



HM TREASURY



Infrastructure UK

# Infrastructure Cost Review:

## annual report 2011-12

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April 2012





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# Foreword

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This is the first annual progress report of the Government's Infrastructure Cost Review programme launched in March 2011. It is written against a background of continuing major investment in infrastructure as a key driver for economic growth.

Over the past twelve months the Government, supported by Infrastructure UK, has worked with industry to put in place the mechanisms through which real reductions in the costs of delivering economic infrastructure can be achieved and sustained – to enable taxpayers and utility bill payers to get more for less.

The programme is on track and as this progress report shows, there is already evidence of the cost savings that are being made. The next twelve months will, however, be crucial as government and industry continue to work together to implement and embed the arrangements that have been put in place.

Events during the year have if anything increased the importance of this programme to support UK economic growth. I am grateful for the continued support from colleagues in wider government, including the chair of the Government Construction Board, Paul Morrell and for the ongoing input from industry, under the umbrella of the Institution of Civil Engineers and the Infrastructure Steering Committee chaired by immediate past President Peter Hansford.

A handwritten signature in black ink that reads "James Sassoon .". The signature is written in a cursive, flowing style.

Lord Sassoon





# Executive summary

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The Infrastructure Cost Review Report 2010 identified that between £15 billion and £20 billion per annum is being spent in the UK directly on infrastructure construction and the opportunity to make efficiency savings of at least 15 per cent by 2015, worth £2 billion to £3 billion per annum.

The latest output figures for 2011 from the Office of National Statistics (ONS) indicate that whilst general construction output has fallen back, infrastructure output for 2011 increased to over £20 billion. The continuing focus on infrastructure investment to support UK economic growth means that it is more important than ever to deliver infrastructure cost effectively.

The 2011 National Infrastructure Plan announced that the Government had identified 40 priority infrastructure projects and programmes and the creation of a Cabinet Sub-Committee on infrastructure to oversee efficient delivery. In taking forward these priority projects, the Government is taking steps to unblock obstacles to delivery and apply the principles identified in the Infrastructure Cost Review.

The Government has already announced significant reform of town planning and wider consent regimes that will make the process clearer and quicker; and it will increase the certainty of outcome that the private sector requires to support its investment in new infrastructure projects and programmes. It has also introduced measures to improve its approach to procurement that will make the UK a better place to invest.

This report is focused on the ongoing Cost Review Programme – set out in the 2011 Implementation Plan – to address client and supply chain issues that are also significant drivers for higher cost. The Implementation Plan identified the components of the work as being: changing the behaviours of industry and clients; increasing the visibility of investment pipelines; improving governance and risk management; reducing complexity of specifications; using smarter procurement and improving infrastructure data. By addressing these issues, industry will be better placed to invest in developing solutions, skills and capability to deliver the cost savings.

Overall, there is evidence in the first year of the implementation plan that changes are beginning to take hold and are leading to cost savings. The Infrastructure Charter, published in 2011 with the support of an industry Alliance Group, set targets for clients and industry to find ways to collaborate to deliver infrastructure more cost effectively. An Alliance Group survey undertaken in February 2012 indicated that industry has seen improvement in the visibility of pipeline and evidence of some change in confidence levels in the certainty of the pipeline, but has not yet seen significant change in procurement practice. The changes are not yet sufficiently widespread to represent a step change across the sector and the next 12 months will be crucial to implement positive behaviours more widely amongst clients and industry participants.

A key measure of success is the application of Cost Review principles to reduce delivery costs on the UK's priority infrastructure projects and programmes. The Government has engaged with client organisations and contractors to identify ways to drive down costs of many of the top 40 infrastructure projects, including: the capital roads programme; Mersey Gateway Bridge; High Speed 2; Crossrail; and Thames Tideway Tunnel. The report gives examples of good practice, consistent with the recommendations of the Cost Review, where individual savings of up to £1.5 billion have been identified.

The 2011 Implementation Plan set out a three year programme. This first year has focused on enabling work to identify and remove potential barriers to the efficient delivery of infrastructure. Key achievements include:

- **publication of the first economic infrastructure pipeline** and the consolidated list of the Government's funded construction pipeline<sup>1</sup>;
- government and industry agreement to the **Infrastructure Charter** as a basis for setting out the behaviours required to improve collaboration and reduce costs<sup>2</sup>;
- development of a **'routemap'** to enable public and private clients to select the most **appropriate procurement strategy** and drive consistent behaviours and practice for across infrastructure programmes or projects;
- application of new approaches to the **management of risk and contingency** in public sector infrastructure projects;
- formation of an **Industry Standards Group** to remove duplication and redundancy in technical standards for infrastructure assets;
- commitment to address the problems of **cyclicality in the water sector** as part of a joint study with Ofwat;
- partnerships with industry to **improve supply chain skills and capability** and access cross sector efficiencies – starting with pilot programmes for tunnelling across rail, waste water and energy projects; and
- a **Memorandum of Understanding** between the Highways Agency, Environment Agency, London Underground and Network Rail to pool data and access commercial intelligence.

The focus for the next year is to continue to develop the enabling mechanisms and to implement, in practice, the principles of the Cost Review work more widely across clients and through the industry supply chain, particularly in relation to the top 40 priority infrastructure projects and programmes. The priority activities for 2012-13 will be to:

- ensure that infrastructure projects and programmes **adopt best practice from the procurement 'routemap'** to drive consistent characteristics, behaviours and practices across public and private sector infrastructure clients;
- improve **strategic pre-procurement dialogue** with industry by jointly developing plans to address existing skills and capability gaps to establish sustainable and efficient supply chains;
- publish the autumn **update of the funded construction pipeline** and wider National Infrastructure Plan updated pipelines;
- consider further measures **to mitigate the impacts of cyclicality and stop-start investment** in other areas, building on the joint study with Ofwat and Alan Cook's recommendations for alternative funding models for the Highways Agency;

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<sup>1</sup> [www.hm-treasury.gov.uk/infrastructure\\_pipeline\\_data.htm](http://www.hm-treasury.gov.uk/infrastructure_pipeline_data.htm)

<sup>2</sup> [www.hm-treasury.gov.uk/iuk\\_cost\\_review\\_index.htm](http://www.hm-treasury.gov.uk/iuk_cost_review_index.htm)

- **consider the recommendations from the Industry Standards Group** report and initiate specific **pilot programmes with the Highways Agency** to ring-fence selected projects and provide industry with the opportunity to challenge existing standards and fast-track the process of agreeing departures;
- continue to work with industry to develop the following enabling mechanisms during 2012-13:
  - complete development of new Green Book **infrastructure risk and contingency guidance**;
  - to develop, in conjunction with industry, **templates for extending the use of the NEC3<sup>3</sup> suite of contracts** in establishing collaborative working arrangements;
  - review and consult on **construction bonds** and the use of innovative and cheaper insurance based products;
  - work with industry to **extend the project performance datasheet pilots** and publish the first wave of project reports; and
  - consider the benefits of adopting **industry standard principles for asset management**, such as PAS55.<sup>4</sup>

The objective, by the time of the next report in Spring 2013, is to: have put in place the enabling mechanisms to achieve cost efficiencies across the infrastructure sector; to have shown how these can be applied in practice in the context of the top UK priority projects; and demonstrate a change in the behaviours of clients, contractors and other stakeholders to support collaboration on ways to reduce costs.

Over 60 per cent of economic infrastructure is delivered through the private sector, including regulated utilities and Network Rail. Where it is delivered through the public sector, infrastructure forms part of the Government's overall strategy for construction in the public sector. Infrastructure UK continues to work closely with the Government Construction Board, chaired by the Chief Construction Adviser, to ensure consistency of approach.

The Government continues to welcome feedback and comments directly from all stakeholders. Requests for further information about the cost review should be directed to [infrastructurecost@hmtreasury.gsi.gov.uk](mailto:infrastructurecost@hmtreasury.gsi.gov.uk)

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<sup>3</sup> New Engineering Contract published by Thomas Telford Limited and the Institution of Civil Engineers

<sup>4</sup> Publicly Available Specification for the Optimised Management of Physical Assets published by the British Standards Institute



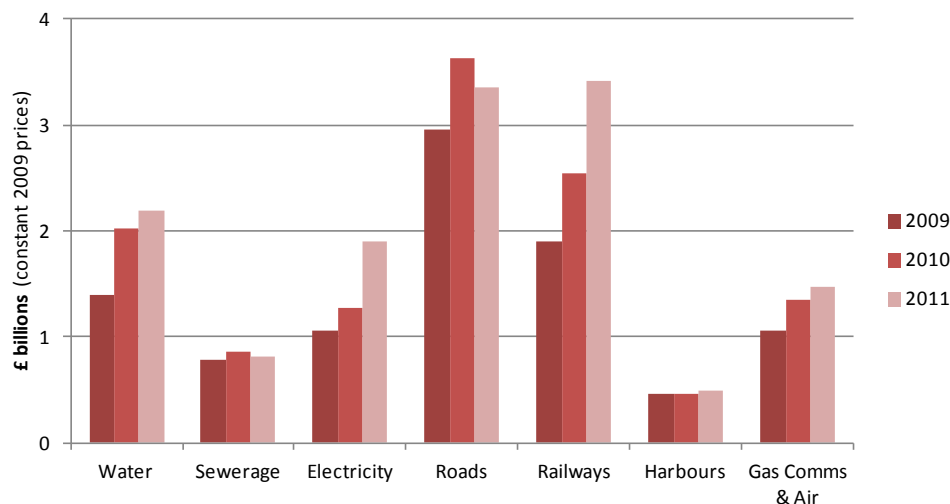
# 1

# Implementing the Cost Review

## The infrastructure cost challenge

1.1 The Infrastructure Cost Review Report, published in December 2010, estimated that over the five years to 2015 between £15 billion and £20 billion per annum in the UK would be spent directly on infrastructure projects and programmes – principally civil engineering works including capacity enhancement, renewals, repairs and maintenance. The report identified the opportunity to make efficiency savings on this spending of at least 15 per cent by 2015, worth £2 billion - £3 billion per annum.<sup>1</sup>

Chart 1.A: Infrastructure construction output 2009-2011



Source: ONS construction output statistics (constant 2009 prices)

1.2 Chart 1.A compares the ONS construction output data for infrastructure for the 2009 to 2011 output years (excluding repairs and maintenance). Infrastructure construction output was £18.2 billion in 2010 rising to £20.7 billion in 2011 in constant 2009 prices (including repairs and maintenance). The data indicates a **net increase in infrastructure output of £4 billion** from the 2009 figures reported in the Cost Review report to the 2011 data, on a like for like basis.<sup>2</sup>

1.3 The 2010 Cost Review report identified reasons for high costs in delivering UK infrastructure due to policy and systemic issues, funder and client issues and supply chain delivery.

1.4 This first annual report is focused on the ongoing work programme to address funder, client and supply chain issues. This is set out in the 2011 Implementation Plan. However, the work programme is taking place against a backdrop of continuing activity to address some of the underlying policy and systemic issues that drive higher costs in the UK and constrain investment.

<sup>1</sup> Based on 2009 infrastructure output data from the Office of National Statistics (ONS)

<sup>2</sup> The output for infrastructure repairs and maintenance has been excluded from this revised comparison as there has been a significant change in the figures (from £1.8 billion in 2009 to £7 billion in 2011) – this is probably a result of improved data for the 2010 collection as this data was only collected for the last quarter of 2009 and extrapolated in the 2010 analysis

## Addressing policy and systemic issues

**1.5** The 2010 Report highlighted issues relating to the onerous planning and consultation process, the UK approach to regulatory compliance and third party influence and wider construction market issues as all contributing to higher costs. The Government's measures to reform the planning system will help to address the policy and systemic issues that drive higher costs, for example by:

- the introduction of the National Planning Policy Framework including the presumption in favour of sustainable development;
- continuing development of the Major Infrastructure Planning regime being delivered through the Planning Inspectorate, including making the regime clearer and easier to navigate;
- implementation of major reforms to the key consenting and advisory agencies involved in planning applications to give greater certainty to developers;
- reducing the cost, complexity and delay involved in complying with the Habitats Directive through the reforms announced following the review of its implementation; and
- introduction of Improvement Plans for Statutory Consultees (English Heritage, Natural England, Highways Agency and Environment Agency).

Taken together these measures are helping to increase the certainty of outcome that the private sector requires to support its investment in new infrastructure projects and programmes.

**1.6** The Government has identified the priority infrastructure projects and programmes for the UK and had created a new Cabinet Sub-Committee, chaired by the Chief Secretary to the Treasury, to drive forward these investments. This is already having a beneficial effect in unblocking some of the obstacles to delivery as indicated by the Infrastructure Delivery Update published alongside Budget 2012, for example by<sup>3</sup>:

- enabling the issue of Safeguarding Direction for the Thames Tideway Tunnel on key sites;
- legislating to adjust the scope of the Special Parliamentary Procedure to avoid duplication on determination of certain Development Consent Orders; and
- supporting the development of effective solutions to radar interference issues affecting wind energy development.

**1.7** The Government announced, as part of the Autumn Statement, a package of measures to improve its approach to procurement. Improving public procurement processes will make the UK a better place to invest. The Government is already implementing a package of measures that incorporates best practice from the EU and private sector to:

- utilise the visibility of the pipeline and improved strategic dialogue with suppliers so that Government can explain its procurement needs, identify areas in which there are capability gaps in the supply chain that need to be addressed to meet future demand and take action to remove barriers to growth; and
- reduce the cost burdens of procurement on industry implementing LEAN sourcing principles from January 2012.

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<sup>3</sup> [www.hm-treasury.gov.uk/infrastructure\\_index.htm](http://www.hm-treasury.gov.uk/infrastructure_index.htm)

**1.8** In December 2011, the Government also announced its intention to undertake a review of the Private Finance Initiative (PFI). The formal review process closed in early February 2012 following an extensive evidence gathering exercise. The overly complex and lengthy procurement processes in the UK have been the subject of much of the written commentary received.

