

## **High Speed Rail (West Midlands - Crewe)** Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement

Volume 5: Technical appendices map book

Water resources  
(WR-05, WR-06)



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Department  
for Transport

High Speed Two (HS2) Limited has been tasked by the Department for Transport (DfT) with managing the delivery of a new national high speed rail network. It is a non-departmental public body wholly owned by the DfT.

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

Telephone: 08081 434 434

General email enquiries: [HS2enquiries@hs2.org.uk](mailto:HS2enquiries@hs2.org.uk)

Website: [www.hs2.org.uk](http://www.hs2.org.uk)

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# Contents

Data dictionary and definitions

Map series name	WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding	WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
<b>Map series description</b>	<i>The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 100 years inclusive of climate change (20%) return period.</i>	<i>The map shows the output from hydraulic modelling of specific crossing locations and the effect the scheme has on flood extent at 1 in 20 year return period.</i>
<b>Community Area name</b>		
CA1 Fradley to Colton	✓	✓
CA2 Colwich to Yarlet	✗	✗
CA3 Stone and Sywnnerton	✗	✗
CA4 Whitmore Heath to Madeley	✗	✗
CA5 South Cheshire	✗	✗

# Mapping explanatory notes

## Structure of the HS2 Phase 2a Supplementary Environmental Statement 2 and the Additional Provision 2 Environmental Statement

This map book is part of the suite of documents that make up the Supplementary Environmental Statement 2 (SES2) and the Additional Provision Environmental Statement 2 (AP2 ES) for Phase 2a of the proposed High Speed Two (HS2) rail network between the West Midlands and Crewe.

The SES2 and the AP2 ES are separate documents. However, they are bound together and presented in a number of volumes as 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 that are likely to remain after mitigation measures are put in place), both beneficial and adverse, which are new or different to those reported in the Environmental Statement (ES) submitted to Parliament in July 2017 in support of the hybrid Bill for Phase 2a of HS2 ('the main ES'), as amended by SES1 and, where relevant, AP1 ES;
- Glossary of terms and list of abbreviations. This contains any new or different terms and abbreviations used throughout the SES2 and the AP2 ES, which are not already explained in the main ES or SES1 and AP1 ES;
- Volume 1: Introduction to the SES2 and the AP2 ES. This introduces the supplementary environmental information and changes to the design and construction assumptions included within the SES2 and amendments within the AP2 ES. The report explains the environmental impact assessment (EIA) process that has been applied;
- Volume 2: Community area reports and map books. These report the supplementary environmental information and changes to the design and construction assumptions included within the SES2 (Part 1), amendments within the AP2 ES (Part 2) and any new or different likely significant environmental effects arising from these changes or assumptions and amendments in each community area. These effects are compared to those reported in the main ES, as amended by SES1 (and by SES2 for AP2). The AP1 amendments are also taken into account where 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 or different likely significant environmental effects arising at a route-wide level from the supplementary environmental information and changes to the design and 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, as amended by SES1 (and by SES2 for the AP2 amendments). The AP1 amendments are also taken into account where relevant; and
- Volume 5: Appendices and map books. These contain supporting environmental information and associated maps.

A Volume 4: Off-route effects report was produced as part of the main ES. A separate Volume 4 has not been produced as part of the SES2 and AP2 ES. Any new or different significant effects arising from the AP2 amendments are reported in the most relevant Volume 2 community area report.

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 [www.gov.uk/hs2](http://www.gov.uk/hs2). The BID documents and maps present background survey information and other relevant background material.

### Copyright statements

Copyright statements are presented in the Data dictionary and definitions section at the front of the map book, due to limited space to include this on the individual maps themselves.

### Ordnance Survey data

All maps produced as part of the SES2 and the AP2 ES contain Ordnance Survey (OS) data. HS2 Ltd use the most up to date mapping available, where possible, supplied by the OS and as such, we cannot be held responsible for any inaccuracies within this data.

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## Chainage

Most of the maps presented as part of the SES2 and the AP2 ES have a chainage value shown next to the alignment. Chainage is presented on the maps in black font, in the form of XX+YYY. E.g. 192+000 or 239+500.

