Presentation on Heathrow Hub International

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ARUP

Slide 1 – Cover slide (St Pancras interior picture)

Heathrow Hub International

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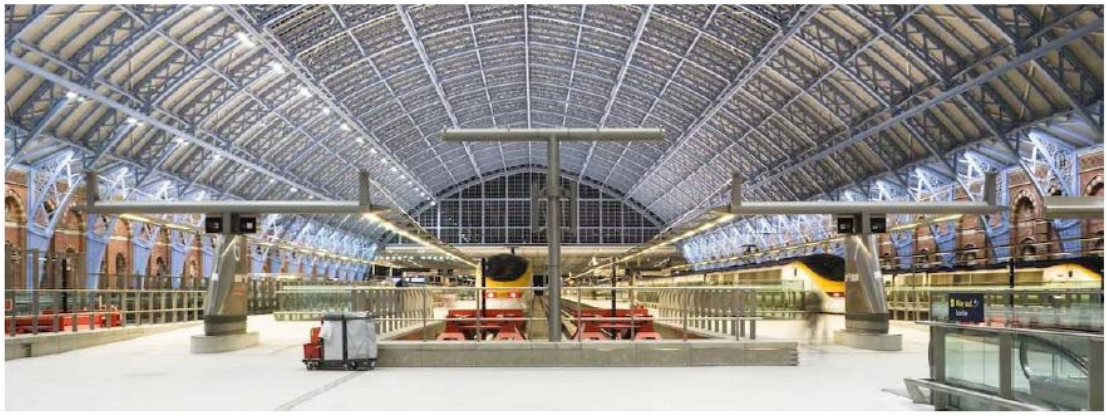


Good morning. I'm Peter Gist – a director at Arup, and the project manager for the team developing the Heathrow Hub, a proposal, three years in development, that aims to deliver a multimodal transport interchange located at Heathrow Airport.

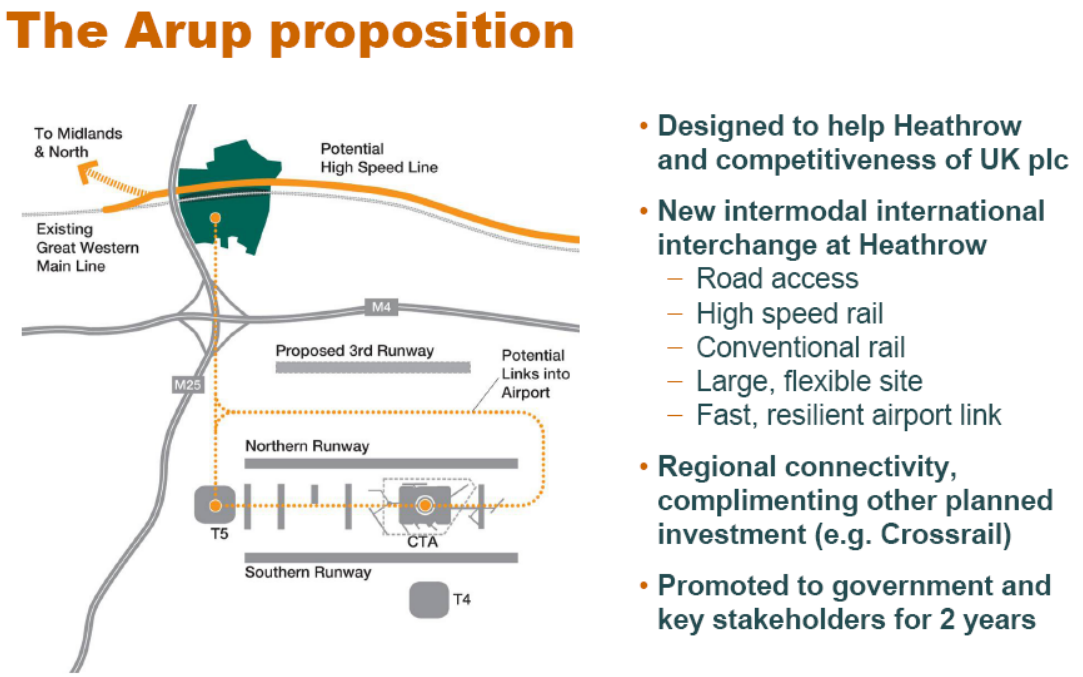
Arup is a trust-owned company which enables us to invest in what we regard as exciting project-creation ventures. We are therefore proud to be the firm that successfully lobbied Government for a different alignment for High Speed 1 – one which would take it into London via the Thames Gateway and Stratford, in order to achieve economic development benefits. We were also part of the team that brought the HS1 project to a successful conclusion.

