



# *Company specific adjustments to the WACC*

A review of company  
representations

December 2014

**pwc**

# 1. Introduction and Summary

## 1.1. Background

In ‘Setting price controls for 2015-20 – risk and reward guidance’, Ofwat set out the two criteria for a company-specific uplift to the weighted average cost of capital (WACC):

*“To justify a company-specific uplift to the WACC, companies will need to demonstrate both that they face a higher cost of raising finance and that there is an offsetting benefit to customers.”<sup>1</sup>*

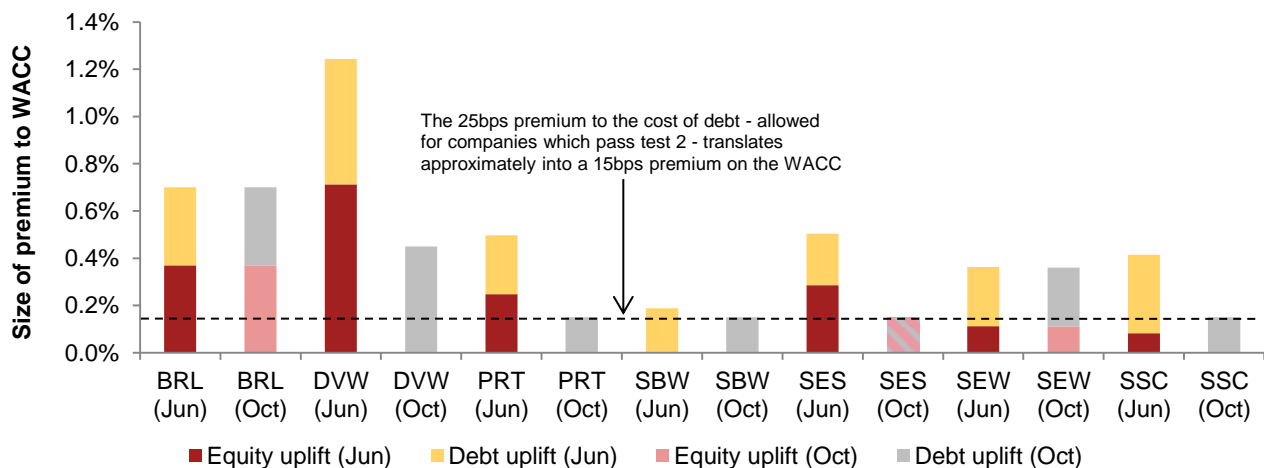
The first criterion - demonstrating that they face a higher cost of financing - is called ‘Test 1’. The second criterion - demonstrating that there is an offsetting benefit to customers - is called ‘Test 2’.

In August 2014, we published a report, ‘Company specific adjustments to the WACC: A report prepared for Ofwat’<sup>2</sup> which reviewed the evidence regarding Test 1 (hereafter referred to as our “First Report”). We concluded that the cost of debt finance for small ‘Water Only Companies’ (WoCs) was approximately 25bps higher than the industry notional cost of debt benchmark, and also concluded that there should be no cost of equity adjustment for either large or small WoCs. Informed by our recommendations, Ofwat’s PR14 Draft Determinations applied this cost of debt uplift to those small WoCs who also passed Test 2 – Portsmouth Water and Sembcorp Bournemouth Water.

Subsequent to the publication of our report alongside Ofwat’s Draft Determinations, Bristol Water, Dee Valley Water, South East Water and Sutton and East Surrey Water made representations to Ofwat regarding our conclusions from the application of ‘Test 1’<sup>3</sup>. The two companies who passed both tests, in addition to South Staffordshire Cambridge Water, did not comment upon the conclusions of our First Report.

In their representations, five of seven companies reduced the size of uplift to the industry WACC they requested relative to June submissions. This is shown in figure 1 below.

**Figure 1 WACC premium requested in June submissions and representations**



Source: Company submissions

<sup>1</sup> Ofwat (2014), ‘Setting price controls for 2015-20 – risk and reward guidance’.

<sup>2</sup> PwC (2014), ‘Company specific adjustments to the WACC: A report prepared for Ofwat’.

<sup>3</sup> Oxera prepared a note on behalf of Bristol Water, and Frontier Economics prepared documents on behalf of Dee Valley Water, South East Water and Sutton and East Surrey Water.

As Figure 1 highlights, Portsmouth Water, Sembcorp Bournemouth Water, South Staffordshire Cambridge Water and Sutton and East Surrey Water have aligned their representations with Ofwat’s proposals on company specific adjustments to the WACC. In short, they have included 15bps uplift to the industry WACC – which is consistent with the recommended 25bps premium on the cost of debt. Despite this, Sutton and East Surrey Water and Dee Valley Water continued to present arguments for a cost of equity premium in their representations.

Section 1.2 below sets out the views raised in representations regarding both the cost of debt and the cost of equity.

## 1.2. Scope of this report

Ofwat has asked us to review all the representations submitted regarding ‘Test 1’. In doing so, we have grouped representations into fourteen topic areas. These are set out in Table 1 below; along with which respondents commented on particular issues and which section of the report address them.

**Table 1 Respondents and topics covered in representations regarding Test 1**

Issue topic	Respondents	Section of this report
<b>Cost of Equity</b>		
Treatment of the cost of equity for WoCs in PR09	DVW, SES	2.1.1
Implications of RoRE analysis for the cost of equity	BRL	2.1.2
Operational gearing	DVW, BRL, SES	2.1.3
Use of Dimson beta calculation	DVW, SES	2.1.4
PAYG ratios	DVW, SES	2.1.5
Consistency between debt and equity costs	DVW, BRL, SES	2.1.6
<b>Cost of Debt</b>		
Previous regulatory decisions on embedded debt costs	SEW	2.2.1
Bank debt issuance costs	BRL	2.2.2
Frequency of debt raising and timing risk	DVW, BRL, SEW	2.2.3
Efficiency of Artesian finance	DVW	2.2.4
Benefits of long-term debt	DVW	2.2.5
Comparators for bond analysis	SEW	2.2.6
Time period and scope of assessment for cost of debt	SEW	2.2.7
Costs of carry	SEW	2.2.8

In Section 2 of this report, we discuss the views of respondents on each of these topic areas, conduct supplementary analyses where necessary, and set out our view on each area in turn. Our conclusions are summarised in Section 1.3 below.

### 1.3. Summary

Table 2 below presents our conclusions on each of the topics set out in Table 1 above.

**Table 2 Conclusions on issue topics raised in company representations**

Issue topic	Conclusion
<b>Cost of Equity</b>	
<b>Treatment of the cost of equity for WoCs in PR09</b>	The adjustment to the cost of capital for small WoCs in PR09 was not intended to suggest the cost of equity, or asset betas, for WoCs are different to WaSCs.
<b>Implications of RoRE analysis for the cost of equity</b>	Historical analysis shows higher RORE variation for WoCs compared to WaSCs, but these differences are much smaller on a forward looking basis. We retain the view held by Ofwat in PR09 - that any remaining differences in business risk between WaSCs and WOCs are specific in nature. As a consequence of the increase in financial gearing for WoCs since PR09, we do not recommend Ofwat sets a different financial gearing assumption for WoCs (as it did in PR09). Rather we recommend a different cost of debt assumption is used for WoCs, as supported by market evidence.
<b>Operational gearing</b>	We maintain our view that there is insufficient conceptual validity to show that WoCs face a higher cost of equity than WaSCs. This is supported by the empirical analysis of water company betas. Any residual differences can be managed through water company calibration of outcome delivery incentives and totex (total expenditure) menu choices.
<b>Use of Dimson beta calculation</b>	Our First Report found that beta analysis did not suggest a difference in the systematic risk between WaSCs and WoCs. After testing different formulations of the Dimson beta, our finding does not change. We conclude that the Dimson beta estimated in our First Report is robust.
<b>PAYG ratios</b>	Despite likely cost structure differences between WoCs and WaSCs over the course of AMP6 (Asset Management Period 6), we do not consider there to be sufficient evidence that this requires a higher cost of equity for WoCs.
<b>Consistency between debt and equity costs</b>	We consider there is both a theoretical basis and empirical evidence to support an uplift to the cost of debt and no uplift to the cost of equity.
<b>Cost of Debt</b>	
<b>Previous regulatory decisions on embedded debt costs</b>	We recommend Ofwat continues with its approach of setting an industry-wide cost of capital, with the only adjustment being for small WoCs in relation to their debt finance costs. We recommend this adjustment is set for the WoC group, as a whole, rather than being set for individual companies.
<b>Bank debt issuance costs</b>	Even with higher amortised issuance costs for bank finance, the average issuance cost across all WoC financing does not exceed 10bps. This is because bank finance represents a relatively small portion of WoC debt finance (c.9%) and issuance costs on larger parts of WoC debt finance are less than 10bps.
<b>Frequency of debt raising and timing risk</b>	We acknowledge that WoCs access bond markets less frequently, although average debt maturity profiles for WaSCs and WoCs are broadly similar. Higher timing risk borne by WoCs can be taken into account through the assessment of WoC debt finance costs across a range of finance types (including a higher proportion of bank debt finance), and can be managed through water company calibration of outcome delivery incentives and totex menu choices.
<b>Efficiency of Artesian finance</b>	We consider that water companies are best able to manage the timing of their debt issuance and hence should be able to benefit from any out-performance, or bear the risk of under-performance. Our analysis suggests that the timing of Artesian finance issuance is the biggest contributory factor to under-performance.
<b>Benefits of long-term debt</b>	We consider it is in the long-term interests of consumers that companies are incentivised to raise debt finance efficiently. The use of a long-term debt benchmark in the calculation of allowed returns supports such incentives. Any move to allow the recovery of actual debt finance costs could reduce such incentives.

