Connecting HS2 to Scotland: the North of England Criteria

Introduction

The planning for the first two phases of High Speed 2 is well underway. And, in October 2012, the Secretary of State for Transport announced his intention to launch a study into connecting HS2 with Scotland, with a target journey time of three hours between London and Glasgow/Edinburgh. This means going beyond the capability that will be delivered by the first and second stages of HS2 which together can shorten end-to-end journey times to 3h 30. To get to three hours or less, further new line construction will be needed.

Scottish authorities are already considering how HSR might best serve Scotland and are now planning to develop an HSR line within Scotland on similar timescales to the first stage of HS2. Ministers have announced in November that the first stage would link Edinburgh and Glasgow and is expected to be delivered by 2024.

Greengauge 21 has previously produced evidence that a high-speed line between northern England and Scotland would offer very good value for money and would deliver substantial carbon savings.

The Scottish Partnership Group usefully developed the criteria that should guide thinking on high-speed rail in Scotland. This guidance, which differs in some important respects from the approach being followed for the first and second phases of HS2 in southern England, while still using the same European technical standards, can be summarised as follows:

Scottish HSR Planning Criteria

- design for 400m long European-sized trains travelling at up 400 km/h
- link to High Speed network in England and multiple northern England destinations
- serve Glasgow & Edinburgh centres with opportunity for a high-speed link between them
- connections to the Scottish rail and motorway network (especially to the north)
- multiple traffic types (a parallel being drawn with HS1's regional passenger and freight capability)
- take advantage of phased delivery where possible
- line resilience against unplanned external events
- based on sustainable development objectives

This guidance is helpful for planning HSR within Scotland, and addresses what might be needed to contribute to achieving a three hour or less journey time. But that still leaves a gap – the geography of northern England between Leeds/Manchester (the furthest north points of the two stage HS2 plan) and the Scottish border. Before any formal remits are drawn up for the study into connecting HS2 to Scotland, Greengauge 21 thought it would be helpful to gain an insight into the likely views in the North of England on how high-speed rail between northern England and Scotland should be developed. On behalf of its Public Interest Group, Greengauge 21 therefore consulted transport authorities, local enterprise partnerships and other organisations.

The results of the survey are set out in Appendix A to this short report and have been used to distil the following suggested planning objectives for the 'northern gap', a 120-150 mile corridor between Manchester/Leeds and the Scottish border.

High-level objectives – what should the HSR line deliver?

1. **Relief of capacity pinch-points on existing main rail lines and on the strategic road network**
   There are rail capacity constraints in the north of England just as in the south, in part caused by the mix of intercity trains, local stopping services and freight trains and junction arrangements. HSR should be designed to relieve capacity pinch-points and to provide a better alternative to road-based travel.

2. **High-speed connections between provincial towns and cities in England and Scotland**
   Delivering fast and frequent connections between the major cities of England and Scotland will improve the economies of the north and help them together act as a counterweight to development in the south.

3. **High-speed connections to London**
   Providing high-quality access to the services, markets and businesses of the nation's capital, including its hub airport, is essential for the prosperity of the northern cities.

4. **High-speed connections between London and Edinburgh/Glasgow**
   Rapid long-distance end-to-end journeys will help deliver environmentally-valuable mode shift from air travel.

5. **Connection to HS1 to allow through services to Europe via the Channel Tunnel.**
   Direct rail access to continental Europe is a requirement for modern, connected and competitive cities.

Planning objectives – what features should the line have?

1. **Mixed usage of the line, where there is capacity available**
   HSR in the north of England should be able to accommodate fast inter-regional passenger services or freight trains where this does not compromise the provision of true high-speed passenger services.

2. **Intermediate stations serving major cities and towns**
   Major cities and towns in the north of England should be served by HSR stations where feasible.

3. **Connections to the existing rail network**
   HSR should be connected to and integrated with the existing rail network, to allow classic-compatible high-speed services to operate to destinations off the high-speed line.

4. **Integration with strategy for the existing rail network**
   All regional centres in the north of England that do not benefit directly from new HSR services or from connections to the HSR network should instead benefit from enhanced classic rail services utilising the capacity freed up by HSR or delivered through route upgrades.

Planning criteria – how should the line be designed?

1. **Compatible technical characteristics with HS2 phases 1 and 2**
   There should be seamless and efficient operation with the existing HS2 proposals and with HSR proposals in Scotland, with common technical standards.

2. **Examination of both new build or route upgrade options**
   Consideration should be given to all options for delivering HSR services, balancing journey time and capacity benefits with cost and environmental impacts.

3. **Minimisation of environmental impacts and reduction of carbon emissions**
   HSR routes should be designed to minimise the impacts on the built and natural environment, where possible, and also to deliver a strong reduction in carbon emissions.

4. **Engagement of transport authorities, economic development bodies, business representatives and user groups in the planning of HSR**
   A fully-inclusive planning process should be undertaken, with active engagement of stakeholders across the north of England.

Conclusion

Authorities across the north of England believe that high-speed rail is needed, and that it can play a valuable role in meeting projected demand for both freight and passenger travel. They want to see its design and development linked closely to the opportunities in northern England for economic recovery and growth. They share the view of the Scottish Partnership Group that consideration needs to be given to the mix of services that could use the new line, while recognising the importance of achieving very attractive journey times for high-speed rail customers.

They also believe that careful consideration should be given to both new build and to upgrading existing lines.

Analysis of Questionnaire Responses

Introduction

A written questionnaire was sent out by email to 66 organisations based in the North of England, comprising local transport authorities, Local Enterprise Partnerships, Passenger Transport Executives, Chambers of Commerce and local groups of the CBI and Institute of Directors. In addition, members of Greengauge 21's Public Interest Group were invited to complete the questionnaire, or send narrative responses, in order that a perspective could be obtained on how further development of HSR in the North of England would be received by organisations further afield.

