HM TREASURY

Infrastructure UK

Infrastructure procurement routemap:

a guide to improving delivery capability

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Preface

The Government's Infrastructure Cost Review Report 2010 identified the opportunity to improve delivery and make efficiency savings of at least 15 per cent by 2015 across the published public and private sector infrastructure pipelines. As part of the 3 year Implementation Plan (published in 2011) the Government is working with industry to enable and implement the behavioural changes that are the key to unlocking improvement in the delivery of economic infrastructure.

Changing procurement behaviours, removing inefficiency and improving strategic collaboration with the supply chain are central themes of the Implementation Plan. The Government has already taken steps to cut significant waste and inefficiency in its own procurement processes. This is just the beginning. The Government is also taking radical steps to improve procurement practice and improve the sustainability and competitiveness of the UK's supply chains.

The Government recognises that, while there is 'no one size fits all' solution to the delivery of complex infrastructure projects, the common characteristics for effective delivery set out in this document must be applied more consistently. Working in collaboration with public and private sector infrastructure clients and academia, the Government has set out in this document the principles of an '**Infrastructure Procurement Routemap**'. Its aim is to support public and private sector infrastructure providers optimise the delivery environment for the project. It does this by providing a structured approach to assessing and improving sponsor, client and supply chain capability and integration, in order to match these to the needs of the project.

Initial pilot applications of the Infrastructure Procurement Routemap ('Routemap') have demonstrated its value as a framework for project sponsors and clients to take a forensic look at their capability and identify areas for improvement.

The Government will continue to work with its industry partners to promote the adoption and development of the Routemap and its supporting tools across public and private infrastructure projects and programmes. Further resources including a technical note on application of the Routemap tools can be obtained from http://www.hm-treasury.gov.uk/Infrastructure UK_cost_review_index.htm.

ceca
Working for Infrastructure

ace
consultancy engineering business environment

ice
Institution of Civil Engineers

construction products association

CONSTRUCTING EXCELLENCE
in the built environment

UNIVERSITY OF LEEDS

Contents

1 Improving infrastructure procurement and delivery

Infrastructure Procurement Routemap – key principles

1.1 The Government, through the Infrastructure Cost Review programme, has worked with leading infrastructure clients, industry and academics to develop this Infrastructure Procurement Routemap - a guide to improving delivery capability. It is aimed primarily at the sponsor and client organisations that deliver major projects and programmes, long term capital investment plans and publicly procured mega-projects.

Box 1.A: The key components and application of the Routemap are based on:

- A suite of assessment tools developed as part of the Routemap to enable sponsors, clients and the supply chain to align behaviours and identify capability gaps.
- The use of 'complexity' assessment tools for establishing the nature of the delivery environment.
- Enabling the adoption of the common characteristics and behaviours associated with successful infrastructure project and programme delivery, including *inter alia*:
    - early visibility and commitment to the pipeline of programme opportunities or the specific project;
    - clearly articulated sponsor requirements adopting whole life principles linked to service outcomes that define the project or programme requirement;
    - effective governance, accountability and timely decision making;
    - early supplier engagement that engages all tiers of the supply chain;
    - effective use and structuring of standard contracts such as the NEC suite to align risk, reward and behaviours in an integrated supply chain;
    - appropriate incentivisation approaches that stimulate further integration of the supply chain; and
    - an environment that encourages innovation and departures from standards that embed cost and add no value to the outcome or safety.
- Pragmatic approaches to compliance with EU procurement legislation.
- An ongoing role for industry leaders and experts in the infrastructure sector to identify, develop and disseminate best practice.

1.2 The Routemap, supporting tools and best practice resources will help clarify and identify required improvements in sponsor, client and supply capability to inform decision-making and optimise procurement and project delivery outcomes. Box 1.A above sets out the core components of the Routemap approach and some of the key related behaviours and characteristics associated with successful project and programme delivery.

1.3 Further details of the Routemap process are set out in Chapter 2 along with an overview of supporting best practice tools and resources in Chapter 3.

1.4 Chapter 4 covers in greater depth the characteristics of effective delivery that should be promoted in any chosen procurement strategy.

1.5 Chapter 5 describes some of the key issues associated with procurement regulation and client interpretations of EU competition and procurement law.

1.6 The Routemap has already been piloted as part of its development on a number of the Government's priority infrastructure projects. Summary case studies of these initial pilots are can be found in Annexes C and D. The detailed case studies and other resources are accessible through the HMT website, alongside the technical note on application of the Routemap tools.

1.7 Infrastructure UK and its industry partners will also act as a focal point to encourage the Routemap's application and development across the wider public and private sector infrastructure pipeline, with particular focus on the priority infrastructure projects and programmes. A key future role of this partnership will be to ensure that the tools, case studies and further best practice material and resources arising from application of the Routemap are captured and made available for the benefit of future projects and programmes. [1]

The need for behavioural change

1.8 Government and industry studies have shown that procurement behaviours and associated processes remain stubbornly lengthy, expensive, adversarial and risk averse.[2] [3]

1.9 To deliver infrastructure more effectively, infrastructure projects and programmes must address entrenched negative behaviours and the long standing issues of inefficiency in the approach to procurement, project delivery and engagement with supply chains. This is particularly true of many government and wider public sector projects and programmes.

1.10 In the public, private and regulated sectors client organisations are faced with the challenge of improving customer service whilst achieving increasingly demanding efficiency targets and upgrading legacy infrastructure. Correspondingly, their supply chains are faced with a demand for greater efficiency and effectiveness, which makes investments and real change in their own organisations even more difficult.

1.11 The Government has already taken steps to boost the capability of senior project leaders through the establishment of the Major Projects Authority Leadership Academy and has streamlined procurement processes through the LEAN procurement initiative. In addition to implementing the Infrastructure Cost Review programme, the Government also set out a package of measures under the Government Construction Strategy and, in the autumn statement, announced a new approach to public private partnerships, PF2.[4]

Assessing and improving the capability of sponsors, clients and the supply chain

1.12 The importance of sponsor and delivery client capability is frequently overlooked when establishing the causes of poor performance. The sponsor, usually the funder or parent department in government projects, is responsible for ensuring that the strategic alignment of the programme and projects remain consistent with the organisation's primary service or delivery objectives and that the project or programme benefits are realised, achieving the optimum combination of capital and asset delivery. They should be the owner of the investment

[1] The Infrastructure Alliance Group and Constructing Excellence will work in partnership with the Government in meeting this objective. The Alliance Group is a collaboration between government and industry that brings together a number of industry bodies to support the Cost Review programme, including the Institution of Civil Engineers, Civil Engineering Contractors Association, Construction Products Association and the Association for Consulting and Engineering.

[2] *International Construction Cost Survey*, Gardiner & Theobald, February 2010; EC Harris, 2007; and *International Construction Cost Index*, Faithful and Gould, 2007

[3] *Infrastructure Cost Review,* HM Treasury, December 2010

[4] *Government Construction Strategy*, Cabinet Office, May 2011

and ensure that the project and the delivery client maintains its business focus, has clear authority and that risk is actively managed.

1.13 The **capability of the sponsor** and its relationship with the client delivery body has a direct effect on the clarity and appropriateness of the sponsor requirements and associated performance targets. In the delivery of economic infrastructure, short term policy and planning, blurred governance structures and uncertain sponsor requirements are all likely to lead to poor project performance. The National Audit Office has also identified the importance of the project initiation stage, where the sponsor's role is vital to achieving a successful outcome. [5]

1.14 **Client capability** is critical to achieving success in procurement particularly when using more sophisticated procurement models. Choosing a procurement strategy with little or no understanding of capability requirements will rarely result in an efficient outcome (Box 1.B below). Clients, as exemplified through the Highways Agency's experience, must recognise their own strengths and limitations: identify skills gaps and, more importantly, implement an improvement programme before considering the adoption of alternative procurement and supply chain models.

Box 1.B: Case Study - The Highways Agency experience

The 2007 Nichols Review of the Highways Agency's performance identified a trend of high outturn costs versus initial business case approvals. The Review identified that the key causes of higher outturn costs were due to a lack of capability in estimating,[6] risk management, method of procurement and delivery capability. This directly affected the Highways Agency's ability to deliver successfully its chosen procurement strategy. Since the Nichols review, the Agency has invested significant resources in improving its cost awareness and now has a far greater understanding of the cost base for new or enhanced assets. This evidence illustrates the importance of understanding capability and resulting risks to delivery prior to proceeding with a chosen procurement strategy.

1.15 **Supply chain** barriers to greater efficiency are predominantly behavioural and require approaches to risk allocation, incentivisation and integration to be improved when moving to more sophisticated procurement models. Clients are often also challenged by a 'behavioural legacy' and lack of trust when adopting more integrated approaches, such as alliancing.

[5] *Initiating successful projects,* National Audit Office, December 2011. The NAO are conducting a further study which examines how attention to various factors early enough in a projects life can minimise the risk of failure. This work raises the importance of organisational capability and the need for appropriate relationships through procurement. The study is due to be published later in 2013.

[6] *Estimating & monitoring the costs of building roads in England,* National Audit Office, March 2007

2 Implementing the Routemap

Overview

2.1 The components of the Routemap (shown in Chart 2.A overleaf) are structured using the following hierarchy:

- Complexity assessment of the organisation and the **project or programme delivery environment** and associated pipeline;
- Capability assessment of the **sponsor** and the approach to **asset management**;
- Capability assessment for project or programme **delivery client** and the supporting **supply chain**;
- **Delivery route** / **procurement option** selection and implementation;
- **Innovation** and **best practice resources** (building on existing guidance and tools where appropriate); and
- **Peer support and industry leadership** to support its implementation.

2.2 Chart 2.B overleaf illustrates a typical project or programme life cycle highlighting when the Routemap assessment tools should be applied in practice to achieve the optimum level of impact. As illustrated, this is typically during the Investment Planning and Programme Development phases. However, where the environment and/or organisation changes, a re-assessment is recommended.