Chainage (known as reference chainage) is referenced from Euston Station, which is 0+000, and the value presented is in metres. E.g. 192+000 refers to the point, 192,000m, or 192km, from Euston Station. Chainage values increase in intervals dependant on the map scale. For maps at 1:50,000 scale chainage is shown at 5km intervals. For maps at 1:25,000 scale chainage is shown at 2km intervals. For maps at 1:20,000, 1:10,000, 1:5,000 and 1:2,500 scales, chainage is shown at 1km intervals.

Chainage has been included on the maps as a useful tool for comparing different map sets showing the different environmental themes or engineering plans, due to map sets having different scales and therefore showing differing amounts of alignment on the map.

## Map sheet layout

Each map in Volume 2 is presented twice, with the main ES map (published July 2017) on the left hand page, where relevant, and the SES2 and the AP2 ES map on the right. For the maps which show the amendment to the Handsacre Junction connection the map from the relevant Phase One Additional Provision Environmental Statement (e.g. AP2 or AP4) is on the left hand page. For the CT-05 and CT-06 map series, the SES2 and the AP2 ES map is annotated with different coloured clouds which highlight the areas of change. The coloured text box provides a brief description of the design change and amendment, and gives the SES2 and the AP2 ES reference number. Only maps which have been amended as a result of the SES2 and the AP2 ES are included within the map books. Other design changes which are within the existing limits of the Bill and do not result in new or different likely significant effects are also shown on the maps, but are not indicated by a cloud. The below table highlights the coloured clouds used, and their description.

Cloud / text box colour	Description
Blue	Design changes relating to the SES2 (Part 1 of each Volume 2 report).
Red	Proposed amendments relating to the AP2 ES (Part 2 of each Volume 2 report).
Grey	Proposed design changes and amendments relating to SES1 changes and AP1 amendments, provided for reference.

SES changes and AP amendments (now referred to as SES1 changes and AP1 amendments) were denoted in the SES and AP ES documents and maps as follows: SES-00X-00X or AP-00X-00X. In order to clearly distinguish between SES1 and SES2 changes and AP1 and AP2 amendments, references in the SES2 and AP2 ES documents and maps relating to SES1 changes and AP1 amendments are now denoted as follows: SES1-00X-00X or AP1-00X-00X.

Each Volume 5 map is annotated to describe the change to a receptor or significant effect, and to give the SES2 and the AP2 ES reference number. For more detailed information about the SES2 and the AP2 ES annotation, refer to the map series legend. Only maps which have been amended as a result of the SES2 and the AP2 ES are included within the map book. Changes to receptors or significant effects relating to SES1 or AP1 ES are also provided for reference. Where this is the case they are shown in a faded box.

Further details on the approach to mapping is set out in Section 6 of Volume 1 of the SES2 and AP2 ES.

## Map orientation

The majority of the maps presented in these map books are presented with the railway alignment running horizontally across the page. The direction of travel to London would be following the alignment to the right hand side of the page, and Crewe to the left.

The exception to this, are map series LV-03 and LV-04 which present the alignment running from bottom to top of the page. This is to allow more of the modelled outputs to be shown at the appropriate map scale. In this instance, the direction of travel to London would be to the bottom of the page, and Crewe to the top.

## Map books

In total there are 16 map books which make up the SES2 and the AP2 ES, spread across volumes 2 and 5. A list of the titles is provided below for reference.

Name
Volume 2: Map book – CA1: Fradley to Colton
Volume 2: Map book – CA2: Colwich to Yarlet
Volume 2: Map book – CA3: Stone and Swynnerton
Volume 2: Map book – CA4: Whitmore Heath to Madeley
Volume 2: Map book – CA5: South Cheshire
Volume 5: Map book – Agriculture, forestry and soils (AG-01, AG-02, AG-04)
Volume 5: Map book – Air quality (AQ-01)
Volume 5: Map book – Community (CM-01)
Volume 5: Map book – Committed developments (CT-13)
Volume 5: Map book – Cultural heritage (CH-01, CH-02, CH-03)
Volume 5: Map book – Ecology - designated sites (EC-01)
Volume 5: Map book – Landscape and visual (LV-00, LV-02, LV-07, LV-08)
Volume 5: Map book – Socio-economics (SE-01)
Volume 5: Map book – Sound, noise and vibration (SV-01, SV-02, SV-03, SV-04)
Volume 5: Map book – Traffic and transport (TR-03, TR-04, TR-08)
Volume 5: Map book – Water resources (WR-05, WR-06)



