

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 4 and
Additional Provision 5 Environmental Statement

Non-technical summary

December 2015

SES4 and AP5 ES 3.0

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Department for Transport

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Contents

1. Introduction to the SES₄ and the AP₅ ES	1		
1.1 Purpose of this Non-technical summary	1		
1.2 Background to High Speed Two	1		
1.3 Terminology used to describe the scheme	2		
1.4 The SES ₄ and the AP ₅ ES	3		
1.5 Structure of the SES ₄ and the AP ₅ ES	4		
1.6 Approach to mitigation associated with the SES ₄ and the AP ₅ ES	5		
1.7 Consultation on the SES ₄ and the AP ₅ ES	5		
1.8 Assessment approach	7		
Part 1: Supplementary Environmental Statement 4	9		
2. Introduction to the Supplementary Environmental Statement 4	9		
3. Changes to the design that do not require amendments to the Bill	11		
3.1 Introduction	11		
3.2 Summary of changes to the design that do not require amendments to the Bill	11		
4. Corrections		17	
5. Summary of residual environmental effects for SES₄ changes		19	
5.1 Summary of residual environmental effects		19	
Part 2: Additional Provision 5 Environmental Statement		23	
6. Additional Provision 5 Environmental Statement		23	
6.1 Introduction		23	
6.2 Summary of amendments within the AP ₅		23	
7. Summary of residual environmental effects for AP₅ amendments		45	
7.1 Summary of residual environmental effects		45	

Table 1: Scheme definitions	2
Table 2: Summary of change to the design not requiring a change to the Bill within CFA10 – Dunsmore, Wendover and Halton	13
Table 3: Summary of change to the design not requiring a change to the Bill within CFA13 – Calvert, Steeple Claydon, Twyford and Chetwode	15
Table 4: Summary of amendments within CFA6 – South Ruislip to Ickenham	25
Table 5: Summary of amendments within CFA7 – Colne Valley	29
Table 6: Summary of amendment within CFA11 – Stoke Mandeville and Aylesbury	31
Table 7: Summary of amendments within CFA12 – Waddesdon and Quainton	33
Table 8: Summary of amendment within CFA15 – Greatworth to Lower Boddington	35
Table 9: Summary of amendment within CFA20 – Curdworth to Middleton	37
Table 10: Summary of amendments within CFA21 – Drayton Bassett, Hints and Weeford	39
Table 11: Summary of amendment within CFA22 – Whittington to Handsacre	41
Table 12: Summary of amendment within CFA24 – Birmingham Interchange and Chelmsley Wood	43

Figure 1: Phase One route showing the community forum areas with and without SES ₄ design changes and AP ₅ amendments	6
Figure 2: Approximate location of the SES ₄ change to the design for Community Forum Area 10 – Dunsmore, Wendover and Halton	12
Figure 3: Approximate location of the SES ₄ change to the design for Community Forum Area 13 – Calvert, Steeple Claydon, Twyford and Chetwode	14
Figure 4: Approximate location of AP ₅ amendments for Community Forum Area 6 – South Ruislip to Ickenham	24
Figure 5: Approximate location of AP ₅ amendments for Community Forum Area 7 – Colne Valley	28
Figure 6: Approximate location of AP ₅ amendment for Community Forum Area 11 – Stoke Mandeville and Aylesbury	30
Figure 7: Approximate location of AP ₅ amendments for Community Forum Area 12 – Waddesdon and Quainton	32
Figure 8: Approximate location of AP ₅ amendment for Community Forum Area 15 – Greatworth to Lower Boddington	34
Figure 9: Approximate location of AP ₅ amendment for Community Forum Area 20 – Curdworth to Middleton	36
Figure 10: Approximate location of AP ₅ amendments for Community Forum Area 21 – Drayton Bassett, Hints and Weeford	38
Figure 11: Approximate location of AP ₅ amendment for Community Forum Area 22 – Whittington to Handsacre	40
Figure 12: Approximate location of AP ₅ amendment for Community Forum Area 24 – Birmingham Interchange and Chelmsley Wood	42

1. Introduction to the SES4 and the AP5 ES

1.1 Purpose of this Non-technical summary

This document is the Non-technical summary (NTS) of the Supplementary Environmental Statement 4 ('SES4') and the Additional Provision 5 Environmental Statement ('AP5 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 changes reported in the SES4 and the amendments reported within the AP5 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 NTS.

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, the need for 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

four 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);
- AP3: deposited in Parliament in September 2015. This focused on CFAs 1 (Euston station and approach) to 3 (Primrose Hill to Kilburn (Camden)); and
- AP4: deposited in Parliament in October 2015. This focused on CFAs 4 (Kilburn (Brent) to Old Oak Common) to 26 (Washwood Heath to Curzon Street).

A number of other changes to the design, which do not require amendments to the Bill, have also been made. Any new or different significant effects that were likely to result from such changes as well as from changes to construction assumptions, new environmental baseline information, and corrections to the main ES were reported in the following 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);
- the SES2: submitted alongside the AP3 ES. This focused on CFAs 1 (Euston station and approach) to 5 (Northolt Corridor); and
- the SES3: submitted alongside the AP4 ES. This focused on CFAs 4 (Kilburn (Brent) to Old Oak Common) to 26 (Washwood Heath to Curzon Street).

Since submission of the SES3 and the AP4 ES, the need for a number of further amendments has been identified in the following CFAs:

- CFA6 (South Ruislip to Ickenham);
- CFA7 (Colne Valley);
- CFA11 (Stoke Mandeville and Aylesbury);
- CFA12 (Waddesdon and Quainton);
- CFA15 (Greatworth to Lower Boddington);
- CFA20 (Curdworth to Middleton);
- CFA21 (Drayton Bassett, Hints and Weeford);
- CFA22 (Whittington to Handsacre); and
- CFA24 (Birmingham Interchange and Chelmsley Wood).

These amendments include additional land required for generally minor works. These amendments are being promoted through AP5. The associated AP5 ES describes these amendments and reports the associated new or different likely significant environmental effects.

There are two design changes in CFAs 10 (Dunsmore, Wendover and Halton) and 13 (Calvert, Steeple Claydon, Twyford and Chetwode) that do not require amendments to the Bill and a correction to the main ES in CFA11 (Stoke Mandeville and Aylesbury). Any new or different likely significant effects that are likely to result from these changes are reported in a fourth SES ('SES4').

These additional amendments and design changes have arisen through the High Speed Rail (London–West Midlands) Bill Select Committee ('the Select Committee') process, and ongoing discussions with petitioners and key stakeholders including utility companies.

A formal consultation will be undertaken on the SES4 and the AP5 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 SES4 and the AP5 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 (excluding 8, 23 and 25)
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 (excluding 8)
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 3 (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 (excluding 5 and 21)
the AP4 revised scheme	the SES3 scheme as amended by the AP4 submitted in October 2015	4 to 26 (excluding 14 and 21)
the SES4 scheme	the SES3 scheme with design changes described in the SES4 submitted in December 2015	10 and 13
the AP5 revised scheme	the SES4 scheme as amended by the AP5 submitted in December 2015	6, 7, 11, 12, 15, 20, 21, 22 and 24

The following terms are also used to differentiate between design changes included in the SES4 and those included in the AP5 ES:

- 'SES4 design changes' – changes to the scheme reported in the SES4 that do not require amendments to the Bill; and
- 'AP5 amendments' – changes to the scheme reported in the AP5 ES that require amendments to the Bill.

1.4 The SES4 and the AP5 ES

The SES4 and the AP5 ES are separate ESs, but have been produced as combined volumes (see section 1.5 of this NTS for further details).

Supplementary Environmental Statement 4

The SES4 presents an assessment of the new or different likely significant effects arising from the SES4 changes compared to the SES3 scheme, which forms the baseline for the assessment. Where relevant, the assessment also reports the likely significant cumulative effects taking into account previous AP amendments.

The SES4 changes include:

- changes to the design of the scheme that do not require amendments to the Bill. These are the provision of additional noise mitigation at Wendover and Chetwode including an extension of the Wendover green tunnel southward by 100m, and increasing the height and length of noise fence barriers; and
- a correction to the main ES.

Additional Provision 5 Environmental Statement

The AP5 ES reports any new or different likely significant environmental effects due to the amendments proposed in AP5 compared to the SES4 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 AP5 amendment is reliant on land required for previous AP revised schemes. Where this occurs it is assumed that the relevant previous AP amendment will be enacted, and therefore the total impact of the AP5 amendment with the relevant previous AP amendment is assessed.

The AP5 amendments are:

- car parking and access: additional land for replacement car parking, access road and security gatehouse at a pharmaceutical research facility in CFA6 (South Ruislip to Ickenham);
- utilities:
 - additional land for a temporary utility diversion between pylons located between Harvil Road and Breakspear Road North, in the London Borough of Hillingdon in CFA6 (South Ruislip to Ickenham) and CFA7 (Colne Valley);

- additional land for a permanent overhead power line diversion at Hillingdon Quarry in CFA7 (Colne Valley);
- additional land required temporarily for utility winching works near Aylesbury in CFA11 (Stoke Mandeville and Aylesbury), near Botolph Claydon and Grendon Underwood in CFA12 (Waddesdon and Quainton), West of Brockhurst Lane in CFA21 (Drayton Bassett, Hints and Weeford) and near Hanch Reservoir and north of Lichfield Golf Course in CFA22 (Whittington to Handsacre); and
- additional land required for a gas main diversion at Gallows Brook, Middleton in CFA20 (Curdworth to Middleton) and CFA21 (Drayton Bassett, Hints and Weeford); and
- public rights of way (PRoW):
 - a reduction in length by 70m of the permanent diversion of Bridleway DEN/3 Ricks 002 near Denham in CFA7 (Colne Valley); and
 - a change to Footpath AN13 near Greatworth in CFA15 (Greatworth to Lower Boddington); and
- permanent scheme infrastructure:
 - additional land required for the upgrading of the A5 Hints Bridleway 4 overbridge to an accommodation overbridge to enable

use by agricultural vehicles in CFA21 (Drayton Bassett, Hints and Weeford); and

- additional land required for the realignment of the people mover between the Birmingham Airport and the National Exhibition Centre (NEC) people mover stops in CFA24 (Birmingham Interchange and Chelmsley Wood).

1.5 Structure of the SES4 and the AP5 ES

The SES4 and the AP5 ES are separate documents. However, they are bound together and presented in combined volumes. The SES4 and the AP5 ES comprise:

- NTS: this provides a summary in non-technical language of the SES4 and the AP5 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 SES4 and the AP5 ES. This introduces the design changes

included within the SES4 and amendments within the AP5 ES. The report explains the scope, methodology, assumptions and limitations of the environmental assessment, and approach to consultation.