2.3 The complexity assessments provide a consistent and structured basis to evaluate the organisation and the project or programme environment. When used in conjunction with the capability assessments, they provide a fuller picture of the capability of each party to deliver the chosen procurement strategy effectively. This ensures that selection of the procurement strategy is made with a full understanding of the risks and opportunities that may affect successful delivery.

2.4 To assist in the selection of the appropriate delivery or procurement model, the different approaches available have been categorised under the following designations: Transactional, Critical, Leveraged and Strategic. These are not definitive categories and broadly represent different approaches to the complexity and risk allocation.

2.5 The range of procurement models identified represents the dominant approaches used in the infrastructure sector. These include *inter alia*: Alliancing, Delivery Partners and Delivery Consortia (see Chapter 4 and Annex A for further detail on these approaches). In practice, many variations are possible in developing a delivery and procurement model to fit the project or programme requirements.

Chart 2.A: The Infrastructure Procurement Routemap – Overview

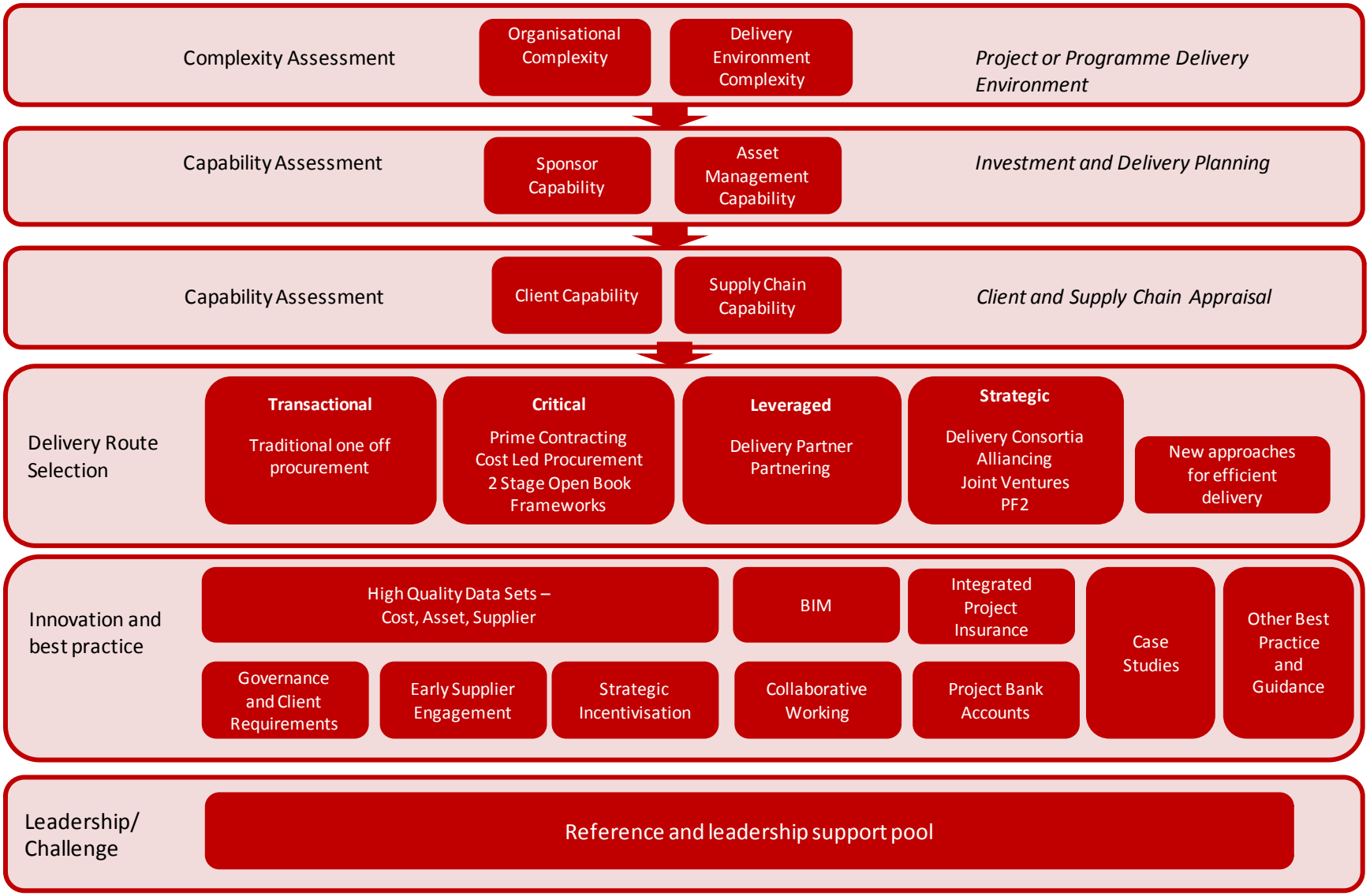
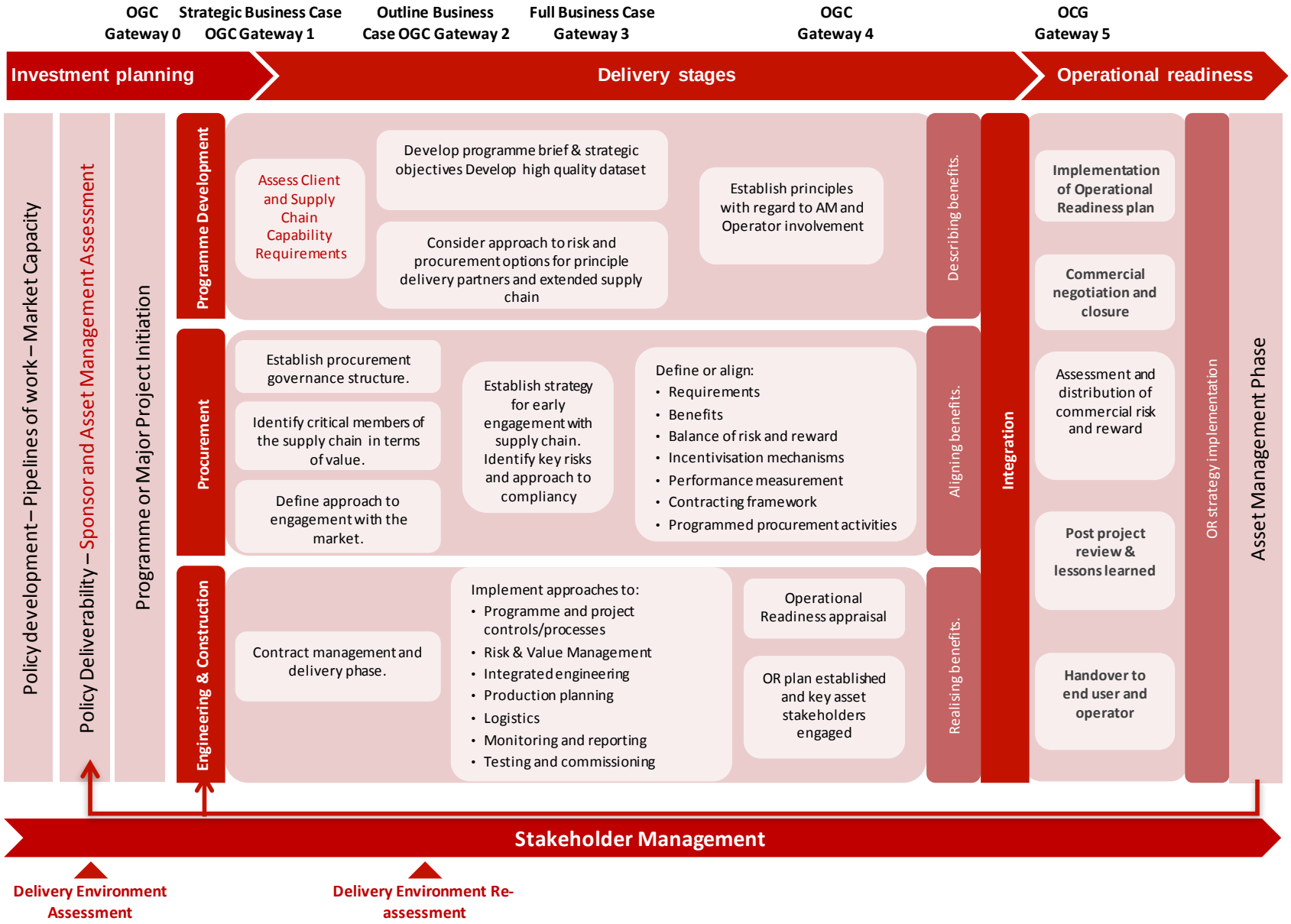


Chart 2.B: Infrastructure Programme Overview Incorporating Routemap Interventions



Delivery and Capability environment assessment process

2.6 This section describes the delivery environment and capability assessment process. Chart 2.C overleaf below shows an overview of the assessment tools and their outputs.

Layer 1 – Complexity Assessment

2.7 The first layer of the assessment process is to carry out an assessment of the organisation and project delivery environment and complexity. This takes into account that people, organisational culture, goals and practices, together with technology and procedures, are all part of an interconnected system in which recognition of the combined effects is vital for success.

2.8 Following this, the sponsor and/or client should consider the complexity of the delivery environment and the issues that will ultimately determine the success or otherwise of the project or programme. The assessment considers the degree of complexity associated with each of the factors shown in Chart 2.C overleaf.

2.9 The output from the delivery environment and project complexity assessment is a qualitative assessment of complexity that provides a greater understanding of risks, their consequences and potential opportunities.

2.10 The approach contained in the Routemap application toolkit can be applied to both projects and programmes.

Layer 2 – Sponsor and Asset Management Capability Assessment

2.11 The second level is for the sponsor to assess their own capability to support the delivery of the project or programme and assess their level of Asset management capability. See Box 2.A below.

Box 2.A: Assessing sponsor and asset management capability

These assessments are based on a range of characteristics that reflect the sponsor's ability to maintain the viability of the investment and take a systemic view of assets aligned with strategic goals. It categorises sponsors and asset management as follows.