High Speed Rail (West Midlands - Crewe)

**Supplementary Environmental Statement 2 and  
Additional Provision 2 Environmental Statement**

Data dictionary and definitions

## Data dictionary and definitions

Legend features	Definition	Source	Copyright
Community area boundary	The Environmental Statement has been split into 5 sections called Community Areas.	High Speed Two (HS2) Ltd	© Crown copyright and database rights 2017 OS 100049190. You are permitted to use this data solely to enable you to respond to, or interact with, the organisation that provided you with the data. You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.
County boundary	County boundaries from Ordnance Survey boundary mapping.	Ordnance Survey	© Crown copyright and database rights 2017 OS 100049190. You are permitted to use this data solely to enable you to respond to, or interact with, the organisation that provided you with the data. You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.
Depot, station, headhouse or portal building	Extends to cover operational footprint of each depot and station and the footprint of each tunnel vent shaft and headhouse at surface level. Excludes any ancillary buildings associated with these structures.	High Speed Two (HS2) Ltd	
District/Borough boundary	Ordnance Survey local authority boundary mapping.	Ordnance Survey	© Crown copyright and database rights 2017 OS 100049190. You are permitted to use this data solely to enable you to respond to, or interact with, the organisation that provided you with the data. You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.
Land potentially required during construction	Boundary defining the maximum possible extent of construction works required to build HS2 as far as the current level of design allows. This only covers surface works and includes all tunnel portals, vent shafts and headhouses, but does not apply to wholly tunnelled sections or to air rights. It also encompasses associated highway, access, drainage and utility works.	High Speed Two (HS2) Ltd	
Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 1% in any one year under baseline conditions. (Also known as a 1 in 100 annual probability).	High Speed Two (HS2) Ltd	
Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 5% in any one year under baseline conditions. (Also known as a 1 in 20 annual probability).	High Speed Two (HS2) Ltd	
Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 1% in any one year under post-development conditions. (Also known as a 1 in 100 annual probability).	High Speed Two (HS2) Ltd	
Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding	The area covered by flooding of the river as a result of an event that is expected to occur with a probability of 5% in any one year under post-development conditions. (Also known as a 1 in 20 annual probability).	High Speed Two (HS2) Ltd	
Open water	A body of water such as a lake or pond forming a geographical feature. Based on Ordnance Survey Vector Map District.	Ordnance Survey	Copyright © 2017 Oxford University Press. All rights reserved.  © Crown copyright and database rights 2017 OS 100049190. You are permitted to use this data solely to enable you to respond to, or interact with, the organisation that provided you with the data. You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.

Legend features	Definition	Source	Copyright
Registered Park and Garden	<p>Parks and Gardens of special historic interest.</p> <p>Supplied by Historic England. Of the 1,590 Registered Parks and Gardens, over 91% were captured against the 1:10,000 Ordnance Survey Raster product. 135 records are potentially subject to movement under Positional Accuracy Improvement (PAI) improvements.</p>	Historic England	<p>© Historic England 2017. Contains Ordnance Survey data © Crown copyright and database right 2017</p> <p>The Historic England GIS Data contained in this material was obtained on 20 July 2017. The most publicly available up to date Historic England GIS Data can be obtained from <a href="http://HistoricEngland.org.uk">HistoricEngland.org.uk</a>.</p>
Route in tunnel Route on surface	Represents the proposed route of HS2, split into route on surface and tunnelled sections.	High Speed Two (HS2) Ltd	
Watercourse	Any channel through which water flows, can be natural or manmade. They are split into two categories (main rivers or ordinary watercourses) in England and Wales for regulation purposes.	Environment Agency	© Environment Agency copyright and/or database right 2018. All rights reserved.

