

HIGH SPEED RAIL (LONDON - WEST MIDLANDS)

Supplementary Environmental Statement 3 and Additional Provision 4 Environmental Statement

Volume 2 | Community forum area reports

CFA25 Castle Bromwich and Bromford

October 2015

SES3 and AP4 ES 3.2.1.25



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Department for Transport

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Structure of the HS2 Supplementary Environmental Statement 3 and Additional Provision 4 Environmental Statement

The Supplementary Environmental Statement 3 (SES3) and Additional Provision 4 Environmental Statement (AP4 ES) comprises:

- non-technical summary (NTS). This provides a summary in non-technical language of the SES3 (Part 1) and AP4 ES (Part 2) and of any likely significant environmental effects, both beneficial and adverse, which are new or different to those reported in the High Speed Two (HS2) Phase One Environmental Statement (ES) submitted to Parliament in November 2013 in support of the hybrid Bill ('the Bill') for Phase One of HS2 (hereafter referred to as 'the main ES') as updated by subsequent SES and AP ES documents;
- Volume 1: introduction to the SES3 and AP4 ES. This introduces the supplementary environmental information and design changes included within the SES3 and amendments, which have resulted in the need to amend the Bill, within the AP4 ES. It also explains any changes to the scope, methodology, assumptions and limitations required for the environmental assessment;
- Volume 2: community forum area (CFA) reports and map books. These describe the supplementary environmental information and design changes included within the SES3 (Part 1) and amendments within the AP4 ES (Part 2). 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 (Part 1) and amendments within the AP4 ES (Part 2) 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;
- Volume 4: off-route effects. This reports new or different likely significant off-route effects arising from the supplementary environmental information and design changes included within the SES3 (Part 1) and amendments within the AP4 ES (Part 2) compared to those reported in the main ES as updated by SES

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and SES₂ (and SES₃ for the AP₄ amendments). The AP₁, AP₂ and AP₃ amendments are also taken into account where relevant;

- Volume 5: appendices and map books. This contains environmental information and associated maps in support of the other volumes of the SES₃ and AP₄ 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.

Structure of this report

This volume of the SES3 and AP4 ES is divided into CFA reports, which are in turn divided into two parts.

Part 1 of this CFA report provides supplementary environmental information relating to:

- new baseline information with respect to ecological surveys conducted during 2015; and
- changes to the design or to construction assumptions which do not require changes to the Bill.

Part 1 of each CFA report includes, where relevant:

- a description of the changes or updates within the CFA that have triggered the need for reassessment;
- an assessment of the environmental effects of the changes for relevant environmental topics considering the:
 - scope, assumptions and limitations of the SES3 assessment;
 - changes of relevance to the assessment;
 - environmental baseline;
 - effects arising during construction;
 - effects arising from operation; and
 - mitigation and residual effects; and
- a summary of any new or different likely residual significant effects as a result of the changes.

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

- a summary of the proposed amendments related to this CFA that have triggered the need for reassessment;
- a description of each amendment;
- an assessment of the environmental effects of each amendment for relevant environmental topics considering the:
 - scope, assumptions and limitations of the AP4 ES assessment;
 - environmental baseline;
 - effects arising during construction;
 - effects arising from operation; and

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

1 Introduction

- 1.1.1 The Bill for high speed rail between London and the West Midlands was submitted to Parliament together with the main ES in November 2013. The AP1 ES, which was submitted in September 2014, contained generally minor amendments to the design of the original scheme (i.e. the scheme submitted in November 2013) in CFAs 7 – 26. The SES and AP2 ES which was submitted in July 2015, updated the main ES and contained a number of further amendments to the design of the original scheme in CFAs 4 – 26. The SES2 and AP3 ES which was submitted in September 2015, contained further updates to the main ES and reported the assessment of a number of amendments to the design of the original scheme in CFAs 1 – 5.
- 1.1.2 Since the submission of the main ES and subsequent SES and AP documents, updates to environmental baseline information and changes to scheme design or assumptions have occurred, which may lead to new or different significant effects. These effects, depending on the type of change, are reported in the SES3 (Part 1) or AP4 ES (Part 2) of this document, where they occur.
- 1.1.3 The Bill and associated Additional Provisions (APs) to the Bill described above, if enacted by Parliament, will provide the powers to construct, operate and maintain Phase One of HS2.
- 1.1.4 In order to differentiate between the original scheme and the subsequent changes, the terms set out in .
- 1.1.5 Table 1 are used.

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 – 26
the AP1 revised scheme	the original scheme as amended by the AP submitted in September 2014	7 – 26
the SES scheme	the original scheme with the design changes described in the SES submitted in July 2015	4 – 26
the AP2 revised scheme	the SES scheme as amended by the AP2 submitted in July 2015	4 – 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 – 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 – 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 – 26

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Scheme name	Definition	Relevant CFAs
the AP ₄ revised scheme	the SES ₃ scheme as amended by the AP ₄ submitted in October 2015	4 – 26

- 1.1.6 SES₃ (Part 1 of this report) contains updated environmental baseline information and describes changes to the scheme that have occurred within the current limits and powers of the Bill, and therefore do not require an AP to the Bill. This includes:
- new baseline information with respect to ecological surveys conducted during 2015; and
 - changes to the design or to construction assumptions which do not require changes to the Bill.
- 1.1.7 Design changes assessed within the SES₃ for this CFA include further information on the design or construction of utilities works.
- 1.1.8 The changes are described in Part 1 under a series of sub-headings and assessed on a topic by topic basis using the same approach adopted in the main ES.
- 1.1.9 The purpose of SES₃ is to provide an assessment of any new or different likely significant environmental effects arising from the changes described.
- 1.1.10 There were no SES₂ changes in this CFA, so the SES₃ changes are compared to the SES scheme. There were AP₁ and AP₂ amendments, so these are taken into account as appropriate.
- 1.1.11 The AP₄ ES (Part 2 of this report) describes the likely significant effects of amendments to the design of the scheme, which require the use of land outside the original limits of the Bill, additional access rights, or other extensions to the powers conferred by the Bill, making it necessary to submit an AP to the Bill. The amendments assessed within the AP₄ ES for this CFA include:
- the provision of an overhead line diversion at Park Hall nature reserve;
 - additional land required for the relocation of a bottom ash plant from the Castle Bromwich Business Park to Tyseley, approximately 9.5km to the south-west of its current site; and
 - the reconfiguration of the construction layout and provision of an access route at the Castle Bromwich Business Park.
- 1.1.12 The AP₄ ES assesses each amendment separately for all relevant topics. The purpose of the AP₄ ES is to provide an assessment of any new or different likely significant environmental effects arising from the amendments compared to the SES₃ scheme, taking into account AP₁ and AP₂ amendments where relevant.
- 1.1.13 The standard measures that will be used to mitigate likely significant adverse environmental effects during construction and operation of the scheme are described in the main ES, Volume 1, Section 9 and the draft Code of Construction Practice (CoCP) submitted in support of the Bill. Implementation of these measures has been assumed in this SES₃ and AP₄ ES.

Part 1: Supplementary Environmental Statement 3

2 Summary of changes

2.1 New environmental baseline information

Ecology

- 2.1.1 Surveys for amphibians, bats and further botanical survey undertaken in this area during 2015 are relevant to the assessment.
- 2.1.2 Details of all amphibian surveys undertaken in this area during 2015 are provided in SES3 and AP4 ES, Volume 5, Appendix EC-001-004 and Volume 5 map series EC-02.
- 2.1.3 The additional baseline data does not generate any new or different significant effects and therefore is not reported in Section 3.

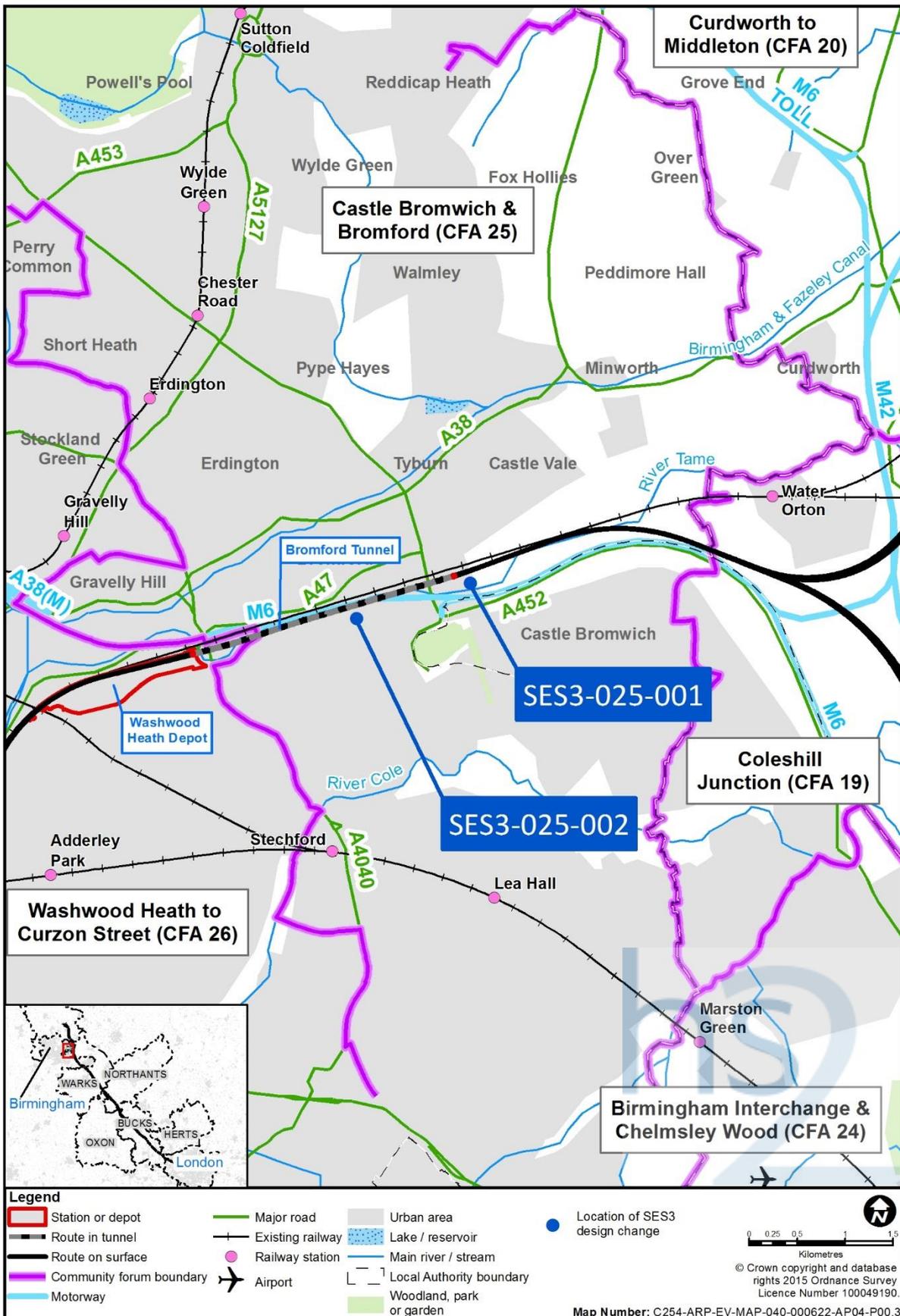
2.2 Changes to the design or to construction assumptions not requiring a change to the Bill

- 2.2.1 Table 2 provides a summary of the changes to the design or to construction assumptions not requiring a change to the Bill which result in new or different significant effects in the Castle Bromwich and Bromford area(CFA25) and Figure 1 shows the locations of the changes.

Table 2: Summary of changes to the design or to construction assumptions not requiring a change to the Bill in CFA25

Name of design change or construction assumption	Description of the SES scheme	Description of the SES ₃ scheme
Utility works at Castle Bromwich Business Park (SES ₃ -025-001)	The Bill provides for the permanent diversion of low voltage (11kV) underground electricity cables which pass under the route, and the diversion of overhead power lines at the eastern edge of Castle Bromwich Business Park.	Provision of low voltage (11kV) underground electricity cabling which will pass under the route on the east side of Castle Bromwich Business Park, resulting in the diversion alignment moving slightly east, further away from the Bromford tunnel east portal. The utility diversion will be constructed by horizontal directional drilling under the existing Derby to Birmingham Line, the route, a fuel pipeline and stream, subject to suitable launch and receptor positions.
Removal of utility replacement on Chillinghome Road (SES ₃ -025-002)	The Bill includes provision for the replacement of a 0.45m diameter cast iron low pressure gas main in Chillinghome Road in Bromford, over a length of 450m to counter possible settlement, with piping to modern standards. Works will be carried out within the highway and feeds to houses will be reconnected.	The replacement of the low pressure gas main on Chillinghome Road is no longer required.

