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PR24 and beyond: Creating tomorrow, together

**Appendix – Examining the boundary
of the targeted control for water
resources**

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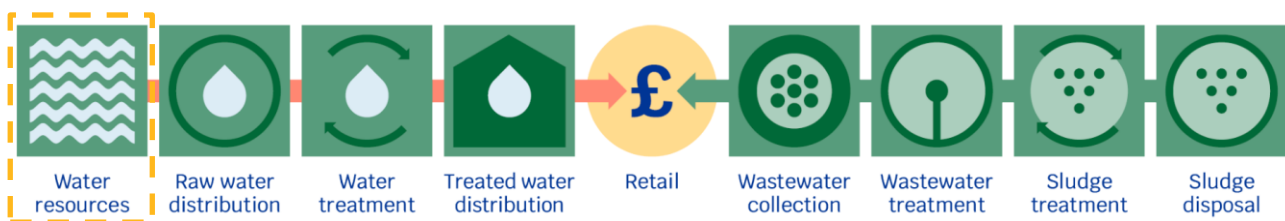
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1. Overview of water resources and our PR19 policy

The provision of water resources is a vital element of the value chain for the public water supply, encompassing the identification of sources of raw water, obtaining permission for its extraction or collection, and its input into the raw water distribution system (Figure 1.1).¹ Companies obtain water resources from a number of sources, including boreholes, reservoirs, and river abstractions.

Figure 1.1 Water and wastewater value chain - water resources



Source: Ofwat ^{2,3}

Population growth and the effects of climate change are expected to place our water resources under increasing pressure in the coming years. Effective water resource planning and efficient delivery of solutions to address these growing pressures, including regional solutions and increased water trading where appropriate, will be essential to meeting the long-term demand for water and ensuring drought resilience is maintained and improved. In parallel, abstraction licencing is being reformed and some abstractions reduced to improve the water environment. This is also an area where markets are being developed to support innovation and efficiency in the provision of new water resources.

At the 2019 price review, we introduced a separate targeted price control for water resources, defined as covering activities relating to raw water abstraction and abstraction licences.⁴ We did this for several reasons:⁵

¹ Water resources are formally defined under section 1.2 of the notification of the final determination of price controls and are the activities carried out as part of the Appointed Business that fall within the definitions of the following services in [RAG 4.08 – Guideline for the table definitions in the annual performance report](#), March 2019: Water resources – Abstraction licences; and Water resources – Raw water abstraction.

² Ofwat, '[Water 2020: Regulatory framework for wholesale markets and the 2019 price review: Appendix 2: Water resources – supporting evidence and design options](#),' December 2015, figure 1, p. 3.

³ Water resources covers activities relating to raw water abstraction and abstraction licences; Raw water distribution includes raw water transport and raw water storage.

⁴ As defined in RAG 4.08 (2019). Raw water transport and raw water storage activities were not designated within the water resources price control, although that would have been permitted under condition B of the companies' licences (which sets out an 'envelope' of activities that we may designate as water resources activities for the purposes of the separate control).

⁵ Ofwat, '[Delivering Water 2020: Our final methodology for the 2019 price review: Appendix 5: Water resources control](#),' December 2017, pp. 14-15.

First, we considered that a separate control would help in developing better targeted regulatory incentives, and in increasing focus on the water resources element of the value chain.

Second, it would help increase the accuracy and consistency of cost reporting for different wholesale activities, including water resources, because regulatory reporting and cost allocations would become more important. This would make it easier to undertake benchmarking and identify efficiencies between incumbents. This would also help where incumbents wanted to agree voluntary water trades between each other, as these trades would need to reflect information about the cost of water resources. This would ensure that, for example, an exporting incumbent's customers benefit from the transaction.

Third, it would facilitate the further development of markets for new water resources. In particular, it would help address two limitations of a single total revenue wholesale water control (as adopted for PR14), for water resources market development:

- a single control may provide opportunities for incumbents to engage in forms of cross-subsidy, which make it harder for third party providers to compete against them for new water resources, an area that has scope for markets. At the same time, incumbent providers could recover more revenue from other parts of the value chain, where their monopoly position was strongest (such as water distribution to existing customers).
- a single control can transfer the financial risks of markets away from the incumbents and towards customers, who effectively compensate incumbents financially for losses in market share. Therefore, as water resources markets develop, customers could fail to receive the benefits, or even be worse off.