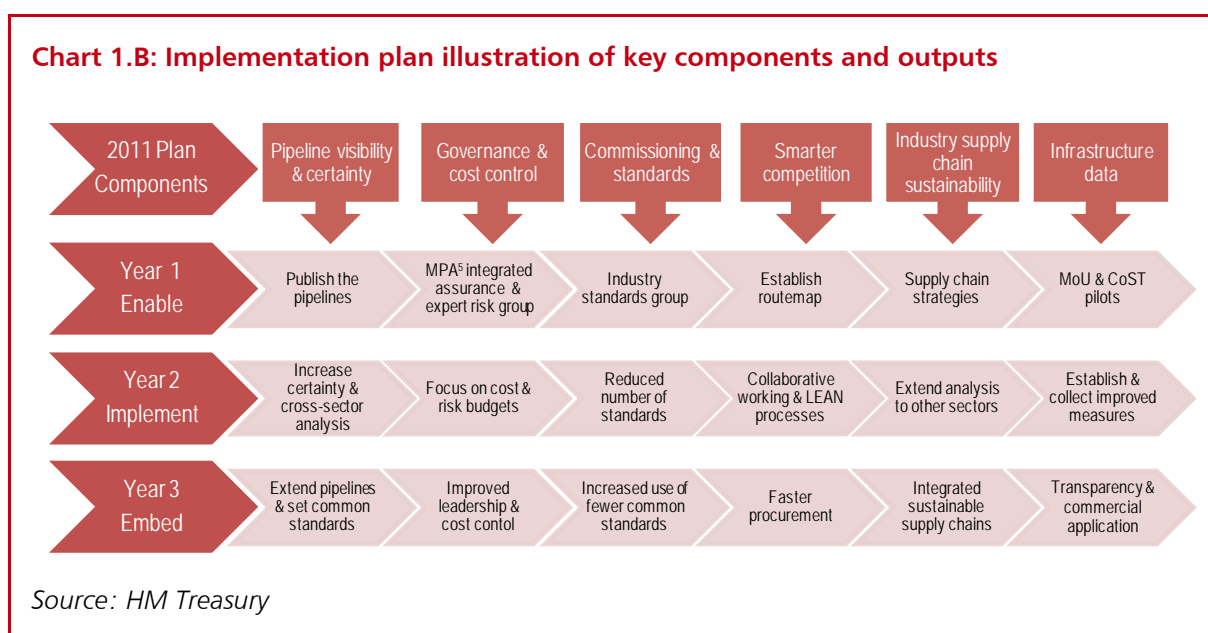
**1.9** The Rail Command Paper published in March 2012, in response to Sir Roy McNulty’s review, highlighted that Network Rail is already due to deliver £1.2 billion of efficiency savings by 2014 with at least a further £600 million expected by 2019. The Command Paper sets the challenge to the whole rail industry to close the efficiency gap identified by Sir Roy of £3.5 billion per year, by 2019.<sup>4</sup>

## Addressing client and supply chain issues

**1.10** The Cost Review Implementation Plan published in March 2011 identified the components of the work required to change the behaviours of industry, regulators and public and private client organisations. The key components are:

- visibility and certainty of pipelines;
- improving the governance arrangements and risk management of projects;
- reducing complexity and duplication of specifications and standards;
- using smarter procurement and better incentives for suppliers; and
- improving the accessibility and use of infrastructure performance and asset data.

**1.11** By addressing the above issues industry will be better placed to invest in developing solutions, skills and capability to deliver the cost savings.



**1.12** The Implementation Plan set out a three year programme. Chart 1.B above provides an overview of the key activities and objectives for each of the six Cost Review components, across the three years. The first year has focused on enabling work to identify and remove potential barriers to the efficient delivery of infrastructure. Annex B provides a detailed summary of progress against the first year actions set out in the 2011 Plan.

<sup>4</sup> Reforming our Railways: Putting the Customer First, March 2012 published by the Government in response to Sir Roy McNulty’s Report on Rail Value for Money – Releasing the Potential of GB Rail, May 2011.

<sup>5</sup> Major Projects Authority.

**1.13** The second year will concentrate on implementing the first year enabling measures, particularly in relation to the priority infrastructure projects and programmes identified in the National Infrastructure Plan 2011. The third year will put in place measures to sustain behavioural changes in the long term and embed changes implemented on pilot projects and programmes across the wider public sector and private sector.

## Continued industry collaboration

**1.14** Since publishing the report, three industry working groups have been operating under the direction of an Infrastructure Steering Committee supported by the Institution of Civil Engineers and made up of key leaders from different infrastructure sectors:

- **Client Working Group** – comprising public and private sector infrastructure clients, which has addressed issues of effective governance and control, competition and procurement;
- **Industry Working Group** – drawn from all levels of the construction, engineering consultancy and manufacturing supply chain, which has addressed issues of specifications and technical standards and supply chain sustainability; and
- **Infrastructure Data Group** – including clients, academia and industry which has developed mechanisms for the capture and use of data and benchmarking.

**1.15** The act of bringing together, for the first time, leaders and experts into a network of stakeholders achieved an instant impact and catalyst for change (Box 1.A).

### **Box 1.A: Bringing together industry 'champions' and stakeholders**

*"The Client Working Group brings together champions and leaders from industry to share best practice and knowledge that will enable us to improve our procurement processes and help integrate our supply chains. Improved collaboration between London Underground and Crossrail has already delivered benefits through harmonising standards across our respective programmes"*

*Simon Kirby, Network Rail and chair of Client Working Group*

**1.16** The industry champions and working groups have been focused on individual elements of the Implementation Plan. The groups are now starting to engage more directly to provide support and leadership to other projects and programmes across the priority infrastructure projects.

**1.17** The working groups and champions are also an important channel for communication and feedback on the activities and the progress of the Cost Review. As part of the communications strategy for the programme in February 2012 the Institution of Civil Engineers hosted an event which brought together over seventy industry leaders and client representatives to review progress and provide input to the work programme going forward. The outputs from the six breakout groups have been incorporated into this document.

**1.18** Work on infrastructure forms part of the Government's strategies for construction in the public sector, overseen by the Government Construction Board, chaired by the Chief Construction Adviser. A joint governance structure has been put in place to ensure coordination of the Cost Review and Government Construction Strategy programmes alongside the industry working groups.<sup>6</sup>

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<sup>6</sup> [www.cabinetoffice.gov.uk/resource-library/government-construction-strategy](http://www.cabinetoffice.gov.uk/resource-library/government-construction-strategy)



# 2

## Measuring progress

### Key programme measures

**2.1** The impact of the Cost Review programme is being measured by the Government in collaboration with industry through:

- application of Cost Review principles to reduce delivery costs on the UK's priority infrastructure projects and programmes;
- change in the behaviours of government, clients and contractors;
- the achievement of the milestones and technical changes set out in the Implementation Plan 2011; and
- selected key benchmark cost indices and empirical data.

**2.2** Evidence in the first year of the Implementation Plan indicates that changes are beginning to take hold and are leading to cost savings. However, the changes are not yet sufficiently widespread to represent a step change across the sector and the next 12 months will be crucial to embed positive behaviours more firmly amongst clients and industry participants.

### Priority infrastructure projects and programmes

**2.3** The Government, through Infrastructure UK, is taking steps to ensure that the Cost Review principles are applied to the UK's priority infrastructure projects and programmes identified in the National Infrastructure Plan 2011. Table 2.A below illustrates activity to reduce costs on these priority infrastructure projects and programmes.

**Table 2.A: Actions undertaken to reduce costs on priority infrastructure projects**

Sector	Outcome
Strategic roads network capital programme	<ul style="list-style-type: none"><li>• Commitment in Budget 2012 to take forward many of Alan Cook's recommendations for the strategic roads network, including developing a national roads strategy and setting a renewed focus on the level of performance expected from the Highways Agency.</li><li>• Introducing a programme based approach to delivery of the strategic roads programme - initial projects on-track to delivery forecast efficiency benefits of 20 per cent.</li></ul>
Mersey Gateway bridge	<ul style="list-style-type: none"><li>• Savings of £30 million achieved by reviewing client requirements – including removing the additional capacity within the design to run a light rail train under the road deck in the future. The project has also modified the planning approval to allow more scope for contractor innovation, consistent with the risk transfer in the proposed DBFO contract.</li></ul>
High Speed 2	<ul style="list-style-type: none"><li>• Review and modify governance arrangements to ensure that the project adopts exemplar practice for a large complex programme - revised governance arrangements now in place to ensure prompt decision making and effective programme oversight.</li><li>• Extended the Cost Review 2010 high speed rail benchmarking work and initiated a more detailed study on HS2 costs with industry.</li></ul>

Sector	Outcome
Crossrail	<ul style="list-style-type: none"> <li>• Cost Review principles adopted into the procurement of contracts for tunnelling and station development.</li> <li>• Expanding the remit and capability of Crossrail's Tunnelling and Underground Construction Academy as part of the cross-sector analysis of supply chain capacity in this sector.</li> </ul>
Rail infrastructure and rolling stock enhancements	<ul style="list-style-type: none"> <li>• Supporting Network Rail through their involvement in the Client Working Group to achieve the target savings of set out in the Rail Command Paper in March 2011, in response to the McNulty Review. Network Rail is already due to deliver £1.2 billion of efficiency savings by 2014 with at least a further £600 million expected by 2019. The Command Paper sets the challenge to the rail industry to close the efficiency gap identified by Sir Roy of £3.5 billion per year, by 2019.</li> </ul>
London Underground investment programme	<ul style="list-style-type: none"> <li>• Piloted a new model on the Bank upgrade project for early contractor involvement based on a gain-share arrangement between bidders. Cost savings through innovation are incentivised by providing bidders with commercially confidential conditions, and thereby protecting the intellectual capital of their innovative ideas.</li> </ul>
Airports capital investment programme	<ul style="list-style-type: none"> <li>• BAA engagement through the Client Working Group and the Expert Risk Group.</li> </ul>
Energy	<ul style="list-style-type: none"> <li>• The industry-led Offshore Wind Cost Reduction Task Force was announced as part of the Government's Renewable Energy Roadmap in July 2011 and will produce an action plan to reduce the levelised cost of offshore wind to £100 MWh by 2020. The task force is due to report later in spring 2012.</li> </ul>
Water and sewerage and flood risk management	<ul style="list-style-type: none"> <li>• On the Thames Tunnel project undertaken a review which has taken the cost estimate to a level of maturity which has replaced 'Optimism Bias' with more explicit provisions, removing duplication and resulting in a reduction in the provision for risk and contingency.</li> <li>• Incorporation of Cost Review principles into the flood and coastal erosion risk management 'next generation supplier agreement' procurement strategy Frameworks will adopt where appropriate collaborative working approach. Support being provided through the industry Client Working Group.</li> <li>• Joint study with OFWAT to identify measures to address additional costs and supply chain disruption caused by cyclicity within price control periods.</li> </ul>

Source: Infrastructure UK

**2.4** The Government will, moving into the second year of the Cost Review programme, focus on extending the application of the Cost Review principles across other priority infrastructure projects and programmes in the public and private sectors.

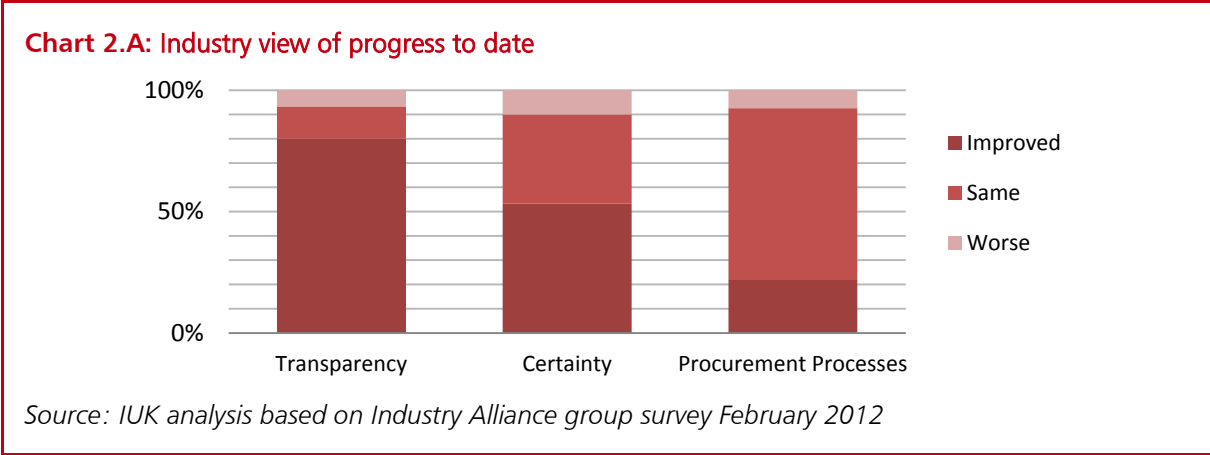
## Behavioural change

**2.5** There is evidence of increased levels of collaboration between clients and contractors to deliver cost savings across the infrastructure sector. Annex A to this report sets out some 20 examples of good practice that have could save up to £1.5 billion of cost. Whilst these represent examples of changed behaviours in line with the principles identified by the Cost Review – and there are many more examples in existence – such behaviours are not yet embedded as the norm.

**2.6** The Infrastructure Charter, published in 2011 with the support of industry, set targets for clients and industry to find ways to collaborate to deliver infrastructure more cost effectively ([www.hm-treasury.gov.uk/iuk\\_cost\\_review\\_index.htm](http://www.hm-treasury.gov.uk/iuk_cost_review_index.htm)). This charter was developed through

collaboration between government and an Alliance Group that brings together a number of industry bodies to support the Cost Review programme, including the Institution of Civil Engineers, Civil Engineering Contractors Association, Construction Products Association and the Association for Consulting and Engineering.

