

Introduction and background

The Environment Agency is responsible for delivering sustainable flood and coastal erosion risk management solutions and for overseeing the delivery of local solutions by others. To do this we work closely with a wide range of partners including government, businesses, local authorities, developers other organisations and communities - with the aim of maximising the benefit for people and the environment from each pound spent.

Our Sustainable Engineering Procurement Strategy - *Engineering a Better Environment* - seeks to ensure we deliver value for money in creating a better place for people and the environment. Over the next 10 years, we will be investing more than £2.5 billion to reduce the risk of river and coastal flooding and to secure wider environmental and social benefits. As part of this strategy, we are trialling new ways of working with our existing supply chain to find better ways of delivering our objectives more efficiently.

Our current approach is one of procurement through traditional frameworks and subsequent competition for individual projects in an annual programme of work. Although we are trying different ways of delivering greater efficiencies through these frameworks, we recognise there is a limit to what can be achieved due to the uncertainty of workload for contractors, stop/start working and lack of real buying opportunities.

Along with government and Environment Agency drivers, we have consulted with and benchmarked with other public and regulated clients in the water and transport sectors who have similar programmes of capital works, to better understand how we might work more efficiently with the supply chain. Additionally the supply chain, through informal discussions and a market sounding exercise in 2012, have confirmed that there is a keen interest in working with the Environment Agency in a more collaborative way to deliver benefits for all parties.

We recognise that new ways of working require changes to how we organise ourselves and how we behave with our suppliers, amongst other things. The Infrastructure Procurement Routemap was seen as an excellent way to assess where we are as an organisation and to inform the development of our procurement and change management strategies for collaborative working to deliver the desired outcomes from a long term programme of flood prevention in the Thames Estuary.

Flood risk management on the Thames estuary and TEP1

The Thames estuary floodplains cover a large and unique area from Teddington in the West of London to Sheerness in Kent and Shoeburyness in Essex. It includes the tidal Thames, its tidal tributaries, and floodplain. Today, 1.25 million people, £200 billion worth of property are at risk from tidal flooding in London and the Thames Estuary. This includes 500,000 residential homes and 40,000 non-residential properties, important business, critical infrastructure, industrial areas, four world heritage sites and the port of London. The Estuary has a major system of tidal flood defences including the Thames Barrier and Associated Gates, gravity sluices, gravity outfalls, pumping stations, access flood gates, and over 350 km of fixed flood defences of varying type.

Through the Thames Estuary 2100 project, the Environment Agency has developed a comprehensive action plan which sets out how to manage this risk of flooding through to the end of the century. The first 10 years, Thames Estuary Phase 1 (TEP1) focuses on maintaining and sustaining the system of flood defences, by considering whole life costs of both fixed and active assets and increasing the proportion of refurbishment rather than renewal when work is required.. Given the location and consequences of flooding this project is seen as high risk and high value - although the nature of the work elements are very much "business as usual" building upon over 30 years of experience for the Environment Agency.

TEP1 represents a unique opportunity for the Environment Agency to deliver a long term planned portfolio of capital works in a unique and challenging location, generating significant benefits and savings of at least 20%, by working collaboratively with suppliers. The things that make TEP1 unique for the Environment Agency are:

- Entirely integrated management of Thames Estuary tidal defences
- 10 year detailed programme of work
- Exclusivity of work within geographical boundaries
- Well defined asset base (mixed ownership) and history of intervention
- Economies of scale - £20 to 30 million/year of capital works
- Procurement – one tender process and contract, not hundreds of project tenders
- Management – streamlined approval and governance processes
- Reduced Environment Agency personnel requirement

The work itself comprises investigation and design of improvements to the flood defences made up of 'fixed' defences (embankments and walls) and 'active' defences (barriers, flood control gates and pumping stations). The estimated value is over £250 million over the 10 years and a single supplier is proposed.

Objectives of the Routemap process for TEP1

The Routemap process was undertaken as a trial alongside the development of the procurement strategy and outline business case for TEP1. Its objectives were:

- To unlock the potential of the TEP1 programme of works
- To understand the complexity of delivering more efficient outcomes through a long term programme and enhance the strategy to ensure success
- To understand the capability of the Environment Agency (Client), Defra (Sponsor) and the supply chain to deliver the outcomes in a collaborative arrangement, recognise any gaps or shortfalls and how to fill them
- To learn from the experience of other organisations who have carried out similar work
- To aid in the development of the delivery, governance and organisation models, using best practice tools
- To inform the procurement strategy and provide evidence for the business case (commercial and management sections) for the Treasury
- To contribute to building a successful implementation and Delivery team.

