



HM Treasury

Infrastructure Cost Review:

annual report 2012-13

June 2013



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Foreword

The UK is rightly gaining a reputation for the effective delivery of major infrastructure. The London 2012 Olympics demonstrated what this country can do and the Government is building on this strong foundation and proven delivery capability in making development of the nation's infrastructure a key part of its economic agenda.

The Autumn Statement 2012 pipeline update identified potential infrastructure investment of over £300 billion – reflecting the Government's continued commitment to increase funding for capital projects in this critical area for growth. So as the next wave of projects come forward for delivery it is more important than ever that we find ways to reduce costs and achieve the maximum benefit from each pound of taxpayer or consumer money that is spent.

The work that Infrastructure UK has supported over the two years of the Cost Review programme to bring together the key stakeholders from across the public and private sectors and help direct their focus onto the challenges of achieving sustained cost savings across the various disciplines of transport, water, and energy has proved to be of real, and I believe lasting, benefit. I am particularly grateful to the Institution of Civil Engineers for their continued support for the programme and to the various members of the working groups for their enthusiasm and commitment.

The next year will see the completion of the current phase of the Cost Review Programme and I want to ensure that there is a lasting legacy from this work. The publication of the Industrial Strategy for Construction later this summer will strengthen the links between Government and Industry in infrastructure as well as wider construction and will provide a platform for the continuation of the various working groups that have proved so valuable to date. In addition the Government has committed to the creation of an improved mechanism – managed within Infrastructure UK – for tracking the progress of, and managing information from, projects in the infrastructure pipeline.



Lord Deighton

Commercial Secretary to the Treasury

Executive summary

In publishing the National Infrastructure Plan the Government set out a range of measures to improve the UK's performance in delivering its infrastructure programme. This included publication of the Infrastructure Cost Review Report 2010, which identified the opportunity to make efficiency savings on the required investment across infrastructure sectors of at least 15 per cent by 2015, worth £2 billion – £3 billion per annum.

This is the second Annual Report of the Cost Review. During the past year there has been substantial progress in bringing the principles set out in the initial report to bear on the UK's critical infrastructure projects, for example High Speed 2, the Thames Tideway Tunnel, flood and coastal defence and the Transport for London investment programme.

Visibility of the infrastructure pipeline, longer-term investment planning and a programme based approach are vital components in establishing more effective delivery environments. These measures are key to unlocking the behavioural changes and improved capability required to improve infrastructure delivery and support sustainable supply chain growth. The Cost Review programme has provided clear evidence to support the Government's commitment made in the Budget 2013 to take a longer-term approach to capital funding as part of the 2015-16 Spending Round.

The Infrastructure Client Working Group, established under the guidance of the Institution of Civil Engineers, has had a significant effect in promoting and sharing best practice among clients from different sectors.

"The Client Working Group has, for the first time, brought together key stakeholder from a range of infrastructure providers to develop and exchange best practice. The development of the Infrastructure Procurement Routemap is one example of how industry and Government is working together to ensure the transfer of lessons learnt from previous projects.

Simon Kirby, Network Rail and chair of the Infrastructure Client Working Group

This report sets out case studies demonstrating where projects and programmes applying Cost Review principles are achieving improved outcomes. Some of these are from projects that began ahead of or in parallel to the Cost Review study, but are strong examples of how the adoption of best practice is developing across different projects and sectors. It also provides a range of benchmarks and projected savings as further evidence of progress toward a 15 per cent cost saving, including for example:

- in-year efficiencies for 2012/13 from the **Highways Agency** and **Environment Agency** total over £290 million on measured expenditure of £1.165 billion – a saving of **25 per cent**;
- the latest cost benchmarks for renewals expenditure by **Network Rail** that demonstrate a **4.9 per cent** reduction in the unit costs between 2010/11 and 2011/12; and
- identification of **HS2** Phase 1 efficiency opportunities of **over £1 billion**.

The previous 2012 Annual Cost Review survey of industry engagement with Cost Review principles, conducted by an alliance of industry representative bodies, has been repeated this

year and there is evidence of improved behaviours and more successful outcomes. However, progress is not yet systemic and there is an inconsistent progression in different infrastructure sectors with evidence suggesting an improving trend in rail, highways and water sectors, but more limited progress in the energy, waste and telecoms sectors.

In addition to infrastructure announcements made by the Government at Autumn Statement 2012 and Budget 2013 the outcomes of a number of the Cost Review Implementation Plan activities have been published over the past year, as set out below.

Cost Review publications 2012/13

Specifying Successful Standards. The Industry Standards Group, chaired by Terry Hill of Arup, published their report "Specifying Successful Standards" in July 2012 which recommended the simplification of procurement specifications and the removal of unnecessary technical standards.

Smoothing Investment Cycles in the Water industry. In July 2012 Infrastructure UK published the conclusions of a joint study with Ofwat and the water industry setting out a series of recommendations to address the significant impacts of cyclicalities which are now being considered by industry and the regulator alongside the current price review process.

Infrastructure Procurement Routemap. In January 2013, the Government published for consultation, a set of guidelines and tools to support public and private sector infrastructure providers' capability to improve the delivery of large scale projects and programmes.

The Infrastructure Cost Review Implementation Plan is now in its final year. In addition to maintaining pressure on the efficient delivery of the Government's critical projects, the emphasis will be on establishing effective arrangements to maintain the legacy of the programme and ensure the benefits can be sustained and developed in years to come.

Key Cost Review priorities for 2013/14

Infrastructure pipeline visibility and performance – Infrastructure UK will continue to develop the published pipeline in collaboration with other Government departments and industry during 2013-14. A new Major Infrastructure Tracking (MIT) team will be established within Infrastructure UK to improve the Government's capability to monitor and track performance of critical infrastructure projects. Better visibility will be used to improve delivery, for example, through further examination of skills and capability gaps across sectors or addressing other areas prone to stop-start investment.

Applying the Infrastructure Routemap – following the successful launch and piloting of the Infrastructure Routemap in January 2013 Infrastructure UK has established a joint Steering Group with industry, to oversee further development and application of the Routemap and its supporting tools.

Infrastructure Client Working Group programme – in conjunction with Infrastructure UK this Group has established a number of priority themes for 2013-14. These include further work to improve governance, build better collaborative relationships, learn from successful alliancing programmes and establish best practice for client and supplier performance management.

Infrastructure data and benchmarking – a key role for the Major Infrastructure Tracking (MIT) team in Infrastructure UK will include a renewed effort to improve the capture and sharing of infrastructure pipeline/performance data and industry and project level benchmarking.

Alongside these key priorities for 2013/14 greater focus will be placed on working with the private sector, particularly energy and communications, where the Cost Review industry survey indicated slower progress was being made in adopting the Cost Review principles. Building on the success of the water sector cyclical Report particular focus will be placed on improved visibility of the pipeline and improved collaboration with industry in these sectors.

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.

1

Implementing the Cost Review

The infrastructure cost challenge

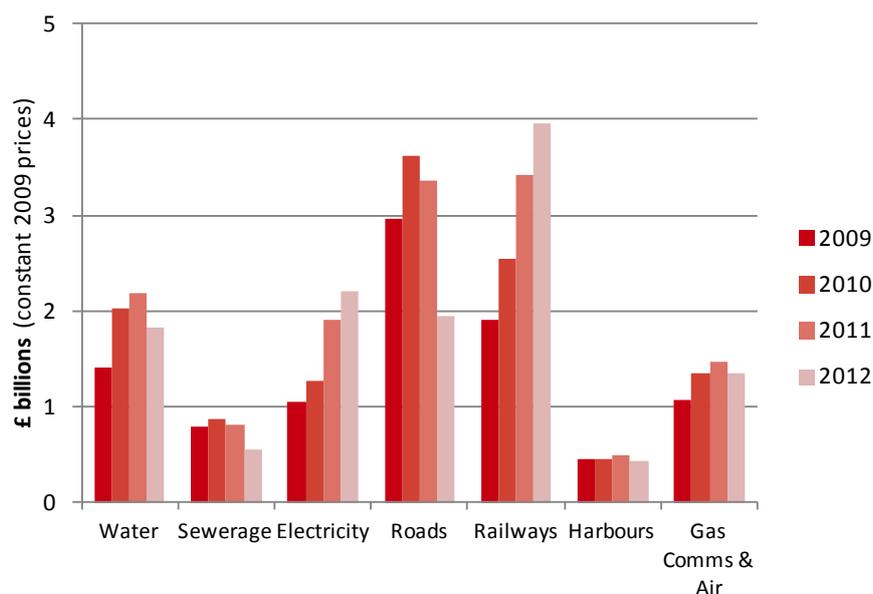
1.1 The Infrastructure Cost Review Report, published in December 2010, identified the opportunity to make efficiency savings on infrastructure spending of at least 15 per cent by 2015, worth £2 billion – £3 billion per annum.

1.2 The first annual report of the Cost Review programme, published in spring 2012, set out progress toward both the targeted efficiency savings and reported on behavioural and cultural change. The report highlighted examples of delivery savings through application of Cost Review principles, but concluded that whilst these represented encouraging progress, such efficiencies were not yet embedded in common practices and behaviours.

1.3 In this year's report, further examples of cost efficiencies have been set out (see Section 2) alongside our view of how implementing the Cost Review principles across a number of projects and programmes is driving changed behaviours.