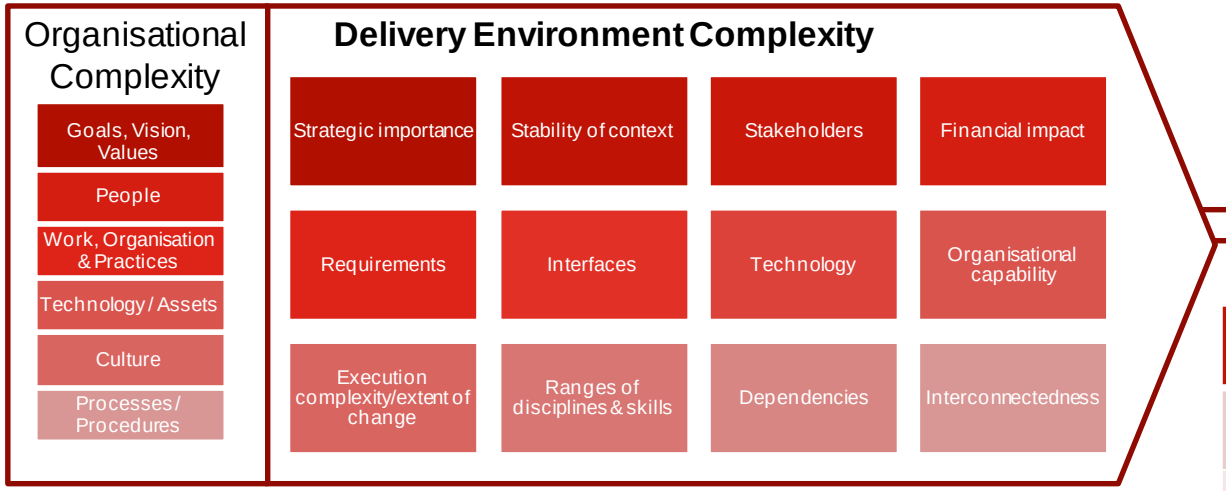
Level 1 – Vulnerable: Provides insufficient direction and strategic guidance. Ownership of asset is fragmented and subject to conflicting sponsor/client priorities. Processes and systems are immature.

Level 2 – Governed: Provides direction and policy guidance. Responsible for asset. Demonstrates active stakeholder management. Informs and works with client to manage strategic risks.

Level 3 – Assured: Invests in strategic planning. Assured governance structures and processes. Undertakes structured evaluation of asset performance and sets demanding but realistic efficiency targets. Actively seeks out best practice and incorporates into policy and strategy.

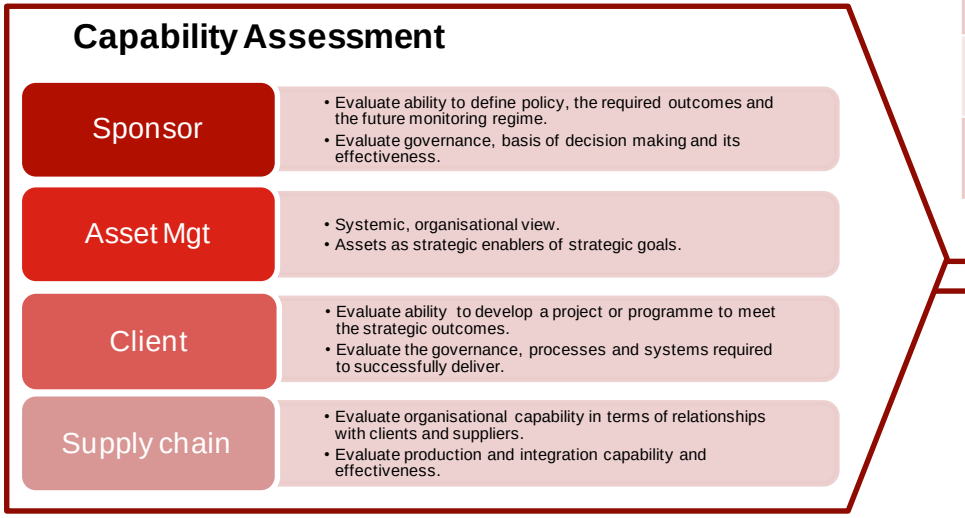
2.12 Level 1 capability (vulnerable) indicates a failing system and limited sponsor ability to establish the clarity of policy and outcomes to the delivery organisation. Following the assessment, an improvement plan should be developed to ensure that the sponsor has the appropriate capability to support successful project or programme initiation and delivery.

Chart 2.C: Routemap approach overview



Output is a qualitative assessment that maps the level of environmental complexity and existing capability of the key parties.

Assessment	Output		
Complexity	H	M	L
Sponsor	Level 1-3		
Asset mgt	Level 1-3		
Client	Level 1-5		
Supply chain	Level 1-5		



Output is then compared to the level of capability required to successfully deliver a given procurement route.

Layer 3 – Client / Supply Chain Capability Assessment

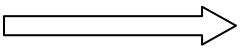
2.13 The third layer of the process is an assessment of client and supply chain capability. The client and supply chain assessment is again focused on a range of socio-technical evaluation criteria that categorises the organisations into one of five levels as shown in Table 2.A.

2.14 The client should be capable of specifying the requirements to external participants and managing the delivery outcomes by selecting the appropriate private sector participants to deliver their needs. Fundamental to this is the ability to maximise value from the supply chain through the management of relationships.

2.15 Based on the outcome of this capability assessment and their understanding of the delivery environment, the client can develop an enhancement programme to bridge any capability gaps.

2.16 At Level 1 a client will only have the capability to procure the most simple projects or commodities and will need to either plan and develop capability or procure capability from the market (e.g. through a Delivery Partner approach). If the latter option is chosen this still requires the client to develop, as a minimum, the processes and procedures necessary to manage their relationship with the private sector partner.

Table 2.A: Client & Supply Chain capability descriptions based on "Intelligent Client" principles

Level 1 – Initial system	Level 2 – Uses processes and procedures	Level 3 – Effectively governed	Level 4 – A managed system	Level 5 - Optimised system focused on outcomes
High degree of inefficiency as a result of informal governance arrangements structured around simple transactional relationships with poorly defined or over prescribed requirements and little or no investment in performance improvement and capability development.	Clearer and repeatable, yet incomplete implementation of business management tools with a greater understanding of performance and improving value but evaluation is in terms of objectives not outcomes.	An organised and coherent process that recognises discrete elements at the strategic level. As a result there is greater consistency in decision making, challenge of requirements, a greater flexibility to market change and clear roles and responsibilities related to performance targets.	Policies are developed in accordance with complex outcomes such as future proofing, carbon reduction and whole life costing. New standards for performance are established based on win/win scenarios and a commitment to sector or industry development.	An adaptive and sustained system focused on learning and continuous improvement both in terms of strategy, behaviour and continuity of investment. New standards for the sector or industry are set focusing on more efficient outcomes, alignment of the interfaces for deriving maximum value and a long standing commitment to capability and capacity enhancement.
Low capability				High capability

2.17 In contrast, a Level 5 client will be highly capable with effective systems and processes that it invests in and improves over time. The client is able to define its requirements and the anticipated benefits clearly and establishes longer term relationships with the supply chain to generate best value.

2.18 The supply chain assessment uses the same structure to examine the supply chain organisational capability and its approach to engineering and construction. A Level 1 supplier will have minimal capability to integrate engineering design with other designers and suppliers and hold the minimum standards of accreditation and quality control. Investment in people will not be a priority and relationships with the extended supply chain will be transactional in nature rather than relational.

2.19 By contrast, a Level 5 supply chain organisation will be able to integrate design information with other designers and suppliers. Surpassing quality accreditation and standards will be a priority, as is investment in the organisation, production equipment, people and skills.

2.20 Level 5 clients and supply chain members in the 'Optimised System' category will have extensive experience and a track record of successful and efficient delivery in a diverse range of projects and environments.

2.21 Alignment of: the critical success factors; organisation and delivery complexity; and the capability of the client and supply chain, enables key risks and opportunities to be identified. This information can then be used to inform the procurement strategy and address the key capability gaps that represent a risk to successful delivery.

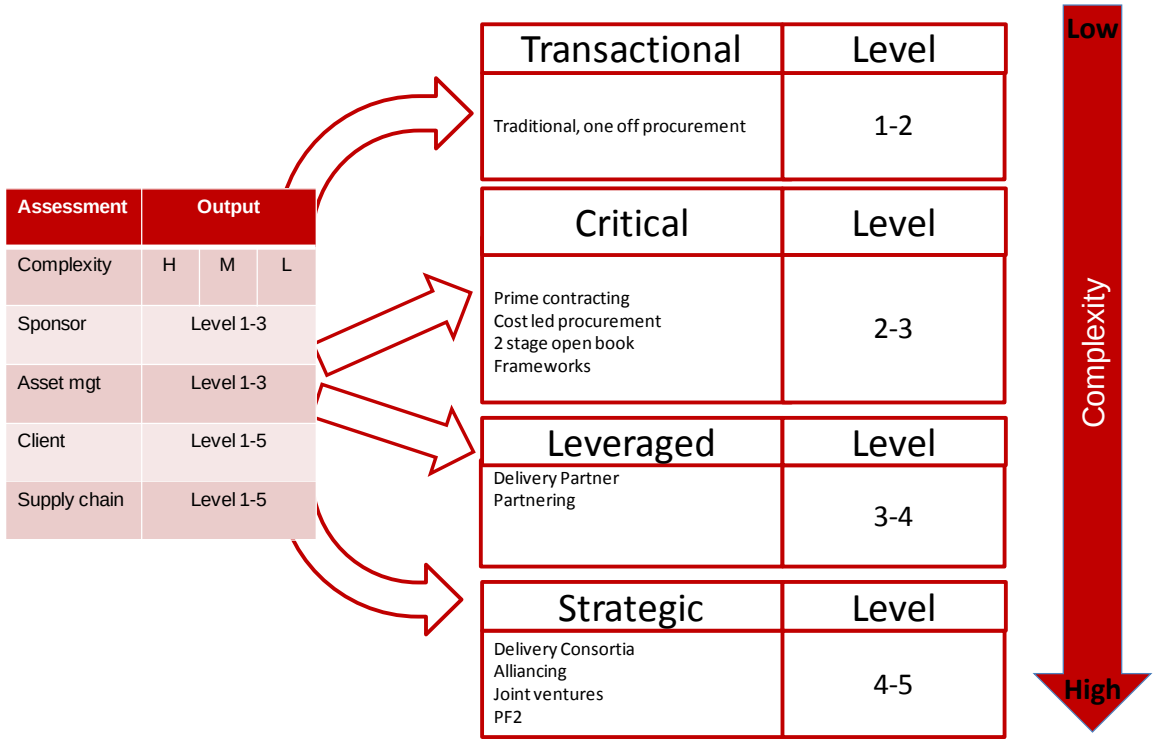
Selection of the optimum delivery model and procurement approach

2.22 Having undertaken the complexity and capability assessments, the delivery route can be identified using the matrix in Chart 2.D to help determine the appropriate procurement model.

