December 2014

Setting price controls for 2015-20

Final price control determination notice: annex 3 – benefits assessment of an uplift on the cost of capital

OFWAT

Contents

Overview

This document sets out our assessment as to whether companies should be allowed to recover a company-specific adjustment ('uplift') on their allowed cost of capital and our response to the representations to our draft determinations. We conclude that Portsmouth Water and Sembcorp Bournemouth Water provide sufficient benefits to customers to allow these companies to recover their higher cost of capital from their customers.

In 'Setting price controls for 2015-20 – risk and reward guidance' (our 'risk and reward guidance'), we set out the following criteria for a company-specific uplift to the weighted-average cost of capital (WACC).

> "**To justify a company-specific uplift in the WACC, companies will need to demonstrate both that they face a higher cost to raising finance and that there is an offsetting benefit to customers.**"[1]

An uplift to the WACC increases customer bills. Companies should only be able to pass this cost on to their customers if they can demonstrate that they face a higher cost of financing (test 1) and that they are able to show that they benefit customers (test 2) – for example, through greater efficiencies or service quality. Therefore, companies need to pass both tests in order to receive an uplift.

Seven water only companies (WoCs) put forward a case for a company-specific uplift to the WACC in their updated business plans[2]. In our draft determinations, we allowed an uplift for two of these companies – Portsmouth Water and Sembcorp Bournemouth Water – and rejected it for the remaining five.

The companies made a variety of representations on the incremental financing costs (discussed in the PwC annex) and benefits test, which we discuss in this document. In light of these representations, we have revised our methodology to quantify the

[1] Ofwat (2014), 'Setting price controls for 2015-20 – risk and reward guidance'.

[2] The only WoC that did not propose a company-specific uplift was Affinity Water, which withdrew its proposal in its risk and reward submission for pre-qualification as enhanced company.

benefits of WoCs as service comparators. Taking account of the representations, we still consider that Portsmouth Water and Sembcorp Bournemouth Water are the only companies to provide sufficient customer benefits to allow them to recover their higher cost of capital from their customers.

Test 1: Higher cost of finance

Based on the advice we received from our advisor, PwC, we consider that the six small WoCs have a notional cost of debt of 0.25% above that allowed in our wholesale cost of debt. PwC considered that South East Water, the remaining large WoC of the seven WoCs, does not face an additional cost of debt. PwC advised that none of the WoCs face a higher cost of equity. We have adopted this advice.

In preparing our draft determinations, our advisor, PwC, gave us an assessment of whether these seven companies have higher notional financing costs – that is, financing costs for notionally structured company. PwC did not consider that there was sufficient evidence that South East Water, as a large WoC, had higher notional financing costs. It considered that there is evidence that the small WoCs (Bristol Water, Dee Valley Water, Portsmouth Water, Sembcorp Bournemouth Water, Sutton & East Surrey Water, and South Staffordshire Water) incurred a higher notional cost of debt of 25 basis points (or 0.25%), but not that WoCs incurred a higher cost of equity. Taking into account PwC's advice we considered that the small WoCs had a higher cost of debt of 25 basis points but not a higher cost of equity. We did not consider that South East Water had higher notional financing costs.

Companies provided representations on the PwC analysis. Bristol Water and Dee Valley Water stated that they should be provided an uplift to the cost of debt greater than 25 basis points and a higher cost of equity. Sutton and East Surrey, South East Water, and South Staffordshire sought a debt uplift of 25 basis points. Portsmouth and Sembcorp Bournemouth did not make any representations on incremental financing costs. The Consumer Council for Water (CCWater) supported our approach.

PwC reviewed its analysis to take account of these representations, and considered that its key conclusions do not change, in that the six small WoCs were subject to a higher notional cost of debt of 25 basis points and South East Water did not face an additional cost of debt. PwC considered that none of the WoCs faced higher equity costs. PwC stated that this conclusion held irrespective of the level of wholesale industry cost of capital. Taking into account PwC's conclusions, and for the reasons set out in its report, we consider that the six small WoCs pass Test 1 as they incur incremental financing costs equivalent to a 25 basis points on the cost of debt or 15 basis points (or 0.15%) uplift to the wholesale cost of capital.[3]

Test 2: Offsetting benefits to customers

We have applied the benefits test by considering evidence of benefits to customers in a wide range of areas. We consider that such benefits exist only where there is the possibility of a merger. Mergers have a potential impact on customers because of our wholesale cost assessment methodology, SIM, and some of our ODIs. We conclude that there is sufficient evidence of a net benefit to customers for Sembcorp Bournemouth Water and Portsmouth Water.

Our draft determinations

For our draft determinations in August 2014, we considered the impact (costs and benefits) on customers as a result of the absence of an uplift leading to mergers and loss of one or more WoCs and consequently:

- Higher prices to customers arising from less efficient water companies, due to:
  - a loss of wholesale cost comparators and so reduced wholesale cost challenge;
  - reduced precision of our wholesale cost models; and
  - an adverse impact on our retail cost assessment methodology.

- Lower quality of service, due to:
  - a direct impact on service quality and innovation by WoCs;
  - an impact on the retail service incentive mechanism (SIM); and
  - an impact on outcome delivery incentives (ODIs).

[3] This has been calculated as the incremental debt cost of 25 basis points multiplied by the notional level of gearing of 62.5%, which gives a pre-tax weighted average cost of capital (vanilla) increase of 15.625 basis points. We have rounded this to 15 basis points for simplicity.

Benefits and costs are assessed over a 30-year period from 2015-45, consistent with the period of our impact assessment for our methodology for the 2014 price review (PR14) and the Competition Commission's[4] previous merger assessments.[5]

We concluded that there was insufficient evidence of an impact as a result of a merger in any area except the wholesale cost benchmarks, where a merger might result in a tougher or weaker efficiency challenge, to the benefit or disbenefit of customers, respectively.

In estimating the benefits for customers from WoCs as efficient comparators, we take into account that companies will experience reduced returns on equity in the absence of an uplift. Companies may seek to mitigate this, among other things, by merging. Since we rely on cross-company benchmarking in a number of areas, it is necessary to estimate whether, and to what extent, a decision not to allow an uplift will result in the loss of WoCs as comparators due to mergers with other water companies.

There are many other factors influencing merger activity, such as opportunities to reduce costs and/or improve services by merging access to finance to undertake mergers and the cost of the merger process. Given the small scale of the impact on returns from the absence of an uplift and the significance of other factors, we consider the incremental change in the probability of a merger from small companies bearing higher financing costs is likely to be marginal. We estimated that the absence of an uplift would increase the probability of a merger by about one sixth to one third.

Since the offsetting benefits identified for Portsmouth Water and Sembcorp Bournemouth Water exceeded the cost to customers of the 15 basis point uplift identified under test 1, we allowed that uplift for those two companies equal to the incremental financing cost. For the other companies the benefits to customers did not exceed the cost of finance, and we considered that an uplift would not be appropriate given our statutory duties.

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[4] Now the Competition and Markets Authority (CMA).
[5] Particularly Competition Commission (May 2007), South East Water Limited and Mid Kent Water Limited merger final report and Competition Commission (May 2012), South Staffordshire plc/Cambridge Water plc merger final report.

Table A7A.1 Our draft determinations

Impact (£m, 30 year NPV)	BRL	DVW	PRT	SBW	SES	SSC
Comparator benefits	-£3m to -£6m	-£2m to -£5m	£3m to £6m	£4m to £7m	-£2m to -£4m	£0.5m to £1m
Increased financing cost	-£12m	-£3m	-£3m	-£4m	-£6m	-£9m
Net benefits	-£15m to -£18m	-£5m to -£8m	£0m to £3m	£0m to £3m	-£8m to -£10m	-£9m to -£8m

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

Issues raised by representations

Following our draft determinations, the companies that did not receive an uplift – Bristol Water, Dee Valley Water, South East Water, South Staffordshire Water, and Sutton & East Surrey Water – submitted new evidence in a variety of areas.

In their responses to our draft determinations, companies challenged the legal validity of the benefits test, saying that it was in inconsistent with our statutory duties – in particular, our financeability duty under section 2(2A)(c) of the Water Industry Act 1991 (WIA91).

Other key representations included evidence to:

- support arguments that we had underestimated the probability of a merger;
- support arguments that there was a possible impact on customers because of a loss of precision of the wholesale cost models; and
- to demonstrate the potential impact on customers of loss of benchmarks associated with the SIM and the wholesale service ODIs.

In addition, Portsmouth Water and Sembcorp Bournemouth Water provided evidence on their customers' willingness to pay an uplift, as requested in our draft determinations.

Our final position

Following consideration of companies' representations, we carried out further analysis on the benefits of WoCs as SIM and ODI comparators and quantified the likely benefits to customers. We conclude that, after taking account of these factors, only Portsmouth Water and Sembcorp Bournemouth Water provide sufficient benefits to customers to allow these companies to recover their higher cost of capital from their customers.

