

**GREATER MANCHESTER INTEGRATED TRANSPORT AUTHORITY****REPORT FOR RESOLUTION**

**COMMITTEE:** Policy and Resources  
**DATE:** 19<sup>th</sup> March, 2010  
**SUBJECT:** Network Rail Northern Hub Rail Study  
**REPORT OF:** Clerk to the Authority and Interim Bus and Rail Director, GMPTE

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**PURPOSE OF REPORT**

To advise Members of the work of the Network Rail Manchester Hub Rail Study, the interim conclusions and further work required.

**RECOMMENDATIONS**

Members are recommended to:

1. Note the contents of this report – including the PTE's new work quantifying the wider economic benefits of the Northern Hub.
2. Endorse continuing work to further develop appropriate infrastructure enhancements such that they provide for the aspirations of GMITA in the future development of train capacity and service patterns that are attractive to potential users and meet the needs of Greater Manchester residents and businesses - this work is set out in para 7.4.
3. Endorse the need for the PTE to work with Network Rail to integrate their work on Manchester Hub with DfT plans for services following the electrification of parts of the North West rail network.
4. Request further reports on the above to this committee.

**BACKGROUND DOCUMENTS**

The Northern Way: Manchester Hub Conditional Output Statement; April 2009  
Manchester Hub Rail Study; Network Rail, February, 2010

**CONTACT OFFICERS**

Michael Renshaw	0161 244 1026	<a href="mailto:michael.renshaw@gmpte.gov.uk">michael.renshaw@gmpte.gov.uk</a>
Stephen Clark	0161 234 3124	<a href="mailto:s.clark@manchester.gov.uk">s.clark@manchester.gov.uk</a>
Darren Kirkman	0161 234 3720	<a href="mailto:d.kirkman@manchester.gov.uk">d.kirkman@manchester.gov.uk</a>
Chris Loader	0161 244 1276	<a href="mailto:chris.loader@gmpte.gov.uk">chris.loader@gmpte.gov.uk</a>

## **1. Background**

- 1.1. Congestion on the rail infrastructure around Manchester has been recognised as a problem for nearly 80 years. The number of passengers travelling on both the north–south and east–west services to and through Manchester has been increased dramatically over the past ten years; resulting in more trains and congestion. Consequently in October 2007 the then Minister of State at DfT announced a study into the problems and potential solutions on the heavy rail network around Manchester.
- 1.2. This study has been carried out in two phases. Phase one was led by Northern Way and was an assessment of the potential economic benefits to the country from improvements to the rail network around Manchester. Their conclusions were published in a “Conditional Output Statement” in April 2009 and are summarised in Appendix A.
- 1.3. Following this work Network Rail commenced the second phase of the study, which has looked at the existing infrastructure and service patterns, likely future requirements, the difficulties that could be encountered in meeting those requirements and potential actions to overcome them. Their conclusions were published on 16<sup>th</sup> February 2010.

## **2. The Extent of the Hub**

- 2.1 The Manchester Hub is the confluence of 14 different radial routes at Manchester’s two principal stations, *and* the mix of terminating and cross-city services that operate on that network.
- 2.2 The geographic extent of the Network Rail study is from Manchester as far as Liverpool, Wigan, Preston, Blackburn, Leeds, Sheffield, Buxton, Stoke-on-Trent, Crewe and Chester. This is roughly the outer boundary of the Manchester journey to work area. The impacts of improvements in this area, both in terms of service patterns and service performance, will be significant throughout the north of England as services operate well beyond these locations. The PTE has worked hard to ensure that a balance is struck between the consideration of shorter distance commuter services and longer distance services.

## **3. Infrastructure Capabilities and Constraints**

- 3.1. The key objective of the Manchester Hub Study has been to assess the capabilities and constraints of the existing infrastructure, both now and with increased demand in the future, and to consider what improvements are required to enable the heavy rail network to continue to contribute to economic growth in the North of England.

- 3.2. Network Rail has therefore assessed six aspects of infrastructure capability:
- Headways – the minimum time between trains,
  - Line speeds – the maximum speed a fast train can travel at. Stopping trains and freight trains are naturally likely to be slower.
  - Passing loops – to enable fast trains to pass slow trains,
  - Junction speeds – the line speed through track points,
  - Electrification, and
  - Metrolink and tram-train – potential for development.
- 3.3. Considering these aspects much of the existing infrastructure is used efficiently. However Network Rail have identified some examples of poor use, in particular:
- Terminating trains in the through platforms at Manchester Victoria station (possible because Victoria is generally under-utilised),
  - Reversing trains between Yorkshire and Manchester Airport in the platforms at Manchester Piccadilly station, and
  - Operating trains between Yorkshire and Liverpool across Manchester Piccadilly station approaches and blocking all other trains in the process.
- 3.4. Overall Network Rail concluded *‘that the inter-relationship of constraints is such that there is no single intervention that will unlock the Manchester Hub. The enhancement of services will require a strategy of interventions across the core area and radial routes.’*

