June 2015

Trust in water

Ofwat's initial submission to the Competition and Markets Authority following the acquisition of Bournemouth Water Investments Limited by Pennon Group plc

www.ofwat.gov.uk

OFWAT

About this document

This paper is in response to the CMA's letter dated 8th June regarding the acquisition by Pennon Group Plc of Bournemouth Water Investments Limited. This submission addresses the questions related to the concept of "enhanced company", small company premium and efficiencies or benefits associated with the merger

Contents

1. Summary

On 16 April 2015, Pennon Group plc, the parent company of South West Water Limited (South West Water), announced that it had acquired 100% of the equity interests of Bournemouth Water Limited (Bournemouth Water) from Sembcorp Holdings Limited.

Under section 32(b) of the Water Industry Act 1991 ('the Act'), the merger of South West Water and Bournemouth Water has been referred to an inquiry group established by the Competition and Markets Authority ('CMA'). The CMA must decide whether this merger has prejudiced, or may be expected to prejudice, the ability of the Water Services Regulation Authority (Ofwat), in carrying out its functions, to make comparisons between different water enterprises and if so, whether any action should be taken to remedy, mitigate or prevent the prejudice or any adverse effect which has resulted from, or may be expected to result from, the prejudice. The CMA will make its decisions under the existing special merger regime provided for by the Act, as amended by the Enterprise Act 2002[1].

This document and the technical appendices comprise our initial submission to the CMA. It should be read in conjunction with the factual submission made to the CMA on 15 June[2]. This document sets out our assessment of prejudice and benefits that arise from this merger, and our initial view on possible remedies.

Assessment of prejudice

This merger would result in the loss of Bournemouth Water as an independent comparator. We assess the merger would have a detrimental impact on our ability to make comparisons in a number of ways:

- **Detriment to our SIM benchmark**. Bournemouth Water has demonstrated upper quartile performance in the service incentive mechanism (SIM) over the three years 2011-12 to 2013-14. The SIM is the comparative mechanism that

[1] The CMA will make its decisions under Part 3 of the Enterprise Act 2002 as it has effect in relation to water mergers by virtue of the Water Mergers (Modification of Enactments) Regulations 2004 (SI 2004/3202).
[2] This document set out background information on and a general description of the regulatory regime and how Ofwat uses comparisons between water enterprises. It provided general information on the companies involved in the merger and on their positions within the water industry in terms of their use as comparators and their retail customer service performance.

is used to measure customer service experience across the sector. We assess the detriment could amount to around £10 million by 2025.

- **Detriment to our wholesale cost benchmark** - At the 2014 price review (PR14) Bournemouth Water was in the upper quartile of the 18 water companies we regulate in our benchmarking assessment of wholesale costs. We assess the detriment could amount to £43 million by 2025.

- **Detriment to our assessment of outcome delivery incentives –** Bournemouth Water demonstrated upper quartile performance against each of the three comparative outcome delivery incentives for the water service that were applied at PR14. We consider that the loss of Bournemouth Water could result in us setting less stringent benchmarks in these areas. We assess the detriment could amount to between £8 million and £66 million by 2025.

- **Loss of precision**. Our assessment of the wholesale cost models used at PR14 indicates that the loss of Bournemouth Water as an independent comparator would have resulted in a reduction in the precision that applies to our wholesale cost econometric models. While we do not state the value of detriment to the loss of precision of our wholesale cost models in monetary terms, we assess the loss of precision to our models to be in the range 0.21% to 3.8%. We consider that this, of itself, would not have prevented us from using the wholesale water cost models at PR14. However, the loss of Bournemouth Water as an independent comparator introduces detriment by potentially making comparable types of model less robust in the future. This detriment is not linear and would increase in the future if subsequent mergers were to arise.

- **Qualitative assessment.** We have identified areas where Bournemouth Water has demonstrated attributes that make it a useful comparator which suggest a detriment over and above those identified on the quantitative assessment. These included the development of outcome delivery incentives in its original business plan at PR14 where it led the way in terms of the proportion of performance commitments that were subject to a financial incentive. Despite its relatively small size, it responded positively to the challenges we put to it through the price review process. It provided good evidence in respect of its proposed spend for a new customer relationship and billing system, which helped us to challenge the requests for billing system investment from other companies. It has a conservative financing structure and importantly, it was one of only two companies to demonstrate to us the need for a small company uplift to its cost of capital.

We conclude that, taking account of the impacts on benchmarks, precision of our econometric models and our qualitative assessment, the loss of Bournemouth Water introduces detriment to customers in England and Wales. This prejudices our ability to make comparisons.

Assessment of benefits

We have carried out an initial quantification of the potential relevant customer benefits that may arise from this merger. We assess the merger could deliver £[redacted] of synergy savings by 2020 (in NPV terms), of which £[redacted] would be passed to customers through the existing regulatory mechanisms in 2020-25.

These benefits arise only to the customers of South West Water and Bournemouth Water. They do not outweigh the prejudice and so in our view, there is a need for a remedy in this instance. The assessment of prejudice is not so great as to lead us to oppose the merger and so we set out a range of potential remedies that could apply.

Remedies

We discuss the range of remedies that could be considered. Remedies are complicated because the net detriment that arises is to all customers in England and Wales whereas the relevant benefit is only to the customers of South West Water and Bournemouth Water.

We anticipate that the merger parties will set out the synergy savings that could arise for customers. However, remedies that comprise a price reduction would only help customers in the Bournemouth and South West Water regions; our view is that remedies should take account of the wider detriment to customers.

We look to Pennon to set out its view of the potential remedies that could apply. We do not, at this stage, set out a firm view of the remedy that should apply as we would expect remedies to be discussed further during the process of this investigation.

The rest of this document sets out our views on prejudice, benefits and remedies that could apply in relation to this merger.

2. Background and the special merger regime

As stated in the summary, the Competition and Markets Authority ('CMA') must decide whether this merger will prejudice the ability of the Water Services Regulation Authority (Ofwat), in carrying out its functions, to make comparisons between different water enterprises and if so, whether any action should be taken to remedy, mitigate or prevent the prejudice or any associated adverse effect which has resulted from, or may be expected to result from, the prejudice.

The Water Act 2014 will make changes to the special water merger regime provided for by the Act once the relevant sections of the Water Act 2014 are commenced by the Secretary of State. When operational, these amendments will introduce a revised process for water mergers. This will require us to provide an opinion to the CMA (in phase 1 of a merger inquiry) on the impact of a merger on our ability to make comparisons and relevant customer benefits; and whether undertakings in lieu of a phase 2 reference would remedy, mitigate or prevent the prejudicial effect on our ability to make comparisons, thereby potentially removing the need for a phase 2 CMA investigation.

The changes also require Ofwat to consult on and prepare a Statement of method, which sets out the criteria we will use to assess the impact on our ability to make comparisons and the weighting applied to those criteria. We published Consultation on Ofwat's approach to future mergers and Statement of method ("draft Statement of method") on 29 May 2015. The consultation remains open until 10 July 2015.

We have applied the draft Statement of method in our assessment of prejudice, benefits and possible remedies for the purposes of this initial submission to the CMA.

South West Water has separately carried out an assessment of prejudice and benefits arising from the merger. South West Water has shared its emerging analysis with us in advance of the Phase 2 investigation. We have provided initial comments to the company on the analysis undertaken throughout the process, but, as we have not yet received the final analysis we do not comment in detail on it in this submission. We expect to receive, and comment on, South West Water's submissions to the CMA, including its final analysis, as part of the investigation process.

3. Prejudice to Ofwat's ability to make comparisons

We regulate the water and sewerage companies in line with the statutory duties that are set out in the Act and the terms of their Instruments of Appointment ('licences'). Our main duties are, in summary, to further the consumer objective, to secure that water companies properly carry out those functions and are able to finance their functions and (currently only in relation to English water companies) to further the resilience objective. Subject to those duties, we also have other duties to, among other things, promote economy and efficiency and secure that no undue preference or discrimination is shown by companies in fixing charges.

The companies we regulate are effectively regional monopolies. They are not subject to the same market forces as companies in competitive sectors. Comparative regulation has underpinned the way we have regulated the water and wastewater sectors since privatisation. The way in which we regulate has evolved since the sector was privatised and will continue to evolve in response to the drivers for change[3]. However, we will continue to use comparisons in our assessment of the limits on the amounts companies can charge their customers, to monitor and incentivise service quality and to enforce and spread best practice. Making comparisons between companies is one of the key tools that we have and it is recognised as such in the law by the special merger regime for water companies.

The CMA must consider whether the merger of South West Water and Bournemouth Water has prejudiced, or may be expected to prejudice, our ability, in carrying out our functions under the Act, to make comparisons between different water enterprises.

3.1 The companies that are the subject of this merger

South West Water provides water services to customers in Devon, Cornwall and parts of Dorset and Somerset. Bournemouth Water provides water services to its customers in Dorset, Hampshire and Wiltshire. The merger results in the loss of one of the 18 independently owned water companies for whom we currently set full price limits[4]. As the merger parties operate the same services and the merger results in

[3] See for example an introduction to our Water2020 work programme.
[4] In addition to these 18 incumbent monopoly companies, we also regulate 6 small local companies with around 2000 customers each providing either water or sewerage services or both within an incumbent's area and more than 12 water supply licensees offering water services to large use customers.

the loss of an independent comparator, consistent with the approach set out in the draft Statement of method, we assess there is the potential for prejudice as a starting presumption in this merger.

Figure 1 Operating regions of South West Water and Bournemouth Water

3.2 Methodology to the assessment of prejudice

As stated above, we have assessed the scale of potential detriment using the proposed principles and methodology set out in the statement of method consultation. The approaches themselves draw on the approach adopted by the Competition Commission in previous merger investigations. We have assessed the impact of the merger by comparing the situation with the merger against a counterfactual under which the merger is assumed not to have occurred.

This section summarises the approach we have adopted to assessing the loss of Bournemouth Water as an independent comparator and the results of our analysis. The technical details of the approach we have adopted are explained in further detail in Appendix A.

3.2.1 The extent to which the merger will change benchmarks

We have considered the impact that the merger may have on our benchmarks. If at least one of the merging companies is leading or high performing in some areas, there is a greater risk of detriment for customers than if both of the companies are poor performers. We have quantified the loss of an independent comparator in selected areas where we used benchmarks at PR14. That is in the areas of:

- The water wholesale cost benchmark;
- The cost to serve benchmark for the retail price control;

- Benchmarks for outcome delivery incentives where we made use of cross sector comparisons; and,
- The household retail service incentive mechanism.

Table 1 summarises our overall assessment of prejudice to our benchmarks that arises from this merger using both 'static' and 'forward looking' approaches.

The 'static' approach has been adopted by the Competition Commission in previous merger investigations. It reruns the approach adopted at the most recent price review (PR14) assuming the merged parties had been treated as a consolidated entity. It therefore assesses the hypothetical impact on our benchmarks in 2015-20. It should be treated as hypothetical as we have already set wholesale and retail price controls for the current control period. Furthermore, the performance of the companies involved is likely to change, which will impact on the price controls we set going forwards.

The 'forward looking' approach takes account of the possible impacts beyond 2020. It focusses on the ways in which we may regulate the water sector in the future. We have recently commenced a programme of work to identify where (and how) we might encourage more extensive use of markets and change our approach to regulating the water and sewerage sectors. This programme of work ("Water 2020") will include the development of a methodology for the 2019 price review[5].

