

# Greengauge 21 consultation response to National Infrastructure Commission: Northern City Connectivity

Greengauge 21 welcomes the opportunity to respond to the National Infrastructure Commission call for evidence on Northern City Connectivity.

We are pleased to see that the Commission is looking at its remit strategically, as well as considering the specifics of individual investment proposals in the North and in London. The first part of our response is germane to both geographies: we put forward common criteria that we believe should be considered in all major (transport) investment decisions. The second part addresses the specific issues raised in the Northern City Connectivity consultation.

## (i) The development of the national rail network

It needs to be recognised that the Northern and London transport initiatives are being considered against a backdrop of continuing high annual rail demand growth and major investments already underway in the rail sector (and a substantial highways investment programme too):

- HS2
- Crossrail 1
- Thameslink
- Electrification of Great Western and Midland Main lines; Liverpool – Manchester – Leeds – York; Edinburgh – Glasgow Queen Street
- IEP

as well as other schemes such as East-West Rail.

Our contention is that there is (still) no overall strategic plan or vision for the development of the national rail network. The risk is of failure to plan effectively the many interfaces and potential overlaps between projects, with the attendant dangers of nugatory expenditure, untenable levels of service and local community disruption, spikes in demand for the supply chain – challenges that can only grow with the adoption of projects such as Crossrail 2 and Northern Powerhouse Rail (TPR). There is also the important strategic question of the extent to which such investments usefully tilt the pattern of regional economic development.

We believe that there needs to be a *rationale* for new project possibilities set at a national level to help form the narrative on the need for such schemes, and to complement the business cases that project promoters will be developing.

Greengauge 21, through its Public Interest Group formed in 2008, with sponsorship of the Northern Way and the wider English RDA network, Network Rail, TfL and many other public authorities across Britain, created a national strategy for high-speed rail ('Fast Forward', published in September 2009). It remains the only blueprint for the long term development of high-speed rail and a useful reference frame for considering issues surrounding investments beyond HS2.

We recognise the planning work that Government (through DfT), Network Rail and the ORR undertakes to establish 5-year investment programmes for the rail sector as a whole. But there is no longer term strategy – and indeed to produce one can seem daunting, with a need to engage with a wide set of stakeholders, make choices (that is, prioritise at a strategic level) and leave sufficient flexibility for changing circumstances.

With appropriate support from stakeholders, building on its experience with high-speed rail, Greengauge 21 is seeking to develop during 2016 a broader national rail development strategy. This will include consideration of high-speed rail, but look more widely, at all forms of rail operation, passenger and freight. It will focus on achieving wider objectives including (but beyond) the obvious challenges facing the rail industry – such as dealing with growth, adopting new digital technologies, and improving yet further the established safety record. We believe that Government might welcome a broad, stakeholder-based initiative in this area in the absence of any body charged with producing such a strategy. We would welcome exploring how it can be used to serve the Commission's and TfN's objectives going forward.

In that work, we plan to develop clear criteria applicable across the nation when considering major rail investment options. Initial formulations of these criteria may help the Commission in its work on the Northern and London reviews, and we identify here five criteria that we believe the Commission should apply to the Northern and London cases – and indeed to all future rail investments of significant scale. These are:

1. Regional (and city region) economic need
2. Housing growth need
3. Capacity need
4. Implementation sustainability
5. Compatibility (with other projects and with changed circumstances) and sequencing.

The first criterion – regional (and city region) economic need – may be hard to assess in the North of England because there are no statutory plans at a regional level – in contrast with London, which has a plan for 2050, and with the various frameworks at a devolved nation level, for instance, Scotland’s Spatial Plan. But city regions including Manchester and Leeds are now developing such plans – on a non-statutory but ‘needs must’ basis.

Greengauge 21 considers it is essential that these non-statutory long term plans are developed comprehensively, with private sector inputs (to pick up the development needs of the North’s leading-edge business clusters). They should be made adaptable/updateable, so that a contemporary spatial account of economic development outlook is available for all regions/city regions. We would urge the Commission to press for this crucial input to meeting the challenge it has been set. In the absence of strategic economic development plans, transport (and no doubt other) investment can only be considered in a vacuum. Without these wider plans or frameworks, transport investments risk being distorted towards meeting existing/short term/foreseeable transport network congestion issues or other shortcomings: the investments may still be worthwhile, but they are unlikely to be transformational and will leave open to chance whether economic and housing policy objectives are met as fully as they could be.