Process

A number of workshops were undertaken following the guidance in the Routemap process:

- **Workshop 1** - Alternative procurement strategies; benefits and evidence for adopting a new approach
- **Workshops 2 & 3** - Identification of the alternative strategy using the Delivery Environment Complexity Analytic (DECA) and sponsor, client and supply chain systemic capability matrices to assess capability to do something different, risks and opportunities and the initial development of a high level governance model (detail developed in further workshops)
- **Workshop 4** - Review outputs incorporated in TEP1 strategy (detail developed in further workshops)

Discussion and Outputs

The first workshop was used to re-affirm the high level objectives of TEP1 and describe the type of client the Environment Agency wants to be – visionary and open minded, intelligent and respected (client of choice), integrated and challenging, outcome focused, efficient and commercially strong. The introduction of the socio-technical system analysis highlighted the benefits the Routemap process could bring to the TEP1 project. We recognised the six socio-technical systems or categories (goals/visions/values; people; work organisation and practices; technology assets; culture and processes/procedures) and the importance each would have to the project. The Routemap analysis helped us to understand the inter-relationship and inter-dependencies between the six categories and

to identify opportunities and issues (mix of strategic and tactical) for future actions as the TEP1 strategy was developed. Examples are shown in the table below:

Socio-technical Category	Opportunities	Issues
Goals, visions and value	Increased certainty of outcomes	Need to ensure Environment Agency maintains a shared vision with key partners and deliver the objectives of the TE2100 plan.
People	Develop staff, improving their level of competency and knowledge, engaging with them so they are keen to learn and improve how they work	Leadership during change needs to be committed, visible and empowered to make decisions. Manage any opposition to change and exceptions to new ways of working.
Work organisation and practices	Procurement strategy used through life of programme to encourage change	Longevity of funding commitment
Technology/asset	New thinking and innovation	Asset condition may change during course of the contract
Culture	Collaborative relationships will allow more energy to be focused on delivery rather than process	Large and long established organisations can be difficult to change
Processes/procedures	Processes and procedures are simplified with one programme	Empowerment of organisation to change

Procurement route options

When we considered possible procurement routes based on our collective experience and knowledge, we found that members of the team had different views on what the various models were. There was a common understanding on what a framework was but there were many views on what a delivery partner or delivery consortium was and even more perspectives on what constituted an alliance, integrated or otherwise.. IUK's best practice characteristics document helped by describing the different models but that knowledge alone was not sufficient to make a fully informed decision on the best model for TEP1. The delivery environment and capabilities of the parties were explored in Workshops 2 and 3:

Delivery Environment (assessed as high complexity/risk; high purchasing power/value)

We started by applying the Delivery Environment Complexity Analytic (DECA) to create a DECA profile. TEP1 was already recognised as having high complexity/risk and high purchasing power/value, from which a common procurement strategy four box model would identify the contract as strategic in nature.

The DECA tool confirmed the strategic nature but went much further, enabling us to identify those issues of high importance, such as stakeholders, financial impact, interfaces, execution complexity and extent of change. Rather than develop individual action plans for these issues, they fed into the on-going work of developing the procurement strategy and the commercial and management cases for the business plan as shown in the table below:

DECA Profile (High importance)	Comments	Actions
Strategic importance	High and will become more sensitive over time	Include in Procurement Strategy
Stakeholders	Early engagement with stakeholders Potential involvement with governance Clear strategy/proactive approach	Stakeholder engagement plans (part of management case)
Financial impact	KPI's and output specification to ensure benefits delivered	Include in Commercial Case
Interfaces	Clarity of objectives/targets	Include in Management Case

	Governance model to reflect the contract	
Execution complexity and extent of change	Clarity of change programme aligned to contract approach	Include in Management Case
Organisational capability	Pathfinders in past but recognise need to prepare	Include in Management Case

Capabilities of the parties to undertake TEP1

The capability of the parties to undertake TEP1 was assessed using the Routemap templates. One of the real benefits here was in the open team discussion around the prompts in the templates, leading to an honest recognition of where each of the parties capability was at this time. In the client assessment for the Environmental Agency, we found that Levels 1 and 2 were solid and aspects of most of the prompts were present in the next level so we settled on an assessment of Level 3 “Governance”, nevertheless there were characteristics of Level 4 and level 5 already within the organisation.

