In Parliament – Session 2022 - 2023

HS2

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Volume 4: Off-route effects

S24

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Department for Transport

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High Speed Two (HS2) Limited
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA

Telephone: 08081 434 434

General email enquiries: HS2enquiries@hs2.org.uk

Website: www.hs2.org.uk

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

ARUP+ ERM | FOSTER + PARTNERS | JACOBS
RAMBOLL | TYPSA | COSTAIN

MWJV
Mott MacDonald | WSP

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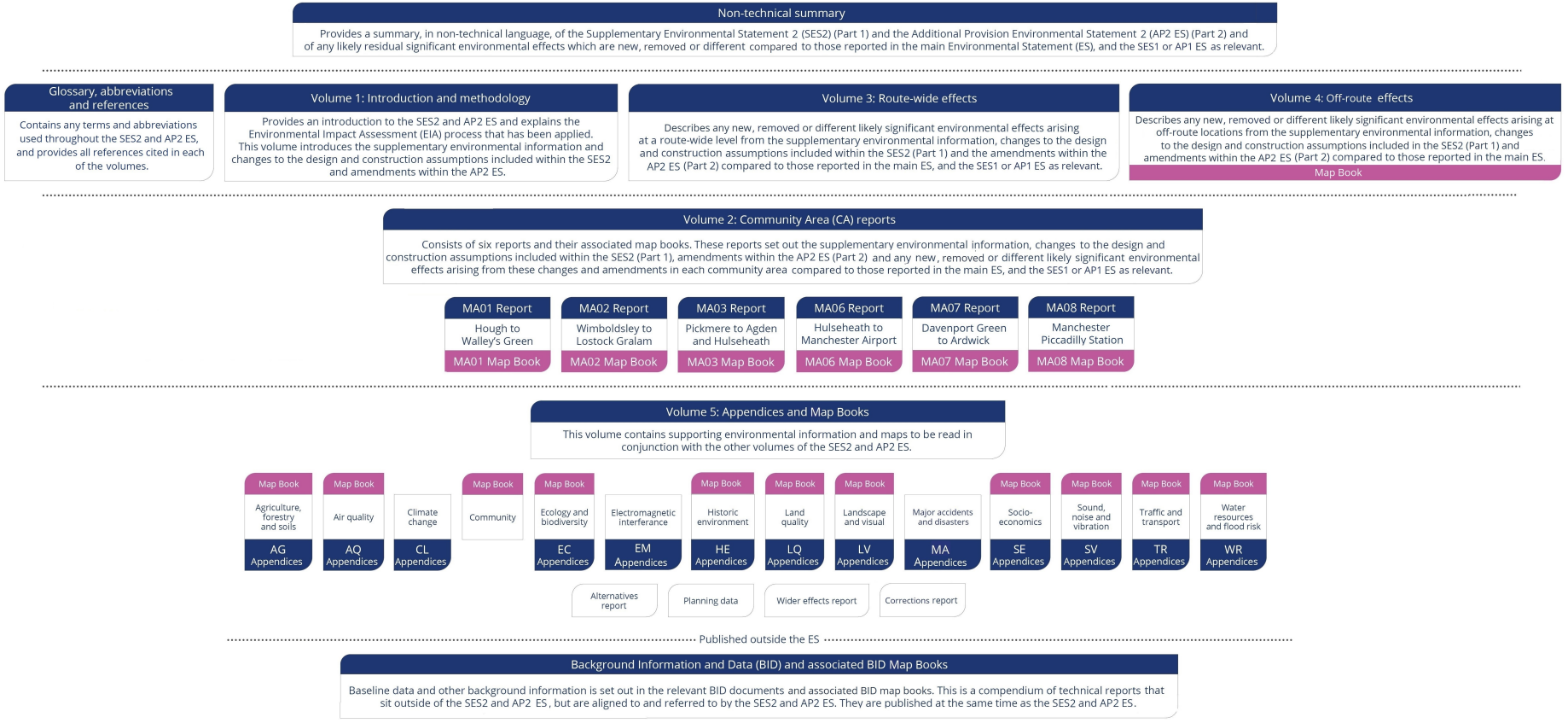
Structure of the HS2 Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

This report is part of the suite of documents that make up the SES2 and AP2 ES for the High Speed Rail (Crewe – Manchester) Bill. The SES2 and the AP2 ES are separate documents; however, they are bound together and presented in a number of volumes shown in Figure 1 and described below:

- **Non-technical summary (NTS)**. This provides a summary in non-technical language of the SES2 (Part 1) and the AP2 ES (Part 2). It presents a summary of any likely residual significant environmental effects (i.e. effects which are likely to remain after mitigation measures are put in place), both beneficial and adverse, which are new, different or have been removed compared to those reported in the main ES or the SES1 and AP1 ES, where relevant;
- **Glossary of terms, list of abbreviations and references**. This contains any terms and abbreviations used throughout the SES2 and the AP2 ES, and provides all references cited in each of the volumes listed below;
- **Volume 1**: **Introduction to the SES2 and the AP2 ES**. This introduces the supplementary environmental information and changes to the design and to the construction assumptions included within the SES2 and amendments within the AP2 ES. The report explains the environmental impact assessment (EIA) process which has been applied;
- **Volume 2: Community area reports and map books**. These report the supplementary environmental information and changes to the design and to the construction assumptions included within the SES2 (Part 1), amendments within the AP2 ES (Part 2) and any new, different or removed likely significant environmental effects arising from these changes and amendments in the following community areas:
  - MA01: Hough to Walley's Green;
  - MA02: Wimboldsley to Lostock Gralam;
  - MA03: Pickmere to Agden and Hulseheath;
  - MA06: Hulseheath to Manchester Airport;
  - MA07: Davenport Green to Ardwick; and
  - MA08: Manchester Piccadilly Station.
- Note, through the SES1, the removal of the HS2 West Coast Main Line (WCML) connection, included in the original scheme, has removed the community areas of Broomedge to Glazebrook (MA04) and Risley to Bamfurlong (MA05) from the HS2 Phase 2b Western Leg. Where changes in the combined traffic assessment result in effects that would have been reported in these two community areas, they are instead reported in the Hulseheath to Manchester Airport (MA06) community area report;

- The environmental effects in the Volume 2 reports are compared to those reported in the main ES, the SES1 or AP1 ES as relevant. The maps relevant to each community area are provided in separate Volume 2 map books and should be read in conjunction with the relevant community area report;
- **Volume 3: Route-wide effects**. This describes any new, different or removed likely significant environmental effects arising at a route-wide level from the supplementary environmental information and changes to the design and to the construction assumptions included within the SES2 (Part 1) and the amendments within the AP2 ES (Part 2) compared to those reported in the main ES, the SES1 or AP1 ES as relevant;
- **Volume 4: Off-route effects**. Describes any new, different or removed likely significant environmental effects arising at locations beyond the route corridor between Crewe and Manchester from the supplementary environmental information, changes to the design and construction assumptions included in the SES2 (Part 1) and amendments within the AP2 (Part 2) compared to those reported in the main ES; and
- **Volume 5: Appendices and map books**. These contain supporting environmental information and associated maps.
- Certain reports and maps containing background information and data (BID) have been produced, which do not form part of the SES2 and AP2 ES. These documents are available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-2-and-additional-provision-2-environmental-statement. The BID documents and maps present background survey information and other relevant background material.

Figure 1: Structure of the SES2 and AP2 ES



Structure of this report

This report is Volume 4 of the Supplementary Environmental Statement 2 (SES2) and Additional Provision 2 Environmental Statement (AP2 ES). It describes any new, different or removed likely significant environmental effects arising at locations beyond the route corridor between Crewe and Manchester from the supplementary environmental information, changes to the design and construction assumptions included in the SES2 (Part 1) and amendments within the AP2 (Part 2) compared to those reported in the main ES. Such works are referred to as 'off-route works' and include works to allow HS2 trains to call at existing stations further north on the West Coast Main Line (WCML) and depots to provide overnight stabling and supporting facilities for HS2 trains serving the north of England and Scotland. This report comprises the following sections:

- Part 1 provides supplementary environmental information, where relevant, relating to:
  - new baseline information with respect to environmental surveys completed and additional information received since the production of the main ES; and
  - changes to the design and construction assumptions that do not require changes to the hybrid Bill.
- Part 2 provides environmental assessment information relating to proposed amendments to the design that have resulted in the need to alter the powers conferred by the Bill.

Parts 1 and 2 also include the following, where relevant:

- a description of the SES2 changes (Part 1) or the proposed AP2 amendments (Part 2) within the off-route works location that have triggered the need for reassessment;
- an assessment of the environmental effects of the SES2 changes (Part 1) or the proposed AP2 amendments (Part 2) for relevant environmental topics, considering the:
  - scope, assumptions and limitations of the assessment;
  - environmental baseline;
  - effects arising during construction;
  - effects arising from operation; and
  - mitigation and residual effects.
- a summary of any new or different likely residual significant effects as a result of the SES2 changes (Part 1) and the proposed AP2 amendments (Part 2); and
- Section 6 describes the off-route railway stations that may be affected by the operation of the AP1 and AP2 revised schemes combined and reports the associated likely significant environmental effects.

1 Introduction

1.1.1 The High Speed Rail (Crewe – Manchester) Bill was submitted to Parliament together with an Environmental Statement ('the main ES') in January 2022. The SES1 and AP1 ES, which was submitted in July 2022, updated the main ES and contained a number of changes and amendments to the design of the original scheme (i.e. the scheme submitted in January 2022). An updated Volume 4, Off-route works report was not included as part of the SES1 and AP1 ES. The only SES1 design change relevant to the assessment of off-route works is reported in Section 2 of this report.

1.1.2 Since the main ES, SES1 and AP1 ES, a number of updates or changes to environmental baseline information, the design, and construction assumptions have occurred, which may lead to new or different significant effects. These effects, depending on the type of change, are reported in the SES2 or the AP2 ES, which form Part 1 and Part 2 of this report respectively.

1.1.3 The Bill and the Additional Provisions to the Bill described above, if enacted by Parliament, will provide the powers to construct, operate and maintain the HS2 Phase 2b Western Leg. Changes made through the SES2 and AP2 ES do not change the principle of the 'original scheme' (i.e. the Bill scheme which was assessed in the main ES) in terms of provision of a route between Crewe and Manchester and the essential components of the construction and operation of that scheme.

1.1.4 The SES2 contains updated environmental baseline information and scheme information relating to changes within the current limits and powers of the Bill, which therefore do not require an Additional Provision to the Bill. The SES2 changes within the off-route works area include:

- additional environmental baseline information for air quality, traffic and transport, socio-economics and water resources and flood risk; and
- changes to the design and construction assumptions which do not require changes to the Bill.

1.1.5 These changes are described in Part 1 and are assessed on a topic by topic basis using the same approach adopted in the main ES.

1.1.6 The purpose of the SES2 is to describe the assessment and identify any new or different likely significant environmental effects arising from the changes.

1.1.7 The AP2 ES (Part 2) 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, or other extensions to the powers conferred by the Bill, making it necessary to submit an Additional Provision to the Bill.

1.1.8 The AP2 ES reports the assessment of each amendment separately for all relevant topics. The purpose of the AP2 ES is to provide an assessment of any new or different likely

significant environmental effects arising from the amendments, as compared to the main ES, as updated by the SES2 where relevant.

1.1.9 The standard measures that will be used to mitigate likely significant adverse environmental effects during construction and operation of the scheme are described in Section 9 of Volume 1 of the main ES and in the draft Code of Construction Practice (CoCP)[1] submitted in support of the Bill. Implementation of these measures has been assumed in this SES2 and AP2 ES.

1.1.10 The following terms were used to differentiate between changes included in SES1 and those included in the AP1 ES:

- 'SES1 design changes' – changes to the scheme design reported in the SES1 that do not require additional powers;
- 'SES1 changes' – all changes reported in the SES1 that do not require additional powers. This may include new baseline information, changes to the design and construction assumptions, and corrections;
- 'AP1 amendments' – changes to the scheme reported in the AP1 ES that include requirements for additional powers in the Bill;
- 'the SES1 scheme' – the original scheme with any changes described in SES1 that are within the existing powers of the Bill; and
- 'the AP1 revised scheme' – the original scheme as amended by SES1 changes and AP1 amendments.