<b>Comparators for bond analysis</b>	We have reviewed suggestion for different bond comparators in the assessment of cost of debt differences between large WoCs and WaSCs. We retain the view that the large WoCs do not require an uplift to the cost of debt.
<b>Time period and scope of assessment for cost of debt</b>	The addition of one extra data point for a large WoC bond issue in 2003 shows that large WoC bond financing costs are within the range of WaSC bond financing costs.
<b>Costs of carry</b>	We consider that an uplift to the cost of capital to compensate for the cost of carry is not required as there are offsetting factors, which are not separately incorporated into Ofwat's WACC framework.

## **1.4. Conclusion**

Overall, we find there are no substantive reasons to change the conclusions set out in our First Report. As a result, our recommendation to Ofwat remains unchanged. We continue to recommend that Ofwat applies 25bps uplift to the cost of debt for small WoCs, and that no WoCs should receive an uplift to the cost of equity.

## 2. Respondents views and responses

In this section, we set out the issues raised in representations to Ofwat, summarise the views of respondents and set out our view on each issue. Section 2.1 covers topics regarding the cost of equity, section 2.2 covers topics regarding the cost of debt.

### 2.1. Cost of equity

#### 2.1.1. Treatment of the cost of equity for WoCs in PR09

##### Issue context

In its PR14 Draft Determinations, Ofwat did not allow an uplift to cost of equity in its assessment of the higher (efficient) financing costs for WoCs.

##### Respondents' views

A number of respondents suggested this approach was inconsistent with the approach adopted in PR09.

##### PwC view

In PR09 Ofwat concluded that there was insufficient evidence to show that WoCs faced different systematic risk to WaSCs<sup>4</sup>. However, it acknowledged that credit rating agencies require WoCs to achieve higher credit ratios, compared to WaSCs, to attain a given rating, and concluded there were higher specific risks for WoCs. For this reason, Ofwat used a lower financial gearing assumption in the WACC for WoCs<sup>5</sup>. This conclusion was supported by the differences in financial gearing in their capital structures at the time (see the 2009 column in table 2 below). WaSCs had, on average, actual financial gearing levels 10 percentage points higher than WoCs in 2009; this has now reversed, with the average WoC having marginally higher gearing.

**Table 2 Gearing (net debt to RCV ratio) in 2009 and 2014**

Gearing (net debt / RCV)	2009	2014
ANH	90%	79%
WSH	73%	63%
SRN	95%	88%
TMS	74%	77%
YKY	66%	78%
NES	60%	61%
SVT	61%	64%
SWT	64%	56%
UU	68%	65%
WSX	71%	64%
<b>WaSC Average</b>	<b>72%</b>	<b>70%</b>
SEW	84%	81%

<sup>4</sup> The conceptual differences between systematic risk and specific risks are set out in Ofwat (2011), "Cost of capital and risk mitigants – a discussion paper"

<sup>5</sup> The notional gearing for WoCs was set at 52.5% - 5% below the notional gearing of 57.5% for WaSCs.

BRL	81%	71%
CAM	52%	-
DVW	65%	77%
PRT	76%	81%
SBW	55%	58%
SST	86%	-
SES	77%	76%
VWC	40%	-
VWE	23%	-
VWSE	46%	-
AFW	-	80%
SSC	-	64%
<b>WoC Average</b>	<b>62%</b>	<b>74%</b>

Source: Regulatory accounts

Ofwat’s application of the lower financial gearing assumption in PR09 was treated as follows. As the lower gearing assumption was intended to increase allowed revenues, the cost of equity was kept the same for both WaSCs and WoCs, with the lower proportion of debt finance increasing the overall cost of capital for WoCs. This was explained as follows:

*“We have maintained the cost of equity that we have used at the industry level in our cost of capital calculation to improve the cash flows of the water only companies. This cost of equity is higher than it might otherwise be under a CAPM approach at 52.5% gearing, as we have not adjusted the equity beta for the water only companies.”<sup>6</sup>*

It is clear from this that the PR09 adjustment was not intended to suggest the cost of equity, or asset betas, for WoCs are different to WaSCs – instead it highlighted the impact of different gearing on the WACC. In particular, Ofwat note some of the challenges of using a less than fully specified CAPM and varying the gearing assumption. This is because a lower gearing assumption can result in a lower cost of equity, and if debt betas and cost of debt relationships are not fully specified, then a lower gearing assumption can result in a lower overall WACC<sup>7</sup>, which would have been counter to Ofwat’s policy intention.

We continue to consider that there is insufficient evidence that shows the systematic risk of WaSCs and WoCs is different, and hence the cost of equity should be the same for both WaSCs and WoCs.

## **2.1.2. Implications of RoRE analysis for the cost of equity**

### **Issue context**

In its January 2014 risk and reward guidance, Ofwat set out the historical variation in the return on regulated equity (“RoRE”). This showed greater RoRE variation in WoCs than in WaSCs. Ofwat also showed forward-looking RoRE ranges for all companies in the PR14 Draft Determinations. These showed less variation between WoCs and WaSCs compared to the past.

<sup>6</sup> PR09 Final Determination, Pg. 135.

<sup>7</sup> For a given asset beta, and where no debt beta is applied, the equity beta calculated is positively related to the level of gearing. Therefore, holding all else equal, lower gearing reduces the equity beta and hence the cost of equity.

## Respondents' views

Respondents suggested that the historic variation in RoRE showed that WoCs have higher risk. They also suggested Ofwat should place more reliance on historical analysis which captures the impact of past events, rather than business plans which merely incorporate expected risks.

Respondents also challenged Ofwat's view that any additional risks in WoCs are specific in nature (as opposed to systematic).

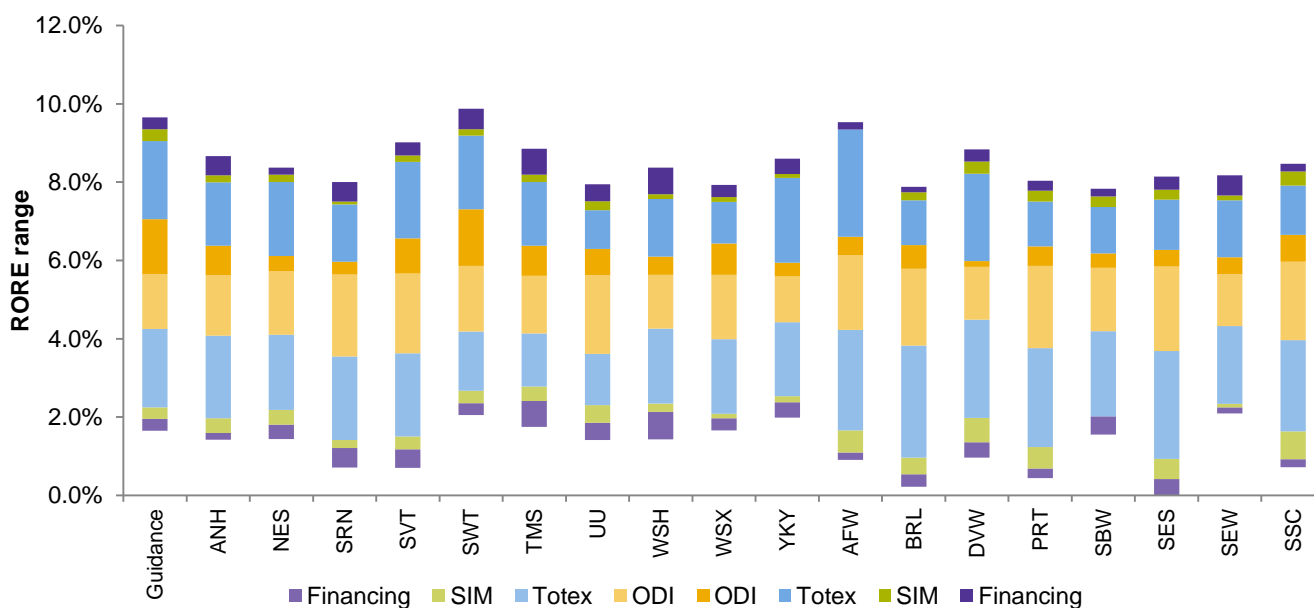
Furthermore, Dee Valley Water and Sutton and East Surrey Water, advised by Frontier Economics, suggested that financeability tools (such as varying the pay-as-you-go (PAYG) ratio and RCV run-off) do not impact the risk profile of the business.

