HS2

Northern Powerhouse Rail Interfaces on the Western Leg of Phase 2b

The purpose of this factsheet is to outline the emerging proposals for integrating the Western Leg of Phase 2b with Northern Powerhouse Rail. This factsheet describes the works that are proposed for inclusion in the Western Leg hybrid Bill for this purpose.

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1. Introduction

1.1.1 High Speed Two (HS2) is the Government's proposal for a new, high speed north-south railway. The proposal is being taken forward in phases. Phase One will connect London with Birmingham and the West Midlands. Phase 2a will extend the route to Crewe. The Western Leg of Phase 2B comprises an extension of the network to Manchester and a connection to the West Coast Main Line at Golborne, and is referred to as the Western Leg hybrid Bill. The Eastern Leg of Phase 2B currently comprises an extension of the network from the West Midlands through the East Midlands to Leeds.

1.1.2 HS2 Ltd is the non-departmental public body responsible for developing and promoting these proposals. The company works to a Development Agreement made with the Secretary of State for Transport.

1.1.3 The construction and operation of Phase One of HS2 is authorised by the High Speed Rail (London – West Midlands) Act (2017). In July 2017, the Government introduced a hybrid Bill to Parliament to seek powers for the construction and operation of Phase 2a.

1.1.4 In February 2020, the Government announced its intention to draw up an Integrated Rail Plan. This will recommend a way forward on scoping, phasing and sequencing the delivery of HS2 Phase 2b, Northern Powerhouse Rail, Midlands Rail Hub and other proposed rail investments across the north. At the same time, the Government asked HS2 Ltd to prepare the Western Leg hybrid Bill, provided it does not prejudge any recommendations or decisions that will be taken in this plan, which will be published by the end of the year.

1.1.5 It is intended to deposit a Western Leg hybrid Bill seeking powers to construct and operate this phase in Parliament in early 2022 or sooner if possible (the Proposed Scheme). The work to produce the Bill will include an Environmental Impact Assessment (EIA), the results of which will then be reported in an Environmental Statement (ES). The ES would be submitted alongside the Bill when it is introduced to Parliament. As was the case with Phase One and Phase 2a, when the Bill is introduced to Parliament the Secretary of State will also publish draft Environmental Minimum Requirements (EMRs). The EMRs will set out the environmental and sustainability commitments that will be observed in the construction of the Proposed Scheme.

1.1.6 A series of information papers were produced for the Phase One and Phase 2a hybrid Bills, explaining the commitments made in those Bills and EMRs. It is the Secretary of State's intention to follow a similar process for the Western Leg Bill. These information papers will be used to provide information about the Proposed Scheme itself, the powers contained in the Bill and how decisions on

the Proposed Scheme have been reached. It is currently proposed that these information papers for the Western Leg of Phase 2b will be published at the time the Bill is introduced in Parliament.

1.1.7 The Secretary of State for Transport will be 'the Promoter' of the Western Leg Bill. The Promoter will also eventually appoint a body responsible for delivering the Proposed Scheme under the powers to be granted by the Bill. This body will be known as the 'nominated undertaker'. There may well 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 Western Leg EMRs and any commitments provided in the Western Leg information papers.

1.1.8 These Western Leg factsheets have been produced to provide information on the emerging proposals for measures to manage the design process for the Proposed Scheme and to control impacts which may arise from the construction and operation of the Proposed Scheme. These measures may then be applied to the Western Leg as commitments made through the eventual Bill, EMRs or information papers.

2. Overview

2.1.1 The purpose of this factsheet is to outline the emerging proposals for integrating the Western Leg of Phase 2b with Northern Powerhouse Rail. This factsheet describes the works that are proposed for inclusion in the Western Leg hybrid Bill for this purpose.

3. Rebalancing Britain

3.1.1 In 2014, in the Rebalancing Britain Report[1], David Higgins as Chair of HS2 Ltd recommended that further attention be given to enhancing east-west connectivity between five city regions in the north – Liverpool, Manchester, Leeds, Sheffield, Newcastle. He also recommended the creation of a single strategic body for the North – Transport for the North (TfN)- to create a unified voice for strategic rail developments. Northern Powerhouse Rail (NPR) is the strategic rail programme being developed by DfT and TfN to better connect the main centres in the North of England.

