



# Competition in water – What are the real options?

Presentation to SBWWI Leakage Seminar

30 November 2009

Dr. Tony Ballance

# Before going through the details of our work it is useful to understand the context and background to our approach

1. Severn Trent took a deliberately positive stance towards competition in its Strategic Direction Statement (December 2007)
2. We decided to undertake a significant piece of work to better substantiate our position in the summer of 2008, which our Board subsequently endorsed
3. The objective of the work was to review the scope for competition (including international experience) and, given the likely options for the development of a more open competitive market to:
  - i. identify options for growth opportunities through increasing inter company transfers of raw and treated water; and
  - ii. develop business cases for Severn Trent to compete by supplying water out of the region most effectively



## Our findings...

---

1. The scope for competition in water is dictated by the fundamental economics of the water industry, which are dominated by the very high transport costs relative to the price of the product. Market competition in water is possible, but is limited. Vertical separation may adversely impact the financing of the sector and customer bills
2. There are no international examples of market based water competition to draw upon and comparisons with other sectors while relevant are limited
3. There are significant national supply demand imbalances for water caused by water scarcity, climate change and increasing demand. The main role of competition will be in helping to alleviate such imbalances
4. The development of a marginal cost based water trading regime for bulk treated water between water companies could be a workable form of competition

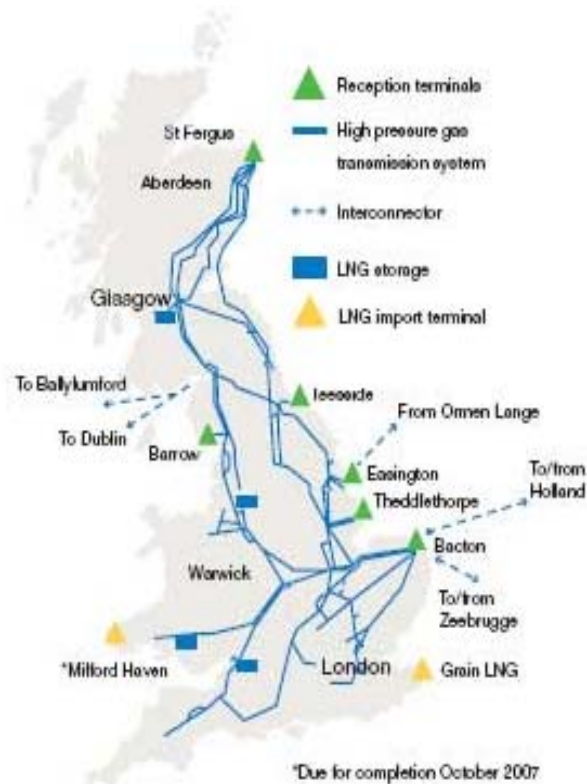
We will now go through the key elements of our analysis and findings...

# We began our work by understanding the scope for moving water around - in terms of interconnectivity there is no national transmission grid for water unlike electricity and gas

## Electricity



## Gas



## Water

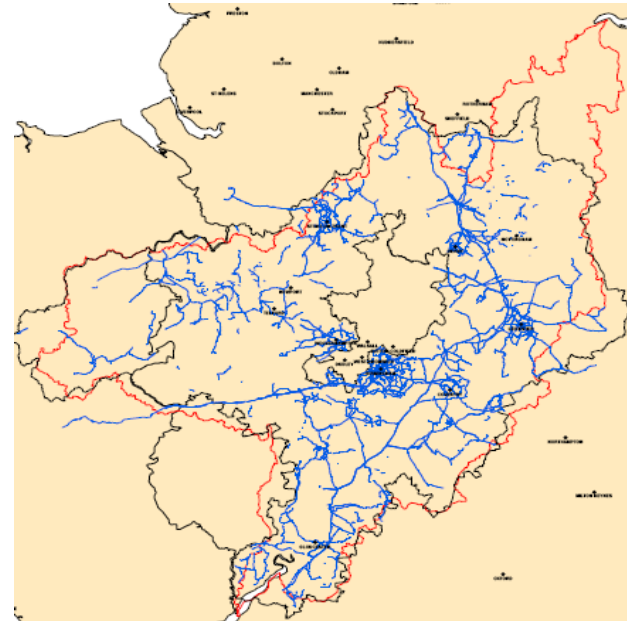


Stylised map of regional water transmission grids in 2005 – largest diameter pipes

# This is perhaps not surprising as water networks were largely not designed, or built, for large scale interconnectivity

- Water company areas (in England & Wales) are catchment based
- Large pipes tend to be in the middle of catchments, getting smaller towards the edge
- New pipes to allow inter-region transfers may, however, be economic
  - The additional cost of moving water from one network to the other is circa 20p/m<sup>3</sup> – versus a water tariff of circa £1/m<sup>3</sup>

