

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and
Additional Provision 4 Environmental Statement

Non-technical summary

October 2015

SES3 and AP4 ES 3.0

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Department
for Transport

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1. Introduction to the SES₃ and the AP₄ ES

1.1 Purpose of this Non-technical summary

This document is the Non-technical summary (NTS) of the Supplementary Environmental Statement 3 ('SES₃') and the Additional Provision 4 Environmental Statement ('AP₄ ES') to the High Speed Rail (London–West Midlands) Bill ('the Bill'). Its main purpose is to report any new or different likely residual significant environmental effects arising from the updates and changes reported in the SES₃ and the amendments reported within the AP₄ ES. These new or different likely residual significant environmental effects are compared to those contained within the Environmental Statement which accompanied the Bill submitted to Parliament in November 2013 ('the main ES'), as updated by the Supplementary Environmental Statements (SESs), taking into account the relevant amendments in previous Additional Provisions (APs).

1.2 Background to High Speed Two

Phase One of High Speed Two (HS2) will provide a new north–south railway between London, Birmingham and the West Midlands. Phase Two of HS2 will comprise new lines between the West Midlands, Leeds and Manchester, completing what is known as the 'Y network'. Phase Two is not the subject of this document.

The Bill was submitted to Parliament in November 2013. If enacted by Parliament, the Bill will provide the powers to construct, operate and maintain Phase One of HS2. The Bill was accompanied by the main ES. The main ES presented the findings of the environmental impact assessment (EIA) for the scheme, outlining the assessment scope and methodology, identifying likely significant environmental effects, mitigation measures to avoid or reduce significant environmental effects, and residual significant environmental effects, which remain after all mitigation has been put in place.

Since the deposit of the Bill, a number of amendments (i.e. changes that require amendments to the Bill) to the scheme have been identified. These have been promoted in Parliament through the following three APs, which were each accompanied by an Environmental Statement (ES):

- AP₁: deposited in Parliament in September 2014. This focused on community forum areas (CFAs) 7 (Colne Valley) to 26 (Washwood Heath to Curzon Street);
- AP₂: deposited in Parliament in July 2015. This focused on CFAs 4 (Kilburn (Brent) to Old Oak Common) to 26 (Washwood Heath to Curzon Street); and
- AP₃: deposited in Parliament in September 2015. This focused on CFAs 1 (Euston station and approach) to 3 (Primrose Hill to Kilburn (Camden)).

Any new or different significant effects that were likely to result from changes to the design which do not require amendments to the Bill, changes to construction assumptions, new environmental baseline information and corrections to the main ES were reported in the following Supplementary Environmental Statements (SESs):

- the SES: submitted alongside the AP₂ ES. This focused on CFAs 4 (Kilburn (Brent) to Old Oak Common) to 26 (Washwood Heath to Curzon Street); and
- the SES₂: submitted alongside the AP₃ ES. This focused on CFAs 1 (Euston station and approach) to 5 (Northolt Corridor).

Since submission of the SES2 and AP3 ES, the need for a number of further amendments has been identified in CFAs 4 (Kilburn (Brent) to Old Oak Common) to 26 (Washwood Heath to Curzon Street). These include a 2.6km extension northwards of the Chiltern tunnel in CFA9 (Central Chilterns) and additional land for ecological mitigation at Langley (a location away from the route of the scheme). These amendments are being promoted through AP4. The associated AP4 ES describes these amendments and reports the associated likely significant environmental effects. In addition to these amendments, there are also a number of design changes in CFAs 4 to 26 that do not require amendments to the Bill. Environmental information not previously available for the assessment has also become available (including changes to construction assumptions) and the need for a number of corrections to the main ES and subsequent SESs and AP ESs has been identified. Any new or different significant effects that are likely to result from these changes are reported in a third SES ('SES3').

These additional amendments and design changes have arisen through the High Speed Rail (London–West Midlands) Select Committee ('the Select Committee') process, ongoing discussions with petitioners and key stakeholders, and as a result of design refinements.

A formal consultation will be undertaken on the SES3 and the AP4 ES. There will also be a petitioning period for those directly and specially affected by the changes. Any petitions against these changes will be heard by the Select Committee in due course.

1.3 Terminology used to describe the scheme

In order to differentiate between the original scheme assessed as part of the main ES and subsequent changes, the following terms in Table 1 are used throughout the SES3 and the AP4 ES:

Table 1: Scheme definitions

Scheme name	Definition	Relevant CFAs
the original scheme	the Bill scheme submitted to Parliament in November 2013, which was assessed in the main ES	1 to 26
the AP1 revised scheme	the original scheme as amended by the AP submitted in September 2014	7 to 26
the SES scheme	the original scheme with the design changes described in the SES submitted in July 2015	4 to 26
the AP2 revised scheme	the SES scheme as amended by the AP2 submitted in July 2015	4 to 26
the SES2 scheme	the original scheme as updated by the SES scheme, with the design changes described in the SES2 submitted in September 2015	1 to 5 (i.e. this applies in the London area only)
the AP3 revised scheme	the SES2 scheme as amended by the AP3 submitted in September 2015	1 to 5 (i.e. this applies in the London area only)
the SES3 scheme	the SES2 scheme with the design changes described in the SES3 submitted in October 2015	4 to 26
the AP4 revised scheme	the SES3 scheme as amended by the AP4 submitted in October 2015	4 to 26

The following terms are also used to differentiate between design changes included in the SES3 and those included in the AP4 ES:

- 'SES3 design changes' – changes to the scheme reported in the SES3 that do not require amendments to the Bill; and
- 'AP4 amendments' – changes to the scheme reported in the AP4 ES that require amendments to the Bill.

1.4 The SES3 and the AP4 ES

The SES3 and the AP4 ES are separate ESs, but have been produced as combined volumes (see section 1.5 of this report for further details).

Supplementary Environmental Statement 3

The SES3 presents an assessment of the new or different likely significant effects arising from the SES3 changes, compared to the most recent SES scheme which forms the baseline for the assessment. In some cases, SES3 changes are also included where they do not result in new or different likely significant environmental effects in order to adequately describe the scheme.

The SES3 reports any new or different likely significant environmental effects resulting from:

- updated/new environmental baseline information;
 - ecology: additional surveys including habitat surveys and surveys for protected species;
 - traffic and transport: additional traffic surveys; and
 - water resources and flood risk assessment: reassessment of the impact the construction of the scheme will have on water resources as a result of Environment Agency updates to source protection zones for a number of public water supply abstractions; and
- design changes that can be made without further amendments to the Bill, including changes to:
 - permanent scheme infrastructure: including extension to the porous section of the West Ruislip portal of the Northolt tunnel in CFA6 (South Ruislip to Ickenham); extension of the southern porous portal of the Burton Green tunnel in CFA18 (Stoneleigh, Kenilworth and Burton Green); and the provision of a maintenance base near Old Oak Common station in CFA4 (Kilburn (Brent) to Old Oak Common);
 - utilities: changes to, and additional realignments and diversions of, overhead and underground power lines, and removal of proposed utility works. For

example, the main ES reported that an existing gas main would be replaced in CFA25 (Castle Bromwich and Bromford), however, this is no longer required;

- roads and public rights of way (PRoW): changes to temporary diversions of PRoW and temporary junction improvements. For example, an alternative diversion route will be provided for Footpath U49 in CFA6 (South Ruislip to Ickenham) from that proposed as part of the original scheme;
 - mitigation: including the provision of additional mitigation, reconfiguration, reduction and the relocation of areas of proposed mitigation. For example, provision of an area of landscape mitigation planting at Stoke Mandeville in CFA11 (Stoke Mandeville and Aylesbury); and
 - existing businesses: the Bickenhill Waste Recycling Centre will be relocated to near the A45 Coventry Road in CFA24 (Birmingham Interchange and Chelmsley Wood); and
- changes to construction assumptions from those in the main ES, and the subsequent SESs and AP ESs, where relevant:
 - revised construction assumptions relating to the use of the M25 slip roads for heavy goods vehicles (HGVs) to access construction compounds within CFA7 (Colne Valley);

- revised construction assumptions for construction traffic movements in CFA18 (Stoneleigh, Kenilworth and Burton Green) and associated slip road onto the A46; and
- updated construction methodology for the Curzon Street No.2 viaduct in CFA26 (Washwood Heath to Curzon Street); and
- corrections to the main ES, the subsequent SESs and the AP ESs.

The SES3 also reports the following, that may not result in any new or different likely significant environmental effects:

- design changes that do not require amendments to the Bill, but are required to be reported in order to adequately describe the scheme, such as:
 - provision of a HS2 maintenance base near the interchange auto-transformer station in CFA24 (Birmingham Interchange and Chelmsley Wood), adjacent to the proposed Birmingham Interchange station; and
 - provision of a training area and larger car park at Calvert infrastructure maintenance depot in CFA13 (Calvert, Steeple Claydon, Twyford and Chetwode); and
- corrections to factual inaccuracies identified in the main ES, the SES and the AP2 ES.

Additional Provision 4 Environmental Statement

The AP4 ES reports any new or different likely significant environmental effects due to the amendments proposed in AP4 compared to the SES3 scheme, which forms the new baseline. Where relevant, the assessment also reports the likely significant cumulative effects taking into account previous AP amendments.

In some instances, an AP4 amendment is reliant on land required for previous AP schemes. Where this occurs it is assumed that the relevant previous AP amendment will be enacted, and therefore the total impact of the AP4 amendment with the relevant previous AP amendment is assessed. The AP4 ES reports whether any resulting significant environmental effects are new or different compared to those reported in the relevant previous AP. The AP4 amendments include:

- permanent scheme infrastructure: including a 2.6km extension of the Chiltern tunnel in CFA9 (Central Chilterns), relocation of the proposed Salusbury Road ventilation shaft from the area proposed in the original scheme to Canterbury Works in CFA4 (Kilburn (Brent) to Old Oak Common), and relocating the proposed Oxford Canal viaduct in CFA16 (Ladbroke and Southam) approximately

20m further north than proposed as part of the original scheme. Other changes to scheme infrastructure include the provision of additional track drainage, provision of additional balancing ponds and modification and reconfiguration of balancing ponds proposed as part of the original scheme;

- utilities: amendments to the amount of land required temporarily for works to pylons, overhead power lines and a sewer diversion. For example, additional land for the permanent diversion of an overhead power line which runs through the Network Park Industrial Estate in CFA26 (Washwood Heath to Curzon Street), to allow it to be permanently diverted underground;
- construction compounds: relocation of the Nash Lee Road satellite construction compound proposed as part of the original scheme to an agricultural field west of the Wendover north cutting and north of residential properties off the B4009 Nash Lee Road in CFA10 (Dunsmore, Wendover and Halton);

- community facilities and existing businesses: relocation of the Island Project School in CFA23 (Balsall Common and Hampton-in-Arden) to Jerrings Hall Farm, and the relocation of a bottom ash plant in CFA25 (Castle Bromwich and Bromford) to Tyseley;
- roads and PRow: changes to the locations of temporary diversions or permanent realignments of roads and public rights of way PRow, provision of junction improvements and provision of roundabouts. For example, relocation of the proposed footpath overbridge SBH/32 in Lower Hartwell in CFA11 (Castle Bromwich and Bromford) approximately 70m further north than proposed as part of the original scheme;
- access arrangements: changes to the locations, alignments or width of some access tracks proposed as part of the original scheme, and provision of additional access tracks from those proposed as part of the original scheme, additional access rights to allow vehicles to use a private road. For example, relocation of the secondary construction access route that was proposed as part of the original scheme in CFA16 (Ladbroke and Southam) to follow Ridgeway Lane near Ufton; and
- mitigation provision: including the provision of additional mitigation, reconfiguration, reduction and relocation of areas of proposed mitigation. For example, the provision of ecological mitigation in Langley (off-route).

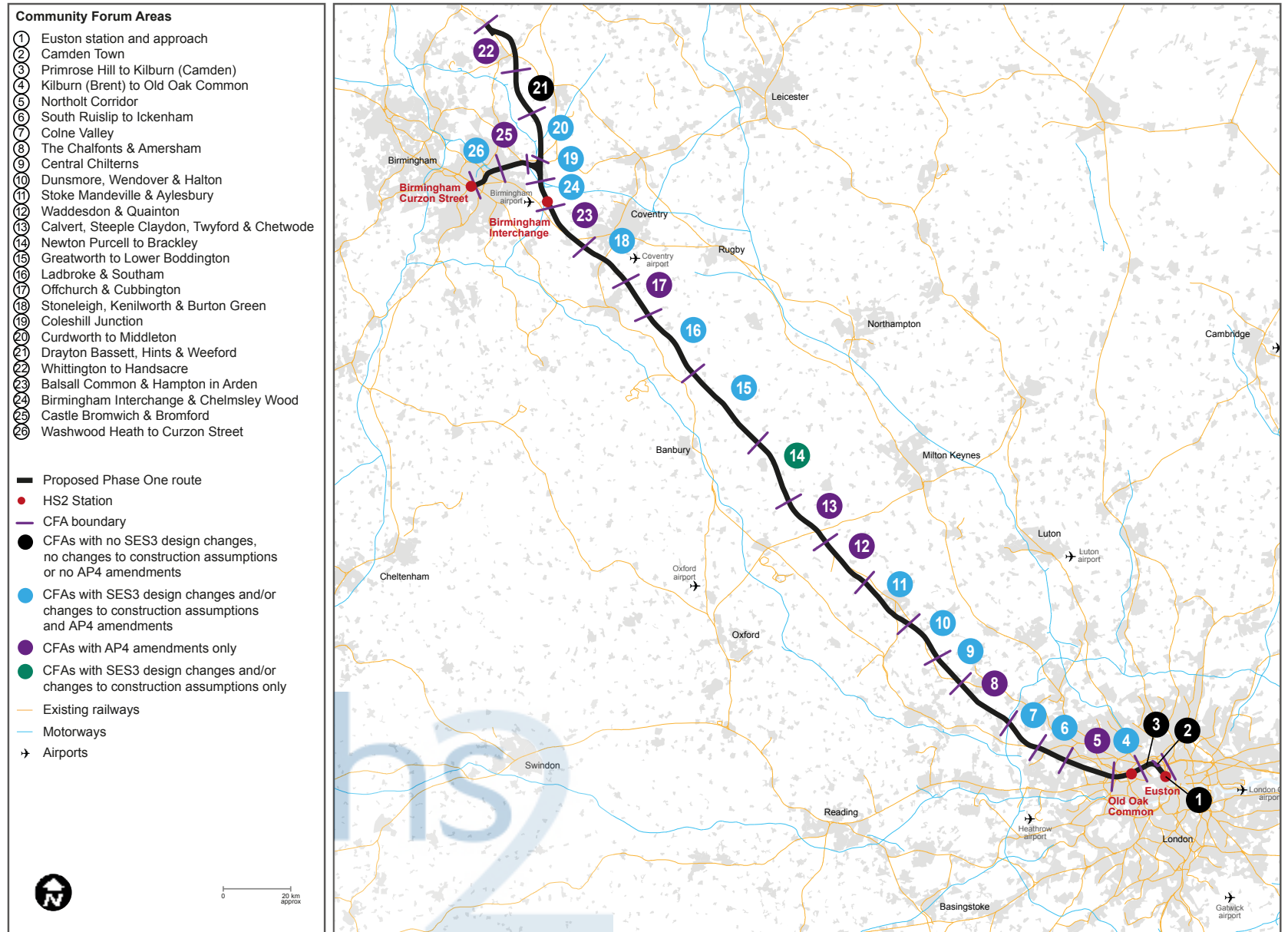
1.5 Structure of the SES3 and the AP4 ES

The SES3 and the AP4 ES are separate documents. However, they are bound together and presented in a number of combined volumes. The SES3 and the AP4 ES comprise:

- NTS: provides a summary in non-technical language of the SES3 and AP4 ES. It presents a summary of any likely significant environmental effects (i.e. effects which are likely to remain after mitigation measures are put in place), both beneficial and adverse, which are new or different to those reported in the main ES as updated by subsequent SESs and AP ESs;
- Volume 1: introduction to the SES3 and AP4 ES. This introduces the supplementary environmental information and design changes included within the SES3 and amendments within the AP4 ES. It also

- explains any changes to the scope, methodology, assumptions and limitations within the EIA and approach to consultation;
- Volume 2: CFA reports and map books. These describe the supplementary environmental information and design changes included within the SES3 and amendments within the AP4 ES. Any new or different likely significant environmental effects arising from these changes and amendments in each CFA, compared to those reported in the main ES, as updated by SES and SES2 documents (and SES3 for the AP4 amendments) are reported. The AP1, AP2 and AP3 amendments are also taken into account where relevant. In addition, 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 SES3 and amendments within the AP4 ES, compared to those reported in the main ES as updated by SES and SES2 (and SES3 for the AP4 amendments). The AP1, AP2 and AP3 amendments are also taken into account where relevant;

Figure 1: Phase One route showing the community forum areas with and without AP4 amendments and SES3 design changes and changes to construction assumptions



- Volume 4: off-route effects. This reports new or different likely significant off-route effects arising from the supplementary environmental information included within the SES₃ and an amendment within the AP₄ ES compared to those reported in the main ES as updated by SES and SES₂ (and SES₃ for the AP₄ amendment). The AP₁, AP₂ and AP₃ amendments are also taken into account where relevant;
- 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 not explained in the main ES.

Figure 1 shows the CFAs along the Phase One route, highlighting which have SES₃ changes and/or AP₄ amendments.

1.6 Approach to mitigation associated with the SES₃ and the AP₄ ES

The 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, including the NTS, and the draft Code of Construction Practice (CoCP), which sets out measures to manage and control the effects of construction. These were provided to Parliament at the same time as the Bill was deposited in November 2013. The same approach to mitigation measures described in the main ES still applies. Site-specific mitigation measures are described within volumes 2, 3 and 4 of the SES₃ and the AP₄ ES, where required.

1.7 Consultation on the SES₃ and the AP₄ ES

A formal public consultation on both the SES₃ and the AP₄ ES is required by Parliamentary Standing Orders. Consultees will have 42 days to respond to the consultation following the deposit of the SES₃ and the AP₄ ES in Parliament and the first publication of the necessary newspaper notices that follow. Parliamentary officials have appointed an independent assessor who will summarise consultation responses and provide a report to Parliament before the Third Reading of the Bill.

There will also be a separate petitioning period. This period will provide an opportunity for individuals or organisations specially and directly affected by the changes in the SES₃ and amendments in the AP₄ ES to petition on the changes or amendments to the Bill.

More information on who may petition against the Bill, and how to do so, is available on Parliament's website (<http://www.parliament.uk>).

1.8 Assessment approach

Scope of the assessment

A scoping exercise was undertaken by environmental technical specialists to determine whether or not the SES3 changes and the AP4 amendments were considered to have the potential to give rise to new or different likely significant environmental effects. The scoping exercise considered the construction and operational effects of the scheme for the following environmental topics:

- agriculture, forestry and soils;
- air quality;
- climate (assessed at a route-wide level, rather than at the local CFA level);
- community;
- cultural heritage;
- ecology;
- electromagnetic interference;
- land quality;
- landscape and visual assessment;
- socio-economics;
- sound, noise and vibration;

- traffic and transport;
- waste and material resources (assessed at a route-wide level, rather than at the local CFA level); and
- water resources and flood risk assessment.

Those SES3 changes and AP4 amendments identified as having the potential to result in new or different likely significant environmental effects were subject to further assessment work.

Assessment methodology

The EIA process for the SES3 and the AP4 ES has followed that which was used for the main ES and subsequent SESs and AP ESs, as described in the Scope and Methodology Report (SMR) and subsequent addendums.

There have also been instances where refinements have been made to the EIA process for the SES3 and the AP4 ES. These are described in more detail in Section 3 of Volume 1 of the SES3 and AP4 ES. These refinements focus on ecology.

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Part 1: Supplementary Environmental Statement 3

2. Introduction to the Supplementary Environmental Statement 3

This part of the NTS provides a summary of the SES₃. It also reports whether the updates and design changes reported within the SES₃ result in new or different likely significant residual environmental effects from those reported in the main ES, and where relevant, the previous ESs.

The remainder of Part 1 of this NTS is comprised of the following sections:

- Section 3: updated and new environmental baseline information: provides a brief introduction, outlining which environmental topics are affected and the reason the baseline is being updated;
- Section 4: design changes and construction assumptions that do not require amendments to the Bill;
- Section 5: corrections to the main ES and subsequent SESs and AP ESs; and
- Section 6: summary of residual significant environmental effects from the SES₃.

3. Updated and new environmental baseline information

3.1 Introduction

Environmental baseline surveys for the scheme have continued to be undertaken since the production of the main ES. Despite the efforts of HS2 Ltd to undertake comprehensive surveys on the land in advance of Bill deposit in 2013, access to some sites was denied or became available too late for survey results to be incorporated into the main ES. In such cases, a precautionary assessment was therefore undertaken for the main ES, based on environmental information gathered from desk-based research, information provided by third parties and professional judgement.

Since the production of the main ES, additional access has been granted and further surveys have been undertaken. New areas of land have also been identified and surveyed and additional desk-based baseline information has become available for some environmental topics. Within the SES3, these surveys and additional desk-based information addresses the following environmental topics:

- ecology surveys: including habitats, amphibians, badger, bats, dormouse, otter, water vole, white clawed crayfish, reptiles, fish, wintering birds, breeding birds, pine marten and terrestrial invertebrates;
- additional traffic surveys: these have been undertaken in CFAs 7 (Colne Valley) to 15 (Greatworth to Lower Boddington) (excluding CFA14 – Newton Purcell to Brackley), to supplement the information reported in the main ES; and
- water resources and flood risk assessment: since submission of the main ES, the Environment Agency has updated the source protection zones for a number of public water supply abstractions in CFAs 8 (The Chalfonts and Amersham) and 9 (Central Chilterns). This has been taken into account where relevant to the AP4 scheme (i.e. where this would form the baseline for an AP4 amendment).

The SES3 reports new baseline information where it is relevant to the assessment of a new or different likely significant environmental effect or where it forms relevant baseline to the assessment of an SES3 design change or AP4 amendment.

4. Changes to the design and construction assumptions that do not require amendments to the Bill

4.1 Introduction

Some changes to the design of the scheme and changes to construction assumptions do not require amendments to the Bill. These are reported within the SES₃, where they:

- result in new or different likely significant environmental effects from those reported in the main ES and, where relevant, the subsequent SESs and AP ESs; and
- are required in order adequately to describe features of the scheme.

4.2 Summary of changes to the design and construction assumptions that do not require amendments to the Bill

Tables 2–20 present a summary of the changes to the design and construction assumptions for each of the CFAs, and at an off-route level, providing a description of the original scheme and the SES₃ scheme.

Figures 2–20 show the approximate location of the SES design changes within each of the CFAs and at the off-route area. The legend is common to each figure in this section.






Legend	
	SES ₃ design changes
	Station or depot
	Route in tunnel
	Route on surface
	Community forum area boundary
	Motorway
	Major road
	Existing railway
	Railway stations
	Airport
	Urban area
	Lake / reservoir
	Woodland, park or garden
	Main river / stream
	Local Authority boundary

Figure 2: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 4 – Kilburn (Brent) to Old Oak Common

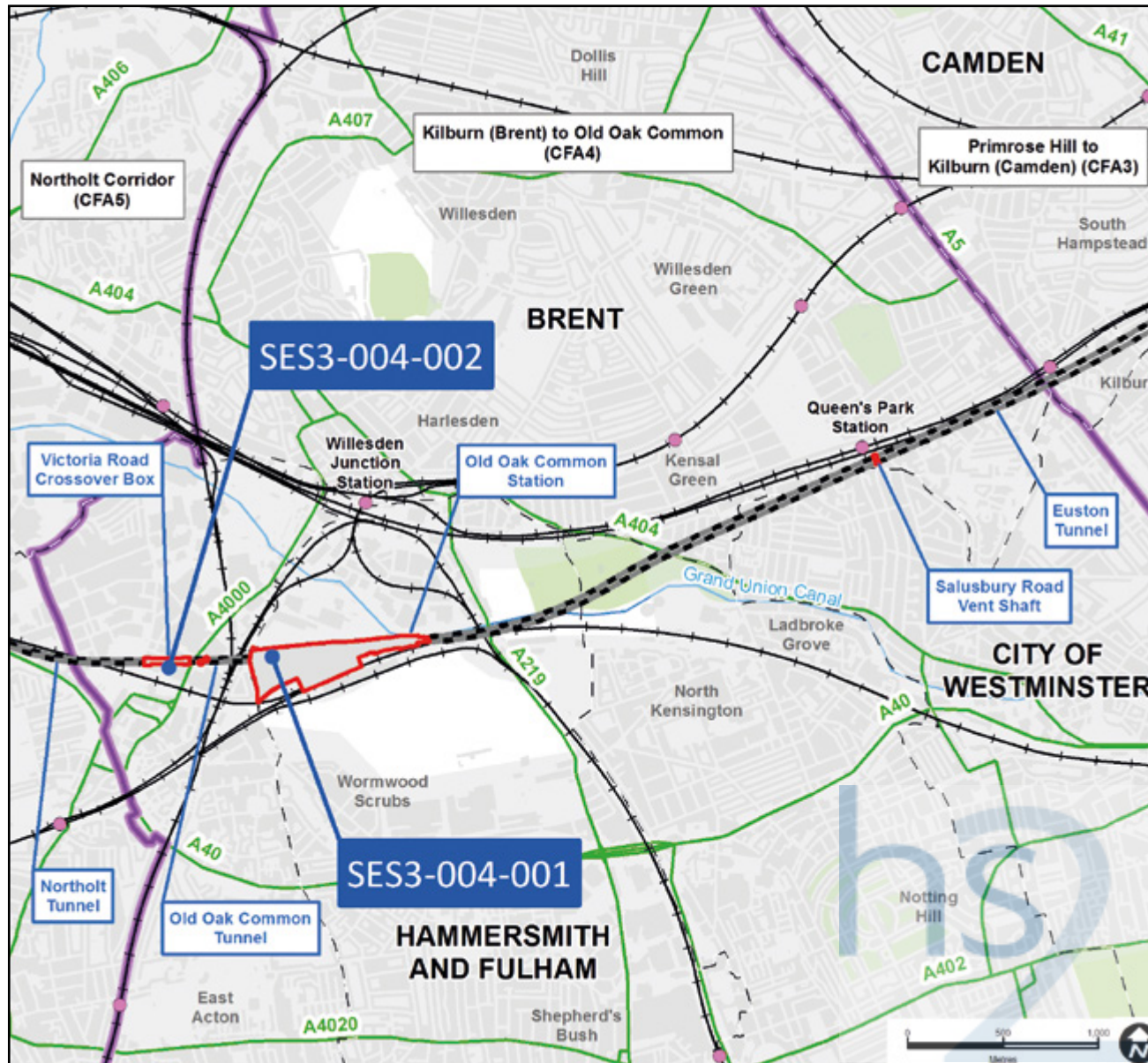


Table 2: Summary of changes to the design not requiring a change to the Bill within CFA4 – Kilburn (Brent) to Old Oak Common

Name of design change or construction assumption	Description of the SES scheme or SES2 as relevant	Description of the SES3 scheme
Provision of a subway at Old Oak Common (SES3-004-001)	The Bill does not provide for a subway under Old Oak Common Lane.	<p>Transport for London (TfL) has proposed to develop a station on the West London Overground Line near to the proposed Old Oak Common station, west of Old Oak Common Lane. TfL would provide a new subway access under Old Oak Common Lane to Old Oak Common station and to facilitate access to future development to the west.</p> <p>As part of the SES3 scheme a 16m wide, 4m high underground reinforced concrete box structure will be constructed beneath Old Oak Common Lane. This will facilitate the provision by TfL of the proposed pedestrian subway connecting to the planned Overground station.</p>
Provision of a HS2 maintenance base near Old Oak Common (SES3-004-002)	The Bill does not provide for a maintenance base at Old Oak Common.	The need for a maintenance base in the vicinity of Old Oak Common station has been identified. The maintenance base will comprise an accommodation building with storage facilities and staff parking. The area required is approximately 515m ² and is within the existing limits of the Bill.

Figure 3: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 6 – South Ruislip to Ickenham

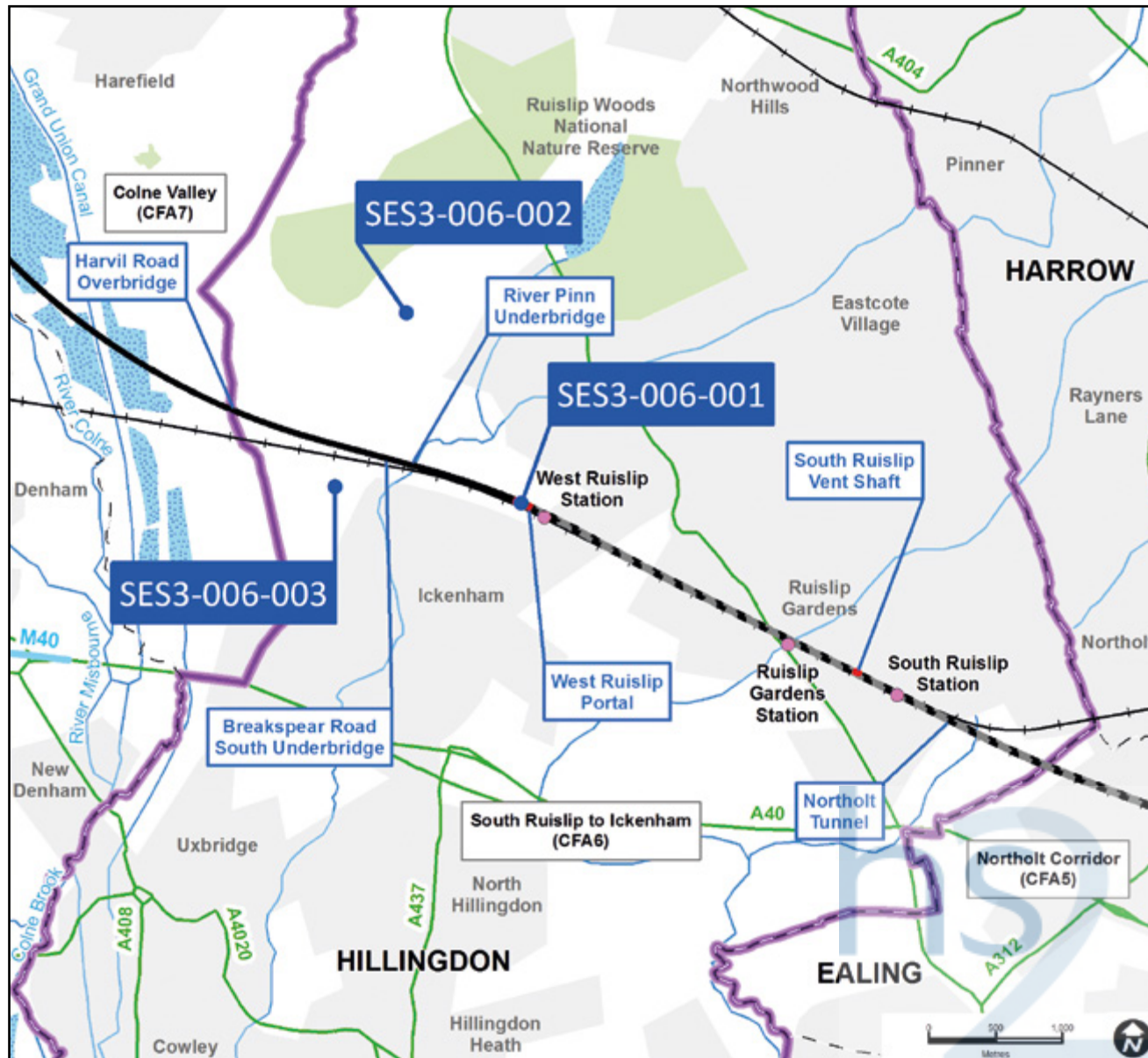


Table 3: Summary of changes to the design not requiring a change to the Bill within CFA6 – South Ruislip to Ickenham

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Extension to the porous section of the West Ruislip portal of the Northolt tunnel and realignment of the footbridge (SES3-006-001)</p>	<p>The Bill provides for a portal and approach ramp approximately 520m in length, as part of the Northolt tunnel.</p>	<p>Following aerodynamic modelling, the need to extend the porous section of the west Ruislip portal westwards by approximately 150m has been identified. However, the overall length of the portal will not increase. As part of this work, the Ickenham Stream (Canal Feeder) Footpath U81 overbridge will be relocated further to the east of the location in the original scheme.</p>
<p>Revised temporary diversion of Footpaths U36, U37 and U38 (SES3-006-002)</p>	<p>The Bill provides for the temporary closure of footpaths U36, U37 and U38 during the removal of sustainable placement materials north of Newyears Green Lane. The proposed diversion routes are:</p> <ul style="list-style-type: none"> • Footpath U36: from the start of Footpath U36, along Newyears Green Lane, Breakspear Road North and through Bayhurst Wood Country Park to the junction of footpaths U35, U36 and U37; • Footpath U37: from the start of Footpath U36, along Newyears Green Lane, Breakspear Road North and through Bayhurst Wood Country Park to the junction of footpaths U35, U36 and U37; and • Footpath U38: from the start of Footpath U38, along Newyears Green Lane and Breakspear Road North to the end of Footpath U38 adjacent to the junction of Breakspear Road North and Fine Bush Lane. 	<p>A replacement diversion route for footpaths U36, U37 and U38 has been identified based on the phasing of the sustainable placement of excavated materials in this area. Footpath U38 will be diverted approximately 700m around the sustainable placement area, and only one footpath (U36 or U37) will be temporarily closed at any one time.</p> <p>A temporary footpath will be required within the field boundaries along the northern edge of Newyears Green Lane and the western edge of Breakspear Road North during the diversion of Footpath U38. The footpath will provide a safe walking route and will be segregated from the works with a temporary fence.</p>
<p>Revised temporary diversion of Footpath U49 (SES3-006-003)</p>	<p>The Bill provides for the temporary closure and diversion of Footpath U49 to accommodate the Northolt tunnel and earthworks main construction compound and areas for sustainable placement.</p>	<p>A replacement diversion route for Footpath U49 is proposed based on phasing of the sustainable placement in this area. Footpath U49 will be temporarily diverted approximately 850m along the south-eastern edge of the construction site and part way along the western boundary adjacent to Harvil Road. The diversion will require a crossing point across Harvil Road. The footpath will be segregated from the construction works with a temporary fence and from Harvil Road by the existing hedgerow.</p>

Figure 4: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 7 – Colne Valley

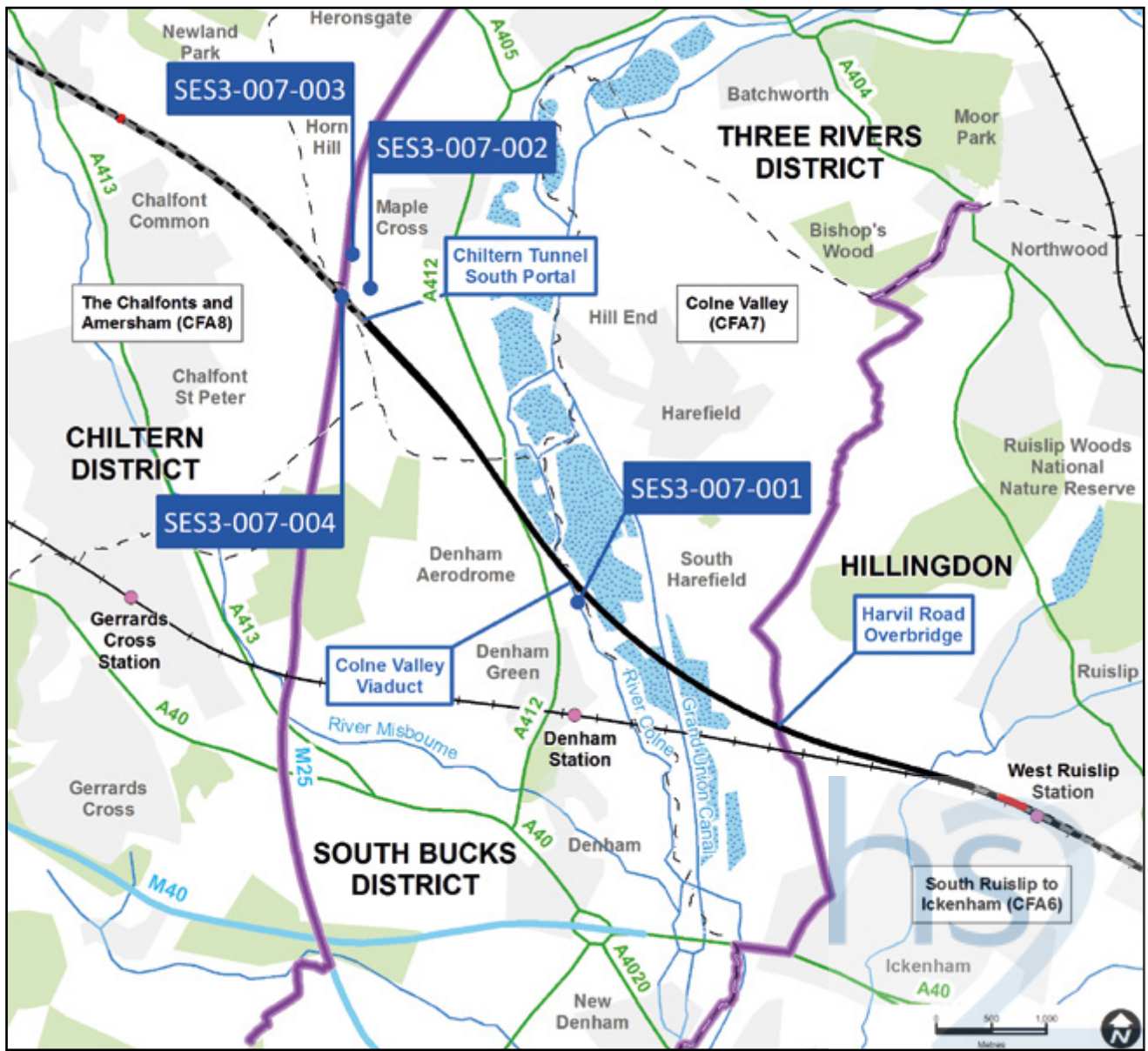


Table 4: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA7 – Colne Valley

Name of design change	Description of the SES scheme	Description of the SES3 scheme
Reconfiguration of land required at Battlesford Wood/Ranston Covert (SES3-007-001)	The Bill provides for the temporary use of approximately 1ha of ancient woodland within Battlesford Wood/Ranston Covert, to construct the Colne Valley viaduct.	An additional area of Battlesford Wood/Ranston Covert has been identified as ancient woodland. The area of land required for the construction of the Colne Valley viaduct has been decreased by approximately 2.6ha, which will reduce the extent of ancient woodland loss compared to the SES scheme.
Utility works at Denham Quarry and Dews Farm (SES3-007-002)	The Bill provides for the temporary realignment of overhead power lines over Colne Valley, 80m to the west of their existing alignment. Approximately 1km of overhead power lines would be permanently realigned via the southern side of the Chiltern Main Line, across Uxbridge Golf Course, over Harvil Road, northwards over the HS2 route and then back in a north-westerly direction to the National Grid feeder station north-east of the Hillingdon Outdoor Activity Centre.	Further construction information has become available for the temporary realignment. The overhead power lines will be realigned to a temporary pylon approximately 65m west of the existing alignment between the River Colne and Denham Quarry Lake B, and to a temporary pylon approximately 65m north-west of the existing cable alignment, north of the proposed National Grid feeder station.
Utility works at Chalfont Lane (SES3-007-003)	The Bill provides for the temporary realignment of an overhead power line along the eastern side of the M25, with permanent relocation below ground along the existing alignment of the power line.	Further construction information has become available for the temporary realignment. The overhead power line will be realigned via two temporary pylons, 60m east of the current alignment of the overhead power line to the east of the M25.
Revised construction assumptions relating to the use of M25 slip roads (SES3-007-004)	The Bill provides for temporary slip roads to and from the M25 between junctions 16 and 17. These slip roads are for HGVs, construction traffic to and from the Chiltern tunnel main and south portal construction compounds, and the Colne Valley viaduct main construction compound. HGV construction traffic generated by the remaining construction compounds within the Colne Valley area would use the A40 or M25 Junction 17 and then the A412 to access and exit the construction compounds.	<p>The routing of HGVs within the Colne Valley area has been revised. All HGV construction traffic generated by the following construction compounds will use the temporary slip roads between the M25 junctions 16 and 17:</p> <ul style="list-style-type: none"> • Chiltern tunnel main compound/Chiltern tunnel south portal satellite construction compound; • Colne Valley viaduct main construction compound; • Colne Valley viaduct north embankment satellite construction compound; • Colne Valley viaduct north launch satellite construction compound; and • Colne Valley viaduct laydown satellite construction compound. <p>The Colne Valley viaduct jetty storage and Colne Valley viaduct storage satellite construction compounds will be accessed via the A40 or M25 Junction 17 and the A412 Denham Way and Moorfield Road.</p>

Figure 5: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 10 – Dunsmore, Wendover and Halton

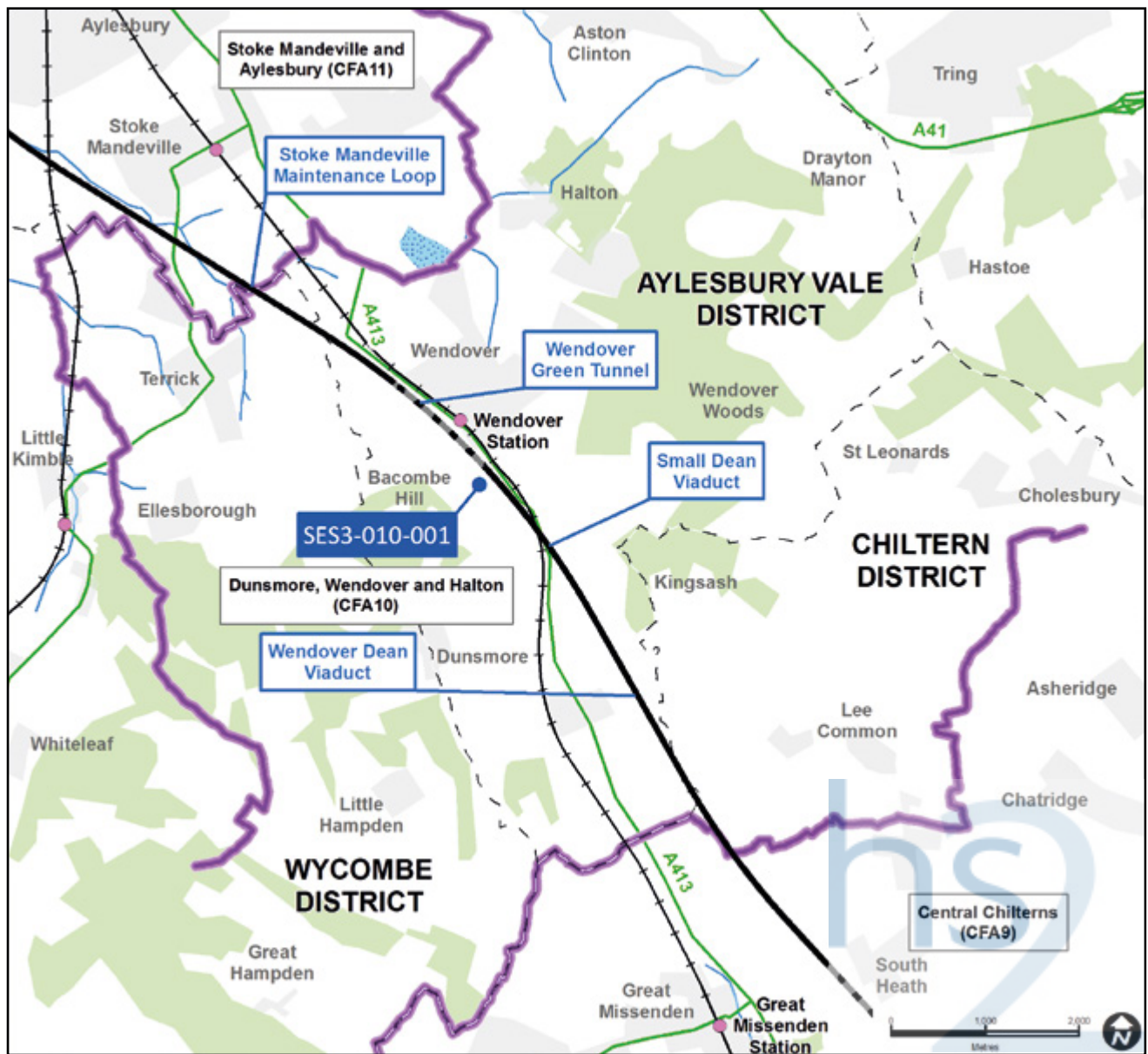


Table 5: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA10 – Dunsmore, Wendover and Halton

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
Utility works to the west of Wendover (SES3-010-001)	The Bill provides for the permanent realignment of an overhead power line and pylons on the west side of the HS2 route for approximately 1km from the Small Dean viaduct to Bacombe Lane, to the west of Wendover.	Additional construction information is now available in relation to the overhead power line. The layout of the permanent realignment of the overhead power line will not change from that proposed in the original scheme and no additional land is required. The foundations will be designed to address the ground conditions at each pylon location; some foundations may need to be 30m deep.