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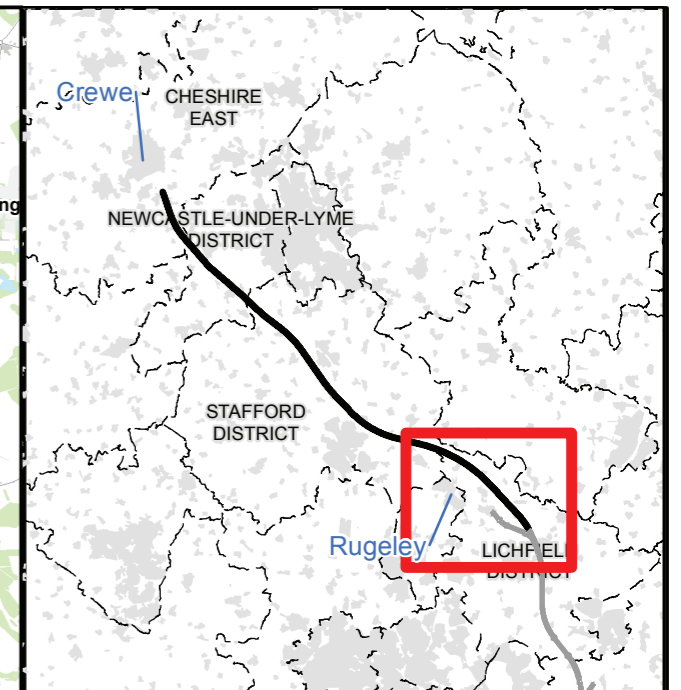
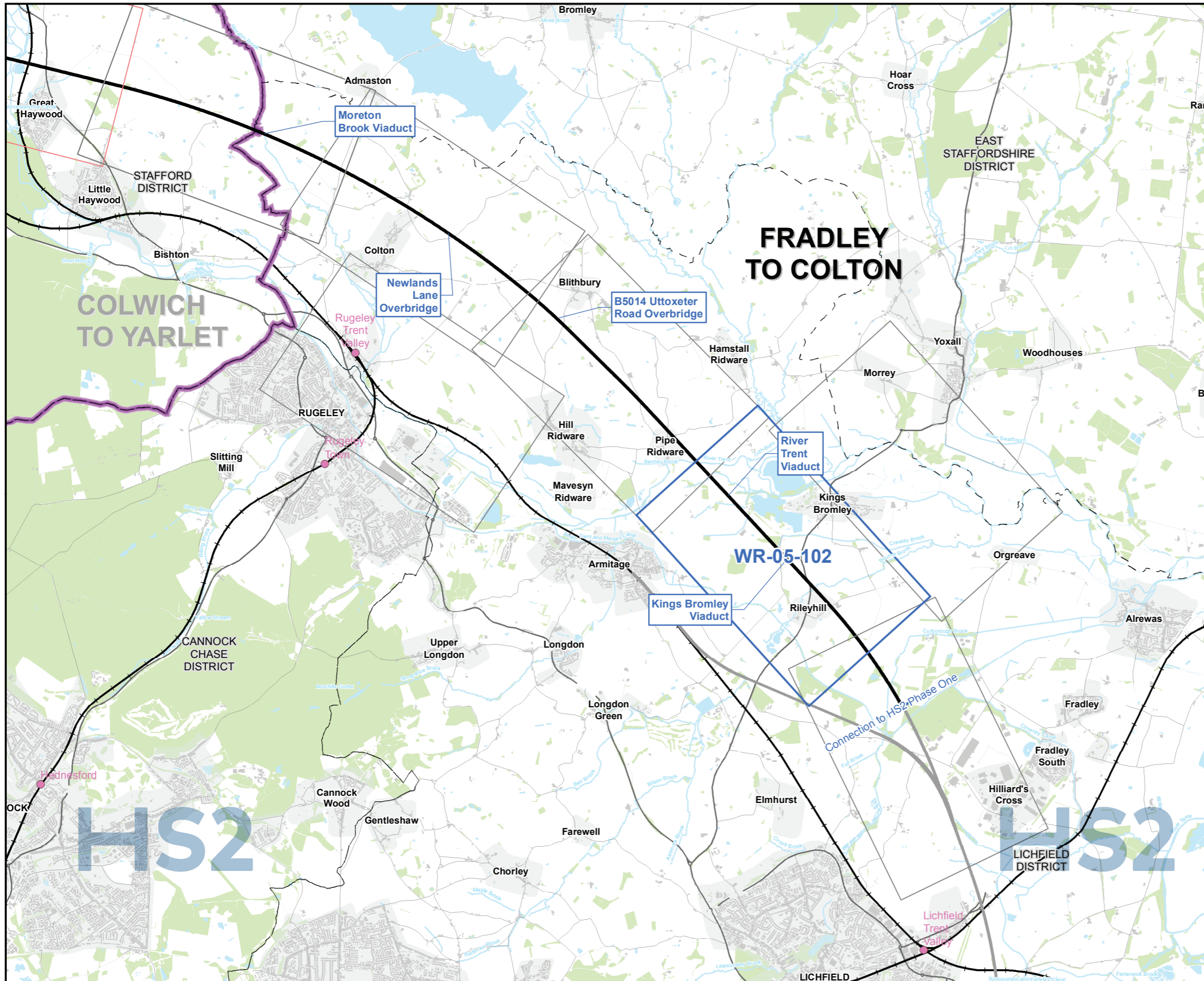
## High Speed Rail (West Midlands - Crewe)