Figure 1: Locations of design changes not requiring a change to the Bill in CFA25



Description of changes to the design or to construction assumptions

Utility works at Castle Bromwich Business Park (SES3-025-001)

- 2.2.2 The Bill provides for the permanent diversion of Western Power low voltage (11kV) underground electricity cables under the route, and the provision of an auto-transformer station at the eastern end of the Castle Bromwich Business Park. See map CT-05-136 in SES3 and AP4 ES, Volume 2, CFA25 Map Book.
- 2.2.3 Since submission of the Bill, further consideration has been given to the utility diversion, resulting in the diversion alignment moving slightly east, further away from the Bromford tunnel east portal. The construction methodology has also been reviewed, and it is now assumed that the utility diversion will be undertaken using horizontal directional drilling under the existing Birmingham to Derby Line, the proposed route, fuel pipeline and the Dunlop Carrier Channel watercourse. It also assumes a drilling depth of approximately 5m and that suitable launch and receptor positions for the directional drilling will be identified. Works will continue to be managed from the Bromford tunnel east portal (west) satellite compound and will not affect the duration that the compound will be in place. See map CT-05-136, in the main ES, Volume 2, CFA25 Map Book.
- 2.2.4 The design change will result in new or different significant effects for sound, noise and vibration and these are reported in Section 3.

Removal of utility replacement on Chillinghome Road (SES3-025-002)

- 2.2.5 The Bill provides for the replacement of an existing 0.45m diameter cast iron low pressure gas main, located within the highway on Chillinghome Road in Bromford, over a length of 450m (see map CT-05/06-137 and CT-05/06-138a, in the main ES, Volume 2, CFA25 Map Book). This work was required due to concerns about the potential impacts of ground settlement on the gas main relating to the boring and operation of the Bromford tunnel.
- 2.2.6 The replacement of the gas main within Chillinghome Road is no longer required. It has now been confirmed that the tunnel works are a sufficient distance from this utility to not compromise the integrity of the existing gas main.
- 2.2.7 The removal of the need for this work will not change the presence or duration of the Bromford tunnel east portal (west) satellite compound, from where the works were previously to be managed.
- 2.2.8 The design change will result in new or different significant effects for sound, noise and vibration and these are reported in Section 3.

2.3 Topics included in the SES3 assessment

- 2.3.1 The changes described in Section 2.2 above result in new or different significant effects in respect of sound, noise and vibration.

3 Assessment of changes

3.1 Sound, noise and vibration

Introduction

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

Scope, assumptions and limitations

- 3.1.2 The assessment scope, key assumptions and limitations for sound, noise and vibration are as set out in Volume 1, the Scope and Methodology Report (SMR) (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 3.1.3 Local assumptions and limitations for sound, noise and vibration are set out in the main ES (Volume 2, CFA 25, Section 11).

SES₃ changes of relevance to this assessment

- 3.1.4 The following SES₃ changes are considered in this assessment:
- utility works at Castle Bromwich Business Park (SES₃-025-001); and
 - removal of utility replacement on Chillinghome Road (SES₃-025-002).

Environmental baseline

Existing baseline

- 3.1.5 The existing baseline sound, noise and vibration information for the area is as described in the main ES (Volume 2, CFA 25, Section 11 and Volume 5: Appendix SV-002-025). In this area, the existing sound environment is characterised by the sounds of road traffic from the M6 motorway, train movements on the Birmingham to Derby Line, aircraft on the Birmingham Airport flight path, and industrial and commercial premises on the Castle Bromwich Business Park.

Future baseline

Construction (2017)

- 3.1.6 Volume 5: Appendix CT-004-000 of the SES₃ and AP₄ ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP₂ ES.
- 3.1.7 None of the identified developments affect the assessment of the SES₃ scheme's likely construction impacts on sound, noise and vibration.

Operation (2026)

- 3.1.8 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 3.1.9 None of the identified developments affect the assessment of the SES3 scheme's likely operational impacts on sound, noise and vibration.

Effects arising during construction

Avoidance and mitigation measures

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

Assessment of impacts and effects

Temporary effects

- 3.1.11 In the vicinity of Castle Bromwich Business Park, the main ES identified a significant (on a community basis) night-time construction noise effect at approximately 25 dwellings in Castle Vale on Blenheim Way and Cadbury Drive, of which approximately 15 dwellings on Blenheim Way (eastern end) were also affected during the day. During the day, various works contributed to the noise including demolition, site clearance, haul route construction, re-soiling, and the construction of the Dunlop Carrier Channel culvert. At night, installation of the railway protection barrier at Bromford tunnel east portal was the main noise source. A significant effect was not identified at the Gypsy and Traveller site in Castle Bromwich Business Park. At the southern end of Blenheim Way, an exceedance of the daytime impact criterion was predicted by 1dB for one month. Based on the magnitude and duration of the impact, the effects were not considered significant at this location.
- 3.1.12 An assessment has been undertaken to determine whether construction noise from the SES3 scheme will result in any new or different likely significant effects, using the significance criteria detailed in the main ES (see SES3 and AP4 ES, Volume 5: Appendix SV-001-000).
- 3.1.13 SES3 and AP4 ES Volume 5: Appendix SV-003-025 details the relevant changes to the results reported in the main ES, Volume 5: Appendix SV-003-025, Sound, noise and vibration assessment.
- 3.1.14 The underground utility diversion increases the number of dwellings affected during the daytime in significant effect number CSV25-Co1 in Castle Vale to approximately 80 dwellings¹. At the southern end of Blenheim Way, the typical and worst-case monthly daytime construction noise levels are increased by 2dB and 5dB respectively (to 64dB and 76dB). The duration of the impact is increased from one month to three months. At the northern end of Blenheim Way, which is more remote from the construction works considered in the main ES, the typical and worst-case monthly daytime construction noise levels are increased by 5dB and 12dB respectively (to 57dB

¹ Significant construction related noise effects are identified with a unique identification number, CSVXX-XXX. Further detail on these effects can be found in Volume 5, Appendix SV-003-025 of the SES3 and AP4 ES.

and 72dB). The duration of the impact on these additional dwellings is approximately two months.

- 3.1.15 The SES₃ change will give rise to a different significant effect at residential properties on Blenheim Way, Castle Vale due to the increased number of dwellings affected.
- 3.1.16 The main ES identified a likely significant construction noise effect (on a community basis), CSV₂₅-Co₂, at approximately 30 dwellings on Wanderer Walk and Chillinghome Road, and Tame Valley Academy, Bromford, due to short-term utility diversions along the route of Bromford tunnel including the replacement of a gas main on Chillinghome Road.
- 3.1.17 As a result of the removal of the gas main replacement works on Chillinghome Road, this significant effect (CSV₂₅-Co₂) reported in the main ES will be removed.
- 3.1.18 SES₃ and AP₄ ES, Volume 5: Appendix SV-003-025 details the relevant changes to the results reported in the main ES, Volume 5: Appendix SV-003-025, Sound, noise and vibration assessment.

Permanent effects

- 3.1.19 No permanent sound, noise or vibration effects are anticipated due to the construction works for any of the SES₃ changes.

Other mitigation measures

- 3.1.20 No other mitigation measures are proposed.

Cumulative effects

- 3.1.21 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the SES₃ changes acting in combination with one another, the AP₂ amendments, or any relevant committed development.

Summary of likely residual significant effects

- 3.1.22 The change to the underground utility diversion in the vicinity of Castle Bromwich Business Park will give rise to a different likely residual significant effect. The significant daytime construction noise effect reported in the main ES at residential properties in Castle Vale is extended from approximately 15 dwellings to approximately 80 dwellings on Blenheim Way. The adverse noise effects on these dwellings are expected to occur for up to three months.
- 3.1.23 As the gas main replacement works on Chillinghome Road are no longer required, the construction noise residual significant effect reported in the main ES at approximately 30 dwellings on Wanderer Walk, Chillinghome Road, and Tame Valley Academy, Bromford will be removed.

Effects arising from operation

- 3.1.24 There are no new or different significant operational effects for sound, noise and vibration as a result of the SES₃ changes in comparison with those described in the main ES or the SES.

Part 2: Additional Provision 4 Environmental Statement

4 Summary of amendments

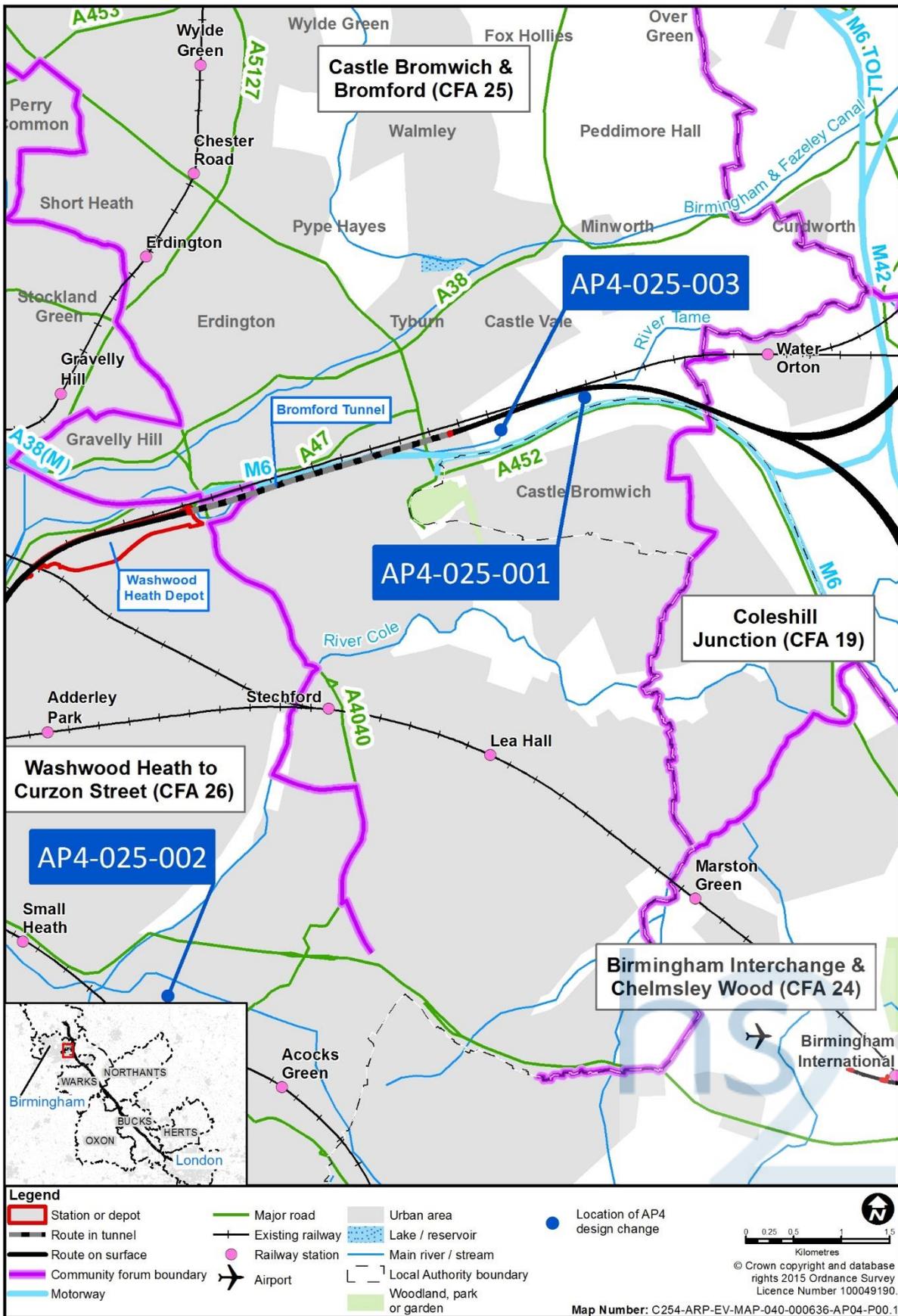
- 4.1.1 Table 2 provides a summary of the amendments in the Castle Bromwich and Bromford area (CFA₂₅) and Figure 2 shows the locations.
- 4.1.2 Amendments in this CFA results in significant changes to waste arisings, which are reported in Volume 5, Appendix WM-001-000 of the SES₃ and AP₄ ES.
- 4.1.3 An assessment of the likely significant environmental effects associated with the disposal of construction, demolition, excavation, worker accommodation site and operational waste has been undertaken for the SES₃ scheme and AP₄ revised scheme as a whole. See Volume 3, Section 19 of the SES₃ and AP₄ ES for further information.