- Volume 2: CFA reports and map book. These describe the design changes included within the SES4 and amendments within the AP5 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 the SES, the SES2 and the SES3 documents (and SES4 for the AP5 amendments) are reported. The AP1, AP2, AP3 and AP4 amendments are also taken into account where relevant.
- Volume 3: route-wide effects. This reports new or different likely significant route-wide effects arising from the design changes included within the SES4 and amendments within the AP5 ES, compared to those reported in the main ES as updated by the SES, SES2 and SES3 (and SES4 for the AP5 amendments). The AP1, AP2, AP3 and AP4 amendments are also taken into account where relevant;

- Volume 5: appendices and map book. This contains environmental information and associated maps in support of the other volumes of the SES4 and AP5 ES; and
- glossary of terms and list of abbreviations. This contains any new or different terms and abbreviations used throughout the SES and AP ES reports, additional to those included in the main ES.

In the main ES, the SES, the AP2 ES, the SES3 and the AP4 ES, Volume 4 presented an assessment of the likely significant environmental effects that will occur in locations away from the HS2 route. None of the SES4 changes or AP5 amendments occur, or have likely significant effects in off-route areas (i.e. outside the CFAs), so no Volume 4 has been prepared.

For CFA22 (Whittington to Handsacre), the changes brought forward by AP2 were substantial and the Volume 2 report was rewritten in its entirety, effectively replacing the CFA22 Volume 2 report prepared for the main ES. There are no SES4 changes in CFA22.

For CFA22 therefore, the AP5 ES provides an assessment of any new or different likely significant environmental effects arising from

the amendment compared to the AP2 revised scheme, as updated by the SES3 scheme, as it is assumed that the AP5 amendment will only proceed in the event that the AP2 amendments are enacted.

Figure 1 identifies the CFAs with and without SES4 design changes and AP5 amendments along the HS2 Phase One route.

1.6 Approach to mitigation associated with the SES4 and the AP5 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, 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 and 3 of the SES4 and the AP5 ES, where required.

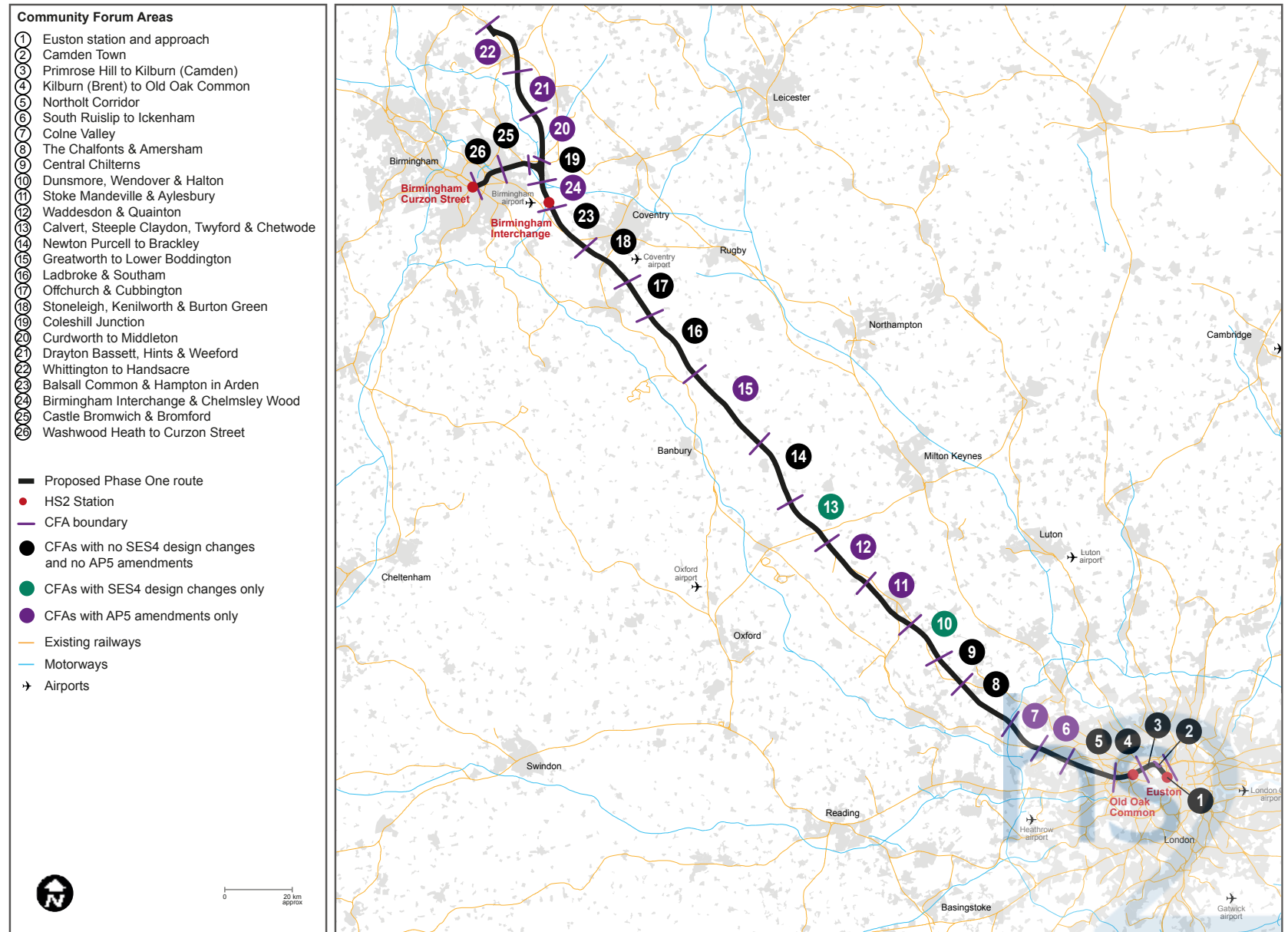
1.7 Consultation on the SES4 and the AP5 ES

A formal public consultation on both the SES4 and the AP5 ES is required by Parliamentary Standing Orders. Consultees will have 42 days to respond to the consultation following the deposit of the SES4 and the AP5 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 SES4 and amendments in the AP5 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>).

Figure 1: Phase One route showing the community forum areas with and without SES4 design changes and AP5 amendments



1.8 Assessment approach

Scope of the assessment

A scoping exercise was undertaken by environmental technical specialists to determine whether or not the SES4 changes and the AP5 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 SES4 changes and AP5 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 SES4 and the AP5 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 and subsequent addendums.

Part 1: Supplementary Environmental Statement 4

2. Introduction to the Supplementary Environmental Statement 4

This part of the NTS provides a summary of the SES₄. It also reports whether the design changes reported within the SES₄ 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: design changes that do not require amendments to the Bill;
- Section 4: a correction to the main ES; and
- Section 5: summary of residual significant environmental effects from the SES₄.

3. Changes to the design that do not require amendments to the Bill

3.1 Introduction

Some of the changes to the design do not require amendments to the Bill. These are reported within the SES₄, where they result in new or different likely significant environmental effects from those reported in main ES and, where relevant, the subsequent SESs and AP ESs.

SES₄ design changes are found within CFAs 10 (Dunsmore, Wendover and Halton) and 13 (Calvert, Steeple Claydon, Twyford and Chetwode).

3.2 Summary of changes to the design that do not require amendments to the Bill

Tables 2 and 3 present a summary of the changes to the design for each of the CFAs, providing a description of the SES₃ scheme and the SES₄ scheme.

Figures 2 and 3 show the approximate location of the SES₄ design changes within each of the CFAs. The legend is common to each figure in this section.

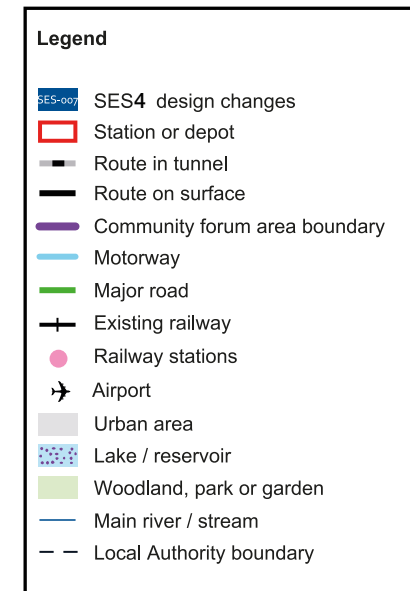


Figure 2: Approximate location of the SES4 change to the design for Community Forum Area 10 – Dunsmore, Wendover and Halton

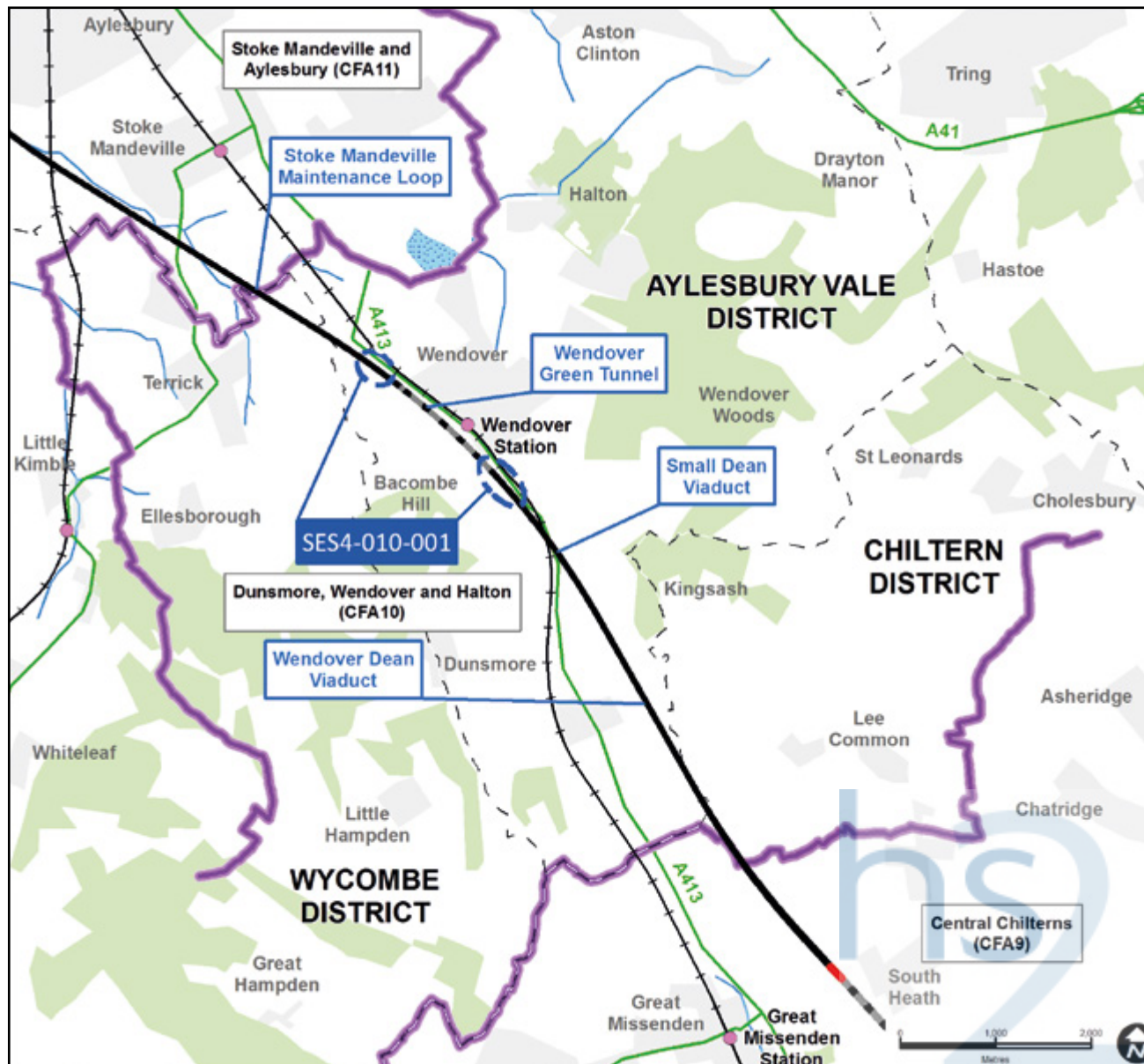


Table 2: Summary of change to the design not requiring a change to the Bill within CFA10 – Dunsmore, Wendover and Halton