Figure 6: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 11 – Stoke Mandeville and Aylesbury

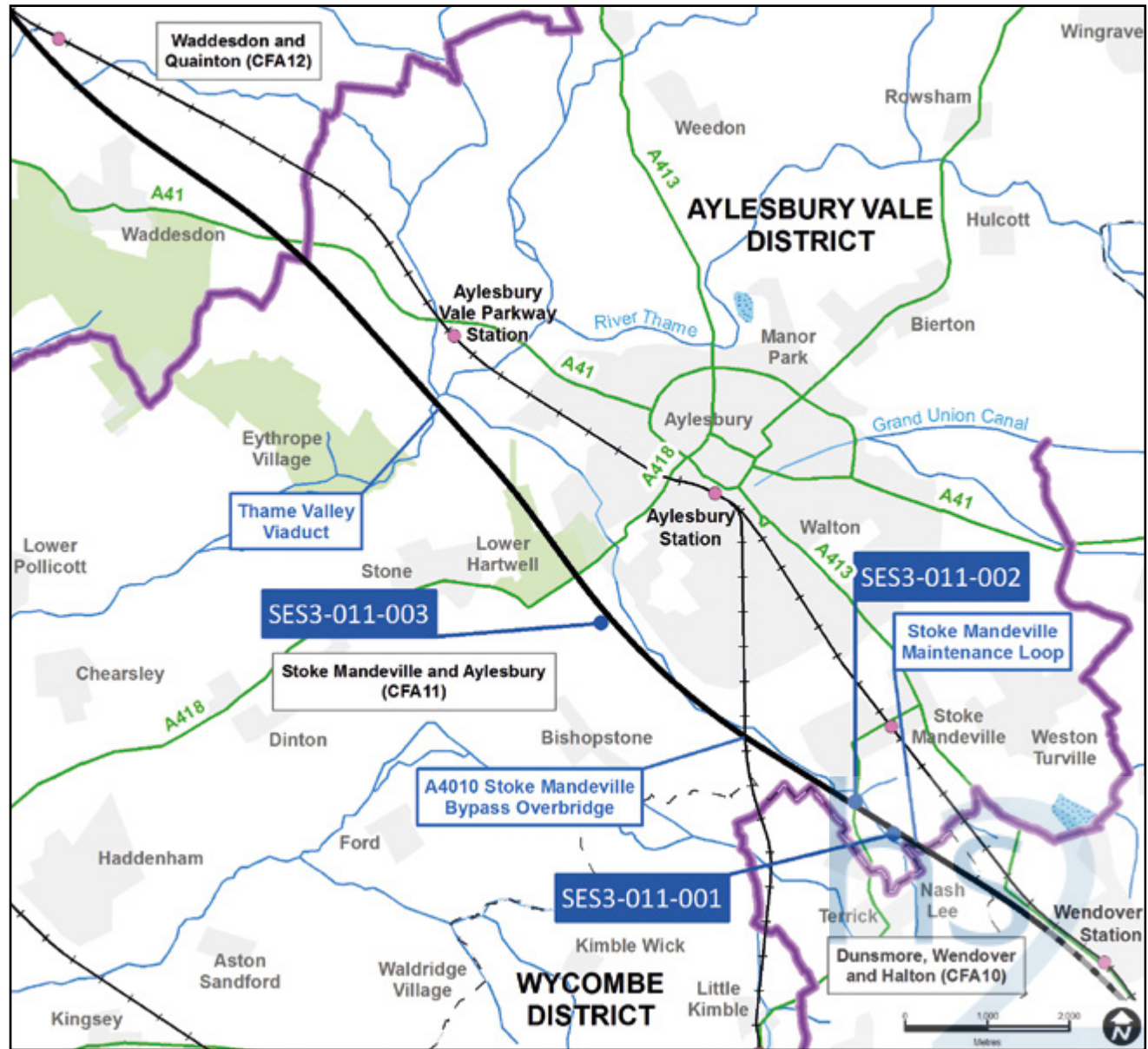


Table 6: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA11 – Stoke Mandeville and Aylesbury

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
Provision of landscape mitigation planting at Stoke Mandeville (SES3-011-001)	<p>The Bill provides for a permanent maintenance loop (a maintenance loop allows maintenance to be carried out at night at more remote locations) approximately 1.2km long at Stoke Mandeville. An access track would be provided either side of the maintenance loop with access from Nash Lee Lane on the east side and B4009 Nash Lee Road on the west side of the HS2 route.</p> <p>An area of ecological mitigation approximately 3ha in size would be provided to the west of the HS2 route and north of Footpath ELL/20 to create a wet grassland habitat and to potentially create an area to relocate any grass snake population.</p>	<p>An area of woodland planting approximately 530m by 30m is proposed west of the HS2 route. This will screen views of the proposed Stoke Mandeville maintenance loop from the viewpoint at Coombe Hill, on the north side of the Chilterns Ridge.</p> <p>The woodland will be located within the area of wet grassland habitat proposed in the original scheme.</p>
Provision of landscape mitigation planting near the A4010 Risborough Road (SES3-011-002)	<p>The Bill provides for hedgerow planting along both sides of the HS2 route, from south of Stoke House to south of Old Risborough Road, to screen views of the railway embankment, overhead line equipment and noise fence barriers from nearby residential properties. The hedgerow would be located at the foot of the railway embankment, and would be approximately 470m long on the east side and 560m long on the west side of the HS2 route.</p>	<p>The hedgerow proposed in the original scheme will be replaced with a belt of woodland to further reduce visual intrusion. This replacement landscape planting will be approximately 650m long on both sides of the HS2 route. The planting will extend up to 30m from the foot of the railway embankment.</p>
Provision of a noise barrier at Sedrup ditch (SES3-011-003)	<p>The Bill does not provide for noise mitigation on the west side of the HS2 route in the vicinity of Sedrup, Stone.</p>	<p>Further assessment work has identified the need to provide operational noise mitigation for Sedrup. A noise fence barrier 3m in height and 350m long will be provided along the west side of the HS2 route, east of Sedrup Lane. The noise fence barrier will extend from Footpath SBH/27 overbridge northwards to join the noise fence barrier south of the A418 Oxford Road.</p>

Figure 7: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 13 – Calvert, Steeple Claydon, Twyford and Chetwode

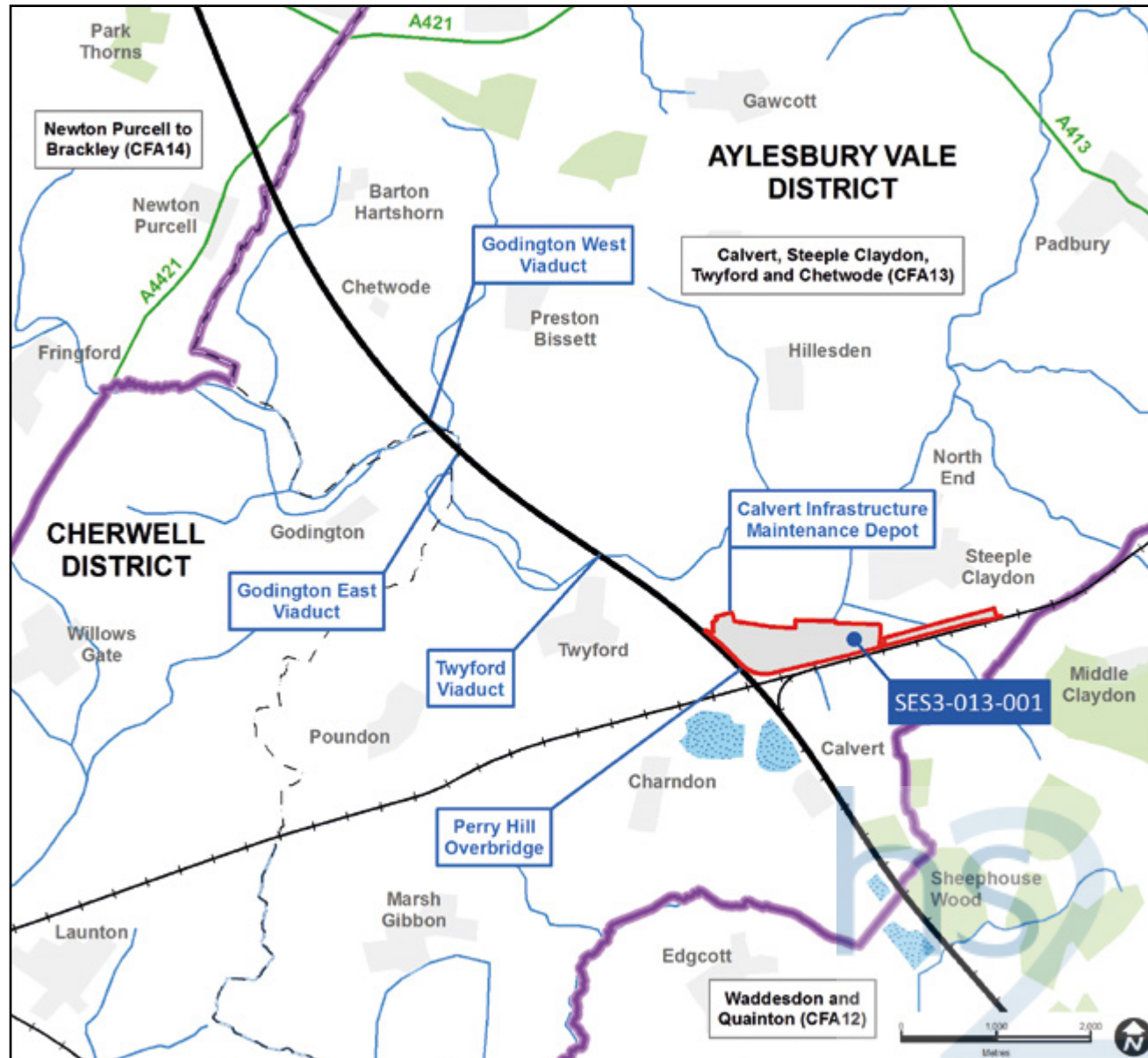


Table 7: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA13 – Calvert, Steeple Claydon, Twyford and Chetwode

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
Provision of training area and larger car park at Calvert infrastructure maintenance depot SES3-013-001	The Bill provides for a 165 space car park at Calvert infrastructure maintenance depot.	<p>The need to increase the number of car parking spaces at the infrastructure maintenance depot has been identified. An additional 135 spaces will be added which will require 0.6ha of additional land. An outdoor training area is also required to support the training of maintenance staff which will require 1ha of additional land. The infrastructure maintenance depot will also increase in size making it 0.6ha larger, all the additional land required is within the Bill limits.</p> <p>The design change will require the temporary and permanent earthwork bunds to be realigned. The permanent diversion of Footpath SCL/6 will be adjusted to suit the permanent realigned earthwork bunds.</p>

Figure 8: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 14 – Newton Purcell to Brackley

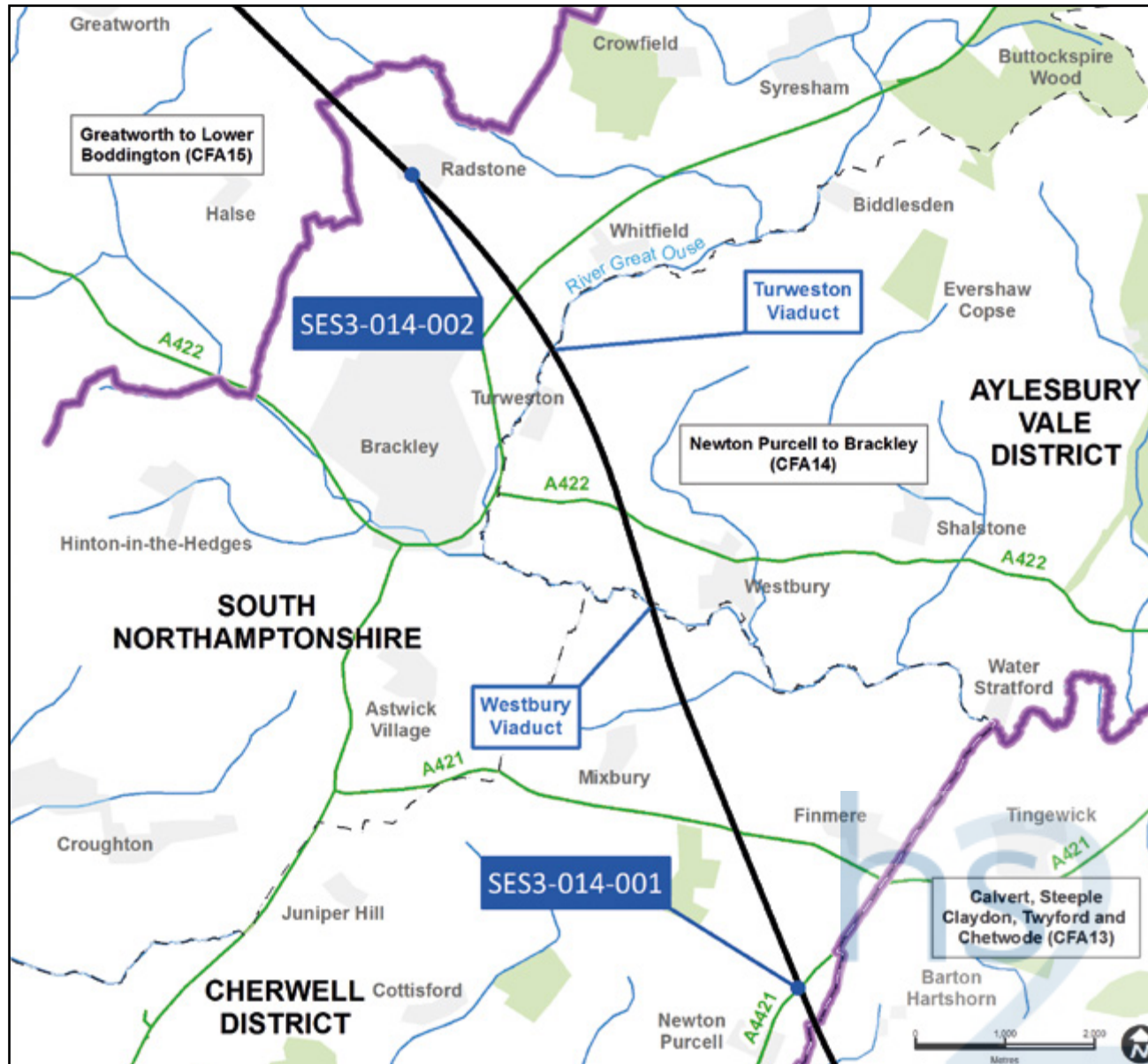


Table 8: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA14 – Newton Purcell to Brackley

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Provision of landscape mitigation planting at Newton Purcell (SES3-014-001)</p>	<p>The Bill provides for a permanent area of linear landscape planting to the east of the HS2 route and south of A4421 Buckingham Road overbridge. There would be a 150m gap in this landscape planting immediately south of the highway overbridge where a balancing pond would be located.</p>	<p>The balancing pond and a maintenance access road will be permanently repositioned and the 150m gap in planting will be filled in with landscape planting.</p>
<p>Provision of additional noise mitigation at Radstone (SES3-014-002)</p>	<p>The Bill provides for permanent landscape earthworks on both sides of the HS2 route from the north Helmdon Disused Railway Site of Special Scientific Interest (SSSI) to Radstone Road. The landscape earthworks would integrate the embankment into the landscape - and provide visual screening to the west and noise screening to the east.</p> <p>AP2 amendment AP2-014-006 proposes that approximately 2ha of landscape mitigation planting proposed in the original scheme is removed. Additional hedgerow planting would be provided to encourage the movement of bats towards the proposed green bridge at Radstone. The hedgerow planting would also provide visual screening for the village of Radstone.</p>	<p>The need for an additional noise fence barrier to the east of the HS2 route, south-west of Radstone has been identified due to significant operational noise effects identified in the main ES.</p> <p>The noise fence barrier will be 5m in height and approximately 800m long. The landscape earthworks and planting proposed in the AP2 revised scheme will remain.</p> <p>An additional area of landscape mitigation planting will be provided on the highway embankment along the eastern edge of Radstone Road to screen views from the west of the noise fence barrier.</p>

Figure 9: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 15 – Greatworth to Lower Boddington

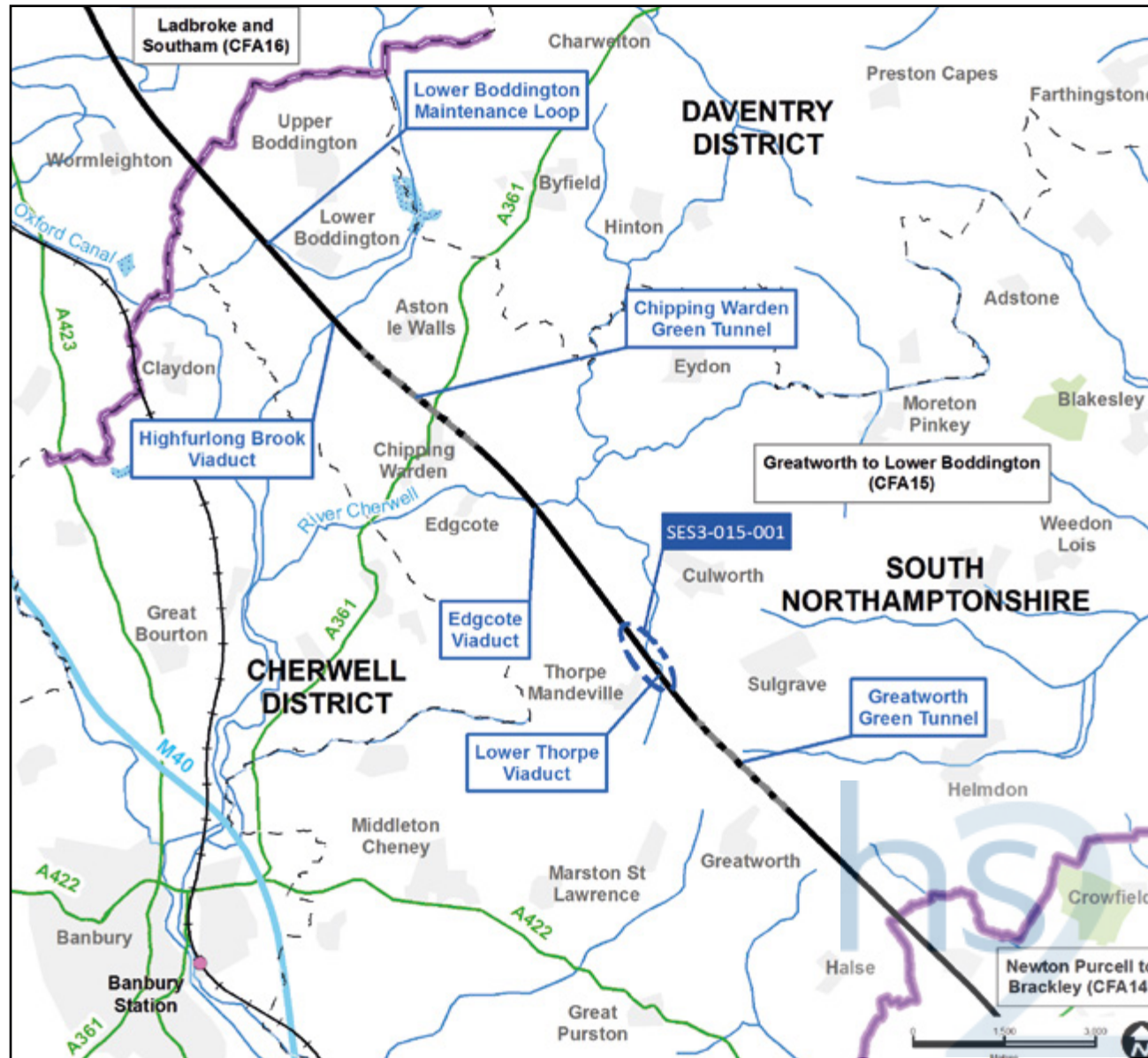


Table 9: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA15 – Greatworth to Lower Boddington

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
Provision of noise mitigation at Culworth (SES3-015-001)	The Bill provides for a permanent noise fence barrier along the western side of the HS2 route east of Lower Thorpe. The barrier will be approximately 780m long, extending from just north of Banbury Road to approximately 240m north of Banbury Lane at Lower Thorpe viaduct. The barrier will be up to 3m high, except across the viaduct where the 1.4m high protection barrier will be modified to include a sound absorptive facing. No noise mitigation would be provided along the eastern side of the HS2 route.	Further noise assessments have identified the need for noise mitigation for properties at Culworth, east of the HS2 route. A permanent 2m high noise fence barrier will be constructed above rail level along the eastern side of the HS2 route. The barrier will extend from just north of Banbury Road at Lower Thorpe viaduct and will be approximately 500m long. The 1.4m high protection barrier along the Lower Thorpe viaduct, approximately 170m in length proposed in the original scheme, will be modified to also act as an absorptive noise fence barrier.

Figure 10: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 16 – Ladbroke and Southam

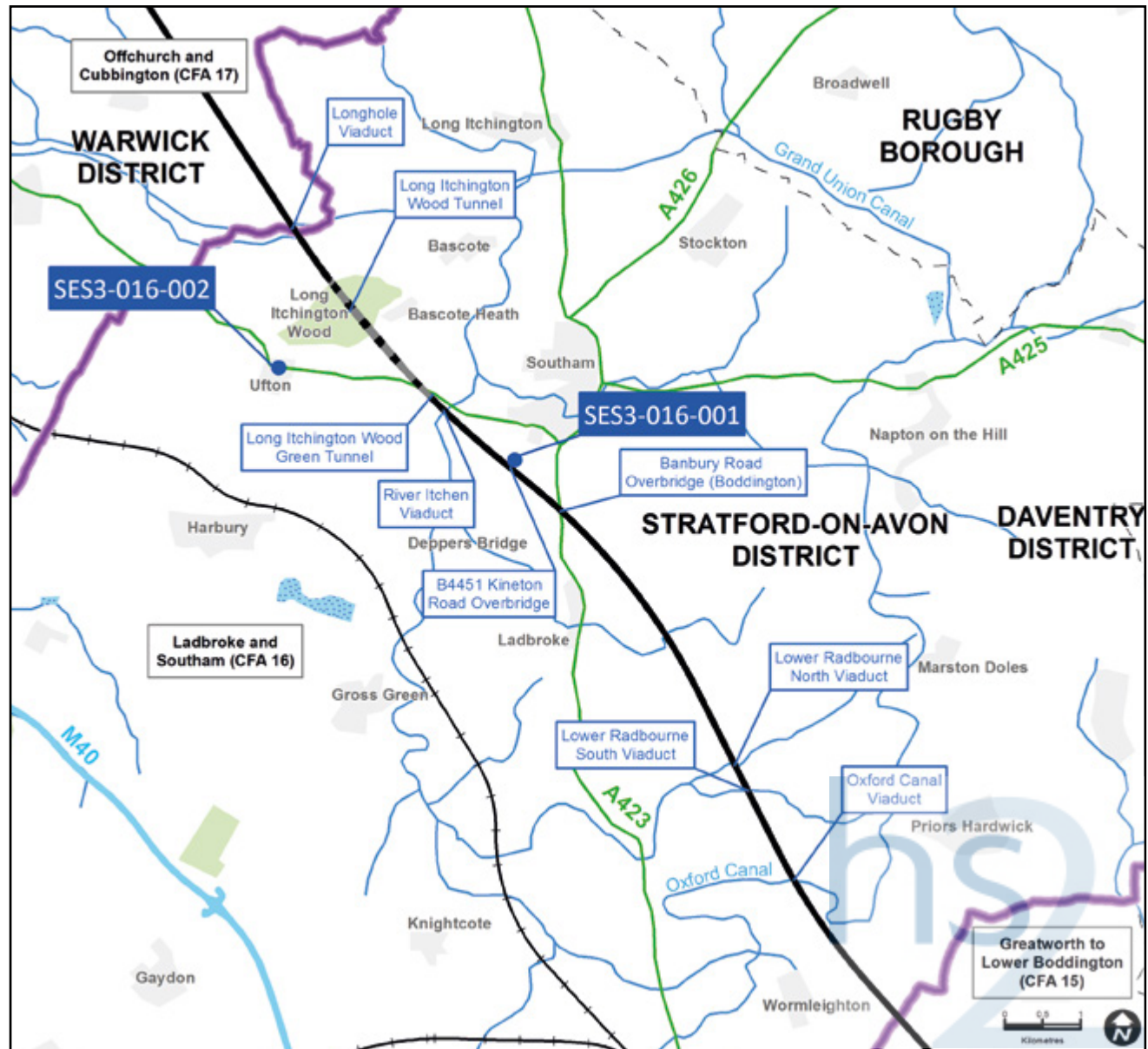


Table 10: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA16 – Ladbroke and Southam

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
Additional grassland habitat creation area to the north of Kineton Road (SES3-016-001)	The Bill provides for landscape mitigation planting north of the realigned B4451 Kineton Road, adjacent to the Southam Industrial Estate. This planting was reduced for the revised SES and AP2 scheme to accommodate a potential future development.	<p>New ecological survey data has identified the presence of great crested newt in a highways drainage pond adjacent to the B4451 Kineton Road overbridge construction compound. To mitigate potential impacts on the great crested newt population, the B4451 Kineton Road overbridge construction compound will be relocated south of the B4451 Kineton Road, west of the HS2 route.</p> <p>The area around the highways drainage pond and the land adjacent to Southam Industrial Estate will be used as an ecological mitigation area, primarily to support great crested newt.</p> <p>The ecological mitigation area will be approximately 1.1ha in size, and is within the existing Bill limits.</p>
Provision of a temporary pedestrian crossing on the A425 Southam Road in the village of Ufton (SES-016-002)	The Bill provides for the use of the A425 as a construction traffic route through the village of Ufton.	<p>Due to concerns regarding pedestrian safety when crossing the A425 in Ufton, a temporary signalised pedestrian crossing will be provided during the construction of the scheme.</p> <p>The proposed crossing will be adjacent to the end of St Michaels Close to the south of the A425 and a grassed island on the north side.</p>

Figure 11: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 17 – Offchurch and Cubbington

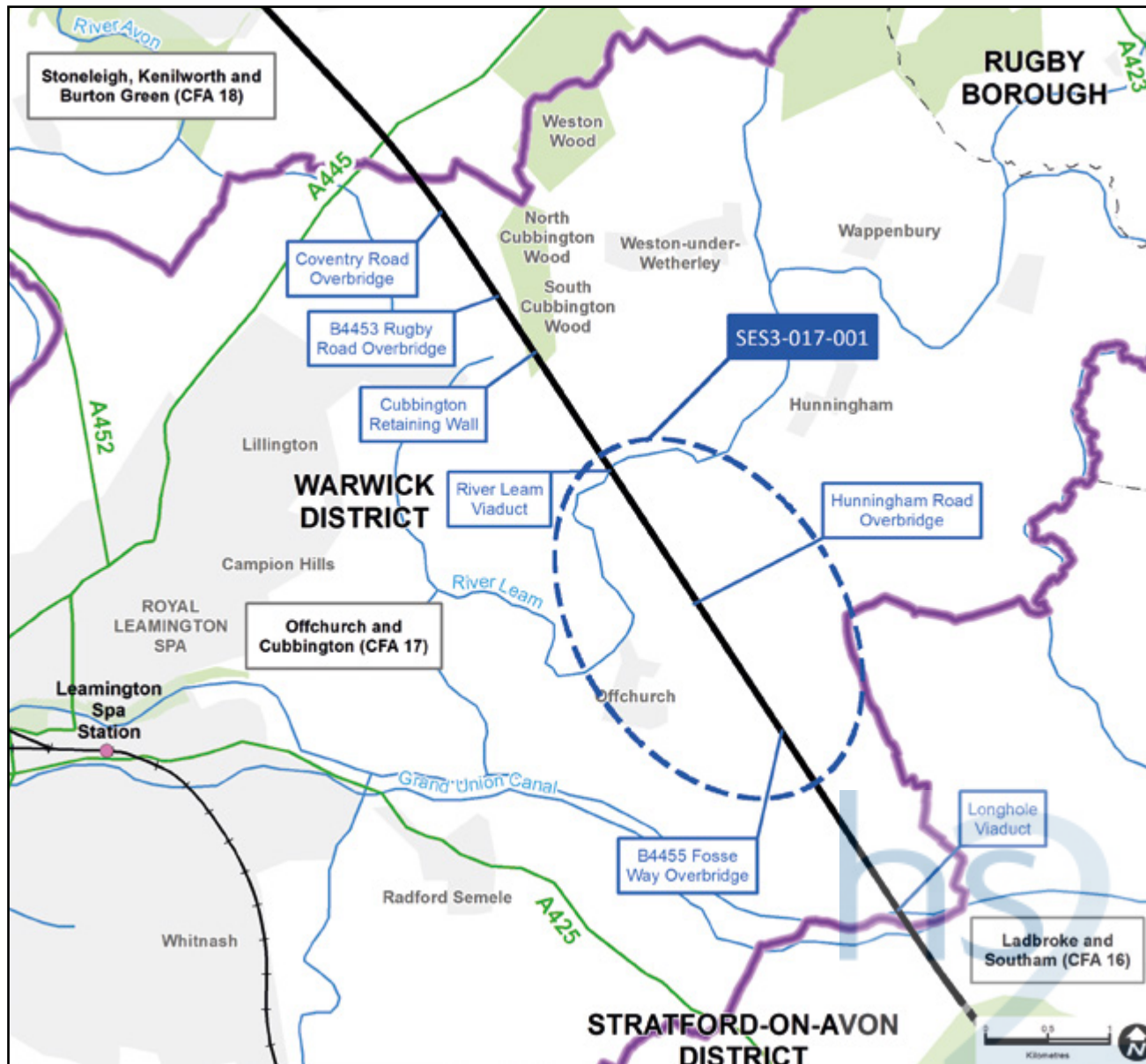


Table 11: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA17 – Offchurch and Cubbington

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Revised construction assumptions for construction traffic movements in CFA17 (SES3-017-001)</p>	<p>The Bill provides for the B4455 Fosse Way main construction compound to be accessed directly off the B4455 Fosse Way. The connection from the B4455 Fosse Way to the M40 will be via the B4100 Banbury Road, the A452 and junction 13 and 14 of the M40. Excavated material from the neighbouring CFA16 (Ladbroke and Southam) will be routed through this area via the A425 Southam Road/Fosse Way junction.</p>	<p>The movement of excavated materials within this area has changed. The following construction assumptions will be implemented:</p> <ul style="list-style-type: none"> • extension to construction earthworks but without extending the overall programme; and • increased use of haul routes for excavated material. <p>An additional temporary construction crossing of the River Leam is required to minimise traffic effects see amendment AP4-017-003.</p>

Figure 12: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 18 – Stoneleigh, Kenilworth and Burton Green

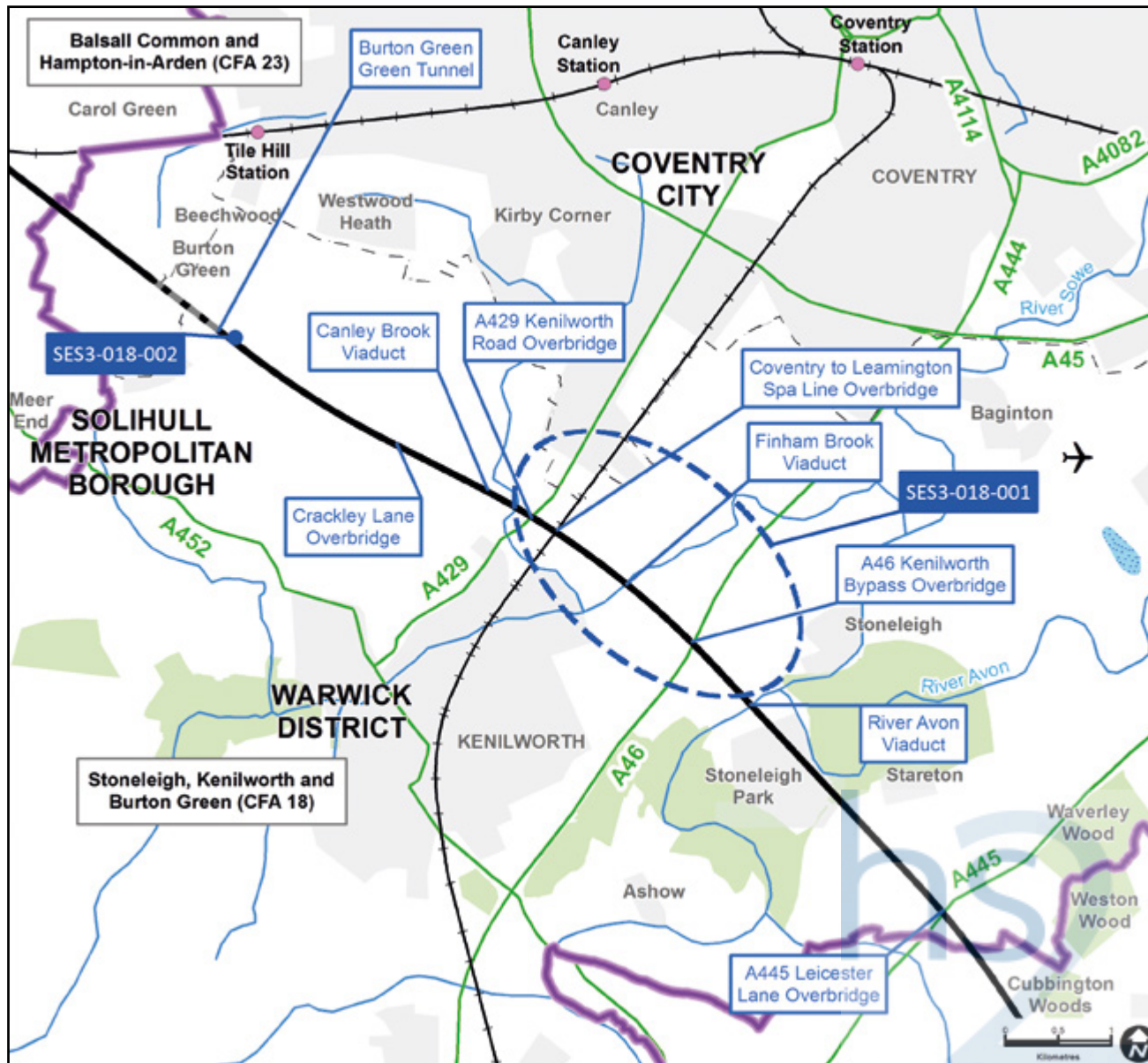


Table 12: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA18 – Stoneleigh, Kenilworth and Burton Green

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Revised construction assumptions for construction traffic movements in CFA18 and associated slip road onto the A46 (SES-018-001)</p>	<p>The Bill provides for the movement of construction traffic between the construction compounds and the work sites on designated haul roads throughout the CFA18 area. The Bill also provides for three roadhead sites (where worksites meet public roads), for the storage, loading and unloading of earthworks material which would be moved to and from the site on public highways. These roadhead sites are:</p> <ul style="list-style-type: none"> • A46 Kenilworth Bypass southbound roadhead; • A429 Kenilworth Road northbound roadhead; and • B4101 Waste Lane east and westbound roadhead. 	<p>Further analysis of traffic data has identified that the traffic movements associated with the movements of excavated material will be higher than reported in the main ES. Changes to construction arrangements have been investigated and will be implemented to reduce HGV movements on public highways.</p> <p>The revised construction schedules will maximise the free capacity at other roadheads to reduce traffic flows onto the A46 Kenilworth Bypass. These measures include proposals for: signalisation of the A46/Stoneleigh Road junction, construction of a temporary dedicated slip road from the Kenilworth bypass roadhead to the southbound carriageway of the A46, and an additional construction traffic route.</p>
<p>Extension of Burton Green green tunnel south portal (SES3-018-002)</p>	<p>The Bill provides for the construction of the Burton Green green tunnel, approximately 620m in length, incorporating a 100m long porous portal at each end.</p> <p>The AP1 scheme requires 0.9ha of additional land on a temporary basis adjacent to the Burton Green green tunnel (south portal) satellite construction compound to facilitate the diversion of a utility pipeline and facilitate maintenance during operation (AP1-018-030).</p> <p>The AP2 scheme proposes to extend the length of the tunnel by 50m in each direction which would result in a tunnel length of approximately 720m, incorporating the 100m long porous portal at each end (AP2-018-004).</p>	<p>Aerodynamic modelling has identified the need to extend the southern porous portal by an additional 40m. This will reduce the build-up of air pressure in the tunnel, reducing the potential for noise effects. The portal buildings and portal access road will be located further to the south-east than proposed as part of the original scheme. Landscape mitigation proposed in the main ES around the portal will be redesigned to accommodate these changes.</p> <p>This change requires a fuel line diversion to be relocated further south-eastwards.</p>

Figure 13: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 19 – Coleshill Junction

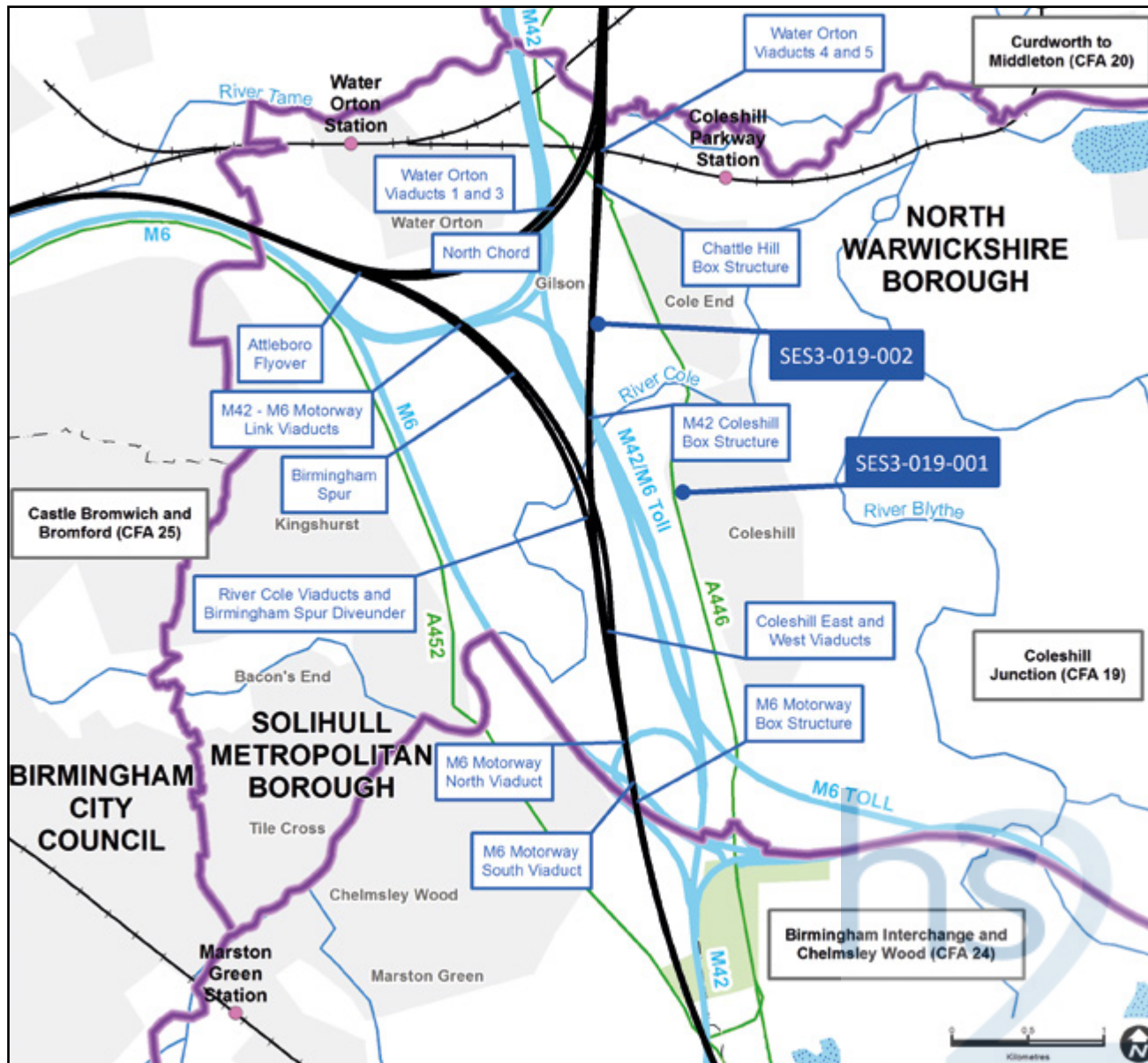


Table 13: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA19 – Coleshill Junction

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Temporary improvements to the junction between the A446 Stonebridge Road and B4114 Birmingham Road to the west of Coleshill</p> <p>(SES3-019-001)</p>	<p>The Bill does not provide for improvements to the junctions between the A446 Stonebridge Road and the B4114 Birmingham Road to the west of Coleshill.</p>	<p>Temporary improvements are proposed to the junction. This will include widening of the westbound approach on the B4114 Birmingham Road from Coleshill for a length of approximately 60m to create two separate lanes on this approach to the roundabout rather than the single lane which currently exists. The improvements will remain in place for up to five years.</p> <p>Approximately 0.2ha of additional land will be required temporarily. The works will be undertaken within the existing highway boundary and Bill limits.</p>
<p>Additional landscape earthworks and relocation of Gilson auto-transformer station</p> <p>(SES3-019-002)</p>	<p>The Bill provides for the HS2 scheme to run onto a short length of embankment at Gilson Drive before passing through the higher ground in cutting at Gilson.</p>	<p>Additional landscape earthworks up to 3m in height will be implemented in an area already proposed for landscape planting. This will provide further screening of views of the HS2 route and an auto-transformer substation from properties in the Gilson Road area, east of the scheme, towards Coleshill.</p> <p>The Gilson Road auto-transformer station will be relocated approximately 80m to the north into a shallow cutting behind the mitigation earthworks to maximise screening.</p>

Figure 14: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 20 – Curdworth to Middleton

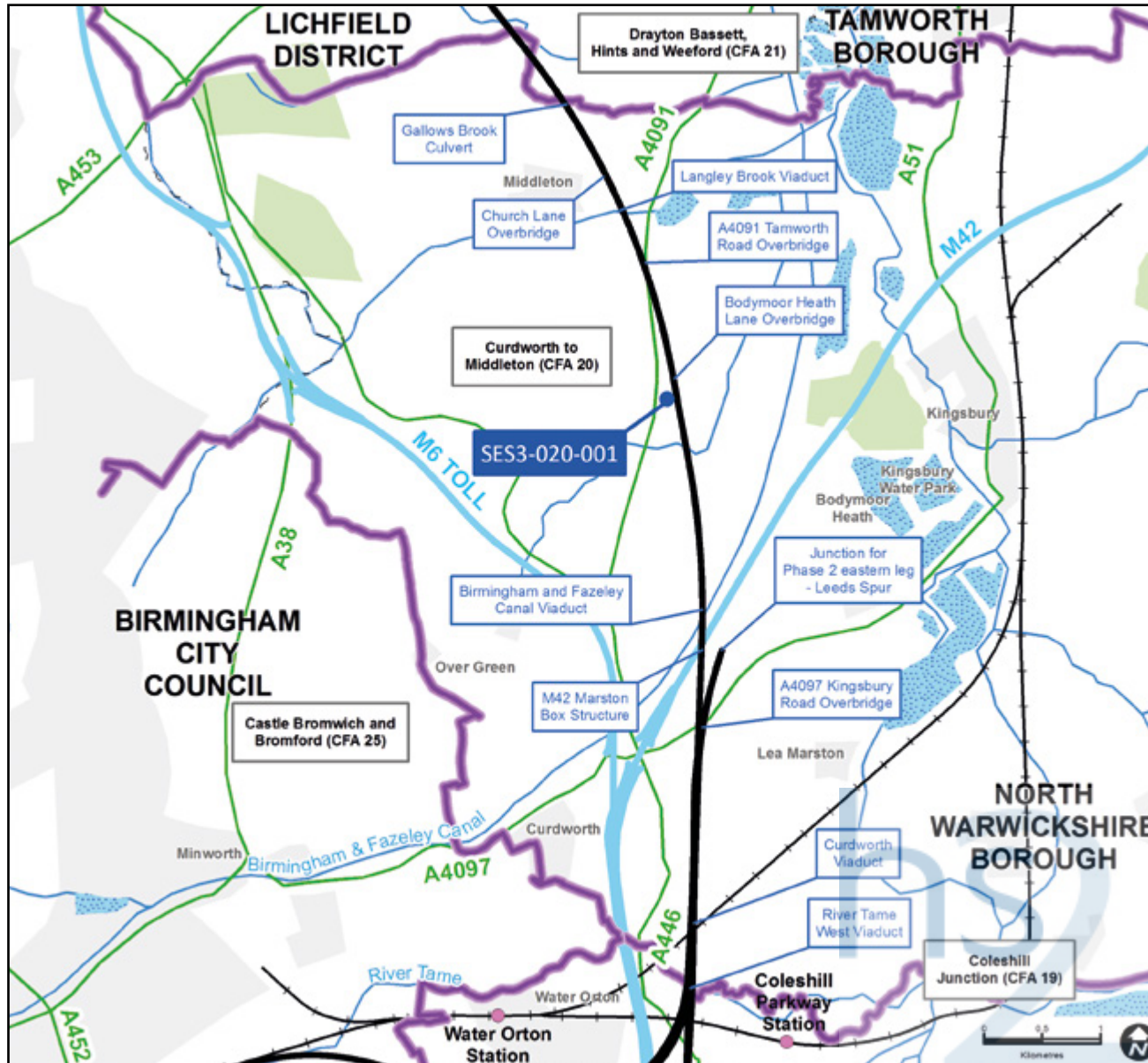
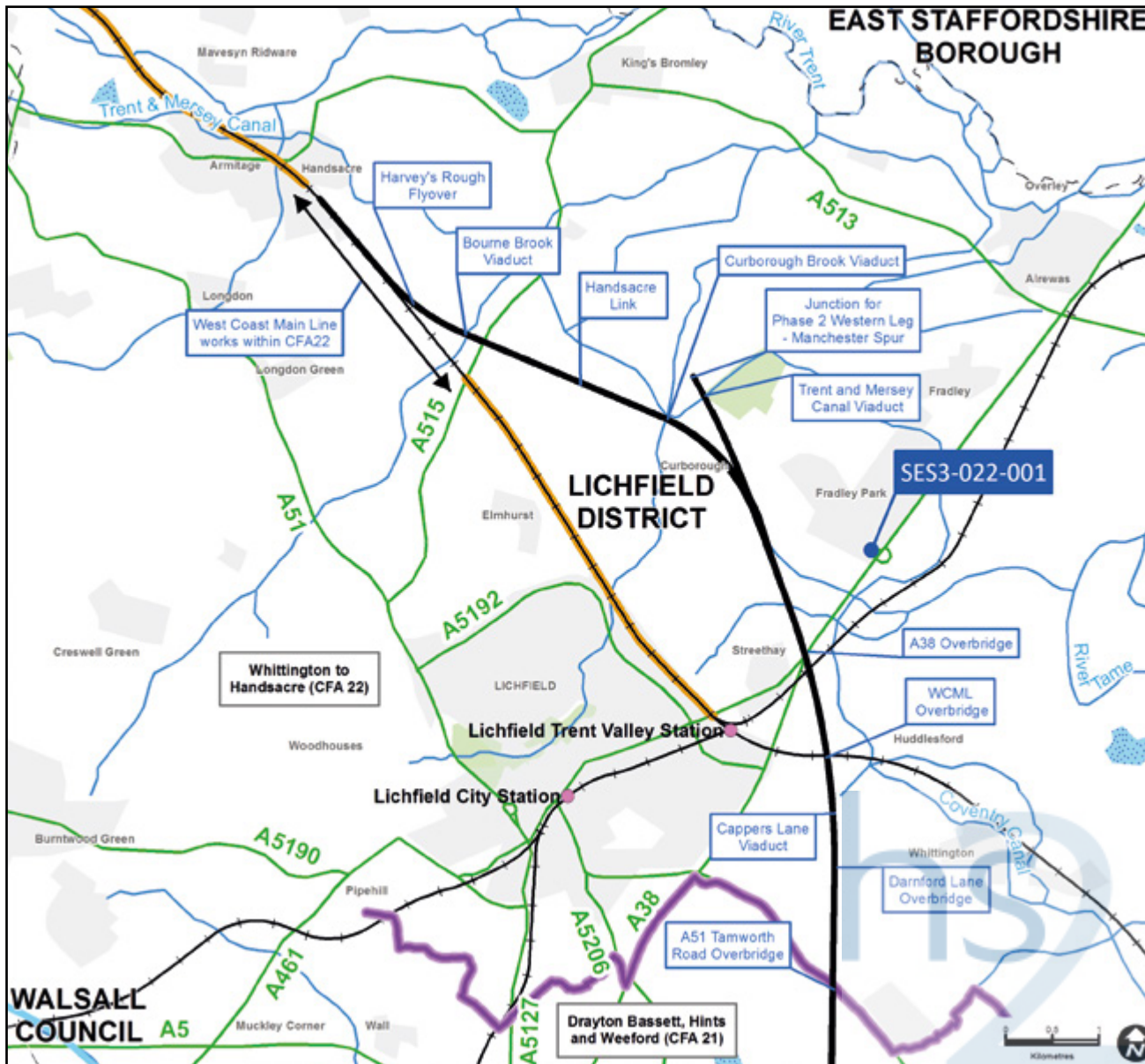


Table 14: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA2o – Curdworth to Middleton

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
Potential removal of the replacement floodplain storage areas around Middleton House Farm (SES3-020-001)	The Bill provides for two areas of replacement floodplain storage in the area of Middleton House Farm.	Removal of the replacement floodplain storage area adjacent to Middleton House Farm would be preferable to minimise the disruption to agricultural activities. This change would increase the flood risk to the farm fields but reduce the amount of land temporarily removed from agricultural use.