Table 3: Summary of amendments in CFA25

Name of amendment	Description of the SES ₃ Scheme	Description of the AP ₄ revised scheme
<p>Provision of overhead line diversion at Park Hall nature reserve</p> <p>(AP₄-025-001)</p>	<p>The route enters the Park Hall nature reserve via the Water Orton cutting, continuing onto the Park Hall Wood embankment and then the River Tame viaduct. The land required for the original scheme includes most of the Park Hall nature reserve for the construction of the River Tame viaduct, the provision of flood compensation areas and to provide flexibility for the diversion of the existing overhead power line.</p> <p>The Bill provides for the diversion of overhead power lines over the route, through the broadleaved semi-natural woodland within the southern area of the nature reserve (Parkhill Wood and Langley Wood) and into Castle Bromwich Business Park.</p>	<p>The new overhead line route described in the main ES is no longer proposed and the existing overhead power line will remain in its original location. In order to achieve clearance of the overhead lines above the route on embankment, two pylons on either side of the route will be replaced with taller pylons.</p> <p>To facilitate the installation of the taller pylons, two new temporary diversions are required. Following the installation of the permanent taller pylons, the overhead line will be reinstated.</p> <p>Two pylons immediately to the west of the replaced taller pylons will remain in their current location and the ground around these pylons will be lowered to provide replacement floodplain storage.</p>
<p>Additional land required for the relocation of a bottom ash plant to Tyseley</p> <p>(AP₄-025-002)</p>	<p>The route enters the Castle Bromwich Business Park in the Castle Bromwich retained cut. An auto-transformer station (ATS) (Castle Bromwich ATS) and a balancing pond and access tracks are provided within the eastern end of the Castle Bromwich Business Park.</p> <p>During construction the eastern end of the Castle Bromwich Business Park would be required for the Castle Bromwich auto-transformer station satellite compound, the Bromford Tunnel east portal (east) main compound and a roadhead.</p> <p>Consequently, the bottom ash plant located at the eastern end of the business park would need to be demolished.</p>	<p>A new bottom ash plant will be provided at Tyseley to replace the existing plant at Castle Bromwich Business Park. The new bottom ash plant will be located on the site of the Atlas Works, off Redfern Road, Tyseley. Although the new site is approximately 9.5km south-west of the existing site, it is being assessed in this report as it is replacing a facility which is currently located within this CFA. .</p>
<p>Reconfiguration of construction layout and provision of an access route at Castle Bromwich Business Park</p> <p>(AP₄-025-003)</p>	<p>Bromford tunnel east portal (east) main compound would manage all of the works in this area between the River Tame and the centre of the Castle Bromwich retained cut (with the exception of the works from the B₄₁₁₈ Water Orton Road overbridge satellite compound) and include a roadhead.</p>	<p>The Bromford tunnel east portal (east) main compound will be co-located with the Castle Bromwich auto-transformer station satellite compound. The roadhead is to be reduced in size and a new stockpile provided on the site of the adjacent balancing pond.</p>

Name of amendment	Description of the SES ₃ Scheme	Description of the AP ₄ revised scheme
	The compound would be accessed via Tameside Drive from either the A452 Chester Road in the west, or a temporary haul road through Park Hall nature reserve in the east.	This will enable the existing Tameside Drive Civic Amenity Site to remain operational throughout and after construction.

Figure 2: Locations of amendments in CFA25



5 Assessment of amendments

5.1 Provision of overhead line diversion at Park Hall nature reserve (AP4-025-001)

- 5.1.1 The Bill provides for the permanent diversion of the existing overhead power lines and pylons through Park Hall nature reserve (see map CT-05/06-135b and CT-05/06-136, in the main ES, Volume 2, CFA25 Map Book). The area of land required for the construction of the original scheme included most of Park Hall nature reserve. This was to allow flexibility for the diversion of the overhead power line, which was proposed to run through Parkhill Wood and Langley Wood in the southern area of the nature reserve.
- 5.1.2 Since submission of the Bill, it was identified that Parkhill Wood and Langley Wood are likely to be added to the ancient woodland inventory as reported in Part 1 of the SES and AP2 ES, Volume 2, CFA25. Further design development also confirmed that the diversion route shown in the Bill was not acceptable to National Grid due to the topography of the area.
- 5.1.3 The new overhead line route described in the main ES is no longer proposed and the overhead power line will remain in its original location. In order to achieve clearance of the overhead lines above the route on embankment, the two pylons on either side of the route will be replaced with taller pylons. To allow the installation of taller pylons, two new temporary diversions are required. The first pylon will be located approximately 100m south-east of its existing position (see grid reference C6, map CT-05-135b in SES3 and AP4 ES, Volume 2, CFA25 Map Book). The second pylon will be located approximately 100m north-west of its existing position (see grid reference H7, map CT-05-136 in SES3 and AP4 ES, Volume 2, CFA25 Map Book). Once the temporary diversion is complete, the new permanent pylons will be constructed. To ensure sufficient vertical clearance over the route, both pylons will be raised by approximately 9m. The taller pylons will remain in their original positions on island platforms above the proposed replacement floodplain storage, each island measuring approximately 25m by 25m. The overhead line will be permanently diverted back along its original horizontal alignment at the new, higher vertical alignment. The land required is within the original limits of the Bill, however it will require a change to the Bill powers, hence the need for this amendment.
- 5.1.4 Works will commence in approximately the fourth quarter of 2017 and will take up to three years and six months to complete. The works will be managed from the Dunlop Carrier Channel culvert satellite compound.
- 5.1.5 The utility diversion is not considered to make changes that require a reassessment of the effects or proposed mitigation as set out in the main ES or SES and AP2 ES with respect to agriculture, forestry and soils; air quality, community, land quality, sound, noise and vibration, and traffic and transport. However, there were changes where reassessment was considered to be relevant in respect of cultural heritage, ecology, landscape and visual assessment, socio-economics, and water resources and flood risk assessment.

Cultural heritage

Introduction

- 5.1.6 This section of the report describes the environmental baseline in relation to cultural heritage that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

- 5.1.7 The assessment scope, key assumptions and limitations for the cultural heritage assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.

Existing baseline

- 5.1.8 The cultural heritage baseline for the assessment takes into account information collected in support of the main ES, which included walk-over, geophysical survey, remote-sensing data, and data from national and local registers. A full list is provided in Volume 2, Section 6 of the main ES. In addition, the baseline was updated with a further review of historic mapping and other available historic data sources in SES and AP2 ES, Part 1, Section 2.
- 5.1.9 Parkhill Wood (asset reference CBB023²) and Langley Hill Wood (asset reference CBB030) were recorded in the main ES as low-value non-designated woodlands identified as being of historic interest. The SES reported that due to new baseline information, Parkhill Wood and Langley Hill Wood would likely be added to the ancient woodland inventory, and therefore be considered as ancient woodlands. This increased the value of these assets from low to high.
- 5.1.10 A sawpit (asset reference CBB025), was recorded as a surviving earthwork within Parkhill Wood (asset reference CBB023). The sawpit is a non-designated asset of low value.

Future baseline

Construction (2017)

- 5.1.11 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.1.12 None of the identified developments affect the assessment of the AP4 amendment's likely construction impacts on cultural heritage.

Operation (2026)

- 5.1.13 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.

² Cultural heritage assets potentially affected by the amendment through physical change are identified with a unique reference code, 'WHAXXX'; further detail on these assets can be found in the gazetteer in Volume 5 of the main ES (Appendix CH-002-025).

- 5.1.14 None of the identified developments affect the assessment of the AP4 amendment's likely operational impacts on cultural heritage.

Effects arising during construction

- 5.1.15 The SES and AP2 ES (Part 1) reported that Parkhill Wood (asset reference CBB023) would be affected by clearance of parts of the woodland to enable the diversion of overhead electricity lines as an early construction activity, resulting in a major adverse effect on the ancient woodland as a result in the change in value of the asset. The amendment of the overhead line diversion at Park Hall nature reserve will avoid the removal of ancient woodland, removing the significant effect on Parkhill Wood.
- 5.1.16 Parkhill Wood's associated wood bank (asset reference CBB023) would be totally removed by construction of the original scheme, as reported in the SES and AP2 ES (Part 1). This would result in a moderate adverse effect, which would be significant. The amendment will retain the wood bank, therefore removing the significant effect.
- 5.1.17 The main ES reported that the saw pit (asset reference CBB025) within Parkhill Wood (asset reference CBB023) would be totally removed by the construction activities associated with the original scheme. This would result in a moderate adverse effect, which would be significant. The amendment will retain the saw pit, therefore removing the significant effect.
- 5.1.18 The SES and AP2 ES reported that Langley Hill Wood (asset reference CBB030) would be affected by clearance of parts of the woodland to enable the diversion of overhead power lines as an early construction activity, including the erection of temporary construction fencing. This would result in a major adverse effect, which would be significant. The amendment will avoid Langley Hill Wood, therefore removing the significant effect on Langley Hill Wood.
- 5.1.19 An overview of the changes to effects is provided in Table 4.

Effects arising from operation

- 5.1.20 The amendment of the overhead line diversion at Park Hall nature reserve will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES and SES and AP2 ES.

Mitigation and residual effects

- 5.1.21 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES reports) are required.
- 5.1.22 The amendment to the overhead line diversion at Park Hall nature reserve will result in the removal of significant residual effects on Parkhill Wood (asset reference CBB023), its associated wood bank (asset reference CBB023), the saw pit (asset reference CBB025) at Parkhill Wood and Langley Hill Wood (asset reference CBB030).

Table 4: Cultural heritage impact assessment of overhead line diversion at Park Hall nature reserve (AP4-025-001)

Unique identification	Name	Designation(s)	Value	Construction impact			Operation impact			New or different likely significant environmental effect from that reported for the SES3 scheme
				Nature of impact including mitigation	Scale of impact	Effect	Nature of impact including mitigation	Scale of impact	Effect	
CBB023	Parkhill Wood and wood bank	Ancient woodland	High	No physical impact on the heritage asset from the amendment to the overhead line diversion at Park Hall nature reserve (AP4-025-001). No mitigation required.	No change	Neutral	No operational impact on the heritage asset from the amendment to the overhead line diversion at Park Hall nature reserve (AP4-025-001). No mitigation required.	No change	Neutral	Removal of significant construction effect. Operational impacts and effects remain the same as reported in the main ES.
CBB025	Sawpit located within Parkhill Wood	Non-designated	Low	No physical impact on the heritage asset from the amendment to the overhead line diversion at Park Hall nature reserve (AP4-025-001). No mitigation required.	No change	Neutral	No operational impact on the heritage asset from the amendment to the overhead line diversion at Park Hall nature reserve (AP4-025-001). No mitigation required.	No change	Neutral	Removal of significant construction effect. Operational impacts and effects remain the same as reported in the main ES.
CBB030	Langley Hill Wood	Ancient woodland	High	No physical impact on the heritage asset from the amendment to the overhead line diversion at Park Hall nature reserve (AP4-025-001). No mitigation required.	No change	Neutral	No operational impact on the heritage asset from the amendment to the overhead line diversion at Park Hall nature reserve (AP4-025-001). No mitigation required.	No change	Neutral	Removal of significant construction effect. Operational impacts and effects remain the same as reported in the main ES.

Cumulative effects

- 5.1.23 There are no new or different likely significant cumulative effects for cultural heritage as a result of the AP4 amendments interacting with one another, AP2 amendments, or any relevant committed development.

Ecology

Introduction

- 5.1.24 This section of the report describes the environmental baseline in relation to ecology that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

- 5.1.25 Updates to the assessment scope for ecology are set out in Volume 1 of the SES3 and AP4 ES. The key assumptions and limitations, and the methodology for determining significance of effects are as set out in Volume 1, the SMR and the SMR Addendum (Volume 5: Appendix CT-001-000/02 and CT-001-000/02) of the main ES and in Addendum 4 to the SMR (SES 3 and AP4 ES, Volume 5: Appendix CT-001-000/5).
- 5.1.26 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment that has been adopted identifies the likely significant ecological effects of the AP4 revised scheme.

Existing baseline

- 5.1.27 The ecological baseline of the land required for the amendment has been based on field data collated for the main ES, additional survey work undertaken in 2014 and 2015, aerial photography, and relevant existing information gathered from national organisations and regional and local sources used to inform the main ES and the SES and AP2 ES, including: Birmingham City Council (BCC), Canal & River Trust (formerly British Waterways), EcoRecord (the biological records centre for Birmingham and the Black Country), Environment Agency and the Wildlife Trust for Birmingham and the Black Country. This additional information informs and supports the assumptions made in this assessment with regard to the habitats and species likely to be present within the land required for the amendment.
- 5.1.28 A summary of the baseline information relevant to the assessment of the amendment is provided below. This takes account of any relevant 2015 survey information provided in SES3 and AP4 ES, Volume 5, EC-001-004. For those receptors described in the main ES, further details are provided in Volume 2, CFA25, Section 7 and in Volume 5, including maps EC-01 to EC-12 of the main ES.

Designated sites

- 5.1.29 The land required for the amendment includes part of Park Hall Site of Importance for Nature Conservation (SINC), which is designated for its broadleaved semi-natural woodland (including Parkhall Wood, Parkhill Wood and Langley Hill Wood), scrub, marshy grassland, swamp vegetation and water bodies, as well as the plants and

aquatic invertebrates, amphibians and birds these habitats support. The SINC is of county/metropolitan value.

- 5.1.30 The River Tame Site of Local Importance for Nature Conservation (SLINC) is also partially located adjacent to the amendment and the Water Orton Sidings SLINC is located approximately 70m north of the amendment. Each of these SLINC is of district/borough value.
- 5.1.31 Parkhall Wood is listed on the ancient woodland inventory and is outside the land required for the AP4 revised scheme. As reported in the SES and AP2 ES, 2.8ha of woodland within Parkhill Wood and Langley Hill Wood is likely to be ancient and is considered as ancient woodland for assessment purposes. It is partly within the land required for the amendment. The total area of woodland recognised as ancient woodland within Park Hall SINC is therefore now 5.8ha.

