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Trust in water

Water 2020: Regulatory framework for wholesale markets and the 2019 price review

Appendix 4 Enabling access to water networks – further evidence and analysis

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1 Introduction

As part of the reforms introduced by the Water Act 2014, we need to develop a new access pricing framework to replace the existing cost principle for undertakers based wholly or mainly in England. This framework will set the charging rules under which third party water resource providers pay for access to the networks and treatment facilities of English water undertakers.

Setting access prices will play a vital part in facilitating the greater use of markets in the provision of water resources. A robust and consistent approach to setting access prices will build confidence that new water providers require to enter the sector. It will also provide incumbents with clarity on how we expect them to recover costs from different business elements and customers.

In Chapter 5 of our [decision document](#) we set out our high-level policy decisions on access pricing for water resources. This appendix provides additional background and supporting analysis for our decisions in this area, including:

- more detail on the responses received from stakeholders to our December consultation on access pricing issues;
- further explanation of how our approach will work in practice, including a worked example;
- discussion of issues that remain to be resolved; and
- next steps.

As part of our forward work programme we will be working collaboratively with interested stakeholders to determine how to develop further our approach and resolve remaining issues, including those highlighted in stakeholder responses. We recognise that further work is required on how access prices will function in practice. While we have advanced our thinking, our view is that working closely with a few interested stakeholders is the best method to better understand how companies can use the cost information they currently hold (for example, information on average incremental costs (AICs) gathered for the purposes of water resource management plans (WRMPs)) to calculate access prices. We provide more detail on next steps in Section 5.

2 Responses to our December consultation

As noted in Chapter 5, there was broad support for our proposed direction of travel on access pricing in our December consultation. Several respondents made detailed comments on the design of the access pricing framework. We will be reflecting further on the submissions made by stakeholders as we develop our approach, but we briefly highlight a number of points below:

- Bristol Water and the Environment Agency noted that an incumbent's costs can potentially differ within a WRZ, particularly if the zone is large. Similarly, Northumbrian Water noted that regional differences in costs do not necessarily map to WRZ differences.
- The Environment Agency stated that WRZs are often revised following new investment (for example, interconnection between zones) or following new information on the supply-demand balance.
- Portsmouth Water stated that it supported breaking-down access charges by WRZ, but that companies should be able to disaggregate further if they wish. They also considered that further value chain disaggregation into treatment and distribution could be desirable, and that Ofwat should have a role in checking company calculations.
- On the compensation payment mechanism, Portsmouth Water stated that the source of funding for the compensation payment should be made explicit and that consumers should have a say in this. It also questioned whether and how the mechanism will apply if trades use existing assets only rather than new investment.
- South West Water noted that it has not had to develop any new resources for some time, raising potential issues with the calculation of incremental costs.
- Sutton and East Surrey Water considered that some of the complexity of the access pricing regime is driven by the proposed separate control.
- Thames Water questioned whether there would be demand for separate access prices for treatment and distribution in the short term and, therefore, suggested that administrative burdens could be reduced by developing prices on an 'as required' basis rather than ex ante.
- Wessex Water argued that payments under the offset mechanism should be made on the basis of capacity provision and commodity because of uncertainty regarding utilisation.

There were only limited suggestions on how we could address the issues we highlighted in our December consultation and there was no clear consensus on an optimal approach to addressing all the issues.

3 Our approach to setting access prices

As set out in Chapter 5, there will be two parts to the access prices that incumbent water companies will need to publish: first, a set of average cost-based charges for network plus services, and second, if applicable, a compensation (or offset) payment. The average cost-based charges will remunerate the incumbent for the costs of providing network plus services (for example, water treatment, treated water distribution, back-up and balancing services). The compensation payment will be based on the difference between the incumbent's average costs of providing water resources and its forward-looking incremental cost of new resources. This latter element will ensure that efficient third party entrants that are able to provide additional water at lower cost are able to compete against incumbents in the bilateral market.

