

# YORKSHIRE AND HUMBER

## INFRASTRUCTURE 2014



Yorkshire and Humber's infrastructure requires prompt policy focus and increased investment to rectify current deficiencies and make it fit for the future. Progress since our 2010 report has been mixed, with some important networks suffering greater uncertainty and deterioration.

### UK OVERVIEW

Infrastructure is vital to society – our quality of life depends on it functioning effectively and our reliance becomes painfully evident when infrastructure systems fail.

The UK's ability to compete in the global race and to generate and sustain economic growth with appropriate quality of life depends on infrastructure networks that provide predictable energy generation and distribution, water supply, waste management and the transportation of people and essential goods into and around the UK by rail, road, sea and air.

State of the Nation is ICE's flagship report on the current state of the UK's infrastructure. The 2014 State of the Nation Infrastructure report assesses the performance, capacity and condition of the UK's economic infrastructure networks, and determines the actions required in order to improve and enhance performance, and importantly, to ensure that our infrastructure is resilient when faced with the many challenges ahead – from climate change to population growth.

### KEY RECOMMENDATIONS

#### ENERGY:

- Complete Electricity Market Reform (EMR) to enable major investment
- Effective action to increase energy efficiency
- Deliver carbon capture and storage trials in the region

#### TRANSPORT:

- Further improvements to trans-Pennine road and rail connections
- Enhance access into and between major urban centres, ports and airports
- Improve network condition and resilience
- Extend devolution of policy and investment powers to city regions

#### WATER:

- Maintain the region's highly-rated water service provision
- Better catchment management, particularly for upland areas
- Reduce pressure on sewer networks

#### FLOODING:

- Increase spending on capital and maintenance
- Implement sustainable drainage systems (SuDS)

#### WASTE:

- Establish a clear national strategy for waste management
- Continue investment in pursuit of a 'circular economy'
- Improve data on commercial and industrial waste.

### YORKSHIRE AND HUMBER OVERVIEW

Yorkshire and Humber's 5.3 million people contribute almost £100 billion (7%) to the UK economy each year. The region contains vital national transport and energy infrastructure and two of the most important city regions.

Interdependent transport, energy, water, flooding and waste infrastructure and services are essential to modern societies. Our networks face many challenges common to other areas of the UK:

- lack of capacity and resilience at critical times
- inadequate policy, planning and governance frameworks
- historic under-investment and uncertain future prospects
- the need to reduce harmful emissions.

Like many regions outside London and the South East, Yorkshire & Humber arguably punches below its weight in economic terms. ICE believes more and better infrastructure investment could facilitate improvements in economic growth, quality of life and the environment. Unlocking this potential requires clearer strategic thinking and decision-making, but there is a real danger that there will be insufficient skilled engineers and technicians to deliver, if urgent action isn't taken to attract and retain suitable people in the industry.



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ENERGY ('AT RISK')

### ENERGY OVERVIEW

Modern life depends utterly on reliable energy supplies - still mostly obtained from fossil fuels. The UK has a huge challenge to renew its electricity infrastructure, ensuring security of supply and decarbonisation at an affordable price. Government is progressing Electricity Market Reform (EMR) as we face short-term capacity constraints, with de-rated peak margins likely to fall below their current 4%.

Yorkshire and Humber has a critical role in the UK's energy system. It is a net exporter of energy, hosts some of the largest generating facilities and is an important location for the landing and storage of gas and biofuels.

In order to secure the UK's energy future in the short to medium-term, we recommend:

- Prompt completion of EMR's secondary legislation to enable major investment
- Effective action to increase energy efficiency, reducing emissions, costs and the need for generation
- Delivery of carbon capture and storage (CCS) trials in the region.

### GENERATION

Yorkshire and Humber's contribution to UK electricity generation is falling. The end of coal-fired generation is in prospect, with stations closing or being converted to biomass fuel - most notably at Drax. Gas stations are ageing and no final investment decisions have been made to build new ones.

Investment in solar and wind generation has continued but is sensitive to subsidy regimes. Offshore wind has a considerable potential, albeit at a high price. In this region, Humber Gateway (219MW capacity) is under construction, a start is due on Westernmost Rough (210MW) and Triton Knoll is progressing with reduced capacity (900MW).

Hull's Alexandra Dock is Siemens's preferred location for its offshore wind turbine assembly and export facility. Existing operations and maintenance centres at the Port of Grimsby are operated by Eon, for the Humber Gateway Wind Farm, and Centrica, for Lincolnshire's Offshore Wind Farm.

The region could benefit from the proposed White Rose Carbon Capture Storage (CCS) demonstration project at the Drax power station, which will enable liquid carbon dioxide to be transported and stored underground. The lessons from this project should be observed so that the wider roll-out of CCS in the region can be achieved - such as the Don Valley project - in order to help the UK meet its legally-binding targets to reduce carbon emissions.