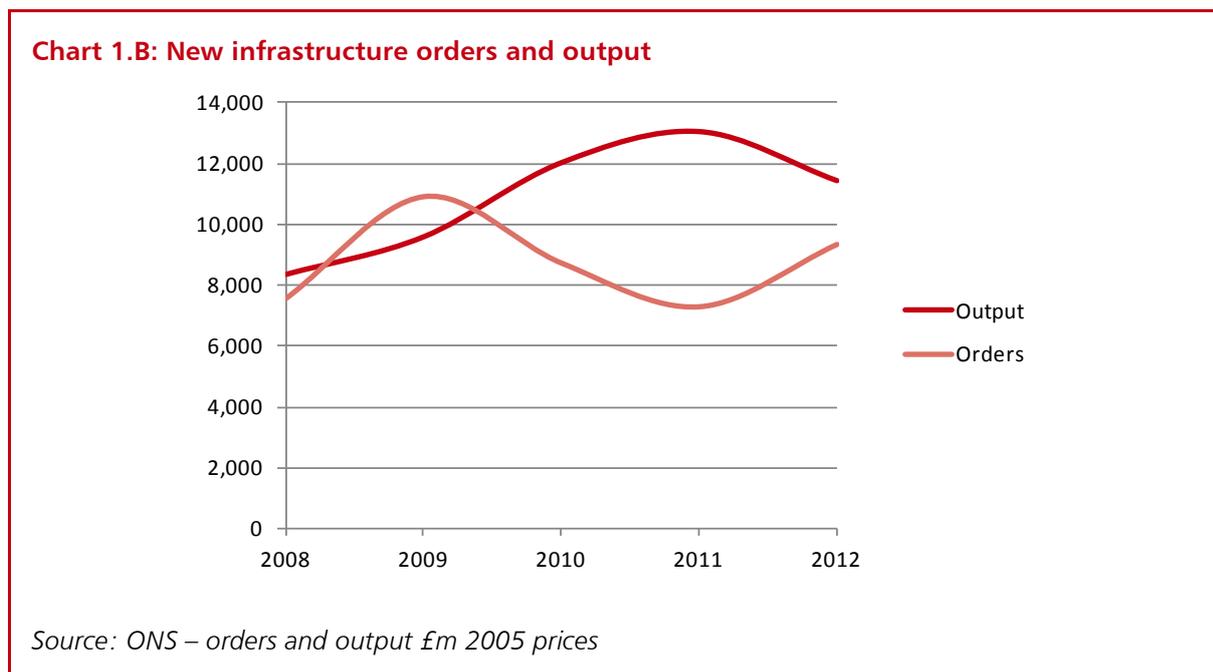
1.4 The programme to implement the Cost Review is happening alongside a changing market place, with a significant decline in construction output reported in 2012. Chart 1.A below shows the drop in infrastructure output in 2012, but also demonstrates key differences between sectors. The statistics show a sharp drop in construction output in highways, partially offset by increases in energy and rail and evidence of cyclical behaviour in the water sector over the 5 year asset management plan period.

Chart 1.A: Infrastructure construction output 2009-2012



Source: ONS: Output in the construction industry (constant 2009 prices)

1.5 Despite the fall in output in 2012, there are positive signs for 2013 and beyond. Industry construction forecasts predict infrastructure output will grow by 5 per cent in 2013, 11 per cent in 2014 and 8 per cent in 2015. This is substantiated by a 28 per cent rise in new infrastructure orders in 2012 (see Chart 1.B).¹ This supports the Government's own forecasts.



Addressing policy and systemic issues

1.6 Infrastructure is vital to the success of any modern economy; it drives growth, creates jobs and generates the networks that allow businesses and organisations to thrive. Investing in and improving this country's infrastructure in order to make the UK globally competitive is a key part of the Government's economic strategy.

1.7 The Government announced a range of measures at Budget 2013, including increasing its capital spending plans by £3 billion per annum from 2015-16. This built on the capital package unveiled at Autumn Statement 2012. This will mean £18 billion additional investment by the end of the next Parliament.

1.8 We have progressed work on the Top 40 priority investments, including completing a programme of eight Highways Agency projects and the King's Cross Station improvements later this year and supported the £14 billion Crossrail project, which has completed over 12 kilometres of tunnelling, as part of one of the most significant infrastructure projects ever undertaken in the UK.

1.9 To build on this progress over the coming months the Cabinet sub Committee on Infrastructure, chaired by the Chief Secretary to the Treasury, will continue to drive forward delivery of the Top 40 priority projects.

1.10 Following Lord Deighton's assessment of Whitehall's ability to deliver infrastructure, which was announced at Autumn Statement 2012 and undertaken with Infrastructure UK and the Major Projects Authority, the Government is implementing a series of reforms to effect a step change in its approach to infrastructure delivery.

¹ Experian Construction Forecasts, Spring 2013 Update Volume 19: Issue 2

Continued industry collaboration

1.11 Industry working groups have continued their support of the Cost Review programme over the past year (Box 1.A below).

Box 1.A: Cost Review industry working groups

Client Working Group – comprising public and private sector infrastructure clients has provided continued support for the Cost Review programme, in particular it has supported the development and implementation of the Infrastructure Procurement Routemap.

Industry Standards Group – led by Terry Hill (Arup) this group published their report “Specifying Successful Standards” in July 2012.

Water Cyclicity Report Implementation Group – chaired by Richard Coackley (past president of the Institution of Civil Engineers) this group of representative water companies, sector bodies and the supply chain is taking forward the recommendations of the joint Infrastructure UK/OFWAT report published July 2012.

Expert Risk and Cost Group – this group of client risk managers and industry risk experts has will publish its report later in 2013 and has supported the development of supplementary HM Treasury guidance on the management of contingency and risk on infrastructure projects.

1.12 Work on infrastructure forms part of the Government’s strategies for construction in the public sector. Reflecting the close alignment of elements of the Cost Review and the Cabinet Office’s Government Construction Strategy (GCS), a new joint steering committee has been formed, chaired by the Crossrail CEO, Andrew Wolstenholme, to provide co-ordination and oversight of the work streams of the Cost Review and GCS. The Government’s Chief Construction Adviser, Peter Hansford is a member of the steering committee and is leading on the development of the Industrial Strategy for Construction, due to be published summer 2013.

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;
- driving change in the behaviours of government, clients and contractors to support collaborative delivery and outcomes;
- selected key benchmark cost indices and empirical data.

2.2 Evidence in the first year of the Implementation Plan indicated that changes were beginning to take hold and are leading to cost savings, but that the changes were not yet sufficiently widespread to represent a step change across the sector.

2.3 Over the past year, progress has continued with evidence of more rapid behavioural change in some infrastructure sectors. There is also evidence of greater collaboration and sharing of best practice between infrastructure clients from different sectors, wider adoption of Cost Review principles and further cost savings in delivery, though this is not yet systemic across all infrastructure delivery.

Priority infrastructure projects and programmes

2.4 Infrastructure UK is continuing to take steps to ensure that the Cost Review principles are applied to the UK's priority infrastructure projects and programmes as identified in the National Infrastructure Plan 2011. Table 2.A below illustrates activity to reduce costs and embed behavioural change on these priority infrastructure projects and programmes.

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

Project	Action
Water programme	<ul style="list-style-type: none">• Formation of industry working group to implement actions from Infrastructure UK's "Addressing Cyclicity in the Water Sector" report to support smoothed investment cycles. In addition, Routemap assessment of alliancing approach proposed by Anglian Water for forthcoming AMP6 programme to support improved delivery outcomes.
Thames Tideway Tunnel	<ul style="list-style-type: none">• Support to project team on risk assessment methodology and procurement approach which has replaced Optimism Bias with more explicit provisions, removing duplication and resulting in a reduction in the provision for risk and contingency.

Flood and coastal defence programme	<ul style="list-style-type: none"> • Routemap assessment undertaken on Thames Estuary flood defence programme to assess readiness of client and sponsor team for the programme and provided an action plan for further development of the delivery model, including enhancement plans for the Agency.
High Speed 2	<ul style="list-style-type: none"> • Establishment of the HS2 Efficiency Challenge Programme which has built on the Cost Review programme to identify opportunities for cost reduction on Phase 1 of over £1 billion.
Rail infrastructure and rolling stock enhancements	<ul style="list-style-type: none"> • Routemap assessment commenced for the European Train Control System project which will replace track side signalling with in cab controls across the network to improve the effectiveness of the rail network.
Energy	<ul style="list-style-type: none"> • Infrastructure UK appointed to Offshore Wind Programme Board implementing actions seeking a 30%+ reduction in the levelised cost over the next seven years.
LU Capital Works Programme	<ul style="list-style-type: none"> • Routemap assessment undertaken on LU's Station Stabilisation Programme to validate their procurement and delivery methodology aiming to achieve over 12 per cent savings to traditional approaches.

Source: IUK analysis

2.5 Through the third year of the Cost Review programme, the Government will continue to work with infrastructure clients and industry to extend the application of the Cost Review principles in these projects and programmes.

2.6 Alongside Budget 2013, the Government published an infrastructure delivery update setting out progress made on the priority infrastructure investments identified in the National Infrastructure Plan 2011 (www.hm-treasury.gov.uk/infrastructure_index.htm).

Cost benchmarks

2.7 There is currently not a central collection and publication of infrastructure cost or performance benchmarks. Even where such benchmarks are collated within infrastructure sectors, there is not a consistent approach to applying cost and performance intelligence to inform future investment decisions.

2.8 To support measurement of progress, a series of representative benchmarks for each sector that allow progression toward the 15 per cent cost saving objective will be tracked. In the sections below, we set out a series of unit cost benchmarks from public, private and regulated infrastructure sectors.

Transport – Highways Agency

2.9 Construction cost benchmarks from the Highways Agency (HA) are set out in Table 2.B below. These benchmarks, presented in the Construction Cost Benchmarks, Cost Reduction Trajectories & Indicative Cost Reductions report in July 2012, will be updated in summer 2013.

Table 2.B: Construction cost benchmarks – Highways Agency – single point average

Benchmark	2009/10	2010/11	2011/12
Trunk road improvement- total construction cost per additional lane provided	£9.7m/km	No data	£7.2m/km
Junction improvement – total construction cost per junction or interchange	£21.0m/junction	£20.3m/junction	No data
Managed motorways – total construction cost per additional lane provided	£6.3m/km	£9.6m/km	£4.3m/km

Source: Cabinet Office

2.10 The cost benchmarks in Table 2.B relate to elements with whole life expenditure of £398 million (in year: £110 million) with projected whole life savings of £110 million (in year: £21 million). For financial year 2012/13, the HA Major Projects has reported efficiencies of £115 million on expenditure of £410 million, representing a 28 per cent saving. In addition, the HA NDD (Network Development and Delivery) have reported efficiencies of £163.2 million on expenditure of £576.3 million, also representing a saving of 28 per cent.

Transport – Airports

2.11 As part of their quinquennial price control planning (Q6 Business Plan), Heathrow undertook an analysis of Q5 performance benchmarks for key infrastructure including terminals, piers multi-storey car parks and taxiways. Empirical data derived from Q4 completed projects was used to compare performance from review period to review period.

