



# Phase 2b Western Leg Information Paper

## E15: Water resources, flood risk and authorisation of related works

This paper outlines the approach to assess and mitigate the impact on water resources and flood risk of the Proposed Scheme, and the consenting of these works.

It will be of particular interest to those potentially affected by the Government's proposals for high speed rail.

This paper was prepared in relation to the promotion of the High Speed Rail (Crewe - Manchester) Bill. Content will be maintained and updated as considered appropriate during the passage of the Bill.

If you have any queries about this paper or about how it might apply to you, please contact the HS2 Helpdesk in the first instance.

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## 1 Introduction

- 1.1 High Speed Two (HS2) is the Government's scheme for a new, high speed north-south railway, which is being taken forward in a number of phases. Phase One will connect London with Birmingham and the West Midlands. Phase 2a will extend the route from the West Midlands to Crewe. The Phase 2b Western Leg will connect Crewe to Manchester. As set out in the Integrated Rail Plan, published in November 2021, HS2 East is proposed to deliver a new high speed line from the West Midlands to East Midlands Parkway.
- 1.2 HS2 Ltd is the non-departmental public body responsible for developing and promoting these proposals. The company works under the terms of a Development Agreement entered into with the Secretary of State for Transport.
- 1.3 The construction and operation of Phase One of HS2 is authorised by the High Speed Rail (London – West Midlands) Act 2017 and Phase 2a by the High Speed Rail (West Midlands – Crewe) Act 2021.
- 1.4 In January 2022, the Government introduced a hybrid Bill to Parliament (hereafter referred to as 'the Bill'), to seek powers for the construction and operation of the Phase 2b Western Leg (the Proposed Scheme), which is called the High Speed Rail (Crewe – Manchester) Bill. The Proposed Scheme comprises the Phase 2b Western Leg from Crewe to Manchester and several off-route works. It also facilitates the delivery of Northern Powerhouse Rail by providing the Crewe Northern Connection and junctions and other infrastructure to be used in future schemes.
- 1.5 The work to produce the Bill includes an Equalities Impact Assessment and an Environmental Impact Assessment (EIA), the results of which are reported in an Environmental Statement (ES) submitted alongside the Bill. The Secretary of State has also published draft Environmental Minimum Requirements (EMRs), which set out the environmental and sustainability commitments that will be observed in the construction of the Proposed

Scheme. For more information on the EMRs please see Information Paper E1: Control of environmental impacts.

1.6 The Secretary of State for Transport is the Promoter of the Bill through Parliament. The Promoter will also appoint a body responsible for delivering the Proposed Scheme under the powers granted by the Bill. This body is known as the 'nominated undertaker'. There may be more than one nominated undertaker. However, any and all nominated undertakers will be bound by the obligations contained in the Bill, the policies established in the EMRs and any commitments provided in the information papers.

1.7 These information papers have been produced to explain the commitments made in the Bill and the EMRs and how they will be applied to the design and construction of the Proposed Scheme. They also provide information about the Proposed Scheme itself, the powers contained in the Bill and how particular decisions about the Proposed Scheme have been reached.

## **2 Overview**

2.1 This information paper outlines the approach taken to assess and mitigate the impact on water resources and flood risk of the Proposed Scheme. This includes impacts and mitigations on surface and groundwater resources and flood risk; the general approach to monitoring, the Water Framework Directive, engagement with statutory bodies and legislative provisions.

2.2 This paper also sets out the approach for approval (or consenting) of such works before they can take place.

## **3 Surface water**

3.1 HS2 Ltd has designed the project to avoid or reduce adverse impacts on rivers, streams, ponds, canals and groundwater. Structures along the route have been designed to ensure the quality of watercourses is not adversely affected. The route crosses rivers and streams either by

viaduct, clear span bridges or, where necessary, culverts. River diversions have been designed to be sympathetic to their surroundings and take account of ecological requirements. Structures that include significant below ground works, such as cuttings for example, have been designed to take into account the potential impact on springs, ponds, watercourses and ecological sites.

- 3.2 The design of the Proposed Scheme includes sustainable drainage systems (“SuDS”) to control the rate, volume and quality of run-off from the rail corridor and other infrastructure, including an additional allowance for climate change. These systems will help to avoid an increase in flood risk and will help to maintain natural flow regimes by encouraging storm-water to soak into the ground or, where that is not reasonably practicable, will discharge it into watercourses or surface water/combined sewers at a controlled rate. SuDS features will include, where reasonably practicable, balancing ponds, swales, infiltration trenches and other forms. Where possible, these drainage systems will also help to avoid having an adverse effect on the quality of the water which the run-off flows into by removing soluble and suspended pollutants.

