



November 2015 marks a major milestone for HS2

The Rt. Hon Patrick McLoughlin MP, Secretary of State for Transport, set out the progress being made with HS2 on November 30th 2015. With a revised budget for the whole project settled at £55.7bn in updated (2015) prices in the Spending Review, Government has again shown the strongest commitment to implement the project.

The Secretary of State identified three major new developments:

1. Confirmation of the Government's intention to accelerate the route from Fradley¹ in the West Midlands to Crewe ('Phase 2a') so that it opens six years earlier than planned, in 2027. This will bring more capacity and faster HS2 services to the North West of England, including Crewe, Liverpool, Manchester, and Scotland much sooner than originally planned.
2. The release of Government funding to support the work of the Northern Gateway Partnership² to develop its growth and regeneration plans.
3. Commitment to the full Y network, with Government undertaking the further technical and economic analysis required for decisions on the rest of the Phase 2 route ('Phase 2b') to be made in autumn 2016. He also announced the revised – and much improved – proposal for the HS2 station at Leeds, which will now be integrated with the existing central Leeds City station rather than leaving an awkward 400m gap to the previously preferred site at Leeds New Lane.

A raft of papers was released by DfT and HS2 Ltd in support of these announcements. Here we summarise in turn the key points in relation to Phase 2a, Phase 2b and (briefly) the implications for Phase 1 too.

¹ This is where the junction will be made with the Phase 1 route which has a connection at this point to the West Coast Main Line at Handsacre.

² The Northern Gateway Partnership is a collaboration of seven local authorities that straddle the North West and West Midlands – including Cheshire East Council – and the Cheshire and Warrington and Stoke-on-Trent and Staffordshire Local Enterprise Partnerships (LEPs). It was launched on October 21st, 2015 and is designed to spearhead economic growth in the region and give a huge boost to delivering new jobs, homes and investment, bridging the 'Northern Powerhouse' and the 'Midlands Engine'.



Phase 2a: HS2 to reach Crewe in 2027

The confirmation of Phase 2a means that usable high-speed rail infrastructure will reach the North (2027) at about the same time as London (2026). This diminishes the argument that HS2 is 'London-centric'.

More importantly it means that North West England and Scotland will get significantly greater journey time reductions in 2027 (see Table 1). Note that the effect of Phase 2a is to continue to spread the benefits of HS2 evenly across the North West (Manchester, Liverpool and Preston have similar London journey times). Note too that Phase 2a gets Glasgow – London journey times below 3h45. The same would be true for Edinburgh, and it remains a nonsense that the current service assumptions for HS2 exclude Edinburgh until the 2030s, when for 6-7 years a faster alternative to the East Coast Main Line will be available.

Table 1: London journey times by HS2 (fastest typical, selected north of England and Scottish cities)

	Phase 1 (2026)	Phase 2a (2027)	Full Phase 2 (2032/3)
Crewe	1h 08	55min	54min
Manchester	1h 41	1h 27	1h 07
Liverpool	1h 46	1h 32	1h 32
Preston	1h 41	1h 28	1h 17
Glasgow	3h 56	3h 43	3h 38
Edinburgh	No service	No service	3h 39

Source: Extracted from Cm 9157 High Speed Two: east and west, the next steps to Crewe and beyond, DfT, November 2015, Figure 4.1

The HS2 service assumptions on which the appraisal of the case for Phase 2a is based allows for just two trains/hour serving Crewe itself. It is recognized that this needs to be revisited, because to act as an effective hub, service frequency is crucial. The Chancellor of Exchequer was in no doubt on this score, and in his announcement on November 30th, he spoke in terms of the potential for 7 high-speed trains/hour at Crewe. The wide beneficial impact of the Crewe hub should not be under-estimated: Holyhead would be just 3 hours from London, for example.



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The scope for major regeneration in the Crewe and Stoke-on-Trent area has been recognized in the innovative Northern Gateway Partnership that is now set to receive Government funding.

What remains at this stage unclear (and presumably uncosted, since it didn't feature in either the original Phase 1 or 2 plans) is the definition of the hub station at Crewe. Setting the criteria (the 'conditional outputs') for this facility is crucial. Ease of passenger interchange and good access will be as important as minor changes in HS2 journey times.

