

High Speed Rail (West Midlands - Crewe)

Supplementary Environmental Statement 2 and
Additional Provision 2 Environmental Statement

Volume 5: Technical appendices

Scope and Methodology Report Addendum 2
(CT-001-000)

High Speed Rail (West Midlands - Crewe)

Supplementary Environmental Statement 2 and
Additional Provision 2 Environmental Statement

Volume 5: Technical appendices

Scope and Methodology Report Addendum 2
(CT-001-000)



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

Website: www.hs2.org.uk

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

ARUP



High Speed Two (HS2) Limited has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the HS2 website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact High Speed Two (HS2) Limited.

© High Speed Two (HS2) Limited, 2019, except where otherwise stated.

Copyright in the typographical arrangement rests with High Speed Two (HS2) Limited.

This information is licensed under the Open Government Licence v2.0. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/version/2 **OGL** or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: psi@nationalarchives.gsi.gov.uk. Where we have identified any third-party copyright information you will need to obtain permission from the copyright holders concerned.



Printed in Great Britain on paper containing at least 75% recycled fibre.

Contents

1	Introduction	1
1.1	Purpose of this Addendum	1
2	Cultural Heritage	2
2.1	Table of amendments to the SMR for this topic	2
3	Ecology and biodiversity	3
3.1	Table of amendments to the SMR for this topic	3
4	Landscape and visual assessment	4
4.1	Table of amendments to the SMR for this topic	4
5	Water resources and flood risk assessment	6
5.1	Table of amendments to the SMR for this topic	6
6	References	10

List of Tables

Table 1:	Cultural heritage table of amendments to the SMR	2
Table 2:	Ecology and biodiversity table of amendments to the SMR	3
Table 3:	Landscape and visual assessment table of amendments to the SMR	4
Table 4:	Water resources and flood risk assessment table of amendments to the SMR	6
Table 5:	Table 49 – Baseline data and sources	7
Table 6:	Table 52 – Examples of the value of possible waterbodies or receptors	9

1 Introduction

1.1 Purpose of this Addendum

- 1.1.1 The High Speed Two (HS2) Phase 2a Scope and Methodology Report (SMR)¹ was published in September 2016 and republished in July 2017 with the HS2 Phase 2a (West Midlands - Crewe) Environmental Statement (ES)² (the main ES). An Addendum to the SMR (Addendum 1)³ was also published alongside the main ES in July 2017. The SMR and Addendum 1 set out the proposed scope and methodology for the Environmental Impact Assessment (EIA) for Phase 2a of HS2. No SMR addendum was published as part of the Supplementary Environmental Statement 1 (SES1) and Additional Provision 1 Environmental Statement (AP1 ES) which was submitted in March 2018. This document is part of the Supplementary Environmental Statement 2 (SES2) and Additional Provision 2 Environmental Statement (AP2 ES).
- 1.1.2 This SMR Addendum (Addendum 2) outlines where the SMR has been amended as a result of:
- changes to legislation or industry best practice guidance; and
 - refinement of the methodology in the course of preparation of the SES2 and AP2 ES.
- 1.1.3 This addendum sets out changes to Part B of the SMR. Where paragraphs/tables etc. from the SMR published in September 2016 have been amended, the original paragraph/table subject, which has been subject to change is identified as follows at the beginning of the paragraph - ***[bold italicised]***. In addition, where text has been amended within a paragraph or table, this change is indicated by italicised text.
- 1.1.4 There have been no updates to Part A and Part C of the SMR, including the Introduction; Changes between Phase One and Phase 2a approach to EIA; Stakeholder engagement; EIA methodology; Reporting of alternatives and Structure of the formal EIA report.
- 1.1.5 There have been no updates to the Annexes, which contain Technical Notes, which were included in the SMR Addendum 1.
- 1.1.6 This addendum is arranged by topic area in the same order as they were presented within the SMR and SMR Addendum 1. Each section commences with a table of amendments to the SMR for the particular topic.