### **Supplementary Environmental Statement 2 and Additional Provision 2 Environmental Statement**

#### CA1 Fradley to Colton

WR-05 - Modelled Baseline and Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

WR-06 - Modelled Baseline and Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding



**Map Series Information:**

The map shows the Modelled Baseline and the Post Development Flood Extent associated with the AP2 Revised Scheme (1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding).

Main Map Legend	
Route in tunnel	Map sheets included in this community area
Route on surface	Map sheets not included in this community area
Depot, station, headhouse or portal building	Map sheets included in this community area with no amendment
Community area boundary	County boundary
Existing railway station	District/Borough boundary

Map Number	WR-05-INDEX-CA1
Map Name	Index Map of: Modelled Baseline and the Post Development Flood Extent associated with the AP2 revised Scheme 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding SES2 and AP2 ES
Community Area 1:	Fradley to Colton

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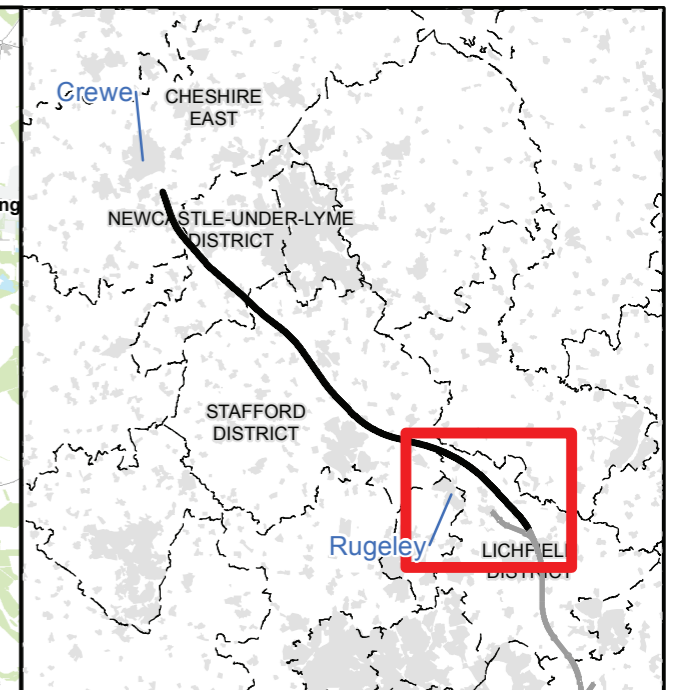
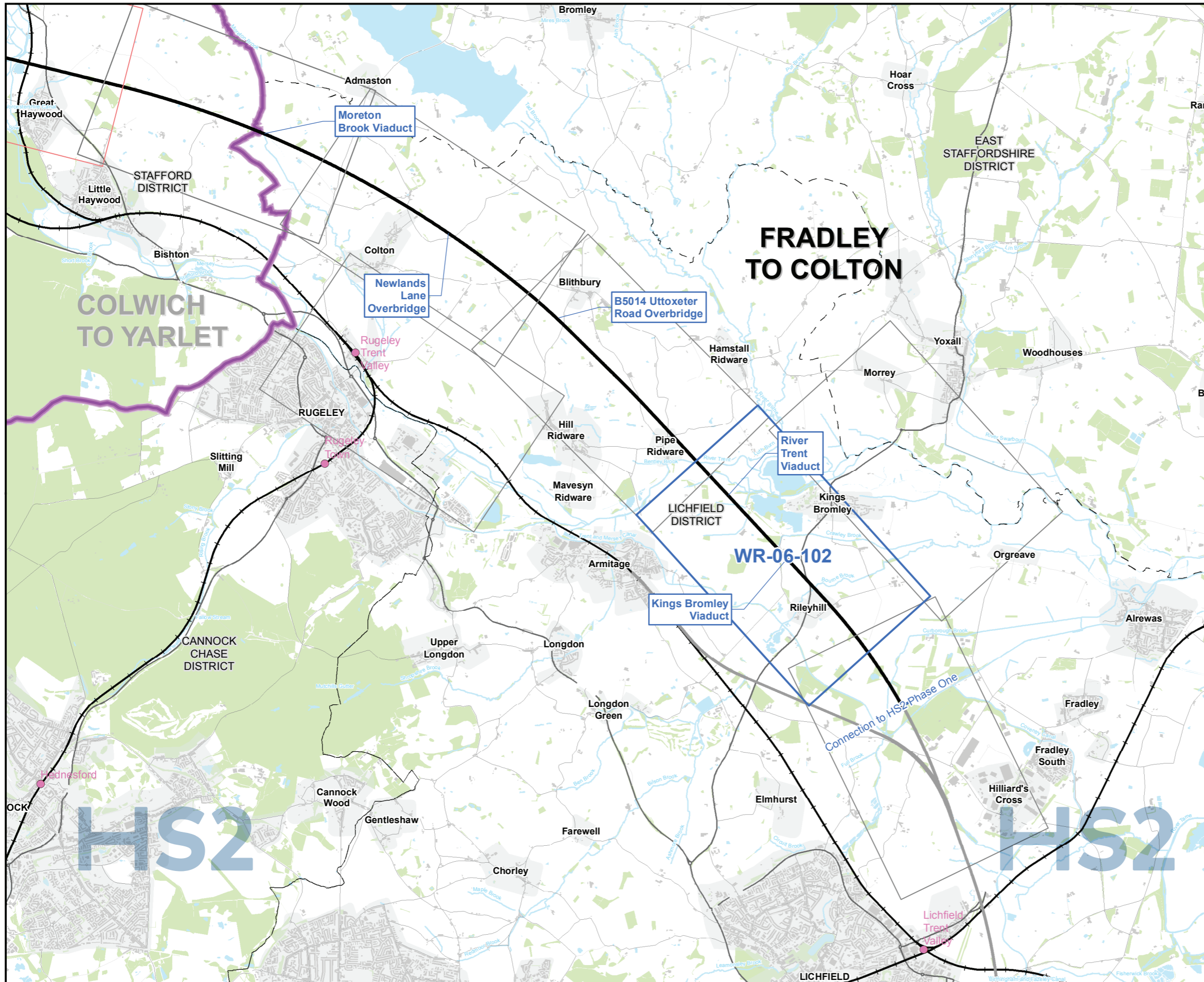
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**Map Series Information:**

The map shows the Modelled Baseline and the Post Development Flood Extent associated with the AP2 Revised Scheme (1 in 20 (5%) Annual Probability of River Flooding).

**Main Map Legend**

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Community area boundary
- Existing railway station
- County boundary
- District/Borough boundary
- Map sheets included in this community area
- Map sheets not included in this community area
- Map sheets included in this community area with no amendment

Map Number **WR-06-INDEX-CA1**

Map Name **Index Map of:  
Modelled Baseline and the Post Development Flood Extent associated with the AP2 Revised Scheme 1 in 20 (5%) Annual Probability of River Flooding  
SES2 and AP2 ES**

