
# HS2's service plans

## The devil's in the detail, says Chris Stokes after perusing the plans for the new high-speed line

Buried in the material published on the day of the announcement of the proposed routes of HS2 north of Birmingham to Manchester and Leeds is a brief paper titled 'Updated economic case for HS2: explanation of the service patterns'.

This shows further development of HS2's thinking, both on the high speed route itself, and the services assumed to run on the 'classic' network. The note includes a great deal of interesting information.

Firstly, and quite appropriately, there is a health warning: 'the service specifications shown here are purely indicative. We are not writing a timetable now for 2032/33'. This is the service pattern which underpins the August 2012 evaluation, and it reflects the new connection just south of Crewe, with the HS2 route itself planned to go in a tunnel right underneath Crewe station!

The future pattern for high speed services is shown in Figure 1. A total of 18 trains an hour are shown, certainly at the technical limit for a high speed line, and well above the level of use of any other high speed route in the world. Route capacity decreases with speed, as braking distance increases; so, other things being equal, a conventional 200km/h route will have a higher capacity than one designed for 350/400km/h. In the past, HS2 has talked loftily about improved technology, but Roger Ford's recent critique of the 2012 Railway Technical Strategy's zany ideas on braking technology (p34, February 2013 issue) suggests that this is pretty speculative stuff.

HS2 Ltd did publish a report last year from the French consultancy Systra which concluded that 18 trains per hour was theoretically possible, but, for example, speeds would have to be brought down on the approach to Old Oak Common, where all trains are scheduled to stop – the railway equivalent of variable speed limits on the M25. Furthermore, reliability would be dependent on precise presentation of seven trains an hour from the classic network, one of which is shown to join another portion at Birmingham Interchange, where seven trains an hour stop – and, so far as I'm aware, no timetabling work has been carried out for the route as a whole. So the jury is still out on 18 trains per hour, which in 'Yes, Minister' terms is clearly courageous.

Birmingham Curzon Steet is shown to have three London services an hour, although one joins a Liverpool service at Birmingham Interchange, so this train will have reduced reliability and a longer journey time.

### Birmingham – Manchester

Interestingly, there is a lack of joined-up thinking, as the Phase 1 specification has four London – Birmingham services at peak periods. Birmingham also has two high speed trains an hour to Manchester. Whilst it's obviously attractive to have high speed Birmingham – Manchester services, it's unlikely that these will be well loaded. From observation, the existing CrossCountry trains don't load tremendously well on this sector; although they're slow (56mph), the competition is the M6 which is notoriously congested and unpleasant, so rail is already reasonably competitive for city centre to

How will everything be shoehorned into the Rugby - Birmingham line? On 18 December 2012, two Class 390 Pendolinos pass one another at Tile Hill near Coventry. Fraser Pithie

city centre journeys. In contrast to London inter-city routes, CrossCountry's business is made up of thousands of small flows, and the total travel market between the centre of Birmingham and the centre of Manchester is in reality almost certainly quite small. The M6 is full, but with people making an enormous range of journeys, just like passengers on CrossCountry.

Liverpool is shown to have two trains an hour. The 'portion train' is shown to come off HS2 at Lichfield and call at Stafford, the other coming off HS2 south of Crewe and calling there. The Crewe connection is eminently sensible as it does enable a better service to Liverpool, Warrington – shown to have no high speed trains at all last time round – and Wigan, the latter both served by a Preston train. Why not to Blackpool and Windermere on alternate hours, to spread the benefits?

If the Welsh Assembly achieves electrification of the North Wales coast line, there would then be enormous pressure to have through high speed trains to Chester and beyond. But this could only be achieved at the expense of somewhere else, as HS2 is full.

