NORTHERN POWERHOUSE

INDEPENDENT ECONOMIC REVIEW

Core Messages

The Northern Powerhouse

The North of England is home some of the most iconic places in the UK. There are around 16m people and 7.2m jobs, and in 2015 the region generated an economic output of around £290bn of Gross Value Added (GVA), about one fifth of the UK's total.

The area has a wealth of high profile and growing businesses and rich sets of expertise, creativity and assets; however there is potential for the North to grow further.

The Chancellor set out a commitment in August 2014 to unify the North's economic centres to create the Northern Powerhouse. The Northern Powerhouse is a shared ambition to bring together the cities, towns and rural communities of the North of England to become a vibrant and growing economy that builds on existing strengths and future potential; attracting and retaining the brightest and best talent and acting as a magnet for inward investment and competitiveness.

Business and civic leaders from across the North have started to respond to this ambition by working together to ensure the vision for the Northern Powerhouse becomes a reality for people and businesses.

Successful pan-Northern partnerships have been formed, including Transport for the North (TfN), which has been created to develop and commission the transport infrastructure needed to connect the Northern Powerhouse, and the Northern Powerhouse Partnership Initiative with business.

The Northern Powerhouse Independent Economic Review has been developed in partnership with the North's business and civic leaders, offering a unified approach to benefit the whole of the North.

The Review

The Northern Powerhouse Independent Economic Review (NPIER) was commissioned by the TfN partners, collaborating with the wider Northern Powerhouse partnership.

The Review was undertaken by SQW Ltd, with support from Cambridge Econometrics, Steer Davies Gleave, John Jarvis Consulting, and (as peer reviewers) Professors Philip McCann (Groningen), Ron Martin (Cambridge) and Roger Vickerman (Kent).

The findings of the Review characterise the North's economic position and the drivers underpinning its performance, and identify opportunities where pan-Northern drivers and collaboration can support local activities. This document has been produced by TfN to provide a short summary of the Review's independent findings.

The Review looked to understand the scale, nature and causes of the North's gaps, distinctive 'capabilities' (pan-Northern collectives of sectoral, academic, skills and hard asset strengths of international substance) and future growth prospects for the area.

These pan-Northern capabilities cut across sectors and were identified by analysis of data on specialisms, productivity and evidence on sectoral strengths, expertise and knowledge assets both bottom-up (using evidence from Local Enterprise Partnerships) and top-down (using evidence on the whole Northern economy).

The capabilities that were identified are international-class assets: expertise, research and businesses that are genuinely distinctive for the North, are highly productive, and can compete on the national and international stages.

The challenges

For the last thirty years, the North's GVA per capita has been consistently about 25% below the average for the rest of England, and 10-15% below the England average (excluding London).

A persistent economic gap exists between the North and the national average that necessitates a radical change in the economy of the North. This performance gap (which is measured by GVA per capita) is structural and has been persistent over the last 30 years. In 2014, this gap equated to a £4,800 per person difference in income between the North and the UK average, and a £22,500 per person difference between the North and London.

Whilst levels of unemployment have an impact on the North's GVA, the Review found that productivity accounts for the largest proportion of the 'performance gap' with the rest of England.

The main factors driving this productivity gap were identified as:

- Insufficient high-skilled workers and too many low-skilled workers
- Not enough exploitation of innovation and technology
- Lower levels of investment
- Lower levels of enterprise (measured by business start-ups per capita)
- Lack of agglomeration
- Sub-optimal transport links and underinvestment in transport

Bridging the gap

The Northern Powerhouse Independent Economic Review uses the intelligence gained by analysing the North's capabilities to set out an achievable trajectory of what the economy could look like if we achieve the Northern Powerhouse vision. Within this projection, there is both a forecast of what would happen if the North's economy continued to grow at its current rate ('business as usual') and a growth forecast for what would happen if the 'transformational' Northern Powerhouse vision was achieved.