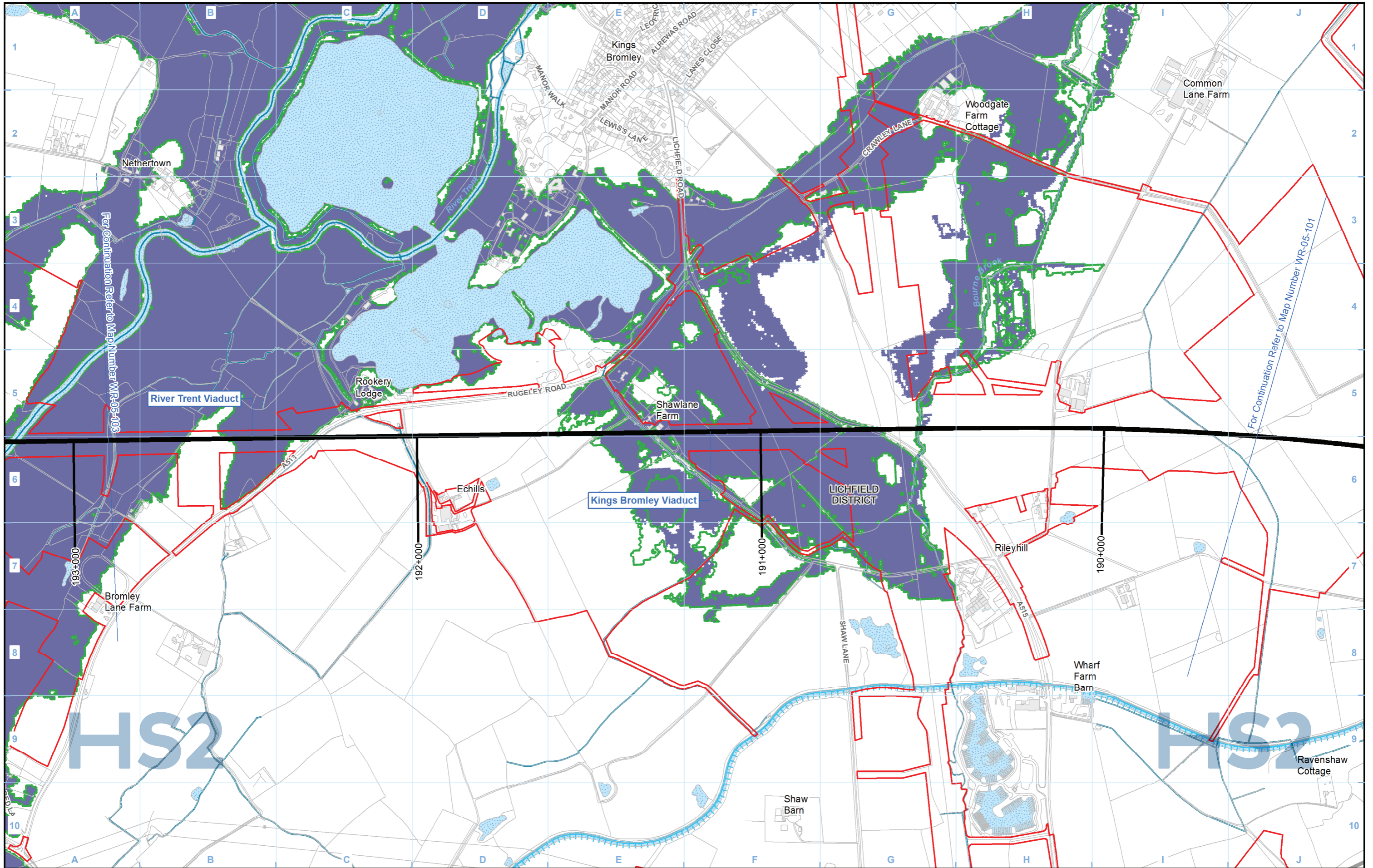
**Community Area 1:  
Fradley to Colton**

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- Legend**
- Route in tunnel
  - Route on surface
  - Depot, station, headhouse or portal building
  - Land potentially required during construction
  - Community area boundary
  - County boundary
  - District/Borough boundary
  - Watercourse
  - Culverted watercourse
  - Canal
  - Canal tunnel
  - Open water
  - Registered Park and Garden
  - Modelled Baseline Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding
  - Modelled Post Development Flood Extent 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

Map Number: WR-05-102

Map Name: Modelled Baseline and the Post Development Flood Extent associated with the AP2 revised Scheme 1 in 100 (1%+CC) including Climate Change Annual Probability of River Flooding