Habitats

- 5.1.32 A mosaic of habitat types exist within the area affected by the amendment comprising approximately 2.8ha of broadleaved semi-natural woodland (Parkhill Wood and Langley Hill Wood), scrub, tall ruderal vegetation, water bodies, swamp (characterised by National Vegetation Classification (NVC³) habitat type S5 *Glyceria maxima* and NVC habitat type S12 *Typha latifolia* swamps), semi-improved neutral grassland, marshy grassland, running water (River Tame), scattered trees and species-poor hedgerow.
- 5.1.33 Broadleaved semi-natural woodland at Parkhill Wood is characteristic of NVC habitat type W10 *Quercus robur* – *Pteridium aquilinum* – *Rubus fruticosus* woodland. Woodland at Langley Hill Wood is characteristic of NVC habitat type W8 *Fraxinus excelsior* – *Acer campestre* – *Mercurialis perennis* woodland. Surveys for ancient woodland vascular plant species undertaken in 2015 for each of the woodland areas recorded 17 species in Park Hall Wood, 21 species in Parkhill Wood and 14 in Langley Hill Wood. These areas of woodland (which include the areas that are assumed to be ancient) are part of the wider woodland resource within Park Hall SINC, reported within the main ES to be of county/metropolitan value.
- 5.1.34 Semi-improved neutral grassland is characteristic of NVC habitat type MG9 *Holcus lanatus* – *Deschampsia cespitosa* grassland and is part of the more extensive semi-improved grassland receptor within Park Hall SINC, which is reported within the main ES to be of county/metropolitan value.
- 5.1.35 Marshy grassland has established in areas that are regularly subject to flooding and differs from adjacent areas of NVC habitat type MG9 *Holcus lanatus* – *Deschampsia cespitosa* grassland by supporting a greater abundance soft rush and meadowsweet. The marshy grassland is part of the more extensive marshy grassland receptor within Park Hall SINC, reported within the main ES to be of county/metropolitan value.
- 5.1.36 The River Tame, the areas of swamp and all water bodies are part of the same receptor within the wider Park Hall area, which is reported as being of district/borough value within the main ES.

³Joint Nature Conservation Committee. The National Vegetation Classification (NVC). <http://jncc.defra.gov.uk/page-4259>; Accessed June 2013.

- 5.1.37 Within Park Hall SINC, species-poor hedgerows, scrub, tall ruderal vegetation, and scattered trees are assessed as being of local/parish value within the main ES.

Protected and/or notable species

- 5.1.38 The main ES states that an assemblage of county rare plant species (including marsh stitchwort) is present at Park Hall SINC, and some of these species are likely to be within the area subject to the amendment as well as the wider Park Hall SINC. They are described in the main ES, Volume 2, Section 7 and reported as being of district/borough value.
- 5.1.39 A small population of water vole was recorded on the River Tame between 100m to 200m from the area of the amendment. This population is reported as being of county/metropolitan value in the main ES.
- 5.1.40 An assemblage of aquatic invertebrate species characteristic of the wetland (pond and ditch) habitats present within the land required for the amendment were recorded within the main ES. The assemblage recorded within Park Hall SINC includes rare and notable species and is reported as being of county/metropolitan value.
- 5.1.41 An assemblage of terrestrial invertebrate species characteristic of the marsh, grassland and woodland habitats present were recorded at Park Hall SINC. The assemblage includes notable species, and is reported as being of county/metropolitan value in the main ES.
- 5.1.42 Otter was recorded along the River Tame which partially lies within the land required for the amendment. Otter is reported in the main ES as being of district/borough value.
- 5.1.43 The main ES reported a population of common pipistrelle associated with Park Hall SINC and the River Tame. This small population of common pipistrelle was assessed in the main ES as being of district/borough value, and they are likely to use the land required for the amendment for foraging and commuting. A survey undertaken in July 2015 confirmed the presence of a small number of common pipistrelle bats roosting in a tree within Langley Hill Wood just outside the land required for the amendment. This data does not change the value of this feature for common pipistrelle bat. Small populations of *Myotis species*, noctule, Leisler's, brown long-eared bat, serotine, soprano pipistrelle and *Nyctalus species*, were also recorded. They are of local/parish value as reported within the main ES. These species are also likely to use the land required for the amendment for roosting, foraging and commuting.
- 5.1.44 The land required for the amendment supports a diverse range of bird species. The main ES reports breeding grasshopper warbler, garden warbler and kingfisher and small numbers of wintering woodcock and green sandpiper within the land required for this amendment, as well as the wider Park Hall SINC. The breeding and wintering assemblages are each of district/borough value, as reported in the main ES.
- 5.1.45 Ponds which support a small metapopulation of great crested newts are located within the land required for the amendment. These ponds also support common frog, common toad and smooth newt. The great crested newt metapopulation and the assemblage of other amphibian species are each of district/borough value as reported in the main ES.

- 5.1.46 A small number of grass snake has been recorded within the land required for the amendment. The grass snake population is of local/parish value as reported in the main ES.
- 5.1.47 Badger is also present within the local area and badger is assessed as being of local/parish value within the main ES.
- 5.1.48 The main ES reports that there is a moderate diversity of fish species within the River Tame SLINC where it passes through Park Hall SINC, within the land required for the amendment. The fish assemblage is of local/parish value.
- 5.1.49 Surveys undertaken during July 2015 have identified additional stands of Japanese knotweed and Himalayan balsam (both of which are invasive non-native shrubs and assessed as being of negligible value), within the land required for the amendment.

Future baseline

Construction (2017)

- 5.1.50 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.1.51 None of the identified developments affect the assessment of the amendment's likely construction impacts on ecology.

Operation (2026)

- 5.1.52 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 5.1.53 None of the identified developments affect the assessment of the amendment's likely operational impacts on ecology.

Effects arising during construction

Avoidance and mitigation measures

- 5.1.54 The amendment has been developed so that the pylon locations and overhead line diversions are on appropriate topography and result in reduced loss of woodland. This has been included as part of the design of the amendment and avoids or reduces impacts to features of ecological value.
- 5.1.55 The assessment assumes implementation of the measures set out within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), which includes translocation of protected species where appropriate.

Designated sites

- 5.1.56 The SES and AP2 ES reported a significant adverse effect on the functional integrity of Park Hall SINC, owing to the loss and fragmentation of ancient woodland, broadleaved semi-natural woodland as well as those other habitat types for which the site is designated, which would be significant at county/metropolitan level. Habitat loss resulted from the construction of the original scheme which included the

diversion of the overhead line. The adverse effect on site integrity of the SINC would be significant at county/metropolitan level.

- 5.1.57 The amendment to the overhead line diversion will avoid the 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 would give rise to a different effect to that which is reported in the SES and AP2 ES due to the reduced loss of ancient broadleaved woodland; however the effect on the integrity of the SINC will remain significant at the county/metropolitan level.

Habitats

- 5.1.58 The SES and AP2 ES (Part 1) reported a permanent loss of 0.7 ha of broadleaved semi-natural ancient woodland at Park Hall Wood, and 2.8ha of broadleaved semi-natural ancient woodland at Parkhill Wood and Langley Hill Wood. This would result in a permanent adverse effect, which would be significant at the county/metropolitan level.
- 5.1.59 The amendment to the overhead line diversion has assumed that the temporary and permanent diversion can be implemented with no loss of woodland vegetation, other than minor trimming of some tree branches. The AP4 amendment therefore avoids the loss of 2.8ha of ancient woodland at Langley Hill Wood and Parkhill Wood that was identified in the SES and AP2 ES. The loss of ancient woodland at Park Hall Wood (0.7 ha) is unchanged from that reported in the main ES. Therefore, the amendment to the overhead line diversion at Park Hall nature reserve would give rise to a different significant effect by reducing the overall loss of ancient woodland to 0.7ha. However, this will not change the level of significance of the effects reported in Part 1 of the SES and AP2 ES as there remains a loss of irreplaceable ancient woodland habitat.
- 5.1.60 It is unlikely that the amendment will result in any other new or different effects on habitat receptors of relevance at more than the local/parish level. Local/parish level effects which are in addition to those identified in the main ES and the SES and AP2 ES are listed in Volume 5: Appendix EC-003-004 of the SES3 and AP4 ES.

Protected and/or notable species

- 5.1.61 The amendment to the overhead line diversion at Park Hall nature reserve will result in reduced loss of habitat for species including terrestrial invertebrates and breeding woodland bird assemblages. However, the amendment will not generate any new or different significant effects or change the level of significance of the effects reported in the main ES for protected and/or notable species.
- 5.1.62 It is unlikely that the amendment will result in any other new or different effects on species receptors of relevance at more than the local/parish level. Local/parish level effects which are in addition to those identified in the main ES and the SES and AP2 ES are listed in Volume 5: Appendix EC-001-004 of the SES3 and AP4 ES.

Cumulative effects

- 5.1.63 There are no new or different likely significant cumulative effects for ecology as a result of the AP4 amendments interacting with one another, the AP2 amendments; or any relevant committed development.

Mitigation and residual effects

Other mitigation measures

- 5.1.64 No additional mitigation measures (i.e. in addition to those identified in the main ES or SES) are required.
- 5.1.65 The amendment avoids the loss of 2.8ha of ancient woodland, and therefore removes the requirement for woodland soils translocation reported in the SES and AP₂ ES to address effects on Langley Hill Wood and Parkhill Wood. Translocation of woodland soils is still proposed for the area of Park Hall Wood that will be removed.

Summary of likely residual effects

- 5.1.66 The amendment to the overhead line diversion at Park Hall nature reserve reduces the area of ancient woodland loss from 0.7ha at Park Hall Wood and 2.8ha at Parkhill Wood and Langley Wood to 0.7ha at Park Hall Wood (with no loss from Parkhill Wood and Langley Wood). This will give rise to a different significant residual effect on the functional integrity of Park Hall SINC and ancient woodland within the Park Hall SINC. However, this would not change the level of significance of the residual effect reported in the SES and AP₂ ES.

Effects arising from operation

- 5.1.67 The amendment does not change the operation of the scheme and so there are no new or different significant operation effects for ecology as a result of the amendment, in comparison with those described in the main ES or SES and AP₂ ES.

Landscape and visual assessment

Introduction

- 5.1.68 This section of the report describes the environmental baseline in relation to landscape and visual that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES₃ scheme.

Scope, assumptions and limitations

- 5.1.69 The assessment scope, key assumptions and limitations for the landscape and visual assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES. An update to the methodology for the landscape and visual assessment is also described in Volume 1 of the AP₁ ES and Volume 1 of the SES and AP₂ ES.

Existing baseline

- 5.1.70 The area of land required for the amendment is located within the River Tame Floodplain landscape character area (LCA), as described in the main ES (Volume 2, CFA₂₅, Section 9). The River Tame Floodplain LCA is in fair condition, exhibits medium tranquillity, and is valued at a regional level due to the designation of Park Hall nature reserve as green belt. The LCA is therefore judged to have a high sensitivity to change.

5.1.71 The following viewpoints are located in close proximity to the amendment and are described in the main ES (Volume 2, CFA 25, Section 9 and Volume 5, Appendix LV-001-025):

- viewpoint 373.4.007: view from a train on the Birmingham and Derby Line across Park Hall nature reserve; and
- viewpoint 373.3.001: views south from Castle Vale Nature Conservation Area (Farnborough Fields).

Future baseline

Construction (2017)

5.1.72 Volume 5: Appendix CT-004-000 of the SES₃ and AP₄ ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP₂ ES.

5.1.73 None of the identified developments affect the assessment of the amendment's likely construction impacts on landscape and visual.

Operation (2026)

5.1.74 Volume 5: Appendix CT-004-000 of the SES₃ and AP₄ ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP₂ ES.

5.1.75 None of the identified developments affect the assessment of the amendment's likely operational impacts on landscape and visual.

Effects arising during construction

Landscape assessment

5.1.76 The River Tame Floodplain LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The River Tame Floodplain LCA is considered to be of high sensitivity to change. The main ES reported a high magnitude of change during construction due to construction activity and associated lighting reducing tranquillity. The high magnitude of change, assessed alongside the high sensitivity of the LCA, would result in a major adverse effect which would be significant.

5.1.77 Construction activity associated with the amendment to the overhead line diversion will include a temporary diversion followed by the permanent reinstatement of the overhead line and pylons back along the original horizontal alignment raised higher by approximately 9m to provide adequate clearance over the route. The diversion and reinstatement of the overhead line and pylons will occur in the context of the construction of the route and other elements of the original scheme.

5.1.78 Given the nature of the major adverse effect reported in the main ES, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Visual assessment

- 5.1.79 Viewpoint 373.3.001: views south from Castle Vale Nature Conservation Area (Farnborough Fields), was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse effect during construction due to a medium magnitude of change assessed alongside the high sensitivity of the receptor due to the construction of the River Tame viaduct, repositioning of existing pylons and overhead lines.
- 5.1.80 Viewpoint 373.4.007: view from a train on the Birmingham and Derby Line across Park Hall nature reserve, was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse effect during construction due to construction of the River Tame viaduct and Langley Wood embankment, the realignment of the River Tame, the excavation of the flood storage areas and the repositioning of existing pylons and overhead power lines, resulting in a substantial change to the views across the Park Hall nature reserve and floodplain.
- 5.1.81 During construction, the nature of effects associated with the amendment will largely be as described for the original scheme. There will be views of construction activities associated with compounds, construction of both the River Tame viaduct and Langley Wood embankment, the realignment of the River Tame, excavation of flood storage areas, the removal of vegetation and existing pylon repositioning. The nature of construction activity would therefore be similar to that assessed in the main ES for all viewpoints. Therefore, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising during operation

Landscape assessment

- 5.1.82 The River Tame Floodplain LCA was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a medium magnitude of change, assessed alongside the high sensitivity of the LCA, resulting in a moderate adverse effect in year 1 of operation. This was reported due to a localised reduction in tranquillity within Park Hall nature reserve where the route diverts from the existing Birmingham and Derby Line, and limited opportunities to integrate the route due to the requirement to create floodplain compensation areas and planting restrictions. By year 15 and year 60 of operation effects would remain unchanged.
- 5.1.83 The amendment to the overhead line diversion at Park Hall nature reserve will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Visual assessment

- 5.1.84 Viewpoint 373.4.007: view from a train on the Birmingham and Derby Line across Park Hall nature reserve was assessed as being affected by the original scheme and will also be affected by this amendment. The main ES reported a moderate adverse effect in year 1 of operation, remaining in year 15 and year 60, due to glimpsed views of the River Tame viaduct and Langley Wood embankment, together with changes in landform and river channel.

