



HM Treasury

National Infrastructure Plan 2014



December 2014



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OVERALL

Progress since 2010

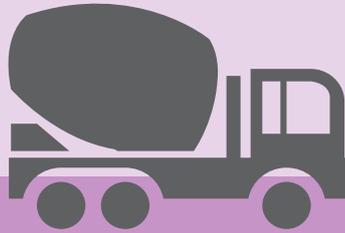
55

major roads and local transport projects completed

King's Cross completed, along with improvements to over 400 other stations

Construction started on transformational projects like Mersey Gateway and the Northern Hub rail upgrade

More than 500 flood and coastal erosion defence improvement schemes completed



Roads Investment Strategy to treble spending on strategic roads investing a further £15 billion in over 100 schemes

£38bn

of spend on our railways in Network Rail Control Period 5

Hinkley Point C, High Speed 2 and Thames Tideway Tunnel due to start construction

Start of construction expected on more than 1,400 flood schemes, with £2.3 billion capital investment

Plan to 2020-21

OVER 2500 PROJECTS COMPLETED SINCE 2010

- Opening of new Heathrow Terminal 2 and Birmingham runway extension

Over
1.5m

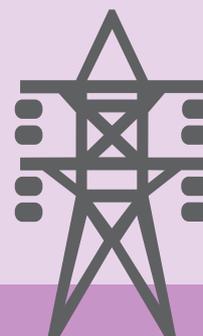
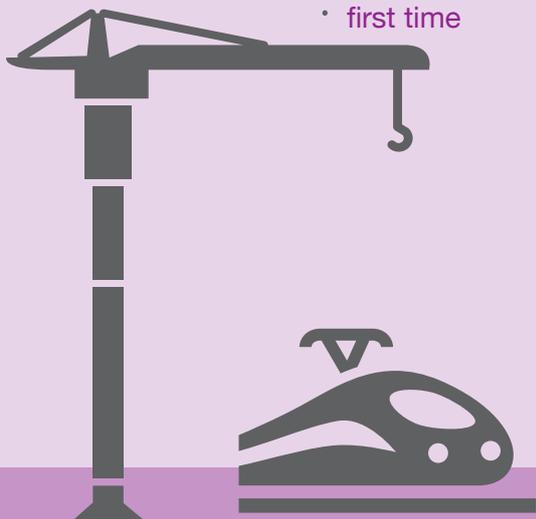
- homes and businesses with access to superfast broadband for the first time

£22bn

- of private-sector investment in water and waste water assets

Nearly
20GW

- of new electricity generation capacity created – enough to power around 23 million homes



£46bn

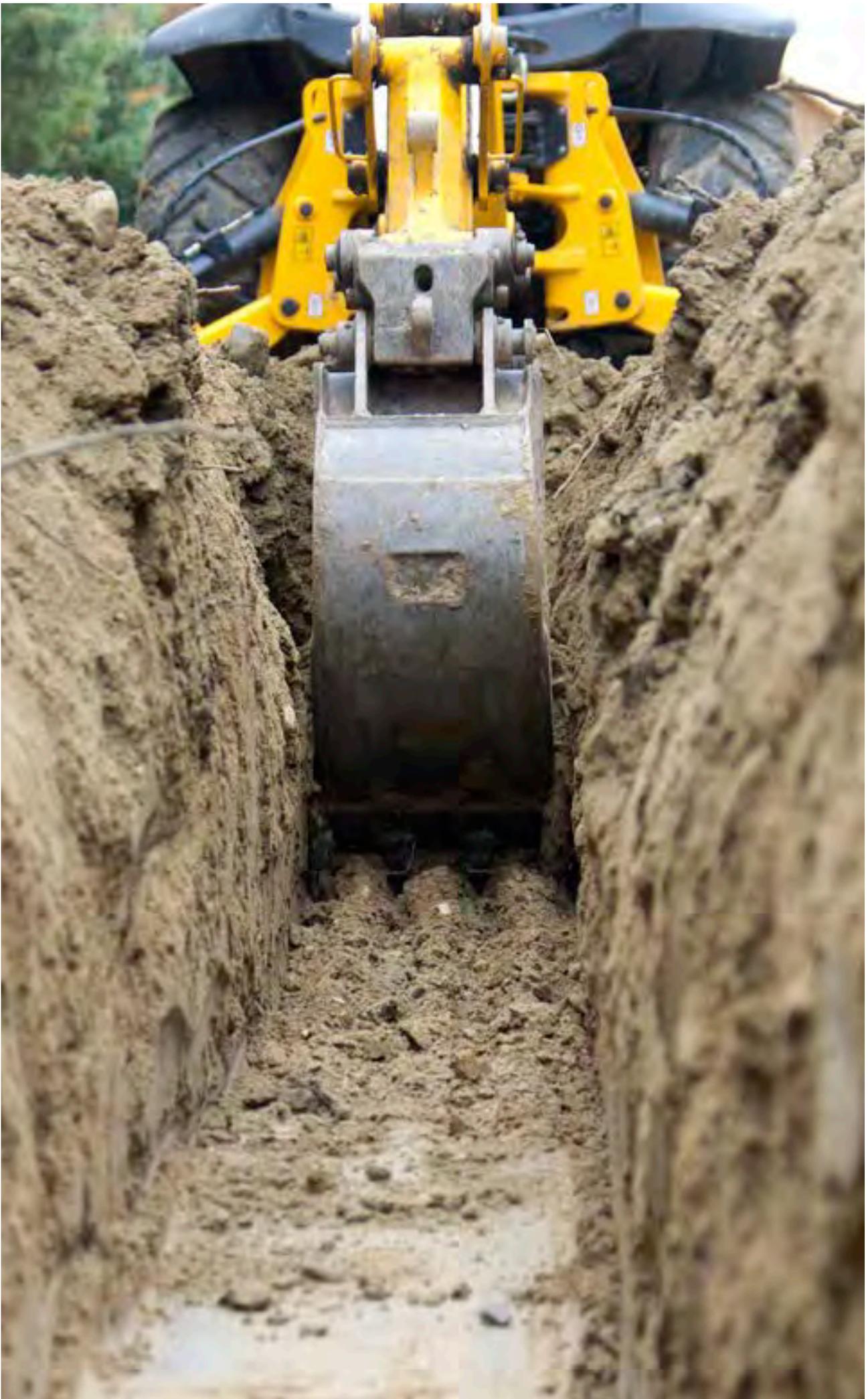
- of investment in gas and electricity networks in the pipeline

- Results of first Capacity Market auction and Contracts for Difference allocations due in 2015

- Final Airports Commission report to be published in summer 2015

- Francis Crick Institute due to be fully operational in 2016

OVERALL INFRASTRUCTURE PIPELINE £466BN
In construction £277bn
Future investment £189bn



Executive summary

Improving the UK's productivity is a vital element of the government's Long-Term Economic Plan. High-quality infrastructure boosts productivity and competitiveness, allowing businesses to grow and enabling them to reach suppliers, deepen labour and product markets, collaborate and innovate and attract inward investment.

The choices that we make about infrastructure enable us to shape the type of economy and society that we want for the future. Infrastructure has the capacity to unlock economic potential in individual regions and ensure that growth and opportunities are distributed across the country, while also creating networks which bind together the different parts of the UK. Investment in infrastructure also helps the government to deliver new housing and business development where it is most needed.

The National Infrastructure Plan 2014 (NIP 14) sets out an ambitious infrastructure vision for the next parliament and beyond, reinforcing the government's commitment to investing in infrastructure and improving its quality and performance. It is underpinned by a pipeline of over £460 billion of planned public and private investment.¹

The government is prioritising the public funding of infrastructure, putting in place the right policy framework to give investors the confidence to commit to long-term projects, and ensuring the supply chain has the certainty and tools it needs to deliver effectively. It recognises the importance of getting the fundamentals right – delivering our key projects and programmes on time and on budget – while also addressing longer-term challenges: integration, resilience, skills, and sustainability.

Progress since 2010

Public and private infrastructure investment has increased in recent years. A top down analysis of average annual infrastructure investment between 2011 and 2014 has been refreshed for NIP 14. **HM Treasury estimates now indicate that average annual infrastructure investment is 15% higher in this parliament than it was in the previous parliament.**²

Of course, levels of investment are only meaningful if they translate to successful delivery. **Since 2010, over 2,500 different infrastructure projects or schemes have been completed.**

¹ This includes oil and gas investment for the first time.

² £47 billion in 2010-11 to 2013-14, compared with £41 billion in 2005-06 to 2009-10 (in 2013-14 prices). HM Treasury estimates, based on published sources. These figures are not comparable to pipeline data presented in this document, which is a forward-looking bottom-up assessment of planned infrastructure investment. Please refer to 'Methodology and Sources for National Infrastructure Plan 2014' for further information on how these estimates are calculated.

Some of these such as the King's Cross redevelopment are long-term projects which have been undertaken over a number of years – just as some of the projects to which the government is now committing will yield benefits in decades to come. Others are smaller in-year schemes which can have an immediate impact at a local level, for example, Highways Agency pinchpoint schemes which have been planned, constructed and completed within this parliament. All are crucial to meeting the UK's infrastructure needs.

A comprehensive update on delivery since 2010 is published as an annex to this document. Key highlights include:

- 55 major roads and local transport projects completed
- start of construction on transformational transport projects such as Mersey Gateway Bridge and Northern Hub
- completion of King's Cross, along with improvements to 400 other stations
- significant progress on Crossrail, the biggest construction project in Europe, which is on time and on budget, with almost 90% of tunnelling complete and flagship stations in construction
- completion of more than 500 flood and coastal erosion defence improvement schemes, improving the standard of protection to over 160,000 homes
- nearly 20GW of new electricity generation capacity created – enough to power around 23 million homes
- over 1.5 million homes and businesses with access to superfast broadband for the first time
- completion of Heathrow Terminal 2 and a runway extension at Birmingham Airport
- increase in container ports capacity of more than 3 million TEU,³ including completion of the London Gateway port and logistics park

The government has also made significant progress in laying the foundations for long-term investment in key projects and programmes:

- the High Speed Rail Preparation Act received Royal Assent, a vital step forward in the delivery of HS2
- the Energy Act has provided the legislative basis for Electricity Market Reform, with the first 8 investment contracts for renewable projects awarded in Spring 2014, unlocking up to £12 billion of investment
- key commercial terms for Hinkley Point C have been agreed, and the project has now secured state aid approval from the European Commission
- the Airports Commission published its interim report in 2013 and is now consulting on shortlisted options
- Thames Tideway Tunnel received development consent and the tender process for construction of the tunnel is underway
- following a consultation on the location options for the lower Thames Crossing, one option has been dropped and work to develop the remaining two options continues to progress well

³ Twenty-foot Equivalent Unit – a measure of container handling capacity

The government has also taken cross-cutting action to support long-term infrastructure investment and drive delivery:

- publishing the **first ever National Infrastructure Plan** bringing together for the first time its vision and approach for the key economic infrastructure sectors, supported by a robust and detailed infrastructure pipeline
- establishing the **UK Guarantees Scheme**, which has now approved support for projects worth around £4 billion
- **streamlining the planning regime** to ensure that decisions get made as quickly as possible
- **strengthening government delivery capability** and creating a Major Infrastructure Tracking unit within Infrastructure UK to monitor progress and address obstacles to delivery

Infrastructure to 2020 and beyond

NIP 2014 builds on this progress by providing a clear forward-looking delivery plan for each of the economic infrastructure sectors.

The tough choices the government has made on day-to-day spending have enabled it to prioritise public investment in vital infrastructure. **This has enabled it to establish long-term funding certainty for the key areas where infrastructure is publicly funded – roads, rail, flood defences and science. All of the publicly funded elements of the infrastructure pipeline now represent a firm and specific government commitment.** This is vital in allowing us to take a strategic approach to investment and delivery and unlocking crucial efficiencies. It also gives the supply chain the confidence in the level of forthcoming infrastructure activity that is fundamental to investment decisions.

NIP 2014 builds on these commitments by setting out clear and fully funded delivery plans for the next parliament (including details of specific projects and programmes). Highlights include:

- **£15 billion of investment in the Strategic Road Network** as part of a new Road Investment Strategy which will include undertaking over 100 major schemes to 2020-21, including transformational projects for the A303 and A1 north of Newcastle
- **a £2.3 billion programme of flood investment investing in over 1,400 schemes to protect at least 300,000 homes;** underpinned by a detailed pipeline of individual schemes including at Oxford, Lowestoft, Yalding, River Thames and the Humber
- **a £38 billion Network Rail delivery programme,** including electrification of key lines, as well as commitments to transformational projects such as Crossrail, phase 1 of which is due to complete in 2018, and HS2, phase 1 of which is due to start construction in 2017
- continued support for digital infrastructure which will ensure that 95% of premises have access to superfast broadband by 2017
- an ambitious programme of investment in science infrastructure, including ground-breaking projects such as a new polar research ship and Met Office supercomputer

The majority of the infrastructure pipeline is expected to be privately funded and financed, and the NIP also includes plans for energy, water, waste, aviation and ports where most or all of the investment comes from the private sector. The government will continue to make sure that the conditions are right for such investment to come forward by upholding a competitive tax system and world-class regulatory regime. **NIP 14 sets out some key policy milestones to 2020-21 in these sectors, including:**

- **implementation of the final stages of Electricity Market Reform** to support long-term investment in electricity generation, with the first Capacity Market auction taking place in December 2014 and the first Contracts for Difference being allocated under the enduring regime in early 2015
- **publication of the Airports Commission's final report on airport capacity** in the South East in summer 2015

This year's National Infrastructure Plan also includes detailed analysis of how the private-sector element of the pipeline will be funded and financed. Since 2010, the government has implemented a number of initiatives to incentivise private investment, in particular the £40 billion UK Guarantees Scheme. Our world-class system of independent regulation continues to attract investment into sectors such as water, electricity and gas networks and telecommunications. Around a further £80 billion of project-specific finance (primarily in non-regulated sectors) is likely to be required between now and 2020. NIP 14 provides more detail than ever before on where these opportunities are expected to lie, providing transparency and clarity for investors, and setting out the action the government is taking to ensure that such investment comes forward.

To ensure value for money for taxpayers and consumers, the government's infrastructure plan must continue to be underpinned by a relentless focus on successful infrastructure delivery and performance. **NIP 14 sets out the action the government is taking to ensure effective delivery of its key projects, identify and address drivers of high costs and to address future delivery challenges,** focusing on issues such as skills, asset management, further improvements to streamline the planning system, and the integration and resilience of our key networks. The government has also refreshed its Top 40 priority investments to reflect changes in project status and ensure that they continue to reflect the government's priorities in each infrastructure sector. This is essential if it is to remain an effective tool for monitoring and supporting progress in infrastructure delivery. Annexes providing a detailed update on delivery since 2010, the top 40, and more detailed performance indicators for individual sectors are provided online.⁴

In addition to setting out detailed plans to the end of the decade, **NIP 14 sets the direction and ambition for the government's longer-term approach to infrastructure in each of the sectors that it covers.** While these plans are less detailed, the government is taking action now to ensure that it is well placed to meet the infrastructure challenges facing the UK in the 2020s and beyond.

⁴ www.gov.uk/government/collections/national-infrastructure-plan

Infrastructure pipeline

The NIP is underpinned by the infrastructure pipeline, which is a forward-looking, bottom-up assessment of planned public and private infrastructure investment in the UK.⁵ The pipeline enhances visibility and certainty for investors and the supply chain and allows government to work more effectively to ensure that the UK's infrastructure needs are met.

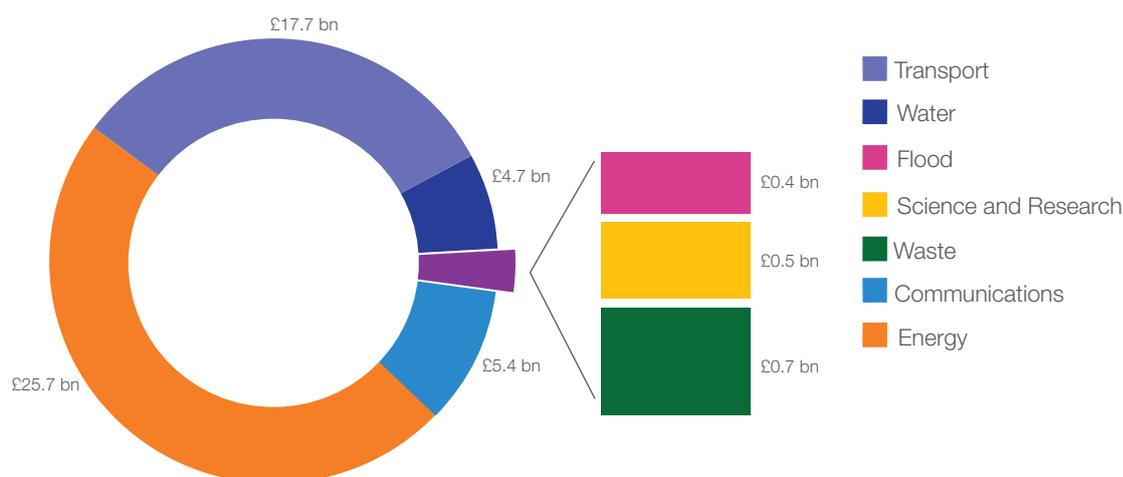
The refreshed infrastructure pipeline sets out over £460 billion of planned public and private investment to the end of the decade and beyond across the key infrastructure sectors. This includes upstream oil and gas investment for the first time – without oil and gas, the pipeline is £413 billion (this compares with £383 billion in NIP 2013⁶).

Table ES.1: 2014 Infrastructure pipeline, by sector, 2014-15 onwards

Sector	No of Projects	No of Programmes	Pipeline Value (£ bn)
Communications	1	5	11.0
Energy	77	70	274.9
<i>(of which Oil&Gas)</i>	<i>0</i>	<i>1</i>	<i>53.0</i>
Flood	5	21	3.7
Science and Research	18	4	1.4
Transport	141	129	142.3
Waste	20	0	2.0
Water	1	59	30.9
Total	263	288	£466
<i>(excluding Oil&Gas)</i>	<i>263</i>	<i>287</i>	<i>£413</i>

£55 billion of investment (including £12 billion oil and gas) is planned for 2015-16 alone and over £320 billion (including £53 billion oil and gas) up to 2020-21.

Chart ES.1: 2014 infrastructure pipeline, by sector, spend in 2015-16



Source: HM Treasury, Major Infrastructure Tracking Unit

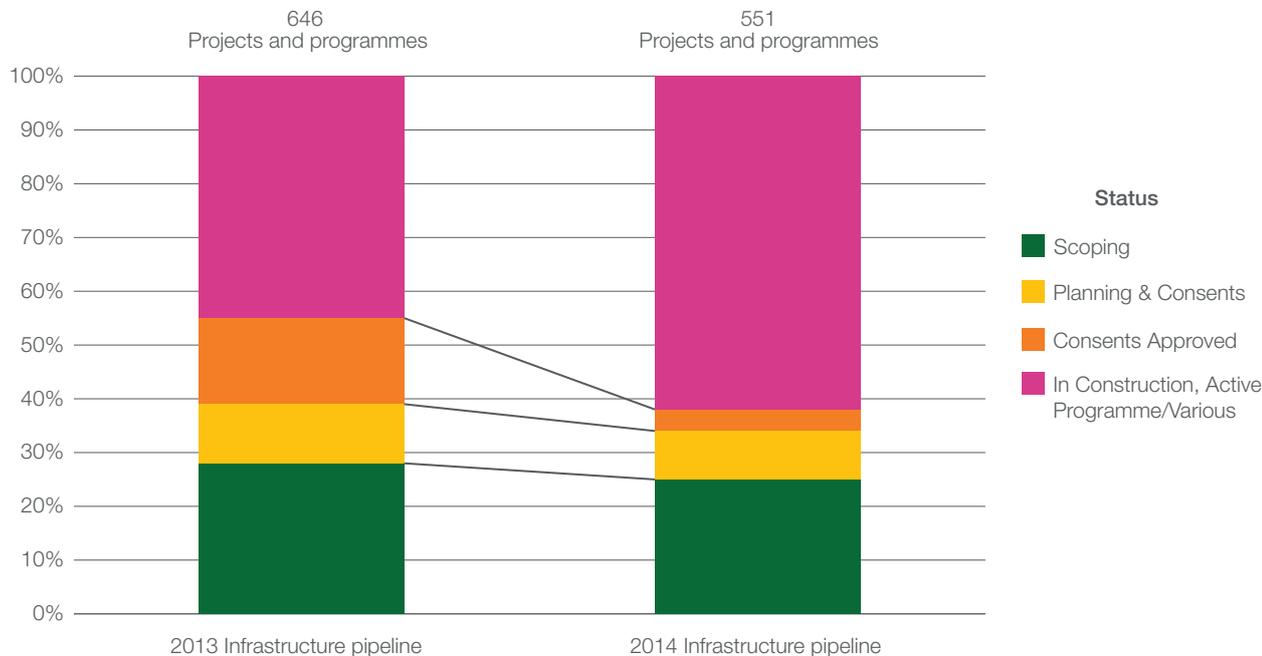
Note: Spend on energy in 2015-16 includes oil and gas of £12 billion

⁵ The infrastructure pipeline includes projects and programmes with a capital value of c.£50 million and over.

⁶ All pipeline figures are in 2013-14 prices. The pipeline published at NIP 2013 was £377 billion in 2012-13 prices

As is to be expected for a pipeline stretching well into the next decade, projects and programmes are at different stages of development. However, with government support, projects in the pipeline are making the crucial transition from scoping and planning into delivery and towards completion. Over 60% of the projects and programmes in the pipeline (excluding oil and gas) are now in construction or part of an active programme (compared with 45% in 2013).

Chart ES.2: Projects and programmes in infrastructure pipeline, by status



Source: HM Treasury, Major Infrastructure Tracking Unit

Note: Some smaller projects that were individually listed in the 2013 pipeline have been grouped into larger programmes this year. This does not affect overall investment assumptions. Projects and programmes that have been completed since NIP 13 have also been removed from the pipeline

Further details on the pipeline can be found at:

www.gov.uk/government/collections/national-infrastructure-plan#national-infrastructure-pipeline

Table ES.2: Announcements in NIP 2014

Roads Investment Strategy – the government is committing £15 billion between 2015-16 and 2020-21 to continue the transformation of the Strategic Road Network, including major projects for the A303, A1, A47 and A27

Flood defences – the government has published its 6-year programme of investment in flood defences, allocating the £2.3 billion capital funding provided at the 2013 Spending Round

Interconnectors – the government will ensure that interconnectors can participate in the 2015 capacity auction; it will estimate the eligible capacity of each interconnector on a case-by-case basis

Swansea Tidal Lagoon – the government will start closer discussions with Tidal Lagoon Power Ltd to establish whether a potential tidal lagoon project at Swansea Bay is affordable and value for money for consumers (without prejudice to the planning decision on the project)

Moorside – HM Treasury has reached a cooperation agreement with Toshiba, GDF Suez and NuGen with the aim of issuing a statement of intent to provide a guarantee to assist the financing of a new nuclear power plant at Moorside, subject to due diligence and ministerial approval

Broadband connection vouchers – the government will provide up to £40m to extend the SME connection voucher scheme to March 2016 and to more cities; vouchers will be available on a first come, first served basis

700MHz spectrum change of use – further details of the clearance process for high-value spectrum will be set out in 2015 ahead of a further auction of mobile broadband spectrum, subject to the development of delivery options by DCMS and Ofcom

Barking Riverside – the government will agree a principal heads of terms agreement for a loan of £55 million to support the extension of the London Overground to Barking Riverside, to unlock the delivery of 11,000 homes

Brent Cross – the government supports the London Borough of Barnet and GLA plans for the regeneration of Brent Cross which could deliver 7,500 homes, subject to a full business case

Ebbsfleet – the government is making the first £100m available to fund infrastructure and land remediation at Ebbsfleet, taking forward its commitment to build the first new garden city for almost 100 years, which will deliver up to 15,000 new homes

Access to Ebbsfleet – the government will undertake a review of transport provision for the Ebbsfleet area, including Crossrail, High Speed 1, Southern and Southeastern rail services

Queen Elizabeth Olympic Park redevelopment (Olympicopolis) – the government will invest £141m to support the London Legacy Development Corporation and Mayor of London's plans to build a new higher education and cultural quarter at the Queen Elizabeth Olympic Park

Northstowe – the government will take forward development at Northstowe, to support accelerated delivery of up to 10,000 homes, and evaluate the feasibility and economic impact of using this model at a wider scale to support and accelerate housing supply

Crossrail 2 – the government will provide £2 million between 2014-15 and 2015-16 to support the development of a comprehensive business case produced jointly by the Department for Transport and Transport for London, to complete ahead of the next Spending Review; this will be combined with a full options appraisal of all potential major transport projects in London, including an extension of the Bakerloo Line to improve connectivity in South East London, and the devolution of South Eastern rail services to London

Ultra-low emission vehicle research and development – the government is announcing up to £50 million between 2017-18 and 2019-20, to support innovation in manufacturing of ultra-low emission vehicles in the UK, based on a government contribution of £25 million for which it will seek match-funding from industry.

Ultra-low emission vehicles in London – the government will provide an additional £10 million between 2017-18 and 2019-20 to increase ultra-low emission vehicles in London, in support of the ambition to introduce an Ultra-Low Emission Zone by 2025

Support for ultra-low emission vehicles – the Roads Investment Strategy sets aside £15 million between 2015-16 and 2020-21 for a national network of chargepoints for ultra-low emission vehicles on the Strategic Road Network; the government is also announcing further detail of three funds totalling £85 million to support ultra-low emission taxis, buses and cities

Local highways maintenance grant – the government has already announced that local highways maintenance funding will be increased, totalling £5.8 billion over the next six years, and can now announce how the formula grant will be broken down by region

Clean Vehicle Technology fund – the government will provide up to £4 million to extend the Clean Vehicle Technology fund in 2014-15 which funds road vehicle modification by local authorities in order to reduce air pollution

Chesterton Rail Station – as announced by the Prime Minister and Deputy Prime Minister the government will provide £44 million between 2014-15 and 2016-17 to build a new rail station at Chesterton, linked to Cambridge Science Park

Cycle City Ambition grants – as announced by the Deputy Prime Minister on 27 November, the government will provide £114 million between 2015-16 and 2017-18 to enable the continuation of the Cycle City Ambition scheme in the eight cities it already covers; this will provide capital funding for better cycle infrastructure such as segregated lanes and improved junctions

Access for all – the government will increase the funding for the Access for All scheme by £60 million between 2015-16 and 2018-19, improving platform access at around 20 stations

Norwich in Ninety – the government supports the key recommendations of the Great Eastern Main Line Task Force, including upgraded infrastructure and the latest Rolling Stock. Bidders for the next Anglia Franchise, which will start in October 2016, will be incentivised to submit plans for achieving these recommendations for services to Norwich in 90 minutes and associated benefits along the Great Eastern Mainline

East West Rail – the government will consider the outputs of the Network Rail study into the East West Rail central section (Bedford to Cambridge) as part of the planning for Control Period 6 (2019-2024)

Dawlish rail services – the government will support Network Rail in its work to improve the resilience of the railway at Dawlish; additionally, it will ask Network Rail to examine wider issues surrounding connectivity to and within the South West peninsula; specifically, Network Rail will consider alternatives to the current mainline route to the South West via Dawlish, including an alternative route via the north side of Dartmoor through Okehampton; this work will feed into Network Rail's Initial Industry Plan for Control Period 6 (2019-2024)

Bath City Centre Congestion Relief – the government welcomes the strategy put forward by Bath and North East Somerset Council and the West of England LEP to improve transport capacity East of Bath and reduce city centre congestion; the government will consider a business case, which will be developed by Bath and North East Somerset Council that assesses the viability of proposals including a park and ride, as well as a park and rail service, located to the East of Bath

Compulsory Purchase Reforms – proposals will be published for consultation at Budget 2015 to make processes clearer, faster and fairer, with the aim of bringing forward more brownfield land for development

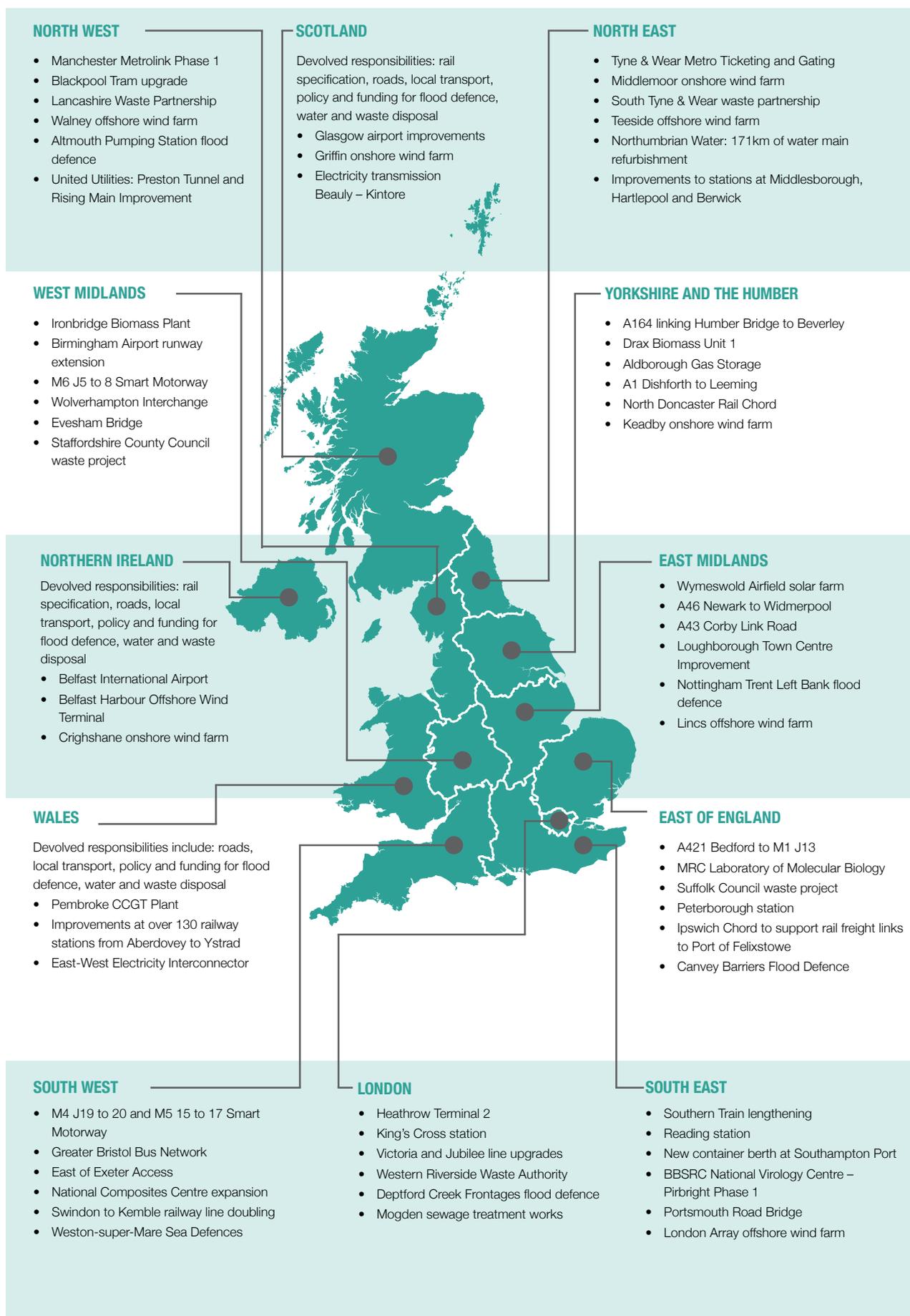
National Transport Policy – the government plans to lay the National Networks National Policy Statement before Parliament this month for consideration and a formal vote

Planning: establishing the principle of development – the government will take forward measures to ensure that the principle of development need only be established once

Planning: section 106 negotiations – the government will take steps to speed up section 106 negotiations, to reduce delays to the planning process

Planning: speed of decisions – the government will keep the speed of major decisions under review, with minimum performance thresholds increasing to 50% of major decisions made on time as performance improves

PROJECTS COMPLETED SINCE 2010



ECONOMIC IMPACT OF INFRASTRUCTURE INVESTMENT



Infrastructure investment could support 5,000 construction jobs for every £1 billion spent, as well as many more indirectly in design, engineering and planning



For every £1 the government is investing in broadband, the UK economy will benefit by £20



£266 million of transport pinch point funding means local transport improvements of over £511 million, with the potential to support over 200,000 jobs and around 150,000 new homes



62% of suppliers winning work for Crossrail are outside London; 58% are SMEs



Increase in overall economic activity of £2.84 for every £1 spent on infrastructure construction

Sources:

Construction jobs/£: ONS data, DfT calculations

Broadband: SQW – UK Broadband Impact Study – Nov 2013

Pinch points: Press release – Road and rail projects to boost local and regional transport – Dec 2013

Crossrail: Crossrail calculations (<http://crossrail.co.uk/news/articles/new-figures-show-impact-of-crossrail-on-jobs-and-growth-around-the-uk>)

Overall economic activity (£2.84): CECA – Securing our economy: The case for infrastructure – May 2013

Chapter 1:

The government's strategy for UK infrastructure

The government's infrastructure strategy

- 1.1 There is a strong economic case for infrastructure investment. A majority of economic studies report that infrastructure has a significant positive effect on output, productivity, and growth rates, and is a key driver of jobs throughout the economy. As such, it is a key element of the government's long-term economic plan.
- 1.2 Prior to 2010, many areas of UK infrastructure had suffered from historic under-investment. By prioritising vital capital investment in infrastructure, the government has been able to provide long-term funding certainty for the key areas where infrastructure is publicly funded – roads, rail, flood defences and science. This means that all of the publicly funded elements of the infrastructure pipeline now represent a firm and specific government commitment.
- 1.3 The UK's mixed model of infrastructure investment enables the government to prioritise public investment in the areas where it provides greatest value for money. In other areas, it harnesses the efficiencies created by a competitive market and commercial incentives. The action the government has taken to stabilise the public finances has been vital to ensuring the private sector has the confidence to invest.
- 1.4 The UK's competitive tax system and world-class regulatory regime, which provides the basis for significant investment in areas such as water, telecoms, and electricity and gas networks, are crucial to providing the right conditions for investment in private-sector infrastructure. So too is the targeted intervention the government has made in individual sectors (e.g. electricity and broadband) and the dedicated support it provides for private-sector finance for individual projects.
- 1.5 The final element of the government's infrastructure strategy has been a relentless focus on successful delivery – this means projects delivered faster, better and more cost-effectively. A key priority has been ensuring that the conditions for successful delivery are right across both the public and private sectors: streamlining the planning regime; developing a robust and transparent pipeline of projects and programmes; ensuring the right skills and capacity are in place; reducing infrastructure costs; adopting a more intelligent approach to procurement; and developing best practice to inform how infrastructure projects are managed and run.