'Business as usual' for the North would not mean zero growth or investment, but it would mean a continuation of historic trends of investment and corresponding reduced growth. This 'business as usual' scenario would mean that the gap between the North's economy and the rest of England would continue to widen.

Under the 'transformational' scenario, **by 2050 the North would have 850,000 more jobs than under the 'business as usual' scenario, with 1.5 million new jobs in total**. If this vision is realised, **by 2050 the North's GVA is projected to be £97 billion higher** than if there was 'business as usual'.

This improved economic performance would be led by growth in the North's distinctive offer of 'prime' capabilities, supported by three 'enabling' capabilities. For the gap to be bridged, transformational improvements to the North's transport connectivity are critical, both between and within cities. We would also need substantial improvements in the North's skills base and graduate retention and attraction, alongside higher levels of innovation and inward investment.

The capabilities of the North

The North is home to internationally regarded assets, expertise, research and businesses that are pan-Northern, highly productive and can compete at national and international scales.

The Review has identified the North as having **four prime capabilities** which are highly productive and can compete on the national and international stage. Alongside these, **three enabling capabilities** have been identified which support the prime capabilities and combine to create a complementary and distinctive offer for the North.

The four prime capabilities are:

- **Advanced manufacturing**, with a particular emphasis on materials and processes
- **Energy**, in particular expertise around generation, storage and low carbon technologies, especially nuclear and off-shore wind
- **Health innovation**, with a focus on Life Sciences, Medical Technologies/Devices, e-health, and emerging new models of service provision
- **Digital**, focusing particularly on computation, software tools/ design and content, data analytics and simulation modelling, and wider media strengths

These four prime capabilities are supported by three enabling capabilities, which play a crucial role in supporting growth and development:

- **Financial and Professional services**
- **Logistics**
- **Education** (primarily Higher Education)

These capabilities account for around **2.1 million jobs** and over **£100 billion in GVA**, representing around **30% of all jobs in the North** and just **over 35% of GVA**. Their role is also strategically significant in driving the jobs and growth in other sectors of the economy, particularly retail, construction, leisure and tourism, which in turn will then generate significant jobs and productivity growth.

In addition to these capabilities, **the North's quality of life is an underpinning asset which supports its economy**, particularly in providing an attractive place for people to live, work, invest in and visit.

The North is home to twenty-seven universities, eight of which are ranked in the UK's top fifty, which attract tens of thousands or students from across the UK and the world. This influx of talent, as well as strong links between higher education institutes and local industry, offers an opportunity for growth if skilled graduates can build a career in the same area as they were educated.

Prime capability: *Advanced manufacturing*

The North has strengths in advanced manufacturing, particularly materials and processes, with expertise in materials and textiles, engineering and manufacturing, research and design, and metal and non-metallic production processes.

The North is home to a wide range of research bases for advanced manufacturing, including the Advanced Manufacturing Research Centre at the University of Sheffield and the Institute of Automotive and Manufacturing Advanced Practice at the University of Sunderland, and benefits from close partnerships between business and Higher Education, sometimes supported by state investment.

New technologies and environmental requirements and consciousness are further generating opportunities for those who can create lighter, stronger components and materials that sense and adjust to their environment.

These include:

- The discovery, creation and production of new, smart materials, such as graphene and the new generation of 2-dimensional materials that sense and respond to their environments
- The design of modern manufacturing methods, taking forward techniques such as rapid prototyping, open architecture control, and agile manufacturing
- The operation of advanced manufacturing processes, such as 3D manufacturing and robotic systems

Going forwards, **it is important that the North builds on its capability to develop new materials**, with the potential to transform entire sectors, such as electronics. It also needs to draw on the expertise of major companies such as BAE Systems and Rolls Royce and develop its capability to translate research expertise into commercial activity, e.g. as with graphene and the next generation of 2D materials.