2.12 The data was collected through a central Estimating Rate Database and through the completion of DCA (Data Collection Analysis) sheets at various gateways throughout the lifecycle of a project. The DCA collects data at four different levels: project, facility, elemental and systems and extends the range of estimating rates available in supporting the project level benchmarking process.

2.13 Benchmarking is carried out at each gateway stage where required, with appropriate quality assurance applied. Table 2.C below summarises the improvements in cost benchmarks for infrastructure elements.

Table 2.C: Airport cost benchmarks

Facility	Rate	Quinquennial 4	Quinquennial 5	Efficiency
Terminals	£/m ²	3,315	3,818	4.0%
Piers	£/m ²	4,324	4,051	6.3%
Multi-storey car parks	£/space	22,251	15,274	31.4%
Taxiway	£/m ²	194	183	5.7%

Source: Heathrow Airports Limited

2.14 Total expenditure against these four benchmarked measures in Q5 was £977.3 million. The efficiency saving over the period equates to £55.56 million.

Transport – Rail Sector

2.15 Network Rail tracks efficiency progress using Real Economic Efficiency Measures (REEM). REEM is a business performance metric agreed between ORR and Network Rail. This metric covers around 80 per cent of Network Rail’s renewals expenditure which was £2.455 billion in

2011/12. Table 2.D below summarises the efficiency savings against a baseline position in 2008/09 demonstrating a 17.7 per cent cost reduction in 2011/12.

Table 2.D: Network Rail REEM for renewals projects

Benchmark	Units	2009/10	2010/11	2011/12
Real Economic Efficiency Measure for Renewals	%	7.1	16.6	17.7

Source: Network Rail

2.16 In addition to the REEM, Network Rail produces a series of unit cost benchmarks for key elements of renewals projects, summarised in Table 2.E. The activity types below are the five largest individual items of benchmarked expenditure which together represent 60 per cent of the benchmarked renewals expenditure in 2011/12.

Table 2.E: Network Rail – unit cost benchmarks

Category - Activity Type	2011/12 (£,000/unit)	2010/11 (£,000/unit)	Saving (%)	11/12 cost (£m)	Saving (£m)
Track - plain line renewal (composite rate measure)	251	273	8.2	480	39.3
Track - switches & crossings equivalent unit renewal	444	447	0.7	149	1.0
Civils -underbridge	1.54	1.38	-11.6	110	-13.0
Civils - earthworks	0.15	0.19	20.8	74	15.4
Signalling - resignalling	198	205	3.4	209	7.2

Source: Network Rail Regulatory Statements

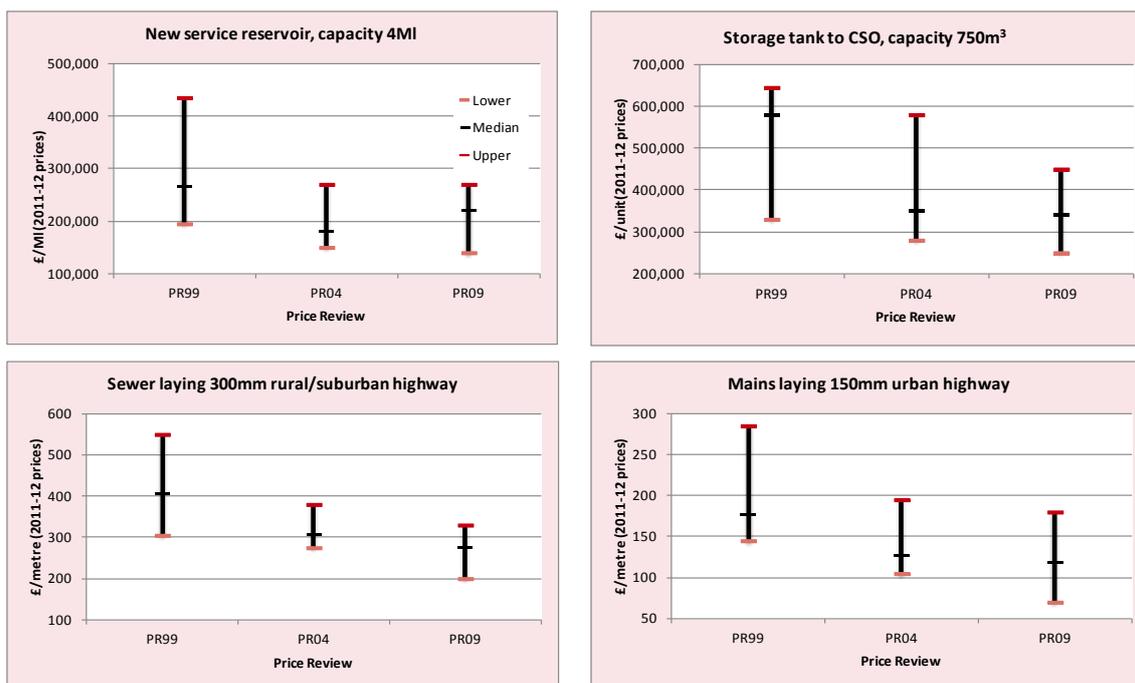
2.17 From the five benchmark measures in Table 2.E, these savings between 10/11 and 11/12 total £49.9 million on this renewals expenditure of £1,021 million, a overall efficiency of 4.9 per cent. (Data for the 2012/2013 financial year will be published in summer 2013).

Water Sector

2.18 Ofwat track a number of unit cost benchmarks from the water companies' standard costs provided as part of their Cost Base submission at the beginning of each price review period. The costs are adjusted for regional differences in building and construction prices including labour, using the Building Cost Information Service index. Historic standard costs have been indexed to 2011-12 prices using the recalculated and rebased Construction Output Price Index revised in September 2011.

2.19 Chart 2.A below shows a sample of the cost benchmarks collected by Ofwat and demonstrates an overall improving trend over the past three price review periods. In parallel, the water cyclical report published in July 2012 (see Section 3) has supported changed behaviours in water companies.

Chart 2.A: Water sector cost benchmarks – PR99, 04 and 09



Source: Ofwat

Environment Agency – flood defence

2.20 Construction cost benchmarks from the Environment Agency’s river flood protection and coastal defences programmes are set out in Table 2.F below. These benchmarks, presented in the Construction Cost Benchmarks, Cost Reduction Trajectories & Indicative Cost Reductions report in July 2012, will be updated in summer 2013.

Table 2.F: River flood protection and coastal defences cost benchmarks – single point average

Benchmark	2009/10	2010/11	2011/12
Unit cost of embankments (500-5000m ³ total volume) – 5 year rolling average	£46/m ³	£43/m ³	£31/m ³
Unit cost of flood walls (less than 2.1m high) – 5 year rolling average	£2802/m	£2387/m	£2244/m

Source: Cabinet Office

2.21 For the 2012/13 financial year, the Environment Agency has reported £13.5 million efficiencies on expenditure of £179 million, a 7.5 per cent saving.

Energy Sector

2.22 Significant investment in gas, new nuclear and offshore wind projects are forecast over the coming decade, led by private sector investors. The Cost Review programme will increase its focus on this sector to support embedding of the key Cost Review principles.

2.23 The standard benchmark for the electricity generation sector is a levelised cost of electricity, presented as £/Mwh which includes the capital costs of construction, operation, including fuel and decommissioning. Low carbon generating sources, such as nuclear and offshore wind,

typically have high up front capital costs, with lower operating costs than traditional fossil fuel power stations.

2.24 In June 2012, the Offshore Wind Cost Reduction Taskforce published their cost reduction pathways study which presented a series of recommendations as to how developers and industry could reduce the levelised cost of offshore wind from around £140/MWh to £100/MWh by 2020. The study identified a number of factors that could drive down cost, particularly larger and more efficient turbines. A number of the other themes included improved procurement, collaboration and contracting models, consistent with Cost Review principles.

2.25 To drive through the recommendations to deliver the cost savings, the DECC Secretary of State has constituted the Offshore Wind Programme Board. Infrastructure UK is represented on this Board to support the embedding of the Cost Review principles as part of the cost reduction pathway.

Behavioural change

2.26 There is evidence of increased levels of collaboration between clients and contractors to deliver cost savings across the infrastructure sector. However, there are differing approaches and behaviours reported between different infrastructure sectors.

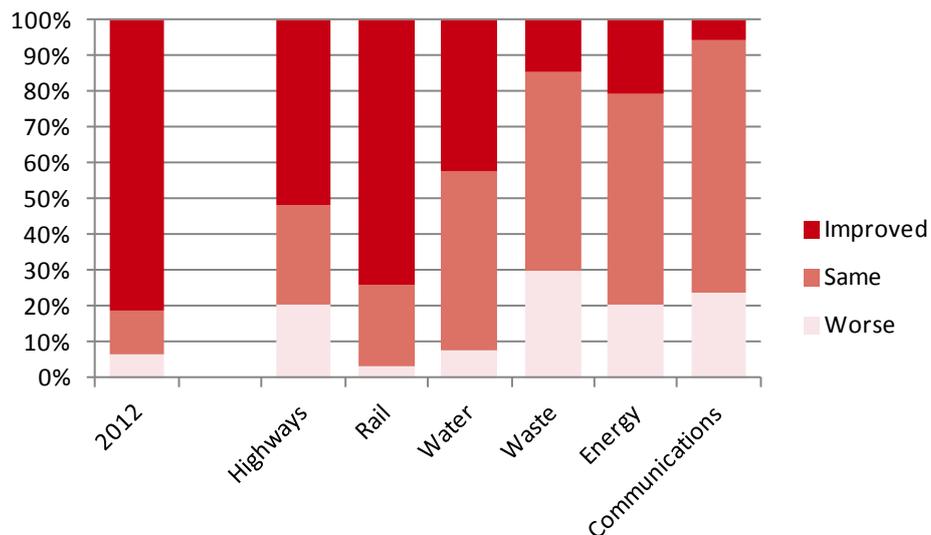
2.27 The Infrastructure Charter, published in 2011 with the support of industry, set targets for clients and industry to find ways to collaborate to deliver infrastructure more cost effectively. This charter was developed through collaboration between the Government and the Infrastructure Alliance Group (www.hmtreasury.gov.uk/iuk_cost_review_index.htm).

2.28 Following a similar survey in 2012, the Alliance Group has undertaken an independent survey of industry CEOs to gather views from industry on the extent to which the behaviours set out in the Charter are improving. The 2013 survey allowed industry to assess the relative performance of individual infrastructure sectors to allow a more granular assessment to build on the overall measures reported in 2012.