Our final position on each issue that the companies raised is set out in table A7A.2.

Table A7A.2 Our final position on the issues raised by companies

Issue	Our conclusions
Validity of the benefits test	We consider that our benefits test is an appropriate exercise of our duties under section 2 of the Water Industry Act 1991, in particular in light of the coming changes in the merger regime in the Water Act 2014. (See section A7A.1.3.) We consider that the test is consistent with our financing duty as our determinations are sufficient to make sure that all companies are financeable on the basis of an efficient, notionally structured company. We also consider that the test is consistent with our consumer objective duty as it only allows incremental financing costs to be passed on to customers where it is in their interests to do so.
Probability of a merger	We consider that we have correctly assessed the incremental probability of a merger. (See section A7A.1.3.) Our focus is on the increase in the probability of a merger arising from not allowing a company-specific uplift. We note that companies may merge regardless of our policy on a company-specific uplift. We also note that there are ways other than mergers through which investors might seek to offset higher financing costs. The absence of a company-specific uplift reduces returns to equity holders by about 40 basis points, compared to an expected variation in returns around 300 to 400 basis points under a range of scenarios. We accept there is some uncertainty around this parameter, but continue to consider that a range between one sixth and one third is our best estimate of incremental probability of merger.

Issue	Our conclusions
Impact of the merger of two companies on our wholesale cost benchmark	We have modified the way we combine the results based on historic and forecast efficiency in line with companies' responses by taking the average of the benefits based on historic efficiency rankings and the benefits based on forecast efficiency rankings, rather than combining the rankings at an earlier stage and calculating the benefits based on the combined result. Otherwise, we consider that our assumptions for our draft determination proposals were appropriate, and we have updated our estimates based on our final position on companies' wholesale costs. (See section A7A.2.3.)
Impact on the precision of our wholesale cost models	We conclude that, while our wholesale costs models become less precise if a company is removed from the sample, the models continue to be fit for purpose to enable an upper quartile efficiency challenge; that is, there would be no need to set a less stringent efficiency challenge to compensate for any lack of precision in our models. For this reason, we consider that there is no material impact on customers associated with a loss of precision. (See section A7A.2.3.)
Impact on the SIM	We note that some small companies offer high levels of customer service and score highly in the SIM. But we consider that we can draw on comparators from other sectors to assess retail service quality and therefore water companies have relatively less value as comparators. However, taking account of representations, we have quantified potential benefits of WoCs as SIM comparators. We concluded that Bristol Water, Sembcorp Bournemouth Water, South Staffordshire Water, and Sutton & East Surrey Water have benefits to customers as SIM comparators.(See section A7A.2.3.) However, such benefits are not large enough to change our provisional conclusions in the draft determination.

Issue	Our conclusions
Impact on ODIs	We conclude that it was not possible to make a robust quantitative estimate of the likely impact on customers associated with the loss of a comparator for each of the ‘horizontal’ ODIs on which we consulted in our August draft determinations, due to the significant uncertainty about use of comparators for ODIs and the absence of sufficient track record associated with the impact of ODIs. However, we have taken account of ODI performance of WoCs as part of our qualitative assessment. (See section A7A.4.2.) We have therefore taken account of the potential comparator benefits from ODIs in the round. However such benefits are not large enough to change our conclusions in the draft determinations.

We consider that the additional engagement with customers that Portsmouth Water and Sembcorp Bournemouth Water carried out provides sufficient evidence to establish that their customers are willing to pay the cost of the uplift. In particular as customers accepted the additional costs of the uplift and that benefits were the result of the company’s performance as an efficient benchmark.

Based on the additional evidence provided, and the further analysis we carried out since we published our draft determinations, we now consider that the net benefits to customers associated with a company-specific uplift to the WACC are as follows. The range of net benefits reflects the merger probability range of one sixth to one third.

Table A7A.3 Assessment of the net benefits

Impact (£m, 30-yr NPV)		BRL	DVW	PRT	SBW	SES	SSC
Wholesale Costs		-£19m to -£10m	-£11m to -£6m	£7m to £15m	£4m to £8m	-£7m to -£4m	-£4m to -£2m
SIM		£1m to £3m	-£2m to -£1m	-£0m to -£0m	£2m to £4m	£1m to £1m	£2m to £4m
ODIs	WQC	✗	✗	✓	✓	✓	✗
	MZC	✓	✗	✗	✓	✓	✗

Impact (£m, 30-yr NPV)		BRL	DVW	PRT	SBW	SES	SSC
	WSI	×	✓	✓	✓	×	×
Comparator benefits		-£18m to -£7m	-£13m to -£7m	£7m to £15m	£6m to £12m	-£6m to -£3m	£0m to £0m
Increased financing cost		-£13m	-£2m	-£4m	-£4m	-£6m	-£9m
Net benefits		**-£29m to -£21m**	**-£16m to -£9m**	**£4m to £11m**	**£2m to £8m**	**-£12m to -£9m**	**-£9m to -£9m**

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

Note:

Incremental financing costs have been calculated by examining the impact of a change in the WACC from 3.60% to 3.75% on allowed revenues in the financial model.

UQ stands for "upper quartile", and NUQ stands for "not upper quartile".
WQC stands for negative water quality contacts, MZC stands for mean zonal compliance, and WSI stands for water supply interruptions.
A tick mark indicates upper quartile performance, a cross mark indicates non-upper quartile performance.

We conclude that a company-specific uplift for Portsmouth Water and Sembcorp Bournemouth Water is justified, as these companies incur a higher notional cost of capital and there is evidence it is beneficial to customers for these companies to recover these costs. The evidence shows that there is not a benefit for Bristol Water, Dee Valley Water, South Staffordshire Water, or Sutton & East Surrey Water, and so it would not be appropriate to provide an uplift for these companies.

The remainder of this document sets out our approach to estimating the benefits associated with allowing an uplift. This is separated into:

- our overall approach to the benefits test;
- benefits related to wholesale cost assessment;
- benefits related to the retail service; and
- other benefits.

A7A.1 The test

This section sets out our overall approach to the benefits test and representations on the test itself. We have grouped consideration of representations into three areas.

- The validity of the benefits test approach to the benefits test and representations on the test itself. We have grouol and previous regulatory decisions.
- The assumed probability of a merger.
- The scope of the benefits test to cover other benefits which do not directly flow from using a company as a comparator.

A7A.1.1 Our draft determinations

A7A.1.1.1 The validity of the benefits test

Our price review methodology has changed significantly since the last price control, and so will the mergers regime once the relevant sections of the Water Act 2014 are commenced. In our draft determinations, we took this into account by making the company-specific uplift contingent on a benefits test, which asks whether the proposed uplift has an offsetting benefit to customers. We considered that the benefits test is necessary in order to strike an appropriate balance between our duty to making sure efficient companies are financeable – which is further secured through our separate financeability test – and our other statutory duties in particular our consumer objective. Based on these two statutory duties we considered that we would be prepared to provide an uplift to cover higher financing costs for small water companies, but only if a customer benefit could be demonstrated.

A7A.1.1.2 Our methodology

Previous merger analysis in the water sector recognised the importance of comparators to the assessment of efficiency in the water sector.[6] As the Competition Commission noted, in the absence of market competition, cross industry comparators have been of central importance in economic regulation of the water sector. The Water Act 2014 opens the retail market for non-household customers to competition from 2017 and competition in upstream markets in 2019. Changes to our PR14 methodology have allowed us to make greater use of non-water industry comparators. However, we consider that it is likely that water sector comparative efficiency assessment will remain an important element of economic regulation of the wholesale water and wastewater businesses in the foreseeable future. We have, therefore, taken account of the potential impact on customers from the loss of efficient wholesale comparators.

In estimating the benefits for customers from WoCs as efficient comparators, we have taken into account that companies will experience reduced returns on equity in the absence of an uplift. Companies may seek to mitigate this by merging. Since we rely on cross-company benchmarking in a number of areas, it is necessary to estimate whether, and to what extent, a decision not to allow an uplift will result in the loss of WoCs as comparators due to mergers with other water companies. [7]

We estimated that the impact on a typical WoC of having to bear an additional 25 basis points on the cost of debt without an increase in the allowed cost of capital is about -0.3 percentage points of the return of regulatory equity (RoRE). We considered evidence of the impact on key financeability ratios and concluded that while this could put financial pressure on some companies, it was unlikely to result in notional debt falling below investment grade or prevent efficient access to finance. We estimated that, absent an uplift, a typical small WoC had an incremental probability of one sixth to one third of merging during the 2015-20 price control period.

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[6] Particularly Competition Commission (May 2007), South East Water Limited and Mid Kent Water Limited merger final report and Competition Commission (May 2012), South Staffordshire plc/Cambridge Water plc merger final report.

[7] Note that in this annex we use the word ‘merge’ or ‘merger’ to include the situation where one water company is acquired by another.