Prime capability: *Digital*

The North has a proud history of computing, with Manchester being the birthplace of 'baby', the world's first stored-program computer. **The region has built on this history and has nationally and internationally significant assets underpinning its digital capability**. One of the UK's three standalone internet exchanges is in Leeds, and The Hartree Centre for High Performance Computing at Daresbury is home to the world's 30th most powerful computer. There are also clusters of tech expertise across the North, including DigitalCity in Middlesbrough, the Baltic Triangle gaming hub in Liverpool, the Yorkshire and North East & Tees Valley Digital Catapults and MediaCity in Salford.

Particular strengths include:

- High performance computing
- Cognitive computation
- Data analytics
- Simulation/modelling
- Media expertise

Big data and data analytics, in conjunction with other capabilities such as advanced manufacturing and the opportunities being created in health devolution, will drive fascinating new innovations and service delivery models. These cross overs and synergies will generate cost efficiencies in design/modelling/prototyping and delivery, and promote increased productivity in a range of sectors.

Prime capability: *Energy*

Energy generation, storage and distribution are essential elements of modern society. The pressures of climate change mean that, along with greater energy efficiency through better designed production processes and products, new methods of low or zero carbon energy generation have to be developed and deployed.

The North of England is a significant exporter of energy to the rest of the UK, with the Leeds City Region alone supplying one-sixth of the UK's electricity.

The North's energy capability is bolstered by its advanced manufacturing capability, which means that many of the elements in the energy sector's supply chain are located in the North.

The North has specific, distinctive sectoral specialisations in:

- Offshore wind energy (with large arrays off the coasts of Humber and Cumbria), manufacturing and assembly facilities and supply chain capabilities
- Nuclear research, nuclear processing, nuclear power, nuclear decommissioning and nuclear design-and-construction, with National Nuclear Laboratory sites in Workington, Sellafield, Preston and Warrington
- A range of new technologies, including waste to energy, biomass, hydrogen production and small hydro, as well as onshore wind. Battery technology is a growing capability in the North East
- Electricity distribution and control apparatus
- Environmental, energy, engineering consultancy and business services

The North has the core capabilities and the associated complementary capabilities required to respond to the structural changes which are taking place in the energy sector. The North is well-placed to seize the opportunity for low carbon energy, and energy portability/storage.

Prime capability: *Health innovation*

Health innovation is widespread across the North. There are a number of health sector specialisms, which mean **the North is well placed to generate and deploy health innovation and technologies**.