### SUPPLY, STORAGE, TRANSMISSION AND DISTRIBUTION

Infrastructure is interdependent: power stations cannot function without adequate supply, which demands transport with resilience to, for example, extreme weather events. The 2013 landslide at Hatfield's spoil tip closed the rail link to Scunthorpe. If Kellingley Colliery closes, leaving Hatfield as the only surviving deep mine, Drax will become increasingly dependent on imported fuels, via seaports and rail links.

Immingham Port plans to continue importing 10 million tonnes of coal a year and to increase biomass capacity to 8 million tonnes by 2020. Biomass is transported by rail and road with material handling and rolling stock investment at Drax. Biomass demand is projected to soar and indigenous production, as well as imports, has increased.

The UK's reliance on gas for electricity generation is likely to increase in the medium-term as older coal and nuclear generation is retired, and for back-up for intermittent renewable generation. Gas also supplies most of our heating.

Yorkshire and Humber hosts vital gas facilities. Easington is one of the UK's three main North Sea terminals. Centrica's Rough facility provides 70% of the UK's gas storage capacity and Scottish Power's Hatfield Moor Facility "soaks up" 0.12 billion cubic metres of injected gas in porous sandstone. However, greater future need is not being met with increases in beachhead or storage capability. Storage may become more important as North Sea production dwindles - yet the UK's capacity is very limited. Eon's Whitehill scheme would hold 400 million cubic metres but has not been approved.

### TRANSPORT OVERVIEW

Our 2013 State of the Nation: Transport report prioritised areas to be addressed if transport systems were to deliver the greatest potential contribution to prosperity and quality of life:

- Recognise interdependencies between transport and other sectors including flooding, communications and fast and reliable high-speed broadband as a form of communication
- Inadequate trans-Pennine connections (from Hull to Liverpool, and all major cities between)
- Poor connections within Yorkshire and Humber, including:
  - Slow and inadequate capacity connecting Leeds with Sheffield
  - Severe traffic congestion in both the Leeds/Bradford and Sheffield conurbations
  - Ineffective commuter services to Leeds from surrounding towns and Bradford, which are unable to cater for the fast-growing population
- Inadequate access to ports and airports
- Lack of resilience in the transport network

Some progress has been made: the M62 Smart Motorway has been delivered; similar plans for the M1 are in progress, as is rail's Northern Hub project. West Yorkshire has formed a Combined Authority - we applaud its strategic thinking and encourage South Yorkshire's new Combined Authority to pursue a model similar to the West Yorkshire Plus Transport Fund.

We have acknowledged the progress that has been made with strategic transport by giving separate grades for strategic and local transport.

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GRADE

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STRATEGIC TRANSPORT: GRADE C ('REQUIRES ATTENTION')

LOCAL TRANSPORT: GRADE D ('AT RISK')

### TRANS-PENNINE CONNECTIONS

We need continued road and rail improvement in the North West, Yorkshire and the North East. Chairman of HS2 Ltd, David Higgins, recently noted "the poor east-west connectivity that appears to inhibit trade, commerce and development"<sup>1</sup>. A 2009 report estimated that a 20 minute reduction in Leeds-Manchester travel time could add £6.7 billion to the Northern economy<sup>2</sup>. HS2 will not deliver this, and the Northern Hub project's benefits<sup>3</sup>, whilst welcome, are insufficient. The Hope Valley line, linking Manchester and Sheffield, is not a modern inter-city link, despite

1. Source: HS2 Plus: A report by David Higgins (2014) 2. Source: Spatial Economics Research Centre (2009) Strengthening Economic Linkages between Leeds and Manchester: Feasibility and Implications 3. Including two more Leeds-Manchester trains per hour and a 10 minute reduction on the existing, slow, journey time



welcome planned improvements at Dore. We thus re-state our call for an engineering and economic investigation of the Woodhead route as an alternative trans-Pennine route. We are encouraged by the partial devolution to Rail North (a coalition of 33 local transport authorities) of rail services for the Northern and TransPennine rail franchises.

### INTRA-REGIONAL CONNECTIONS

Strategies are required to tackle traffic congestion and use existing infrastructure more efficiently, especially in South and West Yorkshire. Road and traffic information before and during journeys should be improved and confidence in the reliability and punctuality of bus and train services is essential.

Continued devolution of powers to city regions is required to allow development of a more-integrated approach to transport planning and provision.

We support the upgrading of the M1 in Yorkshire to Smart Motorway, improving journey time reliability, and the A1 Leeming to Barton upgrade to motorway, which will reduce journey times and improve capacity between the region and the North East.