We decided that pre-2020 investment in water resources should continue to receive full regulatory protection. We decided that incumbent water companies should use an 'unfocused' approach to allocating pre-2020 RCV between the water resources and water network plus controls. This meant that RCV should be allocated based on the relative value of a company's water resources assets to its total wholesale water assets. This was because the legacy (pre-2020) RCV is not directly linked to any specific assets (either in the case of water resources or other water wholesale services) and, given the privatisation discount on RCV and the existing Modern Equivalent Asset Valuation (MEAV) estimates, a focused approach could result in the entire legacy RCV being allocated to water resources for some companies.⁶ We did not impose a common allocation methodology, instead giving companies' ownership of how legacy RCV was to be allocated. From 1 April 2020, investment in new water resources does not receive the same regulatory protection as the pre-2020 water resources RCV and is exposed to a degree of market risk.

⁶ Ofwat, '[Water 2020: our regulatory approach for water and wastewater services in England and Wales Appendix 3 Tackling water scarcity - further evidence and analysis](#),' May 2016, p. 164.

The provision of water resources was further supported at PR19 via new water trading incentives, new market information requirements, up-front funding to several water companies for developing joint strategic water resource solutions, and approval of several water resources schemes to be procured via direct procurement for customers.

We continue to consider that a separate targeted control is a valid approach to addressing the aims set out above. The rest of this appendix sets out some issues and challenges that have arisen from the implementation of the separate control and outlines some thoughts on how these could be addressed, in particular on whether altering the structure or boundary of the control could help realise further benefits for companies and customers.

2. Key issues arising from the implementation of the separate water resources control

While water resources has received increased attention as a result of PR19, including an increased focus on its activities and costs, it is unclear whether incumbents yet see it as a 'separate business' in the way that many companies now view bioresources (for which we also introduced a separate targeted control at PR19). The current structure of the separate control for water resources may be a key reason for this.

We have identified three interlinked issues with the water resources targeted control as it is currently specified and operates:

1. It does not allow incentives to be appropriately targeted;
2. It can create perverse incentives; and
3. It might not reflect the way that the water resource market is developing in practice.

We discuss each in turn below.

2.1 Targeted cost and performance incentives

Some existing water resource assets are multi-functional (i.e. they perform both water resources and other activities) and so costs are apportioned between water resources and water wholesale network plus. For example, some pumps used for the abstraction of raw water also perform raw water transport activities. Some borehole pumps lift the water through to the water treatment stage (or even to the treated water service reservoir). This prevents incentives from being fully targeted on the water resources control and makes management focus on this area more difficult.

Many new water resource options are also likely to consist of investment across water resources and water network plus activities. For example:

- a new raw water reservoir (water resources) will need to be connected to a water treatment works. Here the connecting pipework element of the option will fall under raw water transport (water network plus);
- a large water trade, connecting a water resources asset of one incumbent (such as a raw water reservoir or river abstraction) to the water treatment works of another. This infrastructure will be primarily raw water transport (water network plus); or

- a catchment management programme supporting raw water abstraction activities, will primarily form part of water resources. Elements relating to improving raw water quality to reduce water treatment requirements, would be allocated to water network plus.

As a result, these types of assets may fall under both the water resources and water network plus controls. These overlaps of some assets and schemes across the water resources and 'water network plus' control boundaries may lead to difficulties in allocating costs, hinder water resources being viewed as a distinct activity by management, and make aligned incentives for innovation and efficiency more difficult to design and apply. At each price control, we set an efficient baseline for each incumbent's total expenditure (i.e. including both capital and operating expenditure) for the price control period via a cost assessment process. An important element of our approach to cost assessment is the use of econometric models. At PR19, we explored a wide range of econometric models. However, we were unable to develop a robust 'water resources only' model. As a result, our PR19 cost assessment was based on a 'water resources plus' level of aggregation, which modelled the combined costs of water resources, raw water distribution, and raw water treatment activities. This allowed us to capture interactions between these different activities in the value chain. However, it limited our ability to set targeted incentives to drive improved cost performance specifically in water resources because costs were proportionally allocated across the different elements of the value chain, rather than specifically focused on each element. The lack of a separate control for the wider 'water resource plus' elements also meant that we could not target cost efficiency incentives on the aggregate costs.

2.2 Perverse incentives

There are strong links between water resources costs and those of water treatment. In particular, the initial source of water can have a sizeable impact on water treatment costs. Some cheap water resources can have high water treatment costs and so focusing only on water resource costs might distort incentives as to which schemes to pursue. A direct river abstraction may have relatively low costs associated with its maintenance and operation but have poor water quality when compared to another source type. This would then require significant amounts of additional water treatment and associated costs that currently fall in a separate control.