This would go some way towards meeting the second criterion (housing growth need). The Commission is well-placed to consider questions like overheating of the housing market in London/Southeast and the comparative lack of demand across the North and the rest of the country.

The third criterion – capacity – needs to be driven by a range of demand growth scenarios which include a continuation of recent trends as well as the lower, more cautious forecasts used by DfT.

Consideration needs to be given to *what if* scenarios, rather than a single central demand forecast, including the effects of policy or technology shifts; funding availability and implementation slippages; market trend inflections. This should include thinking about *flexibilities* with operating pattern assumptions and hence wider outcomes. Here, the case of HS1 is relevant: it was planned with no expectation that fully half of its passenger carryings (over 10mppa) would be on domestic high-speed trains.

There is a particular gap presently in the area of freight forecasts where major revisions are needed to take into account the collapse in the rail market to serve coal-fired power stations and the (as yet limited) take-up of biomass in its place. Other factors that need updating are the possible impacts of port developments – especially Liverpool 2 and Thames Gateway developments – and the emerging markets for rail in meeting domestic logistics and distribution network needs, including into urban centres.

And when considering capacity, the closely related area of punctuality performance needs to be addressed as well. There are often non-infrastructure solutions to capacity problems that are appealing for cost reasons but leave the network – which is already busy – overloaded and subject to poor punctuality performance.

The fourth criterion – implementation sustainability – is intended to help guide the nature or version of specific interventions and projects, applicable on a consistent basis across the nation. It has three distinct components:

- The ability of the region/corridor served to sustain any adverse environmental impacts, and specifically, the loss of land currently not used for transport;
- The likely impact on land use development, summarised on a single dimension of inducement towards densification/intensification of existing developed/formerly developed ('brownfield') land at one end of the axis and new development ('greenfield') and dispersion/sprawl at the other end; this is a key indicator for wider carbon/energy outcomes;
- The ability of the region's/corridor/s transport system to sustain economic objectives during periods of disruptive construction.

In effect, work in this area should help guide the type of investment needed: whether it would be better to upgrade existing or go for new build; to serve existing urban developments or foster and encourage new settlements; to propose new transport infrastructure at-grade or in tunnel, and so on.

The fifth criterion – compatibility and sequencing is often missing from project-specific appraisals and gateway reviews. Applicable at project level, a compatibility matrix for NPR is shown as an example below. There is a high level of complementarity, with some other projects representing real opportunities for integrated designs and cost savings – in particular, the Yorkshire section of HS2 and upgrades to Leeds, Manchester and Sheffield city centre stations. Integration with the Manchester – Sheffield road tunnel might also offer cost savings (especially if a Eurotunnel style shuttle was considered). Most projects help build and even feed

traffic onto NPR. TransPennine electrification, if extended into a line of route upgrade, might – in addition to building the market – have an adverse impact on the business case. Upgrading the ECML will help NPR and the east-west connectivity case by linking the North East better; but further south it may diminish the case for the eastern limb of HS2 which could form a key element in a cost effective NPR design.

## NPR Compatibility Matrix

COMPLEMENTARITY				PROJECT	OVERLAP	
Integrated design opportunity = ££ saving	One project feeds the other	Precursor project, builds market for NPR	Independent		Partial substitute, so business case impact	Clear alternative
		■		Trans Pennine electrification	■	
			■	HS2 Phase 2a Crewe		
■				HS2 Phase 2b Yorkshire		
■				HS2 Phase 2 remainder		
	❖			ECML upgrade and IEP		
	■			Anglo-Scottish high-speed		
■				Manchester Sheffield road tunnel	■	
		■		Northern Hub		
	■			MML electrification		
■	■			Leeds/Manch/Sheffield station upgrades		
	■			City region metro networks		

❖ See text above

The related question of sequencing is not the same as phasing. It concerns questions of what actions/investments are precursors for others and what might be precluded subsequently by early decisions, as well as optimum timings. It is crucial to thinking about strategic fit and meeting one of the criteria that Sir David Higgins identified for HS2: standing the test of time.

## (ii) Northern City Connectivity

Key evidence on northern transport investment is provided in the work carried out by the North's major city authorities in summer and autumn 2014 and published initially as *One North: a Proposition*. Work by the northern cities both before and after the publication of this report showed that it was possible to build a consensus on priorities – as had been the case with the Northern Way which had earlier identified the (Manchester) Northern Hub rail scheme as the immediate single biggest project priority of the whole of the North.