## PwC view

We consider there are changes to the PR14 methodology which provide companies with greater ability to manage risks. This includes the ability of companies to propose different mixes of risk in their packages of regulatory incentives which Ofwat reviews via analysis of RoRE ranges. Ofwat has also provided guidance around the typical RoRE range which they consider represents a reasonable balance of risks and rewards between water company investors and customers. Companies can also make totex menu choices in response to Ofwat's Final Determinations which influence their risk profile.

The differences between the forward-looking risk profiles for WaSCs and WoCs is minimal and much smaller than suggested by the historical RoRE analysis. These forward-looking risk profiles are shown in Figure 2 below.

**Figure 2 PR14 final determination RORE ranges**



Source: Ofwat Final determinations

The use of outcome incentive calibration (and totex menu choices after Final Determinations) can therefore narrow overall risk differences between WaSCs and WoCs. While we agree that the tools for managing financeability do not reduce the risk in the operations of the business, they are intended to help manage financing risk (for example where companies have different levels of new capital to raise within a five year



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control period), and will, over time, influence the long-term development of the RCV and therefore cost structure of the company<sup>8</sup>.

The empirical evidence on betas (see Figure 12 in our First Report), current levels of financial gearing (see Point 2.1 above) and WOC company transaction values (see Figure 13 in our First Report) also show limited evidence of a difference in systematic risk between WaSCs and WoCs.

We retain the view held by Ofwat in PR09 - that any remaining differences in business risk between WaSCs and WOCs are specific in nature. This could be due to factors such as a lower degree of asset and customer diversification, or a greater dependence on key infrastructure and human resources. As a consequence of the increase in financial gearing for WoCs, we do not recommend Ofwat sets a different financial gearing assumption for WoCs (as it did in PR09). Rather we recommend a different cost of debt assumption is used for WoCs, as supported by market evidence.

### **2.1.3. Operational gearing**

#### **Issue context**

Some WOCs continue to suggest that WOCs have higher operational gearing due to their smaller size of RCV relative to revenues and costs, and higher proportion of operating costs to revenues. This builds on the approach adopted by the Competition Commission (CC) in the Bristol Water appeal in PR09.<sup>9</sup>

#### **Respondents' views**

In a report prepared for Bristol Water<sup>10</sup>, Oxera challenges PwC's conclusions regarding operational gearing and its impact on the cost of equity. It states that the value of a firm can be viewed as the difference between the present value of its revenue and costs. Following from this, they acknowledge that in the water industry a firm's value is more likely to change as a result of volatility in costs than revenues. Oxera agrees with the logic of our argument that firm profits will fluctuate counter cyclically (implying a negative equity beta) if costs are procyclical, given fixed revenue. But Oxera refers to observed equity betas being positive (greater than zero) which support its argument that it is the combination of revenue and cost volatility that contributes positively to beta risk.

#### **PwC view**

Our First Report set out a number of conceptual situations or illustrations which show potential flaws in the conceptual basis of the operational gearing arguments proposed by WoCs<sup>11</sup>. One illustration considered revenue risks, one considered operational risks and one considered capital expenditure risks.

The second illustration considered how fixed revenues combined with operational costs exposed to systematic risk would, in theory, lead to a countercyclical or negative beta. Oxera acknowledge this. Given the empirical evidence of a positive beta for the water sector, this illustration is not likely to be representative of the actual risks facing the sector. This means that water companies must be exposed to some demand or revenue risk (the first illustration), despite the use of the Revenue Correction Mechanism in AMP5 and previous price controls and the use of revenue controls in AMP6. Such demand risk could come from bad debt, industrial demand or long-term growth which is not fully borne by customers through the regulatory framework. The fact that observed betas are low suggests that any demand risk is small.

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<sup>8</sup> As indicated by ratio such as  $\text{totex}/\text{RCV}$ ,  $\text{opex}/\text{revenue}$  and  $\text{revenue}/\text{RCV}$ .

<sup>9</sup> Competition Commission (2010), 'Bristol Water plc - A reference under section 12(3)(a) of the Water Industry Act 1991', Appendix N

<sup>10</sup> Oxera (2014), 'Review of PwC's evidence on the small-company premium: Note prepared for Bristol Water'

<sup>11</sup> PwC (2014), "Company specific adjustments to the WACC"

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So while Oxera suggest that a water company's value is more likely to change in response to costs, we consider it more constructive to consider variation in revenues, or demand risk. Despite potential for some demand risk, we consider the conceptual basis of the operational gearing effects is still inconclusive. One reason is because there is scope for management to vary operational costs and therefore mitigate demand risks. This is certainly possible during a price control period and more so in the medium term as revenues and operational costs are automatically recalibrated at each price control. The ability to flex operational costs may mitigate, and in some cases, eliminate any difference in the impact of demand risks on companies with a different magnitude of revenues in relation to the size of their assets.

The inconclusive conceptual basis of any adjustment means that it is important to review the empirical evidence on the differences in risk for WaSCs and WoCs. As shown previously:

- There is no tendency for WoCs to have lower valuation ratios in equity transactions, which suggests that shareholders do not perceive a difference in risk (see Figure 13 in our First Report).
- There is no significant difference between the level of gearing of WaSCs and WOCs, which suggests that investors do not perceive a difference in overall risk (see Point 2.1 above).
- The PwC analysis of the asset betas of DVW, SVT, SWT and UU shows that DVW's beta is not demonstrably different, which suggests that there is no difference in systematic risk (see Figure 12 in our First Report).

Furthermore, if there were any difference in risk, Ofwat has given all companies the ability to propose different mixes of risk in their packages of regulatory incentives and, after Final Determination, totex menu choices to mitigate any underlying risk differences.

We maintain our view that there is insufficient conceptual validity and empirical evidence to show that WoCs face a higher cost of equity than WaSCs.

#### ***2.1.4. Use of Dimson beta calculation***

##### **Issue context**

In our First Report, we used a calculation of Dee Valley's beta using a Dimson technique, which includes lagged observations to allow for the illiquidity in Dee Valley's share trading. We then used this empirical evidence to show that the systematic risk in the one publicly listed WoC is little different to that of the three publically listed WaSCs.

##### **Respondents' views**

Dee Valley Water and Sutton and East Surrey Water, advised by Frontier Economics, challenged the basis of PwC's Dimson beta calculation, and hence its use as evidence of there being no discernible difference in the degree of systematic risk comparing WoCs and WaSCs. Assuming that PwC has used daily data, Frontier highlighted how Dee Valley's stock price often does not change for multiple days at a time, leading to Frontier's concerns over the level of illiquidity in Dee Valley's equity. They also raised concern around the large increase in beta in 2007, along with the possibility of statistical insignificance of the beta estimates.