In our December consultation, we set out different ways in which the payment of the cost-based network plus charge and compensation payment could function. We described four methods, which we considered were broadly equivalent:

- payments could flow directly between the wholesale third party water resource provider and the incumbent;
- payments could be made via an independent third party entity, such as a market operator;
- payments could be embedded within the network plus tariff charged to the third party retailer; or
- payments could be implemented through a contract for difference approach, reflecting both the commodity and capacity costs of resources, or alternatively through a 'split contracting' approach where the commodity and capacity are priced separately to offset the incremental cost/average cost differential.

All of these methods result in the same monetary transfer to the different parties (incumbent, third party water resource provider and third party retailer) and crucially have no impact on the final retail price customers pay. They differ in terms of payment risk and practical implementation.

We noted in December that further consideration would need to be given as to how payments would flow. Nevertheless, we said that incorporating the access price within the charge levied on third party water resource providers (that is, wholesalers) might be simpler to implement in practice. Also, under this approach the network plus charge and the offsetting compensation payment can be combined to allow the appropriate cost difference to be reflected in the net access price levied on water

resource providers. It also avoids potential complexity in relation to flows of money between retailers, a market operator, the incumbent and resource providers. For these reasons, we stated that levying the access price on water resource providers (while also allowing for the possibility of long-term contracts to be developed alongside the regulated terms) was our preferred approach. Our position on this issue has not changed since the December consultation. We consider that it would be disproportionate, and unnecessarily complex, to involve either retailers or an additional third party market operator in the payment flows.

The table below demonstrates a simple worked example of the calculation of an access price (including both the network plus charge and offsetting payment), for an incumbent water company supplying 1,100 m³ per year over its network with a total cost of resource provision of £250 for existing capacity (1000 m³) and £40 for new capacity (100 m³). This results in a network plus charge of £1.14 per cubic metre, an offsetting payment of -£0.14 per cubic metre, and a net access price to the wholesale water resource provider of £1.00 per cubic metre. In this example the bilateral water resource provider pays for access to the network and receives a compensation payment directly from the incumbent.

Table 1: Access price calculation – worked example

	Cost / Price Element	Existing resource	New resource	Total (Existing + New)
COSTS	Water capacity (cubic metres per year)	1,000 m ³	100 m ³	1,100 m ³
	Total cost of water resource (£ per year)	£250	£40	£290
	Unit cost of water resource (£ per cubic metre)	£0.25 (= £250/1000)	£0.40 (= £40/100)	£0.26 (= £290/1100)
	Total network plus costs (£ per year)			£1,250
PRICES	Network plus access price (£ per cubic metre)			£1.14 (= £1,250/1100 m ³)
	Compensation payment based on difference between unit costs of new water resource and all resource (£ per cubic metre)			-£0.14 (= £0.26 - £0.40)
	Net access price paid by third party water resource provider (£ per cubic metre)			£1.00 (= £1.14 - £0.14)

4 Further issues to be addressed

In this section we discuss:

- the issues identified in our December consultation;
- capacity versus volumetric charges;
- back-up and balancing services;
- cost measures used for calculation of compensation payments; and
- linking the compensation payment to the water resources price control

4.1 Issues identified in our December consultation

In our December consultation we noted that there are several issues that will need to be addressed before we can implement our proposed approach to access pricing:

- **Water treatment costs** – Differences in water quality will have an impact on treatment costs and this will need to be reflected in the compensation payment for alternative providers. Further, some water resources providers (for example, out-of-area incumbents) may be able to treat water themselves to potable standards and not require any treatment services from the incumbent. To address this issue, treatment services will need to be charged for separately and charges for treatment may need to reflect raw water quality and characteristics. We consider that treatment charges can be based on the cost an incumbent would charge itself to treat water of differing quality.
- **The relevant geographic area for setting prices** – Because the cost of new resources varies by geographical area the compensation payment will need to reflect this. In the responses to the December consultation, it was suggested that companies should be able to set different prices within a WRZ because costs could vary within a zone. Our view is that in general the WRZ is the right area at which to set access prices, and any alternative basis for setting charges would need to be supported with compelling evidence that costs differ within a WRZ.
- **Water distribution and transport costs** – We recognised that the compensation payment could be adjusted to reflect the point at which water is provided in an incumbent's network, with a higher compensation payment for water provided closer to where it is needed. Any adjustment would need to reflect an accurate assessment of the relevant cost savings to incumbents.
- **Deriving access prices from AICs** – Linking the access price with the water resource control determines which AICs to consider in setting the access price. We recognised that the AIC measure used in WRMPs is a potential measure of