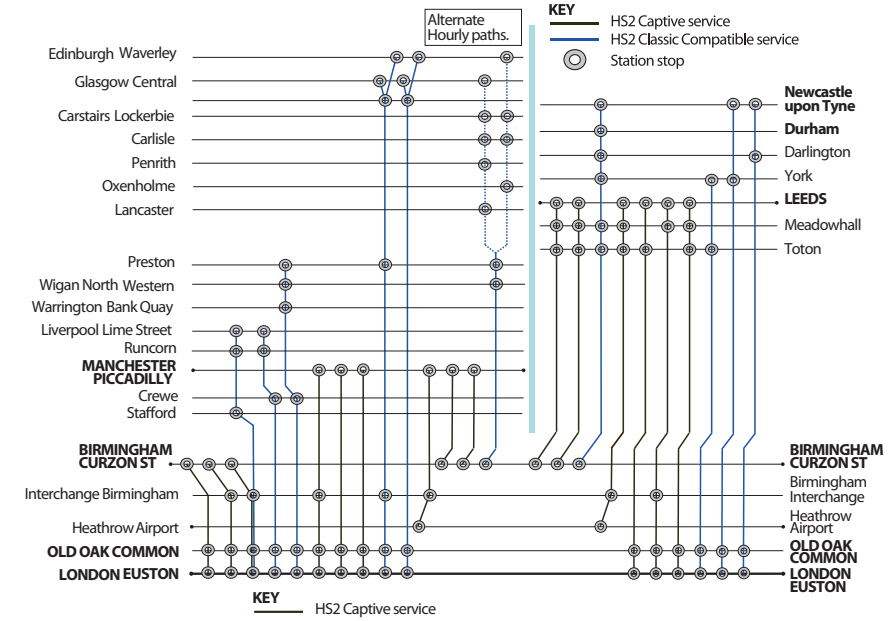
Glasgow and Edinburgh are both shown to have two trains an hour, splitting at Carstairs, which would have an unbelievable service for near zero population. But HS2 Ltd has still used an outdated forecasting methodology, which overstates long distance demand growth; DfT has at last formally accepted revised methodology, and perhaps in the next iteration, trains will split at Preston, not Carstairs, and Lancaster and Carlisle will get a high speed service – at present they are only shown to be served by a Birmingham – Scotland service which replaces the existing classic trains on this axis.

Manchester has three trains an hour, presumably all stopping at the airport, which interestingly is not shown on the schematic, although 'Manchester Outskirts' was shown on the previous version. The Manchester Airport station is shown in other documentation as 'subject to agreeing…a suitable funding package with the airport and wider region'. Something is wrong with the journey times quoted in the main report – it shows Euston to Crewe at 58 minutes, but Euston to Manchester Airport as only 59 minutes. I suspect the published Manchester journey times are over-optimistic, and don't reflect the rather circuitous route to Manchester from the south, which cynics have suggested is designed to minimise the local reaction in the more sensitive parts of George Osborne's Tatton constituency.

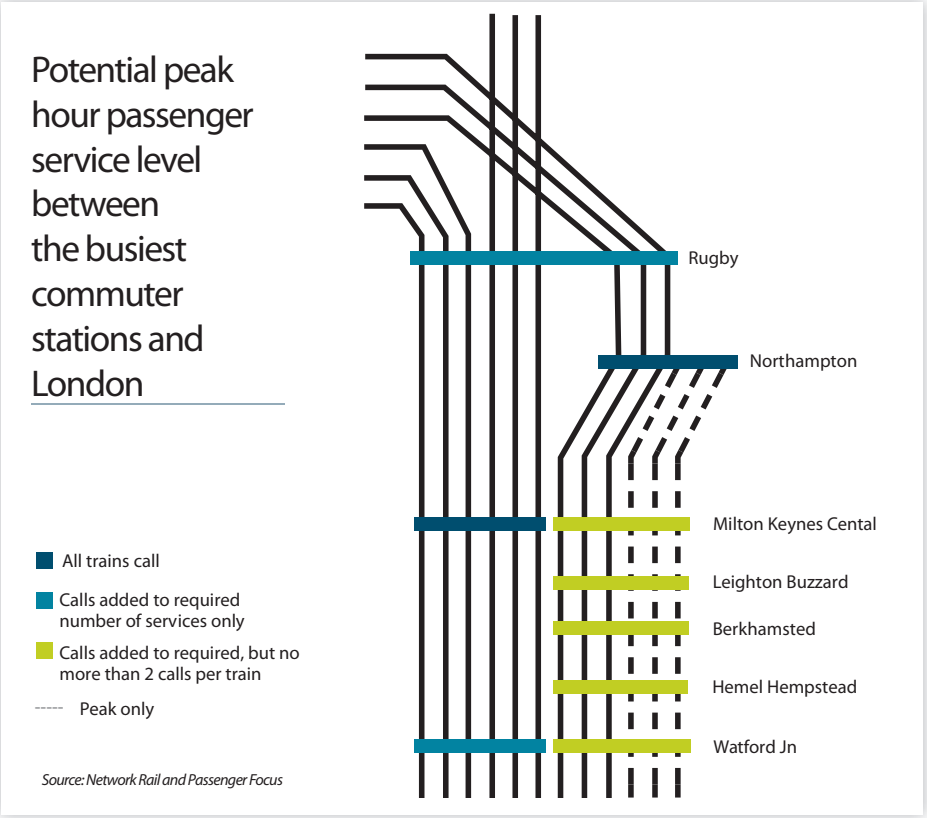
On the Eastern arm of the 'Y', there are three Leeds services an hour, two trains to Newcastle and a York train. Given that the trains operating only on HS2 (the Leeds services) can be 400-metre, 1,100 seat trains, this seems overkill for Leeds, potentially more seats than for Birmingham. Darlington does less well, with only one train an hour, and Durham is not shown to have any London high speed trains, although it does have an hourly service to Birmingham. There are also two Leeds – Birmingham services. Meadowhall (Sheffield) and Toton (East Midlands) both do well, with three London and three Birmingham trains an hour.

