



**Sustainable asset management for a  
British Water Company  
ASTEER - Nantes**

**6<sup>th</sup> June 2013**

**BRISTOL  
WATER**

## Overview

- Background of Bristol Water and UK regulation
- Producing the best Plan for customers
  - An economic approach
  - Challenges
  - Optimisation approaches
- Conclusions

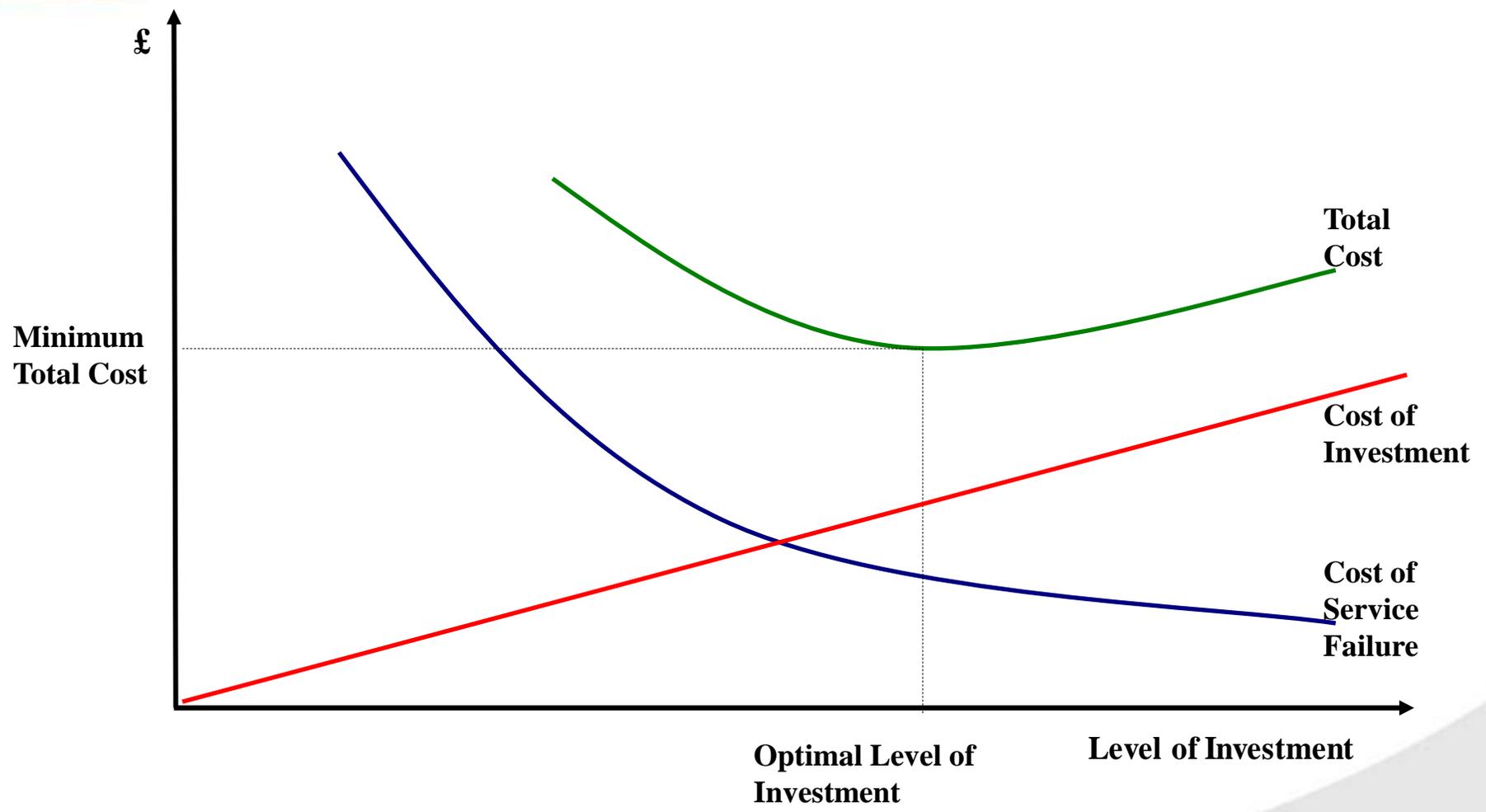
### Bristol Water

- A Water only company operating in the South West of UK, in and around the city of Bristol
- Private company since being established in 1846. It owns and operates all assets required for water supply including reservoirs, treatment works and the pipe network
- Relatively small in UK terms:
  - Provides drinking water to 1.2m people in over 0.5m properties
  - Area of supply 2,400 km<sup>2</sup>
  - Operates 17 treatment works and over 6,700 km of mains
  - Owns 12 reservoirs with total storage of 36,000 MI
  - Relatively old asset base (25% of mains over 100 years old)
- Revenue £115m in 2012/13
- c60% of customers pay on an unmeasured basis