- 1.6 The government is leading by example by strengthening its own approach to delivery. For example, through its Top 40 priority investments it has introduced a clear and consistent approach to project prioritisation. There has also been a step-change in the government's own delivery capability, overseen by Lord Deighton, the Commercial Secretary to the Treasury; and the introduction of mechanisms that allow the government to identify and address risks early and effectively. This includes a dedicated programme management function within Infrastructure UK and an infrastructure-focused Cabinet committee chaired by the Chief Secretary to the Treasury.

The role of the National Infrastructure Plan

- 1.7 The government published the first National Infrastructure Plan (NIP) in 2010, bringing together for the first time its vision and approach for the key economic infrastructure sectors – transport, energy, flood defences, water, waste, communications and science. Since then, the government has continued to develop and refine its approach in response to feedback from investors and the supply chain to ensure the NIP is a maturing, integrated plan for UK infrastructure. The NIP is underpinned by the infrastructure pipeline, which sets out details of planned public and private investment to 2020 and beyond.
- 1.8 The NIP ensures that the government's approach in individual sectors is transparent and coordinated, providing a single point of reference for potential investors and the supply chain in setting out how the infrastructure needs of the economy are expected to be met.
- 1.9 This enables the government to maximise value for taxpayers and consumers by taking a holistic view of issues that cut across a number of different areas of infrastructure – such as the availability and cost of finance, infrastructure skills, planning and permitting, and network resilience. The NIP also allows for a more integrated approach to infrastructure planning, and supports initiatives to develop and share best practice on issues such as reducing construction costs and improving asset management and sustainability.
- 1.10 The NIP also means that the government can address infrastructure delivery in a focused and joined-up way. It sets out the government's priority projects and programmes, and acts as a tool for driving and monitoring progress across sectors – including addressing any obstacles which emerge.
- 1.11 The NIP is produced by Infrastructure UK (IUK), a unit within HM Treasury which is dedicated to infrastructure planning, financing and delivery.

National Infrastructure Plan 2014

- 1.12 In NIP 14, the government seeks to consolidate and build on the progress already made in this parliament, and to provide the clarity and visibility that industry and investors need on its direction and commitments for infrastructure in future.
- 1.13 Having previously set out long-term capital commitments for key publicly-funded sectors, the government is now in a position to set out a clear delivery plan for each of the key infrastructure sectors for the next five years. This includes providing details of specific publicly-funded capital projects and programmes being taken forward as a result of the commitments made at Spending Round 2013.
- 1.14 NIP 14 also sets out a detailed, cross-cutting approach to infrastructure finance and delivery. In addition, the document starts to address some of the longer-term challenges that UK infrastructure will have to address in the 2020s and beyond.

1.15 The structure of the document is as follows:

- Chapter 1 (this chapter) outlines the government's overall strategy for UK infrastructure
- Chapter 2 sets out the government's plan to support and promote infrastructure development at a local and regional level across the UK, as well as in Scotland, Wales and Northern Ireland
- Chapters 3-13 set out the detailed sector plans; these include the government's objectives, an evidence-based needs analysis, a clear strategy for each sector, a detailed plan for the next five years, and a broader sense of direction over the longer term; they also identify the government's priority projects and programmes for each sector
- Chapter 14 highlights the government's approach to infrastructure funding and finance, including its most detailed assessment yet of the potential finance opportunities in infrastructure; for the first time, this also includes a robust analysis of the potential market for infrastructure finance
- Chapter 15 summarises the action the government is taking to improve infrastructure planning, delivery and performance, including the work it is doing with industry to build on the achievements of the Infrastructure Cost Review
- Chapter 16 sets out the government's approach to its 'Top 40' priority investments
- there are also three online-only annexes to the document, which provide more details on infrastructure delivery since 2010, a delivery update on the 'Top 40', and performance indicators for key sectors

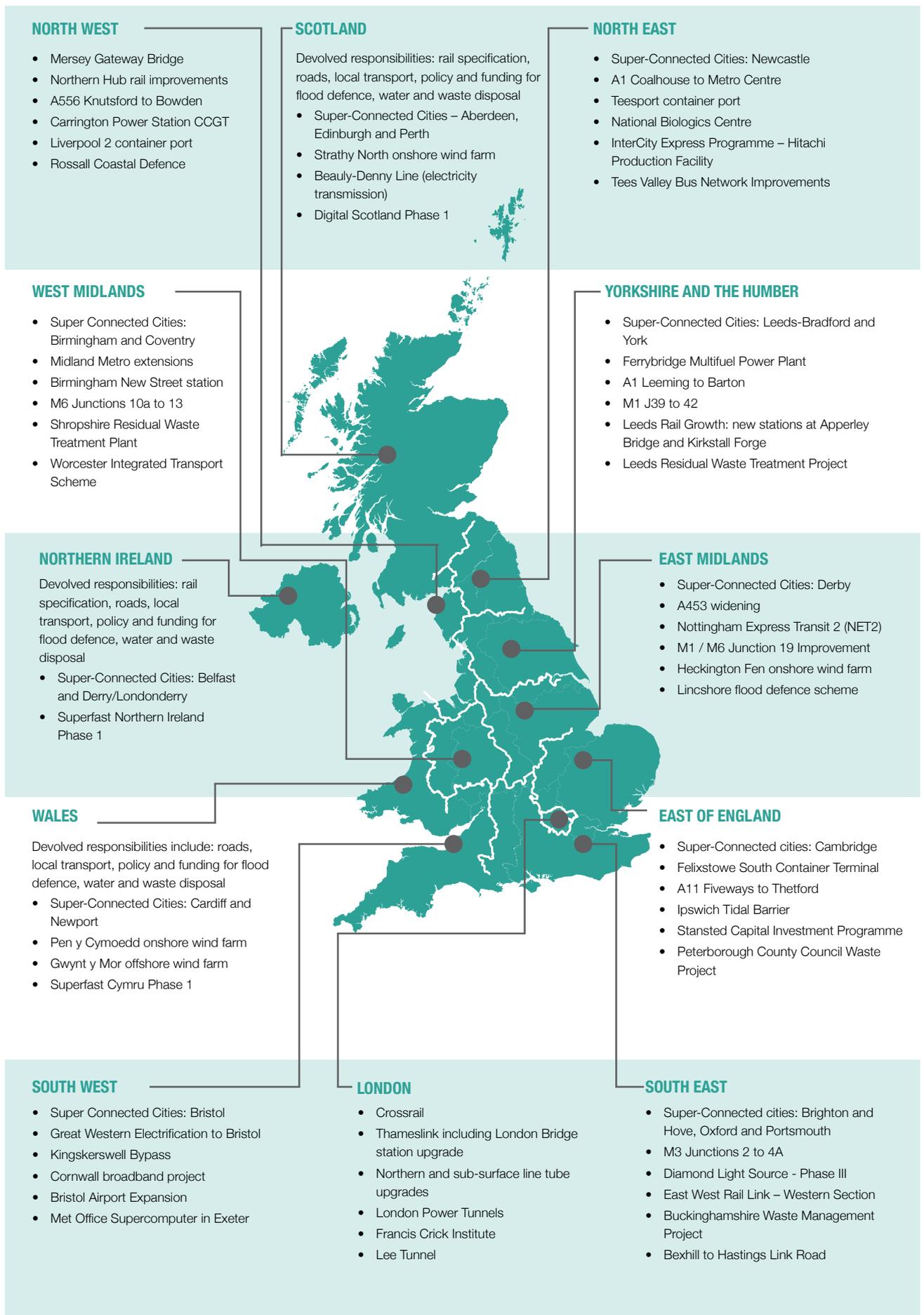
Meeting the longer-term challenges

- 1.16 NIP 14 is published alongside a refreshed infrastructure pipeline which provides details of over £460 billion of planned investment across both the public and private sectors (this includes upstream oil and gas investment for the first time). Many of the infrastructure assets and networks delivered as a result of these plans are expected to be used for decades to come.
- 1.17 Of course, the government's role is to plan not just for the infrastructure we need now, but also for what we will need in the future – and to provide industry with the visibility and stability that it needs to do the same.
- 1.18 Predicting those long-term requirements is far from straightforward, and it is important that future governments retain the flexibility to adapt their approach as new opportunities or pressures emerge. However, there are some long-term challenges that we can be relatively confident our infrastructure will need to be able to meet.
- 1.19 One such challenge is changes to the social landscape. The UK population is growing, and growth is projected to continue throughout this century in most forecasts. The ONS central projections and research by the Infrastructure Transitions Research Consortium (ITRC) show that the UK population will grow by around 25 million people (to 90 million) by the end of the century, with a greater number than ever before over the age of 65. Population increase puts upward pressure on demand for infrastructure services like energy, water and transport.¹

¹ ITRC, 'National infrastructure assessment: Analysis of options for infrastructure provision in GB', ITRC, January 2014

- 1.20 Climate change will also shape the future of UK infrastructure, testing the sustainability and resilience of our networks and assets and strengthening the imperative to make our transport and energy systems greener.
- 1.21 We know too that technological advances will change both our infrastructure needs and the way in which those needs are met – through the development of new types of infrastructure, or the opportunity to deliver or use existing mechanisms in new ways. For example, the increasing requirement for digital connectivity and innovative approaches such as driverless cars are already influencing the choices we make in developing our communication and transport systems. Likewise, we are adapting the way in which we deliver our projects and programmes through breakthroughs in off-site manufacturing. While the nature of innovation makes it inherently difficult to predict, our infrastructure systems will need to be nimble enough to adapt to, and take advantage of, future advances.
- 1.22 The government is taking steps to ensure that the UK is as well placed as possible to meet those challenges when they emerge. Setting out clear and comprehensive plans for the next five years in each of its key infrastructure sectors is key to that, as is the action it is taking to drive forward transformative long-term projects such as HS2, Crossrail and Hinkley Point C.
- 1.23 In addition to setting out clear plans to the end of the decade, NIP 14 gives an initial sense of direction and ambition for the government's longer-term approach to infrastructure in each of the sectors that it covers. By their very nature, these plans are less detailed. However, the government is taking action now to ensure that it has the right organisational and institutional structures in place to develop and take them forward. That means a National Infrastructure Plan that allows it to develop a coherent and credible approach to infrastructure investment and delivery; mechanisms to ensure long-term funding and finance in both the public and private sectors; governance structures that allow every region in the UK to maximise its economic potential, and a conducive delivery environment.
- 1.24 With that framework in place, and with a strong dialogue with industry and the supply chain, the government is confident that UK infrastructure is well placed to meet the challenges that it will face in the next few decades and beyond.

PROJECTS IN CONSTRUCTION AS OF 2014-15





Chapter 2:

Infrastructure across the UK

- 2.1 As set out in the previous chapter, ensuring we have the right infrastructure in the right places is vital to allow our society and economy to function effectively. It is also a crucial tool in driving growth and regeneration across the UK and creating strong and prosperous communities in which people want to live and work.
- 2.2 The government is committed to giving local areas the tools they need to ensure they have the infrastructure that is right for them. That means not taking a one-size-fits-all approach, but giving local authorities, cities and regions the autonomy to determine what is delivered locally, and ensuring they have the ability to influence the regional and national infrastructure that will shape their areas.

The infrastructure pipeline in the regions

- 2.3 The infrastructure pipeline, published alongside the National Infrastructure Plan 2014, gives an indication of the breadth of infrastructure investment being undertaken across the UK. While 38% of the investment in the pipeline is presented on a regional basis, this does not include cross-regional and UK-wide projects or programmes which will have a transformative effect in individual areas – such as the roll-out of superfast broadband (£1.7 billion), the £20 billion of works maintaining the country's gas and electricity networks which straddle more than one region, and major multi-regional projects such as HS2.

Box 2.A: Case study: the infrastructure pipeline in the South West

- Improvements to the strategic and local road networks including the A303, the Kingskerswell Bypass (A380) and 30 pinchpoint schemes
- Electrification of the Great Western Mainline and improvements to Bristol Temple Meads station
- Expansion of Bristol Airport
- The Cornwall Broadband project, worth £132 million, which is deploying 130,000km of fibre optic cable throughout the area
- Government funding of over £54 million to enable the delivery of superfast broadband across Devon and Somerset
- Western Power's plans to spend over £1.5 billion on electricity distribution networks across spending control periods
- Investment in water and sewerage networks of over £2 billion, and in waste of £228 million
- Approximately £136 million Grant in Aid (GIA) from the 6-year floods and coastal erosion management programme is supporting at least 240 projects in this region¹
- A 3.3GW Nuclear Power Plant at Hinkley Point C worth £16 billion

Source: HM Treasury Major Infrastructure Tracking unit

2.4 The maps on pages 15, 21 and 31 further highlight the diverse range of projects that the government has completed and set out plans to take forward across the UK.

Empowering local areas

- 2.5 The government has established Local Enterprise Partnerships (LEPs) between local government and business in functional economic areas, giving them the opportunity to decide what the priorities should be for investment in roads, buildings and facilities in the area. The 39 LEPs have made Strategic Economic Plans, which bring together priorities across local areas and sectors. These documents clearly present the direction the local economy is taking, and highlight important local infrastructure development and delivery opportunities. As such, they act as the starting point for a dialogue on the priorities for spending.
- 2.6 At a regional level, the government encourages LEPs, local authorities and cities to come together and work with central government to shape the infrastructure that they need in their own areas.

Box 2.B: Northern Powerhouse

The government has been clear on the need to rebalance the economy in order to restore economic growth in this country. An important aspect of such rebalancing is to ensure that all areas of the country are able to realise their full economic potential and prosperous cities in the north can complement prosperous cities in the South. The Chancellor has set out plans to create a Northern Powerhouse, through provision of modern transport connections, support for science and universities and more power and control to civic government to maximise the potential of the North of England and reduce the decades-old gap between London and other cities. The government has also listened to the ideas that have come forward through the Deputy Prime Minister's Northern Futures project.

¹ The level of GIA may vary across the programme regions as detailed project planning proceeds

- 2.7 The government has also introduced a range of wider mechanisms for devolving governance and funding to enable local areas to take responsibility for driving economic growth in their own areas.

Box 2.C: London

London has established itself as an incredibly successful thriving global capital, with a population of over 8 million. It is a standout example of how an empowered and ambitious city can help drive the country's economy forward.

London has an elected mayor who sets an overall vision for London and has a duty to create plans and policies for the capital covering a range of issues including transport, planning and regeneration.

Transport for London (TfL) is the public body with standalone responsibility for the majority of transport services in London. It receives over £12 billion of funding from the government over the current Mayor of London's 4 year term. This has enabled it to pursue major programmes of investments such as upgrades to the Northern and Victoria tube lines and expansion of the London Overground network, the rollout of electric and hybrid bus fleets, and the improvement of cycle infrastructure including Cycle Superhighways and segregated cycle lanes. This is in addition to a significant rolling programme of maintenance and renewal. It also undertakes one-off major infrastructure projects such as Crossrail, which is a joint venture with the Department for Transport.

Infrastructure investment in London has ripple effects across the whole country. 43% of businesses that won Crossrail work for example are based outside London and the southeast, with 62% based outside the capital itself.²

City Deals

- 2.8 City Deals are agreements between government and a city that give the city control over decisions that affect their area and how public money should be spent in order to help businesses grow and create economic growth. A total of 28 City Deals have been concluded over this Parliament; 27 in England and one in Scotland (Glasgow and Clyde Valley).
- 2.9 A key element of several City Deals has been the establishment or strengthening of economically prioritised infrastructure spending programmes – notably in Greater Manchester, Glasgow and Clyde Valley, and Greater Cambridge which will see a combined investment from central and local government along with private sector partners of over £3.5 billion.

“[The Greater Cambridge City Deal] is a very significant step towards providing the City with the economic means to shape our future and that of those who live and work in this unique place. It is a great example of what can be achieved when local authorities and others collaborate as they did here”

Jane Paterson-Todd, Chief Executive for Cambridge Ahead

² <http://www.crossrail.co.uk/news/articles/55bn-of-crossrail-contracts-creating-jobs-and-business-opportunities-around-the-uk>

Growth Deals

- 2.10 Building on the success of City Deals, the government has introduced Growth Deals which provide LEPs with money from the Local Growth Fund (LGF) for projects that benefit the local area and economy. Growth Deals have provided the opportunity to bring together LEP, local authority and private sector resources behind the key priorities of the local economy as set out in the strategic economic plans.
- 2.11 The LGF was created in response to Lord Heseltine's report *No Stone Unturned*³ and combines £12 billion of spending allocations across transport, housing and skills over the six year period to 2020-21. Allocations are made on the basis of a competitive process. The first round of deals were agreed in July 2014, in which £6 billion was allocated across 39 LEPs.⁴ Details of some of the projects that received funding through these deals are set out in Chapter 5.
- 2.12 These Growth Deals are crucial in supporting local infrastructure. Firstly LEPs can now plan a significant amount of capital spending over the medium term to 2020-21; this increased certainty is vital for effective infrastructure planning and delivery. They also give LEPs greater autonomy. Of the 332 transport schemes partially or fully funded through the LGF, approximately 90% will be free from any further central government approval. Under the previous approvals system, only around half of the schemes would have enjoyed this freedom. The government has retained an appropriate degree of control for those projects it assesses to be the most complex, contain the greatest degree of risk, or which have significant strategic linkages to other major schemes. The government is also facilitating the sharing of good practice between local authorities, in order to embed consistently high standards of delivery right across the country.

Supporting the funding and financing of local infrastructure

- 2.13 In addition to giving local areas control over infrastructure investment through the mechanisms outlined above, the government has put in place some specific sources of funding to help unlock local investment in infrastructure and other growth projects:
- The Growing Places Fund (GPF) provides up-front capital to help local authorities and developers take infrastructure projects forward where relatively small amounts of funding can help to unlock further development. The GPF is supporting 323 projects across the country.
 - The Regional Growth Fund (RGF) is a £3.2 billion fund helping companies throughout England to create jobs between now and the mid-2020s. Over £168 million has been used for local transport and utilities development, helping local areas realise their economic potential by making essential improvements to road, rail and port infrastructure and over £78 million for energy schemes, including low carbon technology. A further round of successful bidders is to be announced in spring 2015.
 - The Community Infrastructure Levy (CIL) is a levy that local authorities in England and Wales can choose to charge on new developments in their area. The money is being used to support development by funding infrastructure that the council, local community and neighbourhoods want.

³ 'No stone unturned: in pursuit of growth', The Rt Hon the Lord Heseltine of Thenford CH, October 2012

⁴ Interactive map of Local Enterprise Partnerships http://www.tripline.net/trip/Local_Growth_Deals_2014-60344703535410079317EC660AA1B3AF

Box 2.D: Case study: Growing Places Fund

Greater Lincolnshire LEP used £2.9 million of Growing Places Fund funding to provide for the upfront infrastructure costs necessary to allow the Mablethorpe development to proceed. This will include the delivery of 180 homes (of which 120 are affordable), a new supermarket, a sports field and improved access to the local junior school. Overall the scheme will create 530 jobs, and bring in a further £6.5 million private sector investment.

Using infrastructure to support and stimulate regeneration**Box 2.E: Regeneration announcements**

- **Barking Riverside** – the government will agree a principal heads of terms agreement for a loan of £55 million to support the extension of the London Overground to Barking Riverside, to unlock the delivery of 11,000 homes
- **Brent Cross** – the government supports the London Borough of Barnet and GLA plans for the regeneration of Brent Cross which could deliver 7,500 homes, subject to a full business case
- **Ebbsfleet** – the government is making the first £100 million available to fund infrastructure and land remediation at Ebbsfleet, taking forward its commitment to build the first new garden city for almost 100 years, which will deliver up to 15,000 new homes
- the government will undertake a review of **transport provision for the Ebbsfleet** area, including Crossrail, High Speed 1, Southern and Southeastern rail services
- **Queen Elizabeth Olympic Park redevelopment (Olympicopolis)** – the government will invest £141 million to support the London Legacy Development Corporation and Mayor of London's plans to build a new higher education and cultural quarter at the Queen Elizabeth Olympic Park
- **Northstowe** – the government will take forward development at Northstowe, to support accelerated delivery of up to 10,000 homes, and evaluate the feasibility and economic impact of using this model at a wider scale to support and accelerate housing supply

- 2.14 The government also recognises that key national infrastructure schemes can be instrumental in unlocking regeneration or housing projects in local areas. For example, an improved A14 will support further growth in the region as the east coast Haven ports at Ipswich, Harwich and Felixstowe expand, as well as major developments such as Northstowe, the Alconbury Enterprise Zone, and expansion on the northern and eastern fringes of Cambridge.
- 2.15 The High Speed 2 (HS2) Growth Taskforce, which reported in March 2014, made a number of recommendations to maximise the potential of HS2. This includes helping the UK's cities and businesses grow, to generate more jobs, to breathe new life into areas in need of regeneration and to create opportunities for businesses to compete for HS2 contracts. Responding to the recommendations in this report, Phase 1 places are due to finalise their HS2 local growth strategies in spring 2015 and will set up local delivery bodies by summer 2015. The government will also continue to consider proposals for a central HS2 regeneration and development company.

2.16 The government has made significant progress on its commitment to specific housing and regeneration projects, including:

- agreeing principal heads of terms for a loan of £55 million to support the extension of the London Overground to Barking Riverside to unlock the delivery of 11,000 homes
- supporting the London Borough of Barnet and GLA plans for the regeneration of Brent Cross which could deliver 7,500 homes, subject to a full business case
- taking forward the commitment to build the first new garden city for almost 100 years at Ebbsfleet, which will deliver up to 15,000 new homes; the A2 Bean and Ebbsfleet Junction improvements will be delivered as part of the Highways Agency programme; the Chairman Designate of the proposed Urban Development Corporation is now in place and the government has reached agreement with the key landowners on the site on a collaborative approach to the delivery of development; the government will make the first £100 million available to fund infrastructure and land remediation to kick start development, subject to due diligence
- the government will undertake a review of transport provision for the Ebbsfleet area, including Crossrail, High Speed 1, Southern and Southeastern rail services
- the government will invest £141 million in order to support the London Legacy Development Corporation and Mayor of London's Olympicopolis project to redevelop the Queen Elizabeth Olympic Park; this will support the construction of a new higher education and cultural quarter carried out in partnership with University College London, the Victoria and Albert Museum, University of the Arts London and Sadler's Wells, driving innovation and growth and ensuring that this opportunity builds on the success of London 2012
- the government will take forward development of Northstowe; the government will trial a new delivery model on the site, with the Homes and Communities Agency taking the lead on delivering the site, including through master-planning and commissioning; this will support the construction of up to 10,000 new homes on the site, up to twice as fast as conventional development routes; the government will report by Budget on the delivery vehicle, governance and investment in the site; the government will undertake an evaluation of the Northstowe development, and of the feasibility and economic impacts of pursuing this model at a wider scale

Infrastructure investment in Northern Ireland, Scotland and Wales

2.17 In Northern Ireland, Scotland and Wales, the split between the responsibility of the UK government and each of the devolved administrations for infrastructure policy and funding varies according to the distinct devolution settlement in place for each administration. For example:

- responsibility for investment in roads infrastructure is fully devolved to the Northern Ireland Executive, Scottish Government and Welsh Government
- rail specification is devolved in Northern Ireland and Scotland, but not devolved in Wales
- decisions on public sector support for infrastructure in or around airports and ports is generally devolved, whilst regulation of aviation and air transport is dealt with at the UK government level

- similarly, energy policy is devolved in Northern Ireland (aside from some UK government responsibilities in relation to nuclear energy), whereas in Scotland and Wales responsibility for investment in infrastructure has largely remained a reserved matter for the UK government; regulation is conducted by Ofgem in Wales and Scotland but by the Utilities Regulator in Northern Ireland, reflecting the more extensive level of devolution in place there
- both environmental infrastructure and regulation are the responsibility of the three devolved administrations, including policy and funding responsibility for flood defences, water infrastructure, and sewage and waste disposal
- infrastructure relating to broadcasting and telecommunications remains largely a non-devolved matter, although the devolved administrations may support businesses involved in those sectors as part of their general role in promoting economic development

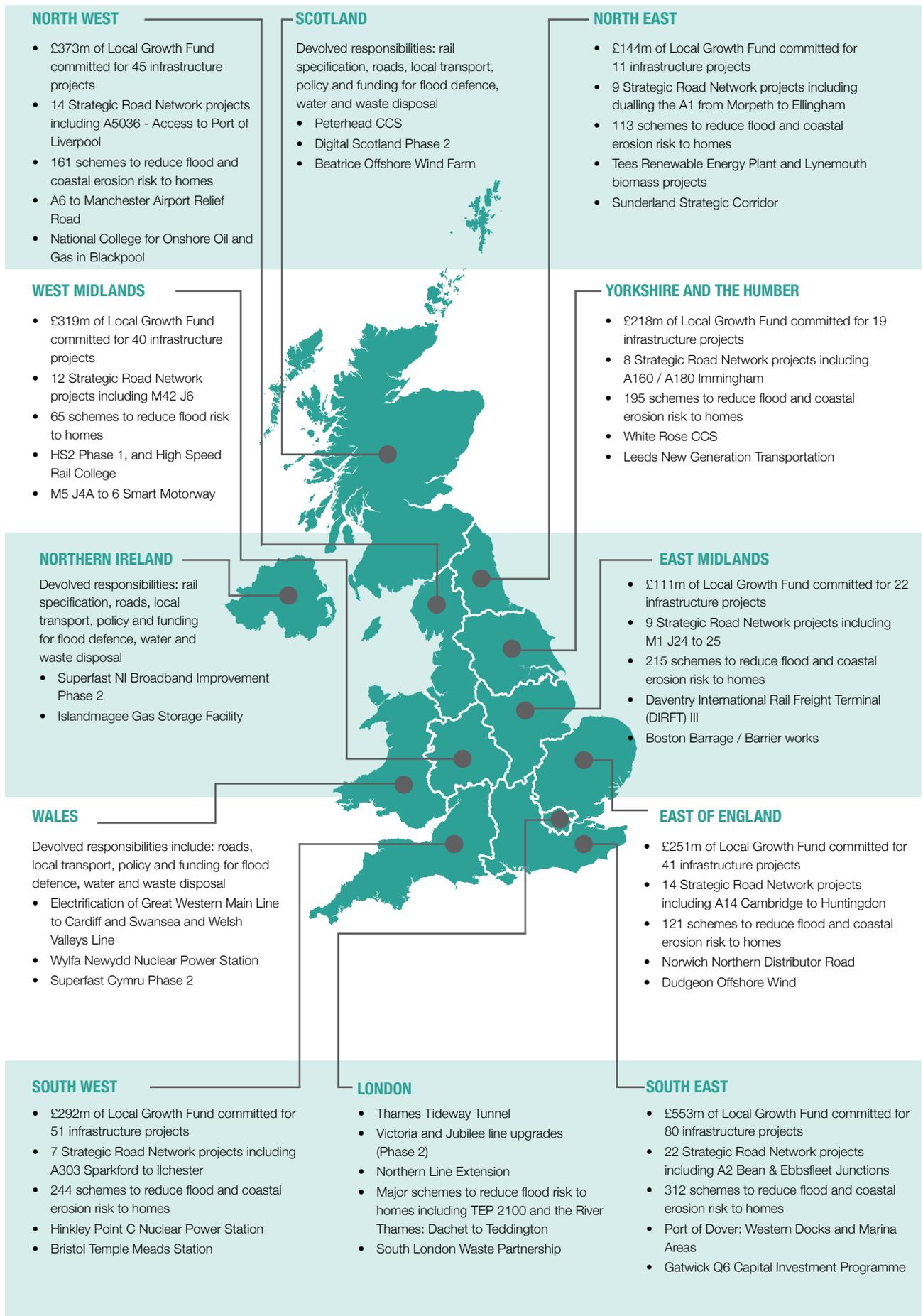
Box 2.F: UK government investment in Northern Ireland, Scotland and Wales

The government remains committed to supporting investment in Northern Ireland, Scotland and Wales in areas where policy responsibility is non-devolved. For example:

- funding of £122 million has been granted to Scotland (including Highlands and Islands), £69 million to Wales and £12 million to Northern Ireland for funding in superfast broadband; Cardiff and Newport in Wales, and Aberdeen, Edinburgh and Perth in Scotland and Belfast and Derry/Londonderry in Northern Ireland are also super-connected cities
- as part of its commitment to the development of marine energy, the government has provided £10 million of grant funding to the MeyGen project in the Pentland Firth Inner Sound in Scotland and the SeaGeneration Wales Limited project in Anglesey
- the UK government is investing £50 million in an offshore renewable energy catapult in Glasgow, designed to accelerate the design, deployment and commercialisation of renewable energy technology innovation
- the government has announced UK Guarantees for the Grangemouth petrochemical plant and the Countesswells development in Aberdeen, which will finance a new development of 3,000 homes; it has also signed a cooperation agreement with Hitachi and Horizon with the aim of being able to agree an in-principle guarantee by the end of 2016 to support the financing of a new nuclear power plant at Wylfa, subject to final due diligence and ministerial approval
- the UK government agreed a funding package with the Welsh government to electrify the Valley Lines; the UK government will also cover the full costs of electrifying the Great Western Main Line to Swansea and devolve the Wales and Borders rail franchise, so that the Welsh government will decide the new franchise in 2018; in order to make this deal happen, the UK government will take over sponsorship and fund the delivery of the Cardiff-Bridgend section of the Main Line electrification scheme to Swansea – worth £105 million, and contribute £125 million towards the costs of the wider Valley Lines electrification scheme; the Welsh government will take over sponsorship and delivery of the Valley Lines project
- the government also provides support for private-sector energy investment in Scotland, and the Beatrice offshore wind farm was one of 8 UK projects to receive an early Investment Contract as part of the Final Investment Decision Enabling for Renewables allocation in spring 2014

- 2.18 Except for those areas which are non-devolved responsibilities, Northern Ireland, Scotland and Wales are responsible for prioritising and delivering infrastructure investment, supported by the funding they receive from the government through their 'block grant' allocations.
- 2.19 The UK government has also allowed local authorities in Scotland and Wales to access the cheaper Project Works Loan Board 'project rate' in relation to borrowing in support of key infrastructure projects. A total of £400 million of borrowing has been made available through to the end of 2015-16. The Scottish and Welsh Governments have now established arrangements for accessing the project rate with local authorities in their own jurisdictions.
- 2.20 The Scottish government published an Infrastructure Investment Plan in 2011 setting out a pipeline of public investment in both economic and social infrastructure through to 2030. A report on progress against the Plan is published annually. The investment pipeline was updated further in August 2014, and now provides information on 30 major programmes and over 100 individual projects. The Scottish 'Infrastructure Investment Plan' and related documents are available at: www.scotland.gov.uk/Topics/Government/Finance/18232/IIP/
- 2.21 The Northern Ireland Executive published its latest 'Investment Strategy for Northern Ireland 2011-21' (ISNI) in October 2012. The ISNI sets out the Executive's renewed priorities for capital investment in social, economic and environmental infrastructure projects – with schemes valued at over £13 billion in total to be delivered in the period up to 2021. The 'Investment Strategy for Northern Ireland' is available at: www.sibni.org/investment_strategy_for_northern_ireland_2011_-_2021.pdf
- 2.22 The Welsh Government set out its approach to identifying, prioritising and delivering the social and economic infrastructure needs of Wales in the 'Wales Infrastructure Investment Plan' (published in 2012). Together with the infrastructure investment pipeline, which provides details of priority infrastructure investments in Wales – incorporating over 320 investments worth over £34 billion across both public and private sectors, including in the non-devolved areas of rail and energy – these documents provide a clear picture of how the Welsh Government is delivering its strategic investment priorities, as well as providing an overview of sectoral investment plans. The Wales Infrastructure Investment Plan is available at: <http://wales.gov.uk/funding/wiipindex/?lang=en>

FORTHCOMING PROJECTS TO 2020-21



ROADS

Progress since 2010

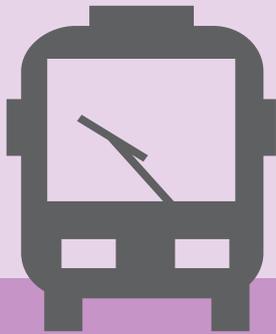
14

major roads projects completed and 14 more in construction



Over 200

smaller improvements delivered around the country



New Smart Motorway lanes opened including on the M1, M6 and M25



£400m

invested in development of Ultra Low Emission Vehicles



Creation of a new national Strategic Highways Company

Over £15bn

to undertake over 100 strategic road schemes

Investing in new 'expressways' to link under-served areas including A303 and A1 north of Newcastle

Resurfacing up to 80% of the Strategic Road Network

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR ROADS £15.9BN

In construction £2.5bn

Future investment £13.4bn

Chapter 3:

Roads

Box 3.A: Announcements on roads

- **Roads Investment Strategy** – the government is committing £15 billion between 2015-16 and 2020-21 to continue the transformation of the Strategic Road Network; this will be the biggest programme of road investment since the 1970s, with investment tripling from current levels by the end of the decade and over 100 schemes to take place over the next Parliament; major projects are taking place in every region, with at least £1.8 billion invested in every area; the schemes being taken forward include substantial projects to upgrade the A303 in the South West, A1 in Gateshead and north of Newcastle, A47 in the East of England, and the A27 along the south coast
- **Support for ultra-low emission vehicles (ULEVs)** – the government is announcing up to £50 million between 2017-18 and 2019-20 to support innovation in manufacturing of ultra-low emission vehicles in the UK, based on a government contribution of £25 million for which it will seek match-funding from industry. The Roads Investment Strategy sets aside a further £15 million between 2015-16 and 2020-21 for a national network of chargepoints for ULEVs on the Strategic Road Network. The government is also providing £10 million support for ULEV measures in London, as well as further detail of three funds totalling £85 million to support ultra-low emission taxis, buses and cities

Objectives

- 3.1 The government's aim is to create a national road network fit for the 21st century, which improves economic productivity and supports jobs and growth across the country. It seeks to increase capacity, tackle congestion, support development, strengthen connectivity, improve reliability and resilience, and ensure a road network of the best possible quality.