Today and I'll be looking at the development of the high speed rail network, and would like to focus in particular on that element in the proposal which is being referred to by government as a "Heathrow International Interchange".

Today I will briefly describe our proposal for this international interchange, and I will try to illustrate how it could add value to any high speed rail network from London to the Midlands and the North.

I will also seek to identify some of the issues that HS2 Ltd will have to take into consideration as they evaluate the high speed rail options, including the location of the interchange, and show how there are many options to consider.

Slide 2: The Heathrow Hub proposal



The primary aim of Arup's proposal is to secure Heathrow's position as Europe's premier hub airport by placing it at the centre of the national and international rail networks. Although it is Europe's busiest airport, the number of destinations people can fly to from Heathrow has declined – putting it behind CDG, Schipol and Frankfurt. Several contributory factors have been identified – including the difficulty of getting to and from the airport.

Roads around the airport are amongst the most congested in the country, and public transport is poor, other than from central London. We aim to develop a rail solution to address these issues. It puts Heathrow at the centre of domestic and high speed rail networks, a proposal which will complement BAAs existing plans, including those for Crossrail and Airtrack.

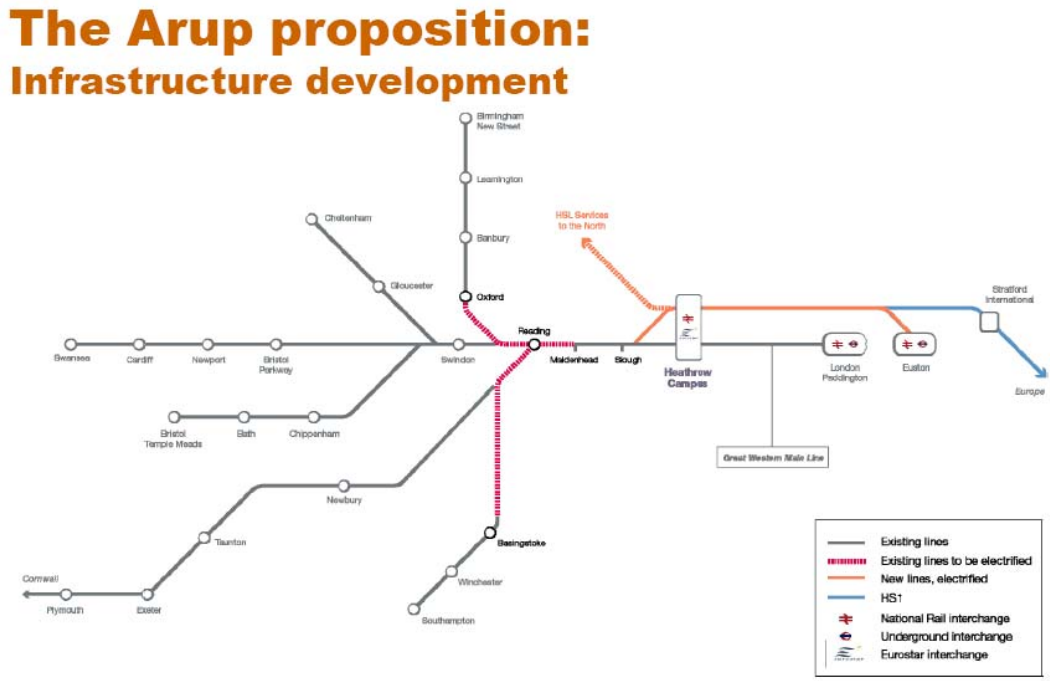
The proposal involves developing a multi-modal interchange at Heathrow, linked to new high speed rail infrastructure and enhanced existing rail infrastructure.

We have identified a number of potential sites for an interchange, the most promising of which is a site 3.5kms north of Terminal 5, large enough to accommodate a 12 platform station, and with good access to the motorway and trunk road network.

Now, there may well be other sites, but this is the one that we have worked through in some detail, that could play host to these range of services, and connect Heathrow to the Great Western Main Line, high speed rail, Crossrail, and the road network.