The core strengths of the northern economy include four key areas (advanced manufacturing; energy; health/life sciences; digital/creative media) together with some key supporting/enabling economic sectors (financial/business services, logistics and higher/further education) that enable these core strengths to prosper, and in which there are higher numbers of jobs. We make four observations:

- The core sectors are each of high value but may not be employment-intensive
- Most of the core sectors are not city centre focused, so the nature of clustering, agglomeration and transport needs are likely to be different from those affecting London's growth model
- The business linkages within these core sectors are not contained within the north of England, but have important linkages with other places (so, with the Midlands for advanced manufacturing; with Scotland/North Wales for energy supply; with the East of England (Cambridge and also London) for life sciences); and internationally (for all of them)
- In practice, a key enabling strength of the northern economy – as in other countries – is its set of leading Universities and the location of these is likely to be another crucial factor in the pattern of economic development; most – but not all of – the North's universities are in/adjacent to city centres. International experience (*e.g.* the USA) suggests that Universities and their campuses can become the key focus of urban development and renewal.

A strengthened northern economy will attract more housing demand, and the location of this demand will also have a major impact on travel patterns and transport demand.

Further evidence would be helpful to validate and bring this analysis to life. We suggest as a priority, an assessment of existing northern businesses, a simple

business survey, designed to establish whether location and inaccessibility limits growth. We would expect that, for example, this would show an inhibition by businesses located in Sheffield to form supply chains with companies in the North West (and vice versa) or to seek to build a customer base because of poor transport links.

In any event, there is a need to consider the basics of alternative transport network models. The nature of the North's economy will require reliable strategic highway connectivity (the dominant mode of transport in the North today) *and* strengthened rail connectivity (the travel sector that is growing the strongest) *and* improved connectivity internationally.

While part of the northern economic growth prospect is city centre-based, some (as noted above) is not. But the rail network in the north operates only weakly as a network in its offer and appeal to those travelling between the wide spread of cities and towns either side of the Pennines. Journey times, lack of connections, low frequencies and an incomprehensible fares system conspire against rail broadening its geographic market appeal. The only way the North's rail network (just as in other parts of Britain and in other countries) can overcome this deficiency cost-effectively is if it is designed to operate as a series of routes connected through a set of nodes. Most of these rail nodes (interchanges) *are* in city centres. Manchester International Airport represents another node (although also in need of better east-west connectivity). So insofar as rail is chosen as the transport mode to accommodate demand growth, even if the demand is of a dispersed nature, and some of the core economic drivers are dispersed, better connectivity across and into city centres will be a key feature.

Within the rail sector – and indeed across the transport modes – northern transport capacity and connectivity can be considered in terms of north-south flows; east-west flows; and flows within city regions; and these need to be considered in conjunction with each other.

On north-south flows, the Commission will have noted the plans for HS2, and their significance for the North's economy, which has very substantial business connectivity with London, as would be expected.<sup>1</sup> Less well understood is the issue of connectivity and capacity northwards from Manchester-Leeds where HS2 ends. This affects both northern England (Cumbria/north Lancashire and the North East) and

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<sup>1</sup> Supplement to the October 2013 Strategic Case for HS2: HS2 and the Market for Business Travel, DfT, November 2015

the question of connectivity between northern cities and Scotland. There is a significant capacity issue for Anglo-Scottish rail and HSR could form part of the solution<sup>2</sup>, yielding up wider benefits in the process:

- A three hour journey time between Glasgow/Edinburgh and London, reducing domestic short haul air demand into the southeast
- The scope to expand and accelerate the fast-growing services between northern cities and Scotland (a key commercial feature of the recently awarded TPE franchise)
- The potential to expand one of the UK's major railfreight flows and reduce carbon emissions
- The chance to address flood resilience through targeting new sections of infrastructure on areas of weakness.<sup>3</sup>

On east-west connectivity/capacity, the key source document is the One North work, which at programme level provides a prioritised investment proposal.<sup>4</sup> The most critical element in the programme is trans-Pennine, and this in turn triggers the need to consider extremely carefully the way rail connections across and between central Manchester, Leeds and Sheffield are to be provided, along with hub capabilities in each city.

At city region level, there is a need to consider how the network of rail services can and should be developed to provide a coherent, user friendly joined-up network, stretching across journey-to-work areas (i.e. beyond the narrow PTE boundaries). Efficient solutions – as adopted in equivalent multi-centred economic regions such as Ruhr/Rhein Westphalia – entail hierarchies of frequent services, including cross-city operations and light rail systems, and of course, smart, multi-modal ticketing with zonal fares. Transport for the North, we suggest, needs to be given the time to carry out the wider planning/development work to achieve equivalent beneficial outcomes for the North.