1.1.11 For the SES2 and AP2 ES the following terms are used to differentiate between changes included in SES2 and those included in the AP2 ES:

- 'SES2 design changes' – changes to the scheme design reported in the SES2 that do not require additional powers;
- 'SES2 changes' – all changes reported in the SES2 that do not require additional powers. This may include new baseline information, changes to the design and construction assumptions, and corrections;
- 'AP2 amendments' – changes to the scheme reported in the AP2 ES that include requirements for additional powers in the Bill;
- 'the SES2 scheme' – the original scheme with any changes described in SES1 (submitted in July 2022) and the SES2; and
- 'the AP2 revised scheme' – the original scheme as amended by SES1 and SES2 changes (as relevant) and AP2 amendments.

[1] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester) *Environmental Statement, draft Code of Construction Practice,* Volume 5, Appendix: CT-002-00000. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

2 Relevant SES1 design changes

2.1.1 The SES1 and AP1 ES reported design changes and amendments since the main ES in the following community areas:

- MA01: Hough to Walley's Green;
- MA02: Wimboldsley to Lostock Gralam;
- MA03: Pickmere to Agden and Hulseheath;
- MA04: Broomedge to Glazebrook; and
- MA05: Risley to Bamfurlong.

2.1.2 A Volume 4, Off-route effects report was not produced as part of SES1 and AP1 ES. This section sets out the SES1 design change which is relevant to the off-route works and considers changes to the assessment of off-route works, as reported in Volume 4, Off-route effects in the main ES.

2.2 Removal of the HS2 West Coast Main Line (WCML) connection (SES1-004-001)

2.2.1 As reported in the SES1 and AP1 ES[2], following the deposit of the Bill, the Secretary of State gave a commitment to Parliament to remove the HS2 WCML connection, included in the original scheme, from the High Speed Rail (Crewe – Manchester) Bill.

2.2.2 The WCML connection from near Hoo Green junction on the HS2 network to the Lily Lane junction, near Golborne, on the WCML was removed from the HS2 scheme, including modifications to the existing WCML for the HS2 WCML connection.

2.2.3 In order to ensure the HS2 Phase 2b Western Leg continues to support the Government's overarching strategic objective for a future connection to the WCML, the following elements were retained within the High Speed Rail (Crewe – Manchester) Bill scheme:

- a new short stub to provide for a future connection at Hoo Green and enable any future connection to the WCML north of Crewe in this location to be built with minimal disruption to the operation of HS2; and
- powers to undertake works at Preston and Carlisle stations and powers to provide a depot at Annandale to serve a future connection to the WCML.

2.2.4 The retention in the Bill of powers to undertake works to stations at Carlisle and Preston and to construct a depot at Annandale will facilitate the future delivery of a northern connection to the WCML and the benefits that future connection would bring.

[2] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement, Volume 1, Introduction and methodology*. Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-1-and-additional-provision-1-environmental-statement.

Socio-economics

2.2.5 As a result of this SES1 change (SES1-004-001), some of the forecast operational jobs reported in the original scheme, as described in Volume 4 of the main ES, will not be delivered through powers sought in this Bill. These employment opportunities would have been accessible to residents within the locality of Preston Station, Carlisle Station and the Annandale depot.

2.2.6 The main ES reported within the Preston Station area there would be 750 HS2-related train crew jobs created based at the existing station[3]. Under the SES1 scheme, this would reduce to 200 HS2-related train crew jobs created based at the existing station[4].

2.2.7 The main ES reported within the Carlisle Station area there would be 400 HS2-related train crew jobs created based at the existing station. Under the SES1 scheme, there would be no HS2-related train crew jobs created based at the existing station.

2.2.8 The main ES reported within the Annandale area there would be a depot creating 170 HS2-related jobs. Under the SES1 scheme, there would be no operational HS2-related jobs created at the depot. The impact of operational jobs would be assessed at the point that a future connection to the WCML is promoted through a separate consenting process.

2.2.9 The route-wide effects of these removed operational jobs were reported in the SES1 and AP1 ES Volume 3, Route-wide effects report[4].

[3] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester) *Environmental Statement*, *Volume 3: Route-wide effects*. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

[4] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester) *Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement*, *Volume 3: Route-wide effects.* Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-1-and-additional-provision-1-environmental-statement.

Part 1: Supplementary Environmental Statement 2

3 Summary of changes at off-route works locations

3.1 New environmental baseline information

3.1.1 Since the main ES, and the SES1 and AP1 ES, updates to the environmental baseline information have occurred which may lead to new or different significant effects for the following environmental topics.

3.1.2 An update to the baseline information for traffic and transport effects is reported first, since this has implications for other topics. The other topics where updated baseline information may lead to new or different significant effects are then reported, in the following sequence:

- air quality;
- socio-economics; and
- water resources and flood risk.

Traffic and transport

3.1.3 The baseline traffic and transport information is as described in Sections 3 and 6 of Volume 4, Off-route effects. However, since the main ES, the 2028 and 2038 future baselines have been updated to 2031 and 2039 to reflect the revised programme presented in Section 6 of SES2 and AP2 ES Volume 2. The 2046 future baseline has been updated to 2051 in order to give the assessment greater resilience to long term growth in travel demand. Consequently, the construction assessment of the AP2 revised scheme has been undertaken for 2031 and the operational assessment has been undertaken for 2039 and 2051.

Air quality

3.1.4 Road traffic data, as discussed in Section 3 and 6, and air quality assessment years have been updated for both construction (2026 as a worst case earliest construction year) and operation (2039) for the Off-route works: Annandale depot area (OR003). Details of the additional traffic data and associated background air pollution concentrations in this area are provided in the Background Information and Data (BID) document AQ-002-OR003 SES2 and AP2 ES and SES2 and AP2 ES Volume 5, Appendix: AQ-001-OR003.

Socio-economics

3.1.5 Since the main ES, the following baseline information has been updated:

- datasets reflecting changes to the business and labour market from the Office for National Statistics (ONS), namely:
  - UK Business Counts (UKBC) (January – December 2021);
  - Business Register and Employment Survey (BRES) (January – December 2021); and
  - Annual Population Survey (APS) (January – December 2021).
- vacancy rates for industrial and warehousing property and for office space, with information supplied by Estates Gazette, where available.

3.1.6 This baseline information has been considered, where relevant, in the assessment and is presented in the SES2 and AP2 ES Volume 5, Appendix: SE-001-OR000, Updated socio-economic baseline information.

3.1.7 No new, different or removed significant effects have been identified and therefore the updated baseline data is not considered further within the SES2 and AP2 ES Volume 4 report.

Water resources and flood risk

3.1.8 Since the main ES, the latest River Basin Management Plan (RBMP) for the Solway Tweed River Basin District has been published[5]. The Water Framework Directive preliminary compliance assessment addendum (SES2 and AP2 ES Volume 5, Appendix: WR-001-OR003) provides the details of these changes. Although changes to individual Water Framework Directive status elements have occurred, these changes do not lead to any change in the overall status of the waterbodies of relevance to the study area. Therefore, these updates to the baseline information will not lead to new or different significant effects and are not considered further within the SES2 and AP2 ES Volume 4 report.

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

3.2.1 The need to make changes to the design and to construction assumptions has been identified since submission of the Bill. The changes of relevance in the off-route works areas relate to the construction programme only.

[5] Environment Agency and Scottish Environment Protection Agency (2021) *The River Basin Management Plan for the Solway Tweed River Basin District 2021 update.* Available online at: https://www.sepa.org.uk/media/594087/211221-final-rbmp3-solway-tweed.pdf.

3.3 Corrections to the main ES

3.3.1 The need for a number of corrections to the contents of the main ES has been identified since submission of the Bill. Table 1 provides the following:

- corrections to the Volume 4 Off-route effects report that have the potential to alter the significant environmental effects previously reported;
- corrections to any factual inaccuracies relating to significant effects previously reported;
- clarifications to elements of the scheme description previously reported;
- the location of the text that is subject to the correction in the relevant report;
- the reason for the correction;
- the original text from the relevant report and, where applicable, revised text; and
- whether the correction changes a significant effect previously reported.

3.3.2 These corrections were considered, where relevant, in the technical assessments reported in Section 4.5 of this SES2.

Table 1: Summary of corrections to the main ES for off-route works

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
Preston Station, Overview of the area and description of the Proposed Scheme Volume 4, Off-route effects of the main ES	The main ES incorrectly omitted socio-economic baseline information for Preston Station.	None included.	Paragraph 3.6.10: A review of employment land in 2019[21] identified the need by 2036 for up to 94.2 ha of additional employment land in the PCC area over an 18-year period (2018-2036). It is estimated that PCC had identified an employment land supply of 71.7 ha across the borough. The employment land shortfall compared to identified supply was up to 22.5 ha to 2036. The main identified gap for the PCC area was for B1(a) offices and B8 warehousing, but it had more than sufficient land allocated for B1(c)/B2 uses, with any oversupply likely focused on North East Preston (where land will also suit B8 options). A review of employment land in 2019[21] identified the need for up to 43.7 ha of employment land in the SRBC area over an 18-year period (2018-2036). It is estimated that SRBC had identified an employment land	N/A

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
			supply of 57.0 ha across the borough. The employment land excess supply was up to 13.3 ha to 2036. The main gap identified for the SRBC area was for sites suiting both larger B2/B8 uses and B1(a) offices. Based on the latest available data from the Estates Gazette (October 2022), the average vacancy rates for industrial and warehousing property in the PCC and SRBC areas have been assessed as 5.3% and 2.8% respectively, based on marketed space against known stock. Based on the latest available data from the Estates Gazette (October 2022), the average vacancy rates for office space in the PCC and SRBC areasx have been assessed as 17% and 3% respectively. [21] Chorley, Preston and South Ribble Councils (2019), Central Lancashire Employment Land Study – Objectively Assessed Needs Update 2019.	
Carlisle Station, Overview of the area and description of the Proposed Scheme Volume 4, Off-route effects of the main ES	The main ES incorrectly omitted socio-economic baseline information for Carlisle Station.	None included.	Paragraph 4.6.8: A review of employment land in 2010[71] identified a need for between 0.7 and 13.0ha of general business land a year to 2026 in the Carlisle City Council (CCC) area. It is understood that there is expected to be future decline in industrial employment and therefore floorspace requirements, although this fails to take account of a continued need for modern manufacturing premises. There is generally strong support for investing in employment spaces around the M6 motorway and other priority areas such as Carlisle city centre. According to the CCC's Employment Land Review, poor access and quality stock accompanied by out of town	N/A

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
			developments are undermining the potential for a vibrant office market within Carlisle city centre. Based on the latest available data from the Estates Gazette (October 2022), the average vacancy rates for industrial and warehousing property in the CCC area has been assessed as 2.8%, based on marketed space against known stock . Based on the latest available data from the Estates Gazette (October 2022), the average vacancy rates for office space in the CCC area5 has been assessed as 4.5%. [71] Office for National Statistics (2021), Business Register and Employment Survey. Available online at: http://www.nomisweb.co.uk/datasets/newbres6pub. This number includes both residents and non-residents of PCC and SRBC who work within their boundaries. [72] Office for National Statistics (2021), Business Register and Employment Survey. Available online at: http://www.nomisweb.co.uk/datasets/newbres6pub. This number includes both residents and non-residents of CCC who work within their boundaries.	
Traffic and transport Paragraph 6.12.58, Volume 4, Off-route effects of the main ES.	The main ES incorrectly reported forecast traffic flows and road name descriptions of roads affected by construction of the original scheme.	Paragraph 6.12.58, all bullets: • B7076 (between Annandale depot main compound access and Gretna Green motorway services access road) – major	Paragraph 6.12.58, all bullets: • B7076 (between Gretna Green service station access and Annandale depot site access) – major adverse effect (HGV); • B7076 (between Annandale depot site access and A74(M) junction 21 south-facing slip roads) – moderate adverse effect (HGV); and • unnamed road serving Cove Crossing satellite compound –	No change. This correction will not lead to a new or different significant effect.

