

TA 11.WR02 Impounding Reservoirs Business Case

September 2018
Version 1.0

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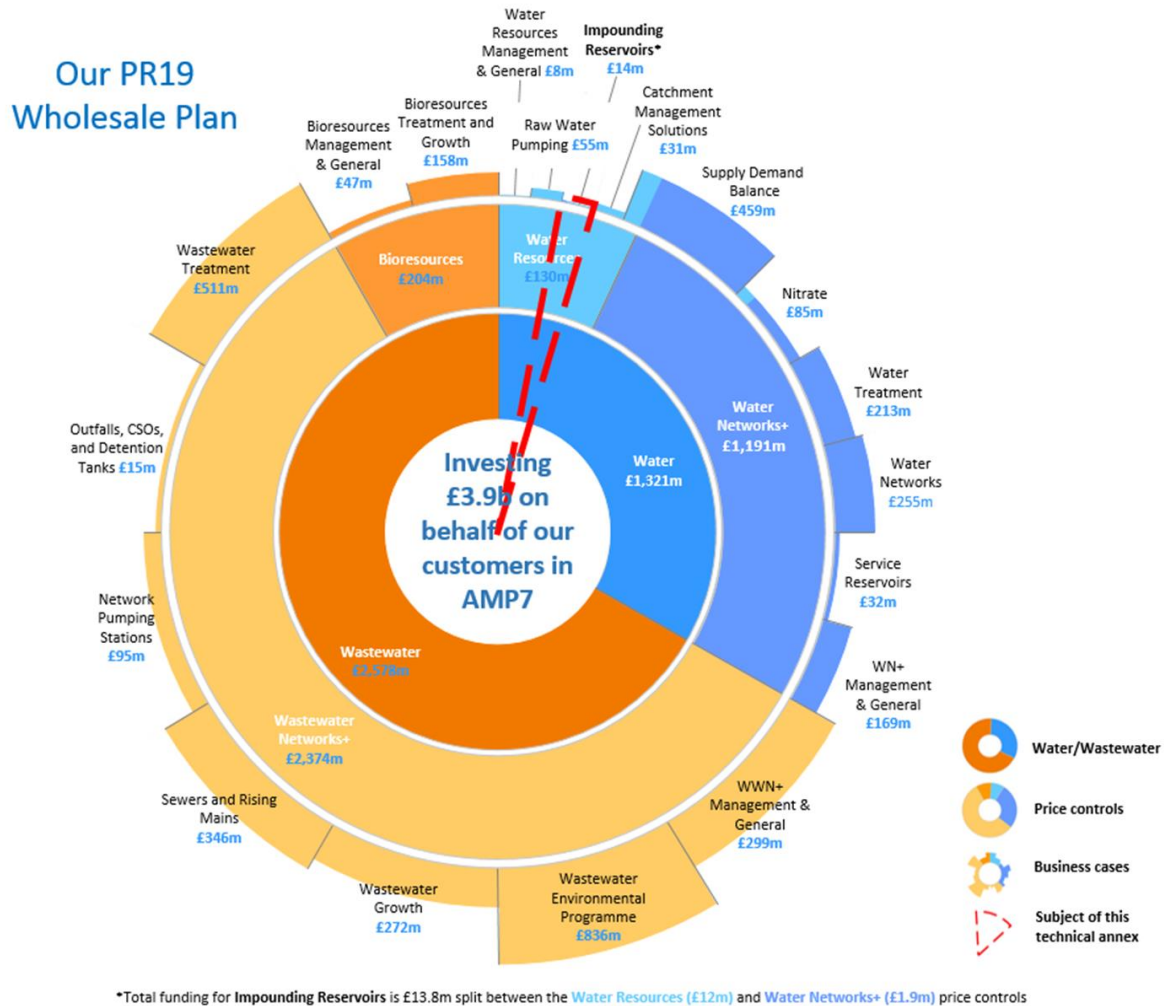
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Need for enhancement / investment	[REDACTED]		
Overview of AMP7 proposals	We will invest £13.8m totex over the AMP7 period, a £12.6m increase from AMP6. This will be partly funded by South East Water who are co-owners of some assets (a £2.1m contribution with Southern Water funding the remaining £11.7m) ¹ .		
Why the proposals are the best programme-level option for customers	We have innovated and challenged the drawdown solutions to ensure we deliver the most efficient solution (the current solution represents a £26.4m saving versus the original solution proposed by the panel engineer in 2017).		
Customer and stakeholder support	Our approach is supported by the Environment Agency.		
Need for a CAC (if relevant)	Not applicable		
Extent of management control (if relevant)	This is a legislative change and so is not in management control.		
Robustness and efficiency	The solutions are prescribed by the panel engineer, who we have worked with to reduce the costs of the schemes by using innovative solutions such as siphon pipework.		
Customer protection (if relevant)	Not applicable		
Affordability considerations	We have worked with our Panel Engineer to reduce the costs of the schemes through value engineering and spread the costs over a longer period into AMP8 to minimise impact on customer bills.		
Board assurance (if relevant)	Not applicable.		
Performance Commitments supported by this business case			
PC	How relevant is this business case?	Comment	
None	N/A		
Schemes and scheme-level options			
Schemes over £10m/£20m	Options		
	Description	Cost	Selected option and rationale
None	-	-	-