SES2 and AP2 ES

Community Area 1: Fradley to Colton

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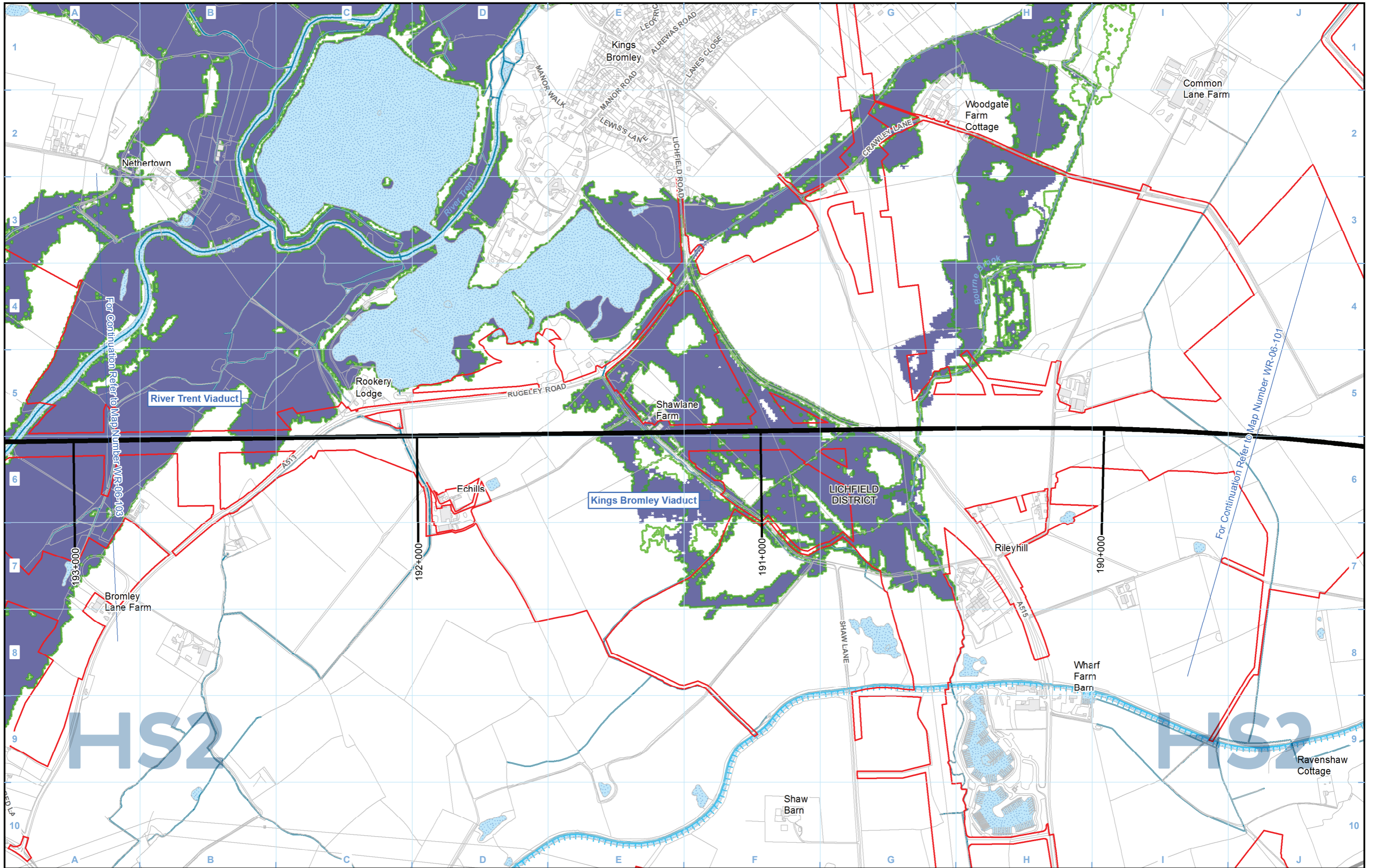
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**Legend**

- Route in tunnel
- Route on surface
- Depot, station, headhouse or portal building
- Land potentially required during construction
- Community area boundary
- County boundary
- District/Borough boundary
- Watercourse
- Culverted watercourse
- Canal
- Canal tunnel
- Open water
- Registered Park and Garden
- Modelled Baseline Flood Extent 1 in 20 (5%) Annual Probability of River Flooding
- Modelled Post Development Flood Extent 1 in 20 (5%) Annual Probability of River Flooding

Map Number: WR-06-102

Map Name: Modelled Baseline and the Post Development Flood Extent associated with the AP2 Revised Scheme 1 in 20 (5%) Annual Probability of River Flooding SES2 and AP2 ES

Community Area 1: Fradley to Colton

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