Name of design change	Description of the SES3 scheme	Description of the SES4 scheme
Provision of additional noise mitigation at Wendover (SES4-010-001)	The Bill provides for noise mitigation measures at the south of Wendover. Noise fence barriers (4m high) are proposed to be installed on both sides of the HS2 route, from the south of Small Dean viaduct to the south portal of Wendover green tunnel.	<p>Further consideration has been given to additional noise mitigation measures to reduce operational noise effects in Wendover. For the purposes of the assessment it has been assumed that this will be provided by:</p> <ul style="list-style-type: none"> • an extension of the Wendover green tunnel southward by 100m; • a 6m high noise fence barrier approximately 780m in length along the eastern side of the HS2 route, between the Small Dean viaduct and the new location of the south portal, replacing the previously proposed 4m high noise fence barrier; and • a 6m high noise fence barrier approximately 340m in length located within the cutting at the northern portal of the Wendover green tunnel. <p>Earthworks would be constructed alongside the Wendover green tunnel south portal to reduce the visual impact of the noise fence barriers and the extension of the green tunnel.</p> <p>As a consequence of these works, there would need to be a permanent realignment of overhead power lines in this area. The alignment will approximately follow the existing overhead power lines. Two new permanent pylons will be constructed, one on the west of the HS2 route, east of Grove Farm and the second on the east of the HS2 route, near the new location of the south portal. The overhead power line will cross the HS2 route approximately 50m south of the current location.</p>

Figure 3: Approximate location of the SES4 change to the design for Community Forum Area 13 - Calvert, Steeple Claydon, Twyford and Chetwode

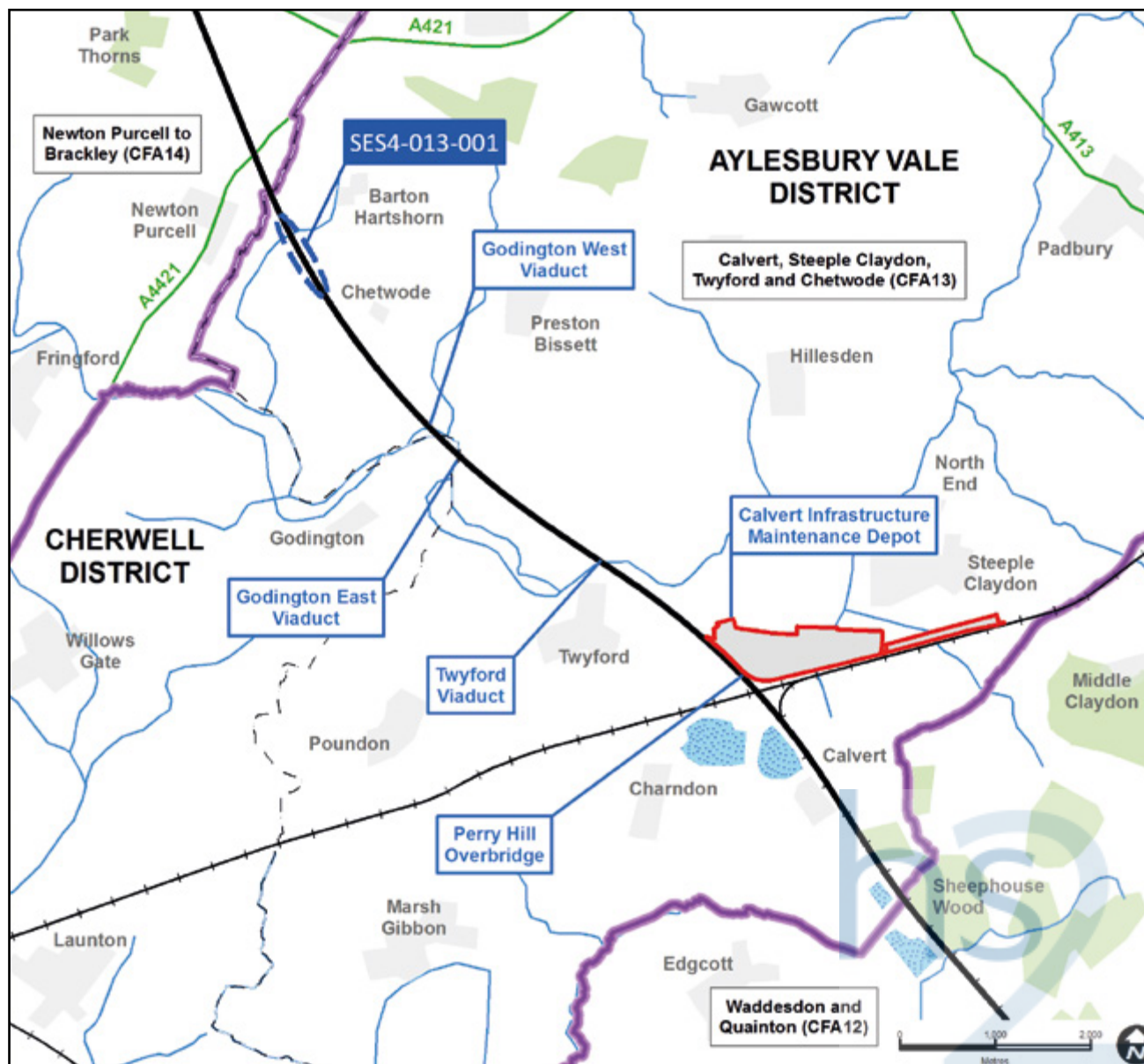


Table 3: Summary of change to the design not requiring a change to the Bill within CFA13 – Calvert, Steeple Claydon, Twyford and Chetwode

Name of design change	Description of the SES3 scheme	Description of the SES4 scheme
Provision of additional noise mitigation at Chetwode (SES4-013-001)	The Bill provides for a noise fence barrier 3m in height for a length of approximately 1km along the east of the HS2 route from Rosehill Farm to The Hermitage, Chetwode.	<p>Further consideration has been given to additional noise mitigation measures to reduce operational noise effects in Chetwode. For the purposes of the assessment it has been assumed that this will be provided by:</p> <ul style="list-style-type: none"> • an increase to the height of the noise fence barrier from 3m to 5m; and • an extension of the 5m high noise fence barrier on the east of the HS2 route approximately 1km to the north, to Barton Hartshorn Railway Wood. <p>This would provide a 2km long continuous noise fence barrier.</p>

4. Corrections

A number of corrections to the main ES were identified and published in the subsequent SESs. Since then, the need for an additional correction to the main ES in CFA₁₁ (Stoke Mandeville and Aylesbury) has been identified. The correction relates to the length of boundary wall that was reported to be demolished in the grounds of Hartwell House and Park.

The 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. The effects of the correction are reported in Section 5 of the NTS.

5. Summary of residual environmental effects for SES4 changes

5.1 Summary of residual environmental effects

In a number of cases, new or different likely significant effects have been identified as a result of SES4 changes. Those which remain after mitigation have been put in place are referred to as 'residual effects'.

CFA10

Community

Effects arising during construction

The main ES reported a major adverse amenity effect on approximately five residential properties on Bacombe Lane due to a combination of significant visual effects and significant daytime noise effects for approximately one year and four months, associated with the construction of the Wendover green tunnel.

The provision of additional noise mitigation at Wendover (SES4-010-001) will increase the duration of the construction noise effects in this location by approximately three months.

This will result in a different significant effect on approximately five residential properties on Bacombe Lane, however the level of significance will remain as reported in the main ES. The reduction in operational noise as a result of the additional mitigation is reported under the Sound, noise and vibration heading below.

Cultural heritage

Effects arising during operation

The main ES reported adverse effects on the setting of the southern part of the town's conservation area (within which St. Mary's Church is located), referred to as the 'Wendover southern focus' (major adverse) and on Old Mill House (moderate adverse) as a result of the operation of the scheme. The provision of noise mitigation at Wendover (as part of SES4-010-001) will reduce operational noise, and as a result the effects on the setting of these assets will reduce to minor adverse, which is not significant.

Sound, noise and vibration

Effects arising during operation

The main ES reported that three residential properties (Larkfield, Long Meadow, and Cobwebs, in the vicinity of Bacombe Lane) were likely to qualify for noise insulation. The provision of additional noise mitigation (SES4-010-001) reduces the predicted operational noise in this area to a level that will not significantly affect residents inside their homes, and as a result these three residential properties are no longer expected to require noise insulation.

The main ES reported a significant adverse noise effect in the open areas around approximately 10 residential properties in the vicinity of Bacombe Lane. As a result of the provision of additional noise mitigation (SES4-010-001), this significant effect will be avoided.

The main ES reported a significant noise effect on St Mary's Church, Wendover. As a result of the provision of additional noise mitigation (SES4-010-001), this significant effect will be avoided.

CFA11

Cultural heritage

Effects arising during construction

The main ES reported the removal of approximately 50m of a boundary wall in the grounds of Hartwell House and Park. However, this should have been reported as 110m. Although the length of demolition reported is increased, and will result in a different significant effect, the level of significance will remain major adverse as reported in the main ES. The part of the wall removed temporarily (approximately 15m in length) will be reinstated on completion of construction works. In advance of demolition and modification a programme of historic building investigation and recording will be undertaken.

CFA13

Community

Effects arising during operation

The main ES reported a major adverse effect on the amenity of up to 10 residential properties on School End in Chetwode, as a result of a

combination of significant visual effects (due to the visibility of the School End overbridge) and significant noise effects (from passing trains).

The provision of additional noise mitigation at Chetwode will decrease the number of residential properties that will experience an amenity effect from ten to eight. This will result in a different significant effect, however the level of significance will remain as reported in the main ES.