## **4 Groundwater**

- 4.1 Impacts of the Proposed Scheme on groundwater flows, levels and quality, have been assessed. Where the assessment predicts that a likely significant adverse effect may occur, a strategy to manage the risk will be agreed with the relevant regulatory agency. Potential significant adverse effects on groundwater due to construction (such as excavations to form cuttings or tunnels) will be mitigated locally wherever reasonably practicable. Tunnels will be designed so that the ingress of groundwater is not significant. Assessments have been undertaken to determine whether passage of groundwater past excavations and tunnels will be significantly reduced as part of the Proposed Scheme. The drainage within the Proposed Scheme will be designed, where reasonably practicable, to mitigate impacts on groundwater flow and encourage the recharge of

groundwater bodies such that no significant impacts arise from any changes in groundwater flow.

- 4.2 Potential adverse effects on groundwater quality will be mitigated through the implementation of measures set out in the draft Code of Construction Practice (CoCP) and any site specific measures presented in the ES see Volume 5, Water resources assessment (WR-003-001 to WR-003-008 and WR-003-OR003). Impacts to groundwater from existing land contamination are presented in the ES Volume 2, Community Area reports.

## **5 Flood risk**

- 5.1 Where the railway and associated works have the potential to increase flood risk, the design reflects the approach required by the National Planning Policy Framework (NPPF) and the supporting Technical Guidance (such as the incorporation of flood risk mitigation measures). The design aim of the Proposed Scheme is for no increase in the risk of flooding from all sources during the lifetime of the Proposed Scheme, including an additional allowance for climate change. The design will mitigate loss of floodplain by creating replacement flood storage areas with the capacity for a 1 in 100 year event (1% probability, including an allowance for climate change).
- 5.2 Where it can be substantiated that, as a result of the works undertaken, the adjacent or nearby land is subject to an increase in flood risk which results in a reduction in land value, compensation may be claimed in accordance with the Compulsory Purchase Act 1965 and Land Compensation Act 1961.
- 5.3 A high-level climate change risk and resilience assessment has been undertaken to identify the potential risks of climate change on the Proposed Scheme, and to assess the Proposed Scheme's resilience and capacity to cope with these potential risks. In addition, a comprehensive flood risk assessment has been carried out for each community area in consultation with the Environment Agency; see Volume 5, Water

resources assessment (WR-003-001 to WR-003-008). A route-wide flood risk assessment has also been carried out.

## **6 Monitoring**

6.1 Water resources and flood risk monitoring will be undertaken in consultation with the relevant regulatory agencies and other key stakeholders such as water companies prior to and during construction, and if required post construction, to establish baseline conditions for surface water and groundwater and to confirm the effectiveness of temporary and permanent mitigation measures together with any remedial works deemed necessary.

## **7 Water Framework Directive**

7.1 HS2 Ltd has also reported on the compliance of the Proposed Scheme with the objectives of the Water Framework Directive. Please see ES Volume 5, Appendix WR-001-000 and the Water Framework Directive compliance assessment review for further details. The scope and the assessment methodology were agreed with the Environment Agency and Scottish Environment Protection Agency.

## **8 Engagement**

8.1 In England, engagement has been, and will continue to be, undertaken with the Environment Agency, Natural England, Lead Local Flood Authorities, the Canal & River Trust and United Utilities Group PLC among others, to ensure that likely residual significant adverse effects are managed and mitigated appropriately.

8.2 In Scotland, engagement has been, and will continue to be, undertaken with the Scottish Environment Protection Agency, Nature Scotland and Dumfries and Galloway Council, to ensure that likely residual significant adverse effects are managed and mitigated appropriately.

## **9 Authorisation of works affecting the water environment**

- 9.1 The Proposed Scheme will interact with a number of water bodies along its route. As a consequence, numerous construction activities and works will be required either within, or near to, water bodies. These temporary and permanent works have the potential to affect the water environment as described in the ES.
- 9.2 The remainder of this information paper:
- sets out the statutory consenting requirements for the Proposed Scheme for works affecting the water environment (both before and after Royal Assent); and
  - clarifies the responsibilities of the relevant authorities in issuing consents (or approvals) and explains how this would be different once the Bill becomes law.