A7A.1.2 Issues raised by representations

A7A.1.2.1 The validity of the benefits test

Bristol Water, Dee Valley Water, South Staffordshire Water, and Sutton & East Surrey Water stated that the benefits test for a company-specific uplift was inappropriate. CCWater supported the use of the benefits test.

Table A7A.4 summarises the key issues raised by companies on the validity of the benefits test.

Table A7A.4 Company representations on the validity of the benefits test

Issue	Representation	Companies
Financeability duty	The benefits test is inconsistent with Ofwat's statutory duty to secure that companies are able to finance the proper carrying out of their functions as it does not allow companies to secure a reasonable return on their capital.	Bristol Water, Dee Valley Water, South Staffordshire Water, and Sutton & East Surrey Water.
Balancing of duties	The benefits test places disproportionate weight on the customer objective relative to the financeability duty.	Bristol Water, Dee Valley Water, and Sutton & East Surrey Water.
Previous regulatory decisions	The benefits test is inconsistent with Ofwat and Competition Commission precedents.	Bristol Water, Dee Valley Water, South Staffordshire Water, and Sutton & East Surrey Water.
Inconsistency with the rest of the price review	The benefits test is inconsistent with Ofwat's approach in other elements of the price review, where company-specific factors are taken into account to a greater or lesser extent.	Dee Valley Water and Sutton & East Surrey Water.
Managing structural change	Ofwat is using the company-specific uplift as a tool to manage structural change in the sector, which is inconsistent with best regulatory practice.	Bristol Water.

Issue	Representation	Companies
Efficiency	It is inappropriate for Ofwat not to allow an uplift as we have not identified inefficiency on the part of the companies.	Bristol Water, Dee Valley Water, South Staffordshire Water, and Sutton & East Surrey Water.
State Aid	Not allowing an uplift for some companies even though these companies have higher financing costs constitutes unlawful State Aid.	Bristol Water.

A7A.1.2.2 Impact on financeability

We have undertaken further analysis of impact on key financeability ratios. Based on a typical WoC of having to bear an additional 25 basis points on the cost of debt without an increase in the allowed cost of capital. We estimate that the Adjusted Interest Cover Ratio would reduce by about 0.1 times (compared to values of for WoCs at final determination of 1.2 to 2.2) and ratio of Funds From Operations/debt by around 0.5 percentage points (on a notional capital structure basis) (compared to values for WoCs at final determination of between 8% to 12%). These values are slightly lower than estimates at our draft determination. We consider that companies are able to manage impacts of this order within their business plans and have been able to take into account in their response to our draft determination.

A7A.1.2.3 The assumed probability of a merger

Dee Valley Water, South East Water, South Staffordshire Water, and Sutton & East Surrey Water submitted reports by Frontier Economics which stated that our assumption about the probability of a merger was unrealistic and, in any event, inappropriate.

Frontier Economics calculated that, in the absence of the proposed uplift on the WACC, shareholders would receive an expected return nearly 10% below the PR14 allowed return on equity. In these circumstances, Frontier Economics considered that the probability of a merger was significantly higher than we assumed.

Frontier Economics stated that we should assume that a merger is a certainty in the absence of an uplift as a matter of principle as companies would do what they could to eliminate their higher cost of capital (that is, as companies would merge if this allowed them to reduce their cost of capital).

A7A.1.2.4 Scope of the benefits assessment

Bristol Water stated that we should also "take into account customer benefits specific to each individual company and its individual circumstances."[8] It gave a number of examples of how, as a local water only company, it had always engaged closely with the communities it served. For example, it:

- noted that it is had always engaged closely with the communiti's success as EU Green Capital 2015d
- noted that, in partnership with the University of the West of England (UWE), it has vidual cia major water use research programme at the UWE student village, providing a test-bed for water efficiency ideas in a large population";
- noted its , in partnership with the University of the West of Eng
- explained that it had provided the University of tpport that has enabled non-domestic customers to save a total of over 1.4 billion litres of water enSutton & East Surrey stated that the benefits test was too narrow in its scope, particularly because, in our draft determinations, we did not consider that evidence of customer support for an uplift was sufficient to establish offsetting benefits.

A7A.1.3 Our final position

A7A.1.3.1 The validity of the benefits test

Our final position on the issues that the companies identified is set out in table A7A.4. For the reasons stated in the table, we consider that our benefits test an appropriate exercise of our duties under section 2 of the WIA91, in particular in light of the coming changes in the merger regime.

[8] Bristol Water's Representation on the PR14 Draft Determination – Appendices, p.205. Bristol Water re-submitted the report by Oxera dated 7 March 2014, which it had already submitted as part of its June submissions, but it did not commission any new analysis on benefits.

Table A7A.5 Our final position on the validity of the benefits test

Issue	Response to representations
Financeability duty	We note that all companies are financeable on the basis of an efficient, notionally structured company, as verified separately in our financeability assessment. We consider that this is sufficient to comply with our statutory duties including, but not limited to, our financeability duty under section 2(2A)(c) of the WIA91. We interpret our duty as securing that an efficient company can finance its functions. We consider that we have allowed for the efficient cost of debt and for an efficient company to earn a reasonable return on their capital.
Balancing of duties	We consider that the law requires us to strike a reasonable balance between our statutory duties, and that there is nothing in the relevant statutory framework that establishes a hierarchy between our duties. We consider that our benefits test, as part of our price review methodology, strikes a reasonable balance between our duties. We consider that the test is consistent with our financing duty as our determinations are sufficient to make sure that all companies are financeable on the basis of an efficient, notionally structured company. We also consider that the test is consistent with our consumer objective duty as it only allows incremental financing costs to be passed on to customers where it is in their interests to do so.
Previous regulatory decisions	The new merger regime will come into force during the 2015-20 period covered by our final determinations. Previous price review determinations, and the decisions of the Competition Commission in previous price determinations, were based on a different statutory framework – particularly a different merger regime – and a different price review methodology. We consider that the benefits test is an appropriate adaptation to a changing regulatory environment, in the best interest of customers.

Issue	Response to representations
Inconsistency with the rest of the price review	We consider that the application of a cost benefit framework to whether a company specific uplift is provided is consistent with the approach we have taken to the PR14 review, for example in terms of customer driven outcomes and efficiency challenge. In different elements of the price review, we take into account company-specific factors to the extent appropriate, while ensuring that companies have incentives to improve efficiency. (See, in that regard, section 2(3)(a) of the Water Industry Act 1991.) Our approach to the company-specific uplift is therefore consistent with our approach in the rest of the price review by providing a clear framework for WoCs to make case for company specific uplift where it is beneficial to customers.
Managing structural change	Our conclusions on the company-specific uplift should not be interpreted as pre-judging our view on the desirability of or likelihood of or our views on any future proposed merger. We are only determining whether or not customers should pay higher bills to recover any higher cost of financing.
Efficiency	We consider that all six small WoCs are inefficient in some aspects in that, as far as their financing costs are concerned, they are inefficiently small. Within the limits defined by the WIA91 merger regime, as amended in the Water Act 2014, it is open to them to mitigate this inefficiency by merging or finding some other means of addressing this scale inefficiency such as by pooling finance.
State Aid	We consider that no state aid exists in respect of this uplift. No state resources are involved, and for state aid to exist it must be granted by the state or through state resources.

A7A.1.3.2 The assumed probability of a merger

In the past 20 years, while we did not make the company-specific WACC uplift conditional on a benefits test, there have been a number of mergers in the water industry, as well as proposed mergers that were prohibited by the Competition Commission.

Table A7A.6 Mergers since 1995

Year	Companies
1995	East Surrey Water/Sutton & District Water (not referred)
1995	Lyonnaise des Eaux/Northumbrian Water
1996	Severn Trent/South West Water (prohibited)
1996	Wessex/South West Water (prohibited)
1996	Chester Water/Wrexham Water (not referred)
1997	General Utilities/Mid Kent Water (prohibited)
1997	Anglian/Hartlepool Water (not referred)
1999	South East Water/Mid Southern Water (not referred)
1999	Yorkshire Water/York Waterworks (not referred)
2000	Three Valleys/North Surrey Water (not referred)
2002	Vivendi/Southern Water (prohibited)
2007	Mid Kent/South East Water
2012	South Staffordshire/Cambridge Water

We note that prohibited mergers tend to be between WaSCs, while the Competition Commission has tended to look more favourably on mergers between a WaSC and a WoC[9].

Based on this experience, we might expect at least one merger during the PR14 price control period regardless of our decision on the company-specific uplift and wider changes. Taking account of the changes to the merger regime, it could be argued that there is enhanced likelihood of mergers. For the benefits test we need to consider the increase in the likelihood of a merger in the absence of an uplift for a given company. Therefore, it would be inappropriate to assume that all six small WoCs would merge absent an uplift as this would seem to overstate the change in the probability of a merger (because at least one merger might be expected to occur in the absence of an uplift).