Figure 15: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 22 – Whittington to Handsacre



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Table 15: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA22 – Whittington to Handsacre

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Temporary improvements to the junction between the A38 Rykneld Street and Wood End Lane (SES3-022-001)</p>	<p>The Bill provides for the junction between Wood End Lane and the A38 Rykneld Street at Hilliard’s Cross to be used as a route for construction traffic.</p>	<p>This amendment is to mitigate the significant traffic effect reported in the SES and the AP2 ES. The junction between Wood End Lane and the A38 Rykneld Street, on the west side of the A38 will have temporary changes within the existing highway boundary. All approaches to the junction will be widened and the junction will be signalised, providing two lanes from all directions. Construction of a retaining wall will be required for the widening of the approach for the slip road overbridge.</p> <p>Upon completion of the scheme construction works, the improvements will be removed and reinstated to its previous condition.</p>

Figure 16: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 23 – Balsall Common and Hampton-in-Arden

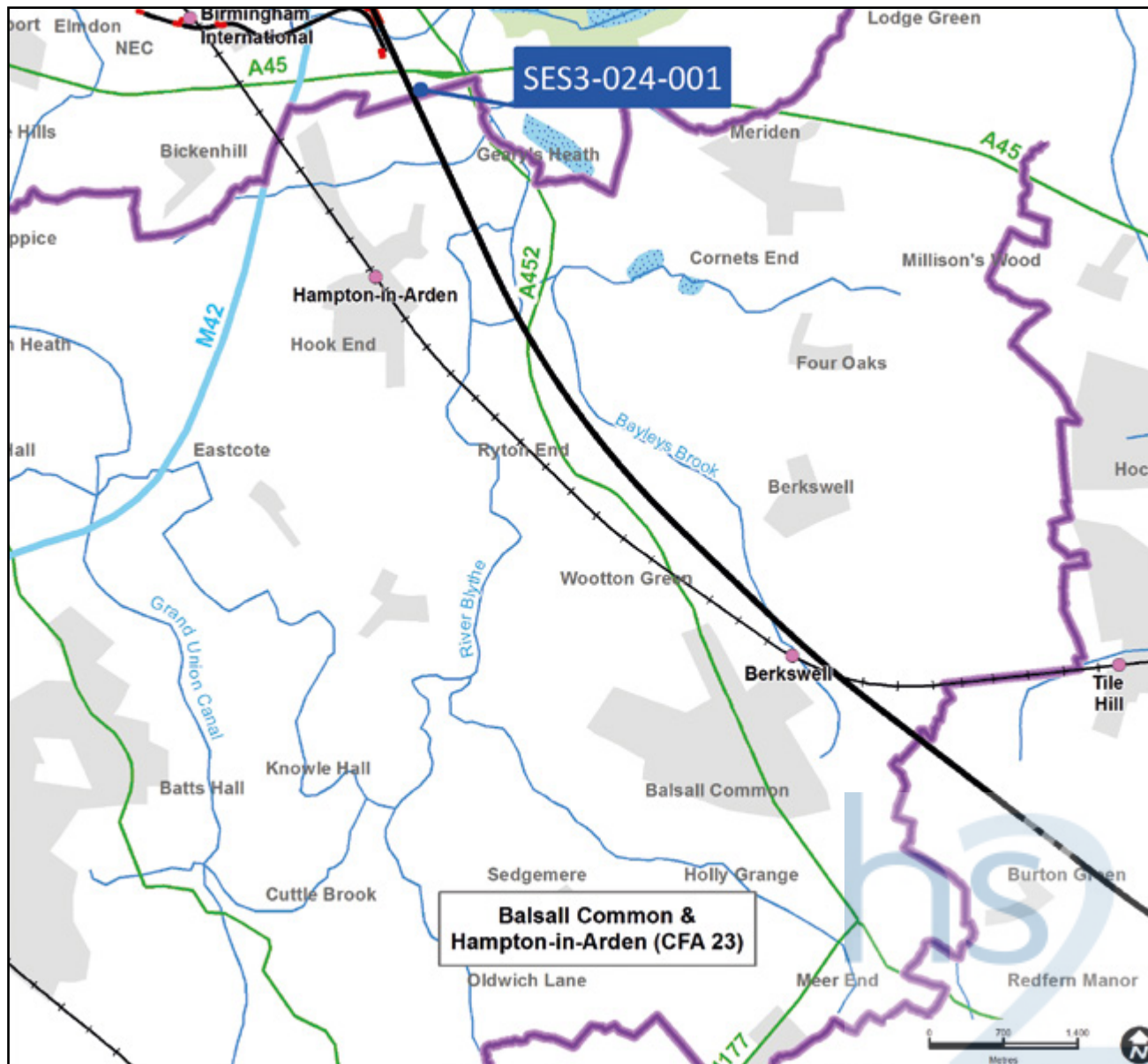


Table 16: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA23– Balsall Common and Hampton-in-Arden

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Relocation of Bickenhill Waste Recycling Centre near the A45 Coventry Road in CFA24 (SES3-024-001)</p>	<p>The Bill provides for the construction of the HS2 route as it intersects the A45 Coventry Road north-east of the Bickenhill Waste Recycling Centre. The HS2 route would be in cutting rising to ground level north of the A45 Coventry Road before entering the Birmingham Interchange station area.</p>	<p>The Bickenhill Waste Recycling Centre will be relocated to the site of the proposed A45/A45 Service Road overbridge satellite construction compound and temporary stockpiles close to the boundary with CFA 23. The new recycling centre will be approximately 30–40% larger than the existing facility. A new balancing pond will be provided for surface water run off.</p> <p>The A45/A45 Service Road overbridge satellite construction compound will be relocated and combined with the East Way Loop satellite construction compound, and will be renamed the A45/A45 Service Road overbridges satellite construction compound. A new Diddington Lane overbridge satellite construction compound will be provided south-east of the new recycling centre.</p>

Figure 17: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 24 – Birmingham Interchange and Chelmsley Wood

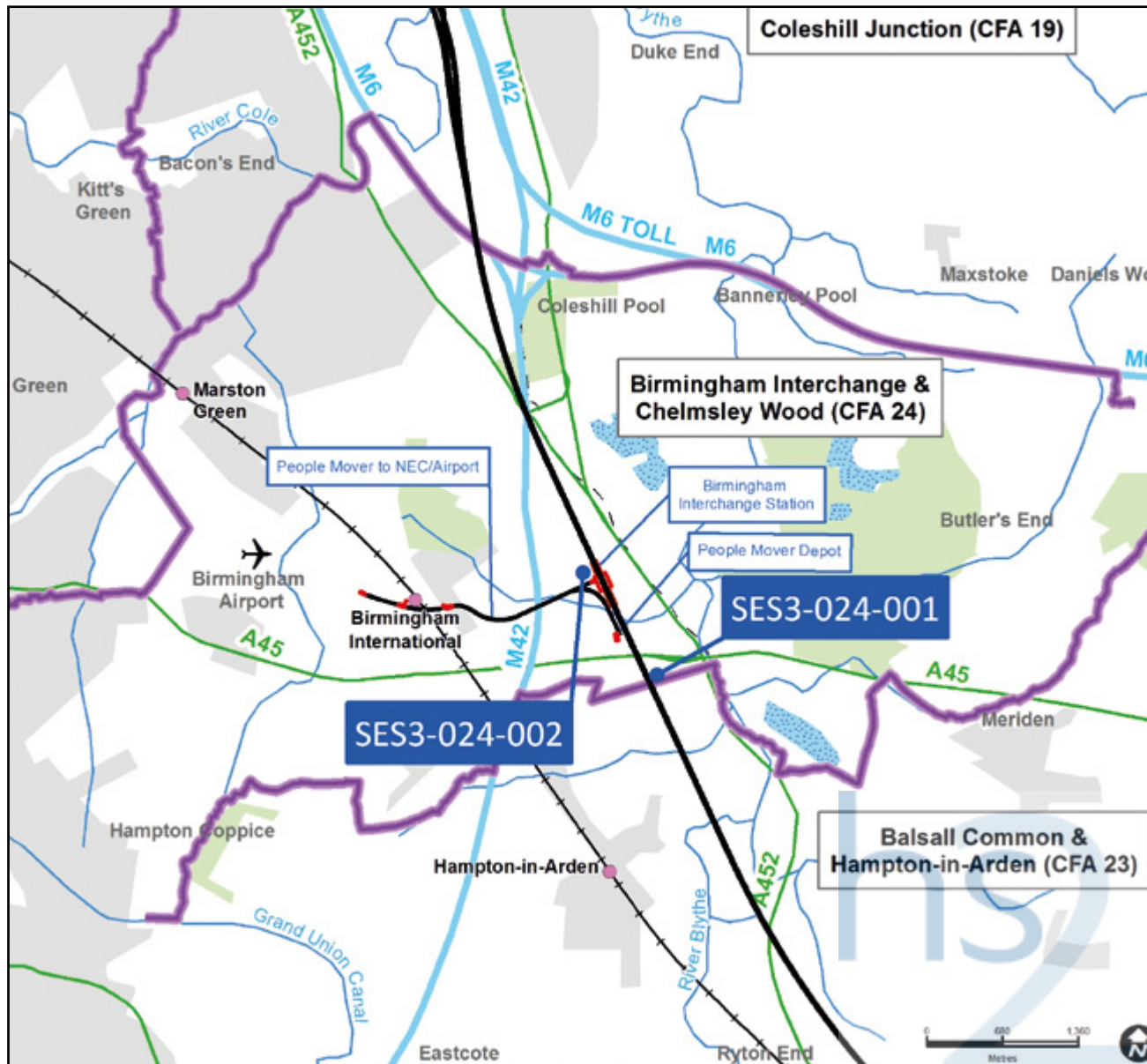


Table 17: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA24 – Birmingham Interchange and Chelmsley Wood

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Relocation of Bickenhill Waste Recycling Centre near the A45 Coventry Road (SES3-024-001)</p>	<p>The Bill provides for the construction of the HS2 route as it intersects the A45 Coventry Road north-east of the Bickenhill Waste Recycling Centre. The HS2 route would be in cutting rising to ground level north of the A45 Coventry Road before entering the Birmingham Interchange station area.</p>	<p>The Bickenhill Waste Recycling Centre will be relocated to the site of the proposed A45/A45 Service Road overbridge satellite construction compound and temporary stockpiles. The new recycling centre will be approximately 30–40% larger than the existing facility. A new balancing pond will be provided for surface water run off.</p> <p>The A45/A45 Service Road overbridge satellite construction compound will be relocated and combined with the East Way Loop satellite construction compound, and will be renamed the A45/A45 Service Road overbridges satellite construction compound. A new Diddington Lane overbridge satellite construction compound will be provided south-east of the new recycling centre.</p>
<p>Provision of a HS2 maintenance base near the Birmingham Interchange auto-transformer station (SES3-024-002)</p>	<p>The Bill provides for the Birmingham Interchange station along with associated people mover, public realm, road infrastructure and car parking. In addition, an auto-transformer station would be provided to the north-east of the proposed A452 link road with an associated access track.</p>	<p>A maintenance base will be provided near to Birmingham Interchange station. This will include an accommodation building, a storage compound and parking for approximately 20 vehicles. It will be located to the west of the Packington embankment, and accessed via the Birmingham Interchange auto-transformer station access road.</p>

Figure 18: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 25 – Castle Bromwich and Bromford

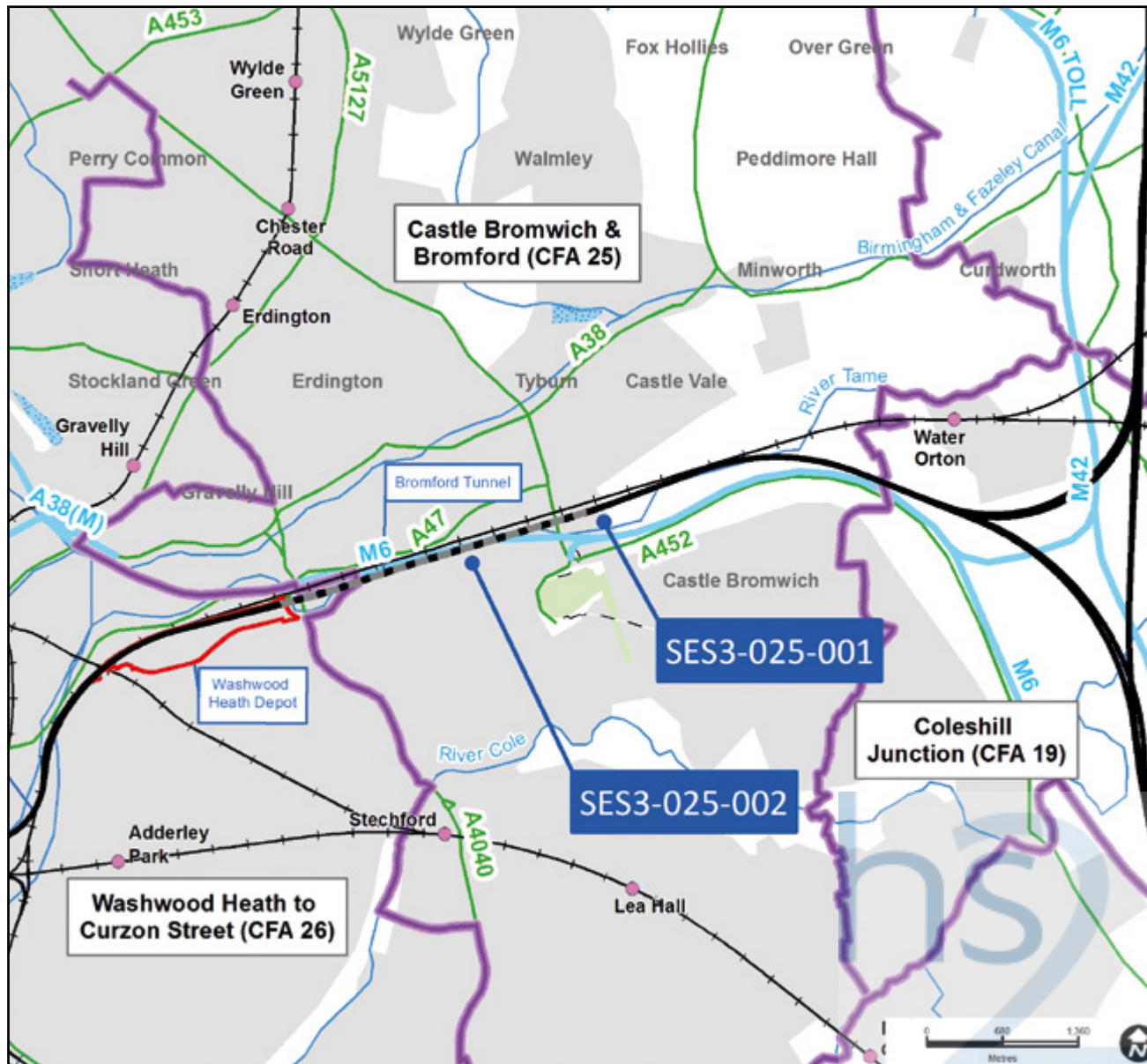


Table 18: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA25 – Castle Bromwich and Bromford

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
Utility works at Castle Bromwich Business Park (SES3-025-001)	The Bill provides for the permanent diversion of underground power cables under the HS2 route. It also provides for the diversion of overhead power lines and the construction of an auto-transformer station at the eastern end of Castle Bromwich Business Park.	The utility diversion will be aligned further east, away from the Bromford tunnel east portal. The construction methodology has been reviewed, and the utility diversion will be undertaken using drilling under the existing Birmingham to Derby line, the proposed HS2 route, a fuel pipeline and the Dunlop Carrier Channel watercourse.
Removal of utility replacement on Chillinghome Road (SES3-025-002)	The Bill provides for the replacement of a 0.45m diameter cast iron low pressure gas main in Chillinghome Road in Bromford, over a length of 450m. This work is due to concerns about ground settlement relating to the boring and operation of the Bromford tunnel.	The replacement of the low pressure gas main on Chillinghome Road is no longer required as the tunnel works are a sufficient distance from this utility.

Figure 19: Approximate location of the SES3 changes to the design and to construction assumptions for Community Forum Area 26 – Washwood Heath to Curzon Street

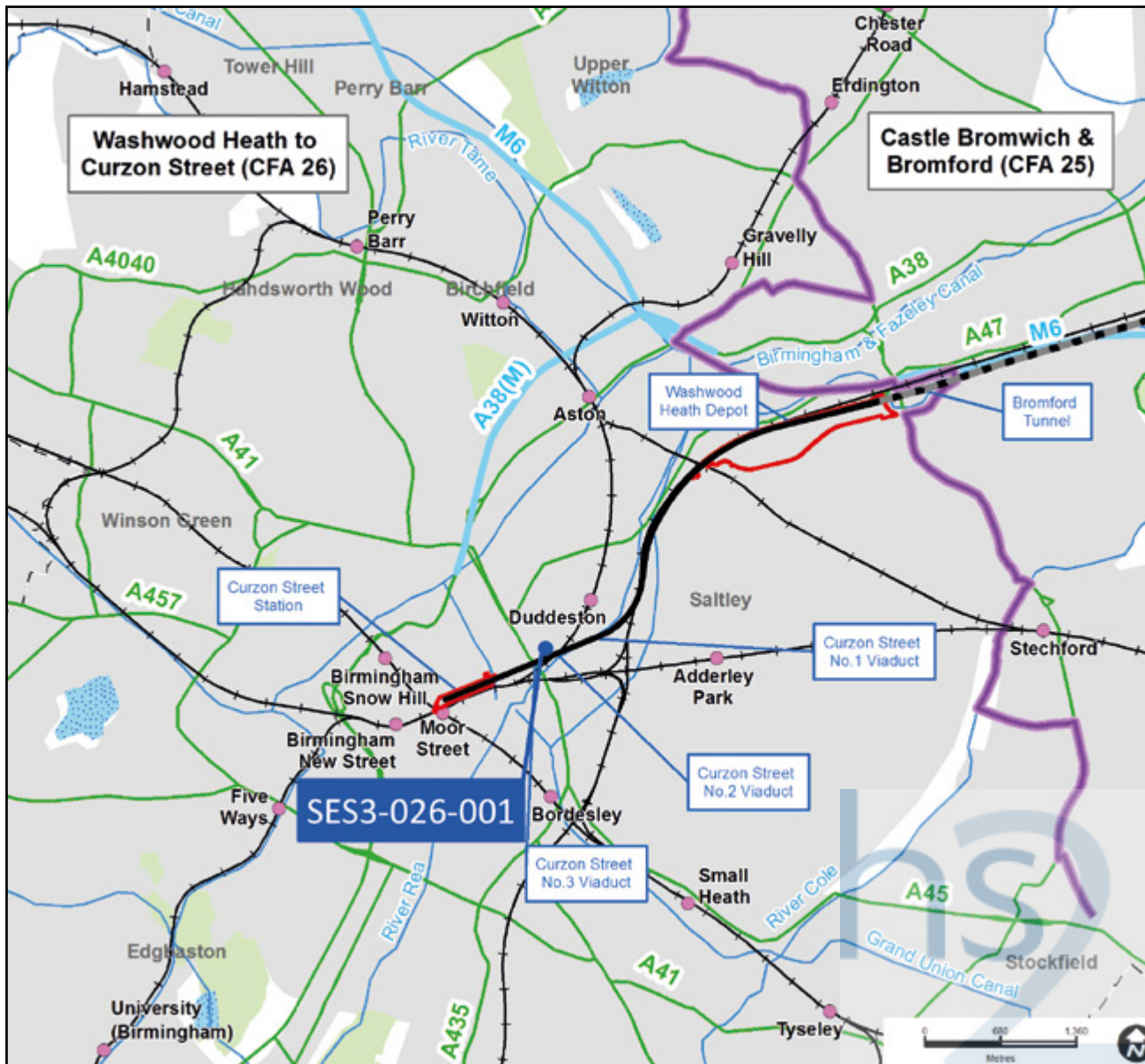


Table 19: Summary of changes to the design and construction assumptions not requiring a change to the Bill within CFA26 – Washwood Heath to Curzon Street

Name of design change or construction assumption	Description of the SES scheme	Description of the SES3 scheme
<p>Update to the construction methodology near West Midlands Fire Service (SES3-026-001)</p>	<p>The Bill provides for the equipment associated with the construction of Curzon Street No.2 Viaduct to be concentrated along the line of the Viaduct, to the south of the existing Lawley Street Viaduct.</p>	<p>The construction equipment required to complete the works at the Curzon Street No.2 Viaduct will now extend over a wider area of land to the north of the existing Lawley Street Viaduct. Less construction works will be concentrated immediately to the south of the West Midlands Fire Service headquarters. All works will be within the limits of the land identified in the Bill.</p> <p>In addition, it is now proposed that night-time works will be located entirely to the south of the Lawley Street Viaduct.</p>

Figure 20: Approximate location of the SES3 changes to the design and to construction assumptions within off-route areas

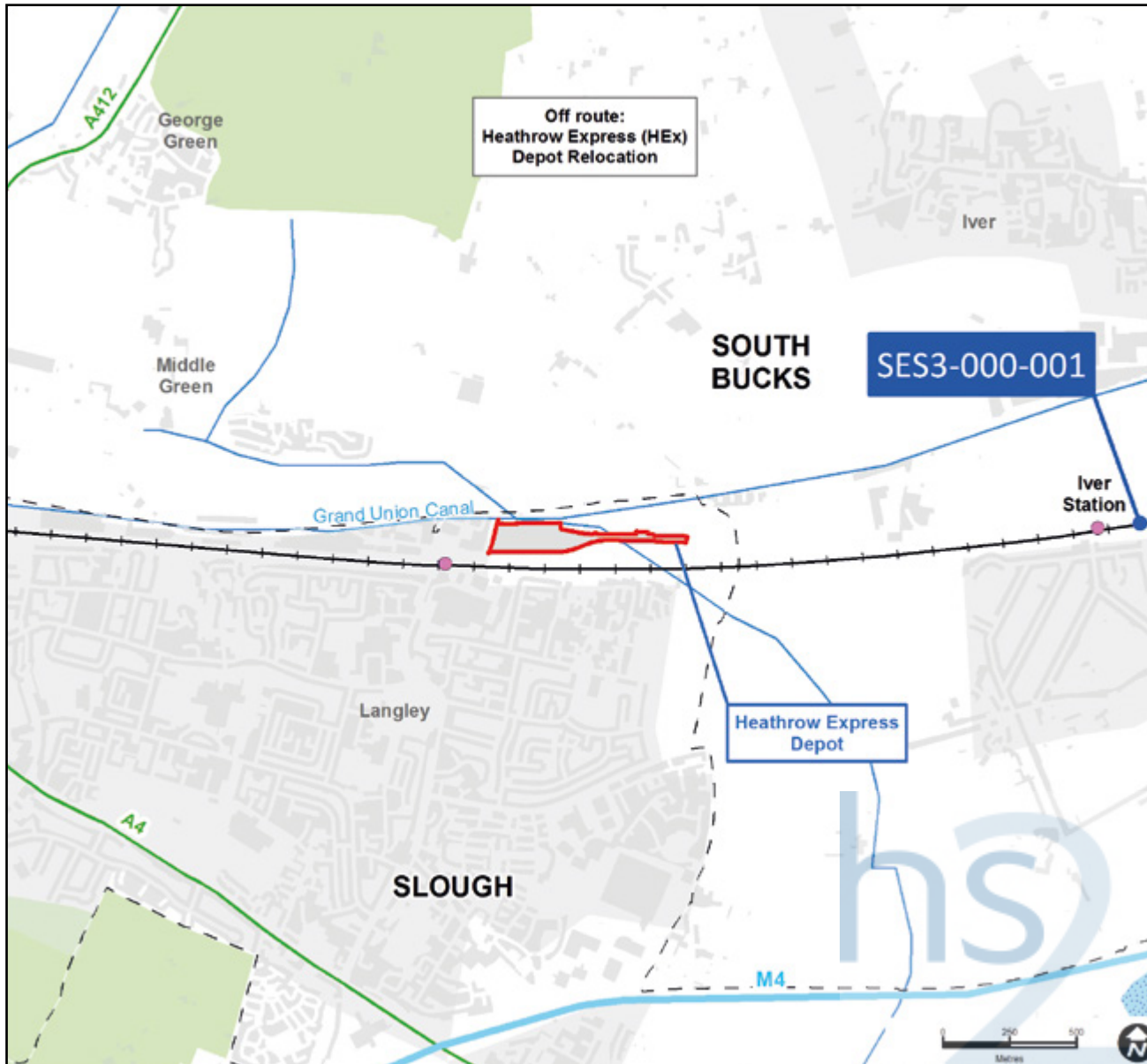


Table 20: Summary of off-route changes to the design and construction assumptions not requiring a change to the Bill

Name of design change or construction assumption	Description of the AP2 scheme	Description of the SES3 scheme
<p>Revision to the HEx depot, Langley construction traffic assumptions (SES3-000-001)</p>	<p>The AP2 revised scheme provides for construction traffic routes to access the Heathrow Express (HEx) depot construction site. The construction traffic would primarily use Thorney Lane and the site access at the eastern end of the construction site. The majority of construction traffic would utilise a route north via Bangors Road South, Bangors Road North and the A412 Denham Road. Traffic would also travel to and from the proposed depot site using Langley Park Road and Station Road using the site access at the western end of the construction site.</p>	<p>The construction traffic routes will be revised. The primary access to the HEx depot construction site will be at the western end, and the majority of the traffic will travel to and from the site using Langley Park Road and Station Road. The number of vehicles at peak times will be reduced and split equally between the northbound and southbound access to and from the site.</p>

5. Corrections

A number of corrections to the main ES were identified and published in the SES and AP₂ ES. Since then, the need for a number of additional corrections has been identified for the main ES and the subsequent SESs and AP ESs. Any such corrections, which do not require amendments to the powers conferred by the Bill, are set out in Section 2 within each CFA report of the SES₃.

Each correction has been reviewed to determine whether it will potentially lead to new or different likely significant environmental effects from those described in the main ES and, where relevant, the subsequent SESs and AP ESs. Where a correction leads to a new or different likely residual significant environmental effect, it is reported in Section 6 of this NTS.

6. Summary of residual environmental effects for SES₃ changes

6.1 Summary of residual environmental effects

In a number of cases, new or different likely significant effects have been identified as a result of SES₃ changes. Those which remain after mitigation has been put in place are referred to as 'residual effects'.

CFA6

Sound, noise and vibration

Effects arising during operation

The main ES reported a significant adverse noise effect in open areas surrounding approximately 200 residential properties, and associated shared community open areas in the vicinity of The Greenway, Hoylake Crescent and Bushey Road in Ickenham during the operation of the scheme. However, as identified in the SES, the number of properties was incorrectly reported in the main ES, and 100 residential properties in this area will experience significant adverse noise effects. As a result of the proposed extension to the porous section of the West Ruislip portal of the Northolt

tunnel (SES₃-006-001), the number of residential properties affected will reduce from 100 to 55 in the vicinity of The Greenway and Hoylake Crescent. This will result in a different significant effect, however the significant adverse noise effect will remain as reported in the main ES.

Traffic and Transport

Effects arising during construction

The main ES reported temporary diversions to footpaths U36, U37 and U38 that required significant additional travel distances for footpath users. The SES₃ changes to footpaths U36 and U37 reduce the required diversion distances. The changes to both footpaths were reported as moderate adverse significant effects in relation to severance in the main ES. With the reduction in the footpath diversions, these become minor effects. The diversion of Footpath U38 was reported to be a minor adverse significant effect in the main ES and this is unchanged by the SES₃ scheme.

CFA7

Cultural heritage

Effects arising during construction

The SES reported that a major adverse effect would occur as a result of the loss of 1.7ha of the ancient woodland within Ranston Covert and Battlesford Wood. As part of SES₃ (SES₃-007-001), the amount of ancient woodland lost will reduce to 0.1ha. This will result in a different significant effect, with the level of significance reducing to moderate adverse.

Ecology

Effects arising during construction

The SES reported that a significant effect would occur as a result of the loss of ancient woodland from the Mid Colne Valley SSSI. As part of SES₃-007-001, the amount of land required temporarily for the construction of the Colne Valley viaduct will be reduced, and there will be a reduction in the loss of ancient woodland at Ranston Covert and Battlesford Wood (by approximately 1.6ha to 0.1ha). This will result in a different significant effect, however

the level of significance will remain as reported in the SES.

Traffic and transport

Effects arising during construction

As a result of the assessment of supplementary traffic data for junctions and the changes to construction routes relating to the use of the dedicated M25 slip roads by HGV traffic (SES3-007-004), there will be changes the assessed impacts of HS2 construction traffic on local roads.

The main ES reported minor adverse effects on the following junctions due to congestion and delay for vehicle users: A412 Denham Way/Chalfont Road, A412 Denham Way/A405 North Orbital Road/A412 Uxbridge Road, A412 North Orbital Road/Woodlands Road. However, as a result of the SES3 changes these significant effects will be avoided. The main ES reported a minor adverse effect due to congestion and delays at A412 Denham Way/Chalfont Lane. The SES identified that this was incorrectly reported in the main ES, as a moderate adverse effect would occur. However, as a result of the SES3 changes, this significant effect will be avoided.

The main ES reported a major adverse effect on A412 North Orbital Road/Denham Green Lane due to congestion and delays. As a result of the SES3 changes, this will reduce to moderate adverse.

The changes will result in a new major adverse effect on A412 Denham Avenue/Moorfield Road due to congestion and delays for vehicle users.

Increases in HGV traffic will result in a new moderate adverse effect on pedestrians as a result of increases in traffic making it more difficult to cross part of the A412 Denham Way/North Orbital Road.

Water resources and flood risk assessment

Effects arising during construction

There is the potential for large significant effects on water quality during construction, as a result of piling for new pylons that are required for the temporary realignment of the overhead power line at Denham Quarry and Dews Farm (as part of SES3-007-003), and for the temporary realignment of the overhead power line across Chalfont Lane (as part of SES3-007-004). However, this effect will reduce to a level that is not significant if the mitigation proposed under amendment AP4-007-003 (see section 7 of this

NTS) (the treatment of abstracted ground water) is put into place.

CFA8

Traffic and transport

Effects arising during construction

The SES reported a moderate adverse effect due to increases in vehicle numbers making it more difficult for pedestrians to cross the A413 Amersham Road, between Joiners Lane and Chalfont St Giles. As a result of the assessment of supplementary traffic data for junctions, it has been identified that this significant effect will not occur.

The main ES reported a moderate adverse effect due to congestion and delay at the junction of A413/School Lane (Amersham Old Town)/Shardeloes. The SES reported that vehicle users would experience a major adverse effect at this junction, due to higher flows. As a result of the assessment of supplementary traffic data for junctions, it has been identified that this effect will reduce to minor adverse.

As a result of the assessment of supplementary traffic data for junctions, it has been identified

that congestion and delay to vehicle users will result in a new major adverse effect at the junction of A40 London Road/A355 London End.

As a result of the assessment of supplementary traffic data for junctions, it has been identified that increases in construction traffic will make it more difficult for pedestrians to cross the A40 London Road, between London End and Pyebush Roundabout, resulting in a new major adverse effect.

The main ES reported a moderate adverse effect on pedestrians as a result of increases in traffic making it more difficult to cross A404 Whielden Lane (between the A413 Amersham Bypass and Whielden Street). The SES reported that this significant effect would be avoided due to changes to the movement of excavated material. However, this was incorrect, as although the movement of excavated material was removed from parts of the A404, this section will continue to be used and the effect reported in the main ES will remain.

Water resources and flood risk assessment

Effects arising during construction

The main ES reported that construction of the Chiltern tunnel, including tunnelling and piling/diaphragm wall construction, has the potential to result in a moderate adverse effect on groundwater quality. The main ES reported that until a strategy is agreed with the Environment Agency in consultation with Affinity Water, this effect could occur. Since submission of the main ES, the Environment Agency has updated the source protection zones for a number of public water supply abstractions in the Chilterns area. As a result of this new information it has been identified that the groundwater area is of higher value, resulting in a major adverse effect (as opposed to moderate reported in the main ES).

CFA9

Traffic and transport

Effects arising during construction

As a result of the assessment of supplementary traffic data for junctions, it has been identified that there will be new major adverse effects at the following junctions: A4010 New Road/Cressex Road and A40 West Wycombe Road/A4010 Chapel Lane due to congestion and delays for vehicle users.

There will be a new moderate adverse significant effect at the junction of A4010 Wycombe Road between Princes Risborough and A40 at West Wycombe, due to increases in traffic making it more difficult for pedestrians to cross the road.

CFA10

Traffic and transport

Effects arising during construction

As a result of the assessment of supplementary traffic data for junctions, it has been identified that significant effects reported in the main ES will no longer occur.

The main ES reported that significant effects will occur on vehicle users at the following junctions as a result of congestion and delay: junctions between the A4010 Risborough Road with B4009 Nash Lee Road/Chalkshire Road (major adverse), and the A413 Nash Lee Road with Small Dean Lane (major adverse), A413 Nash Lee Road with B4009 Nash Lee Road (moderate adverse). As a result of the assessment of supplementary traffic data for junctions, it has been identified that these effects will not occur. The supplementary traffic data has identified that a new major adverse significant effect will occur on vehicle users at the junction of A4010 Risborough Road with North Lee Road, as a result of congestion and delay.

There will be a minor adverse effect with regard to increased travel distance for pedestrians at Footpath ELL/25, as a result of the need to divert this footpath by 650m. This effect was omitted from the main ES.

CFA11

Agriculture, forestry and soils

Effects arising during construction

The main ES reported a moderate adverse effect on Mill House Farm, as 0.6ha of land (18% of the holding) would be required from the holding. As a result of the provision of landscape mitigation planting near the A4010 Risborough Road (SES3-011-002), an additional 0.4ha of land will be required from the holding (31% of the total holding). As a result the effect will increase from moderate adverse to major/moderate adverse.

Community

Effects arising during operation

The main ES reported a permanent major adverse operational amenity effect for up to 10 residential properties located on Old Risborough Road and at Stoke House in the south of Stoke Mandeville, as a result of a combination of visual

and noise effects. As a result of the provision of landscape mitigation planting near the A4010 Risborough Road (SES3-011-002), the duration of the visual effect on these residential properties will reduce, with the combined visual and noise effects being experienced by approximately five residential properties for up to 15 years, rather than permanently. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

Cultural heritage

Effects arising during operation

The main ES reported a major adverse operational effect on Stoke House, and a moderate adverse effect on the Stoke Mandeville village as a result of a change in setting due to the movement and associated noise of passing trains. The landscape planting near the A4010 Risborough Road (SES3-011-002) will increase visual screening of the scheme and views of passing trains, resulting in a different significant effect. However, it would not reduce the associated noise of passing trains so would not change the level of significance of the effect.

Landscape and visual assessment

Effects arising during operation

The main ES reported major adverse effects on views east from residential properties on Old Risborough Road in year 1, 15 and 60 of operation due to the presence of the scheme. The planting proposed along the southern side of the route (as part of SES3-011-001 and SES3-011-002) will not provide any screening from this viewpoint during year 1 of operation. However, by year 15, the planting will partially screen the scheme, and the level of effect will reduce from major adverse, as reported in the main ES, to moderate adverse. By year 60, when the planting is further matured, the route will be fully screened and the level of effect will reduce to a level that is not significant.

The main ES reported a significant effect on views south-west from Stoke House, Stoke Mandeville. The effect would be moderate adverse at year 1 and year 15 of operation, reducing to a level that is not significant by year 60. The planting proposed along the northern side of the route (as part of SES3-011-002) will not provide any screening of these views at year 1 of operation. However by year 15, the planting in summer will almost fully screen the scheme and the effect at year 15 of operation will reduce from

moderate adverse, as reported in the main ES, to a level that is not significant.

The main ES reported a moderate adverse effect on views west from A4010 Risborough Road, Stoke Mandeville at year 1, 15 and 60 of operation. The planting along the northern side of the route (as part of SES3-011-002) will not provide any screening from the viewpoint in year 1 of operation. However, by year 15 of operation, the planting in summer will partially screen the scheme and by year 60 the planting will be further established and almost fully screening the scheme. As a result the moderate adverse effect reported at year 15 and 60 of operation will reduce to a level that is not significant.

Sound, noise and vibration

Effects arising during operation

The main ES reported an adverse noise effect on the open areas surrounding 10 residential properties at Sedrup in the vicinity of Sedrup Lane. As a result of the provision of a noise fence barrier at Sedrup ditch (SES3-011-003), this significant effect will be avoided.

Traffic and transport

Effects arising during construction

The SES reported minor adverse effects on vehicle users as a result of increased traffic resulting in congestion and delay at the following junctions: A418 Oxford Road/Ellen Road, A41/Broadfields, A41/Meadowcroft, and A41/Aylesbury Way Parkway. As a result of the assessment of supplementary traffic data for junctions, it has been identified that the effects will not occur.

As a result of the assessment of supplementary traffic data for junctions, it has been identified that new significant effects will occur on vehicle users as a result of increased traffic resulting in congestion and delay on the following junctions: A4157 Elmhurst Road/A418 Bierton Road (moderate adverse), A413 Buckingham Road/A4157 Weedon Road (moderate adverse), and A4010 New Road/A4129 Longwick Road (major adverse).

The SES reported minor adverse effects on vehicle users at the following junctions as a result of increased traffic resulting in congestion and delay: A41 Friarage Road/A418 Oxford Road, A41 Bicester Road/A4157 Haydon Road, A418 Oxford Road/Churchill Avenue/Fowler Road,

A41/Griffin Lane, A418 Oxford Road/Coldharbour Way, and A41/Jackson Road/Dickins Way. As a result of the assessment of supplementary traffic data for junctions, it has been identified that these effects will increase to moderate adverse.

The supplementary traffic data that has been collected for junctions has identified a new major adverse effect on pedestrians as a result of increases in traffic making it more difficult to cross the A4129 Thame Road, between the A418 and Princes Risborough (A4010).

CFA12

Traffic and transport

Effects arising during construction

The SES reported minor adverse effects on vehicle users as a result of congestion and delay at the following junctions: A41/Station Road and A41 Aylesbury Road/The Broadway. As a result of the assessment of supplementary traffic data for junctions, it has been identified that these effects will not occur.

The SES reported a minor adverse effect at the junction of A41/Blackgrove Road (Waddesdon crossroads) due to increases in traffic resulting

in congestion and delay for vehicle users. As a result of the assessment of supplementary traffic data for junctions, it has been identified that congestion and delay at this junction will result in a major adverse effect.

The SES reported moderate adverse effects on pedestrians as a result of changes in traffic flows making it more difficult to cross the A41, between The Broadway (Grendon Underwood) in CFA12 and A4421 (Bicester) in CFA13. As a result of the assessment of supplementary traffic data for junctions, it has been identified that pedestrians will experience a major adverse effect.

CFA13

Traffic and transport

Effects arising during construction

The main ES reported minor adverse effects on vehicle users at the following junctions as a result of congestion and delay: A421/Gawcott Road and A421 Tingewick Bypass/Barton Road. The main ES also reported a moderate adverse significant effect due to congestion and delay at the junction of School Hill/Perry Hill. As a result of the assessment of supplementary traffic data for junctions, it has been identified that this will

not occur. The SES also reported a minor adverse effect on the junction of the A421/A4421/Sandpit Hill due to congestion and delay. As a result of the assessment of supplementary traffic data for junctions, it has been identified that these effects will not occur. As a result of the assessment of supplementary traffic data for junctions, it has been identified that a new moderate adverse effect will occur on the junction of the A421/A413 London Road due to congestion and delay for vehicle users.

The SES reported a moderate adverse effect on pedestrians as a result of changes in traffic flows making it more difficult to cross the A41, between The Broadway (Grendon Underwood) in CFA12 and A4421 (Bicester). As a result of the assessment of supplementary traffic data for junctions, it has been identified that pedestrians will experience a major adverse effect.

As a result of the assessment of supplementary traffic data for junctions, it has been identified that there will be new moderate adverse effects on pedestrians as a result of increases in traffic making it more difficult to cross the following roads: A4421 Charbridge Lane, between A41 and A4421 Buckingham Road; and A41 Boundary Way, between A4421 Charbridge Lane and B4030 Oxford Road.

CFA14

Community

Effects arising during operation

The main ES reported a significant permanent major adverse operational amenity effect for up to 10 residential properties in Radstone due to a combination of significant visual effects and significant daytime and night-time noise effects. As part of SES3-014-002, additional noise mitigation will be provided at Radstone. This will reduce the number of residential properties that will experience the amenity effect to five. This will give rise to a different significant effect, however the level of significance remains as reported in the main ES.

Cultural heritage

Effects arising during operation

The main ES reported that the historic settlement at Upper Radstone would experience a major adverse effect as a result of changes to its setting due to the movement of trains and the associated increase in noise. The provision of additional noise mitigation at Radstone (SES3-014-002) will reduce the amount of operational noise from the passing trains. This will give rise to a different

significant effect on Upper Radstone, however the level of significance remains as reported in the main ES.

Landscape and visual assessment

Effects arising during operation

The main ES reported significant effects on views looking south-west from Barley Fields residential property on the A4421 Buckingham Road, north of Newton Purcell as a result of the presence of the scheme, including passing trains and noise fence barriers. The effect would be major adverse in year 1 of operation, reducing to moderate adverse by year 15 as a result of mitigation planting helping to screen views of the scheme. The provision of landscape mitigation planting at Newton Purcell (SES3-014-001) will help further screen views of the scheme so that by year 15 of operation the effect will reduce to a level that is no longer significant.

Sound, noise and vibration

Effects arising during operation

The main ES reported a likely significant adverse noise effect in the open areas around 15 residential properties in the vicinity of Radstone. The SES3 change associated with the provision of additional noise mitigation at Radstone

(SES3-014-002) will reduce the number of residential properties affected to five.

CFA15

Landscape and visual assessment

Effects arising during operation

The main ES reported a major adverse effect on views looking north-east from Banbury Lane towards Lower Thorpe during operation as a result of the presence of the scheme. The provision of noise mitigation at Culworth will give rise to a different significant effect, however the level of significance remains as reported in the main ES.

The main ES also reported effects on views north-east from Banbury lane, from the edge of Thorpe Mandeville, views looking north-east from the PROW network north of Thorpe Mandeville, and views looking from Hill Farm north-west of Thorpe Mandeville as a result of the presence of the scheme, with major adverse effects at year 1, reducing to moderate adverse by year 15 of operation as a result of planting to help screen views of the scheme. The provision of noise mitigation at Culworth (as part of SES3-015-001) will accentuate the line of the

route across the valley floor. This will result in different significant effects on these views, however the levels of significance remains as reported in the main ES.

Traffic and transport

Effects arising during construction

The SES and AP2 ES reported a minor adverse effect on vehicle users as a result of congestion and delay to the junction of the A361 and Welsh Road. As a result of the revised assessment based on the supplementary traffic data for road junctions, it has been identified that this effect will not occur.

As a result of the revised assessment based on the supplementary traffic data for road junctions, a new major adverse effect has been identified at the A422 (between B4525 and M40 Junction 11) as a result of increases in traffic during construction of the scheme making it more difficult for pedestrians to cross the road.

CFA18

Sound, noise and vibration

Effects arising during construction

The main ES reported a significant effect during construction around approximately 40 residential properties on Red Lane and Cromwell Lane, Burton Green, due to noise associated with the construction of the Burton Green tunnel. The AP2 ES amendment AP2-018-004 altered both the location of the Burton Green tunnel south portal and the earthworks surrounding the portal which would reduce construction noise levels in the open areas around a number of residential properties on Cromwell Lane and Red Lane to a level that is no longer significant. In addition, 10 residential properties on Cromwell Lane would no longer experience a significant effect in the surrounding open area. As a result of the extension of the Burton Green tunnel south portal (SES3-018-002), significant noise effects in the open areas around a further six residential properties on Cromwell Lane will reduce to a level that is not significant.

Traffic and transport

Effects arising during construction

The main ES reported a major adverse effect on vehicle users as a result of increased vehicles causing congestion and delay at the A429 Kenilworth Road/Gibbet Hill Road/Stoneleigh Road junction. However, since submission of the main ES, the highway authority has changed this junction from a signal controlled junction to a roundabout, resulting in operational improvements and the effect will reduce to minor adverse. The main ES reported a major adverse effect at the A46/Stoneleigh Road junction due to congestion and delay for vehicle users. However, as a result of revised construction assumptions for construction traffic movements in CFA18 this significant effect will be avoided. As a result of the revised construction assumptions a new minor adverse effect will occur at the B4115 Ashow Road/Stoneleigh Road junction, due to congestion and delay for vehicle users.

The main ES reported a minor adverse effect on pedestrians as a result of increases in HGV movements making it more difficult to cross the A46 Kenilworth bypass between the A45 in the north-east and the A452 Leamington Road in the south-west. As a result of revised

construction assumptions, construction traffic will no longer be routed via the A45 and this effect will be avoided between Stoneleigh Road and the A45. The effect will be limited to the A46 south of Stoneleigh Road to the M40, although pedestrians are not expected to be crossing in this area.

The main ES reported a major adverse effect due to increases in construction traffic making it more difficult for pedestrians to cross the A429 Kenilworth Road between the A45 in the north-east and the Farm Access Road immediately to the east of Kenilworth. As a result of revised construction traffic assumptions, construction traffic will no longer be routed via the A45 and the effect will be avoided between Stoneleigh Road and the A45. The effect will be limited to the section between the Farm Access Road and Stoneleigh Road.

The main ES reported minor adverse effects as a result of increases in vehicles making it more difficult for pedestrians to cross Stoneleigh Road between A429 and A46 Kenilworth Bypass and to the B4115 Ashow Road, and the A452 Kenilworth Road between the A46 and the B4115. As a result of the revised construction assumptions in this area, vehicle numbers will

increase along these routes and these effects will increase to major adverse and moderate adverse respectively.

The revised construction traffic assumptions will result in a new major adverse effect due to increases in traffic making it more difficult for pedestrians to cross the B4115 Ashow Road from the A452 Kenilworth Road to Stoneleigh Road.

CFA19

Landscape and visual

Effects arising during construction

The main ES reported a major adverse effect on views west from residential properties and Grimstock Country House Hotel off the B4117 Gilson Road as a result of the presence of construction activities. The proposed additional landscape earthworks and relocation of Gilson auto-transformer station (SES3-019-002) will be visible in the view. This will result in a different significant effect, however the level of significance will remain as reported in the main ES.

Socio-economics

Effects arising during construction

Since submission of the main ES, an extension to the Highway Point building in Coleshill Business Park has been constructed within the land required permanently for construction of the scheme. This building extension will require demolition and, given the amount of employment affected and the limited availability of similar alternative nearby premises, this will result in a major adverse significant effect. However, the business is expected to remain viable. HS2 Ltd is working with the business to understand the impact of the works and how these might be mitigated in accordance with the provisions of the Compensation Code.

Traffic and Transport

Effects arising during construction

The main ES reported a major adverse effect on vehicle users as a result of congestion and delay at the A446 Lichfield Road/B4117 Watton Lane junction. The SES reported that this effect would reduce to a level that is not significant. However, this was incorrect and the SES should have stated that the effect will reduce from major adverse, to minor adverse, which is still significant.

The impact on the A446 Lichfield Road/B4118 Marsh Lane junction was not assessed in the main ES. However, the original scheme would have resulted in a major adverse effect on vehicle users due to congestion and delay. The SES reported that this effect would reduce to moderate adverse. However, this was incorrect, as the effect would remain as major adverse. However, as part of the AP4 ES, mitigation will be provided at this junction.

The main ES reported a major adverse effect on pedestrians as a result of increased traffic making it more difficult to cross the A446 between Coleshill Heath Road and the B4118 Marsh Lane. The SES reported that this would reduce to moderate adverse. However, this was incorrect as the effect will remain as major adverse.

The main ES reported a major adverse effect on vehicle users as a result of congestion and delay due to construction traffic at the A446 Stonebridge Road/B4114 Birmingham Road junction. However, the A446 Stonebridge Road/B4114 Birmingham Road temporary junction improvements (as part of SES3-019-001) will reduce this congestion and delay. This will result in a different significant effect, however the level of significance will remain as reported in the main ES.

CFA20

Water resources and flood risk assessment

Effects arising during construction

As part of SES3-020-001, proposed replacement floodplain storage areas around Middleton House Farm will be removed from the scheme to reduce disruption on agricultural activities. The removal of the replacement floodplain storage, which is subject to Environment Agency and landowner agreement, will increase the flood risk to the Hunts Green underbridge. This will change the level of significance of the effects reported in the main ES from negligible to moderate, which is significant.

CFA22

Community

Effects arising during construction

The main ES reported that no significant effects would occur on the community of Fradley during the construction of the scheme. However, as noted in the SES, this was incorrectly reported as the community would experience a temporary moderate adverse isolation effect, due to

congestion affecting residents travelling from Fradley to Lichfield on a daily basis to access secondary schools, health centres and facilities. However, the temporary improvement of the junction between the A38 Rykneld Street and Wood End Lane (SES3-022-001) will reduce this isolation effect to a level that is not significant.