## Severn Trent Water's catchment area

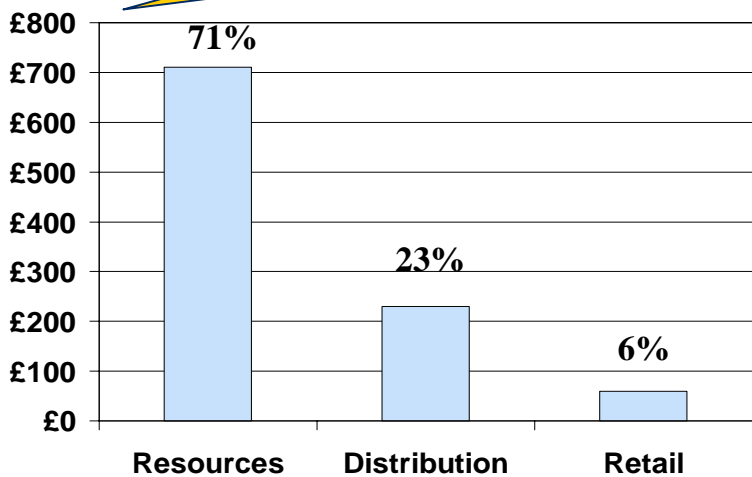


- STW sewerage boundary
- STW water boundary
- STW large/trunk pipe network

# In looking closer one can see - that in comparison with gas - water is relatively expensive to move around (and is a low cost resource) limiting the prospect for market based competition

- Average bill for Gas and Water split by value chain components, 2008-09

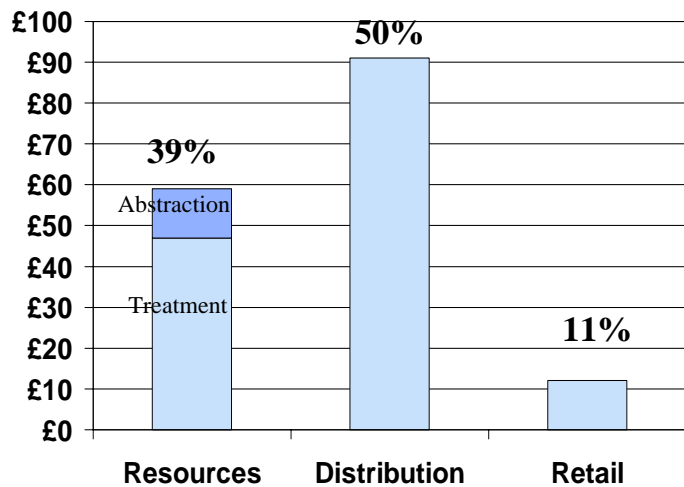
- Most of the gas bill consists of the cost of producing the resource
- It can be traded as a commodity due to the level of grid connectivity



**Gas**

*(subject to p/therm)*

- Most of the cost in water is in the distribution infrastructure
- Lack of connectivity limits trading