We are at the very early stages of the Water 2020 programme and so we are starting to consider how we will adapt the principles adopted at PR14 for the future. We are still considering, for example, the impacts on our use of benchmarks of adopting a dynamic approach[6]. Therefore, our forward looking approach largely assumes that the broad form of regulation that currently prevails (i.e. the approach adopted at the last price review at PR14) will remain in place. We have taken account of changes that may arise where these have been signalled. For example, we have already signalled that we saw the average cost to serve benchmark for retail price controls as part of an evolutionary approach. We expect to adopt a benchmark that better represents an efficient cost to serve in the future and so we have taken account of more efficient benchmarks in our forward looking analysis.

[5] In July 2015 we will publish an issues paper which will discuss challenges to the sector and the issues we consider Water 2020 will address. We will then publish a consultation paper in December 2015 which will seek to set out the proposed approach to competition and regulation which will drive our approach to setting price limits in 2019. For further information - http://www.ofwat.gov.uk/pricereview/water2020/prs_pre20150602wukwater2020.pdf

[6] See for example "Uncharted waters: a forward look at managing change in the water sector - A speech by Jonson Cox http://www.ofwat.gov.uk/mediacentre/speeches/prs_spe201503jonsoncoxpolicyexchange.pdf

We have also made assumptions about the predicted future relative performance of water companies. We have done this using an adapted version of the 'changes' approach used by the Competition Commission in past merger referrals. This makes assumptions about the probability of a movement in the rankings of companies in the future based on that which has been experienced in the past.

For the wholesale price control, we do not assume convergence in performance in the future as wholesale expenditure has been the focus of price controls since privatisation. For retail and outcome delivery incentives, where price controls have been introduced for the first time in PR14, we expect to see considerable convergence in performance, particularly in respect of the poorly performing companies, our assessment makes some assumptions around convergence.

Where we have quantified the impact that may arise from the loss of Bournemouth Water as an independent comparator we have considered the net present value of the impact until 2025. In some areas, it is difficult to say what form regulation will take beyond 2025, but in the areas where we expect to make use of benchmarks in the long term, we have also considered the scope of prejudice up to 30 years ahead (which conforms with the past approaches of the Competition Commission). Where we have monetised the impacts of the loss of a comparator, we have discounted at the social discount rate set down in Treasury's Green Book (3.5%).

3.2.2 The number and quality of independent observations that remain

Any reduction to the number of comparators can have an impact on the robustness of our analysis by reducing the number of observations; in turn reducing the confidence we may have in the econometric and other models that are used to set price limits. For example, at PR14 we found it more difficult to develop robust totex models for wastewater than for the water service. This was because we had only 10 observations for wastewater compared with 18 for water.

We have considered a range of approaches to assess the impact on the precision of our econometric and other models for the wholesale cost assessment using approaches adopted by the Competition Commission in previous merger referrals.

We have not used econometric models in assessing benchmarks for outcome delivery incentives or the service incentive mechanism and so an assessment of precision is not necessary for these benchmarks. While an econometric modelling approach was adopted to assess bad debt adjustments to the retail cost to serve at PR14, we have not assessed the impact of this merger on the precision of the bad

debt econometric model as we have not considered whether this will remain a relevant approach in the future.

We summarise the outcome of our assessment in Table 1.

3.2.3 The loss of a comparator with important similarities or differences for comparison

Our draft Statement of method set out that the loss of a comparator with important similarities for comparisons could impact on our ability to make comparisons. A company might, for example, operate in similar conditions and face similar issues that make it particularly useful as a comparator. The draft Statement of method also set out that our ability to make comparisons could be affected by the loss of a comparator that has important differences. This could, for example, reduce the scope of the development of best practice or the scope of innovation if a company had demonstrated a good track record of innovation that is used to raise standards across the sector.

We have carried out a structured assessment of South West Water and Bournemouth Water against a set of indicators to consider whether the loss of either company as an independent comparator would create adverse effects.

We summarise the outcome of our assessment in Table 1. We focus on the loss of Bournemouth Water as an independent comparator as it is more likely that operations in the Bournemouth region would adopt the management practices of South West Water in the longer term and as Bournemouth Water is the company being taken over[7].

[7] The water customer base of South West Water is roughly four times the size of Bournemouth Water and it is the parent company of South West that has acquired Bournemouth Water.

Table 1 Summary of our assessment

Assessment criteria	Quantification of effects (positive figures represent detriment, negative figures represent benefit)			Commentary
	"Static" approach	Forward looking approach		
	Hypothetical PV to 2020 £m	PV to 2025 £m	30 year PV	
Wholesale cost benchmark	112	-2 to 30	1 to 43	Both Bournemouth Water and South West Water were within the upper quartile of companies on our historic (to 2012-13) totex assessment which informed the benchmark position at PR14. South West Water is ranked in the upper quartile based on our efficiency assessment of wholesale costs based on business plan figures for 2015-20, whereas Bournemouth is the 9th ranked company. We consider greatest weight should be applied to the assessment of detriment that is based on the historic cost performance (i.e. detriment towards the high end of the range) as it is derived from outturn data, and the range of company performance (or 'gaps' between them) is more reflective of past assessments. This demonstrates that the loss of Bournemouth Water as an independent comparator is likely to be detrimental to our assessment of the wholesale cost benchmark.

Assessment criteria	Quantification of effects (positive figures represent detriment, negative figures represent benefit)			Commentary
	"Static" approach	Forward looking approach		
	Hypothetical PV to 2020 £m	PV to 2025 £m	30 year PV	
Retail benchmark	-21 to -5	-6 to 0	-6 to 0 (10 years)	Both South West Water and Bournemouth Water were relatively expensive compared to the average cost to serve benchmark at PR14. The average cost to serve benchmark was part of an evolutionary approach that we expect will enable us to move to an efficient cost to serve at future price controls. The assessment of zero detriment assumes we adopt a frontier benchmark, or an approach that uses benchmarks that are external to the water sector in the future and so assumes that neither company would inform the setting of that benchmark at that time. The assessment of benefit of £6 million is sensitive to the assumptions about the impact of convergence in company cost to serve and the adoption of an upper quartile benchmark in the future. We consider the assessment of detriment is closer to the £0 million end of the range to the extent that we might make use of external benchmarks or frontier benchmarks in the future and the possible adoption of other methods to assessing bad debt that do not involve the use of benchmarking between companies in the future.

Assessment criteria	Quantification of effects (positive figures represent detriment, negative figures represent benefit)			Commentary
	"Static" approach	Forward looking approach		
	Hypothetical PV to 2020 £m	PV to 2025 £m	30 year PV	
Outcome delivery incentive benchmarks	12 to 51	8 to 66	8 to 66 (10 years)	Bournemouth Water was in the upper quartile for each of the three water service financial outcome delivery incentives that were subject to comparative assessment at PR14. While South West Water was an enhanced company and so not subject to interventions on outcome delivery incentives, its past performance ranked as upper quartile for one of these three outcome delivery incentives and in the lowest quartile for two. While we consider there will be convergence in company performance against these historic outcome delivery benchmarks during 2015-20, the loss of Bournemouth Water would be a detriment to the regime. The value we assess for detriment for outcome delivery incentives is illustrative and reflects the value customers place on the marginal levels of performance based on the willingness to pay data companies gathered in PR14.

Assessment criteria	Quantification of effects (positive figures represent detriment, negative figures represent benefit)			Commentary
	"Static" approach	Forward looking approach		
	Hypothetical PV to 2020 £m	PV to 2025 £m	30 year PV	
Service Incentive Mechanism benchmark	6	10	10 (10 years)	Bournemouth Water has performed well on SIM and ranked second or third in the sector for each of 2011-12, 2012-13 and 2013-14. South West Water's performance ranked in the lowest quartile in each of these years. The SIM is a comparative performance measure which incentivises companies to compete with each other to receive a reward and avoid a penalty. The loss of Bournemouth Water results in a detriment to our ability to make comparisons as the SIM would become less stretching for other companies.
Precision of the wholesale cost models	0.21% to 3.8%	N/A	N/A	A reduction in the number of independent observations reduces the robustness of our benchmarking. The loss of Bournemouth Water as an independent comparator would have resulted in a loss of the precision of the wholesale cost models we applied at PR14 of between 0.21% to 3.8%. Although mechanistic precision calculations are not the main criteria we used to select a benchmark (e.g. upper quartile) derived from the models in PR14, they provide some indication of the detriment resulting from potentially making the models less precise. Each additional merger will potentially reduce the precision of the cost models and so allow us to place less reliance on their results. This may make it harder to set stretching cost thresholds.

Assessment criteria	Quantification of effects (positive figures represent detriment, negative figures represent benefit)			Commentary
	"Static" approach	Forward looking approach		
	Hypothetical PV to 2020 £m	PV to 2025 £m	30 year PV	
Qualitative analysis	Across the categories of qualitative analysis that we have considered, South West Water and Bournemouth Water both have attributes that are helpful to Ofwat in making comparisons with other water companies, but in slightly different areas. South West Water has demonstrated a leading approach in the development of its business plan, customer engagement, performance commitments, outcome delivery incentives and risk and reward. However, unlike customers of Bournemouth Water, customers of South West benefit from the full suite of ring fencing licence conditions that provide protection to customers to ensure that a company has sufficient financial and managerial resources to carry out its functions as a water company and is appropriately ring-fenced from the rest of the group Bournemouth Water's similarity to some of the smaller water only companies was useful in assessing company claims for a small company uplift at PR14, and there are attributes that could allow for sub-sample comparisons with other companies for wholesale costs. Despite its relatively small size, Bournemouth Water responded positively to the challenges we put to it through the price review process. It had a leading approach to the delivery of financial outcome delivery incentives in the original business plan for PR14. Evidence provided in the price review process in support of costs associated with a new customer relationship and billing system that helped us to challenge similar claims by other companies. While we have identified some compliance issues with South West in respect of our board, leadership, transparency and governance principles and with demonstrating compliance with the Water Industry Act 1991, none have been identified with Bournemouth Water.			

Assessment criteria	Quantification of effects (positive figures represent detriment, negative figures represent benefit)			Commentary
	"Static" approach	Forward looking approach		
	Hypothetical PV to 2020 £m	PV to 2025 £m	30 year PV	
Possible approaches to offset the detriment	We have considered a variety of measures to offset the potential detriment of the loss of a comparator in our wholesale cost modelling. These encompass adjusting wholesale cost benchmarks, extending the time series in the modelling, strengthening menu incentives, use of alternative modelling approaches and the use of alternative comparators. However for a variety of reasons we do not consider that these approaches would allow us to offset the detriment. We note that approaches which rely on the use of additional data would increase the costs and regulatory intrusion associated with collecting, assuring and validating the data. The increased costs associated with this would not offset the impacts of this merger. Similarly we do not consider that there are alternative approaches to offset the detriment to our use of comparators in retail, outcome delivery incentives and SIM. Our qualitative use of comparators is also likely to be permanently impacted.			