- 5.1.85 The magnitude of change in the view resulting from the amendment, including the increased height (approximately 9m) of the pylons, would not be greater than that assessed in the main ES. Therefore, the amendment to the overhead line diversion at Park Hall nature reserve will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.1.86 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES and AP ES reports) are required.
- 5.1.87 The amendment to the overhead line diversion at Park Hall nature reserve will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Cumulative effects

- 5.1.88 There are no new or different likely significant cumulative effects for landscape and visual as a result of the AP4 amendments interacting with one another, the AP2 amendments or any relevant committed development.

Water resources and flood risk assessment

Introduction

- 5.1.89 This section of the report describes the environmental baseline in relation to water resources and flood risk that is relevant to the assessment. It then identifies any new or different significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

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

Existing baseline

- 5.1.91 The baseline water resources and flood risk information for the Castle Bromwich and Bromford area is described in the main ES (Volume 2, CFA25, Section 13). This is summarised below.
- 5.1.92 The River Tame and Plants Brook flow within the Park Hall nature reserve and are both classified as receptors of high value. The Water Framework Directive objective for both is to achieve good potential by 2027.
- 5.1.93 The Environment Agency flood zone mapping and results from hydraulic modelling reported in the main ES and shown on main ES map WR-05-157, Volume 5 Map Book, indicate that the Park Hall nature reserve is in an area at risk of flooding. The areas at risk of flooding during a flood event with a 1 in 100 annual probability (1%) of river flooding are set out below along with their value as receptors from a flooding perspective:
- areas directly south of the Minworth Wastewater Treatment Works in the Park Hall nature reserve area, which do not contain operational infrastructure (less

vulnerable, of moderate value);

- the Birmingham and Derby Line (essential infrastructure of very high value);
- Park Hall nature reserve (water compatible receptor of low value) from Parkhall Wood westwards to the Castle Bromwich Business Park (less vulnerable, of moderate value); and
- a residential area of Bromford (more vulnerable, of high value), south of the river.

5.1.94 Within the main ES, the assessment included the regrading of local topography in order to create replacement flood storage within the Park Hall nature reserve area. Flood levels were modelled to increase by up to 30mm for the 1 in 100 annual probability including climate change (1%) flood event. Alternative mitigation was to be considered at later stages in the design.

Future baseline

Construction (2017)

5.1.95 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.

5.1.96 All committed developments are required to comply with the National Planning Policy Framework (NPPF), development plans and other legislation and guidance. As such committed developments are not expected to have an effect on the water resources and flood risk baseline.

Operation (2026)

5.1.97 For the reasons stated above for construction, the committed developments will not generate any new or different significant effects during operation.

5.1.98 Current projections to the 2080s indicate that climate change may affect the future baseline against which the effects of the AP4 revised scheme on surface water and groundwater resources have been assessed. There may be changes in the flow and water quality characteristics of surface water and groundwater bodies as a result of changes in climate. However, except for flood flows, these changes will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising during construction

5.1.99 The amendment to the overhead line diversion at Park Hall nature reserve will require the temporary diversion of two pylons to facilitate the construction of raised pylon islands, which will form the base of the new pylons. The temporary diversion will involve additional construction activity within the floodplain of the River Tame including the construction of temporary pylons to the north and south of the existing pylons, the northern one being closer to the route of the River Tame.

5.1.100 With the application of measures within the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES) the construction of the amendment will not give rise to any new

or different significant effect on surface water and groundwater and will not change the level of significance of the effects reported in the main ES.

- 5.1.101 Two island platforms associated with the construction of two new elevated pylons, will result in the loss of a volume of flood storage within the replacement floodplain storage area for the River Tame.
- 5.1.102 Results from the site specific flood modelling undertaken, which includes additional replacement flood storage within Park Hall nature reserve, show that the amendment to the overhead line diversion through Park Hall nature reserve will not cause a significant increase in the risk of flooding to third parties for the 1 in 100 annual probability (1%) river flood event, including an allowance for climate change when compared to the original scheme. Flood levels within the western corner of Park Hall nature reserve are predicted to increase by up to 160mm for a localised area near the confluence of the Dunlop Carrier Channel with the River Tame during the 1 in 100 annual probability (1%) river flood event, including an allowance for climate change (see SES3 and AP4 ES Volume 5: Appendix WR-003-025). There is a minor adverse impact to Park Hall nature reserve and to the Dunlop Channel, however, due to these receptors having a flood vulnerability classification of 'water compatible', the effect will not be significant.
- 5.1.103 For more frequent flood events examined (i.e. 1 in 75 annual probability (1.3%) and 1 in 10 annual probability (10%)), the results indicate that there will be a minor increase in water levels within the River Tame within localised reaches. There will also be a major increase in water levels within Plants Brook at the confluence of the River Tame for the 1 in 75 annual probability (1.3%) event. For the 1 in 10 annual probability (10%) event there will be increases in the Park Hall nature reserve of up to 120mm and an increase of up to 100mm in the Water Orton Flood Relief Channel. However, due to these areas having a flood vulnerability classification of 'water compatible', the effects will not be significant. The AP4 scheme has higher peak flood levels than the original scheme at Kingsbury Pallets, a commercial premises located off Water Orton Lane. However, as the AP4 flood level is still lower than the present day baseline at this location, this represents a negligible change in flood risk which is not significant.
- 5.1.104 Based on the results of the site specific flood model, under the same river flood conditions, the flood levels for the remainder of the Park Hall nature reserve show no significant change when compared to the main ES. Thus, the proposed amendment to the overhead line diversion at Park Hall nature reserve will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

- 5.1.105 The amendment to the overhead line diversion at Park Hall nature reserve will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Mitigation and residual effects

- 5.1.106 The replacement flood storage area within the Park Hall nature reserve are expected to be scheduled at an early stage of construction to provide mitigation for both the

temporary and permanent flood risk impacts. No additional mitigation measures (i.e. in addition to those identified in the main ES) are required.

- 5.1.107 The amendment to the overhead line diversion at Park Hall nature reserve will not give rise to a new or different likely residual significant effect and will not change the level of significance of the effects reported in the main ES.

Cumulative effects

- 5.1.108 There are no new or different likely significant cumulative effects for water resources and flood risk assessment as a result of the AP4 amendments interacting with one another, the AP2 amendments, or any relevant committed development.

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

- 5.1.109 The amendment to the diversion of overhead lines at Park Hall nature reserve will result in the removal of significant residual construction effects on cultural heritage assets: Parkhill Wood (asset reference CBB023), its associated wood bank (asset reference CBB023), the saw pit (asset reference CBB025) at Parkhill Wood and Langley Hill Wood (asset reference CBB030).
- 5.1.110 The amendment will also result in a different significant residual ecology effect on Park Hall SINC and ancient woodland within the Park Hall SINC as a result of the reduction in the loss of ancient woodland. However, this will not change the level of significance of the effects reported in the SES.

5.2 Additional land required for the relocation of a bottom ash plant to Tyseley (AP4-025-002)

- 5.2.1 The Bill provides for the construction of the route through the Castle Bromwich Business Park including the Bromford tunnel, the Bromford tunnel east portal, an ATS, a balancing pond and the Castle Bromwich retained cut (see map CT-06-136 in the main ES, Volume 2 CFA25 Map Book). Nine buildings within the business park would be demolished to accommodate the construction of the original scheme, including the existing bottom ash processing plant.
- 5.2.2 Since submission of the Bill, HS2 Ltd has continued consultation with the plant operator and BCC, with a view to identifying 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 that is vacant, predominantly cleared, and adjacent to an existing BCC depot. This site is also within an existing industrial area, close to the incinerator which produces the bottom ash, and has suitable access to the main highway network. The site will include the main plant building, weighbridge, offices including welfare facilities and car parking. The site will include external lighting, visual screen fencing along the northern perimeter boundary of the site, and open mosaic habitat provided along the east and west perimeter verge.
- 5.2.3 The construction of the new bottom ash plant will be delivered from a new satellite compound (Bottom Ash Plant satellite compound) at the relocation site, and managed from the Bromford tunnel east portal (east) main compound. The new compound will be operational for one year starting in 2017 with the works taking

approximately one year to complete. The compound will support up to 12 workers each day and be accessed via the local road network. The land required for the new bottom ash plant (approximately 2.1ha) is located outside of the original limits of the Bill, hence the need for this amendment. See map CT-05-137-L1 and CT-06-137-L1, in the SES3 and AP4 ES, Volume 2, CFA25 Map Book for the location of the amendment. The new bottom ash plant is also located outside of the Castle Bromwich and Bromford area (CFA25), approximately 9.5km to the south-west of the existing facility, but the assessment is reported within this CFA report as it is replacing a facility which is currently located within this CFA.

- 5.2.4 The relocation of the bottom ash plant is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: agriculture, forestry and soils, cultural heritage, and water resources and flood risk assessment. However, there are changes where reassessment is considered to be required in respect of: air quality, community, ecology, land quality, landscape and visual assessment, socio-economics, sound, noise and vibration, and traffic and transport.

Air quality

Introduction

- 5.2.5 The section of the report describes the environmental baseline in relation to air quality that is relevant to the assessment. It then identifies any new or different likely significant effects as a result of the amendment compared to those of the SES3 scheme.

Scope, assumptions and limitations

- 5.2.6 The assessment scope, key assumptions and limitations and the methodology for determining significance of effects for air quality are as set out in the SMR Addendum 3 (Volume 5: Appendix CT-001-000/4) of the SES2 and AP3 ES.

Existing baseline

- 5.2.7 BCC has declared its entire administrative area as an Air Quality Management Area due to exceedances of the annual mean air quality objective value for nitrogen dioxide (NO₂).
- 5.2.8 Monitoring data gathered in the area suggests that annual mean concentrations of NO₂ are likely to exceed the national air quality objective value at locations in close proximity to the M6 motorway and other major arterial routes into the city. Away from these busier roads, annual mean concentrations fall to levels that are closer to background conditions and are less likely to exceed the objective value.

Future baseline

Construction (2017)

- 5.2.9 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.10 None of the identified developments affect the assessment of the AP4 amendment's likely construction impacts on air quality.

Operation (2026)

- 5.2.11 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.12 None of the identified developments affect the assessment of the AP4 amendment's likely operational impacts on air quality.

Effects arising during construction

- 5.2.13 The amendment will relocate the existing bottom ash plant currently located within the Castle Bromwich Business Park to a new site off Redfern Road, Tyseley. The construction of the new bottom ash plant will introduce a source of potential dust emissions. The mitigation measures in the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES) will be sufficient to control impacts such that a significant effect will not occur. Therefore no new or significant effects are anticipated as a result of the amendment to relocate the bottom ash plant to Tyseley.

Effects arising from operation

- 5.2.14 The operation of the relocated bottom ash plant will introduce a new potential source of dust into the area where it is being relocated due to the presence of ash mounds, which will be up to approximately 3m in height. This area is already industrial in nature, with limited sensitivity to the impacts of dust.
- 5.2.15 The facility will require an environmental permit, which is expected to include conditions that will require that dust emissions are controlled as much as is practicable. As a result the facility's impacts on dust deposition and short-term concentrations of PM₁₀ would not be significant.
- 5.2.16 The relocation of the facility will redistribute the traffic movements associated with the delivery of materials and the movements of staff to and from the site (i.e. they will travel to the new site in Tyseley, rather than the existing site in Castle Bromwich Business Park). This will only impact upon annual mean concentrations of the pollutants NO₂ and PM₁₀ on the local road network in the vicinity of the site, an area with no sensitive air quality receptors.
- 5.2.17 Therefore, it is anticipated that the amendment to relocate the bottom ash plant to Tyseley will not give rise to a new significant effect on local air quality as a result of changes to traffic flows and routes.

Mitigation and residual effects

- 5.2.18 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES reports) are required. The amendment will not give rise to a new significant effect.

Cumulative effects

- 5.2.19 There are no new or different likely significant cumulative effects for air quality as a result of the AP4 amendments interacting with one another or any relevant committed development.

Community

Introduction

- 5.2.20 This section of the report describes the environmental baseline in relation to community that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

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

Existing baseline

- 5.2.22 The existing bottom ash plant is located within the Castle Bromwich and Bromford area (CFA25). The baseline community information for the area is as described in the main ES (Volume 2, CFA25, Section 6 and Volume 5: Appendix CM-001-025).
- 5.2.23 The existing bottom ash plant is located within the Castle Bromwich Business Park, adjacent to a Gypsy and Traveller site on Tameside Drive. The site is owned by BCC, and provides a total of 15 transit pitches⁴.
- 5.2.24 The amendment will relocate the bottom ash plant to Redfern Road, Tyseley. The area surrounding the amendment is predominantly industrial, made up of a mixture of large and small warehouses and workshops. There are a limited number of community resources in the area. The nearest residential dwellings are located approximately 250m north of the site on Speedwell Road. They are separated from the site by industrial development and the Grand Union Canal.