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<sup>2</sup> Capacity (as well as journey time) over the lengthy section of two-track West Coast Main Line in Cumbria and Scotland became very clear at Greengauge 21's British High Speed Rail Network conference, September 2015 <http://www.greengauge21.net/blog/the-british-high-speed-rail-network>

<sup>3</sup> An interesting international comparator is with the FRA's current consultation on the North East Corridor in the US where sea level rises and flood protection are key aims of investment options, see [http://www.necfuture.com/tier1\\_eis/deis/](http://www.necfuture.com/tier1_eis/deis/)

<sup>4</sup> One North: A Proposition for an Interconnected North  
[www.manchester.gov.uk/download/downloads/id/22093/one\\_north.pdf](http://www.manchester.gov.uk/download/downloads/id/22093/one_north.pdf)



**1. To what extent are weaknesses in transport connectivity holding back northern city regions (specifically in terms of jobs, enterprise creation and growth, and housing)?**

The evidence from Northern Way's work<sup>5</sup> as well as One North<sup>6</sup> is: substantially so. The Pennines form a barrier for east west movement and the reliance on the M62 means a lack of network resilience for all – and lengthy itineraries for many.

The Department for Transport's trans Pennine study of 2011 confirmed that enhancing the Leeds-Manchester-Sheffield triangle of corridors supports the economic growth of these large city region economies; and given the extensive use of these three corridors by longer distance trips between the North's city regions (including Tees Valley, Hull and the Humber and Lancashire), the study also concluded that connectivity enhancements across this triangle would lead to balanced economic growth of the wider North.

Much improved trans-Pennine rail connectivity will enhance business to business connectivity across the North and expand labour market catchments for firms and job choice for employees, leading to long-run productivity gains and mitigation of skills shortages. This in turn will support city centre job agglomeration, encourage densification of housing and viability of city centre fringe regeneration areas, and assist dual income households in job/house location choice, benefitting long term career development and higher labour market participation in the North.

**2. What cost-effective infrastructure investments in city-to-city connectivity could address these weaknesses? We are interested in all modes of transport.**

NPR, combined with a bring forward of the Yorkshire section of HS2, a focus on a city centre hub station in each of Sheffield and Manchester (as well as Leeds) and potentially an east west road tunnel achieved by a Eurotunnel style vehicle shuttle integrated with HSR (125 mile/h) services.

The way in which Greengauge 21's earlier work in Fast Forward envisaged a medium speed new trans Pennine connection is illustrated at Annex A.

Better trans Pennine connectivity linking a set of city centre (and Manchester Airport) hub stations with faster more frequent and more reliable services, with city region rail/metro networks acting as spokes to the hubs will help business

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<sup>5</sup> See: The Northern Way Transport Compact: the Economic Case for Transport  
[www.northernwaytransportcompact.com/](http://www.northernwaytransportcompact.com/)

<sup>6</sup> *Op cit* One North

connectivity more widely in the North, enabling rail to expand its market share and provide an alternative to the motorway/A-Road network, and link northern cities better not just with each other, but also with adjoining regions/devolved nations and international gateways.

**3. Which city-to-city corridor(s) should be the priority for early phases of investment?**

The Manchester – Leeds – Sheffield triangle; it's at the core of movements across the whole of the North.

**4. What are the key international connectivity needs likely to be in the next 20-30 years in the north of England (with a focus on ports and airports)? What is the most effective way to meet these needs, and what constraints on delivery are anticipated?**

East-west rail connectivity at Manchester Airport; direct rail access to Heathrow Airport; expanded Trans Pennine rail freight capacity; expanded capacity to connect with Liverpool 2 (road and rail).

**5. What form of governance would most effectively deliver transformative infrastructure in the north, how should this be funded and by whom, including appropriate local contributions?**

A strong devolved body is essential. TfN, as a NDPB, given a substantial annual budget of £100-200m, with representation of the whole of the North and accountability back to the North via the Leaders representing each City Region/CA/LEP area is a sound arrangement.

Local funding is unrealistic for major transport investments; but fiscal returns to the Exchequer will be substantial.

## Annex A: wider high-speed rail network showing Phase 1 of HS2, future extensions and a medium speed trans-Pennine connection



Source: Greengauge 21 Fast Forward, September 2009