Pipeline visibility and certainty

2.29 The rail, highways and, to a lesser extent, water sectors are reported by respondents to have shown improvement in transparency. Rail has been the most successful at making positive changes, with almost 73 per cent of respondents believing that improvements have been made. The waste, energy and communications sectors are perceived as lagging behind, with the majority saying there has been no change or that things have become worse. Chart 2.B below summarises the responses from the survey.

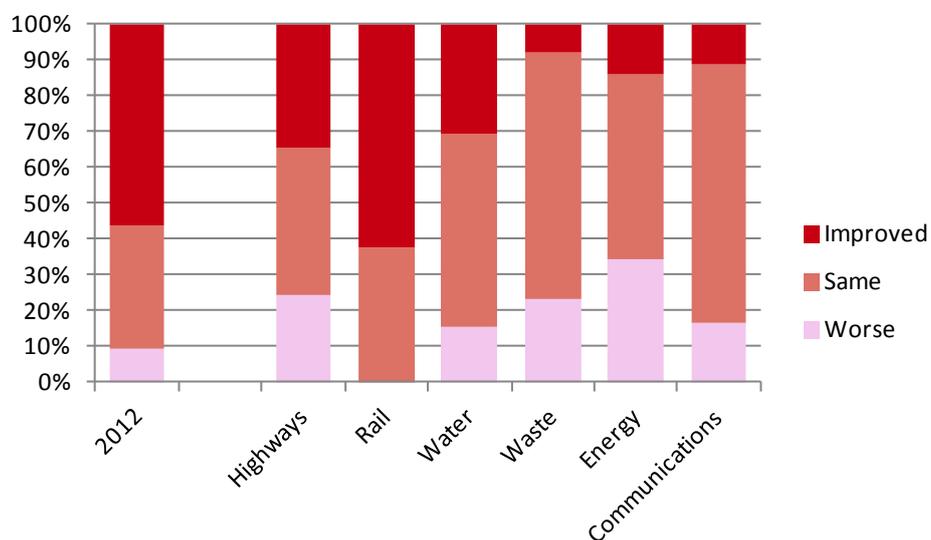
Chart 2.B: Industry view of progress to date - transparency



Source: IUK analysis based on Industry Alliance survey February 2013

2.30 Respondents to the survey reported the rail sector as making significant headway in providing certainty to the supply chain, with highways and water improving to a lesser extent. Again the majority of respondents feel there has been little change in the waste, energy and communications sectors with waste and energy reported as regressing from last year. Chart 2.C summarises the survey responses.

Chart 2.C: Industry view of progress to date - certainty



Source: IUK analysis based on Industry Alliance survey February 2013

Collaborative behaviours

2.31 A number of the Alliance Group survey questions tested co-ordination, communication and collaborative behaviours between clients and the supply chain.

2.32 Responses indicate a general improvement, with over 75 per cent of respondents reporting the rail sector as improving co-ordination and communication with industry. Positive trends

were also reported in the energy, highways and water sectors, with the waste and communication sectors below the overall average.

2.33 When asked to what extent clients utilise the expertise of industry to inform decision making for infrastructure projects, there were positive responses for highways, rail, water and energy sector clients. Both waste and communication sector clients were not reported to be improving at the same rate as other sectors. Despite a majority of respondents giving positive feedback, a minority reported negative feedback for both highways and rail sectors.

2.34 Respondents were also asked to what extent clients utilise the expertise of industry when setting cost targets for infrastructure projects. There were positive responses for energy, water, highways and rail sectors. Feedback on the waste and communication sectors indicates clients may not be taking advantage of the industry expertise at their disposal.

2.35 Despite the general response that clients were utilising industry expertise to set their cost targets, only 33 per cent felt that clients were selecting their supply chain partners in accordance with transparent costs targets and long term outcomes. Only the rail and water sectors were reported to be above the average.

2.36 Chart 2.D below shows the progression of supply chain companies in achieving certification against BS11000: Collaborative Business Relationships. At the time of the 2012 annual report, no suppliers had yet achieved certification. Now over one third of the sample size has reached this milestone. This progression suggests that the supply chain is more able to engage collaboratively with infrastructure clients to drive improved behaviours and performance.

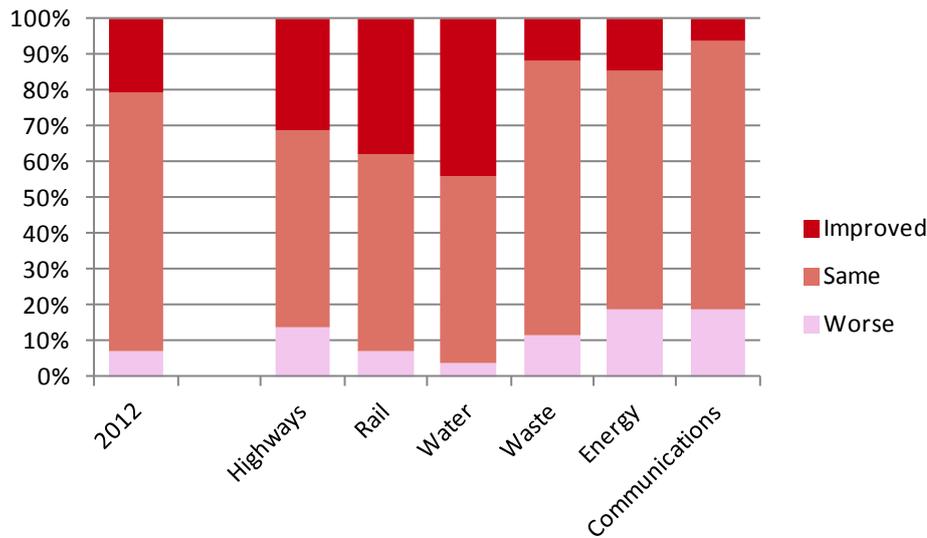


Process change improvement

Procurement process

2.37 Across all sectors, the majority of respondents felt that there has been no overall improvement in procurement processes to take advantage of the benefits of an integrated supply chain. There was a range of opinions across the sectors with around 30 per cent of respondents reporting some improvements in highways, rail and water. However, the evidence suggests that the waste, energy and communications sectors have not done enough to improve procurement processes as far as their supply chain is concerned. Chart 2.E below summarises the output from the survey.

Chart 2.E: Industry view of progress to date – procurement processes



Source: IUK analysis based on Industry Alliance survey February 2013

2.38 A clear majority of respondents in all sectors reported that the procurement process is still favouring lowest capital cost over whole life value. The proportion reporting lowest cost in this year's survey (85 per cent) is similar to last year's (80 per cent) indicating a lack of progress. Whilst the highways, rail and water sectors were above last year's average, the majority still believed lowest cost was the dominant factor in procurement.

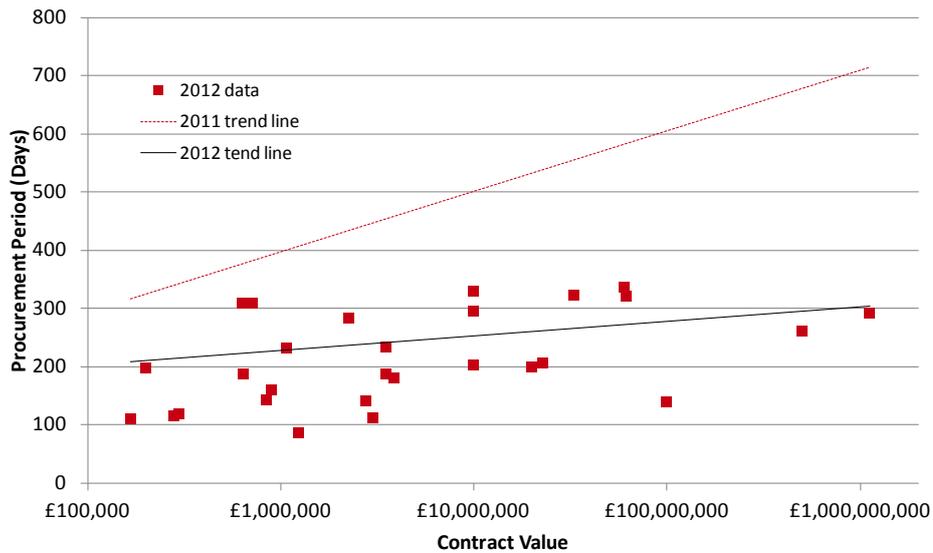
2.39 Over 60 per cent of respondents reported that the rail sector was establishing clear and transparent cost targets and long term outcome for infrastructure projects. Energy sector clients fared worst with over 70 per cent reporting no change or worse. Industry's view was that the rail sector was significantly ahead of other sectors in seeking industry input into developing and implementing more efficient procurement methods.

Procurement timescales

2.40 Evidence gathered for the original Cost Review study suggested that lengthy and bureaucratic procurement processes added to the cost of delivery.

2.41 Chart 2.F shows the measure of procurement period from OJEU notice to contract award, plotted against contract value for Environment Agency and Highways Agency projects in 2012. The trend line has both lowered and flattened from similar data presented from 2011, suggesting improvements in procurement timescales.

Chart 2.F: Procurement timescales - measure of days from OJEU notice to contract award - Environment Agency and Highways Agency projects

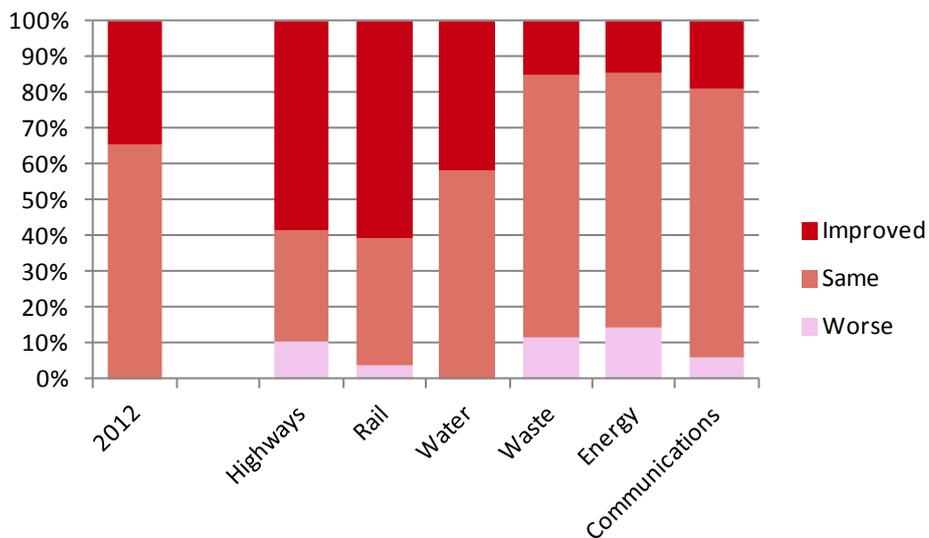


Source: Cabinet Office

Governance

2.42 Both the highways and rail sectors were reported as demonstrating improved governance through grouping similar infrastructure projects as part of a longer term programme to improve efficiency. As illustrated in Chart 2.G above, the water sector also was reported as showing improvement over 2012. However, waste, energy and communications were reported to have regressed from 2012.