Needs

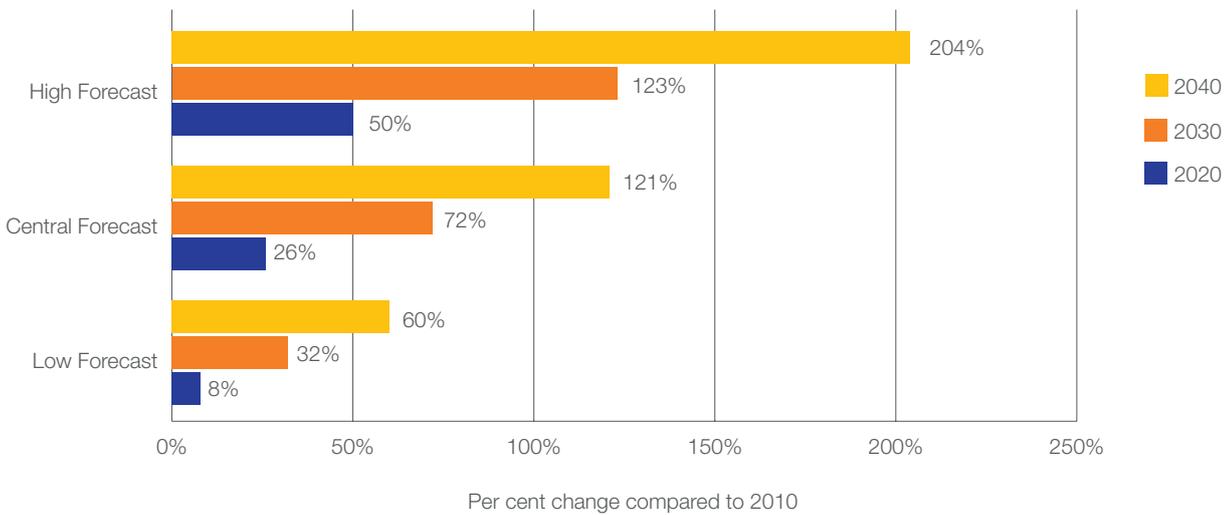
- 3.2 The road network is vital to the economic sustainability of the UK. Well-connected road infrastructure enables people to travel for work and leisure and businesses to move goods. Over 65% of freight movements and 90% of passenger miles are made by road.¹ The long-term trend is of growing road traffic with vehicle miles travelled per year increasing from 28.9 billion in 1949 to 303.7 billion vehicle miles in 2013.²

¹ National Policy Statement for National Networks, Department for Transport, (forthcoming)

² Annual Road Traffic Estimates – Great Britain 2013, Department for Transport, June 2014

- 3.3 With GDP and population expected to rise, demand for travel on the UK’s Strategic Road Network will increase further. DfT analysis estimates that by 2040 traffic in England will be between 27% and 57% higher than 2013 levels based on a range of forecasts of economic growth, motoring costs and the trend in individual travel behaviour.³ This growth, unaccompanied by the required level of investment or appropriate policies to encourage mode shift, is likely to have a significant impact on levels of congestion.
- 3.4 The Strategic Road Network (SRN) is a crucial element of our road infrastructure; in 2013, while it only accounted for 2.4% of the total road network in England, it carried 32.9% of all motor vehicle traffic and 65.6% of all HGV traffic.⁴ Chart 3A identifies a range of scenarios for congestion levels on the Strategic Road Network in England between 2010 and 2040.⁵

Chart 3.A: Forecast of congestion on the strategic road network in England⁶



Source: Road Traffic Forecasts, Department for Transport, (forthcoming)

- 3.5 Greater congestion will lead to greater delays and uncertainty about journeys for commuters and businesses, potentially incurring significant economic costs. DfT estimates indicate that congestion on the SRN already costs over £2 billion per year in value of time and could rise to nearly £10 billion per year by 2040 unless action is taken.⁷

Strategy

- 3.6 The vast majority of UK roads investment is publicly funded. The government directly funds the maintenance and development of the SRN through the Highways Agency. Local roads remain the responsibility of local authorities, with funding support from the government, and are covered in the Local Transport section.

³ Road Traffic Forecasts, Department for Transport, (forthcoming)

⁴ Annual Road Traffic Estimates: Great Britain 2013, Department for Transport, June 2014

⁵ Investment assumptions do not take account of announcements made in Investing in *Britain’s Future* in June 2013

⁶ Data based on forecast scenario 1 and high/low demand variants from Road Traffic Forecasts – (forthcoming)

⁷ National Policy Statement for National Networks, Department for Transport, (forthcoming)

- 3.7 The government is taking action across the SRN to address growing demand and the resulting pressures on the network. This includes:
- the biggest programme of roads investment since the 1970s, focusing on developing and maintaining the existing network to a high standard
 - the creation of a new publicly-owned Strategic Highways Company, freed from government red-tape, and supported by long-term funding certainty and a clear Road Investment Strategy
 - making the best use of road capacity – including through ‘Smart Motorways’, making extra lanes available at key times on more of the busiest routes by opening up the hard shoulder, and using innovative technology to keep traffic moving
 - taking advantage of technological change to improve the experiences and choices of travellers and developing new techniques for the performance and operation of vehicles and the management of transport systems

Delivery plan

- 3.8 The government is taking steps to revolutionise the way that it plans and delivers roads investment, including:
- publishing the first-ever Road Investment Strategy (RIS1) spanning 2015-16 to 2019-20, to set out the national priorities and plans for our Strategic Road Network
 - replacing the Highways Agency with a new strategic highways company, and transforming it into a world-class infrastructure company
 - creating a new highways monitor, charged with ensuring that taxpayers’ money is well spent and the highways authority is delivering efficiencies during RIS 1 and for the future.



3.9 These changes will be underpinned in legislation, through the Infrastructure Bill currently before Parliament.

Key actions to 2020-21

3.10 RIS1 provides details of the government's commitment to treble spending on strategic road enhancements, investing a further £15.2 billion in over 100 major schemes by 2021. This will include:

- to improve the condition of our strategic roads: £6 billion to resurface up to 80% of the Strategic Road Network by the end of the decade
- to improve connectivity and support the growth of regional economies, a package of transformational developments:
 - £2 billion of improvements to the A303/A30/A358 corridor, transforming connectivity to the South West with a new expressway, including a tunnel of at least 1.8 miles at Stonehenge
 - £640 million to further improve the A1 to the west and north of Newcastle, with a particular focus on tackling congestion by further widening sections of the Western-Bypass and dualling north to Ellingham
 - £350 million to upgrade the A47 in the East of England, including continuous dual carriageway around Norwich
 - £350 million to upgrade the A27 on the south coast, including a dual carriageway bypass for Arundel
 - £170 million to improve connections on trans-Pennine roads including improvements to the A61 and A628
 - £1.5 billion of investment in the A14 Cambridge to Huntingdon which improves freight access to Felixstowe, one of the country's major shipping ports, tackling the congestion in the East of England and unlocking a major housing development at Northstowe
- to extend the capacity of the existing network and address the very worst congestion that is holding back the economy:
 - tripling the level of investment in enhancements to the Strategic Road Network – rising from recent levels of £1 billion per year to £3 billion per year by the end of the decade – allowing for sustained investment in improvements to the strategic road network in every region of the country
 - 1,300 lane miles of extra capacity, including a 'smart spine' of Smart Motorways linking London, Birmingham and the North West, providing additional capacity to some of the busiest routes on the network
 - £9 billion to invest in over 100 major projects on the Strategic Road Network by the end of the decade
 - upgrading the country's most important A roads to 'Expressways' – with many similar standards and similar safety levels to our motorways, expected to deliver mile a minute speeds for most journeys; Expressways would generally be dual-lane, with grade separated junctions and technology used to control and inform traffic

- 3.11 RIS1 will also establish 5 designated funds worth £900 million to address a range of specific issues over and above the traditional focus of road investment and ensure the new Strategic Highways Company is at the cutting edge of innovation in road construction and network management. The funds are:
- Environment
 - Cycling, Safety and Integration
 - Innovation
 - Air Quality
 - Growth & Housing
- 3.12 In order to support its ambitious investment programme, in November 2014 the Highways Agency appointed 26 companies to the largest ever Collaborative Delivery Framework worth £5 billion over the next 5 years.
- 3.13 The government will also provide over £500 million of additional capital investment by the end of the decade to support the further uptake of ultra-low emission vehicles (ULEVs). This includes a £32 million fund for charging infrastructure, on top of which the Road Investment Strategy includes £15 million for a network of chargepoints which will ensure access to a chargepoint every 20 miles on 95% of the Strategic Road Network. This infrastructure investment will ensure that ULEV drivers can easily find a rapid charge point to help undertake any journey they choose. A further £11m of joint government and industry funding will help establish an initial network of up to 15 hydrogen refuelling stations by the end of 2015.

Priority investments (Top 40)

- 3.14 To support delivery of its objectives for the roads sector, the government has included the following within its Top 40 priority infrastructure investments:
- Accelerated Road Schemes
 - Strategic Roads New Capacity
 - Smart Motorways
 - A14
 - Lower Thames Crossing
 - A303 / A30 / A358 Corridor
 - A1 (North East)
- 3.15 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

- 3.16 The government's vision is nothing short of a transformation of the nation's road network over the next quarter of a century, with the aim of putting the nation's Strategic Road Network back in the top ten globally.

3.17 As part of RIS1, the government has also asked the new Strategic Highways Company to explore the feasibility of further transformational investments including:

- consideration of further improvements for trans-pennine connectivity from Manchester to Sheffield, raising the level of future ambition and determining if there is an historic opportunity to link two of our great northern cities; this work will be taken forward with Transport for the North as part of the development of the wider Northern transport strategy
- an Oxford to Cambridge Expressway – a new east-west connection linking Cambridge, Bedford, Milton Keynes, and Oxford, connecting a number of high-growth areas, and creating a much better direct east-west connection between some of our most important scientific and technical centres of excellence
- M25 South West quadrant improvements – exploring options for tackling the extremely serious levels of congestion on the busiest road in Britain, making best use of all transport modes

3.18 Transforming our road network is the work of a generation and more detailed future plans will be laid out in subsequent Road Investment Strategies. Alongside the results on future feasibility study work this may well include further improvements to our major trunk roads, such as the A1 between London and Scotland.

Further information

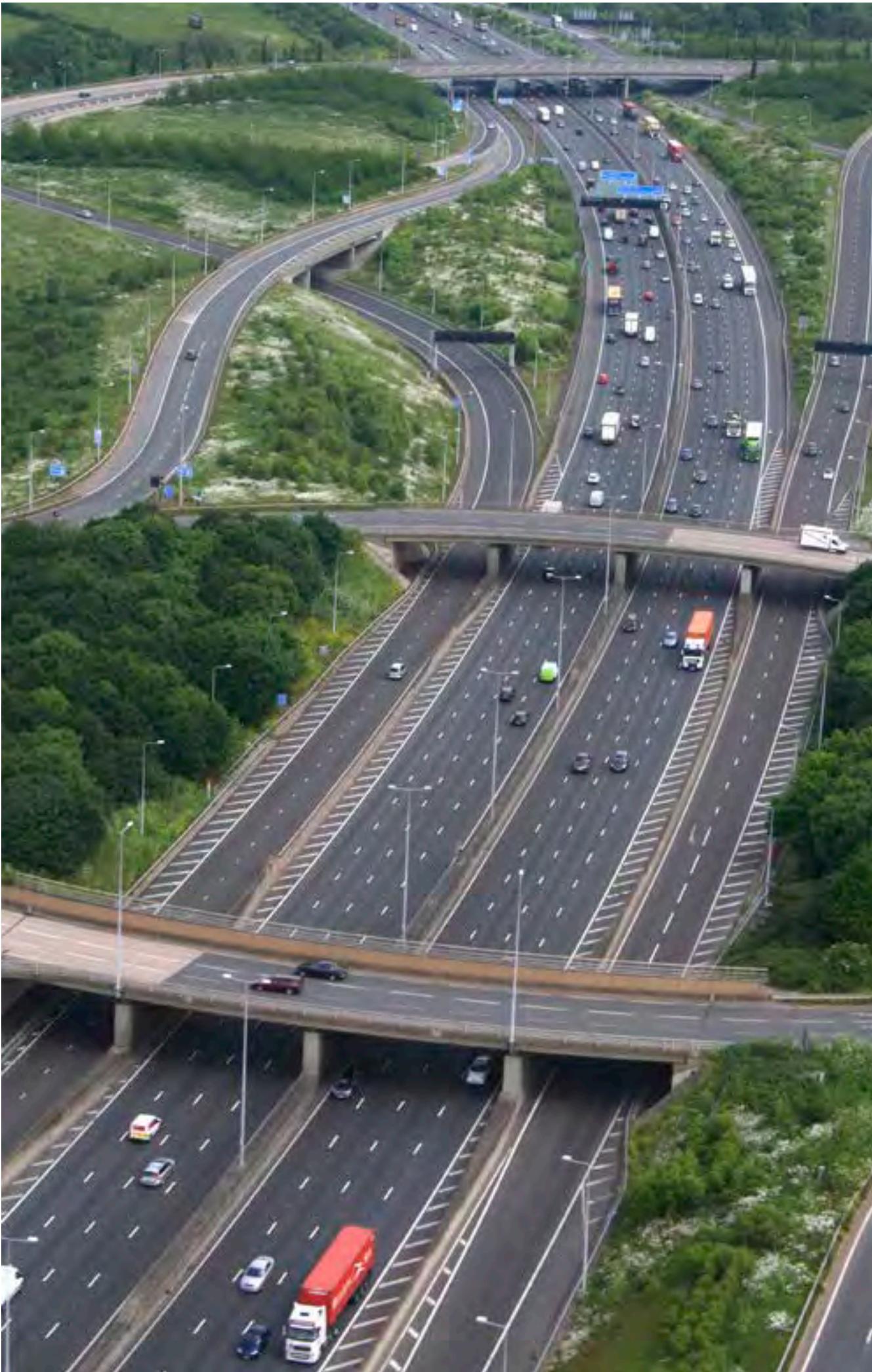
3.19 The infrastructure pipeline sets out details of major planned projects and programmes within the roads sector, including current status, projected construction start/completion dates and cost profiles (where available).

3.20 The full Road Investment Strategy 1 can be found on the gov.uk website.

Key policy and delivery milestones

	2015-16	<p>Top 40 key project starts due: A160/A180 Immingham (all accelerated roads now in construction)</p> <p>Top 40 key project completions due: M1 J28 to 31 and J39 to 42, M6 J10 to 13, A453 Widening</p> <p>Consultation on detailed route options for the Lower Thames Crossing</p>
	2016-17	<p>Top 40 key project starts due: A14 (Cambridge to Huntingdon)</p> <p>Top 40 key project completions due: M3 J2 to 4A, A556 Knutsford to Bowden, Manchester Smart Motorways, M1/M6 J19, A160/A180 Immingham, A1 Coal House to Metro Centre</p>
	2017-18	<p>Top 40 key project completions due: A5-M1 Link Road, A1 Leeming to Barton</p>
	2018-19	
	2019-20	<p>Top 40 key project starts due: A303 (Sparkford to Ilchester)</p> <p>Top 40 key project completions due: A14 (Cambridge to Huntingdon)</p> <p>Over 100 Strategic Road Network schemes due to be completed or in construction as part of RIS1</p> <p>RIS2 due to be published</p>
	2020-21	<p>Start of RIS2 period</p>

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.



RAIL

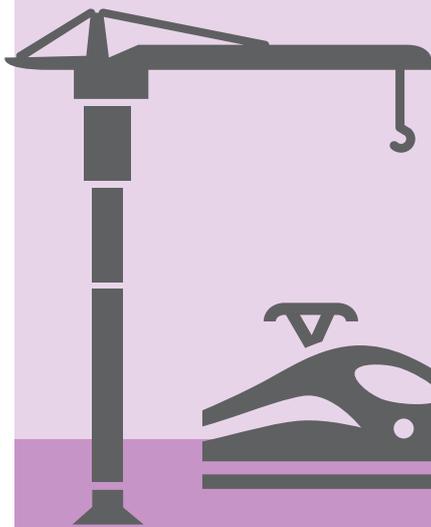
Progress since 2010

- Major upgrade of King's Cross Station, unlocking 2,000 new homes

- Improvements to over 400 other stations around the country

- Crossrail tunnelling nearly 90% complete and flagship stations in construction

- Construction started on the transformational Northern Hub rail upgrade



£38bn

- Network Rail delivery plan, including electrification of key lines

- Crossrail due to be fully operational by 2019

- HS2 phase 1 due to start construction in 2017

- Plans to reduce industry costs by up to £3.5 billion by 2019

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR RAIL £86.9BN

In construction £34.8bn

Future investment £52.1bn

Chapter 4:

Rail

Box 4.A: Announcements in the rail sector

- **Crossrail 2** – see Chapter 5 (Local Transport)
- **Norwich in Ninety** – the government supports the key recommendations of the Great Eastern Main Line Task Force, including upgraded infrastructure and the latest Rolling Stock. Bidders for the next Anglia Franchise, which will start in October 2016, will be incentivised to submit plans for achieving these recommendations for services to Norwich in 90 minutes and associated benefits along the Great Eastern Mainline
- **East West Rail** – the government will consider the outputs of the Network Rail study into the East West Rail central section (Bedford to Cambridge) as part of the planning for Control Period 6 (2019-2024)
- **Dawlish rail services** – the government will support Network Rail in its work to improve the resilience of the railway at Dawlish. Additionally, it will ask Network Rail to examine wider issues surrounding connectivity to and within the South West peninsula. Specifically, Network Rail will consider alternatives to the current mainline route to the South West via Dawlish, including an alternative route via the north side of Dartmoor through Okehampton. This work will feed into Network Rail's Initial Industry Plan for Control Period 6 (2019-2024)
- **Access for all** – the government will increase the funding for the Access for All scheme by £60 million between 2015-16 and 2018-19, improving platform access at around 20 stations
- **Chesterton Rail Station** – as announced by the Prime Minister and Deputy Prime Minister the government will provide £44 million between 2014-15 and 2016-17 to build a new rail station at Chesterton, linked to Cambridge Science Park

Objectives

- 4.1 The government's objectives for the rail network are to:
- increase rail capacity, particularly into major cities
 - reduce journey times
 - strengthen connectivity
 - improve reliability, safety and the passenger experience

- 4.2 The government's rail strategy supports overall decarbonisation of the transport system by providing a greener alternative to roads and aviation.

Needs

- 4.3 Rail is vital to the UK's economic prosperity. If rail services are inefficient and do not meet people's needs for routing or frequency, business and jobs suffer. Since privatisation in the mid-1990s, there has been sustained growth in rail passenger demand. Over 4.3 million journeys are now made by rail every day. Over the last 10 years, passenger journeys in Great Britain have increased by 57%. Demand for long distance rail travel has also increased with 129 million long distance journeys made in 2013/14.¹
- 4.4 Demand for rail freight has also grown, with freight volumes increasing by over 60% since 1995.² In the year to March 2014 alone, the volume of freight moved by rail has grown by 5.8%.³ Economic impact analysis suggests that the transport of over 100 million tonnes of goods annually by the rail freight industry, worth around £30 billion, directly contributes £870 million to the economy.⁴ Rail freight produces 76% less carbon dioxide than road freight per tonne, with each freight train estimated to remove between 43 and 77 HGVs from the roads.⁵
- 4.5 Rising commuter satisfaction and improved service provision, as well as population growth and capacity constraints on other transport modes, mean both passenger and freight demand are predicted to increase further. An upper estimate of forecast growth in passenger rail journeys (passenger-miles) can be seen in Chart 4.A below.



¹ Passenger Journey by Sector, National Rail Trends Portal, ORR

² Value and Importance of Rail Freight, Network Rail, April 2013

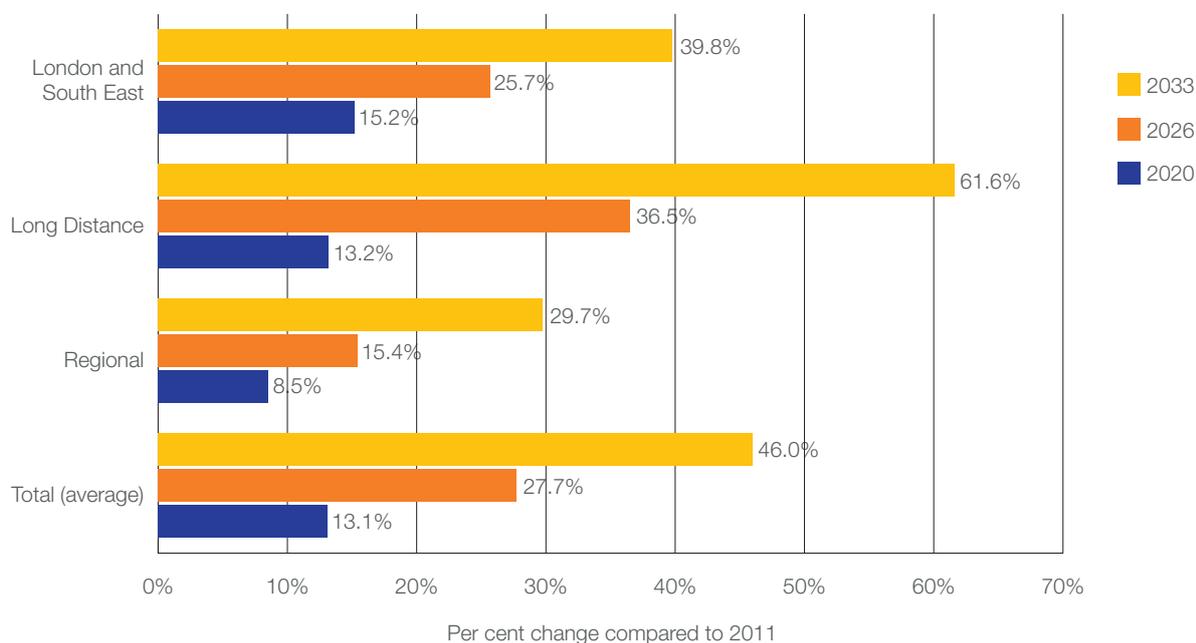
³ Freight Rail Usage, ORR, May 2014

⁴ Value and Importance of Rail Freight, Network Rail, April 2013

⁵ *ibid*

4.6 Total freight traffic, in terms of tonne kilometres moved, is forecast to increase at an average of 2.9% per annum through to 2043.⁶

Chart 4.A: Forecast of passenger miles on the rail network in Great Britain⁷



Source: National Policy Statement for National Networks, Department for Transport, (forthcoming)

Strategy

4.7 The government provides strategic direction and funding to the railways and procures franchises, key projects and in exceptional cases some targeted rolling stock. The majority of rail infrastructure investment is publicly funded (supplemented by access revenue from train and freight operating companies). It also takes targeted action on rail fares to ease the burden on consumers while ensuring that the railway remains financially sustainable.

4.8 The government's approach to the rail sector involves:

- investing in improving capacity and connectivity on the rail network and enhancing passenger experience by:
 - building new lines and making improvements to existing lines, including a rolling programme of electrification and the introduction of better signalling, to provide faster, more frequent journeys
 - enhancing and redeveloping stations
 - enabling a franchise-led programme of progressive investment in rolling stock
 - supporting growth in rail freight by strengthening the Strategic Rail Freight Network
- investing in High Speed 2, the biggest transport project for a generation, which will result in new capacity, better connectivity and quicker journeys; HS2 will link 8 of Britain's 10 largest cities, serving one in five of the UK population; it will allow more passengers to use trains and more freight operators to use rail rather than road; it will also be an engine for economic growth, generating jobs and helping to rebalance the economy between north and south

⁶ The Freight Market Study, Network Rail, October 2013

⁷ Estimates for demand growth by 2030, based on current GDP trend forecasts and fares policy

- investing in other major projects such as Crossrail, which will change the way that people travel around London, improving journey times across the capital, easing congestion and offering better connections; Crossrail will, for the first time, deliver a direct connection between all of London's main employment centres – linking Heathrow with Paddington, the West End, the City and Canary Wharf

Delivery plan

- 4.9 Network Rail is the company responsible for owning, operating and managing Britain's railway network, operating under a licence enforced by the Office for Rail Regulation. In December 2013, the Office for National Statistics (ONS) announced that, following implementation of the European System of Accounts 2010 (ESA10), Network Rail Limited with all of its subsidiaries would be reclassified as a central government body. That decision took effect on 1 September 2014 and Network Rail is now a public-sector arms-length body of the Department for Transport.
- 4.10 HS2 Ltd is the company responsible for developing and promoting the UK's new high speed rail network and is wholly owned by the government.
- 4.11 Responsibility for the delivery of Crossrail belongs to Crossrail Ltd, a fully-owned subsidiary of Transport for London, which is sponsored by the Department for Transport.

Key actions to 2020

- 4.12 The government is undertaking the largest modernisation programme for over a century.
- 4.13 Over the next 5 years it is committed to:
- overseeing £38 billion of expenditure by Network Rail in Control Period 5 (2014 – 2019) including the following enhancement projects:
 - the start of a major electrification programme including key routes such as the Great Western Line, Trans-Pennine and Midland Main Line
 - redevelopment of key stations in Birmingham, Bristol and Manchester
 - capacity improvements at key routes such as the South West and through the Northern Hub
 - beginning implementation of the European Rail Traffic Management System to improve line capacity
 - further development of the Strategic Rail Freight Network
 - ensuring Crossrail is completed on time and on budget; for further detail on Crossrail 2, see Chapter 5
 - completion of the Thameslink upgrade programme, including the redevelopment of London Bridge station and a new direct interchange with Crossrail at Farringdon
 - provision of 3,400 new rail vehicles; this includes around 2,500 for 3 major projects – new trains for the Intercity Express Programme, Thameslink and Crossrail – which are being procured by the public sector
- 4.14 The HS2 Hybrid Bill is currently going through Parliament, and has now passed Second Reading, with Royal Assent expected by the end of 2016. Phase 1 is due to start construction in 2017. This will coincide with the opening of the new National College for High Speed Rail, which will provide up to 2,000 apprentices and will be crucial in supporting the leading edge supply chain provision needed for HS2. The government will also confirm next steps on how to take forward Phase 2 in 2015.

- 4.15 A detailed timetable for all rail franchise competitions over the next 8 years has now been published by the government, and will be refreshed annually, to provide long-term certainty to the market and support major investments in the network. This can be accessed at the following address: <https://www.gov.uk/government/publications/rail-franchise-schedule>
- 4.16 In its 2012 Command Paper “Reforming our Railways, Putting the Customer First”, the Government challenged the Rail Industry to deliver savings of up to £3.5 billion by 2019 to bring it alongside its very best overseas comparators. In its Final Determination for the next Control Period (covering the years 2014 to 2019) the Office of Rail Regulation has set Network Rail the detailed efficiency targets that will achieve this. In parallel, through its franchising programme, the Department for Transport is incentivising Train Operators to deliver operational efficiencies and help drive down industry’s costs.

Priority investments (Top 40)

- 4.17 To support delivery of its objectives for the rail sector, the government has included the following within its Top 40 priority infrastructure investments:
- Intercity Express Programme
 - European Rail Traffic Management System
 - High Speed 2
 - Strategic Freight
 - Crossrail
 - Thameslink
 - Rail Investment Strategy route programmes
 - Major Stations
- 4.18 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

- 4.19 Network Rail Control Period 6 will run from 2019 to 2024. It is likely that the initial industry plan will be released in Autumn 2016, with a view to a final determination by the ORR in 2018, though final timings will be confirmed in due course.
- 4.20 Phase 1 of High Speed 2 is due to open in 2026, with Phase 2 currently scheduled to complete in 2033.
- 4.21 To improve connectivity in the Midlands and the North, Sir David Higgins, Chairman of HS2 Ltd has recommended that decision making on HS2 be integrated with Network Rail’s decision making for improvements to the existing network during control period 6. The Secretary of State for Transport has commissioned HS2 Ltd and Network Rail to make recommendations before the government’s response to the Phase Two consultation. The government is also working on ways to accelerate delivery of the Phase 2 section to Crewe, pending a decision on the route in 2015.

- 4.22 The government will support the railway industry study, due to report in February 2015, which is considering the case for including electrification of the following eight routes in Network Rail's Control Period 6: Leeds – Harrogate – York, Selby – Hull, Sheffield – Leeds, Sheffield – Doncaster, East Coast Main Line – Middlesbrough, Sheffield – Manchester (including the Hope Valley Line), Warrington – Chester, Crewe – Chester.
- 4.23 The government has also given its backing to develop proposals for a new High Speed 3 rail connection for cities in the north, which could significantly reduce journey times across the region. In response to recommendations from Sir David Higgins, the government has announced the creation of a new body called Transport for the North made up of the main northern city regions. This body will work together with other authorities and stakeholders and allow the north to speak with one voice on the big decisions to benefit the region as a whole.
- 4.24 The government, working with Transport for the North, will now produce a comprehensive transport strategy for the region. This will include options, costs and a delivery timetable for a HS3 east-west rail connection. An interim report will be produced in March 2015.

Further information

- 4.25 The infrastructure pipeline sets out details of major planned projects and programmes within the rail sector, including current status, projected construction start/completion dates and cost profiles (where available).
- 4.26 The full Network Rail Control Period 5 Delivery Plan is available at: www.networkrail.co.uk/publications/delivery-plans/control-period-5/cp5-delivery-plan/
- 4.27 Further details on delivery of HS2 and Crossrail can be found on the relevant project websites.

Key policy and delivery milestones

2015	Manchester Victoria and Birmingham New Street station works due to be completed
	New Intercity Express Programme (IEP) plant due to be fully operational
	HS2 Phase One construction contracts due to be put out to tender and phase 1 locations due to finalise growth strategies
	Northern Electrification Taskforce Report due to be published
2016	Initial Industry Plan for Control Period 6 due to be published
	Royal Assent due to be granted for HS2 Hybrid Bill
2017	Control Period 6 High Level Output Specification due to be published
	HS2 Phase 1 construction due to start
	Crossrail tunnel and station fit-outs due to be completed and first rolling stock in use
2018	London Bridge works (Thameslink programme) due to be completed
	First InterCity Express Programme trains due to be in service on East Coast Main Line
	Office of Rail Regulation final determination on Control Period 6 due to be published
	First Crossrail services due through Central London tunnelled sections
2019	Network Rail Control Period 6 Delivery Plan due to be published and start of works
	Full Crossrail services due to be operating from Heathrow & Reading to Abbey Wood & Shenfield.

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.



LOCAL TRANSPORT

Progress since 2010

Over

£1bn

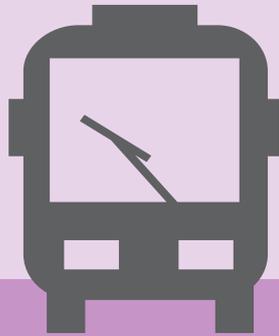
allocated to local sustainable transport projects

41

major local transport projects completed and 28 more under construction

Mersey Gateway Bridge started construction in spring 2014

Completion of the London orbital rail route, Victoria line upgrade and new trains on Circle and Hammersmith and City tube lines



Over

330

transport improvements to be supported through £3.1 billion of Local Growth Funding

41

major transport schemes to be delivered including in Nottingham, Bristol and Leeds

Mersey Gateway Bridge due to open to traffic in autumn 2017

Northern Line Extension due to start construction in 2015

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR LOCAL TRANSPORT £32.3BN

In construction £19.8bn

Future investment £12.5bn

Chapter 5:

Local transport

Box 5.A: Local transport announcements

- **Crossrail 2** – the government will provide £2 million between 2014-15 and 2015-16 to support the development of a comprehensive business case produced jointly by the Department for Transport and Transport for London, to complete ahead of the next Spending Review this will be combined with a full options appraisal of all potential major transport projects in London, including an extension of the Bakerloo Line to improve connectivity in South East London, and the devolution of South Eastern rail services to London
- **Cycle City Ambition grants** – as announced by the Deputy Prime Minister on 27 November, the government will provide £114 million between 2015-16 and 2017-18 to enable the continuation of the Cycle City Ambition scheme in the eight cities it already covers; this will provide capital funding for better cycle infrastructure such as segregated lanes and improved junctions
- **Clean Vehicle Technology Fund** – the government will provide up to £4 million to extend the Clean Vehicle Technology fund in 2014-15 which funds road vehicle modification by Local Authorities in order to reduce air pollution
- **Local highways maintenance grant** – the government has already announced that local highways maintenance funding will be increased, totalling £5.8 billion over the next six years, and can now announce how the formula grant will be broken down by region
- **Bath City Centre Congestion Relief** – the government welcomes the strategy put forward by Bath and North East Somerset Council and the West of England LEP to improve transport capacity East of Bath and reduce city centre congestion; the government will consider a business case, which will be developed by Bath and North East Somerset Council that assesses the viability of proposals including a park and ride, as well as a park and rail service, located to the East of Bath

Objective

- 5.1 The government is committed to ensuring that local transport systems are tailored to the needs of local communities, allowing them to travel freely and easily and supporting jobs and growth.

Strategy

- 5.2 Local roads, which are not part of the Strategic Road Network, are a crucial element of the overall transport system and carry the majority of non-freight road traffic. Local authorities have responsibility for managing, maintaining and making improvements to local roads in a way that best meets local needs. The government provides supporting funding for many larger enhancement and maintenance schemes.
- 5.3 In addition to this the government will be providing local authorities (in England) with £5.8 billion over the next six years for maintenance of local highways. At around £400 billion the local road network is one of the UK's most valuable infrastructure assets, and this investment will ensure that is kept in good order, preventing potholes and making journeys safer.
- 5.4 The government is now able to announce that of this funding £4.7 billion will be allocated according to a needs-based formula, with £580 million to incentivise good asset management and efficiencies, and £575 million reserved to a challenge fund for large one-off maintenance and renewal projects. Funding from the needs-based formula, before including incentive and challenge funding, will indicatively be allocated regionally as follows:
- North East – £270 million
 - North West – £630 million
 - Yorkshire and the Humber – £490 million
 - East Midlands – £540 million
 - West Midlands – £510 million
 - East of England – £640 million
 - South East – £780 million
 - South West – £850 million
- 5.5 55% of car journeys are under five miles, and many of these local trips could be made by public transport, cycling or walking. The government works with local authorities to encourage people to use these options as an alternative to cars to ease congestion whilst cutting carbon, and also provides supporting funding for larger improvements (bus stations, tram schemes). Some funding is also provided for ongoing services, including buses.

Delivery plan

- 5.6 As set out in Chapter 2, a significant proportion of future local transport funding (including the capital element of the Local Sustainable Transport Fund) has now been incorporated into the Local Growth Fund (LGF).
- 5.7 LGF spending has been devolved to 39 Local Enterprise Partnerships (LEPs) between local authorities and businesses. The LEPs are responsible for determining local priorities, with responsibility for delivery of projects remaining primarily with local authorities.

Key actions to 2020

- 5.8 The government has already agreed the first £6 billion of local projects through a wave of Growth Deals with LEPs. This includes the complete allocation of £2 billion from the

LGF for 2015-2016. LGF projects are expected to be matched by local investments worth around twice the contribution from the government. 332 transport improvements will be supported including:

- £44 million for the Metrolink transport system in Manchester, which will include 12 new trams, as part of a £448 million transport package in Greater Manchester including revamped stations and improved bus services
- £23 million for a new road crossing of the M4 linking Swindon to nearby Wichelstowe, creating thousands of jobs and opening up a new site for thousands of homes
- funding for Birmingham to help the city make the most of HS2 – including improving connection to the Birmingham Curzon Street station
- more than £600 million for local sustainable transport schemes

- 5.9 In addition, there are over 100 local authority major (over £5 million) transport projects where funding has been incorporated into the LGF, which are expected to be complete by 2020.
- 5.10 The government will provide support to LEPs and local authorities to improve their delivery capability through the Transport Delivery Excellence programme.
- 5.11 The government has recently consulted on a draft Cycling Delivery Plan. The plan includes a number of specific actions for the next 10 years focusing on infrastructure developments such as cycle-proofing our roads and promoting cycling and walking as alternative sustainable travel choices. The government will respond to the consultation in the new year.