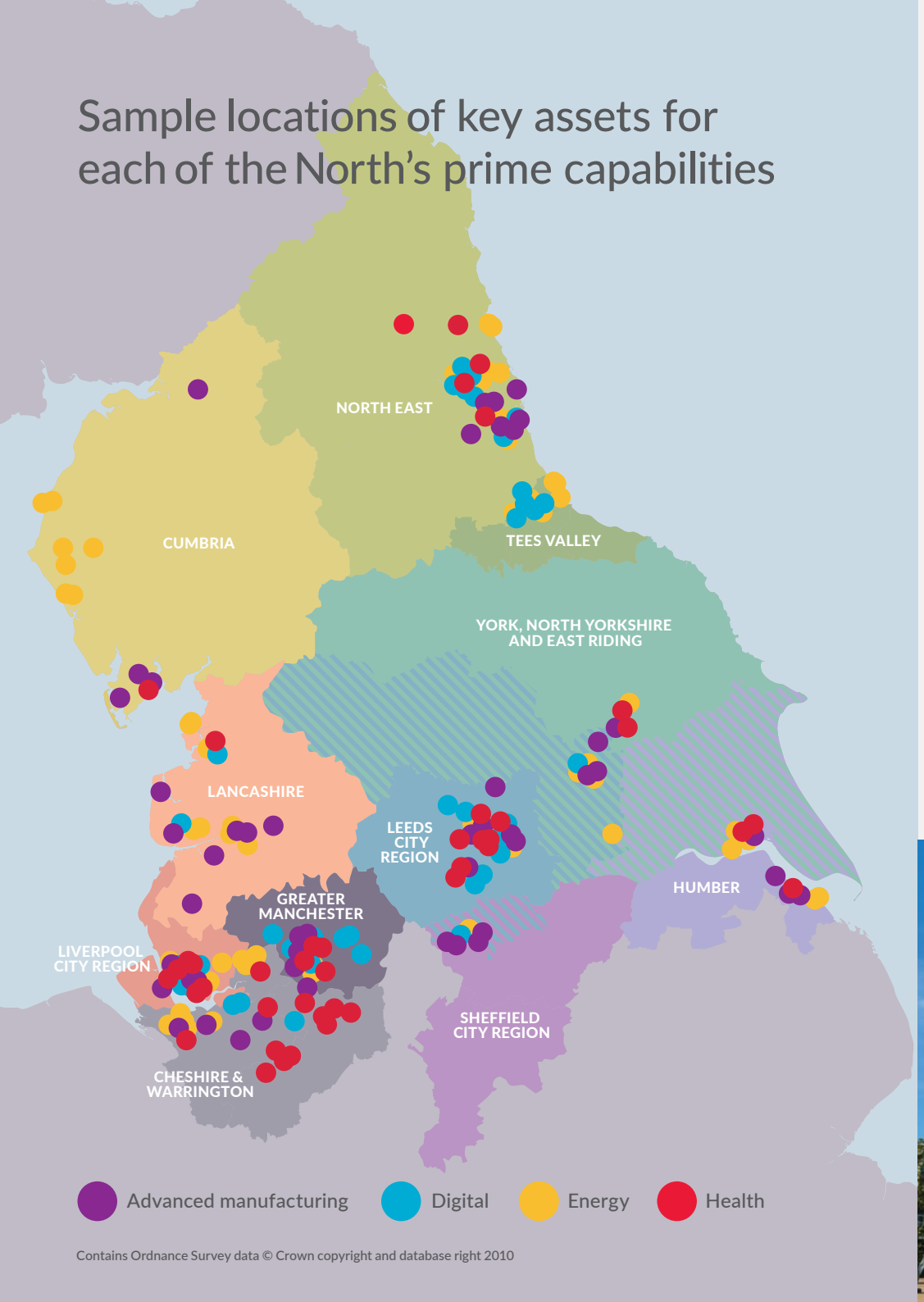
Areas include:

- Pharmaceuticals, particularly around Alderley Edge in Cheshire, the North East and the Manchester Health Corridor
- Medical Devices, particularly in Sheffield City Region
- Drug discovery
- Clinical trials, particularly in Liverpool and Greater Manchester
- Specialisms in ageing, cancer, paediatrics, orthopaedics, advanced wound care, biologics and biotechnology
- Specialisms in ageing, cancer, paediatrics, orthopaedics, advanced wound care, biologics and biotechnology
- Health devolution

The Health sector is facing long term social trends, such as ageing populations in developed economies and the growth of antimicrobial resistant pathogens. At the same time it is experiencing rapid technological advances in computing and data analytics that affect public health, drug discovery and development, and the personalisation of medicine. It is also exploiting new manufacturing processes, such as 3D printing for prosthetic limbs and organs.

Given the North's complementary capabilities in big data, robotics, synthetic biology and new advanced materials, **the North is in a strong position to develop, undertake and showcase world leading health innovation**.

Sample locations of key assets for each of the North's prime capabilities



Enabling capability: *Financial and professional services*

Financial and professional services provide essential services to the Prime Capabilities, whilst also possessing the potential to generate employment, both through indigenous growth and the relocation of services which are currently located in the South East or overseas.

