Update on the 51m Alternative solution to HS2

1. Summary of proposal

51m developed proposals which deliver major additional capacity increases on the West Coast Main Line much more quickly, at much less cost than for HS2. And as a result of Network Rail's 2013 plans with no need even for a subsidy. The proposals more than meet the DfT's forecasts of a doubling in demand for long distance rail travel.

The key features of the 51m proposals are:

- Increasing the length of existing InterCity trains from the current 9 or 11 cars to 12 cars. This can be done on all routes except to Liverpool with only limited work on extending platforms at a number of stations. Liverpool would continue to have 11 car trains, as the costs of reconstructing Liverpool Lime Street station would be prohibitive.
- Reducing the number of first class vehicles in each train from 4 to 3, by converting one car from first to standard class.

These first two changes alone would more than double InterCity capacity compared with the numbers used in the HS2 "base case".

- Addressing three pinchpoints on the West Coast Mainline (WCML)
    - Constructing a grade separated junction south of Milton Keynes and by introducing higher performance commuter trains **doubling** capacity on the fast commuter trains between Northampton, Milton Keynes and Euston. These are services which are overcrowded now – this can't wait until 2026
    - Infrastructure investment to eliminate other existing bottlenecks on WCML between Rugby and Nuneaton and in the Stafford area. This would enable operation of 24 daily additional InterCity trains in each direction.

With the proposed infrastructure investment too, standard class capacity could be <u>tripled</u>.

The additional capacity would also enable services to be improved, particularly for intermediate stations. 51m have developed detailed plans which have been "proved" through external expert analysis, and are robust. The illustrative timetable delivers the following benefits:

- Additional capacity to Manchester and the North West
- Hourly "fast" Manchester trains – non-stop to Wilmslow
- Glasgow trains accelerated by omission of north west stops, and alternate trains running fast from Preston to Carlisle
- New through services to Blackpool/Windermere (alternate hours)
- Major improvement for Nuneaton, Tamworth and Lichfield.
- Improved Rugby service (almost half hourly interval)
- Watford gains an hourly Crewe/Manchester service, giving a step change in access to the North West

In contrast, HS2 will inevitably result in **worse** services for many stations on the existing route, as the HS2 business case includes a saving of £7.7 billion for service reductions on existing routes.

Business case

WS Atkins, ***working for the Department of Transport***, reported in 2012 that the 51m alternative has a much better business case than HS2, with a Benefit Cost Ratio of 5.17[1], compared with only 1.6 – 1.9 for HS2[2]. It also showed it would cost less than 10% of HS2.

But the new announcement by Network Rail [3]in April 2013 of their intention to proceed with the Stafford bypass works, changes the business case, as the works are to be done anyway. These works enable 2 extra trains per hour each way, which is what the 51m alternative provides. The capital cost of the 51m option reduces (to about £1bn) which means it would need no subsidy to proceed. The Annex shows the new arithmetic.

2. Response to criticisms of the 51m alternative

Government has largely relied on a report by Network Rail to "rubbish" the 51m alternative. This work was carried out without any attempt to engage with 51m, or even to clarify 51m's proposals. Network Rail's criticisms are not valid, indeed are in some cases based on misunderstandings of 51m's proposals which could easily have been cleared up.

The principal criticisms are as follows:

Insufficient capacity to meet forecast demand on Euston commuter services

Network Rail implicitly accept that the 51m alternative provides adequate InterCity capacity, but say 51m's proposals won't meet future commuter demand. This issue was not a critical part of the 51m consultation response, so it did not form a major part of the Government's February 2011 consultation on HS2. Even so, 51m's proposals double commuter capacity on the already overcrowded services to Milton Keynes and Northampton.

Furthermore, it is now clear that current overcrowding could be relieved immediately by letting passengers to Milton Keynes use half empty Virgin trains which already stop there at peak periods, but don't carry passengers between Milton Keynes and Euston – the only route to London with such a restriction.

And when it's finished, HS2 provides no more commuter capacity than the 51m proposals – nor any additional capacity for freight. This is because HS2's own service proposals for the existing route don't allow any services to be transferred from the slow to the fast lines, as the fast lines are still intensively used.

51m's proposals would necessitate remodelling Euston station

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3664/hs2-strategic-alternatives-study-update.pdf Page 28
[2] http://assets.dft.gov.uk/publications/hs2-economic-case-appraisal-update/hs2-economic-case-appraisal-update.pdf Page 10
[3] http://www.networkrail.co.uk/news/2013/apr/Improving-the-Stafford-section-of-the-West-Coast-Main-Line/

The 51m alternative would **not** require any work at Euston, as sufficient 12 car length platforms are available to accommodate the proposed service frequency. In contrast, HS2 will require complete reconstruction of the station over an 8 year period, with massive disruption and reduced peak capacity

51m's proposals would result in long periods of disruption

The 51m proposals had involved only three worksites on the existing route, and are comparable to the recently completed flyover at Nuneaton (constructed without any major disruption), the proposed flyover at Norton Bridge (north of Stafford), and the proposed HS2 grade separated junction north of Lichfield.

Now that Network Rail intend to proceed with the Stafford area works themselves, they cannot consider the works prohibitively disruptive.

The work proposed under the 51m alternative would certainly be much less disruptive than the reconstruction works at Euston required for HS2.

The high utilisation of the fast lines would negatively impact on route performance.