2.23 If the project or programme is highly complex then the most appropriate procurement approach is likely to be aligned with leveraged or strategic models, which require a higher level of capability than transactional or critical approaches. In respect of PF2 this would also provide a route to project funding as well as a means of service delivery.

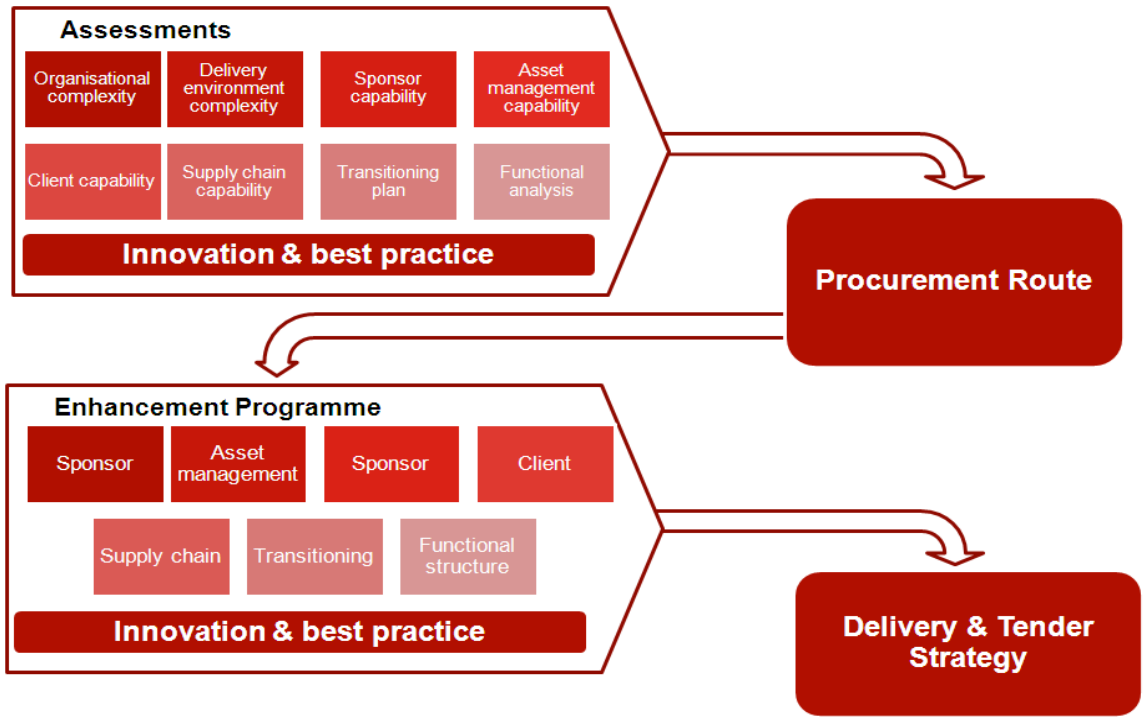
2.24 Where current capability is assessed at levels below that required for a complex project or programme, the options are either to reduce the complexity of the project or programme, or to improve capability. In practice, there will be options for how best to achieve this and the detailed analysis undertaken in the assessments will provide the level of understanding required to address this.

Chart 2.D: Application of Outputs



2.25 In concluding consideration of the appropriate procurement model, a review of all the assessment findings is required in order to identify the enhancement activity that is needed for effective delivery. This may range from up-skilling the client organisation, through to seeking a level of supply capability to complement the client capability. See Chart 2.E overleaf.

Chart 2.E: Routemap – Assessment to Solution



2.26 These enhancements should take due consideration of the existing suite of best practice that exists. By reviewing how other organisations have faced similar challenges, a client will be able to develop the solution that is right for their specific needs.

2.27 Having developed the enhancement requirements and finalised what is required to make the project or programme successful, the client can then reflect this in the delivery and tender strategy and commence the procurement exercise.

2.28 Throughout the procurement process, the knowledge and data derived from the assessments, and the procurement model selection logic, can be used to test and validate that the requirements and needs identified are being fulfilled.

2.29 Furthermore, the systematic process adopted under the Routemap provides a visible and evidence based audit trail of issues identified and the decisions made in the development and delivery of the procurement strategy.

2.30 The case studies in Annex C and D demonstrate how the principles of the Routemap were verified and validated through application on both the Crossrail project, retrospectively, and on the Thames Estuary Phase 1 Programme (TEP 1).

3 Related tools and best practice

3.1 The Routemap has been developed to support public and private sector infrastructure providers to assess and match their capability to the project needs and optimise their approach to engaging supply chains. Its principles are consistent with existing government policy and guidance that support effective procurement.

3.2 As part of the implementation programmes for both the Infrastructure Cost Review and Government Construction Strategy (GCS) a number of tools are being developed jointly with industry that will support the principles of the infrastructure procurement routemap in new projects and programmes.

3.3 This section summarises a number of the existing policy and best practice tools and sets out the key outputs from the Cost Review and GCS that can be deployed alongside the Infrastructure Procurement Routemap.

Related Government policy and best practice

PF2

3.4 In December 2011, the Government initiated a fundamental reassessment of PFI. The Government conducted a broad based engagement process, which invited all interested parties to respond to a call for evidence on the reform of PFI and to bring forward proposals for a new approach in using the private sector in the delivery of public infrastructure and services.

3.5 At the Autumn Statement 2012, the Government concluded its review of PFI and published full details of a new approach to public private partnerships, PF2. The Government stated its commitment to private sector involvement in delivering infrastructure and services, but recognised the need to address the widespread concerns with the Private Finance Initiative and the recent changes in the economic context.

3.6 A summary of PF2 can be found in Annex A and further details in the Government's policy document titled '*A new approach to public private partnerships*' published on 5th December 2012.

LEAN Standard Operating Procedures (SOPs)

3.7 From January 2012, the Government has mandated the adoption of LEAN sourcing principles across central government, to strip out bureaucracy, eliminate wasteful practices and speed up the procurement process. To support these principles Cabinet Office has published Standard Operating Procedures (SOP's) for Open, Restricted and Competitive Dialogue procedures and is working with HMT to develop a set of SOP's tailored for use with PF2 procurements.

3.8 Government procurers are now encouraged to make greater use of the Open Procedure under the Public Sector Procurement Directive. With the exception of complex infrastructure procurement, there is now a presumption against the use of the Competitive Dialogue procedure which has often resulted in long procurements and high costs for industry.

3.9 For government procurers the LEAN sourcing process is intended to change behaviours focusing on:

- early and thorough preparation;
- strong pre-procurement market engagement;
- improved project management; and
- streamlined processes.

Publically Available Specification for Pre-qualification (PAS 91)

3.10 In conjunction with the British Standards Institute and Industry, the Department for Business, Innovation and Skills (BIS) has developed PAS 91 the Publically Available Specification for Construction Related Pre-Qualification. This standard is to be used across all Government departments and addresses a long standing issue raised by the supply chain.

3.11 The Publically Available Specification (PAS) 91 provides a set of questions to be asked by buyers of potential suppliers to enable prequalification for construction related procurement. The standard is focused on the key questions required to test compliance with the core criteria essential for prequalification and to establish uniform requirements for their application and use. It is intended that the questions are also used by assessment providers in their intermediary role between buyers and suppliers.

P3M3 Capability Assessment

3.12 The most comparable existing model for assessing capability is P3M3 (Portfolio, Programme and Project Management Maturity Model) developed and owned by the Cabinet Office. The model is an effective means of assessing the ability of an organisation to carry out the three management disciplines and has been used with a high degree of success in organisations such as London Underground.

3.13 The Routemap incorporates the same systematic approach to assessing capability but in addition considers "what" is being delivered in addition to "how" it is being delivered. The assessment of commercial capability will be incorporated in a refresh of the P3M3 guidance planned in 2013.

Other tools and resources

3.14 The Infrastructure Cost Review and Government Construction Strategy implementation programmes have, with suppliers and clients, been developing a number of new best practice approaches. These will be available to support the implementation of procurement outputs from the Routemap assessment and diagnostics.

3.15 Both these programmes also recognise there is already a wealth of published procurement policy and best practice guidance and the Routemap is designed around its appropriate recognition and use.

3.16 A number of the new tools and best practice approaches are already being developed. These include:

- early supplier engagement;
- strategic incentivisation;
- supply chain contract alignment;
- use of project bank accounts; and

- client requirements and technical standards.

3.17 Further best practice approaches will continue to be developed as outputs from the Cost Review and GCS programmes.

3.18 The intention is that these resources are developed and extended by the Government with the support of the industry partners. A key future objective will be to ensure that these resources can be properly integrated or cross-referenced with other relevant Government or private sector sources and used to support effective implementation of the selected procurement approach.