London

- 5.12 Transport for London (TfL) is the public body with standalone responsibility for the majority of the capital's transport services.
- 5.13 It has a number of major infrastructure upgrades planned, including:
- completion of major projects to rebuild Tottenham Court Road, Victoria and Bond Street stations, increasing capacity and adding step-free access
 - further projects to modernise some of the underground's busiest stations are planned for Bank, Holborn and Camden Town
 - increasing the number of trains on the Jubilee and Victoria lines up to 36 trains per hour (a train every 100 seconds) in the peak hours over the next six years
 - £4 billion investment to improve London's roads, including 17 major roads schemes and 33 junction improvements
- 5.14 The government welcomes the Crossrail 2 Funding and Financing report, completed by PWC, which was published on 27 November 2014. The proposal to build a second Crossrail line could support regeneration and help London's transport network to support long term growth by addressing crowding and offering more direct, fast, frequent services that are not available at present. The Funding and Financing report shows that a significant local contribution to the costs of Crossrail 2 is possible, although genuinely private sources of funding are limited. As with all government spending, the government would need to consider affordability and a business case for Crossrail 2 before making a decision to proceed. In response to the report, the government will provide £2 million between 2014-15 and 2015-16 to support the development of a comprehensive business case produced jointly by the Department for Transport and Transport for London, to complete ahead of the next Spending Review. This will be combined with a full options appraisal of potential major transport projects in London, including an extension of the Bakerloo line and the devolution of South Eastern rail services to London.
- 5.15 Construction of the Northern Line Extension to Battersea is due to start construction in 2015. The extension will improve transport links and public spaces in the area and is essential to support the transformation of Vauxhall, Nine Elms and Battersea, a designated regeneration area on the South Bank. The project could support up to 25,000 jobs and creation of 16,000 new homes.
- 5.16 TfL has consulted recently on options for a new river crossing in East London, with options including crossings at Woolwich, Gallions Reach and Belvedere. An interesting proposal made by Sustrans, and worth looking at in more detail, would be a new pedestrian and cycle bridge from Rotherhithe to Canary Wharf – which could be called the Brunel Bridge in tribute to one of the great figures in the history of UK infrastructure

Priority investments (Top 40)

- 5.17 To support delivery of its objectives for the local transport sector, the government has included the following within its Top 40 priority infrastructure investments:
- Local Transport Major Schemes
 - Mersey Gateway Bridge
 - Transport for London Major Schemes
 - Northern Line Extension

5.18 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

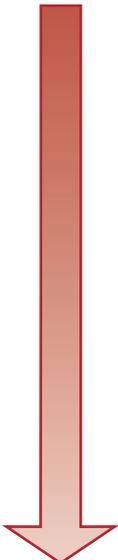
5.19 The government has confirmed availability of a Local Growth Fund of at least £12 billion until 2020-21. It remains committed to the localism agenda and will continue to consider ways in which it can give local areas more control to influence the local growth and infrastructure funding that affects them.

Further Information

5.20 The infrastructure pipeline sets out details of major planned projects and programmes within the local transport sector, including current status, projected construction start / completion dates and cost profiles (where available).

5.21 Further details of projects funded through Growth Deals can be found here: <http://maps.dft.gov.uk/local-growth-deals/>

Key policy and delivery milestones

	2015	<p>Top 40 key project starts due: Norwich Northern Distributor Road, Sunderland Strategic Corridor (New Wear Crossing). Northern Line Extension also due to start</p> <p>Top 40 key project completions due: Nottingham NET2, Midland Metro, Kingskerswell Bypass</p> <p>Start of Local Growth Fund projects</p>
	2016	<p>Top 40 key project completions due: Heysham to M6 Link Road</p>
	2017	<p>Top 40 key project starts due: Leeds New Generation Transport</p> <p>Top 40 key project completions due: Norwich Northern Distributor Road and Sunderland Strategic Corridor (New Wear Crossing). Mersey Gateway Bridge open to traffic</p>
	2018	
	2019	
	2020	<p>Top 40 key project completions due: Leeds New Generation Transport. Northern Line Extension also due to complete</p>

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.

AVIATION

Progress since 2010

- Opening of new Heathrow Terminal 2
-
-
-

- First planes took off from extended runway at Birmingham Airport
-
-
-

Completion of

£164m

- programme to replace the NATS en-route radar network
-
-



- Final Airports Commission report due in summer 2015
-
-

£6.1bn

- of private-sector aviation investment in the pipeline
-
-

- Better road links to support airports including the M42 in Birmingham and A6 in Manchester
-
-

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR AVIATION £6.1BN

In construction £5.7bn

Future investment £0.4bn

Chapter 6:

Aviation

Objectives

6.1 The government seeks to ensure that the UK:

- has sufficient airport capacity to meet current and forecast need
- remains one of the best connected countries in the world via its air links
- maintains its aviation hub capability

Needs

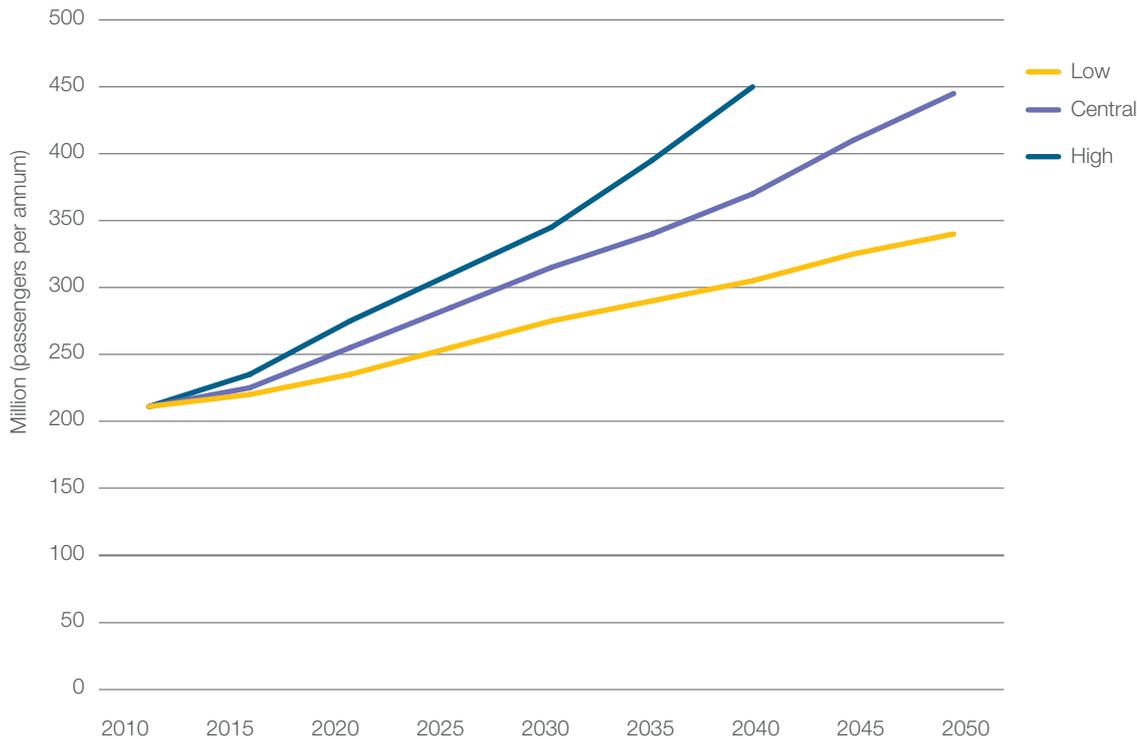
6.2 Air transport has a key role in supporting long-term economic growth, with the aviation sector contributing around £18 billion per annum of economic output to the economy and employing 220,000 people directly.¹ During 2013, UK airports handled 228 million passengers providing access to over 360 destinations worldwide.^{2,3}



¹ Aviation Policy Framework, Department for Transport, March 2013

² Civil Aviation Authority statistics, March 2014

³ Aviation Policy Framework, Department for Transport, March 2013

Chart 6.A: Forecast of terminal passengers at UK airports, 'max use' capacity scenario

Source: DfT, UK Aviation Forecast, Jan 2013

- 6.3 Demand for air travel is forecast to increase within the range of 1% to 3% a year up to 2050.⁴ Low, central and high forecasts for passenger numbers at UK airports, taking into account the impact of capacity constraints, are shown in Chart 6.A.
- 6.4 With rising demand for air travel, the UK's airports face a capacity and connectivity challenge. Heathrow Airport – one of the busiest airports in the world – has operated at almost 98% capacity in 6 of the last 10 years and other major South East airports are forecast to reach full capacity between 2025 and 2030 under certain scenarios.⁵

Strategy

- 6.5 Aviation in the UK is largely privately owned and managed, and the government believes that a competitive aviation market is the most effective way to meet the interests of air passengers and other users. The government's role is primarily to uphold a strong international and domestic regulatory framework which ensures a level playing field and the maintenance of high standards of safety and security. Within this framework the Civil Aviation Authority is responsible for regulating airports which pass a market power test under the Civil Aviation Act 2012 (currently Heathrow and Gatwick).
- 6.6 In order to ensure that the UK is well placed to maintain its aviation hub capability, the government has appointed an independent Airports Commission to examine the scale and timing of airport capacity needs in the South East and to identify how they should be met. The Commission has been asked to assess the options for meeting the UK's international connectivity needs, and recommend the optimum approach to meet those needs.
- 6.7 The government also recognises the importance of maximising the capacity and connectivity of existing airport infrastructure. This includes:

⁴ UK Aviation Forecasts, Department for Transport, January 2013

⁵ Airports Commission: Interim Report, Airports Commission, December 2013

- encouraging ongoing programmes of private investment at airports across the UK
 - optimising existing capacity through the adoption of innovative operational approaches and new technology
 - taking action to improve the quality of surface transport links to existing airports
- 6.8 The government is also taking action to maintain regional air access to London where there is the probability that an existing service would be lost, and to allow start-up aid for new routes from UK regional airports handling fewer than 5 million passengers per annum, in order to underpin the role of aviation in promoting local growth and connectivity.
- 6.9 Across all these measures, the government's policy is to manage the environmental impact of aviation including limiting and, where possible, reducing the number of people in the UK significantly affected by aircraft noise.

Delivery plan

- 6.10 There is significant private-sector investment planned to improve capacity at airports across the UK between now and 2020. The government will also be taking action to support better use of existing airport capacity and, through the Airports Commission, to ensure future needs are met.

Key actions to 2020

- 6.11 The Airports Commission has now published its interim report and is currently consulting on its assessment of proposals for additional runway capacity at Gatwick and Heathrow airports. The Commission will publish its final report in summer 2015. The Commission's analysis will be used to inform government decisions in summer 2015 on future airport capacity in the South East which will include how powers for any new runway could be delivered.
- 6.12 The government will continue to take action to make better use of existing airport capacity, including through a package of surface access measures for international gateways:
- the new Roads Investment Strategy includes plans for a comprehensive upgrade of the M42 Junction 6 near Birmingham airport, allowing better movement of traffic on and off the A45, supporting access to the airport and preparing capacity for the new HS2 station
 - Western Rail Access to Heathrow, to provide a direct service from Reading, will commence enabling works in 2017, subject to feasibility
 - Network Rail is producing a feasibility study into options on Southern Rail Access to Heathrow, to report its findings in 2015
 - Network Rail is consulting on extending the scope of the East Anglian Mainline study to include access to Stansted and will report findings in 2015
 - Network Rail is looking at capacity on the Brighton Mainline as part of the Route Study for Sussex on which it is currently consulting
- 6.13 In total, there is £6.1 billion of planned investment in UK airports and air traffic control in the pipeline between now and the end of the decade. Both Heathrow and Gatwick, regulated by the Civil Aviation Authority, have significant investment plans as part of the sixth quinquennium regulatory period which started on 1 April 2014 for both airports, and will run until 31 December 2018 for Heathrow and until 31 March 2021 for Gatwick.

A number of other privately-owned airports are also expected to bring forth investments to improve capacity on a commercial basis.

Priority investments (Top 40)

6.14 To support delivery of its objectives for the aviation sector, the government has included the following within its Top 40 priority infrastructure investments:

- Airport Infrastructure Improvements
- Airport Connectivity (see also ports)

6.15 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

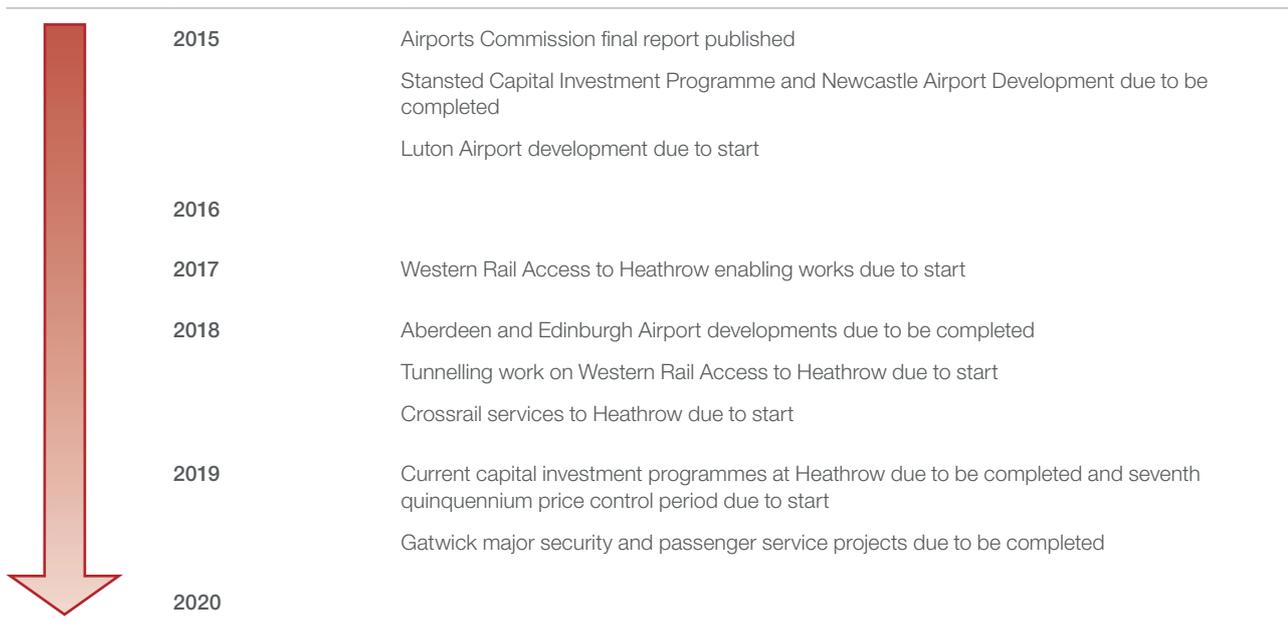
6.16 The Airports Commission has focused primarily on recommendations to meet capacity constraints that are forecast to emerge by 2030. However, the Airports Commission has also indicated that there is likely to be a demand case for a second additional runway in operation by 2050 or, in some scenarios, earlier. It is currently carrying out further analysis on this issue in the second phase of its work programme, including looking at the implications for any future capacity. This will enable it to make recommendations to government in its final report as to when, how and by whom the case for a second new runway should be considered.

Further information

6.17 The infrastructure pipeline contains details of major planned projects and programmes within the aviation sector, including current status, projected construction start/completion dates and cost profiles (where available).

6.18 Further details on the work of the Airports Commission can be found at: www.gov.uk/government/organisations/airports-commission

Key policy and delivery milestones



Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.



PORTS

Progress since 2010

More than
3m
TEU of new
container port
capacity opened

London Gateway
open for business –
the UK's largest new
port for many
decades

Major projects
delivered at
Belfast,
Southampton and
Felixstowe



Over
£1bn
of private-sector
investment in
major ports
projects in the
pipeline

Further developments
at Dover, Liverpool,
Hull and other ports

Better road links to
major ports including
the A5036 to
Liverpool, A14 to
Felixstowe and
A160/A180 to
Immingham

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR PORTS £1.2BN

In construction £1bn

Future investment £0.2bn

Chapter 7:

Ports

Objectives

- 7.1 The government seeks to ensure sustainable port development that will cater for long-term forecast growth in volumes of imports and exports by sea.

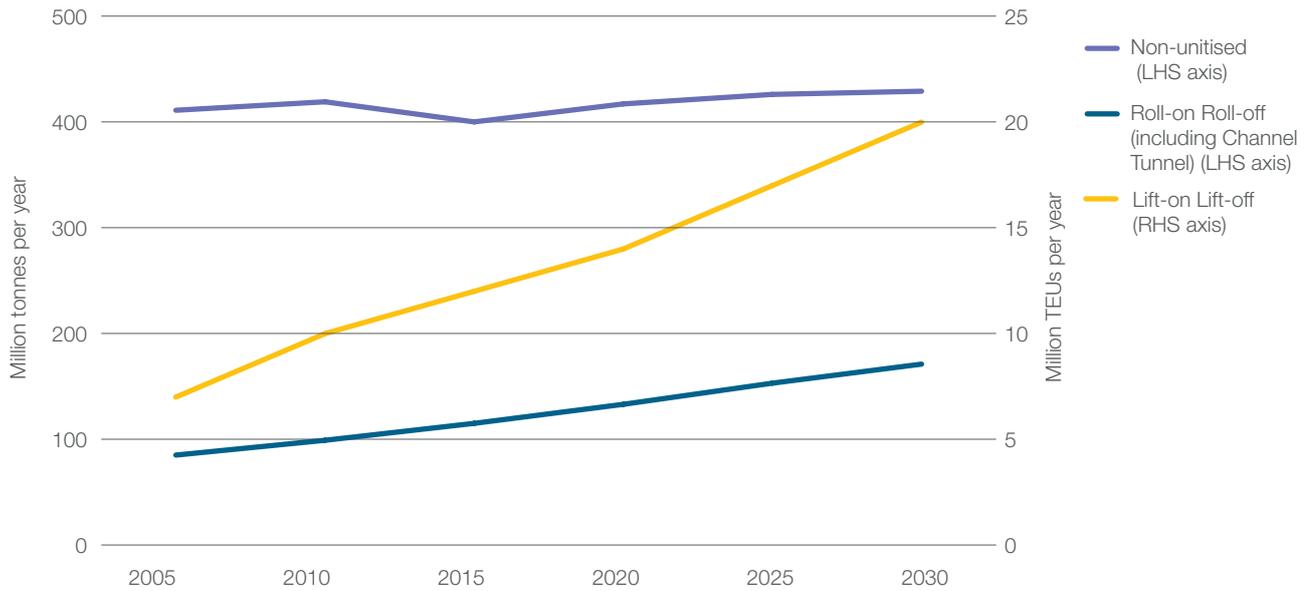
Needs

- 7.2 As an island economy, shipping provides the most effective way to move the vast majority of freight and bulk commodities in and out of the UK. The provision of sufficient port capacity will remain an essential element in ensuring sustainable growth in the UK economy.
- 7.3 There are approximately 120 commercial ports in the UK¹ and the UK handles the largest amount of freight in Europe in terms of tonnage. Ports in England and Wales handle around 95% of all goods in and out of the UK by volume. Freight traffic through UK ports has increased by three-quarters in the last 40 years.² Estimates suggest that the ports sector contributed approximately £7.9 billion to UK GDP in 2011.³
- 7.4 Future need for port infrastructure depends on overall demand for port capacity. In 2007 the Department for Transport published demand forecasts up to 2030. The results are shown in Chart 7.A.

¹ UK Major Ports Group

² National Policy Statement for Ports, Department for Transport, February 2012

³ The economic impact of the UK Maritime Services Sector: Ports, Oxford Economics, February 2013

Chart 7.A: Forecast of port traffic in Great Britain

Source: MDS Transmodal Ltd., Update of UK Port Demand Forecasts to 2030 & Economic Value of Transshipment Study, July 2007
TEUs stands for Twenty-foot Equivalent Unit – a standard measure for container handling capacity

- 7.5 The department has commissioned fresh forecasts which will reflect changes in port freight demand following the global financial crisis and a further update is expected in spring 2015.
- 7.6 Ports also have an important part to play in the import and export of energy supplies, including coal, oil, liquefied natural and petroleum gas, and biomass. In particular, ports will have a crucial role in supporting the installation, operation and maintenance of offshore wind facilities.

Strategy

- 7.7 The ports sector consists of a mixture of company, trust and municipal ports, which operate independently of government, on commercial principles. The government believes that the best way to achieve its objectives is to facilitate a competitive and efficient port industry, allowing judgements about when and where new developments are proposed to be made on the basis of commercial factors. However, the government has established a strategic partnership with the ports industry to provide a cohesive platform for future development. This includes taking action to improve surface access to and from ports where appropriate.

Delivery plan

7.8 The private sector operates 15 of the largest 20 ports by tonnage and around two-thirds of the UK ports' traffic. Development of capacity will therefore be driven largely by private investment.

Key action to 2020

- 7.9 The pipeline includes £1.2 billion of planned investment in major ports projects, from renewals to expansions between now and the end of the decade. For example:
- the Port of Felixstowe is on target to deliver a container handling capacity of 6 million TEUs a year by 2020 (and could deliver an additional 2 million TEUs⁴ in the Harwich Haven by 2030)
 - Green Port Hull is planned to be operational in early 2016. The start of production at the blade factory is scheduled to be in the middle of 2016 with full production levels reached from mid-2017 onwards
 - Dover Port redevelopment of the Western docks
 - a programme of capital investment by Associated British Ports across its portfolio
- 7.10 The government will continue to support the development of international gateways by improving connectivity through measures on surface access. These include the A503 development to improve access to the Port of Liverpool, the A63 (Castle-street) at Hull, the A14 serving Felixstowe, and various rail gauge clearance and path improvements.
- 7.11 Infrastructure UK is working with Atlantic Gateway to facilitate the delivery of critical infrastructure projects in the North West.

Priority investments (Top 40)

- 7.12 To support delivery of its objectives for the ports sector, the government has included the following within its Top 40 priority infrastructure investments:
- Container Port Capacity
 - Ports Connectivity (see also airports)
- 7.13 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

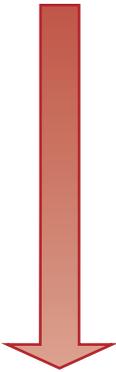
- 7.14 If completed as planned, the private-sector container terminal projects already granted development consent since 2005 would together provide sufficient aggregate container capacity to meet forecast demand at national level for at least the next 20 years.
- 7.15 The government has also left open the possibility for other developers to bring forward proposals for additional developments that satisfy demand that these consented developments are not meeting, as well as a continuing requirement for further new container capacity to meet expected longer term growth.

⁴ Twenty-foot Equivalent Unit

Further information

7.16 The infrastructure pipeline contains details of major planned projects and programmes within the ports sector, including current status, projected construction start/completion dates and cost profiles (where available).

Key policy and delivery milestones

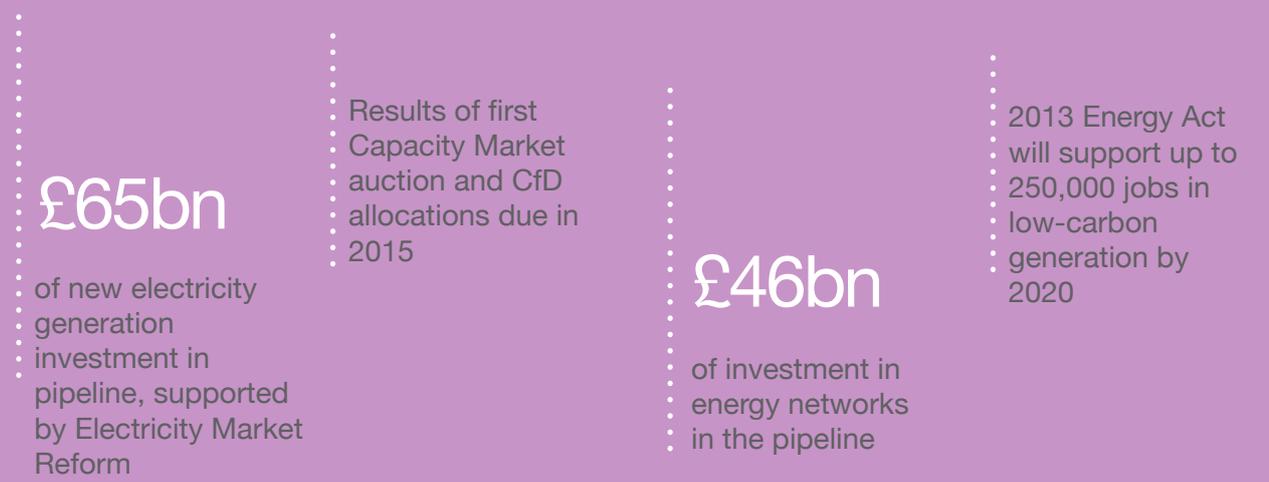
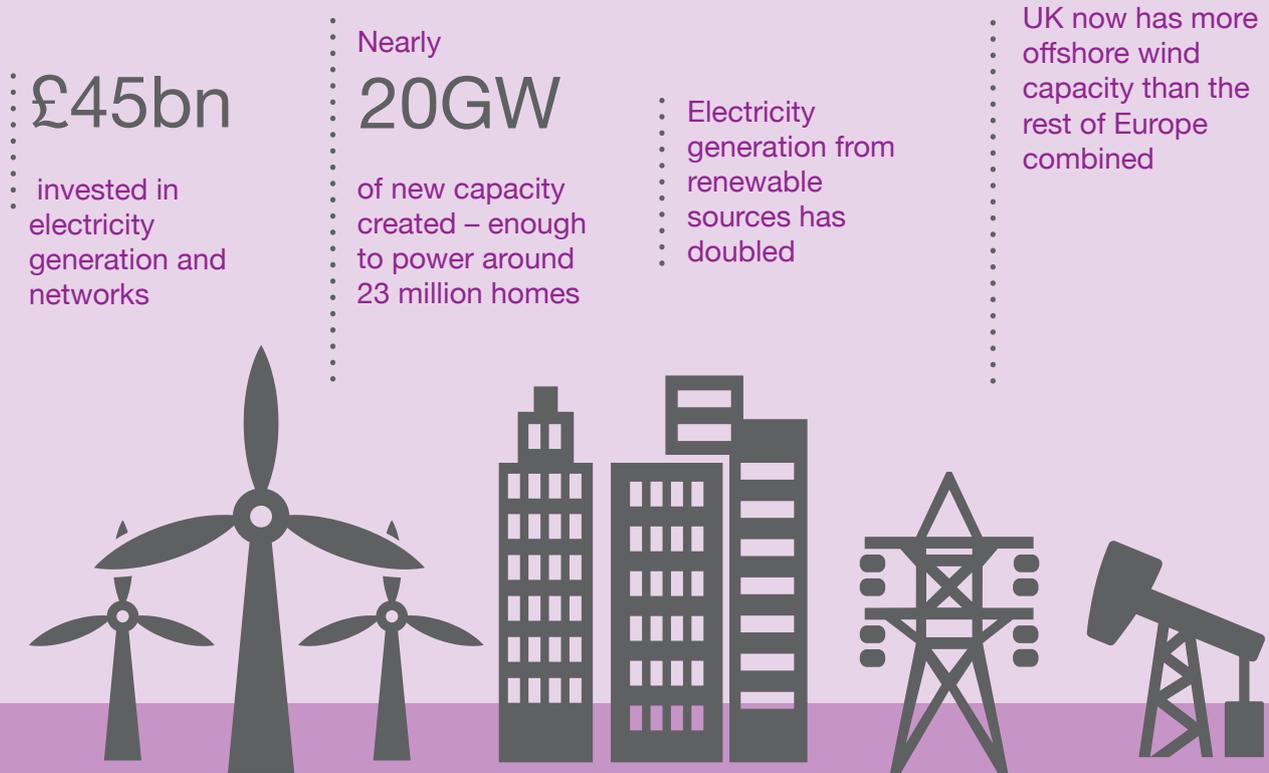
	2015	New DfT forecasts on freight demand for ports due to be published Liverpool 2 development due to be completed Port of Dover Western Docks development due to start construction Felixstowe South development due to be completed
	2016	
	2017	Teesport development due to be completed Green Port Hull wind turbine manufacturing site due to be completed
	2018	
	2019	
	2020	Port of Dover Western Docks development due to be completed

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.



ENERGY

Progress since 2010



Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR ENERGY £274.9BN

In construction £194.7bn

Future investment £80.2bn

Chapter 8:

Energy

Box 8.A: Announcements in energy

- **Interconnectors** – the government will ensure that interconnectors can participate in the 2015 capacity auction, estimating the eligible capacity of each interconnector on a case-by-case basis
- **Swansea Tidal Lagoon** – the government remains committed to achieving its low carbon energy goals through the deployment of a range of technologies; it believes there may be significant tidal lagoon potential in the UK which is why DECC has started to explore the potential for a future lagoon programme; the government will start closer discussions with Tidal Lagoon Power Ltd to establish whether a potential tidal lagoon project at Swansea Bay is affordable and value for money for consumers (without prejudice to the planning decision on the project); if the project were to progress it could become the first tidal lagoon project in the world
- **Moorside** – HM Treasury has reached a cooperation agreement with Toshiba, GDF Suez and NuGen with the aim of issuing a statement of intent to provide a guarantee to assist the financing of a new nuclear power plant at Moorside, subject to due diligence and ministerial approval

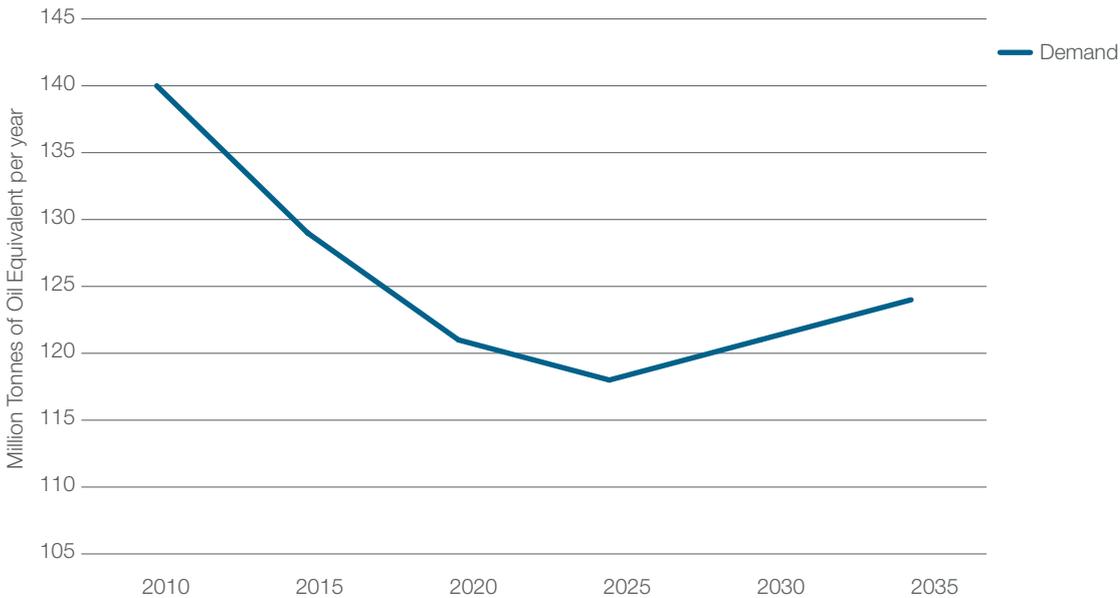
Objectives

- 8.1 The government seeks to support the level and type of energy infrastructure investment and behavioural change required to:
- ensure power, heat and transport are affordable for households and businesses
 - provide energy security to facilitate day-to-day activities and support economic growth
 - reduce carbon emissions in order to mitigate climate change and meet its legally-binding targets

Needs

8.2 Energy underpins the operation of a successful economy and allows other infrastructure networks to function, generating further economic growth. Overall energy demand, while difficult to predict, is expected to continue its general downward trend up until 2025. After this, demand is forecast to rise as the impact of existing policies declines. This is because, in the absence of policy intervention, trend improvements in energy efficiency and the impact of fossil fuel prices are insufficient to offset the impact of economic and population growth.¹ Projected final energy demand is shown in Chart 8.A.

Chart 8.A: Energy demand by final users, UK



Source: Updated energy and emissions projections 2014, DECC, September 2014
 Excludes international aviation

- 8.3 Large-scale investment in gas and low-carbon electricity generation is vital in order to replace ageing energy infrastructure, maintain secure energy supplies and meet legally-binding environmental targets. Around £100 billion of investment is estimated to be required in electricity generation and networks by 2020.²
- 8.4 National Grid and Ofgem project that current electricity generation capacity will reduce until the middle of the current decade.³ In total, a fifth of our existing power stations are scheduled to close by 2020 because they are old, inefficient or polluting.
- 8.5 As legacy coal, gas and nuclear power stations come off line, they will increasingly be replaced with a combination of renewable energy, new nuclear power and fossil fuel power stations fitted with Carbon Capture and Storage (CCS) technology. New gas plant is also needed as a vital backup for less flexible renewable generation and to ensure that the system can meet peak electricity demand. Demand for gas to supply heat to homes and businesses will also remain significant for some time to come.

¹ Updated energy and emissions projections 2014, DECC, September 2014
² Implementing Electricity Market Reform, DECC, June 2014
³ Electricity Capacity Assessment, Ofgem, June 2014

8.6 There is also significant opportunity for greater energy efficiency in the UK. Analysis suggests that there may be potential for up to 32 terawatt hours of electricity savings in 2030 (or around 9 % of estimated total demand).⁴

Strategy

- 8.7 There are three key elements to UK energy infrastructure: oil and gas production; electricity generation; and transmission and distribution through gas and electricity networks. In addition, the government is committed to investment in improved energy efficiency to reduce demand. In all these areas, investment is primarily planned and delivered by the private sector.
- 8.8 In the case of gas and electricity transmission and distribution, independent economic regulation ensures value for money for consumers. Ofgem sets the levels of return which the monopoly network companies can make through a price control process. For electricity transmission, the government and Ofgem have introduced a competitive tender process for the delivery of offshore connections, and Ofgem has recently consulted on proposals to extend a similar approach to certain onshore assets. By upholding a robust system of economic regulation, the government provides companies with the confidence they need to invest in maintaining and developing the country's networks.
- 8.9 In other areas, the government believes that the best way to ensure value for consumers and taxpayers is through the operation of a liberalised energy market. However, within this framework, the government recognises the value of targeted intervention where necessary to achieve the scale and pace of change required to meet overall energy objectives. The government has therefore taken targeted action in the following areas:
- introducing a Levy Control Framework, which sets the aggregate amount that can be levied from consumers by energy suppliers to implement government policy, supporting investment and ensuring bill payers are protected; the government is also committed to being transparent about the costs of levies on bills and publishes an annual report showing their impact on household and business energy bills
 - legislating for Electricity Market Reform, which is designed to minimise costs while also delivering investment, key elements of which include:
 - the Capacity Market, which provides steady payments to providers (both demand and supply side) in return for the delivery of capacity when needed
 - Contracts for Difference (CfDs), which are long-term, legally-binding agreements to stabilise prices for low-carbon plant, providing the policy certainty required to underpin investment and making renewable energy cheaper for consumers by delivering that investment at a lower cost of capital
 - taking steps to support the maximum economic production of remaining reserves in the UK Continental Shelf (UKCS) and exploit new opportunities for shale gas production
 - actively pursuing a significant increase in electricity interconnection capacity to ensure the UK has access to the imports it needs

⁴ Implementing Electricity Market Reform, DECC, June 2014

- 8.10 The government is also taking measures to ensure energy markets are competitive, including through an annual assessment of the state of competition in energy markets. Following the first of these, the energy market has been referred to the Competition and Markets Authority (CMA) for investigation.
- 8.11 The government is committed to minimising the UK's energy needs through the introduction of measures to improve energy efficiency and reduce demand. As set out in the government's Energy Efficiency Strategy, this includes:
- expanding choice and support for households through the introduction of the Green Deal and Energy Company Obligation (ECO)
 - requiring suppliers to roll out smart electricity and gas meters to all households and small non domestic sites by the end of 2020 to put consumers in control of their energy consumption
 - ensuring that both UK businesses and the public sector have access to the support and information they need to install cost-effective energy efficiency measures
 - mobilising investment in the green economy through the Green Investment Bank, which has energy efficiency as one of its key priorities

Delivery plan

- 8.12 The government's plan for energy infrastructure will be delivered through private-sector investment, supported by government in line with the policy framework set out above.