3.2.4 The results of our assessment of detriment

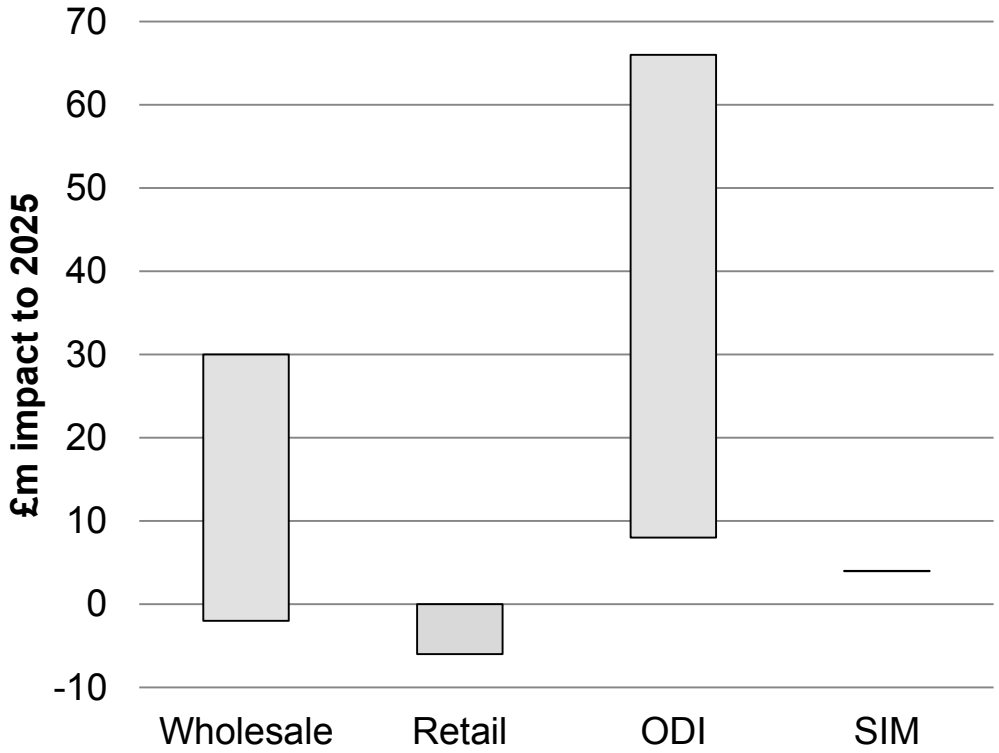
In summary, the results of our quantified analysis demonstrate that the loss of Bournemouth Water would cause detriment in respect of the following.

- The upper quartile benchmark for wholesale costs where the loss of Bournemouth Water as an independent comparator removes a relatively efficient company.
- The upper quartile benchmark for comparative outcome delivery incentives, where the loss of Bournemouth Water removes a company that was assessed to be in the upper quartile of all companies for each of the three incentives where comparisons were made on the water service at PR14.
- Relative performance measures for the service incentive mechanism, where the merger will result in the loss of Bournemouth Water which has achieved consistently upper quartile levels of performance.

The assessment shows that the loss of Bournemouth Water may create benefits in setting the retail cost to serve benchmark. This arises from a possible reduction in the bad debt adjustment for South West Water and other companies subject to the adjustment at PR14 (as the lower deprivation in the Bournemouth area reduces the bad debt adjustment for the merged company as a whole). However, we consider this assessment should be treated with caution as the calculation assumes we continue with the same approach to bad debt adjustments in the future. One option we could pursue is to consider alternative modelling approaches and data sources, for example, the use of more granular demographic data and comparators from other sectors.

In total, taking account of the monetised, quantitative and qualitative assessments and the level of certainty we have over the impacts and future regulation, we consider the merger will introduce detriment to our ability to make comparisons between different water enterprises. As different assumptions have been made in our assessment, we present a range for the overall assessment of detriment. Our overall assessment of plausible net detriment lies in the range £10 million to £106 million (present value to 2025) or £13 million to £119 million on the basis of a 30 year present value. The ends of these ranges are informed by the different assumptions that have been made in our calculations as stated in Table 1. We have not attempted to narrow the range or provide a point estimate due to the different approaches that have been used in the analysis across each of the benchmarks. Figure 2 below shows the plausible ranges of impacts on the four quantitative benchmarks for the assessment to 2025.

Figure 2 Plausible ranges of benchmark impacts



We have used several approaches to assess the impact of losing a company on benchmark precision to the wholesale cost assessment - specific, general and bootstrapping. These approaches, adapted from those used by the Competition Commission in previous merger referrals, differ in the assumptions they make and the methodology they use but they all show an adverse impact. We do not assign a monetary value to this analysis as the reduction in precision does not necessarily translate into the selection of a different benchmark and higher cost to consumers. However, the percentage impacts illustrate the fact there is some detriment to our ability to precisely model the industry efficiency costs.

Figure 3 below shows the plausible ranges of precision impacts, i.e. loss of precision.[8]

[8] The range limits represent percentages of different measures of precision. The bottom end of range represents the impact as a percentage of the upper quartile benchmark and the top end represents the impact as a percentage of the original precision range.

Figure 3 Plausible range of precision reduction

The evidence provided on the qualitative use of comparisons suggests a further detriment over and above that suggested from the quantitative evidence. We consider Bournemouth Water to be a useful comparator across a range of our qualitative assessment criteria, which would be a loss to the system of economic regulation following the merger.

While we cannot yet be certain of the specific approaches we will apply to setting benchmarks in the future, we consider the results of our analysis demonstrate a material amount of prejudice arising from this merger.

4. Relevant customer benefits

In the event that the CMA finds that the merger prejudices our ability to make comparisons, the CMA must consider what action should be taken for the purpose of remedying, mitigating or preventing the prejudice or any adverse effect resulting from the prejudice. In doing so, the CMA may have regard to the effect on relevant customer benefits.

As required by the Act, relevant customer benefits are limited to relevant customers in the form of lower prices, higher quality, increased choice or greater innovation in relation to goods or services.

These benefits must accrue to customers of the merging enterprises, including future customers and can encompass customers at any point in the chain of production and distribution.

We expect South West Water to indicate the benefits it considers will arise for customers from the merger. We consider that most weight should be applied to estimates of benefits that are certain, are specific to the merger (i.e. would not occur if the merger did not take place), which accrue over a reasonable time and are sustained. In a normal competitive market, competition would provide an incentive for the merged entity to pass merger benefits on to its customers. The lack of competition in the water service means that we cannot rely on the same incentives to ensure that potential relevant customer benefits are actually passed to customers. We would therefore apply most weight to benefits proposed by the merging parties where these are accompanied by a public commitment or undertaking (which may include a licence amendment) and supported by a clear implementation plan.

We have focussed our assessment of the potential benefits based on lower prices, improved quality or greater innovation. We discuss each of these below.

4.1 Lower prices

Lower prices can result from cost savings from a merger that are passed on to customers. We consider that the CMA should place greatest weight on the potential benefits where there is a clear mechanism for setting out how cost savings will be passed to customers in the form of reduced prices.

In the absence of a public commitment to pass these cost savings directly to customers in the form of lower prices, we consider the merger parties could be incentivised to overstate the potential benefits that may arise from a merger. They may do this to mitigate the assessment of prejudice or not to realise and pass on to customers benefits that exist in principle. [redacted] Furthermore, other changes that might be expected to generate synergy savings, such as reductions in headcount, have not occurred following the merger of South Staffordshire and Cambridge Water plc.

For these reasons, we suggest less weight is placed on potential merger savings proposed by the merger parties in the absence of a public commitment or undertaking.

4.1.1 Operational cost savings

We have looked at the possible synergy savings arising from the merger based on publicly available financial information. Our initial assessment indicates the net present value of potential synergy savings could be £[redacted] to 2020 [redacted]. Our assessment assumes the merger would provide the opportunity for synergies where functions are currently duplicated in both businesses and generate additional efficiencies such as leveraging the most cost effective procurement contracts as both businesses purchase similar goods and services. The details of our calculations are set out in Appendix B.

Of the [redacted] wholesale savings, [redacted] could be passed back to customers through the wholesale totex cost sharing mechanism which forms part of the existing regulatory framework. However, in the absence of a formal commitment or undertaking from the merger parties to lower customer bills and/or an adjustment the totex baseline, we would not be certain that the full amount of these savings will accrue to customers.

The household retail control does not include a cost sharing mechanism. Consequently household retail cost savings that arise before 2020 would not be passed on to customers without a formal commitment or undertaking.

The introduction of competition in the non-household retail market in 2017 may allow for non-household customers to benefit from merger cost savings in terms of lower

prices during the 2015-20 period. However the market has not yet opened to market competition. Merger cost savings received by customers will depend on the strength of competition and the relative prices offered to relevant customers by South West and Bournemouth compared to other companies.

We assess the merger cost savings could potentially increase to £[redacted] to 2025 (net present value). However, we do not think all of this value should be expected as being incremental to the counterfactual. There is more uncertainty about potential customer benefits beyond 2020 as these benefits would need to be over and above the targets that we would anyway set for these companies at the next price control. These efficiency targets will be driven by underlying efficiency improvements which, themselves, could erode the incremental benefits from the merger.

Our assessment is an initial estimate that is based on information published by South West Water and Bournemouth Water. The merger parties have access to other information on the impact of the merger, which we expect the CMA will also consider as part of this investigation. Indeed the merger savings could be greater depending on the assumptions that are made and we set out in Appendix B some of the issues we suggest the CMA should consider.

4.1.2 Improved water resource management

We have not attempted to assess whether there are any savings arising from improved water resource management planning as the water supply regions operated by South West Water and Bournemouth Water are non-contiguous. We have not seen compelling evidence from the merger parties that benefits from water resource management planning could arise directly and exclusively as a result of the merger.

4.1.3 Reduced financing costs

The merger could lead to reduced cost of debt financing costs, as the consolidated entity should be able to raise finance more cheaply than the separate entities pre-merger. In PR14, we identified that water only companies, including Bournemouth Water had higher debt costs of 25 basis points, which increased the weighted average cost of capital by 15 basis points. The policy we adopted required companies to demonstrate the benefits customers receive associated with a request set down in their business plan for an uplift to the cost of capital. We explain our approach to the benefits test in assessing company claims for a small company uplift in Appendix C.

Bournemouth Water was one of only two companies to pass the benefits test we applied at PR14, and so we allowed it an uplift to its cost of capital. The small company uplift for Bournemouth Water was equivalent to an annual revenue increase of £0.23 million in each year of the 2015-20 period.

4.2 Higher service quality

As stated above, Bournemouth Water has been a strong performer in respect of SIM; in contrast South West Water has remained in the bottom quartile of all companies in the years assessed. It is possible that customers of South West Water could benefit from best practice improvements in customer service that could be drawn from Bournemouth Water. However, the SIM is already recognised as incentivising companies to improve customer service performance and South West Water has shown performance improvements in this area. It is not clear that customers of South West Water would incrementally benefit from ongoing customer service improvements due to the merger (relative to the improvements which the company might be expected to make, with an enhanced business plan and the existing incentives, in the counterfactual case).

From a customer viewpoint, we would expect relevant service quality benefits should be supported by a clear rationale as to why they could only be delivered as a result of the merger. A clear implementation plan would be helpful in demonstrating that these will be delivered.

4.3 Innovation

The evidence we have identified in the area of innovation focusses on the sharing of best practice between the two merger parties. It is possible that the merger parties could put forward areas where customers of the two operating regions could benefit from an innovative approach of the other party.

We note in particular South West Water's approach to the price review where we assessed South West Water's business plan as pre-qualified for enhanced status. Its business plan demonstrated an innovative approach to customer engagement, development of performance commitments and development of its Water Share scheme. Our risk based assessment of South West Water's business plan concluded there were few amendments required to its business plan to allow it to benefit from procedural and financial benefits that arose from enhanced status. We explain our approach to the risk based review and the benefits of being an enhanced company in Appendix D.

Bournemouth Water demonstrated a leading approach to the use of financial incentives on outcomes in its original business plan for PR14.

While it may be the case that customers of one company might benefit from the best practice business planning approaches of the other in the future, we cannot be certain that such benefits will continue to arise, for example as a result of management changes.