¹ HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Scope and Methodology Report, Volume 5: Appendix CT-001-001*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627187/E23_EIA_SMR_CT-001-001_WEB.pdf

² HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe) Environmental Statement*, <https://www.gov.uk/government/collections/hs2-phase-2a-environmental-statement>

³ HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Scope and Methodology Report Addendum, Volume 5: Appendix CT-001-002*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627188/E24A_CT-001-002_Part_1_WEB.pdf and https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627189/E24-B_CT-001-002_Part_B_WEB.pdf

2 Cultural Heritage

2.1 Table of amendments to the SMR for this topic

Table 1: Cultural heritage table of amendments to the SMR

SMR paragraph reference/table number	Note
10.6.4	Paragraph amended to reflect updated guidance

2.1.1 **[paragraph 10.6.4, text amended]**. In December 2015, Historic England published guidance on 'Tall Buildings' in Advice Note 4⁴ to assist those involved in planning for and designing tall buildings in making sustainable decisions. In December 2017, Historic England published a revised edition of its 2015 guidance on the Setting of Heritage Assets⁵. Good Practice Advice in Planning Note 3 (2nd edition) sets out an approach to the analysis and assessment of setting and its relationship to the heritage significance of an asset. (This also replaces the document 'Seeing the History in the View: A Method for assessing Heritage Significance within Views', English Heritage, 2011). In February 2018, Historic England published 'Advice Note 10: Listed Buildings and Curtilage'⁶.

⁴ Historic England (2015), *Historic England Advice Note 4: Tall Buildings*

⁵ Historic England (2017), *Good Practice Advice in Planning Note 3, 2nd Edition: The Setting of Heritage Assets*

⁶ Historic England (2018), *Historic England Advice Note 10: Listed Buildings and Curtilage*

3 Ecology and biodiversity

3.1 Table of amendments to the SMR for this topic

Table 2: Ecology and biodiversity table of amendments to the SMR

SMR paragraph reference/table number	Note
11.6.2	Paragraph amended to reflect updated legislation

3.1.1 ***[paragraph 11.6.2, second and seventh bullets amended to reflect updated legislation, updates in italics]***. The assessment will take into account relevant national and international legislation. Legislation of relevance to consideration of the ecological resources includes:

- The Wildlife and Countryside Act 1981 (as amended)⁷;
- *The Conservation of Habitats and Species Regulations 2017*⁸;
- Protection of Badgers Act 1992⁹;
- The Hedgerows Regulations 1997¹⁰;
- Countryside and Rights of Way Act 2000¹¹;
- Natural Environment and Rural Communities Act 2006¹²;
- *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*¹³;
- Salmon and Freshwater Fisheries Act, 1975 (as amended)¹⁴; and
- Directive 2014/52/EU amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

⁷ HM Government (1981), *The Wildlife and Countryside Act 1981 (as amended)*, The Stationery Office

⁸ HM Government (2017), *The Conservation of Habitats and Species Regulations 2017*, The Stationery Office

⁹ HM Government (1992), *The Protection of Badgers Act 1992*, The Stationery Office

¹⁰ HM Government (1997), *The Hedgerows Regulations 1997*, The Stationery Office

¹¹ HM Government (2000), *Countryside and Rights of Way Act 2000*, The Stationery Office

¹² HM Government (2006), *Natural Environment and Rural Communities Act 2006*, The Stationery Office

¹³ HM Government, (2017), *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*, The Stationery Office

¹⁴ HM Government, (1975), *Salmon and Freshwater Fisheries Act, 1975, Chapter 51*. The Stationery Office

4 Landscape and visual assessment

4.1 Table of amendments to the SMR for this topic

Table 3: Landscape and visual assessment table of amendments to the SMR

SMR paragraph reference/table number	Note
New section 15.7, to follow para 15.6.30. Section 15.7 renumbered as section 15.8	Additional section to set out the methodology relevant to the assessment of the grid supply point connection to National Grid Parkgate substation