**2.7** The Alliance Group has undertaken an independent survey of 33 industry CEOs. The purpose of this survey is to gather views from industry on the extent to which the behaviours set out in the Charter are improving. The Alliance Group intends to continue to conduct this useful survey of industry sentiment annually and will use it to assess progress against the targets set by the “Infrastructure Charter”.



**2.8** Chart 2.A above summarises industry responses to questions about the Government’s approach to providing greater transparency and certainty into the procurement of infrastructure. Overall, respondents indicated that there has been significant improvement in transparency combined with some increase in the levels of certainty of the forward pipeline. However, 80 per cent of industry respondents felt that the government continues to favour lowest cost above best value in procurement.

**2.9** Industry continues to support the move to improved visibility and certainty. In February 2012, the Engineering Construction Forum published their report outlining the practical steps that the UK engineering construction industry must follow if it is to meet the growing demand for major infrastructure projects over the next decade. A key recommendation of this report is for the government to publish long term strategic investment plans, regularly updated, to support better forward planning by industry.<sup>1</sup>

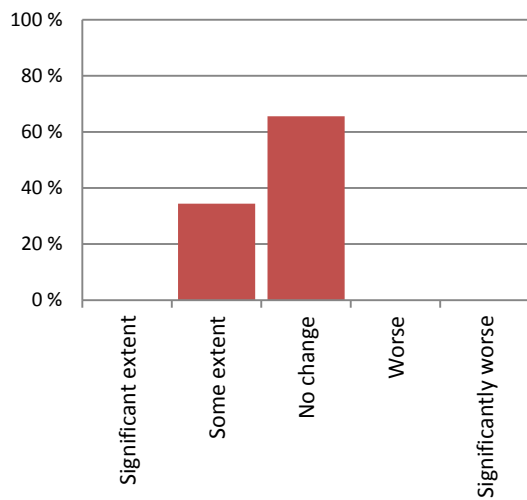
**2.10** Chart 2.B below sets out industry’s view of the extent government has grouped similar infrastructure projects together as part of the longer term programme to improve efficiency. Whilst there is evidence of some progress, there is still a majority of respondents indicating “no change”.

**2.11** In 2011, a new British Standard, BS11000 – Collaborative Working, was introduced. A number of infrastructure clients, contractors and consultants are seeking accreditation against BS11000, with the first accreditations of suppliers expected from summer 2012. Chart 2.C below measures the progress toward accreditation. Increased levels of accreditation will be indicative of growth in the collaborative behaviours required to deliver cost savings.

**2.12** Positive movement in these measures over the next 12 months would be evidence that industry perceives improvement in the effectiveness of the relationship between public and private sectors as a driver of improved efficiency.

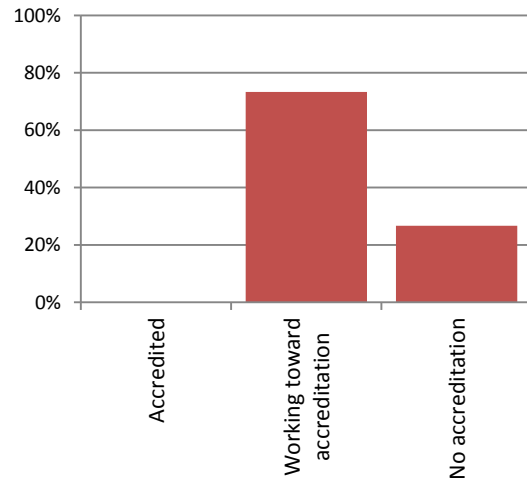
<sup>1</sup> ECF Report in response to Changing to compete. Gibson February 2012 www.njceci.co.uk/ecf.html

**Chart 2.B: Governance - Industry View of extent government has efficiently grouped infrastructure projects**



Source: IUK analysis based on Industry Alliance group survey February 2012

**Chart 2.C: Industry - Companies with Collaborative Working accreditation (BS11000)**



Source: IUK analysis

## Process change improvement

### Moving to performance based specifications

**2.13** The prevalence of client organisations using prescriptive input driven requirements linked to prescriptive and bespoke in-house standards has created inefficiency. Chart 2.D shows the progress of organisations moving towards setting output based requirements and reviewing in-house standards to remove duplication and redundancy. As more clients move toward performance or risk-based requirements, opportunities for innovation and standardisation will drive reduced costs.

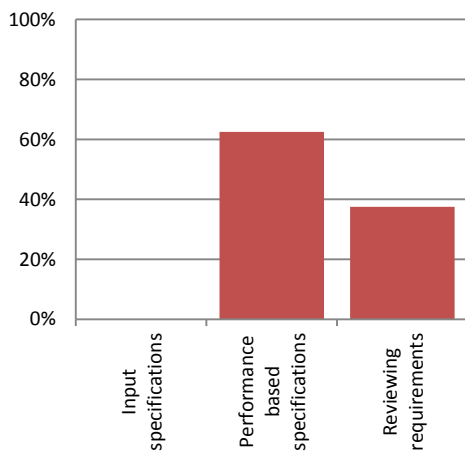
**2.14** The Industry Standards Group will include in their report to government in June 2012 a measure of the number of in-house standards removed within the wider transport sector as part of the drive to improve the statement of client requirements to the supply chain.

**2.15** This report highlights examples of organisations that have reduced the number of in-house standards and achieved efficiencies as a result, including London Underground and Network Rail.

### Improved Asset Management

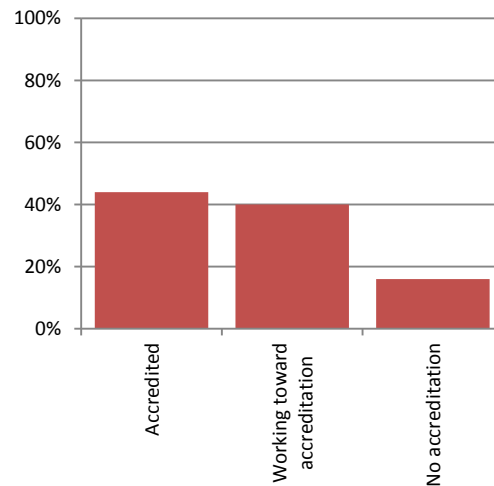
**2.16** Poor asset management strategies have the potential to increase costs through unplanned or unnecessary interventions. Chart 2.E below maps the current accreditation levels of a cross section of infrastructure clients to PAS55 (Publicly Available Specification for the Optimised Management of Physical Assets).

**Chart 2.D: Standards - Style of Specification used by Infrastructure Clients**



Source: IUK analysis

**Chart 2.E: Data and Asset Management - Infrastructure Clients with asset management accreditation (PAS55)**

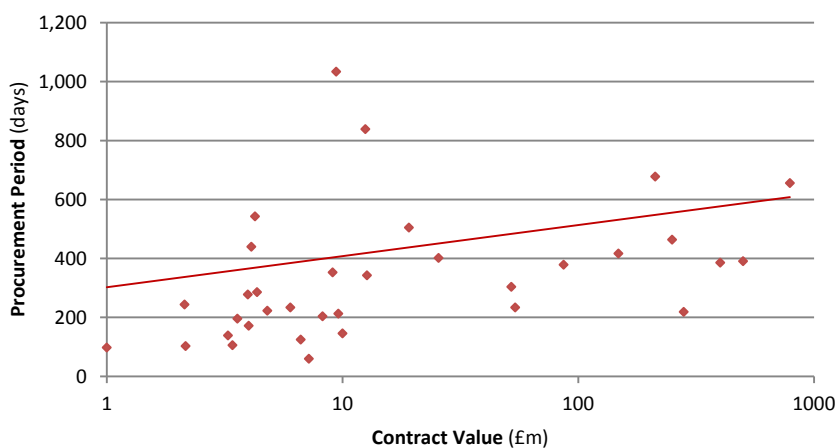


## Procurement timescales

**2.17** The Government is committed to reducing the timescales and costs associated with procurement across the public sector, including economic infrastructure.

**2.18** Chart 2.F sets out the timescales between OJEU and contract award measured for procurement against contract value in the highways sector during 2011-12. The trend line identifies longer procurement timescales as contract value increases. A lowering and flattening of the trend line in future periods will be evidence that improvements to the procurement process are being embedded and a more strategic pre-procurement dialogue exists.

**Chart 2.F: Procurement Timescales - measure of days from OJEU notice to contract award**



Source: IUK analysis of <http://ted.europa.eu/TED>

## Quantitative measures and benchmarking

**2.19** Government published a series of Construction Cost Benchmarks and cost reduction trajectories for central Government Departments in February 2012. Whilst these are largely focused on general construction, they include the Highways Agency and Environment Agency

which are the two principal government agencies involved in the delivery of economic infrastructure.<sup>2</sup>

**2.20** The benchmarks included are for: Embankments and Flood Defence Walls (Environment Agency); Trunk Road Improvements; junction improvements; and Managed Motorway development (Highways Agency). The figures have been used to support cost reduction trajectories within these agencies leading to forecast savings of between 15 per cent and 17 per cent by 2014-15. These benchmarks will be updated in April 2012 alongside the publication of this report.

**2.21** The application of benchmark data across economic infrastructure sectors is inherently more difficult than in general construction due to the lack of a common template for assessing individual elements and the fact that some 60 per cent of investment is by the private sector. The Government will however continue to encourage the development of measures within and across sectors that can use benchmark data to demonstrate further efficiencies. This work will be delivered by the Infrastructure Data Group (Chapter 8).

**2.22** It is expected that collaborative behaviours should extend through all levels of the supply chain, enabling lower tiers to engage earlier in both the pre-procurement and procurement processes. Government has announced that it will track progress through measuring the value of subcontract opportunities that are advertised by Tier 1 contractors through portals such as “ContractsFinder” and “CompeteFor” and include the output in the next annual report.<sup>3</sup>

**2.23** To support the drive to improve the quality and quantity of infrastructure cost data, government will track progress by measuring the volume of infrastructure works undertaken that are subject to a cost benchmarking regime and report in the next annual report.

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<sup>2</sup> <https://update.cabinetoffice.gov.uk/resource-library/construction-cost-benchmarks>

<sup>3</sup> “CompeteFor” is a free service that enables businesses to compete for contract opportunities linked to the London 2012 Games and other major public and private sector buying organisations, such as Transport for London (TfL), Crossrail and the Metropolitan Police. “CompeteFor” acts as a brokerage service, matching buyers with potential suppliers ([www.competefor.com](http://www.competefor.com))

# 3

## Component A: Pipeline visibility and certainty

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### Key objectives

**3.1** Evidence from the Infrastructure Cost Review 2010 and other recent studies shows that a stop-start infrastructure pipeline stifles investment in innovation and supply chain growth and is adding to costs. The Infrastructure Cost Review demonstrated that longer-term funded investment programmes coupled with collaborative supply chain engagement, built around greater visibility of forward work programmes, generally results in lower outturn delivery costs. Analysis in the water sector has demonstrated a strong correlation between pipeline visibility and stability and the ability to deliver continuous efficiency improvements in collaboration with supply chains.

### Enabling actions completed 2011-12

**3.2** The Government has already met its commitments to publish the pipeline of public and private sector infrastructure projects alongside the first consolidated list of the Government's funded construction pipeline. These were first published alongside the Autumn Statement in November 2011.

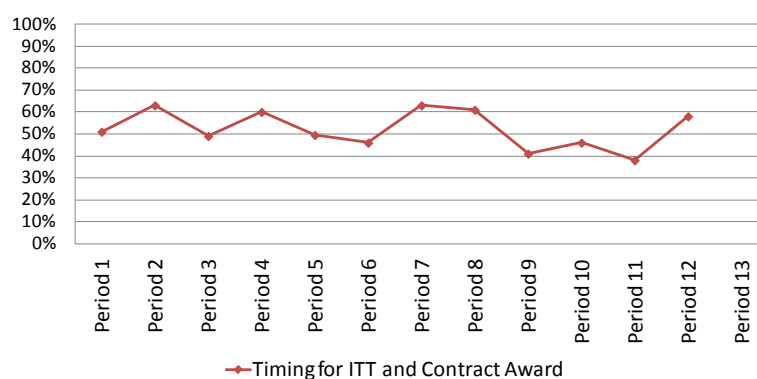
**3.3** The first update to the construction pipeline will be published alongside this report in April 2012 adding over £1.5bn of additional infrastructure projects and further detail to the previously published construction and infrastructure pipelines. Government will continue to work with industry to develop and regularly update the pipeline.

**3.4** Publication of the pipelines has been well received by industry but this is just the start. In order to achieve the step change in behaviours required to deliver the Cost Review objectives visibility of the pipelines needs to be underpinned by smarter funding and budgeting models that provide the necessary stability for long-term planning and investment by industry.

**3.5** The Government is already working with infrastructure providers and industry groups to build on the publication of the pipeline to improve efficiency and supply chain sustainability, starting with action on tunnelling following analysis of the capabilities needed to deliver the pipeline investment. Further details on this initiative are set out Section 7.

**3.6** Consideration is also being given to the approaches and measures used to assess achievement in delivering against the pipelines. For example, Network Rail already track their performance against their published 'workbank' programme as part of their Key Performance Indicators (Chart 3.A below).

**Chart 3.A: Percentage of Network Rail projects achieving target award date 2011-12**



Source: Network Rail

**3.7** The independent Highways Agency Strategy Review published in November 2011 echoed the Cost Review evidence that stop-start funding was a constraint on innovation and efficiency. Amongst its recommendations the independent review called for longer term funding certainty and budget flexibility for the Highways Agency.