It was made clear that this was a officer-level sounding exercise rather than a formal or statutory consultation.

Analysis of respondents

Responses to the Greengauge 21 survey were submitted on behalf of 32 organisations. This took the form of 18 completed questionnaires, 16 of which were from Northern England organisations and two from Public Interest Group members. Narrative responses were received by email from a further three Public Interest Group members. A full list of respondents is provided at Annex 1.

The questionnaire responses are broken down below by type of organisation and by geographical area. Given there may be some differences in response to particular questions depending on whether organisations are located east or west of the Pennines, some responses are broken down into 'North Eastern' (comprising organisations based in the Yorkshire & Humber and North East regions) and 'North Western'. 'Other' comprises Public Interest Group members outside the North of England.

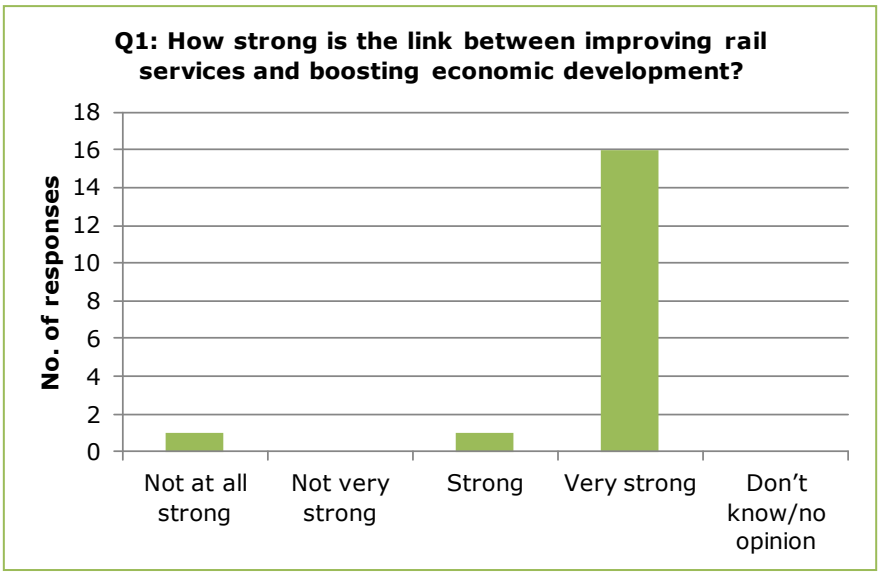
Questionnaire responses received

Type of organisation	Total no. respondents	North Eastern	North Western	Other
Local Enterprise Partnership	2	1	1	
Local transport authority	5	2	2	1
Passenger Transport Executive	4	2	1	1
Chamber of Commerce	4	1	3	
CBI or IoD group	1		1	
Multiple	1	1		
Rail user group	1		1	
Total	**18**	**7**	**9**	**2**

It should be noted that there is one 'multiple' organisation, the Eastern Network Partnership, which comprises 12 organisations (local authorities, LEPs, PTEs and Chambers of Commerce) in the East Midlands, Yorkshire and North East. This one questionnaire response therefore represents a wide geographical area and different types of organisation – and so this should be borne in mind when considering the 'North Eastern' responses analysed below.

Question 1: Rail services and the economy

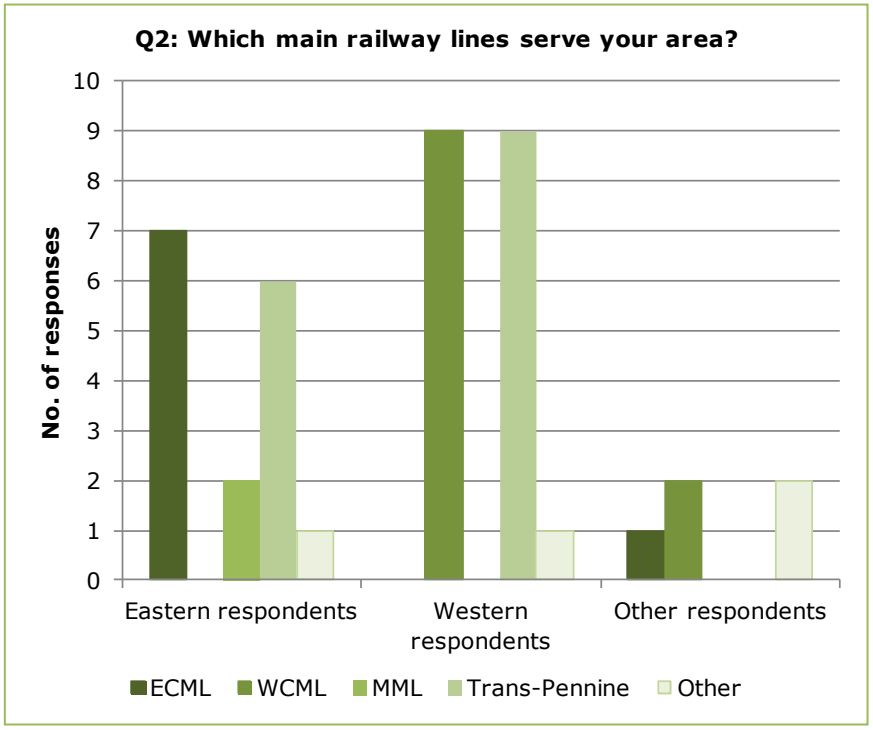
In your area, how strong is the link between improving rail services and boosting economic development and regeneration?



Clearly the vast majority of respondents in all areas consider improving rail services to be a very important lever in boosting economic development and regeneration.