Based on a small WoC incremental cost of debt of 0.25%, in the absence of an uplift, the pre-tax return on equity would be lower by 0.42 basis points, or around 8% (see table A7A.7). While this would reduce shareholder returns, it needs to be considered alongside other variations in returns, as set out in 'Policy chapter A6 – risk and reward'. We find that the RoRE range varies from below 1% to around 10%, which suggests that 0.4% reduction in returns is well inside normal variation of equity returns for water companies both between companies and over time. We also note that total appointee returns for WoCs benefit from additional margins on non-household customers, with impact of between 0.12% to 0.24%, prior to allowing for any gains or losses from competition beyond 2017. There are many other factors influencing merger activity, such as opportunities to reduce costs and/or improve services by merging, access to finance to undertake merger and the costs of the merger process. Given the small scale of the impact on returns from absence of an uplift and significance of other factors, we consider the incremental change in probability of a merger arising is likely to be modest. We continue to consider that it is appropriate to assume an incremental merger probability of one sixth to one third.

We have undertaken sensitivity testing, which shows that varying the probability of a merger does not change our conclusions on any company.

[9] Vivendi/Southern Water involved a merger between Southern and three WoCs (Three Valleys Water, Folkestone & Dover Water, and Tendring Hundred Water) simultaneously.

Table A7A.7 Impacts associated with a 25bp higher cost of debt for a small WoC

Measure	Value
Allowed wholesale WACC, absent an uplift	3.60%
Notional level of gearing	62.5%
Allowed cost of debt	2.59%
Cost of debt for a small WoC	2.84%
Allowed wholesale cost of equity	5.28%
Return on equity for a small WoC, absent an uplift	4.87% (-0.42%)

A7A.1.3.3 Scope of the benefits assessment

Bristol Water and Sutton & East Surrey Water stated that the benefits test was too narrow. Bristol Water submitted a number of examples of engagement with local communities which it considered a larger company would no longer carry out, suggesting a possible detriment to customers as a result of a merger. It did not provide evidence that larger companies would not engage with local communities in this way. We note, for example, the following examples of engagement by large WaSCs.

- On September 27, Thames Water organised an event called ‘Free fishing fun’ at its Walthamstow reservoir.
- Severn Trent Water organises school workshops that include ee fishing fun’ at its Walthamstow reservoirhange our conclusions on any company.o finance to undertake merrk with school/eco-councils”.
- As part of its wastewater business, Yorkshire Water worked with the University of Bradford to develop the Sewerbatt, an innovative tool for surveying sewer asset condition.

Further, following merger of smaller companies, Affinity Water has made its community engagement approach a core part of its business planning and strategy. Affinity Water is an enhanced company in PR14 due to the quality of its business plan and did not seek an uplift to its cost of capital request after pre-qualifying as an enhanced company.

Therefore, there is insufficient evidence that larger companies engage with the community less than smaller companies.

We consider that Sutton & East Surrey Water's submission refers predominantly to attaching the proper weight to different types of evidence about customer preferences. We discuss this in section A7A.4.3, below.

Neither Bristol Water nor Sutton & East Surrey Water set out an alternative framework for analysing offsetting benefits. In addition, no company is proposing that, in the absence of an uplift, it would discontinue one or more activities even in the absence of a merger. We therefore consider that our approach of assessing the benefits of an uplift based on the probability that a comparator would be lost is correct.

A7A.2 Wholesale cost assessment

The wholesale cost allowance for each company in the price control is based on a number of econometric and unit cost models, and evidence from companies on their costs. The process of estimating and using these models is sensitive to the number of companies for which we have data. A merger potentially reduces the precision of the models. Moreover, a merger changes the results of the modelling, which impacts the upper quartile efficiency benchmark, and results in a higher or lower cost allowance for all companies in the sector.

In analysing these issues, we have based our approach on the approach used by the Competition Commission in its two most recent merger decisions[10].

A7A.2.1 Our draft determinations

In our draft determinations in August 2014 we stated that the possible loss of precision was effectively mitigated by our PR14 wholesale cost assessment methodology, which uses econometric models based on panel data, rather than cross-sectional models. As a result, the models use more observations, meaning that they are less vulnerable to the loss of a comparator. We stated that an uplift could not be justified by the need to avoid a loss of precision in the wholesale water cost models,

Concerning the impact of the loss of a WoC on the wholesale cost benchmark, in our draft determinations we stated that a distinction should be drawn between companies that are likely to be in the upper quartile of cost efficiency, and companies that are not. We therefore used the methods that the Competition Commission previously developed to estimate the probability of each WoC being in the upper quartile in each of the next six price control periods, which together make up our 2015-45 assessment period.

[10] Mid-Kent/South East Water in 2007 and South Staffordshire/Cambridge in 2012.

Combining these probabilities with the impact on total allowed expenditure of removing an upper quartile or non-upper quartile company in each period, we calculated an expected value for each WoC. These amounts showed the total expected impact on water customers in England and Wales over the next 30 years of a particular company being removed as a comparator. This expected impact was negative only for the two WoCs that are in the upper quartile for the PR14 price control: Portsmouth Water and Sembcorp Bournemouth Water. The continued existence of these companies therefore provided benefits to customers.

A7A.2.2 Issues raised by representations

There were five broad categories of representations on the wholesale cost assessment.

Table A7A.8 Company representations on the wholesale analysis

Issue	Representation	Companies
Assumptions about future methodology	Ofwat was wrong to assume that it would continue to use an upper quartile benchmark after a merger. Frontier Economics proposed that Ofwat lock in the current benchmark ranking, which is between rank 5 and 6.	Dee Valley Water, South East Water, South Staffordshire Water, and Sutton & East Surrey Water.
Historic and future efficiency	Frontier Economics stated that benefits from wholesale cost assessment were sensitive to the weight given to historic and forecast rankings and the way these rankings were combined. Frontier Economics also challenged the assumption of equal weight to historic and forecast rankings, noting that historic rankings represented outturn data while forecast rankings reflected projections and aspirations.	Dee Valley Water, South East Water, South Staffordshire Water, and Sutton & East Surrey Water.

Issue	Representation	Companies
Loss of precision	There is a potential impact on customers because of a loss of precision of the wholesale cost assessment models, resulting from a lost comparator. Relying on the analysis of the Competition Commission in the South Staffordshire/Cambridge merger case, Frontier estimated an impact of 1%-2% of totex.	Dee Valley Water, South East Water, South Staffordshire Water, and Sutton & East Surrey Water.
Past merger cases	There is an inconsistency, because in past price controls, we have consistently stated that any merger would be detrimental to our ability to set price limits and make comparisons between companies.	Dee Valley Water, South East Water, South Staffordshire Water, and Sutton & East Surrey Water.
Impact of PR14 wholesale cost assessment	The results of the loss of comparator analysis would be different if we accepted one or more of the companies' representations on wholesale costs.	Bristol Water, Sutton & East Surrey Water, and South Water.

A7A.2.3 Our final position

A7A.2.3.1 The wholesale cost assessment methodology in future price reviews

As discussed above, a number of companies submitted reports by Frontier Economics which considered that, if a comparator were to be lost, we would be likely to abandon our upper quartile methodology for setting the efficiency challenge in wholesale costs. As an alternative, Frontier proposed that we should assume that the benchmark would stay at its current position, between the 5th and 6th ranked company.

We consider that this would not be a realistic assumption. We consider it extremely implausible that we would respond to one or more mergers by fixing the PR19 benchmark partway between rank 5 and 6, simply because that is where the benchmark was in PR14. Rather, in deciding whether to maintain our upper quartile approach or to abandon it in favour of another plausible method, we would likely be influenced by the precision of the PR19 wholesale cost models, not the place of the benchmark in PR14. We note that we use an upper quartile methodology for our wholesale wastewater cost assessment as well, even though there are only ten sewerage companies. We therefore continue to consider that the most appropriate assumption at this stage is that future price controls will continue to use an upper quartile efficiency challenge.

A7A.2.3.2 Historic and future efficiency

We agree with Frontier Economics that the wholesale cost impacts are sensitive to the assumptions made in combining historic and forecast wholesale cost rankings. We have adopted its suggestions in one area: we now calculate the impact on customers as the average of the result obtained using historic rankings and the result obtained using forecast rankings, rather than combining the rankings at an earlier stage, because we agree that that makes our results more robust, and less sensitive to the results of the wholesale cost modelling in the water service (in particular the position of the 5th and 6th ranked companies).

We consider that the sensitivity analysis carried out on the results deals with the other points that Frontier Economics raised. For example, the sensitivity tests included in our draft determination documents placed 100% weight on historic or forecast rankings. Based on these tests, we concluded that our decision whether or not to allow an uplift was robust with regard to a range of sensitivity tests on the assumptions. The updated sensitivity testing, taking into account the analysis carried out since the draft determinations, is set out below in section 2.3.5 and in section 5.