3.1.2 In 2015 the Government and Transport for the North issued a vision statement "The Northern Powerhouse: One Agenda, One Economy, One North." This

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/374709/Rebalancing_Britain_-_From_HS2_towards_a_national_transport_strategy.pdf

emphasised the importance of improved connectivity for transforming the economy of the North.

3.1.3 Since 2015, TfN and DfT have worked together on proposals for how NPR might connect to HS2, with HS2 Ltd taking on a technical advisor role. The proposals that have been developed seek to enable NPR to connect to the HS2 network, making use of space capacity on sections of HS2 to enable the NPR programme to achieve its aspirations for journey time and service frequencies between major city regions.

3.1.4 TfN's 'Strategic Transport Plan' (2019), describes current thinking on how the NPR network could be formed. This includes use of HS2 Manchester Spur as part of a route from Liverpool to Manchester and use of the Eastern leg between Sheffield, Leeds and Newcastle.

3.1.5 Figure 1 below from TfN's Strategic Transport Plan shows the sections of HS2 route that the NPR programme intends to join and identifies a series of junctions, or touchpoints, which would be required to connect the networks.

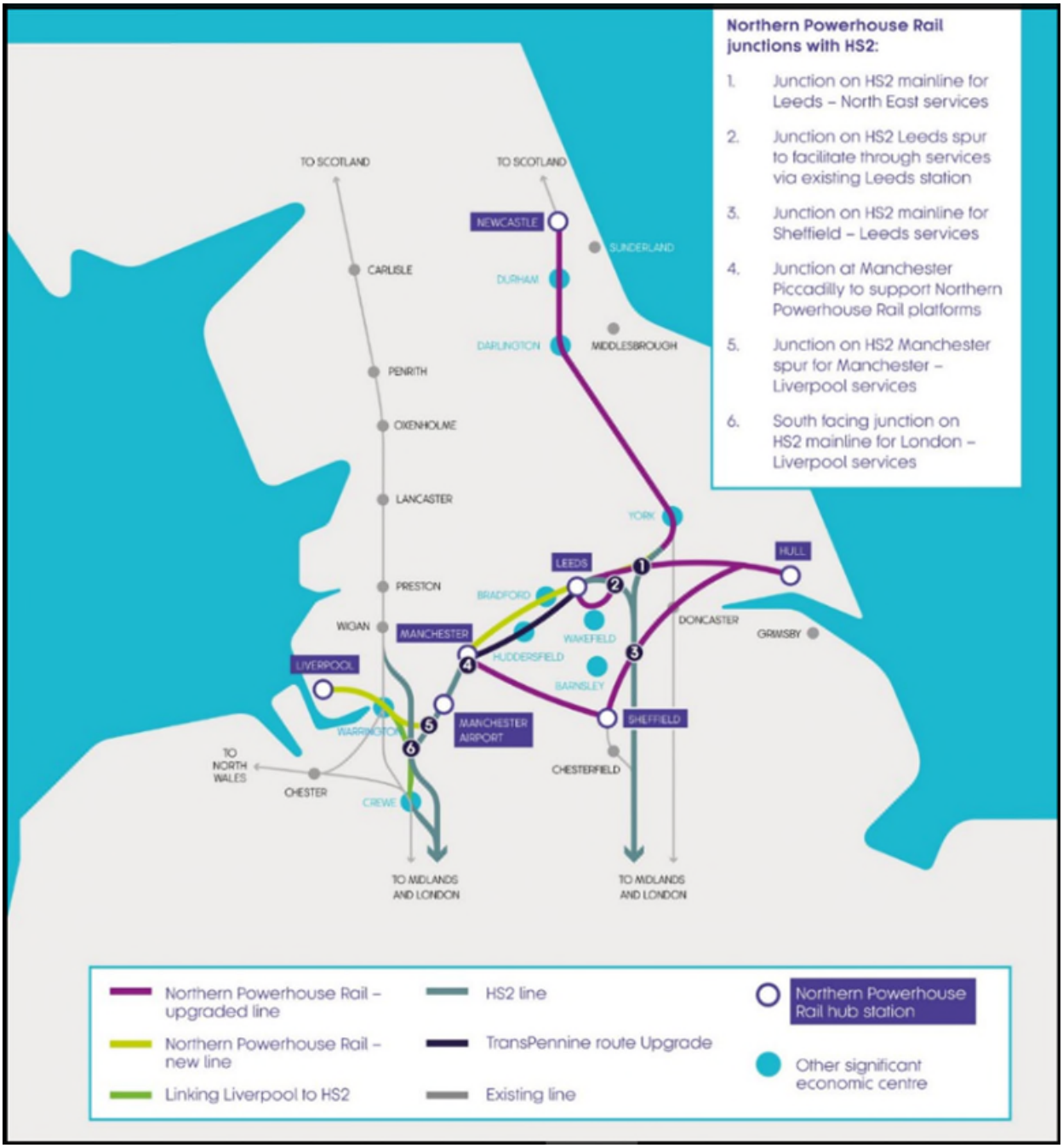

Figure 1: Plan showing interfaces between HS2 and NPR from TfN's Strategic Transport Plan

3.1.6 Although the inclusion of works in a future HS2 Western Leg Bill to support NPR's conditional outputs would introduce new and different impacts with the HS2 construction phase, it would also avoid the potential costs and disruption caused should these interfaces be constructed at a later date when HS2 services are operational.

3.1.7 The final decision on whether or not to include the interfaces with the NPR network, set out in section 4 of this factsheet, in the Western Leg hybrid Bill will be made by the Secretary of State after consultation and subject to future funding decisions.

3.1.8 A set of these interfaces was consulted on as part of the 'HS2 Phase 2b: Crewe to Manchester and West Midlands to Leeds Design Refinement Consultation' in Summer 2019. Further interfaces are included in the current 'HS2 Phase 2b Western Leg Design Refinement Consultation (October 2020)'.