**3.8** The Government announced at Budget 2012 its intention to take forward many of Alan Cook's recommendations for the roads, including developing a national roads strategy and setting a renewed focus on the level of performance expected from the Highways Agency. The Government will set out further details in its response to Alan Cook's recommendations. The Government also announced at Budget 2012 that it will carry out a feasibility study into new ownership and financing models for the national road network, learning lessons from the water industry, to report on progress by Autumn Statement 2012.

**3.9** The negative impacts of cyclicity are not unique to publicly funded infrastructure. Chart 3.B below demonstrates the extent of cyclicity in the water and rail infrastructure sectors. The impacts of stop-start investment are much more acute in the water sector.

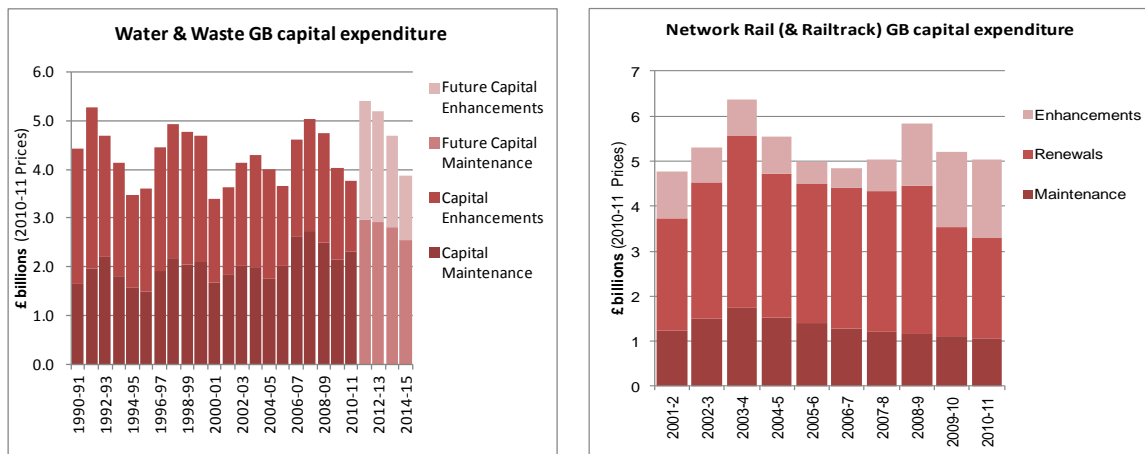
**3.10** Working with Ofwat and the water industry Government has gathered further evidence on significant impacts of cyclical investment in the water sector. The supply chain in this sector, much of which is serviced by Tier 2 providers and SMEs, is impacted by periods of boom and bust investment that results in the supply chain laying off as much as 30 per cent to 40 per cent of its workforce. The cost to industry and water customers of this cyclicity is estimated as somewhere between £3 billion to £5 billion since privatisation.<sup>1</sup>

**3.11** Cyclicity in the water industry is caused by a multitude of different factors, whether as a result of cultural behaviours, planning principles, contractual arrangements or perceptions of regulatory incentives. However, the study also demonstrates a strong correlation between outperformance in the sector with those companies having relatively smooth and stable programmes of investment.

<sup>1</sup> Study undertaken for British Water Summit February 2012



**Chart 3.B: Addressing the impacts of cyclicity**



Source: Ofwat and Network Rail

**3.12** Whilst these impacts have been known for some time, the joint study undertaken with Ofwat has identified a package of recommended mitigation measures to be considered by the water companies, all levels of the supply chain and regulators as part of the next price review. The recommendations will be published in spring 2012 as part of a formal consultation process prior to adoption. Addressing these issues has the potential to improve efficiency by a further five per cent per annum.<sup>2</sup>

## Implementation actions for 2012-13

**3.13** The Government will consider the following additional measures for implementation in 2012-13:

- continue to work with industry to develop and improve the published pipelines at each subsequent publication We will also consider how industry requests for increased visibility of the risks and status of the pipeline projects can be incorporated;
- publish in April 2012 further pipeline data and initial capability plans for key sectors, including tunnelling (see Chapter 7);
- encourage common standards and approaches to the publication and use of pipelines in collaboration with wider public sector and private sector procuring bodies - where it would be impractical to attempt to consolidate sufficient detail into the central pipeline publications;
- publish the response to Alan Cook’s review of strategic road network, including the recommendation on certainty and flexibility of Highways Agency budgets. Work will commence immediately to take forward any actions needed as a consequence of responding to this recommendation. As announced at Budget 2012 the Government will in parallel carry out a feasibility study into new ownership and financing models for the national road network and will report on progress by Autumn Statement 2012; and
- building on the principles established through the joint study with Ofwat, investigate the extent to which cyclicity is impacting other regulated sectors and work with regulators and companies in these sectors to consider the extent to which the recommendations from the joint Ofwat study could be applied.

<sup>2</sup> Figures sourced from British Water survey.



# 4

## Component B: Effective governance and control of costs

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### Key objectives

**4.1** The Cost Review report highlighted leadership capability and effective governance of projects and programmes as key factors in efficient delivery. Within the public sector, the Government recognises that addressing the gap in client skills and capability across the Civil Service would improve efficiency. Successful projects such as the Olympics reinforce the benefits of strong leadership exercised through clear governance structures. Successful projects and programmes all demonstrate the need for effective role separation, timely decision making and measures to incentivise greater focus on the management of outturn costs and better control of risk and contingency at all levels, not just budget.

**4.2** The need to ensure strong client leadership is also an issue in some regulated and private sector companies. For example, several private sector organisations that have outsourced the management of projects and programmes to consultants now acknowledge that this has led to poor planning and inefficient cost and risk control. Many of these organisations are now rebuilding their own intelligent client capabilities.

### Enabling actions completed 2011-12

**4.3** The Government has already taken steps to improve the effective leadership and governance of projects, ensuring that the Cost Review principles are adopted by:

- implementation, through the Major Projects Authority (MPA), of the Integrated Assurance and Approvals Process (IAAP);<sup>1</sup>
- announcing in November 2011 that all civil servants responsible for running major procurements will be trained through a new Leadership Academy. In the next three to five years the scheme aims to have built up a pool of 250 to 350 people who have completed and passed the programme and who will be leading some of the Government's major projects;<sup>2</sup> and
- embedding the requirement to adopt Cost Review principles into the funding approval of critical government infrastructure projects such as High Speed 2 and the flood and coastal erosion risk management programme. As part of the High Speed 2 funding approval the Government modified the governance arrangements to ensure that the project adopted exemplar practice from other large complex programmes to ensure prompt decision making and effective programme oversight.

**4.4** The Cost Review programme has placed particular emphasis in the first year of implementation on the effective management of risk and contingencies. It is difficult to estimate

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<sup>1</sup> The Major Projects Authority (MPA) is responsible for defining and operating the assurance framework for major central government projects. It is sponsored by the Efficiency and Reform Group in the Cabinet Office and HM Treasury.

<sup>2</sup> Saïd Business School at the University of Oxford will design and deliver the new Major Projects Leadership Academy (MPLA). The new academy will build the skills of senior project leaders across government to deliver complex projects – reducing the over-reliance on expensive external consultancy further and building expertise within the Civil Service.

the aggregate size of contingencies across the circa £250 billion infrastructure investment pipeline in the UK over the next five years but it will be measured in tens of billions at any point in time. Failure to manage these sums efficiently can therefore lead to significant expenditure wastage through sub-optimal utilisation of often highly constrained capital budgets and also act as an incentive for 'scope creep' and inflated out-turn costs.

**4.5** The scale of the opportunity is exemplified through London Underground's initiative to incentivise risk mitigation. This is on target to more than halve their 2009 levels of aggregate risk exposure (equivalent to more than £50 million of capital spend per annum) achieved through improved risk mitigation across their £2.7bn capital programme.

**Box 4.A: Projects are carrying large, apparently inconsistent provisions for contingency**

The lack of consistency in the way in which early estimates are produced for large infrastructure projects can be demonstrated by comparing the different approaches taken by Crossrail and High Speed 2. In the High Speed 2 Economic Case, produced in February 2011 using HM Treasury 'Green Book' guidance, Optimism Bias of 34 per cent (more than £4 billion) was applied to risk adjusted estimates of construction costs. When the early estimate for Crossrail was reworked following the passing of the Crossrail Act, it was decided that the design maturity of the project at that stage was sufficient to substitute a detailed Quantified Risk Analysis for a more general allowance for Optimism Bias. The two projects are not directly comparable – Crossrail had a long gestation period when project definition improved – but the discipline of allocating every portion of cost to a specific item of risk has been seen to greatly improve the transparency of the project estimate. This makes it easier to challenge the legitimacy of the cost contingency and overall value for money.

**4.6** As a first step to promoting greater focus on the management of risk and contingency within the public sector the Government has brought together an 'Expert Risk Group' drawn from major infrastructure operators and deliverers<sup>3</sup> to review current practice and consider alternative approaches to contingency management. The outputs of the Expert Risk Group have:

- identified for one-off projects such as High Speed 2 and Thames Tunnel that the approach, definitions and relative budget implications and management of contingency vary significantly between projects (Box 4.A above); and
- provided further evidence that for many infrastructure programmes the approach taken by procuring authorities, with mature estimating procedures, means that strict application of 'Green Book' guidance on contingency and the estimation of so called "unknown unknowns" may not always be appropriate. The current guidance may therefore represent a constraint.

<sup>3</sup> including, but not limited to, Network Rail, London Underground, the Highways Agency, the Environment Agency, British Airports Authority, National Grid and Infrastructure UK

#### **Box 4.B: Thames Tunnel approach to contingency (optimism bias)**

Until early in 2012 the project team for the £4.1 billion Thames Tunnel sewer scheme had followed HM Treasury 'Green Book' guidance in respect of the inclusion of Optimism Bias in early project estimates. Using an approach supported by members of the Cost Review Expert Risk Group, the project team has now undertaken a comprehensive quantitative risk analysis which has taken the cost estimate to a level of maturity which has replaced Optimism Bias with more explicit provisions, removing duplication and reducing the provision for risk and contingency. The cost estimate without Optimism Bias is more transparent, facilitating its scrutiny for value for money and helping to ensure that it is not unduly inflated by loosely defined contingencies.

**4.7** The outputs and capability within the Expert Risk Group are already being applied in support of the priority infrastructure projects (Box 4.B above).

### **Implementation actions for 2012-13**

**4.8** The Government will consider the following additional measures for implementation in 2012-13:

- complete the study initiated with industry to review the baseline cost and contingency estimate for High Speed 2. Building on the initial Cost Review benchmarking analysis (which helped reduce early budget estimate by over £800 million), the Government will work with industry to undertake more detailed comparisons, in particular with a number of current French high speed rail projects - this work will be completed by Spring 2012 and will include analysis of the approach to risk and contingency;
- clarify the current guidance on Optimism Bias in the 'Green Book' with particular recognition of organisations with mature costing methodologies;
- develop supplementary guidance to ensure that project sponsors of infrastructure projects with mature risk estimating capabilities:
  - adopt an approach for accounting for the cost impact of "unknown unknowns" that reflects the specific reasons for the need to adjust for the expected differences between initial estimates and expected out-turns;
  - focuses the production of initial project estimates more on setting a realistic affordability envelope and less on a project budget; and
  - places a greater emphasis on the use of Quantitative Risk Analysis (QRA) to build bottom-up cost estimates.
- work on the revised 'Green Book' infrastructure risk and contingency guidance will commence immediately. The new guidance will be in place by December 2012;
- the Expert Risk Group of major infrastructure operators, deliverers and stakeholders will be formalised and will provide a peer review and support role across the priority infrastructure projects, building on the trial initiative with Thames Tideway Tunnel; and
- the Expert Risk Group will work more closely with the Infrastructure Data Group to put in place measures to aid the collection, collation and dissemination of data to inform future projects.



# 5

## Component C: Specifications and technical standards

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### Key objectives

**5.1** The National Infrastructure Plan 2011 restated the Cost Review objective to bear down on unnecessary costs by aiming to reduce by more than 50 per cent the number of bespoke in-house standards that apply to infrastructure projects, and promote consistency between client groups. The application of technical standards, particularly in-house standards and prescriptive client requirements, adds cost and complexity to infrastructure delivery in the UK. Consistency of engineering standards across industry groups enables consultants and contractors to invest in developing skills, products and solutions to deliver and maintain infrastructure assets more cost effectively. To ensure that infrastructure projects and programmes meet the required outcomes at the minimum sustainable cost, the Government is implementing the actions set out in the following section.

### Enabling actions completed 2011-12

**5.2** The Industry Standards Group, chaired by Terry Hill (chair of Arup Group Board of Trustees), is already helping drive out duplication and redundancy in technical standards for infrastructure assets. This Group is focussing initially on the transport sector.

**5.3** Government and private sector infrastructure clients have already embarked on programmes to tackle these issues. The Cost Review has provided a timely catalyst for the discussions enabling clients across sectors to build on these programmes to encourage greater consistency of approach across clients.

**5.4** In developing in house standards for certain asset types, there has been a historical divergence of requirements between different client groups, resulting in an inconsistent approach to the specification of similar solutions. Not only has there been a significant level of additional bespoke requirements meaning that off-the-shelf solutions cannot be used, but also that the bespoke requirements can conflict where there are interfaces between different client assets. However, there is evidence of a new approach that is delivering significant savings in the construction and operation of escalators for London Underground and Crossrail (Box 5.A below).

**5.5** Within the highways sector, there is a separate issue of how local authority highways organisations use and interpret both current and superseded Highways Agency standards. There is evidence of an inconsistent approach between different local authorities that can act as a barrier to standardisation and the sharing of best practice and lead to increased costs

**5.6** The £6.25bn M25 PFI contract between the Highways Agency and Connect Plus required an extensive number of departures from current HA standards. Whilst the project followed the normal HA departures process, the incentive mechanisms in the contract (sharing savings between the contractor and government) encouraged collaborative behaviours to resolve the issues quickly preventing delays to progress and contributing to significant cost savings.