Key action to 2020

Electricity generation

- 8.13 Annual levy caps for the total projected costs of schemes within the Levy Control Framework (LCF) have been set to 2020-21.

Table 8.1: Levy Control Framework annual limits (£ million, 2011-12 prices)

2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
4,300	4,900	5,600	6,450	7,000	7,600

Source: HM Treasury

- 8.14 The infrastructure pipeline includes a total of £65 billion of mixed energy generation investment by the private sector between now and 2020-21. The overall investment assumptions around low-carbon technologies in the pipeline take into account the LCF limits set out above.
- 8.15 Investment Contracts (an early form of Contract for Difference) have been awarded under the Final Investment Decision Enabling for Renewables process, which is expected to unlock up to £12 billion of investment backed and over 4.5GW of renewables generation capacity.
- 8.16 The contract allocation process under the enduring CfD regime is currently underway, and successful applicants will be notified that they have been awarded contracts early in 2015. The budget for the first CfD allocation round is now £300 million, to be allocated via a competitive auction process to drive value for consumers. The government has held back a significant part of the budget for future allocations within the Levy Control Framework cap.

- 8.17 The government has confirmed that it will seek to procure 48.6GW in the capacity market auction in December 2014. All capacity has to be available from October 2018 for one year, with further auctions held for future delivery years on a rolling basis.
- 8.18 In the nuclear sector, the government and EDF are working together to finalise the Hinkley Point C plant, including the full CfD terms and financing arrangements for the project, which includes support from a UK Guarantee. Progress on Wylfa Newydd continues as the advanced boiling water reactor which Hitachi and Horizon have proposed for this site moves through the Generic Design Assessment, with completion of the process expected in 2017. HM Treasury has also reached a cooperation agreement with Toshiba, GDF Suez and NuGen with the aim of issuing a statement of intent to provide a guarantee to assist the financing of a new nuclear power plant at Moorside, subject to due diligence and ministerial approval.
- 8.19 The government is actively pursuing a significant increase in electricity interconnection to support security of supply, and a robust pipeline of projects is in place which could more than double our capacity by the 2020s.
- 8.20 In recognition of their contribution to security of supply and affordability, the government will ensure that interconnectors can participate in the 2015 capacity auction. This will enable the widest possible range of resources to compete to deliver the capacity we need to ensure the security of our electricity supply in future. It should strengthen the case for the development of further interconnectors linking Great Britain with other electricity markets and could contribute to around £5 billion of private sector investment to 2020,



with savings to consumers of up to £9 billion over the longer term.⁵ Interconnectors will participate on the basis of a calculation of de-rated capacity which reflects the individual circumstances of each interconnector, based on an assessment of likely future direction of electricity flows between interconnected markets, and technical reliability, at times of system stress. The government will provide a full response to the policy consultation in January 2015 which will set out the details of the methodology to be used for de-rating.

- 8.21 Ofgem has introduced a new ‘cap and floor’ regulatory regime to bring forward interconnector investment and 5 projects are already being assessed. This is in addition to the NEMO interconnector to Belgium which piloted the regime, and the ElecLink interconnector to France which received regulatory approval to proceed as a merchant project this summer. Subject to progress with the regulatory settlement between Ofgem and the developers (Statnett and National Grid), a final investment decision on the NSN electricity interconnector project, is also expected in early 2015. The project, which would link the UK and Norway, would be the longest sub-sea electricity interconnector in the world.

Oil and gas

- 8.22 The pipeline includes £53 billion of planned investment within the oil & gas sector between now and 2018-19.
- 8.23 The government is committed to ensuring that the UK Continental Shelf attracts the right investment and has the right infrastructure in place to maximise economic recovery as the basin matures. The UKCS has recently seen record investment of £14.4 billion in 2013, £7 billion of which was directly incentivised by the government’s field allowances. Building on Sir Ian Wood’s ‘UKCS Maximising Recovery Review’, the government has been considering interactions between the tax system and strong asset stewardship as part of the review of the oil and gas fiscal regime to ensure we maximise the benefits of our existing infrastructure. The initial conclusions of the review will be published at Autumn Statement.

Electricity and gas transmission and distribution

- 8.24 RIIO (Revenue = Incentives + Innovation + Outputs) is Ofgem’s new performance-based model for setting network company price controls, lasting for eight years. Ofgem completed the first price control reviews to use the RIIO framework in early 2013: RIIO-T1 for gas and electricity transmission and RIIO-GD1 for gas distribution. The final determination for the RIIO-ED1 price control for electricity distribution was published in November 2014. This will set expenditure to 2022-23.
- 8.25 The pipeline includes £8 billion of planned capital investment in gas transmission and distribution and £38 billion in electricity transmission and distribution to 2020-21 including offshore transmission and interconnectors. This is consistent with the final determinations for RIIO-ET1, RIIO-GD1, RIIO-GT1 and the draft determination for RIIO-ED1 and adjusted for current DECC modelling on network requirements.

Energy efficiency

- 8.26 Energy suppliers will be responsible for replacing over 53 million gas and electricity meters with Smart Meters by 2020. This will involve visits to 30 million homes and small businesses.

⁵ According to analysis carried out on behalf of the Department of Energy and Climate Change: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/266307/DECC_Impacts_of_further_electricity_interconnection_for_GB_Redpoint_Report_Final.pdf

8.27 The government is also testing whether projects that deliver lasting electricity savings at peak times, for example by replacing old bulbs with LEDs or improving motors and pumps, could in future compete in Capacity Market auctions. The first Electricity Demand Reduction Pilot auction is for up to £10 million and is being held in January 2015. Subject to the outcome a further auction may follow. The total budget for the EDR Pilot is at least £20 million.

Priority investments (Top 40)

8.28 To support delivery of its objectives for the energy sector, the government has included the following within its Top 40 priority infrastructure investments:

- electricity generation – nuclear (including Hinkley Point C)
- electricity generation – gas
- electricity generation – wind
- electricity generation – other renewables (biomass, solar, marine)
- electricity interconnection
- Carbon Capture and Storage
- energy transmission and distribution
- oil and gas production (including shale gas)
- Smart Meters

8.29 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

8.30 £80 billion of the energy generation investment in the pipeline is planned for beyond 2020-21. While there remains ongoing demand to build new power generating capacity up to 2030 and beyond to meet our energy needs, the exact technology mix will depend on a number of factors including demand, affordability and progress towards our decarbonisation targets.

8.31 Within that context, the government has secured an ambitious but flexible deal on European Union emissions targets which will cut greenhouse gas emissions by at least 40% within the EU by 2030. This will allow the UK to decide how to decarbonise at least cost to consumers, while also improving energy security by reducing EU reliance on imported energy.

8.32 In the long term, the government's strategy for the electricity market envisages a transition to a market where low carbon technologies can compete fairly on price, with a decreasing role for the Government over time. The government is taking steps now to support the development of less mature low-carbon technologies, which are expected to play a bigger role post 2020. For example:

- to help develop and commercialise wave and tidal technologies, the UK has put in place the most comprehensive marine energy support programme in the world, including protecting revenue support for 100MW of wave and tidal stream projects

- the government will also start closer discussions with Tidal Lagoon Power Ltd to establish whether a potential tidal lagoon project at Swansea Bay is affordable and value for money for consumers (without prejudice to the planning decision on the project); if the project were to progress it could become the first tidal lagoon project in the world
- supporting the development of Carbon Capture and Storage (CCS) through the ongoing £1 billion commercialisation competition and a £125 million 4-year co-ordinated research, development and innovation programme; the government is also now seeking views on phase 2 of CCS

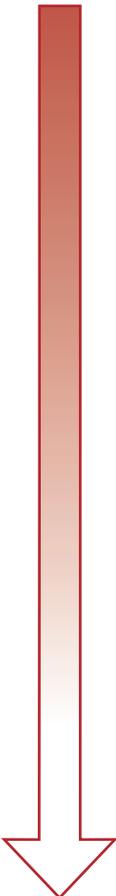
8.33 The government also anticipates significant deployment of new nuclear power through the 2020s with Nuclear New Build (NNB) Generation Company, Horizon and NuGen setting out plans to develop around 16GW of new capacity.

Further information

8.34 The infrastructure pipeline sets out details of major planned projects and programmes within the energy sector, including current status, projected construction start/completion dates and cost profiles (where available).

8.35 Further details on the delivery plan for Electricity Market Reform can be found at <https://www.gov.uk/government/policies/maintaining-uk-energy-security--2/supporting-pages/electricity-market-reform>

Key policy and delivery milestones



2015	Results of first enduring CfD regime allocation round and Capacity Market Auction due Beaulieu-Denny Line (electricity transmission) due to be completed Nemo, NSN and ElecLink interconnector project final investment decisions due Smart Meter installation phase and 8-year RIIO-ED1 electricity distribution price control due to start
2016	Hinkley Point C due to start construction Dudgeon (offshore wind) and Burbo Bank Extension (offshore wind) due to start construction Carrington (CCGT) and Ferrybridge (Biomass) projects due to be completed Westernmost Rough and Humber Gateway OFTOs due to be in operation
2017	Further (T-I) Capacity Market Auction for 2018-19 capacity Western Coast Link (electricity transmission) due to be completed Pen Y Comoedd (onshore wind) and Drax (Biomass conversion) due to be completed
2018	Capacity from first Capacity Market auction to be available for at least one year from October Beatrice (offshore wind) and Walney projects (offshore wind) due to start construction Dudgeon (offshore wind) and Burbo Bank Extension (offshore wind) due to be completed Horizon Wylfa (nuclear) final investment decision due NuGen Moorside (nuclear) final investment decision due
2019	Hornsea (offshore wind) due to start construction Tees Renewable Energy Plant (Biomass) due to be completed NEMO interconnector (subject to final investment decision) due to be completed
2020	Smart Meter rollout to over 30 million premises due to be completed

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.



FLOODS

Progress since 2010

More than

500

flood and coastal erosion defence improvement projects completed

Major flood schemes completed in Essex, Lincolnshire, Weston-super-Mare, and Nottingham

Nearly

160,000

homes protected to date...

...and on track to deliver target of 165,000 by the end of the Parliament



£2.3bn

capital investment committed helping to avoid more than £30 billion in economic damages

Improved protection for at least 300,000 homes

Investment in more than

1,400

schemes

10%

efficiency savings planned across the investment period

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR FLOODS £3.7BN

In construction £1.9bn

Future investment £1.8bn

Chapter 9:

Floods and coastal erosion

Box 9.A: Announcements on flooding and coastal erosion

- The government has published its 6-year programme of investment in flood defences, allocating the £2.3 billion capital funding provided at the 2013 Spending Round

Objectives

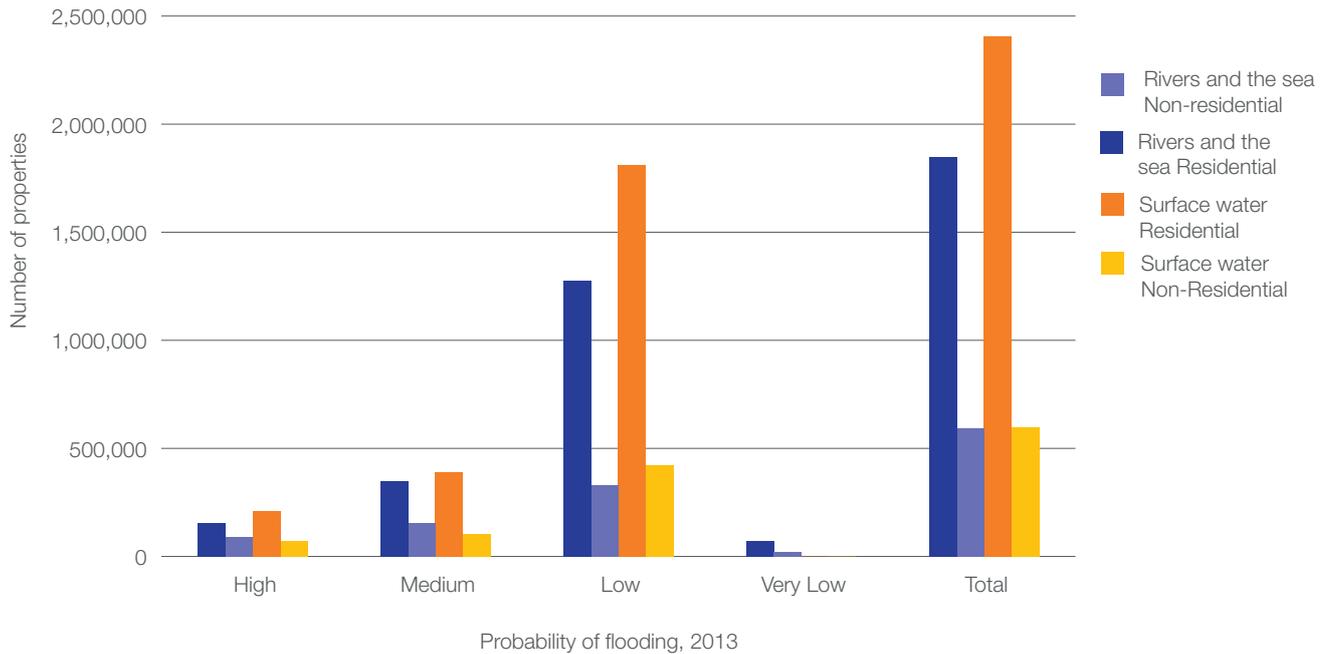
- 9.1 The government's priority is to reduce the risks of flooding and coastal erosion and the consequences for people, the economy, environment and society.

Needs

- 9.2 The flooding in recent years demonstrates the impact flooding and coastal erosion can have on households, businesses and communities. The Environment Agency's Long-Term Investment Scenarios (LTIS) report,¹ published today, is an economic assessment of future flood and coastal erosion risk management looking ahead over a 50-year horizon. The number of properties at risk of flood from both surface water and from the rivers and sea is shown in Chart 9.A.



¹ Long Term Investment Scenarios, Environment Agency, December 2014

Chart 9.A: Properties at risk from flooding, by type of property and source of risk

Source: Environment Agency, Long-Term Investment Scenarios, Dec 2014

Strategy

9.3 The government's flood and coastal erosion risk management strategy comprises:

- promoting a nationally consistent approach to assessing and managing flood and coastal erosion risk
- achieving greatest value for the taxpayer in managing investment in new and improved defences
- taking a risk-based management approach that targets resources to those areas where they have the greatest effect; the government offers access to public funding for all worthwhile schemes and prioritises its investment to achieve the greatest reduction in risk possible
- facilitating and securing alternative sources of funding where possible to maximise overall reduction in risk and encourage greater local choice with local beneficiaries having a greater stake

9.4 The government is the largest funder of risk management of flooding and coastal erosion from main rivers and the sea. In making decisions about where to prioritise resources, the government takes into account the overall economic damages avoided and the number of households benefiting.

Delivery plan

9.5 For the first time, this government has set out a specific long-term funding settlement for flood and coastal erosion risk management. This government will invest £2.3 billion in total across the six year period, representing a real terms increase of 9% compared with the spending review 2010 period. This ensures a major long-term commitment, and is consistent with the recommendations put forward by the Environment Agency in the Long-term Investment Scenarios.

Key action to 2020

9.6 The 6-year capital investment plan will:

- deliver improved protection to at least 300,000 homes and help avoid more than £30 billion in economic damages, including a £1.5 billion reduction in potential losses for the farming sector
- provide for investment in more than 1,400 schemes
- benefit homes and businesses right across England, including replacing seawalls at Fleetwood; building a barrage at Boston; refreshing tidal defences at the Thames Estuary; and undertaking schemes at Oxford, Lowestoft, Yalding and the Humber
- attract approximately £600 million of additional local contributions through partnership funding
- reduce overall flood risk by 5% compared to current levels by 2021

9.7 Also set out are the Environment Agency's commitments to improving how the programme will be managed and delivered, to ensure the benefits of long-term funding certainty are maximised. This includes:

- developing a clear high level statement of outputs and KPIs that aligns and incentivises delivery and performance at all levels, learning from similar approaches in the private and regulated sectors
- delivering further efficiencies from longer-term funding certainty by building on the process of grouping projects into larger 'packages' and programmes of work and exploring the opportunities for a more flexible 'whole-life' approach
- the adoption of new collaborative approaches to delivery building on the recent successful procurement of the TEP1 alliancing initiative (phase 1 of TEP 2100)
- continued investment in improved asset management and programme management datasets and tools
- a strengthened programme management function with the capacity and capability to monitor and intervene early on any obstacles that pose a risk to successful delivery of the programme
- targeted Environment Agency support for local area and local authority led schemes delivery capability

9.8 The plan commits the Agency to developing an integrated approach to deliver these enhancements by spring 2015. This will help deliver the commitment to increase capital efficiency by at least 10% across the investment period compared to a 2014-15 baseline, and is also expected to allow targeting of further efficiency within the maintenance programme.

Priority investments (Top 40)

- 9.9 To support delivery of its objectives for the floods and coastal erosion sector, the government has included the Flood and Coastal Erosion Risk Management Programme within its Top 40 priority infrastructure investments.
- 9.10 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

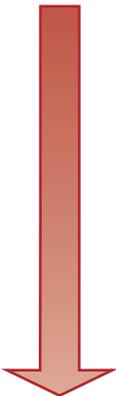
Longer term

- 9.11 Government's current investment plans to 2020-21, supplemented by forecast local contributions and 10% efficiencies, are consistent with the profiles for investment demand currently modelled in the LTIS. It is projected that those investment profiles would deliver a 12% reduction in expected flood damages compared to current levels over the next 50 years.
- 9.12 A number of factors will influence future investment needs, including changes in climate change, development in areas of risk and the costs of protection. The government's approach to flood risk management therefore allows for an adaptive investment strategy to tackle these challenges in the longer term.

Further information

- 9.13 The infrastructure pipeline sets out details of major planned projects and programmes within the floods and coastal erosion sector, including current status, projected construction start/completion dates and cost profiles (where available).
- 9.14 Further details on the floods vision and Long Term Investment Scenarios are available on the gov.uk website.

Key policy and delivery milestones

	2015-16	Start of 6-year flood capital investment plan Thames Estuary 2100 Programme Phase 1 due to start construction
	2016-17	Rossall Coastal Defence scheme due to be completed Lincshore scheme due to be completed
	2017-18	Boston Barrage / Barrier Works due to start construction
	2018-19	Oxford Western conveyance scheme due to start construction
	2019-20	River Thames Scheme: Datchet to Teddington due to start construction Boston Barrage / Barrier Works due to be completed

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes and necessary partnership funding. Final decisions on private-sector led projects will be taken by the project developer.



COMMUNICATIONS

Progress since 2010

80%

of the UK now has superfast broadband coverage with over 1.5 million homes and businesses having access for the first time



Over

25,000km

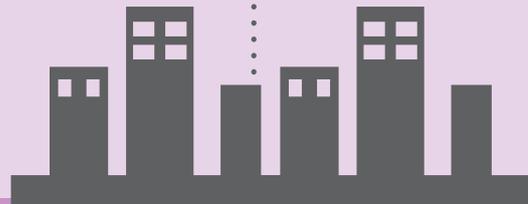
of fibre-optic cabling rolled out – 25 times the distance from Land's End to John O'Groats

22

Super-Connected Cities created across the UK

4G

services rolled out to over 300 towns and cities



95%

of the UK will have access to superfast broadband by 2017 and 8 pilot schemes will explore how to reach the final 5%

70%

of rail passengers to benefit from high-speed broadband on trains by 2019

4G

to reach 98% of premises by 2017

Digital Communications Infrastructure Strategy response to be published in 2015

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR COMMUNICATIONS £11.0BN

In construction and future investment £11.0bn

Chapter 10:

Communications

Box 10.A: Announcements in the communications sector

- **Broadband connection vouchers** – the government will provide up to £40 million to extend the SME connection voucher scheme to March 2016 and to more cities; vouchers will be available on a first come, first served basis
- **700MHz spectrum change of use** – further details of the clearance process for high-value spectrum will be set out in 2015 ahead of a further auction of mobile broadband spectrum, subject to the development of delivery options by DCMS and Ofcom

Objectives

10.1 The government is committed to ensuring that the UK has the right digital communications infrastructure to drive economic growth and innovation, enhance our national competitiveness and build a digital society.

Needs

10.2 Digital infrastructure influences people's ability to access information and services, and to connect with the wider world. The economic impact of the internet is expected to keep growing and is predicted to reach £221 billion by 2016, an 11% rise each year. By this time it will account for 12.4% of the UK's GDP, a significant increase from 8.3% in 2010 and almost double the developed market average including Germany, Japan, the US and France.¹

10.3 As the number of internet users and global connected devices increase, estimates suggest that the availability and take-up of faster broadband speeds will add about £17 billion to the UK's Gross Value Added by 2024, as a result of enhanced productivity, more uptake in the labour force and flexibility in working practices such as the ability to telework.² Faster broadband could also reduce commuting costs and lead to total household savings of £270 million per annum by 2024.³

10.4 Forecasting future needs in the communications space is challenging, but there is a level of consensus that the future will see continued rapid technological change. More

¹ The Internet Economy in the G20, Boston Consulting Group, March 2012

² UK Broadband Impact Study: Impact Report, SQW, November 2013

³ *ibid*

bandwidth will be needed as the traffic over fixed and wireless networks continues to rise, fuelled by the increased take up of smartphones, together with a rise in the availability and use of applications. The scale, availability and capacity of WiFi networks will become increasingly critical. The number of consumers will also remain on the rise (particularly in the older age group) and there will be more focus on reliability, in addition to speed.

- 10.5 Given these factors, and the enduring importance of a world-class digital infrastructure in supporting international competitiveness, the UK will need to continue to prioritise to ensure its communications compare favourably with those of other leading nations.

Strategy

- 10.6 The UK telecoms market is one of the most open and competitive in the world. Effective deregulation has set industry free to create new services and set international standards. The government will always look to the market to deliver communications infrastructure but will also take action where necessary to support innovation and growth, ensure fairness, and protect consumers and other citizens.
- 10.7 To make sure everyone in the UK has access to fast, reliable broadband, the government has set out a vision for a superfast broadband network in the UK of over 24 Megabits per second (Mbps), to reach 95% of the population by 2017. Significant public funding has been committed to enable the rollout to areas where investment would otherwise not be commercially viable.
- 10.8 Some areas of the UK do not get good quality mobile coverage, or do not get any coverage at all. Good mobile coverage helps businesses to grow and people to stay in touch, which can be very important for people who are vulnerable or isolated. The government is therefore investing to improve the quality and coverage of mobile phone voice and data services.
- 10.9 Alongside this direct investment, the government continues to ensure that the policy and regulatory environment is conducive to delivering significant private sector investment in both fixed and wireless technologies, responding to demand and competitive pressures. That includes facilitating the use of spectrum.



Delivery plan

10.10 The Department for Culture, Media and Sport leads on digital communications infrastructure policy, with a dedicated unit, Broadband Delivery UK (BDUK), which has responsibility for managing the government's broadband delivery.

Key actions to 2020

- 10.11 90% of the UK will have access to superfast broadband by early 2016, supported by public investment of over £1.2 billion through the government's superfast broadband programme. An additional £500 million has been allocated with the aim of providing coverage to 95% of UK premises by the end of 2017.
- 10.12 Alongside government funded programmes, the private sector is also investing in excess of £5 billion in commercial programmes to upgrade the UK's digital communications infrastructure: BT's superfast broadband roll-out to two thirds of the UK is almost complete and mobile network operators are rolling out 4G technology at pace, following government's auction of 4G spectrum in 2013.
- 10.13 Over 5000 SMEs across 22 cities have benefitted from the government's connection voucher scheme, with new broadband connections on average six times faster than before. In order for more businesses to benefit, the government is allocating up to £40 million to extend the scheme to March 2016 and to more cities. Vouchers will be available in the new cities from April 2015, and will be available on a first come, first served basis.
- 10.14 The government is also planning to roll out a high speed (50 Mbps) broadband network on the busiest 30% of Britain's railways. Noticeable improvements will start during 2015, with 70% of passengers benefitting from the new technology by 2019. The programme will tackle a series of 'not-spots' – areas along rail corridors with intermittent or poor mobile phone signal coverage – delivering a consistent and reliable service on key routes.
- 10.15 Government's Mobile Infrastructure Programme is a unique model for extending mobile coverage to areas where it will have significant social benefits, and is delivering where the commercial sector alone will not. To ensure benefits of the programme are maximised, it has been extended to 2016.

Priority investments (Top 40)

- 10.16 To support delivery of its objectives for the digital communications sector, the government has included the following programmes within its Top 40 priority infrastructure investments:
- Superfast broadband
 - Super-Connected Cities
 - Mobile Infrastructure Project
 - Commercial 4G rollout
- 10.17 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

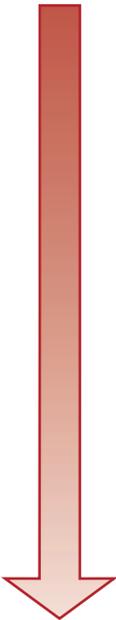
10.18 To achieve the government's ambition to have the right digital communications infrastructure to drive economic growth and innovation we need infrastructure that will allow people to access services when they want, where they want.

- 10.19 The government's current investment plans for digital communications infrastructure are expected to have achieved their objectives by the end of the decade. The government therefore recognises the need for a strategy that goes beyond 2020.
- 10.20 To meet this goal, the government published its consultation on a Digital Communications Infrastructure Strategy in August 2014, which considers different scenarios for future demand and looks at what should follow delivery of superfast broadband and address the rapid convergence of the broadband and telecommunications markets. The government will publish its response to the consultation and its long-term strategy in 2015.
- 10.21 The UK Spectrum Strategy sets out a framework up to 2025 and beyond. In this time, the value of spectrum is expected to double to reach £100 billion. Government's Strategy aims to support this growth and offer business the access it needs to innovate and grow, and everyone in the UK the services they need to live their lives to the full.
- 10.22 As part of this, the government supports Ofcom's work on the change of use of 700MHz spectrum, which it estimates will bring in quantified benefits of between £900 million and £1.3 billion in network cost savings as well as significant unquantified benefits such as improved coverage, capacity and speed in rural areas. Allocating the 700MHz band for mobile broadband will support the growth in demand for mobile services by providing greater capacity in the 4G networks as well as potentially preparing for 5G services. Subject to the development of delivery options by DCMS and Ofcom, further details of the clearance process for this high-value spectrum will be set out in 2015.

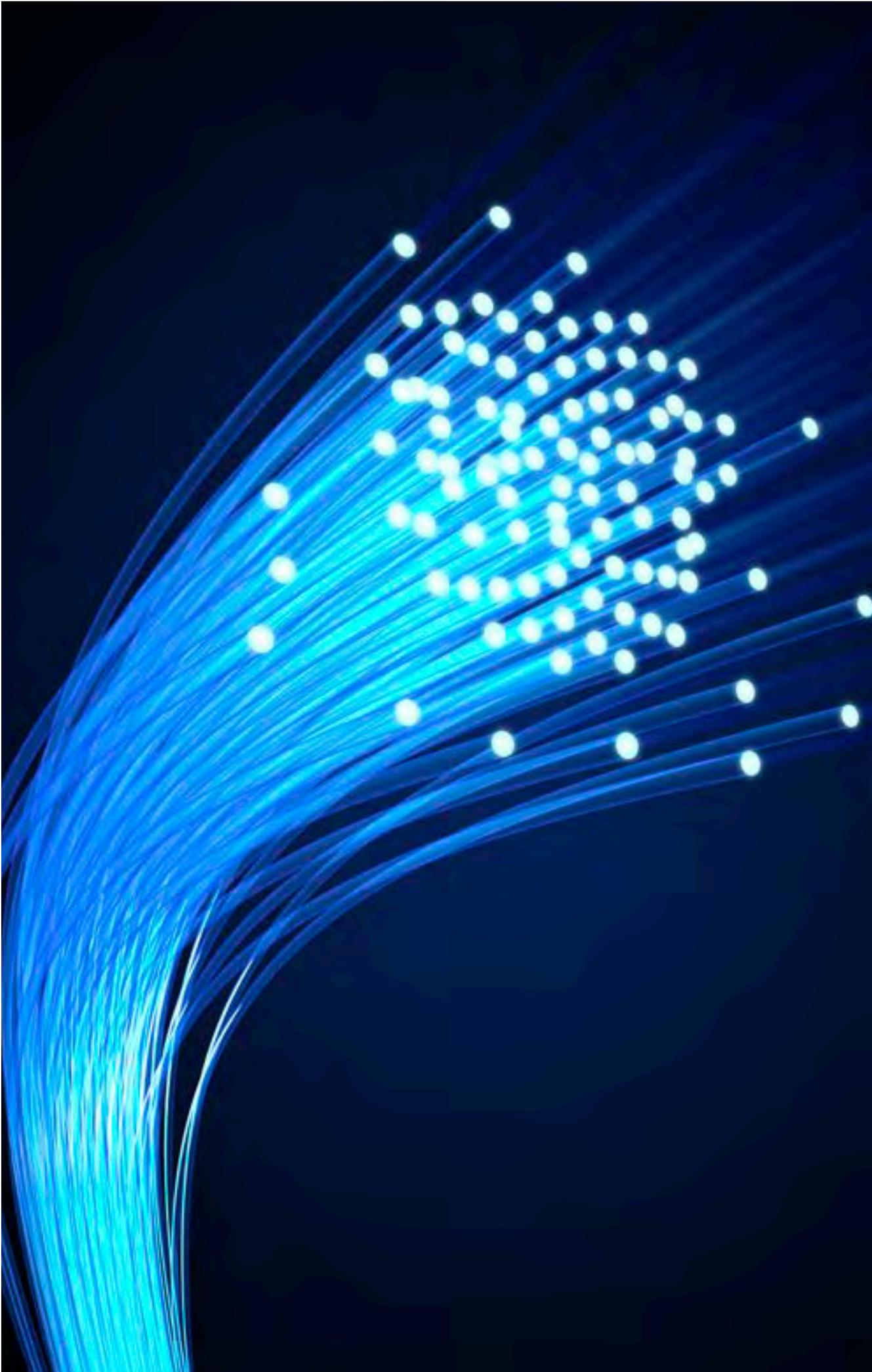
Further information

- 10.23 The infrastructure pipeline sets out details of major planned projects and programmes within the digital communications sector, including current status, projected construction start/completion dates and cost profiles (where available).
- 10.24 Further information on the roll-out of superfast broadband can be found at:
www.google.com/maps/d/viewer?mid=zwLLqmDnfnjA.khRmsBv2kR70&msa=0&ll=53.709714,-2.768555&spn=7.417298,14.0625&dg=feature

Key policy and delivery milestones

	2015	Digital Communications Infrastructure Strategy due to be published 1,000 public buildings, over 100 trains and 1,300 buses due to have been fitted with free Wi-Fi and 10,000 businesses connected to superfast broadband as part of the Super-Connected Cities programme Further details of the clearance process for high-value spectrum due to be set out, subject to development of delivery options by DCMS and Ofcom
	2016	Superfast Broadband Phase 1 due to be completed – 90% UK coverage Mobile Infrastructure Project due to be completed Connection voucher scheme now extended to 2016
	2017	Commercial 4G services due to be fully rolled out Superfast Broadband Phase 2 due to be completed – 95% UK coverage
	2018	
	2019	70% of rail passengers due to benefit from high-speed broadband on trains
	2020	Deadline for the release of 500 MHz of public sector spectrum below 5 GHz

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.



WATER

Progress since 2010

£22bn

of private-sector investment in water and waste water assets

Improvements at almost 500 sewage works since 2010, reducing phosphate and ammonia pollution

Environmental quality of 3,290 km of rivers protected or improved ...

... and cleaner beaches with a record 99.5% of England's bathing waters passing EU standards



£30.9bn

of water and waste water asset investment in the pipeline

2014 Water Act to give all business, charity and public sector customers in England the freedom to switch supplier from 2017

Thames Tideway Tunnel expected to start construction in 2016

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR WATER £30.9BN

In construction £4.1bn

Future investment £26.8bn

Chapter 11:

Water

Objectives

11.1 The government's objectives for the water sector are to secure a fair deal for customers while enabling water companies to continue to attract low-cost investment needed to provide the high quality, resilient water services customers want.

Needs

11.2 The country's existing water and wastewater infrastructure is of varied age and condition, and some of it is well over a century old. There are three main factors influencing future water needs: changing demand, demographic changes and the impact of climate change:

- household demand has been increasing since the 1950s, and although water companies forecast that average personal consumption will drop from 146 litres per day in 2010-11 to 132 in 2030-31, population growth will offset this fall;¹ Industrial water use has been declining as the economy moves away from heavy industry; however, a drive to reduce carbon emissions, e.g. through carbon capture and storage at power stations, could increase water usage
- with population growth likely to be concentrated in the most water-stressed parts of the country, combined with a trend towards smaller households, total household consumption is forecast to increase by 3%, while total water demand (for all purposes) may rise by 5% by 2020. Some extreme scenarios suggest water demand could rise by as much as 49% by 2050²
- a Met Office study suggests a worst case scenario of 10 times as many significant droughts by 2100;³ while water companies are better prepared for such events, sustained investment is likely to be required for a changing climate; demand is likely to increase too, with more water used in hotter weather and potential for greater irrigation⁴

¹ Aggregate of final company water resource management plans (2015-2040). Figures are for England only.