Question 2: The existing rail network

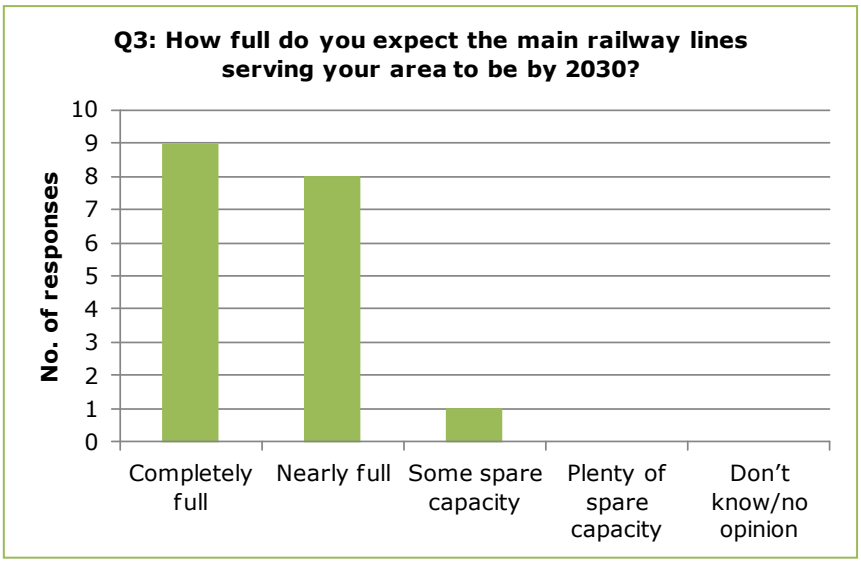
Which of the following main railway lines serve your area?



As would be expected, it is the West Coast Main Line, East Coast Main Line and trans-Pennine routes that predominately serve the respondents' areas, with the Midland Main Line also providing access.

Question 3: Capacity of the existing railway

Thinking about the mix of short and long distance passenger services and railfreight on the main railway lines serving your area, how full do you expect the lines to be by 2030?



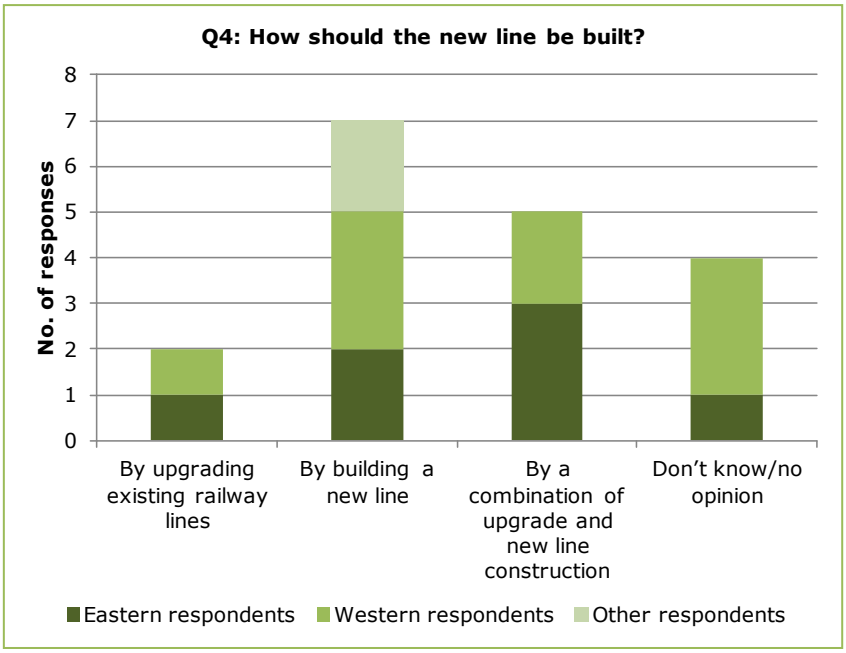
Most respondents expect the main lines serving their areas to be nearly or completely full by the 2030s. The results are consistent across respondents served by the ECML, WCML, MML and trans-Pennine routes.

Respondents commented that capacity pressures are being experienced already, including into Manchester, Birmingham, Newcastle, on the WCML and the ECML more generally, and on cross-border routes serving Scotland. There are also capacity limitations caused by the mix of passenger and freight traffic. This risks stifling passenger and freight demand, particularly at peak times. It is acknowledged that there will be some short-term investments, such as the Northern Hub and electrification schemes, that will provide additional capacity and other journey time and frequency improvements. However, most respondents expect that continued passenger and freight demand growth, together with mode shift from both car and air, means that by 2030 the main lines will be full or nearly full.

Question 4: HSR – new build or upgrade

If HS2 is extended from Leeds/Manchester to Scotland, there may be a choice between upgrading existing railway lines to minimise cost and disruption or building a new line to create more capacity (thereby freeing up capacity on existing routes).

In your view, how should the line be built?



Views were divided on whether HSR line(s) to Scotland should be new build or upgraded existing routes, or indeed a combination of upgrade and new-build. Only 11% of respondents consider that upgrading existing railway lines alone was the most appropriate way to provide HSR services to Scotland. A new line was favoured by 39% of respondents, but, unsurprisingly at this early stage, a further 22% need further information before forming a view.

In their comments, respondents who preferred the construction of a new line gave as reasons less disruption to existing services, higher benefits from a purpose-designed and built route and an ambition to achieve 2h30min journey times between London and Scotland. It was generally considered that existing lines could be used to serve intermediate destinations, local and regional services and to provide freight capacity.