Merging retail activities is an example of a possible benefit that could arise following the merger. While we have taken this into account in our above assessment of incremental cost savings, this type of arrangement could also potentially occur in the counterfactual absent the merger. Our initial estimate of the incremental benefits may, therefore, be overstated in this area. For example, Bristol Wessex Billing Services Limited carries out the retail activities for Bristol Water and Wessex Water as independent companies.

It may also be possible for the merger parties to implement better water resource planning through a single, rather than two, trading arrangements with Wessex Water. However, it is not clear this type of benefit could arise only following the merger and therefore what the incremental impacts of the merger in this area might be.

Based on our assessment we have not seen compelling evidence that the merger would result in relevant customer benefits from innovation. We expect the merger parties to put forward the areas where benefits to customers could arise from the adoption of innovative approaches. It is our view the CMA should place weight on only those areas where there is external, third party evidence in support and where there is an implementation plan in place.

5. Initial view on remedies

As stated in section 4, in the event the CMA finds that the merger prejudices our ability to make comparisons, the CMA must consider what action should be taken for the purpose of remedying, mitigating or preventing the prejudice or any adverse effect resulting from the prejudice. The CMA must consider whether action should be taken by it, or whether it should recommend the taking of action by others, for the purpose of remedying, mitigating or preventing the prejudice or any adverse effect and what that action should be.

As set out above, we consider this merger introduces prejudice to our ability to make comparisons. We do not consider this prejudice is fully offset by the relevant customer benefits that we have calculated as set out in section 4. Our view is that a remedy is necessary to mitigate the prejudice to our ability to make comparisons.

While we have discussed possible benefits and remedies with South West Water, we do not comment on them here as we have not yet seen the final proposals from the company.

We set out in this section the full spectrum of remedies that could be considered in the context of this merger – that is remedies that are behavioural or structural, and those relating to price reductions. Remedies are complicated because the net detriment that arises is to all customers in England and Wales whereas the relevant benefit is only to the customers of South West Water and Bournemouth Water in the context of this merger. We anticipate that the merger parties will set out the synergy savings that could arise for customers. However, remedies that comprises a price reduction would only help customers in the Bournemouth and South West Water regions; our view is that remedies should take account of the wider detriment,

5.1 Behavioural remedies

Behavioural remedies are those which operate on an ongoing basis with the aim of altering, in specific ways, the behaviour of the merging party.

Possible remedies in this context include a commitment to licence amendments that allow us to regulate the sector more effectively in the future. Licence amendments can only be made with the consent of each undertaker (or in the absence of such consent, an appeal to the CMA). Therefore, remedies that help us to regulate differently could be useful to the extent the amendments are introduced in a way that

other companies could adopt them in the future. For example, revealing information in different parts of the value chain that could be subject to different forms of regulation or competition in the future could be helpful to the way the regulation might evolve. This may increase the information that is available to allow us to regulate different parts of the value chain. This could include, for example, separating resources from treatment and networks or separating water and wastewater businesses.

Remedies which may include separate management or separate accounting arrangements could be beneficial. We note that, in the past, we have placed less weight on comparative information that is not supported by adequate, independent assurance and so we would wish to understand how the merged entity would provide us with the requisite assurance as to the quality of the comparative information it provided to us.

Within our current programme of work, we are considering the benefits of pursuing the introduction of modular licences, which would allow licences to be put in place for different parts of the value chain to allow for separate reporting and in turn allow price controls to be set at a disaggregated level in the future. The different modules of the licence could be 'switched off' if a company in future decided not to participate in provision of the relevant services. To the extent that the merger parties offered modifications (or provided an undertaking to deliver those modifications) that were capable of being introduced to other companies, this could be considered further as a possible remedy.

Customers of South West Water do not benefit from the full suite of ring-fencing licence conditions. These provide protection to customers to ensure that a company has sufficient financial and managerial resources to carry out its functions as a water company and is appropriately ring-fenced from the rest of the group. While the ring-fencing licence conditions have been the subject of discussion with South West Water, we expect that, especially in the event of consolidation of the licence conditions following the merger that the company will adopt the full suite of ring-fencing licence conditions to provide adequate protections to customer.

5.2 Structural remedies

We do not consider that full divestiture of either South West Water or Bournemouth Water to be an appropriate remedy on the basis of disproportionality and relevant customer benefits foregone. However, in the event that Pennon was to offer partial divestiture of its activities to create a new independent comparator, this could be considered as a possible remedy.

5.3 Price reductions

The Competition Commission has concluded that price reductions would mitigate the adverse effects resulting from the prejudice to our ability to make comparisons in previous merger investigations. For example, in the case of the South East Water – Mid Kent Water merger[9], the Competition Commission considered that cost savings arising from the merger could be lost to customers in the event of divestiture but was not persuaded that these would accrue to customers without a formal undertaking. In that instance, the remedy comprised a one off price reduction and a requirement for the merger parties to accept a reduction associated with merger savings at the following price review.

As discussed above, we consider price reductions to be an appropriate remedy only where accompanied by an undertaking that confirms it will be passed back to customers. To the extent that price reductions are an appropriate remedy, we consider these should be accompanied by an undertaking from the merger parties confirming when the price reductions will be made and the value of those price reductions. Where price reductions apply to savings that arise from costs within the water wholesale price control, we are open to considering how these price reductions should be accompanied by an agreement to adjust the water wholesale cost benchmark for the merger companies. This would ensure that management is incentivised to deliver both synergy and ongoing efficiency savings.

Customers in the Bournemouth Water region would not have received a small company uplift to the cost of capital had the merger arisen prior to PR14. As stated above, we do not comment on the work carried out by South West Water in preparation for its submission. However, we support the view set out in the customer research that, following completion of the merger, customers of Bournemouth Water should not incur the cost of the small company uplift in the remainder of the current price setting period.

In addition to the above, the assessment we have made as part of the 'specific' benchmarking analysis suggests that had the merger occurred prior to PR14, there may have been a lower bad debt adjustment to the average cost to serve for South West Water. To the extent that the CMA places any weight on the potential benefit arising to the sector from the possible impact of bad debt allowances in its assessment of prejudice, it would be reasonable to expect South West Water to offer

[9] Table A2.6 of our Consultation on Ofwat's approach to future mergers and statement of method sets out the remedies imposed or considered in previous water merger references

that it will not recover the full amount allowed in respect of the PR14 bad debt adjustment from customers in the South West Water region.

6. Appendices

The appendices comprise the following:

Appendix A – Approach to assessing prejudice

A1 – Basis for assessing whether a merger would prejudice our ability to make comparisons

A2 – Loss of an independent comparator

A3 – The impact of the merger on benchmarks

A4 – The impact of the merger on the precision of our wholesale benchmarking models

A5 – Loss of a comparator with important similarities or differences

A6 – Possible approaches to offset the prejudice arising from the loss of this comparator

Appendix B – Synergy savings

Appendix C – Benefits assessment for the small company uplift to the cost of capital

Appendix D – Risk based review and enhanced statu

Appendix A: Approach to Assessing Prejudice

A.1 Basis for assessing whether a merger would prejudice our ability to make comparisons

This section sets out our approach to assessing the impact of the merger on our ability to make comparisons. Our assessment follows the approach we set out in the consultation on the draft Statement of method. The consultation on the draft Statement of method is currently open and closes on 10 July.

A1.1. The counterfactual

To be able to undertake an assessment of the impact of the merger we need to consider the situation with the merger (the factual) and without the merger (the counterfactual).

We have based our assessment on a counterfactual which assumes that both companies, South West Water and Bournemouth Water, would remain as independent companies.

A1.2. Impact of regulatory approach

When considering the impact of a merger we need to make assumptions about the regulatory regime under which our assessment of the impact on our use of comparators and assessment of customer benefits are made. In the main we have based our assessment on the prevailing form of regulation, i.e. that which was used for PR14. However, our regulatory approach is likely to evolve going forwards, for example we have indicated that we are unlikely to use an average cost to serve approach for retail in the future. Where we have signalled a change to our future regulation, we have used this as the central case in our assessment. Where there is less certainty about the evolution of the use of comparators we have used a scenario approach to identify whether future regulatory changes would potentially have a material impact on our ability to use comparisons.

A1.3. Our criteria for assessing whether a merger would prejudice our ability to make comparisons

We have developed a set of criteria for assessing the impact of water mergers on our ability to make comparisons. These criteria are based on our high level principles

for mergers and are based on the harm a merger might create to our ability to regulate the sector in line with our statutory duties. Our high level principles for mergers and our criteria are set out in our draft mergers policy document and draft Statement of method.

- Criterion 1 – the extent to which the merger involves overlaps
- Criterion 2 – whether the merger involves the loss of an independent comparator
- Criterion 3 – the extent to which the merger will change benchmarks
- Criterion 4 – the number and quality of independent observations that remain
- Criterion 5 – a loss of a comparator with important similarities for comparisons
- Criterion 6 – a loss of a comparator with important differences for comparisons
- Criterion 7 – are there alternative approaches available to us to offset the loss of a comparator?

We discuss in section A1.4 how we have made the assessment against these criteria.

A1.4. Our assessment against the criteria

As set out in our draft Statement of method consultation, our assessment against the first two criteria is based on yes/no response, although we accept that this can sometimes be a matter of degree. When we apply the criteria in the new merger regime that will operate once the merger provisions of the Water Act 2014 are in place, if the answer to either question is no then we would expect to consider it is unlikely that the merger would cause prejudice to our ability to make comparisons. If this is the case then, under the new regime, we would not proceed with the assessment against the other criteria and would provide our opinion to the CMA on this basis.

We have quantified the impact of the merger against criteria 3 and 4. Monetising impacts provides an ability to assess the scale of impact and the relative weight of that impact against other criteria. In monetising the impact we have applied a discount rate of 3.5% to assess the impacts to the end of the next price setting period and over 30 years, consistent with the Treasury's Green Book, and consistent with the approach adopted by the Competition Commission in previous water merger inquiries. Where monetisation is not possible then we have undertaken a quantitative or qualitative assessment of the impact on our ability to make comparisons.

Criteria 5, 6 and 7 are assessed on a qualitative basis.

We have brought together monetised, quantitative and qualitative impacts into an appraisal summary table (this is set out in table 1 of the summary document that accompanies this technical appendix). After summing all monetised impacts we have considered, whether, in the round, the non-monetised impacts would change the balance of the decision and whether the overall impact constituted a prejudice to our ability to make comparisons.

Our assessment against each of the criteria is set out in the following sections.

A2. Loss of an independent comparator

This section considers the first two criteria in our draft Statement of method. These are:

- Criterion 1 – the extent to which the merger involves overlaps
- Criterion 2 – whether the merger involves the loss of an independent comparator

A2.1. Basis for our assessment

The assessment against these criteria is intended to identify where a merger could create potential concerns. If the answer to either criteria is no then it is unlikely that the merger would cause prejudice to our ability to make comparisons. We acknowledge that the answer to each question can sometimes be a matter of degree and therefore the assessment requires some level of judgement.

A2.2. The extent to which the merger parties operate the same services

As set out in our draft Statement of method, we consider that the greater the degree of overlap in merger parties' scope of services, the more likely a merger is to prejudice our ability to make comparisons between undertakers. For example, a water and sewerage company (WASC) merging with another WASC has a large degree of overlap (water, sewerage and retail services are all provided by both companies) and so is more likely to prejudice our ability to make comparisons. Conversely a water only company taking over the wastewater services of a WASC would have no overlap in the scope of services and so we would be less concerned about potential prejudice.

In this instance, it is the parent company of South West Water, Pennon, that has taken over the licenced services of Bournemouth Water. Both South West Water and Bournemouth Water operate retail and wholesale water services. We consider there is a significant degree of overlap in the services that are provided and could therefore have a prejudicial impact on our ability to make comparisons.

