

TA 7.7 Optioneering and Estimating Technical Annex

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Navigation: TA 7.7 – Optioneering and Estimating

Purpose:

This annex provides further details on our approach considering a range of options to address the operational risks that we identify. Through robust consideration of a range of options against a proven framework and applying technical and financial analysis to the options we can be confident of selecting the best value option in the long term.

The table below summarises the Ofwat tests that are addressed by the evidence presented in this Annex.

Table 1 - Relevant Ofwat tests

Ref	Ofwat test	Comment
Primary Focus Areas		
	How well has the company objectively assessed the full range of mitigation options and selected the solutions that represent the best value from money over the long term and have support from customers and stakeholders?	<p>In a high-quality plan: The company will thoroughly appraise options for mitigating resilience. It will present a full range of options as evidence that the plan will deliver the best value long-term options for customers. This will include utilising options beyond its boundary to mitigate risks in its own area (and also looking beyond its boundary to understand how it can support long-term resilience elsewhere).</p> <p>This annex provides an overview of our Totex Hierarchy and how the thinking behind it influences our investment decisions. It also provides a brief overview of our whole-life costing process. More information about our optioneering is in Ta 14.5</p>

Developing best value solutions for customers

Ensuring we choose the most cost effective and efficient solutions is fundamental to delivering best value for customers.

Achieving resilience-in-the round requires broadening our focus from our asset base to developing innovative, collaborative solutions. This includes our plans for a South East Skills Academy, our transformational programmes (e.g. Catchment First) and the proposed joint-use reservoir at Havant Thicket. Throughout our plan and technical annexes we explain the wide range of options considered and the reasons behind our proposed solutions.

Figure 1 summaries our Totex Solution Hierarchy which codifies our thought process when identifying, assessing and selecting the best value option, from a range of potential solutions.

By aligning this with the Cabinet Office's 4Rs of resilience, we can categorise the risks we are seeking to address and prioritise solutions accordingly – with some risks most effectively addressed through a basket of smaller interventions rather than a single large solution. An example is our approach to Nitrate, where we have selected a variety of solutions across the region to achieve a single outcome of securing resilient water supplies.

When considering how to address the resilience risks we have identified we seek to eliminate the root of the issue, collaborate to achieve the same outcome, change how we operate and reinvigorate our assets, moving down the hierarchy as solutions are shown to be too expensive or not feasible. After running through the hierarchy we then look to fabricate something new. This approach encourages us to address the root causes of issues before making more expensive capital investments.

For example, to ensure continuous power supply, rather than install standby capacity and addition redundancy, which can be expensive and underutilised we first look to improve our response and recovery to a power failure. This can include, working with stakeholders on better emergency planning and communications and our supply chain to provide mobile generators and changing how we deploy temporary treatment plant, making use of redundancy in the supply chain and across our boundary.

Another example is our work with Portsmouth Water and the wider Water Resources in the South East group to address water shortages in the future. Traditional thinking would lean towards building new supply works or desalination plants. By considering cross-boundary collaborative options we consider options like Havant Thicket reservoir and the South East Water Grid.

Resilience-in-the-Round

Reliable services supplied by infrastructure that can avoid, cope with and recover from, disruption

Need to make the best long-term decisions about operations, maintenance and investment

Have the right information, systems, processes, governance and capabilities

Resilient balance sheets, cash flows and finances

Cabinet Office 4Rs

Plans should consider:

- A full set of mitigating actions and interventions that consider all of the components of resilience;
- Explicitly consider options that involve cooperation and collaboration with other companies at a regional or even national level; and
- The best value solutions for customers in the long term, which may involve long run solutions.



Resistance

Providing the strength or protection to resist a hazard or its primary impact, e.g. the design on an asset to an appropriate standard or expected level of service



Reliability

Ensuring that assets are maintained so that they continue to operate in the range that they are designed for



Redundancy

Designing and building capacity in the network or asset system, through duplication, interconnectivity or applying ecosystem-thinking



Response & Recovery

Enabling a fast and effective response to and recovery from disruptive events, thorough efforts to plan, prepare and exercise contingency plans in advance of events