Cultural heritage

Effects arising during operation

The main ES reported adverse effects on: Chetwode Conservation Area (major adverse); the Church of St Mary and St Nicholas (major adverse); Sunflower Farmhouse (moderate adverse), and The Hermitage (moderate adverse), as a result of the presence of, and noise from, passing trains.

SES-013-001 provides an approach to reducing noise impacts by increasing the height of noise fence barriers at Chetwode to 5m, and extending the barrier on the east side of the HS2 route northwards for a distance of approximately 1km. This will reduce noise from passing trains and the effects on the Church of St Mary and St Nicholas will reduce from major adverse to moderate

adverse. The changes will also reduce noise from passing trains for Sunflower Farmhouse, the Hermitage and Chetwode Conservation Area. However, the level of significance will remain as reported in the main ES.

Sound, noise and vibration

Effects arising during operation

The main ES reported that a residential property (The Hermitage) was likely to qualify for noise insulation. The provision of additional noise mitigation (SES4-013-001) reduces the predicted operational noise at this property to a level that will not significantly affect residents inside it, and as a result this residential property is no longer expected to require noise insulation.

The main ES reported significant noise effects on a community basis at approximately 25 residential properties and associated shared community open areas in the vicinity of the road that runs through Chetwode. The additional noise mitigation at Chetwode, as part of SES-013-001, will reduce the number of residential properties affected from approximately 25 to approximately 15, giving rise to a different significant effect compared to that reported in the main ES.

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Part 2: Additional Provision 5 Environmental Statement

6. Additional Provision 5 Environmental Statement

6.1 Introduction

A number of amendments to the scheme will require additional powers. Therefore, a fifth Additional Provision to the Bill is being submitted accompanied by AP5 ES.

The remainder of this NTS is structured as follows:

- Section 6.2: presents a summary table of all amendments that require additional powers to those already included within the Bill for CFAs 6, 7, 11, 12, 15, 20, 21, 22 and 24; and
- Section 7: summary of residual environmental effects for amendments within the AP5: presents a list of all environmental effects that remain after mitigation measures have been put in place.

6.2 Summary of amendments within the AP5

Tables 4–12 provide a summary of each amendment within the AP5 ES, along with a description of the SES4 scheme, or where relevant, the revised scheme outlined in the previous AP ESs.

Figures 4–12 show the approximate location of each of the amendments within CFAs 6, 7, 11, 12, 15, 20, 21, 22 and 24. The legend is common to each figure in this section.



Figure 4: Approximate location of AP5 amendments for Community Forum Area 6 – South Ruislip to Ickenham

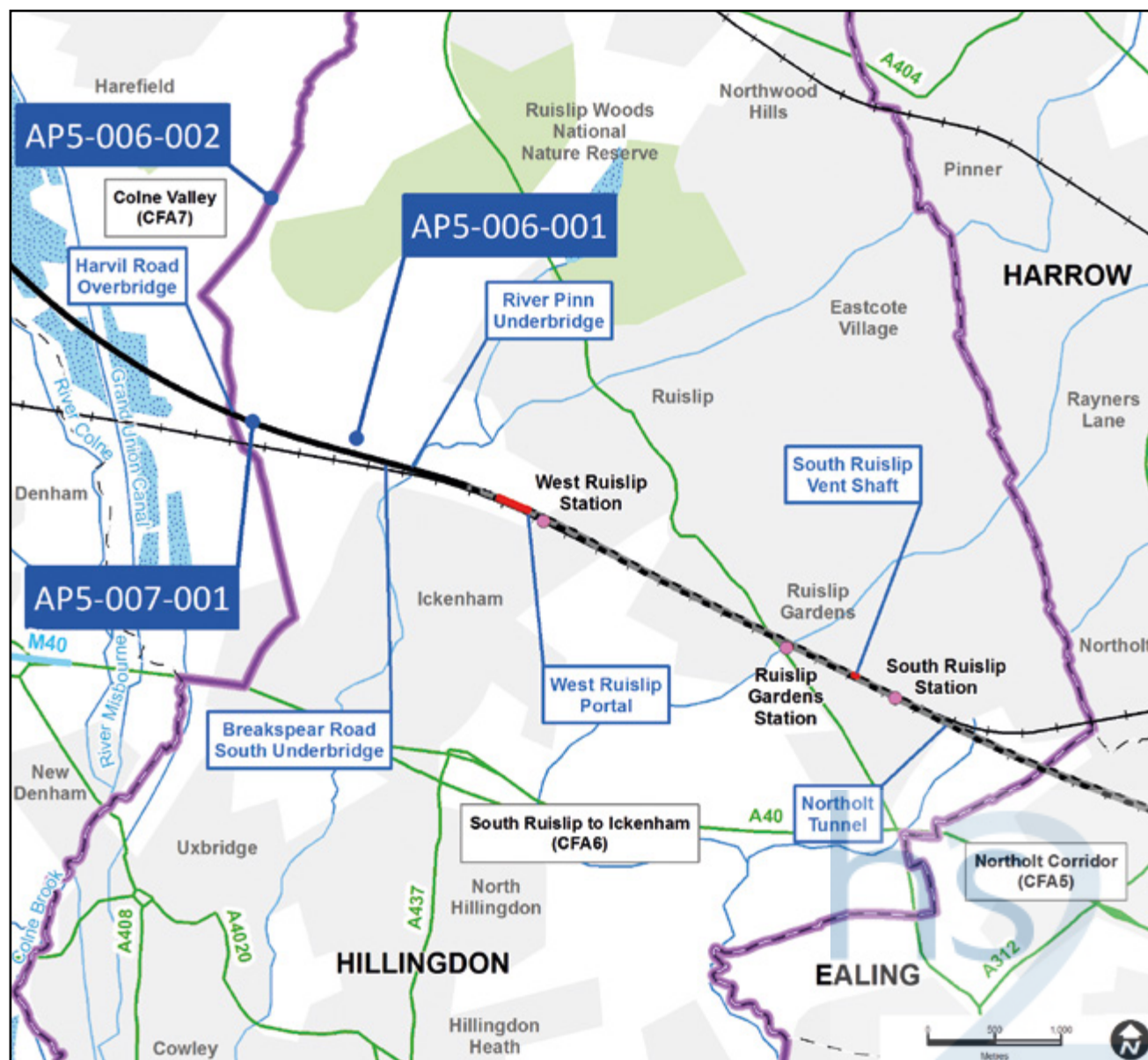


Table 4: Summary of amendments within CFA6 – South Ruislip to Ickenham

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
Additional land required for the relocation of a car park and accommodation access changes for a pharmaceutical research facility near Ickenham (AP5-006-001)	The Bill provides for the HS2 route north-west of Ickenham to be predominantly in cutting. This would include the Copthall retained structure south of the pharmaceutical research facility off Breakspear Road South. Twelve buildings will be demolished in the southern section of the research facility and 90 off-street parking spaces would be required. Utilities diversions serving the research facility will be undertaken to run along a new access road within the research facility.	To allow continued operation of the remainder of the facility, a car park with a capacity of approximately 50 spaces and a security gatehouse are proposed. The area of land required is within a grassed area at the eastern end of the facility, west of Newyears Green Lane, south-west of Bridleway U42. A new 250m section of access road and diversion of utilities will also be provided. Approximately 0.65ha of additional land is required permanently at the eastern extent of the research facility. Separate from the amendment, the operators of the facility will provide an additional 65 parking spaces within two other car parking areas on land not required by the scheme. This will result in a total of 115 off-street car parking spaces being provided.
Additional land required for utility works in the London Borough of Hillingdon (AP5-006-002)	The Bill provides for land for the reconductoring of an overhead power line along the boundary of CFA6 (South Ruislip to Ickenham) and CFA7 (Colne Valley) between Harvil Road and Breakspear Road North, in the London Borough of Hillingdon.	It has been identified that a temporary diversion is required between the pylons where reconductoring is necessary. The diversion will begin at a pylon approximately 500m north of Harvil Road and Lower Lodge, and extend 1km northwards, ending approximately 250m north of Breakspear Road North, near Bourne Farm. A 60m wide corridor of land will be required for the diversion to allow suitable access and working room and to avoid sensitive receptors. Approximately 4.1ha of additional land will be required temporarily.

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
<p>Additional land required for an overhead line diversion at Hillingdon Quarry (AP5-007-001)</p>	<p>The Bill provides for the permanent diversion of an overhead power line from its original alignment (50m north of the Hillingdon Outdoor Activity Centre) to a new alignment that crosses the HS2 route east of Harvil Road. This would require the removal of four existing pylons, whilst replacing one existing pylon. The diversion would require seven new pylons, five of which would be in CFA7 (Colne Valley) and two in CFA6 (South Ruislip to Ickenham). The amended alignment would pass through Uxbridge Golf Club.</p> <p>The AP2 revised scheme (AP2-007-002) relocates six of the seven diverted pylons and includes an additional pylon.</p>	<p>A new permanent alignment of the overhead power line will cross the HS2 route approximately 500m west of Harvil Road. This will require two new pylons as part of AP5 and will still require the removal of four existing pylons and replacement of one. Only three of the pylons proposed in the original scheme and the AP2 revised scheme will be required to be installed.</p> <p>New pylons proposed in the original scheme and the AP2 revised scheme still to be installed in the AP5 revised scheme will be located:</p> <ul style="list-style-type: none"> • adjacent to the proposed National Grid feeder station; • approximately 100m west of Dew's Farm Cottages; and • on the west bank of the Grand Union Canal. <p>The AP5 revised scheme includes two new pylons, which will be located:</p> <ul style="list-style-type: none"> • on the north side of the Chiltern Main Line; and • on the east bank of Denham Quarry Lake B. <p>Approximately 2.4ha of additional land is required within Hillingdon Quarry for this amendment.</p> <p>This AP5 amendment is partly dependent on and partly revises amendment AP2-007-002 and will only be implemented if amendment AP2-007-002 is enacted.</p>

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Figure 5: Approximate location of AP5 amendments for Community Forum Area 7 – Colne Valley