## PwC view

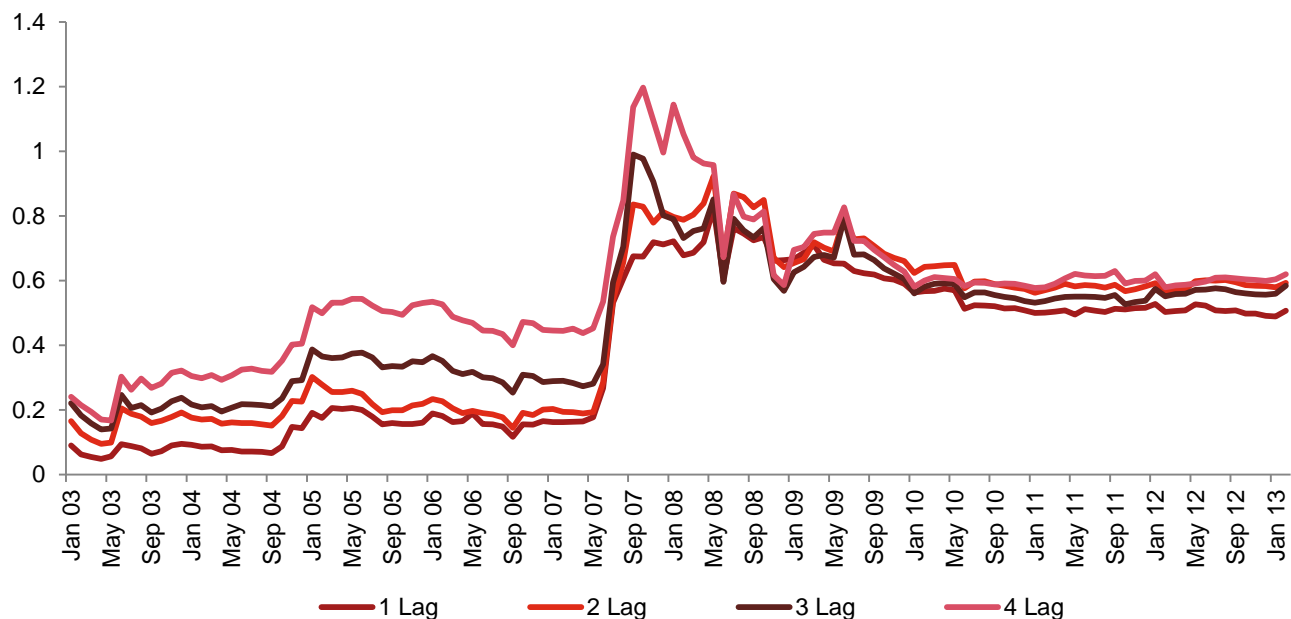
Our First report stated that monthly data and a 1-month lag were used in the calculation of Dee Valley's Dimson beta.<sup>12</sup>

Dee Valley's shares are not traded every day. However, there are price changes during most months. For the period January 1995 to September 2014, Dee Valley's share price changed from one month to the next in 213 out of 237 months. Where liquidity is low, it is preferable to use the Dimson beta because of the risk that movements in the company's share value are masked by illiquidity of share trading.

Our analysis includes a one month lag in calculating the Dimson beta (using monthly data over a 5 year period). Because there is trading in Dee Valley shares in most months, this single lag should be sufficient to correct for any illiquidity effects<sup>13</sup>.

We also tested the use of higher (monthly) lags. These are insignificant in the OLS beta regression we used. This suggests we should not use estimates which include higher lags. Because the impact of higher lags is statistically insignificant, the impact on the estimate of beta is small. Purely for the illustration of this point, we include higher lags in Figure 3 and 4 below, which show minimal impact and, if anything, the beta estimates tend to rise as more lags are used. Figure 3 shows the equity beta for Dee Valley for different numbers of lags; Figure 4 show the equivalent asset beta for Dee Valley versus those of WaSC comparators.

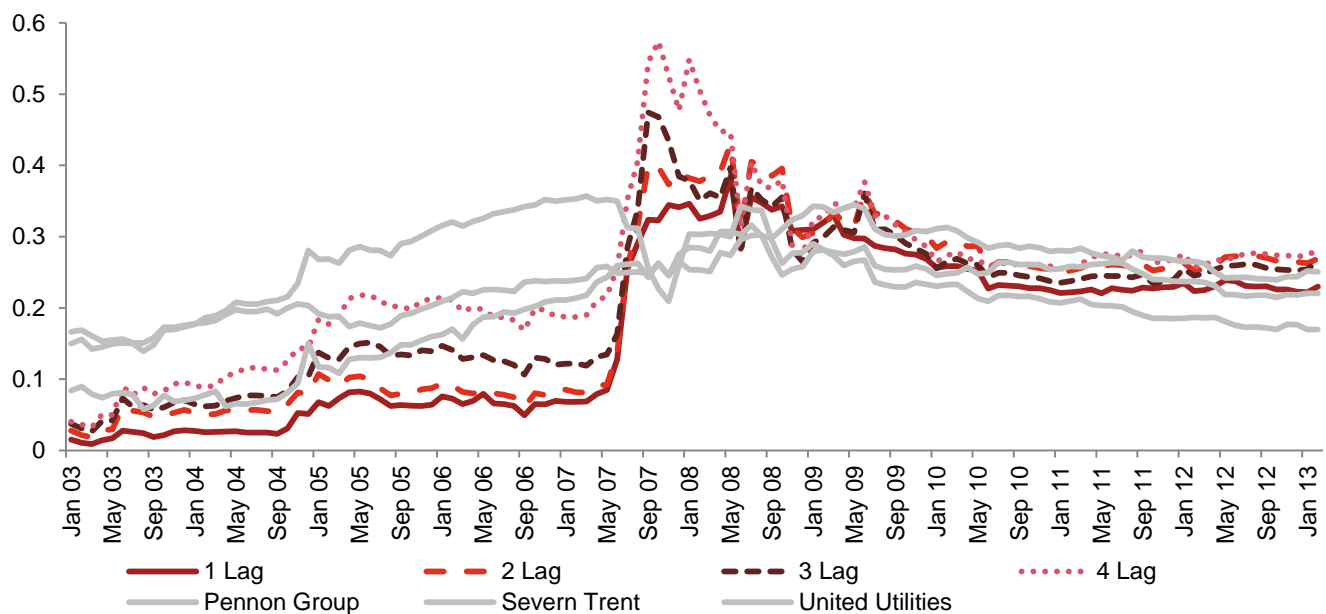
**Figure 3 Dee Valley Dimson Equity Beta (5 year monthly, Blume adjusted)**



<sup>12</sup> Footnote 48

<sup>13</sup> For further details on our Dimson beta estimation see appendix A

**Figure 4 Dee Valley Dimson Asset Beta (5 year monthly, Blume adjusted)**



Source: Datastream, Capital IQ

Our First Report found that beta analysis did not suggest a difference in the systematic risk between WaSCs and WoCs. After testing different formulations above, this finding does not change. We conclude that the Dimson beta estimated in our First Report is robust.

### 2.1.5. PAYG ratios

#### Issue context

New flexibility of PAYG ratios does not mitigate the risk arising from historical cost structure differentials between WaSCs and WoCs.

#### Respondents' views

Frontier Economics state that PAYG flexibility will only have a minimal impact on historical cost structure differences. On behalf of Dee Valley, they state that even if Dee Valley adopted a PAYG of 0%, its RCV ratios<sup>14</sup> would still be significantly different from WaSCs over the PR14 period.

Oxera, in their report on behalf of Bristol Water, also comment upon the impact of PAYG for equity risk. They suggest that it is total cash costs that affect the present value of costs, which means CAPEX and OPEX matter in terms of their contribution to risk, but the remuneration of CAPEX and OPEX in the regulatory framework is less relevant.

#### PwC view

The use of PAYG ratios is primarily a cash flow profiling tool. It can be used to improve short-term financeability, but can also be used to achieve a sustainable longer term balance between operational and financing cash flows. This means the impact on cost structures will be slow and that historic cost structure differences are likely to persist during AMP6.

<sup>14</sup> RCV ratios refer to the ratios of totex and revenues to RCV.

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Despite likely cost structure differences between WoCs and WaSCs over the course of AMP6, we do not consider there to be sufficient evidence that this requires a higher cost of equity for WoCs, for the reasons set out in Points 2.1.3 and 2.1.4 above.

We agree that the characteristics of CAPEX and OPEX influence the risk profile of water companies, rather than the remuneration through the regulatory framework. In our First Report we compared the variability of revenue and costs for WaSCs and WoCs and concluded there was no conclusive evidence that the inherent variability was any greater for WoCs.

## ***2.1.6. Consistency between equity and debt costs***

### **Issue context**

Owat allowed for a 25bps increase in the cost of debt, in its assessment of the finance costs for a WoC, but did not allow any increase in the cost of equity.

### **Respondents' views**

Respondents suggested that Owat had been inconsistent in allowing a higher cost of debt for small WoCs, but not a higher cost of equity.

### **PwC view**

Our assessment of the cost of debt uplift is based upon market observations for the typical differences in financing costs between small WOCs and WaSCs. Our assessment of the cost of equity considered the conceptual and empirical basis for an increase to the cost of equity.

There is no theoretical requirement that the uplift on the cost of debt and the uplift on the cost of equity are necessarily linked, particularly when arguments for any uplift relate to different parts of the cost of debt and cost of equity calculation methodology.

Two particular drivers of the cost of debt are (i) the size of issuers (e.g. RCV); and (ii) exposure to specific risks. Neither of these drivers impact the cost of equity using the Capital Asset Pricing Model. These two effects are explained below.