#### **4. A Proposed Solution**

- 4.1 Network Rail have developed a solution which makes greater use of both Victoria and Piccadilly Stations, and which eliminates the majority of crossing movements which constrain capacity and lead to poor performance.
- 4.2 The solution is based on a rationale that all north-south services will use Manchester Piccadilly Station, with most east-west services calling at Manchester Victoria.
- 4.3 A number of infrastructure improvements are needed in order to implement this solution, which include:
- 4.4 **The Ordsall Curve** This new piece of railway will provide a direct connection between Victoria and Piccadilly stations via Salford and Oxford Road. This will improve connectivity from the north east of Manchester, and allow services from Victoria to access the Airport.
- 4.5 **Additional Passing Loops and 4 Tracking** Sections of 4-track will be built between Broad Green and Huyton on the Chat Moss line, and between Marsden and Diggle on the Huddersfield line. Passing Loops will be constructed at Dewsbury on the Huddersfield and also at

Chinley and Grindleford on the Hope Valley line. These will allow the potential for more stopping trains to be run without impacting on the journey times of fast longer-distance trains.

- 4.6 **Line Speed Improvements** Sections of track between Huyton and Patricroft, and between New Mills and Stockport/Ashburys will be upgraded, as will associated signals, to improve journey times from Liverpool and Sheffield.
- 4.7 **Headway Improvements** Improvements between Piccadilly and Victoria, at Oxford Road and at Patricroft will reduce the time that must be left between consecutive trains, further increasing capacity.
- 4.8 **Additional Platforms** In order to accommodate more trains there will be a need for more platforms. A new Victoria-facing bay platform will be built at Rochdale, providing capacity to run additional commuter services to Manchester. Two new bay platforms will be built at Victoria to accommodate terminating services from Lancashire, and leaving the through-platforms for services crossing Manchester (including most inter-regional services). Two new through-platforms (15 and 16) will be built at Piccadilly, which will relieve pressure on platforms 13 and 14 and lead to a significant increase in capacity between Piccadilly and Oxford Road Station. A fourth platform will also be built at the Airport, increasing the number of services that can call at the station and improving reliability and flexibility.

## 5. Benefits

- 5.1 The Network Rail solution provides additional capacity by increasing the frequency that trains can run, simplifying service patterns and by reducing pressure on the network and platforms at Piccadilly. There is scope to increase capacity further by lengthening trains in the future as all elements of infrastructure will be built to adequate length. The proposals include potential for more services to run from one side of the conurbation to the other.
- 5.2 The proposals are also forecast to lead to a reduction in almost 2 million tonnes of carbon as a result of encouraging motorists onto the rail network.
- 5.3 Network Rail analysis shows that the solution will lead to a significant improvement in performance due to the elimination of crossing movements and the more efficient use of platforms. They plan to carry out further work in this area as the proposals develop.
- 5.4 Journey times between Liverpool and Manchester may be reduced to 33 minutes, and between Sheffield and Manchester to around 43 minutes. However, significant journey time improvements to other key city regions have not been brought about, and this is one area where

the Hub work falls short of the Northern Way Conditional Output Statement.

- 5.5 The proposal will accommodate the forecast increase in freight traffic to Trafford Park, as well as proving the potential for paths to the proposed sites at Port Salford and Parkside. The proposals also leave open the possibility of developing a high speed line to and beyond Manchester.
- 5.6 The Hub proposals will lead to an increase in capacity on the Network, but it is for the DfT and ITAs to agree how that capacity is best used, and for train operators to deliver it. Critically the additional train services in many cases will require additional funding from DfT if the full benefits of the Hub proposals (especially for our commuter services) are to be realised. An assessment of the potential for improvement to services is included in Appendix B

## **6. Appraisal**

### **Network Rail Appraisal**

- 6.1 The proposal is estimated to cost £530 million in capital costs. The Net Present Value of operating costs (in terms of additional vehicles, staff costs and maintenance) are likely to be a similar amount. Balanced with this is around £4.2 billion of benefits to the national economy through journey time reductions, additional patronage, relief of rail overcrowding, reduced road congestion etc. This gives a very strong benefit: to cost ratio of 4:1. It is for this reason that Network rail have committed themselves to develop the scheme further over the next 15-18 months so that any risks in the costs and benefits of the project can be better understood and mitigated.

### **GMPTE Appraisal of Economic and Productivity Benefits**

- 6.2 GMPTE/ITA separately commissioned KPMG to analyse the wider economic impacts of the Hub proposals, this analysis looked at the impacts the scheme would have on productivity and business behaviour. The approach follows a similar approach to that adopted in the Greater Manchester Transport Fund, and in recent work on High Speed Rail for both GMPTE and Greengauge 21.
- 6.3 This analysis shows that there could be an overall increase in Gross Value Added (GVA – a measure of the contribution to the economy of each individual producer, industry or economic sector) across the Northern Way are of £2.1 billion by 2021 (measured in 2007 prices). This analysis places the Hub work in the range of the top third of the GMTF transport schemes.
- 6.4 Of this there is a net increase in productivity within business sectors of around £300 million per year. These benefits are achieved by reducing transport costs, widening the labour market, improving business-to-

business connectivity and improving the competitiveness of different business sectors. These benefits are felt not only in central Manchester but as far away as Liverpool, Preston, Rochdale and Leeds.