We recognise that this proposal is not without its challenges. But wherever the interchange is located, its primary purpose from an air passenger point of view will be to get passengers quickly, efficiently and safely to the terminals and gates. This one of the issues we are currently looking at with BAA, and we hope this work will contribute to High Speed 2 Ltd's evaluation options for the Heathrow Interchange.

Slide 3: The Arup proposition – infrastructure development



We propose developing new infrastructure and enhancing new infrastructure, including,

- a new 12 platform station.
- a new 24 km tunnel under West London
- a connection to the Great Western Main Line to the West of the station
- electrification of the Great Western Main Line beyond the current ambition for Crossrail - West of Maidenhead, North to Oxford and South to Basingstoke.

- and finally, we propose a link to Euston, which, as you will see, we suggest should be HS2's London terminus

This combination of infrastructure developments will deliver a number of valuable new services into Heathrow. It will open access to Heathrow from the West for the very first time, it will improve reliability, and it will reduce journey times to and from the airport, typically by 30 minutes or more.

And a clear benefit of reducing journey times to Heathrow, is that they will encourage more people out of their cars, and onto trains.

Our research has shown how the number of people accessing Heathrow by public transport can be increased from about 40% now, to over 55%.

We have always envisaged this new infrastructure would provide the first leg of an extended high speed infrastructure to the Midlands and the North.

Slide 4 – Objectives and criteria

Let's remind ourselves why are we doing this, and what will influence the choices that will have to be made.

Primarily, I think we all want High Speed Rail to deliver faster, more reliable and more frequent journeys between centres of economic activity.

But we also want better journeys into areas which are not currently economically vibrant - a major consideration in deciding the route of HS1.

And we will also demand that High Speed Rail delivers a number of significant environmental benefits, including encouraging people out of cars and planes and onto trains

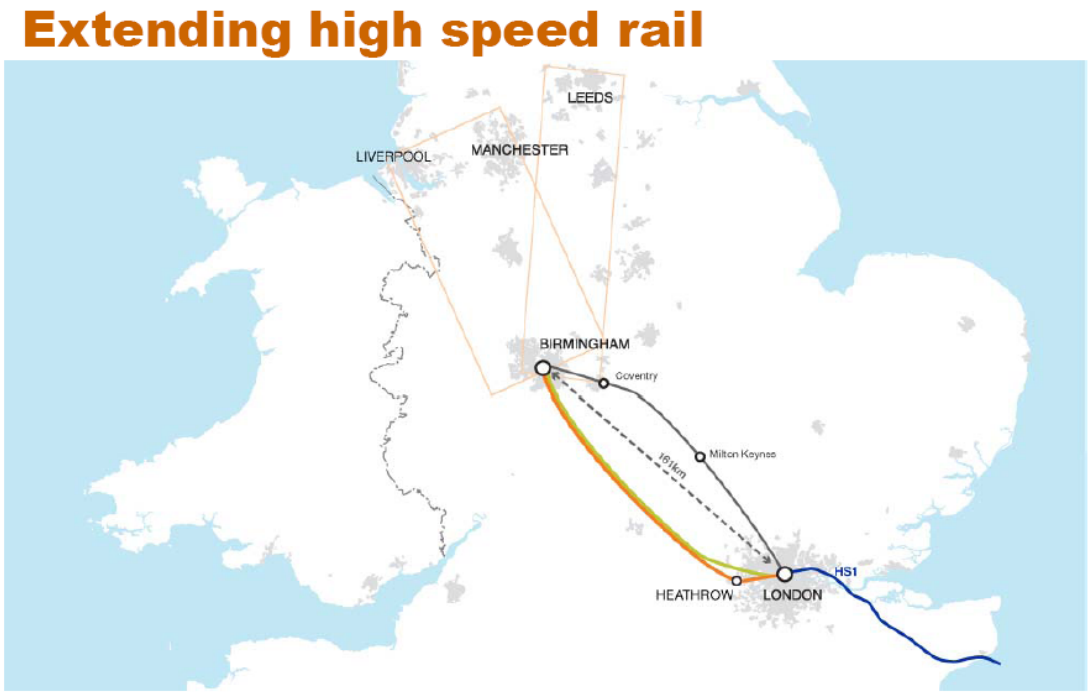
Topographic factors will greatly influence the development of the high speed network. For example trains are noisier when travelling at high speed, so routes aligned through built-up areas may need to be tunnelled, or else trains slowed down. And, although taking High Speed Rail through the countryside may have a positive impact on costs, it would not be without its own environmental impact.