The team assessed Defra, as the sponsor of the Environment Agency as Level 2 “Governed” for TEP1. As a spin off from their participation, Defra separately arranged to use the Routemap to assess themselves as sponsor of the Defra Flood and Coastal Risk Management Programme.

The Environment Agency had undertaken a Market Sounding Exercise (MSE) for TEP1. This built on informal discussions with suppliers and confirmed a genuine market interest in working collaboratively with the Environment Agency to deliver TEP1. The results of the MSE were very useful in assessing supplier capability to undertake TEP1, as a number of potential high quality suppliers responded very positively.

The outputs of the capability assessments for TEP1 were:

Organisation	Current Capability	Desired Capability
Environment Agency - Client	Level 3 - Governed	Level 4 Managed System/Level 5 Optimised System
Defra - Sponsor	Level 2 - Governed	Level 2 Governed/Level 3 Assured
Supply Chain	Level 4 Managed System/Level 5 Optimised System	Level 4 Managed System/Level 5 Optimised System

This showed that the supply chain is capable of delivering TEP1 but the Environment Agency needs to enhance its capability, as was expected. The Routemap process helped to identify the particular areas to address, which are listed below, these principles fed into the developing strategy as indicated in the table below:

Principle	Action
Flexible and adaptable to change	Key element of TEP1 model design – procurement strategy and management case
Makes timely decisions	Streamlined approvals procedures to empower TEP1 board
Balances risk and reward appropriately with supply chain	New incentive mechanism designed as part of procurement strategy
Ensure programme supersedes individual stakeholders	Key element of TEP1 model design – management case behavioural change programme
Continuity of infrastructure investment	Environment Agency funding commitment confirmed and exclusivity for contractor
Improved governance	New streamlined governance for TEP1 designed as part of management case
Adopts lean principles and concepts	Key element of TEP1 model design for realisation of efficiencies
Agenda is one of efficiency	Main business plan driver is to achieve at least 20% efficiency
Continuous capability and capacity enhancement (continuous improvement) Commercial Capability	Key element of TEP1 model design – procurement strategy and management case Expand the Environment Agency’s competency in adapting this new contract approach.

The outputs from the Procurement Routemap were utilised in three main areas of development

The TEP1 model

The team initially thought that an alliance was the most likely delivery model but this view changed as more analysis was undertaken. Benchmarking discussions with Anglian Water and , Severn Trent Water helped confirm that adoption of a full alliance model would be too big a step for the Environment Agency to take at this time. This was because we recognised that the culture of the existing organisation and its capability to do something different, the fact that most organisations have taken 2 to 3 control periods to successfully bring about a similar degree of change and an alliance model might be more appropriate for the Environment Agency's full flood management programme, in the fullness of time, rather than just TEP1.

We took the high level governance model output from workshop 3 and developed it in much more detail by identifying the desired roles and responsibilities of the Environment Agency as intelligent client such as approval of final option, contractor as delivery partner, such as construction and shared roles such as analysis of options. The developed model had features of both alliancing and delivery partner models. It could best be described as **"the Environment Agency working with a delivery partner in an integrated team in a collaborative environment"**. Separate workshops were held to define the roles in full detail, for the start of the contract and to build in flexibility to evolve and change and then to road test them.

We also took the key desirable characteristics identified in our capability assessments and incorporated them in the TEP1 model. For example

- (model) ensures project/programme supersedes individual stakeholders
- true understanding of benefits and value and align success measures accordingly
- programme remains a viable proposition over the lifecycle
- benchmarks performance and understands value of industry comparators

The Procurement Strategy

Outputs from the workshops fed into the procurement strategy. The opportunities and the contracted out works complexity/value model from workshops 1 and 2 were directly incorporated into the strategy.

Key desirable characteristics identified in our capability assessments incorporated in the procurement strategy included

- makes informed use of competition process and regulations
- balances risk and reward appropriately with supply chain
- agenda is one of efficiency not short term commercial gain
- data set managed in real time to provide value based reporting

Finally, the high complexity, value, risk and degree of certainty of work requirements identified in the Routemap workshops pointed us towards the use of the competitive dialogue process. The main objective of the procurement strategy is to achieve minimum savings of 20% against the current baseline cost estimate by:

- Selecting and managing a delivery partner through a single co-located, Integrated Delivery Team (IDT) consisting of key Environment Agency resources and members from the delivery partner
- Planning and implementation of a 10 year programme of work as a strategic programme rather than as packages or individual projects
- Establishing a longer term arrangement (up to 10 years) with a delivery partner
- Streamlining end-to-end business processes to work more effectively on optimised capital works, replacement and refurbishment activities
- Developing and using key indicators of performance and costs that incentivise continuous improvement
- Maintaining an intelligent high performing team for a longer duration than current, reducing the likelihood in loss of knowledge and key experience which impacts on productivity

- Align to Environment Agency and government policies.