- 6.5 In addition to this an additional £350 million can be realised by affecting the mix of businesses that chose to locate within the Northern Way area, leading to overall higher levels of productivity. The connectivity that rail provides to other businesses and to labour markets is attractive to businesses in higher value added business sectors, supporting structural economic change towards the knowledge economy within the urban area. As more and more high-value businesses locate within a given area productivity tends to increase as information is transferred between businesses (so called knowledge-spillovers) and as lower productivity businesses are displaced.
- 6.6 By far the largest economic benefits are felt by expanding employment by making the area more attractive for businesses. A conservative assessment suggests that the Hub could support an additional 23,000 additional jobs across the Northern Way area, representing a £1.2 billion increase in GVA.
- 6.7 This analysis is not included in the DfT appraisal methodology which assumed that Hub investments would not change the pattern of business location or type. Benefits calculated in this way are very relevant to the prioritisation of public sector spend in pursuit of regional policy and economic development policy. The KPMG report is included in Appendix C.

## **7. Relationships with other initiatives**

- 7.1 The Hub Study is clearly at an early stage in its development and a number of other rail programmes are under way which will have an impact on it.
- 7.2 In particular, the Government's electrification proposals will have a significant bearing on its development. The electrification of the Liverpool – Manchester line is due for completion in 2013 – one year before work on the Hub could begin, it was therefore assumed by Network Rail to have been completed when they carried out their study. The Government's announcement of the electrification of lines between Liverpool and Manchester to Bolton, Preston and Blackpool are forecast for completion in 2016/17 and came too late to be included in the study. These proposals will have a significant impact on journey times as well as preferred service patterns and it is now necessary for Network Rail to revise their proposals to understand how maximum benefit can be achieved for passengers.
- 7.3 As noted above the Hub solution does not deliver the journey times on many of the longer distance routes that were set out by Northern Way. On the Leeds-Manchester route the Government set out an aspiration

in the 2007 rail White Paper for a 43 minute journey time, and Network Rail is currently investigating possible schemes that can achieve this – with the intention of reporting in the Summer. Once that study is complete it will be possible to look again at further schemes on the Hub which will bring about a journey time of 40 minutes as set out in the Conditional Output Statement. Further work is also needed to reduce journey times to other cities, including Sheffield and Preston and Liverpool.

7.4 The work on the hub has defined a strategic solution for the key rail network issues in the Manchester area. However in addition to carrying out further work to better understand the project benefits, costs and risks, there is also a need to look in more detail at the opportunities the preferred solution creates. Thus over the next year there needs to be a period of investigation by Network Rail, the PTE and other parties that includes:

- Network Rail is to use as a basis for its demand forecasting work for the future Hub work the work that DfT and PTEs have worked on together as part of the HLOS work.
- The PTE will carry out corridor-by-corridor analysis of the need for improvements on the local commuter services. The PTEs work for LTP3 will help inform this area. The PTE will work with Network Rail to understand which of our needs and aspirations can potentially be met as part of the Hub work. Specific areas where are aware of where work needs to be focussed includes:
  - (i) a review of the options for trains serving the Stockport-Altrincham corridor and more generally in Stockport.
  - (ii) routing of fast and local trains serving the Bolton and Wigan corridors;
  - (iii) options around service patterns on the North Transpennine corridor (Stalybridge route to Leeds).
- There is a need to integrate work on future rolling stock plans, potentially including tram-trains, into the development of the hub infrastructure proposals.
- The work focussed on an “all-day” service pattern. Network Rail have acknowledged the need to do more work to look at peak capacity and frequency enhancements.
- Where services cross Manchester there is a need to consider which places should be connected to each other in order to maximise passenger benefits. This must include consideration of the future form and use of Salford Crescent.
- The development of the Northern Hub may impact on station development and existing and future Park and Ride schemes. Consideration needs to be given especially to future development of all of the central Salford and Manchester stations.
- Work needs to be undertaken to establish the value for money case for re-opening the platforms at Salford Central so as to make better

use of the new services between Victoria and Piccadilly and provide better access to Salford and Spinningfields.

- Network Rail acknowledge that more work needs to be done with regards to the service pattern and routing of the Sheffield express trains.
- There is a need to ensure that the emerging electrification strategy is developed alongside the consideration of which service patterns best serve Greater Manchester and the North.
- Related study work including the DfT “Delivering a Sustainable Transport Strategy” programme, and Network Rail’s “Route Utilisation Strategy” programme needs to build on the work that has been done on the Hub.
- Finally the ongoing work may need to encompass issues that may emerge following any imminent announcements around High Speed Rail.

## **8 Future Timescales**

8.1 Railways are planned and funded in 5 year Control Periods. The current Control Period (CP4) runs 2009-2014. It is our aspiration that physical work on the Hub should commence in 2014. In the run up to this period there are a number of key dates:

- Summer 2010 – Industry view of initial Control Period 5 (2014 - 2019) investment options.
- September 2010 – Draft Northern Route Utilisation Strategy (for consultation).
- Summer 2011 – Initial Network Rail Strategic Business Plan for Control Period 5 setting out Network Rail’s formal corporate view as to the priorities that it believes should be funded by Government in the period 2014-19.
- June 2012 - Department for Transport High Level Output Specification for Control Period 5. It is at this point that formal Government commitment is made to the funding of major infrastructure proposals for the period 2014-19.

8.2 To ensure the requirements of the Greater Manchester conurbation are well presented in the on-going development work PTE and ITA officers will be actively involved in the further Northern Hub work as set out above. Work on the third Greater Manchester Local Transport Plan is also being developed at the present time and this will provide the local strategic context for many of our inputs to Network Rail over the coming months.