Crucially therefore, trade-offs between speed, cost and environmental factors will be inevitable with any route.

For these reasons, it is often sensible for new rail developments, including high speed rail, to follow existing transport corridors between cities.

So let’s look at some of the options available.

Slide 5 – Extending High Speed Rail



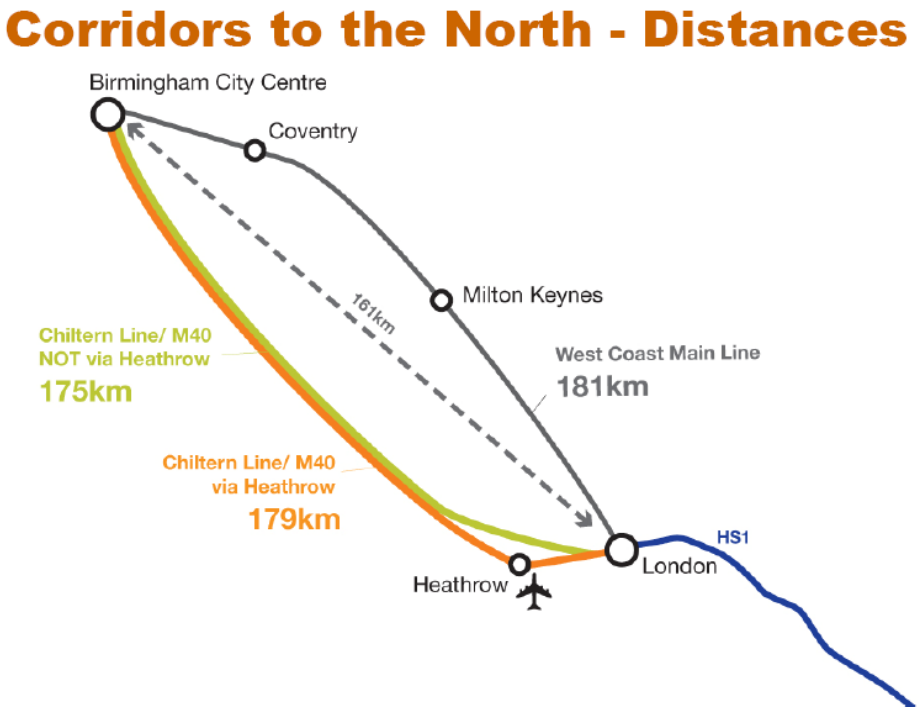
This map shows HS1 in blue from the Channel Tunnel to London St Pancras; the West Coast Main Line in grey, and two potential high speed corridors, shown diagrammatically in orange and green.

Although we often think of Birmingham as being on the route North from London, we can see it is as far West of London as it is North.

As we know, high speed rail will eventually be extended Northwards, and we have shown these possibilities as rectangles on the map. Clearly, the approach of the high speed line from London to Birmingham needs to be planned with these further extensions in mind, and we will share with you some ideas about that in a moment.

Now let us consider the London to Birmingham section of the map in greater detail….

Slide 5 – Corridors to the North - Distances



First, let's look at the distances involved, which will influence journey times and cost.