A2.3. Loss of an independent comparator

A water merger brings under common ownership or common control two or more undertakers. The merging undertakers continue to operate under separate licences (referred to in the Water Industry Act as the appointments) unless their licences are modified.

In the absence of licence changes, we can continue to receive separate information from each of the merging water enterprises and we can continue to use this to make comparisons. However, in general, we consider that companies under common ownership may behave in similar ways and therefore a water merger may reduce the value of comparisons made by Ofwat particularly if there are no specific remedies put in place.

Prior to the merger, South West Water and Bournemouth Water were under wholly separate ownership structures. South West Water is owned by Pennon, which is listed on the London Stock Exchange. Pennon acquired 100% of the share capital of Sembcorp Bournemouth Water Investments, the holding company for Sembcorp Water Limited from Sembcorp Water industries. Neither Pennon nor Sembcorp Industries hold a controlling stake, nor have material influence in, any other water or water and sewerage company in England and Wales. Consequently the merger would mean the loss of an independent comparator. The merger could have a prejudicial effect on our ability to make comparisons.

A2.4. Overall assessment

As the merger of South West Water and Bournemouth Water involves both a merger of companies which operate the same services and the loss of an independent comparator, it has the potential to prejudice our ability to make comparison. The impact of the merger on our ability to make comparisons is considered in the following chapters.

A3. The impact of the merger on benchmarks

A3.1. Introduction

This chapter sets out our assessment of the impact of the merger on criterion 3: the extent to which the merger will change benchmarks. This is the primary area where we make quantitative use of comparators.

We have made use of benchmark assessments at each price review since the sector was privatised. The benchmark assessments we have made have been important for driving this regulated monopoly sector forward both in terms of delivering improved levels of service to customers and the environment and in delivering those services at efficient cost.

The impact of a merger could remove a high performing company from our comparisons, which could impact on our benchmarks, reducing the scale of the challenge for the industry as a whole.

The chapter is structured as follows:

- The basis for our assessment;
- The impact of the merger on wholesale cost benchmarks;
- The impact of the merger on retail cost to serve benchmarks;
- The impact of the merger on outcome delivery incentive benchmarks; and
- The impact of the merger on the service incentive mechanism benchmarks.

Table A1 summarises the overall assessment of detriment that we have quantified in monetary terms from the analysis we have carried out

Table A1 Impact of the merger on our benchmarks

Area	Impact £m		
	"Static" approach (AMP6)	Forward looking approach	
	NPV	NPV to 2025	Cumulative NPV
Wholesale cost assessment	£112m	-£1.5m to £30m	£0.6 to £43.4m (30 years)
Average cost to serve	-£21m to -£5m	-£6m to -£1m	-£6m to -£1m
Outcome delivery incentives	£12m to £51m	£8m to £66m	£8m to £66m (10 years)
Service incentive mechanism	£6m	£10m	£10m (10 years)

A3.2. Basis of our assessment

Our use of benchmarks has evolved at each price review and is expected to continue to evolve in the future. Our approach reflects the extent to which different parts of the value chain are subject to competitive forces and the extent to which regulatory policies have adapted from the more regulatory intrusive focus on cost performance in the price controls that followed privatisation to a greater focus on revealing efficient cost information, such as menu regulation and enhanced business plans, which we have used more recently. We explain the detail of the PR14 risk based review and what it means to be an enhanced company in further detail in Appendix D.

As our regulatory approach is expected to evolve from the approach we adopted at the last price review, our assessment has taken as its initial basis the broad form of regulation that currently prevails (i.e. the approach adopted at the last price review at PR14). We have then taken account of changes that may arise where they have already been signalled.

In each of the areas that are subject to benchmarking assessment, the amount each company receives – as a revenue allowance or as a reward or penalty – depends on the historic or forecast performance of all other companies. Therefore, by making assumptions about the performance of the merged entity, we have calculated the

potential impact of the merger on our benchmarks. For the purposes of this assessment, we have not made any assumptions about synergy savings as we consider these separately in our assessment of customer benefits arising from the merger as set out in Appendix B.

While the merger will not change the PR14 benchmark as price controls for the 2015-20 period have already been set, we first consider the general or "static" impact of the merger. This considers the hypothetical impact if the merger had occurred prior to PR14 and consequently impacted on the PR14 benchmarks. While this approach provides an indication of potential impact of the merger on the current benchmarks, it should be regarded as hypothetical as the merger will only impact on benchmarks for future control periods in practice.

We then look at the impact of the merger on potential benchmarks in future price reviews. This assessment needs to take account of changes in each company's absolute and relative performance, as these are not constant over time. To forecast movements in relative performance over time, we have drawn on historic data on companies' performance rankings to estimate the likelihood of a company rising or falling in the rankings. This analysis is similar to the "changes" approach used by the Competition Commission in the Mid-Kent/South-East Water and South Staffordshire Water/Cambridge Water merger cases. We have calculated the probability of a change in ranking over each five year period to encompass the entire assessment period.

Using the changes approach, we have looked at the impact of this on our benchmarks over both the next five year control period and a 30 year period.

In some instances, towards the end of 30-year period, it is not possible to say which companies will be industry-leading, in part because the low performing companies are expected to catch up with the better performing companies, and so the range of rankings could be expected to narrow. In these cases, the expected impact of the merger on the benchmark would be lower in the later years of a long assessment period.

The approach we have adopted draws on, and adapts, the approach we undertook in the benefits test for assessing claims associated with the company-specific uplift on the cost of capital at PR14[10]. This was undertaken as part of our decisions on company specific uplifts to the cost of capital (WACC). We concluded that

[10] Our approach was set out in IN 14/10 – Ofwat's approach to the assessment of a company-specific uplift on the cost of capital. The assessment carried out in the final determination was explained in Appendix 3 of the final determination and set out in an accompanying spreadsheet.

Bournemouth Water should be allowed an uplift to its WACC as it provided comparator benefits to customers with a net present value over 30 years of £6 million to £12 million which exceeded the additional cost of the financing allowance. We explain in further detail the benefits test we used to assessing claims by small companies for an uplift to the cost of capital in Appendix C.

We have adapted the approach to align with the draft Statement of method and a more detailed consideration of the merger of South West Water and Bournemouth Water.

A3.3. Wholesale cost assessment

A3.3.1. PR14

At PR14, we benchmarked the wholesale costs of companies against each other using a variety of econometric models and unit costs. The econometric water models relied on historical data of the 18 comparators (opex from 2009-08 to 2012-13 and capex from 2005-06 to 2012-13). The efficiency scores derived from these historical performance models were used to set the upper quartile efficiency target applied at PR14. The upper quartile was situated between the 5th and the 6th ranked companies, at 93.47% (calculated by reference to outturn totex used in the wholesale cost modelling divided by modelled totex after triangulation). This upper quartile was then applied to the modelled costs to set efficient cost targets.

The company rankings used at PR14 are set out in Table A2. It illustrates that both Bournemouth Water (BWL) and South West Water (SWT) were in the upper quartile of the wholesale cost assessment.

A3.3.2. Impact on the wholesale cost benchmark - Static approach

The static approach simply examines the benchmarks set in the most recent price control (PR14), with the merged entity replacing South West Water and Bournemouth Water. Consequently it should be regarded as a hypothetical analysis of the impact of the merger.

We have undertaken the static analysis using the historic dataset which was used to set the PR14 benchmarks (and so provides a good indication of the potential impact on the PR14 benchmarks that were set in the review).

In our historic dataset Bournemouth Water and South West Water are first and second ranked respectively and so are in the upper quartile. In the static approach,

we have assumed the efficiency of the merged company to be based on the characteristics of the pre-merger companies. As both companies are upper quartile then we would expect the merged company to also be upper quartile, based on a weighted average. Consequently the impact of the merger does not depend on our assumptions about the efficiency of the merged entity. We would therefore expect the merger to result in the loss of an upper quartile comparator which will shift the upper quartile benchmark downwards.

Table A2 Movement in historic totex rankings

Rank	Identifier[11]	Efficiency ratio		Rank	Identifier	Efficiency ratio
1	BWL	84.3%		Remove BWL		
2	SWT	84.5%		1	SWT	84.4%
3	PRT	91.5%		2	PRT	91.5%
4	SEW	92.6%	UQ	3	SEW	92.6%
5	NES	93.3%		4	NES	93.3%
6	SSC	94.1%		5	SSC	94.1%
7	TMS	94.3%		6	TMS	94.3%
8	SVT	95.7%		7	SVT	95.7%
9	DVW	95.9%	→	8	DVW	95.9%
10	YKY	96.1%		9	YKY	96.1%
11	AFW	97.2%		10	AFW	97.2%
12	ANH	99.4%		11	ANH	99.4%
13	WSX	100.6%		12	WSX	100.6%
14	SRN	101.7%		13	SRN	101.7%
15	UU	102.9%		14	UU	102.9%
16	SES	103.5%		15	SES	103.5%
17	WSH	109.7%		16	WSH	109.7%
18	BRL	122.4%		17	BRL	122.4%
Upper quartile threshold		93.5%		Upper quartile threshold		94.1%

The PR14 upper quartile benchmark was situated three quarters of the way between the 5th and 6th ranked companies. The loss of an upper quartile company will shift the benchmark so that it is based on the performance of the 5th ranked company, i.e. the company that was previously ranked 6th before the loss of the upper quartile company. Therefore, the impact of dropping an upper quartile company is:

[11] See appendix D for a full list of acronyms

¾ x (the difference in efficiency ratio between the 5th and the 6th ranked company) x (industry totex). = ¾ x (94.1-93.3) x £17,393m = £112m.

Consequently the overall detriment to customers from the merger, based on historic data is £112 million in the period 2015-20.

A3.3.3. Impact on the wholesale cost benchmark - Forward looking approach

The static assessment of the impact on PR14 benchmarks does not provide us with an assessment of the impact of the merger in the future. This is because the PR14 price control will remain unchanged as a result of the merger. The impact of the merger on future price controls depends on the relative and absolute levels of performance of the merging companies if the merger did not take place (the counterfactual), as well as on the expected relative and absolute performance of the merged entity.

We estimate the probability that South West Water and Bournemouth Water will be in the upper quartile in each of the next five price controls using the 'changes' approach. That is, an approach based on an assessment of the movements in company rankings of the past and their current positions.

We use the following approach:

1. Derive a probability matrix for changing ranks for each of the next five price controls.
2. Take the current rank of South West Water and Bournemouth Water.
3. Derive their probabilities of being in the upper quartile given their current ranks.
4. Set up scenarios and calculate the joint probability of each scenario.
5. Calculate expected values associated with losing Bournemouth Water.
6. Multiply the probability by the expected value to get the impact estimate and discount over the period of the assessment.

In steps 2 and 5, we have used both the historical or business plan ranking and expected loss, which gives us a range of results for forward-looking impact. Although we still consider that the historical results are more reliable (and therefore used in setting efficiency challenges in PR14), as they relate to outturn costs rather then business plan forecast costs, we also see the relevance of the business plan approach here. Unlike for the static approach, the forward-looking approach does try

to estimate the impact on the future efficient position. The forecasts from the business plan are a starting point.

In the rest of this sub-section we detail our analysis in each of the steps set out above.