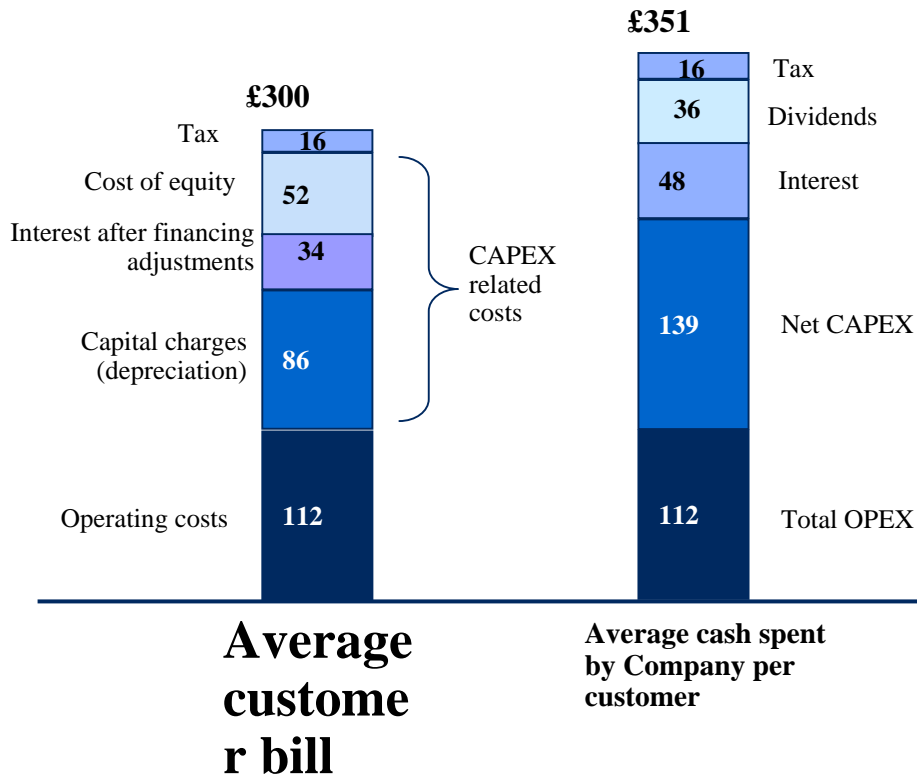


**Water**

*(water bill only)*

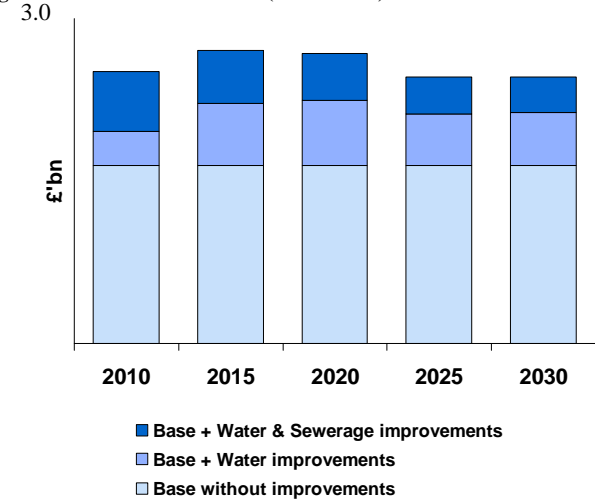
# Furthermore, the scope for market based competition is influenced by the capital intensive and cash negative nature of the business where investor confidence is crucial in ensuring the ongoing funding of the sector

**Customer bills are made up of a significant capital component and are not sufficient to cover cash flows**



STW Total capital expenditure (5 year period commencing)

All figures are real 2007/08 values (not inflated)

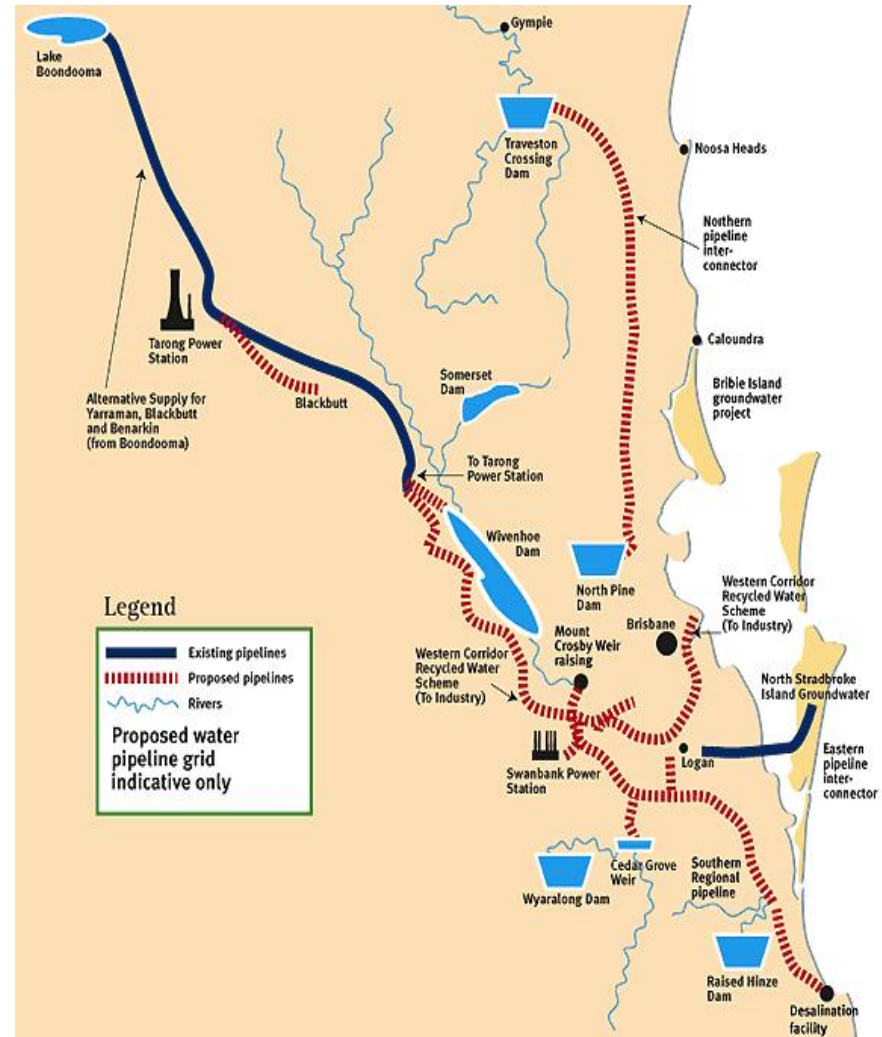


## Key takeaways:

- Competition should not be introduced in a way that significantly affects investor confidence in long term returns on investment
- Vertical separation could significantly increase the overall cost of capital for water companies if it increases uncertainty and therefore impact on customer bills

# Where water resources become very expensive building large scale grids becomes economic – increasing the scope for competition