Traffic and transport

Effects arising during construction

The SES and AP2 ES reported that changes in traffic flows during construction would result in a significant increase in journey times as a result of congestion and delay for vehicle users at the western part of the junction between A38 Rykneld Street and Wood End Lane, resulting in a major adverse effect. As a result of the temporary improvements to the junction between A38 Rykneld Street and Wood End Lane (SES3-022-001), this significant effect will be avoided.

CFA23

Cultural heritage

Effects arising during construction

The main ES reported a temporary major adverse effect on the setting of Diddington Farmhouse (Grade II* listed) as a result of construction activities associated with Pasture Farm accommodation overbridge, Diddington cutting, balancing ponds and the presence of the A45/A45 Service Road overbridges satellite construction compound. The AP2 ES reported a different significant effect on the setting of Diddington Farmhouse, as a result of construction of Diddington Lane overbridge and the earthworks associated with the realigned Diddington Lane (AP2-023-005). The AP2 amendment will also involve the removal of Pasture Farm accommodation overbridge. The AP2 ES reported that the effect would remain as moderate adverse, as reported in the main ES. However, this was incorrect, as the main ES reported a major adverse effect. Therefore, it should have been reported that the effect will remain as major adverse, as reported in the main ES.

The main ES reported a major adverse temporary effect and a moderate adverse permanent effect

on the setting of Diddington Farmhouse, and a moderate adverse temporary and permanent effect on the setting of Pasture Farmhouse. The relocation of Bickenhill Waste Recycling Centre (SES3-024-001) will introduce additional construction activity which will give rise to different temporary effects on both assets, however the level of significance will remain as reported in the main ES. The relocated Bickenhill Waste Recycling Centre will introduce a new element into the setting of both assets which will result in different significant permanent effects, however the level of significance will remain as reported in the main ES.

When considered together, the relocation of the Bickenhill Waste Recycling Centre and the realignment of Diddington Lane (AP2-023-005) will result in different effects on the setting of Diddington Farmhouse and Pasture Farmhouse, however the level of significance will remain as reported in the main ES and the AP2 ES.

CFA25

Sound, noise and vibration

Effects arising during construction

The main ES identified a significant noise effect at 30 residential properties on Wanderer Walk and Chillinghome Road, and Tame Valley Academy, Bromford, due to the replacement of a gas main on Chillinghome Road. However the gas main relaying works on Chillinghome Road (SES3-025-003) are no longer required and these significant effects will be avoided.

The main ES reported a night-time construction noise effect in the open areas around approximately 25 residential properties in Castle Vale on Blenheim Way and Cadbury Drive. Of these, approximately 15 residential properties on the eastern end of Blenheim Way will also be affected during the daytime.

As a result of the utility works at Castle Bromwich Business Park (SES3-025-001), the number of residential properties affected during the daytime in Castle Vale will increase to approximately 80. At the southern end of Blenheim Way, the noise levels and duration of the impact will increase, from one month to three months. At the northern end of Blenheim Way, noise levels will also increase.

CFA26

Community

Effects arising during construction

The reconfiguration of the Freightliner Depot (AP2-026-006) as part of AP2, would result in different significant effects on residential properties on Northumberland Street and Vauxhall Grove reported in the main ES. When assessed together, the changes to the construction works associated with the construction of the Curzon Street No. 2 viaduct (SES3-026-001), along with the reconfiguration of the Freightliner Depot (AP2-026-006) as part of AP2, will increase the duration of the major adverse amenity effect reported in the AP2 ES from one year and one month to one year and two months.

Sound, noise and vibration

Effects arising during construction

The main ES reported construction noise effects in the open areas at Safeside and educational facility (incorporating a 999 call centre) and residential properties on Northumberland Street. The updated construction methodology for the construction of the Curzon Street No.2 viaduct

near the West Midlands Fire Station (SES3-026-001) will result in different significant effects, as the construction activities will take place within a wider area of land to the north of the existing Lawley Street viaduct, bringing construction works closer to Safeside and the residential properties. At Safeside, daytime construction noise will increase and the duration will increase from four months to one year and 10 months. A combined noise and vibration impact will also occur. This will result in a different significant effect. The night-time construction noise levels at the residential properties on Northumberland Street will be slightly lower than reported in the main ES. However, the forecast exceedance of the noise insulation trigger level remains. A combined construction noise and vibration impact will occur. This will result in a different significant effect.

When assessed together, the updated construction methodology for the construction of the Curzon Street No.2 viaduct near the West Midlands Fire Station (SES3-026-001), along with amendment AP2-026-006 (the reconfiguration of the Freightliner depot), there will be a different significant effects at Safeside, as a result of the increased duration of the noise impact (one year and 10 months to two years),

and a slight increase in construction noise during the daytime. At residential properties on Northumberland Street there will be a slight increase in daytime noise levels and an increase in the duration of the daytime impact to one year and two months.

Volume 3: Route-wide effects

Ecology

Effects arising during construction

The SES3 scheme will result in a 1.6ha decrease in the extent of ancient woodland losses in comparison to the SES2 scheme. This will result in a different effect however the level of significance will remain as reported in the SES.

The SES3 scheme, as amended by the AP1, AP2 and AP3 amendments, will result in a 0.7ha reduction in in amount of ancient woodland lost. This will result in a different effect however the level of significance will remain as reported in the main ES and the subsequent SESs and AP ESs.

Volume 4: Off-route effects

Community

Effects arising during construction

The revision of the HEx depot construction traffic assumptions at Langley (SES3-000-001) will require additional HGV movements using the western access, Station Road and Langley Park Road. Residents along Langley Park Road (approximately 30 residential properties) will experience an in-combination effect from a significant increase in HGV movements and significant road noise effects, resulting in a major adverse amenity effect. The affected residential properties are located on Langley Park Road, between the junctions with Hollow Hill Lane and Wood Lane.

Sound, noise and vibration

Effects arising during construction

The AP2 ES reported a noise effect at approximately 19 residential properties as the result of construction traffic along Bangors Road South. However, as a result of SES3-000-001, there will be reductions in HGV traffic in this area and the significant effect will be avoided.

Changes to the proposed construction routes to the HEx depot construction site, as part of

SES3-000-001 will result in a new adverse noise effect in the open areas around approximately 30 residential properties located immediately adjacent to Langley Park Road between Hollow Hill Lane and Wood Lane.

Traffic and transport

Effects arising during construction

The AP2 ES reported moderate adverse effects on vehicle users due to increased HGVs causing congestion and delay at the following junctions: High Street, Iver/Thorney Lane North, and Bangors Road/A4007 Slough Road. As part of SES3-000-001, there will be a reduction in HGV flows using the eastern access and these significant effects will be avoided. The AP2 ES also reported a moderate adverse effect on vehicle users as a result of congestion and delay at the junction of Bangors Road South/Iver High Street. However, as a result of these changes, this will reduce to minor adverse.

The AP2 ES reported major effects on pedestrians as a result of increases in construction traffic making it more difficult to cross Bangors Lane (between High Street, Iver and A412 Denham Road), and Thorney Lane (between Ridgeway and High Street, Iver). However as a result of the

reduction in HGV flows using the eastern access, these effects will reduce to moderate and minor respectively.

Changes to the proposed construction routes to the HEx depot construction site as part of SES3-000-001, will result in increases in HGV flows using the western access to the construction site, resulting in moderate adverse effects for vehicle users as a result of congestion and delay at the following junctions: Wood Lane/Uxbridge Road/A412 Church Road, Langley Park Road/Wood Lane, and Langley Park Road/Station Approach Road.

The changes in HGV traffic accessing the western access will result in new adverse effects on pedestrians, as increases in HGVs will make it more difficult for pedestrians to cross the following roads: A412 Church Road (between Wood Lane and Bangors Road North) (moderate adverse), and Wood Lane (between Langley Park Road and the A412) (major adverse). The AP2 ES also reported a moderate adverse effect on pedestrians due to increases in HGVs making it more difficult to cross Langley Park Road (between Station Approach and Wood Lane). However, as a result of these changes this effect will increase to major adverse.

Part 2: Additional Provision 4 Environmental Statement

7. Additional Provision 4 Environmental Statement

7.1 Introduction

A number of amendments to the scheme have been identified that require amendments to the Bill. Therefore, a fourth Additional Provision to the Bill is being submitted accompanied by the AP4 ES.

The remainder of this NTS is structured as follows:

- Section 7.2: presents a summary table of all amendments that require additional powers to those already included within the Bill for CFAs 4–26 and at Langley (off-route); and
- Section 8: summary of residual environmental effects for amendments within the AP4: presents a list of all environmental effects that remain after mitigation measures have been put in place.

7.2 Summary of amendments within the AP4

Tables 21–42 provide a summary of each amendment within the AP4 ES, along with a description of the SES3 scheme, or where relevant, the revised scheme outlined in the previous ESs.

Figures 21–42 show the approximate location of each of the amendments within CFAs 4–26 and the off-route amendment at Langley. The legend is common to each figure in this section.




Legend	
	AP4 amendment
	Station or depot
	Route in tunnel
	Route on surface
	Community forum area boundary
	Motorway
	Major road
	Existing railway
	Railway stations
	Airport
	Urban area
	Lake / reservoir
	Woodland, park or garden
	Main river / stream
	Local Authority boundary

Figure 21: Approximate location of AP4 amendments for Community Forum Area 4 – Kilburn (Brent) to Old Oak Common

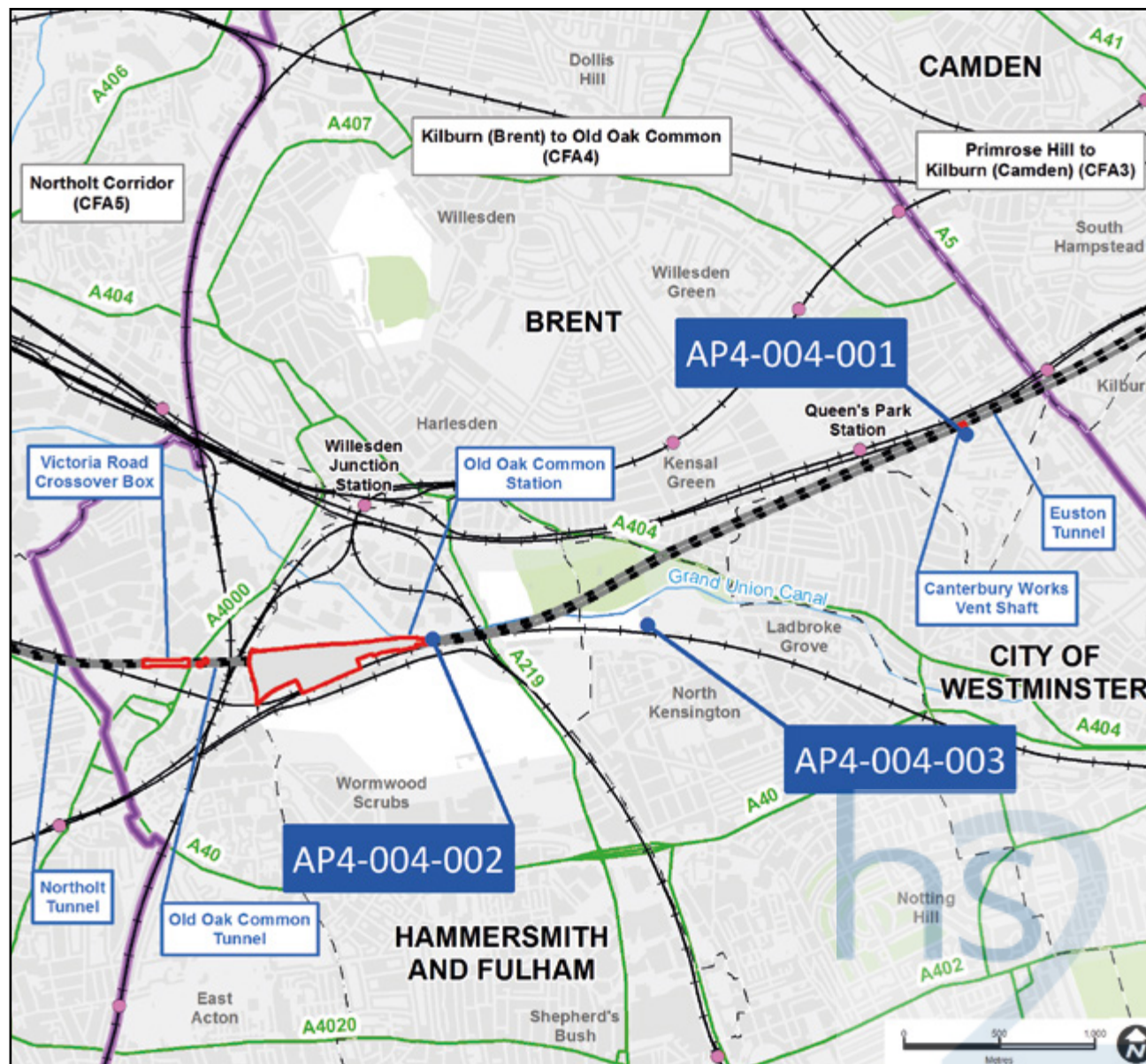


Table 21: Summary of amendments within CFA4 – Kilburn (Brent) to Old Oak Common

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for the relocation of Salusbury Road vent shaft to Canterbury Works (AP4-004-001)</p>	<p>The Bill provides for a ventilation and intervention shaft and auto-transformer station beside Salusbury Road in Kilburn. This was to provide access to the Euston tunnel and the HS1-HS2 Link tunnel.</p>	<p>The HS1–HS2 Link has been removed from the Bill; however the Euston tunnel will remain (see AP3 Volume 2 SES2-002-001) as will the requirement for a ventilation shaft, an auto-transformer station and the relocation of an electricity substation in this vicinity. These will no longer be located at Salusbury Road but will now be located at the Canterbury Works Business Park.</p> <p>Approximately 0.4ha of land is required which is outside the limits of the Bill.</p>
<p>Additional land required for the realignment of Stamford Brook sewer (AP4-004-002)</p>	<p>The Bill provides for the diversion of the Stamford Brook sewer across the Great Western Main Line (GWML) at Old Oak Common and under the future Crossrail depot. Works would involve vegetation clearance of a small section of land within Wormwood Scrubs Railway Embankment Site of Borough Importance Grade 1 (Wormwood Scrubs Park SBI.1).</p> <p>The Bill also provides for excavating shafts at the Intercity Express Programme (IEP) depot access road from which the new diverted sewer would be constructed, potentially disrupting IEP depot operations.</p>	<p>The diversion route of the sewer has been amended so there will be no diversion under the Crossrail depot and the diversion will commence within the land to be acquired for construction of Old Oak Common station. The sewer diversion will be realigned under the IEP depot, into Wormwood Scrubs Park SBI.1, running westwards before connecting into the existing sewer within Wormwood Scrubs. The sewer diversion will temporarily require an additional 2.5ha of land not included within the Bill.</p> <p>A new satellite construction compound will also be located within Wormwood Scrubs Park SBI.1 and will be approximately 0.7ha in size.</p>
<p>Provision for western access to Crossrail depot (AP4-004-003)</p>	<p>The Bill provides for land within the existing GWML railway tracks, to the southeast of Kensal Green Cemetery, to support the operation of the Old Oak Common station.</p> <p>The AP2 revised scheme (AP2-004-002) also included access rights over Canal Way, a private road, to provide access to the GWML.</p>	<p>Access is required to the proposed Crossrail depot from the west, through the train carriage washing machines. This will be provided while maintaining a passive provision for a station at Kensal Portobello.</p> <p>Additional GWML track work will be undertaken to allow realignment of the depot tracks with associated relocation of rail systems equipment. The works will be carried out on land within the existing limits of the Bill.</p>

Figure 22: Approximate location of AP4 amendments for Community Forum Area 5 – Northolt Corridor

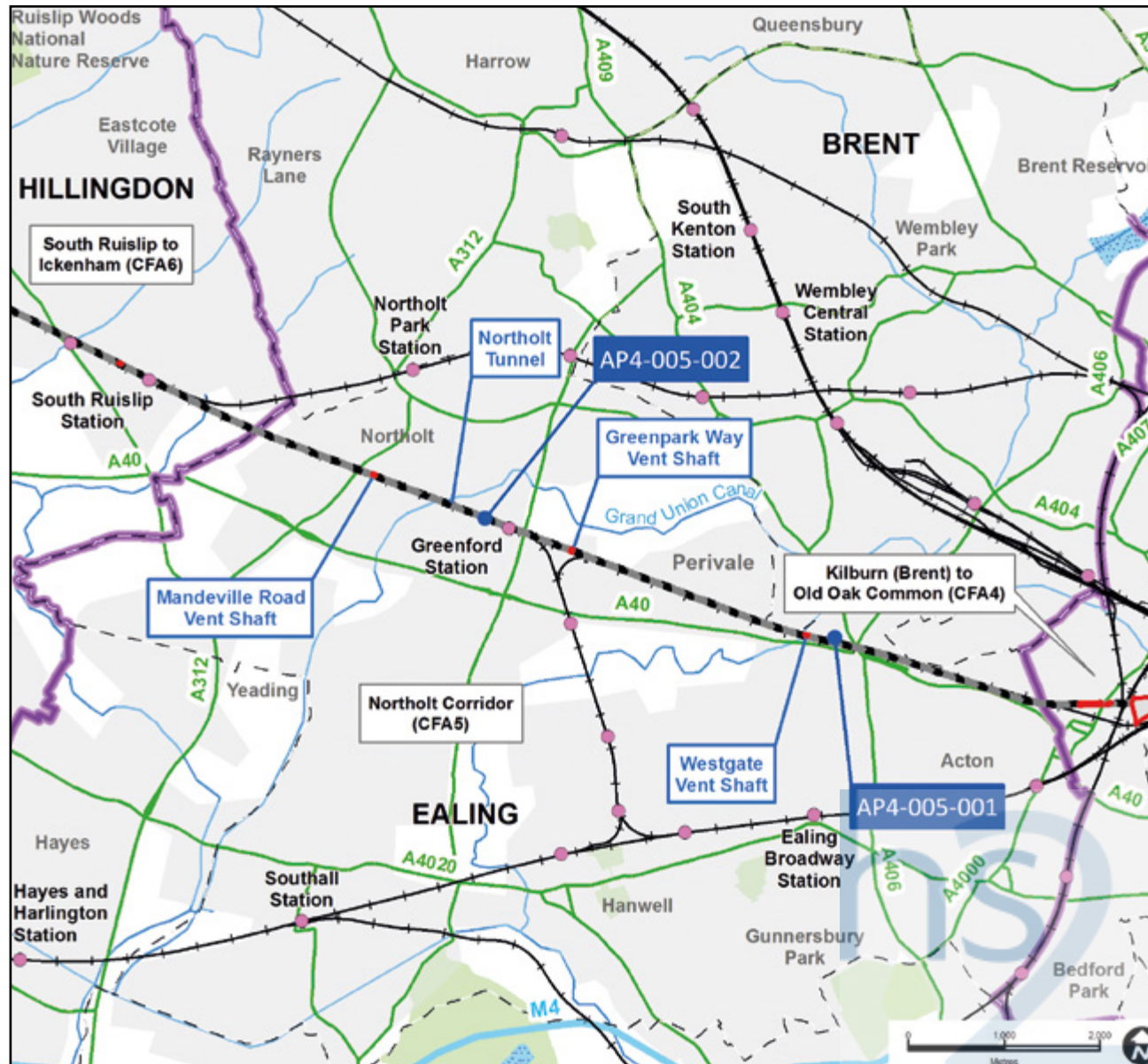


Table 22: Summary of amendments within CFA5 – Northolt Corridor

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Relocation of West Gate vent shaft (AP4-005-001)</p>	<p>The Bill provides for a ventilation shaft, approximately 180m west of A4005 Hanger Lane and directly south of West Gate, within a builder’s merchant site.</p>	<p>The ventilation shaft will be relocated to avoid the demolition of the commercial property and possible loss of employment. It will be relocated to within an existing car park located approximately 250m further west of the original scheme location.</p> <p>The construction and operation of the ventilation shaft requires the relocation of approximately 160 car parking spaces. Approximately 25 of these on the business park access road will be reinstated. The remaining 135 will be relocated to a site immediately north of West Gate and approximately 120m west of A4005 Hanger Lane in an area of existing car parking. The new car park will be a double storey structure.</p> <p>Approximately 3.3ha of additional land will be required which is outside the existing limits of the Bill.</p>
<p>Additional land required for the provision of the Greenford station passing loop (AP4-005-002)</p>	<p>The Bill provides for the HS2 route to pass through CFA5 in tunnel, between the Greenpark Way ventilation shaft and the Mandeville Road ventilation shaft. No temporary or permanent above ground works would be required between these two locations other than works associated with the construction of the ventilation shafts.</p>	<p>A twin-track passing railway loop will be installed adjacent to the existing Wycombe Single line (Acton & Northolt Line) to the west of Greenford London Underground Central Line station to support movement of excavated material. The works involve the realignment of the existing single track northwards and the installation of two new sidings approximately 500m long within the existing railway area. These two new tracks are required during the construction phase for regulating trains transporting excavated material waiting for a train path to go on the GWML from West Ruislip railhead and vice versa. The two tracks will be removed prior to HS2 operation.</p> <p>Approximately 1.3ha of additional land is required that is outside the existing limits of the Bill.</p>

Figure 23: Approximate location of AP4 amendments for Community Forum Area 6 – South Ruislip to Ickenham

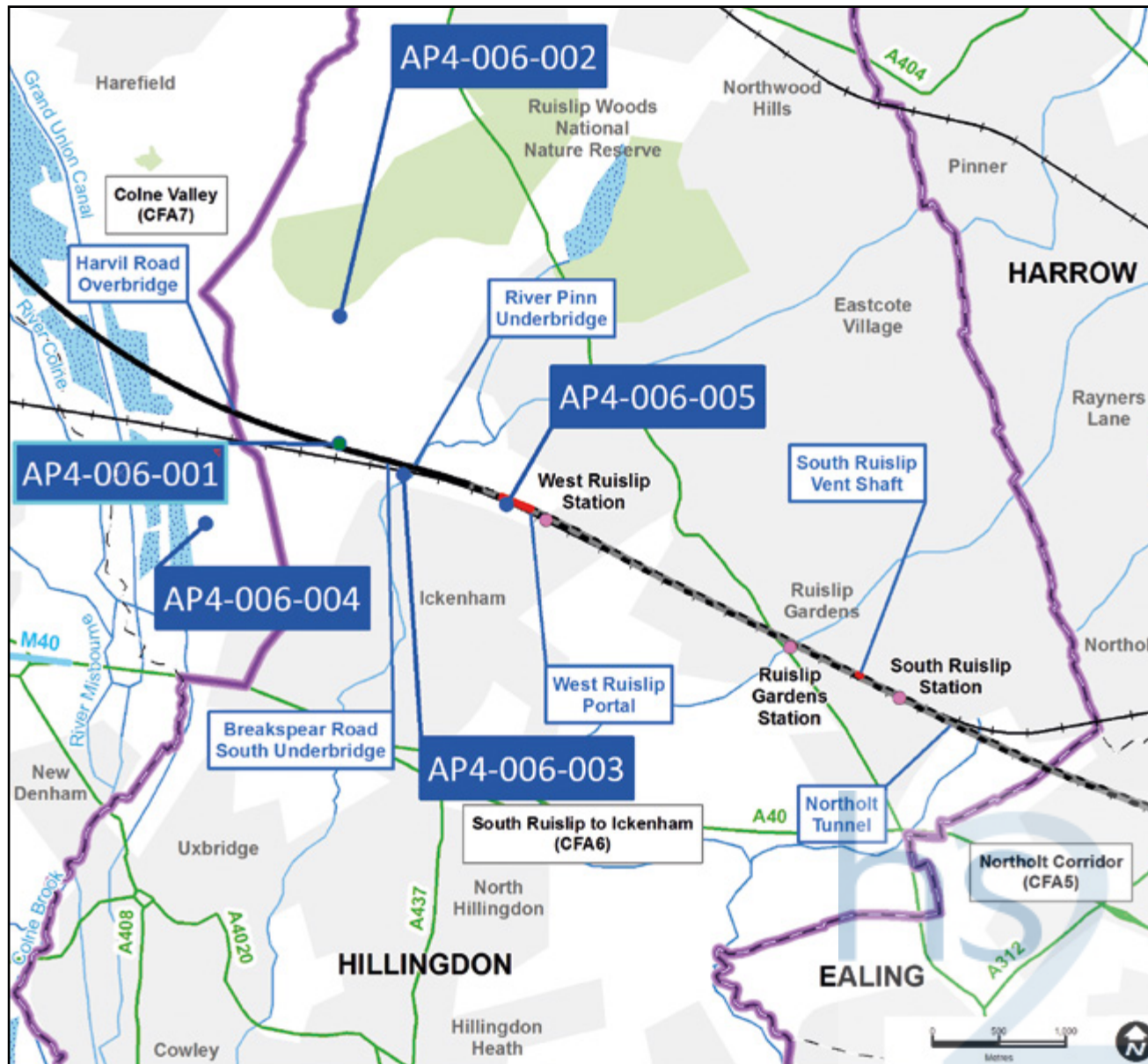


Table 23: Summary of amendments within CFA6 – South Ruislip to Ickenham

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Removal of the Copthall retained structure and additional land required for earthworks at the pharmaceutical research facility (AP4-006-001)</p>	<p>The Bill provides for the HS2 route in cutting, with a maximum depth of 20m below existing ground level and the Copthall retaining structure north of the HS2 route to enable retention of a pharmaceutical research facility off Breakspear Road South.</p> <p>The Bill also provides for the demolition of 12 buildings in the south of the pharmaceutical research facility.</p>	<p>The pharmaceutical research facility will relocate certain operations carried out at the facility to an alternative site outside the area of the HS2 route. The retaining structure will be removed from the scheme so the cutting will be continuous in this area.</p> <p>An additional four buildings, which are located within the pharmaceutical research facility site, will be demolished in addition to those reported in the main ES.</p>
<p>Additional land required for the amended sustainable placement proposals in CFA6 and CFA7 and the associated diversion of Footpath U50 (AP4-006-002)</p>	<p>The Bill provides for three areas within CFA6 and one area within CFA7 for the sustainable placement of surplus excavated materials from the construction of the Brackenbury and Copthall cuttings. One sustainable placement area would be located to the north of Newyears Green Lane and south-east of Bayhurst Wood Country Park, and two areas would be located on land between Breakspear Road South and Harvil Road, to the south of the HS2 route. The latter two areas would be divided by the existing gas main that splits this section of land. The fourth area would be located to the south-east of South Harefield, north of the HS2 route within CFA7.</p> <p>The Bill also provides for the permanent local placement of approximately 1,000,000m³ of excavated material, with a further 500,000m³ being temporarily stored and transported via a railhead.</p>	<p>The sustainable placement areas within CFA6 and CFA7 will be further modified to accommodate changes in the construction programme through:</p> <ul style="list-style-type: none"> • modification of the permanent sustainable placement site located to the north of Newyears Green Lane, which will be split into two; • two additional temporary material stockpiles; • one additional temporary stockpile adjacent and west of the permanent sustainable placement site to the north of Newyears Green Lane which will be restored to woodland habitat; • the removal from Bill limits of the permanent placement site within CFA7; • modification of the permanent sustainable placement site located to the south of the HS2 route, between Break spear Road and Harvil Road; • the addition of two temporary material stockpiles in CFA7; and • diversion of Footpath U50 in CFA7.

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Revised temporary diversion of footpaths U43, U45 and U46 (AP4-006-003)</p>	<p>The Bill provides for the temporary closure of Footpath U43 whilst the proposed flood compensation area, across which the footpath passes, is excavated.</p> <p>The Bill also provides for the temporary closure of Footpaths U45 and U47 for the construction of a new embankment and railway bridge over the River Pinn. The proposed diversion routes are:</p> <ul style="list-style-type: none"> • Footpath U43: diverted approximately 400m, from the start of Footpath U44, which links only with footpaths U43 and U45, at Clack Lane, and links via Clack Lane, R144, R143 and Breakspear Road South to the west end of U43; • Footpath U45: diverted approximately 26m, from the start of Footpath U44 at the junction of Clack Lane and Footpath R144, then via Footpath R144, Tile Kiln Lane (Byway R183), Breakspear Road South, Copthall Road West, Copthall Road East, Bushey Road and finally Footpath U48 to join up with the end of Footpath U47 to the south of the Chiltern Main Lines; and • Footpath U47: diverted approximately 720m from the start of Footpath U47, along Footpath U48, Bushey Road, Copthall Road West and Breakspear Road South to the start of Footpath U46. 	<p>Footpath U43 will be diverted along Footpath U45, along the east side of the River Pinn, to the adjacent Footpath U46 (170m to the south) during construction. At this stage of construction, Footpath U46 will still be in use. Footpath U43 will then be diverted along Breakspear Road South. Footpath U43 will be closed for approximately two months.</p> <p>A temporary footpath will be created along the western side of the Breakspear Road South, on land included within the limits of the Bill.</p> <p>Once footpath U43 is reinstated, it will serve as a temporary diversion route for other footpaths whilst they are affected by the works. Footpath U45 will be temporarily closed and diverted along the reinstated Footpath U43, along Breakspear Road South via the temporary footpath to a temporary footbridge over the River Pinn, joining Footpath U47 south of the Chiltern Main Line.</p> <p>A temporary footpath and footbridge will be required for access across the River Pinn to allow the proposed diversion route of Footpath U45 to connect Breakspear Road South to Footpath U47. A temporary footpath will also be required alongside Breakspear Road South from Grays Cottages to Gatemead Farm. Footpath U47 will remain closed during the construction of the River Pinn bridge and whilst the haul road crossing the footpath is in use.</p>

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for the provision of a haul road through Uxbridge Golf Course (AP4-006-004)</p>	<p>The Bill provides for a construction traffic route via the A40 Western Avenue, the B467 Swakeleys Road and Harvil Road.</p>	<p>A temporary haul road will be provided through Uxbridge Golf Course, located within CFA7. The haul road will connect at its southern end with the eastbound slip road to the A40 Western Avenue/B467 Swakeleys Road roundabout. The southern section of the haul road will pass to the west of, and parallel to, The Drive. The northern section will pass through Uxbridge Golf Course and land to the west of Harvil Road within CFA7. The haul road will connect with Harvil Road at its northern end.</p>
<p>Provision of rail access track to the West Ruislip Depot (AP4-006-005)</p>	<p>The Bill provides for the removal of two rail sidings (additional lengths of track that branch off the main rail line) that London Underground Limited (LUL) sometimes use, prior to entering the LUL West Ruislip Depot, as part of the Northolt tunnel portal works.</p>	<p>A new link will be provided that connects the Chiltern Main Line onto the LUL West Ruislip Depot existing railway network. This will provide direct access from the west to the LUL West Ruislip Depot (there is already access to the depot from the east). This link will allow a more direct access to the depot and will remove the need to temporarily hold trains prior to entering the depot from the west.</p>

Figure 24: Approximate location of AP4 amendment for Community Forum Area 7 – Colne Valley

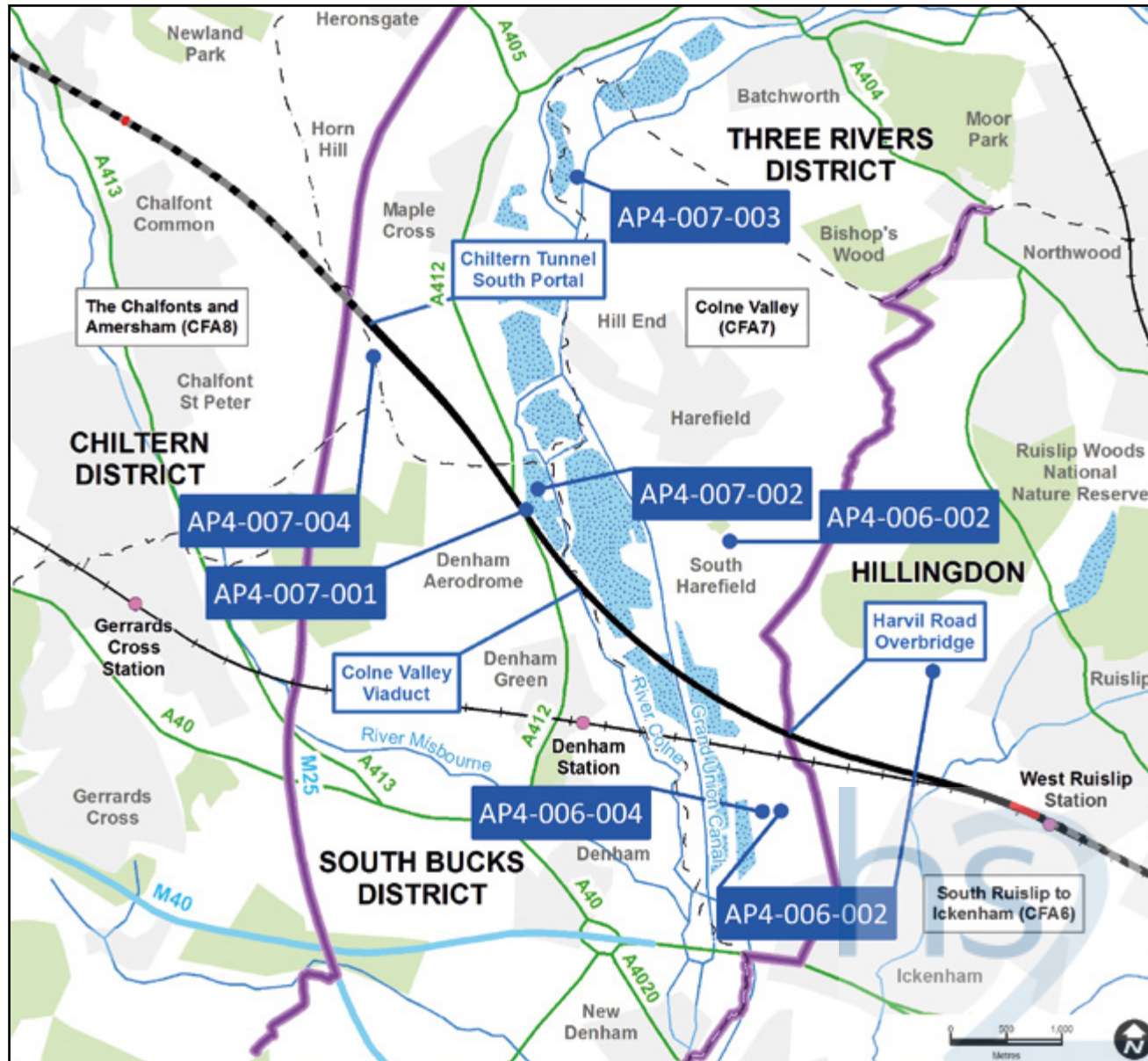


Table 24: Summary of amendments within CFA7 – Colne Valley

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for the amended sustainable placement proposals in CFA6 and CFA7 and realignment of Footpath U50 (AP4-006-002)</p>	<p>For information on this amendment, see AP4-006-002 in Table 23.</p>	<p>For information on this amendment, see AP4-006-002 in Table 23.</p>
<p>Additional land required for the provision of a haul road through Uxbridge Golf Course (AP4-006-004)</p>	<p>For information on this amendment, see AP4-006-004 in Table 23.</p>	<p>For information on this amendment, see AP4-006-004 in Table 23.</p>
<p>Additional land required for access to Denham Water Ski Club (AP4-007-001)</p>	<p>The Bill provides for an access road to enable construction of the piers for the Colne Valley viaduct, on land to the north-east of the A412 Denham Way/ North Orbital Road, off which the Denham Water Ski Club is accessed. Traffic management measures would be implemented to maintain access to the water ski club. Land from part of the club car park, would be required close to the jetty to construct the Colne Valley viaduct.</p> <p>The Bill also provides for landscape mitigation planting on an area of land currently used by club members for recreation.</p>	<p>Changes have been identified to further reduce the impact on the Denham Water Ski Club. The haul road for construction of the scheme will be moved closer to the Colne Valley viaduct to ensure it is perpendicular to the access road to the water ski club. This will enable crossing controls to be installed during construction, and for the club's access road to remain open.</p> <p>An alternative access road to the club will also be provided for times during construction when the current access cannot be used. The alternative access road will link with an existing road used by a utility provider, north of the club's current access. This access road will be used permanently for access to a balancing pond.</p> <p>The amendment also includes the installation of a grass reinforcement mesh in a section of grassland adjacent to the club house, providing an overflow car park during construction and additional parking during operation of the scheme.</p> <p>The balancing pond south of the club house will be replaced by a drainage ditch to reduce the amount of grassland required by the scheme. A small 150m² section of landscape planting will be removed from the scheme. The land will be reinstated to its existing condition following construction, to continue its original use for water ski recreation.</p> <p>Approximately 0.2ha of additional land is required which is outside the limits of the Bill.</p>

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
Additional land required for track drainage discharge in the Colne Valley (AP4-007-002)	The Bill provides for an existing buried culvert, south of Waybeards Cottages approximately on the alignment of an Affinity Water access track. The culvert would be used for track drainage from the Colne Valley viaduct to the River Colne.	Additional land is required permanently along the length of the existing culvert, approximately 400m in length, to enable the culvert and outfalls to be modified or upgraded following more detailed site investigation. Approximately 0.3ha of additional land is required which is outside the limits of the Bill.
Additional land required for the temporary provision of turbidity treatment equipment in the Colne Valley (AP4-007-003)	The Bill provides for potential mitigation options to treat water abstractions affected by turbidity (measure of water clarity in relation to how much material is suspended in the water i.e. soil particles) as a consequence of tunnelling and piling impacts on groundwater resources.	The requirement to treat abstracted groundwater to reduce turbidity has been identified at three pumping station sites: <ul style="list-style-type: none"> • Mill End Pumping Station; • Springwell Lake Pumping Station; and • West Hyde Pumping Station. The turbidity treatment equipment will be located within the boundary of the existing pumping stations. Approximately 3ha of additional land is required temporarily to accommodate the turbidity equipment.
Provision of a cantering route between Bridleways CSP/44 and Rickmansworth 004 (AP4-007-004)	The Bill provides for an overbridge up to approximately 1m above the existing ground level, for the realignment of Tilehouse Lane and Bridleway Rickmansworth 004 over the HS2 route. The diversion of the bridleway via the Tilehouse Lane overbridge would result in a loss of a straight section of bridleway used by horse riders.	A new section of bridleway parallel to and south of, the HS2 route between the realigned bridleways CSP/44 and Rickmansworth 004 will be provided. The new straight section of bridleway will be approximately 700m long.

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Figure 25: Approximate location of AP4 amendments for Community Forum Area 8 – The Chalfonts and Amersham

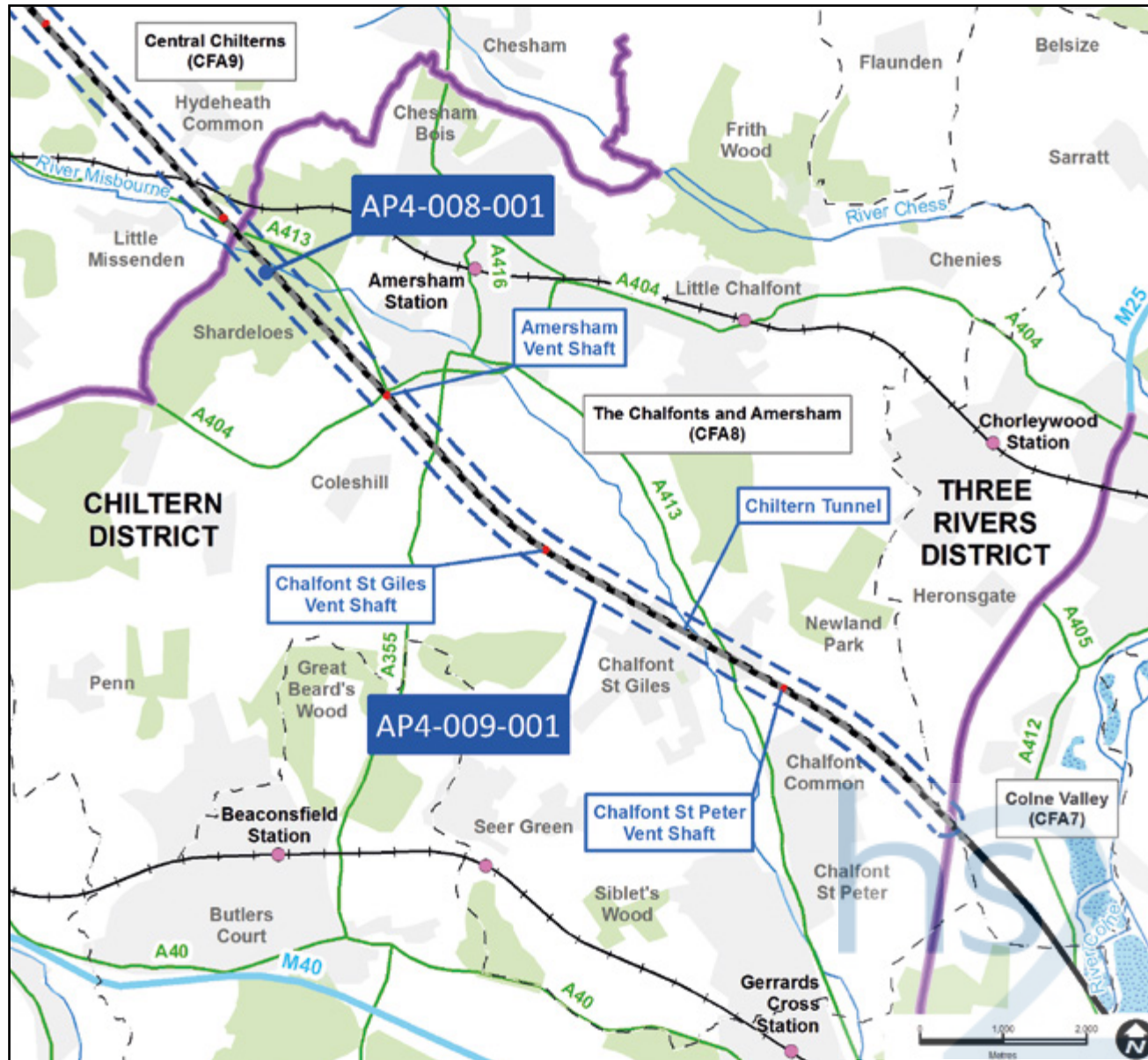


Table 25: Summary of amendments within CFA8 – The Chalfonts and Amersham

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
Provision for the monitoring and protection of Shardeloes Park (AP4-008-001)	The Bill provides for the HS2 route to pass beneath the Shardeloes Estate in the Chiltern tunnel. The Shardeloes Estate includes the Grade II listed buildings and walls of the kitchen gardens of Shardeloes Park.	The Grade II listed buildings and walls of the kitchen gardens of Shardeloes Park have been identified as being in particularly poor condition. As a result, the Grade II listed buildings will be included in the Bill as authorised to be altered or extended for heritage or monitoring purposes. This will enable it to be monitored during construction.