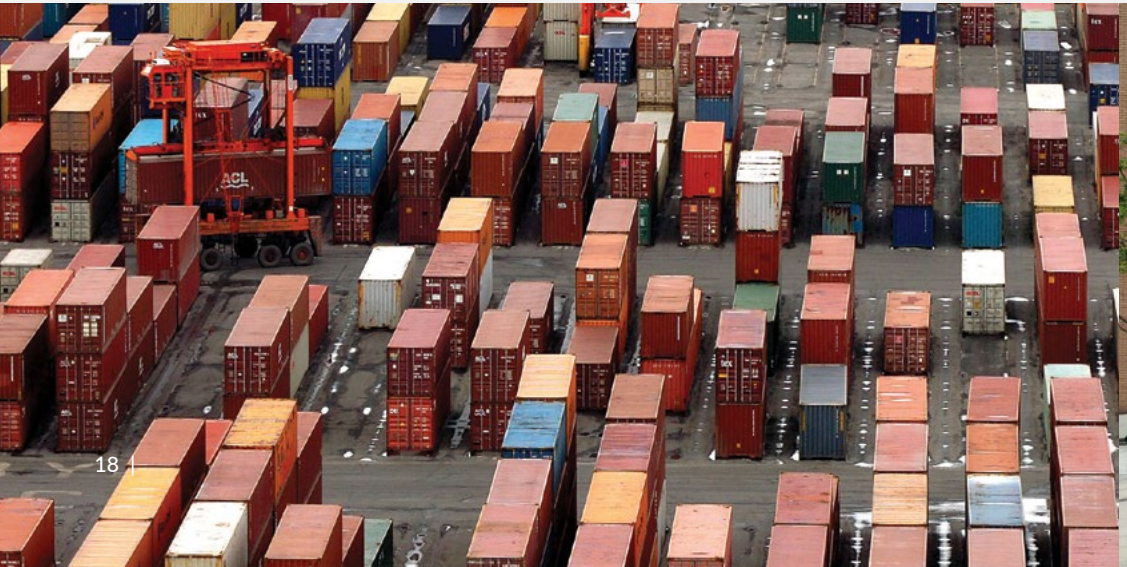
The financial and professional services sector operates at scale in Leeds City Region and Greater Manchester where there are strengths in finance and banking, insurance, legal services, accounting and real estate. There are also niche specialisms in Cheshire and Warrington and Liverpool. **The head offices of a number of major financial institutions are also located in the North**, including the Co-operative Bank in Greater Manchester, Virgin Money and Tesco Bank in Newcastle, and First Direct, and Skipton, Yorkshire, and Leeds Building Societies in the Leeds City Region.

Enabling capability: *Logistics*

The North has particular strengths in freight, logistics and warehousing and accounts for a substantial proportion of British freight transport, in particular rail, with 56% of total rail freight lifted to, from or within the North.

The North is served by several major seas ports including Immingham (the largest port in the UK by tonnage), Hull, Grimsby and Liverpool Superport. Furthermore, inland waterways like the Manchester Ship Canal and the Aire and Calder Navigation allow shipping lines and cargo owners to connect deep-sea cargo with the inland container hubs, providing a cost and carbon efficient route to market. It also has major international airports, such as Manchester, Liverpool, Newcastle and Leeds/Bradford. These all play an important role as international gateways to the North, key for both product and service trading.

Logistics capability will be vital for the prime capabilities to reach, service and exploit their market potentials, as well as having a complimentary role in enabling the efficiency of the wider Northern economy.



Enabling capability: *Education*

The research capabilities of the North's universities provide a vital contribution to the Prime capabilities with significant research capacity, knowledge excellence and facilities.

There are 32 higher education providers in the North, with over 520,000 students (28% of England's total).

Higher Education offers potential for the internationalisation of activity, both through students, university-university links, and collaborations with global businesses. It also generates significant export income via overseas students. Two Northern universities are in the top five in England for foreign student numbers.