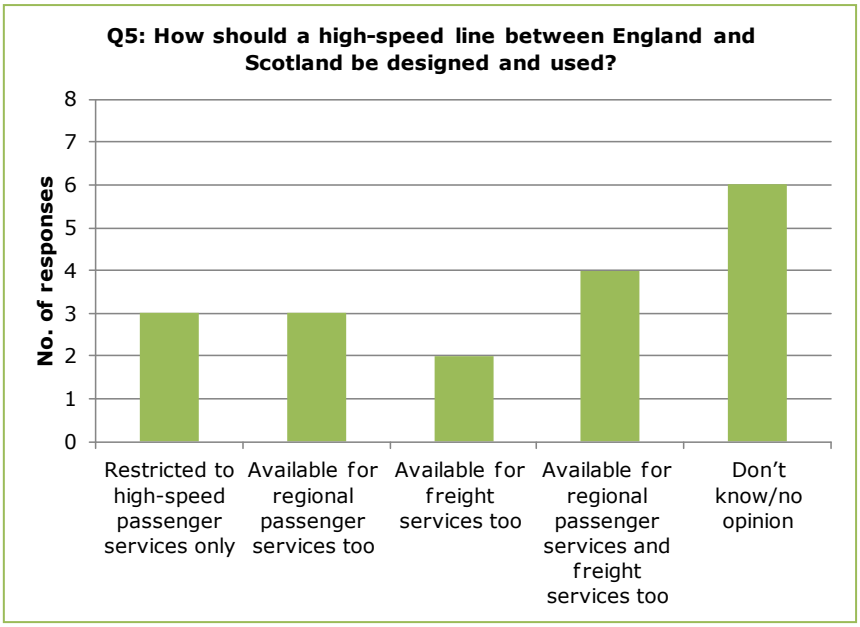
Of those that supported upgrading existing lines, either instead of a new line or as a partial solution, there were comments that route upgrades might provide wider economic benefits to all rail users and a belief that there are some route sections, such as York – Darlington, that might be upgraded for higher speeds quite easily.

A number of respondents expected that further technical studies would need to be undertaken to understand which approach offered the best case.

Question 5: HSR – dedicated or mixed use

If a new high-speed line is built between Leeds/Manchester and Scotland, its capacity may not be fully used by high-speed intercity services. There may therefore be a choice between leaving this spare capacity unused (in order to cater for future growth or to help ensure reliability), or using the capacity for other types of rail services.

In your view, how should a high-speed line between England and Scotland be designed and used?



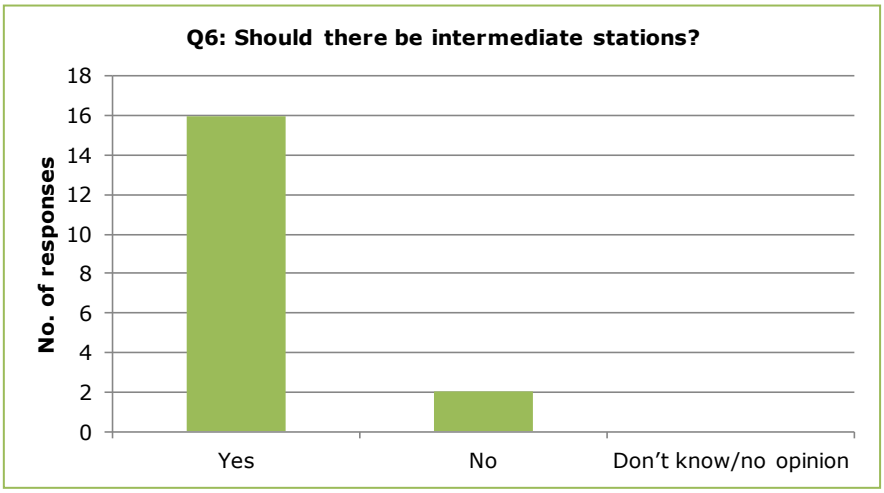
Fewer than 20% of respondents consider that a cross-border high-speed line should be reserved only for high-speed passenger services. These respondents highlighted the need to retain capacity on the high-speed line for future growth of high-speed passenger traffic, and had concerns over any limitations that mixed traffic might place on maximum speeds on the high-speed line. However, there was some support for investigation of high-speed freight.

While many respondents were in the 'Don't know' category, most of those expressing a preference wanted some form of mixed use capability: a new high-speed line should be made available for regional passenger and/or freight services too. In commentary, it was said that high-speed rail services should have priority, but if fast regional passenger or freight services could make use of the capacity without impeding the high-speed services or overnight maintenance activity, then this was a benefit.

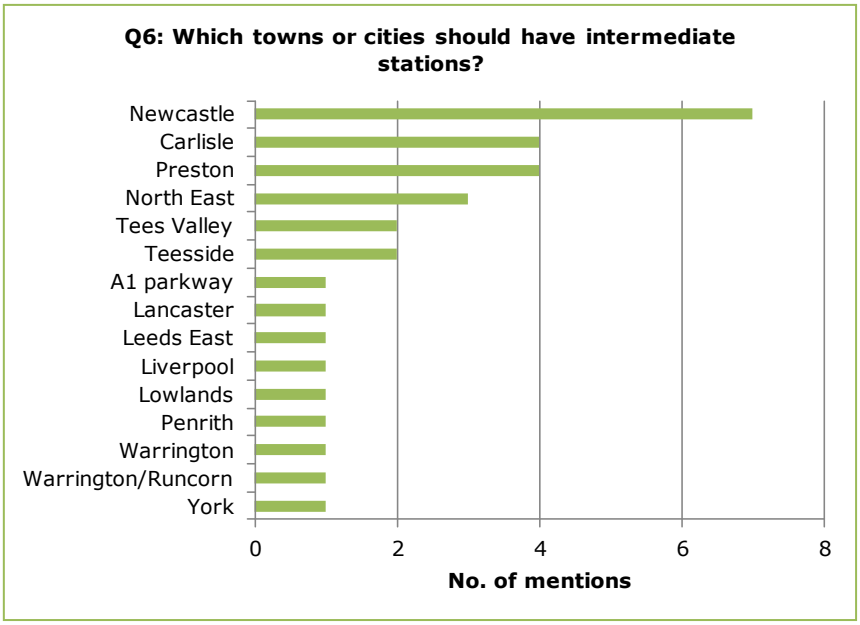
As with question 4, a substantial minority of one-third of respondents need further information before forming a view, in part because of concerns over the impacts of combining several types of service on performance, speed or service frequencies.