The Better Bus Area pilot scheme and tram system improvements in Sheffield are welcome, as is the pursuit of better services in and around Leeds. Lessons should be learned from the experience of Tyne & Wear in trying to implement a bus 'Quality Contract'.

We are concerned that the locations of HS2's proposed stations at Leeds New Lane and Meadowhall have not been fully engineered and recommend a re-examination of the options so that the necessary quality of connectivity is provided.

This year's Tour de France in Yorkshire will enhance cycling's profile and maximum advantage should be gained by integrating cycling planning and provision with other forms of transport.

### ACCESS TO PORTS AND AIRPORTS

Good access to external gateways is essential for a competitive economy. Our air and sea ports are being held back by inadequate surface access. This encourages travel to airports in neighbouring regions, increasing congestion and potentially deterring investment.

The Finningley and Rossington Regeneration Route Scheme (FARRRS) will provide good access to Doncaster-Sheffield Robin Hood

Airport from the M18. However, a 2km link is still required between the A638 and Hurst Lane/Airport Access road, along with A638/Hurst Lane junction improvements, to complete a high quality connection to the strategic network.

### RESILIENCE

In addition to enhancing capacity and modal choice for travellers, attention is needed to the physical condition of the region's roads, particularly the local network. Two-fifths of local authority classified roads' condition was rated amber or red in 2010/11<sup>4</sup>, and the maintenance backlog was estimated at almost £100 million in 2013<sup>5</sup>.

### FLOOD MANAGEMENT

#### OVERVIEW

The UK faces an increase in the frequency and severity of flooding. Yorkshire and Humber is particularly susceptible and was badly affected by the 2007 floods. Last winter's local weather patterns spared the region the worst effects – but this must not lead to complacency. The value of investment in flood management was highlighted recently by the fact that the worst tidal surge for 60 years, which occurred in December 2013, did not lead to loss of life.

Defra's Climate Change Risk Assessment predicts that the region's river basins will experience a 10% increase in peak flow<sup>6</sup> by the 2020s and high tide levels by the end of the 21<sup>st</sup> century are forecast to be 0.75m higher in storm conditions. This, the reduction in maintenance funding and failure to fully enact the Flood and Water Management Act will reduce our protection from flooding.

#### MAINTAINING OUR DEFENCES

Whilst many of the recommendations of the Pitt Review<sup>7</sup>, following the 2007 floods, have been implemented, legislation for sustainable drainage systems (SuDS) has not been fully implemented, resulting in a lack of direction for Lead Local Flood Authorities (LLFAs).

Currently, most urban surface water flows into sewerage networks and is treated as waste water. However, volumes can now overwhelm the infrastructure, which needs better-planned and proactive maintenance.

In 2014/15, Environment Agency (EA) maintenance grants will be 22% lower than in 2010/11<sup>8</sup>, impacting on EA, LLFAs and Internal Drainage Boards. Further reductions in experienced staff and funding (or diversion to capital spending) may result in more flooding losses and compromise emergency response.

GRADE

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FLOOD MANAGEMENT ('AT RISK')

### FIT FOR A CHALLENGING FUTURE

Yorkshire and Humber has at least 100,000 properties at risk from a one in 100 year fluvial event and 300,000 at risk from a one in 200 year tidal flood, and if forecasts of climate change materialise the numbers of vulnerable properties will increase significantly.

When assessing the costs and benefits of flood defence, all factors should be considered, including the full economic consequences of business loss. Even under current methods, however, the investment case is extremely strong, frequently returning cost to benefit ratios better than 1 to 8.

Flood management requires a holistic, or whole system, approach. This combines defences with a holistic management of fluvial and surface water risks, and improved building and infrastructure resilience. Management can be achieved with active measures (physical defences), passive measures (planting of grass and trees to increase water infiltration to soil), emergency management measures (flood warnings and emergency management plans) and improved resilience to speed subsequent recovery. Development on floodplains should be permitted only with designed-in flood management measures.

Progress in managing flood risk will require many stakeholders, including the EA, local authorities, land and property owners, to work together in a mutually supportive way.

### WATER

#### OVERVIEW

Yorkshire and Humber is very diverse with a variety of types of catchment, major rivers and significant groundwater, major conurbations and a large, varied rural area.

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WATER ('ADEQUATE FOR NOW')

4. source: Department for Transport table RDC0104 5. source: Annual Local Authority Road Maintenance (ALARM) survey, 2013. 6. Based on medium risk scenario in "Climate Change Risk Assessment for the Floods and Coastal Erosion Sector" (2012, Defra, et al) 7. Sir Michael Pitt's report to Government on "Learning Lessons from the 2007" 8. Committee on Climate Change (2014) Policy note: flood and coastal erosion risk management spending



Yorkshire Water remains among the top-performing providers<sup>9</sup>. Drinking water quality is high<sup>10</sup>, our 15 river catchments are rated 'good' or better and bathing water quality has improved steadily<sup>11</sup>.