The schematic still shows two trains an hour to Heathrow, although the Heathrow spur has been kicked into the long grass pending the Davies review of South East airports

## HS2 Phase 2 HS service pattern.




*Source: HS2*




strategy. Any rational analysis shows these trains would carry very few passengers in any case. Also, there is no specification for trains to and from HS1; buried in the documentation there are clues that any HS1 trains will only run from Old Oak Common, although this is fudged by statements such as 'this could see passengers boarding direct services from cities like Birmingham, Liverpool or Edinburgh to European destinations like Brussels, Paris or Frankfurt'.

The classic specification suggests that politics has had an impact. It includes three fastish trains an hour from Euston to Coventry, two 'London Midland', one inter-city, each making two or three stops. In relation to service cuts, the latest iteration of the HS2 business case has a net present value saving of £7billion, euphemistically called 'released capacity'. Coventry was the original cause célèbre, and there must be a suspicion that its proposed frequency has been restored irrespective of likely overall demand. Similarly, Milton Keynes has a frequency which wouldn't disgrace East Croydon, about seven fast trains an hour. Four would do fine – it is after all 49 miles from London, so doesn't really need Victoria Line frequencies – but there is a determination to make a political, or propaganda, point. The net result is that there would be ten trains an hour on the fast lines from Euston, virtually the same as now, with no scope for freight on the fast lines. The slow line specification is essentially the same as now, unaffected by HS2, so it's clear that HS2 will provide no additional capacity for freight south of Rugby.

Network Rail, jointly with Passenger Focus, also published 'Future Priorities for the West Coast Main Line' in January 2012, which shows an indicative peak pattern for the fast lines (Fig 2) , promising peak stops at Hemel Hempstead and Berkhamsted. This isn't possible, given the implied fast line occupancy. Passenger Focus can be forgiven, but it appears that Network Rail has not evaluated this rigorously.

## Coventry – Birmingham

The Coventry – Birmingham corridor is even more exciting. Between Birmingham New Street and Birmingham International, the HS2 specification has no fewer than 11 trains an hour, nine non-stop and two all stations, with nine continuing to Coventry (six fast, three slow). This is just about theoretically possible, if the timetable for virtually the whole network is structured round this section, with Newcastle – Reading and Manchester – Bournemouth trains timed to meet exact slots and run with total reliability. But this is more than currently operate over this section, and in practice is clearly undeliverable. There isn't much daytime freight on this section, but the freight operating companies and the Rail Freight Group should be aware that, if this pattern or something close to it were implemented, there would be no freight paths available throughout the day. I don't know whether Network Rail people were involved in this piece of nonsense – they should have been if they weren't, and if they were, they haven't looked at this properly.

The classic specification doesn't contain similar nonsenses elsewhere, but some of the indicative service patterns are quite surprising. The remaining Euston – West Midlands inter-city service is shown as a through train to Liverpool, inherently less reliable than a Wolverhampton – Euston service, and providing too much capacity north of Birmingham. British Rail learned this lesson and abandoned this service pattern about 40 years ago. Even more bizarrely, the remaining Euston – Manchester service – the only London service for Stoke-on-Trent, Macclesfield and Stockport – is shown as going through to Edinburgh and Glasgow on alternate hours. This is superficially efficient in terms of resource utilisation, and gives some new direct journey opportunities (Stoke-on-Trent to Scotland) but will inevitably degrade punctuality and reliability throughout the route. This is also the only direct London service for Lancaster, the Lake District and Carlisle, with something like a 53-minute longer journey time than today.

## East Midlands

On the Midland main line, the service from Leicester and the city centre stations at Nottingham, Derby and Sheffield is inevitably shown to be downgraded, because of the proximity of HS2 Parkway stations. Interestingly, 'High Speed Rail: Investing in Britain's Future', the main report published in January, argues against a Parkway station near the M6 to serve the Potteries because this would be 'unlikely to attract a high proportion of passengers to and from the urban areas of Stoke and Crewe themselves, where people would be likely to continue to use existing rail connections to London'. Obviously a different breed from the East Midlands!

Presumably as a sop to Leicester, the Edinburgh – Plymouth service (shown to be cut back to Newcastle) is shown to be diverted via Leicester and Nuneaton, with significantly extended journey times for passengers to Birmingham and beyond.

Overall, the specification does show significant improvement from earlier versions, but there are still serious oddities and inconsistencies. More fundamentally, it's clear that no serious timetable work has been done to validate both the extraordinary high level of utilisation planned for HS2 itself and the indicative 'classic' specification. Given that hundreds of millions have already been spent on this project, would it have been too much to ask that work had been done to validate some of the wilder claims being made by HS2 Ltd and the Government? mr