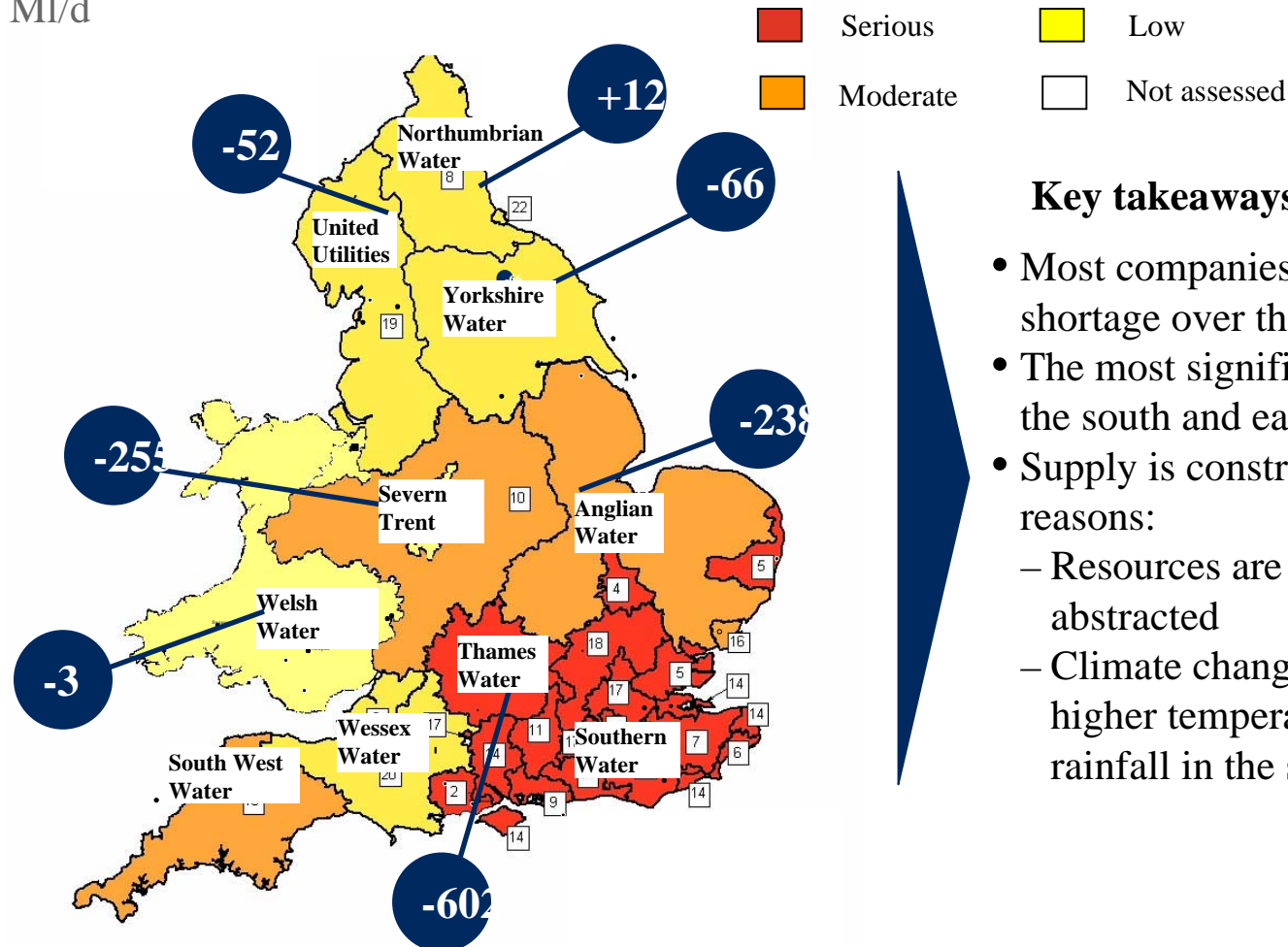
- In Australia, State owned, vertically integrated entities have developed inter-connecting grids
- 450km of transmission grid has been constructed
- This provides the basis for market based competition
- But there are no examples of market based competition in other countries...



# Trading could, however, play an important role in balancing supply and demand for water as demand for water is increasing in areas of greatest scarcity

## Water company supply/demand deficit in 2035 based on 2008 resources

MI/d



### Key takeaways:

- Most companies are forecasting a supply shortage over the next 25 years
- The most significant shortages will be in the south and east
- Supply is constrained for environmental reasons:
  - Resources are already being over-abstracted
  - Climate change is predicted to result in higher temperatures and decreased rainfall in the south east

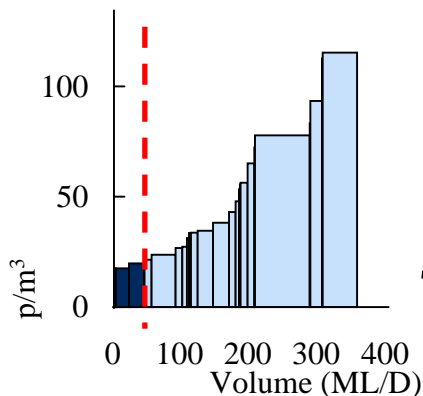
Source: Draft 2009 water resource management plans; Environment Agency; Project team analysis

A proportion of the deficit will be met by providing increased treatment capacity for existing abstraction licences. The remainder would require new or increased abstraction licences.