Frontier Economics also stated that 100% weight should be given to historic rankings, based on other regulatory decisions which tend to rely exclusively or predominantly on historic data[11]. While the sensitivity analysis shows that this decision does not affect our conclusions on which companies should receive an uplift. We consider that the accuracy of our estimate of future wholesale costs efficiency is improved by including the best estimate of companies' relative efficiency over the 2015-20 period, as well as historic performance.

[11] Ofgem relied on forecast efficiency data to set its RIIO-GD1 cost efficiency benchmarks. However, it placed less weight on the forecast than on the historical data. See: RIIO-GD1: Final Proposals – Supporting document – Cost efficiency.

A7A.2.3.3 Loss of precision

We consider that the loss of precision in the wholesale cost models is a potential issue that could arise from the loss of a comparator. We have carried out extensive analysis of the impact on the precision of our water wholesale cost models of a lost comparator. In general, we found significant impacts on the point estimates of the coefficients and the confidence in these coefficients. However, the direction of these impacts was not consistent across companies; removing some companies from the analysis tended to increase the confidence, while removing others tended to decrease it.

On balance, we consider that these results are insufficient to establish a material impact on customers as the models continued to be robust enough to serve as the basis for a price review in the same way that the wastewater cost models, while less robust than the water models, still have sufficient levels of confidence to be used in the price review.

We consider that, if one or two companies were to merge during the PR14 price control period, the PR19 wholesale cost assessment models would still be robust enough to be used in the same way that the PR14 models have been. Consequently, we consider that the loss of precision from the loss of a comparator would have no material impact on customers.

A7A.2.3.4 Consistency with past submissions in merger cases

We based our previous submissions in merger cases on our price review methodology at the time. As we have changed our price review methodology significantly since the most recent merger case, it is appropriate that we have reconsidered to some extent our view on mergers and the role of comparators. We would like to note, however, that nothing in this annex should be taken as pre-judging our view about any future merger proposal.

A7A.2.3.5 Impact of the conclusions of our wholesale cost assessment

We have updated our analysis to reflect our final determination conclusions in the area of wholesale costs. Companies' historic and future efficiency rankings based on their efficiency scores are set out below. The efficiency score is actual total expenditure divided by modelled total expenditure and is used to calculate the upper quartile efficiency threshold in the wholesale cost modelling (lower scores indicate that a company is more efficient). The future efficiency ranking reflects our final determinations on wholesale costs, taking into account company representations.

Table A7A.9 Efficiency ranking based on historic (2008-09 to 2012-13) data

Rank (most efficient first)	Company	Efficiency score
1	Sembcorp Bournemouth Water	0.84
2	South West Water	0.84
3	Portsmouth Water	0.91
4	South East Water	0.93
5	Northumbrian Water	0.93
6	South Staffordshire Water	0.94
7	Thames Water	0.94
8	Severn Trent Water	0.96
9	Dee Valley Water	0.96
10	Yorkshire Water	0.96
11	Affinity Water	0.97
12	Anglian Water	0.99
13	Wessex Water	1.01
14	Southern Water	1.02
15	United Utilities	1.03
16	Sutton & East Surrey Water	1.04
17	Dŵr Cymru	1.10
18	Bristol Water	1.22

Table A7A.10 Efficiency ranking based on estimated efficiency for 2015-16 to 2019-20

Rank (most efficient first)	Company	Efficiency score
1	South West Water	0.92
2	Yorkshire Water	0.94
3	Affinity Water	0.95
4	Thames Water	0.95
5	Portsmouth Water	0.97
6	Northumbrian Water	0.98
7	Dŵr Cymru	1.00
8	United Utilities	1.00
9	Sembcorp Bournemouth Water	1.01
10	Sutton & East Surrey Water	1.02
11	Anglian Water	1.03
12	South East Water	1.03
13	South Staffordshire Water	1.03
14	Severn Trent Water	1.03
15	Wessex Water	1.04
16	Dee Valley Water	1.04
17	Southern Water	1.06
18	Bristol Water	1.33

Based on these starting positions, we estimate the following impacts on customers in each of the next five price review periods from the removal of each of the six small WoCs. Impacts have been estimated separately using historic efficiency rankings only and forecast efficiency rankings only.

Table A7A.11 NPV of estimated impacts on customers over 30 years based on historic efficiency rankings

	PR19	PR24	PR29	PR34	P39	Total
BRL	-£24m	-£9m	-£3m	-£1m	-£0.3m	**-£37m**
DVW	-£0.7m	£0.5m	£0.3m	£0.1m	£0.1m	**£0.3m**
PRT	£25m	£8m	£3m	£1m	£0.4m	**£37m**
SBW	£33m	£10m	£3m	£1m	£0.4m	**£49m**
SES	-£21m	-£8m	-£2.5m	-£0.9m	-£0.3m	**-£32m**
SSC	£12m	£4m	£1.5m	£0.6m	£0.2m	**£19m**

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

Table A7A.12 NPV of estimated impacts on customers over 30 years based on future efficiency rankings

	PR19	PR24	PR29	PR34	P39	Total
BRL	-£49m	-£19m	-£7m	-£2m	-£0.7m	**-£78m**
DVW	-£43m	-£16m	-£5m	-£2m	-£0.5m	**-£66m**
PRT	£34m	£12m	£4m	£1.5m	£0.6m	**£52m**
SBW	-£1.5m	£1m	£0.6m	£0.3m	£0.2m	**£0.6m**

	PR19	PR24	PR29	PR34	P39	Total
SES	-£9m	-£1.5m	-£0.4m	-£0m	£0m	**-£11m**
SSC	-£29m	-£9m	-£3m	-£1m	-£0.3m	**-£43m**

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

We have then applied our incremental merger probability of 1/6 to 1/3 to these impacts to identify the overall impact on customers from the loss of a comparator based on historic efficiency rankings only and forecast efficiency rankings only. We have then combined the estimated impacts based on historic and forecast efficiency rankings assuming each is equally weighted – that is, we have taken a simple average of the impacts using historic and forecast rankings. For example based on historic efficiency rankings the retention of Portsmouth Water would have an overall benefit to customers of £37 million over the next 30 years. Applying our incremental merger probability of 1/6 to 1/3 gives a benefit to customers from providing the uplift of £6 million to £12 million. This has been combined with the benefits based on forecast efficiency rankings of £9 million to £17 million to provide an average benefit of £7 million to £15 million.

Table A7A.13 Offsetting benefits to customers in the area of wholesale costs

Impact (£m, 30-yr NPV)	BRL	DVW	PRT	SBW	SES	SSC
Using historic efficiency	-£12m to -£6m	£0.1m to £0.1m	£6m to £12m	£8m to £16m	-£11m to -£5m	£3m to £6m
Using forecast efficiency	-£26m to -£13m	-£22m to -£11m	£9m to £17m	£0.1m to £0.2m	-£4m to -£2m	-£14m to -£7m
Average	-£19m to -£10m	-£11m to -£6m	£7m to £15m	£4m to £8m	-£7m to -£4m	-£4m to -£2m

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

These results show that our conclusions are not particularly sensitive to the relative weight we place on historic and forecast efficiency rankings when we calculate the overall benefits in wholesale cost modelling. The exception to this is South Staffordshire Water, where a benefit for customers would result if we placed more than 70% weight on the result obtained from historic rankings. However, for the reasons set out above we do not consider that this would be appropriate.

A7A.3 Retail

In the area of retail service provision, a merger could impact on the retail cost assessment, which relies on comparisons between companies to calculate the average cost to serve (ACTS). This means that customers are potentially impacted in a similar manner to the impacts on the wholesale cost assessment. A merger could also impact on the rewards and penalties incurred under the SIM and on service quality.

A7A.3.1 Our draft determinations

In our draft determinations in August 2014 we showed that WoCs currently have a lower average cost to serve than WaSCs, particularly if the costs of metering are excluded. However, we considered that this difference was unlikely to persist in the future, because:

- it was possible to make efficiency gains in retail more quickly than in wholesale, given that the retail costs reflected in our allowed revenues consist almost entirely of retail operating expenditure (opex) and doubtful debt costs, where underperforming companies can adopt best practice to improve quickly; and
- we do not assume that we will employ an ACTS-based methodology for PR19 in the light of intervening industry responses to the comparative efficiency challenges introduced for the retail service for the first time in PR14.

Consequently, as it was not possible to say which WoCs, if any, would outperform the average WaSC in future periods, or what the impact on customers might be of any such outperformance, we concluded that there was insufficient evidence to establish that a merger would result in a detriment to customers through an impact on the retail cost assessment methodology.

On SIM, we noted that the difference between the average SIM scores of WoCs and WaSCs (based on the current specification of the SIM) was not statistically significant. Moreover, we identified a catch-up effect, where underperforming companies improved their scores by more than their better-performing peers. We have set out these impacts in more detail in 'Policy chapter A4 – reconciling 2010-15 performance'. As a result, we estimated that, if such trends were to continue with the SIM, the differences between companies could all but disappear by the start of the

2020-25 period. This was consistent with our experience with the predecessor of the SIM, the overall performance assessment (OPA).