Reference in the main ES	Reason for correction	Text in the main ES	Revised text	Change to significant effects and mitigation
		adverse effect (HGV); • B7076 (between A74(M) junction 21 northbound off-slip and Annandale depot main compound access) – moderate adverse effect (HGV); and • unnamed road serving Cove Crossing – moderate adverse effect (all vehicles).	moderate adverse effect (all vehicles).	
Traffic and transport Paragraph 6.12.82, Table 37, Volume 4, Off-route effects of the main ES.		Paragraph 6.12.82, Table 37, first and second entries: Road Name: B7076 (between B6357 and A74(M) junction 21) Road Name: B7076 (between A74(M) junction 21 and Annandale depot site access)	Paragraph 6.12.82, Table 37, first and second entries: Road Name: B7076 (between A74(M) junction 21 south-facing slip roads and B6357) Road Name: B7076 (between Annandale depot site access and A74(M) junction 21 south-facing slip roads)	

3.4 Changes to construction programme

3.4.1 The main ES provided indicative details of the construction works to be managed from the construction compounds in the area – see Sections 3, 4 and 6 of Volume 4, Off-route effects report. The information included the duration of works, number of workers and a summary of the works to be undertaken. A construction programme was also provided, which included indicative periods for each of the core construction activities.

3.4.2 The AP1 revised scheme has resulted in the need to alter the indicative construction programme as set out in the main ES. The revised indicative programme, outlining changes

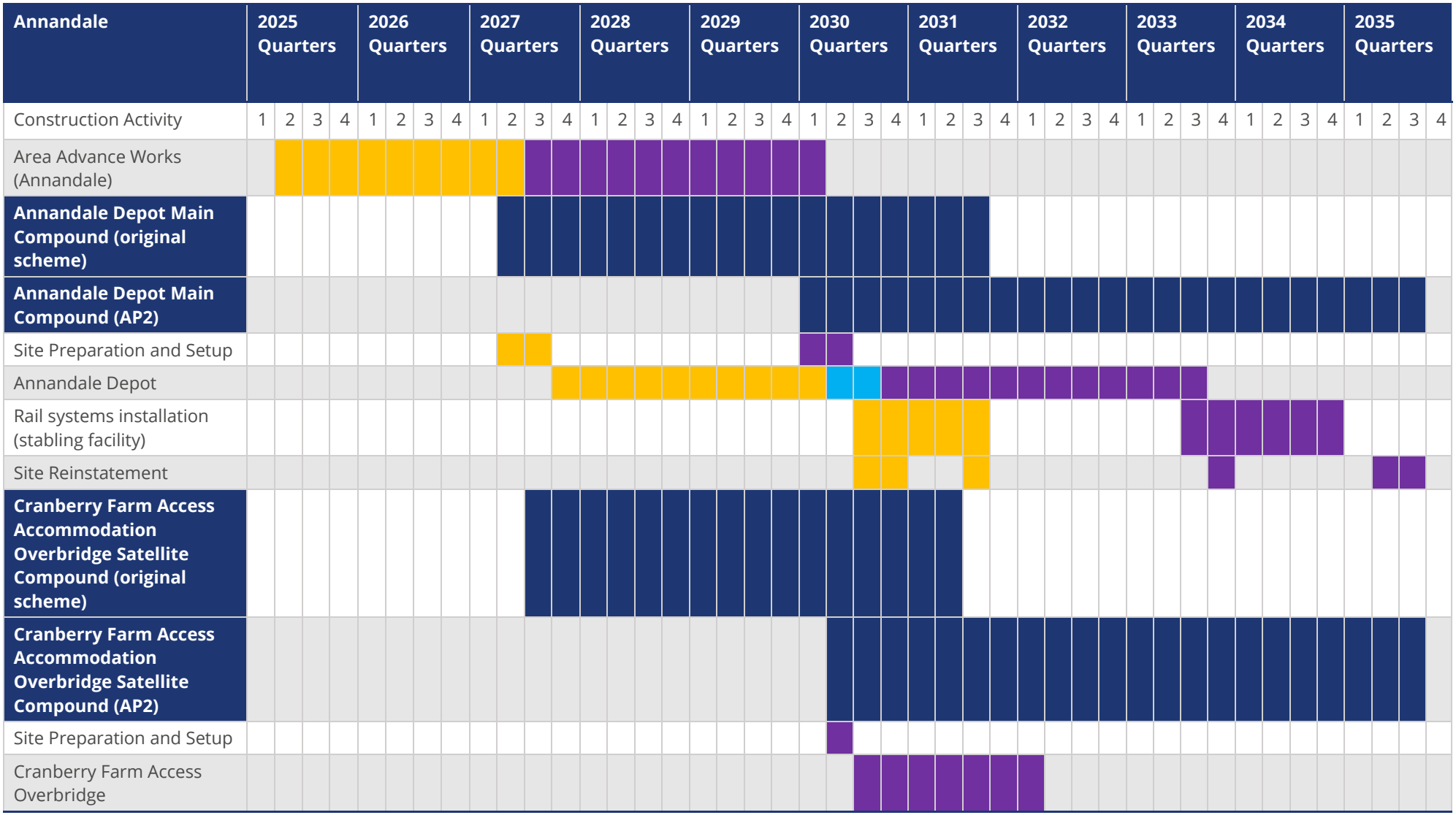
from the indicative programme reported within the main ES for the original scheme, is shown in Figure 2, Figure 3 and Figure 4. The construction duration at Annandale has increased from six and a half years to eight and a half years (including advance works), due to longer durations of advance works, construction duration and rail systems installation and a later date for site reinstatement at Annandale Depot main compound.

3.4.3 The main SES1 design change which gives rise to changes to the construction programme is the Removal of the HS2 West Coast Main Line (WCML) connection (SES1-004-001), as shown in SES1 and AP1 ES Volume 2, community area report: Broomedge to Glazebrook (MA04)[6].

3.4.4 Assessment of these SES1 changes, and any mitigation are reported in Section 4.5, where relevant. There are no SES2 changes in the AP2 revised scheme to consider for the Volume 4, Off-route effects report.

[6] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement*. Available online at: https://www.gov.uk/government/collections/hs2-phase-2b-crewe-manchester-supplementary-environmental-statement-1-and-additional-provision-1-environmental-statement.

Figure 2: Indicative construction programme for Annandale depot, with comparison to the indicative construction programme for the original scheme



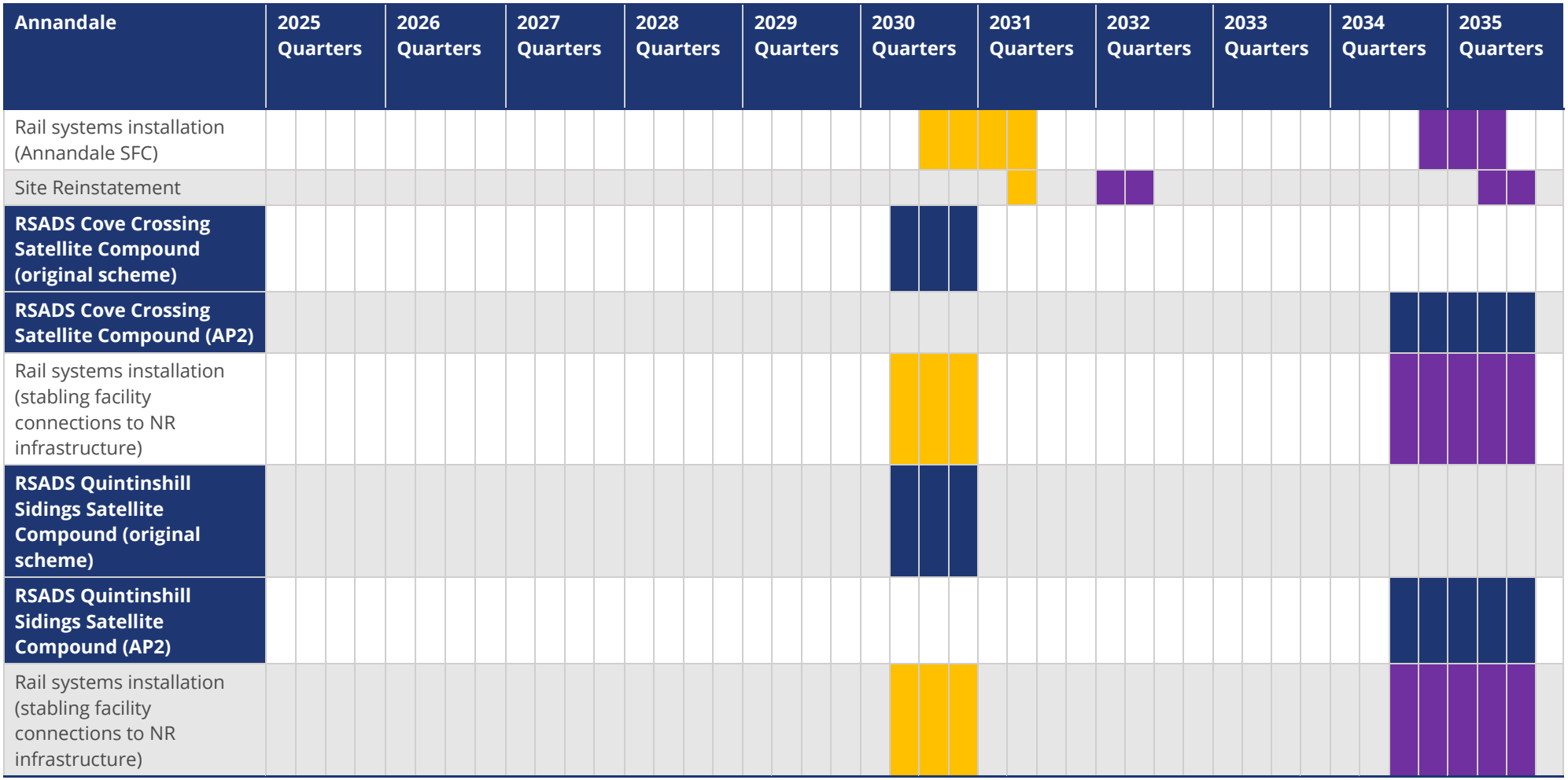

Annandale
2025 Quarters
2026 Quarters
2027 Quarters
2028 Quarters
2029 Quarters
2030 Quarters
2031 Quarters
2032 Quarters
2033 Quarters
2034 Quarters
2035 Quarters
Rail systems installation (Annandale SFC)
Site Reinstatement
RSADS Cove Crossing Satellite Compound (original scheme)
RSADS Cove Crossing Satellite Compound (AP2)
Rail systems installation (stabling facility connections to NR infrastructure)
RSADS Quintinshill Sidings Satellite Compound (original scheme)
RSADS Quintinshill Sidings Satellite Compound (AP2)
Rail systems installation (stabling facility connections to NR infrastructure)

Figure 3: Indicative construction programme for Carlisle Station, with comparison to the indicative construction programme for the original scheme