incremental cost that could be used as part of the calculation of access prices. On further review we consider that this is a potential starting point but that we are likely to need to refine the approach to the calculation a suitable unit cost measure for incremental water resource capacity to fit better with the needs of the access pricing framework and with the cost information that companies use in the water resource planning. We discuss this further below.

- **Losses and leakage** – In December we said that the network operator should be responsible for leakage and water resource providers' payments should be based on efficient losses. Our view on this issue has not changed.
- **Scarcity** – We noted in December that a scarcity payment could be included within the access price, but that it would be better addressed through abstraction reforms. Our view on this issue is unchanged.
- **Other relevant agreements** – Alternative agreements raise the risk of companies bypassing the access pricing rules. Our approach is intended to provide a framework for access pricing, and the ability to adopt alternatives will depend on the final form of the access pricing rules. However, we consider there is likely to be scope within the rules to allow companies to agree alternative, and potentially more efficient, agreements to source new water resources, provided such agreements are consistent with competition law and non-discrimination obligations. We will consider this issue further as the access pricing rules are developed.

4.2 Capacity versus volumetric charges

In addition to the areas outlined above, we also need to give further consideration to whether the network plus charges and compensation payments are based on the capacity made available, the volume taken, some combination of the two, or an alternative mechanism. Volumetric charges are more prevalent for wholesale tariffs but companies already make use of capacity-based charges, especially for larger customers or bulk supplies between water companies. For example, some existing charges and agreements include payments for maximum daily demand or minimum charges regardless of outturn volumes, both of which are forms of capacity-based charge. Charging on the basis of volume has the benefit of being easily monitored and verifiable, with lower metering requirements, and may provide a practical approach for the tariffs for smaller businesses. The case for charges based, in part, on maximum capacity or peak-demand is stronger where larger volumes of water are at stake in the trade between supplier and customer. This reflects the cost structure of water resources, with a large part of the costs more closely related to the amount of capacity that a water company needs to ensure is available to meet peaks in demand, rather than the actual volume of water supplied in a particular period.

4.3 Back-up and balancing services

A further issue that will need to be considered as part of the access pricing framework is the setting of charges for back-up and balancing services. New water resource providers, or retailers contracting with new providers, may need to draw on the water resources of the incumbent from time to time, to deal with occasional interruptions in their sources and to manage any deviations between the water they put in to the system and the water that their customers consume. These services are likely to be needed to enable the third party to provide a similar quality of service to customers as the incumbent water companies. There is a risk that excessive or discriminatory charges for back-up and balancing services could prevent or hinder efficient entry. Water companies will need to develop a non-discriminatory approach to pricing these services. There are links between these services and the charges that water companies currently set for back-up supplies and reservation tariffs (for example, for customers with their own borehole abstraction who rely on the water company as a source of resilience in their supply).

4.4 Cost measures used for calculation of compensation payments

As discussed above, we have decided that the compensation payment element of the access price should reflect the difference (if any) between (i) a measure of the incumbent water company's cost of incremental water resource capacity and (ii) the incumbent's average cost of water resources across its entire water resource asset base. The compensation payment will be set to zero if the first element is no greater than the second element. These cost measures should include financing costs. We have given further consideration to the cost measures that can be used in this calculation.

The calculation of the incumbent's average cost for raw water, including a return on capital, should draw on, and be consistent with, the regulatory accounting information for water resources. This may have implications for the information collected for regulatory accounts and therefore require changes to regulatory accounting guidelines. The calculation might also draw on more granular water resource cost information that the incumbent holds. The average cost measure will reflect the regulated profit attributable to water resources, which will be governed by the water resources price control and reflect the part of each water company's historical RCV that is allocated to water resources.