## UK Regulation of Water

- In UK prices for water are set by economic regulators. These act independently of Government and local authorities.
- Government's role limited to specifying water and environmental quality standards. Changes due to social policy can be introduced through legislation.
- In England and Wales prices are set by Ofwat for 5 year periods. The price setting also includes expectations about the amount of capital expenditure that companies will deliver during a five year period.
- In setting prices Ofwat has to balance two key duties:
  - To further the interest of consumers; and
  - To secure that companies are able (in particular by securing reasonable returns on their capital) to finance the proper carrying out of their functions
- Companies submit business plans to Ofwat setting out the outcomes they will deliver to customers, the expenditure needed to deliver these outcomes, and the amount of revenue they require to finance this expenditure. A key aspect of company submissions is being able to show that the plan is “the best possible for customers” .

# 3 | Best Plan for Customers

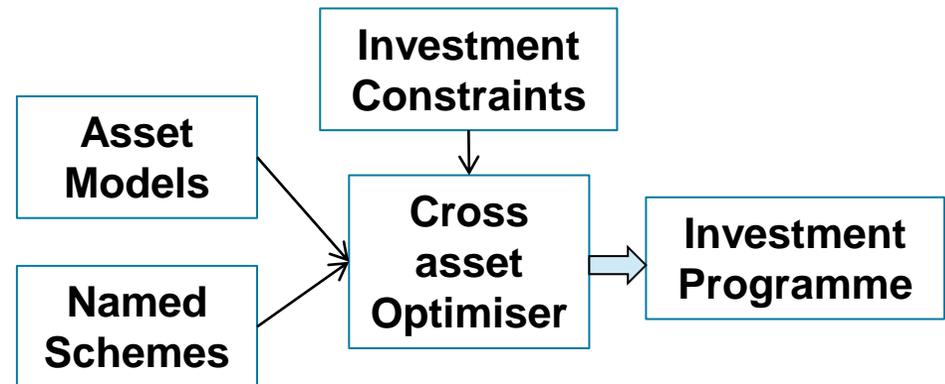


## Issues to deliver

- In reality the problem is multi-dimensional:
  - Lots of different service measures (e.g. interruptions, discoloured water, demand restrictions)
  - Wide range of possible investments (e.g. in mains, pumping stations, treatment works etc)
- To implement this approach need to be able to predict the impact of investment on service levels. This can be difficult:
  - Where investments are difficult to link directly to customer service e.g. vehicles or Information Technology; or
  - Where investments are difficult to relate to risk of failure e.g. civil structures and reservoirs
- To implement the approach, we also need to be able to place values on the cost of service failure. This is done through a stated preference customer survey approach.
- The final issue is that the ‘optimal’ answer may not be acceptable either for service, bill impact or financeability considerations. Acceptability customers research is used to test the overall package or identify limits to rates of improvement.

## Modelling Approach

- Infrastructure models in place for: mains; supply/demand balance; aqueducts; and raw water reservoirs
- Non-Infrastructure models in place for: water treatment works; pumping stations; operational structures; service reservoirs; meters
- Other models in place for: vehicles; buildings; and standby generation
- Optimiser also considers named schemes (which can be tagged must invest)
- Constraints have a key impact on final programme e.g.
  - Most cost beneficial;
  - Most cost beneficial subject to no reduction in service levels
  - Minimum programme for no deterioration in service
  - Most cost beneficial subject to cost constraint



## Conclusions

- The importance of being able to show that plans reflect customer priorities has driven the UK water industry to taking an increasingly sophisticated approach to asset management.
- Customer research has become a key element of the approach:
  - The use of willingness to pay research to reveal customer valuations of changes in service levels – this enables a bottom up approach
  - Acceptability research to make sure that the plan as a whole is acceptable for customers
  - This research is expensive c£0.5m for Bristol Water for the 2014 business plan
- Asset modelling approaches have become increasingly sophisticated.
  - Increasing sophistication has driven improvements in the collection and use of asset performance data;
  - Improved data has in turn allowed more sophisticated/granular modelling approaches to be adopted
  - Despite the increase in complexity, the advanced approach is becoming more of a business as usual approach, rather than a big one-off exercise every five years.