

## NNA VISION TO 2050

“The UK will invest efficiently, affordably and sustainably in infrastructure assets and services that will drive the economic growth necessary to enhance the UK’s position in the global economy, support a high quality of life and realise a low carbon future.”

### INTRODUCTION

The National Needs Assessment (NNA) of UK infrastructure is the first of its kind: a collaboration of experts from across all sectors to offer up a blueprint for infrastructure policy. It sets out the steps that are needed for a national infrastructure system that enables balanced economic growth, creates thriving communities and delivers a transition to a low carbon future.

The report identifies the drivers of demand on infrastructure networks – economic and population growth, technological change and climate change. It also examines the interdependencies of infrastructure networks and the use of technology in managing our assets more efficiently.

### WHAT ARE THE CHALLENGES?

The UK is a long way from having the modern infrastructure networks required by a world-leading economy, lagging at 24th for infrastructure in the World Economic Forum’s Global Competitiveness Report. By 2050, the UK’s population will be larger, older and increasingly urbanised. Adoption of digital communications will increase, and all of us will be more connected through technology. These drivers, combined with housing shortage, congestion on our transport networks, and the increased risk of both drought and flooding means that we have to do things differently.

### ENERGY, TRANSPORT AND DIGITAL – CONNECTING THE FUTURE

Britain’s infrastructure needs are connected and will become increasingly more so in the future. Proliferation of digital connectivity and a shift towards autonomous vehicles will require extra electricity. Without demand intervention electricity requirements could double by 2050. The NNA shows that the energy, transport and digital sectors share significant interdependencies and will drive the economic growth and thriving communities over the next 30 years. The report recommends that both Government and the National Infrastructure Commission must adopt an integrated cross-sectoral approach to the UK’s infrastructure needs.

### WHAT SHOULD BE DONE?

Through effective demand management and the use of technology we can change the way we build, operate and use infrastructure. Effective demand management means we can build less infrastructure and the use of sensors can reduce the costs of construction.

Technological innovation, supported by the right policies, will enable new and existing infrastructure to be used more efficiently, resulting in high quality affordable services. Some of the greatest opportunities for innovation are in people’s homes and workplaces – for example, working and socialising with ultra-fast digital connectivity, smarter use of energy and storage and reuse of rainwater and sewage are all opportunities that should be harnessed in new and retrofitted buildings.

The NNA recommends that both Government and the National Infrastructure Commission considers these factors when making informed decisions on the UK’s infrastructure.

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“Government and NIC must adopt an integrated, cross-sectoral approach to UK’s infrastructure needs.”

Sir John Armit ICIE President Deputy-Chair, National Infrastructure Commission



Modelling from the Infrastructure Transition Research Consortium (ITRC) projects the UK population will be 75 million by 2050.



ITRC’s macro-economic modelling projects UK GDP in the range £2.7–3.7Tn by 2050.



The total energy demand in Great Britain could move from its current level of around 900 TWh/year to 1200 TWh/year depending on the adoption of potentially disruptive new technologies such as energy storage and the electrification of heat and transport.



The adoption of digital communication by businesses has resulted in 20% of total ecommerce turnover in 2013 – an estimated £557bn.



Internet penetration is at around 90%, there are more than 22.6m fixed residential and SME broadband subscribers (ITRC 2016).



Broadband Delivery UK (BDUK) aims to achieve 95% superfast broadband coverage by 2017.



The UK leads the G20 nations with its digital economy, which accounted for 8.3% of total GDP in 2010 and is forecast to grow to 12.4% by 2016.



The UK’s housing needs are estimated to amount to at least 300,000 new homes per year for the foreseeable future.



26% of morning peak trains arriving to London were over capacity in 2014.



The combined excess capacity of morning and evening peak trains totalled 4.1% in 2014, higher than the average of 1.4% across 10 other major cities in England and Wales.



The direct cost of strategic road congestion was estimated at £2bn in 2010 and is anticipated to rise to £8.6bn in 2040 in the absence of intervention.



UK airports exhibit delays above the European average. Estimates put Heathrow’s runway capacity at 95%, Gatwick’s at 80%, Stansted’s at 59% and Manchester’s at 53% (ITRC 2012). ITRC projects that Heathrow, Gatwick and Luton will reach capacity within the next decade.



Disruption from flooding costs the UK economy £1bn per year. 2.44 million properties are at *risk* of flooding from rivers and the sea, 3 million from surface water flooding, and 244,000 are at *high* risk of flooding. These numbers are set to increase in future due to population growth and climate change.

## MAIN RECOMMENDATIONS

The report looks at all infrastructure sectors, but the key recommendations that will help us meet our future infrastructure needs are:

### ■ ENERGY

- Commit to a diverse mix of electricity generation to 2035
- Alternative strategies for energy security post 2035
- Smart energy system and clear policy for reduction of energy demand

### ■ TRANSPORT

- Capacity improvements on the strategic road, primary road and rail networks
- Development and implementation of autonomous vehicles
- New ways of funding road infrastructure
- Increased investment in commuter transport

### ■ DIGITAL

- Private sector incentives to roll out ultra-fast broadband
- Government intervention where market fails

### ■ HOUSING

- Major housing proposals part of nationally significant infrastructure projects
- Accelerate provision of more housing
- Review of public land available for housing
- Unlock development through provision of economic infrastructure

We welcome Government’s vision to invest in the UK’s infrastructure. ICE and the infrastructure community are ready to support this. The NNA is our blueprint for Government, for the National Infrastructure Commission and for the engineering industry. It outlines the actions that are needed now - for energy, housing, transport, digital communications, water, flood management and waste - to allow society to thrive for generations to come.

## HOW YOU CAN HELP

Help share our vision for UK infrastructure:

Follow us on Twitter at @ICE\_engineers and retweet our #UKInfraNeeds hashtag

Share this summary with friends and colleagues

Look out for video content available at [www.ice.org.uk](http://www.ice.org.uk)

For further information about the **National Needs Assessment** please contact **Andrew Wescott** [andrew.wescott@ice.org.uk](mailto:andrew.wescott@ice.org.uk)