

High Speed Rail (Crewe – Manchester)

Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement

Volume 5: Appendix MA-001-00000

Major accidents and disasters

Major accidents and disasters risk screening

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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.

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Contents

1	Introduction	2
1.2	Methodology	3
2	Legal and regulatory framework	4
3	Identification of project risks	5
3.2	Review of risks	5
Tables		
	Table 1: Environmental risk review	7

1 Introduction

- 1.1.1 This report is an appendix to the major accidents and disasters assessment which forms part of Volume 5 of the Supplementary Environmental Statement 1 (SES1) and Additional Provision 1 Environmental Statement (AP1 ES).
- 1.1.2 This appendix provides details of changes to the major accidents and disasters assessment since the production of the High Speed Two (HS2) High Speed Rail (Crewe – Manchester) Environmental Statement (ES)¹ published in January 2022 (the main ES).
- 1.1.3 This appendix should be read in conjunction with:
- Volume 5, Appendix: MA-001-00000 of the main ES²;
 - the Background Information and Data (BID) report, External sources of hazard (see BID MA-002-00000³), which accompanied the main ES;
 - the main ES ES Volume 3, Route-wide effects, Section 11; and
 - SES1 and AP1 ES Volume 3, Route-wide effects, Section 8 and Section 19.
- 1.1.4 In order to differentiate between the original proposals assessed as part of the main ES and subsequent changes, the following terms are used:
- ‘the original scheme’ – the Bill scheme submitted to Parliament in January 2022, which was assessed in the main ES;
 - ‘the SES1 scheme’ – the original scheme with any changes described in the SES that are within the existing powers of the bill; and
 - ‘the AP1 revised scheme’ – the original scheme as amended by the SES changes and AP amendments.

¹ High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement*. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>.

² High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Major accidents and disasters risk screening*, Volume 5, Appendix: MA-001-00000. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>.

³ High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Background Information and Data, External sources of hazard*, BID MA-002-00000. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>.

1.2 Methodology

- 1.2.1 The process undertaken for the major accidents and disasters environmental risk review is set out in the main ES Environmental Impact Assessment (EIA) Scope and Methodology Report (SMR)⁴.
- 1.2.2 For the original scheme and as presented in the main ES, a screening exercise of all identified project risks from the source documents (versions as applicable at the time of the main ES) listed in Section 3 of this report was first undertaken to determine if they had the potential to give rise to an impact which meets the definition of a significant adverse effect to an environmental receptor⁵, including members of the public. The risks that remained in scope were then grouped into high level 'risk events' which have the same potential consequence. For example, all hazard sources and pathways that could lead to a train derailment were combined into a single risk event, since it is the derailment of the train that has the potential to cause harm to an environmental receptor, regardless of the cause.
- 1.2.3 For the AP1 revised scheme a review of changes made to the source documents (current at the time of producing this appendix) listed in Section 3 of this report since the main ES has been undertaken. This review has identified whether any of the changes have the potential to give rise to any revisions to the environmental risk review as presented in Volume 5, Appendix: MA-001-00000 of the main ES.

⁴ High Speed Two Ltd (2022), High Speed Rail (Crewe – Manchester), *Environmental Statement, Environmental Impact Assessment Scope and Methodology Report*, Volume 5, Appendix: CT-001-00001. Available online at: <https://www.gov.uk/government/collections/hs2-phase2b-crewe-manchester-environmental-statement>.

⁵ Receptors include: members of the public and local communities; infrastructure and the built environment; the natural environment, including ecosystems, land and soil quality, air quality, surface and groundwater resources and landscape; and the historic environment, including archaeology and built heritage.

2 Legal and regulatory framework

- 2.1.1 Details on the UK legislation and EU regulations that HS2 Ltd and its supply chain must comply with in relation to its design, management, operation, and maintenance are outlined in Volume 5, Appendix: MA-001-00000 of the main ES. The measures set out the requirements, duties, and in some cases establishes the mechanisms for identifying, assessing, and mitigating risks associated with major accidents and disasters. The list of UK legislation and EU regulations HS2 Ltd and its supply chain must comply with remains unchanged from the main ES, with the exception of the following additional UK legislation:
- The Railways (Interoperability) (Amendment) (EU Exit) Regulations 2019 (SI 2019/345). These regulations amend the Railways (Interoperability) Regulations 2011 and correct certain aspects of the interoperability regime that would no longer function correctly as a result of the UK's withdrawal from the European Union (EU).