¹ PR19 Data Table WS2 Line 14 &

2. Scope of Technical Annex

Our wholesale plan has been valued at £3.9 billion. This technical annex covers capital maintenance and base opex investment in our impounding reservoirs, funded from within the Water Resources price control, and shown below.



The scope of this business case includes the following asset classes:

- All valving, monitoring, control and emergency planning associated with the above structures.

The investment is delivered in a single AMP7 Impounding Reservoir programme.

Table 1 - Section 10 Structures

Reservoir	Asset Type
[REDACTED]	Impounding Water Storage Reservoir
[REDACTED]	Impounding Water Storage Reservoir
[REDACTED]	Non-Impounding Water Storage Reservoir
[REDACTED]	Off-line Flood Storage Area
[REDACTED]	Impounding Water Storage Reservoir
[REDACTED]	Impounding Flood Storage Reservoir
[REDACTED]	Water Service Reservoir

		Non-Impounding Water Storage Reservoir
		Impounding Water Storage Reservoir
		Impounding Flood Storage Reservoir

Source: SWS Report - RCF5

Quality enhancements such as increasing raw water Nitrate levels or new connections are not covered by this business case. Other asset classes including Water Networks, Water Booster Stations and Water Service Reservoirs are covered as individual business cases.

3. AMP6 Strategy

3.1. Investment Strategy

Southern Water has invested to keep impounding reservoir asset health serviceability measures stable over the last two AMP periods. Below is an outline of the major impounding reservoir AMP5/6 investment programmes:

- From 2010 to 2020 investing over £2.5m in our impounding reservoir inspection and repair programme.
- Addressing all matters in the interest of safety to the satisfaction of our Inspecting Panel Engineer.

Table 2 - AMP6 spend on Impounding reservoirs

£m	AMP6 Actual					AMP6 Total
(£'k)	2015/16	2016/17	2017/18	2018/19	2019/20	
TOTEX	0.158	0.269	0.316	0.237	0.238	1.217
CAPEX	0.158	0.269	0.316	0.237	0.238	1.217
OPEX	0	0	0	0	0	0

3.2. Customer Benefits and Resilience

There has been negligible impact on serviceability and resilience. This programme is to ensure regulatory compliance with the Reservoirs Act 1975 and the Flood & Water Management Act (FWMA) 2010.

This programme is to ensure regulatory compliance with the Reservoirs Act 1975 and the Flood & Water Management Act (FWMA) 2010 with the main objective of keeping the public safe and maintaining these key water resource structures.

4. Drivers for Change

4.1. Customer and Stakeholder Views

[Redacted]

[Redacted]

[Redacted]

4.2. Future trends & pressures

In relation to impounding reservoirs the mains trends and pressures are:

- [Redacted]
 - [Redacted]
 - [Redacted]
 - [Redacted]
 - [Redacted]
- There is a current drive by DEFRA to ensure the long-term asset health of UK infrastructure, this is exemplified in the DEFRA commissioned UKWIR paper 'Long Term Investment in Infrastructure (2017)'. The report highlights the need to double UK water industry infrastructure renewal spending by 2030 and double this again by 2050 to maintain current levels of serviceability/affordability.
- A need to demonstrate resilience. At present there is no common quantifiable metric for resilience within the UK water sector. Ofwat and DWI (containment and recovery) now expect companies to be able quantify and demonstrate current and future levels of resilience (beyond the Security of Supply Index) to an asset level of granularity.