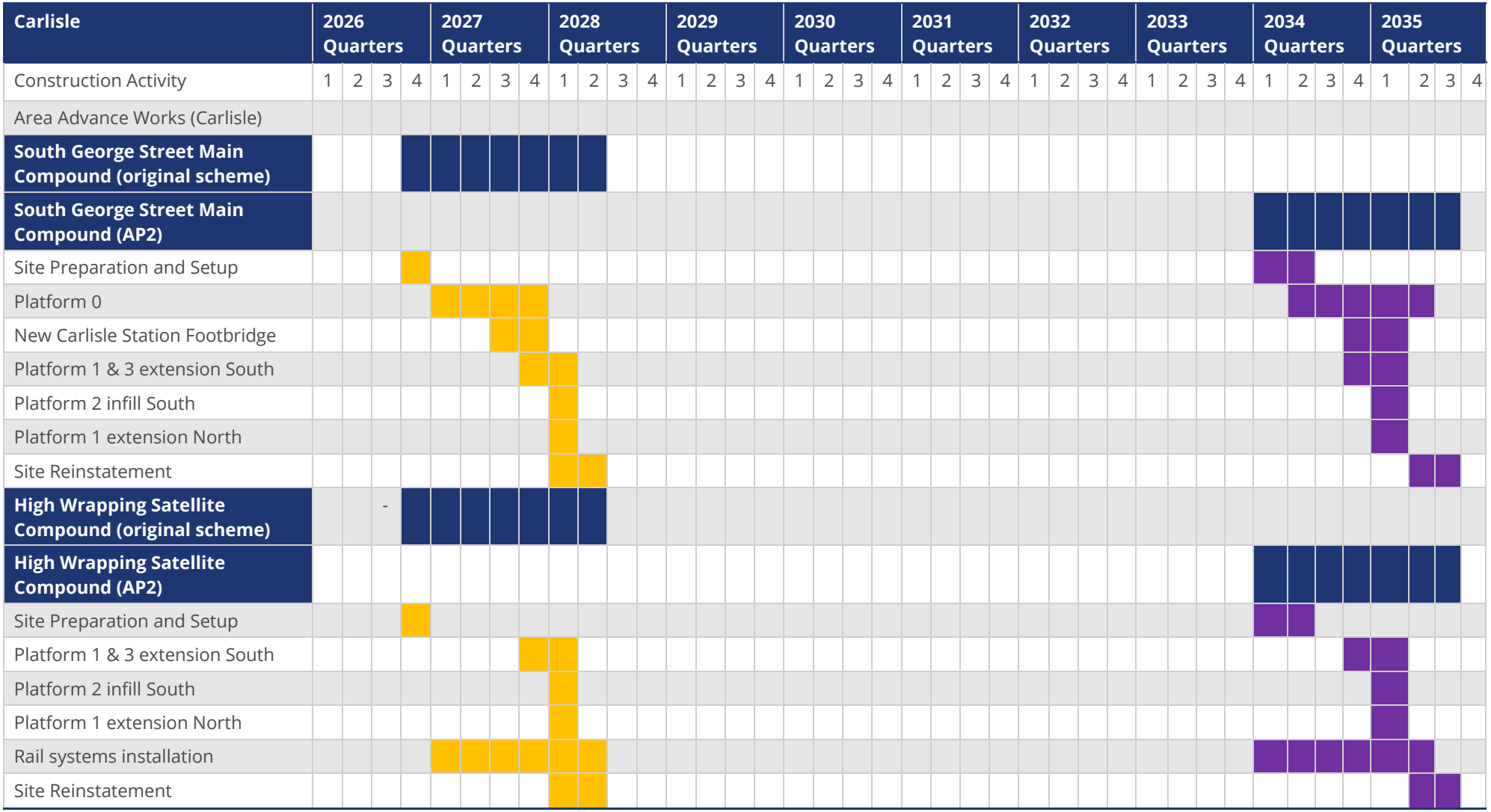
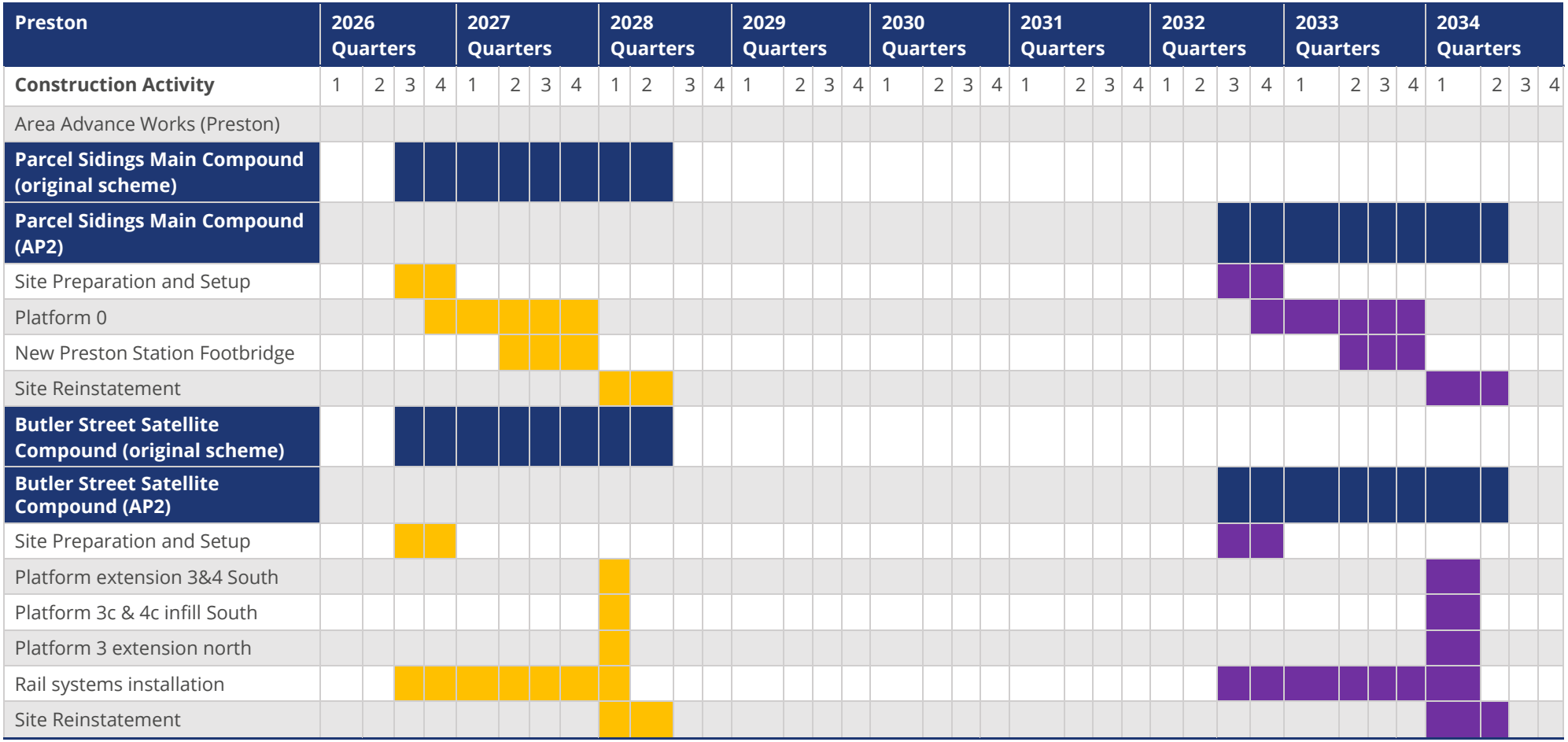


Figure 4: Indicative construction programme for Preston Station, with comparison to the indicative construction programme for the original scheme



Key	
	Compound duration showing start and end of mobilisation. Activities below will be managed from the above compound. Second phase site reinstatement can occur post the compound demobilisation.
	Compound removed as a result of SES change or AP2 amendment.
	Activity duration (indicates where there is no change from the main ES taking into consideration SES changes and AP2 amendments).
	Increase in duration or activity moved as a result of a SES change or AP2 amendment. (A purple box indicates that works are now taking place in the quarter indicated)
	Decrease in duration or activity moved as a result of a SES change or AP2 amendment (A yellow box indicates that works are no longer taking place in the quarter indicated).
	Structure removed as a result of SES change or AP2 amendment.
	New elements of the programme (compound or associated) works as a result of a SES change or an AP2 amendment.

3.5 Assessment of changes

3.5.1 This section describes the effects of the off-route works SES2 changes on traffic and transport.

Traffic and transport

Introduction

3.5.2 Since the main ES, the baseline and future baseline models have been updated for the assessment of the SES2 scheme and AP2 revised scheme to reflect the change in the future baseline forecast years from 2028 to 2031, 2038 to 2039 and 2046 to 2051 (as described in Volume 1 of the SES2 and AP2 ES).

3.5.3 The assessment of the changes to traffic flows associated with the updated baseline and future baseline models in combination with all SES2 changes and AP2 amendments is reported in Section 6 of this report, as the change in traffic flows cannot be directly attributed to a specific SES2 change or AP2 amendment.

3.5.4 Whilst the assessment years have changed, for Preston and Carlisle no material changes to construction activities are anticipated. Consequently, the effects at these stations are unchanged from those reported in Section 6.12 of Volume 4, Off-route effects of the main ES and are not considered further within this report.

Part 2: Additional Provision 2 Environmental Statement

4 Summary of off-route works amendments

4.1 Engineering amendments

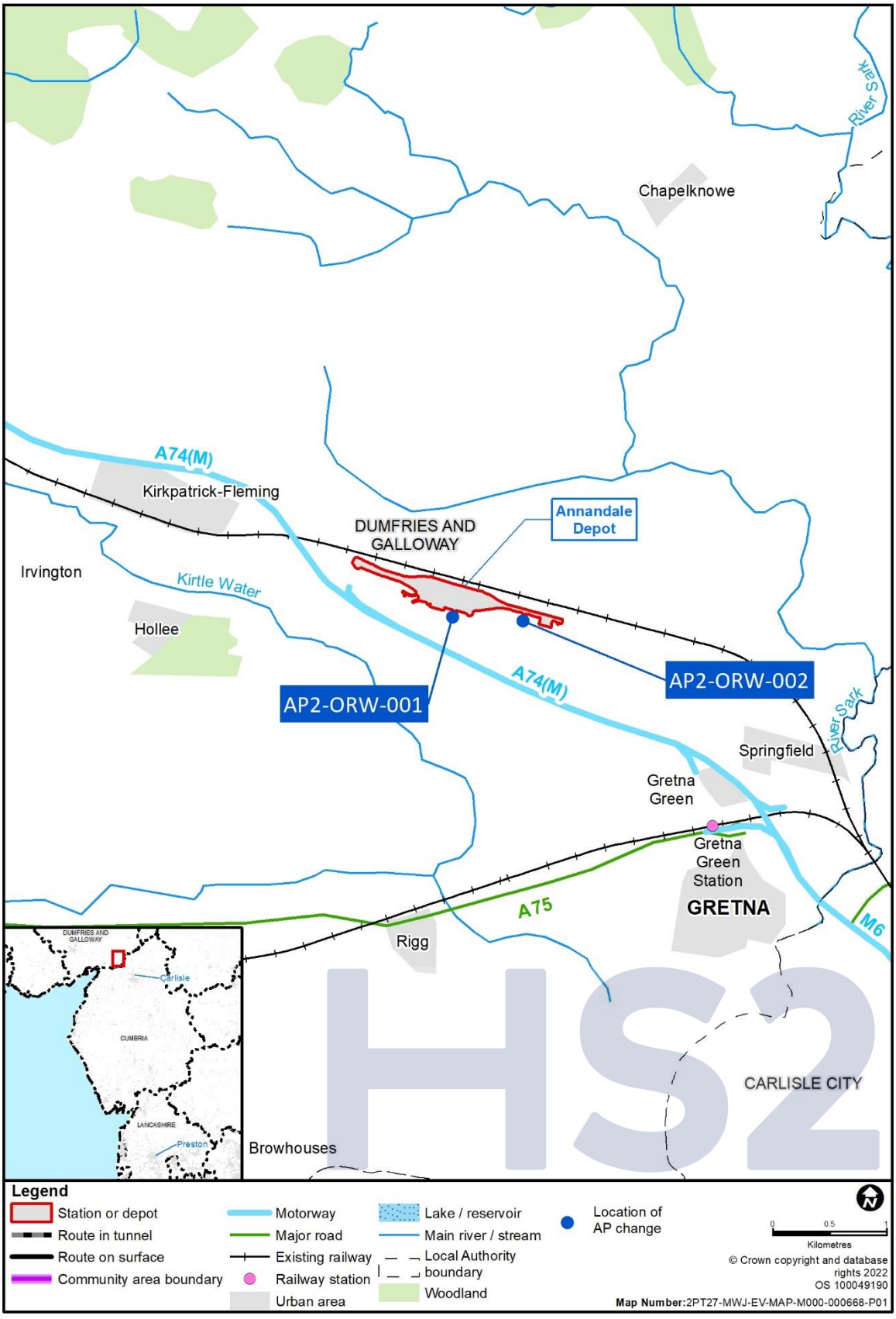
4.1.1 Engineering amendments will be required in off-route areas that will result in changes to the land required or Bill powers required for the original scheme. Table 2 provides a summary of the engineering amendments. Figure 5 shows the locations of the engineering amendments.

4.1.2 Please note that all dimensions in the following sections are approximate.

Table 2: Summary of engineering amendments in off-route areas

Name of amendment	Description of the original scheme	Description of the AP2 revised scheme
Additional land permanently required for modifications to wastewater drainage at Annandale depot AP2-ORW-001 Map CT-05-805, D7 to F10 and map CT-05-805-L1, C1 to I4 in the SES2 and AP2 ES Volume 4, Off-route effects Map Book	The Bill provides for the Annandale depot, which would include an on-site wastewater treatment plant at Annandale depot and a pumping station, 200m west of the Annandale depot traction sub-station.	An update to the drainage design to provide an alternative means of wastewater drainage. Wastewater disposal will be diverted to discharge into the Scottish Water wastewater treatment works, 40m to the south of the Gretna motorway services.
Additional land permanently required for utility diversions and modifications at Annandale depot AP2-ORW-002 Map CT-05-804, A3 to A4, map CT-05-805, A7 to B8, B8 to D7, D9 to F9, D3 to E4 and J5 and map CT-05-806, F8 to F9, H4, G8 to H8 and J7 to J8 in the SES2 and AP2 ES Volume 4, Off-route effects Map Book	The Bill provides for the Annandale depot. To facilitate the construction of the Annandale depot, diversion of the following utilities would be included in the original scheme: • a Scottish Power 132kV overhead power line; • diversion of a Scottish Power 11kV underground cable diversion; and • permanent diversion of a Scottish Water potable water main.	Modifications to utility connections and existing routes (including cabling and water supplies) and the installation of a new 132kV to 25kV transformer sub-station following consultation with utility providers.