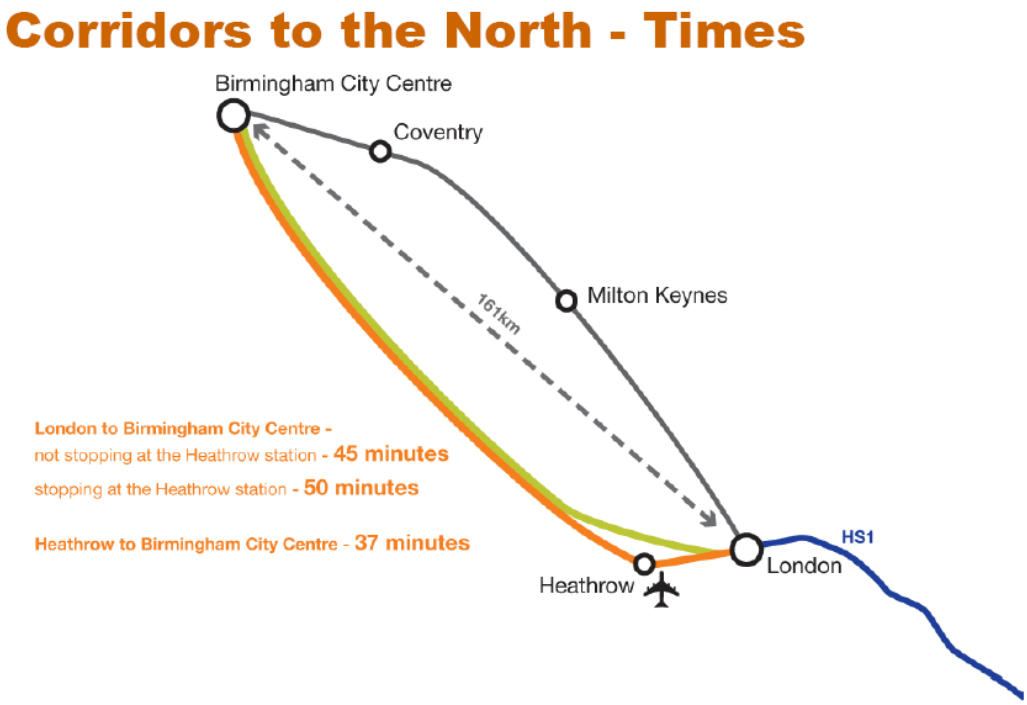
The direct line from Euston to Birmingham City Centre is the dotted line, a distance of 161 kms.

The West Coast Main Line, shown in grey, is a distance of 181km.
We also show two feasible high speed options. The first, shown in green, would run from Euston through urban areas, and connect to Heathrow via an offsite interchange, located nearer to Central London than the airport. As you can see, the route for this option is 175km.

The other option, shown here in orange, is Arup's proposal. Running underground from Euston, it goes to Birmingham via an interchange at the site we've identified just to the North of Heathrow.

Importantly, our proposal, is shorter than the West Coast Mainline route to Birmingham, and just 4km longer than the alternative shown in green.

Slide 7B – Corridors to the North - Times



In terms of benefits though, what is really important is the difference these options will make to journey times and service frequencies, and as a result passenger numbers.

We have estimated the likely speeds at different points on the railway using modern trains such as ICE 3 in Germany, the Velaro in Spain, or the new AGV.

We have found that the journey time from Euston to Birmingham following our proposal via Heathrow, would be 45 minutes, and 43 minutes along the alternative route.

These journey times compare with a typical time now of 1hr 22 minutes on the West Coast Main Line.

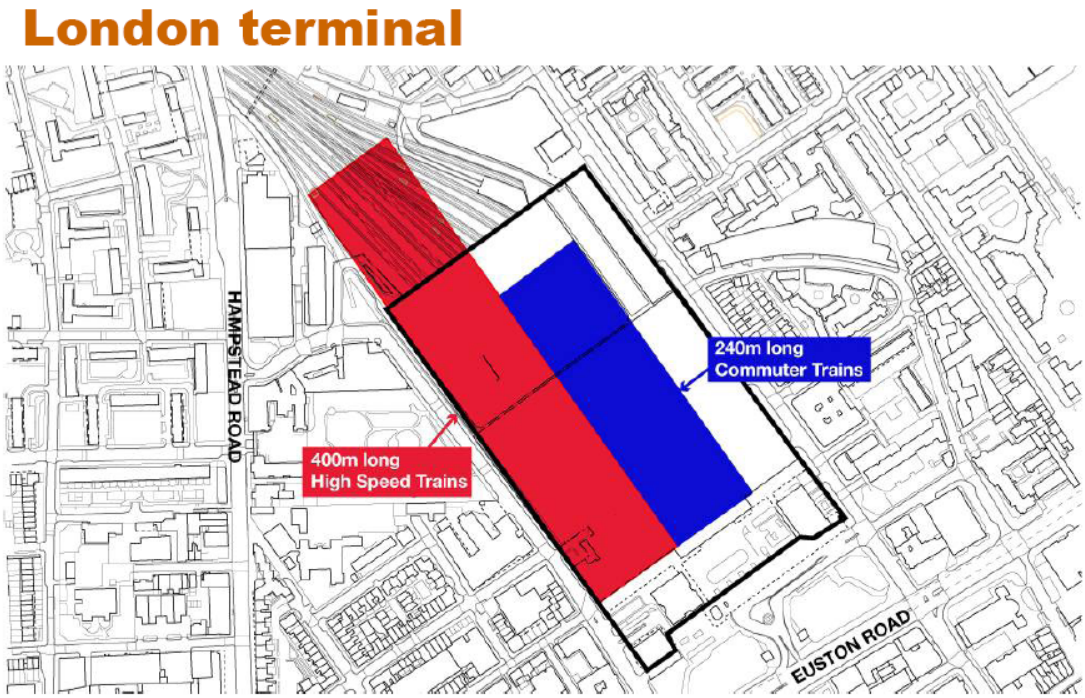
Interestingly, as in the Arup proposal - taking high speed rail via Heathrow - results in less than two minutes time penalty for those travelling between Birmingham and London on a non-stop journey.