Question 6: Intermediate stations

Do you think there should be intermediate stations on a new high-speed line between Leeds/Manchester and Scotland?



The vast majority of respondents consider that there should be intermediate stations on a new high-speed line between northern England and Scotland. Of the two respondents who considered there should be no intermediate stations on the line, one clarified that stations between northern England and Scotland should be on high-speed spurs or loops off the through route and the other considered that existing railway lines adequately serve intermediate destinations.

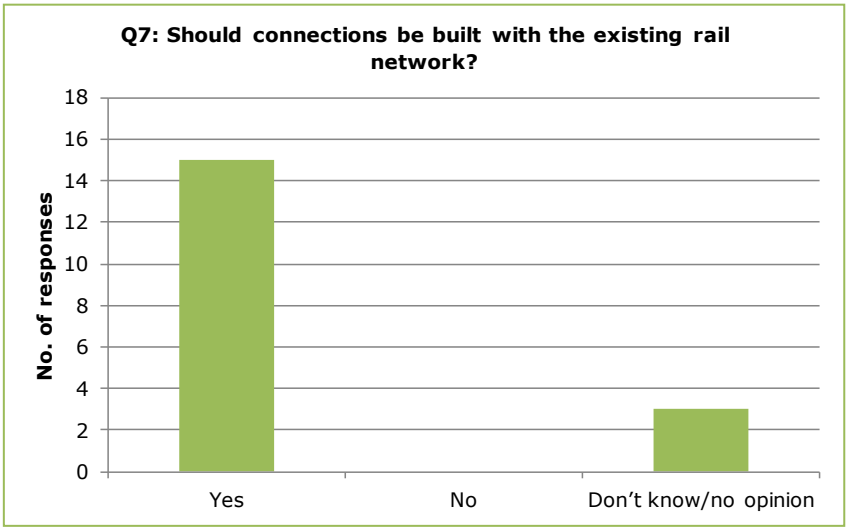


The towns and cities that were mentioned most frequently as locations for intermediate stations are Newcastle, Carlisle, Preston, Tees Valley/Teesside and 'the North East'.

Question 7: Connections

Connections could be built between a new Leeds/Manchester – Scotland high-speed line and the existing rail network to allow high-speed services (from either London or Scotland) to serve destinations off the high-speed line.

Do you think that connections should be built with the existing rail network?



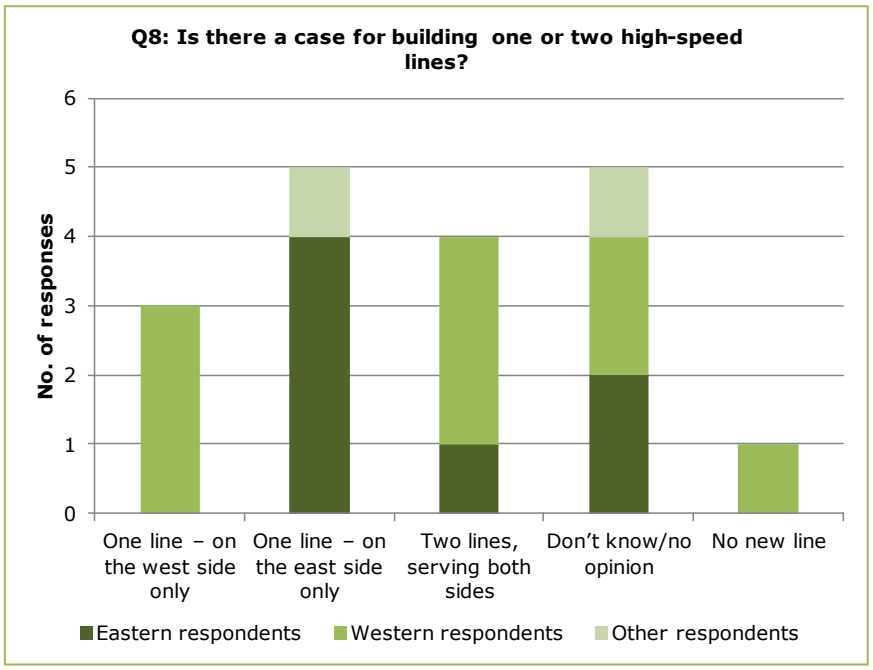
All respondents who expressed an opinion considered that connections should be built between a new high-speed line and the existing rail network.

In comments, some respondents suggested that locations already referred to in question 6 above could be connected via the classic rail network – such as Warrington, Preston, Newcastle. In addition, a wide range of other destinations were put forward as benefiting from links to the high-speed rail network, including Liverpool, the Lake District, Blackpool, Wigan, Lancaster, Bradford, York, Harrogate, Barnsley, Doncaster, Rotherham, Chesterfield, Worksop, Wakefield, Dearne Valley, Nottingham and Hope Valley, Thornaby/Middlesbrough/Redcar, Stockton/Hartlepool.

Another benefit mentioned was connecting to continental Europe via the planned HS2-HS1 link. However, some mentioned that a careful balance needs to be struck between more direct services via HSR and the role that classic rail services can play in improving connectivity, particularly where HSR capacity might be limited.

Question 8: One line or two

In your view, is there a case for building one high-speed line between northern England and Scotland, or two?



Views on this question tended to reflect the geographical orientation of the responding organisation: all of those who consider that one line should be built on the east were from the north east and all those who thought that one line should be built on the west were from the north west. Overall, 41% of respondents are in favour of only one line between northern England and Scotland, 24% are in favour of two lines and 29% did not express a view. One organisation stated that the WCML should be upgraded in place of constructing a new line.