Future baseline

Construction (2017)

- 5.2.25 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.26 None of the identified developments affect the assessment of the AP4 amendment's likely construction impacts on community.

Operation (2026)

- 5.2.27 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.28 None of the identified developments affect the assessment of the AP4 amendment's likely operational impacts on community.

⁴ Birmingham, Coventry and Solihull Councils (2008), *Joint Gypsy and Traveller Accommodation Assessment*.

Effects arising during construction

- 5.2.29 There are no new significant air quality, noise, vibration, visual, or HGV effects on community resources due to the amendment, therefore there are no significant community amenity effects. The amendment to relocate the bottom ash plant to Tyseley will not give rise to a new or significant effect.

Effects arising from operation

- 5.2.30 The amendment to relocate the bottom ash plant to Tyseley will not give rise to a new or significant effect.

Mitigation and residual effects

- 5.2.31 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES and AP ES reports) are required. The amendment will not give rise to a new or different significant effect.

Cumulative effects

- 5.2.32 There are no new or different likely significant cumulative effects for community as a result of the AP₄ amendments interacting with one another, or any relevant committed development.

Ecology

Introduction

- 5.2.33 This section of the report describes the environmental baseline in relation to ecology that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES₃ scheme.

Scope, assumptions and limitations

- 5.2.34 Updates to the assessment scope for ecology are set out in Volume 1 of the SES₃ and AP₄ ES. The key assumptions and limitations, and the methodology for determining significance of effects are as set out in Volume 1, the SMR and the SMR Addendum (Volume 5: Appendix CT-001-000/02 and CT-001-000/02) of the main ES and in Addendum 4 to the SMR (SES₃ and AP₄ ES, Volume 5: Appendix CT-001-000/5).
- 5.2.35 The land required for the amendment did not form part of the original scheme, and therefore no baseline information has been collected for this area prior to 2015. At the time of writing, access was not available to the land parcel, so mapping of habitat types and subsequent assumptions and assessment is based on aerial photography and is informed by other third party information.
- 5.2.36 To address any limitations in data, a precautionary baseline has been considered according to the guidance reported in the main ES, Volume 5: Appendix CT-001-000/2. This constitutes a 'reasonable worst-case' basis for the subsequent assessment. The precautionary approach to the assessment that has been adopted identifies the likely significant ecological effects of the AP₄ revised scheme.

Existing baseline

- 5.2.37 Access has been requested, but has not yet been obtained to the land required for the amendment. Therefore the ecological baseline of the land required for the amendment has been based on aerial photography and relevant existing information gathered from national organisations and from regional and local sources used to inform the main ES and the SES and AP2 ES, including: BCC, Canal & River Trust (formerly British Waterways), EcoRecord (the biological records centre for Birmingham and the Black Country), Environment Agency and the Wildlife Trust for Birmingham and the Black Country. This additional information informs and supports the assumptions made in this assessment with regard to the habitats and species likely to be present with the land required for the amendment.
- 5.2.38 A summary of the baseline information relevant to the assessment of the amendment is provided below.

Designated sites

- 5.2.39 The land required for the amendment is approximately 70m south-west of the Grand Union Canal SLINC. This designated site is of district/borough value.
- 5.2.40 There are no other statutory or non-statutory designated nature conservation sites, or ancient woodland inventory sites, relevant to the assessment.

Habitats

- 5.2.41 Habitats within the land required for the amendment comprise approximately 1.6ha of hardstanding and approximately 0.1ha of building. There is an estimated 0.4ha of ephemeral/short perennial vegetation, forming a mosaic with areas of bare ground and an adjacent line of trees along the northern boundary. There is scattered scrub throughout the site, including within areas of hardstanding.
- 5.2.42 Given that land access was not possible at the time of writing, a precautionary assessment assumes that the ephemeral/short perennial vegetation, associated scrub on bare ground and adjacent line of trees on the northern boundary, qualifies as a habitat of principal importance classified as 'mosaic habitat on previously developed land' under Section 41 of the Natural Environment and Rural Communities Act 2006⁵. This habitat area is considered to be of up to local/parish value.

Protected and/or notable species

- 5.2.43 It is possible that the building and/or the line of trees on the northern boundary of the land required for the amendment could support a roost of common bat species. The main ES reported activity of common pipistrelle bat within similar urban areas as described in Volume 2, CFA26, Section 7. Common pipistrelle and other bat species may also use the scrub within the land required for the amendment for foraging, with connectivity to the wider landscape afforded by the nearby Grand Union Canal. A precautionary assessment assumes that the building and/or trees supports a roost of common bat species, and that the land required for the amendment also supports

⁵Natural Environment and Rural Communities Act (2006), Chapter 16, Her Majesty's Stationery Office, London.

foraging by these common bat species. The local bat assemblage is therefore considered to be of up to district/borough value.

- 5.2.44 A precautionary assessment assumes that the building also supports a single breeding pair of black redstart, which is of up to county/metropolitan value.
- 5.2.45 The land required for the amendment has potential to support common reptile species such as grass snake and slow worm, and is connected with other habitats of potential suitability, along the Grand Union Canal. A precautionary assessment therefore assumes the presence of a small reptile population of up to local/parish value within the land required for the amendment and adjacent land along the Grand Union Canal.
- 5.2.46 An assemblage of terrestrial invertebrates associated with the network of urban habitats alongside the existing Birmingham and Derby Line, the Grand Union Canal and the Digbeth Branch Canal was assessed in the main ES to be of local/parish value and is described in Volume 5: Appendix EC-005-004. The land required for the amendment and adjacent corridor along the Grand Union Canal is considered to have potential to support a similar assemblage of terrestrial invertebrates. A precautionary assessment therefore assumes the presence of an assemblage of terrestrial invertebrates within the land required for the amendment and alongside the adjacent Grand Union Canal of up to local/parish value.

Future baseline

Construction (2017)

- 5.2.47 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.48 None of the identified developments affect the assessment of the amendment's likely construction impacts on ecology.

Operation (2026)

- 5.2.49 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.50 None of the identified developments affect the assessment of the amendment's likely operational impacts on ecology.

Effects arising during construction

Avoidance and mitigation measures

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

Designated sites

- 5.2.52 The main ES (Volume 2, CFA26, Section 7) reported that there would be no impacts as a result of the original scheme on the Grand Union Canal SLINC. The amendment to

relocate a bottom ash plant to Tyseley will not give rise to new significant effects on this designated site.

Habitats

- 5.2.53 For the purpose of this assessment it is assumed that all habitats, including all 0.4ha of the assumed open mosaic habitat on previously developed land, within the land required for the amendment will be lost. These additional losses result in an adverse effect at no more than local/parish level which is not significant.
- 5.2.54 Local/parish level effects which are in addition to those identified in the main ES and the SES and AP2 ES are listed in Volume 5: Appendix EC-003-004 of the SES3 and AP4 ES.

Protected and/or notable species

- 5.2.55 Site clearance works for the amendment will involve the demolition of buildings and removal of trees assumed to support roosting bats as well as the loss of habitats of potential value to foraging bats. However, alternative foraging habitats exist within the area, including alongside the Grand Union Canal which is within 100m of the land required for the relocated bottom ash plant. Overall these impacts will give rise to a new adverse effect on the assemblage of common bat species which will be significant at up to district/borough level. This is a new significant effect, not reported in the main ES.
- 5.2.56 Site clearance works will also involve the demolition of buildings with potential to support nesting black redstart. For the purpose of this assessment it is assumed that these buildings support a breeding pair of black redstart. However, given that other suitable nesting sites are likely to be present in the immediate vicinity of the land required and that implementation of the CoCP will ensure building demolition activities take place outside of the bird nesting season, the killing or injury of black redstart will be avoided. Consequently, it is not anticipated that the amendment will result in any new or significant adverse effects on the conservation status of this species.
- 5.2.57 Site clearance and construction works will result in the loss of habitat that may support a small population of common reptile species. This is assessed as a new adverse effect on the conservation status of these reptile species at up to local/parish level, and is not significant.
- 5.2.58 It is unlikely that the amendment will result in any other new or different effects on species receptors of relevance at more than the local/parish level. Local/parish level effects which are in addition to those identified in the main ES and the SES and AP2 ES are listed in Volume 5: Appendix EC-003-004 of the SES3 and AP4 ES.

Cumulative effects

- 5.2.59 There are no new or different likely significant cumulative effects for ecology as a result of the AP4 amendments interacting with one another; or any relevant committed development.

Mitigation and residual effects

Other mitigation measures

- 5.2.60 The following mitigation measures will be provided to address adverse effects identified in this precautionary assessment of the AP4 revised scheme.
- 5.2.61 The scheme design will include creation of approximately 0.1ha replacement vegetation around the periphery of the site along the northern, western and eastern boundaries. The target habitat is a mosaic of bare ground, grass and forb species, scrub and scattered trees, which together comprise the type of open mosaic habitat on previously developed land, a habitat of principal importance. As a result of this habitat creation there will be no significant adverse effects on habitats within the land required for the amendment.
- 5.2.62 There is a requirement for additional mitigation to address the impact on assumed roosting bats within the land required for the amendment. There is also a potential requirement for additional mitigation to address the impact on reptile populations, should appropriate habitat creation not be possible within the land required prior to site clearance activities. Appropriate measures will therefore be provided, including the provision of alternative roost sites and replacement reptile habitat, within the limits of the Bill. After implementation of this mitigation in accordance with the ecological principles of mitigation set out in the SMR Addendum (see main ES, Volume 5: Appendix CT-001-000/2), there will be no residual adverse effect on the assemblage of common bat species or reptile populations.

Summary of likely residual effects

- 5.2.63 With the implementation of the mitigation measures proposed, the new ecological effects arising from the AP4 revised scheme are reduced to a level where they are not significant.

Effects arising from operation

- 5.2.64 No new residual effects on ecological receptors will occur during operation as a consequence of the amendment.

Land quality

Introduction

- 5.2.65 This section of the report describes the environmental baseline in relation to land quality that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

- 5.2.66 The assessment scope, key assumptions and limitations for land quality are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.
- 5.2.67 The relocation site for the bottom ash plant is located in Tyseley, approximately 9.5km south of the existing plant. The site of the amendment is located outside of the CFA25 land quality study area for the main ES.

Existing baseline

- 5.2.68 The site is currently open industrial land, largely surfaced with concrete. Aerial photography indicates that there were a number of large vehicles present on the site, with 11 large skip containers located on the north-western site boundary, the contents of which are unknown. To the immediate north, the adjacent site is characterised by open scrubland where abandoned vehicles are present. There is one building on the site itself, located on the south-eastern boundary.
- 5.2.69 Geological mapping indicates that beneath the site are glacio-fluvial deposits. The River Colne has incised into the Mercia Mudstone Formation which underlies the site.
- 5.2.70 The glacio-fluvial deposits are classified as a Secondary A Aquifer and the Mercia Mudstone is classified as a Secondary B Aquifer. Full aquifer descriptions are given in the main ES (Volume 2, CFA25, Section 8).
- 5.2.71 Approximately 75m to the north of the amendment is the Grand Union Canal. Approximately 300m to the north-west, is the River Colne which flows in a north-easterly direction.
- 5.2.72 Environment Agency records indicate that there are no known groundwater abstractions local to the proposed relocation site, although there is one surface water abstraction licence from the Grand Union Canal, located approximately 300m to the north-west of the amendment site.
- 5.2.73 The earliest maps of the proposed relocation site (OS County Series 1887-1890, 1:10560 scale) show the site and surrounding area to be occupied by agricultural fields. By 1905 industrial development was occurring within the surrounding area, although the site itself was vacant. At some point between 1938 and 1951, the site became occupied by the "Invincible Works" (Aluminium), which is shown on the map records until at least 1965. The 1970, 1983 and 1981–1996 maps show industrial use on the site, although the layout of the buildings appears to have changed.

Other regulatory data

- 5.2.74 No other regulatory data has been reviewed as part of this assessment.

Mining and mineral resources

- 5.2.75 The proposed relocation site is not within a mineral safeguarding area.

Geo-conservation resources

- 5.2.76 There are no Local Geological Sites at the proposed site, or within the immediate vicinity.

Future baseline

Construction (2017)

- 5.2.77 The potential for the baseline to change in the lead up to the construction of the amendment is limited to the extent to which any new development necessitates remediation or mitigation measures to control potential contamination releases. Any new development in the study area on potentially contaminated land will need to be suitable for its intended use as set out in the NPPF. To meet this requirement, new

development sites may require remediation to be undertaken. This will mean that some areas described as having potentially contaminative current and/or historical land use, may no longer be of significance at the time of construction.

- 5.2.78 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.79 None of the identified developments affect the assessment of the AP4 amendment's likely construction impacts on land quality.

Operation (2026)

- 5.2.80 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.81 The potential for the baseline to have changed by the time the HS2 scheme is operational is limited to the extent to which any new development (between 2017 and 2026) necessitates remediation or mitigation measures to control potential contamination.
- 5.2.82 None of the identified developments affect the assessment of the AP4 amendment's likely operational impacts on land quality.