Firstly, size effects can explain an increase in the cost of debt, but not necessarily in the cost of equity. Whereas there is empirical evidence to suggest smaller companies can't typically achieve debt finance costs as low as larger companies, the academic evidence on whether smaller companies require a higher equity return is very mixed, and has been discounted by sector regulators and the CMA.<sup>15</sup>

Secondly, specific risk factors can affect the contracted cost of debt. This is because debt finance providers set their return requirements on the basis of the probability of default. Any specific risk which increases the probability of default will therefore increase cost of debt, as reflected in the coupon rate when a new bond is issued. In contrast, equity investors can diversify specific risks when equity investments are held as part of a diversified portfolio. This means that equity investors do not require compensation for bearing specific risks. Examples of specific risk factors include asset, resource and customer diversification. In the case of higher specific risks for WoCs, which are relevant to debt financing costs, the appropriate treatment is to set a lower financial gearing assumption or higher cost of debt assumption in the WACC; we recommend the latter.

We therefore consider there is both a theoretical basis and empirical evidence to support an uplift to the cost of debt and no uplift to the cost of equity.

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<sup>15</sup> This point was previously addressed in Section 3.3 of our First Report.

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## 2.2. Cost of debt

### 2.2.1. Previous regulatory decisions on embedded debt costs

#### Issue context

Ofwat has previously allowed the recovery of efficiently incurred embedded debt costs.

#### Respondents' views

Respondents suggested that the approach taken in the PR14 Draft Determinations is inconsistent with past regulatory decisions from Ofwat (PR99 and PR04), where they argue that actual debt costs were considered to some degree. Respondents also highlight that a partial pass through of actual debt costs can still provide incentives for efficient financing. A number of respondents have also suggested that Ofwat's approach is inconsistent with that of the CC and more recently the CMA. The CC/CMA used an assessment of the embedded debts costs for the relevant company, rather than a broader industry benchmark, in both the Bristol Water PR09 appeal and the Northern Ireland Electricity price determinations.

#### PwC view

The issue of embedded debt costs is relevant to the assessment of the industry-wide notional cost of capital, but has a particular impact on a number of the WoCs with high actual embedded debt costs. Therefore, we address this issue in this report, but our views are also applicable to the assessment of the industry-wide cost notional of capital which we set out in, 'Updated evidence on the WACC for PR14: A report prepared for Ofwat'.

In PR04 Ofwat made no explicit allowance for embedded debt, but did cross check its cost of debt estimate against a company which requested an embedded debt premium. The determination stated that:

*"In our assessment of the cost of debt we have placed greater emphasis on longer term historic averages for the risk-free rate and the debt premium. Our cost of capital assumes a cost of debt towards the high end of the range (as shown in table 45). Consequently, the arguments for an embedded debt premium are much weaker. A limited number of companies put forward a case for embedded debt premiums in their final business plans. We have reviewed these. In most cases the evidence did not support such a premium but one company did set out a justification. However, its overall cost of debt in its business plan (including the high coupon fixed rate element) was lower than our assumption. Consequently, we have concluded that no additional premium is required."*

In PR09 Europe Economics<sup>16</sup>, on behalf of Ofwat, set out three approaches which could be taken to the issue of embedded debt:

- a. Making full allowance for embedded debt on a company-by-company basis;
- b. Applying an embedded debt adjustment based on average embedded debt costs across the industry;
- c. Making no allowance for embedded debt.

They concluded that option 'b' provided "better incentive properties" for efficient financing than 'a', and that option 'c' provided the strongest incentives.

Ofwat's Final Determination for PR09 stated that, "Consistent with our draft determinations we have assumed a real cost of debt of 3.6%. In doing so, we have drawn on direct observations from companies' existing debt

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<sup>16</sup> [http://www.ofwat.gov.uk/pricereview/pro9phase3/rpt\\_com\\_20091126fdcoc.pdf](http://www.ofwat.gov.uk/pricereview/pro9phase3/rpt_com_20091126fdcoc.pdf)

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*portfolios and forward projections. The cost we have assumed for existing debt is 3.4%.”* Therefore, the PR09 approach was more similar to option ‘b’ set out above.

Consistent with PR09, Ofwat has allowed embedded debt costs incurred as a consequence of debt finance which companies have previously issued, but which is still outstanding as part of the package of assumptions used for deriving the allowed WACC for an efficient company with a notional capital structure. The applicable debt finance costs for such debt finance is a historical issuance cost. Ofwat has considered a range of evidence of both historical issuance costs for water company bonds and benchmark yields for investment grade corporate debt with a rating in the A/BBB range. Rather than taking water company bond issues directly, they have placed more weight on investment grade corporate debt benchmarks, but allow for typical water company out-performance in relation to these benchmarks. Using this approach, Ofwat ensures that debt timing risks are managed by companies, which may not be the case by relying only on industry-specific benchmarks to set efficient embedded debt benchmarks, as in “b” above.

Ofwat has regularly stated that it will use a single notional industry-wide cost of capital. This was supported by our report on the methodology for assessing the cost of capital for PR14<sup>17</sup>. A single notional industry-wide cost of capital encourages regulated water companies to finance their activities efficiently, whereas allowing companies to recover their own actual embedded debt costs risks blunting incentives for efficient financing. We apply the same principle when assessing the cost of financing for small WOCs. We conclude that as a group, small WOCs typically have higher debt finance costs, and set a single uplift to the relevant notional cost for the group. We do not generate company-specific uplifts based upon their actual debt finance costs.

We consider it important to preserve incentives for WaSCs and WOCs to finance themselves efficiently. This is because water companies are best placed to manage the timing of debt issuance and choice of debt finance market and instrument. Hence, we consider that Ofwat should use a benchmark for efficient financing, but should expect some water companies to outperform this benchmark and some companies to underperform this benchmark.

In past determinations, the CC has taken into account actual embedded debt costs. However, we consider that the CC has not suggested that use of an industry-wide notional cost of debt is inappropriate. The CC stated that:

*“We estimate the real cost of Bristol Water’s existing debt at 3.53 per cent (see Annex 3). If we add issuing costs for a company of Bristol Water’s size (which we estimate to be about 0.1 per cent) and allow for minimum cash balances of about £10 million (about 0.2 per cent), we arrive at 3.83 per cent, which is very close to Ofwat’s projected cost of existing debt of 3.8 per cent [based on 3.4% with a small company uplift of 0.4%]. In this case, therefore, the approach to existing fixed-rate debt makes little difference to the WACC.”<sup>18</sup>*

We recommend Ofwat continues with its approach of setting an industry-wide cost of capital, with the only adjustment being for small WOCs in relation to their debt finance costs. We recommend this adjustment reflect an assessment of the relevant debt costs for the WOC group, as a whole, rather being individually set for individual companies.

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<sup>17</sup> PwC (2013), “*Cost of capital for PR14: Methodological considerations*”

<sup>18</sup> Competition Commission (2010), ‘Bristol Water plc - A reference under section 12(3)(a) of the Water Industry Act 1991’

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## **2.2.2. Bank debt issuance costs**

### **Issue context**

There are arguments that transaction costs and fees associated with bank financing have not been fully accounted for.

### **Respondents' views**

Respondents stated that PwC's estimate of the cost of debt was incomplete. This is because it had not factored in transaction costs and fees associated with bank financing, which will be proportionally higher on a per-annum basis than transaction costs of longer-term bond financing.

### **PwC view**

Our First Report also concluded that the cost of bank financing was higher for WoCs than for WaSCs, when financed at the same time (although those WoCs which have bank financing are currently benefitting from low short-term interest rates).

We validated the 10 bps industry-wide issuance cost assumption by reviewing the issuance cost for Artesian debt issues, which constitute around 80% of WoC debt financing.

Our calculation of the average amortised issuance costs for Artesian issues – comprising the majority of WoC debt - was 6bps. The cost of issuance fees for bank debt is likely to be higher, largely because of the typical maturity of bank debt finance, which is shorter than most bond issuance. Interviewees from banks who provide debt finance to the water sector informed us that arrangement fees can be around 50 bps, or 10 bps amortised over 5 years. Commitment fees can add a similar amount, suggesting an overall annual 20 bps figure for overall debt issuance and maintenance costs.

Even with higher amortised debt issuance and maintenance costs for bank finance, the average issuance cost across all WoC financing still does not exceed 10bps. This is because bank finance represents a relatively small portion of WoC debt finance (c.9%). We therefore recommend Ofwat continue to use a 10 bps assumption for amortised debt issuance costs for WoCs.

## **2.2.3. Frequency of debt raising and timing risk**

### **Issue context**

On average, WoCs access bond markets less frequently than WaSCs. This is partly a function of their borrowing requirements and the minimum size required to access bond markets. This exposes them to a greater degree of timing risk relative to WaSCs who frequently issue bonds.

### **Respondents' views**

Respondents have raised concerns about having to fully bear timing risk in relation to embedded debt. They are concerned that setting the WACC without an allowance for actual embedded debt costs will jeopardise financeability. Additionally, WoC respondents think it is inappropriate to penalise them for the timing of debt issuance as they have no way of mitigating these timing risks. This is because smaller issuance sizes are not possible for WoCs as bonds need to meet minimum size thresholds to be viable, and short-term bank loans involve substantial costs associated with issuance and facilities. Respondents suggested that efficiently issued debt should be allowed for to some degree, regardless of timing.