Chart 2.G: Governance – industry view of extent clients have efficiently grouped infrastructure projects

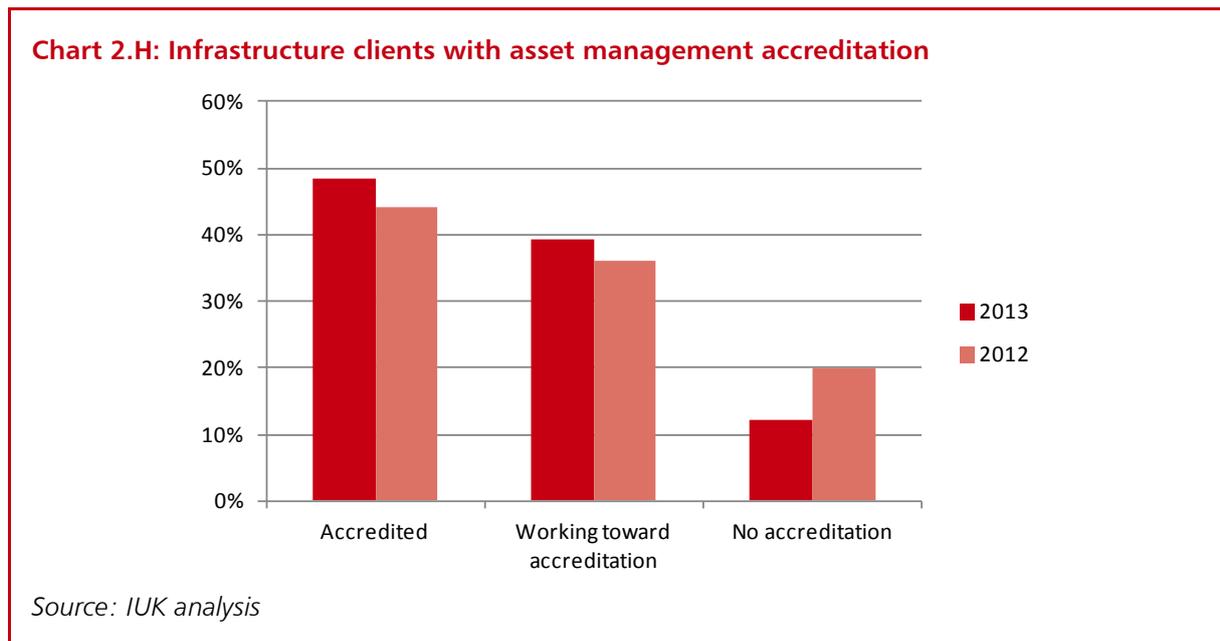


Source: IUK analysis based on Industry Alliance survey February 2013

Improved asset management

2.43 Good asset management strategies have the potential to decrease costs through minimising unplanned or unnecessary interventions. Chart 2.H below maps the current accreditation levels of

a cross section of infrastructure clients holding or working toward a formal asset management accreditation (PAS55 or similar). Analysis from 2013 demonstrates a positive trend with an increasing proportion of clients both holding and working toward formal accreditation.



Summary of progress

2.44 There has been an overall positive trend in the behavioural change objectives set out in the Infrastructure Charter, though some infrastructure sectors are demonstrating a faster pace of change. This evidence is supported by efficiency savings demonstrated through the cost benchmarks and projected savings that demonstrate progress toward a 15 per cent cost saving, including:

- In-year efficiencies for 2012/13 from the **Highways Agency** and **Environment Agency** total over £290 million on measured expenditure of £1.165 billion – a saving of **25 per cent**.
- The latest cost benchmarks for renewals expenditure by **Network Rail** demonstrate a **4.9 per cent** reduction in the unit costs between 2010/11 and 2011/12. Further data for 2012/13 will be published in July 2013.
- Working with **HS2 Efficiency Challenge programme**, the Infrastructure Cost Review has supported the identification of opportunities for cost reduction on Phase 1 of **over £1 billion**.

3

Pipeline visibility and certainty

Key objectives

3.1 Evidence from the Infrastructure Cost Review shows that a stop-start infrastructure pipeline stifles investment in innovation and supply chain growth and is adding to costs. The Government is supporting longer-term investment planning and a programme based approach to establish more effective delivery environments, built around greater visibility of forward work programmes to drive lower outturn costs.

Enabling actions completed 2012-13

3.2 With the National Infrastructure Plan 2011, the Government published, for the first time, the infrastructure investment pipeline data. This data has been updated annually alongside the Cabinet Office Construction Pipeline on the HM Treasury website. The Government committed to update the national infrastructure pipeline annually and the construction pipeline every six months.

3.3 The December 2012 pipeline update includes over 550 infrastructure projects and programmes, worth around £310 billion to 2015 and beyond. This is an increase of over 50 projects and programmes over the 2011 pipeline and represents an increase of over £45 billion over that first pipeline. This increase reflects the inclusion of the second phase of High Speed 2, information on nuclear decommissioning investment, updated information on energy projects. Additional information was also included on over 500 local authority highways maintenance projects.¹

3.4 Having improved the visibility of the pipeline the Government has also sought to mitigate the impact of pipeline uncertainty and cyclicalities across infrastructure sectors. In July 2012 Infrastructure UK published the conclusions of a joint study with Ofwat and the water industry. This report set out a series of recommendations to address the significant impacts of cyclicalities – an unintended consequence of the price review process that creates volatility across the sector within each five year period. These recommendations are now being considered by industry and the regulator alongside the current price review process (Box 3.A). In autumn 2012 Ofwat published its “Future Price Limits” consultation which examined how these recommendations can be adopted, and set out the future process for price reviews.

¹ The information on local authority highways maintenance was provided through a study undertaken by ADEPT (The Association of Directors of Environment, Economy, Planning & Transport).

Box 3.A: Infrastructure UK Report – Smoothing Investment Cycles in the Water Sector

The report sets out six key recommendations to improve certainty, productivity and value for money; and to reduce the regular round of significant redundancies in the sector. If the recommendations are implemented in full they could reduce the average customer water and sewage bills by 2 per cent, saving £6.50 on average annual bills; saving the water industry £600 million every five years; and prevent up to 40,000 job losses over the next five years. Government, the regulators, water companies and the industry will all need to take action and view risks differently if money and jobs are to be saved.

In order to address the causes of cyclical regulators will need to consider:

- measures to improve transparency and predictability within the price review process by raising confidence and certainty at the time of the draft determination;
- developing effective incentives that drive choices for investment across the transition, including where appropriate bringing projects forward, recognising the balance of costs and risks between company and customer; and
- improving clarity around existing incentive measures including the overlap programme.

In return water companies will be expected to:

- commit to early development of projects in advance of the next pricing control period;
- implement measures to provide greater visibility of their work programmes; and
- initiate early engagement and improved integration with their supply chains to improve productivity, efficiency and promote innovative solutions.

3.5 The Government is also utilising the visibility of the pipeline to identify areas in which there are capability gaps in the supply chain that need to be addressed, to meet future demand and to enable growth. In April 2012, in conjunction with BIS and industry, Infrastructure UK undertook a pilot capability analysis focusing on the demand for tunnelling. We are working with industry and infrastructure clients to strengthen the shared apprentice scheme to invest in the necessary skills and capability in this sector to meet future pipeline demand, working with the Tunnelling and Underground Construction Academy hosted by Crossrail.²

Implementation actions for 2013-14

3.6 We will take forward the recommendations to mitigate the effects of cyclical investment in the water sector. An industry working group has been established to implement the recommendations set out in the Infrastructure UK Report, chaired by Richard Coackley (past President of the Institution of Civil Engineers).

3.7 Building on the work in the water sector we will continue to examine other sectors to identify other ways to reduce stop-start investment and smooth out the planning and delivery of the priority infrastructure programmes and projects – to reduce cost to the taxpayer and consumers and promote stability and growth in supply chains.

3.8 We will publish a further update of the national infrastructure pipeline after the 2013/14 Spending Round. At the same time we will announce a package of measures to improve the presentation and robustness of published infrastructure pipeline. We will consider how the

² www.gov.uk/government/publications/public-procurement-and-the-uk-supply-chain-an-analysis-of-the-tunnelling-industry

pipeline can be developed and sustained working in conjunction with Barbour ABI, the Government's industry partner, supporting development of the published construction pipeline.

3.9 A new Major Infrastructure Tracking (MIT) team will be established within Infrastructure UK to meet the above objectives. This will increase the Government's capability to monitor and track performance of the pipeline and the Top 40 infrastructure projects. New reporting requirements will be piloted over the summer and rolled-out from autumn 2013 alongside an improved infrastructure pipeline.

3.10 Infrastructure UK will continue to work with regional infrastructure providers to help improve the visibility and planning of local pipelines. We will seek to expand the North West pilot initiative, where Infrastructure UK has been supporting the establishment of the North West Infrastructure Hub.

3.11 The Industrial Strategy for Construction, to be published in summer 2013, will build on the publication of the forward pipeline of opportunities to drive skills and capability development.

4

Effective governance and control of costs

Key objectives

4.1 The Cost Review report highlighted leadership capability and effective governance of projects and programmes as key factors in efficient delivery. The Government is now taking steps to address client skills and capability across the Civil Service. For example, establishing the Major Projects Leadership Academy and the development of Departmental delivery capacity plans, as announced at Autumn Statement 2012.