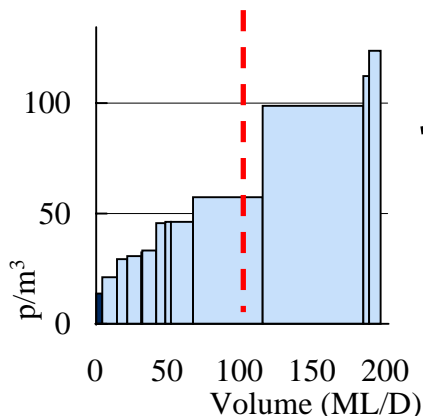
# Large differences in the marginal cost of water schemes suggests that inter-regional bulk transfers may help to optimise capital programmes

## UK water companies' proposed new resource schemes\*

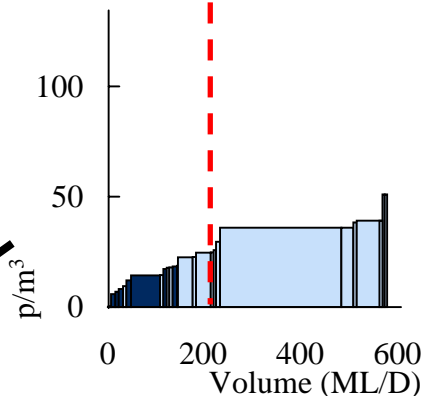
### UU Integrated WRZ



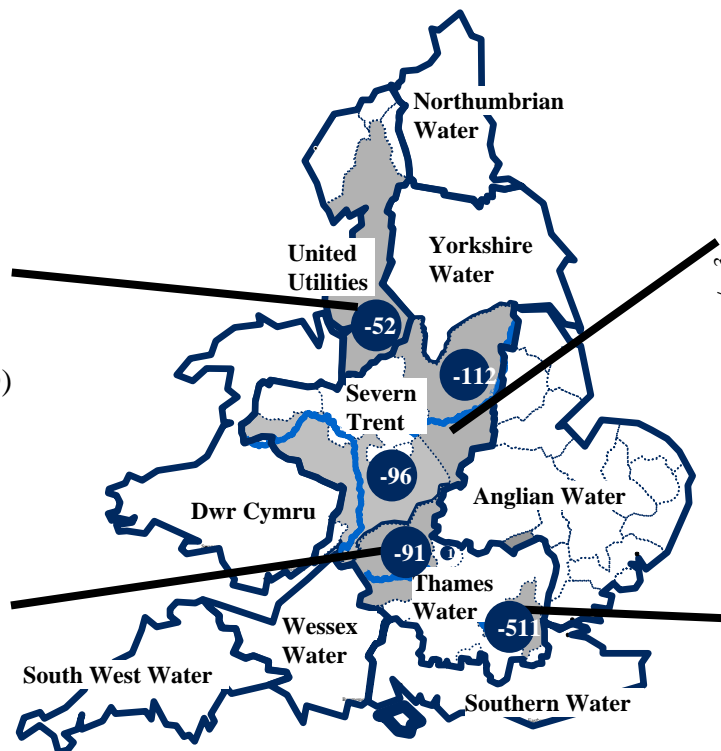
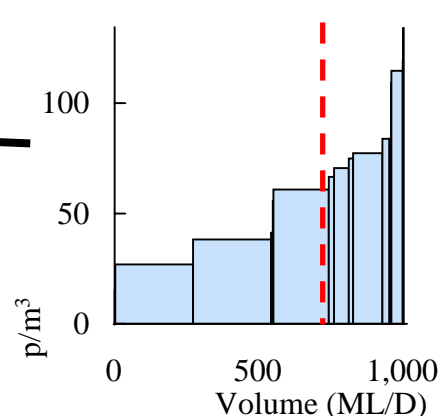
### Thames SWOX WRZ



### STW Severn & East Midlands WRZs\*\*



### Thames London WRZ



- xx 2035 deficit ML/D
- Schemes < 20p/m<sup>3</sup>
- Schemes > 20p/m<sup>3</sup>

\* Assuming all proposed schemes are authorised by the Environment Agency

\*\* Does not include 300ML/d Minworth effluent re-use scheme which the STW Water Resource team feel is unlikely to be permitted by the EA and Drinking Water Inspectorate

\*\*\* South Staffordshire not shown as the Company has not forecast any deficit in 2035

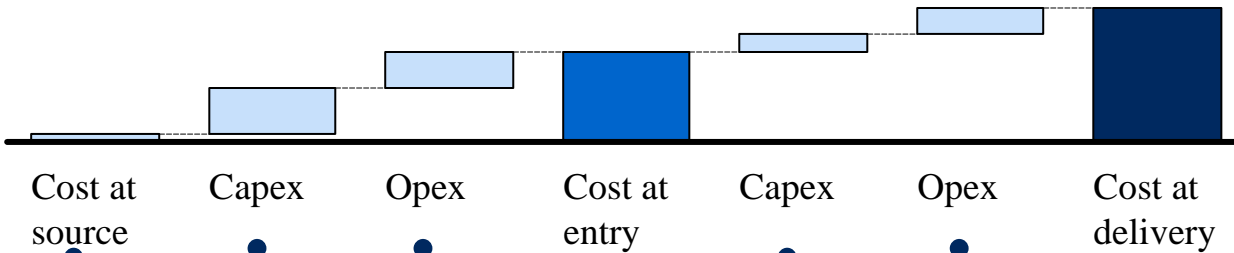
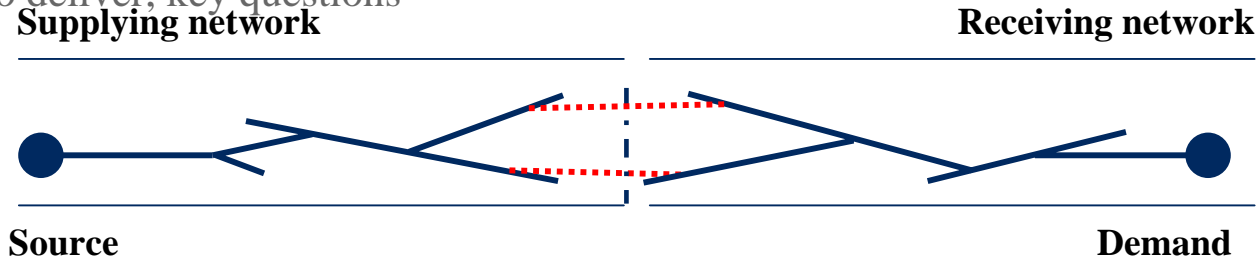
Source: Draft 2009 water resource management plans; Project team analysis