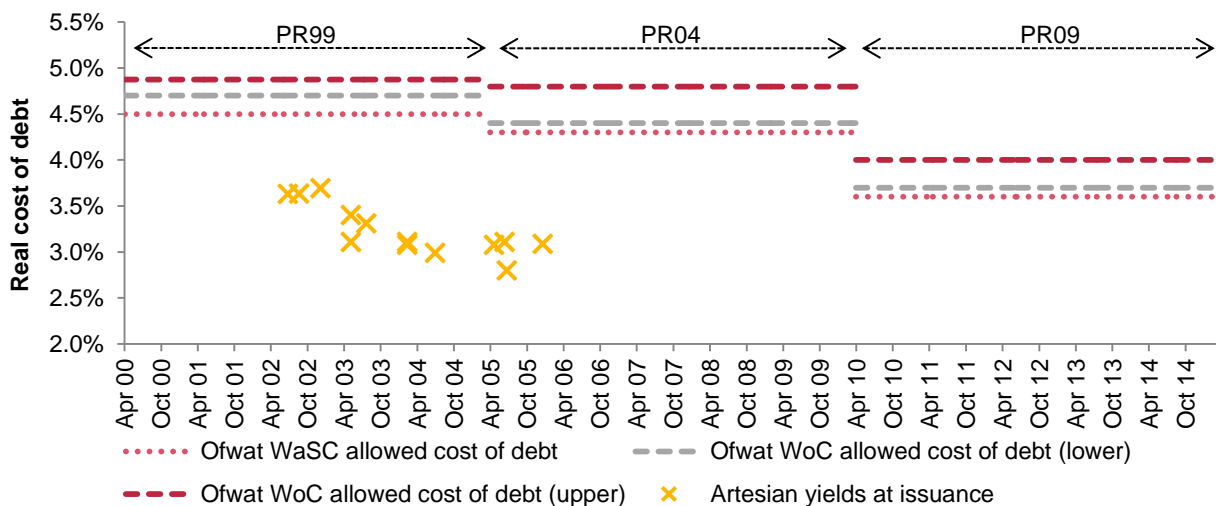
## PwC view

In our earlier report for Ofwat, we set out our views of the appropriate methodology for assessing the cost of capital for PR14. We suggested that water companies are best placed to manage the timing and frequency of debt financing, as opposed to passing this risk onto customers. This means that companies should be able to benefit from out-performance, or bear the risk of under-performance of debt finance costs in relation to debt issuance timing<sup>19</sup>. Different companies at different times have both benefitted and suffered from such an approach where they bear finance timing risk.

We note that Europe Economics in their analysis on behalf of Ofwat at PR09 stated that, “In PR09 Ofwat is facing the situation that some water companies have taken out significant volumes of debt in the period up to mid-2007 at low rates. If Ofwat were to take account of this embedded debt, in line with its approach at PR 99, this may reduce price limits below what they would otherwise be.” Had Ofwat taken account of actual embedded debt more directly in PR09, the WACC would have been lower. This means that companies have benefited from bearing finance timing risks in the past. This helps to show that timing risks can be both beneficial and detrimental to regulated water companies.

Figure 5 below demonstrates that previous determinations by Ofwat have allowed a real cost of debt significantly above the real cost of Artesian debt. Therefore, WoCs have previously benefitted from the timing of from this type of financing prior to PR14.

**Figure 5 Artesian effective interest cost and the allowed cost of debt**



Source: Ofwat final determinations, company submissions

We acknowledge WoCs access bond markets less frequently, although average debt maturity profiles for WaSCs and WoCs are broadly similar (see appendix B). This means that WoCs are exposed to more timing risk, but not debt maturity profile risk. Higher timing risk can be taken into account in two ways:

- We have assessed WoC debt finance costs across a range of finance types which they use, partly as a consequence of their smaller size and timing risks. This means we include bank finance in our assessment of debt finance costs.
- The use of outcome incentive calibration (and totex menu choices after Final Determinations) can narrow overall risk differences between WaSCs and WoCs.

<sup>19</sup> PwC (2013), “Cost of capital for PR14: Methodological considerations”

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## ***2.2.4. Efficiency of Artesian finance***

### **Issue context**

WoCs issued long term Artesian debt<sup>20</sup> from 2002 to 2005 and it remains a key source of their outstanding borrowings.

### **Respondents' views**

Respondents suggest that Artesian debt was issued to enable WoCs to increase their gearing towards Ofwat's guideline on "efficient company" gearing levels. Respondents have shared additional advisor reports which suggest that Artesian debt was efficiently priced compared to other debt benchmarks at the time of issue. Respondents believe that efficiently incurred debt costs should be recoverable.

### **PwC view**

We do not opine on the efficiency of individual company debt financing. Given an efficient debt finance cost benchmark using a range of industry-wide evidence, we expect that some historic water company issuance may be above this benchmark and some issuance may be below this benchmark. One reason why some water companies have higher embedded debt costs is due to the timing of their issuances, and much of the Artesian debt was issued over the period 2002 to 2005, when long-term interest rates were higher than they currently are.

We consider that water companies are best able to manage the timing of their debt issuance and hence should be able to benefit from any out-performance, or bear the risk of under-performance. Where a water company decides to finance a large proportion of its business at one point in time, then companies should recognize that this exposes them to both upside and downside finance risk, depending upon the evolution of debt finance costs.

## ***2.2.5. Benefits of long term debt***

### **Issue context**

Water companies typically use long-term debt finance for the majority of their debt finance needs. This enables them to finance long-term assets and limits liquidity/re-financing risk.

### **Respondents' views**

Dee Valley states that long-term debt is a benefit to customers, as it protects them from 'cliff-face' and 'cliff-edge' bill changes between regulatory periods. It also protects them from short-term financing decisions. Dee Valley suggests companies should be allowed to recover all efficiently incurred long-term debt finance from customer bills.

### **PwC view**

We use a long-term debt finance cost benchmark in assessing our efficient cost of debt. Companies are best able to manage the term, issuance timing, debt instruments and debt market and may therefore out-perform this benchmark. We consider it is in the long-term interests that companies are incentivised to raise debt finance efficiently and any move to allow the recovery of actual debt finance costs could reduce such incentives.

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<sup>20</sup> In 2002, the Royal Bank of Scotland (RBS) created the first Artesian Finance facility with the purpose of pooling the debt financing needs of small water companies and, in doing so, reducing the higher financing costs typically associated with small debt issuances. Between June 2002 and December 2005 six WoCs, and one WaSC, borrowed through the Artesian financing facilities.

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Furthermore, any ‘cliff-face’ or ‘cliff-edge’ bill profiles can be managed through the use of financeability levers introduced for PR14.

## **2.2.6. Comparators for bond analysis**

### **Issue context**

Our First Report used a range of comparators bonds to test whether WoCs face a higher debt finance cost compared to WaSCs.

### **Respondents’ views**

Frontier Economics, on behalf of South East Water, found that one of the comparator bonds used in PwC’s analysis of the cost of new debt for large WoCs was unsuitable. Frontier’s inspection of the bond showed that the ‘Thames Water 2030’ bond has a variable coupon rather than a fixed coupon. A call option also exists on the bond, and therefore it could not be compared with South East Water’s bond on a like-for-like basis. Removing this bond from the analysis would show that South East’s bonds do have a positive spread over other WaSC comparator bonds (i.e. a higher yield). Frontier calculates that South East’s bond has a spread of 28bps over an alternative set of WaSC comparators.

### **PwC view**

We confirm the bond issued by Thames Water Utilities Cayman Finance Limited has a variable coupon and call option, meaning it should not have been compared directly to the yields on the fixed coupon South East Water bond. Removing the Thames bond from the analysis would result in South East Water’s bond yield having a positive spread over that the Wessex Water and Severn Trent bond yields (the other WaSC comparators we used in our first report) – see figure 6 below for traded yields with the Thames Water bond removed.

However, evidence from another bond issued by Affinity Water (another large WoC) has very similar yields to WaSC comparators (see Figure 7 below for traded yields).