Figure 5: Locations of engineering amendments in the off-route areas



5 Assessment of engineering amendments

5.1 Additional land permanently required for modifications to wastewater drainage at Annandale depot (AP2-ORW-001)

5.1.1 The Bill provides for a depot at Annandale. The depot would be situated alongside the West Coast Mainline (WCML) north-west of Gretna Green and would provide stabling and light maintenance facilities and accommodate up to 28 200m HS2 trains. The depot would include an on-site wastewater treatment plant (which would discharge into Ewes Burn) and a pumping station, 200m west of the Annandale depot traction sub-station (see Volume 4, Off-route effects Map Book: map CT-06-805, A6 to D6 and A7 to D7 in the main ES). Additionally, there would be two watercourse realignments of Ewes Burn around the southern edge of the southern reception tracks and depot sidings, comprising one realignment up to 800m in length, including 45m of culvert beneath the Cranberry Farm accommodation overbridge, and one realignment of up to 180m long (see Volume 4, Off-route effects Map Book, map CT-06-805, A6 to D6 and I7 to J7 in the main ES).

5.1.2 Since the main ES, engagement with the Scottish Environmental Protection Agency (SEPA) and Scottish Water has identified the need to amend the design to ensure that there is sufficient flow within the Ewes Burn at all times of the year to effectively dispose of the Annandale depot's wastewater. This has resulted in an update to the drainage design to provide an alternative means of wastewater disposal, for which additional temporary and permanent land will be required to accommodate construction works. The following permanent modifications to the design will be implemented as a result of the amendment:

- the modifications will remove the requirement for the wastewater treatment plant and pumping station, as included in the original scheme;
- the alternative means of disposal will be in the form of a foul water pumping station (to be adopted by Scottish Water) and 300mm rising main, which will discharge into the nearest Scottish Water wastewater treatment plant, situated 40m to the south of the Gretna motorway services and 500m south of Annandale depot; and
- the new pumping station compound (12m by 8m in size) will be located within the Annandale depot footprint, as outlined within the main ES, immediately west of the Cranberry Farm accommodation overbridge satellite compound.

5.1.3 The rising main will be 2.6km in length and will be routed as follows:

- south of the Annandale depot beneath agricultural land adjacent and west to the existing accommodation access for Cranberry Cottage and Cranville, before reaching the B7076. It will occupy a strip of land (15m wide by 365m in length), and will permanently require 0.57ha of additional land;

- once within the public highway, the main will be installed in the grass verge of the B7076 for approximately 1.1km, east of Suttons Cranberry Depot, before turning south and passing beneath the A74(M) within an existing motorway underpass and south-west of Hill House. This will result in the temporary requirement of 1.4ha of land and the permanent requirement of 239m^2 of land, additional to that required in the original scheme; and
- once south of the motorway, the water main will be routed east for 795m through agricultural land in order to connect into the Scottish Water wastewater treatment works. This will require 1.5ha of land permanently.

5.1.4 Permanent access rights will be required on a section of access road from Gretna Services to the Scottish Water wastewater treatment works for use during operation, totalling an area of 859m^2.

5.1.5 The amendment will be constructed from the Annandale depot main compound and will be completed within the indicative construction programme for the compound shown in Section 3.4.

5.1.6 The land required for this amendment is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 2.2ha of land and the temporary requirement of an additional 1.4ha (see SES2 and AP2 ES Volume 4, Off-route effects Map Book: maps CT-05-805, D7 to F10 and CT-05-805-L1, C1 to I4).

Topics included in the AP2 assessment

5.1.7 The assessment of this amendment has identified new, different or removed likely significant effects for: agriculture, forestry and soil; ecology and biodiversity; and, water resources and flood risk.

Agriculture, forestry and soils

Scope, assumptions and limitations

5.1.8 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1, Section 8 of the EIA Scope and Methodology Report (SMR)[7] of the main ES. Details of published and publicly available information used in the assessment are shown on SES2 and AP2 ES Volume 5, Map Book: Map Series: AG-01 – Agricultural Holdings and AG-04 – Agricultural Land Quality.

5.1.9 The amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for agriculture, forestry and soils.

[7] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Repo*rt, Volume 5, Appendix CT-001-00001. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

Environmental baseline

Existing baseline

5.1.10 The baseline agriculture, forestry and soils information is as described in Volume 4, Off-route effects of the main ES.

5.1.11 The agricultural land associated with these amendments has soil in the Canonbie association. These soils comprise imperfectly drained soils developed in reddish sandy clay loam or clay loam till and are prone to seasonal waterlogging. The agricultural land is assessed under the Scottish Land Capability for Agriculture system as lower quality in Class 3.2.

5.1.12 Two agricultural holdings will be affected by the AP2 amendment as set out in Table 3.

Table 3: Summary characteristics of the holdings affected by additional land required for modifications to wastewater drainage at Annandale depot

Holding reference/name	Holding type	Holding size (ha)	Diversification	Sensitivity to change
ADEP2 Cranberry Farm ¥	Beef and arable	93	None	Medium
ADEP7 Land at Gretna *	Grassland	13	Not known	Medium

¥ Telephone discussions have been held and brief baseline details have been obtained.

** It has not been possible to arrange farm impact assessment interviews with this holding and publicly available sources have been used to obtain the information presented.*

Future baseline

5.1.13 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.1.14 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.1.15 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on agriculture, forestry and soil.

Effects arising during construction

Avoidance and mitigation measures

5.1.16 No mitigation measures additional to those reported in the main ES and the draft Code of Construction Practice (CoCP)[8] are proposed.

Assessment of impacts and effects

5.1.17 The amendment will permanently require a further 2.1ha of lower quality agricultural land classified as Class 3.2 than that required for the original scheme.

5.1.18 This amendment will not change the overall effect on agricultural land that was reported in the main ES and which was assessed as temporary and permanent minor adverse (not significant).

5.1.19 The impacts on holdings are permanent and no land will be reinstated to agriculture following the works. The impacts on the holdings affected are set out in Table 4.

Table 4: Permanent impacts and effects on holdings affected by additional land required for modifications to wastewater drainage at Annandale depot

Holding reference/name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES
ADEP2 Cranberry Farm	The amendment will permanently require an additional 0.6ha compared to the main ES. The adoption of this amendment alone would increase the area of land required from this holding to 9.1ha (10%). Low This holding is affected by more than one AP2 amendment (see Section 5.3).	Negligible	Negligible	Minor adverse due to the proportion of land required	No change
ADEP7 Land at Gretna	The total land required permanently will be 1.5ha; 11% Medium	Negligible	Negligible	Moderate adverse due to the proportion of land required	New holding affected – new significant effect

[8] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester) *Environmental Statement, draft Code of Construction Practice,* Volume 5, Appendix: CT-002-00000. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

Mitigation and residual effects

Other mitigation measures

5.1.20 No mitigation measures additional to those reported in the main ES are proposed.

Summary of likely residual significant effects

5.1.21 This amendment will result in a new permanent moderate adverse (significant) effect for Land at Gretna (ADEP7).

Cumulative effects

5.1.22 No new or different significant cumulative effects have been identified.

Ecology and biodiversity

Scope, assumptions and limitations

5.1.23 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1, Section 8 and the SMR of the main ES.

5.1.24 This amendment has the potential to result in new or different significant construction effects only. There is no change to the operational assessment for ecology and biodiversity.

5.1.25 Where there are limitations in data, a precautionary baseline has been taken following the approach set out in the SMR which constitutes a 'reasonable worst-case' basis for the subsequent assessment.

Environmental baseline

Existing baseline

5.1.26 The baseline ecology and biodiversity information is as described in Section 6.6 of the main ES Volume 4, Off-route effects. A summary of the baseline information relevant to the assessment of the AP2 amendment is provided below.

Habitats

5.1.27 Habitats within the existing agricultural land required for the construction of the amendment include species-rich hedgerow, dense scrub, improved grassland and arable. Within the public highway, the amendment requires land either side of the B7076 that includes linear sections of semi-natural broadleaved woodland, coniferous and mixed semi-natural woodland, coniferous plantation and amenity grassland.

5.1.28 Within the land required for the amendment, there is 300m of hedgerow assumed to be species-rich on a precautionary basis. The hedgerows contribute to the wider network that is of county value.

Species

5.1.29 Land required for the amendment contains trees which, on a precautionary basis, are assumed to support roosting bats. In the absence of survey information, on a precautionary basis, assumed roosts present are of up to county value.

Future baseline

5.1.30 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.1.31 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.1.32 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

5.1.33 No avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

Habitats

5.1.34 On a precautionary basis, the main ES, reported a net loss of 5.5km of hedgerow habitat within the land required for construction of the Annandale depot, resulting in a permanent adverse effect significant at the county level. The amendment will result in the loss of an additional 300m of hedgerows that are assumed to be species-rich. This will result in a different significant effect on hedgerow, but there will be no change in the level of significance of the effect reported in the main ES.

Species

5.1.35 On a precautionary basis, the main ES reported likely adverse impacts upon bat assemblages, significant at up to county level as a result of habitat loss. The amendment will result in the loss of additional trees, which on a precautionary basis, are assumed to support

roosting bats. This will give rise to a different significant effect on the bat assemblage present but will not change the level of significance of the effect reported in the main ES.

Other mitigation measures

Habitats

5.1.36 The main ES reports that a total of 4.6km of new hedgerows will be planted as replacement for those lost at the Annandale depot, resulting in an overall net loss of 5.5km of hedgerow after mitigation. As part of the amendment, a further 300m of hedgerow will be re-planted to partly compensate for the additional loss of hedgerow resulting from this amendment. Following implementation of these measures, there is no change to the residual significant effects upon the hedgerow network at Annandale depot.

Species

5.1.37 To replace roosts that will be lost to construction, artificial roosts will be provided in retained areas as close to the roost being lost as possible, in accordance with the Ecological Principles of Mitigation within the SMR. The mitigation measures will take account of the different significant effects identified above. Following the implementation of these measures, the effects of the potential loss of roosts on the bat assemblage will be reduced to a level that is not significant.

Summary of likely residual significant effects

5.1.38 There are no changes to the likely residual significant effects identified in the main ES as a result of the amendment.

Cumulative effects

5.1.39 No new or different significant cumulative effects have been identified.

Water resources and flood risk

Scope, assumptions and limitations

5.1.40 The assessment scope, key assumptions and limitations for water resources are as set out in Volume 1, Section 8 and the SMR of the main ES.

5.1.41 Flood risk has been scoped out of this assessment as the AP2 revised scheme will not impact sensitive existing receptors.

5.1.42 This amendment has the potential to result in the removal of a permanent significant operational effect.

5.1.43 There is no change to the construction assessment for water resources.

Environmental baseline

Existing baseline

5.1.44 The baseline water resources information is as described in Section 6 of the main ES Volume 4, Off-route effects. A summary of the baseline information relevant to the assessment of the AP2 amendment is provided below.

5.1.45 All surface water bodies in the study area fall within the Gretna Coastal catchment of the Solway Tweed river basin district (RBD).

5.1.46 There are six watercourses within 500m of the amendment. They are Ewes Burn, Tributary of Ewes Burn 1, Tributary of Ewes Burn 2, Stand Burn, Tributary of Stand Burn 1 and Kirtle Water. Kirtle Water has a high receptor value. In the absence of field surveys, the other surface water bodies have been identified within this assessment as being of moderate value on a precautionary basis.

Future baseline

5.1.47 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.1.48 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.1.49 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on water resources and flood risk.