² Water for life, DEFRA, 2011

³ An extreme value analysis of UK drought and projections of change in the future, Met Office, 2010

⁴ Water for life, DEFRA, 2011

- 11.3 Waste water treatment infrastructure is also essential for a clean environment and public health. Every day in England and Wales the sewerage system collects approximately 10 billion litres of waste water from households and industry.⁵ Demand for new and improved waste water infrastructure is expected to increase as a result of statutory requirements to protect the environment and water quality, population growth, urbanisation and adaptation to climate change.
- 11.4 New infrastructure is not the only solution to the above issues. However, a sustained and significant programme of maintenance, renovation and replacement in water infrastructure will also be necessary in order to reduce leakages and ensure a high level of service for customers both now and in the future.

Strategy

- 11.5 The government sets the strategic policy framework for a privatised water industry to ensure sufficient supplies of secure and sustainable water – including a requirement to plan to balance supply and demand over the long term. In doing so, it seeks to set the conditions for a water sector that is as innovative, efficient and customer-focused as possible.
- 11.6 An independent economic regulator (Ofwat), sets the framework within which individual companies make their commercial decisions, ensuring that consumers receive high standards of service at a fair price. In doing so, it must take into account the government's stated policy priorities including considering the impact on investment, innovation, resilience, sustainable development and the need to prepare for longer-term challenges.
- 11.7 Water companies are regulated by the Drinking Water Inspectorate to ensure water supplies in England and Wales are safe and drinking water quality is acceptable to consumers. The Environment Agency regulates environmental impacts, abstractions and discharges.
- 11.8 The government also takes targeted action where appropriate to ensure that water companies support vulnerable customers, and when necessary, to facilitate investment in projects of exceptional size and complexity such as Thames Tideway Tunnel.

Delivery plan

- 11.9 Privately-owned water and sewerage companies are responsible for running, maintaining and, where necessary, upgrading the UK's water infrastructure.

Key action to 2020

- 11.10 The Thames Tideway Tunnel is a key element of the programme to modernise London's aging sewerage network and the project received development consent in September 2014. Following the government's decision to specify the project under the Water Industry Act it will be designed, financed and operated by a separately regulated Independent Infrastructure Provider. Thames Water is currently procuring through competition both the Infrastructure Provider and the main contractors for the construction. Contract negotiations should be completed in mid-2015 with construction due to start in 2016.

⁵ National Policy Statement for Waste Water, DEFRA, March 2012

- 11.11 The water industry operates on five-yearly cycles called asset management periods. Ofwat has now published draft determinations setting the price, investment and service package that water companies should provide for the next asset management period (AMP6), which will begin on 1 April 2015. Ofwat's final determinations will be published on 12 December 2014.
- 11.12 Based on its draft determination proposals for AMP6, Ofwat projects that by 2020:
- there will be £43 billion of total investment on delivering, maintaining and improving services; the pipeline captures a projection of the capital element of this⁶
 - average bills will fall by about 5% in real terms
 - more than 340 million litres of water a day will be saved by tackling leakage and promoting water efficiency
 - there will be on average a 40% reduction in the time lost due to supply interruptions
- 11.13 Major projects and programmes due for delivery in AMP6 will be confirmed in companies business plans once the final determination has been published.
- 11.14 The Water Act will, for the first time, mean all businesses, charities and public sector customers in England will have the freedom to switch supplier from 2017.

Priority investments (Top 40)

- 11.15 To support delivery of its objectives for the water sector, the government has included the following within its Top 40 Priority Infrastructure Investments:
- Water Supply and Sewerage Networks
 - Thames Tideway Tunnel
- 11.16 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Longer term

- 11.17 Following AMP6, Asset Management Period 7 will run from 2020 to 2025. The price review process for AMP7 is expected to involve a similar total expenditure (TOTEX) and output-based approach to that taken in PR14.
- 11.18 Companies produce Water Resources Management Plans which set out how they will balance the demand and supply of water over the long-term, taking account of factors such as population growth, economic growth and climate change. Companies consider options from managing demand as well as options for developing new sources of supply, for example reservoirs. The plans are subject to public consultation and the Environment Agency provides technical advice to the Secretary of State, who decides whether each company should publish its proposals as a final plan.
- 11.19 Most water companies have now published the final version of their latest plans (covering 2015 to 2040). The companies will begin consulting on their next plans in 2018.

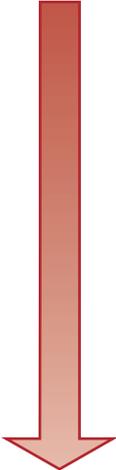
⁶ For the AMP6 period (2015-20), Ofwat is moving to a total expenditure approach in which capital investment and operating expenditure are assessed together. Of the £43 billion of totex in AMP6, an estimated £22 billion represents expenditure which would have been traditionally reported as capex.

Further information

11.20 The infrastructure pipeline sets out details of major planned projects and programmes within the water sector, including current status, projected construction start/completion dates and cost profiles (where available).

11.21 Further details on the price review process for AMP6 is available on Ofwat’s website.

Key policy and delivery milestones

	2015	Start of Asset Management Period 6 (AMP6) with £43 billion of anticipated investment to deliver, maintain and improve water services Thames Tideway Tunnel contract awarded to Infrastructure Provider Lee Tunnel due to be completed
	2016	Thames Tideway Tunnel due to start construction
	2017	All businesses, charities and public sector customers will have the freedom to switch supplier under the 2014 Water Act
	2018	
	2019	Ofwat final determinations on AMP7 due to be published
	2020	End of AMP6 and start of AMP7

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.



WASTE

Progress since 2010

£3.2bn

in funding allocated to support 27 new local authority waste projects

19

projects completed including in Cumbria, Staffordshire and Exeter

4.6m

tonnes of extra processing capacity per year



20

waste projects worth more than £2 billion in the pipeline

England on track to meet EU targets for reducing waste sent to landfill

Negotiation on EU review of resource and waste management expected to be concluded by 2018

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR WASTE £2.0BN

In construction £1bn

Future investment £1bn

Chapter 12:

Waste

Objectives

- 12.1 The government's ambition is to move towards a 'circular economy' where material resources are valued and kept in circulation. This means that we make the best use of materials and resource, prevent and deal with waste, and recycle properly. This is essential for our future growth, increased resilience and environmental and human health.

Needs

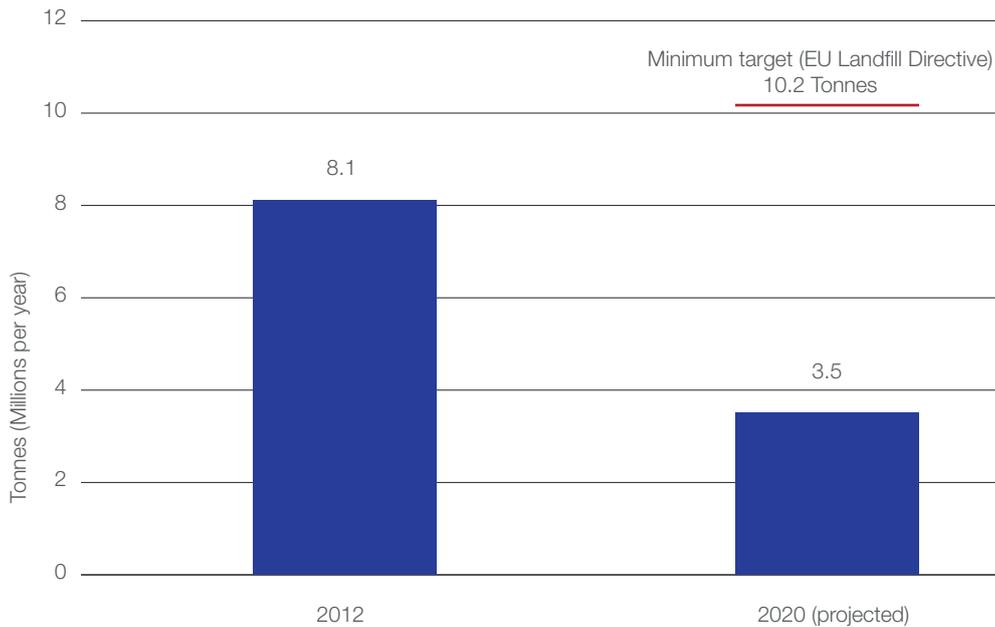
- 12.2 Waste and resource management is critical to the UK. England produced approximately 42 million tonnes of Municipal Solid Waste (including 19.1 million tonnes of Commercial and Industrial waste similar in nature to household waste in 2012), 16.2 million tonnes of which went to landfill.¹ As well as being damaging to the environment this is a loss of a valuable resource.
- 12.3 The UK also needs sufficient waste infrastructure capacity to be in place to meet the requirements of the EU Landfill Directive targets for biodegradable municipal waste (BMW). The current target requires that the amount of BMW sent to landfill in England by 2020 decreases to 35% of 1995 levels (to 10.2 million tonnes).² England met its contribution to the UK BMW target for 2010 and the latest data, for 2012, shows BMW to landfill already within the requirements of the 2013 and 2020 targets. Based on the latest assumptions, levels of BMW to landfill in England are expected to be around 3.5 million tonnes in 2020.^{3 4}

¹ Estimate includes household waste and similar waste from commercial and industrial sources. Source: Wastedataflow and Forecasting 2020 Waste Arisings and Treatment Capacity, Defra, October 2014

² Defra – UK statistics on waste – 2010 to 2012, Defra, September 2014

³ *ibid*

⁴ Forecasting 2020 Waste Arisings and Treatment Capacity, Defra, October 2014

Chart 12.A: Forecast of biodegradable municipal waste sent to landfill in England

Source: UK statistics on waste, 2010 to 2012, Defra, Sep 2014;
Forecasting 2020 waste arisings and treatment capacity, Defra, Oct 2014

Strategy

- 12.4 The government seeks to ensure the best use of materials and resources, and that waste in England is dealt with as efficiently as possible, in a way that meets EU targets. It also believes that the efficient use of resources should primarily be driven by the market, operating within a policy and regulatory structure that provides the right economic incentives. This includes using the tax system to influence behavioural change where appropriate (e.g. through the landfill tax).
- 12.5 Private sector suppliers build and run waste plants that treat waste and divert biodegradable municipal waste from landfill. To ensure that it will meet its EU obligations, the government provides financial support to help local authorities part-fund residual waste infrastructure contracts with private sector suppliers. The government also provides technical and commercial expertise to PFI/PPP waste projects, including helping local authorities identify and secure substantial efficiency savings.

Delivery plan

- 12.6 The government routinely monitors progress against its requirements under the EU Landfill Directive and, as set out above, England is currently on track to meet the existing 2020 targets. All grant funding has now been allocated to waste infrastructure and the government is not currently planning to fund any new projects through Waste Infrastructure Credits.

Key action to 2020-21

- 12.7 There are some 20 existing waste PFI and PPP projects representing almost £2 billion of investment between now and 2020-21 in the infrastructure pipeline, 11 of which are already in construction.
- 12.8 In July 2014, the European Commission published proposals as part of a review of resource and waste management policy and legislation, including key targets in EU waste legislation. The government is committed to the negotiation and implementation of proportionate EU agreements, and has made clear that it would not support new targets at an EU-level unless there is a clear economic and environmental case to do so.
- 12.9 There will now be a period of negotiation on the European Commission proposals which is expected to conclude between 2016 and 2018.
- 12.10 It is only once these negotiations have substantively concluded that the government expects to have sufficient clarity to decide what further action, including on infrastructure, will be necessary to meet any revision of the targets.

Longer term

- 12.11 In the longer term, the government wants to see businesses leading the way in resource use and management, increasingly realising the economic and commercial opportunities that arise from resource efficiency and tackling environmental challenge.
- 12.12 The government will continue to have a role to play. It will continue to work with local authorities, industry and other stakeholders to promote good practice and ensure businesses have the tools and the freedom to realise the benefits of moving towards a more circular economy

Further information

- 12.13 The infrastructure pipeline sets out details of major planned projects and programmes within the waste sector, including current status, projected construction start/completion dates and cost profiles (where available).
- 12.14 Details of individual PFI and PPP projects are available on local authority websites.

Key policy and delivery milestones

2015	3 waste projects in London, Surrey and Gloucestershire due to start construction
	4 waste projects due to be completed including in Shropshire, Barnsley and Wakefield
2016	8 waste projects due to be completed including in Merseyside, Buckinghamshire and Cornwall
2017	3 waste projects in North Yorkshire, North Lincolnshire and Derby due to be completed
2018	EU negotiations on new waste targets due to have concluded
	South London waste project due to be completed
2019	
2020	Deadline for meeting existing EU Landfill Directive targets

Project-specific dates are based on the infrastructure pipeline and are indicative of current plans. Some projects may be subject to finalisation of statutory processes. Final decisions on private-sector led projects will be taken by the project developer.

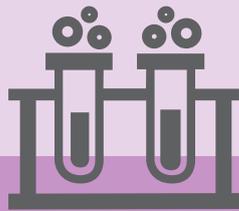
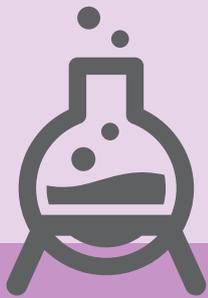
SCIENCE AND RESEARCH INFRASTRUCTURE

Progress since 2010

.....
Laboratory of
Molecular Biology
one of more than
20 new research
facilities opened
.....

..... 7
.....
new Catapults
established to
support
commercialisation
of research
.....

..... 27
.....
projects supported
through £400
million Research
Partnership
Investment Fund
.....



.....
Publication of the
Science and
Innovation
Strategy
.....

..... 2
.....
new Catapults
planned in Energy
Systems and
Precision Medicine
.....

.....
New
£225m
.....
Polar Research
Ship as part of
£5.9 billion science
capital spending
.....

.....
Francis Crick
Institute to be fully
operational in 2016
.....

Plan to 2020-21

INFRASTRUCTURE PIPELINE FOR SCIENCE £1.4BN

In construction £1bn

Future investment £0.4bn

Chapter 13:

Science and research

Objectives

- 13.1 The government aims to make the UK the best place in the world to do science and research.

Needs

- 13.2 Science is a crucial driver of productivity growth. The UK's ability to develop and commercialise new ideas, products and services will be critical to its economic success.
- 13.3 Yet the science and innovation landscape is changing. The scale of science is increasing, meaning long-term strategic investment by government and business is required. Sophisticated infrastructure and kit means that national, or in some cases international, facilities are often the only realistic solution. The global pace of research is increasing, meaning the UK needs to work harder to remain at the cutting edge. Science – and the way it is conducted - is also becoming more open, working across organisational, disciplinary and geographic boundaries and requiring greater collaboration between business, research and academic institutions, and government.
- 13.4 All this poses new challenges for the way we approach science infrastructure. Sustained and efficient future investment in scientific and research infrastructure is essential to ensure that UK research is able to remain internationally competitive.

Strategy

- 13.5 Recognising its importance, the government has taken tough decisions this parliament to increase spending on science at a time of falling budgets. This has delivered major programmes spanning both blue skies and applied science, and across the eight great technologies.
- 13.6 In addition to directly funding capital projects, the government continues to enhance funding at institutional and project level through Research Councils UK (RCUK) and the Higher Education Funding Council for England (HEFCE) to ensure a joined-up network of science infrastructure.
- 13.7 It also uses funding mechanisms and incentives to encourage greater collaboration between the research community, business and government. For example, the Research Partnership Investment Fund (RPIF) which gives awards to large-scale projects and can attract at least double public investment from private or charitable sources. Likewise,

Catapults are a network of widely-supported technology and innovation centres which aim to boost the UK's innovation capability in areas that have a large global market potential, bringing together public and private sector actors through a risk sharing model. Many of the Catapults support research into areas with direct implications for economic infrastructure sectors, including in future cities, offshore renewable energy, transport systems and digital communications.

Delivery plan

Key actions to 2020-21

- 13.8 The government has increased capital funding for science and research in real terms to £1.1 billion in 2015-16, and provided a long-term commitment which sees it growing in line with inflation each year to 2020-21.
- 13.9 The government recently consulted on proposals for long-term capital investment to 2020-21. In doing so, it set criteria for the prioritisation of publicly funded capital projects: affordability (including revenue costs), excellence, impact, skills development, and efficiency and leverage of other funding sources. Projects are also required to support the government's wider priorities: the 'eight great technologies', the industrial strategy and developing collaboration across disciplines and boundaries.
- 13.10 At Autumn Statement 2014, the government will announce which large projects have been selected in the first round of funding as part of this consultation. Shortly afterwards, it will publish its Science and Innovation Strategy, and full response to the capital consultation. These will build on the feedback received and set out how the long-term funding settlement for the sector will be used to support key priorities and projects.
- 13.11 The government will also continue to focus on delivery of its existing infrastructure commitments, including major science projects such as Diamond Phase III, the Pirbright Institute Development Phase 2 and the Francis Crick Institute.

Longer-term

- 13.12 The government's forthcoming Science and Innovation Strategy will set out the government's long-term objectives for the sector.

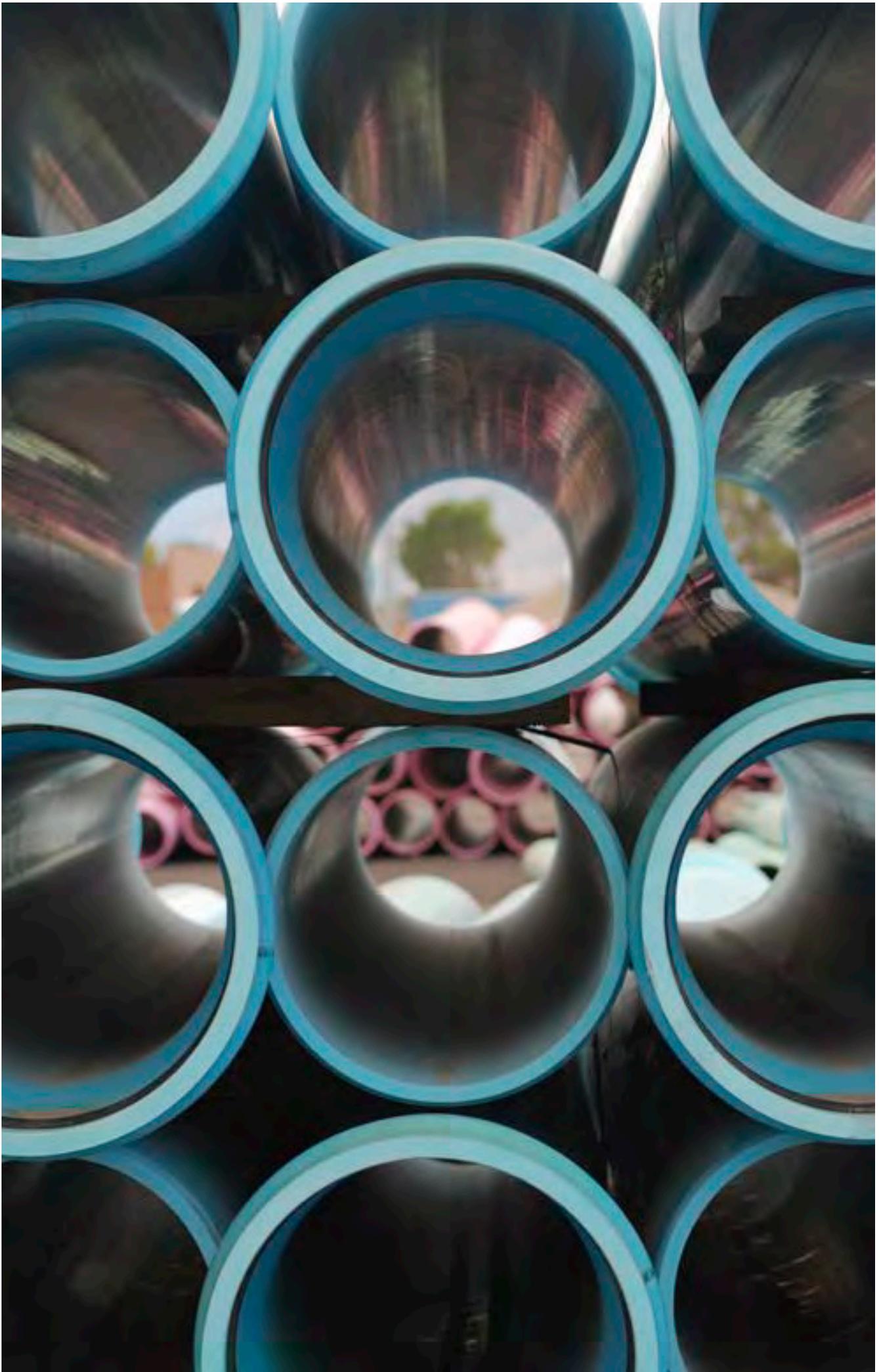
Priority projects

- 13.13 To support delivery of its objectives for the science and research sector, the government has included the following within its Top 40 priority infrastructure investments:
- Science Major Projects – focusing on the largest projects by capital value
 - Science and Innovation Catapults – focusing on physical infrastructure elements
- 13.14 For full details on the Top 40 selection criteria and how the government tracks and supports progress, please see Chapter 16, which also sets out the key projects and programmes within individual investments.

Further information

- 13.15 The infrastructure pipeline contains details of major planned projects and programmes within science and research infrastructure, including current status, projected construction start/completion dates and cost profiles (where available).





Chapter 14:

Financing UK infrastructure

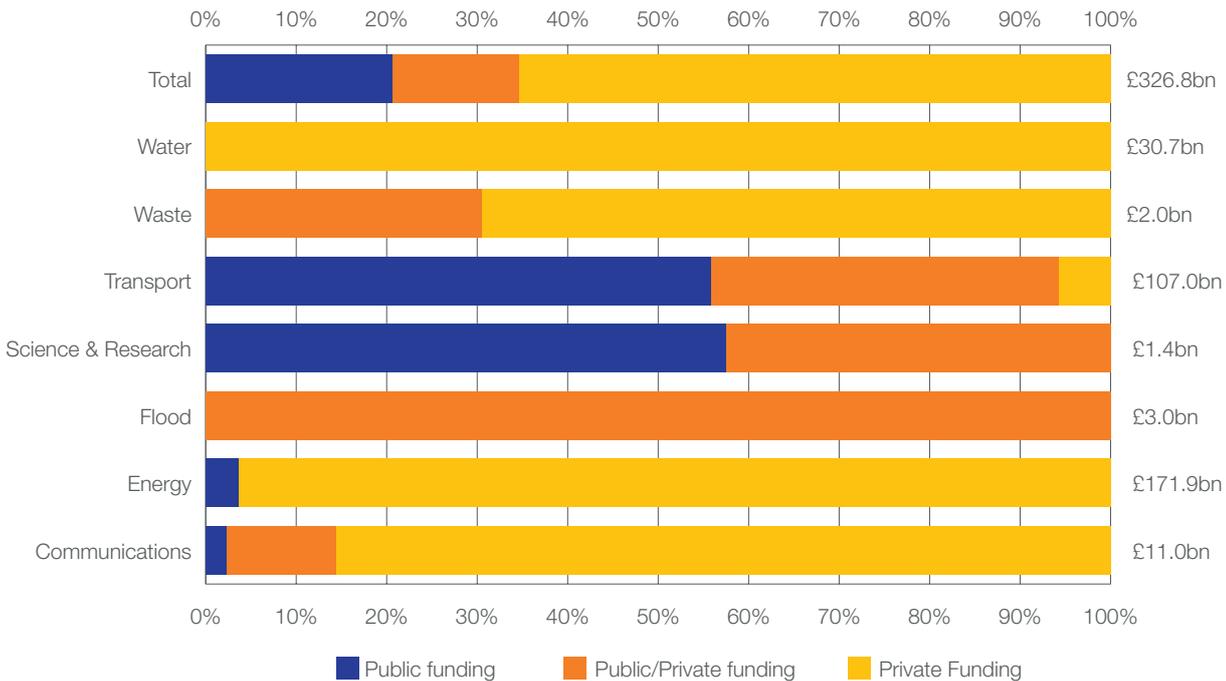
- 14.1 Securing the right funding and financing is critical to delivering UK infrastructure effectively and efficiently. Overall, analysis of investment trends show that investment in UK infrastructure has been increasing, from an average annual investment of £41 billion between 2005-6 and 2009-10 to an average annual investment of £47 billion between 2010-11 and 2013-14.¹
- 14.2 The infrastructure pipeline sets out details of around £327 billion of planned investment across the public and private sectors to 2020-21. This chapter sets out the details of how this investment will be delivered, and the opportunities for private investment in the 2014 infrastructure pipeline.

Funding infrastructure

- 14.3 Underpinning investment in UK infrastructure is the funding source which will ultimately pay for the asset. Funding is paid for in three main ways: from consumers through bills and user charging, through public spending raised from general taxation, or a combination of the two.
- 14.4 Chart 14.A below shows the proportion of public and private funding for infrastructure investment in the 2014 infrastructure pipeline.

¹ 2013-14 prices. HM Treasury estimates, based on published sources. These figures are not comparable to pipeline data presented in this document, which is a forward-looking bottom-up assessment of planned infrastructure investment. Please refer to 'Methodology and Sources for National Infrastructure Plan 2014' for further information on how these estimates are calculated

Chart 14.A: Funding mix of 2014 infrastructure pipeline, 2014-15 to 2020-21, by sector



Source: HM Treasury, Major Infrastructure Tracking Unit

- 14.5 The UK has been at the forefront of developing a model of infrastructure investment whereby responsibility for funding, financing and delivery is split between the public and private sectors. This means that 20.6% (£67.5 billion) of the planned investment in the infrastructure pipeline is entirely public investment, with a further 13.8% (£45 billion) representing a mix of public and private sources, and 65.6% (£214.4 billion) will be purely private investment.
- 14.6 The approach to delivering investment depends on the sector concerned, the nature of the asset, for example whether there are a defined set of users who will benefit and could reasonably be charged for usage, and takes into account the relative efficiency and fairness of different approaches to funding. The government’s objective is to ensure an open market for investment in UK infrastructure to maximise competition for investment and ultimately drive down the costs of delivering infrastructure. The model also seeks to allocate risk appropriately between the public and private sectors to ensure value for money is delivered for the taxpayer.
- 14.7 For example, the partnership funding policy for the floods programme prioritises investment on a transparent and objective basis. It increases certainty, local ownership and choice, and incentivises communities to reduce costs and maximise benefits. Alongside the £2.3 billion of government capital expenditure, the government expects to attract contributions from other sources, including the private sector, of around £600 million for the schemes within the 6 year programme.

Financing infrastructure

- 14.8 While the funding model determines the revenue stream that will ultimately pay for an asset, financing is the method of securing upfront capital investment which will get a project started and support associated jobs and economic growth. Predictability in the revenue stream enables finance to be made available to developers of an asset, so that the project can get underway.

Public financing

- 14.9 Where projects are publicly funded, this means that they are financed (in their entirety or in part) directly out of the agreed capital budgets of the relevant government department, local authority or arms-length delivery body.
- 14.10 Of the current UK infrastructure pipeline to 2020-21, £67.5 billion will come from public investment with a further £45 billion from a mix of public and private sources. All publicly funded elements of the infrastructure pipeline now represent a firm and specific government commitment. Details of new government funding commitments are set out in the previous sector chapters of this document.

Investment in the regulated sectors

- 14.11 A significant proportion of private investment in the infrastructure pipeline is in regulated sectors. The UK has pioneered a system of independent regulation for the following sectors of the economy: electricity and gas transmission and distribution; water; telecommunications; airports; and rail. While the specific approach varies between sectors, regulation is structured in a way that protects consumers, rewards efficiency and innovation, and gives investors the confidence to privately finance the infrastructure the UK economy needs.
- 14.12 Regulated companies will continue to require investment in order to both maintain existing infrastructure and construct large new assets, such as the Thames Tideway Tunnel. The infrastructure pipeline to 2020-21 includes £113.5 billion of investment in the regulated sectors.
- 14.13 The essential nature of network infrastructure means that demand for services is strong and expected to grow over time. Price controls and licence conditions are set by independent economic regulators and provide investors with a high degree of predictability about the extent of future profitability in the sector, which is free from political interference. This system of independent regulation has proved particularly attractive to traditionally long-term investors, such as pension funds.
- 14.14 Equity investment in the regulated sectors is made either directly in large publicly-listed regulated companies, or through share-holdings in the groups or investment funds that own regulated companies as part of their portfolio.
- 14.15 The capital-intensive nature of regulated industries, as well as the make-up of regulatory settlements, creates considerable opportunities for debt investment. Regulated companies commonly issue debt as fixed term interest-bearing bonds, or bonds linked to RPI as inflation is included in the regulatory settlement. Other forms of debt investment are also generally available including short-term debt such as commercial paper, and other financial instruments designed to match the company's future interest payments to the levels allowed in the price control settlement.
- 14.16 Moody's Investors Service (a credit rating agency) regards the regulatory regime for electricity and gas networks and water companies in Great Britain as amongst the most stable and predictable in the world, assigning the highest score (Aaa) for the relevant factor under its methodologies for the two sectors.

14.17 Developments in regulatory settlements continue to make regulated infrastructure networks an even more attractive place to invest. For example:

- in regulated energy networks, the length of regulatory settlements has extended from five to eight years; in addition, there is a mechanism to update this settlement annually with movements in the cost of debt and to set allowances for major projects agreed during the price control period; this removes the need to 'log-up' capital investments until the next price review period
- Ofwat and Ofgem have introduced new mechanisms to award 'enhanced status' (water) or 'fast-track' status (energy) to companies whose business plans are high-quality, ambitious, fully engaged with their customers and well justified; network companies that achieve this status are then subject to only a 'light-touch' regulatory review; this new mechanism reduces the 'regulatory burden' and reduces uncertainty for the companies demonstrating outstanding business plans and frees them to focus on delivering their business plans

14.18 The government is fully committed to the system of independent regulation for delivering the required infrastructure investment in the regulated sectors, while protecting consumers' interests. The stability of the UK economic regulation systems means that companies operating regulated networks in the UK are consistently regarded as stable and relatively low-risk. There should therefore be continued competition to invest in the regulated sectors, reducing the cost of capital, which is a positive outcome for consumers.

Private investment

14.19 As well as corporate investment in the regulated sectors, there is a further £130 billion of private investment in the non-regulated sectors of the infrastructure pipeline to 2020-21. For several sectors, in particular waste, ports, and oil and gas, financing is likely to be almost entirely provided by project developers on balance sheet – where investment is financed from the companies' own resources.

14.20 For other sectors, primarily in energy generation, balance sheet financing is also important. However, many developers in these sectors – particularly the large utilities – have had limited headroom for investment on balance sheet for some time. The opportunity for project financing is therefore likely to grow and involves raising long-term financing in the form of debt and equity to be repaid from the cash flows generated by the project once operational.

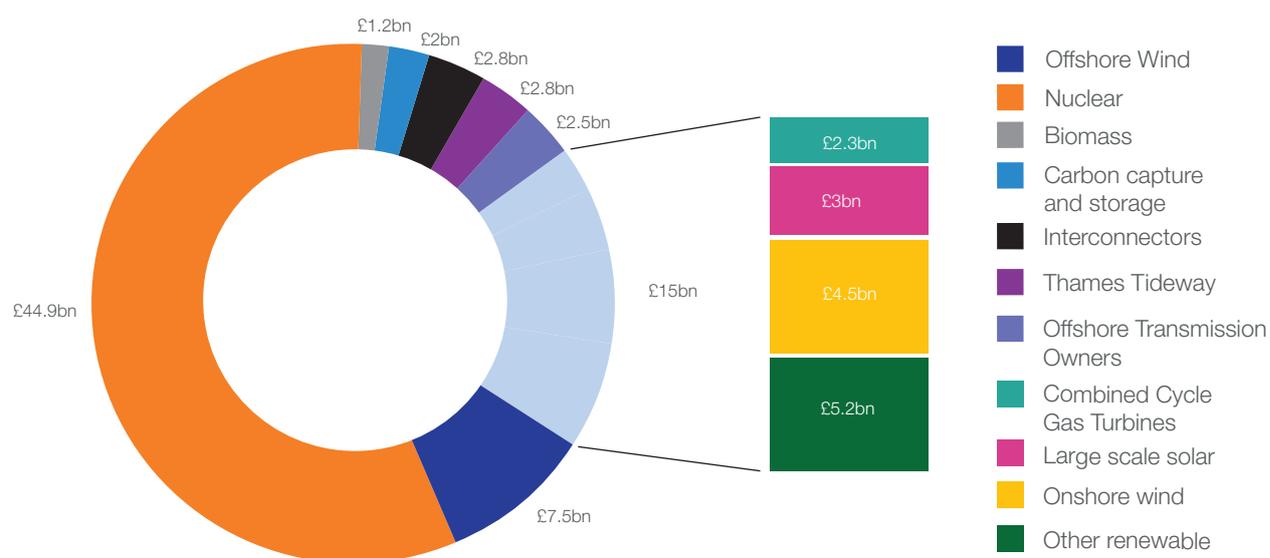
Breakdown of project specific finance opportunities to 2020-21

14.21 In sectors where some or all investment will be off balance sheet, there are potential investment opportunities in project finance. This includes energy generation, interconnection, offshore transmission, as well as one-off large scale projects like the Thames Tideway Tunnel.

14.22 In the finance update to NIP 2013, published in March 2014, the government set out a total of £125 billion of potential finance opportunities, including £52 billion in projects to 2019-20, and £73 billion beyond 2020. This assessment was based on the capital expenditure required for projects over the course of construction, often extending beyond 2020. For NIP 2014, the methodology has been updated, extending to include the 2020-21 financial year and to reflect the need for projects to have finance committed upfront. This means the full capital expenditure (capex value) of a project is allocated in the year that a final investment decision is expected, where this falls in or before 2020-21. This better reflects when investment will actually need to be committed by the market.

14.23 The stated value of the potential project finance opportunity to 2020-21 has therefore increased, as £31 billion has been brought forward from the post-2020 period into the current decade. This is due to the full capex value for 3 nuclear projects falling within the pre-2021 financing window. Taking into account our expectations on the use of corporate balance sheets in the sectors included, the total project financing opportunity to 2020-21 is therefore £79 billion, based on the updated methodology.² It should be noted that it is not the government's policy to pick the electricity mix. Ultimately the amount of investment in the various technologies will be driven by how each can meet our security of supply and low carbon ambitions at least cost to consumers. Furthermore, exact finance structures will ultimately be determined by the project sponsor in any given deal. The assessment provided in Table 14.1 of project finance opportunities, and structures is based on data in the 2014 UK infrastructure pipeline and engagement with developers.