8.3 PTE/ITA officers will continue to make the case that the ultimate package must include a balance of benefits for both local commuter and longer distance passengers.

## **9. Conclusions**

- 9.1. The Manchester Hub studies have provided compelling economic evidence for developing the heavy rail network in the north of England. The work indicates how this can be done to meet most aspirations, represent good value for money, be affordable and deliverable. There is still a need for more development work before a robust package of proposals that can be presented to the Department of Transport for funding.
- 9.2. Network Rail have a desire to progress this work in conjunction with the West Coast and Northern Route Utilisation Strategies and the Delivering a Sustainable Transport Strategy studies and this needs to be supported to ensure the best possible High Level Output Specification for Greater Manchester in Control Period 5.
- 9.3. Whilst not the subject of this paper it is vital that GMITA lobbying efforts continue to make the case to local and national politicians, and other key influencers, around the importance of this scheme for transport in and around Greater Manchester – and for the longer term health of our regional economy.

## **10. Recommendations**

See front sheet of report for recommendations.

**Sir Howard Bernstein**  
Clerk to the Authority

**Michael Renshaw**  
Interim Bus and Rail Director

**Summary of Manchester Hub Conditional Output Statement**  
**Northern Way, April 2009**

**The Conditional Outputs**

3 The Phase One report identifies 10 Conditional Outputs that the solutions should seek to meet. These are:

1. *Capacity and flexibility* should be adequate to meet forecast passenger growth rates.
2. Proposals should contribute to *carbon reduction*.
3. *Service performance* (punctuality and reliability) should not deteriorate.
4. *Journey times* to major centres should be no longer than Bradford 50mins, Leeds 40mins, Liverpool 30mins, Preston 30mins and Sheffield 40mins).
5. All the *growth centres in Greater Manchester* (Defined in the Local Transport Plan as Altrincham, Ashton-under-Lyne, Bolton, Bury, Oldham, Rochdale, Stockport, Wigan) should have easy access to the Regional Centre.
6. Where through services are not available there should be easy interchange between routes / modes to ease *connectivity to deliver economic benefits*.
7. There should be better early and late services to *Manchester Airport* and easy access from all directions, including improvements from North Wales and the East and West Midlands.
8. *Trans Pennine* service frequencies should be as least as good as Bradford / Halifax every 30 minutes, Leeds every 15 minutes and Sheffield every 20 minutes.
9. Proposals should be able to accommodate proposals for improved *North South links and High Speed Rail* from other studies.
10. Proposals should be capable of accommodating a doubling of rail *freight* (tonnes lifted) by 2030.

**Potential Service Improvements**

**1. London, Birmingham and the South**

- Additional capacity to Manchester to meet the plans for the West Coast Main Line (WCML). This could be an additional stopping service between Manchester and Birmingham and reduced journey time for an existing service.
- Does not close off options for trains from a high speed line in the future to arrive in Manchester.

**2. Inter-regional and Cross Pennine services**

**2.1. Leeds, York and Hull**

- 6tph from Leeds and beyond.
- Opportunity for 4tph fast with only one or two stops thereby improving journey times
- Also 2tph semi-fast stopping at Ashton-under-Lyne and Stalybridge
- Faster journey time to and through central Manchester
- Increased frequency provides opportunity for new direct services to Liverpool, Chester, Preston or Manchester Airport.

**2.2. The North East (Newcastle and Middlesbrough)**

- Opportunity for new direct services beyond Manchester
- Improved journey times through use of the four fast trains on North trans Pennine
- Improved performance of services to Manchester Airport
- Improved connections for onwards journeys at Leeds, Huddersfield and Manchester Victoria.

**2.3. South Yorkshire (Sheffield and Doncaster)**

- Faster journey time to Piccadilly by around five minutes
- Increased frequency for up to 4tph running as two pairs (5min apart) , one in each pair to Piccadilly (via Stockport) and Victoria (non-stop via Marple line)
- Increased direct services beyond Manchester to Liverpool, Chester or Preston via Victoria with journey time improvements via the Chat Moss route.

**2.4. East Midlands (Derby, Leicester and Nottingham)**

- 2tph to Manchester
- Faster journey time to Piccadilly by around five minutes
- Improved connections beyond Manchester (via Victoria) making use of the improved journey time to Liverpool via the Chat Moss route
- Potential for one train per hour to run direct to Manchester (avoiding Sheffield) with resultant journey time improvement (15-20min) without worsening current East Midlands to Sheffield connectivity.

- 2.5. Bradford and Halifax
- 2tph crossing Manchester to Manchester Airport and Liverpool or Chester
  - Improved connection through Victoria and Piccadilly.
- 2.6. Liverpool
- Improved journey time of 33 minutes to Victoria
  - Four fast tph between Victoria and Liverpool Lime Street
  - Improved connections for inter-regional destinations at Victoria
  - Access to Manchester Airport via Warrington Central (slower than current service via Newton-le-Willows).
- 2.7. Warrington and Chester
- Doubled frequency to 2tph
  - Direct service across Manchester to destinations such as Manchester Airport, Bradford, Sheffield and Leeds (replacing existing Liverpool – Warrington – Manchester – Leeds service)
  - Incremental journey time improvements as a result of works on the Chat Moss route.
- 2.8. The North West (Preston and beyond)
- Additional services from Manchester via Wigan to Preston and destinations to the north
  - Capacity for electrified services to operate via Chat Moss route and WCML with the ability to provide a fast service between Wigan and Manchester.