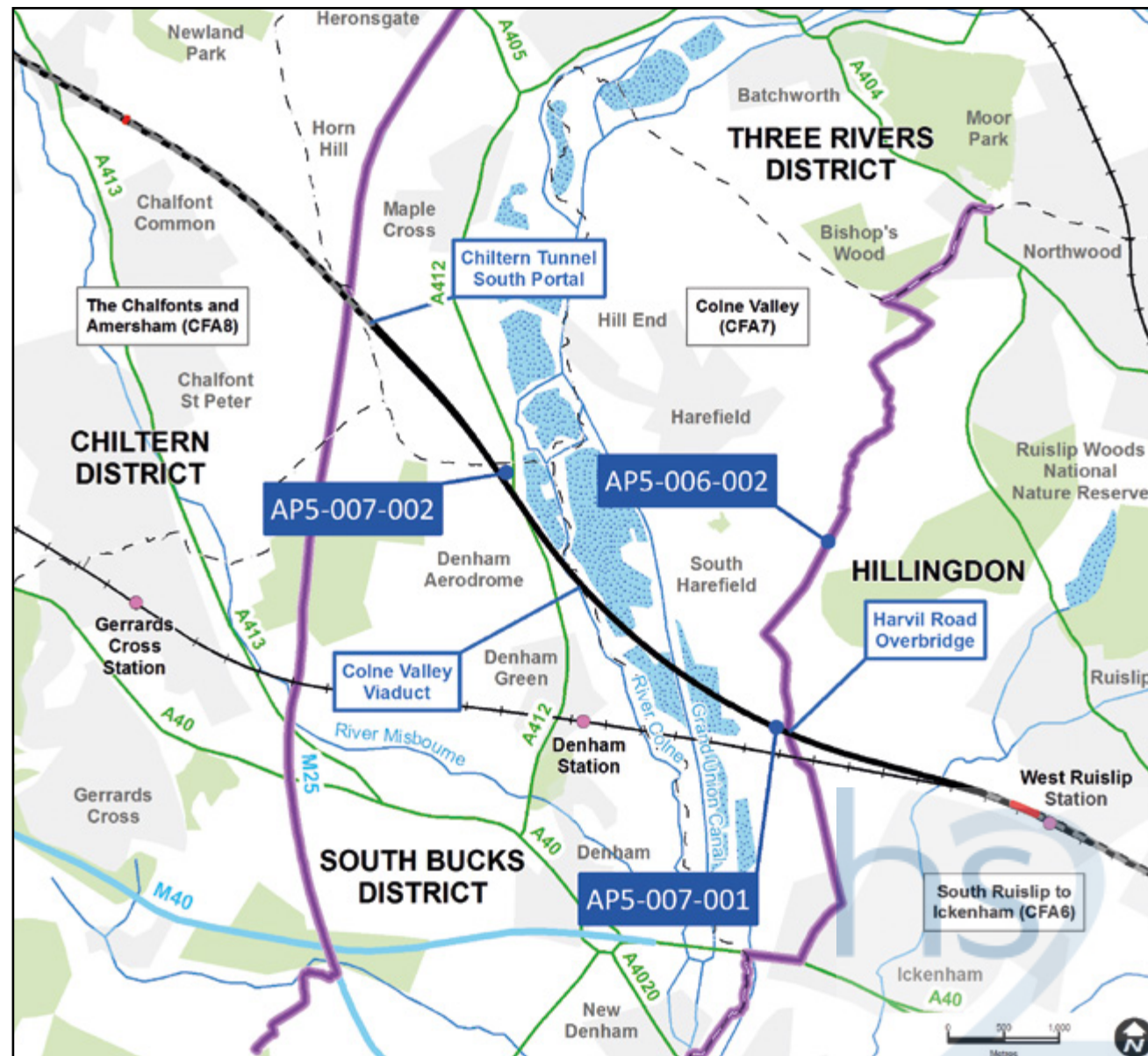


Table 5: Summary of amendments within CFA7 – Colne Valley

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
Additional land required for utility works in the London Borough of Hillingdon (AP5-006-002)	For information on this amendment see AP5-006-002 in Table 4 (Summary of amendments within CFA6 – South Ruislip to Ickenham).	For information on this amendment see AP5-006-002 in Table 4 (Summary of amendments within CFA6 – South Ruislip to Ickenham).
Additional land required for an overhead line diversion at Hillingdon Quarry (AP5-007-001)	For information on this amendment see AP5-007-001 in Table 4 (Summary of amendments within CFA6 – South Ruislip to Ickenham).	For information on this amendment see AP5-007-001 in Table 4 (Summary of amendments within CFA6 – South Ruislip to Ickenham).
Revised permanent diversion of Bridleway DEN/3 Ricks 002 near Denham (AP5-007-002)	The Bill provides for the permanent diversion of Bridleway DEN/3 Ricks 002 approximately 150m to the south of the existing alignment in order to pass under the HS2 route at the Colne Valley viaduct, adding 270m to the existing alignment. The diverted PRow would pass between the railway embankment and landscape mitigation planting on the eastern side of the HS2 route.	Bridleway DEN/3 Ricks 002 will be permanently diverted on the eastern side of the HS2 route around the eastern side of the landscape mitigation planting, set back 2m from the edge of the planting. An additional section of the bridleway will be stopped up to the north of the landscape mitigation planting. The permanent diversion will add approximately 200m to the current alignment of the bridleway, which is 70m shorter than the diversion proposed in the original scheme. No additional land is required for this amendment.

Figure 6: Approximate location of AP5 amendment for Community Forum Area 11 – Stoke Mandeville and Aylesbury

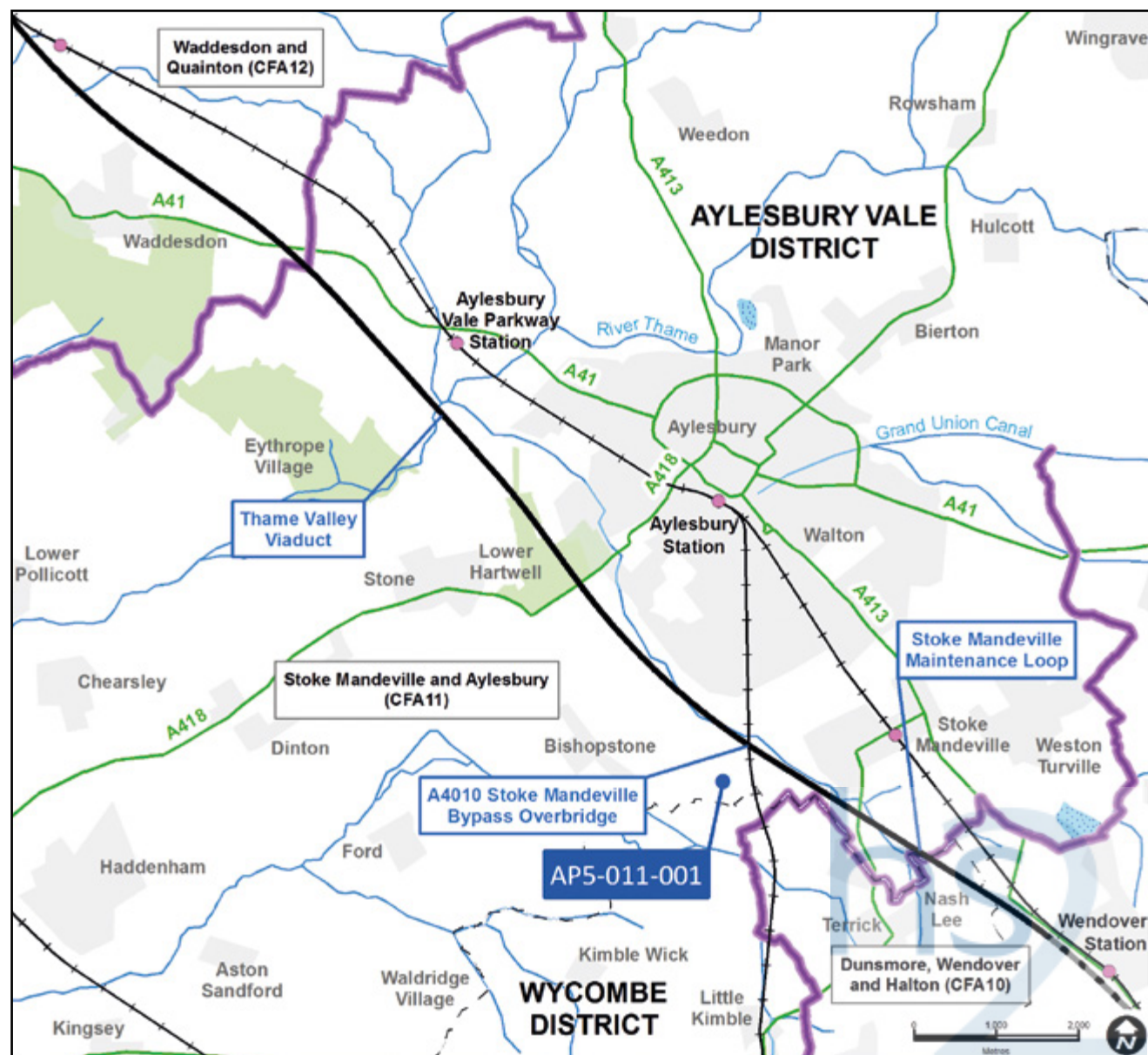


Table 6: Summary of amendment within CFA11 – Stoke Mandeville and Aylesbury

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
Additional land required for utility winching works near Aylesbury (AP5-011-001)	The Bill provides for land for reconductoring (the process of installing or replacing wires on a section of overhead power line using winches) and earthing of overhead power lines (involves workers climbing the pylon and connecting a thin wire from the conductor to the earth plate on the pylon to protect those working on the overhead power lines), at a pylon approximately 220m north of Springfield Farm buildings, near Aylesbury.	The safe working area required for reconductoring and earthing will be extended at the construction boundary of the pylon. Approximately 0.7ha of additional land will be required temporarily.

Figure 7: Approximate location of AP5 amendments for Community Forum Area 12 – Waddesdon and Quainton