Effects arising during operation

Avoidance and mitigation measures

5.1.50 No avoidance or mitigation measures additional to those reported in the main ES are proposed.

Assessment of impacts and effects

5.1.51 The main ES reported a permanent moderate adverse effect, which is significant on Tributary of Ewes Burn 1 as a result of the discharge from the proposed wastewater treatment plant at Annandale Depot. As part of this amendment, sewage discharge and grey water will now be pumped via a new onsite pumping station and foul water rising main to an existing Scottish Water wastewater treatment works situated to the south of Gretna Motorway Services. As a result of this amendment, the potential significant effect on

Tributary of Ewes Burn 1 has been removed. Further details can be found in SES2 and AP2 ES Volume 5, Appendix: WR-001-OR003.

5.1.52 There are no new impacts and significant effects on water resources and flood risk arising from this amendment.

Other mitigation measures

5.1.53 No mitigation measures additional to those reported in the main ES are proposed.

Summary of likely residual significant effects

5.1.54 The removal of discharge into Tributary of Ewes Burn 1 will lead to the removal of the permanent moderate adverse effect reported in the main ES on Tributary of Ewes Burn 1. There will be no new or different residual significant effects resulting from this amendment.

Cumulative effects

5.1.55 No new, removed or different significant cumulative effects have been identified.

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

Construction

Agriculture, forestry and soils

5.1.56 This amendment will result in a new permanent moderate adverse (significant) effect for Land at Gretna (ADEP7).

Summary of likely residual significant effects that will be removed

Water resources and flood risk

5.1.57 The removal of discharge into Tributary of Ewes Burn 1 will lead to the removal of the permanent moderate adverse effect reported in the main ES on Tributary of Ewes Burn 1.

5.2 Additional land permanently required for utility diversions and modifications at Annandale depot (AP2-ORW-002)

5.2.1 The Bill provides for a depot at Annandale. The depot would be situated alongside the West Coast Mainline (WCML) north-west of Gretna Green and would provide stabling and light maintenance facilities and accommodate up to 28 200m HS2 trains (see Volume 4, Off-route effects Map Book: map CT-06-806, C5 to J6 and CT-805, A6 to H5 in the main ES). To facilitate the construction of the Annandale depot, diversion of the following utilities would be included in the original scheme:

- a Scottish Power 132kV overhead power line would be permanently diverted, for 750m in length, to accommodate the original scheme. The overhead power line would be re-routed underground west of Cranberry Farm, underneath the WCML and the southern reception tracks, before reconnecting above ground south of the land required for the original scheme;
- permanent diversion of a Scottish Power 11kV underground cable diversion within the Williamsfield Farm access diversion; and
- permanent diversion of a Scottish Water potable water main.

5.2.2 Since the main ES, consultation with utility providers (Scottish Power and Scottish Water) has been undertaken. Additional land will be temporarily required to accommodate the updated design of utility connections. The following modifications to the design will be implemented as a result of the amendment:

- the diverted underground 11kv cable will be permanently changed to an 11kV overhead line that will be suspended between wooden poles positioned adjacent to the Williamsfield Farm access diversion (as outlined in the main ES). This will result in an increase of 182m^2 to the land permanently required at the western end of the Williamsfield Farm access diversion;
- six additional working areas will be required, located around the perimeter of the Annandale depot area. These working areas, required for the diversions of existing Scottish Power 11kV overhead lines, will only be used for access and re-stringing works, and include:
  - an area (6.4ha, of which 0.75ha was included as temporarily required land within the original scheme) north-west of Nouthill Cottage, to be permanently required for compound areas for the construction of the works.
  - a strip of land (892m^2 in area) east of the B7076 realignment, and south-east of Redhouse Farm, to be temporarily required;
  - a strip of land (0.18ha in area) between Redhouse Farm and Redhouse Cottage, to be temporarily required;

  - two strips of land adjoining (totalling an area of 0.67ha), north of Cranville and Cranberry Cottage, to be temporarily required;
  - a parcel of land (of 0.13ha), east of the WCML and within Blacksike Wood and Bensmoor Wood, to be permanently required. During the construction works, 163m^2 of land in the highway verge will also be required for access purposes; and
  - a parcel of land (of 1.45ha) south of Cranberry Farm, to be permanently required;
- installation of a new permanent 132kV to 25kV transformer sub-station (100m by 50m), that will be located within the Annandale depot area, 300m west of Cranberry Cottage; and
- the transformer sub-station will be permanently connected (via a 132kV underground cable) from the existing Scottish Power 132kV overhead line that is being diverted beneath the Annandale depot's southern reception tracks as part of the original scheme. The installation of this transformer sub-station will require an increase to the land required for construction around the southern tie-in point for the Scottish Power 132kV overhead line diversion, as described in the main ES.

5.2.3 There will be three areas where land is no longer needed for re-stringing works, from that included in the original scheme. These are as follows:

- an area of 0.24ha, north of Nouthill Cottage;
- an area of 17m^2, west of Redhouse Farm; and
- an area of 320m^2, north of Valley Cottage.

5.2.4 The amendment will be constructed from the Annandale depot main compound and will be completed within the indicative construction programme for the compound shown in Section 3.4.

5.2.5 The land required for this amendment is outside the limits of the Bill. The amendment will result in the permanent requirement for an additional 7.97ha of land and the temporary requirement of an additional 0.97ha. The amendment will result in the reduction of 17m^2 of land permanently required and 0.28ha of land temporarily required. (see SES2 and AP2 ES Volume 4, Off-route effects Map Book: maps CT-05-804, A3 to A4, map CT-05-805, A7 to B8, B8 to D7, D9 to F9, D3 to E4 and J5 and map CT-05-806, F8 to F9, H4, G8 to H8 and J7 to J8).

Topics included in the AP2 assessment

5.2.6 The assessment of this amendment has identified new, different or removed likely significant effects for the following topics: agriculture, forestry and soils; and, ecology and biodiversity.

Agriculture, forestry and soils

Scope, assumptions and limitations

5.2.7 The assessment scope, key assumptions and limitations for agriculture, forestry and soils are as set out in Volume 1, Section 8 and the SMR of the main ES. The amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for agriculture, forestry and soils.

Environmental baseline

Existing baseline

5.2.8 The baseline agriculture, forestry and soils information is as described in Volume 4, Off-route effects of the main ES. Details of published and publicly available information used in the assessment are shown on SES2 and AP2 ES Volume 5, Map Book: Map Series: AG-01 – Agricultural Holdings and AG-04 – Agricultural Land Quality.

5.2.9 The agricultural land associated with this amendment has soil in the Canonbie association. These soils comprise imperfectly drained soils developed in reddish sandy clay loam or clay loam till and are prone to seasonal waterlogging. The agricultural land is assessed under the Scottish Land Capability for Agriculture system as lower quality in Class 3.2.

5.2.10 The holdings affected by the amendment are set out in Table 5.

Table 5: Summary characteristics of the holdings affected by additional land required for modifications to utilities at Annandale depot

Holding reference/name	Holding type	Holding size (ha)	Diversification	Sensitivity to change
ADEP2 Cranberry Farm ¥	Beef and arable	93	None	Medium
ADEP3 Nouthill Farm including Williamsfield Farm ¥	Dairy and arable	120	None	Medium (dairy cows zero grazed so no reliance on grazing land)
ADEP4 Redhouse Farm ¥	Beef cattle	50	None	Medium

¥ Although it has not been possible to arrange face-to-face farm impact assessment interviews with these holdings, telephone discussions have been held and brief baseline details have been obtained.

Future baseline

5.2.11 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.2.12 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.2.13 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on agriculture, forestry and soil.

Effects arising during construction

Avoidance and mitigation measures

5.2.14 No mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

5.2.15 The amendment will temporarily require 7.9ha of lower quality agricultural land classified as Class 3.2. Following construction and the restoration of agricultural land not required on a permanent basis, the permanent requirement will be for 6.9ha of Class 3.2 agricultural land.

5.2.16 This amendment will not change the overall effect on agricultural land that was reported in the main ES and which was assessed as temporary and permanent minor adverse (not significant).

5.2.17 The impacts and effects on the holdings affected by the amendment are set out in Table 6 and Table 7.

Table 6: Temporary impacts and effects on the holding affected by additional land required for modifications to utilities at Annandale depot

Holding reference/ name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES
ADEP2 Cranberry Farm	This amendment will result in an increase in the area of land required of 2.1ha. The adoption of this amendment alone would increase the area of land required from this holding to 32.8ha (35%) High This holding is affected by more than one AP2 amendment (see Section 5.3).	Medium	Negligible	Major/moderate adverse due to the proportion of land required.	No change
ADEP3	This amendment will result in an increase in the area of land	Medium	Negligible	Major/moderate adverse due to	Increase from

Holding reference/ name	Total area required from holding	Construction severance	Disruption	Scale of construction effect	Change in effect from main ES
Nouthill Farm including Williamsfield Farm	required of 4.3ha. The adoption of this amendment would increase the area of land required to 26.6ha (22%) High			the proportion of land required and severance	moderate adverse.
ADEP4 Redhouse Farm	This amendment will result in an increase in the area of land required of 0.3ha. The adoption of this amendment would increase the area of land required to 35.7ha (71%) High	Negligible	Low	Major/moderate adverse due to the proportion of land required.	No change

Table 7: Permanent impacts and effects on the holding affected by additional land required for modifications to utilities at Annandale depot

Holding reference/name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES
ADEP2 Cranberry Farm	This amendment will result in an increase in the area of land required of 1.5ha. The adoption of this amendment alone would increase the area of land required from this holding to 10ha (11%) Medium This holding is affected by more than one AP2 amendment (see Section 5.3).	Negligible	Negligible	Moderate adverse due to the proportion of land required.	Change from minor adverse
ADEP3 Nouthill Farm including Williamsfield Farm	This amendment will result in an increase in the area of land required of 3.1ha. The adoption of this amendment would increase the area of land required to 13.1ha (11%). Medium	Medium	Negligible	Moderate adverse due to the proportion of land required and severance	No change
ADEP4 Redhouse Farm	This amendment will not require any	Negligible	Negligible	Major/moderate adverse due to	No change

Holding reference/name	Land required from holding	Severance	Infrastructure	Scale of effect	Change in effect from main ES
	additional land on a permanent basis. The total land required permanently will remain 13.2ha (26%) High			the proportion of land required.	

Mitigation and residual effects

Other mitigation measures

5.2.18 The land required temporarily for construction will be restored to its former agricultural condition once the works are completed, following good practice techniques in handling, storing and reinstating soils on that land, as set out in the draft CoCP. No other mitigation is proposed.

Summary of likely residual significant effects

5.2.19 This amendment will result in:

- a different temporary significant effect (from moderate adverse to major/moderate adverse) (significant) effect for Nouthill Farm including Williamsfield Farm (ADEP3) due to the proportion of land required and severance; and
- a new permanent moderate adverse significant effect for Cranberry Farm (ADEP2).

Cumulative effects

5.2.20 No new, removed or different significant cumulative effects have been identified.

Ecology and biodiversity

Scope, assumptions and limitations

5.2.21 The assessment scope, key assumptions and limitations for ecology and biodiversity are as set out in Volume 1, Section 8 and the SMR of the main ES.

5.2.22 This amendment has the potential to result in new or different significant construction effects only. Therefore, there is no operational assessment for ecology and biodiversity.

5.2.23 Where there are limitations in data, a precautionary baseline has been taken following the approach set out in the SMR which constitutes a 'reasonable worst-case' basis for the subsequent assessment.

Environmental baseline

Existing baseline

5.2.24 The baseline ecology and biodiversity information is as described in Section 6.6 of the main ES Volume 4, Off-route effects. A summary of the baseline information relevant to the assessment of the amendment is provided below.

Designated sites

5.2.25 The land required for the amendment includes 0.13ha of Blacksike Wood and Bensmoor Wood, which is 6.8ha in area, comprising long-established (or plantation origin) woodland, identified on the Scottish Ancient Woodland Inventory, and located either side of the WCML at Quintinshill. The woodland within the land required for construction of the AP2 revised scheme is crossed by an existing Scottish Power 11kV overhead line with a maintained wayleave beneath.

Habitats

5.2.26 Habitats within the land required for the construction of the amendment include semi-natural broad-leaved woodland present in Blacksike Wood and Bensmoor Wood and a narrow band of woodland south of the B7076, species-rich hedgerow, improved grassland, and arable.

5.2.27 Within the land required for the amendment, there is 675m of hedgerow assumed to be species-rich on a precautionary basis. The hedgerows contribute to the wider network that is of county value.