Step 1

We construct the changes matrix, which sets out the probabilities of a company reaching a future ranking based on its current ranking. We have used the proposed approach outlined in 'Valuing the Impact of Mergers and Identifying Undertakings in Lieu'[12], which builds on the approach used in the Competition Commission's assessment of the South Staffordshire Water and Cambridge Water merger case.[13] The matrix for the PR19 is derived in the following way:

- Rank changes in opex from 2000 to 2009 (annual).
- Rank changes in capex in PR99, PR04 and PR09 (five yearly).
- Calculate the probabilities of incremental rank changes for opex and capex separately. This equals the relative frequency of each move, adjusted for a normal distribution.
- Take a weighted average of the probabilities, applying a notional 60% capex.
- Adjust these raw probabilities by forcing the total in each row to be 100%.

The resulting matrix is set out in Figure A1.

Figure A1 changes matrix

[12] http://www.ofwat.gov.uk/rpt_com201505eemergers.pdf
[13] Further details of our views on the approach to forecasting future efficiency rankings and amendments to the Competition Commissions approach are set out on pages 14-19, Pr14 draft determinations: Annex to technical appendix A6 – benefits assessment from a company-specific uplift on the cost of capita

		Discrete probability of reaching rank y in year 5																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Starting rank (x)	1	10.8%	10.7%	10.4%	9.8%	9.1%	8.3%	7.4%	6.5%	5.6%	4.7%	3.9%	3.2%	2.6%	2.1%	1.6%	1.3%	1.0%	0.8%
	2	9.7%	9.8%	9.7%	9.4%	8.9%	8.3%	7.6%	6.8%	5.9%	5.1%	4.3%	3.6%	2.9%	2.4%	1.9%	1.5%	1.2%	0.9%
	3	8.7%	9.0%	9.1%	9.0%	8.7%	8.2%	7.7%	7.0%	6.2%	5.5%	4.7%	4.0%	3.3%	2.7%	2.2%	1.7%	1.4%	1.1%
	4	7.7%	8.1%	8.4%	8.5%	8.4%	8.1%	7.7%	7.1%	6.5%	5.8%	5.1%	4.4%	3.7%	3.1%	2.5%	2.0%	1.6%	1.3%
	5	6.7%	7.3%	7.7%	7.9%	8.0%	7.9%	7.7%	7.3%	6.7%	6.1%	5.5%	4.8%	4.1%	3.5%	2.9%	2.4%	1.9%	1.5%
	6	5.9%	6.5%	6.9%	7.3%	7.6%	7.6%	7.6%	7.3%	6.9%	6.5%	5.9%	5.2%	4.6%	4.0%	3.3%	2.8%	2.3%	1.8%
	7	5.1%	5.7%	6.2%	6.7%	7.1%	7.3%	7.4%	7.3%	7.1%	6.7%	6.2%	5.7%	5.1%	4.4%	3.8%	3.2%	2.7%	2.2%
	8	4.3%	5.0%	5.6%	6.1%	6.6%	6.9%	7.2%	7.2%	7.2%	6.9%	6.6%	6.1%	5.6%	5.0%	4.3%	3.7%	3.2%	2.6%
	9	3.7%	4.3%	4.9%	5.5%	6.0%	6.5%	6.9%	7.1%	7.1%	7.1%	6.9%	6.5%	6.0%	5.5%	4.9%	4.3%	3.7%	3.1%
	10	3.1%	3.7%	4.3%	4.9%	5.5%	6.0%	6.5%	6.9%	7.1%	7.1%	7.1%	6.9%	6.5%	6.0%	5.5%	4.9%	4.3%	3.7%
	11	2.6%	3.2%	3.7%	4.3%	5.0%	5.6%	6.1%	6.6%	6.9%	7.2%	7.2%	7.2%	6.9%	6.6%	6.1%	5.6%	5.0%	4.3%
	12	2.2%	2.7%	3.2%	3.8%	4.4%	5.1%	5.7%	6.2%	6.7%	7.1%	7.3%	7.4%	7.3%	7.1%	6.7%	6.2%	5.7%	5.1%
	13	1.8%	2.3%	2.8%	3.3%	4.0%	4.6%	5.2%	5.9%	6.5%	6.9%	7.3%	7.6%	7.6%	7.6%	7.3%	6.9%	6.5%	5.9%
	14	1.5%	1.9%	2.4%	2.9%	3.5%	4.1%	4.8%	5.5%	6.1%	6.7%	7.3%	7.7%	7.9%	8.0%	7.9%	7.7%	7.3%	6.7%
	15	1.3%	1.6%	2.0%	2.5%	3.1%	3.7%	4.4%	5.1%	5.8%	6.5%	7.1%	7.7%	8.1%	8.4%	8.5%	8.4%	8.1%	7.7%
	16	1.1%	1.4%	1.7%	2.2%	2.7%	3.3%	4.0%	4.7%	5.5%	6.2%	7.0%	7.7%	8.2%	8.7%	9.0%	9.1%	9.0%	8.7%
	17	0.9%	1.2%	1.5%	1.9%	2.4%	2.9%	3.6%	4.3%	5.1%	5.9%	6.8%	7.6%	8.3%	8.9%	9.4%	9.7%	9.8%	9.7%
	18	0.8%	1.0%	1.3%	1.6%	2.1%	2.6%	3.2%	3.9%	4.7%	5.6%	6.5%	7.4%	8.3%	9.1%	9.8%	10.4%	10.7%	10.8%

Once we derive the PR19 matrix, we can derive the PR24 matrix. The probability of a company being first twice is the probability of it being first once, squared. This results in the convergence towards the middle ranks over time, which reflects the increased uncertainty of performances in the future.

As set out above we have used the historic changes in rankings in opex and capex performance rather than use rankings based on totex performance. To be able to estimate appropriate probabilities of a change in efficiency ranking over time we need a reasonably sized dataset on how companies' actual relative efficiency performance has changed over time, Rankings in actual totex performance are only available for the PR14 period, which would not provide a sufficient dataset for robust efficiency rankings to be assessed (as it only covers five years and performance in individual years may be affected by the profile of capex). While we could use rankings based on forecast future performance this does not reflect how companies have actually performed and there can be wide variations between business plan projections and actual company performance (as seen in the 2010-15 period). Furthermore there can be differences between business plans and our projections due to the smoothing of capex profiles. Consequently as we might expect the performance against totex will reflect the relative efficiency against both opex and capex, we consider that our approach which uses historic rankings in performance is reasonable.

Step 2

The starting ranks for South West Water and Bournemouth Water are different under the historical and business plan approaches. The historical rankings for South West and Bournemouth were stated in Table A2. Forecast rankings are stated in Table A3.

Table A3 Forecast rankings from business plan data

Rank	Identifier	Efficiency ratio
1	SWT	91.5%
2	YKY	94.3%
3	AFW	94.7%
4	TMS	95.3%
5	PRT	96.5%
6	NES	98.3%
7	WSH	100.4%
8	UU	100.5%
9	BWL	101.2%
10	SES	102.5%
11	ANH	102.9%
12	SEW	103.1%
13	SSC	103.2%
14	SVT	103.3%
15	WSX	103.8%
16	DVW	103.8%
17	SRN	106.3%
18	BRL	132.8%
Upper quartile threshold		97.0%

Step 3

We then estimate the probability of each of the two companies being in the top five by adding up the probabilities of getting into the first five ranks. The probability of getting a top 5 rank depends on the company's starting position. For example, South West Water was ranked second in the historical approach. We therefore sum up the probability of a second company ending up anywhere in the top five.

Using the these probabilities, tables A4 and A5 set out the probabilities of South West Water and Bournemouth Water being in the upper quartile in each of the next five price controls based on the historic and forecast rankings

Table A4 Probabilities of South West Water and Bournemouth Water being in the upper quartile based on historic rankings

	PR14 rank	PR19	PR24	PR29	PR34	PR39
South West	2	48%	33%	28%	26%	26%
Bournemouth	1	51%	34%	29%	27%	26%

Table A5 Probabilities of South West Water and Bournemouth Water being in the upper quartile based on business plan rankings

	PR14 rank	PR19	PR24	PR29	PR34	PR39
South West	**1**	51%	34%	29%	27%	26%
Bournemouth	**9**	24%	25%	25%	25%	25%

Step 4

As the future performance of the merging companies is uncertain we consider the probability of the merged company achieving upper quartile performance. Table A6 sets out the six possible scenario combinations. We go on to discuss the assumptions in the table in further detail.

Table A6 Possible combinations of merged company performance (upper quartile – "UQ", not upper quartile "NUQ")

Scenario	SWT Performance	BWL Performance	Merged Entity Performance	Merged entity probability given BWL and SWT scenario
1	UQ	UQ	UQ	100%
2	UQ	NUQ	UQ	x
3	UQ	NUQ	NUQ	1-x
4	NUQ	UQ	UQ	1-x
5	NUQ	UQ	NUQ	x
6	NUQ	NUQ	NUQ	100%

Of these six scenarios, scenarios 2, 3, and 6 would result in losing an inefficient company[14]. Therefore, a stricter efficiency challenge in those scenarios will lead to a lower industry allowed totex and therefore a benefit for customers. The reverse is true for scenarios 1, 4, and 5. The table below shows the expected value under various assumptions.

We consider that scenarios 3 and 4 are least likely as South West Water is much larger than Bournemouth Water and these scenarios imply that the performance of the merged company would be markedly different to that of South West Water. Nevertheless all six scenarios have a non-zero probability and need to be taken into account in our analysis:

- The probability of the merged company ending up in the upper quartile is conditional on the performance of the merging companies. For example, if both companies are upper quartile, then the merged entity is most likely to be upper quartile at the same point in time. We therefore give the merged company a joined probability of 100% in Scenarios 1 and 6.
- If one of the companies is upper quartile and the other one is not, then the merged company has some probability of being upper quartile. Here, we assume that there is a high probability of the merged company resembling

[14] We assume the merger results in the loss of Bournemouth as the new merged company will be more like South West due to its size and the fact that Pennon, the parent company of South West is the company that has acquired Bournemouth

South West Water because of its relative size and the administrative changes likely to occur. This is the percentage 'x' in Table A6. We note that the final results are not sensitive to 'x'. We explain this further in Step 5.

Using the approach stated above, we calculate the probability that this merger will result in the net loss of an upper quartile company – and therefore a detriment for customers – for each of the next five price controls. Taking PR19 as an example, using historical data:

- The probability of scenario 1 is equal to the probability that both South West Water and Bournemouth Water would be in the upper quartile. Assuming those probabilities are independent, the likelihood is 48% x 51% = 24%. Separately, the probability of the merged company ending up in the upper quartile is 100% as explained above. Therefore, the joint probability of scenario 1 is 24% x 100% = 24%;
- The probability of scenario 2 is equal to the probability of South West being upper quartile and Bournemouth not, with the merged company being upper quartile as a result. So, for example, for illustrative purposes, if 'x' is 90%, then the probability associated with scenario 2 is 48% x (100% - 51%) x 90% = 21%;
- Scenario 3 follows the opposite logic – the probability of the merged company resembling BWL is 10%, which gives an overall scenario probability of 2%;
- The probability of scenario 4 is 3%;
- Similarly the probability of scenario 5 is slightly higher than for Scenario 4 as the only element that differs is the probability of the merged company not being upper quartile (an assumption of 90% is used for illustrative purposes), the resulting probability is 24%; and
- The probability of scenario 6 is equal to the probability that both South West Water and Bournemouth Water are below the upper quartile, that is: 52% x 49% x 100% = 37%.

Step 5

Table A7 shows the detriment that has been calculated based on the historical data and PR14 forecast business plan data.

Table A7 Impact of losing an efficient or inefficient company based on business plan or historic data

	Impact of losing an efficient company (£m)	Impact of losing an inefficient company (£m)
Business plan	262	-87
Historical	112	-37

Note: in this table, a positive figure represents detriment, a negative figure represents benefit.