A number of respondents suggested that further evidence, such as on the capacity of existing lines or the costs of new lines, would be needed before a firm decision could be made. Those that supported two lines tended to do so because of the impossibility of serving the whole of the north with one line and the risk of creating economic imbalances. A number of those who supported only one line also highlighted the importance of providing east-west links (such as between Edinburgh and Glasgow, or Leeds and Manchester/Liverpool) and upgrading the existing main line on the other side of the Pennines, to mitigate any imbalances. There was some support for a fully integrated national HSR network, which would eventually have two north-south lines plus east-west links, although it was recognised that cost constraints would mean this is a long-term aspiration.

The reasons put forward for preferring a line to be constructed on one side of the country to the other include the scope to serve major population and business centres, the need to serve both Edinburgh and Glasgow effectively, the alignments of the existing main lines (and hence the ease of upgrading them), the relative distances between the northern English cities and Edinburgh/Glasgow, the achievable journey times between London/the Midlands and Scotland, and the cost-benefit case.

Question 9: Benefits of HSR to Scotland

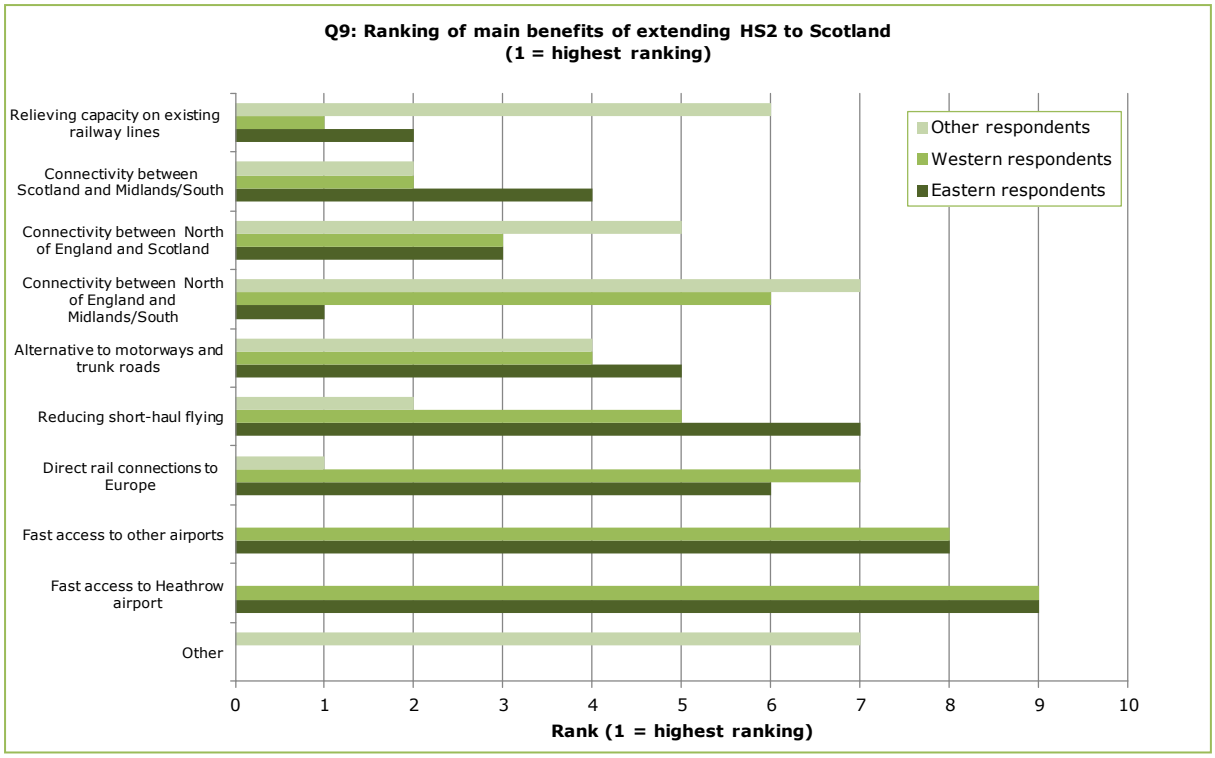
In your view, what would be the main benefits of extending HS2 to Scotland?

Given respondents were allowed to rank as many or as few factors as they wish, responses to this question can be measured two ways: first, by calculating the average score given to each benefit and then ranking the resulting scores; and second, in terms of the percentage of respondents who simply identify a particular factor.

Overall Importance Rank	Benefit	% of respondents identifying benefit
1	Relieving capacity on existing railway lines to improve local passenger and freight services	78%
2	Better connectivity between Scotland and the Midlands/South of England	72%
3	Better connectivity between the North of England and the Midlands/South of England	72%
4	Connectivity between North of England and Midlands/South	67%
5	Providing an alternative to motorways and trunk roads	94%
6	Reducing short-haul flying	56%
7	Direct rail connections from the North of England and Scotland to Europe via the Channel Tunnel	72%
8	Fast access to other airports, such as Manchester and Birmingham	44%
9	Fast access to Heathrow airport	28%
10	Other	6%

The overall ranking of benefits shows the relief of capacity constraints and improved transport connectivity as the most significant to most respondents. While providing an alternative to motorways and trunk roads was ranked mid-table, it was mentioned by 94% of respondents, more than the connectivity and capacity benefits. The benefits related to reducing flying or providing access to airports were mentioned by fewest respondents.

There are some geographical differences in the responses, with those from the North East placing greatest weight on connectivity from the North of England to the Midlands/South, while those in the North West were more focused on the capacity benefits of relieving existing railway lines.