Separation of controls and incentives between water resources and other elements of the value chain has the benefit of focusing management attention on each separate component, but can mean that companies might not focus sufficiently on reducing total costs as, for example, a reduction in water resource costs might be more than offset by additional treatment costs. This would therefore create an overall detriment to customers.

2.3 Market development

Finally, we observe that some water trading is of treated water rather than raw water. Additionally the options for increasing water supply can involve significant assets and costs in the water treatment and treated water distribution controls (for example a desalination plant or additional capacity at an existing water treatment works). And some ways of reducing demand for water resources are related to treated rather than raw water (for example through reducing per capita consumption or leakage reduction). This means that the control does not capture the full scope of trading opportunities or where companies invest to maintain supplies to customers.

Although it is not certain, and will require more time for the impact of the PR19 price control change to become clear, there is a risk that the current narrowly defined water resource price control boundary might be preventing or distorting how trades and different water supply assets and solutions are viewed.

3. Potential solutions

3.1 Improving cost allocation and cost modelling

It is important to ensure that costs are being allocated appropriately across the water resources and 'water network plus' controls. An inconsistent or inaccurate allocation of assets, activities and expenditure between controls may limit our ability to accurately estimate cost drivers, set targeted incentives and facilitate effective markets. If we were able to identify robust costs for a water resource control then it might allow us to better target cost efficiency incentives on water resources, for example through the use of differential cost sharing rates (as we do for the bioresources and wastewater network plus controls in the wastewater value chain).

Our PR19 cost modelling and RCV allocation exercises involved extensive interactions with the incumbent water companies, and we will continue to work with companies to ensure that costs are being allocated consistently and accurately ahead of our PR24 cost modelling exercise, particularly in relation to the challenges posed by cross-functional assets. Therefore, we are keen to understand what improvements could be made to allow us to better identify accurate and consistent water resource costs across companies, and any barriers to doing so.

However, it is possible that the challenge in identifying consistent water resource costs across companies and developing a functioning separate water resource cost model stems from the deeper structural issues relating to how assets and activities co-ordinate and how companies operate their water resources and wider water wholesale businesses (as described above). As a result, we are also considering options for improving the scope and structure of the water resources control to better internalise the assets and costs of the full range of activities related to the provision of water resources, including whether the control boundary is currently set in the best place. At PR19 we recognised this may be an issue and specified a wider envelope of water resources activities in the companies' licences in order to provide a safeguard that would reduce the risk from inadvertently having set the boundary in the wrong place.⁷ Our key aim is to improve the long-term impact of the targeted control, in particular its ability to address the previously identified issues with a single control for wholesale water and the issues that have arisen in implementation of the new control.

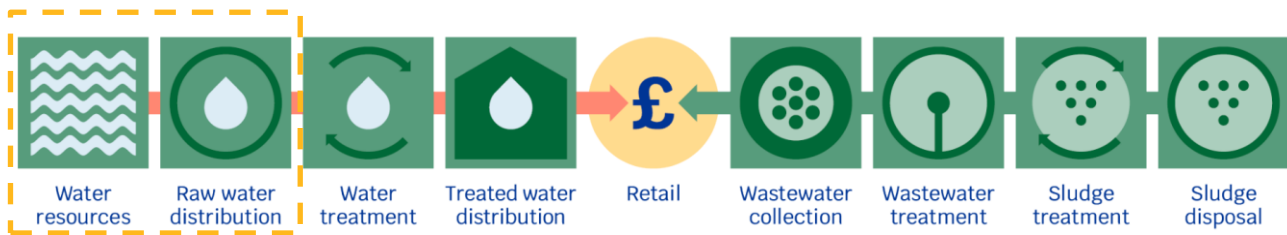
3.2 Incorporating raw water distribution

One option is to extend the boundary of water resources control so that it includes raw water distribution activities (which includes raw water transport and raw water storage), rather

⁷ Ofwat, [Delivering Water 2020: Our final methodology for the 2019 price review: Appendix 5: Water resources control](#), December 2017, p. 21.

than stopping at the point that water enters the raw water distribution network. We expect this would resolve a sizeable proportion of the current overlap of assets and costs between the water resources and ‘water network plus’ controls, with the majority of cross-functional assets, such as abstraction pumps and smaller balancing reservoirs, performing only water resources and raw water distribution activities. The activities within the potential ‘raw water’ control are shown in Figure 3.1.