The education capability also helps to generate the skilled workforce (if retained in the North) that should attract and retain employers. This therefore contributes to the development of agglomeration effects within City Regions and also at a pan-regional level.

Transforming the North

A transformational scenario builds up a picture of what the North's economy would look like when the following six things occur:

- **substantial growth in the four prime and three enabling capabilities**
- consequent **effects on suppliers** based in the North
- **agglomeration effects** arising from faster connections between areas of employment and activity density in the North, reflected in the growth in output and productivity of city-based business services
- **improvements in productivity** across the wider economy and a higher employment rate
- **effects on private and public services** that serve the population which has a higher income

It is the accumulation of these measures that will together **drive the overall improvement in the North's performance** over a 30-35 year period.

The transformational scenario incorporates the potential scale and nature of impacts arising from connectivity improvements and agglomeration. This would make it easier for firms and their employees to interact and hence benefit from the productivity increases associated with agglomeration, and allow more workers to work in city centre locations where higher-paid jobs are available.

The transformational scenario represents what the commitment to the Northern Powerhouse will achieve. With the right support and adequate investment, this would create a **sustained better long term performance for the North**.

A transformational economic future for the North, in which there are substantial improvements in the skills base, innovation and transport connectivity, would see growth rates in the North's productivity, GVA and employment rise markedly above past trends, helping to close the productivity and prosperity gap compared with the rest of England.

The Review estimates that, by 2050, transformation would bring about a level of **productivity that would be 4% higher** with **850,000 additional jobs** than if we continued business as usual.

A transformational scenario would be dependent on a step change in investment in transport, alongside other factors including skills and innovation. Some investments are required across the whole of the Northern Powerhouse and others can be managed at LEP area level.

The Northern Powerhouse Independent Economic Review sets out the vision for an economic ecosystem where transport connectivity is essential and where each economic building block (enterprise, skills development, infrastructure, etc) is able to respond rapidly to the North's changing needs.

Achieving the transformation

A transformed North will require investment and improved performance in a number of critical areas, especially skills, innovation, and inward investment, alongside transport infrastructure and services.

The Review recommends that improvements are required across the North, particularly in terms of the following:

- Improved education outcomes and work-based and vocational training
- Improved graduate retention and attraction, helped by better prospects for skilled, mobile workers to make their careers in the North through good access to opportunities in more than one town/city, and by a good supply of high-quality housing
- Better commercialisation of university research to the benefit of the North's business base
- Better management skills, including the uptake of innovation
- Attraction of inward investment by world-leading, international businesses that can bring transformed business practices and access to leading technologies.

Core Messages

- There is a persistent economic gap between the North and the national average that necessitates a radical change in the economy of the North
- The North has four prime capabilities which are highly productive and can compete on the national and international stage, alongside three enabling capabilities that support the prime capabilities and combine to create a complementary and distinctive offer
- The North is home to internationally regarded assets, expertise, research and businesses that are pan-regional, highly productive and compete at a national and international scale
- Agglomeration is driven within the major cities, however the capabilities are present across the North:
- By 2050, in a transformed North GVA is projected to be some 15% higher than a 'business as usual' projection, and productivity some 4% higher, with some 850,000 additional jobs.
- A transformed North will require investment and improved performance in a number of critical areas, especially skills, innovation, and inward investment, alongside transport infrastructure and services
- This first stage of analysis has clearly set out the opportunity for transformation in the North's economy. It is important that there is now continued analysis and strong leadership to make this transformational vision a reality.

TRANSPORT FOR THE NORTH

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The Northern Powerhouse Independent Economic Review was carried out by SQW Ltd and Cambridge Econometrics Ltd (CE), supported by SDG Ltd, John Jarvis Consulting and (as peer reviewers) Professors Philip McCann (Groningen), Ron Martin (Cambridge) and Roger Vickerman (Kent). The Review was commissioned by Transport for the North on behalf of wider partners.

Some images courtesy of Visit England