Species

5.2.28 Land required for the amendment contains trees which, on a precautionary basis, are assumed to support roosting bats. In the absence of survey information, on a precautionary basis, it is assumed roosts present are of up to county value.

5.2.29 Habitats within land required for the amendment contain grassland, hedgerow and woodland habitat available to breeding birds. On a precautionary basis it is assumed that the breeding bird assemblage present includes species of conservation concern such as tree sparrow, lapwing and skylark, and is of up to county value.

Future baseline

5.2.30 The Planning data report of the main ES (see Volume 5, Appendix: CT-004-00000) provides details of committed developments assumed to have been implemented by 2025.

5.2.31 This information has been supplemented by the committed developments listed in the equivalent Volume 5 planning report of the SES2 and AP2 ES (see SES2 and AP2 ES Volume 5, Appendix: CT-004-00000). These committed developments have been considered as a future

baseline where relevant, and their potential to give rise to cumulative effects has been assessed.

5.2.32 None of the identified developments affect the assessment of the AP2 revised scheme's likely impacts on ecology and biodiversity.

Effects arising during construction

Avoidance and mitigation measures

5.2.33 No avoidance or mitigation measures additional to those reported in the main ES and draft CoCP are proposed.

Assessment of impacts and effects

Designated sites

5.2.34 With respect to utility works, it is normally assumed that all habitat is lost from the land required for the AP2 revised scheme. This is assumed to be temporary except for mature woodland and areas of high-quality habitat. However, for some utility works, such as decommissioning of existing utilities, the construction methods are such that it is possible to exclude significant effects on receptors within the land required for construction of the AP2 revised scheme. This includes Blacksike Wood and Bensmoor Wood relevant to this amendment, where utilities works are limited to access and re-stringing existing Scottish Power 11kV overhead lines. For this reason, the amendment will not create any new of different significant effects upon ancient woodland.

Habitats

5.2.35 On a precautionary basis, the main ES, reported a net loss of 5.5km of hedgerow habitat within the land required for construction of the Annandale depot, resulting in a permanent adverse effect significant at the county level. The amendment will result in the loss of an additional 675m of hedgerows that are assumed to be species-rich. This will result in a different significant effect on hedgerow, but there will be no change in the level of significance of the effect reported in the main ES.

Species

5.2.36 On a precautionary basis, the main ES reported likely adverse impacts upon bat assemblages, significant at up to county level as a result of habitat loss. The amendment will result in the loss of additional trees which, on a precautionary basis, are assumed to support roosting bats. This will give rise to a different significant effect on the bat assemblage present but will not change the level of significance of the effect reported in the main ES.

5.2.37 The main ES reported that the loss of grassland, hedgerow and woodland habitats available to breeding birds will result in an adverse effect significant at county level. The amendment

will result in additional habitat loss that may give rise to a different significant effect on the breeding bird assemblage but will not change the level of significance of the effect reported in the main ES.

Other mitigation measures

Habitats

5.2.38 The main ES reports that a total of 4.6km of new hedgerows will be planted as replacement for those lost at the Annandale depot, resulting in an overall net loss of 5.5km of hedgerow after mitigation. As part of the amendment, a further 675m of hedgerow will be re-planted to partly compensate for the additional loss of hedgerow resulting from this amendment. Following implementation of these measures, there is no change to the residual significant effects upon the hedgerow network at Annandale depot.

Species

5.2.39 To replace roosts that will be lost to construction, artificial roosts will be provided in retained areas as close to the roost being lost as possible, in accordance with the Ecological Principles of Mitigation within the SMR. The mitigation measures will take account of the different significant effects identified above. Following the implementation of these measures, the effects of the potential loss of roosts on the bat assemblage will be reduced to a level that is not significant.

5.2.40 The AP2 revised scheme includes habitat creation measures to address the adverse effects on farmland birds including tree sparrow which are assumed to form part of the breeding bird assemblage present on land required for construction of the Annandale depot. Once these habitats have become established adverse effects will be reduced to a level that is not significant.

Summary of likely residual significant effects

5.2.41 There are no changes to the likely residual significant effects identified in the main ES as a result of the amendment.

Cumulative effects

5.2.42 No new or different significant cumulative effects have been identified.

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

Construction

Agriculture, forestry and soils

5.2.43 This amendment will result in:

- a different temporary significant effect (from moderate adverse to major/moderate adverse) (significant) effect for Nouthill Farm including Williamsfield Farm (ADEP3) due to the proportion of land required and severance; and
- a new permanent moderate adverse significant effect for Cranberry Farm (ADEP2).

5.3 Combined effects of AP2 amendments in the Annandale area

5.3.1 This section reports where there are combined effects arising from two or more AP2 amendments and whether these result in the potential for new or different effects to those reported above for each amendment individually. For the off-route works, there are combined effects for agriculture, forestry and soils.

Agriculture, forestry and soils

5.3.2 This section identifies the combined effect on the holdings affected as a result of the AP2 revised scheme. One holding in Table 8 will be significantly affected by two AP2 amendments.

Table 8: Combined effects of AP2 amendments at Annandale on the holding affected

Holding reference/name	AP2 amendments that affect this holding	Effect of the individual amendment	Combined effect
ADEP2 Cranberry Farm	Additional land permanently required for modifications to wastewater drainage at Annandale depot (AP2-ORW-001) Additional land permanently required for modifications to utility diversions and modifications at Annandale depot (AP2-ORW-002)	Temporary minor adverse Permanent minor adverse Temporary major/moderate adverse Permanent moderate adverse	Should both the amendments be adopted the total area required from this holding for the AP2 revised scheme will be 32.8ha (35%) (temporary) and 10.6ha (11%) (permanent) • Land required: High • Severance: Medium • Disruption: Negligible • Infrastructure: Negligible The overall combined temporary and permanent effect is Major/moderate adverse and increases the scale of effect reported for AP2-ORW-001 alone.

6 Combined effects of changes and amendments in the Annandale depot area due to changes in traffic flows

6.1 Introduction

6.1.1 This section identifies the effects of the changes to traffic flows associated with the updated baseline and future baseline models in combination with all SES2 changes and AP2 amendments in Annandale. Of the SES2 changes and AP2 amendments, the following make a particular contribution to the changes in traffic flows in the Annandale depot area:

- changes in construction traffic related to the changes to the movement of excavated material, construction programme and construction assumptions; and
- additional land permanently required for modifications to wastewater drainage at Annandale depot (AP2-ORW-001).

6.1.2 In addition, updates to the future baseline described in Section 2 will lead to changes to the future baseline traffic forecasts reported in the main ES. These baseline changes give rise to new or different effects compared with the main ES as a result of, for example, different underlying levels of traffic and congestion against which the impacts of HS2 are assessed. The combined assessment of changes to traffic flows presented in this section of the report takes into account the revised future baseline traffic forecasts alongside the changes in traffic flows associated with the AP2 revised scheme.

Scope, assumptions and limitations

6.1.3 The assessment scope, key assumptions and limitations for the traffic and transport assessment are as set out in Volume 1 (Section 8) and the EIA Scope and Methodology Report (SMR)[9] of the main ES.

6.1.4 Information on traffic and transport impacts of the AP2 revised scheme within the Annandale area is contained in Volume 5, Appendix: TR-005-00000 Transport Assessment of the main ES. Changes to traffic and transport impacts within the Annandale area as a result of the AP2 revised scheme are contained in SES2 and AP2 ES Volume 5, Appendix: TR-005-00000 Transport Assessment.

[9] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Repo*rt, Volume 5, Appendix CT-001-00001. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement

6.2 Environmental baseline

Existing baseline

6.2.1 Existing baseline traffic and transport information is described in Section 6 of Volume 4, Off-route effects, the main ES. This section of the main ES is unchanged.

Future baseline

6.2.2 The future baseline traffic and transport information is described in Section 6 of Volume 4, Off-route effects of the main ES and is updated for the AP2 revised scheme below.

6.2.3 In the main ES, future baseline traffic volumes were calculated for 2028, 2038 and 2046. For the SES2 and AP2 ES the 2028 and 2038 future baselines have been updated to 2031 and 2039 to reflect the revised programme presented in Section 6 of SES2 and AP2 ES Volume 2. The 2046 future baseline has been updated to 2051 in order to give the assessment greater resilience to long term growth in travel demand. Consequently, the construction assessment of the AP2 revised scheme has been undertaken for 2031 and the operational assessment has been undertaken for 2039 and 2051.

Construction

6.2.4 Construction of the AP2 revised scheme is expected to commence in 2027 with construction activity continuing to 2035. Changes to the construction programme since the main ES are set out in Section 3.3. Construction activities have been assessed against 2031 baseline traffic flows, irrespective of when they occur during the construction period.

6.2.5 The year 2031 is the common base year for off-route works in the Annandale Depot area and the impact of individual or overlapping activities is considered against this single year.

6.2.6 Future baseline traffic volumes in the peak hours are forecast to grow by an average of 5% by 2031 compared to a baseline year of 2020.

Operation (2039 and 2051)

6.2.7 Future baseline traffic volumes in the peak hours are forecast to grow by an average of 8% by 2039 compared to a baseline year of 2020.

6.2.8 Future baseline traffic volumes in the peak hours are forecast to grow by an average of 12% by 2051 compared to a baseline year of 2020.

6.3 Effects arising during construction

Avoidance and mitigation measures

6.3.1 No avoidance or mitigation measures additional to those reported in the main ES and the draft Code of Construction Practice (CoCP)[10] are proposed.

Assessment of impacts and effects

Temporary effects

Key construction transport issues

6.3.2 Table 35 in the main ES Volume 4, Off-route effects provided a summary along with HGV and car/light good vehicle (LGV) access trips at each compound in the peak month of activity and during the busy period. This information has been updated to reflect changes resulting from the AP2 revised scheme and is provided in Table 9 which replaces Table 35 in the main ES. These revised flows reflect the change in increased workforce numbers alongside programme changes which result in increased average daily trips within the Annandale area.

Table 9: Typical vehicle trip generation for construction compounds within the Annandale area

Compound Type	Compound Name	Indicative start/set up date (years/ quarter)	Estimated duration active of use (years/ months)	Average daily combined two–way car/LGV trips during busy period and within peak month of activity	Average daily combined two–way HGV trips during busy period and within peak month of activity	Estimated duration of busy period (months)
Rail systems	Quintinshill Sidings satellite compound	2034 Q3	9 months	147 - 147	4-4	6 months
Satellite	Cranberry Farm accommodation overbridge satellite compound	2030 Q2	1 year 11 months	251-268	18-26	17 months
Main	Annandale depot main compound	2030 Q1	4 years 8 months	588 -618	445 - 466	16 months
Rail systems	Cove Crossing satellite compound	2034 Q3	9 months	147 - 148	4-4	6 months

[10] High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester) *Environmental Statement, draft Code of Construction Practice,* Volume 5, Appendix: CT-002-00000. Available online at: https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement.

Highway network

Strategic and local highway network

6.3.3 The AP2 revised scheme will lead to a change in traffic levels which will result in changes to traffic-related severance for non-motorised road users, particularly pedestrians using or seeking to cross a road. Changes to traffic-related severance for non-motorised users are predicted on the B7076 (between Annandale depot site access and A74(M) junction 21 south-facing slip roads) previously reported as moderate adverse significant (HGV) which changes to major adverse significant (HGV).

6.3.4 There are no changes to the likely significant effects on congestion or delays identified in the main ES as a result of the SES2 changes and AP2 amendments.

Other mitigation measures

6.3.5 No avoidance or mitigation measures additional to those reported in the main ES are proposed.

Summary of likely residual significant effects

6.3.6 The temporary residual significant effects during construction remain as described above. These effects will be temporary and reversible in nature lasting only for the duration of the construction works.

6.3.7 The AP2 revised scheme will result in a change to the traffic-related severance effects for non-motorised users on the B7076 (between Annandale depot site access and A74(M) junction 21 south-facing slip roads) previously reported as moderate adverse significant (HGV) which changes to major adverse significant (HGV).

Cumulative effects

6.3.8 No new, removed or different significant cumulative effects have been identified.

6.4 Effects arising during operation

Avoidance and mitigation measures

6.4.1 Whilst there is uncertainty regarding the timing of the depot being brought into use, the SES2 changes and AP2 amendments do not impact upon the operation of the depot. Although the changes to the forecast years would marginally alter the future traffic baseline, this would not materially affect the assessment and the conclusions in Volume 4 of the main ES. Consequently, there are no changes to the likely significant effects during operation identified in Volume 4 of the main ES.