Rather than presuming that the original full Phase 2 plan should be implemented unchanged in the 2030s, it might be possible to save the cost of a major tunnel through Crewe – potentially a useful offset to the cost of the new hub station. Achieving (say) a 200km/h alignment for non-stopping HS2 services from both Manchester and Preston/Liverpool directions will lose little in the way of overall project benefits and should be feasible at reasonable cost. As the analysis of alternatives to Phase 2a by consultants Atkins shows³, the benefit cost ratios of scaled-back versions of Phase 2a which yield lesser journey time savings are higher than those for the adopted Phase 2a scheme.

A potential sum of £200m has now been identified to ensure that the connection back to the classic network at Crewe works effectively and that three HS2 trains/hour can operate the Manchester – London route via Crewe. Ensuring that the Crewe hub design fully meets traveller needs within the project budget envelope will be an important challenge for HS2 Ltd and Government, stretching the factors to be considered well beyond the question of end-to-end journey times.

One of the contentious points about the 'Crewe extension' was the argument that HS2 might instead be better routed *via* Stoke-on-Trent. But the Stoke alternative is shown clearly to be less advantageous than Crewe in the Government's Command Paper⁴.

Of interest to Stoke-on-Trent will be the prospect of changing the current assumption that an hourly HS2 service would operate *via* Stoke-on-Trent but pass through non-stop (doing the same at Macclesfield). Now, however, there is a Government commitment that HS2 Ltd must report back on the best way to serve Stoke and Macclesfield with a classic compatible service, and the possibility of a Stoke-London journey time of a little over 1 hour.⁵ The detail

³ Rail Alternatives to HS2 Phase 2a, Atkins for Department for Transport, November 2015

⁴ Cm 9157 High Speed Two: east and west, the next steps to Crewe and beyond, DfT, November 2015

⁵ *Ibid* §5.17



on how this could be achieved and why it makes good sense for the overall HS2 business case was set out in earlier work by Greengauge 21.⁶

Phase 2b: Completing the 'Y'

(i) The Eastern limb

The major area of contention surrounding the eastern limb has been whether the locations of the three planned new stations – none of which were at existing city centre transport hubs – are satisfactory.

The great news for Leeds is that, alongside the development of a hub station at Crewe, the plan for a station at New Lane, remote from both the city centre and the existing Leeds City station, has been dropped in favour of an integrated hub. The HS2 terminus will now share a concourse with the existing station. This means that the Leeds HS2 station can link properly with the wider city region and across Yorkshire, with ready interchange onto local and regional services, including those to be developed as part of the Northern Powerhouse initiative. This development has been warmly welcomed by local political leaders and by business.⁷ It will add to project costs, inevitably, but the new arrangement is a huge step forward.

The reasoning behind the change in plan is described fully in a document from Sir David Higgins who had initiated the review into the earlier design for HS2.⁸ His report rules out a below ground level station on the same site – for obvious reasons of cost – but this is an example of where considerations beyond HS2 Ltd's formal remit need to be checked. An underground (rather than elevated) station at the new site could be extended northwards towards north east England at a later stage. We need to ask whether this has been

⁶ See <http://www.greengauge21.net/general/stoke-and-staffordshire-can-be-key-hs2-beneficiaries-as-well-as-crewe/>

⁷ See <http://www.bbc.co.uk/news/uk-england-leeds-34962062>

⁸ See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/480396/Higgins_-_The_Yorkshire_Hub.pdf



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considered. Understandably perhaps, Government, in committing to such a large investment as HS2, may be reluctant to look even further ahead and take an all-Britain strategic overview. Yet it should be considering strategic long term infrastructure needs – and these stretch beyond 2032/3.