4. Strategic interfaces with NPR

4.1.1 The extent and type of works envisaged for each NPR interface varies and includes consideration of whether to provide the interface in an 'active' or 'passive' form.

4.1.2 Active provision refers to the inclusion of all the necessary works for NPR services to operate on HS2 in future in the Western Leg hybrid Bill and delivering them in one go as part of a single HS2 construction phase. Generally, the decision has been made to opt for 'active provision' where it would not be possible, or would be prohibitively expensive, to adapt HS2 infrastructure in future to accommodate NPR.

4.1.3 Passive provision refers to the minimum level of additional works that would be needed in the Western Leg hybrid bill to ensure that NPR can connect to HS2 in future without significantly interrupting HS2 operations. At locations where passive provision is planned, this generally involves the provision of civil engineering structures and earthworks from HS2 to a distance of 500m away.

4.1.4 The proposed NPR interfaces on the Western Leg of Phase 2b are as follows:

- Crewe Northern Connection (active provision);
- London to Liverpool Junction (passive provision);
- Manchester to Liverpool Junction (passive provision);
- Manchester Airport High Speed station (active provision);
- Manchester Piccadilly High Speed station (active provision); and
- Manchester to Leeds Junction (passive provision).

Crewe Northern Connection

4.1.5 Crewe Northern Connection is proposed for inclusion in the Phase 2b Western Leg Design Refinement Consultation (October 2020) to support the strategic objectives of NPR and the Crewe Hub rail programme, being developed by Network Rail.

4.1.6 Under Phase One and Phase 2a of HS2, high speed services can call at Crewe, but to continue their journey to destinations to the north, can only use the existing West Coast Main Line and be subject to capacity, reliability and speed restrictions on it. Under proposals for Phase 2b without a Crewe Northern Connection, a number of high-speed services would bypass Crewe Station entirely on their way to destinations to the North by using Crewe Tunnel.