Early supplier engagement

3.19 Industry has consistently identified the engagement of the supply chain in developing solutions as being key to driving greater efficiency in project and programme delivery. This approach is commonly known within industry as "Early Contractor Involvement" (ECI). However, the current business model of first tier contractors is thought to limit innovation and places a barrier between the client and expert system and product suppliers in the extended supply chain.

3.20 ECI is a service procured by construction clients to bring expert knowledge of the construction process to their projects or programmes of work. Approaches to ECI vary across clients and industry sectors but all have a common objective to deliver a better value solution to the client. In most cases a first tier contractor provides the ECI service.

3.21 Our research has identified nine ECI strategies administered by eight key infrastructure clients in a variety of sub-sectors. From this analysis and the input of the CWG the best practice features of an ECI model have been identified as follows:

- implemented at the point of maximum influence, ideally whilst the solution is still in the initial stages of development;
- of sufficient duration to develop alternative solutions. Maximising ECI benefits should be a key client objective when structuring the procurement programme;
- prequalification and tender selection criteria that are tailored to reflect the input of both 1st tier contractors and the extended supply chain;
- tender processes comply with procurement law but do not adopt overly cautious strategies;
- flexible payment terms and contract terms that may include ECI self funding options and recognition of Intellectual Property (IP);
- a structured approach to engagement with the supply chain that is client led rather than by the 1st tier contractor;
- utilises incentive strategies that reward all levels of the supply chain; and
- can be linked to the post contract stage to maximise the available opportunity and mitigate the "gaming" behaviours frequently witnessed in two stage procurement approaches.

3.22 The benefits of implementing these features include removing barriers to innovation, engaging with the supply chain in a structured and coordinated manner and recognising and rewarding SME's for their specialist input into the construction process.

3.23 The Case Study set out in Box 3.A below describes an innovative approach to early supplier engagement piloted by London Underground on the procurement of the Bank Station project.

Box 3.A: Case study - Bank Station - innovative contractor engagement

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

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

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

Strategic incentivisation models

3.24 Various strategic incentivisation models exist to link the performance and success of individual projects or programmes to an overarching set of client objectives. The approach elevates the success criteria for project and programme delivery above the traditional measures of time, cost and quality performance to the successful achievement of a client's business objectives.

3.25 Traditional incentivisation strategies tend to be project based and are embedded within the terms and conditions of a construction contract. The NEC3 is perhaps the most well known contract that provides for incentive mechanisms under the Option C "Target Cost with Activity Schedule" Engineering and Construction Contract.

3.26 Strategic incentivisation is used successfully in a number of client and programme environments to ensure that the supply chain configures itself to achieve the best value solution for the client on the basis that it will receive an enhanced benefit for doing so.

3.27 Strategic Incentivisation may be used where there is a greater business risk to the client in the construction supply chain failing to meet the required objectives. By offering improved reward (over and above a typical fee), the client encourages the supply chain to "buy in" to its business objectives in order to jointly manage the risk and increase the chances of success.

3.28 Examples of the use of strategic incentivisation include:

- Mega projects such as London 2012 and Heathrow Terminal 5;
- Capital investment programmes in the regulated utility sector; and
- Public sector infrastructure such as the Highways Agency Managed Motorway Programme.

3.29 It is clear from the above examples indicates that strategic incentivisation is commonly used in integrated project team or collaborative working environments and frequently where the risk of failure can result in major reputational and financial damage.

3.30 To achieve a successful strategic incentivisation scheme that aligns sponsor, client and supply chain behaviours the following requirements must be met:

- security of funding;
- committed programmes of work;
- clear business objectives;
- procurement strategy promoting integration and collaboration;
- desire to reward "Exceptional Performance"; and
- client commitment to continuous improvement.

3.31 These characteristics are illustrated in the following case study (Box 3.B below).

Box 3.B: Case Study – Welsh Water Incentivisation Model

The Welsh Water Alliance has moved from an incentive based on a traditional fee (Overhead and Profit) on turnover to a fixed fee arrangement. This is based on the Welsh Water business plan projections for the Alliance Partner's portion of the programme of work. The Alliance has agreed pain/gain incentive arrangements at both project and programme level.

The aim of the fixed fee is to enable the Alliance Partner to earn a reasonable profit, recover the agreed overhead and focus upon delivering the programme "fit for purpose, just in time and below market value". The fixed fee is based on each partner's portion of the business plan for the Alliance programme. Each delivery team in turn agrees the fee for the Strategic Partner and reviews the fee annually.

Performance of the Alliance is measured against the overall programme of work. The aim of the Partners is to outperform the plan and thereby share in the savings generated. In the event of overspend the partners will also share the pain.

Supply chain contract alignment

3.32 Working with the Institution of Civil Engineers and Thomas Telford Ltd, the Government has considered the case for developing further the provisions of the NEC suite of contracts to foster greater collaboration and supply chain integration.[1]

[1] NEC is an integrated set of contract documents overseen by a panel of the Institution of Civil Engineers.

3.33 An initial consultation exercise has explored the value of introducing a new Alliancing form of contract to the existing suite to recognise the move in certain infrastructure sectors to move towards more collaborative procurement strategies.

3.34 The Government recognises that contracts alone do not deliver improved performance or greater efficiency and that further efficiencies can be made by aligning behaviours and commercial arrangements throughout the supply chain. Frequently collaboration agreements can stall at the first tier level and for this reason, the Government is exploring improved guidance for the NEC suite of contracts that achieves greater alignment and consistency. It is envisaged that this work will provide benefits both for the public and private sectors.

3.35 To inform the improved guidance, further work is planned by both Infrastructure UK and Thomas Telford Ltd in 2013 to carry out an industry wide engagement to establish the requirement for new contract forms and improved guidance on structuring contracts throughout the supply chain.

Project Bank Accounts

3.36 The Government is presently at the forefront of introducing fairer approaches to the payment of SME's in the construction industry. Project Bank Accounts (PBA) have been used extensively on Crossrail and will be implemented further in the Highways Agency and Ministry of Defence.

3.37 By introducing fairer payment terms, suppliers have greater security and stability and can commit to investment in their own businesses, increasing the benefit to clients on future projects.

3.38 The Government Construction Strategy has also called for a Project Bank Account Implementation Group to be formed to measure the impacts on all levels of the supply chain and to capture and disseminate best practice.

Client requirements and technical standards

3.39 In July 2012, The Industry Standards Group produced their report, Specifying Successful Standards which set out a series of actions that would, *inter alia*, support the establishment of a best practice tool helping clients set out their requirements to minimise bureaucracy and redundancy in the application of technical standards.

3.40 Implementing the actions set out in the report will allow industry to bring more cost effective, innovative solutions that can reduce capital and whole life costs.

4 Effective delivery and procurement models

Infrastructure procurement models

4.1 Infrastructure UK research, as summarised in Table 4.A below, has identified a range of procurement models commonly used in the infrastructure sector.

Table 4.A: Common infrastructure procurement models

Approach	Examples	Indicative applications
Delivery consortia	Southern Water, Thames Water, United Utilities	Long term Capital Investment Programmes of low to medium value projects
Development/ Delivery partners	Network Rail, Crossrail, London 2012, HS2 Ltd	Publicly procured Mega-Projects and major infrastructure enhancements
Alliancing	Anglian Water, South West Water, HA Managed Motorways	Long term Capital Investment Programmes of low to medium value projects
Frameworks	BAA, Northumbrian Water, Environment Agency flood defence programme	One-off projects and call-offs to major projects

Source: Infrastructure UK, January 2013

4.2 Typically the procurement approaches are adapted to reflect the client's risk appetite and the unique circumstances of a project or programme.

4.3 Approaches range from risk averse strategies such as single entity contracts with a Delivery Consortia, to longer term collaborative Alliances. For major one-off investments such as Crossrail and London 2012, the Delivery Partner approach has been adopted with success, while in the regulated utility sector, approaches vary from traditional frameworks to Delivery Consortia and Alliancing. Joint ventures between the client and supply chain are also considered an option for very high risk projects. However, at this time few infrastructure clients consider this an appropriate delivery strategy.

4.4 Common to all of the successful projects and programmes reviewed is the high level of capability that exists both in client and supply chain organisations. In addition the Infrastructure UK research identified other key areas of best practice key to successful delivery, notably:

- collaborative working;
- appropriate risk allocation;
- incentivisation of the supply chain at 1st and 2nd tier level; and
- approaches to supply chain performance management.

4.5 The Government recognises that the approach to managing the risks associated with delivering infrastructure projects and programmes is one of the most significant factors in procurement strategy selection.

4.6 The approach adopted will vary depending on whether the project is a major one-off capital project, a long term capital investment programme or a major enhancement project.

4.7 Whilst the definition of an efficient outcome will also vary between these projects or programme types many common features and behaviours exist that are associated with successful project and programme delivery.

4.8 The following two case studies (Box 4.A and Box 4.B) illustrate the differences in risk management strategies between a short to medium term "mega-project" and a long term programme of infrastructure investment.

Box 4.A: Case study – London 2012 (Learning Legacy published October 2011)

The London 2012 Olympics has been procured and delivered using a Delivery Partner (CLM) to provide the expert capability to manage and construct the diverse range of enabling works, stadia and legacy projects. As a major one-off procurement or "Mega-project" the approach taken to efficiency has been to engage the supply chain to generate innovative solutions. This has included making significant savings in both cost and embedded carbon by using recycled steelwork from an aborted gas pipeline project, specifying accredited timber throughout the site both in the temporary and permanent works and using harvested rainwater for the Olympic velodrome. The programme is a successful example of balancing risk transfer to the supply chain using the Delivery Partner approach whilst successfully generating efficiency through early supplier engagement.

4.9 The London 2012 project example (Box 4.A) illustrates a balanced approach to managing programme risk whilst providing an environment that still permits a degree of innovation and efficiency. For longer term infrastructure investment programmes an alternative strategy is required that balances risk transferral with efficiency and control over the desired outcomes.

4.10 In this respect, the Anglian Water '@One Alliance' example (Box 4.B overleaf) demonstrates an approach based on collaboration with all members of the supply chain, not just the 1st tier contractors. Efficiency is achieved by aligning behaviours and culture, incentivising the supply chain against strategic business objectives and jointly managing programme risk over the duration of the control period.