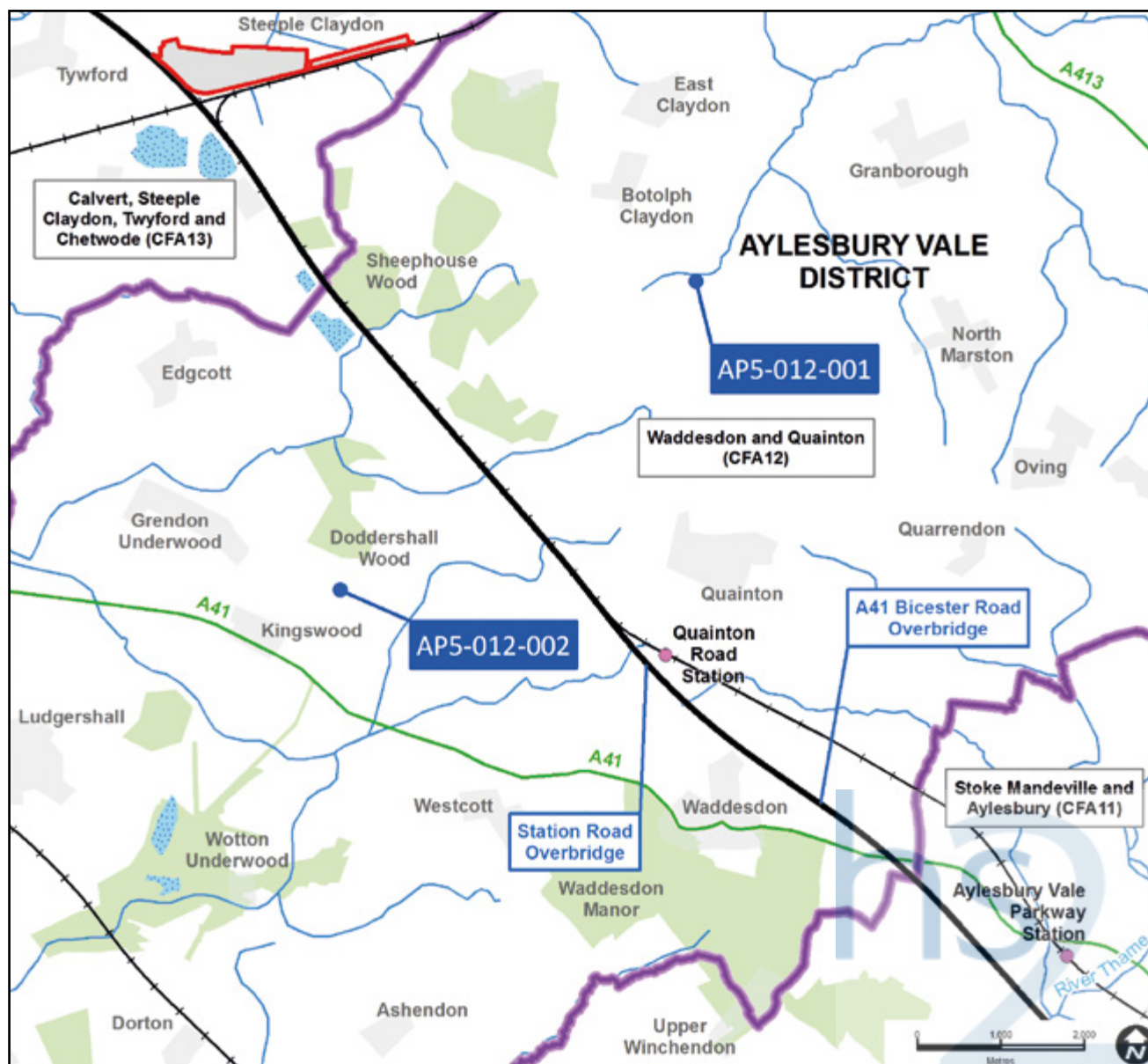


Table 7: Summary of amendments within CFA12 – Waddesdon and Quainton

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
Additional land required for utility winching works near Botolph Claydon (AP5-012-001)	The Bill provides for land for the reconductoring and earthing of overhead power lines, at a pylon approximately 200m east of Borshaw Farm buildings, Botolph Claydon.	The safe working area required for the reconductoring and earthing will be extended at the construction boundary of the pylon. Approximately 0.4ha of additional land will be required temporarily.
Additional land required for utility winching works near Grendon Underwood (AP5-012-002)	The AP1 revised scheme includes land for the reconductoring and earthing of overhead power lines (AP1-012-015), at a pylon located approximately 100m east of the Lawn Farm Business Centre, Grendon Underwood.	The safe working area required for the reconductoring and earthing will be extended at the construction boundary of the pylon. Approximately 1.1ha of additional land will be required temporarily. This AP5 amendment will only proceed if AP1-012-015 is enacted.

Figure 8: Approximate location of AP5 amendment for Community Forum Area 15 – Greatworth to Lower Boddington

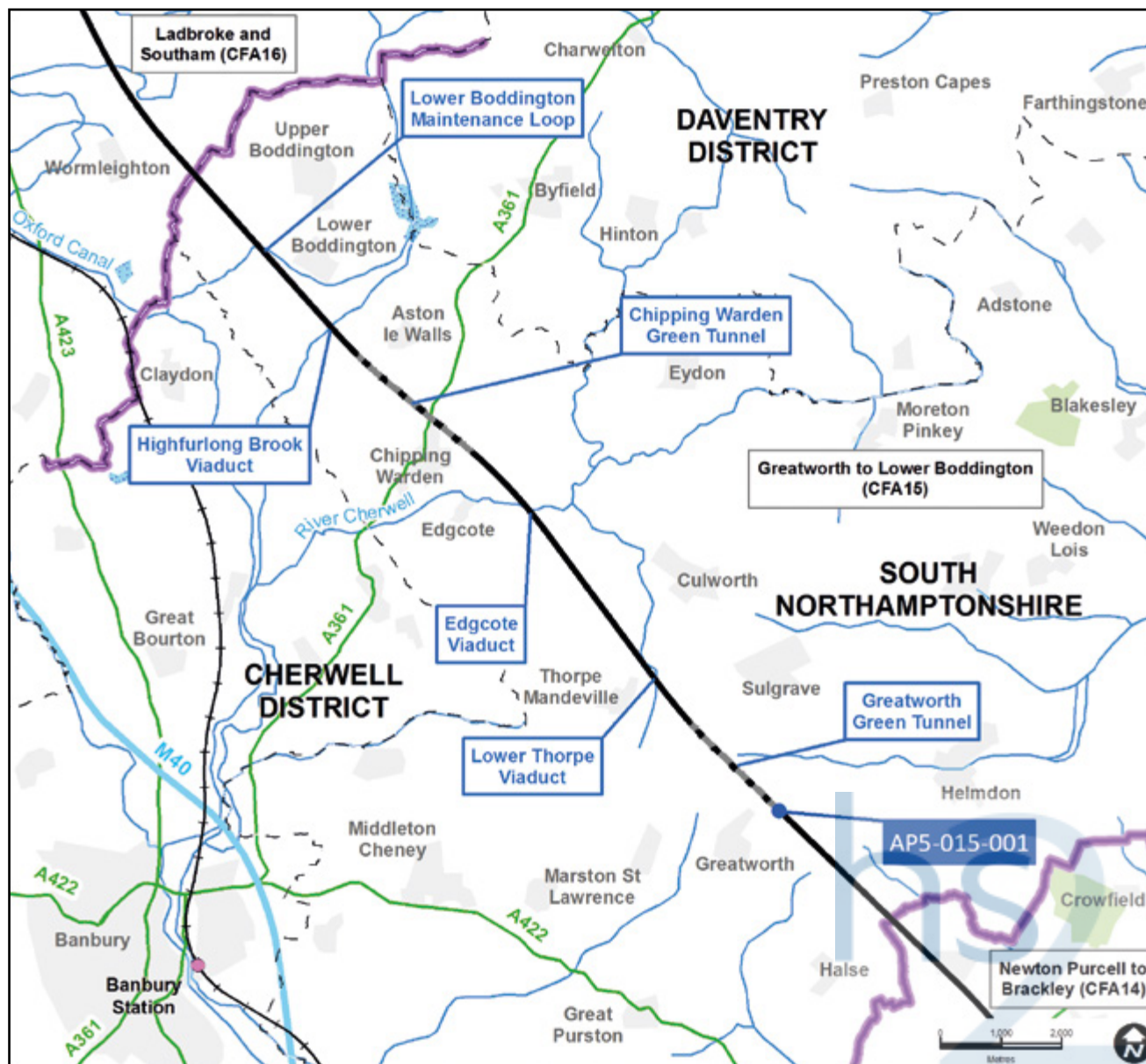


Table 8: Summary of amendment within CFA15 – Greatworth to Lower Boddington

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
Provision to alter Footpath AN13 diversion near Greatworth (AP5-015-001)	The SES4 scheme includes the permanent stopping up of a section of Footpath AN13 approximately 400m to the north-west of Greatworth Hall. A temporary diversion will be provided during construction, followed by a permanent diversion from the access road for the Greatworth auto-transformer station then following the inside of the field boundary, to the point where Footpath AN13 joins Helmdon Road. The SES4 scheme also includes an extension of Footpath AN13 by 150m, still on the inside of the field boundary, alongside Helmdon Road, to the B4525 Welsh Road.	The extension of Footpath AN13 from the point the footpath currently joins Helmdon Road to the B4525 Welsh Road will not be implemented. The permanent diversion will remain unchanged, and will re-join Helmdon Road at the point where AN13 currently joins the road. The temporary diversion of Footpath AN13 is unchanged by this amendment.

Figure 9: Approximate location of AP5 amendment for Community Forum Area 20 – Curdworth to Middleton