The 'other' benefit mentioned by one respondent was an improved BCR for HS2 and much-reduced carbon emissions.

Question 10: Developing a route

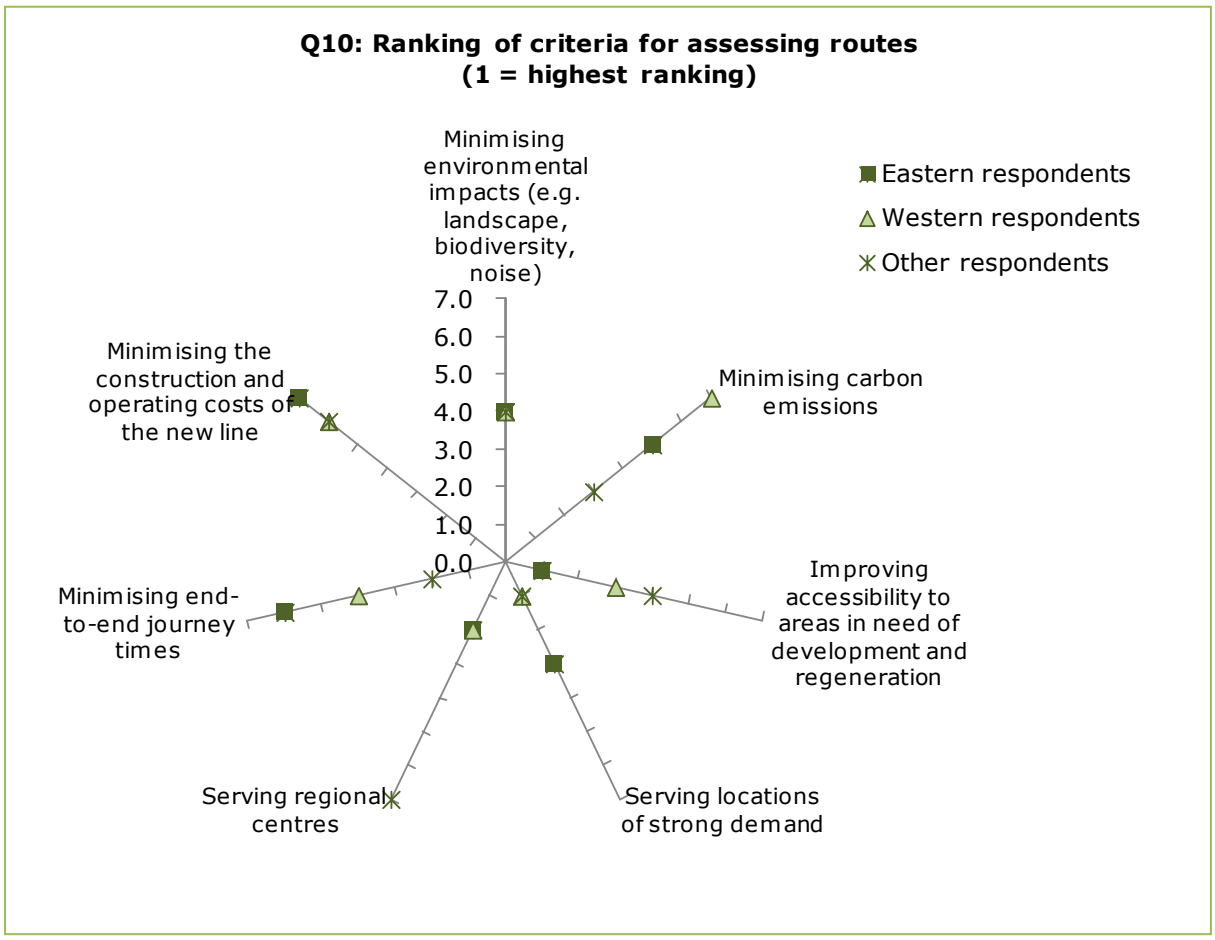
In your view, which of the following criteria should be used in assessing routes for a new high-speed railway line between northern England and Scotland?

Overall Importance Rank	Criteria	% of respondents identifying criterion
1	Serving locations of strong demand	67%
2	Serving regional centres	83%
3	Improving accessibility to areas in need of development and regeneration	78%
4	Minimising end-to-end journey times	61%
5	Minimising environmental impacts (e.g. landscape, biodiversity, noise)	72%
6	Minimising carbon emissions	56%
7	Minimising the construction and operating costs of the new line	61%
8	Other	6%
	Don't know/no opinion	6%

Most respondents consider that when planning new high-speed routes, the most important factors to be taken into account are those that relate to the destinations served – to ensure that the route adequately serves regional centres, locations with the strongest demand and areas in need of regeneration. The majority of respondents also saw that environmental impacts and cost considerations would be key factors.

Examining the differences in the rankings between those in the North East and the North West reveals that those in the North East place greater weight on serving areas in need of regeneration and on minimising carbon emissions while those in the North West consider that minimising journey times and serving locations with strong demand are more important criteria. Most respondents consider it important that any new lines serve regional centres.

One organisation did not rank the criteria as it does not support the construction of a new line, and another identified an additional factor of rebalancing growth across the whole of the UK rather than in heavily congested areas. In commenting on the criterion of serving locations with strong demand, one respondent cautioned that when defining/assessing demand many areas, particularly away from the main lines, are likely to have lower levels of historic long distance rail demand due to poor connectivity.



Question 11: Other factors

In your view, what other factors should be taken into account when planning high-speed rail routes to Scotland?