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Extension to the Chiltern tunnel from Mantle's Wood portal to South Heath green tunnel north portal and associated works (AP4-009-001)</p>	<p>The Bill provides for the HS2 route to pass beneath part of the Chilterns Area of Outstanding Natural Beauty (AONB) in tunnel. A 13.5km tunnel would commence south of the M25 between junctions 16 and 17 and east of Chalfont St Peter, in the Colne Valley area (CFA7) and emerge at Mantle's Wood, north-west of Hyde Heath, in the Central Chilterns (CFA9). There would be four ventilation and intervention shafts along the length of the Chiltern tunnel, near Chalfont St Peter, Chalfont St Giles, Amersham (all CFA8) and near Little Missenden (CFA9).</p> <p>The route would emerge from the Chiltern tunnel and continue north-west in a cutting, for approximately 750m, then on an embankment, for approximately 100m. It would then continue in cutting, for approximately 650m up to the B485 Chesham Road, south-west of South Heath. The HS2 route would enter the South Heath green tunnel adjacent to the B485 Chesham Road.</p> <p>The route would then emerge from the South Heath tunnel, north of Frith Hill. The route would continue north-west in a cutting, up to 11m deep, north of Leather Lane.</p> <p>The original scheme provided for 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.</p> <p>In the AP2 revised scheme (AP2-009-001), changes were made to extend the Chiltern tunnel north portal to 220m. The portal building was relocated approximately 120m north-west along the HS2 route to accommodate the longer portal. The permanent access track to the portal building and associated earthwork was extended by approximately 120m in length and realigned closer to the access track.</p>	<p>The Chiltern tunnel will be extended by 2.6km from Mantle's Wood, north-west of South Heath, to the location of the South Heath tunnel north portal in the original scheme.</p> <p>The amendment includes changes to the scheme design in CFAs 8, 9 and 10. The changes associated with the extension of the Chiltern tunnel are:</p> <ul style="list-style-type: none"> • the same horizontal alignment as the original scheme in CFAs 8, 9 and 10; • additional cooling equipment at: Chalfont St Peter, Chalfont St Giles and Amersham ventilation shaft in CFA8, and Little Missenden and Chesham Road in CFA9; • a larger permanent surface area for the Chalfont St Giles ventilation shaft and auto-transformer feeder station to accommodate an express feeder auto-transformer station (CFA8); • revised design of Little Missenden ventilation shaft and auto-transformer station; • a new ventilation shaft located adjacent to Annie Bailey's public house and restaurant with access from B485 Chesham Road (CFA9); • environmental mitigation proposed in the SES3 scheme will no longer be required between Mantle's Wood, and the new Chiltern tunnel north portal as the HS2 scheme will tunnel below the woodland (CFA9); • a 200m porous portal at the new Chiltern tunnel north portal (CFA9); • realignment of an overhead power line to the west of South Heath (CFA9) which includes the replacement of two pylons with one approximately 11m higher than the existing pylons; • wider and deeper cutting northwards from the new north portal, compared to the SES3 scheme. The changes to the cutting will require the height of the overbridges to be increased (CFA9 and CFA10); • the Chiltern tunnel north portal construction compound will be accessed via the A413 Missenden Bypass. The area will be restored to its former use following the construction works with a permanent access provided from Frith Hill to the new portal (CFA9); • provision of noise fence barriers approximately 3m high and 1.4km long at the top of the cutting on the eastern side of the HS2 route, extending from the new portal to Leather Lane (CFA9). Integration of the noise fence barriers with landscape earthworks and landscape planting; and • a midpoint auto-transformer feeder station located on the eastern side of the HS2 route north of Leather Lane with access from Leather Lane (CFA10). <p>The amendment will result in an overall net reduction in the land required across CFAs 8, 9 and 10. In particular, the removal of approximately 9ha of ancient woodland from Mantle's Wood, Farthings Wood and Sibley's Coppice in CFA9 is no longer required. In CFA8, 0.13ha of additional land is required at Chalfont St Giles ventilation shaft and auto transformer station during construction and operation which is outside of Bill limits.</p>

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Figure 26: Approximate location of AP4 amendments for Community Forum Area 9 – Central Chilterns

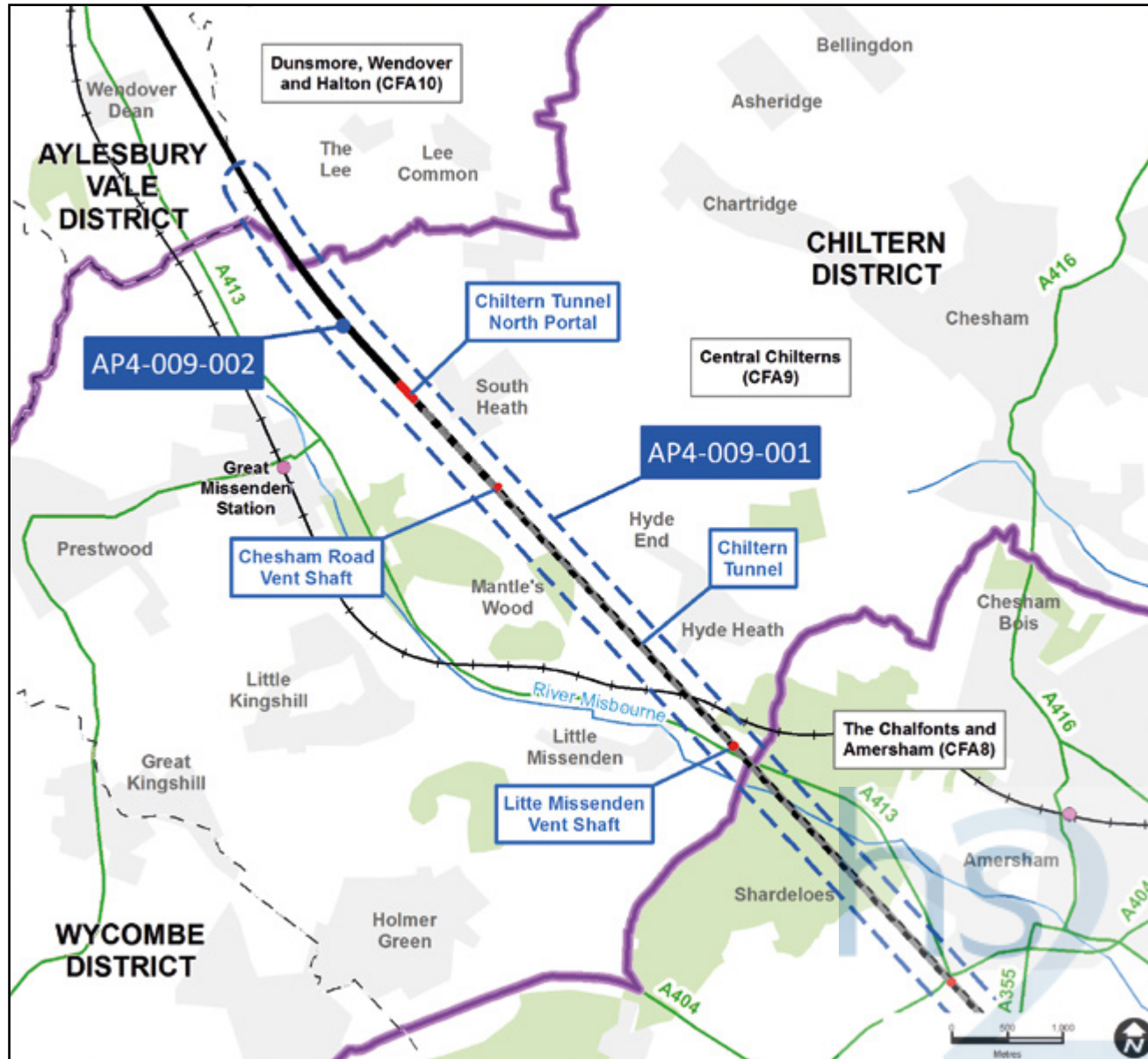


Table 26: Summary of amendments within CFA9 – Central Chilterns

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Extension of the Chiltern tunnel from Mantle’s Wood portal to South Heath green tunnel north portal and associated works (AP4-009-001)</p>	<p>For information on this amendment, see AP4-009-001 in Table 25.</p>	<p>This amendment includes changes to the scheme design in CFAs 8, 9 and 10.</p> <p>The changes within CFA9 associated with the extension of the Chiltern tunnel include:</p> <ul style="list-style-type: none"> • addition of cooling equipment at Little Missenden and Chesham Road; • revised design of Little Missenden ventilation shaft and auto-transformer station; • a new ventilation shaft located adjacent to Annie Bailey’s public house and restaurant with access from B485 Chesham Road (CFA9); • environmental mitigation proposed in the SES3 scheme will no longer be required between Mantle’s Wood and the new Chiltern tunnel north portal as the HS2 scheme will tunnel below the woodland (CFA9); • a 200m porous portal at the new Chiltern tunnel north portal (CFA9); • realignment of an overhead power line to the west of South Heath (CFA9) which includes the replacement of two pylons with one approximately 11m higher than the existing pylons; • wider and deeper cutting northwards from the new north portal, compared to the SES3 scheme. The changes to the cutting will require the height of the overbridges to be increased (CFAs 9 and 10); • the Chiltern tunnel north portal construction compound will be accessed via the A413 Missenden Bypass. The area will be restored to its former use following the construction works with a permanent access provided from Frith Hill to the new portal (CFA9); • provision of noise fence barriers approximately 3m high and 1.4km long at the top of the cutting on the eastern side of the HS2 route, extending from the new portal to Leather Lane (CFA9). Integration of the noise fence barriers with landscape earthworks and landscape planting; and • approximately 9ha of ancient woodland from Mantle’s Wood, Farthings Wood and Sibley’s Coppice in CFA9 is no longer required. <p>All changes within CFA9 remain within the limits of the Bill.</p> <p>For more information on this amendment see AP4-009-001 in Table 25.</p>
<p>Realignment of diverted Footpath GMI/2 near South Heath (AP4-009-002)</p>	<p>The Bill provides for the diversion of Footpath GMI/2 during operation. It will remain open during construction, but will then be permanently diverted 200m to the west over the new Footpath GMI/2 accommodation overbridge alongside the HS2 route. The permanent diversion increases the length of the footpath by 550m.</p>	<p>To avoid Footpath GMI/2 running alongside the HS2 route, the footpath will be diverted to run along the outer edge of a proposed area of landscape planting instead of along the inner edge. This will visually screen the footpath from the HS2 route and reduce the footpath diversion by approximately 20m.</p>

Figure 27: Approximate location of AP4 amendments for Community Forum Area 10 – Dunsmore, Wendover and Halton

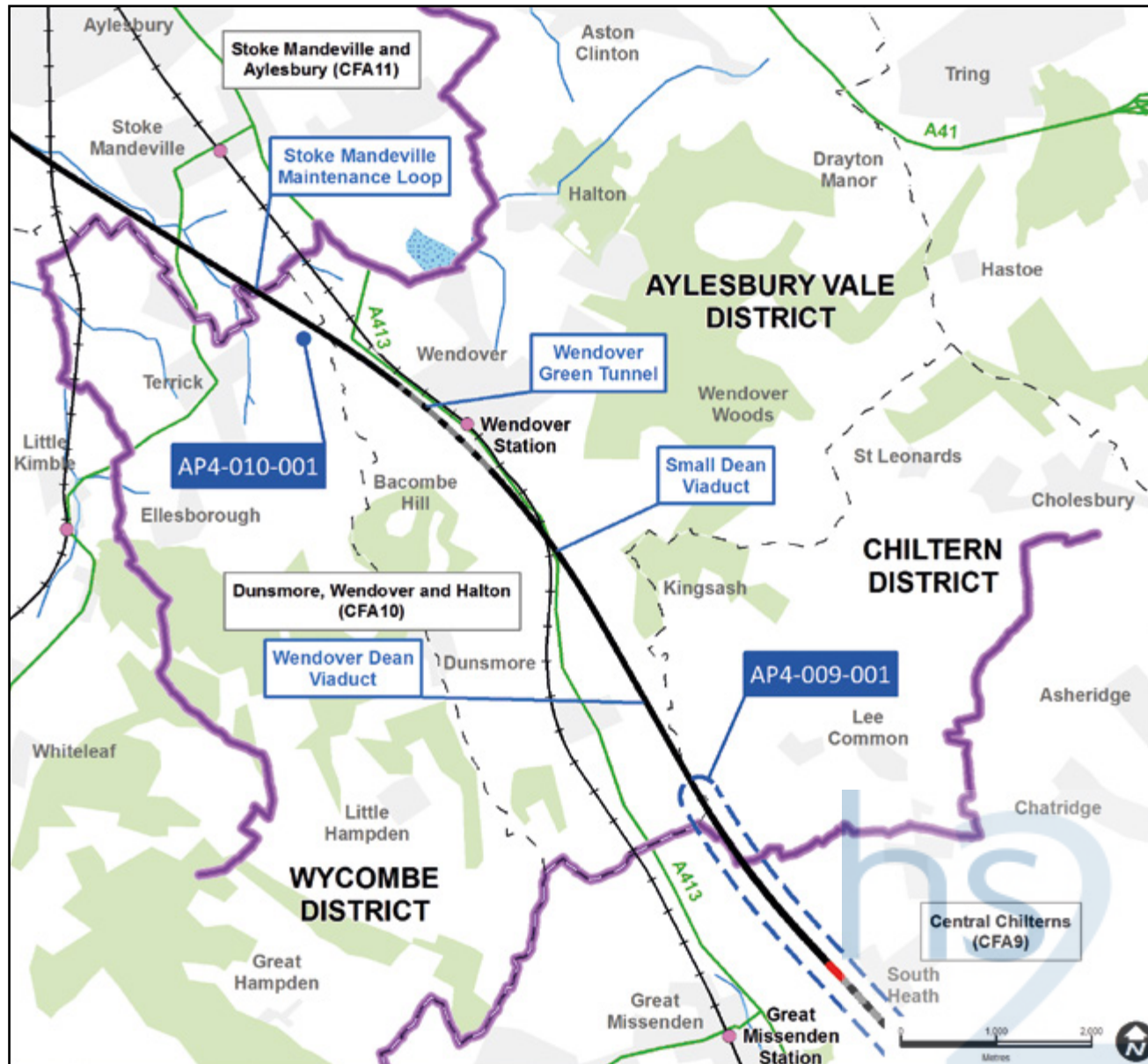


Table 27: Summary of amendments within CFA10 – Dunsmore, Wendover and Halton

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Extension of the Chiltern tunnel from Mantle’s Wood portal to South Heath green tunnel north portal and associated works (AP4-009-001)</p>	<p>For information on this amendment, see AP4-009-001 in Table 25.</p>	<p>This amendment includes changes to the scheme design in CFA8, CFA9 and CFA10.</p> <p>The change within CFA10 associated with the extension of the Chiltern tunnel is the relocation of a mid-point auto-transformer station approximately 150m north of Leather Lane. Permanent access will be provided off Leather Lane.</p> <p>All changes within CFA10 remain within the limits of the Bill.</p> <p>See AP4-009-001 in Table 25 for more information on this amendment.</p>
<p>Additional land required for the overbridge satellite compound at Nash Lee Road (AP4-010-001)</p>	<p>The Bill provides for land adjacent to, and south of, the B4009 Nash Lee Road on a temporary basis to accommodate the Nash Lee Road overbridge satellite construction compound, located approximately 1.5km to the north of Wendover. The land would be restored to its original agricultural use once the satellite construction compound is no longer required. A temporary construction haul road would be located along the west of the HS2 route. Footpath ELL/25 would be closed temporarily during construction and a temporary diversion provided to the west of an existing pond adjacent to the B4009 Nash Lee Road. This would add an additional 650m to its length.</p>	<p>To reduce disruption to farming operations, this amendment will relocate the satellite construction compound north of the B4009 Nash Lee Road, to a more suitable agricultural field west of the Wendover north cutting and north of properties off the B4009 Nash Lee Road.</p> <p>The proposed haul road on the west of the HS2 route will be realigned to avoid the pond south of the B4009 Nash Lee Road. This will provide an alternative means of access to the agricultural land off Nash Lee Road.</p> <p>A shorter diversion of Footpath ELL/25 will be maintained during construction, which will reduce the length of the temporary diversion from 650m to 440m.</p> <p>Approximately 0.6ha additional land is required temporarily which is outside the existing limits of the Bill.</p>

Figure 28: Approximate location of AP4 amendments for Community Forum Area 11 – Stoke Mandeville and Aylesbury

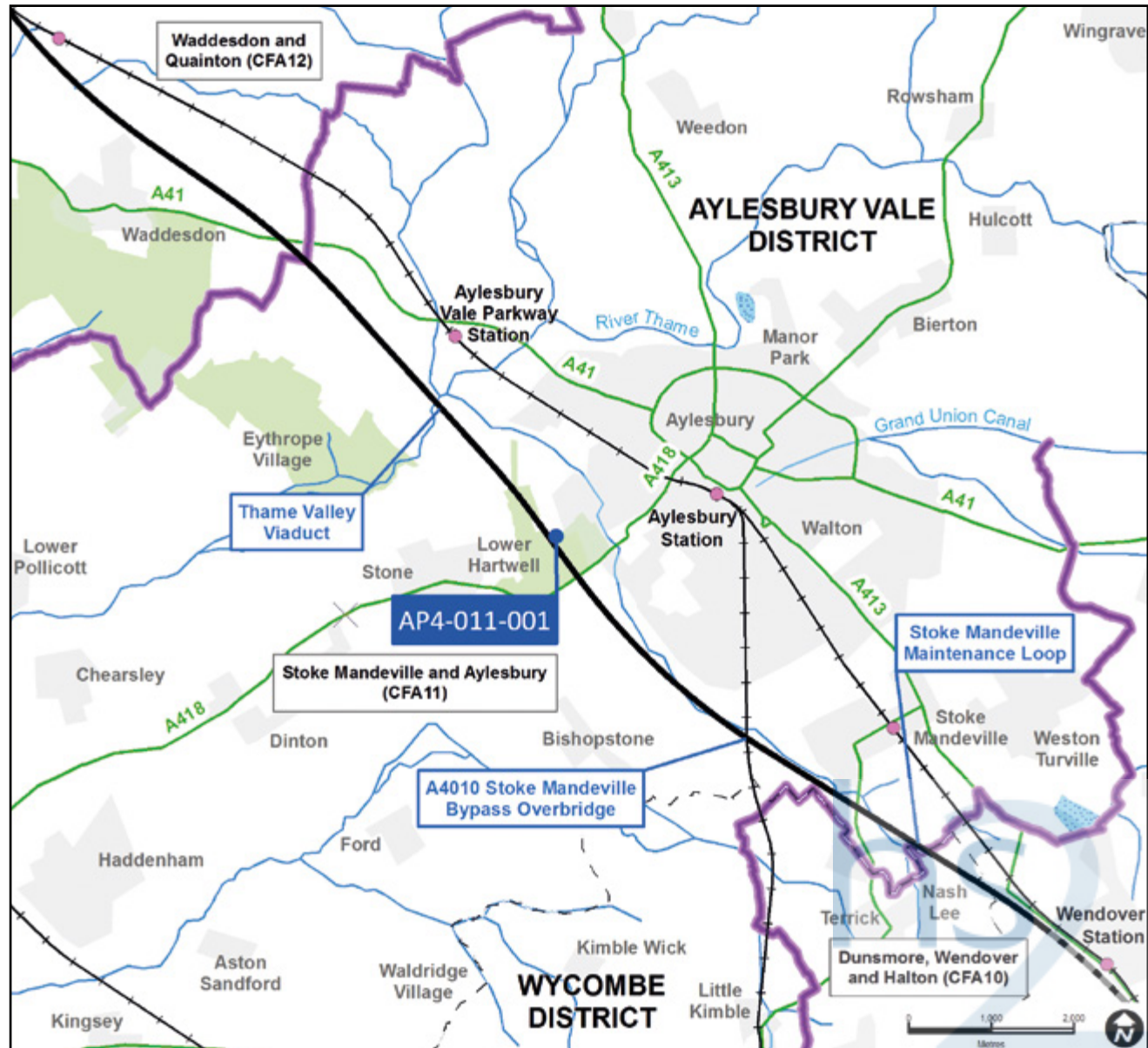


Table 28: Summary of amendments within CFA11 – Stoke Mandeville and Aylesbury

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Relocation of Footpath overbridge SBH/32 in Lower Hartwell (AP4-011-001)</p>	<p>The Bill provides for a permanent overbridge west of Aylesbury Park Golf Club, approximately 12m above existing ground level, enabling the reinstatement of Footpath SBH/32 which would otherwise be severed by the HS2 route. The approach to the overbridge would include landscape planting. Construction of the earthworks on the west of the HS2 route would require culverting of a ditch crossed by the footpath, for a length of approximately 45m. An area of landscape planting would be provided to the south of the overbridge and west of the HS2 route to screen the railway and integrate it and the overhead line equipment into the wider landscape. A balancing pond would be provided for route drainage, north of Footpath SBH/32, east of the HS2 route, with maintenance access from the existing Aylesbury Park Golf Club access road.</p>	<p>The overbridge will be moved permanently northwards by approximately 70m in order to avoid the removal of existing vegetation and trees in Rifle Spinney, which would screen the new overbridge. The proposed diversion of Footpath SBH/32 will be increased to approximately 500m, 40m longer than proposed as part of the original scheme.</p> <p>Earthworks will be extended further so the length of the culvert required on the west of the HS2 route will be increased to approximately 80m. An additional balancing pond will be provided for scheme drainage north of Footpath SBH/32, to the east of the HS2 route, with access from the existing access road to Aylesbury Park Golf Club. The proposed floodplain storage area west of the HS2 route will be increased in area to 0.3ha. Additional floodplain storage will be constructed east of the HS2 route between the current alignment of Footpath SBH/32 and the proposed alignment of the footpath overbridge.</p> <p>Approximately 0.4ha of land required permanently in the original scheme will no longer be required. Approximately 0.6ha of additional land is required temporarily and 1.8ha of additional land, outside the limits of the Bill is required permanently.</p>

Figure 29: Approximate location of AP4 amendments for Community Forum Area 12 – Waddesdon and Quainton

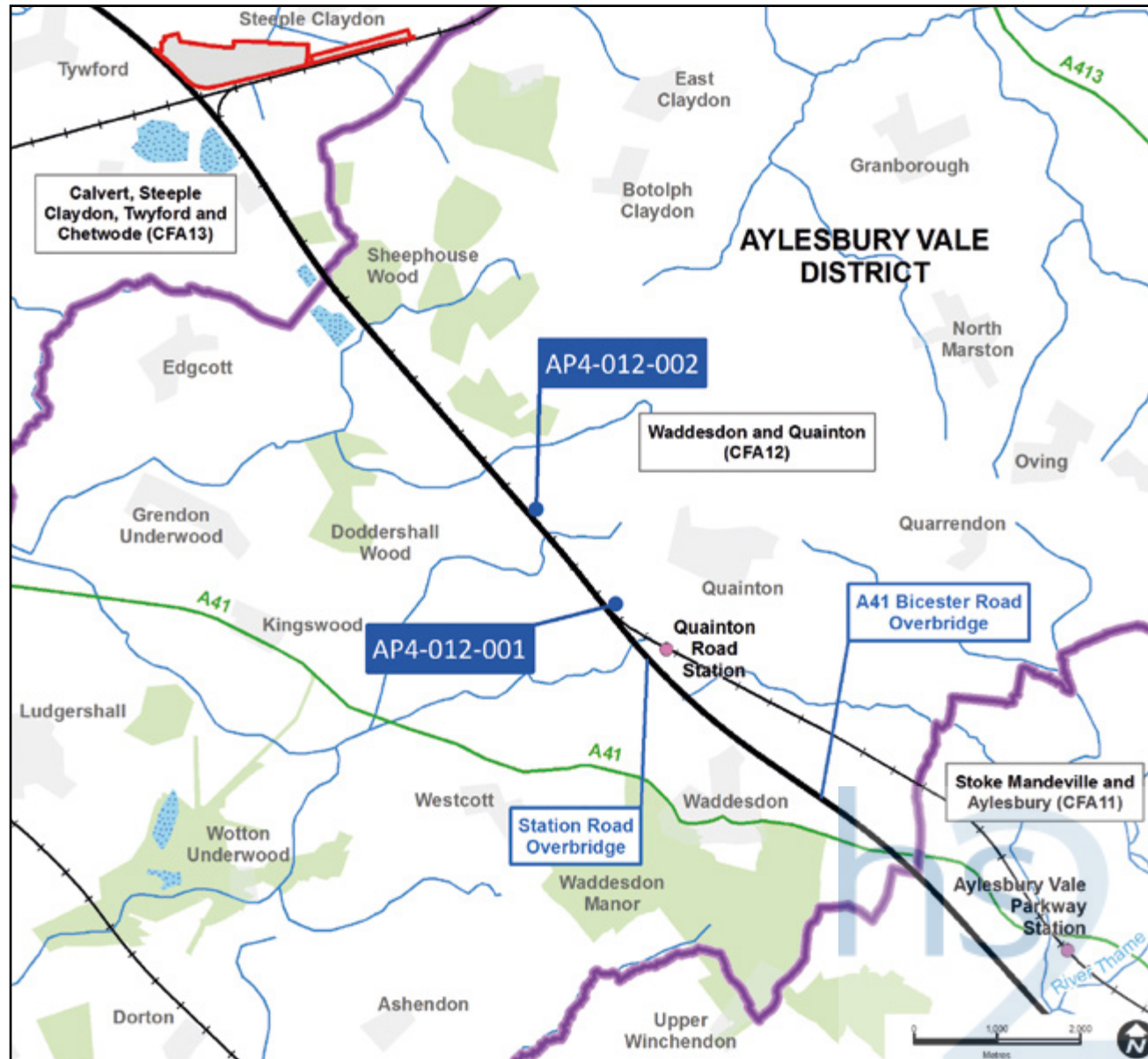


Table 29: Summary of amendments within CFA12 – Waddesdon and Quainton

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for balancing ponds near Footpath QUA/31 (AP4-012-001)</p>	<p>The Bill provides for two balancing ponds for railway drainage and an associated access track located north of the existing Station Road. One balancing pond would be west of the HS2 route near Crossroads Farm and the other further north and east of the HS2 route.</p>	<p>An additional third balancing pond is required and will be located west of the HS2 route, adjacent to Crossroads Farm, to the south-east of one of the originally proposed balancing ponds. Maintenance access will be provided off the realigned Quainton Road for both balancing ponds west of the HS2 route.</p> <p>Assessment of surface water flood risk has identified that the balancing pond east of the HS2 alignment will be relocated approximately 200m further south than proposed as part of the original scheme. The proposed access track will be realigned to accommodate the revised location of the balancing pond. The land proposed for the site of the balancing pond in the original scheme will be part of a grassland mitigation area in the AP4 revised scheme. Hedgerow planting will be amended at this location to maintain visual screening of the HS2 route.</p> <p>Approximately 0.6ha of additional land is required permanently which is outside the limits of the Bill.</p>
<p>Additional land required for reconfiguration of balancing ponds near Footpath QUA/26 and Bridleway QUA/28A (AP4-012-002)</p>	<p>The Bill provides for a section of railway drainage, at Doddershall embankment north of Footpath QUA/26 accommodation underbridge. This drainage would discharge into a balancing pond at the accommodation underbridge.</p> <p>The AP2 revised scheme as part of AP2-012-002 would reduce the size of the balancing pond by approximately half and would introduce a second balancing pond west of Footpath QUA/26 accommodation underbridge.</p>	<p>Further flood risk assessments have identified that the balancing pond proposed in the main ES would lie in an area at risk of flooding and should be constructed elsewhere as two separate balancing ponds. They will be located east of the HS2 route, one at Footpath QUA/26 accommodation underbridge and the other at Bridleway QUA/28A accommodation overbridge. The proposed access track in the original scheme will be extended southwards to allow maintenance access to the balancing pond at Bridleway QUA/28A overbridge. A turning head (i.e. turning point) will be provided.</p> <p>Approximately 0.4ha of additional land is required permanently which is outside the limits of the Bill. However, 1.7ha of land is no longer required. Therefore overall the amendment will require 1.3ha less land compared to the AP2 revised scheme.</p>

Figure 30: Approximate location of AP4 amendments for Community Forum Area 13 – Calvert, Steeple Claydon, Twyford and Chetwode

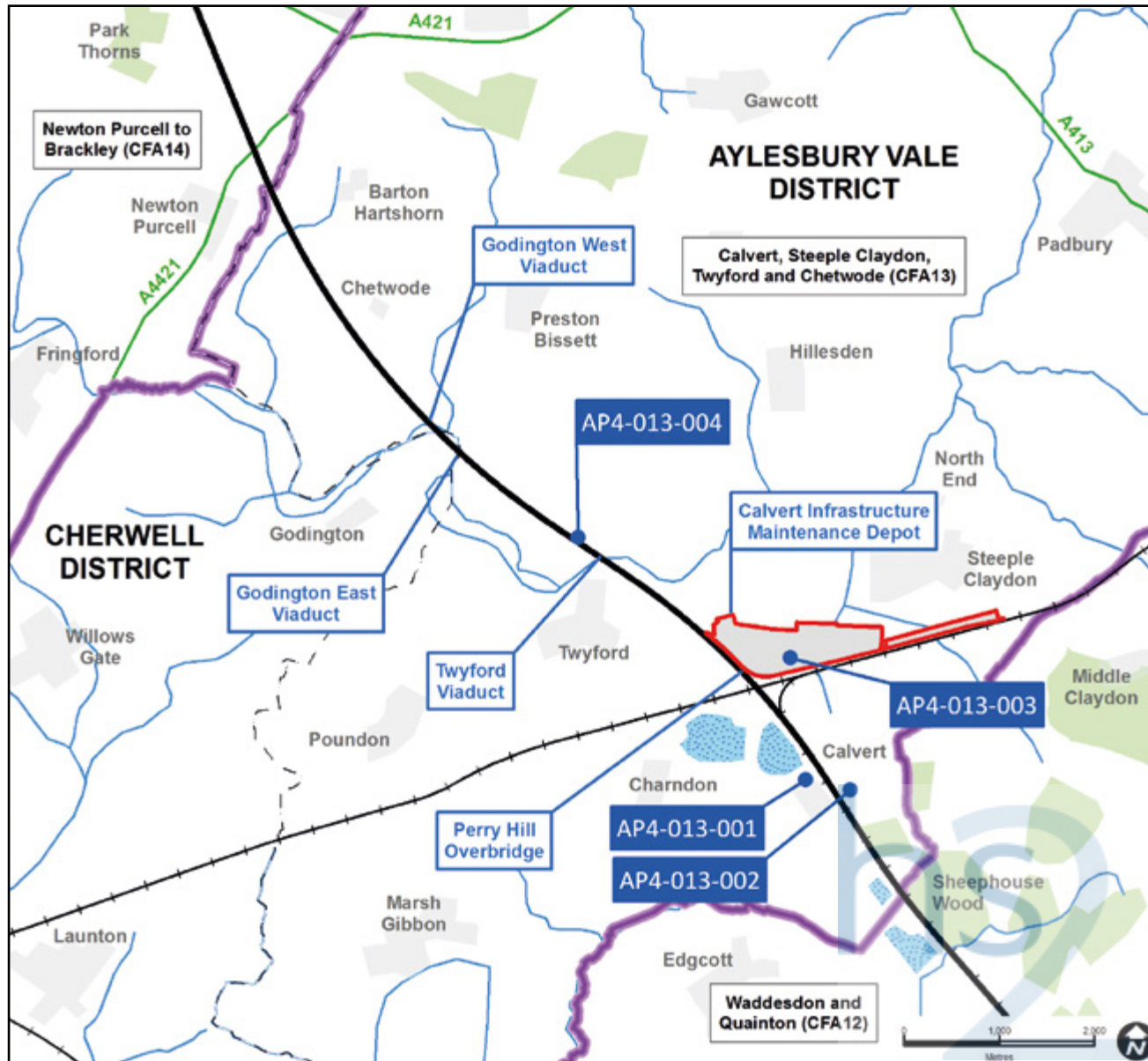


Table 30: Summary of amendments within CFA13 – Calvert, Steeple Claydon, Twyford and Chetwode

Amendment	Description of the original scheme	Description of the AP4 revised scheme
<p>Permanent provision of access to pumping station at Calvert (AP4-013-001)</p>	<p>The Bill provides for an access track from Brackley Lane to a pumping station at Calvert.</p>	<p>A label has been added to a Bill Plan, because the access track was omitted from map CT-06-055 in the main ES. This will ensure powers are obtained to construct and use the access track.</p>
<p>Additional land required for an overbridge and reconfiguration works at Calvert Landfill waste transfer sidings (AP4-013-002)</p>	<p>The Bill provides for the relocation of two existing Calvert Landfill waste transfer sidings and gantries to the east of the realigned Aylesbury Link railway line. The track layout comprised two 440m sidings and an additional 70m at each end of the sidings for shunting. The sidings would provide train stabling and waste offloading facilities for the Calvert Landfill site. Bridleway SCL/18/1, which runs approximately parallel to the HS2 route, would be temporarily diverted during construction. A section of the bridleway would be stopped up and permanently diverted.</p> <p>The AP2 scheme would provide a permanent diversion of Bridleway SCL/18 in the vicinity of the existing waste offloading facility.</p>	<p>The length of the sidings will be extended approximately 1km north to improve their operation and capacity.</p> <p>A new overbridge will be constructed approximately 150m north of Calvert green overbridge to serve landfill traffic. Access roads will be constructed on either side of the bridge. The amendment will result in the loss of approximately 300m² of ancient woodland.</p> <p>Calvert green overbridge will be retained, but will be moved approximately 30m further south and reduced to 30m in width. It will not be used by vehicle traffic, avoiding potential wildlife disturbance.</p> <p>Noise fence barriers will be constructed along the western side of the HS2 route, the western side of the sidings, along sections of the access road and on the northern side of Calvert sidings overbridge. A barrier similar in height to the noise fence barrier will be constructed on the southern side of the Calvert sidings overbridge to prevent light spillage affecting the green overbridge. This barrier will extend along the access road providing light screening for wildlife habitats east and west of the HS2 route.</p> <p>A section of Bridleway SCL/18 route, west of the proposed overbridges and adjacent to Brackley Lane and Calvert Sports Ground will be removed. The proposed AP4 diversion will run along Brackley Lane. For pedestrians, the realignment of SCL/18 will add 30m to its length, but will be 90m shorted than the AP2 revised scheme (AP2-013-001). The permanent realignment will be shorter than the original scheme and the AP3 revised scheme for horse riders.</p> <p>An additional balancing pond will be constructed north of Calvert sidings overbridge.</p> <p>Approximately 2.5ha of additional land is required permanently for the works, which is outside the limits of the Bill. Due to scheme revisions, 0.7ha of land is no longer required, resulting in a net requirement of 1.8ha in comparison to the original scheme.</p>

Amendment	Description of the original scheme	Description of the AP4 revised scheme
<p>Additional land required for two new balancing ponds at Calvert infrastructure maintenance depot (AP4-013-003)</p>	<p>The Bill provides for drainage of Calvert infrastructure maintenance depot as a single area with one culvert that will discharge to a proposed balancing pond west of the depot.</p> <p>The SES revised scheme added two new balancing ponds, both east of Addison Road, which are unaffected by this amendment.</p>	<p>It had been identified that there may be insufficient distance between the infrastructure maintenance depot sidings and the proposed balancing pond to its west. Two additional balancing ponds will be constructed west of Addison Road and north of the Calvert infrastructure maintenance depot. A maintenance access track will be constructed from Perry Hill along the northern edge of the bund to access both balancing ponds. A temporary drainage ditch proposed in the original scheme will become permanent and the western pond will drain into it. The eastern pond will discharge into existing drainage.</p> <p>Approximately 1m² of additional land is required permanently for the works, which is outside the existing limits of the Bill. The original scheme required approximately 1.1ha of land temporarily; this will now be required permanently.</p>
<p>Additional land required for the relocation of a balancing pond at Twyford viaduct (AP4-013-004)</p>	<p>The Bill provides for a balancing pond north of Twyford viaduct and east of the HS2 route.</p>	<p>The pond will be relocated approximately 150m northwards due to results of further surface water flood risk assessments adjacent to Padbury Brook. An access track and turning head (turning area) will be constructed south of the relocated pond. The access track and turning head proposed in the original scheme will not be constructed.</p> <p>Approximately 0.4ha of additional land will be required permanently for the works, which is outside the limits of the Bill.</p>

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Figure 31: Approximate location of AP4 amendments for Community Forum Area 15 – Greatworth to Lower Boddington

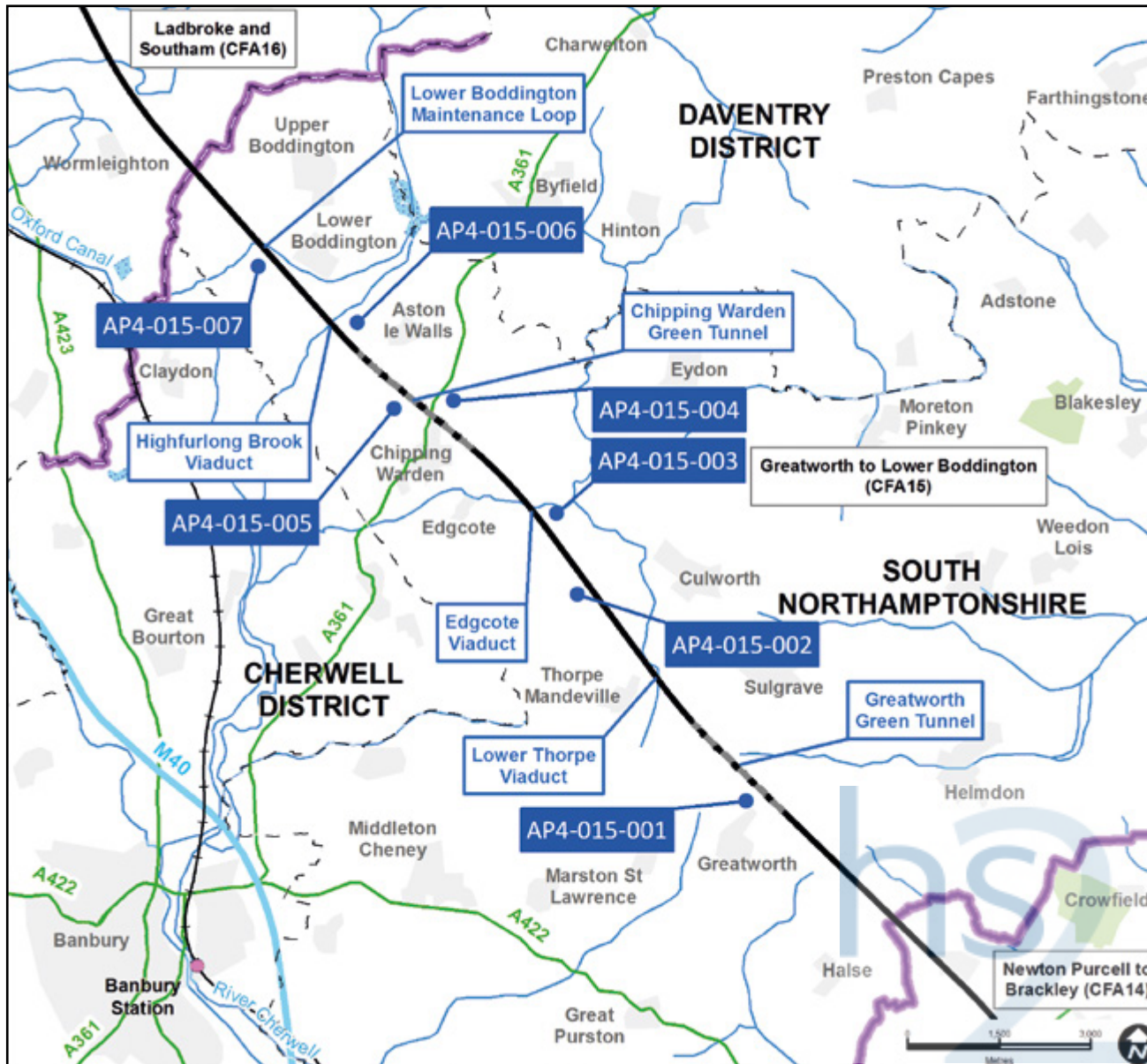


Table 31: Summary of amendments within CFA15 – Greatworth to Lower Boddington

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
Additional land required for junction improvements at the B4525 and Sulgrave Road (AP4-015-001)	The Bill does not provide for highway improvements at the junction of the B4525 and Sulgrave Road (also known locally as Dump Road), north-west of Greatworth. The Bill provides for the temporary realignment of the B4525 over the Greatworth tunnel for a period of approximately two and a half years, then permanent reinstatement along its existing alignment.	Improvements will be made at the junction of the B4525 and Sulgrave Road. These improvements will include widening the approaches to the junction, and provision of road markings, a safe turning area and lighting. These junction improvements will tie in with the temporary realignment of B4525 east of the junction. A balancing pond approximately 550m2 in size will be provided adjacent to and west of the upgraded Sulgrave Road. Hedgerow will be planted along the upgraded sections. Approximately 3.3ha of additional land will be required permanently which is outside the limits of the Bill.
Additional land required for the reconfiguration of a balancing pond at West Mill Farm (AP4-015-002)	The Bill provides for a permanent balancing pond for railway drainage at West Mill Farm adjacent to, and west of, the HS2 route and east of Bridleway AG10, west of Culworth. The balancing pond would be located north of the proposed Bridleway AG9 overbridge and south of the proposed Bridleway AG10 overbridge. An access track will be provided to the balancing pond from Welsh Road. The AP1 revised scheme (AP1-015-024) provides for the improvement and widening of a shared access with West Mill Farm for access to the balancing pond from Welsh Road.	Further flood risk assessments have identified the need for the balancing pond to be repositioned to sit along the western boundary of the HS2 route, partially over the same footprint of the pond proposed in the original scheme. The balancing pond will be reshaped to be wider at its southern edge and narrower at the northern extent. The access track will be extended by approximately 20m southwards with a turning head (turning point) provided adjacent to the balancing pond. Additional landscape planting will be carried out to the north of the balancing pond. Approximately 0.5ha of additional land will be required permanently which is outside the limits of the Bill.
Additional land required for the relocation of ecological mitigation near Trafford Bridge (AP4-015-003)	The Bill provides for areas of ecological compensation for the loss of lowland fen, swamp and semi-improved grassland from Trafford Bridge Marsh Local Wildlife Site (LWS). Ecological compensation areas next to the LWS will mitigate habitat losses from the LWS during construction and provide habitat connectivity. This will include wetland habitat creation and landscape mitigation planting on the Culworth Mill landholding, east of the HS2 route near Edgcote. In addition areas of wetland habitat creation, semi-improved grassland habitat creation and landscape mitigation planting were to be provided within and adjacent to the LWS to the east and west of the HS2 route. This includes habitat creation on the southern and northern edges of the River Cherwell to provide visual screening to Culworth Mill from the Edgcote viaduct.	The need to relocate the ecological mitigation area at Culworth Mill to minimise adverse impacts on the operation of the landholding has been identified. The proposed area of ecological mitigation will be relocated from Culworth Mill to adjacent to the Trafford Bridge LWS, west of the HS2 route. The new wetland habitat area will comprise an area of approximately 1.2ha on the southern bank of the River Cherwell and approximately 0.4ha at the north-western extent of the mitigation planting in this location. The grassland habitat will be extended by approximately 0.5ha in size, adjacent to and south of the new wetland habitat creation area south of the River Cherwell. There will be an overall reduction of 1.4ha of land required in comparison to the original scheme. Approximately 0.6ha of additional land will be required permanently which is outside the original limits of the Bill.

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for junction improvements at the A361 and Welsh Road (AP4-015-004)</p>	<p>The Bill does not provide for highway improvements at the junction of the A361 and Welsh Road, located approximately 1.3km north-east of the edge of Chipping Warden.</p>	<p>To improve road safety a permanent staggered T-junction will be provided at the junction of the A361 and Welsh Road.</p> <p>Landscape mitigation planting will be provided along the approaches to the upgraded junction, and a drainage area will be situated on the southern side of the A361, east of Welsh Road.</p> <p>Approximately 5ha of additional land will be required permanently, which is outside the limits of the Bill.</p>
<p>Additional land required for temporary stockpiling at Chipping Warden (disused) Airfield (AP4-015-005)</p>	<p>The Bill provides for land on the Chipping Warden (disused) Airfield to be utilised during construction at the Chipping Warden tunnel north portal satellite construction compound. This includes the temporary stockpiling of excavated material generated during the construction of the green tunnel.</p>	<p>To avoid disruption to the business which currently uses the areas proposed for stockpiling as a vehicle car parking, an alternative area of land will be required for the temporary stockpiling. The alternative area of land is located adjacent to and north of the buildings on the Appletree Industrial Estate.</p> <p>An additional strip of land will be required to form an access track between the stockpiling area within the main construction compound and the new stockpiling area.</p> <p>Approximately 6.1ha of additional land will be required temporarily, which is outside the limits of the Bill. Approximately 5.9ha of land identified in the original scheme for stockpiling will no longer be required.</p>
<p>Additional land required for land drainage, balancing pond changes and improved access at Old House Farm (AP4-015-006)</p>	<p>The Bill provides for permanent landscape earthworks to the east and west of the HS2 route from Highfurlong Brook to the sewage works on Banbury Road to integrate the cutting/embankment into the landscape, and to provide noise mitigation for properties to the east and visual screening to the west. A land drainage area will be provided north of Highfurlong Brook to the east of the HS2 route and a balancing pond will be provided north of Highfurlong Brook to the west of the HS2 route. A new HS2 access road would be provided off Claydon Road (Hill Road) on the western side of the HS2 route extending to the southern side of the balancing pond.</p> <p>As part of design change SES-015-001 reported in the SES ES, the earthworks between Highfurlong Brook and Cedars Farm will have a more gentle slope, but will be carried out on the same footprint of as the original scheme.</p>	<p>To reduce the land affected by construction and reduce the impact on agricultural operations, it has been decided to permanently reposition the railway drainage area, the balancing pond and associated access track. Both the land drainage area and the balancing pond will be repositioned to sit within the far edge of the landscape earthworks, wrapping around the respective south-eastern and south-western extents, on either side of the HS2 route. The location of the outfalls from the drainage structures into Highfurlong Brook will also be repositioned.</p> <p>The access track will be repositioned to provide access to the eastern side of the repositioned balancing pond, and will be approximately 100m longer than proposed in the main ES. A track which forms a junction with this road will be extended by approximately 370m to provide a new access for the landowner across the HS2 route beneath the viaduct.</p> <p>Approximately 0.4ha of additional land will be required permanently which is outside the limits of the Bill. Approximately 4.1ha of land identified in the original scheme for the land drainage area and balancing pond will no longer be required.</p>

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for the provision of an accommodation overbridge at Cedars Farm (AP4-015-007)</p>	<p>The Bill provides for a permanent new private access track to Cedars Farm from Claydon Road (also known as Boddington Road) on the western side of the HS2 route, north-west of Lower Boddington. The HS2 route would sever the landholding and access would be maintained between the two land parcels via the public highway network. This diversion would be approximately 3km in length along the realigned Claydon Road (also known as Boddington Road) and Banbury Road.</p>	<p>A new private permanent accommodation overbridge will be provided across the HS2 route to maintain direct connectivity between the two land parcels within Cedars Farm holding. The accommodation overbridge will be located in the same position as the existing farm access track from Banbury Road and will allow for farming operations to be maintained with less disruption to farming operations.</p> <p>The access track as proposed in the original scheme would no longer be provided under the AP4 revised scheme.</p> <p>The overbridge carriageway will be approximately 3.5m wide. The approaches to the overbridge will be planted to integrate the structure into the landscape. Approximately 0.1ha of additional land will be required temporarily which is outside the limits of the Bill.</p>

Figure 32: Approximate location of AP4 amendments for Community Forum Area 16 – Ladbroke and Southam

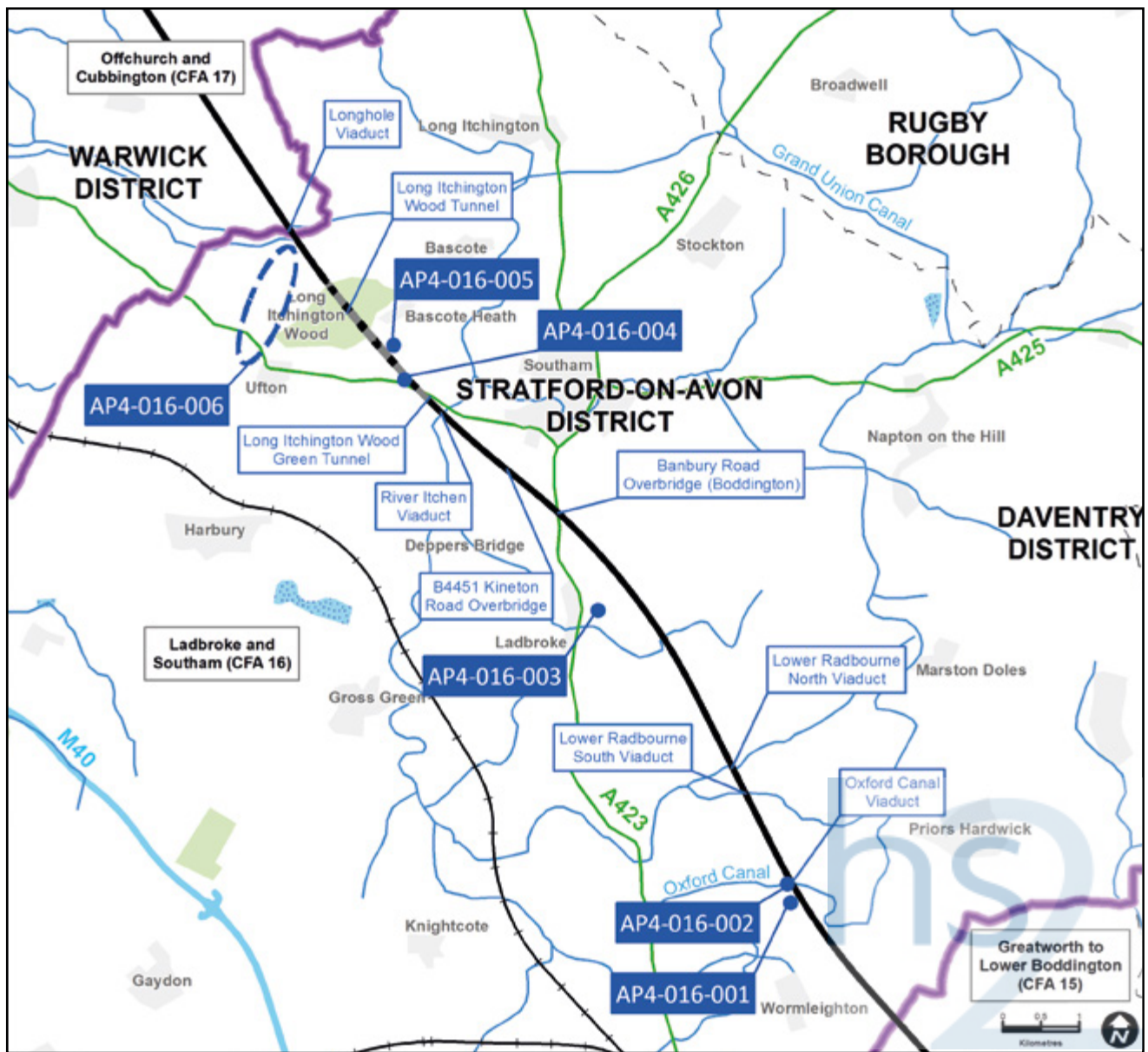


Table 32: Summary of amendments within CFA16 – Ladbroke and Southam

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Relocation of the Oxford Canal balancing pond to the east of the HS2 access (AP4-016-001)</p>	<p>The Bill provides for a balancing pond adjacent to the Oxford Canal on the west side of the HS2 route.</p> <p>As part of the SES scheme, the balancing pond will be relocated to the west of Bridleway SM116 and the HS2 maintenance access track. Mitigation earthworks would be lengthened to meet Bridleway SM116 and steepening of the earthworks would no longer be required. The AP2 revised scheme also reconfigures the balancing pond and a turning head (i.e. turning point) access.</p>	<p>To reduce the loss of agricultural land, the balancing pond will be relocated from the west of Bridleway SM116 proposed in the SES scheme, to the east of it. To achieve this, two balancing ponds will be constructed. The most northerly balancing pond will be immediately east of Bridleway SM116 and will be approximately 0.1ha in size. The second most southerly balancing pond located adjacent to Footpath SM116a will be approximately 0.8ha in size.</p> <p>Maintenance access, a turning head and parking will be provided along the alignment of Bridleway SM116. The parking area will also serve the maintenance access point near the proposed Oxford Canal viaduct.</p> <p>The outfall for the most northerly balancing pond will be to the east of Bridleway SM116 and towards the Oxford Canal to the north. The most southerly balancing ponds outfall will be to the Oxford Canal to the east.</p> <p>Mitigation planting will be provided to screen the balancing ponds. The landscape mitigation earthworks will be reshaped to accommodate these changes.</p> <p>No additional land is required outside the limits of the Bill.</p>
<p>Relocation of the Oxford Canal viaduct to the north (AP4-016-002)</p>	<p>The Bill provides for construction of a viaduct over the Oxford Canal, with embankments. The canal and towpath will be maintained during construction and will not be permanently realigned.</p> <p>The SES scheme would increase the height of bunds around the proposed Oxford Canal viaduct to help screen views. The layout of balancing ponds, access tracks and PRoW would be adjusted in four areas that are within the limits of the Bill.</p>	<p>The viaduct will be located approximately 20m further north than proposed in the original scheme to enable the Oxford Canal to pass through the southernmost span of the viaduct. This will allow increased views of the landscape and align the viaduct piers so they are parallel to the canal.</p> <p>The Oxford Canal will be narrowed temporarily during construction, however, the canal and towpath will remain open for users. No additional land is required.</p>
<p>Provision of temporary passing places along Windmill Lane (also known as Ladbroke Hill Lane) near Ladbroke for construction access (AP4-016-003)</p>	<p>The Bill provides for Windmill Lane (also known as Ladbroke Hill Lane) to be used as a construction traffic route from the A423 to the Windmill Lane green overbridge satellite construction compound.</p> <p>The Bill also provides for a section of Windmill Lane by the overbridge to be realigned and the redundant section to be grassed over.</p>	<p>Four temporary passing places will be provided along Windmill Lane. These passing places will facilitate safer shared use of the road by construction and other traffic. The passing places will be built within the existing road verge with no loss of agricultural land.</p> <p>Approximately 100m of hedgerow will need to be removed and will be replanted once construction works are complete.</p> <p>Approximately 0.6ha of additional land within the highway boundary is required temporarily.</p>