Figure 3.1 The activities within the potential ‘raw water’ control



Raw water distribution forms a very small proportion of the asset value of incumbent water companies. Based on Modern Equivalent Asset Values in 2014–2015 (the last year that data is available), raw water distribution represents an estimated 5% of the incumbent water companies’ wholesale water RCV allocations⁸. Meanwhile, the incumbent water companies’ Annual Performance Reports for 2019–2020 suggest that raw water distribution accounts for around 3% of wholesale totex.⁹ This compares to around 12% of wholesale totex and 10% of RCV¹⁰ allocated to water resources.

Incorporating raw water distribution into the targeted control could reduce the operational issues and perverse incentives associated with asset overlaps with a relatively low impact on cost allocation, and could be implemented with relative ease. This is because we do not consider that extending the boundary of the targeted control for water resources to incorporate raw water distribution would require a change to existing company licences given that the activities we can designate as water resources in Condition B includes raw water transport and raw water storage activities.

However, this might not remove all of the interactions between water resource and other costs, as illustrated by our inability at PR19 to estimate a separate cost model for this extension of the control. Consequently, extending the control in this way still may not facilitate the development of fully-targeted incentives for water resources activities.

⁸ Ofwat calculations based on company annual performance reports.

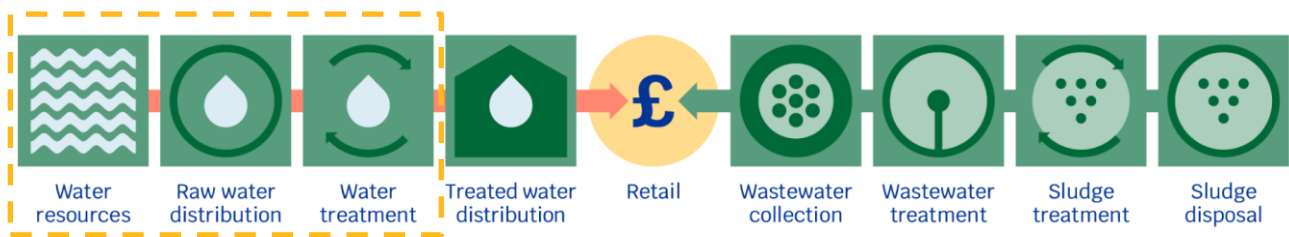
⁹ Ofwat calculations based on company annual performance reports.

¹⁰ [RCV as at 31 March 2020](#).

3.3 Incorporating water treatment

Extending the control boundary further to incorporate water treatment activities could lead to a better price control split. This would in effect create a ‘price control for the sourcing of treated water’, reducing the ‘water network plus’ control to a ‘price control for distributing treated water’. The activities within the potential ‘treated water’ control are shown in Figure 3.2.

Figure 3.2 The activities within the potential ‘sourcing of treated water’ control



Given the dependency of the costs of treating water on the initial water resource asset, this format may more closely correlate to the lens through which companies view water resource investments, while capturing the inherent choices and trade-offs across the value chain. A ‘price control for distributing treated water’ would contain more homogeneous asset types and company activities which would mean that cost drivers would be relatively easy to identify and would focus treated water distribution management attention on areas that are important to customers, notably leakage. This allocation would also resolve the remaining overlap of assets across controls that is posed by borehole pumps. Furthermore, the PR19 cost assessment exercise showed that a ‘water resources plus’ level of aggregation (i.e. water resources to water treatment) can be successfully modelled, improving our ability to identify inefficiencies and set targeted incentives for each price control area.

However, the process of incorporating water treatment into the water resources area would lead to a greater change in the scale of the control. While our analysis suggests that water treatment forms a similar proportion of water companies’ wholesale water RCV (12%) as water resources¹¹, it forms a much greater proportion of overall wholesale water expenditure, representing an estimated 26% of wholesale water totex.¹² Furthermore, extending the boundary of the targeted control to incorporate water treatment would require a licence modification.

¹¹ Based on 2014–15 gross modern equivalent asset values.

¹² Figures for 2019–20 based on annual performance reports.

Key Questions

Q14.1 - How can costs and incentives for the existing water resources control be targeted more effectively?

Q14.2 - Would amending the boundary to include raw water distribution or to extend it further to include water treatment improve the operation of the control? What are the issues involved?

**Ofwat (The Water Services Regulation Authority)
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