### **Box 5.A: London Underground / Crossrail escalator standards**

An international escalator benchmarking study commissioned by London Underground (LU) in 2009 concluded that they paid a high cost premium for using design standards that lead to bespoke designs and a dependence on a highly specialised supply chain. In order to move away from this situation, LU has been working with escalator suppliers through a process of technical dialogue, in order to develop a new specification that allows supply from a global base. LU has a need to install at least 50 escalators over a 10 year period between 2013 and 2023. There is also a requirement from Crossrail for 57 escalators to support their stations programme for installation between 2014 and 2016. LU and Crossrail have therefore agreed a joint procurement managed under contract as a single TfL package to a single supplier against a single contract arrangement.

In addition to responsibility for design, manufacture and installation, suppliers will also have responsibility for the 'whole life' asset management comprising preventative maintenance and capital renewal activities for a duration of up to 30 years. The key benefits of this arrangement are that it provides for: a firm volume commitment, enabling suppliers to make the necessary resource investment to deliver stable project performance, cost, quality and reliability improvements; significant economies of scale; and the learning, competition and asset management benefits of a common escalator design. This new approach has already yielded a 43 per cent capital cost reduction in the first installation at Charing Cross and additional savings are expected as further competition and learning benefits accrue. The life cycle perspective is expected to yield operational reliability and circa 30 per cent cost improvements over the whole life of the asset compared with LU's historical practices.

Following the success of this joint LU / Crossrail approach to the escalator pipeline, a similar exercise is being carried out for lifts. This will conclude in June 2012 and will source 52 lifts for LU and Crossrail on a similar design, manufacture, install and maintain basis.

## **Implementation actions for 2012-13**

**5.7** The Government will consider the following additional measures for implementation in 2012-13:

- the Industry Standards Group will report progress and quantification of costs and benefits in June 2012 and present recommendations for extending this approach into other sectors beyond transport;
- announce in June 2012 trial projects with the Highways Agency to ring-fence a number of projects and provide industry with the opportunity to challenge existing standards and fast-track the process of agreeing departures; and
- expand the role of the Industry Standards Group to include other infrastructure sectors and specific priority infrastructure projects and programmes.



# 6

## Component D: Competition and procurement

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### Key objectives

**6.1** Effective and fair use of competition and procurement procedures remains critical to achieving value for money and ensuring that the UK remains attractive for inward investors. However, evidence from the Cost Review suggests that the UK's approach and interpretation of competition and procurement law is not always effective in achieving the best outcomes. Improving skills and capability within procuring bodies, tempering the overly contractual and risk-averse attitudes of clients and suppliers and encouraging early supply chain engagement, are all key components to reducing costs, improving collaborative working and promoting growth at all levels of the supply chain.

### Enabling actions completed 2011-12

**6.2** Evidence from international comparisons of public procurement process supported the view that the timescales and costs of procurement were greater in the UK. For example, the cost of the average procurement in France is €21,600 compared to €52,700 in the UK<sup>1</sup>.

**6.3** In France and Germany the procurement process is generally quicker than the UK, with the evidence suggesting greater consistency of the procurement process. For example, the signing of contracts in Germany is achieved earlier as bidders are required to sign prior to the tender submission. This position is perhaps easier to achieve in Germany due to the greater use of standard forms of contract. In the UK, standards forms are generally significantly amended and bespoke to clients and projects, adding cost and complexity to the procurement process.<sup>2</sup>

**6.4** The Autumn Statement 2011 reinforced Government's commitment to address the widely accepted view that there is significant wastage in procurement processes in the UK through:

- better use of pre-procurement dialogue and earlier involvement in procurement processes of suppliers at all levels; and
- implementing LEAN procurement principles.

**6.5** These principles are being applied to all procurements, including infrastructure, although the comparative complexity of most economic infrastructure projects and resultant variances in approach and procurement timescales precludes the use of overly prescriptive targets.

**6.6** As part of its objective to improve procurement and fairness, the Government has also mandated use of fair payment regimes for sub contractors and developed the use of standard pre-qualification processes. This includes further implementation of the use of Project Bank Accounts in construction projects (see Chapter 7).

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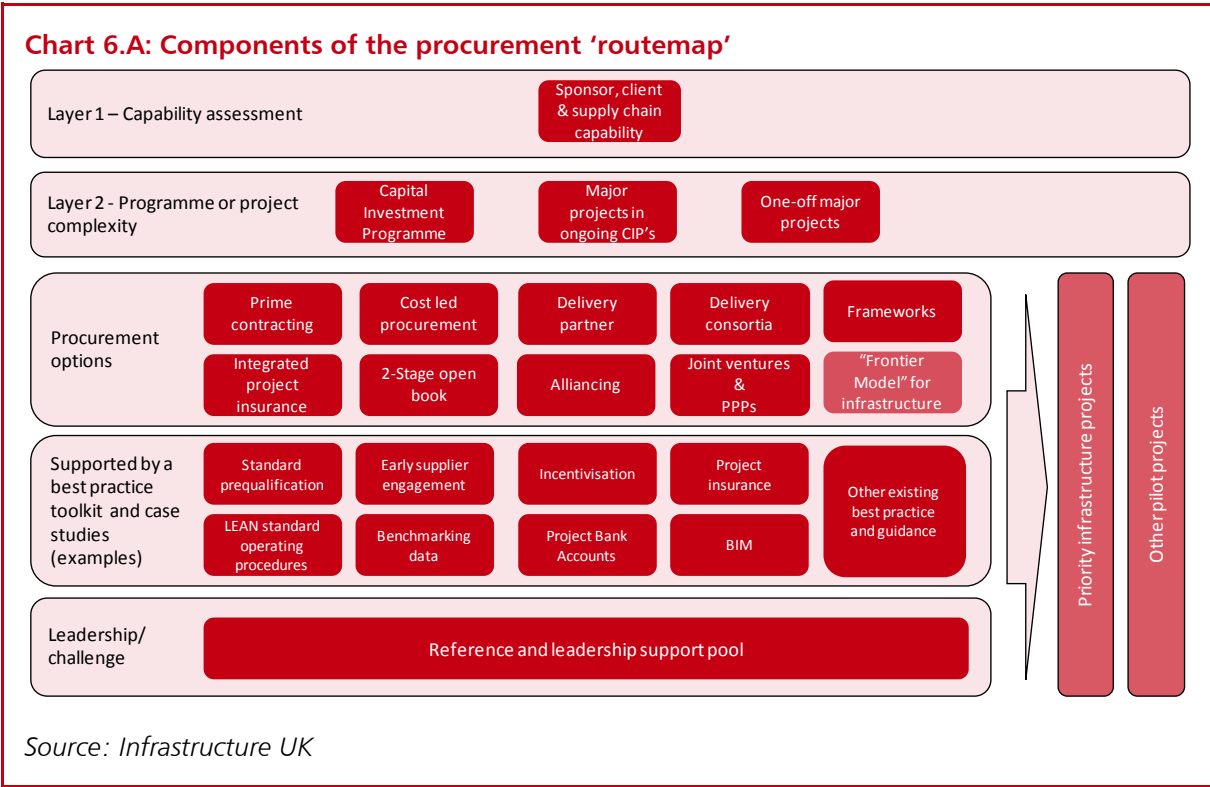
<sup>1</sup> Source: EU (2011) Public Procurement in Europe, Cost and Effectiveness

<sup>2</sup> The Government investigated the approach to public procurement in France and Germany in summer 2011 to identify key differences to procurement practice in the UK

6.7 For public and private infrastructure sectors the Government has identified the specific procurement approaches and behaviours that have been successful in delivering improved performance and cost savings of between 12 per cent and 25 per cent. The Government has been working with the industry Client Working Group to incorporate the outputs of this work into an overarching framework or ‘routemap’ to help public and private procuring clients select the most appropriate procurement strategy for different infrastructure programmes or projects. The key components of the routemap are described in Chart 6.A below.

6.8 This ‘routemap’ is underpinned by:

- assessment tools that consider client capability, project complexity and minimum capability requirements in selecting from the range of possible procurement routes;
- best practice case studies, resources and enabling policy and guidance to support a move towards alternative delivery routes that promote integration and better use of supply chains; and
- access to a “mentoring pool” and industry leaders to promote new practices and assist less mature client (and supply chain) organisations.



6.9 To enable delivery of the procurement measures set out in the Autumn Statement 2011 the Government will work with industry to ensure that the ‘routemap’ and supporting tools are applied across public and private sector infrastructure providers to deliver consistent characteristics, behaviours and practices, including:

- improved client capability – clients who know what they want, what it should cost and how best to go to market;
- effective communication of transparent and smoothed pipelines of work where possible; and
- longer term collaborative and integrated relationships that remove waste and incentivise innovation and continuous improvement at all levels of the supply chain.

**6.10** The case study set out in Box 6.A below illustrates work already underway to develop and implement a number of the key 'toolkit' components, for example: approaches to early supply chain involvement), pooled incentivisation models and greater use of fixed target-cost benchmarks or 'cost led procurement'.

**Box 6.A: Bank station early contractor engagement case study**

London Underground (LU) has been concerned that traditional approaches to Early Contractor Involvement (ECI) do not incentivise or reward contractors sufficiently to achieve the desired objective of bringing innovation into the early stages of design. In response, LU has developed a new ECI approach to tendering for the £600m upgrade of Bank Station, one of the biggest and most complex on the LU network.

This Innovative Contractor Engagement (ICE) approach has the following key features:

- Pre-qualification and short-listing which address the contractors' ability to innovate as well as deliver.
- A structured dialogue phase where contractors bring forward and develop with LU innovative ideas under a non-disclosure agreement which protects the contractors' intellectual capital, allowing them to bring the competitive advantage of their innovation to their ITT technical and commercial response.
- LU makes a contribution to the costs to contractors for engaging in this ICE.
- Where an innovative idea that is of value is brought forward by a bidder that ultimately loses, LU recognises the need to share the value of that idea with the bidder.
- Revision of the Requirements Statement included in the Invitation to Tender so that the innovative ideas that can deliver benefit to the Project can be included.

LU has assessed the benefits associated with this procurement process and is looking for it to deliver 10 per cent to 20 per cent increased value to the Project, as well as opportunities to accelerate delivery of benefits to passengers.

**6.11** Across the public sector the Government published in February 2012 a list of trial projects to test a range of alternative procurement approaches. In infrastructure construction this included, for example, trials for the use of Project Bank Accounts on a number of roads projects and the trial use of target benchmark costs (Cost Led Procurement) on the Upper Mole and Rye Harbour flood risk management schemes.<sup>3</sup>

**6.12** Working in collaboration, the Institution of Civil Engineers and Government are considering adding a new form of alliance contract to the NEC3 suite of contracts. Following an initial consultation exercise with key stakeholders, the case for a new form of standardised contract is under consideration. NEC acknowledge there is also a need to better aid users in giving good guidance to the range of incentivisation and collaborative working models currently provided for in NEC3 Contracts.

**6.13** Government has already started to change its procurement behaviours and adopt programme rather than project-based approach to asset procurement, for example in the Highways Agency (Box 6.B below). The procurement of frameworks for flood defence are also being taken forward with the Cost Review principles in mind, in particular the new frameworks will focus on improved supply chain integration across the packages being procured.

<sup>3</sup> <https://update.cabinetoffice.gov.uk/resource-library/construction-cost-benchmarks>

### **Box 6.B: Programme approach to delivery of the Managed Motorways projects**

The Highways Agency is now planning and managing the 14 major projects approved in the last Spending Review as a programme, rather than as a series of discrete projects. This helps them collaborate more effectively with their supply chain, and creates opportunities to generate innovation and value from a large and visible programme of work. The first schemes are already underway. Through this new approach, Highways Agency is targeting a £443m cost reduction against an expenditure of £2.2 billion over the lifetime of the programme, a cumulative reduction of 20 per cent. In addition to the 14 schemes already announced a further 6 major project were approved in the Chancellor's Autumn Statement (2011) to be started in the next 3 years. The Highways Agency will manage these based on the same approach as the existing 14 and is targeting a £201m cost reduction against expenditure of £1.0 billion over the lifetime of the programme, a cumulative reduction of 20%.

## **Implementation actions for 2012-13**

**6.14** The Government will consider the following additional measures for implementation in 2012-13:

- publish by July 2012 the procurement framework or 'routemap' together with the supporting tools to drive consistent characteristics, behaviours and practices across public and private sector infrastructure clients. This will include updated guidance and case studies on interpretation of the EU Procurement Directives, where this is seen as an impediment to improved behaviours;
- implementation of the key components of this framework will be extended across the priority infrastructure projects, identified within the National Infrastructure Plan 2011;
- work with the Institution of Civil Engineers and publish a formal consultation document in spring 2012 on approaches to using the existing NEC3 standard forms to establish collaborative working arrangements along with proposals for a new form of alliancing contract;
- the Government launched in December 2011 a comprehensive review of the Private Finance Initiative. The terms of reference published for this review placed particular emphasis on procurement. The Government has encouraged industry to come forward with innovative approaches to streamlining the process and alternative ways of adapting other procurement models alongside alternative forms of funding; and
- the new Major Projects Leadership Academy will play an important role in improving procurement skills and capabilities across the public sector. The Government will ensure that the outputs of the Cost Review and the network of infrastructure leaders and champions are embedded effectively into the Academy.