Effects arising during construction

- 5.2.83 The construction assessment takes into account the mitigation measures contained within the draft CoCP, (Volume 5: CT-003-000, Section 8).
- 5.2.84 Based on its historical land use as an aluminium works, the land required for the amendment would be classed as having a potentially contaminative land use (Class 2: Metal manufacturing and processing) in accordance with the land quality assessment methodology.
- 5.2.85 The land required for the amendment to relocate the bottom ash plant is not located within the study corridor for the Castle Bromwich and Bromford area (CFA25) as defined in the main ES (Volume 2, CFA25, Section 8). The methodology for Stage A and B of the assessment requires some consideration of the vertical alignment of the route, which provides a measure on how the route may interact with any potential contaminated land. The methodology also considers whether there are potential contaminated sites within the boundary of the land required to construct the amendment (including its replacement habitat buffers) and also within an area extending 250m from the boundary.
- 5.2.86 Given the distance of the relocation site from the route (9.5km), the route is not going to interact with the relocation site.
- 5.2.87 The relocation site will be constructed from the Bottom Ash Plant satellite construction compound and managed from the Bromford tunnel east portal (east) main compound. Although the construction of the new bottom ash plant will introduce a source of potential dust emissions, the measures in the draft CoCP (Volume 5: Appendix CT-003-000 of the main ES), will be sufficient to control impacts.

5.2.88 Table 5 summarises a qualitative risk assessment (Stage C and D of the assessment methodology) for the site of the amendment.

Table 5: Qualitative risk assessment

Source	Receptor	Pathway	Probability	Consequence	Risk
BASELINE Soil and groundwater contamination due to historical use as an aluminium works	Controlled waters – groundwater at the relocated site	Leaching, vertical and lateral migration from contaminated soils and water	Likely	Minor	Moderate/low risk
BASELINE Generation of potentially contaminated dust	Site neighbours	Airborne dust and fumes	Unlikely	Negligible	Very low risk
CONSTRUCTION Soil, leachate and groundwater contamination due to construction of bottom ash plant	Controlled waters – groundwater at the relocated site	Leaching, vertical and lateral migration from contaminated soils and water	Likely	Minor	Moderate/low risk
CONSTRUCTION Generation of potentially contaminated dust during construction phase	Site neighbours	Airborne dust and fumes	Low likelihood (assuming adherence to CoCP)	Minor	Low risk
POST-CONSTRUCTION Residual soil, leachate and groundwater contamination due to construction and operation of bottom ash plant	Controlled waters – groundwater at the relocated site	Leaching, vertical and lateral migration from contaminated soils and water	Low likelihood	Negligible	Very low risk
POST-CONSTRUCTION Generation of potentially contaminated dust during operational phase	Site neighbours	Airborne dust and fumes	Low likelihood	Minor	Low risk

5.2.89 The change in land use from disused industrial site to a bottom ash plant results in a minor adverse effect during construction with respect to possible dust emissions, which is not significant.

5.2.90 Owing to the site's historical use as an aluminium smelting works, ground investigation will be required to inform any potential remediation that is likely to be required to make the site suitable for its new use. The remediation of the site will

reduce the potential contamination risk to groundwater from a moderate/low risk (baseline) to a very low risk after remediation (post construction). This will result in a moderate beneficial effect, which is significant, with respect to groundwater, despite the risk remaining moderate/low during construction whilst remediation takes place.

Effects arising from operation

- 5.2.91 The operation of the relocated bottom ash plant will introduce a new potential source of dust into the area where it is being relocated due to the presence of ash mounds which will be up to approximately 3m in height. This area is already industrial in nature, with limited sensitivity to the impacts of dust. Providing that the facility is operated in a manner that controls dust emissions as much as is practicable, which would be enforced under the conditions of the facility's environmental permit, impacts on dust deposition would not be considered to be significant.
- 5.2.92 The identified minor adverse construction effect with respect to possible dust emissions which is not significant will remain during operation. The moderate beneficial effect with respect to groundwater identified during construction will also apply to the operational phase due to the long-term beneficial effect of the remediation of the site.

Mitigation and residual effects

- 5.2.93 Additional measures necessary to mitigate risks from land contamination at the construction phase are set out in the draft CoCP. A site investigation and development of a land remediation strategy is likely to be required.
- 5.2.94 The amendment to relocate a bottom ash plant to Tyseley will give rise to a new moderate beneficial effect with respect to groundwater during construction and operation due to the likely requirement for remediation of the site.

Cumulative effects

- 5.2.95 There are no new or different likely significant cumulative effects for land quality as a result of the AP4 amendments acting in combination with one another, or any relevant committed development.

Landscape and visual assessment

Introduction

- 5.2.96 This section of the report describes the environmental baseline in relation to landscape and visual assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

- 5.2.97 The assessment scope, key assumptions and limitations for the landscape and visual assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES. An update to the methodology for the landscape and visual assessment is also described in Volume 1 of the AP1 ES and Volume 1 of the SES and AP2 ES.

Existing baseline

- 5.2.98 The area of land required for the amendment to relocate the bottom ash plant is located off Redfern Road, Tyseley which lies within the Tyseley Industrial and Commercial LCA. This LCA lies beyond the Castle Bromwich and Bromford area (CFA25) and is additional to those identified within the main ES, SES and SES3. Further information about this LCA is available in the SES3 and AP4, Volume 5 LV-001-025 and maps LV-02-100-L1, LV-07-100-L1 and LV-08-1001.
- 5.2.99 The Tyseley Industrial and Commercial LCA is dominated by light industrial land use, is generally in poor condition, and exhibits low tranquillity. Despite the localised value of the Grand Union Canal, the LCA is of limited landscape value. The LCA is therefore considered to have a low sensitivity to change.
- 5.2.100 The amendment will affect new representative viewpoints into the area including recreational receptors located along the Kings Road Canalside Walk (Grand Union Canal) (viewpoint 392.3.001) and road users on Redfern Road (viewpoint 392.4.002).
- 5.2.101 The foreground of the view from viewpoint 392.3.001: view south from the Kings Road Canalside Walk (Grand Union Canal towpath), includes a combination of fence and wall boundaries running parallel with the canal itself. Vegetation bordering the route also filters views towards the industrial premises beyond. Refer to Volume 5: Appendix LV-001-025, Section 4 of the SES3 and AP4 ES.
- 5.2.102 The foreground of the view from viewpoint 392.4.002: view north-east from Redfern Road, includes the boundaries of industrial premises and vacant land forming the road frontage. The carriageway and palisade fencing boundaries dominate the foreground of the view. Refer to Volume 5: Appendix LV-001-025, Section 4 of the SES3 and AP4 ES.

Future baseline

Construction (2017)

- 5.2.103 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.104 None of the identified developments affect the assessment of the SES3 scheme's likely construction impacts on landscape and visual.

Operation (2026)

- 5.2.105 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.106 None of the identified developments affect the assessment of the SES3 scheme's likely operational impacts on landscape and visual.

Effects arising during construction

Landscape assessment

- 5.2.107 The Tyseley Industrial and Commercial LCA is a new receptor not previously considered in the main ES. The amendment would introduce construction activity within this LCA and result in the loss of a belt of vegetation located on the northern boundary of the proposed site. This will give rise to a low magnitude of effect given the existing industrial context of the LCA. The low magnitude of change, assessed alongside the low sensitivity of the LCA, would result in a new minor adverse effect, which is not significant.

Visual assessment

- 5.2.108 Viewpoint 392.3.001: recreational users on the Kings Road Canalside Walk (Grand Union Canal towpath), are identified as visual receptors not previously defined within the main ES, SES and AP₂ ES or SES₃. The most apparent change in the view at this location will relate to the temporary presence of construction plant, including cranes and construction machinery in the middle ground and upper views. The low magnitude of change, assessed alongside the high sensitivity of the receptor, will result in a new minor adverse effect, which is not significant.
- 5.2.109 Viewpoint 392.4.002: views from road users on Redfern Road are also identified as new visual receptors. The viewpoint will afford views north-east towards construction activity and the presence of the Bottom Ash Plant satellite compound located in the immediate foreground. The high magnitude of change, assessed alongside the low sensitivity of the receptor, will result in a new minor adverse which is not significant.

Effects arising during operation

Landscape assessment

- 5.2.110 The amendment will result in the presence of the new bottom ash plant including a weighbridge, offices, car parking, perimeter fencing and lighting, and 3m high ash mounds within the site, all within an existing urban/light industrial context. The low magnitude of change assessed alongside the low sensitivity of the Tyseley Industrial and Commercial LCA, will result in a new minor adverse effect at year 1 of operation, which is not significant. The effects on the LCA during years 15 and 60 will remain as assessed at year 1.

Visual assessment

- 5.2.111 The amendment will result in views towards the new bottom ash plant for recreational users of the Grand Union Canal towpath (viewpoint 392.3.001), which will be partially obscured by the intervening boundary fence. The nature of the canal towpath offers a vantage point which lies at a lower level than the bottom ash plant site. Therefore, views will be confined to the upper extents of ash mounds in the middle-ground (ash mounds assumed 3m in height). Given the existing industrial context of the area, the low magnitude of change assessed alongside the low sensitivity of the receptor will result in a new minor adverse effect in year 1 of operation, which is not significant. The effects on visual amenity during years 15 and 60 will remain as assessed at year 1.
- 5.2.112 Viewpoint 392.4.002: view north-east from Redfern Road, will experience views of the bottom ash plant forming the road frontage. Given the surrounding industrial context

and the existing land use, the medium magnitude of change assessed alongside the low sensitivity of the receptor will result in a new minor adverse effect at year 1 of operation, which is not significant. The effects on visual amenity during years 15 and 60 will remain as assessed at year 1.

Mitigation and residual effects

- 5.2.113 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES and AP ES reports) are required.
- 5.2.114 The amendment will not give rise to any new residual significant effects.

Cumulative effects

- 5.2.115 There are no new or different likely significant cumulative effects on landscape and views as a result of the AP4 amendments interacting with one another, AP2 amendments or any relevant committed development.

Socio-economics

Introduction

- 5.2.116 This section of the report describes the environmental baseline in relation to socio-economics that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

- 5.2.117 The assessment scope, key assumptions and limitations for socio-economics are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.

Existing baseline

- 5.2.118 The baseline socio-economics information for CFA 25 Castle Bromwich and Bromford is as described in the main ES (Volume 2, CFA25, Section 10).

Future baseline

Construction (2017)

- 5.2.119 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.120 None of the identified developments affect the assessment of the amendment's likely construction impacts on socio-economics.

Operation (2026)

- 5.2.121 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES.
- 5.2.122 None of the identified developments affect the assessment of the amendment's likely operational impacts on socio-economics.

Effects arising during construction

- 5.2.123 The bottom ash plant forms part of the Castle Bromwich Business Park and Hayward Industrial Estate socio-economic resource identified in the main ES. The main ES reported that during construction the eastern end of the Castle Bromwich Business Park would be required for the Castle Bromwich auto-transformer station satellite compound, the Bromford tunnel east portal (east) main compound and a roadhead. Consequently, the bottom ash plant, civic amenity site and other businesses located within the Castle Bromwich Business Park and Hayward Industrial Estate would need to be demolished, resulting in a major adverse effect.
- 5.2.124 The amendment includes the provision of a new bottom ash plant to replace the existing plant at Castle Bromwich Business Park. The proposed new plant will be provided at a site on Redfern Road, Tyseley. It is estimated that this amendment will result in the retention of approximately 10 jobs in the area.
- 5.2.125 The amendment to provide a new bottom ash plant will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

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

Mitigation and residual effects

- 5.2.127 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES and AP ES reports) are required.
- 5.2.128 The amendment will not result in new or different significant residual effects in construction or operation and will not change the level of the significance of the effects reported in the main ES.

Cumulative effects

- 5.2.129 There are no new or different likely significant cumulative effects for socio-economics as a result of the AP₄ amendments interacting with one another or any relevant committed developments.

Sound, noise and vibration

Introduction

- 5.2.130 This section of the report describes the environmental baseline in relation to sound, noise and vibration that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES₃ scheme.

Scope, assumptions and limitations

- 5.2.131 The assessment scope, key assumptions and limitations for the sound, noise and vibration assessment are as set out in Volume 1, the SMR (Volume 5: Appendix CT-

001-000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES.

- 5.2.132 Local assumptions and limitations for sound, noise and vibration are set out in main ES Volume 2, CFA25, Section 11.

Existing baseline

- 5.2.133 The location of the new bottom ash plant is remote from the route and is therefore outside the study area for which baseline data was obtained. The area surrounding the site is predominantly commercial/industrial in nature, however, a small number of residential dwellings and educational uses have been identified in reasonably close proximity.
- 5.2.134 Baseline sound level data have been collected at a location on Kings Road representative of the identified educational uses and residential dwellings. A summary of the measured baseline sound data is provided in Table 6. Details of the methodology and the baseline data collection are given in the main ES, Volume 5: Appendix SV-001-000 and Appendix SV-002-025. Maps showing the baseline sound monitoring and assessment locations used within the assessment of construction sound, noise and vibration within this area are included in SES3 and AP4 ES map series SV-03.
- 5.2.135 The ambient sound climate at the measurement location was noted to be dominated by local road traffic on Kings Road.

Table 6: Existing baseline sound levels

Assessment location ID	Area represented	Measurement location	Existing baseline sound level (dB) for construction sound assessment			Data source coding
			Daytime L _{pAeq}	Evening/ Weekend L _{pAeq}	Night-time L _{pAeq}	
722016	Fairgate House, Kings Road, Tyseley, Birmingham	WM3901	70.0	-	-	4,C,i,A
722019	Kings Road (south), Tyseley, Birmingham	WM3901	70.0	-	-	4,C,i,A

- 5.2.136 The movement of vehicles to and from the bottom ash plant is considered as an absolute change in road traffic noise level only, and therefore does not require measured baseline noise levels to complete this assessment.

