



Phase 2b Western Leg Information Paper

F4: Infrastructure maintenance and rail systems construction facilities

This paper provides information regarding the proposals for the permanent infrastructure maintenance facilities required for the Proposed Scheme.

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.

The Helpdesk can be contacted:

by email: HS2enquiries@hs2.org.uk

by phone (24hrs): 08081 434 434
08081 456 472 (minicom)

or by post: High Speed Two (HS2) Limited
2 Snowhill, Queensway
Birmingham
B4 6GA

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 provides information regarding the proposals for the permanent infrastructure maintenance facilities required for the Proposed Scheme. It provides an overview of the expected strategy for infrastructure maintenance on the Proposed Scheme.

3 Types of depot

3.1 The two main types of depot required for the operation and maintenance of the Proposed Scheme are:

- Rolling stock depots (RSDs) – facilities to be used for the maintenance and servicing of HS2 passenger trains (rolling stock) and to enable rolling stock to be stored (stabling) when not in use; and
- Infrastructure maintenance depots – facilities to be used for undertaking the maintenance of HS2 infrastructure such as track, overhead electrical equipment and other railway structures.

- 3.2 It is proposed that the Bill will include two Infrastructure Maintenance Bases – Rail (IMB-Rs) to support infrastructure maintenance. These would work in conjunction with the planned main IMB-R in Stone that forms part of the works authorised by the High Speed Rail (West Midlands – Crewe) Act 2021.
- 3.3 Facilities to maintain or stable HS2 passenger rolling stock are not covered in this information paper. For further information on these facilities, see the Information Paper F3: Rolling stock stabling facilities.

4 Rail systems construction strategy

- 4.1 Rail systems installation starts after the civil engineering installation of structures, earthworks and tunnels is complete. Elements of the rail systems include track laying, overhead line equipment, and signalling and communications equipment installation, testing and commissioning.

The need for a railhead

- 4.2 To construct the rail systems elements of the Proposed Scheme, a temporary construction facility connected to the conventional railway and the proposed route is required. This is known as a ‘railhead’.
- 4.3 A connection to the conventional railway is essential because certain rail systems materials such as rail, which is between 108m and 216m in length, cannot reasonably be delivered by road.
- 4.4 Other rail systems materials, such as aggregates, overhead line equipment and cables could be delivered by road, but given the size and scale of such materials, it is beneficial to deliver these by rail where possible to reduce the volume of construction vehicles using the public road network.

Overview of railhead requirements

- 4.5 A railhead will usually act as the main construction compound in terms of managing the rail systems installation, and needs to have the space and

facilities to be able to receive, handle and store enough materials to maintain an efficient rail systems installation programme.

4.6 Rail systems installation is generally carried out in a 'linear' manner, working away from the railhead, using newly installed track to deliver materials further along the route. This limits the efficient range of the railhead. For Phase One of HS2, this meant that more than one railhead was proposed.

4.7 As installation works progress in this linear manner moving away from the railhead, it is important that the railhead isn't 'bounded' by complex civils engineering works, which may block progress of the rail systems installation if they are delayed.

4.8 A railhead has several core functional requirements such as:

- connection to the conventional railway network to a line that can accommodate freight trains to deliver and remove material;
- good connection to the road network;
- connection, preferably in both directions, to the main line; and
- suitable space to load and unload trains as well as to store plant, trains and materials.

4.9 The above points are all critical in terms of considering the optimum location for a temporary railhead or railheads for the Proposed Scheme.

5 Infrastructure maintenance

Types of maintenance

5.1 Maintenance is the general day-to-day upkeep of the railway that keeps trains running. It is expected to consist of:

- preventative maintenance to keep things working at their optimum level;

- predictive maintenance to address issues with equipment before it fails; and
- corrective maintenance to repair or replace elements once they have failed.

5.2 HS2 Ltd's infrastructure maintenance strategy is expected to involve undertaking a programme of preventative and predictive maintenance by gathering and analysing real-time information about the condition of all elements of HS2 infrastructure, to avoid corrective maintenance as far as possible.

5.3 This condition-monitoring information would be obtained by:

- using active monitoring systems on passenger trains;
- running dedicated inspection trains with on-board specialised measuring equipment;
- using automated fixed monitoring systems on the elements themselves (track controlling systems, security systems, fire detectors etc.) that flag up the need for additional maintenance before they fail; and
- utilising maintenance teams to conduct on-site inspections.

Maintenance timing and facility positioning

5.4 It is expected that on-site inspection work and the majority of maintenance work itself would normally be carried out along the route at night, once passenger train services are no longer operating. Passenger services are expected to operate between 05:00 and 00:00 from Monday to Saturday and between 08:00 and 00:00 on Sunday.

5.5 When and where urgent corrective maintenance is required, work would be undertaken to return the train service to normal.

5.6 With this in mind, positioning maintenance teams and equipment at appropriate locations where they can reach the whole route safely and quickly, would allow preventative, predictive and corrective maintenance

to be carried out with minimum disruption to train services and with maximum efficiency.