The expected value associated with each scenario is sourced from the table above. The merger will essentially result in the loss of Bournemouth Water and therefore the expected value in each scenario is driven by the assumptions that are made for Bournemouth Water. The table below shows the expected value using the historical data based on the scenarios set out in Table A6.

Table A8 Expected impact of losing Bournemouth Water under different scenarios

Scenario	BWL Performance	Expected value (£m)
1	UQ	112
2	NUQ	-37
3	NUQ	-37
4	UQ	112
5	UQ	112
6	NUQ	-37

We note that the expected value for scenarios 2 and 3, and 4 and 5 are the same. Therefore, the assumptions made about 'x' in Step 4 have no impact on the final answer.

Step 6

Table A9 sets out the results of the analysis after we have multiplied the impact of the loss of Bournemouth Water as an independent company by the probability of each the scenarios. On this basis, we calculate an expected benefit of £1.5 million

over AMP7 if based on the business plan assumptions and an expected detriment of £30 million if based on the historical efficiency assumptions.

Going forward, it is unclear what models we will use if further changes occur in the industry. Even so, we will continue to rely on comparative analysis to assess wholesale costs and set benchmarks using industry comparators. Therefore, we estimate the long terms impact of this merger from the wholesale benchmark to be between £1 million and £43 million over 30 years.

Table A9 Overall assessment of detriment

Estimate (positive figures represent detriment, negative are benefit)	AMP7 impact (£m PV)	30-year (£m PV)
Business plan	-1.5	0.6
Historical	29.9	43.4
Average	14.2	22.01

A3.3.4. Further comment on the analysis

The policy of adopting upper quartile performance means there are few drivers that determine the outcome of the analysis.

The **changes matrix** reflects how much information we have about the likely future rankings of companies, given their rankings today. If the changes matrix shows a high degree of convergence impact of a lost comparator is correspondingly lower. As time progresses, the current rankings are increasingly less informative. While we have not considered higher or lower degrees of convergence, it would be possible to include this in the analysis.

The **efficiency gap between the 5th and 6th ranked companies** determines the static one-period impact of losing an upper quartile or non-upper quartile company. A particularly wide gap between the 5th and 6th companies will increase the scale of detriment or benefit, conversely, a narrow gap between the 5th and 6th placed companies will reduce the scale of detriment or benefit. We assess the gap between the 5th and 6th ranked companies in the historical models (0.9%) to be in the 50th percentile of historical gaps, while the gap in the business plan ranking (1.8%) was in the 75th percentile of gaps. This is one of the reasons why the expected values of losing a comparator using the business plan efficiencies are greater than using the historical efficiencies (see Table A7).

The **degree of convergence** in efficiency determines whether it is appropriate to use the PR14 gaps for future price controls. Our current analysis assumes no convergence. To the extent that we assume that the gap between any two companies – including the 5th and 6th ranked companies – reduces over time, as it has done in the past, the impact of the scale of detriment or benefit also reduces.

Finally, our estimate of the impact of the merger is directly proportionate to the assumed amount of **industry totex**. Our current analysis assumes a constant level of expenditure over future price control periods. We consider that this is a reasonable assumption, because future expenditure is just as likely to decrease due to efficiency savings as it is to increase due to higher environmental standards and other changes in requirements, which is consistent with historic trends.

We note that we could take a longer term view of cost performance in the future. A company could potentially remain in the upper quartile company over more than one AMP and so have a greater impact on the benchmark. The change matrices we have used, with independence of scores across each AMP, does not take this into account).

Our analysis has not taken into account the impact of any synergy savings that may be achieved by the merged entity, as there is no public commitment or undertaking that will allow customers to benefit from any proposed synergy savings. To the extent that the merger produces synergy savings, this may adjust the probabilities we have assumed reducing the level of detriment.

A3.3.5. Conclusion

We assess the overall impact lies in the range of a £1.5 million benefit to a £29.9 million detriment in the next price control period (2020-25) or a detriment in the range of £0.6 million to £43.4 million based on a 30 year present value. We consider greatest weight should be applied to the assessment of historic cost performance as it is derived from outturn data and the gap between the 5th and 6th based companies on the historic dataset is similar to the average gap between all companies on our assessment of historic rankings. This would put the detriment towards the upper end of the quoted range.

A3.4. Retail cost to serve

A3.4.1. PR14

At PR14, we introduced separate, binding, price controls for retail household and retail non-household activities for the first time.

We used average cost to serve (ACTS), calculated using 2013-14 cost data, as the benchmark for company efficiency in the retail household price control. As PR14 was the first time we set retail household price controls we allowed for a three year glidepath, whereby companies whose cost to serve was above the ACTS have three years to reduce their cost to serve to the ACTS. However, we made clear in 'Setting price controls for 2015-20: final methodology and expectations for companies' business plans' (our 'final methodology statement') that we see this as part of an evolutionary approach that we expect will enable us to move to an efficient cost to serve over future price controls.

An important driver of differences in the retail cost to serve between companies is the extent of meter penetration amongst the household customers. Differing levels of meter penetration were taken into account by having a separate ACTS and efficiency challenges for:

- unmeasured customers
- measured water customers
- measured sewerage customers
- measured water and sewerage customers

The cost of serving water and sewerage customers who receive supplies from one company (a WaSC) was adjusted using a scope factor to make them comparable with the cost of serving a single service customer. This means that the ACTS is comparable across all companies.

In order to take account of company specific claims, adjustments were assessed and successful ones were incorporated within the allowed costs. Company specific claims that were material enough to be considered were for bad debt and input price pressure. A more detailed description of the household control can be found in policy chapter A5 of our final determination.

For illustrative purposes, to show the relative position of South West Water and Bournemouth Water in our assessment, we present the rankings of all companies

based on the five-year average of the average cost to serve that was used to determine the retail price control for the water service for each company.

Table A10 Rankings of all companies based on the five-year average of the average cost to serve

Rank (most efficient to least)	Company	Average additional measured water CTS across 2015-20 (£/cust)
1	ANH	2.48
2	NES	2.65
3	**SWT**	**2.76**
4	DVW	3.03
5	SRN	3.44
6	PRT	4.32
7	YKY	4.84
8	WSX	4.88
9	UU	5.42
10	SSC	5.60
11	**BWL**	**5.79**
12	SEW	6.17
13	BRL	6.32
14	SES	6.36
15	SVT	6.37
16	AFW	6.51
17	WSH	6.55
18	TMS	6.63

Rank (most efficient to least)	Company	Average unmeasured CTS across 2015-2020 (£/cust)
1	PRT	13.63
2	AFW	15.97
3	BRL	16.49
4	YKY	17.00
5	SES	17.42
6	SEW	18.44
7	WSX	19.06
8	ANH	20.44
9	SVT	21.32
10	DVW	21.50
11	TMS	21.55
12	**BWL**	**21.56**
13	NES	21.56
14	SSC	21.65
15	**SWT**	**21.81**
16	WSH	22.36
17	UU	23.71
18	SRN	24.11

A3.4.2. Impact on the retail cost benchmark – Static approach

Consistent with our approach to the wholesale cost assessment, we have rerun the PR14 ACTS model with the merged entity replacing South West Water and Bournemouth Water. The key assumptions underpinning this analysis are:

- The performance of the merged business has been derived using customer weighted averages of the two separate businesses for each cost input without the inclusion of cost synergies.
- The econometric models used to set bad debt allowances have been re-estimated using averaged inputs for the merged business in place of the two separate businesses.

The net effect is to reduce the net present value of the retail price control allowances for the sector by £21 million over 2015-20, largely due to the impact on the sector bad debt allowances for customers of Northumbrian Water, United Utilities Water, South West Water and Welsh Water. Excluding any adjustment for bad debt, we assess the effect would be to reduce the retail price control for the sector by £5 million over 2015-20.

A3.4.3. Impact on the retail cost benchmark - Forward looking approach

We set benchmark efficiency targets for the retail household control for the first time at PR14. We also set a clear expectation that we would determine retail costs by reference to an efficient cost to serve at the next price control[15]. This could involve, for example, an approach based upper quartile or frontier costs to serve, or potentially an approach that uses benchmarks that are external to the sector. Given the uncertainty over the approach to determining the cost to serve in future reviews, and the potential for us to use non-water based comparisons going forwards we have not assessed the impact of a merger beyond 2025.

To assess the forward looking impact, we apply a changes approach, similar to the one used in wholesale (Section A3.3). The difference is that we use a changes matrix based on opex only and different expected values of the outcomes. There is insufficient data to estimate changes in retail rankings in particular as the wholesale retail split was recently introduced. However, we consider retail moves can be proxied by opex rank moves as retail costs mostly consist of opex. We therefore use

[15] For example, we set out in our methodology for PR14 that we expect to move to an efficient cost to serve in the future.

the opex changes matrix to assess the probability of South West and Bournemouth moving ranks in the next price control.

We take the starting rank of each company in AMP6 (average across 2015-16 to 2019-20) for both unmetered and metered costs. South West is 12th in unmetered and 3rd in metered, while Bournemouth is 9th and 11th respectively. It is these starting positions that drive the probabilities the most. We make use of the same scenarios as in wholesale (see Section A.3.3.3). However, we only use one changes matrix – PR19 – as we are uncertain how we are going to benchmark retail costs beyond that price control. Therefore, the probability of each company being in the upper quartile is the following.

Table A11 Probabilities of being upper quartile at PR19

Company	Unmetered	Metered
South West Water	**13%**	**50%**
Bournemouth Water	**23%**	**16%**

Our analysis is based on, and is sensitive to, a number of assumptions about future regulatory methodology and projections of company performance. We have also considered alternative options to the way in which the benchmark might be set at PR19 – we focus in particular on assessments that include the adoption of frontier and upper quartile benchmarks.

The assumptions we have modelled comprise:

- Two convergence scenarios:
  - Companies whose cost to serve is above the upper quartile, converge to upper quartile by 2025
  - No convergence
- Two benchmark scenarios:
  - Upper quartile
  - Frontier
- A glidepath to the benchmark we might apply at PR19, following the approach we took in some areas at PR14 (eg the glidepath to upper quartile performance for outcome delivery incentives and to the average cost to serve for retail).
- Each company's average cost to serve at the start of PR19 is the same as its PR14 average forecast.

Unlike wholesale costs, where we only estimate the impact on the upper quartile by removing the least or the most efficient company, in retail we have to re-derive the benchmark (the upper quartile benchmark). We do so to apply the glidepath to the individual parts of the retail costs (unmetered and metered), which have separate benchmarks. Although we remove the least (most) efficient company from the upper quartile calculation, we still calculate this company's allowance to compare to the overall industry allowance. Therefore, the benchmark costs assigned to this company are the same as the ones for the company nearest to it (e.g. second worst). This ensures that the company receives a realistic benchmark with a glide path.

The expected value of the outcome depends on the degree to which companies' cost to serve will converge over time. We expect a high degree of convergence in retail cost to serve during 2015-20, with the more expensive companies catching up with those that are below the average cost to serve.

Table A12 Impact of losing an efficient or inefficient company

	Type of costs	Impact of losing an efficient company (£m)	Impact of losing an inefficient company (£m)
No convergence	Unmetered	£96.9	-£30.2
	Metered	£9.6	-£2.8
Convergence to upper quartile by 2025	Unmetered	£52.4	-£26.2
	Metered	£4.7	-£1.2

As can be seen in the table above, convergence leads to a significant reduction in the detriment of losing an inefficient company because the gaps between companies decrease significantly.

We then combine the unmetered and metered impact and apply a discount rate to get the NPV.