The 51m alternative would result in higher utilisation of the fast lines than at present, with a maximum of 16 trains per hour in the peak direction. However, this is reliably achieved elsewhere on the rail network in peak periods, for example on the fast lines between Liverpool Street and Shenfield (20 trains an hour) and between Waterloo and Woking (15 trains an hour). Moreover, the proposed infrastructure enhancements will ***improve*** reliability by segregating freight and local passenger trains from InterCity trains throughout the route between Euston and Crewe.

In addition, the fast line occupation is lower than that proposed for HS2 (18 trains per hour) despite the fact that HS2 will have a lower technical limit on the number of trains per hour, as a result of its proposed 360 kph operating speed, hence the much longer braking distances required. It is extremely doubtful that 18 trains per hour will be capable of being reliably delivered in practice – no high speed line anywhere else in the world operates close to the level claimed for HS2

The 51m proposals increase long distance high speed connectivity on some flows, however this is at the expense of other intermediate flows, where connectivity severely worsens. In some cases this results in leaving stations without a train service.

The concerns about connectivity and leaving some stations without a train service are entirely unfounded, as 51m would have readily explained if Network Rail had made any attempt to clarify this. The illustrative 51m service pattern improves overall connectivity. No stations are left "*without a train service*".

The service pattern set out in the 51m alternative was not exhaustive, and was not intended to cover stations such as Atherstone, Rugeley and Stone, which are the stations cited in Network Rail's report. There is clearly route capacity to continue to serve these stations.

In contrast, the HS2 business case includes a saving of £7.7 billion for service reductions on existing routes.

ANNEX: The 51m Optimised Alternative to HS2 now requires no subsidy

This note sets out the implications of Network Rail's announcement in 2013 of their intention to proceed with the Stafford area works, that were part of the 51m optimised alternative to HS2 as assessed by DfT. This shows how it results in changing the business case for the 51m alternative to requiring no subsidy. A summary of the 51m alternative is available in the main note.

Business case for the 51m alternative

WS Atkins, working for the DfT, reported in 2012 that the 51m alternative has a much better business case than HS2, with a Benefit Cost Ratio of 5.17[4], compared with only 1.6-1.9 for HS2[5]. 2. It also showed it would cost less than 10% of HS2.

January 2012 Assessment of 51m [6]gave following summary table:

Table 5.3 – Economic Summary Statistics – Core Scenarios (£m, 2011 prices & values)

Economic Summary Statistic	PVB	PVC	NPV	BCR
Package 2	7,912	1,971	5,941	4.01
Package 2A	6,984	2,570	4,414	2.72
51M	6,063	1,173	4,891	5.17
Scenario B	13,740	9,742	3,998	1.41

This shows the position excluding the Wider Economic Impacts (WEI). For the 51m alternative there are benefits of £6.06bn and net costs (subsidy) of £1.17bn. The subsidy is the costs less the revenue.

The same document gives the breakdown of costs. The capital costs (rolling stock are treated more expensively as leased) are as follows (see page 34):

51M

Package	Scheme Name	Cost (£Billions)	
51M	Stafford Area Bypass	£	1.285
51M	Cheddington / Leighton Buzzard Grade Separated Junction	£	0.253
51M	Attleborough to Brinklow	£	0.195
51M	Northampton Line Speed Improvements	£	0.003
51M	Additional Network Rail Costs for Infrastructure Enhancement	£	0.360
	Sub-Total 51M Cost (£Billions)	**£**	**2.097**
Extras:			
Power supply + disruption + other items (+24%)		£	0.503
	Total Cost 51M (£Billions, Av 2011 Prices)	**£**	**2.600**

[4] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/3664/hs2-strategic-alternatives-study-update.pdf Page 28

[5] http://assets.dft.gov.uk/publications/hs2-economic-case-appraisal-update/hs2-economic-case-appraisal-update.pdf Page 10

[6] 'High Speed Rail Strategic Alternatives Study: Update Following Consultation ', January 2012

The capital cost of £2.60bn (in 2011 prices) has a 2011 value (ie NPV) of £2.083bn (Table 2, page 40)[7], ie 19.9% less.

Network rail announcement

Network Rail have announced that they are proceeding with the Stafford Area works to the extent that it would allow 2 extra trains/hr to the North West when completed, which is what the 51m scheme aimed to achieve. Details are given at:

http://www.networkrail.co.uk/news/2013/apr/Improving-the-Stafford-section-of-the-West-Coast-Main-Line/

- Two extra trains an hour (each direction) between London and the north west of England
- One extra fast train an hour (each direction) between Manchester and Birmingham
- One extra freight train an hour (each direction) through Stafford

This relieves the 51m option of the cost of the Stafford Area Bypass, at £1.285bn plus the 24% on cost (for power supply, disruption etc) – totalling £1.593bn. Expressing the £1.593bn saving in 2011 values (ie discounted by 19.9%) gives £1.277bn. This leaves the 51m alternative with a capital cost of a little over a billion.

This saving, £1.277bn, is more than the £1.173bn net cost to Government in the January 2012 assessment, (see summary table above), so the 51m alternative has a benefit (rather than cost) to Government (of £0.104bn).

Conclusion

The effect of Network Rail's decision to proceed with the Stafford Area works is that the 51m solution requires no subsidy. This is because the costs (reduced by the cost of the Stafford Bypass) are less than the revenue that would be generated on the Government's 2012 analysis.

This analysis uses entirely Government figures (ie with the optimism bias etc).

[7] Table 5.1 (a different table in the main text) gives the £2.60bn but the title for the table is incorrect (it contradicts the text), and it is in fact in £2011 prices but not values.