### **3. Key commuter corridors**

- 3.1. Rochdale / Calder Valley
- Additional all day services to Rochdale from Manchester and Leeds
  - Direct services to destinations beyond Victoria such as Manchester Airport and Wigan
  - Increased frequency of services between Halifax and Leeds
  - Capacity for services from Burnley via Todmorden if investment at Todmorden is funded.
- 3.2. Bolton
- Alleviate peak crowding through additional services via Wigan and WCML for Preston and north
  - Potential for more services to work through to destinations beyond Victoria, such as the East Midlands
  - Faster journey times to Wigan from additional services via WCML
  - Opportunity for more all day services to Blackburn if investment at Darwen is funded.

- 3.3. Atherton
- Potential for additional services in the peak
  - Faster journey times to Atherton and potentially other significant stations
  - Alleviate peak crowding as Wigan passengers travel via WCML
  - Potential for through working to destinations beyond Victoria to destinations such as Bradford.
- 3.4. Chat Moss Route
- Significantly faster more frequent direct links between Liverpool and Manchester
  - More frequent fast services between Wigan and Liverpool
  - Faster local journeys due to electrification with scale dependent on stopping pattern
  - More frequent service between stations to Chester and central Manchester
  - Opportunity, if infrastructure is funded, for more frequent service to Eccles by way of loop or turnback.
  - Better access to Regional Centre if Salford Central platforms funded.
- 3.5. CLC Route
- Potential to review stopping pattern which may improve frequency at some stations – but with longer journey times
  - Potential to consider stations at White City and Chapelfield.
- 3.6. Northwich
- More off-peak services
  - Faster journey time to key locations
  - Potential for Greenbank - Altrincham to be linked to Victoria or Stalybridge.
- 3.7. Crewe
- Potential for extra peak capacity when needed
  - More frequent service to Manchester Airport
  - Heaton Chapel and Levenshulme could see return to 15 minute all day pattern.
- 3.8. Stoke-on-Trent
- New direct service to Manchester Airport via Crewe
  - Potential for faster services serving Manchester from Congleton and Kidsgrove depending on stopping pattern of the all day Birmingham slow service.
- 3.9. Buxton and Hazel Grove
- More off peak services beyond Hazel Grove (could be to Buxton and/or Chinley)
  - Modest improvement in journey times – dependent on stopping patterns

- Potential for long distance services to call at Hazel Grove and or Chinley all day or peak only
- Potential for a new station at Chapel-en-le-Frith on the Great Rocks line
- Better faster connections to Sheffield and the East Midlands from Manchester and potentially from Hazel Grove and Chinley dependent on stopping patterns.

### 3.10. Marple

- Potential for more peak services to Marple, Rose Hill and New Mills Central
- Potential to improve services to Ardwick, if viable
- More all day services to Chinley (and/or Chapel-en-le-Frith) – with connections to Sheffield and the East Midlands
- Potential for (some) services to go to Victoria, and for new station at Eastlands
- Express service to Sheffield via Marple precludes Metrolink / tram-train options.

### 3.11. Glossop and Hadfield

- Significant increase in service frequency from Guide Bridge to Manchester
- Potential for some services to go to Victoria if electrified
- Ability to increase frequency if services alternate between Glossop and Hadfield, but loss of direct service between Glossop and Hadfield.

### 3.12. Huddersfield and Stalybridge

- Potential for more peak or all day services to Stalybridge from Victoria and/or Piccadilly
- Commuter services to Huddersfield from Piccadilly, not Victoria
- Service linking Stalybridge and Guide Bridge
- More frequent trans Pennine trains calling at Stalybridge
- Inclusion of Ashton-under-Lyne in the trans Pennine network
- Potential to review stopping pattern of trans Pennine semi-fast service
- Potential for new station and turnback facility at Diggle facilitating additional services
- Potential for electrification to Stalybridge allowing electric through working from beyond Victoria
- Increased frequency of local services east of Huddersfield.

## 4. Regional Centre Links

- 15min pattern Victoria – Oxford Road – Piccadilly – Airport
- Potential to include Salford Central if Liverpool line platforms provided
- Potential for a station at Eastlands with services working through Victoria.

## **5. Manchester Airport**

- Provide opportunity for new direct connections such as to Bradford, Halifax, Chester, Stoke-on-Trent and Warrington
- Improved cross Manchester capacity and additional platform provides capacity for additional services
- Improved city centre dispersal through Piccadilly, Oxford Road and Victoria
- Improvement in performance through the simplification of the operation at Piccadilly.

## **6. Freight**

- Doubling the number of paths from WCML to Trafford Park meeting the 2030 freight forecast
- Provision of an hourly path on the Chat Moss route to serve developments at Port Salford and Parkside.



## Manchester Rail Hub

Wider Economic Analysis Of Network  
Rail's Proposed Solution

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## **Introduction**

### **Background**

The Manchester Hub is the most significant rail bottleneck in the North of England and refers to a series of pinch points which restrict the ability to deliver rail services across central Manchester, with a wider impact felt across the entire North of the country.