## **10 Consenting regimes**

- 10.1 Under the current statutory regime, giving consent for works that affect the water environment is the responsibility of several risk management authorities (as defined by the Flood and Water Management Act 2010 and Flood Risk Management (Scotland) Act 2009).
- 10.2 The Environment Agency in England is responsible for the following works requiring a permit under The Environmental Permitting (England and Wales) Regulations (EPR) 2016:
- any works affecting main rivers (main rivers are watercourses marked on the main rivers map, as set out in the Water Resources Act 1991, as amended by the Water Act 2014.) or their associated floodplains; and
  - any works or activities affecting water quality in surface water and groundwater, such as discharges.
- 10.3 Additionally, water abstraction activities affecting a waterbody require consent from the Environment Agency, as set out in the Water Resource Act, 1991.

- 10.4 Lead Local Flood Authorities (LLFAs) or Internal Drainage Boards (IDBs) where designated, in England provide consent for works affecting ordinary watercourses as set out in the Flood Water and Management Act 2010 (FWMA) and Land Drainage Act 1991. Section 23 of the Land Drainage Act 1991 however does not apply to any works carried out under Acts of Parliament.
- 10.5 The Scottish Environment Protection Agency is responsible for authorising works which may affect the water environment in Scotland under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 – more commonly known as the Controlled Activity Regulations (CAR) – and their further amendments of 2013 and 2017.
- 10.6 Some activities associated with the construction of the Proposed Scheme will be required before Royal Assent, such as ground investigations and archaeological investigations, and hence will be subject to the current consenting regime.

### **Changes after Royal Assent**

- 10.7 Once the Bill is enacted, the legislative framework outlined above would not apply. Instead, the Bill would have put in place a bespoke regime controlled by protective provisions.
- 10.8 The protective provisions for the water environment have been developed to ensure that the duties of relevant authorities are not unduly affected by the construction and operation of the Proposed Scheme. The Environment Agency and LLFAs in England and the Scottish Environment Protection Agency in Scotland would be able to:
- approve (or refuse approval of) detailed plans for works affecting water bodies;
  - impose reasonable conditions on works to protect the water environment against damage;
  - enforce the conditions that they impose; and



- take corrective action to any completed works in order to keep them in good repair at the expense of the nominated undertaker.

## **11 Consenting responsibilities after Royal Assent**

11.1 The protective provisions set out conditions whereby specific works would require approval by the Environment Agency or by an LLFA in England or the Scottish Environment Protection Agency (SEPA) in Scotland under the regime after Royal Assent.

11.2 The type of works requiring approvals related to waterbodies and the associated responsibilities of each of the relevant flood risk management authorities are detailed below.

11.3 Consideration of the compliance of works with the Water Framework Directive remains the responsibility of the Environment Agency and the relevant LLFA.

### **Works affecting a main river (England)**

11.4 After Royal Assent, plans for works that are likely to affect a main river and/or its flow, or level, would require approval from the Environment Agency before they could be built or operated. These works may include modification to the channel of the main river, its floodplain or any of the following associated with a main river – its bank, wall, embankment or other structure, appliance, flood defence, monitoring equipment or land used to provide flood storage capacity.

### **Works affecting ordinary watercourses (England)**

11.5 After Royal Assent, plans for the following types of works would require approval from the relevant LLFA or IDB where relevant:

- erection of a new (or alteration of an existing) structure which obstructs flow in an ordinary watercourse such as a mill dam, weir or other like obstruction;

- erection of a new (or alteration of an existing) culvert structure in an ordinary watercourse; and
- alteration, removal or replacement of a designated feature under Schedule 1 of the FWMA 2010.

### **Works affecting quality or quantity of water bodies (England)**

- 11.6 After Royal Assent, plans for works that are likely to affect the quantity or quality of a groundwater body, water extraction or involve water discharges, would require approval from the Environment Agency before they could be built or operated.