4.2 The application of the Infrastructure Procurement Routemap (see Chapter 6) has reinforced that successful delivery of major projects such as the Olympics or Crossrail depends on having the right delivery environment. This needs to be based on strong leadership exercised through clear governance structures and recognising the need for organisational development through the key stages of the project.

4.3 Government places considerable importance on understanding the potential costs of infrastructure as early as possible as it is a key determinant on deciding whether a project should proceed and affects the totality of how much can be achieved in a fiscally constrained economy. In addition to development of the Infrastructure Procurement Routemap the Cost Review has highlighted the need for greater focus on the management of outturn costs and better control of risk and contingency at all levels.

Enabling actions completed 2012-13

4.4 An Industry Group on Cost and Risk plans to publish their report on “Managing Cost, Risk and Uncertainty in Infrastructure Projects” in summer 2013. Their review identified nine changes that could be made to improve the early cost estimates of infrastructure projects and the subsequent management of cost and risk through the life of an infrastructure project.

4.5 Research undertaken by the Cost Review alongside the HS2 project team has identified a wide range in the proportion of indirect costs of project budgets. The largest element of indirect costs is generally the management and supervision costs of the client and contractor.

4.6 Evidence was gathered from the Olympics, air, rail and water sector projects to provide a comparison between contract type, delivery model, design responsibility and sector. Indirect costs as a proportion of direct costs (i.e. the construction activities) ranged between 20 and 40 per cent.

4.7 There is evidence of large differences between sectors and the proportion of indirect costs can vary significantly depending on the level of collaboration between client and contractor. Collaborative working has demonstrated a reduced overhead cost through the removal of “man-marking” of roles in the client-contractor management teams.

Implementation actions for 2013-14

4.8 A number of the forthcoming recommendations from the Industry Report will be incorporated into revised supplementary guidance to The Green Book – Appraisal and Evaluation

in Central Government and published by summer 2013. The remaining recommendations will be delivered by further work of the Industry Group and Government.

4.9 Further evidence will be collected from the indirect costs benchmarking to support sharing of best practice within the Client Working Group and inform budgets for future projects.

4.10 Assuring early establishment of effective governance and stakeholder alignment is a key element of project success. To achieve this, a work stream under the Client Working Group has been established to review existing measures and tools to map and improve the key dynamics at play during the critical initiation phases, the hand-offs/step down of responsibility and accountability between sponsor, client, PM and supply chain. This group will report in winter 2013 and incorporate recommendations for the on-going oversight through to benefits realisation and project conclusion.

5

Specifications and technical standards

Key objectives

5.1 The National Infrastructure Plan 2011 restated the Cost Review objective to bear down on unnecessary costs by aiming to reduce the number of bespoke in house standards that apply to infrastructure projects, and promote consistency between client groups.

5.2 Through publication of the Industry Standards Group report, the Government is supporting greater deployment of outcome based client requirements to drive improvement across infrastructure and on the priority projects and programmes.

Enabling actions completed 2012-13

5.3 The Industry Standards Group published their report “Specifying Successful Standards” in July 2012 which recommends the simplification of procurement specifications and the removal of unnecessary technical standards.

5.4 The adverse impacts of the “traditional” approach to how standards and specifications have been used to set out client requirements are widely recognised by industry and clients alike.

5.5 Through the investigation, which focused on the transport sector, it quickly became clear that much of the inefficiency was not caused by British, European or other International Standards themselves, but by how these were interpreted by different clients. For example, Midland Quarry Products in Leicestershire produces asphalt for a range of local authority clients. Despite there being similar requirements, it has to produce 270 different asphalt mixes to meet the different clients’ interpretations of the high level standards.

5.6 There is already evidence of a change in behaviour and process that is yielding significant reductions in duplication, redundancy and, quite simply, the sheer volume of “standards” that have been used in some sectors. The number of Railway Group Standards managed by the Rail Safety and Standards Board (RSSB) has been reduced by 46 per cent, Network Rail has reduced their portfolio of standards by 80 per cent and London Underground (LU) has reduced the volume of pages in their in house standards by 95 per cent.

5.7 Further benefits have been developed by allowing project teams to challenge existing standards and by enabling an effective process to assess and adopt derogations or departures. Box 5.A sets out a case study from the M25 DBFO where an effective derogations process delivered cost and time savings.

Box 5.A: Case study: M25 DBFO derogations

Success in obtaining departures from standards has led to some significant benefits on the recent M25 DBFO widening contract carried out by a Skanska Balfour Beatty Joint Venture on behalf of Connect Plus for the Highways Agency. A substantial proportion of efficiencies developed were achieved by reconfiguring existing infrastructure to make it serviceable and fit for purpose. This meant challenging a number of the Standards applicable to the works. Applying current standards would have resulted in full replacement of the central reserve. However, the project team also decided to consider retaining as much of the existing infrastructure as was practical. In particular this required:

- Checking that the existing drainage network would satisfy the design requirements of the widened carriageway to avoid removal and replacement of the existing assets at surface level
- Checking and adapting the existing system for surface water collection to accommodate the widened carriageway
- Using the more expensive “superspan” gantries to avoid the need to construct gantry bases in the Central Reserve
- Introducing alternative approaches to the design of the works under the over-bridges to avoid time consuming and costly bridge pier strengthening in the central reserve.

An important factor in the success of the M25 DBFO project achieving their necessary departures was the establishment of a cross-project Strategic Works Group (SWG). The SWG ensured that the key value engineering opportunities requiring departures were dealt with quickly and efficiently by a group that fully understood and acknowledged the strategic nature of the proposed departures. Appropriate incentives were instrumental in driving the right behaviours to enable the challenge.

In all some 400 departures were submitted and accepted on the M25 DBFO with numerous and extensive benefits arising. However, it should be acknowledged that this achievement did require considerable effort from all parties bearing in mind the extensive and robust procedures involved.

The adaption and re-use of the existing central reserve was only fully achievable in specific areas but this was sufficient to create a significant advantage to the project and was a particular influence in being able to re-open the motorway (now with 4 lanes) between J16 to J19 six months ahead of programme and with a major early benefit of congestion reduction.

Source: Industry Standards Group Report “Specifying Successful Standards”

Implementation actions for 2013-14

5.8 Following the Specifying Successful Standards, the HS2 Efficiency Challenge Project team have developed a work stream to challenge the technical requirements and specifications to maximise opportunities for smarter specifications to drive efficiencies in the project delivery.

5.9 Through the highways pinch point schemes, the HA will consider piloting the use of output specifications of a number of the projects to enable a comparison of outcomes with traditionally specified schemes. Outputs from the pilots and initiatives will continue to feed into the best practice tools within the Infrastructure Routemap.

5.10 The British Standards Institution are writing a new design code, a Publicly Available Specification (PAS) for High Speed 2, to bring a consistent and efficient approach to the use of design codes, and to address overlaps, inconsistencies or obsolescence in the large number of codes and guidance documents available. High Speed 2 will also be looking at the Technical Standards for railways to ensure that the standards for compliance are appropriate,

unambiguous and prioritised in cases of conflict, and that an efficient process is adopted to manage compliance.

5.11 The Infrastructure Working Group of the Government's Green Construction Board's has commissioned the Infrastructure Carbon Review as a 'sister' document to the Infrastructure Cost Review. The Infrastructure Carbon Review will provide evidence that reducing carbon reduces cost. It will present clear enablers and practical recommendations for releasing the value of lower-carbon solutions throughout the value chain. In addition to reduced cost in UK infrastructure delivery this would establish the UK as a global leader in low carbon delivery, creating competitive advantage and a significant export potential for UK consultants and contractors. The report and implementation plan will be published summer 2013.

6

Competition and procurement

Key objectives

6.1 The Government remains committed to streamlining procurement and removing wastage from the process. Measures have already been put in place to streamline procurement processes for PF2 alongside the Government's LEAN procurement initiatives.

6.2 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. In partnership with the Client Working Group, the Cost Review programme is driving the adoption of best practice in competition and procurement across infrastructure projects.

Enabling actions completed 2012-13

6.3 In January 2013, the Government published for consultation the 'Infrastructure Procurement Routemap: a guide to improving delivery capability' and its associated Application Guide. It provides for the first time a coherent approach to assessing and improving sponsor, client and supply chain capability and integration, in order to match these to the needs of the project or programme and improve the delivery environment. The full report, toolkit and further details are available at: www.hm-treasury.gov.uk/iuk_cost_review_index.htm

6.4 The 'Procurement Routemap' recognises that while there is no "one size fits all" solution to the delivery of our infrastructure there are common characteristics for effective delivery that must be applied more consistently. The toolkit has already been successfully piloted and shown to improve efficiency by providing a structured framework for project sponsors and clients to take a look at their capability and areas for improvement.

6.5 Implementation of the Routemap on major projects and programmes facilitates the identification and sharing of best practice among infrastructure sponsors and client.

"The Routemap enables participants to understand the key principles, systems, roles and tasks required before determining how they create the capability to deliver a project efficiently."

Professor Denise Bower, Engineering Project Academy, University of Leeds

6.6 With the support of the Client Working Group, the Routemap tools have already been adopted on a number of major projects and programmes including Crossrail, High Speed 2 (see Box 6.A below), London Underground Station Stabilisation Programme, Anglian Water AMP6 and the Environment Agency TEP1 programme. Further assessments are planned in 2013 on a number of Top 40 infrastructure projects and its use will also be piloted with local infrastructure, starting with Surrey County Council's highways programme.

6.7 Whilst each application of the Routemap delivers specific outcomes and recommendations for the project or programme in question, there are a number of emerging themes that are consistent across the current sample size. These are:

- the need for clarity and the timely setting of 'requirements' and 'governance' for the project or programme, between the Sponsor and the Client. In the absence of this the objectives of both organisations are unclear and therefore impacts on efficient project initiation;
- recognising the time and effort required to develop an organisation through the various stages of programme delivery; and
- ensuring that delivery models and procurement routes reflect the requirements and capabilities of the sponsor and client organisation – this can only be done once the wider delivery environment has been considered.