The regulatory accounts do not currently provide information on incremental costs of new water resource capacity. In our December consultation, we identified that a

potential starting point for the incremental cost measure is the AIC used in the context of WRMPs. The AIC has the benefit of being familiar to water industry stakeholders and the methods used for its calculation have been developed and applied to take account of the practicalities of balancing water demand and supply and the costing of alternative options.

We do not expect to be able to take the AIC figures from WRMPs and use these directly in the calculation of compensation payments however, as:

- Although the AICs are reported in WRMPs and provide indicative cost information, they do not necessarily reflect all the cost information that companies use to plan water resources and they may be over-simplified. We understand, a number of companies use sophisticated optimisation models and techniques to select among alternative options, which draw on more detailed cost information and take account of interactions with existing capacity, rather than selecting schemes based on a ranking of AICs for feasible schemes. Focusing only on AIC would not take account of the more detailed cost information and estimation that companies make use of in practice.
- The AIC measure includes the costs of raw water distribution and water treatment, where applicable. However, it will be important that the cost measure used for the compensation payment distinguishes between costs allocated to water resources and costs that fall under the definition of network plus used for price control purposes. This is because some third parties will supply raw water and use the treatment facilities of the incumbent water company and so the compensation payment for these third parties should not reflect treatment costs; the third party will pay for these separately through the network plus charges for water treatment. Some third parties may be able to carry out treatment themselves. As we develop our approach, we will need to consider whether the compensation payment available to third parties should be limited to the water resources element or whether, in the case where an third party carries out its own treatment, there should be compensation payments in respect of the extent (if any) to which the incumbent's incremental water treatment costs exceed its charges for water treatment (which will fall under the network plus control and reflect the RCV allocated to network plus). This approach could be used to ensure that third providers faced efficient price signals for treatment, where the charges derived from network plus cost recovery did not reflect forward looking incremental cost.
- The calculation of AIC is made by dividing a measure of the costs of an option or scheme (on an NPV basis) by the capacity or output of that option (again on an NPV basis). This provides a measure of the cost per unit of available capacity or output. However, if the schemes selected by an incumbent water company provides capacity in excess of what is needed to address the forecast deficit in

each year (e.g. due to lumpiness of investment projects) then the AIC measure may understate the unit costs of meeting demand and addressing the forecast deficit. It seems more relevant for pricing purposes to calculate costs by reference to the volume or capacity required (or forecast to be required), rather than the theoretical maximum volume or capacity of new resources which may be in excess of what is needed, including headroom, to meet peak demand.

In light of these issues, we plan to develop a unit cost measure for incremental water resource capacity that draws on the cost measures and concepts used for WRMP purposes but adapts these for the purposes of the access pricing framework.

In our December consultation, we referred to long run incremental cost (LRIC) as a relevant measure of forward-looking incremental costs that was relevant to our proposed approach to access pricing. Some stakeholders also discussed LRIC in their responses. The unit cost measure that we envisage might be seen as a form of LRIC (or long run average incremental cost (LRAIC)) measure. However, the term LRIC has many different nuances and means different things to different stakeholders and there is scope for confusion. To be clear, we do not intend to develop bottom-up models of hypothetical water resource solutions as the basis for calculating the compensation payment; nor to develop industry-wide incremental cost measures that abstract from the circumstances of individual WRZs. Instead, our starting point will be the AIC calculation and we will develop the relevant incremental cost measure from this.

We recognise that the relevant unit cost measure will depend on the nature of the deficit that is forecast over the planning period (for example, whether the deficit is forecast for a short critical period or whether it reflects insufficient aggregate volumes across a normal year). Likewise, the compensation payments available for bilateral market third parties will depend on how third parties contribute to the capacity needed to meet peaks in demand for water.

4.5 Linking the compensation payment to the water resources price control

As noted in Chapter 5, we expect there to be substantial benefits from the creation of explicit or structural links between the methodology for the calculation of the compensation payment element of the access price and the level of regulatory funding available to the incumbent water company through the water resources price control.