- 4.1.1 **[new subheading 15.7]**. Landscape and visual assessment methodology for the grid supply point connection to National Grid Parkgate substation.
- 4.1.2 **[paragraph 15.7.1 added]**. The landscape and visual assessment for the proposed overhead 132kV power line connection from the new National Grid Parkgate substation, 1.5 km west of Newborough to the new National Grid Newlands Lane substation, immediately to the north of the Newlands Lane Auto Transformer Feeder Station (ATFS) on the HS2 route is based on a design provided by National Grid and will generally follow the assessment methodology set out in Section 15.6. The 132kV power line, consisting of three circuits, will be carried on two parallel lines of steel pylons, one carrying two circuits and the other carrying a single circuit, for a length of approximately 7.7km. The distance between the two overhead lines will vary between 29m and 38m apart and the height of the pylons on the new lines will vary from 23m to 38m above ground level.
- 4.1.3 **[paragraph 15.7.2 added]**. As set out in paragraph 15.5.3 to 15.5.5, the landscape and visual assessment study area will be determined through the production of zones of theoretical visibility (ZTV) models. Due to the height of the pylons the coverage required for the ZTV model for the grid supply point connection to the National Grid Parkgate substation will be 2.5km either side of the pylon line.
- 4.1.4 **[paragraph 15.7.3 added]**. A ZTV model will be created for operation year 1 – defined as the area over which the components associated with the grid supply point connection to the National Grid Parkgate substation would be visible.
- 4.1.5 **[paragraph 15.7.4 added]**. A construction ZTV will not be created as pylon heights in construction would be modelled on the basis of conservative assumptions that would be very similar to the height of pylons modelled in the operation year 1 ZTV.
- 4.1.6 **[paragraph 15.7.5 added]**. An operation year 15 ZTV will not be created as new planting established as part of the AP2 revised scheme¹⁵ is unlikely to screen pylons in summer after 15 years of growth.
- 4.1.7 **[paragraph 15.7.6 added]**. The ZTV models will follow the Landscape and Visual Technical Note 'Zone of theoretical visibility production methodology' set out in

¹⁵ In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes, the term AP2 revised scheme is used to refer to the original scheme (also known as the Proposed Scheme in the SMR) as amended by the SES2 changes and AP2 amendments (amendments to the scheme reported in the AP2 ES that include requirements for additional powers in the High Speed Rail (West Midlands – Crewe) Bill).

Annex I of the SMR Addendum 1 and will include the modelling of the height of the indicative pylon locations. A second draft ZTV will be prepared based on a solid pylon wall to ascertain differences in visibility of altered pylon spacing / locations, however there are likely only to be very minor differences shown by the second ZTV.

- 4.1.8 **[paragraph 15.7.7 added]**. Additional scenarios (or sensitivity tests) for each identified visual receptor will be assessed, where the impacts would be reduced or worsened if the height and location of pylons within the corridor were changed. The three scenarios for the sensitivity tests are as follows:
- an increase in pylon height of 3m above that in the National Grid design;
 - a longitudinal movement of pylons along the alignment of up to 50m in either direction; and
 - a lateral movement of pylons within the construction corridor.
- 4.1.9 **[paragraph 15.7.8 added]**. Each of these scenarios will be considered individually and in combination. Where the effects of these scenarios increase the assessed level of effects of the AP2 revised scheme, this will be reported in the visual assessment.
- 4.1.10 **[paragraph 15.7.9 added]**. Summer year 15 photomontages will be prepared in line with the methodology outlined in paragraph 15.6.26 and 15.6.27 and the 'Approach to verifiable photomontages' Landscape and Visual Technical Note.
- 4.1.11 **[existing section 15.7 to be renumbered as section 15.8]**.

5 Water resources and flood risk assessment

5.1 Table of amendments to the SMR for this topic

Table 4: Water resources and flood risk assessment table of amendments to the SMR

SMR paragraph reference/table number	Note
21.2.8	Paragraph amended to update WFD legislation reference and to add additional bullet point (ninth entry in list) to reflect comments from the Environment Agency and Natural England.
Table 49	Table amended to reflect comments from consultees and new data set references.
21.6.1	Paragraph amended to improve consistency in references to EU Directives (fourth bullet point) to reflect updated guidance from the Environment Agency.
21.6.2	Supplementary paragraph inserted after 22.6.2 to reflect updated guidance from the Planning Inspectorate.
Table 50	Table amended to provide additional resolution and greater clarity regarding receptor value definitions.

5.1.1 ***[paragraph 21.2.8, updated footnote 16 reference and additional bullet inserted as ninth entry in bulleted list – updates in italics]***. Baseline conditions will be set, where appropriate, as follows:

- floodplain extent (1 in 20, 100, 100 + climate change and 1,000 year return periods);
- floodplain depth / velocity / hazard (1 in 20, 100, 100 + climate change and 1,000 year return periods);
- surface water flood depth (1 in 30, 1 in 100 and 1 in 1,000 year);
- surface water quantity and quality and *Water Framework Directive*¹⁶ (WFD) Status (chemical, physico-chemical and hydromorphology quality elements¹⁷);
- surface water designations, licences / consents;
- surface water / groundwater interactions;
- hydrogeology, including geology, aquifer hydraulic parameters, groundwater level and flow directions;
- groundwater quality and quantity (including WFD quantitative and chemical quality elements);

¹⁶ HM Government (2017), *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*, The Stationery Office

¹⁷ Biological quality elements are considered within the ecology and biodiversity assessments of the EIA, but consideration of all quality elements will be included in a WFD compliance assessment

- *hydrological and geomorphological interactions;*
- groundwater yield, licences / consents;
- groundwater dependent terrestrial ecosystems; and
- hydro-meteorological conditions and variability arising from climate change.