# 7

## Component E: Industry and supply chain sustainability

### Key objectives

**7.1** Much of the focus within the Cost Review programme requires behavioural changes within clients. However, the full benefit of available cost savings can only be achieved if industry responds in turn, by working with clients to enable better integration and innovation through all levels of the supply chain. The commitments made in the Autumn Statement (November 2011) and more recent announcements by Government have placed renewed emphasis on promoting better collaboration through the whole supply chain. These commitments include specific measures to ensure that visibility of the pipelines extends to SMEs, alongside other actions to ensure principal (tier 1) contractors maximise growth and sustainability of the wider supply chain.

### Enabling actions completed 2011-12

**7.2** The Government has already taken a lead by initiating pilots to test the use of Project Bank Accounts (PBAs), starting with a number of highways projects, flood defence projects and Crossrail. This is in keeping with the Government's policy of Fair Payment for SMEs aimed at reducing the risk of supply chain members going out of business due to excessive delays to payment by principal contractors, which currently average 63 days.

**7.3** In addition to the infrastructure and construction pipelines, first published in November 2011, an increasing number of procuring bodies are publishing more detailed procurement package pipelines. Alongside these pipelines many procuring authorities are also establishing forums where they engage with their key suppliers to discuss their forward work plans (Box 7.A below).

#### Box 7.A: Examples of strategic supplier engagement

- The Highways Agency hold supplier briefings at CEO level and groups such as the Major Projects Principals Group, all of which discuss pipelines as well as performance.
- Crossrail hold industry days, CEO / MD / Project Director forums and 'come meet the buyer' events.
- Network Rail holds industry days and formal 'senior account management' meetings to explain pipelines.
- National Grid holds industry days and provides access to Directors to talk about pipeline.
- EDF hold industry consultations, supplier forums and 'come meet the supplier' days.
- London Underground / TfL use web based publicly available information and supplier days.

**7.4** However, these forums do not always follow a consistent approach, nor is the output from these engagements aggregated and analysed across sectors. As such, potential opportunities to identify cross-cutting themes may be missed.

**7.5** To gain improved cross-sector visibility Government has been developing with industry supply chain strategies across key sectors; in infrastructure these extend to nuclear, and offshore-wind. In addition to these top-down plans, a more detailed bottom-up process has been developed based around an analysis of the tunnelling sector.

#### **Box 7.B: Tunnelling pilot programme**

Within the priority infrastructure projects identified in the National Infrastructure Plan 2011, there are a number that contain significant elements of tunnelling including: High Speed 2; Crossrail; Thames Tideway Tunnel; Northern Line Extension to Battersea; National Grid tunnels; and new nuclear programme (cooling water intake and outflow). These projects are for six different contracting authorities, a mixture of public, private and regulated clients and under the policy lead of three departments (DECC, DEFRA and DfT). Government, working together with industry, has analysed the pipeline requirements across these projects, and compared the requirements of the pipelines with the capability and capacity of the tunnelling industry in the UK. The findings suggested that:

- economies of scale may accrue on purchasing of key components if consideration is given to re-use and standardisation of elements of the tunnelling plant and equipment;
- similar savings can be achieved by strategic spares being made available across projects. It is only through strategic consideration across a portfolio of tunnel projects for different clients that such opportunities may be developed; and
- enhanced manufacturing opportunities may be developed on key components such as mining rolling stock and tunnel segments.

As a result of this analysis the Government will explore:

- options for training new apprentices at the Tunnelling and Underground Construction Academy to train apprentices and develop key skilled labour and supervisory resources to support the forward programme of work;
- in partnership with industry, how to improve capability, with the key infrastructure clients with major tunnelling projects – Crossrail, London Underground, National Grid, Thames Water, National Grid and EDF – supporting the planned investment programme to improve technical and delivery skills; and
- options for developing the next generation of tunnelling engineers to support the growth in tunnelling skills, and better place UK firms to compete for the increasing tunnelling opportunities both in the UK and overseas markets.

**7.6** Following analysis of its supply chain spend (especially in the lower tiers) and engagement with its delivery supply chain partners Highways Agency has identified five lead areas for its initial focus of introducing category management into its core highway business. These are Gantries, Pavements (includes surfacing, aggregates and concrete), Temporary Traffic Management, Traffic Technology and Earthworks. Each category being developed focuses on three main areas; product, process and procurement efficiencies (where appropriate). Highways Agency has already awarded two 'enabled' frameworks for Gantries and Pavement, with the former already yielding a forecast £2 million of savings.<sup>1</sup>

<sup>1</sup>An enabled framework is one that the Agency procures to agreed terms and conditions and supply chain then purchase directly through these to our pre-agreed terms. These frameworks are available to OGD's and LA's who have been engaged in development. We have also engaged with EA and MoD over potential use of the Pavements Framework

## Implementation actions for 2012-13

7.7 The Government will consider the following additional measures for implementation in 2012-13:

- build on the autumn statement commitment to improve strategic pre-procurement dialogue with industry, by jointly developing plans to address existing skills and capability gaps to establish sustainable and efficient supply chains necessary to deliver the pipelines. Further details on the initial sector specific implementation plans (including tunnelling) will be set out by the Government in April 2012;
- implementation of the actions to improve UK tunnelling capability and continue to work with industry to extend the standard approach to strategic supplier engagement developed for tunnelling to other infrastructure sectors and supply chain 'pinch-points', for example civil engineering earthworks;
- in addition to expanding the use of Project Bank Accounts the Government committed in the National Infrastructure Plan 2011 to consider other means to ensure the sustainability of SMEs and enhance their ability to compete for more infrastructure construction work, for example by reviewing Government requirements for construction bonds or the use of innovative and cheaper insurance based products.<sup>2</sup> The requirements for performance bonds are typically 10 per cent to 15 per cent of the capital costs and particularly affect SMEs, where the cost of securing bonds at the levels required becomes more onerous and can often preclude them from bidding. The Government will consult with industry and publish recommendations in 2012; and
- other measures to encourage improved industry integration and supply chain sustainability are embedded into the actions within the competition and procurement workstream, for example improved use of early supplier involvement, pooled incentivisation models and collaborative delivery models such as alliancing.

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<sup>2</sup> For example, Subguard® is an insurance based scheme that already helps construction contractors manage the risk of subcontractor or supplier default as an alternative to expensive performance bonds. It is currently aimed at providing protection to general contractors if a subcontractor defaults.





# 8

## Component F: Infrastructure data

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### Key objectives

**8.1** The 2010 Cost Review Report identified the importance of a consistent approach to managing and sharing infrastructure data. Cost savings could be delivered by improving the maturity of cost capture systems, introducing a culture of greater transparent reporting of out-turn data and improving the quality of information held relating to existing assets.

**8.2** With targeted investment, the private sector and parts of the Government have already proven the capacity for cost savings through improved use of performance and cost data. Nevertheless, it remains a concern that infrastructure clients' management and use of data remains patchy, hindering Government's ability to set challenging cost targets, manage risk effectively and benchmark itself against the private sector and other countries.

### Enabling actions completed 2011-12

**8.3** The Infrastructure Data Group set up by the Government in March 2011 has brought together industry, academia, clients and the Government to consider ways to help infrastructure clients and industry address the challenges of capturing and using data for efficient delivery. The initial outputs of this group have been to:

- put in place a Memorandum of Understanding (MoU) between the Highways Agency, Environment Agency, London Underground and Network Rail for the organisations to pool data. The intention is to widen the scope of the MoU to include other infrastructure clients. This will improve cross-sector access to basic cost information on some major, recent projects; and
- use pilot projects in the Highways Agency to implement a standardised approach to collecting outturn performance and cost data on a range of infrastructure projects, including the M1 J10-13 Managed Motorways scheme, the improvements to the M1 at J19, and the M53 at Bidston Moss. These demonstration projects are being undertaken in collaboration with the Construction Sector Transparency initiative.<sup>1</sup>

**8.4** Organisations are most likely to obtain greatest value for money when they can establish and validate what their infrastructure investments should cost and as 'intelligent clients' incorporate this into procurement processes. This has been proven in the economically regulated water sector, the commercial property sector and in the success of the Highways Agency 'Cost Intelligence' programme (Box 8.A below).

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<sup>1</sup> CoST is an independent initiative to encourage the pro-active disclosure of public and private sector construction project information. The programme is supported by the World Bank, is endorsed by the G20 countries and the UK Government. The UK CoST programme is coordinated by the Institution of Civil Engineers.

#### **Box 8.A: Highways Agency “Cost Intelligence” data**

The Highways Agency (HA) has embarked upon a programme of improving their “Cost Intelligence”. The HA recruited commercial specialists, invested in systems and trawled historic cost data from some 65 major schemes. The HA has built up a database which, alongside expert knowledge and judgement, enables the organisation to know what the construction of their future assets “should cost”. During 2011 the advantages of this approach became clear: the HA working with industry to agree savings of nearly £200 million from submitted tenders.

**8.5** The Government has also undertaken a joint study with the University of Cambridge’s Department of Engineering into how infrastructure operators use condition data to inform their maintenance strategies and risk transfer decisions. This work has demonstrated a mixed range of effectiveness with some sectors demonstrating world class asset management practices whilst others encounter problems from inadequate incentive arrangements, legacy issues and the scale of the task. For example, on the London Underground PPPs and the M25 design build finance and operate (DBFO) contract responsibility for maintenance of the assets was transferred to the private sector, but with incomplete information of the condition, or expected life, of the assets. As a result of this lack of data and the risk transfer arrangements, value for money was probably not optimised and costs were increased.

**8.6** PAS 55 is published by British Standards Institution and gives guidance as to how infrastructure operators or owners should approach the management of their physical assets to achieve greatest value over the entire asset lifecycle. This has been called an “asset management” approach. London Underground is one of few public bodies which are accredited to PAS 55 and has made savings as a result of this approach estimated at £422m over 4 years; LU achieved this by adopting the Government’s “P3M3” project management methodology.<sup>2</sup> Many private/regulated infrastructure organisations are now accredited. The independent Cook Review recently stated that the Highways Agency should seek similar accreditation.<sup>3</sup>

#### **Box 8.B: Crossrail use of Building Information Modelling (BIM)**

Crossrail, one of the largest current infrastructure projects in the country, has adopted BIM and is operating one of the most sophisticated models yet, as part of an ‘asset lifecycle’ approach. The BIM model approach has been designed to be flexible and capable of increasing levels of detail as the design progresses through to the operational phase. Objects can be interrogated for details of their purpose, performance specification, manufacturer information, operating requirements, and systems of which they are a part. Once the railway is operational, the model can provide the ‘single source of the truth’ for a variety of purposes, such as maintenance or replacement of components, all as part of the management of the asset lifecycle.

**8.7** Through the Infrastructure Data Group and the Government’s BIM task group, guidance for clients and the supply chain has been produced on the application of BIM to infrastructure. Though the benefits of collaborative working on discrete projects are well understood, reservations have existed regarding the applicability of BIM to infrastructure. This is due to infrastructure including ‘linear’ assets such as roads or railways and assets that may be difficult to define such as earthworks and flood protection. Also, all infrastructure fundamentally exists

<sup>2</sup> [www.p3m3-officialsite.com](http://www.p3m3-officialsite.com)

<sup>3</sup> Accreditation to PAS55 represents good practice but “best practice” exceeds PAS55 requirements and yields greatest cost savings.

as interconnected networks, hence individual assets are difficult to model. The new guidance will enable infrastructure clients to better specify their requirements when seeking to adopt BIM. Two publications underpinning this are: PAS 1192 series (published from summer 2012 onwards), Infrastructure UK is contributing to the drafting of this documentation, which will specify how a suitable BIM system will perform to the required level; and PAS 55 which requires a whole-life approach be taken when managing physical assets, with which BIM will assist by providing the required information at handover. The traditional data structures for BIM may be too simplistic for some infrastructure networks, so Government is also supporting development of a more robust option and a hierarchy within which this asset information will reside.

## Implementation actions for 2012-13

**8.8** The Government will consider the following additional measures for implementation in 2012-13:

- work with industry to build on the Memorandum of Understanding to create a hub for exchanging benchmark data. Work has already commenced with industry on the development of standard protocols which will facilitate benchmark data exchange. This has been published by the Building Cost Information Service (BCIS) for formal consultation with industry. Infrastructure clients are already collaborating with BCIS on unifying data structures, initially focusing on common assets such as bridges<sup>4</sup>;
- consider the next steps to extending the CoST demonstrator projects and publish the first wave of project reports. Government will consider the options for embedding the use of such a means of reporting on outturn performance, for publication on clients' websites and/or a CoST portal;
- the Infrastructure Data Group is exploring in more depth the benefits of adopting PAS55 and the asset management principles for best practice whole life management and will report with recommendations in summer 2012;
- work with clients, economic regulators and academia to improve the definition and collection of Cost Review cost and performance benchmarks for future years. The Infrastructure Data Group will be established as a hub to facilitate and enable tracking of a series of key indicators. Revised benchmark indices will be published as part of the next annual Cost Review report;
- to support the drive to improve the quality and quantity of infrastructure cost data, government will track progress by measuring the volume of infrastructure works undertaken that are subject to a cost benchmarking regime and report in the next annual report; and
- the Infrastructure Data Group will work closely with the Expert Risk Group to put in place measures to aid the collection, collation and dissemination of data to inform future projects.

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<sup>4</sup> BCIS is part of the Royal Institution of Chartered Surveyors and gathers and provides construction cost data to industry.



# 9

## Next steps

### Summary of priority actions for 2012-13

**9.1** This Annual Report represents a continued commitment by Government to working with industry to meet the objectives of the Cost Review Implementation Plan 2011. Going forward the Government will place greater emphasis on implementation of the enabling actions and strategies which formed the focus of the first year of the implementation plan. This will necessitate improved mechanisms for tracking progress against these commitments building on the mechanisms and measures set out in Chapter 2.

**9.2** Table 9.A below sets out a summary of the actions set out in this plan for the year 2012 to 2013, together with the timeframe within which the Government anticipates they will be completed.