Box 6.A: Application of the Procurement Routemap to High Speed 2 (HS2)

As part of the HS2 Efficiency Challenge Programme Infrastructure UK applied the Routemap assessment with the specific objectives to:

- **identify and remove gaps in the governance and decision making structure** for the project at Sponsor and Client level that may impede the ability to deal with the project's relative complexity, or that stifle organisational capability to deliver the stated HS2 project objectives (establish a "single controlling mind");
- **identify specific anchors and critical path constraints** that impact the ability to establish a collaborative delivery capability or alternatively embed unnecessary cost, uncertainty and risk to delivery;
- establish how the **HS2 delivery organisation** needs to be shaped now and through the key transitions of the Hybrid Bill Stage, procurement, detailed design, construction and commissioning; and
- identify the key drivers and building blocks for **design of an effective delivery structure and procurement strategy**.

The Routemap workshops and summary report recommendations underpin a significant component of the HS2 Efficiency Challenge Programme opportunity. The outputs provided a set of structured recommendations to be taken forward in three workstreams. Support from all the key stakeholders is now required to implement the Routemap findings successfully and realise the significant efficiencies opportunities and to provide the right delivery environment for this critical growth project.

Implementation actions for 2013-14

6.8 Government will consider industry feedback from the Routemap consultation process and publish revisions and amendments to the document in autumn 2013. The revised guidance will incorporate findings from the ongoing Routemap implementation on priority projects and programmes.

6.9 With the continued support of the Client Working Group, Government will actively promote and support the adoption of Routemap tools and process on priority projects and programmes in both the public and private infrastructure sector and capture and publish best practise and case studies arising from Routemap implementations. This will include further work to improve governance, build better collaborative relationships, learn from successful alliancing programmes and establish best practice for client and supplier performance management.

6.10 Government will work with the Institution of Civil Engineers to launch a formal consultation on the use of existing NEC3 standard forms to establish collaborative working arrangements.

7

Industry and supply chain sustainability

Key objectives

7.1 Delivering the full benefits from the Cost Review programme requires behavioural changes from both infrastructure clients and industry. Building trust and enabling collaboration will enable the supply chain to innovate to deliver more effective project outcomes and unlock investment and sustainable growth in all levels of the delivery supply chain.

Enabling actions completed 2012-13

7.2 Through the Industry Group, a survey was undertaken to gauge the supply chain's views on the impact of infrastructure clients' approaches to Bonds and Insurances on projects and how their procurement approach impacted integration with lower levels of the supply chain.¹

7.3 Not all infrastructure clients routinely ask for bonds. Typically where they do these are in the range of 5-10 per cent of the contract price, though there is evidence in some sectors, higher levels are being requested, limiting contractors capacity and appetite to tender. The survey responses indicated an inconsistent approach to the provision of bonds between different infrastructure clients, with different approaches reported by respondents by the same client on different projects. Such differences in approach were more dependent on the client than the complexity or project type.

7.4 Survey respondents reported an inconsistent approach to clients' insurance requirements on infrastructure projects. There were also responses indicating an inconsistent approach by the same client on different projects with similar scope and complexity.

7.5 In addition to the regular requirements for Contractors All Risk and Professional Indemnity insurance, an increasing number of clients are also requesting contractors take out Environment Liability Insurance cover, particularly water sector and local authority clients.

7.6 A number of respondents to the survey reported that the client's procurement approach conflicted with the company wide supply chain management strategy. For example, one respondent noted a change in client attitude from a requirement for *collaboration* at tender stage to a requirement for *supply chain competition* as the projects progressed to delivery.

7.7 Improved supply chain integration, both between clients and their tier 1 suppliers and throughout all levels of the supply chain, can support improved outcomes by aligning more closely the objectives of all participants.

¹ Bonds are a form of guarantee, generally provided by a bank or surety for the due performance of legal or contractual obligations to give an employer additional protection to that provided under the contract. The provision of Bonds increases the contractor's costs and the value of Bonds a contractor can provide is limited to the facility amount available from the banks and sureties and consumes credit capacity. This is different to insurance which is a form of indemnity that provides protection to the named parties for the consequences arising from specific events. Employers and Public Liability Insurance are legal requirements for all Employers and Contractors All Risks and Professional Indemnity Insurance are common features of the sector.

7.8 Box 7.A sets out a case study from Network Rail's London Bridge project, where collaborative working practices between the client and the supply chain are delivering significant savings to the overhead cost of the project.

Box 7.A: Case Study - cost savings from collaborative working at London Bridge

The London Bridge station redevelopment programme is part of the Thameslink programme, a £6 billion government investment in rail. This project will create new platforms for more trains, build a new concourse and create a bigger, better station for passengers. Network Rail (NR) recognised that the complexity of the project – delivering a major upgrade in a busy, operational station - would require a collaborative working relationship with their supply chain to deliver the challenging programme. The procurement process was designed to select supply chain partners who could work collaboratively with NR to deliver the commercial and programme challenges of the project. Together with their Tier 1 contracting organisation, NR set out to identify and remove duplicated management, commercial and supervisory roles that were not required under collaborative working arrangements from both their own and the Tier 1 contractors' organisations. This review has resulted in a slimmed down overhead structure with a fully integrated management team. Through this collaborative organisation, approximately 100 man years of overhead staff costs have been removed from the project, equating to a saving of circa £20 million.

7.9 To improve supply chain sustainability, further progress has been made on improving payment terms to all levels of the supply chain, both through wider use of Project Bank Accounts and through client initiatives such as Network Rail's Fair Payment Charter.

Implementation actions for 2013-14

7.10 The Government, in partnership with industry, is preparing a series of Industrial Strategies for key sectors of the economy with the Construction and Offshore Wind strategies due for publication in summer 2013. These strategies will set out a series of actions to improve delivery and build capability consistent with the key Cost Review principles.

7.11 The Infrastructure Client Working Group has recognised that a more consistent approach to measuring and reporting supplier performance may help drive improvements and support sharing of best practice. They will investigate introducing a high level supplier performance measurement report to inform future engagement and procurement. Consideration will be given to sharing this data between clients and aggregating the output into a high level supplier performance report. The group will report in winter 2013.

7.12 The Government will consider issuing guidance to set out its view on pragmatic insurance and bonding requirements to build greater awareness of the impacts on the supply chain and to support a more consistent approach from infrastructure clients. Any guidance will be incorporated into the best practice tools beneath the Infrastructure Routemap.

8

Infrastructure data

Key objectives

8.1 The Cost Review identified the opportunities from a consistent approach to managing and sharing infrastructure data, not just for capital projects, but through a greater shared understanding of effective asset maintenance and operation. The Government is supporting cost sharing initiatives between infrastructure clients and promoting more consistent reporting of project outcomes.

Enabling actions completed 2012-13

8.2 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.

8.3 In 2012 a Memorandum of Understanding (MoU) was put in place between Highways Agency, Environment Agency, London Underground and Network Rail for the organisations to pool data. The intention is for the group to share best practice information and undertake cost and process benchmarking activities.

8.4 In January 2013 the Prime Minister reinforced, in a letter to the G8 Leaders, the Government's commitment for improved global transparency on construction costs – including through the Construction Sector Transparency Initiative (CoST) and new ideas like a global land transparency partnership. Infrastructure UK will continue to promote the use of CoST principles.

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.

8.6 Those companies or organisations which generated an output that generated direct income, such as electrical power, water supply or oil, tended to have very robust asset information systems that directly informed investment and operational decisions. In organisations such as the Highways Agency, Environment Agency and Local Government the service provided is not directly linked to the income received. This disconnect removes some of the commercial imperative that drives efficiency in the private sector and demonstrates the value of effective data management systems.

8.7 The study produced a number of recommendations, which will be addressed in the coming months through the capture and sharing of best practice across infrastructure sectors and discussion with the Client Working Group.

8.8 PAS55 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 "asset management approach" is now

being adapted to form the basis of the ISO 55000 series- the development of which is being supported by the Cost Review. The principles of PAS55 are increasingly being adopted by Infrastructure Clients as they provide an effective, high level framework and audit procedure for evaluating asset management practices.

8.9 In support of the HS2 Efficiency Challenge Programme Infrastructure UK has also undertaken further benchmarking of high speed rail costs. Working with RFF and the Tours-Bordeaux high speed rail project delivery vehicle a detailed benchmarking comparison was undertaken, building on the original Cost Review analysis.¹

Implementation actions for 2013-14

8.10 The Infrastructure Benchmarking Group (consisting of Network Rail, London Underground, Environment Agency and Highways Agency) is currently developing a Benchmarking Agreement containing confidentiality clauses to allow members of the group to share data including Unit Cost Benchmarks and best practice information amongst themselves.

8.11 The members of the group will:

- share best practice sharing on common topics such as Asset Management and Remote Condition Monitoring;
- share approaches to Value for Money and Efficiency;
- share KPI measures to identify common themes and enable KPI benchmarking; and
- identify potential unit cost benchmark data to be shared.

8.12 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. Clients are increasingly using Building Information Modelling (BIM) as part of their project delivery plans to support design and construction, but also as part of their asset operational plans. Infrastructure UK, through its role on the BIM Steering Group will provide a link between infrastructure clients and the BIM programme to benchmark performance and share best practice.

¹ Réseau Ferré de France (RFF), owns and maintains the French national railway network

9

Next steps

9.1 As the Infrastructure Cost Review enters the third and final year of the programme the emphasis will be on embedding change and establishing effective legacy vehicles to ensure implementation of the key pillars of the programme.

9.2 The Government’s Construction Industrial Strategy, to be published summer 2013, is a vital instrument in ensuring that the objectives of the Cost Review remain at the forefront of Government and industry efforts. The Industrial Strategy will reinvigorate the process of behavioural change and innovation required to remove wastage and promote growth through a more sustainable and efficient supply chain.