Maintenance across the different phases of HS2

- 5.7 HS2 is planned to be built in phases, with maintenance facilities constructed separately on each phase. These facilities must be capable of safely, reliably and efficiently maintaining both that phase as well as interacting effectively with facilities provided on other HS2 phases.
- 5.8 However, neither the maintenance facilities that will be constructed as part of the HS2 Phase One and Phase 2a schemes are sufficient to support the expected maintenance requirements on the Proposed Scheme.
- 5.9 As such, separate permanent maintenance facilities would be required as part of the Proposed Scheme. These would be smaller facilities than the main IMB-R proposed at Stone in Staffordshire as part of HS2 Phase 2a. In contrast to this main IMB-R, the 'satellite' IMB-Rs on the Proposed Scheme would consist of a small number of rail sidings to stable maintenance trains at strategic points across the route. These smaller 'satellite' IMB-Rs are proposed at Ashley and Crewe North Rolling Stock Depot (RSD).
- 5.10 The proposal to include a satellite IMB-R near Ashley was part of the High Speed Two: Phase 2b Design Refinement Consultation (2019). The proposal to include a further satellite IMB-R at Crewe North RSD was consulted on as part of the HS2 Phase 2b Western Leg Design Refinement Consultation (2020).

Overview of maintenance facility requirements

- 5.11 In addition to the requirements described above, the permanent maintenance facilities have several core functional requirements, such as:
- connection to the conventional railway network to a line that can accommodate freight trains to deliver and remove materials needed to maintain HS2 (Ashley is a satellite IMB-R and does not have a

connection to the conventional railway network as it will be a stabling facility for HS2 maintenance trains only);

- adequate connection to the road network;
- connections to the existing HS2 main line; and
- suitable space to load and unload trains as well as to store plant, trains and materials.

6 IMB-R sites

6.1 It is expected that, where practicable, materials would be delivered to each IMB-R using the existing and proposed rail network.

6.2 The Code of Construction Practice (CoCP) requires that a route-wide Traffic Management Plan (TMP) be produced, in liaison with highway and traffic authorities and the emergency services. As appropriate, the plan would be expected to include:

- the means of managing lorry flows;
- the requirement for vehicle and driver safety;
- requirements for preparing workforce travel plans;
- the strategy for design and consultation for traffic management (including the signing strategy for emergency service access and lorry wayfinding); and
- the requirements for protecting highways.

6.3 Local TMPs would also be produced in liaison with highway and traffic authorities and the emergency services. As appropriate, these would be expected to include:

- contractors' construction flow assumptions;
- the local routes to be used by large goods vehicles (approved where applicable), including lorry holding areas required for construction of the Proposed Scheme; and

- significant works affecting roads and public rights of way, including temporary and permanent closures and diversions.

6.4 Contractors would be required to consider and, where reasonably practicable, mitigate noise generated by construction traffic on the road.

6.5 It is expected that construction vehicles and their impact on road safety would be managed, monitored and controlled by:

- a vehicle monitoring system, to enable contractors to provide forecast and actual movement data as well as information on safety compliance;
- vehicle flow monitoring, where there are specific restrictions on numbers of vehicles permitted to use a route;
- vehicle identification;
- driver training in vulnerable road user awareness, rural road driving and fuel efficiency;
- requirements for vehicle safety equipment and blind spot minimisation;
- the implementation of fleet operator quality schemes; and
- the implementation of route and flow monitoring, including monitoring of whether the driver and vehicle safety requirements are being met.

6.6 For more information on the CoCP and Traffic Management Plans, see Information Paper D3: Draft code of construction practice; and Information Paper E3: Management of traffic during construction.

6.7 As it is expected that the majority of heavy materials would arrive at the IMB-Rs by the existing and proposed rail network, rather than by road, a connection will be provided from the IMB-Rs to Network Rail lines. Once in the IMB-R, trains carrying heavy materials would be stabled or unloaded.

- 6.8 The satellite IMB-Rs proposed at Crewe North RSD and Ashley are expected to consist of two rail sidings to stable maintenance trains, a small amount of storage space and a small number of car parking spaces.

7 IMB-R operations

- 7.1 The satellite IMB-Rs proposed at Crewe North RSD and Ashley would be used as and when needed by the maintenance schedule and would not be in constant use. When in use, maintenance units would normally be prepared and dispatched from satellite IMB-Rs at around midnight and return before the closure of the maintenance window, at 04:59 Monday to Saturday and at 07:59 on Sunday. In an emergency, maintenance units may be dispatched and return outside of these hours.
- 7.2 Once passenger services draw to a close in the evening, maintenance trains would then leave the satellite IMB-Rs and travel to wherever maintenance is required. The majority of actual maintenance works will be carried out away from the IMB-Rs and along the railway.
- 7.3 As described earlier, during the operational phase of the Proposed Scheme, supplies would be delivered to each satellite IMB-R via rail and road, although the majority of heavy materials would arrive by rail.
- 7.4 Construction, maintenance and operation of the Proposed Scheme, including the IMB-Rs, would be in accordance with environmental legislation and good practice.

8 More information

- 8.1 More detail on the Bill and related documents can be found at www.gov.uk/hs2-phase2b-crewe-manchester.