Totex Solution Hierarchy

	Resistance	Reliability	Redundancy	Response & Recovery
 Eliminate Remove the root-cause of the principal threat or pressure	<ul style="list-style-type: none"> Lead Supply Pipe Replacement (WQ Risk) Going beyond statutory requirements for Bathing Waters Infiltration reduction 	<ul style="list-style-type: none"> Rationalisation of water supply works Rationalisation of water networks (2030) Rationalisation of waste water treatment works Rationalisation of sewerage networks 	<ul style="list-style-type: none"> Surface Water Removal 	Not Applicable
 Collaborate Partner with stakeholders to develop mutually beneficial (and funded) solutions	<ul style="list-style-type: none"> Havant Thicket Service Reservoir (with Portsmouth Water) 'Unflushables' / Fats, Oils & Greases (FOG) Catchment management schemes for No3,P, Pesticides 	<ul style="list-style-type: none"> Catchment First – River Enhancements Catchment monitoring Catchment mitigation measures Catchment compensation 	<ul style="list-style-type: none"> Hampshire Region Grid Target 100 – PCC Reduction Catchment First – Raw WQ Water Trading SuDS / Rainwater Gardens / Smart Water Butts Charrette / Collaborative Planning – Drainage 2030 	<ul style="list-style-type: none"> Joint Emergency Response & Recovery Plans Energy Resilience – Mobile Generation / Power Network (East Worthing) Tier 2 Supplier Framework (Ops)
 Operate Operate and maintain assets and systems differently	<ul style="list-style-type: none"> Reduction in leakage of 15% by 2025 Networks 2030 (monitoring and control) Drainage 2030 (data analytics) 	<ul style="list-style-type: none"> Mains Flushing Surface Water Works Operational Excellence – Criticality of Assets; Reviewing Maintenance Strategy ACS Sludge Disposal 	<ul style="list-style-type: none"> Water Supply Zone Studies Storm (Storage Tanks) 	<ul style="list-style-type: none"> Leakage - Find & Fix Contingency Planning (Lessons learned from March 2018 Freeze / Thaw) Drought plan Temporary Treatment Plant Deployment Pumping Station Fast Response
 Reinvigorate Leverage existing asset capabilities or enhance headroom	<ul style="list-style-type: none"> Outfall enhancements 	<ul style="list-style-type: none"> Resource Hub Natural Flood Management Condition Based Maintenance – Pumping Stations East Worthing Wet Well Reinforcement – Extending Asset Life / Reliability 	<ul style="list-style-type: none"> Network 2030 – Smart Networks Water Re-Use Network Flow Monitoring (Building on Portsmouth surface water separation) 	<ul style="list-style-type: none"> Water Quality Temporary Plant ('Thunderbird Units')
 Fabricate Construct new assets, on a 'designed to operate' basis, using efficient construction approaches	<ul style="list-style-type: none"> Nitrate Plant Desalination Water re-use Reservoir development Target 100 Leakage 100 Extending Pumping Station Outfalls (Sea Level Rise) 	<ul style="list-style-type: none"> Leakage – Mains Replacement Design standards Water efficiency for the new build Target 100 Protecting Sewage Treatment Works from Flooding 	<ul style="list-style-type: none"> Service Reservoir Rationalisation Whitfield; Ebbsfleet Growth Challenges 	<ul style="list-style-type: none"> Strategic Spares Management

Figure 1 – Totex Solution Hierarchy

We undertake a rigorous cost benefit analysis process, shown in Figure 2 below, to ensure the solutions we develop deliver best value for customers.

We use customer insight to inform the prioritisation of risk to customer service and develop solutions against the Totex Hierarchy, which are evaluated against technical viability and whole life cost. Benefit is calculated in terms of customers' willingness to pay for different service levels, ensuring the schemes selected are supported by them.

Whole life cost modelling determines the cost of schemes over a 60 year lifetime and considers customers' preferences and consequential cost mitigation to determine preferred options to justify scheme selection. More information about the above is in Chapter 14 and TA 14.5.

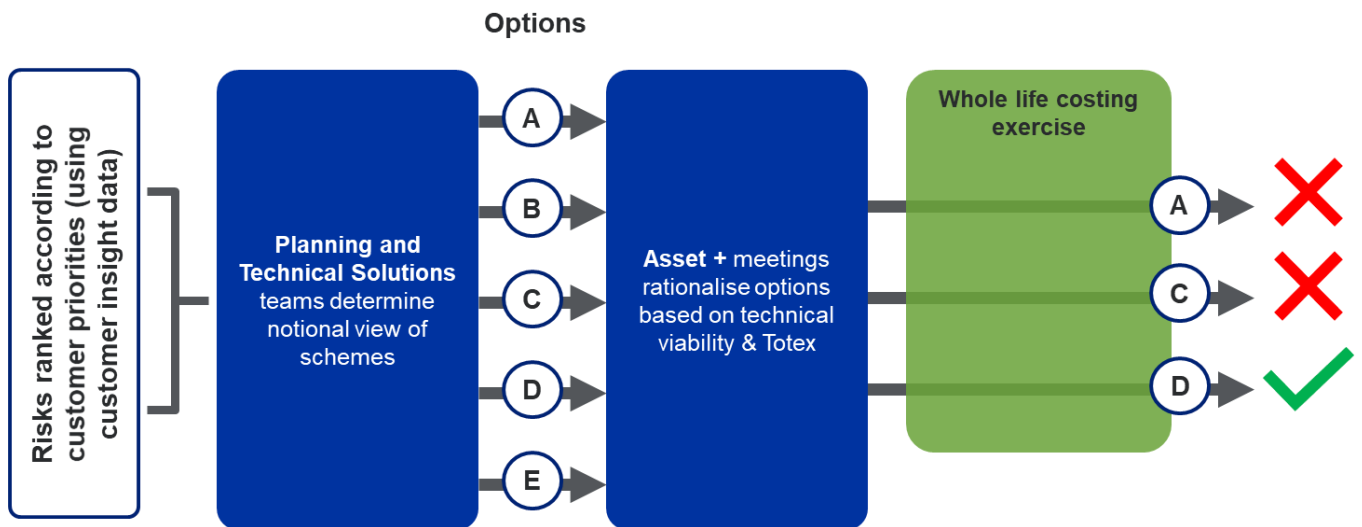


Figure 2 - Approach to whole life costing in our Water and Wastewater systems