The Northern Way commissioned work to better understand the problems posed by the Manchester Hub and to examine potential solutions. Network Rail has recently put forward its preferred solution to relieve this constraint and achieve as much as technically feasible of the stakeholder aspirations for services to and through Manchester.

This report draws on KPMG's analysis and examines the implications of Network Rail's proposed solution for employment and productivity across the Northern Way.

### **Network Rail's proposed solution**

Network Rail has recommended that there should be increased use of Manchester Victoria Station for inter-regional Trans Pennine services as part of a suite of improvements designed to relieve capacity constraints. These will be achieved through the provision of the Ordsall chord, additional through platforms at Piccadilly, reduced headways at Manchester Victoria through differential line-speed improvements, provision of two western bay platforms at Manchester Victoria and line-speed improvements between New Mills South junction and Manchester Victoria.

Network Rail proposed this solution as it has a good benefit cost ratio and minimises disruption to the network during construction.

### **Outline of analysis**

KPMG's analysis has been undertaken in a modelling framework developed to assess the links between rail connectivity and economic outcomes across the Northern Way area. The primary input to this analysis is a matrix describing the difficulty of rail journeys between different places in the different scenarios tested

This note describes a central case test of Network Rail's proposed solution and a sensitivity test to include the effects of crowding reduction. Network Rail found that crowding contributed a large part to the welfare cost benefit case for investing in the Manchester Hub. KPMG has therefore included it in our analysis although the techniques for doing so require some approximations and should be treated with caution.<sup>1</sup>

This note is structured into four further sections describing how the impacts of Hub investment on economic output are built up

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<sup>1</sup> Crowding benefits have only been calculated for journeys into central Manchester. This inevitably misses some of the benefits to other areas that are expected to experience significant crowding in future. Also, it has been necessary to convert route level crowding cost measures into measures to applied at a more disaggregate origin to destination level which has involved making some assumptions about the distribution of these costs.

## Productivity impacts

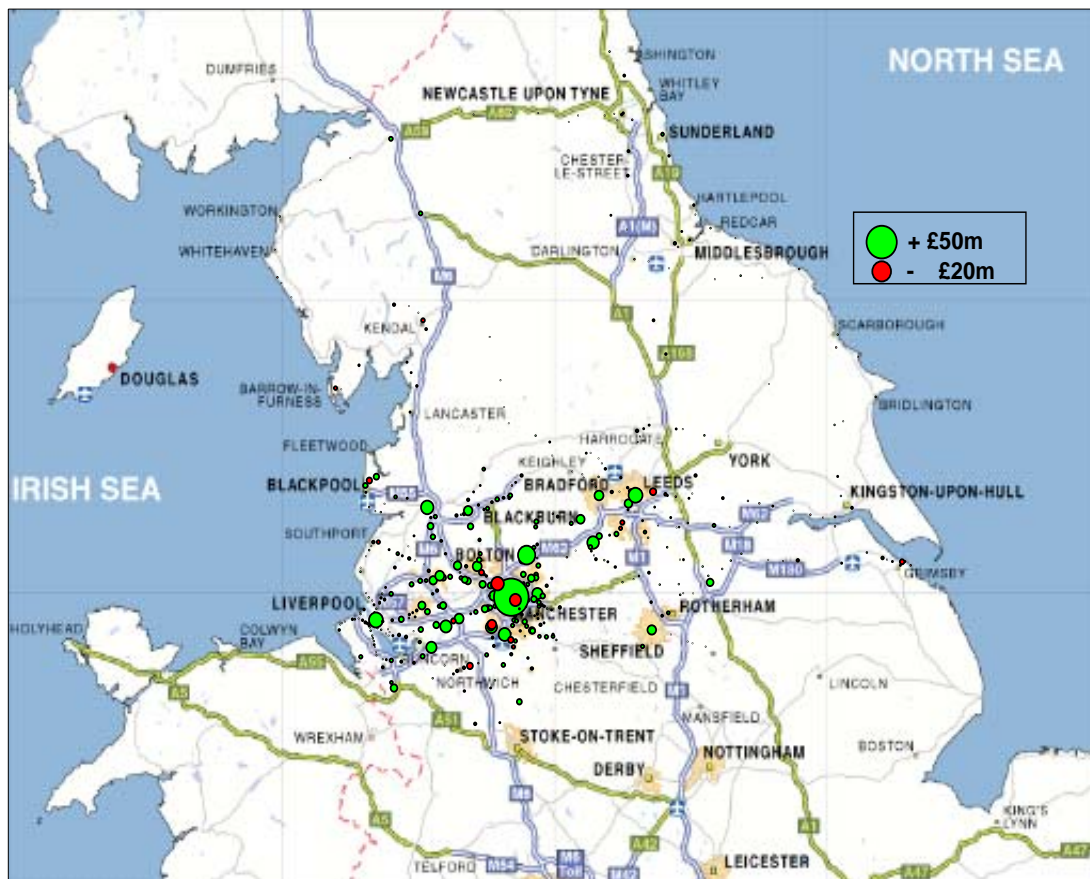
### Impact on productivity within sectors

#### **Core scenario**

The results of KPMG's core analysis<sup>2</sup> show that there could be an increase in productivity of around £300m per year in 2021<sup>3</sup> in 2007 prices across the Northern Way area. This analysis is restricted to the productivity impacts within sectors and ignores the employment impacts and productivity impacts from sectoral change.