A detailed point with the Leeds station re-design is that it:

“can facilitate Northern Powerhouse rail services to run through the existing station *via* a connection from HS2 to the existing rail corridor into the west side of the [Leeds City] station.”⁹

This is of significance for three reasons:

- It would allow a future HS3 scheme to use part of the Yorkshire section of HS2 to provide a new faster link between Liverpool/Manchester and Leeds/Newcastle/Hull
- It makes it possible to contemplate bringing forward the Yorkshire section of HS2 (in an analogous way to Phase 2a), as has been advocated by authorities in Yorkshire, and without needing to wait for what will inevitably be time-consuming – the construction of the new HS2 station at Leeds
- Both of these points should strengthen the business case for this part of HS2, by spreading the benefits of quicker and more reliable rail journeys over a wider area. They also mean that DfT should revisit the question of bringing forward this part of HS2, since the changes at Leeds mean that the reasoning given in the new documents for leaving this segment until the 2030s is no longer valid.

Such a connection could also be used by HS2 services to operate some services with a station call at Leeds for journeys between (say) Newcastle/York and HS2 destinations south of Leeds. This would incur a time penalty against the use of the planned reconnection to the ECML at Church Fenton, but would offer connectivity advantages – e.g. for travel to/from Bradford.

The changed design for Leeds has unsurprisingly stimulated a fresh debate about whether Sheffield should have an equivalent station in the city centre or one at Meadowhall.¹⁰ While Sheffield City Council prefers a location at Victoria, the alternative of an expanded location

⁹ *Ibid* p11 – the first ‘pro’ in an assessment of the new station location/design in the pros and cons of three alternative designs for Leeds’ HS2 station

¹⁰ <http://www.yorkshirepost.co.uk/news/main-topics/politics/leeds-switch-prompts-fresh-calls-for-sheffield-hs2-stations-1-7598592>



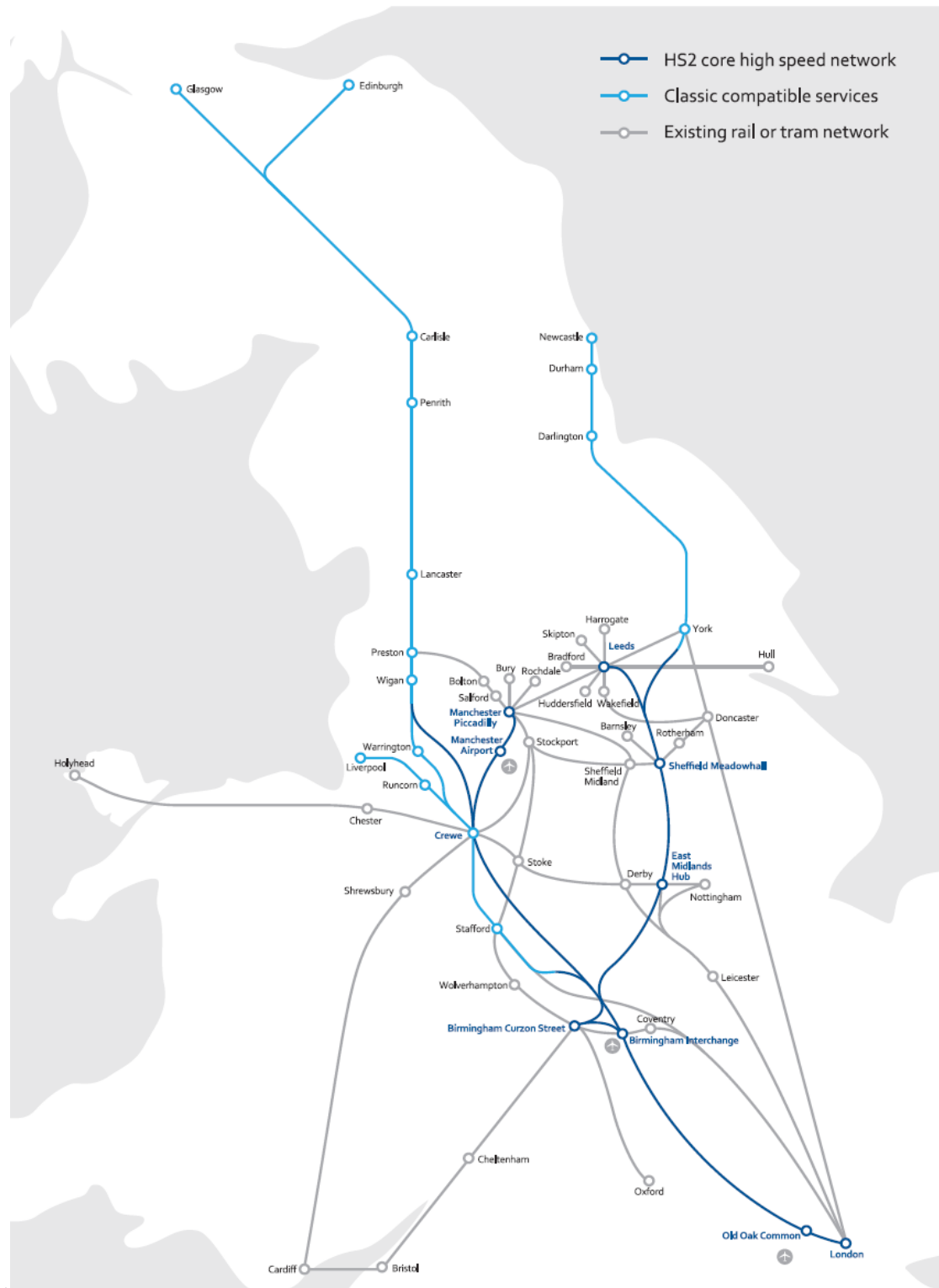
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at Sheffield (Midland) station should be considered if the benefits of the type now on offer with the re-design at Leeds are to be achieved in South Yorkshire.