4.1.7 The inclusion of Crewe Northern Connection would enable high speed services that call at an enhanced Crewe Hub station to then re-join the HS2 main line north of Crewe, as opposed to the using the West Coast Main Line. This would enable enhanced connectivity between Crewe and Manchester via HS2 that would not be possible with Phase 2b alone.

4.1.8 Subject to the Secretary of State confirming that the London to Liverpool junction is included in the Western Leg hybrid Bill (see below for more details) and NPR constructing a new route to connect this junction to Liverpool, Crewe Northern Connection would also deliver faster journeys between Liverpool and Crewe than is achieved by HS2 without this junction.

4.1.9 Crewe Northern Connection is intended to enable up to 4 trains per hour serving Liverpool and Manchester Airport and Piccadilly High Speed Stations from Crewe Hub.

4.1.10 If further investment is made to the West Coast Main Line north of HS2's proposed junction at Lily Lane near Golborne, then Crewe Northern Connection alongside these investments would enable between 5 and 7 additional services to call at Crewe and travel on to the north west and Scotland with faster journey times via the HS2 network.

4.1.11 The proposed creation of the Crew Northern Connection would require a number of design changes to HS2 and the WCML between Parkers Road in Crewe to the south and the River Dane viaduct near Bank Farm to the north. These are set out in more detail in the Western Leg Design Refinement Consultation.

4.1.12 It is proposed that Crewe Northern Connection would be delivered as 'active provision'.

London to Liverpool Junction (Junction 6 on Figure 1)

4.1.13 It is proposed to make passive provision in the Western Leg hybrid Bill for a junction between HS2 and a future NPR route to Liverpool. This junction would enable high speed services on the HS2 main line north of Crewe to connect to a future NPR line to Liverpool and by-pass the West Coast Main Line, improving journey times between London, Crewe and Liverpool.

4.1.14 To enable this, it is proposed that the existing cutting south of Hoo Green on the HS2 main line is widened by up to 25m to allow two additional tracks to be laid at a later date for a potential new London to Liverpool line. This would also require the HS2 mainline south of the M6 to be moved by up to 70m eastwards. Earthworks and civil engineering structures would be provided to support the London to Liverpool line to cross over the HS2 mainline and HS2 Spur near Hoo Green Lane. This would increase the height of infrastructure in this area by up to 15m.

4.1.15 This proposal was consulted on in Summer 2019. For further information on this proposal, please see the Secretary of State's Command Paper High Speed Two: Phase 2b Design Refinement Consultation (June 2019).

Manchester to Liverpool Junction (Junction 5 on Figure 1)

4.1.16 To support NPR's aspirations for connectivity between Liverpool and Manchester, it is proposed that passive provision for a junction between HS2 and NPR is included in the Western Leg hybrid Bill. This junction, combined with a new line between Liverpool and Manchester, would enable high speed services from Liverpool to avoid the constraints of the existing conventional network and travel to Manchester Airport and Manchester Piccadilly high-speed stations.

4.1.17 It is proposed that the earthworks and civil engineering structures required to support a junction with NPR are added to the HS2 Manchester Spur in the vicinity of Ashley and extended west, under the A556 to a point near Millington Lane. This also requires an overbridge to be constructed across the HS2 mainline. Under this proposal, the HS2 Manchester Spur remains in the same location, while a future Manchester to Liverpool line would cross over the Manchester Spur near Birkin Brook at a height of approximately 14m.

4.1.18 This proposal was also consulted on in Summer 2019. For further information on this proposal, please see the Secretary of State's Command Paper High Speed Two: Phase 2b Design Refinement Consultation (June 2019).

Manchester Airport High Speed station

4.1.19 In the October 2020 Phase 2b Western Leg Design Refinement Consultation, it is proposed that the number of platforms at Manchester Airport station would be increased from two to four to provide further capacity for NPR services calling at the Airport in future, in addition to the HS2 services serving the station.

4.1.20 Additional capacity within the station design and car parking space is also to be provided under the Western Leg hybrid bill for predicted future NPR need.