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Revision of the temporary A425 Leamington Road diversion at the Dallas Burston Polo Club (AP4-016-004)</p>	<p>The Bill provides for the route to pass in tunnel beneath the Dallas Burston Polo Club, with the tunnel entrance south of the A425 Leamington Road. During construction of the tunnel the A425 would be temporarily diverted to the north of its current alignment onto land used by the Dallas Burston Polo Club. The land that would be affected includes the club's main entrance, an area used for training purposes and approximately one quarter of an international grade polo pitch and the corner of a second pitch.</p>	<p>The alignment of the A425 temporary diversion will be changed from that proposed within the original scheme. This will reduce the amount of land required at the Dallas Burston Polo Club by approximately 1.4ha.</p> <p>Approximately 0.7ha of additional land associated with the polo club is required temporarily for the revised diversion.</p> <p>Temporary accommodation access to the diverted A425 Leamington Road is included for the Codemasters site; this was not included in the original Bill scheme. This will be south of the additional land and adjacent to the existing alignment of the A425 Leamington Road. Temporary accommodation access will also be provided connecting the polo club to the temporary A425 Leamington Road diversion.</p> <p>The temporary road realignment will cross an important hedgerow which will be replanted once the temporary works are complete.</p>
<p>Revision of grassland habitat creation area adjacent to Dallas Burston Polo Club (AP4-016-005)</p>	<p>The Bill provides for approximately 6.2ha of land for an area of grassland habitat creation (ecological compensation area) between the Dallas Burston Polo Club and the Bascote Road. This is primarily to provide improved habitat for bats.</p>	<p>The ecological compensation area proposed as part of the original scheme will be reduced by approximately 3ha to accommodate a proposed camp site development by the Dallas Burston Polo Club. A 30m wide strip along the northern edge of the field will be retained for ecological connectivity. The remainder of the field will not be used allowing for the potential development of the campsite.</p> <p>Approximately 1.5ha of land will be permanently required immediately to the north of the retained strip. This will partially replace the compensation area proposed in the original scheme that will not be used. Overall there will be 1.5ha reduction in the total area of land required for the ecological compensation area.</p>

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Relocation of the secondary construction access route to follow Ridgeway Lane near Ufton (AP4-016-006)</p>	<p>The Bill provides for a secondary construction access route to the north portal area of Long Itchington Wood tunnel. The secondary construction access route would be used occasionally for exceptional loads such as the movement of the tunnel boring machine, with pedestrians and vehicle traffic managed during its use. The access track would only be used by HS2 during construction. The section of track across the fields would be removed after construction. This route would use Ridgeway Lane and then follow the existing access track to Wood Farm and Cottage, crossing fields to the north portal area of Long Itchington Wood tunnel.</p>	<p>A revised route for the secondary construction access has been identified that reduces the impacts on agricultural operations of the affected landholding. The secondary construction access will follow more of Ridgeway Lane before crossing a field closer to the north portal. This route is approximately 200m longer than the Bill scheme.</p> <p>Approximately 2.6ha of additional land is required which is outside the existing limits of the Bill.</p> <p>Ridgeway Lane will require widening and resurfacing so it is suitable for construction traffic. Following construction of the scheme, the width will be reduced and the surfacing removed to the extent agreed with the highway authority.</p> <p>Three locations will be replanted following the removal of the temporary widening of the road works. The junction of Ufton Hill and Ridgeway Lane, the second area is to the north of the junction with Ridgway Lane and the access track to Wood Farm, and the third area is near Ridgeway Lane where the secondary construction access passes along the field boundaries.</p> <p>Approximately 2.7ha of land identified in the Bill is no longer required along the access track to Wood Farm and Cottage.</p>

Figure 33: Approximate location of AP4 amendments for Community Forum Area 17 – Offchurch and Cubbington

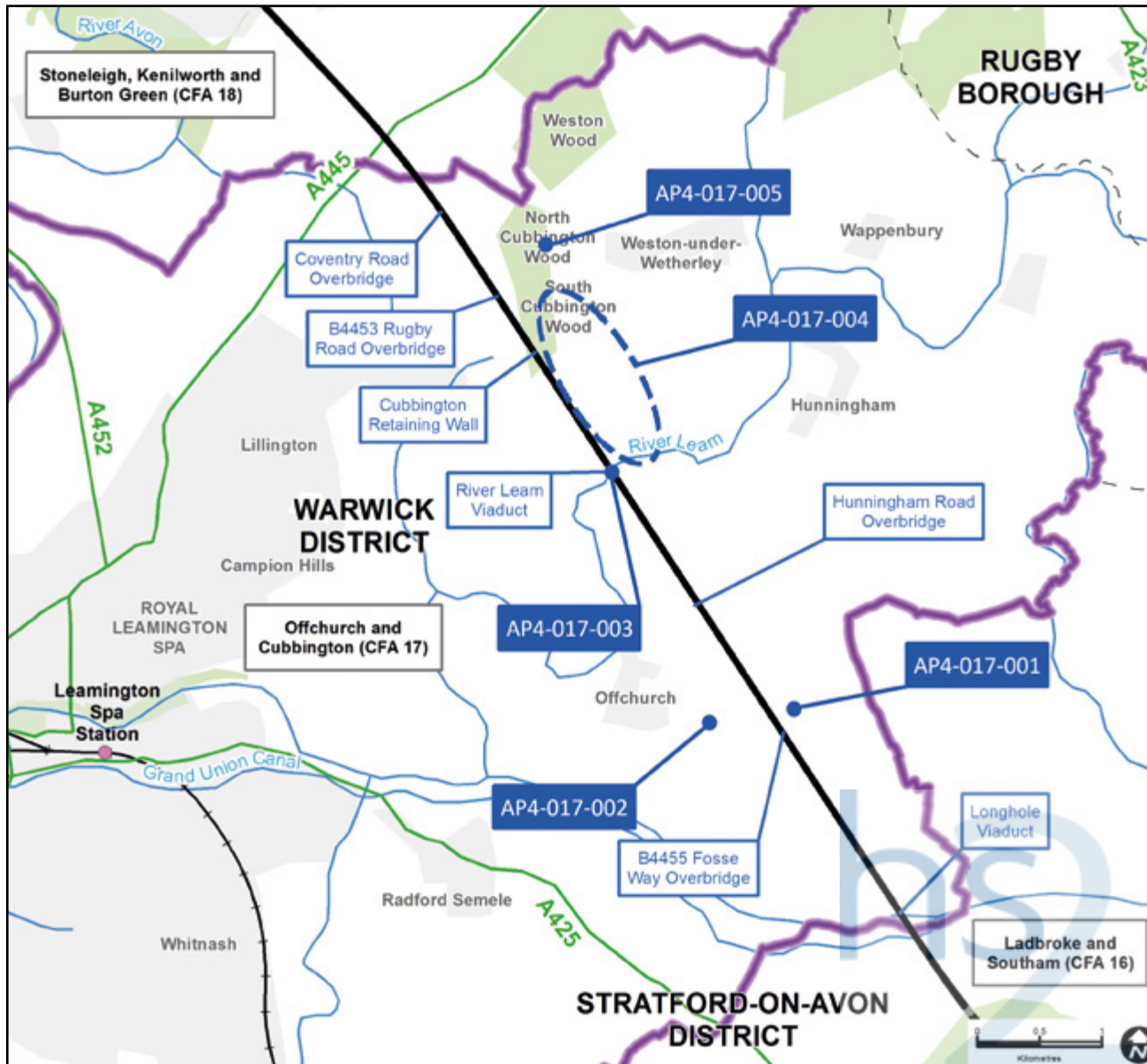


Table 33: Summary of amendments within CFA17 – Offchurch and Cubbington

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
Provision of a temporary roundabout at the junction of Fosse Way and Long Itchington Road (AP4-017-001)	The Bill provides for the B4455 Fosse Way main construction compound to be accessed directly off the B4455 Fosse Way via a T-junction during construction of the scheme.	To alleviate traffic issues during the construction period, the T-junction will be temporarily replaced with a five 'arm' roundabout including lighting. Following construction the junction will be replaced with a T-junction, without lighting, with a ghost island (turning lane) provided for right hand turns into Long Itchington Road to the east. The additional land required for the roundabout is within the limits of the Bill.
Revision of junction between Long Itchington Road and Welsh Road, Offchurch (AP4-017-002)	The Bill provides for the realignment of Welsh Road for approximately 850m to the south of its junction with Long Itchington Road, to provide a suitable through route for traffic diverted to the roundabout. Long Itchington Road would be closed north-east of the existing junction with Welsh Road, where it would cross the HS2 route, creating a cul-de-sac to retain access to existing properties adjacent to the Offchurch Greenway. Mature trees to the north-east of the existing junction would be removed by the realignment of Welsh Road. The existing residential access road to the Lowfield, Field View and Cedar Colt properties would be realigned through a garden in Lowfield to a safer configuration connecting to Long Itchington Road.	The proposed change to the highway arrangement will give priority to through movements along Welsh Road. The south-west open section and the redundant north-east section of Long Itchington Road will meet the realigned Welsh Road with a T-junction. The existing residential access road will be maintained and local works may be required at its junction with Long Itchington Road, avoiding the mature trees. This amendment will result in a reduction in land required east of Welsh Road; however it will require additional agricultural land to reprovide the access track and car park for Offchurch Greenway users to the west of Welsh Road. Overall 1.7ha less land will be required.
Provision of a temporary bridge over the River Leam for construction (AP4-017-003)	The Bill provides for one material transfer stockpile area in Offchurch and Cubbington, adjacent to the main construction compound at the B4455 Fosse Way. This stockpile area would also be a roadhead for import and export of excavated material.	There has been an increase in the volume of excavated material that needs to be transported (SES3-017-001). It is necessary to provide a temporary crossing of the River Leam to allow the movement of construction material along haul routes rather than the public highway. The temporary bridge will be located to the north of the proposed permanent rail viaduct over the River Leam so that the movement of excavated material along the haul route within the land required for construction can continue in parallel with the installation of track work.
Revision of woodland habitat creation area to the east of South Cubbington Wood (AP4-017-004)	The Bill provides for planting areas and associated earthworks to the east of Cubbington on the east and west sides of the HS2 route. This is to mitigate the loss of ancient woodland and associated habitats, and to provide visual screening, landscape integration and habitat connectivity. This mitigation includes a large area of woodland planting immediately to the east of South Cubbington Wood.	A requirement has been identified to reconfigure a large block of woodland planting to reduce the impact on the agricultural land at Weston Hall Farm (CFA17/7). The majority of the field identified for woodland habitat creation is no longer required. Additional planting has been added along the eastern edge of South Cubbington Wood and alongside the HS2 route between South Cubbington Wood and the River Leam. This reconfiguration requires an additional 5.5ha of land permanently which is outside the limits of the Bill.
Additional land required for access to woodland habitat creation area adjacent to North Cubbington Wood (AP4-017-005)	The Bill provides for access along a field boundary off the B4453 Rugby Road, for access to an area of compensatory habitat woodland which would link North Cubbington Wood and Weston Wood. This would mitigate severance and loss of ancient woodland habitat in South Cubbington Wood and provide for the translocation of ancient woodland.	The access will be widened to a total of 5m to provide the required standard of access at this location. Permanent access rights are required on land within Burnt Heath Farm.

Figure 34: Approximate location of AP4 amendments for Community Forum Area 18 – Stoneleigh, Kenilworth and Burton Green

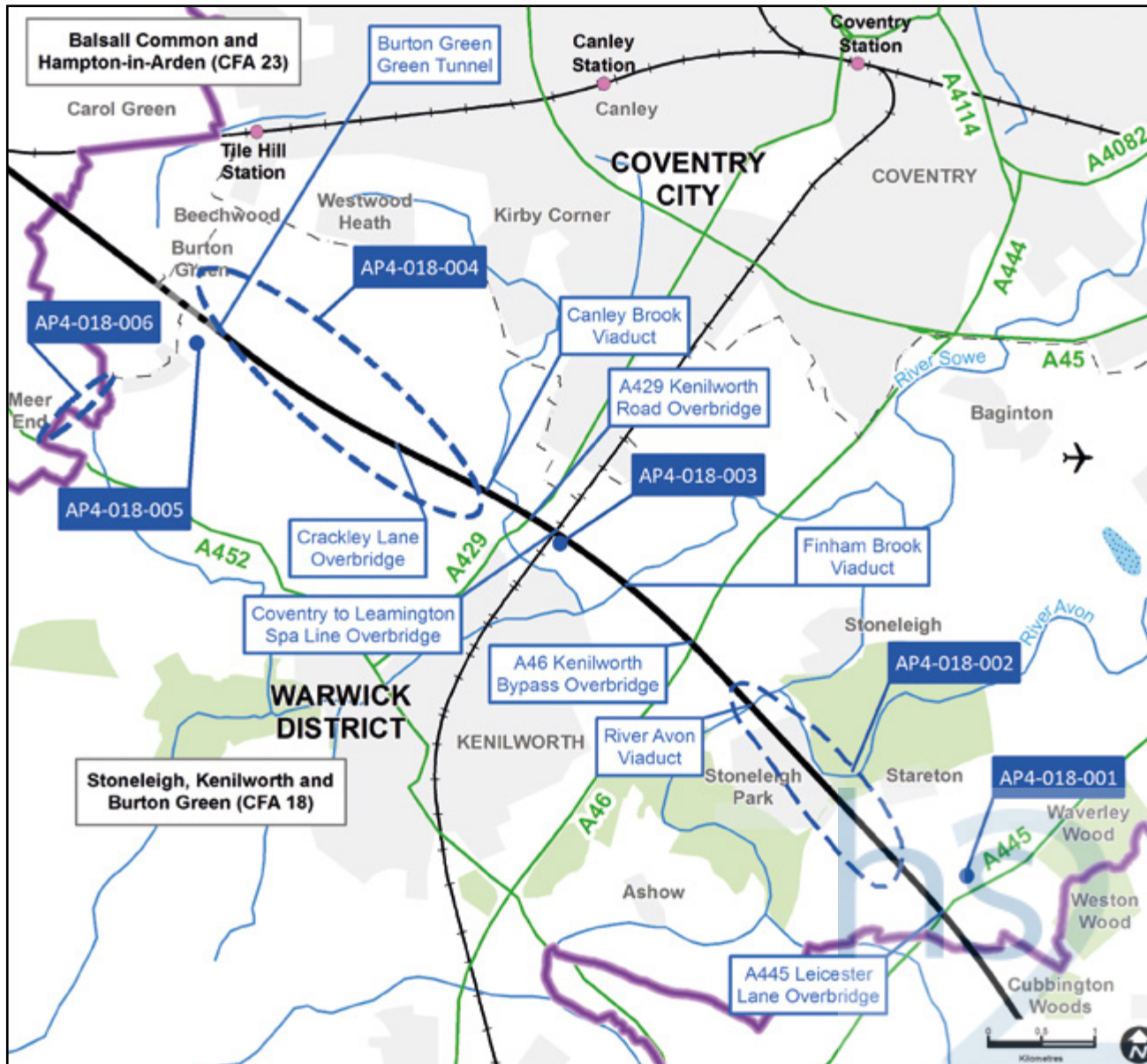


Table 34: Summary of amendments within CFA18 – Stoneleigh, Kenilworth and Burton Green

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for construction of a drainage outflow into a minor watercourse AP4-018-001</p>	<p>The Bill provides for construction of a balancing pond immediately north of the A445 Leicester Lane and Furzen Hill Cottages. An outflow would be provided from the balancing pond into the watercourse to the north. The construction requirements would include provision of an outfall pipe, headwall and localised erosion protection works.</p>	<p>There is insufficient land to construct the outflow. Approximately 200m² of additional land is required on a permanent basis to facilitate construction of the outflow into the watercourse.</p>
<p>Stoneleigh Park amendments (AP4-018-002)</p>	<p>The Bill provides for the HS2 route to pass in cutting under the realigned B4113 Stoneleigh Road and to continue through the eastern part of Stoneleigh Business Park, exiting the north-western boundary of the business park and then crossing the River Avon on a viaduct.</p> <p>The Bill provides for a 1.8km-long retaining wall running along both sides of the HS2 route, a balancing pond to the south-west of the HS2 route, and for the realignment of the B4113 Stoneleigh Road approximately 40m south-east of its current location to include a new roundabout.</p> <p>The Bill also provides for a green overbridge to carry the B4113 Stoneleigh Road, the permanently diverted Footpath W171 and Stareton Road, across the HS2 route to allow access within the business park. Planting would be undertaken on both sides of the HS2 route and the realigned roads.</p>	<p>In order to support the Warwickshire District Council masterplan, maintain connectivity within Stoneleigh Park and to reduce impacts on ancient woodland, the AP4 revised scheme includes the following design amendments:</p> <ul style="list-style-type: none"> • a second road bridge crossing over the HS2 route to provide improved connectivity across Stoneleigh business park; • provision of additional landscape mitigation to the east and west of the HS2 route adjacent to the southern approach to the River Avon viaduct; • provision of an accommodation access track adjacent to Stone House Farm; • relocation of the B4113 Stoneleigh Road roundabout to improve access to Stoneleigh Park main entrance and to the Hares Parlour field, which is used for event car parking; • an agricultural and pedestrian underpass from Stoneleigh Park Entrance Gate 3 under the B4115 Ashow Road to provide more direct access from the replacement Crewe Farm Fields car park into the business park; and • redesign of the access track to the balancing pond south of the B4115 Ashow Road to avoid an area of newly designated ancient woodland. <p>Approximately 2.7ha of additional land that is outside the limits of the Bill is required on a permanent basis.</p>
<p>Revised accommodation access for Millburn Grange Farm (AP4-018-003)</p>	<p>The Bill provides for a farm accommodation overbridge over the HS2 route to provide access to Millburn Grange Farm, located immediately to the south-east of the Coventry to Leamington Spa line.</p>	<p>The extent of the mitigation earthworks and the length of the western accommodation overbridge access track will be reduced. This is required as the design proposed as part of the original scheme would prevent HGV access to a barn at Millburn Grange Farm. The height of environmental mitigation earthworks will be maintained, and noise fence barriers readjusted, to provide an equivalent level of screening to the original scheme.</p> <p>Approximately 600m² less land will be required than proposed in the original scheme.</p>

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Revised woodland compensation proposals in the vicinity of Burton Green</p> <p>(AP4-018-004)</p>	<p>The Bill provides for woodland compensation planting within the Stoneleigh, Kenilworth and Burton Green area. Approximately 0.9ha of woodland habitat will be created to the south of Stareton Park Farm and 6ha on both sides of the HS2 route in the vicinity of Crackley Wood. There would also be woodland habitat creation between Broadwells Wood and Burton Green (13.2ha area), 2.3ha of ancient woodland soil and seed bank translocation and a small area of grassland and ponds. A secondary woodland habitat would be created south of Stareton Park Farm.</p>	<p>Since submission of the Bill, some areas of woodland affected by the proposed scheme have been identified as likely to be ancient woodland. To compensate for the losses of ancient woodland an 8.7ha area of existing woodland at Black Waste Wood will be subject to woodland management and enhancement.</p> <p>To reduce the impacts on agricultural land, the following woodland compensation areas will be amended:</p> <ul style="list-style-type: none"> • removal of approximately 0.2ha of proposed planting between the realigned Crackley Lane and Roughknowles cutting. A 20m strip of planting will be retained to maintain visual screening; and • removal of a 3.7ha area of proposed woodland habitat adjacent to the south section of Broadwells Wood. This will be replaced by 2.4ha of alternative woodland planting near South Hurst Farm.
<p>Additional land required along Red Lane for the temporary Kenilworth Greenway diversion</p> <p>(AP4-018-005)</p>	<p>The Bill provides for the temporary realignment of the Kenilworth Greenway, which runs along the route of the dismantled Kenilworth to Balsall railway line. A temporary diversion route for the greenway would be provided at Burton Green.</p> <p>This temporary realignment would serve as a diversion route for the Coventry Way and Sustrans National Cycle Route No. 523 which share the same route as the greenway through Burton Green. The temporary realignment diverged from the existing greenway alignment to the south of Cromwell Lane, running along a section of Red Lane, crossing Hob Lane and running around the edge of fields to the south-west of the HS2 route.</p>	<p>It has been identified that the existing Red Lane is not wide enough for the realignment of the greenway.</p> <p>An alternative temporary realignment of the greenway will be provided from that proposed in the original scheme which will ensure that the main access to the adjacent plant nursery is not affected during construction works. It will cross Red Lane and then pass through and continue behind the hedge running along the southern verge of Red Lane, passing back through the hedge at the Hob Lane crossing to re-join the Kenilworth Greenway temporary diversion.</p> <p>Approximately 0.1ha of additional land is required temporarily which is outside the existing limits of the Bill.</p>
<p>Alternative access for overhead power line diversion south of Moat Farm</p> <p>(AP4-018-006)</p>	<p>The Bill provides for the diversion of the Berkswell substation overhead power line in the vicinity of Burton Green. A temporary access route leading from Hob Lane at Moat Farm would be provided to the overhead power line winching site to facilitate the diversion. This would require the upgrade of two accommodation bridges.</p>	<p>An alternative temporary access to the winching site will be provided, which will avoid Moat Farm and the need for bridge upgrades. The access will be from further south via agricultural land from the A452 Kenilworth Road east of Black Hales Farm. The revised access will follow existing field boundaries, crossing one field boundary with established vegetation. The revised temporary access is partially located within CFA23 (Balsall Common and Hampton in Arden).</p> <p>Approximately 0.7ha of additional land outside of the Bill limits is required. Approximately 0.2ha of land required temporarily for the previous access will no longer be required.</p>

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Figure 35: Approximate location of AP4 amendments for Community Forum Area 19 – Coleshill Junction

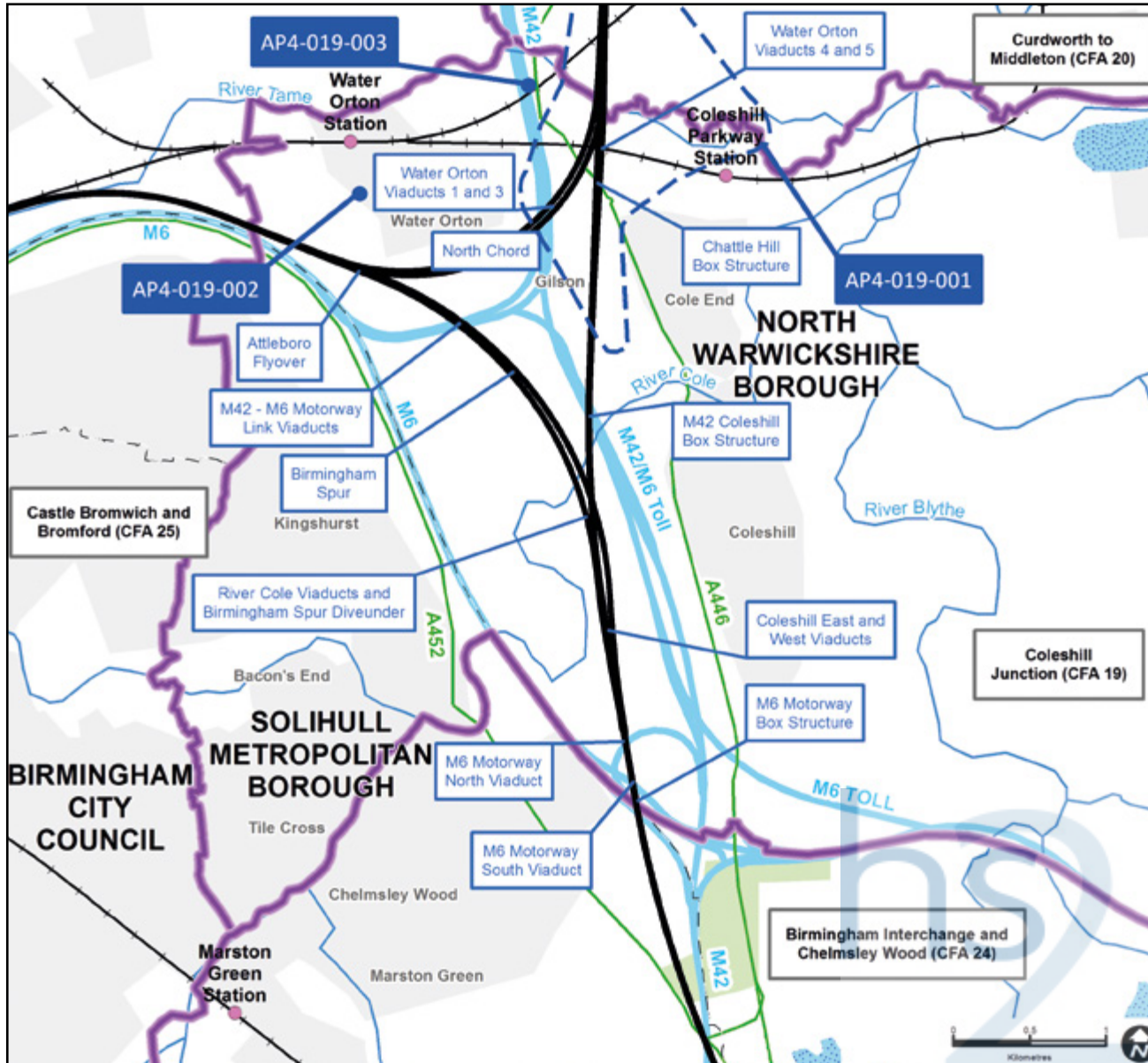


Table 35: Summary of amendments within CFA19 – Coleshill Junction

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
Chattle Hill area amendments (AP4-019-001)	The Bill provides for the Chattle Hill box structure, approximately 110m long over the A446 Lichfield Road, with a noise fence barrier on the east side. This would include a second span allowing sufficient clearance and flexibility for potential widening of the A446 Lichfield Road in the future. It would also provide for an embankment approximately 160m long and a pair of viaducts over the Birmingham to Nuneaton Line.	The box structure will be extended to avoid the need to divert a gas main. The access road and drainage pond will be relocated approximately 30m to the north, to prevent any disturbance to any potential future works to the A446 Lichfield Road.
Rail infrastructure	An embankment, approximately 250m long, increasing in height to approximately 7m, with a noise fence barrier would be constructed along the east side on the approach to the A446 Lichfield Road. The Bill also provides an access road from the A446 Lichfield Road to a drainage pond on the west side and for railway maintenance.	A pair of viaducts will be extended from the Chattle Hill box structure to create a continuous viaduct which will cross the Birmingham to Nuneaton Line. There will be additional landscape mitigation in this area beneath and around the viaducts.
Demolitions	The SES3 scheme requires the demolition of buildings listed in Table 1 of the main ES, Volume 2, CFA19 and SES3 and AP4 ES Volume 2, CFA19, Section 2.1.	The AP4 revised scheme requires the demolition of one additional building; the club house of the Old Saltleians Rugby Football Club in order to facilitate the diversion of a gas main. It will also require the demolition of additional water company assets within Coleshill Sewage Treatment Works in order to facilitate the permanent diversion of the overhead power line.
Highway realignments	The Bill provides for the Chattle Hill box structure to be constructed in two phases; the southern half would be constructed first for a temporary realignment of the A446 Lichfield Road under this completed span while the northern half is constructed. The road would then be reinstated to its existing alignment after the works.	The temporary southern road realignment will be left in place to facilitate any potential future widening of the A446 Lichfield Road.

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
Utilities	<p>The Bill provides for a number of major utility diversions:</p> <ul style="list-style-type: none"> • gas main diversion from land north of Bromwich Court, under the HS2 route and the North Chord to connect to the existing network south of the Birmingham to Nuneaton Line; • gas main diversion south-west from Bromwich Court, under the HS2 route, north-west under the North Chord and M42/M6 toll connecting to the existing network; • gas main diversion from the existing network between the HS2 route and the M42/M6 toll, south and west under the M42/M6 toll, parallel to the south of the North Chord to the gas station near Attleboro Lane; • gas main diversion from Bromwich Court, to the east of the Highway Point building, heading north-west through the Coleshill Sewage Treatment Works to connect with the existing network; and • power line diversion near M6/M42 Junction, to divert the route over the HS2 route, requiring a temporary diversion between Gilson Road and Watton Lane. 	<p>The AP4 revised scheme provides for further changes to the utility diversions:</p> <ul style="list-style-type: none"> • gas main diversion from the carpark of the Highway Point building, under the A446 Lichfield Road, under the HS2 route to connect to the existing network to the south of the Birmingham to Nuneaton Line; • gas main diversion from the western side of the A446 Lichfield Road at the foot of the Lichfield embankment, under the HS2 route and under the M42/M6 toll to connect to the existing network; • gas main diversion from the western side of the A446 Lichfield Road at the foot of the Lichfield embankment under the HS2 route to connect to the original scheme diversion to the east of the B4117 Gilson Road; • gas main diversion from west of the Bromwich Court building, under the A446 Lichfield Road, under the HS2 route and the Birmingham to Nuneaton Line to connect to the existing network to the immediate south of an existing gas pressure reducing station within CFA20; and • permanent power line diversion to the east of the HS2 route between Gilson Road and Faraday Avenue with CFA20. These works will require a temporary diversion for four months between the Birmingham and Derby Line and Faraday Avenue.
Satellite construction compounds and roadheads	<p>The Bill provides for four temporary satellite construction compounds within CFA19 and one within CFA20 for the construction of this part of the scheme.</p>	<p>The construction compound locations and durations are amended as a result of the revised utility diversion within the AP4 revised scheme:</p> <ul style="list-style-type: none"> • Water Orton viaduct 1 and 3 (south) satellite compound; • Water Orton viaduct 1 and 3 (central) satellite compound; • Chattle Hill box structure satellite compound; and • Curdworth viaduct (south) satellite compound (within CFA20).

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
Provision of additional grassland habitat creation area adjacent to the River Tame	The SES3 scheme requires the permanent loss of 5.9ha of the Coleshill Sludge Lagoons LWS.	A 1.6ha grassland habitat creation area will be created to compensate for the loss from the LWS. A 2.4ha area of the LWS will be restored to provide similar habitat to those currently present following the completion of the construction works. Access to the habitat creation area will be provided via Edison Road to the public highway for which new access rights are required.
Relocation of Water Orton Primary School (AP4-019-002)	<p>The Bill provides for construction works that require an area of playing field at Water Orton Primary School permanently, which is currently situated on Attleboro Lane, Water Orton. An area of land for replacing the playing fields would be provided adjacent to the south-east of the school grounds.</p> <p>The Bill also provides for noise fence barriers to the south of Water Orton Primary School, to reduce noise levels within the school grounds during the construction of the HS2 scheme. The proposed noise fence barriers would also provide visual screening during construction.</p>	<p>There is a preference to relocate the school rather than applying mitigation. An alternative site on Plank Lane within Water Orton village, 150m north-west of the school's current location has been identified. The mitigation detailed in the main ES will no longer be provided.</p> <p>The school will be constructed ahead of the main HS2 construction phase and will include a new school building, parking facilities, a playground, sports pitch and hard games court.</p> <p>The area of copse trees on the new school site will be retained and used by the school, except where vegetation needs to be removed to create access to the site.</p> <p>Footpath M40, which crosses the eastern part of the site, will be diverted along the eastern site boundary on a diversion of approximately 150m.</p> <p>Approximately 3.1ha of additional land is required permanently.</p>
Temporary improvements to the junction of the A446 Lichfield Road and B4118 Marsh Lane to the east of Water Orton (AP4-019-003)	The SES assessed the impact of the revised construction assumptions on construction traffic and consequential effects. Moderate adverse significant effects were identified for the A446 Lichfield Road/B4118 Marsh Lane junction to the east of Water Orton.	<p>The AP4 scheme proposes to temporarily improve the junction to reduce congestion and delays. The approach and exit to the junction of the A446 Lichfield Road will be widened to two lanes for a length of approximately 190m.</p> <p>Additional earthworks will be constructed on land west of the A446 Lichfield Road and will be planted.</p> <p>Approximately 1.1ha of additional is required permanently and 0.7ha of land is required temporarily which is outside the limits of the Bill.</p>

Figure 36: Approximate location of AP4 amendments for Community Forum Area 20 – Curdworth to Middleton

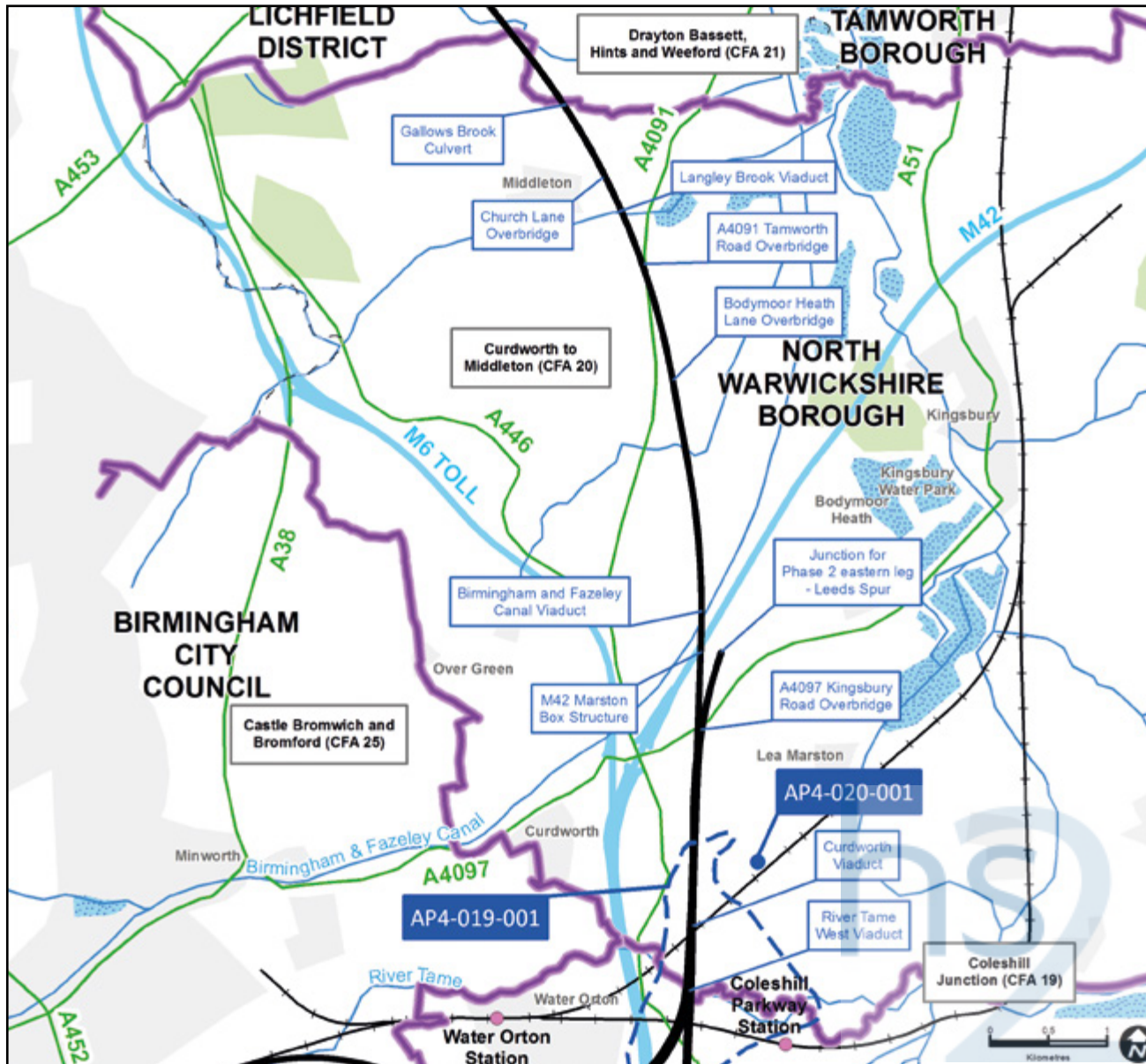


Table 36: Summary of amendments within CFA20 – Curdworth to Middleton

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional temporary land for the removal of electricity transmission line at Hams Hall (AP4-020-001)</p>	<p>The Bill provides for the formation of a cutting to accommodate the Kingsbury Road railhead reception sidings to provide access to the main construction compound. This will also provide access for the construction of a permanent pumping station and associated balancing pond and access. The earthworks from the reception siding would remain as a permanent feature.</p>	<p>An existing pylon is located within the footprint of the proposed cutting for the Kingsbury Road railhead reception sidings. The overhead power line is not currently in service and will therefore be removed. This will require the removal of the overhead power line over the Birmingham and Derby railway and the pylons on both sides of the railway. An additional 1.6ha of land will be required temporarily on both sides of the Kingsbury Road railhead reception sidings to provide access to enable the power lines to be removed.</p> <p>Temporary access rights will be required along a private road which extends north from a roundabout with Faraday Avenue and across an existing car park, which is used by Birmingham Airport, to allow access to the works.</p>
<p>Chattle Hill area amendment (AP4-019-001)</p>	<p>For information on this amendment, see AP4-019-001 in Table 35.</p>	<p>For information on this amendment, see AP4-019-001 in Table 35.</p>

Figure 37: Approximate location of AP4 amendments for Community Forum Area 22 – Whittington to Handsacre

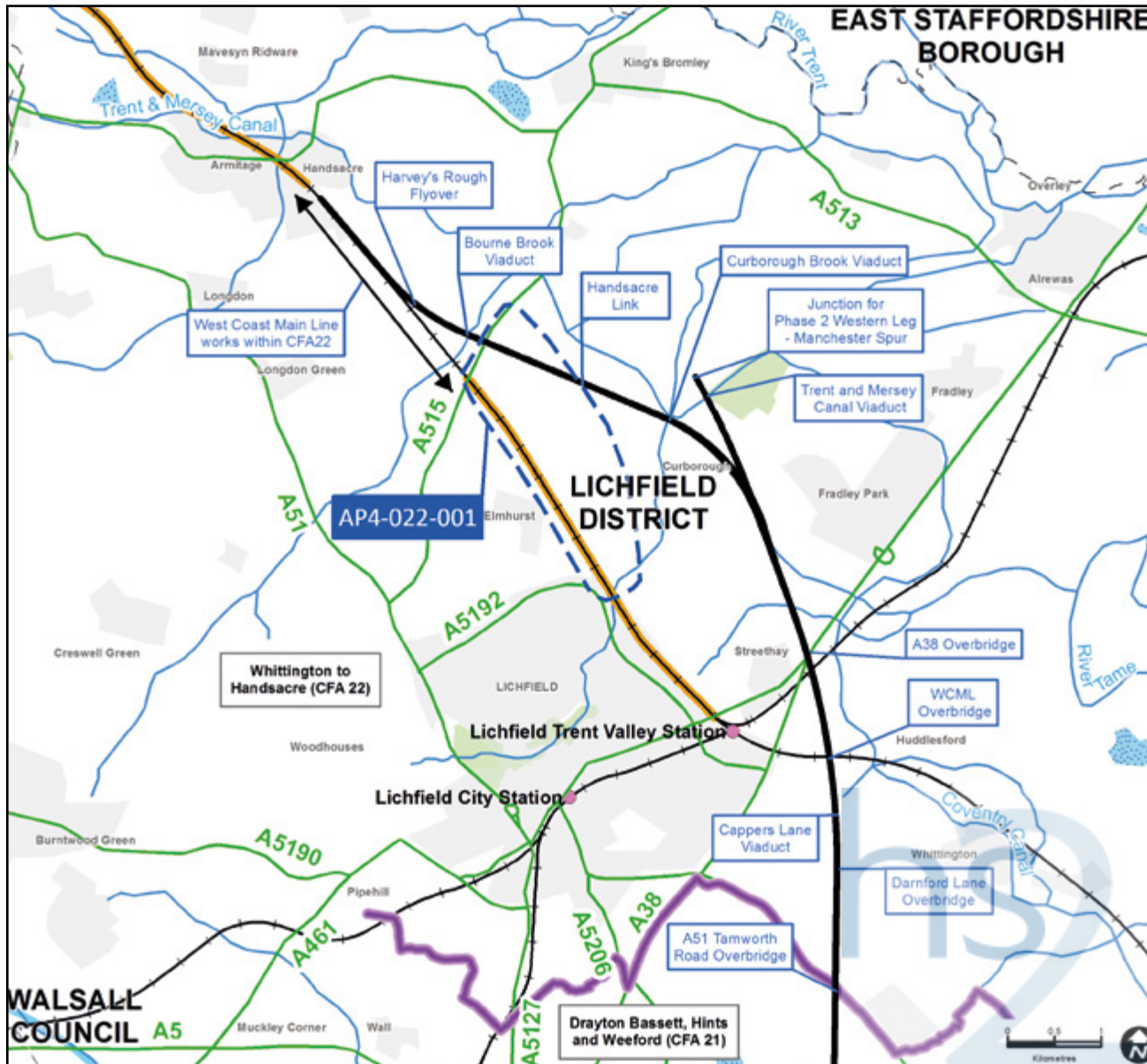


Table 37: Summary of amendments within CFA22 – Whittington to Handsacre

Name of amendment	Description of the AP2 revised scheme	Description of the AP4 revised scheme
<p>Revised diversion of an electricity transmission line north of Lichfield (AP4-022-001)</p>	<p>The AP2 scheme provides for the HS2 route to be relocated to the south of the original scheme and requires a diversion of the electricity power line in this area. This diversion would require the removal of an overhead power lines and pylons between the junction of Watery Lane and Wood End Lane, and a pylon west of the A515 Lichfield Road south of Kings Bromley Marina, with a buried diversion route along the A515 Lichfield Road and Wood End Lane to new pylons at each end.</p>	<p>Since the submission of AP2 scheme a revised diversion route has been identified.</p> <p>A buried underground diversion route will be provided from a new pylon to a route under the A515 Lichfield Road, extending south-easterly, parallel to the West Coast Main Line, until Watery Lane. At Watery Lane, the buried power line will extend in a south-easterly direction along the A5192 Eastern Avenue, where it connects into the Lichfield substation.</p> <p>The AP4 revised scheme includes temporary works within Watery Lane and A5192 Eastern Avenue associated with burying the power line. These works will require temporary single lane closure of up to 250m of Watery Lane. Additional traffic management may be required at the junction of A5192 Eastern Avenue and Watery Lane. Final access into the substation would be using the existing access routes and remain within the substation boundaries.</p> <p>The amendment is located within land identified as required for construction in the main ES. An additional 5.1ha of new land will be required temporarily and 7.2ha will be required permanently. After construction, the land will be reinstated to agricultural use with permanent access for maintenance along the length of the diversion.</p>

Figure 38: Approximate location of AP4 amendments for Community Forum Area 23 – Balsall Common and Hampton-in-Arden

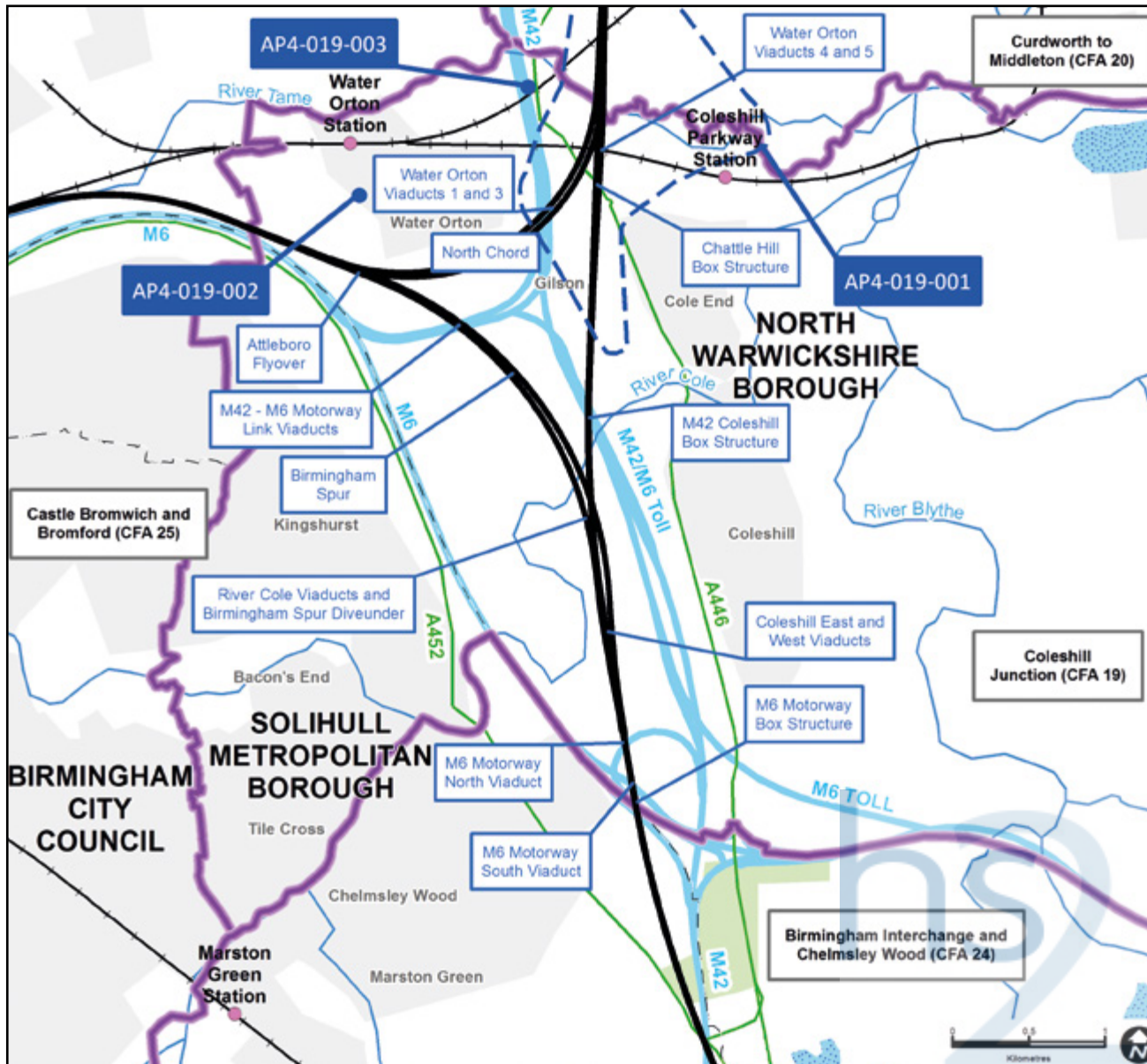


Table 38: Summary of amendments within CFA23 – Balsall Common and Hampton-in-Arden