The third station on the Eastern limb is now settled on a preferred location at Toton, between Nottingham and Derby. This is illustrated in a new map provided in the Command Paper– see below.



High Speed Two: East and West. The next steps to Crewe and beyond



Source: Cm 9157 High Speed Two: east and west, the next steps to Crewe and beyond, DfT, November 2015



According to this map, Toton is well connected by means of an *existing* rail (or tram) line running east-west directly from Derby to Nottingham. But no such line exists today.

The demand modelling for HS2 allows for an interchange time of just 5 minutes at interchanges like Toton based on the *quickest possible* passenger interchange time and no wait time at the connecting service platform. It is on the basis of such assumptions that claims are made that the Birmingham – Nottingham journey times will be reduced from today's 69 minutes to just 36 minutes, unrealisable on current plans in practice.

It seems that comparisons between out-of-town and city centre station locations will have been biased against city centre stations because of these interchange assumptions. We would ask that this is corrected in any outstanding station design choices – for instance about the location choices in South Yorkshire, and the detail of the planned Crewe Hub.

In any event, journey times using HS2 to travel between London and Derby *via* Toton – even with what look like optimistic assumptions on onward transfer times – would be no faster than it is expected will be achievable once the Midland Main Line electrification project now under way is complete.¹¹

A general concern raised by stakeholders in response to the Government's consultation on Phase 2 was that more connections are needed to the existing network and the scope to operate 'Javelin' type services (as operate over HS1) should be considered.¹² The Command Paper insists that HS2 'will not be a separate, stand-alone railway', but fully integrated with the national rail network and other transport modes. So, have the plans for the Eastern limb been revised sufficiently to realise this aim?

In our view, the answer to this question centres on settling on the right station location for South Yorkshire/Sheffield and being realistic about how the East Midlands hub station will work. A good development would be the creation of connections from HS2 to the classic network such that services could run directly from, for example, Nottingham northwards to

¹¹ MML timings based on the current timetable (National Rail Enquiries) 85 minutes less the projected time saving of 9½ - 10½ minutes, based on Arup's report for the East Midlands councils (see p4 Table 1) – say 75 minutes <http://www.emcouncils.gov.uk/write/Case-for-Upgrading-Electrifying-Midland-Main-Line251111.pdf>

¹² See Phase 2 consultation summary by Greengauge 21: <http://www.greengauge21.net/resources/hs2-phase-2-consultation-a-summary-assessment-by-greengauge-21/>



Leeds (and beyond, now that a connection could be available for services to operate to north east England).