Where quality is poor, this is largely due to sewage effluents and combined sewer overflows. Sewer flooding continues to be a problem, with 600 properties affected, and there are overloaded sewers. Even though targets are being met, leakage and pipe bursts remain a challenge, as does managing ageing assets, some dating from the industrial revolution.

Overall, the current position is relatively stable, with no major deficiencies. There are no grounds for complacency, however, on security of supplies and over-abstraction, nor on the effects of water pollution and new controls under the EU Water Framework Directive. The introduction of competition into water supply could lead to greater complexity. Providers must maintain effective collaboration if they separate bulk supply and services and utilise the interconnections that exist with the region's water network.

### MAINTAINING AND IMPROVING STANDARDS

Yorkshire Water's vision<sup>12</sup> takes a commendably integrated approach to the water cycle - although operations are still segregated into 'clean' and 'dirty'. Their aim, however, is to continue to deliver consistency of service equivalent only to recent standards, despite the changing external factors of climate, customer expectations and regulation.

Many pressures for change are regulatory. ICE welcomes Ofwat's incentivisation of a Total Expenditure approach, which removes the tendency to seek capital-intensive solutions where there may be more appropriate alternatives.

The Water Framework Directive necessitates more-effective management of uplands, controls on abstraction and tightening effluent discharge standards, all as part of an integrated approach. There is greater emphasis on complex and alien chemicals as a major challenge and on stronger public involvement via catchment partnerships. Water companies have to define new 'outcome measures' for expected performance and, in partnerships with other providers, for managing catchments and flood risk. The Water Act introduces more competition in service provision and increases local authorities' responsibility for reducing the input to water company assets.

### CLIMATE CHANGE

There is uncertainty as to how the region will be affected by climate change but predictions show higher river flows in winter and lower river flows in summer and early autumn. Changes in rainfall may cause increased leaching of contaminated soils into water bodies. Higher-intensity storms in the summer will recharge groundwater aquifers less, which means that water companies will have to review their supply infrastructure. The proposed changes to the abstraction licence regime, currently under consultation, make this particularly important.

### WASTE OVERVIEW

The approach to waste has changed considerably in recent decades, with simple disposal replaced by more sophisticated resource management intended to increase recycling and energy recovery, and to reduce landfill.

ICE supports a 'circular economy' which maximises value at every stage and minimises waste; we should be proposing practical measures to stimulate this. Unlike for energy, secondary markets for recycled materials are poor: we need to provide incentives to correct this. There is an increase in exports of Refuse-Derived Fuel at the same time as increased imports of coal and biomass. An Office for Resource Management is required to provide strategy and leadership in England.

### MUNICIPAL WASTE MANAGEMENT

Solid waste collected by Yorkshire and Humber's 15 local authorities is down 18% from 2000/01 - to 2.5 million tonnes per annum. Management of that waste has seen considerable improvement:

- Over 40% was recycled or composted in 2012/13, up from 10% in 2000/01
- Under 40% was sent to landfill - above England's 34% average but less than half 2000/01's 84%
- Almost 20% was used to produce energy, a six-fold increase.

Infrastructure investment continues, driven by the Landfill Tax escalator, national targets and associated Private Finance Initiative (PFI) funding. Most authorities now have long-term waste contracts, although Government's withdrawal of PFI credits from a number of schemes created uncertainty when further investment is needed to achieve a circular economy.

GRADE

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WASTE ('AT RISK')

### COMMERCIAL WASTE MANAGEMENT

Little data is available on commercial and industrial waste and there is no coherent national or regional strategy for its management. ICE recommends rectifying both failings.

The Landfill Tax escalator (now limited to inflation) increased landfill costs, creating a market for commercial EfW (Energy from Waste) schemes. In addition to existing plants at Sheffield, Kirklees and North East Lincolnshire, new schemes are at various stages of development, most notably at Ferrybridge, where a large plant is under construction and a second under consideration. Others, however, have been slow to progress due to funding and planning issues, exacerbated by uncertainties about national energy and waste policies.

Landfill capacity in the region, whilst sufficient in the short-term, is diminishing. There are no local sites for hazardous wastes, Teesside being the nearest.

View the full report online at [ice.org.uk/stateofthenation](http://ice.org.uk/stateofthenation)

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9. In Q3 2013, Yorkshire Water scored highest on Ofwat's service incentive mechanism (SIM) (source: Interim Report and Financial Statements 2013) 10. In 2012/13, 99.93% of samples met UK standards (source: Annual report and financial statements) 11. Yorkshire Water is the only company funded to achieve the highest standard set by the European Revised Bathing Water Directive for 2015 12. Source: Final business plan: 2010-15