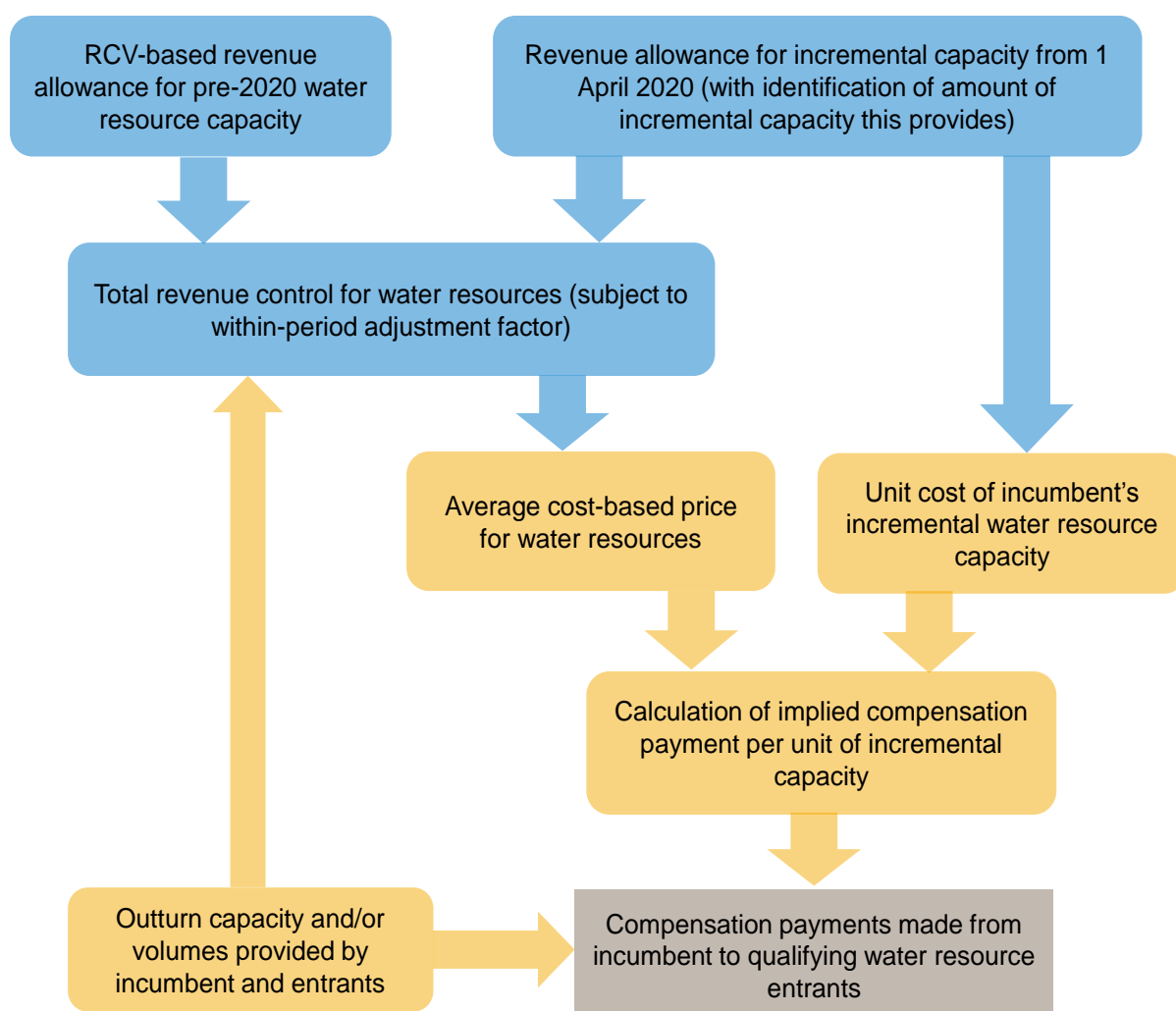
For setting the water resources control, both the average cost of existing resources and the incremental cost of new capacity will be factored into the cost allowance. Currently, controls are set on a five-year basis and companies only recover costs incurred within the control period. Conversely, the incremental cost measures the average cost of a new water resource over its entire asset life. Since water resources are typically capital intensive, the cost profile is generally front-loaded. This could be resolved either by allowing only an annualised unit cost allowance in the control (and consequently not providing upfront funding for new water resources), or by continuing to pre-fund capital investment but having an offsetting adjustment to future access prices and controls that maintains a level playing field.