(ii) The Western limb

Beyond Phase 2a, the Command Paper envisages retaining the current plan for the line between Crewe and Manchester Piccadilly and also, subject to further analysis, the link to Golborne, south of Wigan. But the spur that would link from Manchester northwards onto HS2 has been dropped and the idea of a rolling stock depot at Golborne is being reconsidered.

With the plan for Phase 2a now adopted, there is good reason to consider whether the new station at Manchester Piccadilly could be brought forward to 2026/7 as well, connected on an interim basis to the existing railway. This would help accommodate longer trains at Manchester Piccadilly. Without such a development, connectivity southwards from Manchester to non-HS2 destinations might be prejudiced from 2026 until Phase 2 opens in full in 2033.

The planned HS2 station at Manchester Airport, which has strong local support and could help support major development planned for the area, is singled out as needing local funding contributions to proceed. Is this because there are doubts about its business case, if its costs are fully allocated to HS2? Or is it just opportunistic – hoping that the scale of development could, in this one instance, yield a useful developer contribution? If the latter, is the same logic being applied to Old Oak Common and Toton?

The Command Paper points towards conclusions on the joint DfT/Transport Scotland study by HS2 Ltd into the cross-border opportunities emerging in early 2016. It specifically mentions the aim of the Scottish Government to achieve a three hour journey time for Glasgow/Edinburgh - London. Three points should be made on the Anglo-Scottish question:

- Achieving a three hour journey time does not need a new railway to be built the entire distance from Crewe/Golborne into the central belt in Scotland



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- Critical to the investment case will be the question of *capacity* (as well as *journey time*) over this lengthy section of two-track railway as became very clear at Greengauge 21's Conference on the subject earlier this year¹³
- It would be wrong to see the development further northwards as being of benefit just to Scotland. Locations such as Cumbria and northern Lancashire have much to gain too, and the service opportunities and wider benefits stem from better connections between the cities of Scotland and those of the Midlands and the north of England as well as London.

Phase 1: Progressing through its Committee stage in Parliament

The Phase 1 Bill is making good progress through its Committee stage, and a revised scheme for Euston overcomes many of the perceived weaknesses in earlier designs.

There are choices announced on connectivity to the classic network in Phase 1 – and these have implications for stakeholders right across the country. Retaining the prospect of a direct connection to Heathrow was dropped earlier this year – possibly prematurely depending on the Government's response to the Davies Commission, expected shortly. Now two further candidate connections to Phase 1 have been dropped:

- A connection from HS2 on its approach to the Curzon Street terminus in Birmingham to the 'classic lines' into New Street. This will preclude the 'arms' of the Y network fulfilling a cross-country capability allowing HS2 services to operate between northern England/Scottish cities and, for example, Cardiff/Bristol. Since the east-to-north part of the HS2 triangle on the Birmingham approaches is designed for only 170km/h (that is, conventional line-speed), this looks short-sighted and we question whether it would withstand Sir David Higgins' test of time criterion
- The possible connection between HS2 and HS1. This connection (unlike the Birmingham case) is not easy to construct and the capacity to accommodate additional services on the 'stem' of the HS2 network is a serious challenge. Along with others, we have developed solutions to these important questions in earlier work¹⁴ – and it remains disappointing that all that is left is discussion of better

¹³ See <http://www.greengauge21.net/blog/the-british-high-speed-rail-network/>

¹⁴ See <http://www.greengauge21.net/publications/hs1-hs2-connection-a-way-forward/>
<http://www.greengauge21.net/publications/travel-market-demand-and-the-hs1-hs2-link/>
<http://www.greengauge21.net/wp-content/uploads/early-lessons-from-kent.pdf>



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pedestrian links between Euston and St Pancras when, if nothing else, a proper seamless facility should surely be included in HS2 Ltd's plans.

Conclusion

The Government announcements of November 30th 2015 mark a further positive step on the road to delivering HS2. The acceleration of the segment of route to serve Crewe, the decision to create a hub station at Crewe and the decision to revise the design and location of the HS2 station at Leeds are significant. They signal both serious engagement with northern stakeholders and earlier delivery – but we have also identified here some opportunities to go further, including to bring forward other parts of Phase 2. All of these opportunities demand serious consideration as Government develops its conclusions in 2016.