The optimum approach for the Environment Agency, identified through the analysis of this procurement strategy, is to establish a long-term delivery partner covering the provision of required services as detailed in subsequent sections of this strategy document, over a 10 year (7+3) period with a single entity.

The Management Case

Building on the new TEP1 governance model, we also developed a delivery organisation structure (the integrated team) and designed a streamlined gateway approval process to realise some of the benefits of working more effectively.

Once again we took the key desirable characteristics identified in our capability assessments and built them into the management case, including

- “Shaping” culture established – desire for improvement
- Knows what they need and can prioritise
- Able to challenge specialist requirements
- Able to bridge interfaces between organisations

This is where outputs from the Routemap helped identify challenges yet to be overcome. For example the change programme needed to help internal stakeholders to understand and contribute to TEP1. This is relatively straightforward for the small number of staff who will be full time members of the integrated delivery team but TEP1 will interface with many more Environment Agency staff who are used to working with framework suppliers and who will need to respond differently in their part time involvement with TEP1. Change management is an important part of the management case.

The main objectives of the management case are to:

- Achieve buy-in from the business as to the proposed solution
- Identify the changes necessary to achieve contract award and deliver the 10 year programme
- Streamline approval processes
- Outline the new ways of working
- Highlight the change from the current approach
- Demonstrate that the preferred approach can be implemented successfully
- Identify those who will be responsible for delivery
- Outline the resource requirements for enablement and delivery.

The developed management case covers the following sections in detail:

- Programme Management Strategy
- Project Management Approach
- Arrangements for Change Management
- Benefits Realisation Plan
- Risk Management Strategy
- Arrangements for Post Contract Evaluation.

Benefits of applying the Routemap process to TEP1

The following benefits have been realised through the use of the Procurement Routemap:

- Understanding the inter-relationship between goals/visions/values, people, work organisation and practices, technology, culture and process/procedures. This highlighted the importance of change management planning and communications, which have since been developed in the management case within the business case for TEP1
- Alignment of Environment Agency programme objectives and critical success factors with delivery approach to ensure the anticipated programme benefits will be delivered e.g. realistic phased approach to achieving increasing efficiencies (savings) over the life of the contract
- Understanding the link between the nature and complexity of the delivery environment, the capability of sponsors, Environment Agency and supply chain and the most appropriate

delivery approach e.g. delivery partner in integrated team rather than alliancing which would be a step too far at this time. This has influenced the development of the procurement strategy towards competitive dialogue and the commercial case for TEP1.

- The start of the development of a robust governance model with clear responsibilities and risk allocation. This has been completed after the workshops as part of the management case for TEP1
- Enhancement actions for sponsors, Environment Agency and supply chain. This enabled early identification of the need for better engagement with the Environment Agency Directors. Defra undertook a separate workshop to assess Defra's Flood and Coastal Erosion Risk Management Programme.
- Emphasised the benefit of early supplier engagement. Outputs from the Environment Agency's market sounding exercise have been used to assess supply chain capability to meet the objectives and challenges posed by TEP1
- All the individuals who participated in the workshops gained benefits from having access to best practice tools, processes and structure in the pre-development of the procurement strategy for TEP1. Some pre-conceived ideas were shown to be not the best way forward, with good reasons and a better outcome was developed by informed debate and consensus.

Conclusions

The Environment Agency has been undertaking flood risk management works in the Thames estuary since its inception, as did its predecessors. The TEP1 programme has provided the opportunity to deliver the outcomes required more efficiently by working collaboratively with the supply chain.

The Procurement Routemap helped identify the best way to achieve this goal and the outputs from workshops fed into the on-going development of the procurement strategy, organisational design for the programme and the business case. Use of the Procurement Routemap provided a structured approach to help identify the key socio-technical issues which needed to be addressed to ensure that TEP1 is successful. As such it was a success and we would have no hesitation in recommending its use in major infrastructure programmes of work.



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