Name of amendment	Description of the AP2 revised scheme	Description of the AP4 revised scheme
<p>Alternative access for overhead power line diversion south of Moat Farm (AP4-018-006)</p>	<p>For information on this amendment see AP4-018-005 in Table 34.</p>	<p>For information on this amendment see AP4-018-005 in Table 34.</p>
<p>Additional land required for roundabout at A452 Kenilworth Road/Marsh Lane junction. (AP4-023-001)</p>	<p>The Bill provides for the realignment of the A452 Kenilworth Road over a distance of 1.7km, approximately 100m east of the existing alignment and raised up to 13.5m above ground level. The closed up section of the A452 Kenilworth Road would be partially landscaped with part of the existing carriageway retained to provide access to a balancing pond. An existing underground power line and underground telecommunications cables would be diverted along the realigned highway and through the new road bridge.</p> <p>Areas of native broadleaved woodland, shrub and grassland planting proposed along the embankments of the diverted A452 Kenilworth Road, would provide visual screening to residential properties along Marsh Lane and users of Footpath M230A. Planting to the south of the balancing pond and west of Marsh Farm would provide visual screening to Mercote Cottages and Marsh Farm.</p> <p>The existing gap in the central reserve would be removed and an extension of Marsh Lane onto the realigned A452 Kenilworth Road provided for vehicles turning left off the northbound carriageway and left onto the northbound carriageway only.</p> <p>Bayleys Brook would be diverted through a new culvert under the A452 Kenilworth Road and the existing culvert under the stopped up section of carriageway would be removed and replaced with an open channel.</p> <p>Mercote Hall Lane (Bridleway M218) accommodation overbridge would be approximately 9m above rail level and would carry Mercote Hall Lane over the HS2 route. A floodplain replacement storage area would be provided under Marsh Farm viaduct and one balancing pond and associated access road, south of Marsh Farm viaduct provided for drainage. Planting to the south of the balancing pond and west of Marsh Farm would provide visual screening to Mercote Cottages and Marsh Farm.</p>	<p>Further consideration has been given to improving operational traffic movement along the A452 Kenilworth Road and Marsh Lane. A new roundabout will be provided at the A452 Kenilworth Road/Marsh Lane junction. Marsh Lane will be permanently extended along a new alignment to join the roundabout.</p> <p>Access onto the roundabout will also be provided enabling access to and from Mercote Hall Lane (via Mercote Hall Lane (Bridleway M218) accommodation overbridge), the flood compensation area beneath Marsh Farm viaduct, the balancing pond west of Marsh Farm and Bradnock auto-transformer station. Access to the auto-transformer station will be via the realigned access track which will be located parallel to the HS2 route. Mercote Hall Lane and its associated earthworks will be raised slightly to accommodate the new roundabout and tie into the new junction.</p> <p>New permanent road lighting and signage will be provided along the A452 Kenilworth Road from the new roundabout junction to the existing A452 Kenilworth Road/Bradnocks Marsh Lane roundabout.</p> <p>The Bayleys Brook diversion will remain on the same alignment as it passes under the A452 Kenilworth Road and Mercote Hall Lane. A new crossing will be provided under the realigned Marsh Lane and the new culvert will be approximately 25m in length. The existing culvert under the A452 Kenilworth Road will be removed and replaced with an open channel which will be reduced in length by 10m. A new culvert proposed under Mercote Hall Lane will be increased from 26m to 46m in length.</p> <p>Mitigation planting provided west of the balancing pond and east of Marsh Lane will be reduced.</p> <p>Approximately 1.1ha of additional land will be required temporarily which is outside the limits of the Bill.</p>

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for the relocation of the Island Project School (AP4-023-002)</p>	<p>The Bill provides for the HS2 route on Diddington Lane embankment before passing over Shadow Brook underbridge. The HS2 route would then leave the Balsall Common and Hampton-in-Arden area in the Diddington cutting as it enters the Birmingham Interchange and Chelmsley Wood area (CFA24).</p> <p>The Island Project School is located at Diddington Hall, approximately 350m north-east of Shadow Brook underbridge and 350m east of Diddington Lane.</p> <p>As reported in SES and AP2 ES, Diddington Lane would be realigned to the west of the HS2 route, approximately 450m east of the Island Project School.</p>	<p>An alternative location for the school has been identified in consultation with Island Project School. The school will be relocated to Jerrings Hall Farm, Solihull. The new site is located outside of the CFA23 boundary approximately 11.3km south-west of the existing school location. Internal and external alterations are required to make the site suitable for the Island Project School to operate. The farmhouse is a Grade II listed building.</p> <p>Approximately 1.6ha of additional land is required permanently which is outside the existing limits of the Bill.</p>

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Figure 39: Approximate location of AP4 amendments for Community Forum Area 24 – Birmingham Interchange and Chelmsley Wood

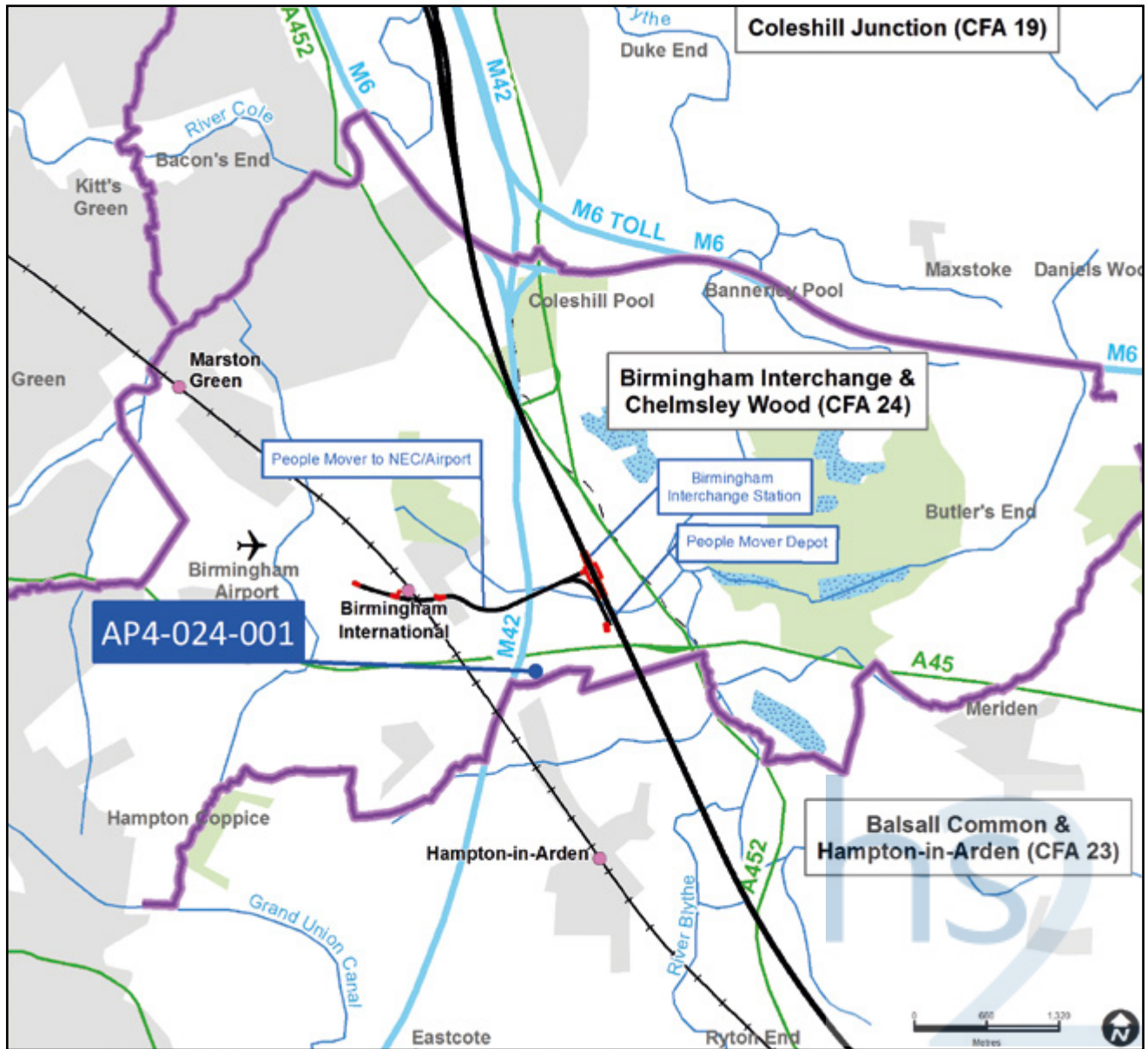


Table 39: Summary of amendments within CFA24 – Birmingham Interchange and Chelmsley Wood

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for mitigation car parking at the National Motorcycle Museum (AP4-024-001)</p>	<p>The Bill provides for the permanent acquisition of land at the National Motorcycle Museum for the widening of the A45 Coventry Road westbound roundabout entry to provide a separate left turn lane to the M42 southbound roundabout exit. These works would result in the temporary loss of 55 car parking spaces and the permanent loss of 45 car parking spaces. The existing access road to the museum would be permanently closed and a replacement provided east of the museum from the A45 westbound Service Road. Footpath M107 would be permanently realigned parallel to the replacement access. Other improvements to the road network in this area relate to the widening of some of the M42 and A45 Coventry Road on and off roundabout slip roads and the roundabout circulatory carriageway.</p> <p>As a result of improvements by Highways England, a number of improvements were introduced in the SES scheme. To maintain the required vehicle capacity at the M42 Junction 6 roundabout, the widening of the A45 Coventry Road westbound roundabout entry to provide a segregated left turn lane to the M42 southbound roundabout would be replaced by widening of the A45 Coventry Road westbound slip road roundabout entry from three lanes to four. These changes remove the permanent loss of 45 car parking spaces reported in the main ES. The temporary loss of 55 car parking spaces would remain. The existing museum access would be retained with some minor modifications, and Footpath M107 would no longer need to be realigned.</p>	<p>As a result of the amended highway works detailed in the SES and AP2 ES, further design work has established that 30 car parking spaces would be lost temporarily, a reduction from the 55 spaces reported in the main ES.</p> <p>Approximately 1.9ha of additional land, including an area of existing car parking not already included within the Bill limits is required temporarily to provide 30 replacement car parking spaces at the museum. The additional land required to provide the temporary spaces is within the ownership of the National Motorcycle Museum, and is outside the limits of the Bill.</p>

Figure 40: Approximate location of AP4 amendments for Community Forum Area 25 – Castle Bromwich and Bromford

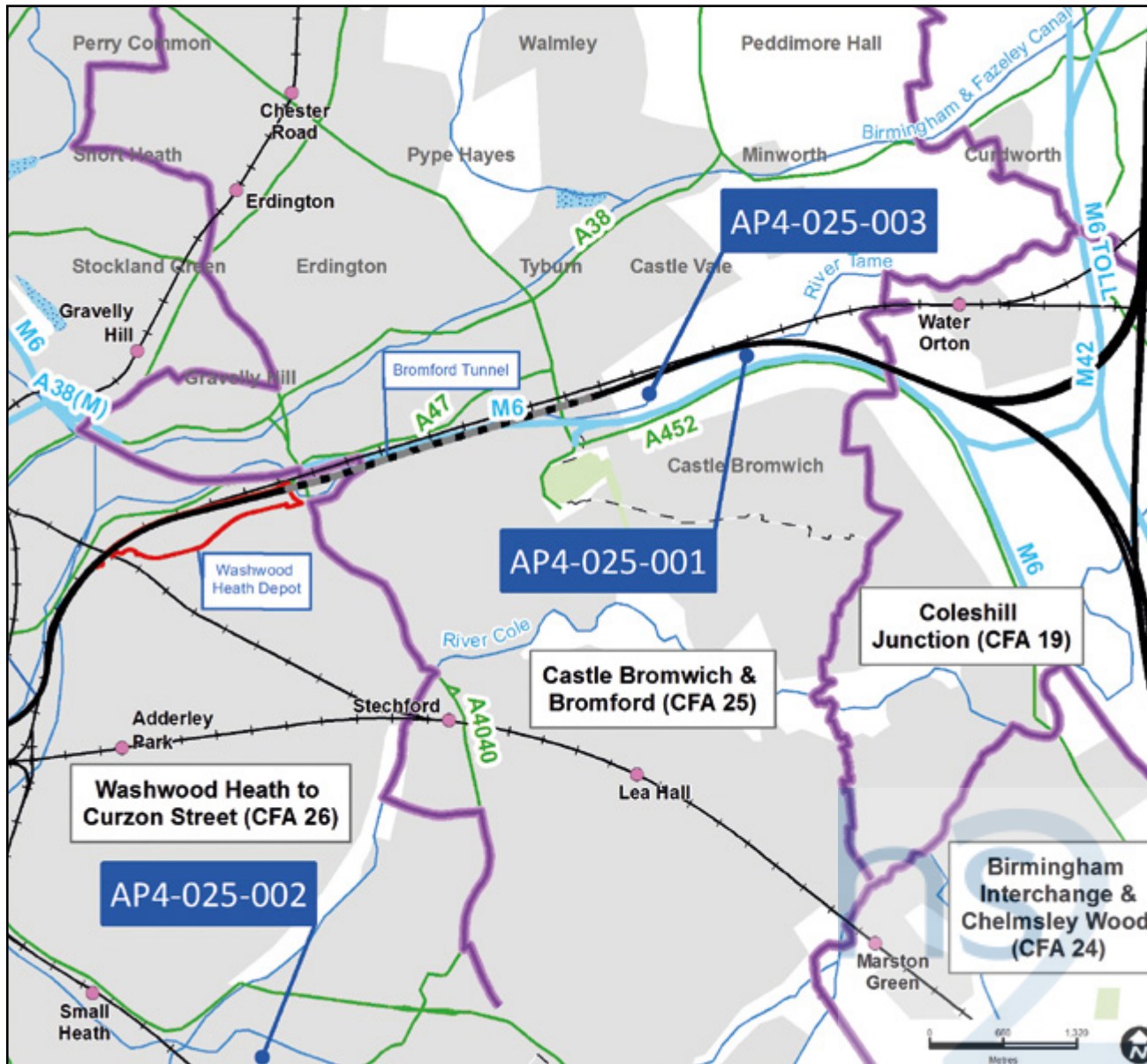


Table 40: Summary of amendments within CFA25 – Castle Bromwich and Bromford

Name of amendment	Description of the SES3 scheme	Description of the AP4 revised scheme
Provision of overhead line diversion at Park Hall Nature Reserve (AP4-025-001)	The Bill provides for the permanent diversion of the existing overhead power lines and pylons through Park Hall Nature Reserve. The area of land required for the construction of the original scheme included most of the nature reserve. This would allow flexibility for the diversion of the overhead power line which was proposed to run through Parkhill Wood and Langley Wood, in the southern section of the nature reserve.	It has been identified that Parkhill Wood and Langley Wood are likely to be added to the ancient woodland inventory as detailed in the SES. Further design development has also confirmed that the diversion route shown in the Bill was not appropriate due to the topography of the area. The overhead power line will require the replacement of two pylons with taller pylons to achieve clearance of the HS2 route. A temporary diversion will be required to allow installation of the taller pylons. The first pylon will be located approximately 100m south-east of its existing location. The second pylon will be located approximately 100m north-west of its existing position. The new permanent pylons will be constructed once the temporary diversion is complete. Both of the new pylons will be approximately 9m taller and the ground around these will be lowered to provide replacement floodplain storage. The land required is within the original limits of the Bill, but a change in Bill powers is required.
Additional land required for the relocation of a bottom ash plant to Tyseley (AP4-025-002)	The Bill provides for the construction of the HS2 route through the Castle Bromwich Business Park. These construction works would require the demolition of nine buildings within the business park, including the existing bottom ash processing plant.	Detailed assessment work will be carried out to identify a suitable site for the relocation of the existing bottom ash plant. It is proposed to include the site of the former Atlas Works, off Redfern Road, Tyseley, within the Bill as an appropriate relocation site. The site will include the main plant building, weighbridge, offices including welfare facilities and car parking. The site will require external lightening and visual screen fencing.
Reconfiguration of construction layout and provision of an access route at Castle Bromwich Business Park (AP4-025-003)	The Bill provides for the Bromford tunnel east portal (east) main construction compound which would manage most of the works in this area between the River Tame and the centre of the Castle Bromwich retained cutting. The compound would include a roadhead and would be accessed via Tameside Drive from the A452 Chester Road in the west or a temporary haul road through Park Hall Nature Reserve in the east.	The Bromford tunnel east portal (east) main construction compound will be collocated with the Castle Bromwich auto-transformer station satellite compound. The roadhead will be reduced in size and a new stockpile provided on the site of the adjacent balancing pond. This will enable the existing Tameside Drive civic amenity site to remain operational throughout and after construction.

Figure 41: Approximate location of AP4 amendments for Community Forum Area 26 – Washwood Heath to Curzon Street

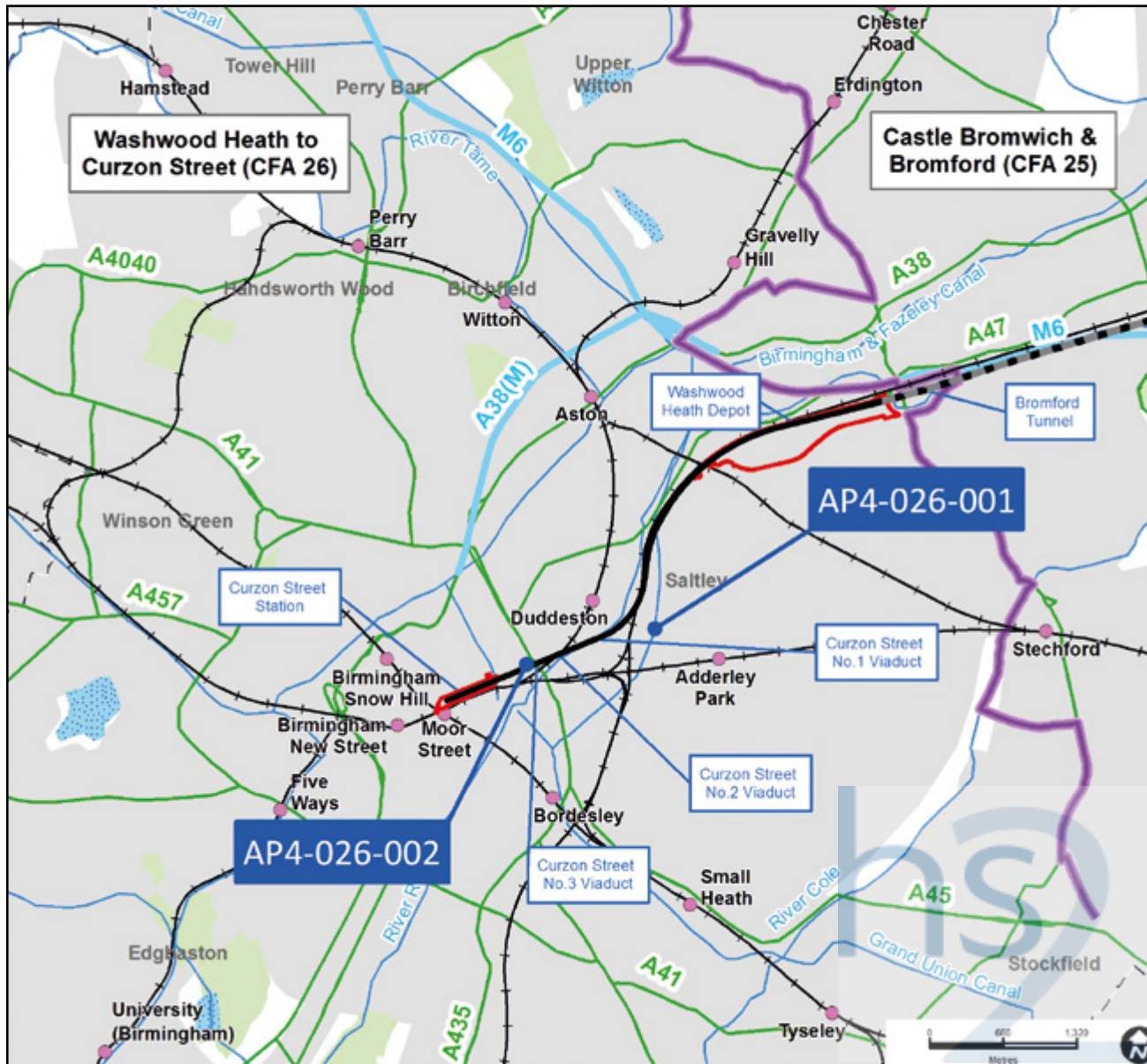


Table 4.1: Summary of amendments within CFA26 – Washwood Heath to Curzon Street

Name of design change or construction assumption	Description of the SES3 scheme	Description of the AP4 revised scheme
<p>Additional land required for a utility diversion at Network Park Industrial Estate (AP4-026-001)</p>	<p>The Bill provides for the permanent acquisition of land at the Network Park Industrial Estate for the construction of the HS2 route. The route would pass under the new B4114 Saltley viaduct before passing through the western edge of the industrial estate. The construction of the original scheme would require the demolition of three buildings within the industrial estate and the diversion of a 1.8m diameter sewer for approximately 380m in a north-south direction.</p> <p>Amendments AP2-026-003 and AP2-026-004 in AP2 provide additional land within the industrial estate for construction traffic routes and additional car parking.</p>	<p>It has been identified that the overhead power line which runs through Network Park Industrial Estate along the eastern side requires permanent diversion to facilitate construction within the area. The existing terminal pylon located adjacent to a multi-purpose activity centre and the Grand Union Canal will be converted to a junction pylon. The overhead power line will be diverted underground eastwards from the B4114 Saltley viaduct, then southwards along Adderley Road and Venetia Road.</p> <p>The existing overhead power line and five pylons will be removed between B4114 Saltley viaduct and the go kart circuit.</p> <p>Approximately 5.5ha of land will be required temporarily and 0.2ha of land permanently which is not within the limits of the Bill.</p>
<p>Provision for the relocation of Curzon Street auto-transformer station at A4540 Lawley Middleway (AP4-026-002)</p>	<p>The Bill provides for an auto-transformer station located to the west of the A4540 Lawley Middleway, south of Curzon Street, and north of Curzon Street No.3 viaduct as it approaches Curzon Street station.</p>	<p>The Curzon Street auto-transformer station will be relocated further east, across the A4550 Lawley Middleway, south of Vauxhall Road, and north of Curzon Street No. 3 viaduct.</p>

Figure 42: Approximate location of AP4 amendments within off-route areas

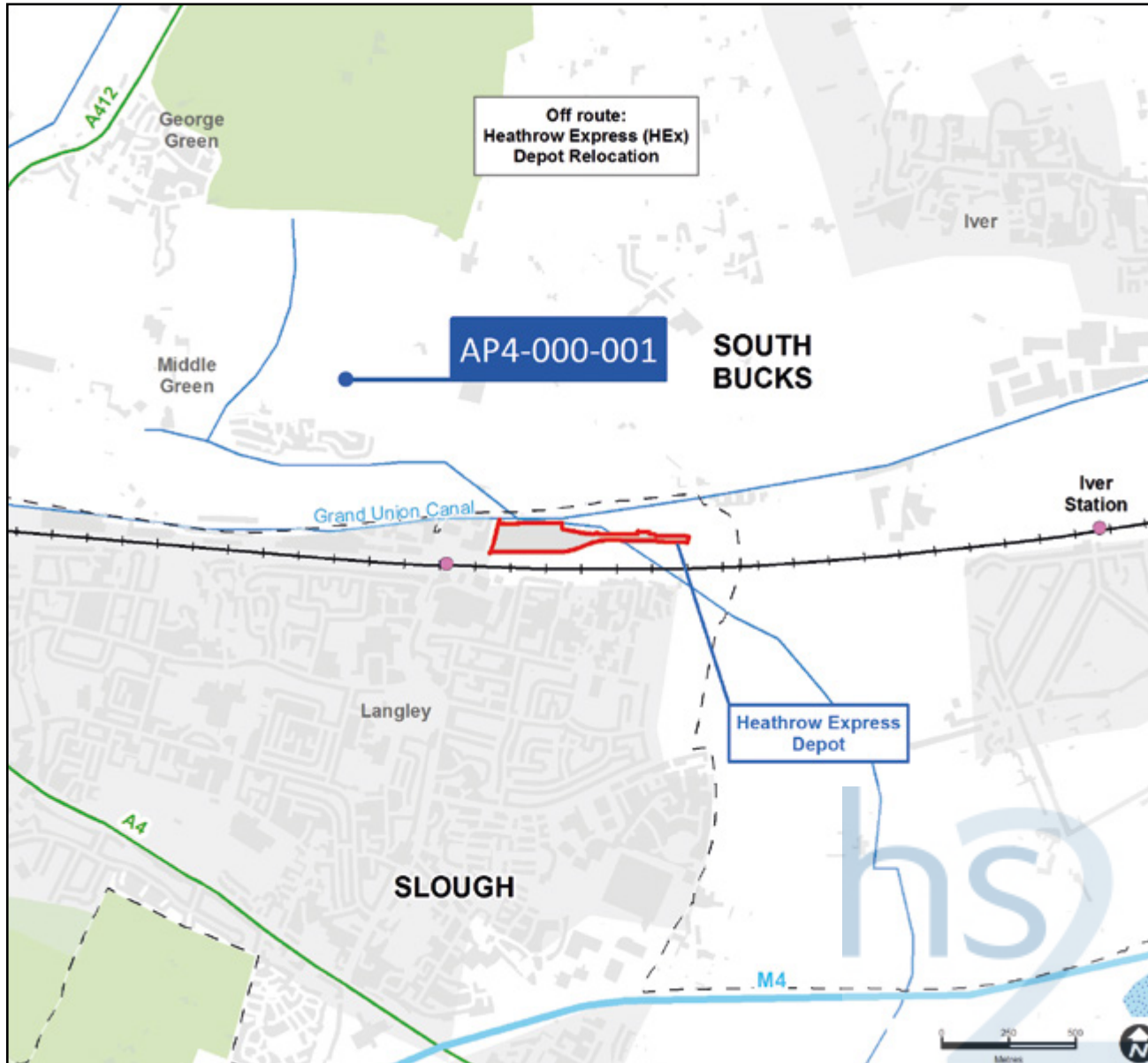


Table 42: Summary of off-route amendments

Name of design change or construction assumption	Description of the AP2 revised scheme	Description of the AP4 revised scheme
<p>Additional land required for ecological mitigation at Langley (AP4-000-001)</p>	<p>The AP2 ES proposed no additional land for ecological mitigation at Langley.</p>	<p>Approximately 18ha of additional land is required for ecological mitigation. The area of land is north of the Grand Union Canal, approximately 380m north-west of the proposed HEx depot site, to the north of Pickford Drive and to the west of Trenches Lane and is outside the limits of Bill.</p> <p>Footpath WEX/13/2 may be temporarily diverted or closed during creation of the ecological mitigation area. The alternative routes would increase travel distance by up to 400m for footpath users.</p>

8. Summary of residual environmental effects for AP4 amendments

8.1 Summary of residual environmental effects

In a number of cases, new or different likely significant effects have been identified as a result of AP4 amendments. Those which remain after mitigation has been put in place are referred to as 'residual effects'. The significant effects referred to in the remainder of this NTS are residual effects.

CFA4

Community

Effects arising during construction

Relocating the proposed Salisbury Road ventilation shaft to Canterbury Works (AP4-004-001) will result in major adverse amenity effects on residential properties at Carlton House on Canterbury Terrace (approximately 20 residential properties) and Canterbury House (approximately 10 residential properties). These amenity effects will be as a result of noise effects from demolitions, site preparation works, views of construction activities and HGV movements.

These noise and visual effects will also result in a new major adverse amenity effect for staff and children at St Mary's Primary School. HS2 Ltd will work closely with St Mary's Primary School to identify reasonably practicable measures to mitigate the residual significant effects.

As part of AP4-004-001, the ventilation shaft at Salisbury Road proposed in the original scheme will no longer be constructed at this location. Therefore the following effects reported in the main ES will be avoided:

- major adverse amenity effects on approximately 80 residential properties on the B414 Salisbury Road, Claremont Road and some properties at the east of the B413 Kilburn Lane; and
- a moderate adverse effect from the loss of public toilets in the car park adjacent to Premier House.

Landscape and visual

Effects arising during construction

The main ES reported a moderate adverse effect during construction on the Kilburn Lane and Carlton Vale Post-war Residential and Community Landscape Character

Area (LCA), due to the construction of the Salisbury Road ventilation shaft, auto-transformer station and headhouse. As part of AP4-004-001, the ventilation shaft will now be located in Canterbury Works, which is also located in the LCA. Therefore, although the location has changed, the LCA will still be affected by construction activities associated with the ventilation shaft. This will result in a different significant effect on the LCA, however the level of significance remains as reported in the main ES.

The main ES reported significant effects on the following views during construction of the ventilation shaft, headhouse and the auto-transformer station at Salisbury Road: views west from Salisbury Road/Albert Road junction (major adverse), views north from Kilburn Lane (major adverse), views east from Kilburn Lane (moderate adverse), views north from Portnall Road (moderate adverse), views south from Salisbury Road (moderate adverse), and views east from dwellings on Claremont Road (major adverse). However as the ventilation shaft is now being located at

Canterbury Works (AP4-004-001), these significant effects will be avoided.

The following views will be affected near Canterbury Works as a result of the construction of the ventilation shaft, resulting in new significant effects: views north-west from residential properties on Canterbury Road (moderate adverse) - views north from residential properties on Chichester Road (moderate adverse) - views west from St Mary's Primary School (moderate adverse) - views east from Carlton House on Canterbury Terrace (major adverse) - and views north from the Canterbury House (major adverse).

Effects arising from operation

The main ES reported a moderate adverse effect on the Kilburn Lane and Carlton Vale Post-war Residential and Community LCA during operation due to the presence of the Salusbury Road ventilation shaft and auto-transformer station. As part of AP4-004-001, the ventilation shaft will be located at Canterbury Works, which is in a different part of the LCA. The effect on the LCA will reduce to minor adverse, which is not significant. This is because the Canterbury Works site is enclosed on three sides by

buildings, unlike the more open Salusbury Road site. In addition, the Canterbury Works site is industrial and the new structures will be in keeping with the existing land use.

The main ES reported effects on the following views during operation of the ventilation shaft, headhouse and the auto-transformer station at Salusbury Road: views west from Salusbury Road/Albert Road junction (major adverse) - views north from Kilburn Lane (major adverse) - views east from Kilburn Lane (major adverse) - views north from Portnall Road (major adverse) - views south from Salusbury Road (major adverse) - and views east from dwellings on Claremont Road (major adverse). However, as these scheme elements will now be located at Canterbury Works these significant effects will be avoided.

There will be new significant effects during operation on the following views near Canterbury Works: views north from the Canterbury House (moderate adverse) and views east from Carlton House on Canterbury Terrace (moderate adverse).

Socio-economics

Effects arising during construction

The main ES reported a permanent major adverse effect as a result of the loss of the Bakerloo Line welfare facility at Premier House on Kilburn Lane, and the subsequent loss or displacement of 55 jobs due to the proposed Salusbury Road ventilation shaft. However as the ventilation shaft will now be located at Canterbury Works (AP4-004-001), this significant effect will be avoided.

Sound, noise and vibration

Effects arising during construction

A number of residential properties have been identified as likely to experience significant noise effects during construction of the ventilation shaft at Canterbury Works (AP4-004-001). These are: approximately 40 residential properties on Canterbury Terrace, 20 residential properties in Canterbury House, and 40 residential properties on Brondesbury Villas. However, noise insulation will be provided to reduce noise to a level that is not significant.

The main ES identified a number of residential properties that would be eligible for noise insulation to reduce noise effects during construction of the

Salisbury Road ventilation shaft to a level that is not significant. These are: William Dunbar House on Albert Road, Cullen House on Salisbury Road, Claremont Court on Claremont Road and 307 Kilburn Road, and 332 to 335 Kilburn Lane. However, as the ventilation shaft is being relocated, these properties will no longer require noise insulation.

The open spaces around Canterbury Terrace, Brondesbury Villas and Canterbury House that are closest to the works will experience significant noise effects during construction.

The main ES reported significant noise effects as a result of the construction of the Salisbury Road ventilation shaft in open areas around a number of residential properties, including:

- approximately: 20 dwellings in Winterleys, Albert Road; 20 dwellings in Watling Place, Albert Road; 10 dwellings in Bond House, Rupert Road; 10 dwellings in Thames Court, Albert Road; and 45 dwellings in William Dunbar House, Albert Road
- approximately: 30 dwellings in Cullen House, Salisbury Road; 15 dwellings on Kilburn Lane; 10 dwellings in Claremont Court, Claremont Road and 10 dwellings on Claremont Road; and
- approximately 20 dwellings on Brondesbury Road.

However, as the ventilation shaft will now be at Canterbury Works, these significant effects will be avoided.

Construction of the Canterbury Works ventilation shaft (AP4-004-001) will result in significant noise effects on St Mary's Primary School. HS2 Ltd will continue to seek all reasonably practicable measures to further reduce these significant effects.

The main ES reported significant noise and vibration effects on St Luke's Church, Kilburn Lane - and Blessing Medical Centre, 307 Kilburn Lane due to the construction of the Salisbury Road ventilation shaft. However, as the ventilation shaft will now be located at Canterbury Works (AP4-004-001), these significant effects will be avoided.

Traffic and transport

Effects arising during construction

The main ES reported that the Salisbury Road ventilation shaft main construction compound would require the relocation of bus stops on Premier Corner and Claremont Road, resulting in moderate and major adverse effects respectively. However, as the ventilation shaft will now be constructed at Canterbury Works

(AP4-004-001), these effects will be avoided.

The original scheme involved the redevelopment of Salisbury Road car park, leading to the loss of up to 40 parking spaces, including one disabled car parking space, resulting in a major adverse effect. However, as the ventilation shaft will now be located at Canterbury Works, these significant effects will be avoided.

As part of the construction of the Canterbury Works ventilation shaft (AP4-004-001) Albert Road and Canterbury Place will be used by construction vehicles. This will make it more difficult for pedestrians to cross the road, resulting in a new moderate adverse effect.

CFA5

Sound, noise and vibration

Effects arising during construction

The main ES reported that the construction of the West Gate ventilation shaft would result in temporary significant effects on the following non-residential receptors: West Gate House; West Gate Media and Broadcast Ltd; AGB House; commercial

operations in Westworld, West Gate; and Manhattan House, Manhattan Business Park. However, as part of AP4-005-001, the West Gate ventilation shaft will be relocated and these significant effects will be avoided.

Traffic and transport

Effects arising during construction

As part of AP4-005-001, the proposed West Gate ventilation shaft will be relocated. This will result in the temporary loss of approximately 25 car parking spaces from the West Gate access road for a period of three years. Replacement parking will be provided, but due to the additional walking distance for users, a new major adverse effect will occur.

Effects arising during operation

Relocation of the West Gate ventilation shaft (AP4-005-001) will result in the permanent loss of car parking spaces from the West Gate Hanger Lane Ltd car park (approximately 109 spaces) and the Manhattan Business Park Management Co. overflow car park (approximately 26 spaces). Replacement parking will be provided to the north of West Gate, but a new moderate adverse effect will still arise for users of the Manhattan Business Park Management Co. Ltd overflow car park due to additional walking distances.

CFA6

Agriculture, forestry and soils

Effects arising during construction

The main ES reported significant effects on Rose Farm, St Leonards Farm and Park Lodge Farm as a result of land being required for a proposed sustainable placement area to the north of Newyears Green Lane. As part of AP4-006-002, additional land will be required for the amended sustainable placement proposals in CFAs 6 and 7. As a result, land at an additional unidentified holding (possibly Pylon Farm) will be temporarily and permanently required, resulting in moderate/major effects.

The main ES reported a major/moderate effect on Harvil Farm, due to land required. As a result of the amended sustainable placement proposals in CFA6 (AP4-006-002) and CFA7, land will be temporarily required at Harvil Farm, which effectively represents all of the farm land at this holding. This will result in a different significant effect; however the level of significance remains as reported in the main ES.

Air quality

Effects arising during construction

Changes in traffic routes and flows arising from the new haul road as part of AP4-006-004 will result in Swakeleys Road no longer being used for the movement of excavated materials. The assessment of the AP4 changes results in new significant beneficial effects along Warren Road, Swakeleys Road, Harvil Road, Shoredich Close and Roker Park Avenue, due to decreases in NO₂ concentrations. The assessment results in new significant adverse effects for NO₂ at assessed receptors along Ickenham Road.

The assessment also results in new significant beneficial effects along Swakeleys Road, Woodhall Road, Park Road, Harefield Road and Sharps Lane. These new significant effects are due to the change in methodology described in the Addendum 3 to the SMR (published as part of the SES2 and AP3 ES).

Community

Effects arising during construction

The main ES reported that residents on B467 Swakeleys Road (between the junction with the A40 and the junction with Harvil Road) would experience major adverse amenity effects as a

result of a combination of significant increases in HGV movements, road traffic noise and air quality effects. However as part of AP4-006-004, a haul road will be provided through Uxbridge Golf Course, therefore reducing traffic flows along the B467 Swakeleys Road. As a result, the significant effect will be avoided.

The provision of the haul road through Uxbridge Golf Course (AP4-006-004) will result in a new major adverse amenity effect on residents along Ickenham Road due to a significant increase in HGV movements and air quality effects during the construction phase.

Sound, noise and vibration

Effects arising during construction

The main ES reported a significant noise effect in the open areas around residential properties immediately adjacent to B467 Swakeleys Road due to passing construction traffic. The provision of the haul road through Uxbridge Golf Course (AP4-006-004) will reduce the levels of passing construction traffic, and the significant effect will be avoided.

Effects arising during operation

The main ES reported a vibration effect at a pharmaceutical research facility on Breakspear

Road South. However, as identified in the SES, this was incorrectly reported, as a combined noise and vibration effect will occur. As part of AP4-006-001, the facility will now be relocated to Milton Keynes (which is outside the scheme area) and the existing building will be demolished. Therefore the assessment location has been moved to nearby offices, which will not be demolished. These offices are not sensitive to vibration impacts and therefore the vibration aspect of the combined noise and vibration significant effect identified in the SES is no longer likely. This will result in a different significant effect. HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid the adverse significant effects.

As noted in the SES3 residual effect summary (Section 6 of this NTS), a significant adverse noise effect will occur in the open areas around approximately 55 residential properties and associated shared community open areas in the vicinity of The Greenway and Hoylake Crescent in Ickenham. As part of AP4-006-005, two new sets of switches and crossings on the Chiltern Main Line close to The Greenway, Ickenham will be provided. This has the potential to increase noise levels from trains operating on this existing line. As a result the number of residential

properties affected in this area will increase from approximately 55 to 65. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

Traffic and transport

Effects arising during construction

The main ES reported major adverse effects on pedestrians as a result of increases in construction traffic, making it more difficult to cross Harvil Road and Swakeleys Road. The construction of the new haul road through Uxbridge Golf Course (AP4-006-004) will reduce construction traffic using Harvil Road and Swakeleys Road, resulting in a different significant effect. However, the level of significance will remain as reported in the main ES.

The main ES reported significant effects on vehicle users as a result of congestion and delay at: Swakeleys Roundabout (moderate adverse), and Swakeleys Road/Woodstock Drive (minor adverse). However as a result of changes to traffic flows due to AP4-006-004, these effects will increase to major adverse and moderate adverse respectively. The main ES reported a moderate adverse effect on vehicle users due

to congestion and delay at Swakeleys Road/ Harvil Road junction. However, as a result of changes to traffic flows due to AP4-006-004, the effect will reduce to minor adverse.

The revised temporary diversion of footpaths U43, U45 and U47 (AP4-006-003) will give rise to a new moderate adverse significant effect due to the increased length of Footpath U45.

CFA7

Air quality

Effects arising during construction

The main ES reported that properties on Swakeleys Road between Harvil Road and the A40 were expected to experience temporary substantial adverse impacts during construction as a result of increases in NO² concentrations. The SES reported that these significant effects would not occur.

The provision of a haul road through Uxbridge Golf Course (AP4-006-004) will result in fewer vehicle movements along Swakeleys Road and Lodore Green. This will result in reductions in NO² concentrations and beneficial effects at these locations.

The changes in methodology reported the Addendum 3 to the SMR (published as part of the SES2 and AP3 ES) also results in new significant beneficial effects at receptors along Swakeleys Road and The Drive.

Community

Effects arising during construction

As part of AP4-006-004, a haul road will be constructed through Uxbridge Golf Course. This will require land temporarily that currently comprises four holes at the north of the course. Some redesign would allow it to continue to function as a nine hole golf course. This will result in a moderate adverse effect.

The main ES reported that residents on B467 Swakeleys Road (between the junction with the A40 and the junction with Harvil Road) would experience major adverse amenity effects as a result of a combination of increases in HGV movements, road traffic noise and air quality effects. However as part of AP4-006-004, there will be reduced traffic flows along the B467 Swakeleys Road. As a result the significant effect reported in the main ES will be avoided. As this occurs on the boundary of CFAs 6 (South Ruislip to Ickenham) and

7 (Colne Valley), it is also reported in the AP4 CFA6 residual effects section of this NTS.

Ecology

Effects arising during construction

As part of AP4-006-004, 0.3ha of wet grassland and 0.1ha of other mixed habitat will be lost from Fray's Farm Meadows SSSI. This will result in a new significant effect.

The main ES reported that construction of the original scheme would result in increased nitrogen oxides (NO^x) and nutrient nitrogen which would be deposited on approximately 0.2ha of Fray's Farm Meadows SSSI at its southern extent. The main ES did not report a significant effect. Construction traffic using the haul road through Uxbridge Golf Course (as part of AP4-006-004) will increase NO^x concentrations on the SSSI at its northern extent, affecting approximately 0.9ha (3.4%) of the habitat within the SSSI. This will result in a new significant effect.

The haul road that will be constructed as part of AP4-006-004 will extend parallel to the western edge of Pinnocks Wood, an ancient woodland. This will result in increases in NO^x concentrations, affecting approximately

0.3ha (13.5%) of the ancient woodland. This will result in a new significant effect.

Landscape and visual assessment

Effects arising during construction

The main ES reported a major adverse effect on the Harefield Farmland Valley LCA as a result of the construction of the scheme. The removal of the sustainable placement area at South Harefield (as part of AP4-006-002) will reduce the scale of construction activity taking place north of Harvil Road. However, there will be additional construction activities associated with the temporary stockpile areas on land west of Harvil Road. This will result in a different significant effect, however the level of significance will remain as reported in the main ES.

The main ES reported a major adverse effect on views south-west from Harvil Road, Ickenham, as a result of the presence of construction activities. The removal of the sustainable placement area at South Harefield (as part of AP4-006-002) will remove highly visible views of construction. However, the remaining parts of the scheme will remain visible. The amendment will give rise to a different significant effect and the level of significance will reduce to moderate adverse.

The main ES reported that the presence of construction activities would result in a moderate adverse effect on views east from Harvil Road, South Harefield, and a major adverse effect on views north-east and north-west from Footpath U31 near South Harefield. However, as a result of the removal of the proposed sustainable placement area at South Harefield, these effects will be avoided.

The main ES reported a major adverse effect on views west from Footpath U50. As part of AP4-006-002, the use of land west of Harvill Road for stockpile areas will increase construction activities in the view, resulting in a different significant effect. However, the level of significance will remain as reported in the main ES.

The main ES reported a moderate adverse effect on the Colne Valley LCA due to the presence of construction activities. The construction of the haul road through Uxbridge Golf Course as part of AP4-006-004 will affect part of the LCA which as part of the original scheme would have been relatively undisturbed. This will give rise to a different significant effect on the LCA, however the level of significance remains as reported in the main ES.

Construction of the haul road through Uxbridge Golf Course as part of AP4-006-004 will result in a moderate adverse effect on views south and west from The Drive and Georgian Close.

Sound, noise and vibration

Effects arising during construction

The construction and removal of the haul road through Uxbridge Golf Course (as part of AP4-006-004) will result in a new temporary noise and vibration effect on Fairways Carvery Restaurant. HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid this significant effect.

The main ES reported that construction traffic would result in significant noise effects on residential receptors immediately adjacent to the following roads: Harvil Road between the junction of Harvil Road and B467 Swakeleys Road and the scheme, and B467 Swakeleys Road between the junction with Harvil Road and the A40. As a result of the construction of a haul route through Uxbridge Golf Course (as part of AP4-006-004), construction traffic will be reduced on these roads and the significant effects will be avoided.

Traffic and transport

Effects arising during construction

As part of AP4-006-002, there will be a temporary diversion of Footpath U50 around the new stockpile areas, adding 350m to the length of the footpath. This will result in a moderate adverse effect on footpath users due to the increased travel distance.

The new haul road (as part of AP4-006-004) will cross footpath U50, resulting in a minor adverse severance effect on footpath users.

The moderate adverse effect for users of Footpath U50 as a result of increased travel distances along with the minor adverse severance effect on the footpath users will result in a new temporary cumulative effect.

Water resources and flood risk

Effects arising during construction

As a result of the construction of the haul road (AP4-006-004), there is the potential for a moderate adverse effect on surface water quality from discharge from road run off. Appropriate measures are expected to be brought forward either in a subsequent AP or by direct agreement

with landowners. This will reduce the effect to a level that is not significant.

The SES3 reported potential significant effects on water quality during construction as a result of SES3-007-003 and SES3-007-004. However, this effect will reduce to a level that is not significant if the mitigation proposed under amendment AP4-007-003 (the treatment of abstracted ground water) is put into place.

CFA9

Agriculture, forestry and soils

Effects arising during construction

The main ES reported a major/moderate adverse effect as a result of the loss of good quality agricultural land. Construction of the 2.6km extension of the Chiltern tunnel (AP4-009-001) will require 45% less good quality agricultural land than the original scheme, resulting in a different effect. However, the level of significance will remain as reported in the main ES.

The main ES reported significant effects on the following holdings due to the amount of land required: Mantle's Farm (major/moderate, both temporarily and permanently); Hyde

Farm (moderate adverse both temporarily and permanently), Elwis Field Farm (moderate adverse, both temporarily and permanently), an unnamed paddock (CFA) (moderate adverse temporarily), 94 King's Lane (moderate adverse, both temporarily and permanently), and Gates Farm (major/moderate adverse temporarily). As a result of the extension of the Chiltern tunnel (AP4-009-001), these significant effects will be avoided, as the holdings will no longer be affected.

The main ES reported major/moderate adverse effects both temporarily and permanently due to land required at Middle Grove Farm, and a moderate adverse effect temporarily on CFA09/17 (part of which is Sibley's Coppice). As a result of the extension of the Chiltern tunnel (AP4-009-001), less land will be required at these holdings, and the effects will be reduced to a level that is not significant.

The main ES reported no permanent effects on an unnamed paddock (CFA09/20), Orchard Cottage, and Frith Hill Farm, as the original scheme did not require any land from these holdings permanently. However, as part of the extension of the Chiltern tunnel (AP4-009-001), land will be required permanently,

resulting in a moderate adverse effect. Approximately 0.1ha less land will be required temporarily at Orchard Cottage than proposed as part of the original scheme.

The main ES reported moderate adverse effects on Bury Farm due to land required both temporarily and permanently. As part of AP4-009-001, less land will be required temporarily and more land will be required permanently. However the level of significance will remain as reported in the main ES.

The AP4 revised scheme, will affect fewer agricultural holdings than the original scheme and will remove eight significant adverse temporary effects and five significant adverse permanent effects. One additional agricultural barn demolition is required as part of the amendment at Mulberry Park Hill. This barn was not required for demolition in the SES3 scheme though the residential property was, and remains, required for demolition under the AP4 amendment which introduce a different significant effect although the level of significance remains as reported in the main ES.

Community

Effects arising during construction

The main ES reported the following effects as a result of the construction of the South Heath Green tunnel:

- significant temporary amenity effects for residential properties in South Heath (on Frith Hill, King's Lane and Potter Row) during construction as a result of a combination of visual effects and increases in HGV movements or noise effects;
- significant temporary effect on the community of South Heath due to the temporary loss of land at Sibley's Coppice;
- permanent effects due to the demolition of two properties (Rowan Farm and Hedgemoor) on Hyde Lane, and the demolition of five residential properties in South Heath (one on the B485 Chesham Road, two on King's Lane; one on Frith Hill, and the residential property above the Annie Bailey's public house and restaurant on B485 Chesham Road);

- significant effects due to the demolition of Annie Bailey's public house and restaurant on B485 Chesham Road, and the Weights and Measures Gym on Frith Hill; and
- significant permanent effect due to the permanent loss of land at Mantle's Wood; and
- significant temporary effects for residents of South Heath and Ballinger Common.