# However, the cost of delivering water depends strongly on transportation costs, making competition highly dependent on the distribution system

Cost to deliver, key questions

ILLUSTRATIVE

Key Takeaways:



- The cost of supplying water to a particular location depends on the details of the supplying and receiving networks
- Optimisation of both networks is needed for a cost effective solution
- Calculating transport costs requires complex modelling on a case by case basis

Do we have a source of cheap water to meet a demand in another area?

Could we get the new bulk source to where it is needed using our existing network?

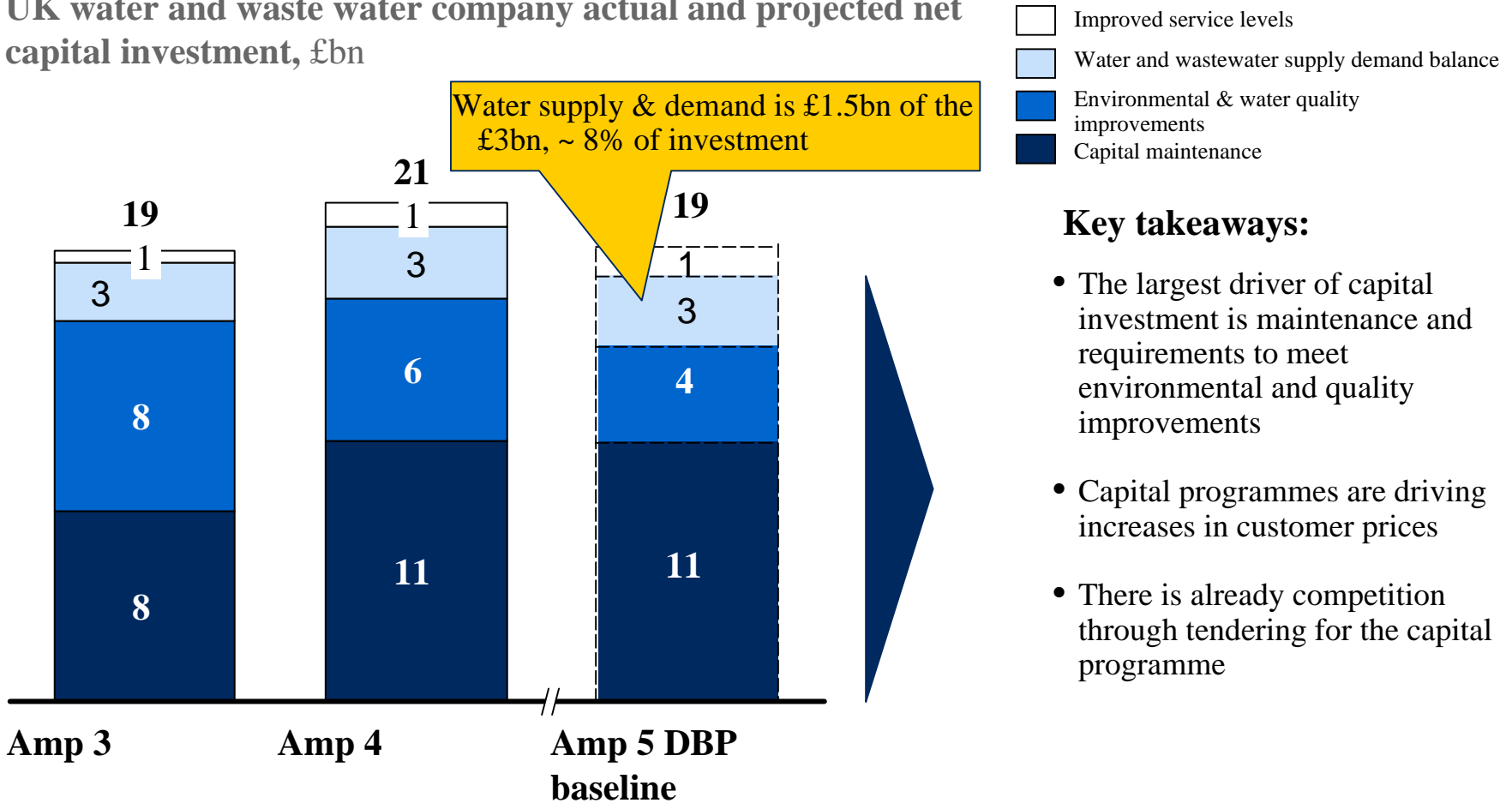
Where can we get this volume of water close to the other network and what new infrastructure will we need?