3 Identification of project risks

- 3.1.1 The following sources of information, current at the time of producing this appendix, have been reviewed to inform the environmental risk screening review:
- Phase 2b Construction, Design and Management (CDM) risk registers⁶ (live working documents);
 - HS2 Ltd's System Safety Hazard Record⁷ (live working document); and
 - the BID report, External sources of hazard (see BID MA-002-00000), which accompanied the main ES and presents external sources of hazard that interact with the original scheme.
- 3.1.2 As reported in Volume 5, Appendix: MA-001-00000 of the main ES, a review of traffic-related effects was undertaken, in relation to major hazard sites identified by the Health and Safety Executive (HSE) where the consultation zone interacts with land required for the original scheme. This review presented a summary of traffic-related effects which correlate with roads used as emergency response routes for these sites. This will be updated and reported in a separate, future Supplementary Environmental Statement 2 (referred to as SES2) and Additional Provision 2 Environmental Statement (referred to as AP2 ES).

3.2 Review of risks

- 3.2.1 The objective of this environmental risk review is to determine, since the main ES, whether:
- additional grouped risk events are introduced;
 - grouped risk events are removed;
 - additional, different, or removed hazard-source-pathway models are presented;
 - different reasonable worst consequence outcomes could arise if the grouped risk event were to occur;
 - additional or different embedded mitigation measures are required to manage risks 'as low as reasonably practicable' (ALARP);
 - grouped risk events can be considered to be managed ALARP with embedded mitigation measures; and
 - additional mitigation measures may be required to ensure that the identified risks to environmental receptors can be reduced to ALARP. This has been done in consultation with the other environmental topics.
- 3.2.2 In accordance with the detail outlined in Section 2, and best practice including design standards, 'embedded mitigation' comprises those measures that have not yet been

⁶ MWJV CDM Risk Register dated 19 January 2022, version P03, WSP CDM Risk Register dated 15 November 2021, version P02.

⁷ High Speed Two Ltd (2021), *System Safety Hazard Record, Phase 2b Western Leg, version P01*.

implemented, but will be at the appropriate stage of the AP1 revised scheme, i.e. any measures that will be undertaken during detailed design, construction planning, construction, and during the life of the AP1 revised scheme.

- 3.2.3 Table 1 presents changes to the environmental risk review of the original scheme as a result of SES1 design changes and AP1 amendments and changes to the source documents listed in Section 3 of this report current at the time of producing this appendix. Text presented in **bold** in Table 1 represents a change to the environmental risk review presented in Volume 5, Appendix: MA-001-00000 of the main ES. Changes include:
- the introduction of an additional risk event (C17 - Striking high-voltage utility cables/structures); and
 - an additional hazard source in relation to risk event OM2 - Train derailment or collision (on Network Rail mainline).
- 3.2.4 Table 1 sets out grouped risk events with the identified hazard sources and pathways, and describes the reasonable worst consequence if the event did occur in relation to environmental receptors.
- 3.2.5 Table 1 also summarises the necessary risk management and mitigation measures which are currently embedded within the AP1 revised scheme, through legislation, standards, policy, and other measures. It concludes whether each risk event can be considered to be managed to be ALARP. These measures are to be considered as commitments under the hybrid Bill and will be implemented prior to construction and authorisation to place HS2 into service by the Regulator.

Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement

SES1 and AP1 ES Volume 5, Appendix: MA-001-00000

Major accidents and disasters

Major accidents and disasters risk screening

Table 1: Environmental risk review

ID	Risk event	Hazard sources and/or pathways	Reasonable worst consequence if event did occur	Embedded mitigation	Is this ALARP with embedded mitigation ⁸ ?	Clarification
C17	Striking high-voltage utility cables/ structures	HS2 construction vehicles Presence of over/ underground high-voltage lines/structures	Striking utility service results in utility outage and direct injury or fatality to members of the public	<p>Managed via CDM –</p> <p>Consultation with Highways England, local authorities and other asset owners will help identify risks. Defining mitigation to control these risks will be undertaken as part of this consultation.</p> <p>Overarching controls outlined in the draft CoCP⁹ (set out in the main ES) which states that route-wide, local area and site-specific traffic management measures will be implemented during the construction of the HS2 scheme on or adjacent to public roads, bridleways, footpaths and other public rights of way (PRoW) affected by scheme as necessary.</p> <p>Example construction controls may include traffic management plans, method statements, speed restrictions, closures/diversions, physical barriers/errant vehicle protection, controlled crossings etc in consultation with Highways England/local authorities.</p> <p>Heavy Good Vehicles (HGV) with cameras and other safety features will be used.</p> <p>Whenever reasonably practicable construction traffic will make use of the main road network, site haul</p>	Yes	Considered to be ALARP if all mitigation measures outlined are correctly implemented.

⁸ ‘Embedded mitigation’ is considered as the measures outlined in the column adjacent, compliance with the UK legislation and EU regulations outlined in Section 2 and implementation of best practice including design standards.

⁹ 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>.

Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement

SES1 and AP1 ES Volume 5, Appendix: MA-001-00000

Major accidents and disasters

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ID	Risk event	Hazard sources and/or pathways	Reasonable worst consequence if event did occur	Embedded mitigation	Is this ALARP with embedded mitigation ⁸ ?	Clarification
				<p>routes and transportation via rail. Planning of delivery routes will be undertaken.</p> <p>The land required for the construction of the HS2 scheme has been established to provide adequate space for construction plant.</p> <p>Stage 1 Road Safety Audit completed with no road safety related issues identified. Further road safety audits to be undertaken at detailed design stage.</p>		
OM2	Train derailment or collision (on Network Rail mainline).	<p>HS2 interface with the existing railway incorrectly managed/ incompatibility resulting in HS2 train collision or derailment.</p> <p>Driver error in transition from HS2 mainline to Network Rail mainline causing train collision.</p> <p>Flooding of Network Rail mainline causes HS2 train derailment.</p>	<p>Off-track and outside boundary derailment of a non-HS2 train (including freight), or a HS2 train using the conventional rail network.</p> <p>Severe disruption to rail transportation, major accident causing injury/fatality to Network Rail staff/passengers and adjacent receptors.</p> <p>Spillage of pollutants.</p>	<p>Mitigation measures listed for risk OM1A are relevant. Additionally:</p> <p>Interface with the existing railway is included in the CSM-RA.</p> <p>The HS2 scheme must comply with Network Rail Standards to be allowed on the conventional network. Compatibility must be ensured.</p> <p>Human factor assessment and processes developed to prevent driver error.</p> <p>HS2 Ltd's Supply Chain Health and Safety Approach¹⁰ states: 'We expect our supply chain to comply with the CSM-RA. This will provide assurance that changes made to Network Rail's infrastructure in support of the HS2 scheme are safe to operate and maintain, interoperable and comply with relevant legislation. For the new railway we are required to comply with:</p> <ul style="list-style-type: none"> • technical specifications of interoperability and relevant notified national technical rules; and 	Yes	Considered to be ALARP if all mitigation measures outlined are correctly implemented.

¹⁰ High Speed Two Ltd (2018), *Supply chain health and safety approach*. Available online at: <https://www.hs2.org.uk/documents/hs2-supply-chain-health-and-safety-approach/>.

Supplementary Environmental Statement 1 and Additional Provision 1 Environmental Statement

SES1 and AP1 ES Volume 5, Appendix: MA-001-00000

Major accidents and disasters

Major accidents and disasters risk screening

ID	Risk event	Hazard sources and/or pathways	Reasonable worst consequence if event did occur	Embedded mitigation	Is this ALARP with embedded mitigation ⁸ ?	Clarification
		Presence of overbridges. HS2 trains using conventional network not compatible. Object on the line including unauthorised third-party access, animals.		<ul style="list-style-type: none"> • the common safety method on risk assessment and evaluation¹. 		

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