However as a result of the construction of the Chiltern tunnel extension (AP4-009-001), these significant effects will be avoided.

Effects arising during operation

The main ES reported significant effects on residential amenity for approximately six properties in the vicinity of Hyde Lane in Hyde End and for 10 properties on Potter Row in South Heath due to visual and operational noise effects. However as a result of the extension of the Chiltern tunnel (AP4-009-001), these significant effects will be avoided.

Cultural heritage

Effects arising during construction

The main ES reported physical effects on the following assets: Mantle's Wood and Mantle's Wood earthworks, parts of the Missenden

parish boundary, Farthing's Wood, artefacts on land to the north of Rowan Farm, artefacts on land between Chesham Road and Frith Hill, Sibley's Coppice. The extension of the Chiltern tunnel (AP4-009-001) will result in a reduction in the amount of land required and as a result the significant effects on these assets will be avoided. The main ES reported that the setting of South Heath Farmhouse would also be affected. However, as a result of the extension of the Chiltern tunnel (AP4-009-001) this effect will be avoided.

The main ES reported permanent effects as a result of the demolition of: Chiltern Cottage, Weights and Measures Gym, and Annie Bailey's. As a result of AP4-009-001, these buildings no longer need to be demolished. Although the buildings will be retained, there will be temporary moderate adverse effects on their setting due to the proximity of construction works associated with the extension of the Chiltern tunnel. This will result in a different significant effect.

The main ES reported effects on Bury Farm and Hammondshall Farm. As part of the extension of the Chiltern tunnel (AP4-009-001), a noise fence barrier and landscape planting will be constructed. This will result

in further impacts upon the setting of these assets, however the level of significance will remain as reported in the main ES.

The main ES reported that the construction of the scheme would result in significant effects on the setting of the following assets: The Castle, Rook Wood, Missenden Abbey, the moated site in Chalkdell Wood, Hyde Farm, Chapel Farm, Sheepcotts, and 86 King's Lane. As a result of the construction of the Chiltern tunnel, these significant effects will be reduced to a level that is not significant. The effects reported in the main ES for The Granary at Cusden's Farm and Sheepcotts Cottage will be reduced to moderate adverse as a result of the construction of AP4-009-001.

There will be a different significant effect on Briarwood and artefacts on land between Hedgemoor Wood and Cusden's Farm, although the level of significance will remain as reported in the main ES. The different significant effects result from the construction activity at the new ventilation shaft at Chesham Road, rather than the construction works for the South Heath cutting, tunnel and associated landscaping associated with the original scheme.

Effects arising during operation

The main ES reported a significant effect on Hyde Farm and Sheepcotts Cottage as a result of noise from and views of passing trains. As a result of the extension of the Chiltern tunnel (AP4-009-001), the route will now be in tunnel at these locations and the significant effects will be avoided.

Ecology

Effects arising during construction

The main ES reported significant effects on Mantle's Wood, Hedgemoor and Farthings Wood and Sibley's Coppice, due to the combined loss of gha of ancient woodland. However, as a result of the extension of the Chiltern tunnel (AP4-009-001) this land will no longer be required and these effects will be avoided.

Effects arising during operation

The main ES reported effects on barn owl, due to increased risk of train strike south of South Heath. As part of the extension of the Chiltern tunnel (AP4-009-001), the trains will be below ground and this significant effect will be avoided.

Landscape and visual

Effects arising during construction

The main ES reported major adverse effects on the Misbourne Upper North and Hyde Heath North LCAs due to the construction of the scheme. The extension of the Chiltern tunnel (AP4-009-001) will reduce the scale of construction works in the LCAs, reducing the effects to moderate adverse. The main ES reported a major adverse effect on the Lee and Buckland Farmland LCA due to construction activities. The amendment will result in a different effect on the LCA due to the construction works affecting a wider area. However, the level of significance will remain as reported in the main ES.

The main ES reported significant effects on the following views due to construction activities: views west from Bullbaiters Lane and Bridleway LM/27/1 towards Mantle's Wood (major adverse), views north-east from Hyde Lane and adjacent residential properties (moderate adverse), views north from Footpath LMI/21 (major adverse), views south from Hyde Heath Road and residential properties on B485 Chesham Road (moderate adverse), views south-west from Hyde Heath Road (two separate viewpoints)

(moderate adverse), views south-east from PRoW (Footpath GMI/23/6) and residential property The Hyde (major adverse). The extension of the Chiltern tunnel (AP4-009-001) will reduce the scale of construction works that are visible from these viewpoints, and the effects will reduce to a level that is not significant.

The main ES also reported major adverse effects on the following views due to construction activities: views north from Hyde Lane and adjacent residential properties, views north from PRoW (Footpath GMI/33/5), views north-east from Cudsdens Court residential properties, views south-west from B485 Chesham Road and associated residential properties, and views south-west from PRoW (Footpath GMI/23/5). As part of AP4-009-001, construction of a cutting, demolition of properties, construction of overbridges and the realignment of a road proposed as part of the original scheme will no longer be required. However, there will be construction works associated with the Chesham Road ventilation shaft. The level of significance will reduce to moderate adverse for these viewpoints.

The main ES also reported major adverse effects on the following viewpoints due to

construction activities: views north-east from PRoW (Footpath GMI/12/1), views north-east from PRoW (Footpath GMI/13/3), view south-west from Frith Hill including associated residential properties, views south-west from PRoW (Footpath GMI/13/3), views south-west from PRoW (Footpath GMI/2/10) and residential properties on Potter Row, views north-east from PRoW (Footpath GMI/12/1) and views south-west from residential properties on Potter Row. The replacement of the South Heath green tunnel with a bored tunnel (as part of AP4-009-001) will remove the requirement for large scale earthworks east of Frith Hill. However, there will be other construction works associated with the extension of the Chiltern tunnel. This will result in a different significant effect, however the level of significance will remain as reported in the main ES.

Construction of the extended Chiltern tunnel (AP4-009-001) will result in a new moderate adverse effect on views north-east from Bury Field House, due to the proximity to the satellite construction compound.

Sound, noise and vibration

Effects arising during construction

The main ES reported that a residential property on King's Lane and a residential property on B485 Chesham Road were forecast to experience noise levels higher than noise insulation trigger levels. As a result, these residential properties would have been offered noise insulation to reduce noise to a level that is not significant. However as part of the construction of the Chiltern tunnel (AP4-009-001) these residential properties will no longer experience this level of noise and insulation will no longer be required.

The main ES reported noise effects in the open areas surrounding approximately 50 residential properties on Sibleys Rise, Bayleys Hatch and Frith Hill. As part of the extension of the Chiltern tunnel (AP4-009-001), these significant effects will be avoided.

The main ES reported noise effects on residential properties immediately adjacent to King's Lane (south of Frith Hill) as a result of construction traffic. However, as a result of the extension of the Chiltern tunnel (AP4-009-001), these effects will be avoided.

Effects arising during operation

The main ES reported that Sheepcotts Cottage on Hyde Lane was forecast to experience operational noise levels higher than noise insulation trigger levels. As a result, this residential property would have been offered noise insulation to reduce noise to a level that is not significant. However, as part of the Chiltern tunnel extension (AP4-009-001) this property will no longer experience this level of noise and insulation will no longer be required.

The main ES reported noise effects in open areas at Hyde Lane, South Heath and Potters Row. However, as a result of the extension of the Chiltern tunnel (AP4-009-001), this effect will be avoided.

Traffic and transport

Effects arising during construction

Construction activities associated with AP4-009-001 will result in a number of changes to construction vehicles routes and flows in the area.

A new major adverse effect will occur on vehicle users as a result of congestion and delay at A413/Leather Lane. The main ES reported a major adverse effect on vehicle users as a result of congestion and delay at the junction of A413

London Road/A4128. This effect was removed by the SES. However, as a result of AP4-009-001, this will give rise to a major adverse effect.

The main ES reported major adverse effects on vehicle users as a result of congestion and delay at the following junctions: B485 Frith Hill (Chesham Road)/Kings Lane, and B485 Frith Hill (Chesham Road)/Frith Hill. As a result of AP4-009-001, construction traffic will reduce and these effects will be avoided. The SES reported a minor adverse effect on B485 Frith Hill (Chesham Road)/Hyde Heath Road. As a result of AP4-009-001, construction traffic will be reduced and this effect will be avoided.

The main ES reported significant effects on pedestrians due to increases in construction traffic making it more difficult to cross the following roads: Potter Row between Leather Lane and Frith Hill (moderate adverse), Frith Hill between Potter Row/King's Lane and B485 Frith Hill/Chesham Road (major adverse), King's Lane between Frith Hill and B485 Frith Hill/Chesham Road (major adverse), and Hyde Heath Road between B485 Frith Hill/Chesham Road (major adverse). However, as a result of AP4-009-001, these effects will be avoided.

The SES reported that increases in traffic would result in major adverse effects on pedestrians crossing the A413 between Hyde Lane and B485 Frith Hill/Chesham Road. As a result of reductions in traffic from that proposed in the main ES (as part of AP4-009-001), this level of significance will reduce to moderate adverse. The changes to traffic flows associated with AP4-009-001 will result in a new major adverse effect on pedestrians as a result of increases in construction traffic making it more difficult to cross the A413 London Road between B485 Frith Hill/Chesham Road and Rocky Lane.

The SES reported a major adverse effect on pedestrians as a result of increases in construction traffic making it more difficult to cross B458 Frith Hill/Chesham Road, between A413 and King's Lane. However, as a result of AP4-009-001 construction traffic will decrease and the effect will reduce to moderate adverse.

The SES reported a moderate adverse effect on pedestrians as a result of construction traffic making it more difficult to cross the B458 Frith Hill/Chesham Road, between King's Lane and ventilation shaft S5 compound access. Increases in construction traffic associated with AP4-009-001 will increase this effect to major adverse.

The main ES reported effects as a result of road closures and associated diversions causing increased travel distance on Frith Hill between Potter Row/King's Lane and B485 Frith Hill/Chesham Road (major adverse), and Hyde Lane (moderate adverse). As a result of the changes to traffic flows associated with the extension of the Chiltern tunnel, these significant effects will be avoided. The main ES reported minor adverse effects on the following footpaths as a result of increased travel distances for footpath users due to diversions: Frith Hill, Hyde Lane, Footpath GMI/79/2, Footpath GMI/80/1, Footpath GMI/79/1, Footpath GMI/28/1, Footpath GMI/28/2, and Footpath GMI/23/6. The main ES also reported a moderate adverse effect on footpath users as a result of increased travel distances on Footpath LMI/17/2. As a result of changes to construction activities associated with AP4-009-001, these significant effects will be avoided.

Construction activities associated with AP4-008-001 will result in new minor adverse effects on Footpath GMI/33/4, and Footpath GMI/13/3 due to increased travel distances for users.

Effects arising during operation

The main ES reported minor adverse effects on the following locations as a result of increased travel distances for footpath users: King's Lane, B485 Chesham Road, Footpath GMI/33/4, Footpath GMI/33/2, Footpath GMI/33/3, Footpath GMI/27/1, Footpath GMI/23/7, and Footpath LMI/21/1. As a result of construction activities associated with AP4-009-001, these significant effects will be avoided.

Water resources and flood risk

Effects arising during construction

The main ES reported major adverse effects on PWS abstractions TH011 and TH316. Amendment AP4-009-001, with an additional 1km of tunnel located below groundwater level, will give rise to a different significant effect. HS2 Ltd are working with Affinity Water to review the potential effects on water supply and to develop a management strategy. Until a management strategy is agreed this temporary significant effect will remain.

The construction of the Chesham Road ventilation shaft (as part of AP4-009-001) has the potential to impact on groundwater quality resulting in a different moderate adverse effect on abstraction TH011.

CFA10

Agriculture, forestry and soils

Effects arising during construction

The SES reported a moderate adverse effect on Hunt's Green Farm as a result of land being permanently required. As part of AP4-009-001, the proposed mid-point auto-transformer station will be relocated approximately 150m north of Leather Lane and more land at Hunt's Green Farm will be required. This will result in a different significant effect, with the level of significance increasing from moderate adverse to major/moderate adverse.

Landscape and visual assessment

Effects arising during construction

The main ES the SES and AP2 ES reported a moderate adverse effect on views west from King's Lane near Potter Row as a result of the presence of construction activities.

As a result of the relocation of the proposed mid-point auto-transformer station approximately 150m north of Leather Lane (as part of AP4-009-001), the mid-point auto-transformer satellite construction compound will be visible from views west from King's Lane near Potter

Row. This will give rise to a different significant effect, however the level of significance remains as reported in the main ES.

The main ES reported that a major adverse effect would occur on the Longwick Vale LCA due to the construction of the scheme, including cuttings and the Stoke Grove auto-transformer station. The B4009 Nash Lee Road overbridge satellite construction compound was to be located in the adjacent Risborough Foothills LCA, which would indirectly affect the setting of this LCA. As part of AP4-010-001, this construction compound will be located in a different area from that proposed as part of the original scheme to reduce impacts on farming operations. It will now be in the Longwick Vale LCA. This will result in a direct impact on the LCA (rather than the indirect impact reported in the main ES). This will give rise to a different significant effect, however the level of significance remains as reported in the main ES.

The main ES reported that a major adverse effect would occur on views south-east from residential properties on Nash Lee Road during construction, due to the presence of construction equipment and construction activities including the B4009 Nash Lee Road

realignment, vegetation removal and the B4009 Nash Lee Road overbridge satellite construction compound. As part of AP4-010-001, the satellite construction compound will now be located in a different area and will not form part of this view. However, construction works will still be present. This will result in a different significant effect; however the level of significance remains as reported within the main ES.

Sound, noise and vibration

Effects arising during construction

The SES reported a noise effect in the open areas around approximately 30 residential properties located immediately adjacent to the A4010 Aylesbury Road/Risborough Road, as a result of construction traffic associated with the SES changes. As a result of AP4-009-001, in combination with the use of revised baseline traffic data, this significant noise effect will no longer occur.

Traffic and transport

Effects arising during construction

The main ES reported a minor adverse effect as a result of increases in traffic making it more difficult for pedestrians to cross King's Lane (Kingsash) between Rocky Lane (also

known as Chesham Lane) and Bowood Lane. However as part of AP4-009-001, a haul road between the Chiltern tunnel north portal satellite construction compound and Bowood Lane overbridge satellite construction compound will be constructed, reducing construction traffic on King's Lane. Therefore the minor adverse effect will be avoided.

The SES reported a major adverse effect on pedestrians as a result of increases in vehicles making it more difficult for pedestrians to cross Rocky Lane, between A413 London Road and the Rocky Lane underbridge satellite construction compound. As a result of the extension of the Chiltern tunnel (AP4-009-001), there will be a reduction in HGV traffic flows and the effect will reduce to moderate adverse.

AP4-009-001 will result in a major adverse effect on pedestrians as a result of increases in HGV flows, making it more difficult for pedestrians to cross the A413 London Road between B485 Frith Hill/Chesham Road (in CFA9) and Rocky Lane.

The main ES reported a major adverse effect on vehicle users, as a result of congestion and delay on A413 London Road with Dunsmore Lane. The SES reported that as a result of SES changes, the effect would reduce to

moderate adverse. However, as a result of AP4-009-001, HGV movements will increase, resulting in a major adverse effect.

The main ES reported a major adverse effect on vehicle users due to congestion and delay on the A413 London Road with Bowood Lane. The SES reported that this would reduce to moderate adverse. However, as a result of AP4-009-001, there will be increases in HGV traffic flows, resulting in a major adverse effect.

CFA11

Cultural heritage

Effects arising during construction

The main ES reported a major adverse effect on Hartwell House and Parkland Group as a result of impacts on setting and physical impacts. As part of AP4-011-001, Footpath overbridge SBH/32 and the proposed balancing bond will be moved to the north of Rifle Spinney. Trees will provide screening of the overbridge and more of the existing landscape will be retained, reducing views of the scheme from Hartwell House. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

The main ES reported a major adverse effect on the Lower Hartwell medieval settlement, due to the loss of 0.7ha of the asset and associated archaeological remains. The relocation of the overbridge and balancing pond (as part of AP4-011-001) will result in an additional 0.26ha of land being required within the settlement. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

CFA12

Cultural heritage

Effects arising during construction

The main ES and the AP2 ES reported a major adverse effect on Doddershall Deserted Medieval Village and the hedgerow complex, and a moderate adverse effect on Doddershall medieval landscape as a result of the construction of the scheme. As part of AP4-012-002, additional land is required for the reconfiguration of two balancing ponds near Footpath QUA/26 and Bridleway QUA/28A. This will result in a net reduction in land temporarily required for construction of the balancing ponds. However, a new area of land

will be temporarily required. This will result in different significant effects on these assets; however the level of significance remains as reported in the main ES and the AP2 ES.

The SES and AP2 ES reported a different significant effect due to amendment AP2-012-002 compared to that reported in the main ES for Doddershall deserted medieval village and landscape and an historic hedgerow. This was due to an additional 0.4ha of land within this area being required for the AP2 amendment and an additional stretch of hedgerow being removed. This different significant effect does not change the level of significant effect reported in the main ES, with the major adverse significant effect remaining for Doddershall deserted medieval village and the historic hedgerow remaining. The moderate adverse significant effect on the Doddershall medieval landscape also remains in the AP2 revised scheme.

The cumulative effect of the AP2 and AP4 amendments will result in a net reduction of 0.9ha of land required within Doddershall deserted medieval village and landscape when compared to the SES3 scheme. The combined amendments will also result in an additional 36m of historic hedgerow being

removed. This will result in different significant effects for all three assets from that reported in the main ES and SES and AP2 ES.

Although there are different significant effects, with the reduction in land required and additional hedgerow to be removed, from that reported in the main ES and SES and AP2 ES, this will not change the level of effects reported.

CFA13

Ecology

Effects arising during construction

The SES reported that a significant effect would occur as a result of the removal of 2.1ha of ancient woodland near Decoypond Wood and south of Calvert for the construction of the eastern bank of the Calvert cutting. As part of AP4-013-002, an additional overbridge will be constructed and there will be an alternative configuration at Calvert Landfill waste transfer sidings. This will result in an additional loss of 300m² and isolation of a further 0.2ha of ancient woodland south of Calvert. This will result in a different significant effect; however the level of significance remains as reported in the SES.

Landscape and visual assessment

Effects arising during construction

The main ES reported that the Claydon Bowl LCA would experience a major adverse effect during construction, due to the removal of trees and hedgerows, loss of agricultural land, creation of engineered earthworks and the introduction of construction equipment into the rural landscape. As part of AP4-013-002, an additional overbridge will be constructed. This will result in an increase in the construction footprint, resulting in the loss of mature hedgerows and the partial loss of the southern extents of an area of woodland east of the HS2 route. Additional construction equipment will also be visible. This will result in a different significant effect; however the level of significance will remain as reported in the main ES.

The main ES reported that significant effects would occur on views west from Footpath SCL/12 near Great Pond Farm (moderate adverse) and views south-west from School Hill, east of Calvert (major adverse). As a result of AP4-013-002, these views will be further affected by the construction activities associated with the scheme. However the level of significance of the effects remains as reported in the main ES. The

presence of construction activities associated with AP₄-013-002 will result in a new major adverse effect on views looking north from the Calvert waste disposal facility (Footpath SCL/13).

Effects arising during operation

The main ES reported a major adverse effect on the Claydon Bowl LCA during year 1 of operation due to the presence of the scheme. This would reduce to moderate adverse by year 15 and to non-significant by year 60. As part of AP₄-013-002, an additional overbridge between the waste transfer sidings and the landfill site will be visible. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

CFA15

Agriculture, forestry and soils

Effects arising during construction

The main ES reported that a moderate adverse effect on Cedars Farm would occur as a result of the HS2 route severing land within the holding. Access to the severed land would be provided through use of the public highway. As part of AP₄-015-007, an accommodation overbridge

will be provided to maintain connectivity between the two parcels of land, reducing the severance effect to minor adverse, which is not significant. Therefore, the significant effect reported in the main ES will be avoided.

Cultural heritage

Effects arising during construction

The main ES reported that a moderate adverse effect would occur on an archaeologically sensitive area as a result of land required to the south of Culworth Mill. However as part of AP₄-015-003, the wetland habitat creation area and landscape mitigation planting area proposed as part of the original scheme will no longer be located at Culworth Mill and will instead be located adjacent to the Trafford Bridge LWS. Therefore impacts on the archaeologically sensitive area will no longer occur and the moderate adverse effect reported in the main ES will be avoided.

The proposed relocation of the mitigation planting (as part of AP₄-015-003) will give rise to a different significant effect on the Trafford Bridge to Trafford House landscape component, as there will no longer be a need to remove buried archaeology. However,

the level of significance remains as reported in the main ES, SES and the AP₂ ES.

The main ES reported a moderate adverse effect on an area of prehistoric activity at the Chipping Warden (disused) Airfield, as part of this will be required for construction of the scheme. The relocation of the proposed stockpile at the disused airfield (as part of AP₄-015-005) will no longer require some of the land which was required by the original scheme. However, the extent of the area where any archaeological remains are assumed to be removed will still noticeably change the value of the asset. This will result in a different significant effect; however the level of significance remains as reported in the main ES.

The main ES and SES reported a moderate adverse effect as 1.5ha of land would be required from within the Lower Boddington historic landscape. The additional land required for land drainage, changes to the balancing pond and improved access at Old House Farm (AP₄-015-006) will require different areas of land from within the Lower Boddington historic landscape, with 1.1ha of the land required as part of the original scheme no longer required. This will result in a different significant

effect from that reported in the main ES and the SES, however the level of significance will remain as reported in the main ES.

Ecology

Effects arising during construction

The junction improvements at the junction of the A361 and Welsh Road (AP4-015-004) will require additional land to that identified in the main ES. This additional land includes a pond that will be lost for construction of the scheme. As the pond has not been surveyed yet, a precautionary approach has been taken and it is assumed that a significant effect would occur on a local great crested newt population. If great crested newt is confirmed to be present at this location then HS2 Ltd will work with landowners to provide suitable mitigation to ensure that there is no residual significant effect on the great crested newt population.

Landscape and visual assessment

Effects arising during construction

The main ES the AP2 ES reported that a moderate adverse effect would occur on the Boddington Broad Unwooded Vale LCA during construction, due to the removal of trees and hedgerows, loss of agricultural land and the

introduction of construction equipment into the rural landscape. As a result of the amended route of access to Cedars Farm from Banbury Road (through AP4-015-007), the extent of construction effects to the West of Cedars Farm will be reduced. Construction of the accommodation overbridge at Cedars Farm and earthworks will increase construction activity and use of construction equipment, however there will be other more extensive construction activity as part of the scheme in the area. This will result in a different significant effect, however the level of significance remains as reported in the main ES or SES and AP2 ES.

The main ES reported that the construction of the accommodation overbridge at Cedars Farm (AP4-015-007) would result in major adverse effects on the following views: views looking north-east from Cedars Farm, west of Lower Boddington, views looking south-west from Church Road on the southern edge of Upper Boddington (viewpoint located 50m west of Footpath AC/011), views looking north-east from Boddington Road, north of Three Shires Farm, and views looking north-west from the PRoW network north-east of Springfield House (viewpoint located on PRoW AC/001). The amendment will result

in different significant effects, however the level of significance remains as reported in the main ES, the SES and the AP2 ES.

The main ES reported major adverse effects on views looking east from Appletree Lane south-west of Aston le Walls, views looking south-west from Appletree Lane, south of Aston le Walls, and a moderate effect on views looking north-east from Appleton Industrial Estate as a result of the presence of construction activities. The amendment associated with temporary stockpiling at Chipping Warden (disused) Airfield (AP4-015-005) will be visible in open views. This will result in different significant effects, however the level of significance remains as reported in the main ES.

The AP2 amendment to provide a bypass at Chipping Warden (AP2-015-009) will introduce additional construction activity. The SES and AP2 ES reported new and different significant effects on landscape and visual receptors. When considered together, the AP4 amendment (AP4-015-005) associated with stockpiling at Chipping Warden (disused) Airfield and the provision of a Chipping Warden bypass (AP2-015-009) will give rise to a cumulative effect. Cumulative effects

will arise as a result of construction activity associated with both these amendments together on views looking north-east from Appleton Industrial Estate. However, this will not change the level of significance of the effects reported in the main ES and AP2 ES.

Effects arising during operation

The main ES reported a moderate adverse effect during year 1 of operation on views looking west from Welsh Road, north of Trafford Bridge as a result of the presence of the scheme. This would remain moderate adverse by year 15 and 60 of operation. As the mitigation planting will no longer be included at Culworth Mill (due to AP4-015-003), the extent of tree cover within the view southwards along Welsh Road during year 15 and year 60 of operation will be reduced, but will not change visibility of the viaduct, rail infrastructure or trains. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

The main ES reported a major adverse effect on view looking east from Battlefields Trail PRoW (Footpath AE/005), north-east of Edgcote House as a result of the presence of the scheme. This would remain major adverse in year 15 and year 60 of operation. The reduction

in the extent of the landscape mitigation planting to the west of Edgcote viaduct (as a result of AP4-015-003) will increase visibility of Edgcote viaduct and passing trains in year 15 and year 60 of operation. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

The main ES and the SES reported that the presence of the scheme would result in adverse effects for the following views: views looking north-east from Cedars Farm, west of Lower Boddington (major adverse in year 1 of operation, reducing to moderate adverse at year 15 and 60 of operation), views looking south-west from Church Road on the southern edge of Upper Boddington (viewpoint located 50m west of Footpath AC/011) (moderate adverse), and views looking north-east from Boddington Road, north of Three Shires Farm (moderate adverse). As a result of AP4-015-007, an additional overbridge will be present in the views. This will result in a different significant effect. However, the level of significance remains as reported in the main ES and the SES.

As part of AP2-015-008, Stoneton Lane will be realigned to cross over the route and the Warwick Road and Banbury Road junction will

be reconfigured. The AP2 amendment also changes the Banbury Road overbridge structure, removing the proposed green bridge component, and includes the realignment of Banbury Road to bring it closer the route, and the construction of Stoneton Lane green overbridge. The SES and AP2 ES reported no new or different significant effects as a result of the amendment. However, this has subsequently been corrected in the SES3, as the AP2 amendment will result in different significant effects, but the level of significance will remain as reported in the main ES. When considered together, the AP2 amendment, along with the AP4-015-007 (amendment to provide an accommodation overbridge at Cedars Farm) will give rise to different effects during operation. This is because the accommodation overbridge at Cedars Farm, Banbury Road overbridge and Stoneton Lane green overbridge structures will also be present and in close proximity. However, the level of significance will remain as reported in the main ES and the SES3.

CFA17

Cultural heritage

Effects arising during construction

The SES reported that a major adverse effect would occur where part of an archaeological site between Fields Farm and the River Leam would be lost during construction. This asset also lies within the area where a temporary bridge is proposed over the River Leam during construction (AP4-017-003). The proposed amendment will give rise to a different effect, as it will involve a different area of the archaeological site. This will result in a different significant effect, however the level of significance remains as reported in the SES.

Traffic and Transport

Effects arising during construction

The main ES reported a moderate adverse effect on pedestrians as a result of increases in traffic making it more difficult to cross B4455 Fosse Way, between A425 Southam Road and Long Itchington Road. However, as a result of the changes in HGV traffic flows due to the combined SES3 scheme and AP4 amendments, the effect will increase to major adverse.

The main ES reported a major adverse effect on pedestrians as a result of increases in traffic making it more difficult for pedestrians to cross B4455 Fosse Way between the A425 Southam Road and B4100 Banbury Road. Increases in HGV traffic flows due to the combined SES3 scheme and AP4 amendments will result in a different significant effect, however the level of significance will remain as reported in the main ES.

CFA18

Cultural heritage

Effects arising during construction

The main ES reported a major adverse effect on Broadwells Wood. The revised woodland compensation proposals in the vicinity of Burton Green (AP4-018-004) will further affect the setting of Broadwells Wood. This will result in a different significant effect; however the level of significance remains as reported in the main ES.

Ecology

Effects arising during construction

The SES identified that an unnamed area of approximately 0.6ha of ancient woodland south

of the B4115 Ashow Road in Stoneleigh would be lost, resulting in a significant effect. As part of the Stoneleigh Park amendments (AP4-018-002), the area of ancient woodland required will reduce to approximately 0.2ha. This will result in a different significant effect, however the level of significance remains as reported previously.

The SES reported adverse effects on Black Waste Wood, as a result of land required for the construction of the scheme. As part of the revised woodland compensation proposals in the vicinity of Burton Green (AP4-018-004), management and enhancement measures will be adopted within Black Waste Wood LWS. This will compensate for the effect identified in the SES, as a result of the loss of ancient woodland. However, the effect on ancient woodland will remain.

Landscape and visual assessment

Effects arising during construction

The main ES reported moderate adverse effects on views south-west from PRoW (bridleway) W157, views south-west from Stoneleigh Park, and views north-east from Stoneleigh Park, as a result of construction activities. The Stoneleigh Park amendments (AP4-018-002)

will introduce further construction activities within these views, resulting in different significant effects. However the level of significance remains as reported in the main ES.

CFA19

Community

Effects arising during construction

Construction activities associated with the relocation of Water Orton Primary School (AP₄-019-002) will result in a new major adverse amenity effect on 11 residential properties at Plank Lane, Long Leys Croft and Mickle Meadow due to significant noise and visual effects.

Cultural heritage

Effects arising during construction

Construction associated with the relocation of the Water Orton Primary School (AP₄-019-002) will remove an area of ridge and furrow. This will result in a new moderate adverse effect.

Ecology

Effects arising during construction

The SES reported effects on the Coleshill

Sludge Lagoons LWS. As a result of the mitigation measures proposed within the Chattle Hill area amendment (AP₄-019-001), this effect will reduce to a level that is not significant. As part of AP₄-019-001, the significant effect on the mosaic of habitats within the Coleshill Sewage Treatment Works will reduce to a level that is not significant.

Landscape and visual

Effects arising during construction

The main ES reported a moderate adverse effect on views west from residential properties at Chattle Hill and Gorsey Way. The extension of the south-east wall of the Chattle Hill box structure (AP₄-019-001) will give rise to a different significant effect on this view. However, the level of significance will remain as reported in the main ES.

The main ES reported moderate adverse effects on views west from Coleshill Industrial Estate. Amendment AP₄-019-001 will replace the proposed embankment as part of the original scheme with viaducts. This will give rise to a different significant effect, however the level of significance will remain as reported in the main ES.

Construction activities associated with the relocation of Water Orton Primary School (AP₄-019-002) will result in an alteration to the views south-west from residential properties along Coleshill Road and Mickle Meadow in Water Orton. In addition, the removal of trees along the Plank Lane boundary will open up views of residential properties on Attleboro Lane and, during the peak construction phase, the construction of embankments in the distance, filtered by intervening vegetation. This will result in a new major adverse effect.

Effects arising during operation

The main ES reported a moderate adverse effect on views west from Coleshill Industrial Estate at year 1 of operation. This effect would remain as moderate adverse at year 15 and 60 of operation due to views of the scheme, including embankments. The Chattle Hill amendments (AP₄-019-001) include additional landscape mitigation planting to help screen views of the scheme. This will give rise to an improvement from this viewpoint by year 15 of operation, and will result in a different significant effect, however the level of significance will remain as reported in the main ES.

The relocation of Water Orton Primary School (AP4-019-002) will result in a substantial change to the view south-west from residential properties along Coleshill Road and Mickle Meadow in Water Orton. The amendment will alter the view from gently rising and open fields, with trees and hedgerow boundaries, to a view of the replacement school building in the foreground. In addition, the removal of trees at the Plank Lane boundary will open up views of residential properties on Attleboro Lane and embankments of the scheme in the distance, filtered by intervening vegetation. This will result in a new, major adverse significant effect in year 1 of operation, reducing to moderate adverse in years 15 and 60 as a result of mitigation planting.

Sound, noise and vibration

Effects arising during construction

The main ES reported construction noise effects on commercial properties located on the western edge of the Coleshill Industrial Estate. The Chattle Hill amendments (AP4-019-001) will give rise to a different significant effect on these commercial properties. The construction works associated with the amendment will lead to a reduction in the construction noise levels,

but the noise effect will occur for a longer period (from one year and four months in the main ES to one year and seven months months).

Construction activities associated with the relocation of Water Orton Primary School (AP4-019-002) will result in a new adverse effect on 11 residential properties on Plank Lane, Long Leys Croft and Mickle Meadow when assessed on a community basis.

Traffic and transport

Effects arising during construction

The SES3 reported a major adverse effect on vehicle users as a result of changes in traffic flows during construction causing congestion and delay at the A446 Lichfield Road/B4118 Marsh Lane junction. As part of AP4-019-003, there will be temporary improvements to the junction and the effect reported in the SES3 will reduce to moderate adverse.

CFA23

Community

Effects arising during construction

The main ES reported a major adverse amenity effect on six residential properties located off the A452 Kenilworth Road and Marsh Lane, due to a combination of noise and visual effects during construction for up to one year and one month. The provision of a new roundabout at the A452 Kenilworth Road/Marsh Lane junction (AP4-023-001) will increase construction activity in this area, and Arden House will also be affected, bringing the total of residential properties subject to the amenity effect to seven, and the effect will increase in duration from one year and one month to one year and three months. This will result in a different significant effect, however the level of significance will remain as reported in the main ES.

The main ES reported that the pupils at the Island Project School would be adversely affected by the construction of the scheme due to noise and visual effects resulting in a major adverse amenity effect. In addition, the closure of Diddington Lane would mean that they would not be able to walk to Hampton-in-Arden

Village as part of life skills education, resulting in a major adverse isolation effect. The AP2 ES reported that the realignment of Diddington Lane (AP2-023-005) would not change the level of significance of the adverse isolation effect. As a result of the relocation of the Island Project School (AP4-023-002) to a new site at Jerrings Hall Farm, Solihull, the adverse temporary amenity and isolation effect will be avoided.

Cultural heritage

Effects arising during construction

The relocation of the Island Project School to Jerrings Hall Farm (AP4-023-002) will result in new significant effects. The relocation to Jerrings Hall, a Grade II listed building, will require the internal reconfiguration of the heritage asset, resulting in a major adverse effect on the building. The provision of a new modular building and car park and the presence of the Island Project satellite construction compound will result on major adverse effects on the setting of the building. The Island Project satellite construction compound will be located to the east of the hall and may have a direct impact upon below ground archaeological remains. This will result in a moderate adverse effect.

Effects arising during operation

The relocation of the Island Project School to Jerrings Hall Farm (AP4-023-002) will result in a new major adverse effect upon the setting of the hall, due to the introduction of the new car park, traffic movements and the change of use.

Landscape and visual

Effects arising during operation

The proposed A452 Kenilworth Road/Marsh Lane Junction will give rise to a different significant effect on the Blythe Valley LCA, during operation due to introducing lighting between the proposed roundabout and the existing roundabout at Bradnocks Marsh Lane to the south.

The main ES and SES3 reported a major adverse effect on the Blythe Valley LCA during the operation of the scheme. The proposed new roundabout at the junction between the A452 Kenilworth Road and Marsh Lane (AP4-023-001) will sit across the Blythe Valley LCA. Lighting of the new road layout will result in increased urbanisation and result in a different significant effect, however the level of significance will remain as reported in the main ES.

Sound, noise and vibration

Effects arising during construction

The main ES reported a significant noise effect in the open areas around 10 residential properties along the A452 Kenilworth Road, including Mercote Lodge Hornbrook Cottage, Bibury House, and Marsh Cottage and on the Bibury House guest house. Construction of the roundabout at the A452 Kenilworth Road/Marsh Lane junction (AP4-023-001) will change the location and timing of a number of road construction activities in this area, resulting in different significant effects, however the level of significance will remain as reported in the main ES. An additional residential property, Arden House, will also experience a significant construction noise effect.

The main ES reported a significant noise effect at the Island Project School at Diddington Hall. The relocation of the Island Project School to Jerrings Hall Farm (AP4-023-002) will remove the construction noise effect reported in the main ES on the school at its existing location at Diddington Hall. However the subsequent occupants of the premises may experience a significant effect, which is dependent on their sensitivity.

Traffic and transport

Effects arising during construction

Construction of the new roundabout at the A452 Kenilworth Road/Marsh Lane junction (AP4-023-001) will require temporary restrictions to the movements at the junction of A452 Kenilworth Road/Marsh Lane. This will result in a new temporary minor adverse effect on journey times due to increased travel distance for vehicles turning into and out of Marsh Lane and Mercote Hall Lane.

Effects arising during operation

The main ES reported a permanent minor adverse effect on journey times due to the reconfiguration of the A452 Kenilworth Road/Marsh Lane junction which would have required increased travel distance for right turning vehicles of 1.8km or 3.1km, depending on the direction of travel. The construction of the new roundabout at the A452 Kenilworth Road/Marsh Lane (AP4-023-001) will remove this permanent effect as vehicles will have access to an all-movement junction.

CFA24

Community

Effects arising during construction

The SES reported a temporary moderate adverse effect on car parking at the National Motorcycle Museum due to the temporary loss of 55 spaces. Further consideration of the car parking at the museum concluded that the highway changes introduced by the SES scheme would reduce the loss of temporary car parking spaces from 55 to 30 spaces. As part of AP4-024-001, temporary car parking spaces will be provided at the National Motorcycle Museum and this will fully mitigate the temporary loss of car parking spaces and this significant effect will be avoided.

Traffic and Transport

Effects arising during construction

The SES reported a temporary moderate adverse effect on car parking at the National Motorcycle Museum due to the temporary loss of 55 spaces. Further consideration of the car parking at the museum concluded that the highway changes introduced by the SES scheme would reduce the loss of temporary car parking spaces from 55 to 30 spaces. As part of AP4-024-001,

temporary car parking spaces will be provided at the National Motorcycle Museum and this will fully mitigate the temporary loss of car parking spaces and the significant effect will be avoided.

CFA25

Cultural heritage

Effects arising during construction

The SES reported adverse effects on Parkhill Wood (major adverse, due to the loss of ancient woodland), its associated woodbank (moderate adverse), the saw pit within Parkhill Wood (moderate adverse) and Langley Hill Wood (major adverse) as a result of the diversion of overhead power lines. As a result of amendments to an overhead power line diversion at Park Hall Nature Reserve (AP4-025-001), the assets would be retained and the significant adverse effects will be avoided.

Ecology

Effects arising during construction

The SES reported significant effect on Park Hall Site of Importance for Nature Conservation (SINC) due to the loss and fragmentation of ancient woodland, broadleaved semi-natural

woodland and other habitat types (for which the site is designated) as a result of the construction of the scheme, including the diversion of an overhead power line. The amendment to the overhead power line diversion (AP4-025-001) will avoid loss of ancient broadleaved woodland within Parkhill Wood and Langley Hill Wood, reducing the overall loss of ancient woodland at Park Hall SINC from 3.5ha to 0.7ha (from within Park Hall Wood). This will result in a different significant effect on the functional integrity of Park Hall SINC, however, the level of significance will remain as reported in the SES.

Land quality

Effects arising during construction

The relocation of a bottom ash plant to Tyseley (AP4-025-002), from Castle Bromwich Business Park will result in the change in land use of the new site from its historical use as an aluminium smelting works to a bottom ash plant. Remediation is likely to be required to make the site suitable for its new use. The remediation of the site will result in a moderate beneficial effect on groundwater.

Effects arising during operation

The moderate beneficial effect as a result of the remediation of the proposed bottom ash plant site in Tyseley will remain during operation.

Sound, noise and vibration

Effects arising during construction

Amendment AP4-025-002 will relocate a bottom ash plant from the Castle Bromwich Business Park to Tyseley. The construction of the bottom ash plant will result in new significant noise effects on a number of commercial/ industrial premises located to the south on Redfern Road for approximately one month.

Traffic and transport

Effects arising from operation

The operation of the relocated bottom ash plant (as part of AP-025-002) will increase the number of HGV movements on the local roads accessing the site, including on Kings Road between A45 Coventry Road and Speedwell Road, on Kings Road between Speedwell Road and Redfern Road and on Redfern Road between Kings Road and the site access. This will make it more difficult for pedestrians to cross these roads, resulting in a new major adverse effect.

CFA26

Land quality

Effects arising during construction

Potentially contaminated sites, which are within the land required permanently to construct the utility diversion at Network Park Industrial Estate (AP4-026-001) will be remediated during construction. This will result in a minor to moderate beneficial effect.

Landscape and visual

Effects arising during construction

The main ES reported a moderate adverse effect on the Washwood Heath Rail Corridor LCA, due to the presence of construction activities. The removal of five existing pylons within the Network Rail Industrial Estate and the diversion of the utility underground along Adderley Road (as part of AP4-026-001) will introduce additional construction activity into the LCA. This will result in a different significant effect, however the level of significance will remain as reported in the main ES.

The main ES reported moderate adverse effects on views west from residential properties on Alum Rock Road and views east

from Mainstream Way, due to the presence of construction activities. This additional construction activity associated with the removal of five existing pylons within the Network Rail Industrial Estate (as part of AP4-026-001) will result in different effect on these views, however the level of significance will remain as reported in the main ES.

The main ES reported a minor adverse effect on views west from Adderley Park. The additional construction activity associated with the removal of five existing pylons within the Network Rail Industrial Estate (as part of AP4-026-001) will increase the level of significance from minor adverse to moderate adverse, which is significant. Amendment AP4-026-001 will also result in a new moderate adverse effect on views west from residential properties on Adderley Road.

Effects arising during operation

The main ES reported moderate adverse effects on views west from residential properties on Alum Rock Road and on views east from Mainstream Way. The removal of five existing pylons within the Network Rail Industrial Estate (as part of AP4-026-001) will give rise to different effects on these

views, however the level of significance will remain as reported in the main ES.

Sound, noise and vibration

Effects arising during construction

The utility diversion at the Network Park Industrial Estate (AP4-026-001) will give rise to a new effect in the open areas surrounding approximately 150 residential properties along Adderley Road. Significant noise effects will occur at the following non-residential receptors: Adderley Children's Centre on St Saviours Road, the Madina Masjid Mosque, Adderley Primary School, commercial properties facing onto Adderley Road, and a proposed development that has not yet been constructed.

HS2 Ltd will continue to seek reasonably practicable measures to further reduce or avoid these significant noise and effects.

Noise at up to 85 residential properties on Adderley Road is forecast to slightly exceed the noise insulation trigger level as a result of the utility diversion at the Network Park Industrial Estate (AP4-026-001). Noise insulation will be offered for qualifying buildings to reduce noise inside the residential properties to a level that is not significant.

Volume 3: Route-wide effects

Chilterns AONB

Effects arising during construction

The main ES reported a significant effect on the Chilterns AONB as a result of the construction of the original scheme. The extension of the Chiltern tunnel (AP4-009-001) will reduce surface-level groundworks by approximately one third within the Misbourne Valley. Ancient woodland at Mantle's Wood, Farthings Wood and Sibley's Coppice will not be removed, as would be the case for the original scheme. This will change the level of significance of the effect on the Misbourne Valley from major adverse as reported in the main ES, to moderate adverse. For the AONB as a whole however, the extension of the Chiltern tunnel will not give rise to new or different significant effects to those reported in the main ES and the AP2 ES.

Effects arising during operation

The main ES reported that the presence of the original scheme would give rise to a significant effect on the landscape of the AONB. The increased length of the Chiltern tunnel as part of the AP4-009-001 will give rise to a different significant effect locally on the Misbourne

Valley, reducing from a major adverse effect as reported in the main ES, to a moderate adverse effect. For the AONB as a whole, however, the extension of the Chiltern tunnel will not give rise to new or different significant effects to those reported in the main ES and the AP2 ES.

Ecology

Effects arising during construction

The AP4 scheme will result in habitat loss and/or fragmentation from a total of four statutory designated sites for nature conservation (three SSSI and one local nature reserve). In comparison the SES3 scheme affects two statutory designated sites (SSSI). HS2 Ltd will work with relevant landowners, Natural England and London Wildlife Trust to develop appropriate mitigation and/or compensation to address this new significant effect.

As a result of the extension of the Chilterns tunnel (AP4-009-001), habitat loss and/or fragmentation at three LWSs, identified in the main ES, will not occur as the tunnel will now pass beneath these sites. However, three additional LWS previously located outside the land required for the scheme will be affected by the AP4 amendments. Overall, there is no

change in the number of LWS affected (89) by the scheme as a result of the AP4 amendments.

The number of ancient woodland sites directly affected by the scheme will reduce from 37 as reported in the SES3, to 32 as a result of the AP4 amendments and the amount of ancient woodland required will reduce by approximately 12.4ha (a total loss of 30.5ha for the scheme). This will result in a different significant effect, however the level of significance remains as reported in the main ES.

The AP4 revised scheme, in combination with the AP1, AP2 and AP3 amendments, will result in the reduction of 0.4ha of total ancient woodland losses, at 30.1ha. This will result in a different significant effect, however the level of significance remains as reported in the main ES.

Waste and material resources

Effects arising during construction

The total quantity of inert waste (i.e. surplus excavated material) that will require off-site disposal to landfill during construction will be approximately 12,573,420 tonnes, (an increase on the 3,760,937 tonnes reported in the main ES and an increase on the 11,311,251 tonnes reported in the AP2 ES). Work is

being undertaken to identify opportunities for the off-site re-use of surplus excavated material, for example in flood protection schemes, with the aim of achieving a landfill diversion rate of 90% for excavated material. The resultant significance of the effect after mitigation associated with the off-site disposal of inert surplus excavated material generated by construction of the AP4 revised scheme would be minor adverse, compared to negligible as reported in the main ES and minor adverse as reported in the AP2 ES.

The total quantity of non-hazardous waste that will require off-site disposal to landfill during construction is approximately 852,562 tonnes, (an increase of 88,387 tonnes (11.6%) reported in the main ES and an increase of 22,108 tonnes (2.7%) reported in the AP2 ES). The significance of the effect after mitigation remains as reported in the main ES and the AP2 ES (moderate adverse).

The total quantity of hazardous waste requiring off-site disposal to landfill during the construction period is approximately 539,193 tonnes, (an increase of 137,832 tonnes (34%) reported in the main ES and an increase of 1,784 tonnes (0.3%) reported in the AP2 ES). The significance of the

effect after mitigation remains as reported in the main ES and the AP2 ES (moderate adverse).

An assessment has been undertaken to establish the cumulative effects associated with the offsite disposal to landfill of solid waste that will be generated by the construction of the AP4 revised scheme and other developments along the HS2 route.

Without mitigation measures applied to the three major projects considered in the assessment alongside the HS2 scheme (Crossrail 1, Thames Tideway Tunnel and Northern Line Extension), the following effects would occur:

- moderate, in relation to inert waste landfill capacity;
- moderate adverse, in relation to non-hazardous waste landfill capacity; and
- major adverse, in relation to hazardous waste landfill capacity.

Implementation of mitigation measures to the three major projects will reduce the magnitude of the cumulative effects.

Volume 4: Off-route effects

Agriculture, forestry and soils

Effects arising during construction

AP4-000-001 will increase the amount of good quality land required for the HEx depot to 24ha. This will result in a new significant effect compared to the AP2 scheme.

Cultural heritage

Effects arising during construction

The provision of ecological mitigation at Langley (AP4-000-001) will result in the removal of part of the 1603 extent of Langley Park (first mapped in 1603) and will affect its setting. This will result in a new moderate adverse effect.

Ecology

Effects arising during construction

The AP2 ES reported that the construction of the HEx depot at Langley would result in significant effects as a result of loss of mosaic habitats, loss of waterbodies, and effects on great crested newt, common reptiles, breeding birds, bats, and terrestrial invertebrates. As a result of the provision of ecological mitigation at Langley (AP4-000-001), these effects will be avoided.

Traffic and transport

Effects arising during construction

During the works to create the ecological mitigation area (as part of AP4-000-001) it may be necessary to temporarily divert or close Footpath WEX/13/2, increasing travel distances by up to 400m for footpath users. As assessed on a precautionary basis, there will be a new moderate adverse significant residual severance effect due to the potential temporary diversion of Footpath WEX/13/2.

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