5.1.2 **[Table 49 amended as below – amended text in italics].**

Table 5: Table 49 – Baseline data and sources

Baseline data	Sources
Floodplain extent, depth, velocity, hazard Surface water flood depths <i>River flow data</i> <i>Groundwater flooding susceptibility datasets</i> Groundwater level and flow directions Groundwater yield Aquifer extent (vertical and horizontal) and hydraulic parameters	Targeted hydraulic modelling, making best use of existing information held by the Environment Agency, Lead Local Flood Authorities (LLFAs), Canal & River Trust and water companies. Information contained within local planning authorities' Strategic Flood Risk Assessments and Surface Water Management Plans. Data on hydro-meteorological conditions and variability arising from climate change. Topographical surveys of the channel and WFD surveys. Site walkovers. <i>River flow, groundwater and hydrogeological data from the Environment Agency, British Geological Survey and water companies</i>
Surface water quality Groundwater quality	Targeted water sampling and testing at accredited laboratory. Information held by the Environment Agency including within River Basin Management Plans, Local Authorities, Natural England and water companies
Surface water designations Groundwater Dependent Terrestrial Ecosystems (GWDTEs)	Information held by the Environment Agency and Natural England
Surface water licences/consents Groundwater licences/permits Unlicensed abstractions	Information held by the Environment Agency Information held by the Environment Agency Information held by local authorities
Hydro-meteorological data, as needed	Met Office, Environment Agency

5.1.3 **[paragraph 21.6.1, updated footnote 28 reference and fourth bullet amended – update in italics].** The following legislation, policy and guidance will be taken into account in the assessment of water resources and flood risk. Assessment of the Proposed Scheme and its impacts in relation to the provisions of this legislation and policy, will form an essential step in the assessment of the significance of effects associated with the Proposed Scheme.

- EU WFD¹⁸; EU Groundwater Directive¹⁹; EU Floods Directive²⁰; EU Habitats Directive *and associated UK legislation;*

¹⁸ European Commission (EC) (2000), *Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy*, European Commission

¹⁹ Official Journal of the European Union (2006), *Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration*, European Commission

²⁰ Official Journal of the European Union (2007), *Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks*, European Commission

- Flood and Water Management Act²¹; Water Act²²; the Environmental Protection Act 1990; the Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009²³; Land Drainage Act²⁴;
- Water and flood risk local planning policy for local authorities along the route of the Proposed Scheme (saved local plan policies and adopted Local Development Framework policy);
- *government groundwater protection guides covering: requirements, permissions, risk assessments and controls*)²⁵; and
- non statutory technical standards for sustainable drainage systems, Defra, 2015²⁶.

5.1.4 **[supplementary text provided as new paragraph after 21.6.2.]** There is no established methodology for assessing compliance with WFD legislation. The WFD Assessment will be based largely on internal Environment Agency guidance²⁷ and the prior experience on Phase One. The approach applied is also in general accordance with advice provided by the Planning Inspectorate²⁸.

²¹ HM Government (2010), *Flood and Water Management Act 2010*, The Stationery Office

²² HM Government (2003), *The Water Act 2003 (Commencement No. 11) Order 2012*, The Stationery Office

²³ HM Government (2009), *Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009*, The Stationery Office

²⁴ HM Government (1994), *Land Drainage Act 1994*, The Stationery Office

²⁵ Environment Agency and Defra (2017), *Groundwater protection guidance*, <https://www.gov.uk/government/collections/groundwater-protection>.

²⁶ Department for Environment, Food and Rural Affairs (2015), *Sustainable Drainage Systems Non-statutory technical standards for sustainable drainage systems*, <https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards>

²⁷ Environmental Agency, (2010), *Assessing new modifications for compliance with WFD: detailed supplementary guidance*.