On the wider impacts on service quality, our draft determinations presented CCWater's tracking survey data, which showed that neither WoCs as a group nor individual WoCs systematically outperformed WaSCs across the seven customer satisfaction measures we identified.

As there was insufficient evidence that any WoC would outperform the average WaSC in the future on any aspect of the retail control, we concluded in our draft determinations that an uplift could not be justified based on the quantified impacts of a merger on the provision of retail services.

A7A.3.2 Issues raised by representations

We received no representations regarding the average cost to serve of different companies.

On the SIM, South Staffordshire Water submitted extensive analysis carried out by Frontier Economics. The report that Frontier prepared for Dee Valley Water also contained some of this evidence. These reports contained evidence on both the SIM itself and on the OPA. The main points that Frontier Economics raised are set out in table A7A.14.

Table A7A.14 Issues raised by Frontier Economics on the SIM and OPA

Issue
Statistical significance was not relevant when assessing whether WoCs perform better than WaSCs in the SIM, as we do not take into account statistical significance when we determine SIM rewards and penalties.
There was not significant convergence for most of the years that the OPA measure existed, and that, before their merger, both South Staffordshire Water and Cambridge Water had consistently outperformed the WaSC average. Frontier Economics also stated that WoCs tended to be over-represented among leading performers in the OPA and the SIM.

Issue
Convergence had occurred in the SIM, but pointed out that WoCs generally and South Staffordshire Water in particular continued to outperform WaSCs, suggesting that these companies were either continuing to innovate, or that other companies were unable to adopt best practice at the rate we had assumed.
Supported the earlier estimate of SIM benefits made by Oxera for all small WoCs of £0.50 per customer.
For South Staffordshire Water, Frontier Economics carried out a loss of comparator analysis for the SIM, analogous to the analysis we carried out for wholesale costs. It estimated a customer benefit of £16.8 million for South Staffordshire Water, based on the following assumptions. • There would be an impact in each year starting with 2015-16. • South Staffordshire Water would continue to be ranked first in the SIM tables until the end of the PR14 price control period (2015-20). • In the PR19 (2020-25) and PR24 (2025-20) price control periods, the company would be 'industry leading' with a probability of 60% and 20%, respectively. • There would be no benefits beyond 2030.
The SIM was only a partial measure of customer service but did not provide additional evidence on this point.

A7A.3.3 Our final position

A7A.3.3.1 Average cost to serve

We confirm our view in the draft determinations that there is no benefit or disbenefit from loss of WoCs to setting retail price controls, recognising that we did not receiving any representations on this issue.

A7A.3.3.2 Service incentive mechanism

Some WoCs have performed well in both the SIM and its predecessor the OPA. However the use of water sector based comparators for assessing quality of service is not as important as for wholesale costs. This is because retailers in other sectors could provide suitable comparators for assessing retail quality of service and we understand water companies are choosing to benchmark their service against retailers in other sectors. In PR14 we have also had regard to performance in other sectors in setting the retail controls, whereas it is much more difficult to find appropriate comparators in other sectors to benchmark wholesale water costs. It could be argued that WoCs are unlikely to provide as much value as retail comparators beyond 2015-20 as Ofwat could offset any loss of a WoC benchmark by greater reference to other sectors, as the separation of controls leads to sharper focus on the relevant activities and services.

However, in light of the representations and the work undertaken by Frontier Economics, we consider that there is merit in attempting to quantify the benefits for SIM performance, in a similar way to the benefits we have estimated for wholesale costs. We consider that this is likely to represent an upper limit to the benefits of comparators for retail service quality, given the ability to use benchmarks in other sectors.

A key part of assessing future benefits in this way is to forecast future SIM performance. Given that we only have three years of SIM data in its current form we have considered whether a company’s track record under the OPA and the SIM provides some evidence of its likely future performance against the modified SIM in future in the next control period (and potential future comparable service quality incentive mechanisms). However, the OPA and the SIM are not directly comparable; the OPA was a broader metric, including areas such as:

- leakage;
- environmental impact; and
- security of supply.

In addition, since it was not directly linked to the companies’ allowed revenue for most of its existence, it is unlikely that it affected companies’ behaviour in the same way that the SIM does. For this reason, we have not included OPA scores in the dataset we used to forecast future performance.

In modelling the likely future of the SIM, we have modified the approach that Frontier Economics chose in a number of ways.

- We assumed no impact until the middle of the price review period, given that any proposed merger would take time to be decided, cleared by the Competition and Markets Authority, and then implemented.

- As with wholesale costs, we used changes matrices to estimate the probability of a company achieving a particular rank at a particular point in time.

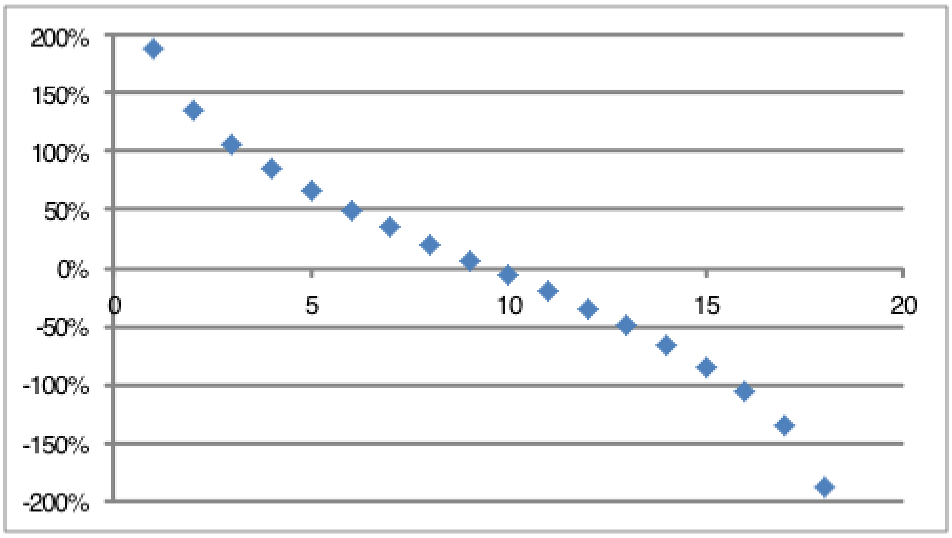
- While our modelling continues to show a high degree of convergence after 2020, we assumed that the SIM would continue to exist until 2025.

- We assumed no benefits after 2025, as it would be speculative to make assumptions about the magnitude of any future service quality incentive mechanism that might replace the SIM. However, relaxing this assumption does not change our conclusions.

SIM rewards and penalties are based on the distribution of relative performance. The SIM reward or penalty is calculated based on the difference between the company's score and the average score, divided by the standard deviation of SIM scores. A SIM score of one standard deviation or more above the mean implies a maximum reward of 6% of retail revenue, while a score of two standard deviations or more below the mean implies a maximum penalty of around 12% of retail revenue. Scores that are in between result in rewards or penalties that are proportionally smaller.

To reflect this, we have examined historic SIM scores as 'standardised scores', calculated as the difference between the company score and the mean score, divided by the standard deviation of all scores. We concluded that it was reasonable to assume that the distribution of standardised scores stays constant over time. This means that in any given year the first ranked company would have a score that was approximately 1.9 standard deviations from the mean score. (See figure A7A.1, below, which shows the first ranked company with a score of 190%.) This takes account of the relative basis of SIM rewards and benefits and means that the analysis is not impacted by changes in rate of improvement over time.

Figure A7A.1 Distribution of standardised scores in any given year



At the same time, our analysis of the year-on-year changes in rank showed that the first ranked company in any given year had only a 29% chance of being ranked first again the next year. (See the top left cell in figure A7A.2, below.) In this way, we were able to calculate the expected reward or penalty for each company in each year.

