

Factsheet #1- Digital Rail and the National Infrastructure Commission

Objective	Description	Effect of "capacity crunch"	Benefit from Digital Railway
Keep London Moving;	The continued success of London as a prime global centre ¹ is dependent on its transport infrastructure, in particular rail, which transports 563,000 people every day in the morning peak compared to 39,000 in Birmingham ² . The Infrastructure Commission has set an objective to 'Keep London Moving' so that the transport infrastructure continues to maintain and expand the economic output of London.	London possesses a number of capacity constraints along its major commuting lines. The Wessex Route Study has identified a package of conventional enhancements which are needed to accommodate the demand into Waterloo, including a 5 th track between Clapham Junction and Surbiton. Without action, businesses and people will find it increasingly difficult to access the markets and places of work which are present within London – resulting in "negative economic consequences, with the loss of productivity from reduced agglomeration benefits" ³ .	Acceleration of digital modernisation could enable London to benefit from greater frequency, connectivity and reliability, allowing rail to carry sufficient commuters and business users to keep London moving. Modernisation would improve the connections between London and the rest of the country, removing barriers to economic and population growth. London would also be able to gain improvements in productivity from greater agglomeration. This could be achieved whilst potentially avoiding the need for some costly and intrusive conventional enhancements.
Transforming connectivity of the North;	To boost the economy the Government is prioritising investment in the "Northern Powerhouse" to create hubs for innovation and growth. Transport, with rail featuring heavily, has been identified as a critical enabler for achieving this objective by making better connections between cities in the regions to transport more people and goods to places and markets.	Travel between major cities is currently a major barrier to growth: <ul style="list-style-type: none"> ▶ Services are slow - it is faster to make the 283 miles journey from London to Paris by train than it is to travel less than half that distance between Liverpool and Hull⁴; ▶ Services are overcrowded – one in three commuters in the region is dissatisfied with the space available to sit or stand⁵; ▶ Services are infrequent – Sheffield to Manchester has only two 'fast' trains per hour, and even these take between 51 and 56 minutes for a 40 mile journey⁶. 	Digital Railway has the potential to increase the capacity of the network, allowing routes and local authorities greater flexibility and choice to strike the right balance between: <ul style="list-style-type: none"> ▶ An increased number of trains – improving the ability of passengers and businesses to draw on the resources of neighbouring cities and regions across the north of England; ▶ A more connected service – creating a timetable with a greater number of stops for the same overall running time. This would increase the size of the region which can easily reach major northern cities, and boost the 'agglomeration effect' required for increased productivity; ▶ Better reliability across the network – giving passengers and businesses a more dependable service.
Transport in Scotland;	Scotland set out in its Economic Strategy ⁷ the objectives of 'Increasing Competitiveness' and 'Tackling Inequality' to make Scotland more competitive internationally and to make economic growth sustainable by fairly spreading the benefit of growth fairly across the country. Both of these objectives can be supported by the priorities set by the Strategic Transport Projects Review ⁸ to 'improve journey times and connections, 'reduce emissions' and 'improve quality, sustainability and affordability of transport'.		Digital Railway also aligns well with the Welsh Government's objectives by: <ul style="list-style-type: none"> ▶ Providing enhanced connectivity – Digital Railway will give more choices to strike the right balance between the number of stops and the end to end journey time; ▶ Ensuring Wales is well connected to the rest of the UK – the choices created by Digital Railway could be used to facilitate the running of more services between Wales and major cities across the UK; ▶ Improving accessibility and safety – replacing conventional signalling and train control will mean a reduction in lineside infrastructure, and therefore fewer people will be required to work trackside.
Transport in Wales.	Wales is currently consulting with its stakeholders on its draft National Transport Plan ⁹ , which identifies three main priorities: <ul style="list-style-type: none"> ▶ Providing enhanced connectivity for communities, business and key services; ▶ Ensuring Wales has high quality transport links and is well connected to the rest of the UK and internationally; ▶ Improving accessibility and safety of stations and services. 		Digital Railway represents a substantial opportunity to reduce the UK's carbon footprint through a combination of: optimised train movements that reduce the use of power and fuel; passengers and freight users switching from road to rail and the reduced need for concrete and steel as a result of fewer conventional interventions.
Helping the UK meet its energy needs.	The UK has a number of binding legal obligations to reduce carbon emissions, most notably via the 2008 Climate Change Act, which committed to an 80 per cent reduction in carbon emissions by 2050 against a base year of 1990 ¹⁰ . Rail can support the Government achieve this objective through more efficient use of cleaner energy and by encouraging modal shift from road to rail and increasing the proportion of the network that is operated using electric traction.	Rail has strong environmental credentials, and represents a substantial opportunity to cut emissions. Rail produces only 40 grams of Carbon Dioxide per passenger kilometre, compared to over 100 grams for road, and over 110 grams for air travel ¹¹ and as a result reduces emissions by up to 7.4m tonnes annually ¹² . A rail service which suffers for frequency, connectivity and performance will be less able to attract customers from competing methods of transports (road in particular). This could mean greater difficulty in reducing emissions, and increased congestion of the GB road network (currently costs the economy £2bn each year ¹³).	Digital Railway can boost Scotland's objectives to increase competitiveness and tackle inequality by: <ul style="list-style-type: none"> ▶ Improving journey times and connections – as previously mentioned, digital train control and signalling could be used to increase the number of connections on a line of route, or increase performance (or achieve a combination of the two); ▶ Reducing emissions – the TM system identified as an option for implementation is effective in optimising train movements across the network. In addition, using digital train control to offer a more reliable service can cut emissions by encouraging passengers and freight companies to shift from road to rail; ▶ Improving quality, accessibility and affordability of transport – accelerating digital technology on the network could reduce the need for costly conventional interventions, lowering the overall costs of the rail network.

¹ AT Kearney (2014) "2014 Global Cities Index and Emerging Cities Outlook" p2

² Mayor of London (2014) "London Infrastructure Plan 2050: Transport Supporting Paper" p27

³ Mayor of London (2014) "London Infrastructure Plan 2050: Transport Supporting Paper" p26

⁴ Transport for the North Partnership Board (2015), "Northern Powerhouse: One Agenda, One Economy, One North", p17

⁵ Ibid

⁶ Ibid, p18

⁷ Scottish Government (2015) "Scotland's Economic Strategy", p35

⁸ Transport Scotland (2008) "Strategic Transport Projects Review", www.transportscotland.gov.uk/strategic-transport-projects-review

⁹ Welsh Government (2014) "National Transport Plan 2015 – Draft" p52

¹⁰ Department for Energy and Climate Change (2015), "2010 to 2015 government policy: greenhouse gas emissions", <https://www.gov.uk/government/publications/2010-to-2015-government-policy-greenhouse-gas-emissions/2010-to-2015-government-policy-greenhouse-gas-emissions>

¹¹ European Environment Agency (2011) "Specific CO2 emissions per passenger-km and per mode of transport in Europe, 1995-2011" <http://www.eea.europa.eu/data-and-maps/figures/specific-co2-emissions-per-passenger-3>

¹² Rail Delivery Group (2014) "What is the contribution of rail to the UK economy?", p1

¹³ Highways Agency / Department for Transport (2014) "Transforming England's Strategic Road Network" p2