This benefit would occur by reducing business transport costs, widening rail based labour and business to business markets and improving the efficiency and competitiveness of different business sectors. Figure 1 below shows the distribution of these benefits across the Northern Way area.

**Figure 1: Impact of proposed solution on GVA through improving the productivity within different business sectors, 2021, 2007 prices**



Source: KPMG analysis

<sup>2</sup> i.e. without taking crowding into consideration

<sup>3</sup> Benefits are expressed as single year impacts rather than a discounted stream of future benefits, as is common in transport cost benefit appraisal. The benefits are measured in 2021 productivity levels (although in 2007 prices) so reflect the output of workers that are more productive than today due to productivity growth in the intervening years.

Figure 1 shows the areas that benefit from the improvements. The green circles identify positive GVA impacts. (The size of circles indicates the size of the GVA impact, where green indicates a positive impact and red indicated a negative impact).

The impacts tend to substantially improve connectivity and hence productivity in Central Manchester which sees the largest impact. Other significantly positive impacts are seen in Preston, Liverpool, Huddersfield, Rochdale and Central Leeds. Some of the key drivers of these positive impacts are business time savings and agglomeration, as businesses find it easier to connect with the labour market and with other businesses.

### **Sensitivity: Including crowding benefits**

The results from the core scenario do not consider the benefits that Network Rail's proposed solution would have on levels of crowding, experienced by commuters. Reducing the generalised costs faced by commuters would increase the impact of the investment on Greater Manchester's labour market footprint and increase the productivity benefits.

The analysis shows that Network Rail's proposed solution, with crowding considered, could have a total GVA impact of £390m per year, 30% higher than in the core scenario.

## Impact on productivity through changes in the sectoral mix of businesses

### **Core scenario**

A substantially improved rail timetable will push out the labour market boundaries of the Northern core cities as well as significantly improving options for rail business to business travel. This will in turn influence the sectoral mix of business in the Northern Way area. KPMG's statistical analysis has identified links between the level of connectivity offered by an area and the mix of businesses that choose to locate in that area. Rail connectivity to labour and other businesses is particularly important to businesses in the services sector and improving rail connectivity will tend to attract businesses in these sectors. The estimated overall impact of this on the GVA of the Northern Way area is a further £350m, in addition to the benefits already identified.

This would occur for example, by enabling a higher growth rate of business services firms such as architects, accountancies, marketing and media businesses as rail connectivity enables a better match between skilled individuals and business labour needs. The Manchester business mix might move towards higher value added activities and focus on world class internationally traded services.

The expected pattern of these benefits is similar to the pattern of impacts in Figure 1.

### **Sensitivity: Including crowding benefits**

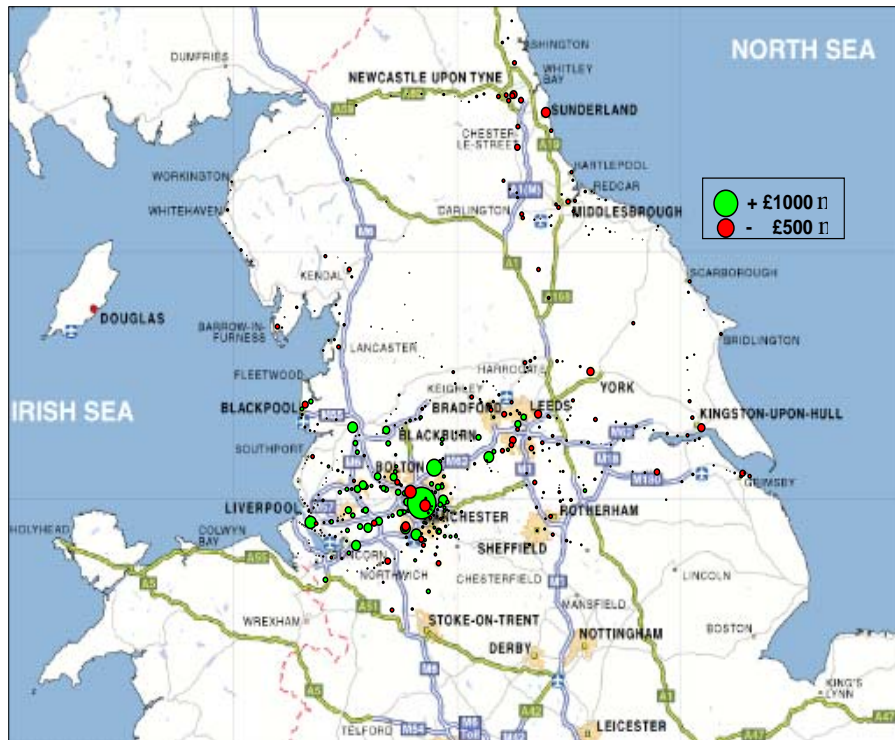
When taking the reductions in crowding into consideration, our analysis has shown a potential GVA impact across the whole of the Northern way of around £440m, some 25% higher than the core scenario.