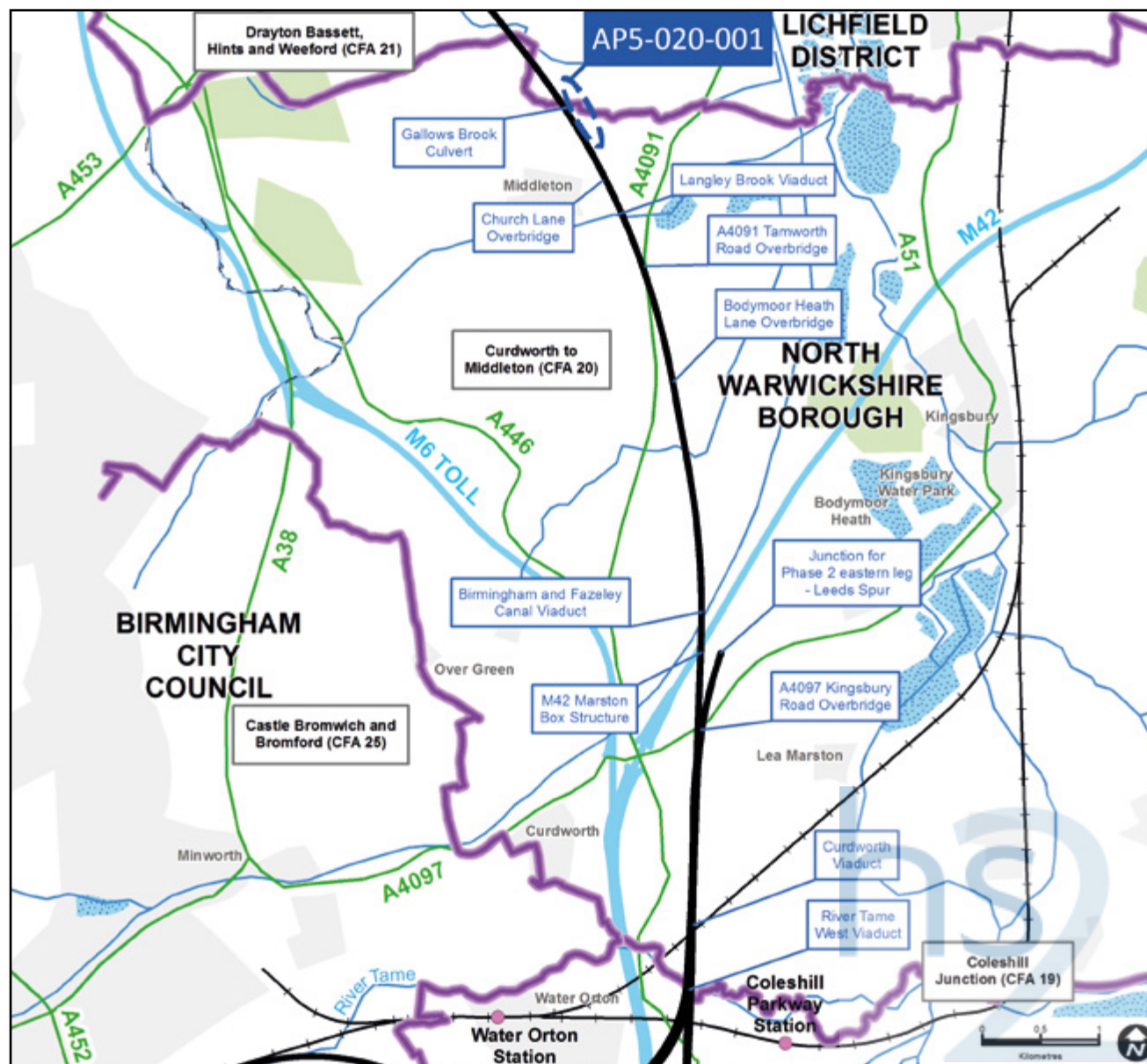


Table 9: Summary of amendment within CFA20 – Curdworth to Middleton

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
<p>Additional land required for utility works near Middleton (AP5-020-001)</p> <p>This amendment extends into the Drayton Bassett, Hints and Weeford area (CFA21), however all effects for CFA20 and 21 are reported within CFA20.</p>	<p>The Bill provides for the diversion of a 600mm diameter gas main north of Church Lane, Middleton. The gas main would be diverted to cross the HS2 route approximately 100m south of Footpath T15 accommodation overbridge. The diversion would then continue on the eastern side of the HS2 route and rejoin the existing gas main alignment approximately 300m to the north of Footpath T15 accommodation overbridge, just south of Gallows Brook.</p>	<p>A further review of the construction methodology for gas main diversions has been undertaken in conjunction with the utility company. As a result, a revised diversion route has been identified that will result in an increase to the length of the gas main diversion and moves the connection further away from Gallows Brook.</p> <p>The beginning of the diversion is unchanged from the SES4 scheme, but the end of the diversion will be moved approximately 200m to the north, beneath Gallows Brook into CFA21 (Drayton Bassett, Hints and Weeford).</p> <p>Approximately 6.8ha of additional land is required temporarily, with permanent access rights required for future maintenance of the gas main.</p>

Figure 10: Approximate location of AP5 amendments for Community Forum Area 21 – Drayton Bassett, Hints and Weeford

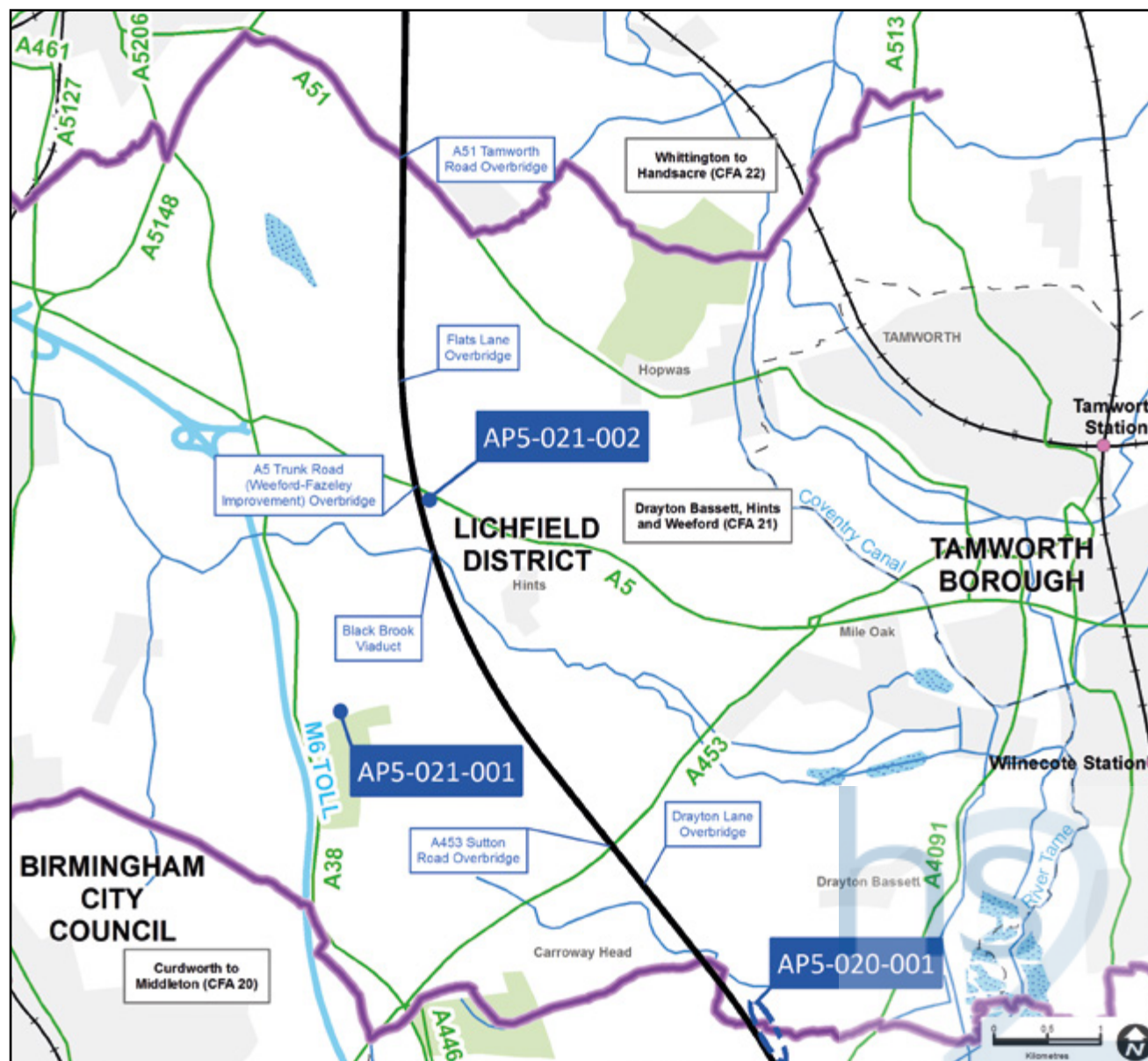


Table 10: Summary of amendments within CFA21 – Drayton Bassett, Hints and Weeford

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
Additional land required for utility works near Middleton (AP5-020-001)	For information on this amendment see AP5-020-001 in Table 9 (Summary of amendments within CFA20 – Curdworth to Middleton).	For information on this amendment see AP5-020-001 in Table 9 (Summary of amendments within CFA20 – Curdworth to Middleton).
Additional land required for utility winching works west of Brockhurst Lane (AP5-021-001)	<p>The Bill provides for temporary overhead power line diversions terminating at the sand and gravel quarry east of the M6 Toll, including an area for winching.</p> <p>Amendment AP1-021-043 proposed to extend the area of land required for winching and included temporary access rights to the realigned winching site from the existing access track from the A38 London Road.</p>	<p>Due to ongoing quarrying activities and uncertainty of ground conditions in the area required for winching, a larger area is required to provide increased flexibility.</p> <p>This AP5 amendment will only proceed if amendment AP1-021-043 is enacted, as both the winching area and the temporary access included in the AP1 amendment will still be required.</p> <p>Approximately 2.2ha of additional land is required temporarily in addition to the 0.3ha required for AP1-021-043. Therefore a total of 2.5ha of land is required temporarily for these works.</p>
Additional land required for the upgrading of the A5 Hints Bridleway 4 overbridge to an accommodation overbridge (AP5-021-002)	The Bill provides for the raising of the A5 adjacent to Buck's Head Farm, Hints. As a result the existing accommodation overbridge, which carries the Heart of England Way (Hints Bridleway 4) over the A5, would be demolished and replaced by a new bridleway only bridge – the A5 Hints Bridleway 4 overbridge.	<p>It has been identified that access over the A5 Hints Bridleway 4 overbridge is required for agricultural vehicles. As a result, this amendment will widen the overbridge to an accommodation overbridge and continue to carry The Heart of England Way.</p> <p>Approximately 0.2ha of additional land will be required permanently to the north of the A5 for access to the new accommodation overbridge.</p>

Figure 11: Approximate location of AP5 amendment for Community Forum Area 22 – Whittington to Handsacre