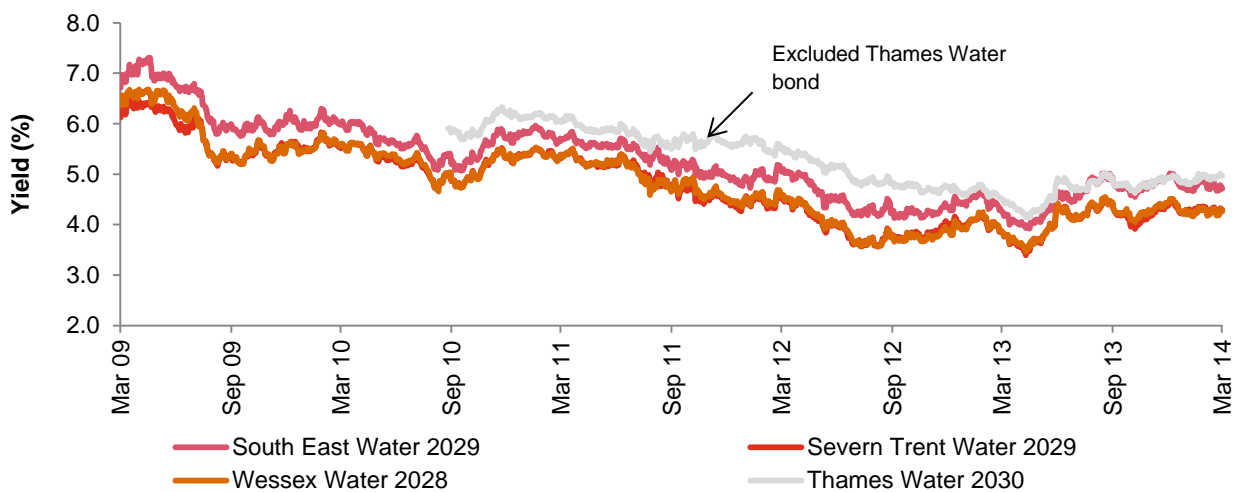
Furthermore, we estimate Affinity Water to have a cost of embedded debt of 2.1% and South East Water 3.1%.<sup>21</sup> This shows that Affinity Water’s embedded cost of debt was comfortably below Ofwat’s notional industry embedded debt benchmark of 2.65%, whereas South East Water was above. On average, the large WoCs are therefore close to the WaSC embedded debt benchmark.

Therefore, we retain the view that the large WoCs do not require an uplift to the cost of debt.

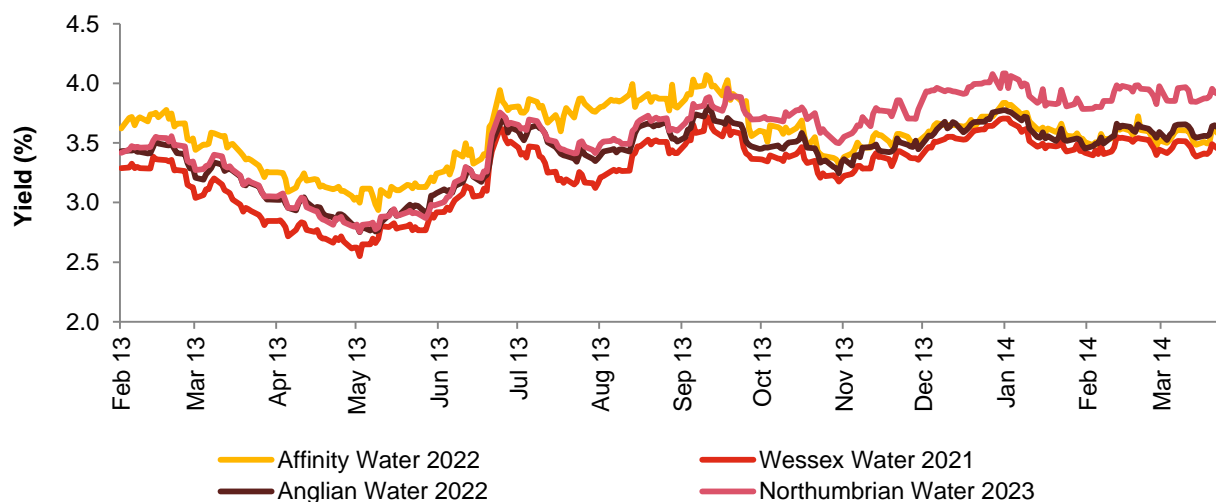
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<sup>21</sup> Based on A21 tables from March 2013 and applies a 2.8% inflation assumption. Real coupons on South East Water’s Artesian index-linked loans adjusted following July query – consistent with the figures used in our previous report.

**Figure 6 Yield on to maturity on South East Water 2029 bond and WaSC comparators**



**Figure 7 Yield on to maturity on Affinity Water 2022 bond and WaSC comparators**



Source: Capital IQ, Datastream

## ***2.2.7. Time period and scope of assessment for cost of debt***

### **Issue context**

The time frame used to assess the embedded cost of debt was too narrow.

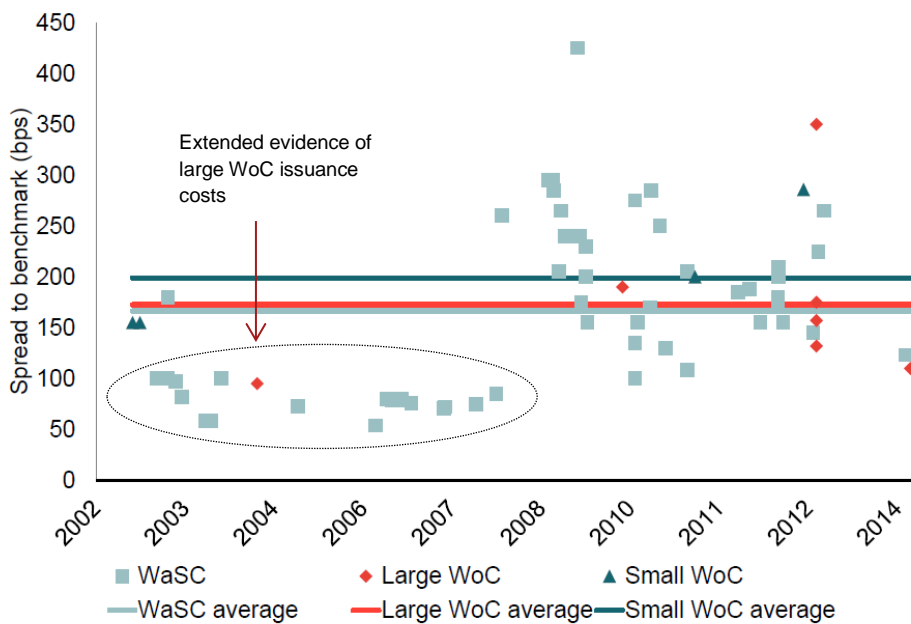
### **Respondents' views**

On behalf of South East Water, Frontier Economics stated that the period of embedded debt cost analysis for bond issuance was arbitrary, and had no particular justification. Therefore, they extend the analysis back to 2002 (previously 2008), in line with PwC's analysis of Artesian debt. Whereas PwC's analysis showed that large WoC bond issuances did not include a premium over those of WaSCs, Frontier's extended period shows a spread of 7bps above those of WaSCs (Figure 8 below shows Frontier's analysis of the extended time period). Frontier states that they still do not consider this as a robust statistical analysis, because of the small number of observations.

## PwC view

Our First Report acknowledged that bond issuances by WoCs have been limited and for this reason placed more emphasis on the analysis of Artesian debt (which accounts for 80% of WoC debt financing). The extension of the time period, from 2008 back to 2002 by Frontier, allows the addition of one extra data point for a large WoC bond issue in 2003 (see Figure 8 below). An inspection of this additional data point shows that large WoC bond financing costs are within the range of WaSC bond financing costs. Consequently there is insufficient evidence to show that the large WoCs incur higher debt finance costs. This analysis does provide evidence of high debt financing costs for small WoCs.

**Figure 8 Frontier Economics extended debt cost analysis**



Source: Frontier Economics

## 2.2.8. Costs of carry

### Issue context

PwC's analysis does not account for the costs of carry faced by small water companies.

### Respondents' views

Costs of carry are incurred when a water company needs to raise more debt finance than it immediately needs, so that the issuance is of sufficient size. These costs may be more pronounced for smaller WoCs because their financing needs are not as large. This results in a temporary loss of the difference between the borrowing rate and the cash deposit rate until the cash resources are deployed in the business. Frontier Economics on behalf of South East water calculate a cost of carry premium for a WaSC of 0.2%. They then also make further additions to this amount for additional transaction costs and costs of carry for a large WoC compared to a WaSC.

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## PwC view

The water company with a notional financing structure is assumed to have efficient treasury management. We recognize that companies need to maintain a prudent level of cash balances and may be required to hold cash balances for other requirements such as borrowing covenants. This means that a proportion of borrowings are not invested in regulated assets and instead earn only the return offered by banks on short term cash deposits. Alternatively, companies may arrange debt facilities which provide access to short-term funding, but such debt facilities also incur costs.