Future baseline

Construction (2017)

- 5.2.137 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.2.138 None of the identified developments affect the assessment of the amendment's likely construction impacts on sound, noise and vibration.

Operation (2026)

- 5.2.139 Volume 5: Appendix CT-004-000 of the SES and AP₄ ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP₂ ES.
- 5.2.140 None of the identified developments affect the assessment of the amendment's likely operational impacts on sound, noise and vibration.

Effects arising during construction

- 5.2.141 The amendment will introduce additional construction works not assessed in the main ES or the SES.
- 5.2.142 An assessment has been undertaken to determine whether these construction works would result in any new or different likely significant effects, using the significance criteria detailed in the main ES (Volume 5, Appendix SV-001-000).
- 5.2.143 SES₃ and AP₄ ES, Volume 5: Appendix SV-003-025 details the relevant results. Maps showing the assessment locations used within the assessment of construction sound, noise and vibration within this area are included in SES₃ and AP₄ ES map series SV-03.
- 5.2.144 At the closest identified residential properties, located on Kings Road, and the various educational uses located within Fairgate House on Kings Road, the relevant impact screening criteria are not exceeded and a significant noise effect is not identified. At the closest identified commercial/industrial premises located to the south on Redfern Road, a new significant effect is identified on the basis that the buildings have office-type uses facing towards the bottom ash plant. The likely duration of the impact on these buildings is one month and the worst-case monthly daytime construction noise level is 79dB. At more distant commercial/industrial premises a significant effect is not identified.
- 5.2.145 The relocation of the bottom ash plant will give rise to a new significant effect at the closest commercial/industrial premises to the site.

Effects arising during operation

- 5.2.146 An assessment has been undertaken to determine whether operational noise levels from the amendment will result in new or different likely significant effects, using the significance criteria detailed in the main ES (Volume 5: Appendix SV-001-000).
- 5.2.147 The operational sound assessment has considered the use of the bottom ash plant with respect to two potential operational noise sources:
- road traffic accessing the site; and
 - fixed mechanical and electrical equipment serving the facility.
- 5.2.148 Significant operational noise effects from any mechanical or electrical plant associated with the facility will be avoided through the plant design and the specification of noise emission requirements, as detailed within main ES, Volume 5: Appendix SV-001-000 (Annex E - Operation of stationary systems).

5.2.149 The change in road traffic flow and composition as a result of this amendment, is below the threshold defined in the SMR Addendum (CT-001-000/2) requiring further assessment, and therefore is not subject to a detailed assessment.

5.2.150 There are no new significant operational ground-borne noise or vibration effects.

Mitigation and residual effects

5.2.151 A 2.4m high solid hoarding around the site boundary is proposed to mitigate construction noise impacts at the adjacent commercial/industrial premises.

5.2.152 The amendment will give rise to a new direct construction noise residual significant effect at the closest commercial/industrial premises to the site, for a period of approximately one month.

5.2.153 Where it is necessary to do so, planning conditions will be imposed to ensure that operation of the bottom ash plant does not result in any likely significant operational sound, noise and vibration effects.

Cumulative effects

5.2.154 There are no new or different likely significant cumulative effects for sound, noise and vibration as a result of the AP4 amendments interacting with one another or any relevant committed development.

Traffic and transport

Introduction

5.2.155 This section of the report describes the environmental baseline in relation to traffic and transport that is relevant to the assessment. It then identifies any new or different likely significant environmental effects as a result of the amendment, compared to those of the SES3 scheme.

Scope, assumptions and limitations

5.2.156 The assessment scope, key assumptions and limitations for traffic and transport are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/1) and the SMR Addendum (Volume 5: Appendix CT-001-000/2) of the main ES. There is no change to the scope, assumptions and limitations as reported in the main ES in relation to the existing site.

Existing baseline

5.2.157 The existing bottom ash plant is located off Tameside Drive on the Castle Bromwich Business Park. The baseline traffic and transport information for the area is as described in the main ES (Volume 2, CFA25, Section 12).

5.2.158 The land required for the amendment to relocate the bottom ash plant is located on Redfern Road, Tyseley. Redfern Road between Kings Road to the west and Wharfdale Road to the east is primarily industrial in nature and connects to the A45 Coventry Road to the north via Kings Road. There are footpaths on both sides of Redfern Road and car parking on road is restricted in the vicinity of the site. The junction of Redfern Road and Kings Road is a priority junction with priority to Kings Road. Kings Road is primarily industrial in nature between the junction of Redfern Road and Speedwell

Road and residential in nature between Speedwell Road and the A45 Coventry Road. There are bus stops located on Kings Road to the south of the junction with Redfern Road.

- 5.2.159 The junction with the A45 Coventry Road is signal controlled. The A45 Coventry Road is the main strategic route in the area which provides access to Birmingham City Centre and the wider strategic transport network. The A45 Coventry Road also provides part of the existing route between the waste recycling centre on the A45 Small Heath Highway and the existing bottom ash plant off Tameside Drive.
- 5.2.160 Traffic baseline figures are reported in SES3 and AP4 ES, Volume 5, Appendix TR-001-025.

Future baseline

- 5.2.161 Future baseline traffic volumes have been calculated by applying growth factors derived from the Trip End Model Presentation Program. Committed developments within the area which have a direct access onto the route into the proposed site have been included.

Construction

- 5.2.162 Future baseline traffic volumes in the peak hours are forecast to grow by around 10% by 2021 compared to 2015.
- 5.2.163 Construction activities associated with the relocation of the bottom ash plant have been assessed against 2021 baseline traffic flows, irrespective of when they occur during the construction period.

Operation (2026 and 2041)

- 5.2.164 Future baseline traffic volumes in the peak hours are forecast to grow by around 19% by 2026 compared to 2015.
- 5.2.165 Future baseline traffic volumes in the peak hours are forecast to grow by around 48% by 2041 compared to 2015.

Effects arising during construction

- 5.2.166 The amendment to relocate the bottom ash plant will be delivered from a new satellite compound (Bottom Ash Plant satellite compound) at the relocation site, and managed from the Bromford tunnel east portal (east) main compound. The satellite compound will be operational for approximately 12 months and support up to 12 workers each day. Access will be off Redfern Road, as shown on map CT-05-137-L1 of the SES3 and AP4 ES, Volume 2, CFA25 Map Book.
- 5.2.167 Construction works associated with the relocation will give rise to approximately 10 two-way HGV trips per day and 21 two way car/LGV trips per day to Kings Road and Redfern Road.
- 5.2.168 This level of change in traffic will not give rise to a new significant effect.
- 5.2.169 There are no other relevant traffic and transport changes during construction as a result of the amendment.

Effects arising from operation

- 5.2.170 The relocated bottom ash plant is expected to operate substantially in the same manner as the existing site. The existing baseline data identified the associated traffic volumes which is assumed will transfer to the proposed site. The data showed that on a typical weekday, there are approximately 70-75 two-way HGV trips. There are minimal private car trips due to the nature of the business and the low level of associated employment.
- 5.2.171 The operation of the bottom ash plant will increase the number of HGV movements on the local roads accessing the site. There will be an increase in HGV movements on Kings Road between A45 Coventry Road and Speedwell Road. However, this will not be significant due to the level of background HGV traffic. There will also be an increase in HGV movements on Kings Road between Speedwell Road and Redfern Road and on Redfern Road between Kings Road and the site access. Although overall traffic levels will not increase substantially on these roads (1% on Redfern Road and 6% on Kings Road), the percentage increase in HGV traffic will result in new major adverse traffic severance effects for non-motorised users in both 2026 and 2041.
- 5.2.172 The significant effects that result from operation of the AP4 revised scheme in 2026 and 2041 are shown on Map TR-04-159-L1 (SES3 and AP4 ES, Volume 5, Traffic and Transport, CFA25 Map Book).

Mitigation and residual effects

- 5.2.173 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES reports) are required.
- 5.2.174 The amendment will result in a permanent major adverse residual traffic severance effects for non-motorised users on Kings Road between Speedwell Road and Redfern Road, and on Redfern Road between Kings Road and the site access, due to the increase in HGV movements in both 2026 and 2041.

Cumulative effects

- 5.2.175 The above assessment has taken into account cumulative effects, including planned development by taking account of background traffic growth, as well as traffic and transport impacts of works being undertaken in neighbouring areas.
- 5.2.176 There are no new or different likely significant cumulative effects for traffic and transport as a result of the AP4 amendments interacting with one another or the AP2 amendments.

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

- 5.2.177 The amendment will result in a new moderate beneficial residual effect with respect to groundwater during construction and operation due to the likely requirement for remediation of the site.
- 5.2.178 The amendment will result in a new construction noise likely residual significant effect at offices in the closest commercial/industrial premises to the site, for approximately one month.

- 5.2.179 The operation of the amendment will result in new permanent major adverse traffic severance effects on Kings Road between Speedwell Road and Redfern Road and on Redfern Road between Kings Road and the site access due to the increase in HGV movements in 2026 and 2041.

5.3 Reconfiguration of construction layout and provision of an access route at Castle Bromwich Business Park (AP-025-003)

- 5.3.1 The Bill provides for the Bromford tunnel east portal (east) main compound (see map CT-05-136 in the main ES, Volume 2 CFA25 Map Book), which would manage all of the works in this area between the River Tame and the centre of the Castle Bromwich retained cut (with the exception of the works from the B4118 Water Orton Road overbridge satellite compound). The compound would be operational for approximately five years and three months for civil engineering works, starting in 2017, and support approximately 45 workers each day. The compound would be accessed via Tameside Drive from either the A452 Chester Road in the west, or a temporary haul road through Park Hall nature reserve in the east. The compound would also include a roadhead.
- 5.3.2 Since submission of the Bill, further review of the construction proposals has enabled the Bromford tunnel east portal (east) main compound to be co-located with the Castle Bromwich auto-transformer station satellite compound. The roadhead is to 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. The duration of the use of both compounds will remain as detailed in the main ES.
- 5.3.3 The reconfiguration of construction layout and provision of an access route at Castle Bromwich Business Park is not considered to make changes that require a reassessment of the environmental effects or proposed mitigation as set out in the main ES with respect to: agriculture, forestry and soils, air quality, cultural heritage, community, ecology, landscape and visual assessment, land quality, sound, noise and vibration, traffic and transport and water resources and flood risk assessment. However, there are changes where reassessment is considered to be required in respect of socio-economics.

Socio-economics

Scope, assumptions and limitations

- 5.3.4 The assessment scope, key assumptions and limitations for socio-economics are as set out in Volume 1, the SMR (Volume 5: Appendix CT-001 -000/01) and the SMR Addendum (Volume 5: Appendix CT-001-000/02) of the main ES.

Existing baseline

- 5.3.5 The baseline socio-economics information for Castle Bromwich and Bromford (CFA 25) is as described in the main ES (Volume 2, CFA25, Section 10).

Future baseline

Construction (2017)

- 5.3.6 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2017, additional to those identified in the main ES and the SES and AP2 ES.
- 5.3.7 None of the identified developments affect the assessment of the amendment's likely construction impacts on socio-economics.

Operation (2026)

- 5.3.8 Volume 5: Appendix CT-004-000 of the SES3 and AP4 ES provides details of the developments which are assumed to have been implemented by 2026, additional to those identified in the main ES and the SES and AP2 ES.
- 5.3.9 None of the identified developments affect the assessment of the amendment's likely operational impacts on socio-economics.

Effects arising during construction

- 5.3.10 The main ES reported that during construction the eastern end of the Castle Bromwich Business Park would be required for the Castle Bromwich auto-transformer station satellite compound, the Bromford tunnel east portal (east) main compound and a roadhead. Consequently, the bottom ash plant, civic amenity site and other businesses located within the Castle Bromwich Business Park and Hayward Industrial Estate would need to be demolished, resulting in a major adverse effect.
- 5.3.11 The amendment includes the relocation of the stockpile and construction compound as well as alterations to access the auto-transformer station and balancing pond at Castle Bromwich Business Park. This will enable the continued operation of the Tameside Drive Civic Amenity site, which forms part of the Castle Bromwich Business Park and Hayward Industrial Estate socio-economic resource identified in the main ES.
- 5.3.12 It is estimated that the amendment would result in the retention of approximately five jobs in the area. However, the amendment will not give rise to a new or different significant effect and will not change the level of significance of the effects reported in the main ES.

Effects arising from operation

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

Mitigation and residual effects

- 5.3.14 No additional mitigation measures (i.e. in addition to those identified in the main ES and subsequent SES and AP ES reports) are required.
- 5.3.15 The amendment will not result in new or different significant residual effects in construction or operation and will not change the level of the significance of the effects reported in the main ES.

Cumulative effects

- 5.3.16 There are no new or different likely significant cumulative effects for socio-economics as a result of the AP4 amendments interacting with one another or any relevant committed developments.

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

- 5.3.17 The amendment will not result in new or different significant residual effects in construction or operation and will not change the level of the significance of the effects reported in the main ES.

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

- 6.1.1 All of the effects of the changes proposed in this CFA have been described above and there are no further combined effects to report.

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