How much will it cost to move it to the demand?

What will the additional opex be of getting water to the other network for each option?

# And as the main drivers of customer bills are capital programmes to maintain networks and meet environmental and customer needs water trading may not have a significant impact on customer bills

UK water and waste water company actual and projected net capital investment, £bn



## Key takeaways:

- The largest driver of capital investment is maintenance and requirements to meet environmental and quality improvements
- Capital programmes are driving increases in customer prices
- There is already competition through tendering for the capital programme

The major benefit of competition will therefore not be lower bills but the long-term security of supply and efficient allocation of resources

# And, there are a number of factors which prevent companies from trading water

## **Lack of incentives to purchase:**

- Each company's priority is to meet demand for itself and to own and control resources.
- The current regulatory regime means that companies will continue to balance supply and demand for themselves, facilitated by investment on new resources going into the regulatory capital value.
- Bulk supplies also result in increased operating costs which negatively impact on Ofwat's efficiency assessment.

## **Lack of incentives to supply/sell:**

- No margin through current application of the costs principle.
- The revenue benefits of supplying water would only be kept for five years under the current rolling mechanisms.

## **Negotiating a trade is complex:**

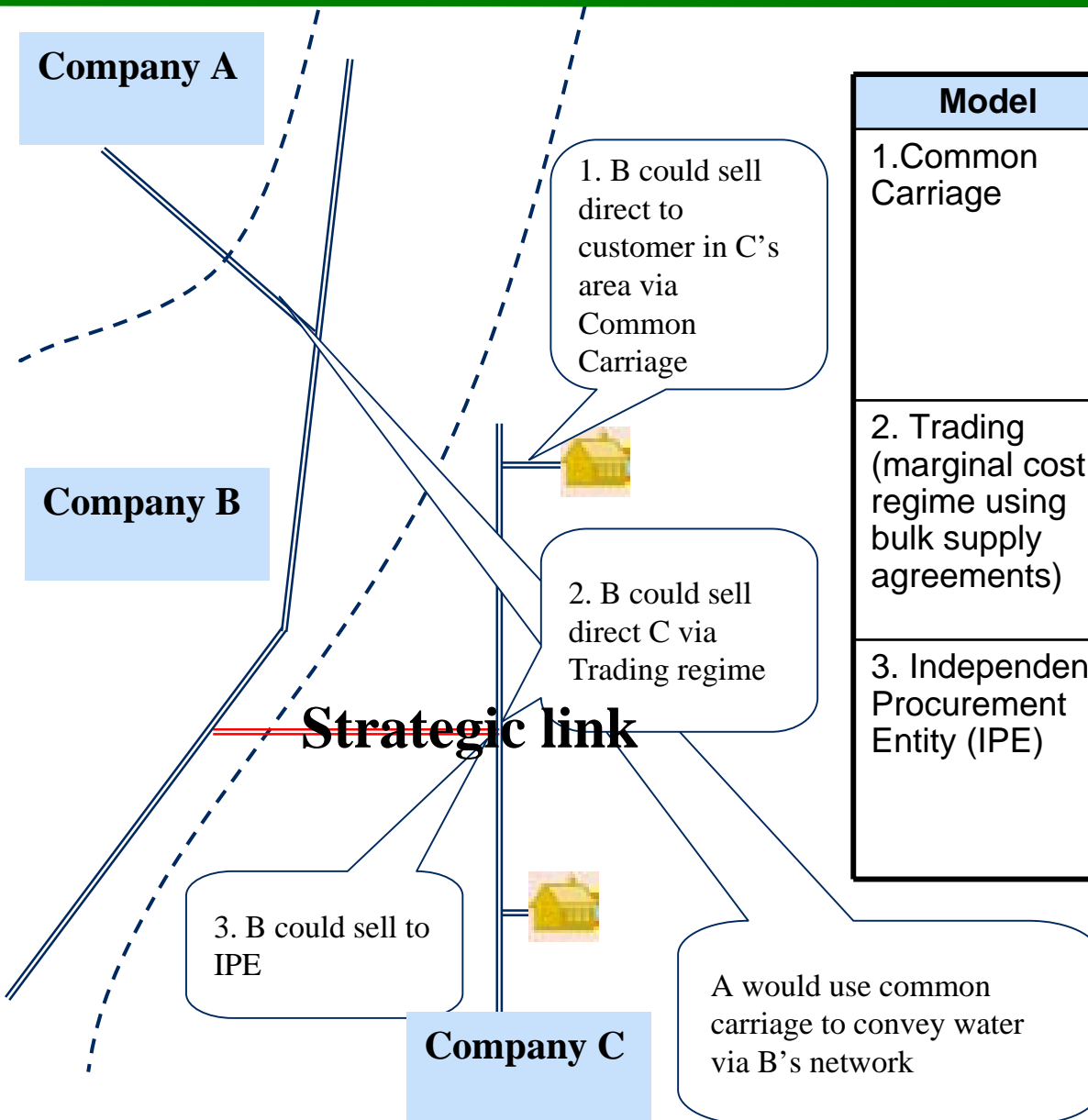
- Negotiating bulk supplies is complex – involving complex transactions.
- While there are powers for OFWAT to determine the terms of bulk supply agreements these have not been used extensively (except for the South East in the late 1990s).