The Competition Commission accepted that these costs add to the cost of the business and allowed an uplift to the cost of capital in its review of the PR09 determination for Bristol Water.<sup>22</sup>

The impact of this additional cost on the overall cost of debt depends upon both the relative size of cash balances and the magnitude of the differential between deposit rates and borrowing rates. WoCs on average have cash balances close to 5% of total debt (based on 2014 regulatory accounts). The average cash balances across the WaSC group are very similar – 5% on average for 2014 - suggesting the impact of carry costs is comparable for WaSCs and WoCs.

We assess the broad impact of carry costs using the following assumptions. Current nominal yields on short-term deposits are low, and assumed to be equal to 6 month Libor. We assume a nominal cost of debt of 5.5%<sup>23</sup>. We calculate the ‘cost of carry’ as the difference between the short-term deposit rate and the nominal cost of debt; this is currently 4.8%. Applying this cost of carry to the proportion of debt that is cash balances, we estimate that this cost is an equivalent to an uplift of around 14bps on the WACC for a typical WoC.

However, current low nominal short-term interest rates have other, offsetting financing cost benefits which are not separately adjusted for in Ofwat’s estimate of WACC. Water companies typically have exposure to some floating rate debt and/or short-term debt - WoCs on average have approximately 5% floating debt - and therefore benefit from a lower cost of debt than that assessed by reference to long-term borrowing costs.

Allowing for a margin on floating rate debt of approximately 1.1% above LIBOR<sup>24</sup>, we calculate that the current cost of floating debt is approximately 3.70% below the assumed nominal cost of debt. Applying this discount to the portion of debt which is floating lowers the overall WACC by approximately 12bps.

Figure 9 below shows the relationship between these two offsetting impacts. In this analysis, we fix the long-term real cost of debt and inflation assumptions, but vary the short-term nominal interest rate. We also hold constant the proportion of cash balances and the proportion of floating debt.

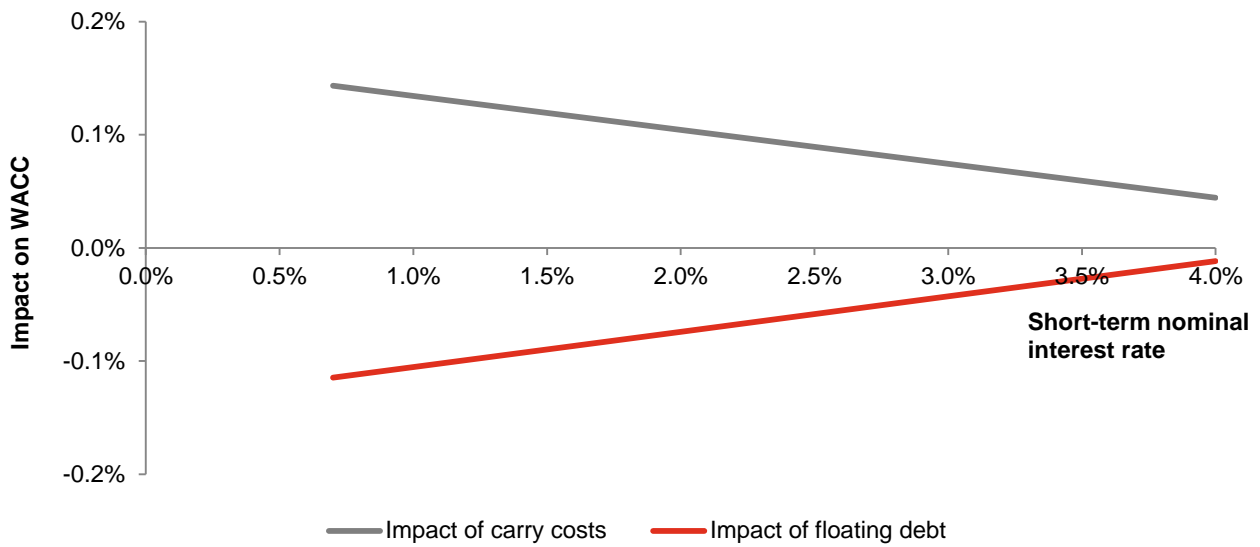
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<sup>22</sup> Competition Commission (2010) *Bristol Water plc - A reference under section 12(3)(a) of the Water Industry Act 1991*, Appendix N, para. 48.

<sup>23</sup> This is the implied nominal cost of debt allowed in PR14 assuming Ofwat sets a real cost of debt of approximately 2.6% and applies an inflation assumption of 2.8%.

<sup>24</sup> Based on interview evidence with banks.

**Figure 9 Comparative impact on WACC of carry cost and floating debt assumptions**



Source: PwC analysis

This analysis shows how these two factors have offsetting impacts on the overall cost of capital as short term nominal rates vary. On this basis, we consider that an uplift to the cost of capital to compensate for the cost of carry is not required as there are offsetting factors, which are not separately incorporated into Ofwat's WACC framework.

This analysis also shows the benefit of using a simple long-term debt financing cost for regulatory purposes, by avoiding the need to replicate or opine on the efficiency of short-term treasury management approaches, which, in our opinion, should be left to water company management.

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## ***3. Conclusion***

Overall, we find there are no substantive reasons to change the conclusions set out in our First Report. As a result, our recommendation to Ofwat remains unchanged. We continue to recommend that Ofwat applies 25bps uplift to the cost of debt for small WoCs, and maintain that no WoCs should receive an uplift to the cost of equity.



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# Appendix A. - Dimson beta

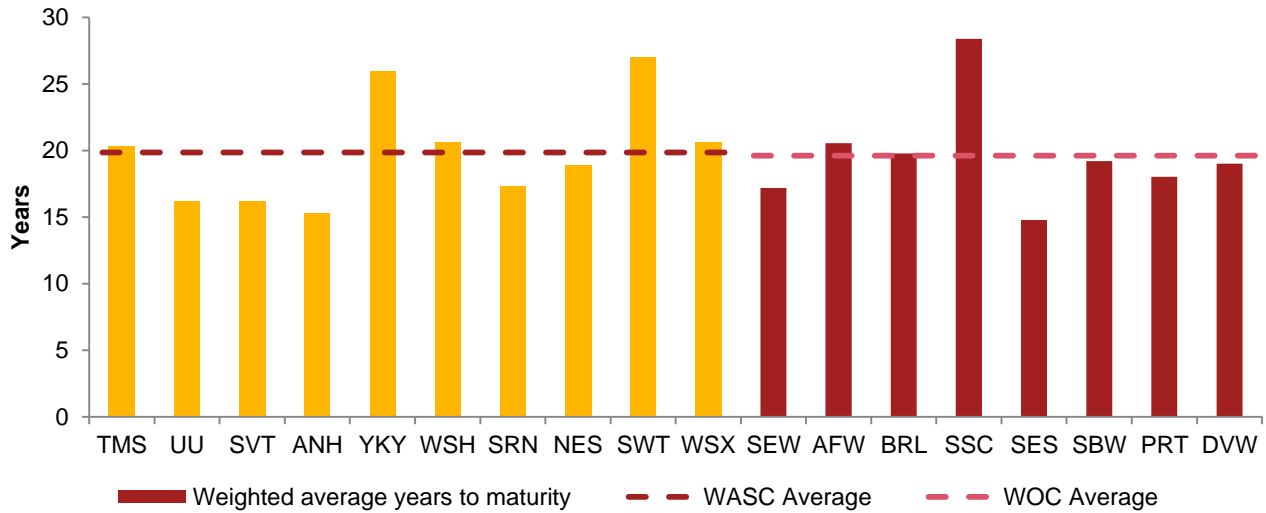
## Notes on the Dimson Beta analysis

- The beta is calculated using 5-years of monthly returns.
- The Dimson beta calculation uses a single lag and no leads. This is the recommended approach for Dimson betas as additional lags result in an estimate that is less statistically robust.
- To be consistent with the calculation of the other equity betas in the Figure 12 of our First Report, the raw Dimson beta was Blume adjusted.
- The sharp increase in beta in 2007 is due to a change in the correlation of returns between the FTSE All Share and Dee Valley's share prices – in mid-2002 steep rises in Dee Valley's share price associated with their restructuring announcements had a large negative correlation with the significant downward movements in the FTSE All share – the beta coefficient rose as these data points left the beta estimation sample.
- In terms of the liquidity of Dee Valley's shares, the monthly trading volumes are relatively low but there is at least some trading in most months. In contrast, the daily data indicates that there are periods of multiple days without trading or price changes. This supports the use of the monthly Dimson beta, as the daily data is probably too static and would therefore require multiple lags in the beta calculation.

# Appendix B. - Debt maturity profiles

The debt maturity profile for WoCs and WaSCs is currently very similar as shown in the figure below.

**Figure 10 Weighted average years to maturity on outstanding debt**



Source: Company submissions



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