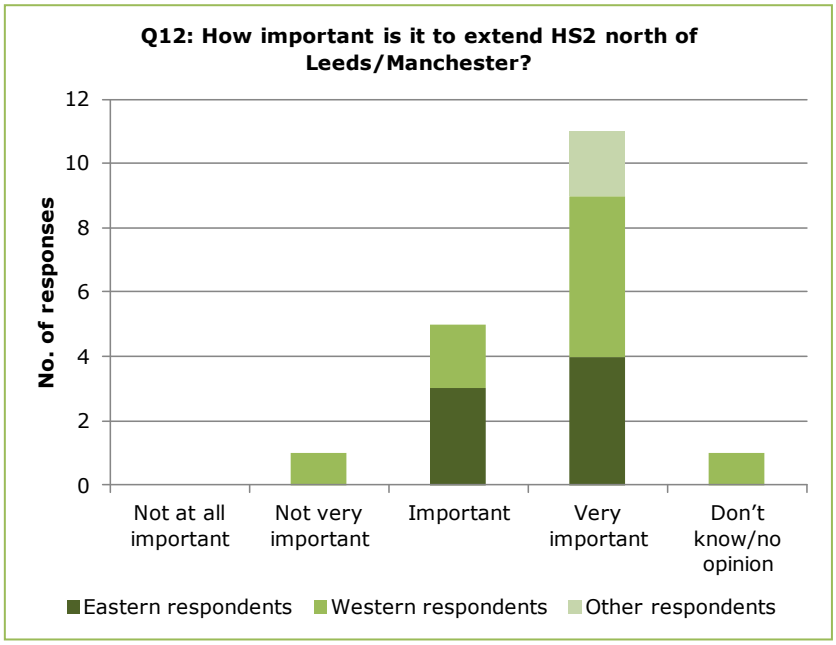
Ten respondents set out additional factors to be considered, which in summary were:

- The level of future demand and economic benefits that will be generated, and the importance of capturing a wide range of markets;
- Economic forecasts and population projections;

- The ability of a new HSR line in conjunction with the existing rail network to maximise available rail capacity and improve performance;
- Enabling intra-regional and inter-regional connectivity as well as reducing journey times between London and Scotland;
- Local impacts on station locations and their catchments;
- The effects on aviation and roads;
- Clear fares policies and structures that can be communicated early;
- Ensuring that the benefits of high-speed rail are presented and communicated well, including to those who won't use the line;
- The need for a balanced and integrated long-term strategy and vision for UK transport;
- The possibility of starting construction at both northern and southern ends at the same time;
- Funding, particularly in the light of the Scottish devolution agenda;
- Providing regions with the policy structure and funding mechanisms to enable the economic potential of HS2 to be fulfilled.

Question 12: Importance of extending HS2 to Scotland

In your view, is it important to extend HS2 north of Leeds/Manchester?



The vast majority of respondents – 89% - consider that extending HS2 from northern England to Scotland is important or very important.

In the final comments, a number of other points were made, highlighting:

- The importance of regional and inter-regional journeys to economic activity in the north of England, in providing connections to markets;
- The need for a true national high-speed network, acknowledging the importance of phases 1 and 2 of HS2, but extending to other English, Scottish and Welsh cities in due course to achieve strong, sustainable and balanced growth. Without this, regions not served by directly high-speed rail lines will be disadvantaged economically;
- The potential to reduce the demand for short-haul flights by reducing HSR journey times;

- The need for consideration of enhancements on the existing main lines to remove bottlenecks and constraints and reduce journey times.

Other responses

Greengauge 21's Public Interest Group members were asked for views on extending HS2 to Scotland. It was generally agreed that building a national high-speed rail network should be a transport and economic development priority, as should a specific HSR connection between Leeds/Manchester and Scotland. Without this, there is a risk that capacity constraints on the existing rail network in the north of England will stifle rail growth, particularly in freight traffic, and economic activity. An extension of HS2 to Scotland could free capacity on existing routes for improved local and regional services.

A clear long-term HSR strategy statement would be very valuable. Indeed, concerns were expressed that regions such as the South West and Wales, not connected to HS2, would be further disadvantaged by an extension of HS2 to Scotland on its own because of a competitive imbalance in terms of journey times to London.

In planning this stage of the national network, there is support for a greater focus (than was the case with phase 1 of HS2) on facilitating travel between regional/metropolitan centres in the UK, rather than only travel to/from London. Collaborative working is needed, not only between UK and Scottish governments, but also with local and regional stakeholders. Particular factors that should be addressed include connections with the existing rail network, to ensure comprehensive access to HSR services, while avoiding any negative impacts on performance or capacity. A need for a significant uplift in local transport capacity and strategic land use planning is also identified, to deliver a sustainable long-term transport system.

Annex 1: Survey respondents

Questionnaire

Blackpool Council

Centro

Cheshire and Warrington LEP

Cheshire West and Chester Council

Durham County Council

Eastern Network Partnership[1]

Glasgow City Council

Greater Manchester Chamber of Commerce

Institute of Directors North West

Merseytravel

Metro

Nexus

North and Western Lancashire Chamber of Commerce

North Cheshire Rail Users' Group and Wirral Transport Users' Association

North East Chamber of Commerce

North Yorkshire County Council

Sheffield City Region

Warrington Chamber of Commerce

General comments

City of Edinburgh Council

Great Western Partnership[2]

Passenger Transport Executive Group

[1] The Eastern Network Partnership comprises: SYPTE (representing the Integrated Transport Authority and Sheffield City Region Local Enterprise Partnership), Metro, Tees Valley, Derby City Council, Derbyshire County Council, Nottingham County Council, Nottingham City Council, Leeds Chamber of Commerce, East Midlands Councils, North Eastern LEP and Tyne & Wear ITA.

[2] The Great Western Partnership comprises: Bristol City Council, Cardiff Business Partnership, Cardiff Council, Newport Council, Swindon Borough Council, South East Wales Economic Forum, the West of England Partnership, South West Wales Economic Forum, Institute of Directors (SW England), Cardiff Business Partnership, SWWITCH, GWE Business West and South East Wales Transport Alliance