However, it holds significant benefits for passengers travelling between Birmingham and the Heathrow Hub, and vice versa. They who would enjoy a journey time of just 37 minutes.

We have not modelled the travel times between Birmingham and the alternative option that we've described. But as the interchange would be located nearer to London, passengers from the North and West destined for the Airport would be required to interchange to at this site, and travel backwards to Heathrow, we therefore expect travel times to be greater.

Now, briefly, I'd like to raise some issues surrounding the station options for HS2 in both London and Birmingham….

Slide 8 –London terminal



Let me start by saying it will be a significant challenge for HS2 Ltd to develop proposals for a London terminal.

We believe there is little point in spending billions of pounds developing a high speed network, if passengers are not delivered to city centres, where good transport networks already exist. This is the lesson of St Pancras and HS1, which is served by a great range of public transport options, and it is why in our proposal Euston is the London terminal for HS2.

But this has interesting implications. Maximising capacity may well mean the use of 400m trains, considerably bigger than those operating at Euston today. The red

blocks on the diagram represent 400 metre high speed trains, like the existing Eurostar trains. As you can see, we have overlaid this on Euston's existing footprint. For comparison, shown in blue is the length of a standard 12 coach commuter train.

Euston may well need redevelopment on a large scale, extending the station back towards Euston Square Gardens, potentially requiring demolition of the 1960s developments. Some may say that would be a welcome initiative!

Alternative options might include a completely new underground terminus, or several separate terminal stations.

But whatever solution is chosen, we envisage a major project, perhaps on the scale of St Pancras and King's Cross.

Slide 9 – Options at Birmingham

So, what about Birmingham?

We believe the key choices are driven by where the line goes next, and the levels of services provided to Birmingham itself.

Some obvious choices are shown on this slide; going round Birmingham at high speed with a branch into the city (in red), or running through the centre of

Birmingham on the red and blue sections. There are a number of plausible corridors into, through, under and round Birmingham, all allowing for onward links to the North.

Going through central Birmingham will inevitably involve some tunnelling, as will coming out of London. Environmental and engineering considerations might mean not going through the city at very high speed.

An advantage of the through-Birmingham option is the potential to provide a very high frequency service. The Birmingham City Centre station could have 6 or so high speed services to London every hour, if it was situated on the new line. It might have, for example, only 2 or 3 if it was located on a “branch” line.

Another advantage of running services into the city centre, is the ability to connect with existing transport networks, just as we had argued with the London terminus.

The alternative is to run the line around the outside of Birmingham, perhaps stopping near the airport. That might cut a few minutes off journey times, and could create the opportunity to develop a parkway option for cars and buses.

Whichever option is adopted, what is clear is that implementing any of these – be it through or round Birmingham – is going to be challenging.

Slide 10 – Conclusion

Ladies and gentlemen, in conclusion, High Speed 2 Ltd has a number of significant recommendations to make to Government, including how the new high speed network will link to one of Britain's most important economic assets – Heathrow Airport.

We strongly believe that the Heathrow Interchange should be thought of as an integral part of these developments.

After all, Heathrow is not out of the way, it's definitely on the way to Birmingham and the North.

The airport interchange is not secondary to delivering a high speed network - it is central to it…

… especially if it is to deliver the benefits that will justify the not insignificant costs.

To maximise the benefits of the Heathrow interchange, it must be located as close as possible to the airport itself, so that passengers consider it as part of the airport.

Ladies and gentleman, we have a once in a life time opportunity to overcome what has become the very British divide between our rail networks and international airports.

Our proposal would do just this.

Thank you.