## Impact on employment size and location

### Core scenario

KPMG has evaluated the employment impacts of Network Rail's proposed timetable on the scale and location of employment across the Northern Way area. The results show that the improved timetable could support an additional 23,000 jobs across this area by 2021.

**Figure 2: Map of GVA impact of the proposed solution across Northern way area in core scenario, £m, 2021, 2007 prices, after employment growth and redistribution**



Source: KPMG analysis

Figure 2 shows the areas that benefit from the improvements. The size of the circle indicates the size of the overall GVA impact including changes in productivity, sectoral mix and employment size and location. Green circles identify positive impacts and red indicated negative impacts.

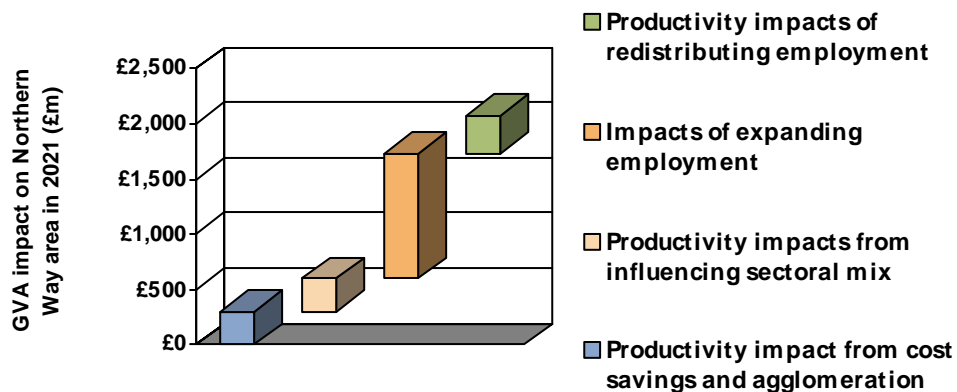
### Sensitivity: Including crowding benefits

The analysis has shown that when crowding reductions are taken into account the total employment impact across the Northern Way area could increase to 28,000 jobs, this is a 21% increase in employment compared to the core scenario.

## Combined impact of proposed solution

The results from our analysis have shown that the overall impact of the proposed solution is £2.1bn in 2021, measured in 2007 prices. Figure 3 breaks this down into four components.

**Figure 3: Overall GVA impact of Network Rail timetable (excluding crowding) by source, 2021 values, 2007 prices**



Source: KPMG analysis

The combined £2.1 billion GVA impact is comprised of the following four components;

1. **Productivity impacts from costs savings and agglomeration** (represented by the blue bar in Figure 3): As transport costs fall, businesses effectively become closer together and can benefit from closer links and greater specialisation. This is known as agglomeration and drives up productivity. In addition, businesses gain from wider and deeper labour markets. This can improve ‘labour market matching’ (getting the right people into the right jobs). The benefits within individual business sectors will also pick up benefits from business time savings and the ability of businesses to use travel time more productively when using rail transport. The impact of this component reflects net new economic activity to the UK and has been valued at around £300m.

This component bears the closest resemblance to the GVA benefits captured in a standard transport appraisal, although it will also tend to capture some aspects of productivity benefits that a standard appraisal does not (such as more productive travel time when using rail for business trips). Nevertheless, this is only a small part of the GVA benefits that could accrue to the Northern Way area. The remaining three impacts discussed below, go some way beyond DfT appraisal guidance and emphasise the fact that transport can have more profound impacts on economic structure and location as well as providing time saving benefits.

2. **Productivity impacts from influencing sectoral mix** (represented by the pale pink bar in Figure 3): Transport supply can provide competitive conditions for different kinds of businesses. The statistical evidence shows that areas with good rail connectivity tend to attract more productive business sectors. The connectivity benefits from investing in Manchester Hub could accelerate the shift towards more productive business sectors. This could happen either by altering the national distribution of these sectors in which case the net national benefits of this would be zero, or by supporting faster national structural economic change which would represent a net national benefit. As shown in Figure 3 the GVA impact of this component is also expected to be around £300m across the Northern Way area.
3. **Impacts of expanding employment:** (represented by the orange bar in Figure 3): Improvements in rail connectivity will enhance the competitive position of areas served and attract businesses to those locations. The additional employment modelled in the Northern Way area will come from two sources. Either activity will be competed away from relatively less attractive locations or higher wages offered will attract people into the labour market. In practice, the impact is likely to come from both of these. KPMG has not assessed the balance of these two sources and has taken the conservative position that none of this GVA impact represents net new economic activity at a national level. Impacts at a Northern Way level are modelled to be £1.2bn per annum in 2021. Drawing employment to the Northern Way area and attracting people into the labour market are therefore expected to make the largest contribution to Northern Way area GVA.
4. **Productivity impacts of redistributing employment:** (represented by the green bar in Figure 3). Changes in the location of business activity can affect the productivity of this activity. Rail investment in the Manchester Hub attracts employment to those areas which gain from the service changes. As these areas tend to be the denser and more productive parts of the Northern Way area (e.g. Central Manchester) this tends to increase the productivity of these jobs. The GVA impact of this is expected to be around £350m and represents net new economic activity to the UK, although it should not be confused with a gain in welfare.

The sensitivity test where crowding is included shows that overall benefits grow by 32% to around £2.8bn per annum in 2021 in 2006 prices.