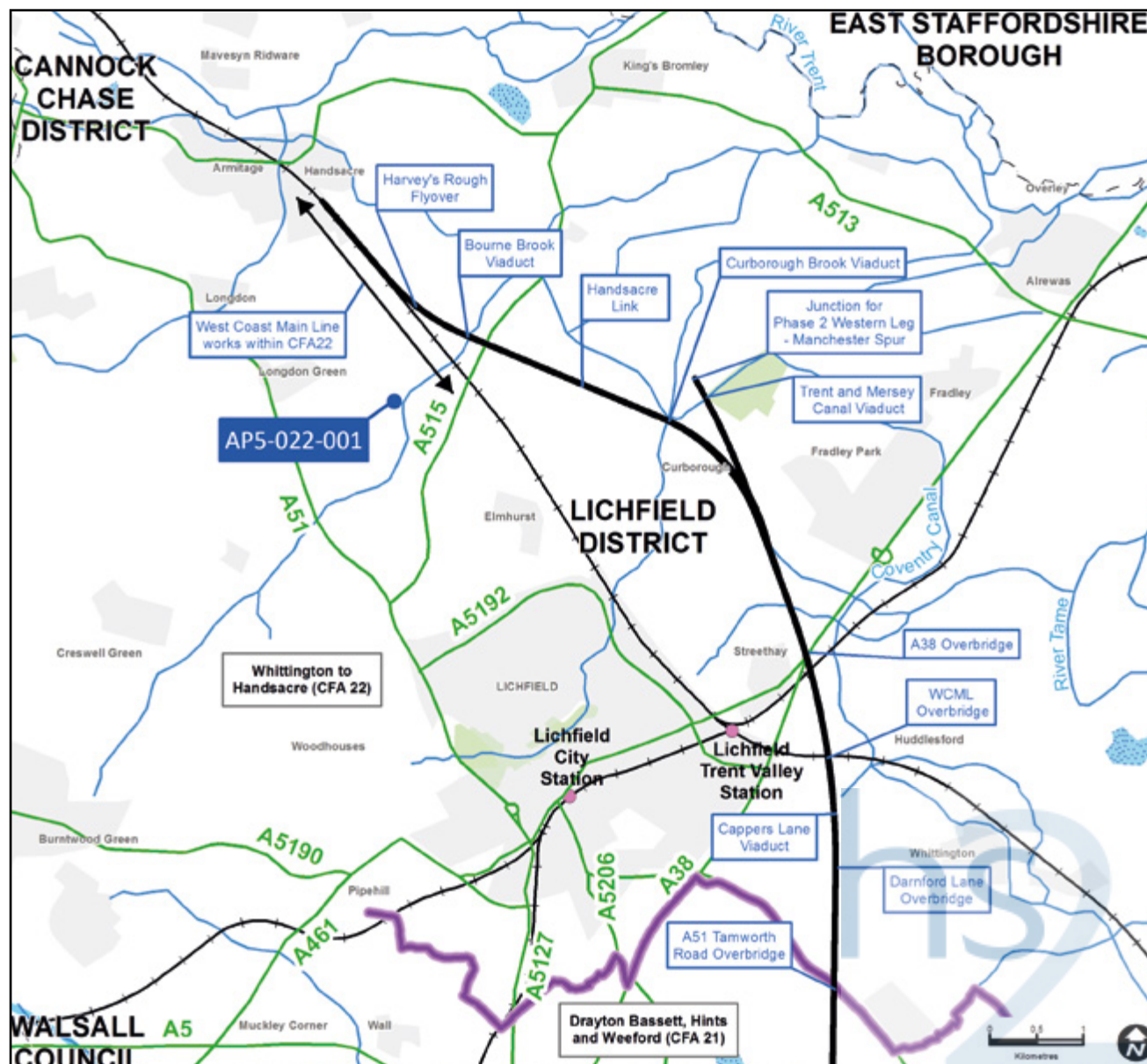


Table 11: Summary of amendment within CFA22 – Whittington to Handsacre

Name of amendment	Description of the AP2 revised scheme (as updated by the SES3 scheme)	Description of the AP5 revised scheme
Additional land required for utility winching works near Hanch Reservoir (AP5-022-001)	The AP2 revised scheme includes the diversion of overhead power lines to the south-west of Hanch Reservoir, with an area of land immediately north of Lichfield Golf Course included for winching works.	<p>A larger area of land located immediately to the north-west of the land included in the AP2 revised scheme is required temporarily to provide greater flexibility for the siting of the winching equipment. Vegetation clearance will be required within the additional land identified but no hedgerow removal will be required.</p> <p>Approximately 0.4ha of additional land is required temporarily and approximately 0.1ha of land included in the AP2 revised scheme is no longer required.</p>

Figure 12: Approximate location of AP5 amendment for Community Forum Area 24 – Birmingham Interchange and Chelmsley Wood

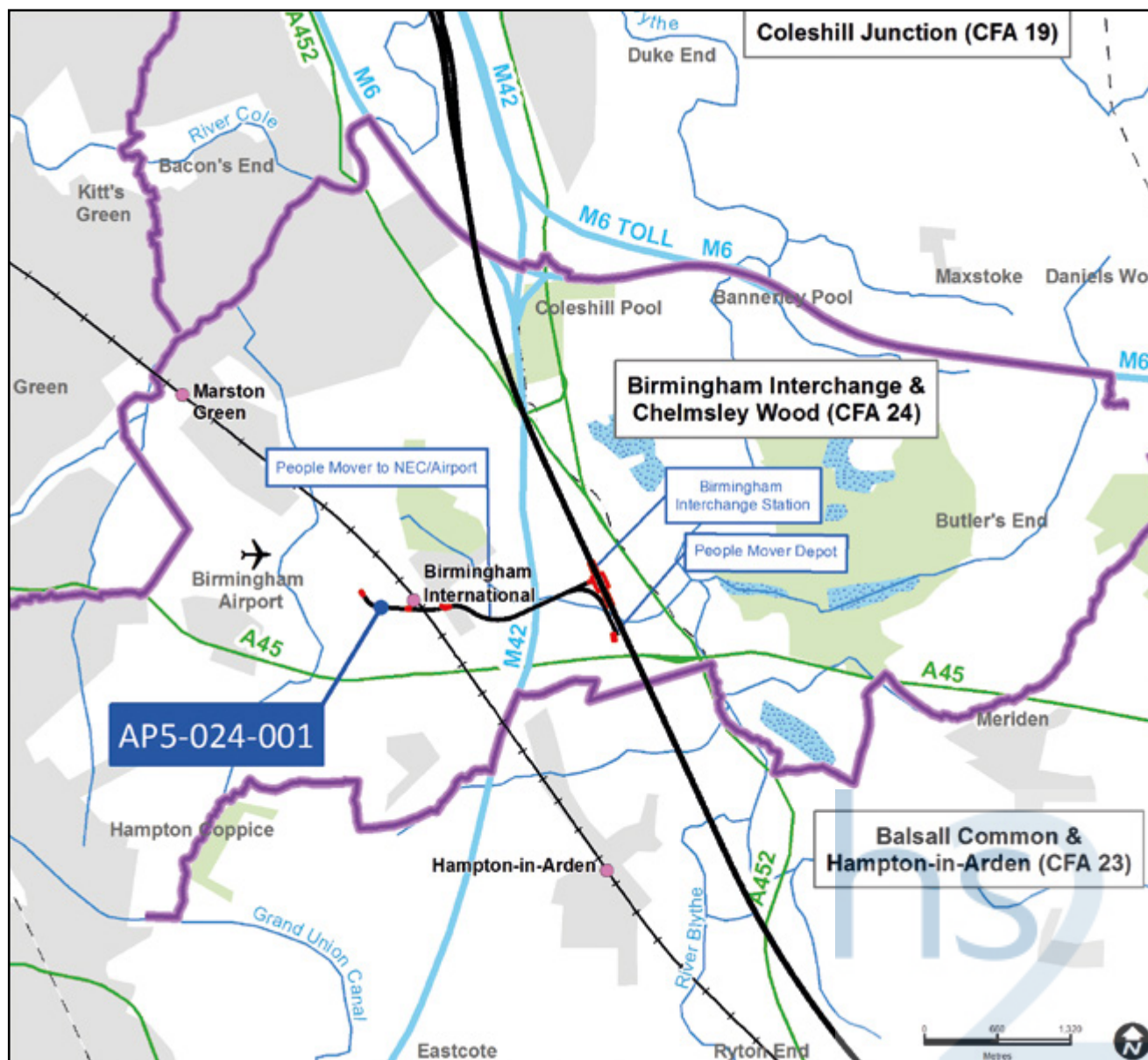


Table 12: Summary of amendment within CFA24 – Birmingham Interchange and Chelmsley Wood

Name of amendment	Description of the SES4 scheme	Description of the AP5 revised scheme
<p>Additional land required for the realignment of the people mover between the Birmingham Airport and National Exhibition Centre people mover stops (AP5-024-001)</p>	<p>The Bill provides for a people mover to enable a direct link between the new Birmingham Interchange station, the NEC complex, Birmingham International station and Birmingham Airport. The people mover would be up to 17m in height and approximately 2.3km in length. The people mover would operate from the Birmingham Interchange station, extending to the south-west and crossing over the M42, East Way, Pendigo Lake and the Rugby to Birmingham Line before continuing on to Birmingham Airport. There will be four stops along the route of the people mover.</p> <p>Construction of the people mover will be managed by six construction compounds in the area.</p>	<p>The amendment will change the alignment of the people mover between the NEC people mover stop and the Birmingham Airport people mover stop to avoid precluding the potential for a new hotel at Birmingham Airport.</p> <p>The change in alignment will require the relocation of both the Birmingham Airport and Birmingham International station people mover stops.</p> <p>A footbridge, included within the SES4 scheme, to connect the existing Birmingham International station to the Birmingham International station people mover stop will be increased in length by 15m.</p> <p>Approximately 480m² of additional land will be required for this amendment.</p> <p>The people mover Birmingham International station satellite construction compound will be moved approximately 50m northwards to avoid the new alignment of the people mover.</p>

7. Summary of residual environmental effects for AP5 amendments

7.1 Summary of residual environmental effects

In a number of cases, new or different likely significant effects have been identified as a result of AP5 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.

CFA6

Traffic and transport

Effects arising during operation

The main ES reported a moderate adverse effect as a result of the permanent loss of a car park with a capacity for 90 parking spaces at the pharmaceutical research facility.

As part of AP5-006-001, a car park with a capacity for 50 parking spaces will be provided. In addition, separate from this amendment, the operators of the pharmaceutical research facility have indicated that a further 65

parking spaces will be provided within two other car parking areas at the facility within land already required by the SES4 scheme. Together with this amendment a total of 115 off-street car parking spaces will be provided and therefore the significant effect reported in the main ES will be avoided.

CFA7

Water resources and flood risk assessment

Effects arising during construction

The additional land required for an overhead power line diversion at Hillingdon Quarry (AP5-007-001) will give rise to a different significant effect on a public water supply abstraction, as the overhead power line diversion will occur prior to the main construction works, however this will not change the level of the large temporary significant adverse effect reported in the main ES.

HS2 Ltd is seeking to agree a management strategy with the Environment Agency, in

consultation with Affinity Water, to remove as far as practicable the significant effects.

However, until this management strategy is agreed there remains the potential for adverse significant effects associated with turbid groundwater (i.e. water with a high volume of suspended particles, making it appear cloudy) reaching public water supply abstractions.

CFA20

Agriculture, forestry and soils

Effects arising during construction

The main ES reported a moderate adverse temporary effect on Brook Farm due to land being required. As a result of AP5-020-001, the amount of land required temporarily will increase by 3.8ha to 14.3ha. This will increase the level of the effect from moderate adverse to major/moderate adverse; this is a different significant effect to that reported in the main ES.

As part of the AP2 revised scheme there are amendments in this area (AP2-020-007 and AP2-021-001) which, if enacted, would reduce the

additional amount of land required temporarily from this holding by 1.6ha to 2.2ha. The amount of land required temporarily from this holding would be 12.7ha (11% of the holding) which would result in a major/moderate adverse significant effect. This is an increase in the level of the significance of the effect reported in the main ES (moderate adverse) but is the same effect as that reported for the AP5 amendment in isolation.

CFA24

Sound, noise and vibration

Effects arising during construction

The main ES reported a significant noise effect on the Diamond House offices during construction of the people mover. As part of AP5-024-001, the people mover construction works will be further away from the offices and the significant effect will be avoided.

The main ES reported significant effects on the Novotel, Ibis and Etap hotels. These effects will still occur, however, as a result of AP5-024-001, daytime noise levels will be slightly lower than reported in the main ES and the duration of the impact will reduce by six months from one year and three months to nine

months. This will result in a different significant effect at these receptors in comparison to the effects reported in the main ES.

Traffic and transport

Effects arising during construction

The main ES reported that the construction of the people mover would result in the temporary loss of approximately 200 car parking spaces (8%) from the West Car Park of the NEC for up to two years. However, due to the large amount of car parking available around the NEC, Birmingham International station and Birmingham Airport and the potential to phase construction works to reduce car parking spaces lost and the length of time they are unavailable, the effect would not be significant. As part of AP5-024-001, a further 200 parking spaces will be lost, so that in total, 400 spaces (16%) will be lost temporarily from the West Car Park, resulting in a new minor adverse significant effect.

Effects arising during operation

The main ES reported a moderate adverse significant effect as a result of the permanent loss of approximately 16 taxi holding spaces (30.8% of the total) at Birmingham Airport. As a result of

AP5-024-001, the designated taxi holding spaces will be retained and the effect on the taxi holding spaces reported in the main ES will be avoided.

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