Chart 14.B: Project finance investment opportunities in UK infrastructure to 2020-21



Source: HM Treasury

Please refer to 'Methodology and sources for National Infrastructure Plan 2014' for further information

² HM Treasury estimates. Please refer to 'Methodology and Sources for National Infrastructure Plan 2014' for further information

Table 14.1: Breakdown of project finance investment opportunities in UK infrastructure to 2020-21

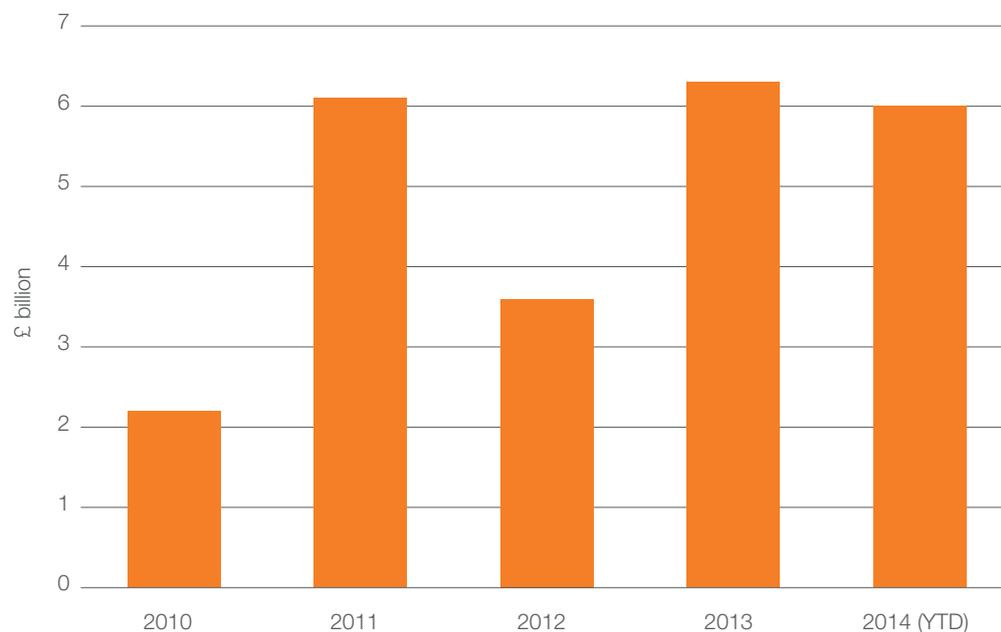
Nuclear	Investment to 2020-21: £45bn Investment opportunity: Up to £45bn Estimated Debt/Equity value: £22.5/£22.5bn	Specific projects:	Hinkley Point C – a 3.2GW facility in Somerset developed by NNB GenCo Moorside – a 3.6GW facility in Cumbria developed by NuGen Wylfa Newydd – a 2.7GW facility in Anglesey developed by Horizon Nuclear Power.
Offshore wind	Investment to 2020-21: £10.1bn Investment opportunity: Up to £7.5bn Estimated Debt/Equity value: £5.7/£1.9bn	Specific projects:	Beatrice – 664MW, Outer Moray Firth, SSE Renewables/Repsol Nuevas Energias Burbo Bank Extension – 258MW, Liverpool Bay, DONG Energy Dudgeon – 402MW, Norfolk coast, Statkraft/Statoil Hornsea – 1.2 GW, Yorkshire coast, DONG Energy Walney Extension – 660MW, Cumbrian Coast, DONG Energy
Carbon capture and storage (CCS)	Investment to 2020-21: ~ £3bn, including up to £1bn of government funding available. Investment opportunity: ~ £2bn	Specific projects:	Peterhead – a post combustion gas fired retro-fit CCS power station capable of capturing 1mt CO2 per year, Aberdeenshire, Shell with SSE Generation White Rose – a new 426MW oxy-fuel coal power station with CCS, capable of capturing 2mt CO2 per year, Yorkshire, Capture Power
Biomass	Investment to 2020-21: £1.2bn Investment opportunity: Up to £1.2bn Estimated Debt/Equity value: £0.7/£0.5bn	Specific projects:	Tees Renewable Energy Plant – 299MW biomass plant, Teeside, developed by MGT Teeside Lynemouth Biomass conversion – 420MW coal to biomass conversion, Northumberland, Lynemouth Power (RWE Npower)
Interconnectors	Investment to 2020-21: £5.3bn Investment opportunity: £2.8bn Estimated Debt/Equity value: £1.6/£1.2bn	Specific projects:	ElecLink – 1GW UK-France, Groupe Eurotunnel/Star Capital Partners FAB –1.4GW France-Alderney-Britain, RTE/Alderney RE/Transmission Investment Greenlink –0.5GW GB-Ireland interconnector, Element Power IFA2 – 1GW UK-France, National Grid and RTE NEMOLink – 1GW UK-Belgium interconnector, National Grid and Elia NSN –1.4GW UK-Norway interconnector, National Grid and Statnett. Viking Link – 0.7-1.4GW UK-Denmark, National Grid and Energinet.dk
Thames Tideway Tunnel	Investment to 2020-21: £4.2bn Investment opportunity: Up to £2.8bn Estimated Debt/Equity value: Up to £1.8bn/Up to £1bn	Specific projects:	Thames Tideway Tunnel – a 25km sewer under the Thames in London being developed by Thames Water
Other energy investment	Investment to 2020-21: Up to £18bn Investment opportunity: Up to £18bn Estimated Debt/Equity value: £13bn/£5bn	Specific sectors:	Offshore Transmission of up to £2.5bn (est. £2.25bn debt/£0.25bn equity) Large scale solar of up to £3bn (est.£2.4bn debt/£0.6bn equity) Onshore wind of up to £4.5bn (est. £3.6bn debt/£0.9bn equity) Gas generation of up to £2.3bn (est. £1.2bn debt/£1.2bn equity) Other renewable generation of up to £5.2bn (est. £3.1bn debt/£2.1bn equity)

Note: Values may not sum exactly due to rounding

Sources of private finance for the 2014 infrastructure pipeline

14.24 The UK continues to be an attractive place to invest. Nabarro LLP's 2013 infrastructure index assessed the UK as number one for attracting investment. Recent trends suggest both debt and equity markets are increasingly willing and able to invest in UK infrastructure.

Chart 14.C: Value of private sector investment transactions in UK infrastructure



Source: HM Treasury analysis, using InfraDeals Transactions Database

Please refer to 'Methodology and Sources for National Infrastructure Plan 2014' for further information

Equity

14.25 Around £33 billion of project investment opportunity is estimated to be equity investment. Equity in UK infrastructure is provided by a range of entities in the market: developers, institutional investors and funds, as well as the supply chain.

14.26 The government expects **developers** to continue to be significant providers of a project's equity. However, large utilities remain balance sheet constrained as many are still highly leveraged, which restricts their capacity to make large-scale greenfield investment.

14.27 Therefore, **institutional investors** such as pension funds and insurance companies are also a potential source of equity investment, investing either directly or through equity funds. Institutional investors are particularly relevant for infrastructure as they are looking for longer-term investments to match defined liabilities that are realised when claims are made for pension or insurance purposes, and government bonds are less attractive as yields are currently low.

14.28 **Equity funds** are playing an important role in allowing developers to recycle their capital by taking stakes in projects. For example, in 2014 Greencoat and Swiss Life acquired developer AES's UK onshore wind portfolio for £175 million, and Equitix acquired a 50% stake in GDF Suez's 70MW UK wind portfolio. The new €150 million Allianz Renewable Energy Fund, managed by Allianz Global Investors, recently made its first investment in a solar farm north-east of London.³ However this investor class still tend to invest in sectors where there is low regulatory, construction and technology risk.

14.29 There is also equity provision in UK infrastructure from the **supply chain**. Recent examples include equipment manufacturers such as Siemens, where Siemens Project Ventures will invest in a project if there is a strategic reason to do so, ie where it benefits from a supply contract. On the basis of this strategy, Siemens invested in both Gwynt-y-Mor and Lincs offshore wind farms.⁴

14.30 Equity investment in UK infrastructure is unlikely to be delivered by UK institutional investors, existing commercial banks and funds alone: **overseas investors** have a role to play. This is about ensuring deliverability, driving down the cost of capital by broadening the appetite for UK infrastructure, opening up our funding markets, and liberalising our energy markets.

14.31 The UK has attracted over £18 billion of large-scale equity investments in UK infrastructure projects since May 2010.⁵ Recent examples are shown in Table 14.2.

Table 14.2: Examples of foreign investment in UK infrastructure

Date	Investor	Country	Investment (% stake in project)
Jun '14	Antin IP	France	Central Area Transmission System (Cats) (63%)
Aug '14	Marubeni	Japan	Westermost Rough Offshore Wind (25%)
Sep '14	Ontario Teachers' Pension Plan (OTPP)	Canada	Bristol Airport (49%)
	Abu Dhabi Future Energy Company (Masdar)	UAE	Dudgeon Offshore Wind (35%)
Oct '14	Ferrovial	Spain	Aberdeen/Glasgow/Southampton Airports (50%)
Nov '14	Copenhagen Infrastructure Partners	Denmark	Beatrice Offshore Wind (25%)

14.32 The UK reached a total of \$1,606 billion (£975 billion) last year in Foreign Direct Investment (FDI) stock, which is almost \$500 billion more than any other European country. Over half of the £975 billion FDI in the UK in 2013-14 is in energy or other infrastructure schemes, also creating 31,261 jobs.⁶

³ InfraNews

⁴ InfraDeals

⁵ HM Treasury

⁶ UNCTAD World Investment Report 2014.

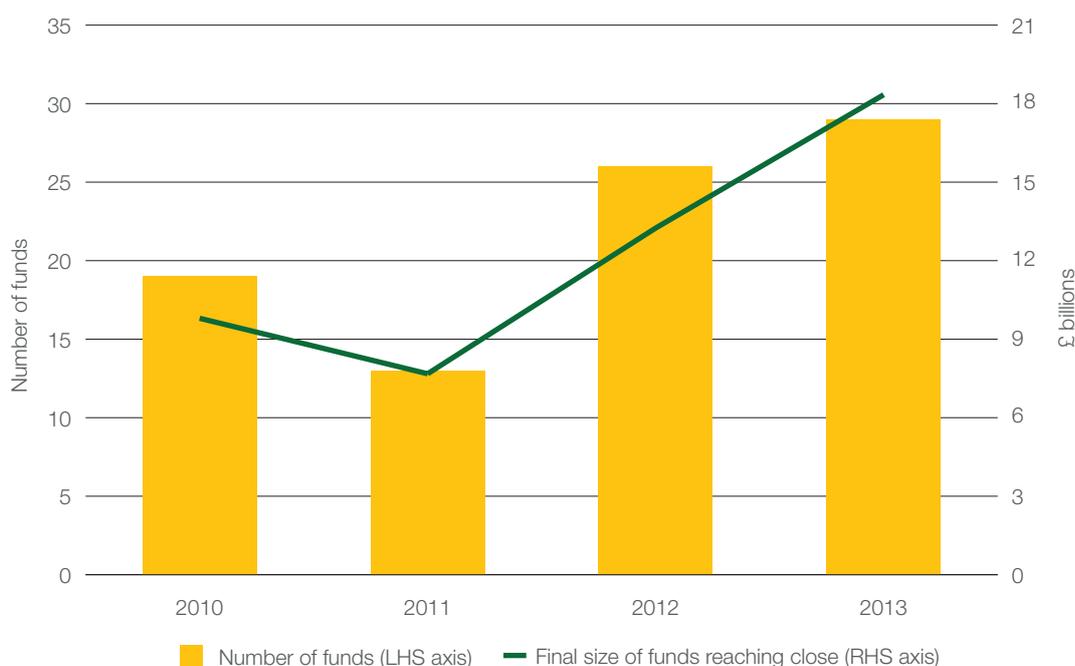
Debt

14.33 Around £45 billion of the project investment opportunity is estimated to be debt financed. Despite contraction in lending activity as a result of the financial crisis, **commercial banks** are still significant players in infrastructure finance, and are again reporting increasing capacity to provide the longer-term lending required for infrastructure. According to the Deloitte Infrastructure Investors Survey 2013, many investors expect the terms and availability of debt financing for infrastructure to continue to improve over the next two years.⁷ There is increasing liquidity in the debt market for new build assets provided that the investment proposition is well structured and the risk profile is appropriate. In the sectors that are more established such as onshore wind and solar, there is debt financing available for UK infrastructure projects in both construction and operational phases. Tenors available are also improving with Japanese banks in particular offering up to 30 years.⁸ This is also reflected in debt terms that are again very favourable for investors.

14.34 Recent activity in sectors perceived as more risky, such as offshore wind, has shown some appetite for lending with longer tenors (particularly non-UK lenders) and lower margins. The syndication market has also returned where the project finance debt requirement is underwritten by a small number of lead banks who subsequently pass on some of their exposure to a second tier of banks. Since the financial crisis this market had been largely close and only club deals where the lead banks take and hold their respective commitment had been possible. An example of a recent syndication is the c.£290 million of senior debt raising by Antin to help fund its acquisition of a stake in the Central Area Transmission System (CATS) gas transmission network for the North Sea.

14.35 There are an increasing number of infrastructure debt funds either currently active or being set up. In 2013, ten unlisted infrastructure debt funds reached a final close, raising a record \$8.1 billion⁹ globally.

Chart 14.D: Unlisted infrastructure equity and debt funds with potential to invest in the UK



Source: HM Treasury analysis, using Preqin data

Note: Please refer to 'Methodology and Sources for National Infrastructure Plan 2014' for further information

⁷ Infrastructure Investors Survey, Deloitte, 2013

⁸ HM Treasury market engagement, 2014

⁹ The Importance of Infrastructure Debt, Preqin, May 2014

- 14.36 As show in Chart 14.D, the scale of equity and debt infrastructure funds with the potential to invest in the UK is increasing. However, appetite in both the debt and equity markets is strongest in established lower risk sectors where assets are operational, and evidence suggests that banks will take construction risk in more established sectors like solar and onshore wind. In general, appetite for less established sectors such as offshore wind is currently confined to around six to eight lenders which limits the size of deals that can be comfortably funded by banks.
- 14.37 However the 600MW Gemini offshore wind project in the Netherlands shows that significant finance can be raised, delivering €2 billion of senior debt with €800 million at risk, from 12 commercial banks and the **European Investment Bank (EIB)**, involving the support of three **export credit agencies (ECA)**.¹⁰ Large deals in sectors such as this, particularly greenfield ones, broadly all involve some public backing either by EIB or ECAs or both. For the most risky and large-scale projects such as nuclear these are unlikely to be financed currently without government support measures such as the UK Guarantee Scheme.
- 14.38 To enable projects to be financed, there has been an emergence of alternative financing structures for infrastructure projects in the form of incorporated or unincorporated joint ventures. For example, in the UK offshore wind sector, DONG Energy – who is the developer for 4 offshore wind projects in the UK – aims to bring in a 50% joint venture partner within 12 months of the final investment decision, ie still during the construction period. The joint venture partner may decide to project finance their part of the investment and would normally aim to raise this finance as soon as practicable after entering the joint venture. In these structures DONG Energy has taken a flexible approach to construction risk. This together with the ability of the joint venture partner to borrow against its share of the project revenues creates a viable structure for attracting project finance in a relatively higher risk/return sector. A recent example of an incorporated joint venture structure is the offshore wind farm Westermost Rough (see Box 14.A).

Box 14.A: Securing project financing: The Westermost Rough Example

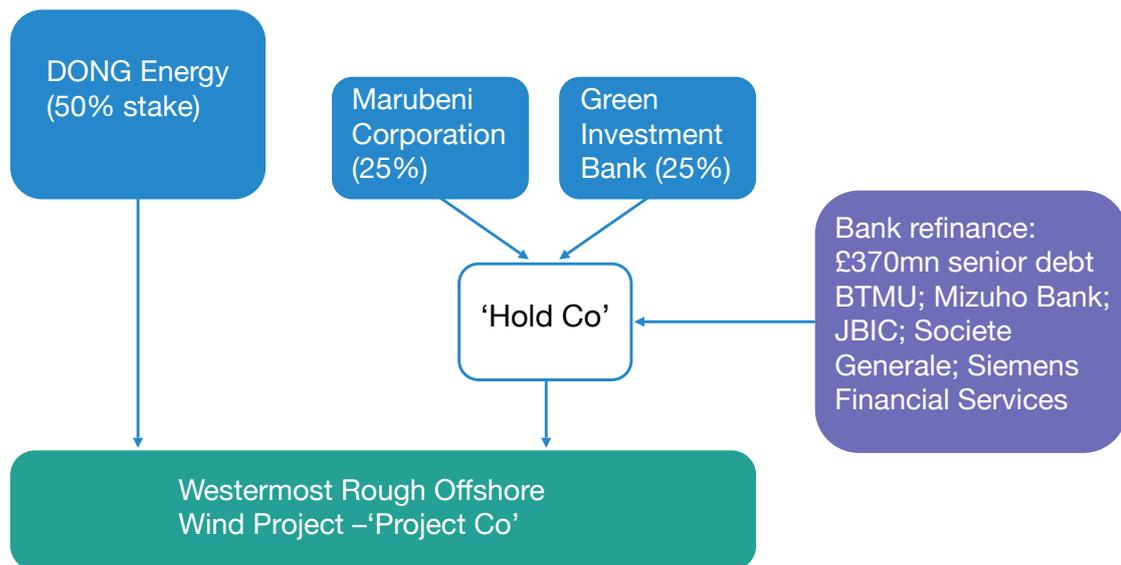
Westermost Rough is a 210MW wind farm off the coast of Yorkshire which was part of the Round 2 offshore wind farm tendering process. In 2007, DONG Energy became the developer of the project and in March 2014, after construction had started, sold a 50% stake to the Green Investment Bank (GIB) and Marubeni Corporation. In August 2014, GIB and Marubeni corporation refinanced most of their investment on the basis of its share of the project revenues by signing an agreement with banks for £370 million of senior debt.

GIB and Marubeni obtained debt financing from lenders including BTMU, Mizuho Bank, Japan Bank for International Cooperation, Societe Generale and Siemens Financial Services as shown in Chart 14.E.¹¹

¹⁰ InfraDeals

¹¹ InfraDeals

Chart 14.E: Incorporated joint venture structure for Westernmost Rough



Refinancing

- 14.39 Improvements in the market are also evidenced by the refinancing market. For example, DfT has issued refinancing notices on two significant transport projects: Intercity Express Programme Great Western Rolling Stock (c.£1 billion of commercial debt) and Thameslink rolling stock (c.£1.2 billion of commercial debt) and is actively considering opportunities to refinance and deliver value for the taxpayer on other projects. This reflects the reducing price of credit in the market making refinancing attractive for some infrastructure projects. There has also been significant debt refinancing activity in renewable energy. In addition to developers' equity being recycled by equity funds, developers are also taking out their equity by issuing debt as in the Westernmost Rough example mentioned above. Another example is Lightsource Renewable Energy, one of the UK's biggest solar developers, which has secured almost £200 million in project finance in the last year to support the refinancing of operational solar parks.¹²
- 14.40 With some positive trends in commercial bank lending, debt and equity fundraising and refinancing, as set out above, the government expects appetite for private investment in UK infrastructure to continue to improve, and financing for the infrastructure pipeline to be available. However the government recognises the challenges to securing finance and has put in place a number of policy measures and finance initiatives to promote private investment in UK infrastructure.



¹² InfraDeals

Action to support private investment

Box 14.B: Policy measures to support energy investment

New legally-binding Contracts for Difference (CfDs) are supporting investment in low-carbon energy generation. Under a CfD, the electricity generator is paid the difference between the ‘strike price’ – a price for electricity reflecting the cost of investing in a particular low-carbon technology – and the ‘reference price’ – a measure of the average market price for electricity in the GB market. It gives greater certainty and stability of revenues to electricity generators by reducing their exposure to volatile wholesale prices, whilst protecting consumers from paying for higher support costs when the market electricity prices are high. In April 2014, the government awarded investment contracts (early Contracts for Difference) to eight major renewable electricity projects. The first full CfD contract allocation round is due to conclude in early 2015. The budget for the first CfD allocation round is now £300m. The government has held back a significant part of the budget for future allocations within the Levy Control Framework cap. CfDs are available to a range of low-carbon energy generation including nuclear, offshore wind, and biomass.

The government is providing £1 billion of public funding for carbon capture and storage (CCS) technology through a commercialisation competition. £100 million has been set aside for the Peterhead and White Rose CCS projects to undertake FEED (Front End Engineering and Design) studies. In late 2015 the companies will take final investment decisions with the government taking decisions shortly afterwards.

The government recognises that investment in new gas plant capacity will be needed as back-up for less flexible renewable electricity generation to meet demand. The government is supporting investment in these assets via the Capacity Market, providing payment beginning in 2018-19 for reliable sources of capacity, alongside their electricity revenues, to ensure they deliver energy when needed.

Development of offshore projects requires development of offshore transmission infrastructure. Ofgem has introduced a stable and attractive regulatory regime for offshore transmission to secure revenues for Offshore Transmission Owner Assets (OFTOs), which has already secured financing from a wide range of investors in these assets. Ofgem grants licences to operate new offshore transmission assets via a competitive tender process, driving down costs. This innovative, competitive approach has saved generators and consumers £200-£400 million over the first tranche of projects.¹³

Increasing interconnection can reduce bills for consumers. For interconnectors between the UK and other countries, the UK has historically relied on merchant interconnectors, where private developers decide where to build interconnection (and how much to build) and recover their capital and returns by exploiting the price differences between interconnected markets. To support interconnection, Ofgem has launched a new “cap and floor” regulatory regime. Private developers still decide the location and capacity of interconnectors, but consumers guarantee a floor to the developer’s revenues in downside scenarios, in exchange for a cap on the revenues in upside cases. In addition, today the government is announcing that interconnectors will have access to the capacity market from 2015 to provide clarity and confidence to investors.

¹³ <https://www.ofgem.gov.uk/publications-and-updates/consultation-cepabdo-evaluation-offshore-transmission-tender-round-1-benefits>

Finance initiatives

14.42 While the trends in investment are showing signs of improvement and the government has introduced policy to support investment in energy generation and transmission, there are still challenges in securing finance, particularly given the large scale and perceived risks of some types of infrastructure. The government has therefore taken a number of steps to stimulate a range of different types of private investment in UK infrastructure.

14.43 The UK Guarantees Scheme (UKGS) was launched in 2012 to support investment in UK infrastructure. The government will engage with industry on the future of the UKGS, which is currently due to close in 2016.

Box 14.C: The UK Guarantees Scheme

UK flagship vehicle, with £40 billion worth of guarantees, to provide certainty to investors.

Government is using the strength of its credit rating to facilitate the provision of debt.

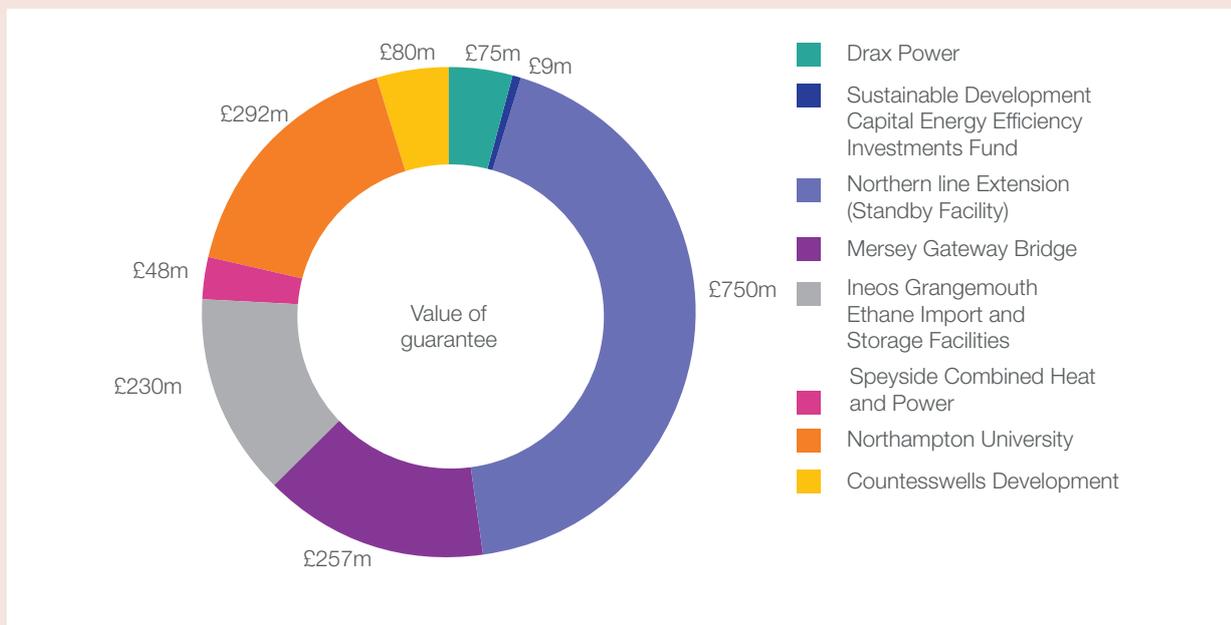
39 projects with a total capital value of £34 billion pre-qualified for the scheme.

7 guarantees and 1 standby facility signed or approved to date with a value of over £1.7 billion, supporting projects worth almost £4 billion.

In 2014, UKGS has underwritten £827 million of senior debt for greenfield projects in the UK – more than any other commercial lender (InfraDeals).

During 2014, over 50 institutional investors have funded infrastructure projects as result of UKGS.

Chart 14.F Guarantees and facilities signed or approved under the UK Guarantees Scheme to date



Source: HM Treasury

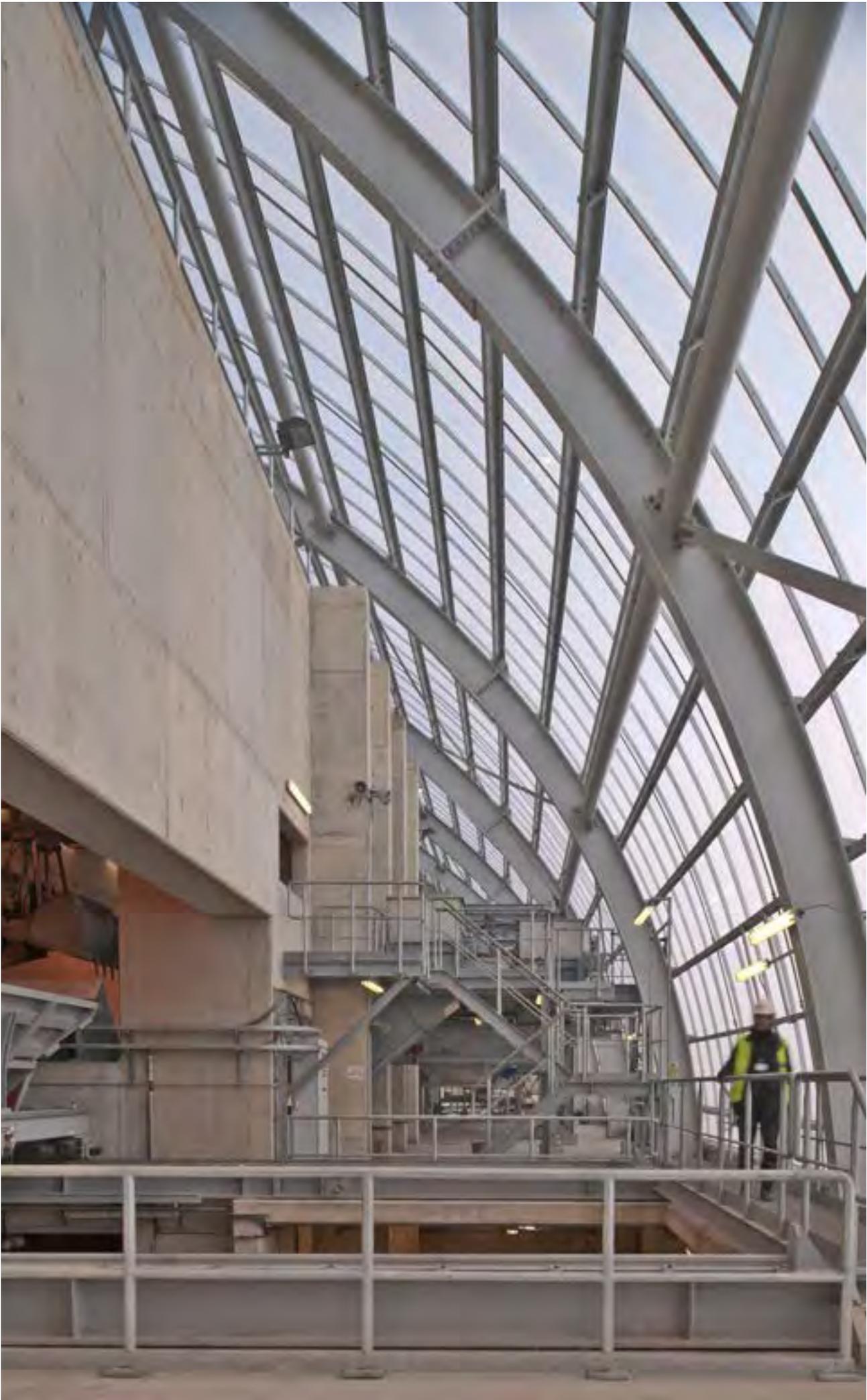
Please refer to 'Methodology and Sources for National Infrastructure Plan 2014' for further information

- 14.44 **The Green Investment Bank (GIB)** is the world's first investment bank dedicated to accelerating the transition to a green economy. With committed funding of £3.8 billion, the GIB is providing debt solutions to innovative, environmentally friendly sectors where the risk profile, particularly in innovative technologies, means there is currently a lack of sufficient support from private markets. The GIB has invested more than £1.4 billion in over 35 projects in over 200 communities across the UK, working with over 70 co-investors. In June 2014 the GIB announced plans to launch a £1 billion fund to acquire equity stakes in operational offshore wind projects in the UK. Equity investments in operational wind farms can offer a compelling opportunity for investors seeking long-term, inflation-linked returns and the GIB is now seeking a suitable group of strategic, long-term co-investors to participate in this innovative capital raising exercise.
- 14.45 The government is also encouraging greater involvement of institutional investors in UK infrastructure.
- 14.46 The government set up the **Insurers' Infrastructure Investment Forum** to give members of the Association of British Insurers (ABI) a direct communication link to government, exploring ways to maximise opportunities for insurance fund managers to invest in UK infrastructure debt instruments via the capital markets. In December 2013, and as a result of the new certainty over Solvency II, six insurers – Aviva, Friends Life, Legal & General, Prudential, Scottish Widows and Standard Life – said they will work alongside partners with the aim of delivering £25 billion of investment in UK infrastructure in the next five years.



- 14.47 As part of the **PF2 Priority Schools Building Programme** the Education Funding Agency (EFA) has developed and procured an innovative senior debt finance vehicle which will fund all five batches of schools under the programme. One of the key features of the **debt aggregator** is the ability to aggregate total financing requirements across all of the batches but without common ownership of equity at the project level. By aggregating the funding requirements, the EFA has been able to access cheaper sources of finance, and streamline its procurement by using standardised finance documents for each batch of schools. EFA has now signed a Funding Procurement Agreement with the aggregator which is a wholly owned subsidiary of International Public Partnerships Limited, with services provided by Amber Infrastructure Limited, and senior funding provided by Aviva and the European Investment Bank. PF2 is a public private partnership model that is used primarily for social infrastructure projects and where government invests equity alongside the private sector to promote closer partnership working.
- 14.48 The **Pensions Infrastructure Platform (PiP)** was announced in 2011 to help make infrastructure investment more accessible to UK pension schemes. HM Treasury signed a memorandum of understanding with the National Association of Pension Funds (NAPF) and the Pension Protection Fund (PPF) to assume an advisory role in establishing the PiP. In February this year, the PPP Equity PIP LP fund was launched. This first PIP fund invests in UK PPP/PFI project equity and is being managed by Dalmore Capital. It has a hard cap of £600 million and currently has commitments of £348 million. Two thirds of this has already been invested into 41 separate projects. In September, PiP appointed its first Chief Executive to accelerate development of the organisation and to promote it to all UK pension schemes. Additional investment funds and co-investment opportunities are being worked on with the support of the PiP's UK Founding Investor pension schemes. PiP retains its original £2 billion target for investment into UK infrastructure by UK pension schemes.
- 14.49 At the European level, the **European Investment Bank (EIB)** is another source of finance for infrastructure projects in the UK. In recent years the EIB has significantly increased its support for long-term investment across a range of sectors in the UK. Record lending last year provided nearly £5 billion for investment in water and energy infrastructure, support for improved rail and port facilities, loans to support new hospitals, housing and development of higher and further education across the country. The EIB has just agreed its largest ever single loan for any project in Europe, £1.5 billion for investment in energy infrastructure by National Grid. The National Grid loan is for a range of capital investments, including the Western Link and London Power tunnels, as well as upgrading transmission infrastructure across the country. Under the EU's recently announced Investment Plan for Europe, further work is underway to use EU resources and institutions to facilitate €315 billion of investment across Member States. The infrastructure pipeline has enabled the UK to be on the front foot in proposing up to £60 billion of investment that could be eligible for support from the proposed €315 billion EU Investment Plan. The UK's approach of producing a clear, rigorous pipeline across all infrastructure sectors is seen as an exemplar for other EU countries looking to identify planned investment and engage the private sector.





Chapter 15:

Planning, performance and delivery

Box 15.A: Announcements on planning, performance and delivery

- **Compulsory Purchase Reforms** – proposals will be published for consultation at Budget 2015 to make processes clearer, faster and fairer, with the aim of bringing forward more brownfield land for development
- **National Transport Policy** – the government plans to lay the National Networks National Policy Statement before Parliament this month for consideration and a formal vote
- **Establishing the principle of development** – the government will take forward measures to ensure that the principle of development need only be established once
- **Section 106 negotiations** – the government will take steps to speed up section 106 negotiations, to reduce delays to the planning process
- **Speed of decisions (DCLG)** – the government will keep the speed of major decisions under review, with minimum performance thresholds increasing to 50% of major decisions made on time as performance improves

15.1 Since 2010 Infrastructure UK has worked closely with other government departments and agencies, the construction industry, regulators, clients and promoters of projects to drive improved infrastructure delivery and performance across both the public and private sectors. Its focus now is to build on this success, and the success of major projects like the Olympics and Crossrail, in addressing the next phase of delivery challenges.