² Blueprint for Water priorities for PR19.

[Redacted]

⁵ Dates subject to final validation from the Inspecting Panel Engineer.

Section 5 describes how the AMP7 investment strategy meets these future trends/pressures and how the individual investment programme lines are delivered as part of 3 key strategic initiatives.

5. AMP7 Strategy

5.1. Investment Strategy

Taking into account the future trends and pressures our AMP7 strategy builds on our AMP6 approach and expands this to provide a greater level of programme integration to maximise the amount of benefit per £ spent.

Table 3 - Breakdown of Impounding Reservoir AMP7 Expenditure by Programme

£m	AMP7			
	Price Control	QBEG	Ofwat Table	AMP7 Total
TOTEX	-	-	-	13.847
CAPEX	Water resources / Water networks +	Quality	WS2 13	13.847
OPEX	Water resources	Quality	WS2 47	0

Source: Gold Business Case Investment Data Lockdown LD4.xls

Southern Water has ten reservoirs of >25 Ml capacity that fall within the provisions of the Reservoirs Act 1975; six earth embankment raw water storage reservoirs, three flood alleviation lagoons and one treated water service reservoir. The Act requires an Inspecting Engineer to report on each reservoir, generally at ten yearly intervals ("Section 10 Inspections"), supplemented by Supervising Engineer Statements produced after six monthly visits that include recommendations and suggestions for the continued safety of the reservoirs.

Issues and recommendations arising are reviewed and categorised according to priority based on safety risk. These mostly relate to maintenance works, but may also include issues relating to monitoring and good practice.

Based on the judgement of our appointed Inspecting Engineer, higher priority issues are formally notified to the EA as mandatory actions. The highest priority actions are classified as "Measures in the Interests of Safety". From 2017, as a new requirement under the Flood & Water Management Act 2010 (F&WMA), the statutory inspection process now also identifies a secondary formal category of actions designated "Maintenance Measures Deemed Mandatory". These measures are also notified to the EA by our Inspecting Engineer as part of the S10 certification process. They are in effect items that require particular focus to prevent potential escalation to the higher category of "Measures in the Interests of Safety".

The primary component of this programme is to fund these activities and inspections at a cost of £2.2m (based on an assessment by our panel engineer and subsequent challenge by our engineering department) to maintain compliance with the legislation.

[Redacted text block]

- [Redacted bullet point]
- [Redacted bullet point]
- [Redacted bullet point]
- [Redacted bullet point]

[Redacted text block]

[Redacted]

[Redacted] This solution, whilst not novel within the industry, represents an innovative change in Southern Water practice with significant benefits in reducing construction cost.

5.4. Customer Benefits and Resilience

[Redacted]

[Redacted]

[Redacted]

[Redacted] This will ensure that the investment is balanced over two AMP periods to ensure an efficient programme of delivery (compressing to 5 years will lead to delivery inefficiencies). Further sensitivity analysis is not considered appropriate for mandatory and legally binding investments such as this.

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

These activities will also ensure continued compliance with our regulatory and legislative requirements. Note however this investment is primarily to meet statutory obligations and not for the purposes of improving performance.

5.5. Value for Customers

We have selected the lowest cost option for customers as detailed in Section 5 above whilst also satisfying our safety and resilience obligations for these safety critical structures.

[Redacted]



6. Costing Strategy

The costs shown in this business plan have been derived by one of the following methods:

- Bottom-up assessment using historical performance (for inspections and minor repairs).
- Scheme Cost from Scheme Builder for all the drawdown schemes.

Southern Water and South East Water have worked closely to identify cross-border solutions resulting in synergies and savings for our customers. As a part of this process, both organisations were satisfied that the jointly funded schemes in this programme have been efficiently costed and represent good value for customers.

7. Key Risks and Opportunities

Our key risks and opportunities are detailed in the sections below.

7.1. Key Risks:

- [REDACTED]

7.2. Key Opportunities:

- There is an opportunity that further zonal/regional procurement packaging of work could achieve economies of scale with other major civil works.
- There is an opportunity that further assessment and scope challenges with our panel engineers could allow more work to be deferred into AMP8. This may be difficult as the panel engineers have already formally outlined their AMP7 requirements and expectations. However, new surveys and investigations may be grounds for reconsiderations.

Appendix 1: Schemes in AMP7