Figure A7A.2 Probability of moving from rank x to rank y in one year, using the changes approach

		Discrete probability of reaching rank x in 1 year																	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Starting rank	1	29.4%	26.8%	20.2%	12.7%	6.6%	2.9%	1.0%	0.3%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	2	21.1%	23.2%	21.1%	16.0%	10.0%	5.2%	2.3%	0.8%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	3	13.8%	18.2%	20.0%	18.2%	13.8%	8.6%	4.5%	1.9%	0.7%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	4	8.0%	12.7%	16.8%	18.4%	16.8%	12.7%	8.0%	4.1%	1.8%	0.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	5	4.0%	7.6%	12.2%	16.1%	17.7%	16.1%	12.2%	7.6%	4.0%	1.7%	0.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	6	1.7%	3.9%	7.5%	12.0%	15.8%	17.4%	15.8%	12.0%	7.5%	3.9%	1.7%	0.6%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
	7	0.6%	1.7%	3.9%	7.5%	11.9%	15.7%	17.3%	15.7%	11.9%	7.5%	3.9%	1.7%	0.6%	0.2%	0.0%	0.0%	0.0%	0.0%
	8	0.2%	0.6%	1.7%	3.9%	7.5%	11.9%	15.7%	17.2%	15.7%	11.9%	7.5%	3.9%	1.7%	0.6%	0.2%	0.0%	0.0%	0.0%
	9	0.0%	0.2%	0.6%	1.7%	3.9%	7.4%	11.9%	15.7%	17.2%	15.7%	11.9%	7.4%	3.9%	1.7%	0.6%	0.2%	0.0%	0.0%
	10	0.0%	0.0%	0.2%	0.6%	1.7%	3.9%	7.4%	11.9%	15.7%	17.2%	15.7%	11.9%	7.4%	3.9%	1.7%	0.6%	0.2%	0.0%
	11	0.0%	0.0%	0.0%	0.2%	0.6%	1.7%	3.9%	7.5%	11.9%	15.7%	17.2%	15.7%	11.9%	7.5%	3.9%	1.7%	0.6%	0.2%
	12	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%	1.7%	3.9%	7.5%	11.9%	15.7%	17.3%	15.7%	11.9%	7.5%	3.9%	1.7%	0.6%
	13	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%	1.7%	3.9%	7.5%	12.0%	15.8%	17.4%	15.8%	12.0%	7.5%	3.9%	1.7%
	14	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%	1.7%	4.0%	7.6%	12.2%	16.1%	17.7%	16.1%	12.2%	7.6%	4.0%
	15	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	0.6%	1.8%	4.1%	8.0%	12.7%	16.8%	18.4%	16.8%	12.7%	8.0%
	16	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.7%	1.9%	4.5%	8.6%	13.8%	18.2%	20.0%	18.2%	13.8%
	17	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.2%	0.8%	2.3%	5.2%	10.0%	16.0%	21.1%	23.2%	21.1%
	18	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.3%	1.0%	2.9%	6.6%	12.7%	20.2%	26.8%	29.4%

Using this data, we re-estimated the change in each company's expected SIM reward or penalty associated with removing a particular small WoC from our calculation of the mean score and the standard deviation of the scores. Taking into account the probability of a merger, we estimated the following impacts.

Table A7A.15 Impacts on customers due to the SIM

Company	Impact
BRL	£1.4m to £2.9m
DVW	-£2.4m to -£1.2m
PRT	-£0.4m to -£0.2m
SBW	£1.8m to £3.7m
SSC	£2m to £4.1m
SES	£0.5m to £1m

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

We note that the estimated impact for South Staffordshire Water of £2 million to £4.1 million, is significantly lower than the impact estimated by Frontier Economics of £16.8 million. Our estimate is lower as it takes into account our views of the probability that the company will merge, covers a shorter time period (that is, it excludes the first half of the upcoming price review period) and takes into account the probability that relative performance will change over time.

A7A.3.3.3 Service quality

Our draft determinations had a transcription error for the score on "satisfied with taste and smell" for one of the companies. We have therefore reproduced table 9 of the draft determinations annex below, with the corrected values. This has no impact on our conclusions.

Table A7A.16 Key data from recent CCWater tracking surveys

CC Water customer satisfaction survey question(s)	WaSC average	WoC average	AFW*	BRL	DVW	PRT	SBW	SEW	SSC*	SES
2013										
Overall satisfaction with water supply	**94%**	**93%**	91%	95%	91%	93%	95%	91%	96%	94%
Satisfied with colour and appearance of tap water	94%	93%	88%	93%	92%	95%	93%	91%	95%	92%
Satisfied with taste and smell	87%	88%	83%	90%	88%	92%	89%	80%	89%	88%
Satisfied with hardness/softness	72%	61%	44%	68%	83%	66%	57%	58%	69%	66%
Satisfied with safety	93%	92%	88%	94%	87%	94%	95%	90%	93%	95%
Satisfied with reliability of supply	98%	97%	96%	99%	97%	98%	97%	97%	97%	97%
Satisfied with water pressure	92%	89%	82%	91%	90%	94%	89%	90%	93%	91%
2011										
Overall satisfaction with water supply	**92%**	**91%**	88%	93%	93%	96%	96%	90%	90%	93%

CC Water customer satisfaction survey question(s)	WaSC average	WoC average	AFW*	BRL	DVW	PRT	SBW	SEW	SSC*	SES
Satisfied with colour and appearance of tap water	92%	90%	87%	91%	93%	91%	95%	92%	89%	93%
Satisfied with taste and smell	86%	84%	79%	89%	89%	86%	87%	80%	87%	91%
Satisfied with hardness/softness	68%	57%	46%	69%	83%	51%	59%	58%	68%	72%
Satisfied with safety	92%	91%	88%	92%	89%	95%	90%	90%	94%	96%
Satisfied with reliability of supply	96%	96%	93%	96%	97%	98%	97%	95%	94%	98%
Satisfied with water pressure	89%	88%	87%	86%	90%	87%	92%	87%	86%	90%

Source:

CCWater, Ofwat analysis.

Note:

Green shading indicates where a WoC has scored higher than the WaSC average. For AFW and SSC separate company results have been combined using a RCV weighted average.

Key:

AFW = Affinity Water; BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

Our analysis of this data indicates that any service quality difference between WoCs and WaSCs is being eroded and may have disappeared. While in 2011 a number of WoCs outperformed the average WaSC on customer satisfaction metrics, by 2013 this difference had disappeared with only Portsmouth Water outperforming the average WaSC on four out of the six metrics, and other WoCs only outperforming on two or three of the metrics.

In the absence of compelling evidence showing that WoCs inherently provide superior service quality, we conclude that it is unlikely that the level of service quality experienced by customers of WoCs would deteriorate following a merger with a WaSC. This means that there is unlikely to be a material detriment to customers in the area of service quality from the loss of one or more WoCs.

A7A.4 Other benefits

We have considered a number of other potential disbenefits from a merger. These are set out below and include:

- the impact of having fewer companies on rate of innovation;
- the impact of a merger on our ability to set outcome delivery incentives;
- customer willingness to pay for an uplift; and
- the possibility that bills might go up following a merger.

A7A.4.1 Innovation

A7A.4.1.1 Draft determinations

It is possible that the rate of innovation in the water industry might depend on the number of companies that are active in the sector. In our draft determinations we concluded that we had not received sufficient evidence to show that WoCs are inherently more innovative than WaSCs. While it could be argued that smaller companies might be more agile and therefore able to introduce innovations, on the other hand larger companies may have more scope to support research and development and to experiment with different approaches.

We noted that innovation in the water sector is occurring throughout the world, with improvements introduced in one country being adopted in others if successful. In terms of UK developments, much of the innovation in the sector is likely to come from companies that supply goods and services to the water companies. The incentives created by the PR14 regulatory framework, such as the move towards a totex approach to cost assessment, outcomes and greater customer engagement, is likely to be more significant as a driver of innovation than the number of companies in the sector or the existence of small companies within the sector. For that reason, we concluded that the loss of one or more WoCs would be unlikely to create a material detrimental impact on innovation.

A7A.4.1.2 Issues raised by representations

In its reports for Dee Valley Water and South Staffordshire Water, as part of its analysis of SIM performance, Frontier Economics stated that smaller companies might have more flexibility to adopt new practices. However, apart from its evidence on SIM and OPA performance, it did not provide any evidence on the role of small companies in promoting innovation in the sector.

A7A.4.1.3 Our final position

We consider that companies' representations on our draft determinations did not contain any new evidence on the relationship between the size or number of companies and the rate of innovation. We therefore confirm our draft determination that is it would not be appropriate for us to factor into our consideration of an uplift any innovation benefits or disbenefits from the loss of small water only companies..

A7A.4.2 Outcome delivery incentives and performance commitments

A7A.4.2.1 Draft determinations

A key part of the PR14 methodology is the setting of outcome delivery incentives (ODIs) and performance commitments (PCs) across companies. In line with our PR14 approach for company ownership of business plans, our methodology asks companies to make proposals for ODIs and PCs following engagement with customers.

In our draft determinations in August 2014, we stated that we do not rely on comparators for our assessment of PCs and ODIs, although we occasionally drew on comparators to support interventions in companies' plans. Therefore, we did not consider that the loss of one or more WoCs would make these comparisons any less valid. Consequently, we did not consider that there would be costs from the loss of one or more WoCs in terms of PCs and ODIs.

A7A.4.2.2 Issues raised by representations

Dee Valley Water, South East Water, South Staffordshire Water, and Sutton & East Surrey Water submitted reports by Frontier Economics that discussed the impact of a lost comparator on the ODIs we proposed to set for the interruptions, drinking water quality contacts, and mean zonal compliance measures of performance. For each of these incentives, Frontier Economics estimated the impact on the benchmark from dropping all WoCs as comparators. However, it did not show the impact of dropping individual companies, nor did it provide an estimate of the impact on customers of the shift in benchmark.