Improving government client-side capability

15.2 Since 2010, the government has successfully transformed its approach to planning, tracking and delivering its infrastructure programme. This includes:

- using the NIP as a tool for driving delivery of the government's infrastructure agenda, including through the development of a clear set of priority investments (the 'Top 40') with a strong link to the government's overall strategy and objectives in those sectors
- establishing a new Major Infrastructure Tracking (MIT) team within Infrastructure UK to professionalise its approach to programme managing delivery of the government's infrastructure priorities; this includes a more robust and reliable pipeline and much improved monitoring of delivery progress and risks across the different infrastructure sectors, and an enhanced ability to identify where strategic interventions may be required

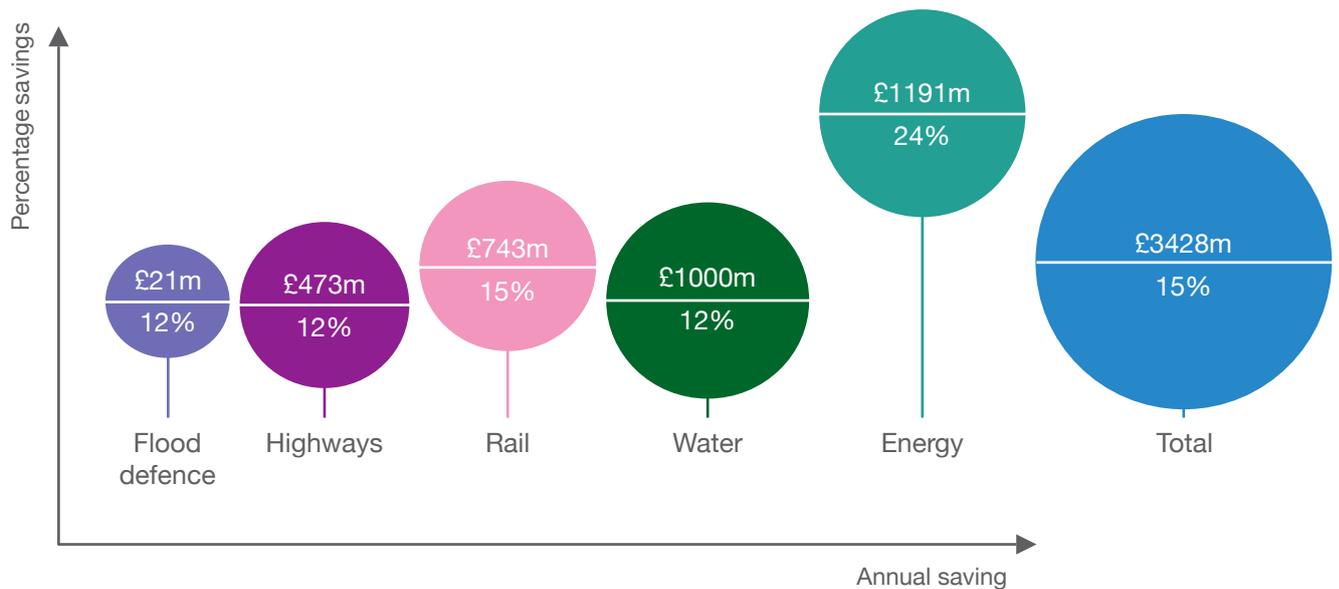
- deploying commercial specialists from IUK alongside government departments to help secure the contractual arrangements for delivery of critical infrastructure projects, including: Mersey Gateway Bridge, the Northern Line Extension to Battersea, rural broadband, Thames Estuary (phase 1), and ongoing negotiations for Hinkley Point C, Thames Tideway Tunnel, Ebbsfleet Garden City and High Speed Two
- creating a dedicated Cabinet Committee for infrastructure, chaired by the Chief Secretary to the Treasury and including Ministers from all the key infrastructure Departments, which oversees progress on the infrastructure programme and agrees early actions to address any obstacles to delivery
- utilising the expertise of key industry stakeholders to help deliver the NIP through the creation of the National Infrastructure Plan Strategic Engagement Forum (NIPSEF); through NIPSEF, the government has developed a strategic dialogue with the finance, asset owner, supply chain and business communities, allowing it to understand industry views, take advice on barriers to delivery and better communicate actions the government is taking
- improving the commercial capability of key infrastructure departments (DFT, DECC, DEFRA and DCMS), through Lord Deighton's work on Infrastructure Capacity Plans and the introduction of a new presumption that significant economic infrastructure projects and programmes should be supported by specialist delivery units with the appropriate commercial expertise

15.3 The government will continue to embed these changes, and ensuring that the right capability and systems are in place for successful delivery will remain a key focus at all levels of government.

Working with industry to reduce costs and drive performance

Progress to date

- 15.4 In 2010, Infrastructure UK launched the Infrastructure Cost Review, an investigation into the drivers of higher costs and poor delivery outcomes in the UK. The investigation led to a three-year joint programme with industry to improve infrastructure delivery in the UK. The programme sought to improve pipeline certainty, promote collaborative behaviours and innovation and reduce the costs of delivery by around 15%.
- 15.5 Working with the Infrastructure Client Group (ICG), a group of leading clients from across sectors, the programme has reported annual savings of over £3 billion (as set out in Chart 15.A) and set in place a number of improvements that are helping to improve delivery of our key infrastructure projects.
- 15.6 In 2011, the government published the first infrastructure investment pipeline, setting out in one place the investment plans of infrastructure clients from the public, private and regulated sectors, providing a holistic view of the demand for infrastructure investment across sectors and regions. This allows industry to match their business planning with projections of future demand, enabling industry to invest strategically for the market, rather than simply tactically for a project. The breadth and depth of the pipeline, which is now published twice annually, has increased year-on-year and the government is committed to improving its utility to industry.

Chart 15.A: Savings as measured in the Cost Review

Source: HM Treasury

15.7 The Cost Review¹ was one of a number of studies to identify the need for a greater focus on the early stages of projects to ensure that they are set up to succeed. The government has worked with industry to develop a “Project Initiation Routemap”. It provides a framework to help identify and address many common and recurring problems during the early stages of projects. Following an industry-wide consultation in 2013, the government published in July 2014 a refreshed and improved version of the Routemap tools and modules.

15.8 Eleven Routemap assessments have been undertaken for nine different clients in five sectors, helping to support successful project delivery on major infrastructure projects worth over £60 billion.

“Using the Routemap is like holding a mirror up to yourself. It helps you to understand the environment you have and create the one you need”

Andy Mitchell, CEO Thames Tideway Tunnel

15.9 The Cost Review study also set out opportunities to improve procurement outcomes through earlier engagement with supply chains and a more collaborative approach. In October 2014 new guidance was published through the ICG providing support to those wishing to use more collaborative supply chain engagement through alliancing.

15.10 As a result of increasing levels of investment in infrastructure across the public, private and regulated sectors, there is a growing pressure on input costs and demand for skilled workers.

15.11 The Construction Skills Network forecasts overall construction employment rising from 2.54 million in 2014 to 2.73 million in 2019. At the same time, a high proportion of those currently employed in key sectors of the industry will soon retire.² These factors suggest that, without appropriate action, the industry could face a skills shortage.

¹ Infrastructure UK Cost Review Report, HM Treasury, 2010

² In the power sector, an estimated 50% of current employees are set to leave the sector by 2023, and in rail, 20% of the workforce is over 55

15.12 The government and industry are undertaking a number of initiatives to address skills supply issues that are already well evidenced. These include:

- EngTechNow scheme, aiming to increase “Engineering Technician” professional registrations
- support through BIS competitive funds and the National Colleges programme to develop skills capacity
- £30m fund established by BIS which seeks to increase the supply of engineers, especially female engineers
- individual client led programmes and Joint Ventures – mainly specialist colleges such as the Tunnelling Academy and similar initiatives in highways, power, and flood defence

15.13 The Infrastructure Carbon Review³ recognised the potential benefits of considering whole life carbon as a driver of lower lifetime costs. The government, infrastructure clients, and suppliers have agreed to incorporate carbon reduction objectives within their infrastructure projects and programmes by 2016. The government will also work alongside the Green Construction Board to develop a new carbon standard.

Key actions to 2020

15.14 Feedback from industry – both clients and suppliers – suggests that there are further opportunities for improvement. The next stage of the Infrastructure Cost programme was launched in October 2014. The refreshed programme embeds further government’s partnership with industry through the Infrastructure Client Group and will focus on the following areas:

- **improving pipeline visibility and certainty:** the pipeline will only maximise its effectiveness if it gives the supply chain the confidence to invest; the government will continue to develop the pipeline and how it is used to monitor performance, and will work with delivery bodies and clients to ensure that the investment pipeline flows through to the supply chain in work packages; it will also continue to promote the development of more granular local pipelines and delivery plans such as those already being developed in the North West, West Midlands and London
- **whole life planning and cost control:** the roads and flood defence programmes are already building on the benefits of long-term funding, by adopting best practice from private and regulated sectors; IUK will continue to work with departments and industry to support the adoption of improved asset management and whole-life principles alongside the ongoing ICG work on carbon reduction, risk management and standards
- **improving project initiation:** the government will continue to extend the implementation of the Routemap across the Top 40 projects and will incorporate it into the Major Project Authority’s assurance and approval processes; it will also make it a tool available to LEPs in implementing their Strategic Economic Plans
- **improving procurement:** building on work of the Infrastructure Alliancing Group, an overarching set of objectives and principles is being developed to drive smarter, faster and more effective risk allocation in procurements; these objectives will be underpinned by measures to embed alliancing best practice and collaborative working; consideration will also be given to how procurement can be used appropriately to encourage

³ Infrastructure Carbon Review, HM Treasury, November 2013

investment in innovation and skills and to developing a standardised approach to measuring and sharing information on supplier performance

- **supply chain productivity and skills:** the government is investing to deliver the key skills required to meet the requirements of the infrastructure pipeline and improve delivery productivity; the government will shortly set out more details around the National Colleges programme which will create high status technical training institutions, targeting critical skills gaps; the government has announced its intention to create a National College for High Speed Rail, a college for onshore oil and gas to support the Shale industry and a National Nuclear College; further national colleges are expected to be forthcoming in response to the recent call for engagement; to support further action and coordination across the infrastructure sector and training providers, IUK is using the infrastructure pipeline to build a stronger evidence base of expected demand and the potential skills gaps; the result of this work will be published in spring 2015

15.15 The Infrastructure Cost programme will continue to be coordinated alongside the government's wider ambitions for the construction sector as set out in the Industrial Strategy for Construction, Construction 2025.

Box 15.B: Case Study: Rail skills

The new academy for rail, jointly funded by the government and the rail industry, will give a new generation of young people the skills to succeed.

Opening in autumn 2015, the academy will boost the UK's expertise and skills level in rail engineering, plugging the skills gap that could otherwise become a barrier to growth. Thousands of young people will gain vital training in specialist traction and rolling stock and many others will learn the skills they need to respond to new technology in the UK rail industry.

The Department for Transport, the Department for Business, Innovation & Skills and the National Skills Academy for Rail Engineering have provided £3.5 million for the National Training Academy for Rail (NTAR), with industry partner Siemens contributing the rest.

Streamlining the planning and consenting systems

15.16 Improving the efficiency and speed of the planning process, particularly for infrastructure delivery, is a crucial part of creating the right conditions for sustainable growth.

Progress to date

15.17 The government has taken a number of steps to improve the planning system over this Parliament, including:

- introducing a presumption in favour of sustainable development in the National Planning Policy Framework
- establishing the Major Infrastructure Unit in the Planning Inspectorate to speed up the application process for major infrastructure projects
- establishing a new Planning Court to speed up the judicial review process
- radically streamlining planning policy and guidance
- making changes to the Nationally Significant Infrastructure Planning (NSIP) regime in response to a 2014 review:

- publishing a prospectus to help with the pre-application process, including arrangements for handling early advice provided to the Planning Inspectorate by developers
- improving training and practice to ensure greater consistency of examination hearings
- ensuring applications are published without delay, allowing more time to study documents without lengthening the overall timetable

15.18 These reforms are working. The NSIP regime has bedded in well and 97% of all applications have been approved, with all but one of the decisions made within the prescribed deadlines. The latest figures show that local planning authority approval rates are at a 10-year high, with authorities granting 350,000 permissions (including approvals for 230,000 new homes) in the year to June. 80% of local planning authorities now have at least a published Local Plan (compared to less than a third in 2010), and nearly 60% have an adopted plan in place.⁴

15.19 Early outcomes from the government's new Planning Court show a significant reduction in the time taken to deal with Judicial Review cases. The important early stage of deciding whether a case has the merit to proceed to a hearing has fallen by around 40% from 15 weeks (in the 12 months to April 2013) to 9 weeks (in the 12 months to September 2014). Furthermore, the time taken from lodging a claim to reaching a decision at a final hearing has fallen by around 30% from 54 weeks (in the 12 months to April 2013) to 39 weeks (in the 12 months to September 2014).⁵

Key actions to 2020

15.20 The Government believes that the compulsory purchase regime would benefit from streamlining and updating. Proposals will be published for consultation at Budget 2015 to make processes clearer, faster and fairer, with the aim of bringing forward more brownfield land for development.

15.21 The government is also continuing to make practical improvements to the Nationally Significant Infrastructure Planning regime and will take forward work to:

- bring more non-planning consents into the Development Consent Order regime, starting with three consents covering water discharge and trade effluent during this Parliament; the European Protected Species licence will be brought into the regime early in the new Parliament, once a legislative vehicle is identified, in a way that ensures robust decision making; the government is currently working towards bringing flood defence consents into the environmental permitting framework next year, followed by water abstraction and impoundment licenses as soon as possible after that.
- consult on options in 2015 for combining the two-stage process of making written and relevant representations into a single longer stage; this could make it easier for communities and others to engage with the regime and reduce the scope for duplication of effort
- create a more proportionate process for handling changes to Development Consent Orders, post consent, (through the Infrastructure Bill)

⁴ Department for Communities and Local Government

⁵ Ministry of Justice

- allow two inspectors for examinations instead of the current stipulation for one or three, which could save small schemes around £100,000 per application, (through the Infrastructure Bill)
- allow for the appointment of the Examining Authority as soon as an application has been accepted, to make process more efficient, (through the Infrastructure Bill)
- clarify guidance on the expectations for Preliminary Environmental Information and how to make changes to proposals during examinations
- lay the National Networks National Policy Statement before Parliament in December

15.22 The government will continue to improve the planning system for infrastructure outside of the NSIP regime. Autumn Statement 2013 announced a comprehensive package of measures to speed up planning decisions. This included ‘deemed discharge’ of planning conditions and reducing unnecessary statutory consultation, which have been taken forward through the Infrastructure Bill and new regulations.

15.23 Building on this progress, the government will take further measures to speed up the end-to-end planning process, including:

- taking forward measures to ensure that the principle of development need only be established once, to give greater certainty and allow locally-supported development to proceed more quickly
- taking steps to speed up section 106 negotiations, including revised guidance, consulting on a faster process for reaching agreement, and considering how timescales for agreement could be introduced, and improving transparency on the use of section 106 funds
- keeping the speed of decisions on major applications under review, with the minimum performance threshold increasing to 50% of major decisions on time as performance continues to improve

Infrastructure interdependence, resilience and cross-sectoral working

15.24 The UK infrastructure system is a highly complex, interdependent set of networks and assets that rely on each other to work effectively. The government is working with academia, regulators and industry to develop a more strategic, coordinated and efficient approach to future infrastructure development and delivery, with the aim of saving costs and increasing value – ensuring that we get right what we build, as well as where and how we build it.

15.25 It is also vital that these assets are sufficiently resilient to absorb, adapt to or rapidly recover from a disruptive event whether that be adverse weather, terrorist or cyber-attacks, industrial action or simply degradation over time. Across the UK, some elements of our national infrastructure are designated by government as Critical National Infrastructure (CNI). The concept of CNI exists to enable government, regulators, and industry to prioritise efforts to harden and protect assets essential to daily life, to ensure continuity of service to the public. With an agreed and prioritised list of assets, resources can be deployed as effectively as possible to protect the infrastructure that is deemed most critical. Protecting the UK’s CNI relies upon close co-operation and collaboration between industry and government.

15.26 Departments responsible for CNI have submitted their Sector Resilience Plans (SRPs) to the Cabinet Office. A summary of the SRPs setting out the current level of resilience to risks of UK infrastructure was published in November.⁶

Progress since 2010

15.27 The UK Regulators Network (UKRN) was formed in March 2014 with the purpose of ensuring effective cooperation between sectors. It will explain and take account of the differences between sectors, while maximising coherence and shared approaches in the interests of consumers and the economy. The UKRN's work programme consists of 8 projects and 6 objectives, including specific workstreams on efficient multi-sector infrastructure investment projects, affordability and cross sector resilience⁷.

15.28 The government initiated the development of a new methodology to assist with the planning and management of interdependencies. The Interdependency Planning and Management Framework (IPMF)⁸, published in November, enables the identification and appraisal of cross-sectoral delivery benefits and facilitates engagement between stakeholders. It was developed in a joint research programme between the University of Bristol and University College London.

15.29 The IPMF is currently being incorporated into Green Book supplementary guidance on valuing infrastructure spend, which is due to be available in early 2015. This work will ensure that interdependencies can be properly identified, valued and the associated impacts realised from the inception of major government-funded infrastructure investments.

15.30 The government is taking advantage of opportunities for synchronised or co-located investment to 'future-proof' our networks and systems. This is considerably cheaper and less disruptive overall in the long term than creating new networks separately at a later date. For example, the HS2 Hybrid Bill includes clauses allowing the inclusion of telecommunications equipment in the future along the route of HS2 Phase One (from London to Birmingham) based on evidence of a projected increase in data capacity requirements. The proposal to allow other types of infrastructure to use the route has also been incorporated into the consultation document for HS2 Phase Two.

15.31 The understanding of interdependence is also being improved by two multi-disciplinary research centres (iBUILD⁹ and the International Centre for Infrastructure Futures¹⁰). These were launched in 2013 to investigate innovative infrastructure business models, and bring together expertise in fields such as economics, engineering and social sciences.

Key actions to 2020

15.32 The government has recently held a consultation on whether further measures would support and embed the work of the UKRN, and will respond in due course. The UKRN will also publish further reports as part of its work programme, including work on cross-sectoral resilience.

⁶ www.gov.uk/government/publications/sector-resilience-plan-2014

⁷ UKRN work plan 2014. www.ukrn.org.uk/wp-content/uploads/2014/05/UKRN-2014-15-work-programme.pdf

⁸ Development of a Proposed Interdependency Planning and Management Framework, International Centre for Infrastructure Futures, 2014

⁹ <https://research.ncl.ac.uk/ibuild/>

¹⁰ <http://www.icif.ac.uk/index.html>

- 15.33 Organisations across government and the regulated sectors have been working together to investigate how utility connections can be achieved more effectively, to help the development of housing and economic activity. This work covers the co-ordination of new connections and improving the understanding of capacity requirements going forwards. In December, the government will produce a document which will provide a single point of reference for developers on the most up to date roles, responsibilities and expectations of different parties involved in the process of delivering utilities connections.
- 15.34 IUK will explore the technical, commercial and legislative feasibility of using the fibre cabling that supports wind farms for commercial communications services including broadband for rural communities.

Box 15.C: Case Study: Flood defences: resilience and cross-sectoral working

Coastal flood defences can bring combined benefits of greater resilience and economic growth across a number of sectors. As an example, Mounts Bay in Penzance is currently considering how best it can address the risk of coastal flooding for its community. A breakwater could strengthen flood defences, but also bring much wider benefits such as enabling more local and visiting boats to safely harbour, protecting vulnerable local infrastructure and attracting possible private investment in a marina. Working alongside Cornwall Council and Penzance Town Council, government has now made funding available for a study to appraise the best options going forward. The results will have impact across the community and help this area grow and thrive.

Multiple organisations will also have a role to play in a 20 year action plan to reduce the risk of flooding in Somerset. The plan, developed in March 2014, contains key objectives which go beyond simply reducing the frequency, depth and duration of flooding. It also includes maintaining access for communities and businesses, ensuring strategic transport connectivity, and promoting business confidence and local resilience. Immediate delivery of the Action Plan is being overseen by an Implementation Group, led by Somerset County Council and also consisting of local and national partners. Central government is supporting the delivery of the plan with a £20.5 million contribution, announced in March 2014.



Chapter 16:

Top 40 priority infrastructure investments

Introduction

- 16.1 To support delivery of its objectives in each sector, since 2011 the government has set out its 'Top 40 priority infrastructure investments'. This allows the government to focus on the delivery of those investments which either make the most significant contribution towards achieving a particular objective or carry the most risk should they fail, both strategically and in value for money terms.
- 16.2 As set out in the previous chapter, the government monitors delivery against the Top 40 priority investments, and key projects and programmes within them, through the Major Infrastructure Tracking Unit within Infrastructure UK. A Cabinet Sub-Committee, chaired by the Chief Secretary to the Treasury, meets regularly to scrutinise progress and support as appropriate in tackling specific delivery challenges and cross-cutting issues.
- 16.3 The government has also identified other levers that it can use to support effective delivery of these priority investments. These include operating a presumption in favour of prequalification for the UK Guarantees Scheme for any project that is part of a 'Top 40' priority investment, subject to the Scheme's criteria. The government will also ensure that it gives regard to the 'Top 40' designation when considering applications for the Nationally Significant Infrastructure Planning Regime.

Selection of Top 40 priority infrastructure investments

- 16.4 Given the scale of the government's infrastructure commitments, the Top 40 is necessarily diverse and spans both the public and private sectors, and includes projects both currently in construction and some which are still in the scoping stages, with delivery milestones stretching beyond 2020. The current full list of Top 40 priority infrastructure investments, including key projects and programmes, is set out in Table 16.1 at the end of this chapter.
- 16.5 Top 40 priority investments, are selected on the basis of three main criteria:
- potential contribution to economic growth
 - nationally significant investment that delivers substantial new or replacement infrastructure with enhanced quality, sustainability and capacity
 - projects that attract or unlock significant private investment

16.6 Priority investments are grouped by sector and are not listed in order of importance. Whilst some individual projects are large or significant enough to be included within the Top 40 in their own right, in many cases the priority investment will be a wider programme, with key projects from within that programme identified for closer scrutiny. Key projects are chosen based on one or more of the following criteria:

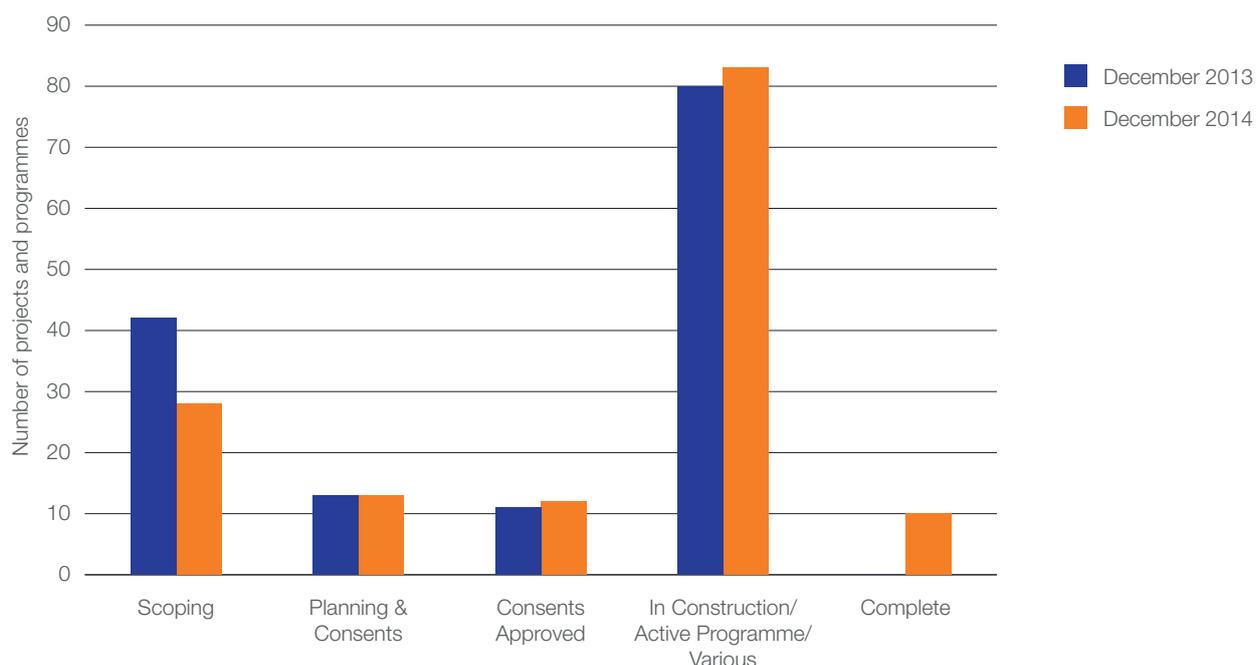
- Strategic importance (SI): project delivers a significant contribution towards an objective
- Capital value (CV): project of significant capital value
- Regional priority (RP): project of high strategic importance or capital value in a region
- Demonstrator (D): project is innovative or novel and could improve future delivery
- Unlocking investment (UI): project enables significant private sector investment

Progress on the government's Top 40 investments since NIP 2013

16.7 Chart 16.A highlights progress on the government's Top 40 priority investments since NIP 13. It demonstrates that, with government support, key projects and programmes are moving from the early stages of delivery (scoping, planning and consents) into construction and completion.

16.8 The chart shows that a number of the key projects within the Top 40 priority investments highlighted in NIP 13 have been successfully delivered during the past year. These are listed below:

- M25 Junctions 5 to 6/7 and Junctions 23 to 27 (Smart Motorways)
- Network Rail Control Period 4 key projects: Southern Train Lengthening, West Coast Main Line and East Coast Main Line (Line Capacity Improvements)
- Peterborough and Reading stations (Major Station Improvements)
- Birmingham runway extension (Regional Airports)
- Heathrow and Gatwick Quinquennial 5 capital investment, including Heathrow Terminal 2 (South East Airports)
- National Composites Centre Expansion (Science and Innovation Catapults)
- Manchester Metrolink Extension (Local Authority Major Transport Schemes)

Chart 16.A: Status of NIP 2013 Top 40 projects and programmes

Source: HM Treasury, Major Infrastructure Tracking Unit

Changes to the Top 40 since NIP 13

- 16.9 The Top 40 is not a static list, but is refreshed on an annual basis to reflect changes in project status and ensure that it continues to reflect the government's priorities in each infrastructure sector. This is essential if it is to remain an effective tool for monitoring and supporting progress in infrastructure delivery. The government particularly focuses on adding new projects that are at an early stage of development, as this is where it can often have most influence in driving progress.
- 16.10 To reflect the progress highlighted above, completed projects have now been removed from the list.
- 16.11 The government has also decided to remove two funding categories from the Top 40, containing three separate infrastructure funds; the Research Partnerships Investment Fund and Local Infrastructure Funding (Regional Growth Fund and Growing Places Fund). This decision reflects that the current phases of these funds have now been fully allocated to a large number of relatively small projects, which are not being delivered directly by central government.
- 16.12 In the rail sector, the government has reorganised the way it categorises investment by introducing a new Rail Investment Strategy priority investment (replacing the previous categories for Electrification, Line Capacity Improvements and Northern Connectivity). This is to better align with reporting structures and public understanding of how this investment is delivered. This includes a number of regional enhancements as key programmes, ensuring that the Great Western Programme, Northern Hub and East-West Rail, amongst others, continue to be effectively monitored and driven forward. A new priority investment, the European Rail Traffic Management System has also been added.

16.13 In the aviation sector the decision has been taken to move away from a geographic split (South East and Regional Airports) to priority investments which address objectives more directly (Airport Infrastructure Improvements and Airport Connectivity). Port Connectivity is also included in the latter category as this supports the government's overall strategic objectives in a similar way.

16.14 In the roads, flood defence and science sectors, the publication of new strategies and more detailed capital investment plans has inevitably required a considered reprioritisation of key projects. This means the A303/A30/A358 Corridor and A1 (North East) road programmes become priority investments in their own right given their significant capital value, strategic and regional importance. The Highways Agency New Capacity category has been renamed as Strategic Road Network Capacity. The A1 Leeming to Barton key project will now be monitored as part of the wider A1 priority investment.

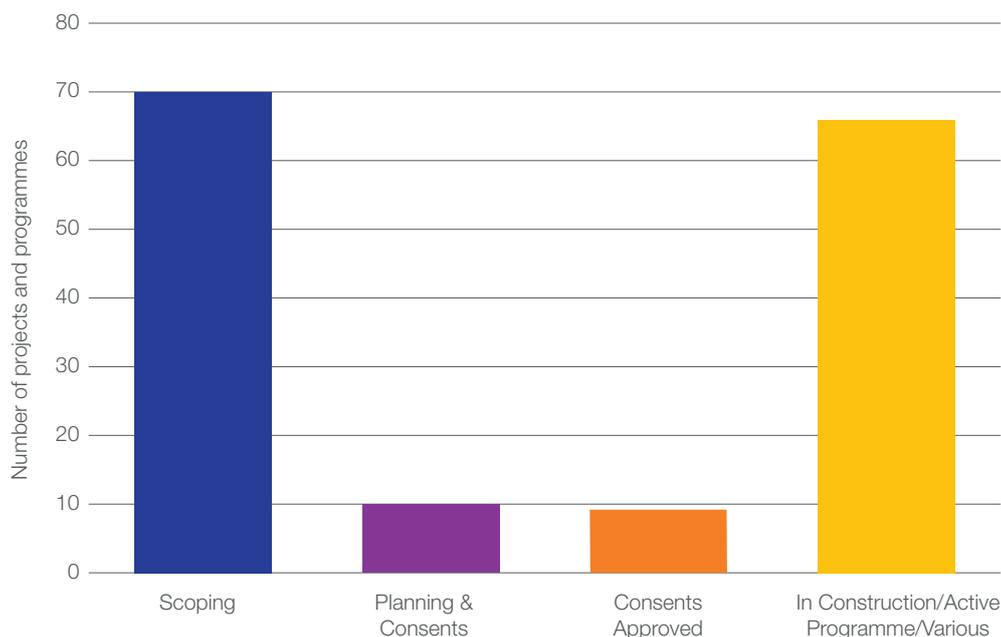
16.15 The government has identified six new flood defence key projects which were included in the Top 40 in NIP 13 combined will cost more than £700 million. Given that all nine flood growth schemes are expected to be under construction by the end of 2014-15, these will no longer be tracked as individual key projects but will still be monitored as part of the wider programme.

16.16 Similarly, the key projects in the Science Majors priority investment were selected based on the capital value of the investment at stake. Reflecting decisions taken since NIP 13, the government is introducing the new Polar Research Ship to its list of Science Majors. Further projects may be added in line with the priorities set out in the forthcoming Science and Innovation Strategy.

16.17 In the energy sector, the government's commitment to increase electricity interconnection is reflected in a new priority investment.

16.18 The delivery status of the new Top 40 is shown in Chart 16.B. As would be expected, there are a higher number of projects in the new Top 40 which are in scoping, reflecting the government's continuing commitment to supporting the development of new infrastructure projects and programmes, particularly in their early stages.

Chart 16.B: Status of NIP 2014 Top 40 projects and programmes at December 2014



Source: HM Treasury, Major Infrastructure Tracking Unit

Table 16.1: Full list of Top 40 priority infrastructure investments in NIP 2014 (including selection criteria)

Priority investment	Key projects/programmes	Selection criteria
Roads		
1 Accelerated Roads	M3 Junctions 2 to 4a	D
	M6 Junctions 10a to 13	D
	M1 Junctions 28 to 31	D
	A160 / A180 Immingham	D
2 Strategic Road Network Capacity	M1 / M6 Junction 19 Improvement	CV
	A556 Knutsford to Bowdon	CV
	A453 Widening	CV
	A5-M1 Link Road	CV
	A2 Bean and Ebbsfleet	CV
3 Smart Motorways	Manchester Smart Motorways	CV
	M1 Junctions 39 to 42	CV
	M4 Junctions 3 to 12	CV
4 A14		SI CV RP UI
5 Lower Thames Crossing		SI RP UI
6 A303/A30/A358 Corridor		SI RP
7 A1 (North East)		SI RP
Rail		
8 Intercity Express Programme		SI CV
9 HS2		SI CV RP UI
10 European Rail Traffic Management System		SI
11 Strategic Rail Freight	Felixstowe to Nuneaton	SI
	Strategic Rail Freight Interchanges	SI UI
12 Crossrail		SI CV RP
13 Thameslink		SI CV RP
14 Rail Investment Strategy	North of England Programme (including Northern Hub)	SI CV RP
	Great Western Programme	CV RP
	South West Route Capacity Programme	CV RP
	Midland Main Line Programme	CV RP
	East-West Rail and Electric Spine	CV RP
	East Coast Main Line	CV RP
15 Major Stations	Manchester Victoria	SI RP
	Bristol Temple Meads	SI RP
	Birmingham New Street	SI RP

Priority investment		Key projects/programmes	Selection criteria
International Gateways			
16	Airport Infrastructure Improvements	Heathrow Q6	SI CV
		Gatwick Q6	SI CV
17	Port Capacity		SI
18	Airport / Port Connectivity	A6 to Manchester Airport Relief Road	SI CV RP
		M42 Junction 6	SI CV RP
		A5036 to Port of Liverpool	SI CV RP
Local Transport			
19	Transport for London	Sub-surface upgrade	CV RP
		Northern Line upgrade	CV RP
		Bank station upgrade	CV RP
		Victoria and Jubilee Lines (Phase 2)	CV RP
20	Northern Line Extension		CV RP UI
21	Mersey Gateway Bridge		CV RP UI
22	Local Transport Major Schemes	Heysham – M6 Link Road	RP
		Nottingham NET2	RP
		Leeds New Generation Transport	RP
		Norwich NDR	RP
		Sunderland Strategic Corridor	RP
		Kingskerswell Bypass (A380)	RP
		Croxley Rail Link	RP
		Midland Metro	RP
Energy			
23	Electricity Generation – Nuclear	Hinkley Point C	SI CV
		Wylfa Newydd	SI CV
		Moorside	SI CV
24	Electricity Generation – Gas (to 2020-21)		SI
25	Electricity Generation – Wind (to 2020-21)	Onshore	SI
		Offshore	SI CV
26	Electricity Generation – Other Renewables (to 2020-21)	Biomass	SI
		Solar PV	SI
		Marine	SI
27	Carbon Capture & Storage (CCS)	Peterhead CCS project	SI
		White Rose CCS project	SI
28	Electricity Interconnection		SI
29	Energy Transmission & Distribution	Western HVDC Link	SI CV
		Beaulieu-Denny 400kv Line	SI CV
		London Power Tunnels	SI CV

30	Oil & Gas Production	Shale Gas	SI
31	Smart Meters		SI CV

Priority investment

Key projects/programmes

Selection criteria

Communications

32	Superfast Broadband		SI CV RP
33	Super-Connected Cities		SI CV RP
34	Mobile Infrastructure Project		SI RP
35	4G Rollout		SI RP

Water

36	Water Supply & Sewerage (AMP6)		SI CV
37	Thames Tideway Tunnel		SI CV RP

Flood Defence

38	Flood and Coastal Erosion Risk Management Programme	Lincshire	SI RP
		Thames Estuary Phase 1	SI CV RP D
		River Thames Scheme (Datchet to Teddington)	SI CV RP
		Boston Barrage/Barrier Works	SI RP
		Rossall Coastal Defence Improvement Scheme	SI RP
		Oxford – Western Conveyance	SI RP

Science & Research

39	Science Majors	Francis Crick Institute	SI
		Polar Research Ship	SI
		Diamond Light Source Phase III	SI
		Pirbright Development Phase II	SI
40	Science & Innovation Catapults	Cell Therapy Manufacturing Centre	SI
		National Biologics Manufacturing Centre	SI

16.19 An online annex provides a more detailed delivery update on each of these priority investments and is available at www.gov.uk/government/collections/national-infrastructure-plan



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This document can be downloaded from
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