Table 9.A: Cost review measures 2013/14

Cost review theme	Measure
Pipeline visibility and certainty	<p>Publish an update to infrastructure investment pipeline by summer 2013 and seek to improve visibility and planning of local pipelines.</p> <p>Take forward the recommendations to mitigate the effects of cyclical investment in the water sector through the industry working group and investigate the impact of cyclical investment profiles in other infrastructure sectors.</p>
Effective governance and control of costs	<p>Publish industry report on Managing Cost, Risk and Uncertainty in Infrastructure Projects and publish supplementary guidance to Green Book – Appraisal and Evaluation in Central Government in summer 2013.</p> <p>Through the Client Working Group, report in winter 2013 on the existing practice and tools driving governance arrangements on infrastructure projects, particularly the impact on responsibility and accountability between sponsor, client and supply chain.</p>
Specifications and technical standards	<p>The HS2 Efficiency Challenge Project team will implement work to challenge the technical requirements and specifications to drive efficiencies in the project delivery. HA will consider piloting the use of output specifications of a number of their pinch point schemes projects to enable a comparison of outcomes with traditionally specified schemes.</p>
Competition and procurement	<p>The government will respond to the consultation on the infrastructure Routemap and publish revised guidance in autumn 2013. In parallel, the programme of Routemap assessments on infrastructure projects and development of best practice tools will continue.</p> <p>Government will work with the Institution of Civil Engineers to respond to the market consultation on the use of existing NEC3 standard forms to establish collaborative working arrangements.</p>
Industry and supply chain	<p>Government will publish the Industrial Strategies for Construction and Offshore Wind in summer 2013. Infrastructure UK will sit on the Construction Sector Council and the Offshore Wind Programme Board.</p> <p>The Infrastructure UK Client Working Group will report in winter 2013 on a high level supplier performance measurement approach to help drive greater consistency in reporting and to facilitate sharing of performance data across infrastructure clients.</p> <p>The Government will consider issuing guidance on the levels of bonds and insurances demanded of the supply chain by infrastructure clients.</p>

Infrastructure data

The Infrastructure Benchmarking Group will develop an agreement to allow members to share data including unit cost benchmarks and best practice on common topics such as asset management. Infrastructure UK will provide the link between infrastructure clients implementing BIM on their projects and programmes and the Government BIM Steering Group to benchmark performance and share best practice in BIM implementation.

Source: IUK

9.3 In addition Infrastructure UK will implement the following Cost Review legacy measures during 2013-14. Further announcements on each of these measures will be made over the course of the coming year, in advance of the final Infrastructure Cost Review report in spring 2014. These legacy measures build on the actions set out in Table 9.A above.

Infrastructure pipeline visibility and performance

9.4 The Government remains committed to providing greater clarity and certainty of the Government funded construction and National Infrastructure Plan pipelines. Greater awareness of the pipelines has helped highlight the effects of stop-start and cyclical investment on supply chains. This has contributed to the Government's commitment in the Budget 2013 to take a longer-term approach to capital funding as part of the 2015-16 Spending Round.

9.5 Infrastructure UK will continue to develop the published pipeline in collaboration with other Government departments and industry during 2013-14. We are working with Barbour ABI, the Government's construction pipeline partner, to launch a more accessible web based version of the infrastructure pipeline by autumn 2013. In the interim, the Government will refresh the current published construction and infrastructure pipelines following the 2015-16 Spending Round announcement in June 2013.

9.6 A new Major Infrastructure Tracking (MIT) team will be established within Infrastructure UK to meet these objectives. This will increase the Government's capability to monitor and track performance of the pipeline and the Top 40 infrastructure projects. New reporting requirements will be piloted over the summer and rolled-out from autumn 2013 alongside an improved infrastructure pipeline.

9.7 Infrastructure UK will continue to work with regional and sector infrastructure providers to encourage improved visibility and management of local and sector specific pipelines.

Applying the Infrastructure Routemap

9.8 Following the successful launch and piloting of the Infrastructure Routemap in January 2013 Infrastructure UK has established a joint Steering Group with industry to oversee development of the Routemap and its supporting tools.

9.9 The Steering Group will take on board feedback from the Routemap consultation and regional roadshows and will support the development and wider application of an updated version. This will be published autumn 2013 – to encourage greater adoption and use of the Routemap by industry future publications and development will be publicised and hosted on the Institution of Civil Engineers' website.

9.10 In addition to continued development and application of the Infrastructure Routemap over the course of 2013-14 Infrastructure UK will consider additional measures to embed the Routemap principles and tools across public and private sector infrastructure projects.

9.11 Alongside the infrastructure capacity reviews announced at Budget 2013 the Infrastructure Routemap is seen as a key tool for improving project governance and the organisational capability of delivery bodies. For publicly funded projects existing assurance, approval and audit process will be used to ensure the Routemap principles are applied. Infrastructure UK will establish a Routemap Steering Group with industry – a key objective for this group will be to explore the most appropriate means of encouraging its application across regulated and private funded infrastructure programmes.

Infrastructure Client Working Group

9.12 The Infrastructure Client Working Group (chaired by Simon Kirby, Network Rail) was established in 2010 with the initial aim of supporting the Infrastructure Cost Review programme. The Group has successfully overseen the development of the Infrastructure Routemap as well as the establishment of a number of sub groups, such as the expert Risk Group set up to help develop and implement the new Green Book risk and contingency guidance for infrastructure projects.

9.13 Infrastructure UK will support an expanded role for the Infrastructure Client Working Group and to ensure its continued success will work with the existing members to mainstream its activities and seek partnership and alliances with other industry associations and groups. The membership of the Client Working Group will be expanded providing an enlarged group of industry leaders. A key role for the Group will be to extend the pool of 'critical friends' able to provide support for those seeking to set up new projects and programmes, or improve existing delivery capability.

9.14 In addition to providing peer review capability alongside the application of the Infrastructure Routemap the Client Working Group, in conjunction with Infrastructure UK, has established a number of working group priority themes for 2013-14. As well as formalising the role of the expert risk sub-group (Risk UK) the programme includes measures to:

- improve the **application of best practice governance** and organisational development on complex projects;
- build better **collaborative relationships** between project stakeholders and the supply chain;
- learn from **successful alliancing programmes** and provide support to those considering similar models; and
- extend the application of **client and supplier performance management** best practice tools and consider the scope for greater sharing of performance data.

9.15 Starting from summer 2013 the activities and outputs of this Group will be publicised more widely on the Institution of Civil Engineers website.

Infrastructure data and benchmarking

9.16 The Infrastructure Cost Review Report 2010 published the result of the cost and performance benchmarking undertaken across a number of sectors. Infrastructure UK has extended this work during the course of 2012-13, for example, working with HS2 to undertake further analysis and benchmarking against French high speed rail projects. Analysis has also been undertaken to help improve benchmarks of client and contractor indirect costs across sectors and for different procurement approaches, the provisional results of which are reported in Chapter 2.

9.17 The Cost Review Annual Report 2012 announced that a number of public and regulated infrastructure clients had signed an agreement to share more data and form an Infrastructure Benchmarking Group. However, progress has been slow and whilst individual clients have made improvements there is still much to do to improve the systematic capture and exchange of data across sectors.

9.18 A key role for the Major Infrastructure Tracking (MIT) team in Infrastructure UK will include a renewed effort, in conjunction infrastructure providers and industry, to improve the capture and sharing of infrastructure pipeline performance, industry and project level benchmarking. This will include the establishment of an international forum for exchanging data and best practice on infrastructure pipeline performance – Infrastructure UK will host an inaugural event autumn 2013.

A

Progress against 2011 implementation plan

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

Implementation Plan 2011 Ref.	Activity	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.	Complete
	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.	Report published July 2012
	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.	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.	Recommendations for the strategic roads network published in Alan Cook's report in November 2011 and subsequent DfT response May 2012. The Government will provide a further update on measures later in 2013.
	DfT and Highways Agency to consider alternative programme delivery models as part of the Highways Agency Strategic Roads Review.	
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.	Completed
	Infrastructure UK to identify with Highways Agency and Environment Agency programmes opportunities for cross programme investment/purchasing of standard assets.	HA and EA working with the new Government's Procurement Service to identify opportunities
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.	Completed

Implementation Plan 2011 Ref.	Activity	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:	Completed Initial pilots completed
	(1) earlier establishment of project governance and clear delegations of authority/ accountability to be assessed through the mandatory Starting Gate. (2) establishing mechanisms for 'forensic' reporting on outturn cost and performance to inform subsequent projects.	
	Infrastructure UK to develop guidance and template agreements for use between public sector stakeholders on major infrastructure projects and programmes.	Carried forward to 2013/14
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.	Study completed – Green Book supplement to be published July 2013 alongside the industry working group best practice report
	Infrastructure UK to review the appropriateness of current guidance and the application of optimism bias in budgeting for publicly procured infrastructure projects.	
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.	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.	Completed
	Ensure guidance and assurance processes encourage the use of outcome based specifications and processes that support innovation and remove unnecessary prescription.	Ongoing
	For infrastructure projects establish capability and data requirement to improve effectiveness of central challenge functions in support of projects.	Ongoing
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.	Complete. "Specifying Successful Standards" report published July 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	

Implementation Plan 2011 Ref.	Activity	Status
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	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.	Negotiation ongoing within EU on procurement directive reforms.
	Infrastructure UK and ERG to develop new model competition and procurement processes in collaboration with Highways Agency and Environment Agency programmes.	New models of procurement being piloted by Government based around improved collaborative working. Further work on alliancing planned for 2013/14.
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.	"Infrastructure Procurement Routemap" published for consultation January 2013.
	Infrastructure UK to review the ways in which risks are currently analysed and allocated in different infrastructure contracts.	Completed (see also B.2)
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.	Action with NEC to launch formal consultation carried forward to 2013/14.
E.1 Improve and develop communications and collaboration between industry and Government	Government to work with industry to develop and publish a Charter for changing client and supply chain behaviours.	Completed
	Alongside the Charter establish with industry proposals for joint funding of programmes and sustainable models for future collaboration and development activity.	Alliance Group providing ongoing 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
	Identify infrastructure programmes suitable for structured alliances, starting with the Highways Agency and Environment Agency programmes.	See D1 and D2

Implementation Plan 2011 Ref.	Activity	Status
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	Working with Build Off-Site specific pilots being considered for project such as HS2.
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
	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.	Review of pipeline being used to identify demand for critical plant and equipment – starting with tunnelling pilot (published March 2012).
	Alongside more effective planning of infrastructure investment industry will need to consider the future programme requirements for supply chain skills and resources.	Tunnelling pilot announced March 2012. Further work to be taken forward as part of Construction Industrial Strategy to be published summer 2013.
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.	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.	Infrastructure Data Group established April 2011 to take forward this action.
	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.	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.	Completed – published benchmarking methodology February 2012. MoU put in place March 2012 and ongoing development to be carried forward by Infrastructure UK.
	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.	Initial pilots completed January 2012. Ongoing development to be carried forward by Infrastructure UK.

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