Frontier Economics stated that we – and by extension customers – would benefit from having more comparators for a range of future policy choices concerning outcome delivery incentives – in particular, if we took account of exogenous factors in our horizontal checks, as Frontier Economics advocated.

A7A.4.2.3 Our final position

Following Frontier Economics' representation, we have reconsidered our draft determination position on the impact on ODIs. Our use in our draft and final determinations of horizontal checks, and setting future performance commitments based on sector-wide upper quartile performance for some outcome measures means that there is potentially an impact on customers similar to the impacts we identified in wholesale cost assessment and SIM. We have therefore assessed whether we can use the same methodology for estimating benefits from avoiding a merger for ODIs.

We set future performance commitments based on historic sector wide performance for our horizontal ODIs: in the wholesale water service control, these are interruptions to supply, mean zonal compliance and negative water quality contacts. However by the middle of the 2015-20 period, we expect all companies to reach current upper quartile performance. Consequently it is unclear on what basis we would set any horizontal ODIs for subsequent control periods, or the relative performance of difference companies at the start of the next period (in particular, as the introduction of financial incentives, following their engagement with customers, is likely to have a significant impact on companies' behaviour). In addition, not all companies are subject to these three horizontal ODIs and the basis for individual ODIs and their relative impacts on financial performance differs across companies, reflecting customer priorities for each company, which makes cross-sector comparisons difficult and reduces the potential benefits from additional comparator companies.

We have therefore concluded that it would be inappropriate for us to include a quantitative estimate of the impact on customers as the result of a lost comparator in the area of ODIs. Instead, we have taken into account each company's performance to date against each of the three 'horizontal' ODIs qualitatively, when weighing the overall costs and benefits associated with a company-specific WACC uplift. Company performance against these horizontal ODIs is shown in table A7A.17 with Sembcorp Bournemouth in the upper quartile on all three ODIs, and Portsmouth Water and Sutton & East Surrey in the upper quartile on two.

Table A7A.17 Company performance against the "horizontal" ODIs

Outcome	BRL	DVW	PRT	SBW	SES	SSC
Negative water quality contacts	✗	✗	✓	✓	✓	✗
Mean Zonal Compliance	✓	✗	✗	✓	✓	✗
Water Supply Interruptions	✗	✓	✓	✓	✗	✗

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

As for Frontier Economics' separate submission about the value of each company as a comparator, in case we should choose to carry out more sophisticated horizontal checks in future price reviews based on a more established track record of incentivised comparator performance, we consider that this benefit is too uncertain to be included in our quantitative analysis, and consider that it is more reasonable to take account of the benefits of WoCs as horizontal benchmarks qualitatively.

A7A.4.3 Customer willingness to pay

A7A.4.3.1 Draft determination

As part of their revised business plan submissions in June 2014, a number of companies submitted survey evidence on their customers' willingness to pay for the cost of an uplift. In our draft determinations, we stated that we considered these surveys were flawed, as, for example, the surveys often said that bills would go up following a merger or that quality would go down. However both statements are not necessarily true and so respondents could have been misinformed about the impacts of a merger.

We invited the companies where we provisionally allowed an uplift, Sembcorp Bournemouth Water and Portsmouth Water, to provide additional evidence on customer willingness to pay.

A7A.4.3.2 Issues raised by representations

Sembcorp Bournemouth Water and Portsmouth Water provided further evidence showing that their customers were willing to pay the costs associated with the WACC uplift.

Sutton & East Surrey stated that we had placed insufficient weight on the focus group results that they had submitted as part of their June submissions. However, it did not provide new evidence.

A7A.4.3.3 Our final position

We consider that Sembcorp Bournemouth Water and Portsmouth Water have provided sufficient further evidence that their customers are willing to pay the costs associated with the WACC uplift.

On our treatment of Sutton &East Surrey's focus group evidence, we consider that evidence obtained in this way is generally insufficiently robust to establish customer willingness to pay without supporting survey evidence. In addition we note that evidence of customer indifference about small bill increases is not evidence of customer willingness to pay.

A7A.4.4 Impact on bills

A7A.4.4.1 Draft determination

In their revised business plan submission in June 2014, a number of companies attempted to justify their proposed uplift by suggesting that a merger would lead to an even bigger bill increase. We did not accept this argument in our draft determinations, because a merger does not necessarily lead to bill averaging or bill increases. In addition, even if bills were averaged for a merged entity, this would have no net impact on customers as the total allowed revenue would not change as a result of the merger.

A7A.4.4.2 Issues raised by representations

Bristol Water reiterated that it estimated the impact of bill increases resulting from a merger to be in the range of £25-£33 per customer per year. Other companies did not make submissions on this point.

A7A.4.4.3 Our final position

Representations on our draft determinations did not contain new evidence or other reasons why customer bills might increase following a merger. We therefore confirm our draft determination approach, which is that it would not be appropriate for us to factor into our consideration of an uplift any benefit or disbenefit associated with the impact of the loss of small water only companies on customer bills.

A7A.5 Conclusion

A7A.5.1 Our draft determinations

In our draft determinations in August 2014, we considered the impact on customers from the loss of a WoC through a merger. This analysis included an assessment of the potential impacts in those areas of our price review methodology where we rely on cross-company benchmarking, and also potential impacts in other areas. We concluded that there was insufficient evidence of an impact on customers as a result of a merger in all areas except wholesale cost assessment.

All things considered, we calculated the following benefits and costs:

Table A7A.18 Our draft determinations

Impact (£m, 30-year NPV)	BRL	DVW	PRT	SBW	SES	SSC
Comparator benefits	-£6m to -£3m	-£5m to -£2m	£3m to £6m	£4m to £7m	-£4m to -£2m	£0.5m to £1m
Increased financing cost	-£12m	-£3m	-£3m	-£4m	-£6m	-£9m
Net benefits	-£18m to -£15m	-£8m to -£5m	£0m to £3m	£0m to £3m	-£10m to -£8m	-£9m to -£8m

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

Note:

The comparator benefits have been obtained by adjusting the estimated impact of a merger for the probability that a merger will occur, which we have assumed to be between 1/6 and 2/6.

Based on this evidence, we concluded that Portsmouth Water and Sembcorp Bournemouth Water passed both tests for an uplift, and that the other WoCs did not.

A7A.5.2 Our final position

Our conclusions on each area are set out in the following table. This compares the benefits in terms of wholesale costs (discussed in chapter 2), SIM (discussed in chapter 3) and ODIs (discussed in chapter 4) to the incremental financing costs of 15 basis points (discussed in the overview).

Table A7A.19 Our final position

Impact (£m, 30-yr NPV)		BRL	DVW	PRT	SBW	SES	SSC
Wholesale Costs Benchmark		-£19m to -£10m	-£11m to -£6m	£7m to £15m	£4m to £8m	-£7m to -£4m	-£4m to -£2m
SIM		£1m to £3m	-£2m to -£1m	-£0m to -£0m	£2m to £4m	£1m to £1m	£2m to £4m
ODIs	WQC	✗	✗	✓	✓	✓	✗
	MZC	✓	✗	✗	✓	✓	✗
	WSI	✗	✓	✓	✓	✗	✗
Comparator benefits		-£18m to -£7m	-£13m to -£7m	£7m to £15m	£6m to £12m	-£6m to -£3m	£0m to £0m
Increased financing cost		-£13m	-£2m	-£4m	-£4m	-£6m	-£9m
Net benefits		**-£29m to -£21m**	**-£16m to -£9m**	**£4m to £11m**	**£2m to £8m**	**-£12m to -£9m**	**-£9m to -£9m**

Key:

BRL = Bristol Water; DVW = Dee Valley Water; PRT = Portsmouth Water; SBW = Sembcorp Bournemouth Water; SES = Sutton & East Surrey Water; SSC = South Staffordshire Water.

Note:

WQC stands for negative water quality contacts, MZC stands for mean zonal compliance, and WSI stands for water supply interruptions.
Figures may not add due to rounding.

These results show that our conclusions are generally not sensitive to the weight we place on historic and forecast efficiency rankings. However, South Staffordshire Water, whose result on wholesale costs is most sensitive to this assumption, would have a net benefit of -£4 million to +£1 million if we relied only on historic efficiency rankings. For the reasons set out above, we do not consider that this would be an appropriate approach.

If instead we vary our assumed probability of a merger, our conclusions do not change for any company.

We therefore conclude that only Portsmouth Water and Sembcorp Bournemouth Water provide sufficient benefits to customers to allow these companies to recover their higher cost of capital of 15 basis points from their customers. The evidence shows that there is no offsetting benefit for Bristol Water, Dee Valley Water, Staffordshire Water, or Sutton & East Surrey Water, and so it would not be appropriate to provide an uplift for these companies.

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We are responsible for making sure that the water sector in England and Wales provides customers with a good quality and efficient service at a fair price.

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