²⁸ The Planning Inspectorate (2017), *Advice note eighteen: The Water Framework Directive*, https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/06/advice_note_18.pdf

5.1.5 *[Table 52 amended as below – amended text in italics].*

Table 6: Table 52 – Examples of the value of possible waterbodies or receptors

Value	Criteria	Examples
Very high	Nationally significant attribute of high value	Watercourse with a Q ₉₅ ²⁹ flow $\geq 1.0 \text{ m}^3/\text{s}$, <i>public drinking water supply</i> within a Principal Aquifer, essential infrastructure or highly vulnerable development
High	Locally significant attribute of high value	Watercourse with a Q ₉₅ flow $> 0.01 \text{ m}^3/\text{s}$, <i>industrial/agricultural water abstraction</i> $> 100 \text{ m}^3/\text{d}$, <i>private drinking water supply</i> , Principal Aquifer, more vulnerable development*
Moderate	Of moderate quality and rarity	Watercourse with a Q ₉₅ flow $> 0.002 \text{ m}^3/\text{s}$ to $\leq 0.01 \text{ m}^3/\text{s}$, Secondary Aquifer, less vulnerable development*
Low	Lower quality	<i>Watercourse with a Q₉₅ flow $\leq 0.02 \text{ m}^3/\text{s}$, surface water sewer, minor ditch, non-aquifer, water compatible development*</i>

* as defined in Table 2 of the Flood Risk section of the Technical Guidance to the NPPF.

²⁹ Q₉₅ is the flow equalled or exceeded in a watercourse for 95% of a recording period - typically over several years

6 References

Department for Environment, Food and Rural Affairs (2015), *Sustainable Drainage Systems Non-statutory technical standards for sustainable drainage systems*. Available online at: <https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards>.

Environment Agency and Defra (2017), *Groundwater protection guidance*. Available online at: <https://www.gov.uk/government/collections/groundwater-protection>.

Environment Agency (2010), *Assessing new modifications for compliance with WFD: detailed supplementary guidance*.

European Commission (EC) (2000), *Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy*, European Commission.

Historic England (2015), *Historic England Advice Note 4: Tall Buildings*.

Historic England (2017), *Good Practice Advice in Planning Note 3, 2nd Edition: The Setting of Heritage Assets*.

Historic England (2018), *Historic England Advice Note 10: Listed Buildings and Curtilage*.

HM Government (1975), *Salmon and Freshwater Fisheries Act 1975, Chapter 51*. The Stationery Office.

HM Government (1981), *The Wildlife and Countryside Act 1981 (as amended)*, The Stationery Office.

HM Government (1992), *The Protection of Badgers Act 1992*, The Stationery Office.

HM Government (1994), *Land Drainage Act 1994*, The Stationery Office.

HM Government (1997), *The Hedgerows Regulations 1997*, The Stationery Office.

HM Government (2000), *Countryside and Rights of Way Act 2000*, The Stationery Office.

HM Government (2003), *The Water Act 2003 (Commencement No. 11) Order 2012*, The Stationery Office.

HM Government (2006), *Natural Environment and Rural Communities Act 2006*, The Stationery Office.

HM Government (2009), *The Flood Risk Regulations 2009*, The Stationery Office.

HM Government (2009), *Water Resources Act 1991 (Amendment) (England and Wales) Regulations 2009*, The Stationery Office.

HM Government (2010), *Flood and Water Management Act 2010*, The Stationery Office.

HM Government (2017), *The Conservation of Habitats and Species Regulations 2017*, The Stationery Office.

HM Government (2017), *The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017*, The Stationery Office.

HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe) Environmental Statement*. Available online at: <https://www.gov.uk/government/collections/hs2-phase-2a-environmental-statement>.

HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Scope and Methodology Report, Volume 5: Appendix CT-001-001*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627187/E23_EIA_SMR_CT-001-001_WEB.pdf.

HS2 Ltd (2017), *High Speed Two (HS2) Phase 2a (West Midlands - Crewe), Scope and Methodology Report Addendum, Volume 5: Appendix CT-001-002*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627188/E24A_CT-001-002_Part_1_WEB.pdf and https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/627189/E24-B_CT-001-002_Part_B_WEB.pdf.

Official Journal of the European Union (2006), *Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration*, European Commission.

Official Journal of the European Union (2007), *Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks*, European Commission.

The Planning Inspectorate (2017), *Advice note eighteen: The Water Framework Directive*. Available online at: https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/2017/06/advice_note_18.pdf.

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

08081 434 434
HS2Enquiries@hs2.org.uk
www.hs2.org.uk