**Table 9.A: Summary of actions for 2012-13**

Component	Action	Due Date
Pipelines	<ul style="list-style-type: none"> <li>Publish the autumn update of the funded construction pipeline and wider National Infrastructure Plan updated pipelines.</li> </ul>	autumn 2012
	<ul style="list-style-type: none"> <li>In collaboration with wider public sector and regulated bodies publish common standards and approaches for the transparency and use of pipelines - where the projects and programmes do not form part of the centrally published pipeline data.</li> </ul>	autumn 2012
	<ul style="list-style-type: none"> <li>Building on the joint study with OFWAT the Government will also consider the extent to which cyclicalities is impacting other regulated sectors to determine the scope for similar actions to those being implemented in the water sector to reduce the impacts on supply chains.</li> </ul>	winter 2012
	<ul style="list-style-type: none"> <li>As announced at Budget 2012 carry out a feasibility study into new ownership and financing models for the national road network, learning lessons from the water industry, to report on progress by autumn 2012 The principles will be considered for other areas of public investment, such as flood defences.</li> </ul>	autumn 2012
Effective governance and control of costs	<ul style="list-style-type: none"> <li>Work on developing the new Green Book infrastructure risk and contingency guidance will commence immediately. The principles are already being tested in relation to a number of the Government's priority infrastructure projects.</li> </ul>	winter 2012
	<ul style="list-style-type: none"> <li>The Expert Risk Group of major infrastructure operators, deliverers and stakeholders will publish its findings and will re-focus its activities on to overseeing the delivery of best practice cost contingency management on major UK infrastructure projects and programmes.</li> </ul>	spring 2012

Component	Action	Due Date
	<ul style="list-style-type: none"> <li>Government has initiated a study with industry to review the baseline cost and contingency estimate for High Speed 2, building on the benchmarking analysis undertaken as part of the initial Cost Review. The output will be considered as part of the re-baselining being undertaken alongside mobilisation of the HS2 Development Partner.</li> </ul>	spring 2012
Specifications and technical standards	<ul style="list-style-type: none"> <li>Reduce by more than 50 per cent the number of bespoke in-house standards that apply to infrastructure projects in the transport sector, and promote consistency between client groups. The Industry Standards Group will report progress and quantification of costs and benefits and present recommendations for extending this approach into other sectors beyond transport.</li> <li>Government will initiate a number of specific pilot programmes with the Highways Agency to ring-fence a number of projects and provide industry with the opportunity to challenge existing standards and fast-track the process of agreeing departures.</li> </ul>	<p>spring 2012</p> <p>spring 2012</p>
Competition and procurement	<ul style="list-style-type: none"> <li>The Government will publish for review with industry a procurement framework or 'routemap' to support infrastructure procurement.</li> <li>Piloting of the key components of this framework will be extended across the priority infrastructure projects identified within the National Infrastructure Plan 2011 (see Table 9.B for details).</li> <li>A consultation document will be launched in conjunction with industry, setting out guidance and templates for extending the use of the NEC3 suite of contracts in establishing collaborative working arrangements, along with proposals for a new form of alliancing contract.</li> </ul>	<p>summer 2012</p> <p>spring 2012</p>
Industry / supply chain sustainability	<ul style="list-style-type: none"> <li>The Government will review and consult on its requirements for construction bonds. This includes considering the use of innovative and cheaper insurance based products. The Government will publish its recommendations.</li> <li>The standard approach to strategic supplier engagement developed for tunnelling will be extended to other infrastructure sectors and supply chain 'pinch-points', for example civil engineering earthworks.</li> <li>Government will undertake with industry further work to remove potential barriers in prequalification or tender return requirements as an enabler to supply chain integration. We will publish the results of this work and if necessary take further action to ensure procurement processes do not impede effective integration.</li> </ul>	<p>winter 2012-13</p> <p>autumn 2012</p> <p>winter 2012-13</p>
Infrastructure data	<ul style="list-style-type: none"> <li>Work has already commenced with industry on the development of standard data structures which will facilitate benchmark data exchange. This has been published for formal consultation with industry.</li> </ul>	Ongoing through summer 2012

Component	Action	Due Date
	<ul style="list-style-type: none"> <li>The Government will work with industry in considering the next steps to extending the CoST demonstration projects and will publish the first wave of project reports. Government will consider the options for embedding the use of CoST or similar means of reporting on outturn performance, for publication on clients' websites and/or a CoST portal.</li> </ul>	autumn 2013
	<ul style="list-style-type: none"> <li>The Infrastructure Data Group is exploring in more depth the benefits of adopting PAS55 principles and the consequential implementation costs and will report back in autumn 2012 with their recommendations.</li> </ul>	autumn 2012
	<ul style="list-style-type: none"> <li>To support the drive to improve the quality and quantity of infrastructure cost data, government will track progress by measuring the volume of infrastructure works undertaken that are subject to a cost benchmarking regime and report in the next annual report.</li> </ul>	spring 2013

*Source: Infrastructure UK*

**9.3** The Government will provide a further update on progress against the 2012-13 milestones set out in Table 9.A above in April 2013.

## Implementation on priority infrastructure projects and other pilots

**9.4** In addition to completion of the actions set out in Table 9.B above the Government has already started placing increased emphasis on ensuring that the enabling work undertaken in 2010-11 is implemented, where appropriate, across the priority infrastructure projects identified in the 2011 National Infrastructure Plan. Table 9.B summarises the proposed actions to be implemented or piloted on projects and programmes.

**Table 9.B: Planned implementation pilot projects for 2012-13**

Project	Proposed Action	Challenges
Strategic Roads Network	<ul style="list-style-type: none"> <li>Undertaken the feasibility study announced at Budget 2012 and consider options for additional funding flexibility</li> <li>Undertake pilot projects with industry to review approach to client requirements and standards</li> </ul>	<ul style="list-style-type: none"> <li>Trade-offs between efficient delivery and fiscal flexibility. Unlikely to be able to implement until next Spending Review.</li> <li>Specific pilots to be announced spring 2012</li> </ul>
Local roads network (Highways Maintenance Efficiency Programme) <sup>1</sup>	<ul style="list-style-type: none"> <li>From Spring 2012 begin issuing practical guidance and commence pilots with local highways authorities on efficiency projects. These will be based on existing good practice wherever possible.</li> </ul>	<ul style="list-style-type: none"> <li>The wide and diverse nature of the sector, which includes 153 independent local highway authorities, all with differing challenges and needs, plus the contractors, consultants and other parties involved in the industry.</li> </ul>

<sup>1</sup> HMEP is a long term efficiency programme aimed at supporting English highway authorities. HMEP provides practical and adaptable efficiency solutions [www.dft.gov.uk/hmep/index.php](http://www.dft.gov.uk/hmep/index.php)

Project	Proposed Action	Challenges
High Speed 2	<ul style="list-style-type: none"> <li>Undertake further benchmarking study with industry on HS2 costs focusing on indirect costs and risk (Spring 2012)</li> </ul>	<ul style="list-style-type: none"> <li>Comparability of HS2 with other EU high-speed projects.</li> </ul>
LU upgrade programme – Bank upgrade	<ul style="list-style-type: none"> <li>Implement and report on progress of the bank upgrade ECI pilot and consider scope for use on other projects.</li> <li>Ensure that the station upgrade project is packaged and delivered as part of an efficient programme adopting Cost Review procurement and contingency management principles</li> </ul>	<ul style="list-style-type: none"> <li>Approach requires detailed understanding of savings delivered. May not be appropriate for more complex projects.</li> <li>Significant variability in size and scope of work packages which will require an innovative solution to structuring the programme.</li> </ul>
Thames Tideway Tunnel	<ul style="list-style-type: none"> <li>Ensure that the delivery and procurement strategy adopt Cost Review principles with particular focus on risk and supply chain incentivisation and early involvement.</li> </ul>	<ul style="list-style-type: none"> <li>Competing taxpayer, customer and shareholder interests and timeframes of project.</li> </ul>
Flood defence frameworks (next generation supplier agreements)	<ul style="list-style-type: none"> <li>Ensure new frameworks incorporate Cost Review principles through support of the Client Working Group.</li> </ul>	<ul style="list-style-type: none"> <li>Framework tools need to encompass flexibility for use by central and local government – need to be simple to administer recognising varying client capability.</li> </ul>
Thames Estuary 2100 flood defence programme	<ul style="list-style-type: none"> <li>Explore innovative delivery model with emphasis on programme based collaborative approach (by Autumn 2012).</li> </ul>	<ul style="list-style-type: none"> <li>Will require behavioural changes in client and supply chain. Will need to address issues around short-term funding and planning cycles building on the discussions for roads.</li> </ul>
Water companies AMP6 determination	<ul style="list-style-type: none"> <li>Undertake formal consultation with industry on measures to address cyclical and incorporate into AMP6 price determination methodology (Spring 2012).</li> </ul>	<ul style="list-style-type: none"> <li>No single solution that will solve the issue for all the water companies.</li> </ul>
Project bank accounts	<ul style="list-style-type: none"> <li>Extend the 2011 PBA pilots across priority infrastructure projects - published list of projects signed up to PBAs (June 2012).</li> </ul>	<ul style="list-style-type: none"> <li>PBAs may not be appropriate for all projects and programmes.</li> </ul>



# A

## Examples of improved performance

**Table A.1: Examples of Cost Savings, Efficiency gains and Best Practice**

Client / Project	Sector	Description	Benefits
Highways Agency – Managed Motorways and Trunk Road Improvement Programme	Highways	The Highways Agency is now planning and managing the 14 major projects approved in the last Spending Review as a programme, rather than as a series of discrete projects. This helps them collaborate more effectively with their supply chain, and creates opportunities to generate innovation and value from a large and visible programme of work. The first schemes are already underway. Through this new approach, Highways Agency is targeting a £443m cost reduction against an expenditure of £2.2 billion over the lifetime of the programme, a cumulative reduction of 20 per cent. The additional schemes approved in the Autumn Statement (2011) will be managed using the same approach as the existing 14 - targeting a £201m cost reduction against expenditure of £1.0 billion over the lifetime of the programme, a cumulative reduction of 20%.	£644m 20% (on total programme of £3.2bn) <sup>1</sup>
Highways Agency – Cost Intelligence	Highways	The Highways Agency (HA) has embarked upon a programme of improving their “Cost Intelligence”. The HA recruited commercial specialists, invested in systems and trawled historic cost data from some 65 major schemes. The HA has built up a database which, alongside expert knowledge and judgement, enables the organisation to know what the construction of their future assets “should cost”. During 2011 the advantages of this approach became clear.	Included above
Highways Maintenance Efficiency Programme	Highways	Through adopting a shared incentive technique, Hertfordshire County Council is on course to achieve a £13m efficiency saving. An efficiency steering group was formed from the client, term contractor and design consultant to develop a mechanism to drive efficiencies and contract savings through the life of a 3 year extension to the Alliance. This has enabled innovative solutions and integrated, collaborative working by all parties.	£13m saving
Highways Maintenance Efficiency Programme	Highways	Through joint procurement of the Highway Technical Inspection and Testing Services contract, a consortium of South and West Yorkshire authorities have achieved economies of scale and lower costs of service provision	38% (£167k reduction from £434k)

<sup>1</sup> Including the additional 6 projects approved in the Autumn Statement totalling £201M

Client / Project	Sector	Description	Benefits
Highways Maintenance Efficiency programme	Highways	Three West Yorkshire Authorities, Calderdale, Bradford and Kirklees, joined to form a collaborated procurement group to identify and progress potential efficiencies. This group identified an opportunity to undertake joint procurement of highways surface dressing to achieve savings.	10-20%
Midlands Highway Alliance – A5 Vicarage Road, Staffordshire	Highways	Project savings realised through ECI approach saving of around £138,500 and £100,000 savings through using Medium Services Framework 1 (MSF1) in procurement in addition to exceeding all project Key Performance Indicators.	13% (on £1.86m)
Midlands Highway Alliance – Birstall Park & Ride, Leicestershire	Highways	Project savings realised through ECI approach saving over £39,000 and £150,000 saving through use of MSF1 – with project completed on time and on budget.	5% (on £3.8m)
Midlands Highway Alliance Medium Schemes Framework contract	Highways	<p>Traditionally local authorities have procured medium sized highway projects in the range of £500,000 to £8 million by individual tendering.</p> <p>This approach can be very slow and costly. In 2007, when the Highways Agency offered the use of its Midlands Works Frameworks (MWF) for these projects, this was considered an attractive works procurement vehicle to the MHA's local authority members.</p> <p>However, these frameworks were more aligned to major Trunk Road projects rather than local authority schemes, and it was felt that there was room for even more savings to be made, both in terms of reduced procurement times and costs, and also in works costs and durations by sharing of innovations and best practice.</p> <p>Since May 2010, the MHA invested around £300,000 in developing its own Medium Schemes Framework contract (MSF1), which was launched in May 2010 and caters for highway construction schemes with an upper value of £12 million.</p>	Best Practice – common procurement approach
Mersey Gateway Bridge	Highways	Savings of £30 million have been achieved by reviewing client requirements – including removing the additional capacity within the design to run a light rail train under the road deck in the future. The project has also modified the planning approval to allow more scope for contractor innovation, consistent with the risk transfer in the proposed DBFO contract.	£30m
ConnectPlus – M25 PFI	Highways	The £6.25bn M25 PFI contract between the Highways Agency and Connect Plus required an extensive number of departures from current HA standards. Whilst the project followed the normal HA departures process, the incentive mechanisms in the contract (sharing savings between the contractor and government) encouraged collaborative behaviours to resolve the issues quickly preventing delays to progress and contributing to significant cost savings.	Potentially