We will seek to create structural links between the access price framework and the price control framework as we develop our approach. This may allow the access price and/or water resources control to change during a period in response to competition for the supply of new water resources. This will lead to a more level playing field for alternative providers and will also provide strong incentives for companies to market-test their costs and thoroughly explore opportunities to procure water from third parties, which in turn would improve the quality of information for price control purposes. For example, a company that over-estimates the efficient cost of developing new water resource capacity in its price control business plan may achieve a higher control allowance, but would also face a greater risk of bilateral market entry since the compensation payment element of the access price would then also be higher.

For the access price to enable an equally efficient resource provider to enter it must effectively provide the third party provider with a discount to the access prices it pays that reflects the incumbent's cost of providing new resource. Accordingly, if we were to allow more/less cost to an incumbent for developing new resources when setting a water resource price control, this should translate to a lower/higher access price for new resource providers so as to preserve the incentives for equally efficient resource providers to enter.

The figure below illustrates one potential way in which the water resource price control could be linked to the calculation of access prices. It works, in brief, by identifying the compensation payment that is implicitly allowed under the water resources price control to remunerate the incumbent water company for any incremental capacity it needs to provide, and making this same compensation payment available to water resource third parties under the access price framework. We note that this is just one example of how it could operate and further work is needed to develop the methodology.

Figure 1: Potential method for linking compensation payment to price control



We can highlight several features from the figure. First the water resources price (revenue) control could be calculated as the sum of two elements:

- An RCV-based revenue allowance for water resource capacity available (or funded but yet to be commissioned) at 31 March 2020. This would be calculated on a building blocks basis, and would include a return on the historical RCV allocated to water resources and an allowance in relation to the costs of operating and maintaining this capacity, as far as needed. This would comprise the vast majority of revenue at the 2019 price review, due to the relative scale of existing water resource capacity compared to incremental capacity.
- The water resources price control would also include an allowance for the incumbent's incremental costs of any additional capacity that is needed, beyond that available on 31 March 2020. The unit costs of incremental capacity could then be calculated by dividing the price control allowances attributed to this

capacity by the amount of additional capacity provided. An alternative approach to implementing this is discussed below.

As set out in Chapter 5, the water resources price control will also include a mechanistic within-period adjustment factor. This adjustment will reflect variations in outturn volume/capacity for the incumbent and third parties, compared to expectations used for the price control determination, and the unit costs of additional capacity allowed for under the price control.

The compensation payment element of the access price would be calculated based on price control information by reference to the incumbent's average cost-based price for water resources (which will reflect its average costs across existing and new capacity) and the incumbent's incremental costs of water resource capacity, as funded through the price control.

With this structure in place, the compensation payment concept would be used to remunerate both the incumbent water company and any bilateral market third parties for the provision of incremental capacity (it would be an implicit part of the funding for the incumbent's incremental capacity). The compensation payments would be shared between the third party and the incumbent according to relative shares of capacity or volume provided to the market. This would work through payments from the incumbent water company to qualifying bilateral market third parties. The overall level of compensation payment would, in effect, be fixed or capped, such that the compensation payment per unit of capacity or volume will tend to fall as additional capacity is developed in excess of what is identified as needed. This would help protect customers from paying for unnecessary levels of additional capacity and provide incentives for all market participants to adapt their plans as the market develops.

These arrangements are intended to enable the retention of an RCV-based building blocks approach for existing water resource capacity while allowing a modified approach for new capacity that allocates the competitive risks from bilateral market entry to incumbent water companies (rather than customers) and seeks to provide a level playing field between incremental capacity developed by the incumbent and incremental capacity that could be provided by bilateral market third parties.