### **Strategic role of the Environment Agency in England**

- 11.7 The protective provisions give the Environment Agency a strategic overview role in the approval process for ordinary watercourses. This reflects the Environment Agency's current strategic overview role in delivering the Government's national Flood and Coastal Erosion Risk Management Strategy, and the supervisory role that the Environment Agency has undertaken in the development of LLFAs since the introduction of the Flood Risk Regulations in 2009 and FWMA in 2010.
- 11.8 This process will minimise the administrative impact on LLFAs and foster a consistent approach to the approval of relevant works.
- 11.9 The Environment Agency will work with LLFAs (as well as other parties) to develop standard practices and model conditions for consents to be issued for structures and works that may affect ordinary watercourses along the route.
- 11.10 LLFAs can impose reasonable conditions or requirements on works it approves. However, as part of its strategic overview role, the Environment Agency must be consulted before setting such conditions and the model conditions issued by the Environment Agency should be considered.

### **Works affecting inland water (Scotland)**

11.11 After Royal Assent, plans for the following types of works would require approval from the SEPA:

- any activity liable to cause pollution of the water environment (defined as all surface water, groundwater and wetlands), such as the discharge of polluting matter;
- abstraction of water from the water environment;
- construction, alteration or operation of impounding works (e.g. dams and weirs) in surface water (defined as inland water (other than groundwater), transitional water (e.g. estuaries) and coastal water) or wetlands;
- carrying out building or engineering works either in inland water (defined as all standing or flowing water on the surface of the land (e.g. rivers, lochs, canals, reservoirs) and all groundwater) or in the vicinity of inland water or wetlands and having or likely to have a significant adverse effect on the water environment;
- artificial recharge or augmentation of groundwater;
- the direct or indirect discharge, and any activity likely to cause a direct or indirect discharge, into groundwater of any hazardous substance or other pollutant;
- any other activity which directly or indirectly has or is likely to have a significant adverse impact on the water environment.

## 12 More information

12.1 More detail on the Bill and related documents can be found at

[www.gov.uk/hs2-phase2b-crewe-manchester](http://www.gov.uk/hs2-phase2b-crewe-manchester).

## References

Compulsory Purchase Act 1965

[https://www.legislation.gov.uk/ukpga/1965/56/pdfs/ukpga\\_19650056\\_en.pdf](https://www.legislation.gov.uk/ukpga/1965/56/pdfs/ukpga_19650056_en.pdf)

Land Compensation Act 1961

[https://www.legislation.gov.uk/ukpga/1961/33/pdfs/ukpga\\_19610033\\_en.pdf](https://www.legislation.gov.uk/ukpga/1961/33/pdfs/ukpga_19610033_en.pdf)

Flood and Water Management Act 2010

[https://www.legislation.gov.uk/ukpga/2010/29/pdfs/ukpga\\_20100029\\_en.pdf](https://www.legislation.gov.uk/ukpga/2010/29/pdfs/ukpga_20100029_en.pdf)

Flood Risk Management (Scotland) Act 2009

[https://www.legislation.gov.uk/asp/2009/6/pdfs/asp\\_20090006\\_en.pdf](https://www.legislation.gov.uk/asp/2009/6/pdfs/asp_20090006_en.pdf)

The Environmental Permitting (England and Wales) Regulations (EPR) 2016

[https://www.legislation.gov.uk/uksi/2016/1154/pdfs/uksi\\_20161154\\_en.pdf](https://www.legislation.gov.uk/uksi/2016/1154/pdfs/uksi_20161154_en.pdf)

Water Resources Act 1991

[https://www.legislation.gov.uk/ukpga/1991/57/pdfs/ukpga\\_19910057\\_en.pdf](https://www.legislation.gov.uk/ukpga/1991/57/pdfs/ukpga_19910057_en.pdf)

Water Act 2014

[https://www.legislation.gov.uk/ukpga/2014/21/pdfs/ukpga\\_20140021\\_en.pdf](https://www.legislation.gov.uk/ukpga/2014/21/pdfs/ukpga_20140021_en.pdf)

Land Drainage Act 1991

[https://www.legislation.gov.uk/ukpga/1991/59/pdfs/ukpga\\_19910059\\_en.pdf](https://www.legislation.gov.uk/ukpga/1991/59/pdfs/ukpga_19910059_en.pdf)

The Water Environment (Controlled Activities) (Scotland) Regulations 2011

[https://www.legislation.gov.uk/sdsi/2011/9780111012963/pdfs/sdsi\\_9780111012963\\_en.pdf](https://www.legislation.gov.uk/sdsi/2011/9780111012963/pdfs/sdsi_9780111012963_en.pdf)