Client / Project	Sector	Description	Benefits
Network Rail – Asset Information	Rail	By combining high quality data sets detailing topological and topographical information, Network Rail has helped the industry demonstrate the potential to bring about significant energy and carbon savings. Network Rail provided the data to a third party who added value by modelling train operations then supplying intelligent driver advisor technology. By using geography and live timetabling information, trains are able to coast for longer, accelerate more efficiently and smoothing the flow of trains, yielding energy and associated carbon savings.	10% (energy savings)
Network Rail Workbank	Rail	Publication of forward pipeline on NR website (Workbank) and the introduction of a KPI to measure performance of bringing pipeline opportunities to market in line with published plans.	Best Practice – improved visibility and confidence
London Underground / Crossrail investment programme	Rail	<p>LU has a need to install at least 50 escalators over a 10 year period between 2013 and 2023. There is also a requirement from Crossrail for 57 escalators to support their stations programme for installation between 2014 and 2016. LU and Crossrail have therefore agreed a joint procurement managed under contract as a single TfL package to a single supplier against a single contract arrangement.</p> <p>This new approach has already yielded a 43% capital cost reduction in the first installation at Charing Cross and additional savings are expected as further competition and learning benefits accrue. The life cycle perspective is expected to yield operational reliability and circa 30% cost improvements over the whole life of the asset compared with LU's historical practices.</p> <p>Following the success of this joint London Underground / Crossrail approach to the escalator pipeline, a similar exercise is being carried out for lifts. This will conclude in June 2012 and will source 52 lifts for London Underground and Crossrail on a similar design, manufacture, install and maintain basis.</p>	<p>43% (capital costs)</p> <p>30% (whole life costs)</p>
London Underground – Bank Station	Rail	<p>LU has been concerned that traditional approaches to Early Contractor Involvement (ECI) do not incentivise or reward contractors sufficiently to achieve the desired objective of bringing innovation into the early stages of design. In response, LU has developed a new ECI approach to tendering for the £600m upgrade of Bank Station, one of the biggest and most complex on the LU network.</p> <p>LU has assessed the benefits associated with this procurement process and is looking for it to deliver 10% to 20% increased value to the Project, as well as opportunities to accelerate delivery of benefits to passengers.</p>	<p>Enabler</p> <p>10% - 20% increased value to project</p>
London Underground – Project Management and Governance	Rail	By focusing on their in house project management improvement programme based on the P3M3 model, LU has improved – based on independent assessment – their maturity rating to 3.1 in 2011, equating to a significant efficiency saving over the past 3 years.	£422m efficiency saving

Client / Project	Sector	Description	Benefits
London Underground In house standards	Rail	London Underground, under a programme of work that finished in March 2012, has reduced the number of pages in their in house standards from 12,400 to 400. This will greatly simplify client requirements and provide a greater focus on performance and outputs rather than prescriptive input-based standards	Best Practice – performance based client requirements
London Underground – Asset Management	Rail	London Underground has adopted whole life asset management principles to develop a common Asset Management Strategy that has been independently accredited to PAS55, achieving a midpoint maturity level against the IAM’s six-point maturity scale. As part of their development plan, LU is seeking to improve their asset management strategy, capability, and further embed whole life cost decision making in the business processes to reduce their unit costs.	Best Practice
Crossrail	Rail	Crossrail, one of the largest current infrastructure projects in the country, has adopted BIM and is operating one of the most sophisticated models yet. The model has been designed to be flexible and capable of increasing levels of detail as the design progresses. Objects can be interrogated for details of their purpose, performance specification, manufacturer information, operating requirements, and systems of which they are a part. Once the railway is operational, the model can be the ‘single source of the truth’ for a variety of purposes, such as maintenance or replacement of components.	Best Practice
Thames Tideway Tunnel	Water	Using an approach supported by members of the Cost Review Expert Risk Group, the project team has now undertaken a comprehensive quantitative risk analysis which has taken the cost estimate to a level of maturity which has replaced Optimism Bias with more explicit provisions, removing duplication and resulting in a reduction in the provision for risk and contingency. The cost estimate without Optimism Bias is more transparent, facilitating its scrutiny for value for money and helping to ensure that it is not unduly inflated by loosely defined contingencies	Improved transparency over initial provision for ‘Optimism Bias’
Environment Agency – Flood Defence Programme	Flood	Through incorporation of Cost Review principles into ‘next generation supplier agreement’ procurement strategy, EA frameworks will adopt where appropriate collaborative working approach. Support is being provided through the industry Client Working Group.	Best Practice - procurement

# B

## Progress against Implementation Plan 2011

**Table B.1: Progress against Cost Review Implementation Plan 2011 revised milestones**

Implementation Plan 2011 Ref.	Activity	Delivery Period	Status
A.1 In regulated sectors extend regulatory planning cycles or identify other means for longer-term planning of non-contentious investment	Ofgem has already extended the price control cycle from 5 to 8 years. Infrastructure UK to work with Defra and Ofwat to consider alternative approaches to optimising work planning and regulatory funding cycles as part of the water industry White Paper.	Summer 2011	Completed
	Infrastructure UK to work with Defra, Ofwat and a pilot water company to report on value for money measures for extending commitment beyond agreed regulatory cycles for non-contentious works.	Summer 2011	Study completed - consultation paper due spring 2012 for incorporation into AMP6 price determination
	DfT, ORR and Network Rail to consider basis on which forward contract certainty can be increased in response to the McNulty Rail Value for Money Review and as part of the rail White Paper.	Autumn 2011	DfT response published in White Paper March 2012
A.2 In the public sector, optimise planning and funding cycles for infrastructure programmes in conjunction with clear cost reduction targets	Infrastructure UK to consider alternative programme delivery funding and approval models working in collaboration with Highways Agency and Environment Agency programmes.	Autumn 2011	Recommendations published in Alan Cook's report in November 2011. Further work planned for 2012 to consider alternative funding models
	DfT and Highways Agency to consider alternative programme delivery models as part of the Highways Agency Strategic Roads Review.	Late 2011	Recommendations published in Alan Cook's report in November 2011
A.3 In the public sector remove blockers that impact on the ability to plan work efficiently across programmes and projects	Introduce a new system to allow a limited amount of inter-year spending flexibility as a means of improving work planning.	Announced at Budget 2011	Completed
	Infrastructure UK to identify with Highways Agency and Environment Agency programmes opportunities for cross programme investment/purchasing of standard assets.	Autumn 2011	Ongoing actions within Highways Agency and Environment Agency
A.4 Improve transparency of long-term investment and forward programme of infrastructure works	The Government will publish the UK's long term forward view of projects and programmes. The Government will also publish quarterly a rolling 2 year forward programme of public infrastructure and construction projects, where funding has been agreed.	Autumn 2011	Completed

Implementation Plan 2011 Ref.	Activity	Delivery Period	Status
B.1 Develop measures to implement effective governance - so that key project decisions vest through individuals or bodies capable of discharging their function as a 'single controlling mind'	Infrastructure UK to develop with MPA checklists for major infrastructure projects to complement the new Integrated Assurance and Assessment Process, in particular:		
	(1) earlier establishment of project governance and clear delegations of authority/ accountability to be assessed through the mandatory Starting Gate.	August 2011	Completed
	(2) establishing mechanisms for 'forensic' reporting on outturn cost and performance to inform subsequent projects.	December 2011	Initial pilots completed
	Infrastructure UK to develop guidance and template agreements for use between public sector stakeholders on major infrastructure projects and programmes.	September 2011	Carried forward to 2012-13
B.2 Review the ways in which contingency is assessed and managed in delivering infrastructure projects and programmes	Infrastructure UK to publish a common set of principles for the structuring and management of contingency and risk and measures for embedding cost and risk control into a range of different project and programme scenarios.	December 2011	Study completed – findings to be incorporated into new Green Book guidance in 2012
	Infrastructure UK to review the appropriateness of current guidance and the application of optimism bias in budgeting for publicly procured infrastructure projects.	September 2011	Study completed – findings to be incorporated into new Green Book guidance in 2012
B.3 Consider governance/ delivery models for integration of local infrastructure delivery projects	Infrastructure UK will work with DFT's Highways Maintenance Efficiency Programme (HMEP) in identifying specific geographically based pilot opportunities.	Spring 2011	Initial pilots being taken forward by HMEP
C.1 Introduce greater objective challenge of the specification of requirements and budget cost estimates.	Improved early stage intervention and objective challenge, through the new ERG MPA Starting Gate process, MPRG and Treasury Approvals Process.	Announced February 2011	Completed
	Ensure guidance and assurance processes encourage the use of outcome based specifications and processes that support innovation and remove unnecessary prescription.	Ongoing 2011	Ongoing
	For infrastructure projects establish capability and data requirement to improve effectiveness of central challenge functions in support of projects.	Ongoing 2011	Completed

Implementation Plan 2011 Ref.	Activity	Delivery Period	Status
C.2 Remove unnecessary prescription and duplication of infrastructure standards	Infrastructure UK and BIS to work with a pilot sector group in establishing sector based standards group(s) tasked with removing wastage and duplicate standards and to integrate and incentivise standards setting bodies.	Spring 2011	Industry Standards Group established Autumn 2011. Report now due in June 2012.
	Standards group(s) to establish a transparent basis for cost-benefit assessment of standards and clear target for reducing the number of standards, working with a pilot sector	Autumn 2011	Industry Standards Group established Autumn 2011. Report now due in June 2012.
D.1 Encourage more effective application of competition to realise cost savings and growth through the supply chain and minimise wastage in procurement processes	Infrastructure UK to work with ERG and issue guidance to encourage greater risk-based assessment of competition and procurement options with greater focus on innovation, cost and performance outcomes	To be agreed 2011	Principles adopted as part of MPA Leadership Academy
	Government to work with industry and Procurement Lawyers Association to encourage a more pragmatic approach to compliance. Engage with EU consultation on procurement directive to ensure revisions are consistent with UK objectives to remove wastage and procurement legislation that stifle innovation.	Ongoing through programme	Ongoing through programme working with reference group of procurement lawyers.
	Infrastructure UK and ERG to develop new model competition and procurement processes in collaboration with Highways Agency and Environment Agency programmes.	December 2011	Environment Agency frameworks currently in procurement.
D.2 Encourage procurement approaches and contract form selection that properly consider clients' risk appetite and commercial capability	Government to publish guidance on the selection of effective procurement models and contracting options for different categories of infrastructure projects and programmes.	December 2011	Framework and common principles approved by Government Construction Board in December 2011. Publication in June 2012.
	Infrastructure UK to review the ways in which risks are currently analysed and allocated in different infrastructure contracts.	Summer 2011	Completed
D.3 Where appropriate encourage further standardisation of infrastructure contracts	Infrastructure UK to review the use of NEC3 and other standard contracts for infrastructure and make recommendations for further areas for standardisation or the development of a standard public sector alliancing agreement.	by Autumn 2011	NEC to launch formal consultation draft in Spring 2012
E.1 Improve and develop communications and collaboration	Government to work with industry to develop and publish a Charter for changing client and supply chain behaviours.	April 2011	Completed



Implementation Plan 2011 Ref.	Activity	Delivery Period	Status
between industry and Government	Alongside the Charter establish with industry proposals for joint funding of programmes and sustainable models for future collaboration and development activity.	December 2011	Alliance Group providing on-going collaboration
E.2 Encourage industry collaboration and joint venturing as a means to improve efficiency and growth	As part of a wider review of infrastructure delivery models consider how the benefits of supply chain integration can be incorporated into procurement approaches and contracting models that encourage supply chain integration.	See D1 and D2	See D1 and D2
	Identify infrastructure programmes suitable for structured alliances, starting with the Highways Agency and Environment Agency programmes.	See D1 and D2	See D1 and D2
E.3 Encourage industry to put forward innovative proposals for reducing costs	Encourage industry to put forward innovative variant proposals for standardisation, the use of off-site fabrication and other means of improving efficiency.	Ongoing	Ongoing
E.4 Industry to develop specific measures to improve efficiency and productivity	Industry to promote an efficiency programme across suppliers engaged in frameworks and alliances through initiatives such as 'buying clubs' and plant pools, consider trialling for example on the Highways and Environment Agency programmes	Ongoing	Ongoing
	Work with supply chain to improve logistics capability and encourage efficient use of assets starting with collaboration with the supply chain on understanding the locations and availability of key plant assets.	Ongoing	Supply chain review of pipeline being used to identify demand for critical plant and equipment – starting with tunnelling pilot.
	Alongside more effective planning of infrastructure investment industry will need to consider the future programme requirements for supply chain skills and resources.	Ongoing	Tunnelling pilot announced March 2012
E.5 Undertake with industry a review of alternative 'insurance' based models	Establish a joint Government and industry group to review benefits of alternative European models for construction risk management and project insurance.	Winter 2011	Completed – pilot projects announced Feb 2012
F.1 Improve the availability and transparency of infrastructure asset and performance data	Infrastructure UK to publish a programme of work to improve the quality of data held in relation to economic infrastructure.	Spring 2011	Infrastructure Data Group established April 2011. Comprehensive data on the cost and performance of UK infrastructure also published in the NIP 2011.



Implementation Plan 2011 Ref.	Activity	Delivery Period	Status
	In support of this Infrastructure UK will establish a joint public sector and industry Infrastructure Data Group to support the development and delivery of this programme.	April 2011	Completed
F.2 Improve the availability, transparency and use of infrastructure benchmarking and post project evaluations.	Through the joint Infrastructure Data Group establish and publish guidance to support the extended use of benchmarking across infrastructure sectors.	Winter 2011	Completed - published benchmarking methodology February 2012. MoU put in place March 2012.
	Through the joint infrastructure data group develop a means to capture post project cost and performance information and improve access to international data, working with the Construction Sector Transparency (CoST) initiative.	Winter 2011	Initial pilots completed January 2012.





## **HM Treasury contacts**

This document can be found in full on our website: <http://www.hm-treasury.gov.uk>

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