## **Lack of transparency:**

- Current supply costs, demand points and future demand requirements are not visible.

An approach is therefore needed to provide greater incentives for companies in regions of lower cost to create surpluses to supply neighbouring companies.

# There are three potential options for realising a marginal cost trading regime

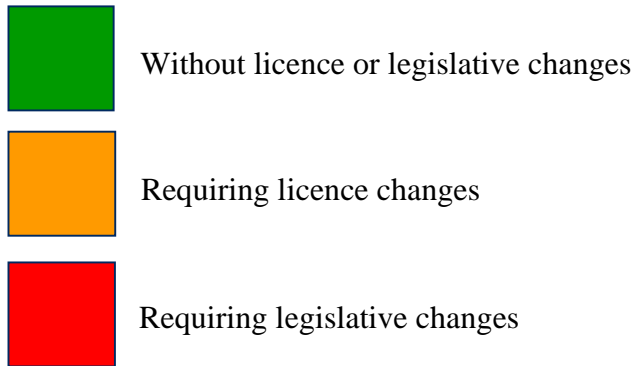


Model	Pros	Cons
1. Common Carriage	<ul style="list-style-type: none"> <li>Facilitates use of existing networks</li> <li>Would allow us to trade out of region</li> </ul>	<ul style="list-style-type: none"> <li>Have to secure customers</li> <li>Access prices may still prevent entry into market</li> </ul>
2. Trading (marginal cost regime using bulk supply agreements)	<ul style="list-style-type: none"> <li>Efficient development of water resources</li> <li>Allows new entrants</li> </ul>	<ul style="list-style-type: none"> <li>Need Regulator to intervene if no independent buyer</li> </ul>
3. Independent Procurement Entity (IPE)	<ul style="list-style-type: none"> <li>Removes existing bias of water companies to develop own resources</li> </ul>	<ul style="list-style-type: none"> <li>Adds layer of cost</li> <li>Unnecessary if not enough players in the market</li> </ul>

## **The Cave Review has recommended the following changes as a first move to introducing greater upstream competition:**

- 1. Obligation for incumbents to procure the best value supplies.**
- 2. Scrutiny by a procurement panel.**
- 3. New upstream licence to introduce water into supply.**
- 4. Publication of supply costs at Water Resource Zone level plus transport costs.**
- 5. Access prices by Water Resource Zone based on economic costs and long run avoidable costs.**
- 6. Common, binding operational codes and systems.**
- 7. Powers for Ofwat to investigate non-compliance.**
- 8. Powers for DWI to maintain wholesomeness of water supply.**

# Cave's short to medium term recommendations address some of the current difficulties with the regulatory framework



	Obligation for incumbents to procure the best value supplies	Scrutiny by a procurement panel	New upstream licence to introduce water into supply	Publication of supply costs at WRZ level plus transport costs	Access prices by WRZ based on economic costs and LRMC	Common, binding operational codes and systems	Powers for Ofwat to investigate non-compliance	Powers for DWI to maintain wholesomeness of water supply
<i>Without licence or legislative changes, requiring licence changes or requiring primary legislation</i>								
<b>Incentives to purchase</b>								
<b>Incentives to supply</b>								
<b>Complexity</b>								
<b>Transparency</b>								

# The Cave Review recommendations, however, need further consideration – and there are a number of key questions:

## 1. Would the obligation for incumbents to procure the best value supplies have a significant effect?

- ☞ Ofwat already has a duty to promote economy and efficiency

## 2. How would a procurement panel be established/is it required i.e. would it merely be a vehicle for realising the use of existing powers?

- ☞ Bulk supply determination powers

- ☞ Approaches at price reviews could be developed

## 3. How and who will determine access and/or interconnection prices?

- ☞ Need for consistency with other regulatory development – e.g. accounting separation

## 4. What can be achieved without legislation?

- ☞ Use of bulk supply powers

- ☞ Interpretation of the Cost Principle

- ☞ Improving incentives through price review processes

# Executive summary

- 📖 The development of a marginal cost based water trading regime for bulk treated water between water companies could be a workable form of competition:
  - 📖 There are significant national supply/demand imbalances for water caused by water scarcity, climate change and increasing demand. The main role of competition will be in helping to alleviate such imbalances
  - 📖 The fundamental economics of the water industry are dominated by the very high transport costs relative to the price of the product. Market competition in water is possible, but is limited and vertical separation may adversely impact the financing of the sector and customer bills
  - 📖 There are no international examples of market based water competition to draw upon and comparisons with other sectors while relevant are limited
  - 📖 The economics suggest a trading regime could work but there are barriers to achieving this
- 📖 This is a model that we believe could become workable without significant legislative changes or massive set up costs but the Cave recommendations could help push it forwards