Summary of likely residual significant effects

6.4.2 There are no new or different likely residual significant effects for traffic and transport as a result of the AP2 revised scheme.

Cumulative effects

6.4.3 No new, removed or different significant cumulative effects have been identified.

7 Off-route railway stations in operation

7.1 Introduction

7.1.1 The assessment of off-route operation of stations and depots is reported in Section 5, Volume 4, Off-route effects of the main ES. This section reports new or different significant effects from the design changes associated with the AP2 revised scheme and an update to the Planet Framework Model (PFM). Where no new or different effects are reported below, the conclusions in the main ES remain valid.

7.2 Methodology

Forecast changes in passenger demand

7.2.1 The forecast change in HS2 passenger numbers has been derived from Planet Framework Model (PFM) which has been periodically updated by HS2 Ltd during the course of the development of all phases of HS2. For the SES2 and AP2 ES, PFM has been updated from PFM9.6 to PFM10a. Changes from PFM9.6 to PFM10a reflect the re-estimation of the long-distance demand model using more recent survey data from the National Travel Survey (NTS) and updated values of travel time savings from the Department for Transport (DfT) 2015 study[11]. For the assessment of off-route stations in operation, the forecast year has been updated from 2046 to 2051 in order to give the assessment greater resilience to long term growth in travel demand.

7.2.2 A review has been undertaken to assess the changes to passenger demand forecasts at Phase One stations (London Euston, Old Oak Common, Birmingham Interchange and Birmingham Curzon Street) between PFM9.6 and PFM10a.

7.2.3 This review shows that the PFM10a demand used in the analysis undertaken for the AP2 revised scheme, predicts lower demand at London Euston, Old Oak Common, Birmingham Interchange and Birmingham Curzon Street than the PFM9.6 forecasts used in the main ES. Therefore, the conclusion in the main ES that there are no significant adverse effects arising from changes in use of these stations due to HS2, is unchanged.

Sifting of stations

7.2.4 The methodology used for sifting of stations for the original scheme is reported in Section 5.2 of Volume 4, Off-route effects of the main ES. With the exception of the change in forecast year from 2046 to 2051, this section of the main ES is unchanged.

[11] Department for Transport (2015), *Values of travel time savings and reliability: final reports.* Available online at: https://www.gov.uk/government/publications/values-of-travel-time-savings-and-reliability-final-reports.

7.2.5 The forecasts of changes in footfall at off-route stations have been updated to reflect the AP2 revised scheme, including updates to PFM10a and the update from a 2046 to a 2051 forecast year.

7.2.6 Table 13, Volume 4, Off-route effects in the main ES showed those stations where the predicted change in footfall met the criteria of a daily increase in footfall of 10% or 700/1,400 users. Table 10 replaces Table 13 in the main ES and identifies both the in-combination change of Phase One, Phase 2a and the AP2 revised scheme together with the incremental change resulting from the AP2 revised scheme assuming Phases One and 2a are in operation.

Table 10: Increase in daily footfall at stations that meet the criteria for assessment of effects for the AP2 revised scheme. Passengers/day, 2051, PFM10a

Station	Change in daily passenger demand due to HS2 Phase One, 2a and the AP2 revised scheme together (2051)		Incremental change in daily passenger demand due to the AP2 revised scheme compared with HS2 Phase One and 2a (2051)	
	Change in footfall	% change	Change in footfall	% change
Milton Keynes Central	3,128	7%	-71	-0.2%
Crewe	1,067	4%	-464	-1.9%
Preston	2,288	11%	-117	-0.5%
Lancaster	860	10%	7	0.1%
Carlisle	742	8%	-24	-0.3%
Glasgow Central	2,592	3%	121	1.0%

7.2.7 In Table 13, Volume 4, Off-route effects of the main ES, six stations were forecast to experience an increase in daily passenger demand greater than 10% or 700/1,400 users as a consequence of the original scheme in combination with Phase One and 2a. The same six stations experience an increase with the AP2 revised scheme in combination with Phase One and 2a and meet the 10% or 700/1,400 users/day with no additional stations meeting these criteria and therefore requiring assessment. These increases with the AP2 revised scheme are all lower than those presented in the main ES and therefore the effects reported in the main ES are either unchanged, reduced or removed and are set out below. In addition, this is the case for the incremental changes in footfall for the AP2 revised scheme which are substantially lower than those presented in the main ES, as a result of the Removal of the HS2 WCML connection (SES1-004-001).

7.2.8 Table 14, Volume 4, Off-route effects of the main ES, showed that eleven stations were forecast to experience a reduction in daily passenger demand greater than 10% or 700/1,400 users as a consequence of the original scheme in combination with Phase One and 2a. Table 11: Reduction in daily footfall at stations for the AP1 and AP2 revised schemes. Passengers/day, 2051, PFM10a replaces Table 14 in the main ES and shows that these stations experience a lower reduction in footfall with the AP2 revised scheme with the exception of Nuneaton, Lichfield Trent Valley and Warrington Bank Quay. These three stations, whilst still experiencing small reductions in footfall, now fall below the criteria of 10% or 700/1400 users so are no longer reported. However, with the AP2 revised scheme,

Leamington Spa, Solihull, Chester and Wilmslow stations are now forecast to experience a reduction in demand greater than 10% or 700/1400 users/day.

7.2.9 Those stations which are forecast to experience a substantial reduction in footfall with the AP2 revised scheme in combination with Phase One and 2a are shown in Table 11: Reduction in daily footfall at stations for the AP1 and AP2 revised schemes. Passengers/day, 2051, PFM10a along with the incremental change resulting from the AP2 revised scheme. These stations are generally directly impacted by alternative faster HS2 services. With the exceptions of Leamington Spa, Solihull, Chester and Wilmslow stations, which were not reported in the main ES, these reductions are all lower than those presented in the main ES.

Table 11: Reduction in daily footfall at stations for the AP1 and AP2 revised schemes. Passengers/day, 2051, PFM10a

Station	Change in daily passenger demand due to HS2 Phase One, 2a and the AP2 revised scheme together (2051)		Incremental change in daily passenger demand due to the AP2 revised scheme compared with HS2 Phase One and 2a (2051)	
	Change in footfall	% change	Change in footfall	% change
London Paddington	-47,341	-20%	184	0.1%
London Kings Cross	-1,632	-2%	N/A	N/A
London Marylebone	-6,701	-15%	-23	0%
Leamington Spa	-1,271	-6%	-22	-0.1%
Coventry	-5,968	-16%	-74	-0.2%
Birmingham International	-8,330	-21%	-32	-0.3%
Solihull	-1,582	-5%	N/A	N/A
Birmingham New Street	-19,957	-11%	-3.974	-2.1%
Chester	-1,061	-6%	N/A	N/A
Manchester Airport	-1,111	-6%	N/A	N/A
Wilmslow	-1,330	-13%	-2,138	-20.5%
Stockport	-6,521	-14%	-10,370	-21.9%

7.3 Changes in demand at off-route stations during operation

7.3.1 This section reports changes to footfall and consequential changes to traffic and transport significant effects for the off-route railway stations. Changes to footfall that meet the criteria of increases in daily passenger demand greater than 10% or 700/1,400 users as a consequence of the AP2 revised scheme are unchanged from Section 5.3 of Volume 4, Off-route effects of the main ES, namely Milton Keynes Central, Crewe, Preston, Lancaster, Carlisle and Glasgow Central. There were no significant effects for other environmental topics in the main ES and, as the changes in footfall are lower for the AP2 revised scheme than for the original scheme, the conclusions in the main ES for other environmental topics are unchanged.

Summary of the changes to effects at off-route stations

Milton Keynes Central Station

7.3.2 Section 5 of Volume 4, Off-route effects of the main ES reported minor adverse significant effects at Milton Keynes Central Station for car parking, cycle parking provision and traffic-related severance for vulnerable road users. Compared to the main ES, the lower growth in passenger numbers means that these significant effects are now removed.

7.3.3 This is based on the smaller change in passenger numbers at Milton Keynes Central Station which are forecast to increase by approximately 7%, equivalent to 3,128 additional passengers per day in 2051 as a result of the AP2 revised scheme in combination with Phase One and 2a. This compares to an increase of 10% or 4,450 additional passengers per day for the original scheme in 2046 as reported in the main ES.

Crewe Station

7.3.4 Section 5 of Volume 4, Off-route effects of the main ES reported minor adverse significant effects at Crewe Station for car parking and cycle parking provision. Compared to the main ES, the lower growth in passenger numbers associated with the removal of the HS2 WCML connection means that these significant effects are now removed.

7.3.5 This is based on the change in passenger numbers at Crewe Station which are forecast to increase by approximately 4%, equivalent to 1,067 additional passengers per day in 2051 as a result of the AP2 revised scheme in combination with Phase One and 2a. This compares to an increase of 10% or 2,554 additional passengers per day for the original scheme in 2046 as reported in the main ES.

Preston Station

7.3.6 Section 5 of Volume 4, Off-route effects of the main ES reported a moderate adverse significant effect at Preston Station for car parking and a minor adverse significant effect for cycle parking provision. The moderate adverse significant effect on car parking resulted from growth in passenger demand and a requirement for daily operation staff including drivers, managers, cleaners and customer service staff at Preston Station. The removal of the HS2 WCML connection reduces the growth in both passenger numbers and the requirement for daily operation staff. As a result, the moderate adverse significant effect on car parking is predicted to change to a minor adverse significant effect. The minor adverse significant effect reported on cycle parking provision remains unchanged.

7.3.7 This is based on the change in passenger numbers at Preston Station which are forecast to increase by approximately 11%, equivalent to 2,288 additional passengers per day in 2051 as a result of the AP2 revised scheme in combination with Phase One and 2a. This compares to

an increase of 16% or 3,518 additional passengers per day for the original scheme in 2046 as reported in the main ES.

Lancaster Station

7.3.8 Section 5 of Volume 4, Off-route effects of the main ES reported minor adverse significant effects at Lancaster Station for car parking and cycle parking provision. Although there is forecast to be a lower growth in passenger numbers compared to the original scheme associated with the removal of the HS2 WCML connection, these effects are predicted to remain.

7.3.9 This is based on the change in passenger numbers at Lancaster Station which are forecast to increase by approximately 10%, equivalent to 860 additional passengers per day in 2051 as a result of the AP2 revised scheme in combination with Phase One and 2a. This compares to an increase of 15% or 1,276 additional passengers per day for the original scheme in 2046 as reported in the main ES.

Carlisle Station

7.3.10 Section 5 of Volume 4, Off-route effects of the main ES reported a moderate adverse significant effect at Carlisle Station for car parking and minor adverse significant effects on cycle parking provision and traffic-related severance. The moderate adverse significant effect on car parking resulted from growth in passenger demand and a requirement for daily operation staff including drivers, managers, cleaners and customer service staff at Carlisle Station. The removal of the HS2 WCML connection reduces the growth in passenger numbers and removes the requirement for daily operation staff at Carlisle station. As a result, the moderate adverse significant effect on car parking is predicted to change to a minor adverse significant effect. The minor adverse significant effect on cycle parking provision will be removed.

7.3.11 This is based on the change in passenger numbers at Carlisle Station which are forecast to increase by approximately 8%, equivalent to 742 additional passengers per day in 2051 as a result of the AP2 revised scheme in combination with Phase One and 2a. This compares to an increase of 20% or 1,682 additional passengers per day for the original scheme in 2046 as reported in the main ES.

Glasgow Central Station

7.3.12 Section 5 of Volume 4, Off-route effects of the main ES reported no adverse significant effects at Glasgow Central Station. As there is forecast to be a lower growth in passenger numbers compared to the original scheme, the conclusion of no adverse significant effects at Glasgow Central Station is unchanged.

7.3.13 This is based on the change in passenger numbers at Glasgow Central Station which are forecast to increase by approximately 3%, equivalent to 2,592 additional passengers per day in 2051 as a result of the AP2 revised scheme in combination with Phase One and 2a. This

compares to an increase of 6% or 4,854 additional passengers per day for the original scheme in 2046 as reported in the main ES.

hs2.org.uk

High Speed Two (HS2) Limited
Two Snowhill
Snow Hill Queensway
Birmingham B4 6GA
Freephone: 08081 434 434
Minicom: 08081 456 472
Email: HS2enquiries@hs2.org.uk