Manchester to Leeds Junction (Junction 4 on Figure 1)

4.1.21 In the October 2020 Phase 2b Western Leg Design Refinement Consultation, passive provision for a grade separated junction for a Manchester to Leeds connection is included in the Western Leg hybrid to support the realisation of NPR's conditional outputs between Manchester and Leeds.

4.1.22 Passive provision for this junction would be made in the Ardwick area, with the civil engineering structures for a future junction for a future NPR route to Leeds from Manchester.

4.1.23 In future, it is proposed that both NPR and HS2 services would use the HS2 Manchester Spur between Manchester Airport and Manchester Piccadilly High Speed stations. Then NPR services between Liverpool, Manchester and Leeds would be required to reverse from the Manchester Piccadilly High Speed station to the future Manchester to Leeds Junction to continue their journey onwards to Leeds.

4.1.24 Government is yet to determine where a future connection between Manchester and Leeds would run. If a route between Manchester and Leeds is developed, this would be subject to a separate formal consultation process.

Manchester Piccadilly High Speed station

4.1.25 At Manchester Piccadilly High Speed station, it is proposed to add two further 400m platforms in the Western Leg Hybrid Bill. This would take the total number of platforms at Manchester Piccadilly High Speed station from 4 to 6. A change would also be made to the design and layout of the approach tracks to Manchester Piccadilly High Speed station to provide operational flexibility and capacity for future service growth.

4.1.26 The additional platforms would enable NPR services to call at the station. The platform configuration and design which is the subject of the Western Leg DRC would maximise flexibility by allowing either NPR or HS2 services to call at any platform. The approach track and platform layout would make Manchester Piccadilly High Speed station more resilient for the operation of HS2 and NPR services.

5. Other adaptations to HS2

5.1.1 Besides these interfaces, a number of small changes are needed to proposed HS2 infrastructure to avoid precluding the running of NPR services in future, or make it expensive or disruptive to do so. For example, adaptations have been made to the capacity of the proposed traction power system on the Western Leg so that it can supply enough power for additional NPR services while they operate on HS2 infrastructure.

6. Key Design Assumptions

6.1.1 Since 2015, HS2 Ltd has acted as a Technical Advisor to the DfT and TfN on the proposed development of potential new lines for NPR. Network Rail have acted in a similar technical advisory capacity for TfN and the DfT on upgrades to existing lines and non-high speed options for NPR.

6.1.2 In the development of designs for these interfaces, HS2 Ltd have acted according to some key assumptions. As HS2 Ltd was instructed to assume new high speed lines for NPR, the track form, civil engineering and other elements of the design produced by HS2 Ltd for NPR follow existing HS2 design standards.

6.1.3 As it is proposed that NPR services will connect to and join the HS2 network in the future, a key assumption in the development of these interfaces is that NPR rolling stock will be capable of matching HS2 rolling stock technical specifications. This ensures that if in future NPR services use the HS2 network they can do safely and efficiently, without incurring additional cost, journey time or reliability penalties for either programme.

6.1.4 The assumption that NPR rolling stock will match HS2 rolling stock technical standards, has also allowed the potential impact of the operation of additional NPR services on the HS2 network to be modelled for the purposes of the Environmental Statement. For instance, this has allowed the operation of NPR services to be factored into the operational sound, noise and vibration assessment that will be contained in the ES. The ES that accompanies the hybrid Bill will include an assessment of the likely significant effects associated with the construction of these interfaces. The operational sound, noise and vibration impacts of running NPR services on sections of the Western Leg will be assessed as part of the ES and where appropriate, additional mitigation would be included in the scheme.

6.1.5 As NPR interfaces would be included and authorised through the Western Leg hybrid Bill their construction would be in accordance with the same environmental controls and policies as the rest of the HS2 construction phase. For instance, the measures contained in the Code of Construction Practice for the Western Leg would apply to the construction of these interfaces as well.

6.1.6 The designs of these interfaces are intended to allow subsequent choices on the precise direction of the NPR routes that will join them to be decided in future.

7. More information

Further factsheets and details on the Proposed Scheme can be found at: www.hs2.org.uk/phase2b