Box 4.B: Case study – @One Alliance, Anglian Water

Anglian Water provides water and wastewater services to 4.3million customers over a region of approximately 27,500 square km. The organisation is in the 5th generation of its asset management strategy regulated by OFWAT. Anglian Water has adopted a long term collaborative relationship with its supply chain, known as the @One Alliance, to deliver the challenging efficiency targets demanded by the regulator. This involves developing the supply chain to not only drive procurement savings but to identify new and innovative approaches to product development and efficiency. This strategy contrasts with other approaches in the sector based on risk transferral and a desire to manage contractual risk over a delivery period. These programmes find it harder to tap into the innovation and efficiency achieved in alliances as there is less incentive on the part of the supply chain to invest their own resources and capital in new products and processes. The @One Alliance is a successful example of choosing the potential for long term efficiency over shorter to medium term risk transferral. This Alliance and others like it are seen as leading industry thinking in delivering long term efficient infrastructure.

4.11 The common themes in both case studies are informed procurement decision making based on an awareness of capability, engaging directly with the supply chain to stimulate innovation and a commitment to achieving an efficient outcome over short-term commercial gain.

Common characteristics and behaviours for effective delivery

4.12 As already noted, the definition of an efficient outcome can vary depending on whether a major one-off capital project, long term capital investment programme or major enhancement project is required.

4.13 Some common characteristics exist that appear to underpin the most successful projects and programmes. These key common characteristics are captured in Annex B and are aligned to the delivery stages of a typical project or programme, as follows.

- Investment planning: Developing policy, assessing deliverability and initiation.
- Programme development: Establishing the business case and defining benefits.
- Procurement planning and execution: Structuring the supply chain and implementing strategy.
- Engineering & construction: Delivering the brief and realising benefits.
- Transition: Implementing the Operational Readiness strategy.

4.14 The characteristics for successfully delivery are equally applicable for both public and private sector infrastructure sponsors and clients.

The role of Government and other infrastructure providers

4.15 The Government has a clear strategy to improve public sector procurement. Significant progress has been made in opening up Government procurement and making contracts more accessible to SME's. Additionally, through the National Infrastructure Plan the Government has outlined its vision for UK infrastructure identifying a medium term pipeline of work.

4.16 Through the Infrastructure Cost Review programme and the Construction Strategy the Government is committed to the following actions:

- establishing pipelines of work on a sector by sector basis;

- introducing fairer payment terms for the extended supply chain;
- trialling new approaches in procurement such as Integrated Project Insurance;
- introducing LEAN Standard Operating Procedures;
- identifying new approaches to operational readiness to enable "Soft Landings" and greater focus on whole life asset management;
- establishing cost benchmarks for the public sector;
- eliminating unnecessary standards; and
- improving project governance and risk management.

4.17 The Government is also committed to trialling the use of the Routemap in the public and private sectors and in particular, the Top 40 projects identified in the 2011 National Infrastructure Plan and disseminating the approach within industry (supported by the Infrastructure Client Working Group).

4.18 Additionally, the Government will encourage future major projects and programmes (as classified by the Major Project Approval and Assurance Guidance) to apply the Routemap or similar capability reviews prior to approval of the Outline Business Case, identifying the risks and opportunities that might impact on delivery. Consideration will also be given to greater coordination of the Routemap approach with the work of the National Audit Office (NAO) in relation to its work on "Initiating Successful Projects".

4.19 The Government considers that these measures will achieve the step change required to deliver our infrastructure more efficiently and in support of achieving the potential savings identified in the Infrastructure Cost Review.

The role of industry

4.20 As Government implements the changes identified the construction industry will be expected to respond and adapt to change.

4.21 The consequences of the changes identified above are far reaching. This includes fundamental issues such as how first tier suppliers are presently rewarded and how they can be moved from traditional fee based contracting to margin enhancing strategic incentivisation.

4.22 Providing greater access to the first tier suppliers' supply chain is undoubtedly one of the most significant challenges and requires first tier organisations to develop long term, open relationships with clients. This must be reciprocated by clients providing greater certainty of their construction programme, incentives to stimulate change and a commitment to not revert to traditional risk avoidance practices.

4.23 The consulting industry also has a role to play in identifying and advocating new approaches as their advice is often critical in the early stages of delivery. Wider opportunities should be sought by consultants in addition to becoming higher profile advocates of more efficient approaches to infrastructure delivery.

4.24 Clients will benefit by achieving greater levels of integration, improved supply chain management, greater innovation from the supply chain and enhanced value for money.

5 Impact of procurement rules

Public sector procurement context

5.1 The Public Sector Procurement Directive (2004/18/EC) sets out the rules for the procurement of goods and services and works above certain threshold values and is embodied within the Public Contracts Regulations 2006 (PCR). Similarly the Utilities Directive (2004/17/EC) sets out the rules for procurement in the utilities sector and is embodied in the Utilities Contract Regulations 2006 (UCR).

5.2 Infrastructure is procured under either set of Regulations depending on the nature of the procuring authority. Utilities as defined by the Regulations fall under the UCR whilst "contracting authorities" such as the Highways and Environment Agencies fall under the PCR.

Table 5.A: Application of the Directives across sectors

Directive	Relevant sectors	Examples of clients or contracting authorities
Procurement Directive (2004/18/EU)	Environmental protection, highways, one-off infrastructure projects not classified under the UCR	Environment Agency, Highways Agency, ODA
Utilities Directive (2004/17/EC)	Water, electricity, gas and heat, oil and gas, coal and solid fuels*, transport	Regulated utilities, Network Rail, TfL

**Note: Nuclear power generation is procured by the private sector whilst the NDA is a contracting authority for the purposes of the PCR albeit with much higher, bespoke safety regulations*

5.3 The current PCR includes four relevant procedures for competitive procurement: the Open Procedure; Restricted Procedure; the Competitive Dialogue; and the competitive Negotiated Procedure. The Open Procedure means authorities evaluate bids from all qualified bidders, whereas under the Restricted Procedure the authority can restrict the number of qualified suppliers who are invited to bid - neither the Open nor Restricted allow scope for negotiation.

5.4 Due to the bespoke nature, high risk and low levels of cost certainty during the initiation stages of many infrastructure projects the ability to negotiate or dialogue with the private sector is critical in most procurements and the Open and Restricted Procedures are unlikely to be appropriate. The alternative is therefore to use Competitive Dialogue or Negotiated Procedure. For complex infrastructure procurement Government has in the past recommended the use of Competitive Dialogue and the European Commission considers Negotiated Procedure must only be used if no other procedure is objectively suitable.

5.5 Competitive Dialogue has a negative reputation in the UK, due to a combination of factors such as poor strategy development and planning, inadequate process and the lack of training provided to procurers. Whist the Government has sought to limit the inappropriate use of Competitive Dialogue it also recognises that with proper preparation and by ensuring that an authority has a suitably skilled team, able to engage robustly with the private sector, Competitive Dialogue can support successful procurement outcomes.

5.6 Government consultation with industry found few problems with the procurement processes set out in the PCR and UCR. However the way these processes were applied by procuring authorities did create problems. Too often procuring authorities did not have sufficient procurement capability and did not have sufficient time to plan effectively or engage with suppliers and the market generally prior to launching their procurement. Recognising this, the Government's "Lean Procurement Guidance" and forthcoming ''Standard Operating Procedures for Competitive Dialogue'' stresses the importance of being adequately prepared and engaging with the market before launching procurement. [1]

Box 5.A: Case study – Network Rail Multi-Asset Framework (MAF)

Entering Control Period 4 (CP4) Network Rail faced the challenge of delivering an increased Enhancements workload. This required Network Rail to grow capability to deliver Enhancements, make better use of existing resources and find quicker and more efficient routes to market whilst preserving competition and demonstrating value for money. The MAF was one of several mechanisms used to achieve these objectives.

Context – Typical procurement processes required an average duration of 6 months from pre-qualification to contract award. This timeframe was unacceptable to internal stakeholders and third party funders and required a redesign of multi-disciplinary design and construct frameworks.

Original strategy – Establish the initial MAF framework for contracts between £1m and £15m based on a workload of approximately 30% of Enhancements expenditure. Evolve the framework agreements to reduce the reliance on mini-competition as cost intelligence develops, reward suppliers through performance based work allocation, utilise early supplier engagement and move from fixed price to target based contracting.

Challenges – Initially fourteen framework providers were appointed. This was considered too great a number. Additionally the planned expenditure targets were not realised leading to the original framework benefits not being realised. Changing market conditions, inconsistent management and aggressive pricing practices led to a review of the original strategy.

Rationalised strategy – A strategic decision was taken to reduce the number of frameworks and provide greater certainty of workload to a smaller number of suppliers. As a result 6 rationalised frameworks were awarded.

The competition was legally permitted to be restricted to the original fourteen suppliers reducing the complexity of the framework rationalisation.

Benefits realised – Commercial volume discounts and reductions based on greater certainty of workload, reduction in waste, greater commercial transparency, shorter procurement timescales, greater certainty of outcomes, improved behaviours and collaboration, a less adversarial environment, lower bidding costs, introduction of shared KPI's, smoothed programmes for resource deployment, earlier supplier engagement and reduced Network Rail management resource.

5.7 The above case study (Box 5.A), provided by Network Rail, details how an existing framework agreement was rationalised to achieve greater efficiency without compromising regulatory compliance. This example illustrates very clearly the importance of procurement capability and that the EU procurement regulations in themselves do not cause the typical problems that occur in the industry. Network Rail recognised that their strategy was failing to deliver the anticipated benefits and took the difficult decision to re-tender to achieve their goals

[1] Due to be released for consultation in February 2013

within a demanding regulatory environment. The key message from this case study is that approaches to procurement under the regulations require rationalisation and not reinvention.

5.8 The EU procurement regulations are presently under review to improve what is already a robust procurement process under which billions of pounds of construction activity has already been tendered, procured and delivered.