Structurally linking the access price and water resource control

Based on the example on setting access prices from Table 1 above, the table below sets out how the water resource control and access price calculations could be linked structurally, using a simplified example.

In this hypothetical scenario an incumbent has an existing demand in each year for 1,000m³ and requires an additional 100m³. The price control provides funding of £40 for developing the 100m³ new water resources, and this implies a unit cost for incremental capacity of 40 pence/m³. The total water resources price control is £290, across existing and new resources, which implies an average cost across the existing and new water resources of 26 pence/m³. Taking the difference between the 40 pence/m³ for incremental capacity and the 26 pence/m³ for the incumbent's average costs of water resources provides a compensation payment of 14 pence/m³.

The network plus price control has a total revenue of £1,250 which works out as £1.14/m³ on an average cost basis.

A retailer using the incumbents' water resources would pay a total wholesale charge of £1.40, comprising a network plus charge of £1.14 and water resource charge of £0.26 based on the incumbent's average costs.

A retailer using an alternative water resource provider would pay a net charge of £1.00 per m³, which reflects the cost based network plus charge of £1.14 and the offsetting compensation payment of £0.14.

	Existing resource	New resource	Total
Cubic metres per year	1,000	100	1,100
Water resource costs allowed under price control (£)	250	£40	290
Water resource unit costs (£/m ³)	0.25	0.40	0.26
Compensation payment (£/m ³)			0.14
Network plus price control (£)			1,250
Network plus unit costs (£/m ³)			1.14
Network plus charge minus compensation payment (£/m ³)			1.00

Linking the access price and resource control resolves some of the issues we highlighted as requiring further consideration in our December consultation. We considered that we would need to determine for what schemes and over what time frame we would consider the AICs for setting the access price. Our approach of linking the two elements suggests that only those schemes committed to begin within a control period would be considered, and that the relevant costs of the incremental capacity would reflect the level of costs allowed for as part of the water resources price control.

We proposed in December several methods for aggregating AICs into a single access price. Consistent with our intention to link the access price and remuneration through the water resource control, we envisage that the weighted average of unit costs from appropriate schemes should be used to set the compensation payment.

With respect to the control, there are a number of possible options by which the revenue allowance could be set. As set out above and in Chapter 5, our proposal is a building blocks approach which would have an adjustment mechanism to deduct for volumes/capacity supplied by third parties. We note another option would be to provide a unit cost allowance for new water resource capacity (intended to cover development, maintenance, operational and financing costs) which would be consistent with the compensation payment paid to alternative providers. This could include a true-up mechanism to protect companies against wider market demand risk and limit demand variance to competition, which mean that companies faced similar risk under either approach. In the absence of a true-up this option would expose companies to market risk, which might impact on cost of capital and allowed returns.

A unit cost approach would have advantages in that it would more closely resemble the flow of revenues to third party providers under bilateral contract arrangements, and might better realise market benefits. The disadvantage is that it would mean significantly different form of control compared to existing capacity. We will consider implications for form of control further in the methodology consultation including whether we should develop shadow unit cost allowance to learn about operation of control in the 2019 price review period and scope for setting future controls on this basis.

5 Next steps

We will progress our work on access pricing as part of our forward work programme. As part of this we will be setting up a water resources working group in which we will cover the access pricing framework to both provide further clarity on how we envisage that it will function and to understand better how companies' information can be used to set access prices that encourage efficient entry.

We will look to provide an opportunity for stakeholders to discuss how access prices will work in practice. We will also explore how the information companies collect for developing business plans and WRMPs can be used to set access prices. This may have implications for the information collected for regulatory accounts and therefore require changes to regulatory accounting guidelines.

We are also interested in working with a small number of companies to examine further how company information can be used to set access prices. In particular, we would like to run through some practical scenarios of developing new water resources, understand the assessment of options for new resources the companies go through and the information collated, and use the data to set some hypothetical access prices. We would then report back to a wider group of interested stakeholders on the findings from this exercise.