Procurement myths

5.9 To support improved procurement behaviour and dispel many of the "myths" surrounding public sector procurement the Cabinet Office has published Procurement Policy Note 04/12 (PPN 04/12). The document focuses on the commonly held myth that engagement with the supply chain compromises compliancy with EU procurement law.

5.10 The PPN confirms that it is not against EU procurement law to talk to potential suppliers before starting the formal procurement process and that no formal process exists in how it is undertaken other than it must not prevent an effective competition taking place. Engaging with the market pre-procurement is more likely to achieve a value for money outcome and, as shown in the previous case study, can prevent inefficient approaches to procurement.

5.11 Pre-procurement engagement has the following benefits:

- managing the market by raising interest in the competition;
- assisting in defining the requirements through technical dialogue resulting in a greater certainty of client requirements once the procurement process begins;
- providing a better understanding of the feasibility of the requirements, the best approach and the capacity of the market to deliver;
- improving understanding the risks involved;
- reducing the procurement timescales by minimising the dialogue needed during procurement;
- minimising the requirement for complex and costly procedures later in the process; and
- allowing the supply chain to align their resources to meet market demand and to raise queries in advance of the competition.

5.12 The PPN also provides a short checklist of activities to be carried out in pre-procurement engagement and a number of alternative approaches. Stimulating market interest and preparing the market for competition reduces the likelihood of going to the market with a poorly defined requirement and specification. The engagement process also stimulates the desired level of competition and allows the supply chain to identify trends in market demand.

A Infrastructure procurement models

Infrastructure procurement alternatives

A.1 Government research has identified a number of trends in projects and programmes in the infrastructure sector. These illustrate some of the favoured procurement approaches but should not be interpreted as the only effective strategy in each scenario.

A.2 For low to medium value and complexity projects within a capital investment programme, the best practice approach is considered to be the alliancing model used in the regulated utilities sector. The supply chain is integrated to involve expert system and component manufacturers in the development of solutions. This approach brings significant innovation that is, in turn, incentivised through performance league tables and Key Performance Indicators. Challenging cost targets are set by the client, linked to the efficiency targets for the control period.

A.3 For medium to high value and complexity projects within a capital investment programme, best practice was identified in both alliancing and delivery partner approaches. Collaborative working and integration of the client and supply chain functions are adopted. Both parties sharing the management of risk with the incentive of outperforming target cost based contracts. In several sectors including regulated utilities, rail and aviation, programme level incentives also include qualitative measures of client satisfaction that act as a significant incentive to consistently perform.

A.4 For higher value complex programmes, delivery partner and delivery consortia approaches are most commonly adopted. The delivery consortia approach, when successful, can be considered an example of best practice in transferring and managing risk to achieve a desired outcome. However, the approach does possess significant shortcomings in terms of developing the supply chain, effectively engaging with SMEs and controlling the quality and certainty of outcomes.

Delivery Consortia

A.5 The Delivery Consortia approach is adopted in sectors such as the regulated utilities where clients seek to transfer high value performance based contracts to a 1st tier organisation over the course of a regulatory control period. Under the contract the supplier undertakes the design of the projects from solution development stage against an output specification. The supplier also provides programme management services alongside design and build capability.

A.6 The key drivers for this approach are to achieve regulatory "catch-up" efficiencies (some of the highest in the sector) as quickly as possible by outsourcing the risk and to meet the desire of infrastructure owners to secure a stable return for their investment.

A.7 A significant advantage in this approach is the transfer of the projects from the asset management branch of the owner's organisation at a much earlier stage in the project lifecycle. The consortia therefore has greater control and visibility of the delivery programme to optimise the solution at lowest cost.

A.8 A potential disadvantage is that the operator can quickly lose its technical capability particularly in project and programme management. If the operator chooses an alternative

strategy in the future this capability can be very difficult and expensive to replicate. The operator also has little control over the development of the solutions that meet the original performance specification.

A.9 Whilst not a true collaborative model research has shown that clients are championing initiatives to improve working processes, share knowledge, drive more efficient supply chains and deliver innovation.

Delivery Partners

A.10 High value examples of the Delivery Partner approach can be found on the Crossrail and London 2012 programmes. Both the Olympic Delivery Authority (ODA) and Crossrail are examples of temporary client organisations required to deliver a specific programme.

A.11 The approach taken on both projects is subtly different. The ODA appointed a delivery partner "CLM" (CH2M Hill, Laing O'Rourke and Mace) to provide programme management and client integration, project management and construction capability.

A.12 Crossrail appointed a programme delivery partner (Consisting of AECOM, CH2M Hill and Nichols Group) to provide programme management capability and client integration, and a separate project delivery partner (a consortium consisting of Bechtel, Halcrow and Systra) to provide project management. The Crossrail project relies on separate competitions for each work package to procure construction services.

A.13 Procuring a Delivery Partner can bring instant programme management, design and construction capability to temporary client organisations that can be rapidly demobilised on completion of the project. The client organisation retains a significantly higher degree of risk than the Delivery Consortia approach but has a far greater influence over the final outcome.

A.14 The Delivery Partner procurement model is highly flexible and can be used to stimulate collaborative working through integrated working. A key driver to the success of the Delivery Partner Model is the development of performance management measures and incentivisation for the Delivery Partner aligned to the client organisations strategic objectives.

A.15 Box A.1 overleaf shows how Network Rail has successfully implemented delivery partner approach on the Thameslink Programme.

Box A.1: Case study – Network Rail Thameslink Programme

Network Rail has developed an eight step model to partnering with the supply chain based on BS11000 (Ref. http://www.networkrail.co.uk/aspx/12343.aspx) ranging from outsourcing and traditional procurement to delivery partners, alliancing and limited partnership models. On the £2.5bn London Bridge element of the Thameslink programme Network Rail has procured three delivery partners - Invensys, Costain and Balfour Beatty. Under the procurement strategy Network Rail act as Programme Manager and supply the Programme Management Office. If traditionally procured the risk premium would have undermined the business case. Network Rail's response has been to structure the project around greater supply chain collaboration and achieving consensus on solutions prior to construction. Network Rail manages approximately £500-600m of risk in relation to the £2.5bn project value. Suppliers have been procured competitively through an existing national framework. Sub-tier competitions are managed by the partners. Joint agreement is required on the supply chain structure at 2nd tier and below. Network Rail utilise a standard NR12 ICE target cost contract with ICE Partnering Provisions and ring fenced overheads and profit. Liquidated damages have been substantially reduced to reflect the high risks associated with technology and TOC/FOC damages.

Alliancing

A.16 Government research has shown a degree of confusion between the terms alliancing and partnering. Features such as establishing long term collaborative relationships, shared risk management and incentivisation at project and programme level are interchangeable. True partnering requires the parties to work under a single multi-party contract whereas research has shown that in the alliancing model clients in the infrastructure sector prefer direct contracts with each member of the alliance.

A.17 This allows the client greater flexibility in developing the supply chain and offers greater freedom for suppliers to join and leave the alliance.

A.18 Research has also shown that the Partnering secondary option clause (X12) under the NEC family of contracts is not used implying that the procurement model is out of favour in the infrastructure sector. Evidence of the use of "Partnering Charters" has been observed but these appear to be largely ineffective with no contractual measures attached to address underperformance. However more clients and suppliers appear to be in the process of obtaining the new British Standard for "Collaborative Business Relationship Management" – BS11000. Infrastructure UK will measure the take up of this new standard over the period of its three year Implementation Programme.

A.19 The major advantage to alliancing when implemented effectively is the achievement of sustained levels of efficiency in the medium to long term. However it should be stressed that alliancing requires much more than collaboration and integrated working and has taken many years for several clients in the regulated utilities sector to develop and perfect the desired behaviours.

A.20 Box A.2 overleaf shows how Anglian Water have successfully used an Alliance Approach to deliver significant programme benefits.

Box A.2: Case Study – Anglian Water product development

Under the AMP 5 "Lead Programme" a requirement was identified for a number of new Orthophosphoric Acid Dosing (OAD) facilities. An efficiency challenge of 20% encouraged Anglian Water Alliance teams to identify new and innovative ways of providing the facilities. The concept of providing an OAD facility within a "Permitted Development" emerged as the key challenge. The final OAD solution was a standardised product making use of off-site manufacture, reduced construction timescales and factory rather than on-site testing. The solution used common, standard components and also safeguarded operatives for the dosing of alternative chemicals. Integration of the design, construction and commissioning team also led to significant savings. Overall 30% efficiency has been made using this approach and is being applied across a number of water treatment facilities that lend themselves to repeatability and standardisation.

Public Private Partnerships (PPPs)

A.21 There are a number of Public Private Partnership (PPP) models, characterised by joint working and risk sharing between the public and private sectors. These can include relatively simple outsourcing-type partnerships – where services are provided on short or medium-term contracts – or longer-run private finance partnerships such as previous Private Finance Initiative (PFI) and the Government's latest approach PF2.

A.22 PPPs are used when the public sector requires a private sector partner to design, build, finance maintain, and perhaps operate, a public asset.

A.23 PF2 is a new approach to involving private finance in the delivery of public infrastructure and services through a long-term contractual arrangement. This continues to draw on private finance and expertise in the delivery of public infrastructure and services whilst addressing past concerns with PFI and responding to the recent changes in the economic context.

A.24 PF2 will continue to combine asset design and construction with responsibility for maintenance and renewal in a single contract. The flexibility of the model has, however, been improved by reducing, and providing greater discretion over, the number of services included in PF2 projects. To strengthen the partnership between the public and private sectors, the Government will look to act as a minority equity co-investor in future projects. PF2 will also be structured in a way that facilitates access to the capital markets, capitalising on the appetite of institutional investors and of other sources of long-term debt finance.

A.25 Under PF2 parties will continue to be incentivised to deliver on time and budget as no payment is payable to the successful private sector bidder until it has delivered an operating asset. Changes have, however, been made to the previous PFI risk allocation structure to improve value for money with a greater retention and management of certain risks by the public sector.

A.26 A number of changes have also been made to the procurement process to increase the speed and reduce the cost of PF2 procurements. These changes include: encouraging centralised procurement for new projects, thereby creating a body of procurement expertise; introducing a suite of standard documentation, including details of a new standardised approach that follows Lean Sourcing principles; strengthening the scrutiny of project preparation and setting out a maximum 18 month timeline from OJEU to the appointment of preferred bidder for all projects unless an exemption is agreed by the CST.

A.27 The Government has also stated clearly the circumstances when PF2 may be suitable. These are suggested to be for projects in which there is:

- a major capital investment need, requiring effective management of risks associated with construction and delivery;
- a stable policy environment and long term planning horizons exist, so there is a high degree of confidence the infrastructure and services will be required throughout the life of the contract;
- the nature of the requirement allows the public sector to define its needs as service outputs that can be adequately contracted for in a way that ensures effective and accountable delivery of public services over the long term, thus ensuring risk allocation between the public and private sectors can be clearly defined and enforced;
- the nature of the assets and services identified as part of the scheme, as well as the associated risks, are capable of being costed on a whole life, long term basis;
- a slow rate of technological change – as projects involving a high IT content are unlikely to provide the stability in demand required for a PF2 approach;
- a capital investment in excess of £50m – as less capital intensive projects seldom justify the procurement and management costs involved; and
- a project is not so large or complex that the private sector is unable to bear the risks being transferred.

Frameworks

A.28 Frameworks are a procurement tool used to appoint preferred suppliers in advance of either directly awarding work or competing in a subsequent mini-competition where more than one supplier is appointed. In the infrastructure sector, mini-competitions held following appointment to a framework are very common.

A.29 Under framework agreements clients are free to adopt either collaborative or risk averse procurement strategies. Effective frameworks achieve direct procurement efficiencies and savings but require proper planning and management to deliver efficiency in design and construction. The features of an effective framework are set out in Box A.1 overleaf.

A.30 The recent Cabinet Office report "The Effectiveness of Frameworks"[1] sets out the above features in greater detail and a compelling evidence base for the savings that can be achieved by using a framework.

[1] *Interim Report of the Procurement/Lean Client Task Group*, Government Construction Task Group, January 2012

Box A.1: Features of effective frameworks

- Demonstrable business need for the framework.
- Effective governance processes, active stakeholder engagement and client leadership.
- Supporting clients throughout the project lifecycle, ensuring that clients and the supply chain receive a legacy of improvement.
- Being driven by aggregated demand to create volume of workflow for selected suppliers and generate efficiencies, providing sufficient opportunities to cover supplier investment.
- Maintaining "competitive tension" in terms of value, quality and performance during its life.
- Being designed and managed to deliver the required outcomes and continuously improve upon them.
- Demonstrating greater value for money.
- Paying fairly for the work done and the risks taken.
- Contribution to the development of an effective and efficient construction market.
- Harnessing the power of infrastructure procurement to provide jobs and skills, local employment and enables all firms to prosper, especially SMEs.
- Ensuring supply chains are engaged from the earliest stages of a project.
- Ensuring transparency and collaborative values flow down the supply chain to produce supply chains that clients can have confidence in.

B Common characteristics of effective delivery

Stage	Description
Investment planning: Developing policy, assessing deliverability and initiation	Establish longer term pipelines of work and programmes with clear evidence base for efficiency.
	A clear benefits rationale established by the Sponsor.
	The use of asset performance data to inform benefits rationale.
	Risks and opportunities identified in relation to Sponsor capability and delivery environment.
	Capability assessment used to inform and develop the Strategic Outline Case (SOC) under public sector approval and assurance process (or private sector equivalent).
	Sponsor draws upon asset management data provided by the Client to establish a performance measurement regime and efficiency targets based on best practice from the regulated utilities sector.
Programme development: Establishing the Business Case and defining benefits	Project or programme brief identifies clear strategic objectives.
	Delivery organisation identifies clear alignment of benefits, strategic objectives and anticipated cost.
	Brief is informed by existing asset performance data. Client sets minimum standards for performance and specification rather than aspirational goals.
	Define approach to early market testing prior to SOC approval. Identify strategy for obtaining Early Supplier Engagement to assist in defining strategic objectives.
	Risks and opportunities identified in relation to Client and Supply Chain capability and delivery environment.
	Risk position of the delivery organisation established and strategic procurement options identified based on full understanding of capability prior to SOC approval.
	Opportunities identified to establish integrated teams to deliver ongoing series of projects and programmes achieving greater consistency and programme awareness.
Procurement planning and execution: Structuring the Supply Chain and implementing strategy	Identify where greatest value and criticalities lie in the supply chain prior to early market engagement. Identify key markets and suppliers and related risks and opportunities.
	Undertake early market engagement in accordance with Cabinet Office public procurement guidance and LEAN principles.
	Establish integrated delivery team appointed on the basis of technical, commercial and behavioural competency.
	Identify the approach taken to balance risk and reward through the Supply Chain and incorporate in Outline Business Case (OBC or private sector equivalent).
	Apply PAS91 or equivalent standards in pre-qualification. Eliminate unnecessary duplication and provide access to Client organisation procurers rather than relying wholly on automated systems.

Stage	Description
	Undertake Early Supplier Engagement to assist in developing and defining options. Apply greater incentives to bring innovation to the process earlier. Prioritise a structured approach to ESE early in the programme.
	Consider incentivising supply chain against downstream operation costs rather than just upfront capex.
	Establish robust systems for monitoring supply chain performance risk (e.g. insolvency or liquidation risk).
	Clearly articulate the approach to the above items in the Procurement Policy and Strategy documents and feed into the Full Business Case (FBC or private sector equivalent) at OGC Gateway Review 3.
	Undertake competition stage applying best practice (e.g. Incentive Based Alliancing in Construction, European Construction Institute, 2000).
Engineering & construction: Delivering the Brief and realising benefits	Align contract forms and conditions through the extended Supply Chain ensuring incentives do not fall to the first tier organisation only.
	Integrate supplier processes and systems that support efficient workflow and effective decision-making.
	Produce Full Business Case (FBC or private sector equivalent) prior to contractual commitment.
	Require the Supply Chain to integrate their design information or to develop the capability to do so.
	Require the Supply Chain to demonstrate efficient production planning and management techniques.
	Require the first tier integrator to establish robust systems for monitoring and reporting, performance measurement and production control with the extended Supply Chain.
	Undertake Operational Readiness appraisal and establish plan prior to Transition stage engaging with all key stakeholders.
Transition: Implementing the Operational Readiness strategy	Apply Operational Readiness plan to enable "Soft Landing" in accordance with Cabinet Office best practice (or private sector equivalent).
	Undertake post project review and lessons learned. Compare outcomes against risks and opportunities identified in early stage capability assessments and delivery environment analytic.

C Crossrail Routemap pilot case study

Box C.1: Application of the Procurement Routemap to Crossrail

The Routemap principles were mapped retrospectively against Crossrail's journey as the programme progressed from development to preparing for operational readiness. In doing so, the benefit of the Routemap's objective and systematic approach led to identification of a number of areas where its application would have realised further gains.

It was found that the components of the Routemap corresponded to the challenges that Crossrail faced and how they were actually dealt with (many intuitively). As a form of rapid appraisal, the Routemap identified critical aspects requiring in-depth review and provided guidance on how to systematically take steps to increase both effectiveness and efficiency.

The following lessons or 'shortcuts' to assist other major investments have been identified:

- The need to firmly establish the key principles, systems, roles and tasks before the detail of delivery and procurement;
- The need to determine the interfaces prior to transition from one phase of the project to the next – what is the impact on risk and complexity and how can procurement be used to maximise benefit (e.g. common procurement);
- Insufficient planning for organisational change can result in a loss of client identity, the blurring of governance and accountability and the need to redefine the relationship with partners;
- The need to assess the functional requirements against the partnering and systemic relationships. Efficiency can be lost through duplication of effort, conflicting culture and not knowing 'when to step in'; and
- The need to protect not only the key programme elements but the capability required to manage them during organisational change.

The significant benefits achieved at Crossrail, reflective of the application of Routemap principles, illustrate the potential of the Routemap for application on other major projects and programmes. Having led to savings against the original budget of approximately 7% (£1.1billion from a mature sponsor-client relationship and tens of millions from client capability transitioning and OCI), it is reasonable to assert that the adoption of an objectively systematic approach, as outlined by the Routemap, would enable other major investments to achieve the projected savings.

D Thames Estuary Routemap pilot case study

Table D.1: Application of the Procurement Routemap to Thames Estuary Phase 1 (TEP1)

The Environment Agency is considering a different delivery approach for its TEP1 investment programme. The Agency is developing its commercial and procurement strategy for the programme and will be seeking approval of an outline business case in early 2013. Applying the Routemap has helped to validate the Agency's high-level approach and provided an action plan for further development of the delivery model, including enhancement plans for the Agency.

A number of benefits have been realised from applying the Routemap and these may be useful to other clients developing commercial strategies for their investment programmes.

- Aligning the client's programme objectives and critical success factors with the delivery approach to ensure that the anticipated programme benefits will be delivered.
- Establishing and understanding the clear link between the nature and complexity of the delivery environment, the capability of the sponsor, the client and the supply and the most appropriate delivery approaches.
- Determination of functional boundaries between the client and its supply chain to support the development of a robust work breakdown structure (WBS) and responsibility matrix for the programme and a sound basis for clarifying risk allocation between the parties.
- Development of an enhancement plan for the sponsor, client and supply chain. This has enabled early identification of the required changes in the client organisation to ensure its compatibility with the proposed delivery approach and interface with the wider client business.
- Emphasised the benefits of early supplier engagement. Output from the Agency's market sounding exercise has been synthesised to help assess supply chain capability to meet successfully the challenges posed by the proposed delivery model.

The TEP1 Routemap trial has emphasised the benefit of applying the process at the development stage in a project's lifecycle as a means of building evidence for the outline business case, substantiating the proposed commercial strategy.

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