It is not possible to predict exactly how our decision making on bad debt would change in the future (in the context of potentially wider refinements to the form of the retail control). For example, in our PR14 methodology statement we suggested that doubtful debt costs could be modelled using data about ONS Lower Super Output Areas rather than company areas. While we did not adopt this modelling approach for the draft and final determinations, adopting such a modelling approach would have been reliant on data series that is not linked to company operating regions (which can mask important bad debt drivers within wider regions) and so would have completely removed any direct impact due to a lost comparator. As such, we do not assume any adjustments for bad debt in the forward looking approach.

Results

Unlike other areas, in retail allowances, the loss of a comparator would not result in detriment and could result in benefits to consumers as both South West Water and Bournemouth Water currently have a relatively high cost to serve. The table below shows the benefits resulting from the merger associated with each scenario.

Table A13 Benefits in retail driven by cost to serve (with glide path)

Scenario	Benchmark	No convergence	Convergence to the upper quartile by 2025
NPV impact in AMP7 (£m)	UQ	£1m	£6m
	Frontier	£0	£0

As neither South West Water nor Bournemouth Water is currently the frontier company on either the unmetered cost to serve or the cost to serve for metered water-only customers, the merger would have no impact on the price control if the benchmark is set at the frontier level of efficiency. However, using an upper quartile benchmark results in benefits to consumers, which depending on the convergence scenario (to average, upper quartile or frontier), is equivalent to between £1-6 million in present value terms. In the convergence scenario, if we assume a benchmark for the worst company, more consistent with its poor performance (as opposed to the same benchmark as the second worst company), this would lead to a smaller benefit.

6.1.1 Further comment on the analysis

We considered a number of other scenarios and have concluded that there are a range of sensitivities that largely result in no changes in the impacts when using

upper quartile or frontier benchmarks. As both companies remain above the average cost to serve, the introduction of retail cost synergies will only have a beneficial impact on the benchmark if the company's cost to serve takes it beyond the upper quartile or to the frontier.

The same holds true for the calculations with or without the bad debt adjustment - none of the companies that received a bad debt allowance at PR14 are in the upper quartile. Hence the impact of updating the bad debt allowance when setting upper quartile of frontier benchmarks would be zero. We cannot, however, rule out bad debt adjustments for upper quartile companies in the future (we did for example make an allowance for input price pressure for companies that put forward an evidenced case and which were in the upper quartile). Although we could expect to use the upper quartile cost to serve as a target, we may apply ex post adjustments for bad debt if the need is demonstrated consistent with the approach applied on wholesale costs at PR14.

Furthermore, to the extent that we may adopt alternative approaches to benchmarking in the future, for example, that take account of retail benchmarks that are external to the sector, the impact of losing a water comparator could be reduced (although we might still need to make water sector comparisons as other sector benchmarks may not be perfect).

To the extent that any assessment of synergy savings could be considered to drive the benchmark in the future, these need to be demonstrably the result of the merger and beyond the efficiencies that might arise from the incentives placed on the companies under the separate retail control. We note, for example, that synergy savings could be achieved within the existing regime in the absence of a merger. We note for example, in section 4.3 that Bristol Wessex Billing Services limited carries out retail activities for Bristol Water and Wessex Water as independent companies.

Conclusion

Given the likely future changes in the retail sector, including changes in companies' relative and absolute performance and changes in our cost assessment methodology, the loss of a comparator does not affect the retail revenue allowance in a predictable way. Now that we have introduced a separate retail price control, we expect companies to rapidly adopt current best practice, meaning that it is impossible to say whether, in the counterfactual, South West Water or Bournemouth Water would be above or below average. Nor is it possible to predict how the merged entity will perform relative to wider improvements that might be expected in

the sector, especially over the longer term (where there might be spill over effects from competition in the non-household sector).

Therefore, we consider not too much emphasis should be placed on the headline estimated impact on the retail allowance of a benefit of between £1m to £6m. This range could be much lower if less stringent convergence scenarios are assumed or even zero if the benchmark were set at the level of the frontier company. A frontier benchmark would be consistent with our statement about the retail price control in our PR14 final determination document "we see this as part of an evolutionary approach that we hope will enable us to move to an efficient cost to serve over future price controls."

A3.5. Outcome delivery incentives

A3.5.1. PR14

In PR14, for the first time, companies developed a set of outcomes that reflect what their customers need, want and can afford. Companies were required to determine performance commitments to support their outcomes. In assessing company business plans, we sought evidence to assess that the performance commitments proposed were challenging, appropriately incentivised each company to deliver and were supported by customer engagement

The outcomes approach was designed to deliver a number of benefits to customers and wider society. The outcomes methodology sought to achieve:

- Focus on customer priorities: companies were required to develop outcomes through customer engagement, including detailed dialogue with the customer challenge groups (CCGs) to ensure a strong focus on the delivery of customer priorities across current customers, future customers and the environment.
- Company ownership of business plans: companies developed and took ownership of, and accountability for their own business plans, rather than responding to regulatory prescriptions about what they should deliver.
- Performance commitments (PCs): which set the performance targets that companies use to monitor their performance in delivering their outcomes.
- Outcome delivery incentives (ODIs): the ODIs associated with the outcomes create strong financial incentives for companies to innovate and become more efficient, protecting customers against instances of under-delivery and where merited, rewarding companies for outperformance in areas where customers are willing to pay more to receive more of what they want.

- Greater accountability: companies are required to publish independently assured and challenged information about their performance against outcomes each year. This creates greater accountability for how well they deliver for customers and the environment in the longer term. We have reviewed and adjusted these parameters to ensure customers are protected.

Where possible, and to ensure customers' interests were protected, we performed detailed comparative analysis across all companies where they proposed similar performance commitments and outcome delivery incentives. In particular, we considered it important that companies are incentivised to deliver upper quartile efficiency in those areas where they were proposing comparable performance commitments and outcome delivery incentives. Our analysis highlighted some variations, causing us to intervene to protect customers' interests.

Where we intervened, we did so to ensure that companies faced incentive penalties in the event of non-delivery and were only able to access rewards where performance exceeds sector upper quartile levels. Our interventions proposed that all companies should achieve historically achieved levels of upper quartile performance by 2017-18. Interventions such as these are important where there is a high degree of comparability between the performance commitments because customers of water companies are unable to switch suppliers.

Five specific aspects of service delivery were identified where it was possible to compare the proposed performance commitment levels. These were:

- duration of supply interruptions;
- number of contacts from customers regarding water quality;
- compliance with DWI water quality standards;
- number of sewerage pollution incidents; and
- number of properties impacted by internal sewer flooding.

Customers of most companies highlighted that all of the performance areas that were subject to comparative analysis are priorities. However, where customers expressed their views to specific companies during the preparation of business plans, they generally did so without a full understanding of relative performance across the sector and so we made use of comparative techniques to ensure that customers' interests were protected.

Tables A12, A14 and A15 in the following sections set out the rankings of each company at PR14 for the performance commitments that were relevant to the financial ODIs set for the water service. Bournemouth Water was in the upper

quartile for each of these performance areas. South West Water was upper quartile on two of the performance areas and lowest quartile on one.

Further detail of our policies and approach to outcomes is set out in policy chapter A2 of our final determination.

A3.5.2. Impact on the outcome delivery incentive benchmarks – static approach

To assess the impact of the merger on customers, we have considered how the merger affects the upper quartile benchmark performance level for those three relevant outcome delivery incentives that apply to wholesale water activities i.e. duration of supply interruptions, contacts from customers regarding water quality and compliance with DWI water quality standards.

Consistent with the 'static' approach to the assessment of the wholesale cost benchmark, we have considered how our assessment of the upper quartile position would have moved at PR14. We have assessed the impact based on assumptions that the merged entity's performance is the same as the weighted average performance of Bournemouth Water and South West Water.

We have valued the movement in the upper quartile performance position by reference to the penalty rates that apply to the outcome delivery incentives for each company. As this information is informed by willingness to pay data, we consider this to be a reasonable assessment of the value customers place on the movement of the upper quartile position as a result of the loss of a comparator.

Water quality contacts

At PR14, Bournemouth Water was the 4th ranked company based on average performance over 2011-12 to 2013-14 and so within the upper quartile. South West Water was assessed as an enhanced company and so not subject to the interventions that were applied to companies where we made comparisons of company performance commitments that underpinned their outcome delivery incentives. Nevertheless, the company confirmed it would report its performance on water quality contacts with an objective, on a reputational basis, of targeting upper quartile performance.

Table A14 Drinking water contacts (rate per 1000 population)

Rank	Company	Average - 2011-12 to 2013-14
1	SES	0.51
2	PRT	0.52
3	TMS	0.64
4	BWL	1.13
5	AFW	1.14
6	ANH	1.53
7	SVT	1.70
8	SRN	1.72
9	SSC	1.86
10	NES	1.91
11	BRL	2.08
12	UU	2.25
13	WSX	2.40
14	SEW	2.43
15	YKY	2.59
16	WSH	3.42
17	DVW	5.39
18	SWT	6.17
Upper quartile		1.23

UQ

Rank	Company	Average - 2011-12 to 2013-14
1	SES	0.51
2	PRT	0.52
3	TMS	0.64
Remove BWL		
4	AFW	1.14
5	ANH	1.53
6	SVT	1.70
7	SRN	1.72
8	SSC	1.86
9	NES	1.91
10	BRL	2.08
11	UU	2.25
12	WSX	2.40
13	SEW	2.43
14	YKY	2.59
15	WSH	3.42
16	SWT/BWL	5.14
17	DVW	5.39
Upper quartile		1.53

We assess the loss of Bournemouth Water as an independent comparator reduces the upper quartile benchmark performance level from 1.23 contacts per thousand population to 1.53 contacts per thousand population.

The financial value of this movement in the upper quartile benchmark has been quantified by applying company specific penalty rates for those companies where we

intervened in the final determinations to set an upper quartile challenge. It has been estimated at £13.4 million per annum which results in a net present value of £35 million over the 3 years for which upper quartile targets were set in AMP6.

While the company specific penalty rates are most appropriate to the valuation of detriment as they relate to the companies subject to upper quartile challenge there is a wide variation in penalty rates adopted by companies (which were derived from companies' estimates of customers willingness to pay for changes in outcomes).

The table below shows the range of detriment obtained using different penalty rates assumptions. We consider the median penalty rate to be the most appropriate alternative to the company specific rates as the average is distorted by a very high penalty rate which only applies to a narrow penalty range in the case of Northumbrian Water. Our adopted range for detriment under the static approach is therefore £9-£35 million.

Table A15 Penalty rate sensitivities

"Static" approach (AMP6) - Water Quality Contacts	
Penalty Rate Scenario	**NPV Impact**
Median penalty rate	£9m
Company specific penalty rate	£35m
Average penalty rate	£64m

Mean zonal compliance

As demonstrated in table A15 below, both Bournemouth Water and South West Water are ranked in the upper quartile for mean zonal compliance. As the performance of all companies across 2011-12 to 2013-14 is close, the impact of the merger of two upper quartile companies has no impact on the upper quartile performance level. We therefore assess that there is no detriment or benefit arising from the merger and we have not carried forward any further analysis on the mean zonal compliance ODI.

Table A16 Mean zonal compliance

Rank	Identifier	Average Score 2011-12 to 2013-14
1	SWT	99.980%
2	TMS	99.980%
3	WSX	99.977%
4	BWL	99.977%
5	AFW	99.973%
6	BRL	99.973%
7	SES	99.973%
8	PRT	99.970%
9	SVT	99.967%
10	YKY	99.963%
11	WSH	99.963%
12	ANH	99.961%
13	UU	99.957%
14	SEW	99.950%
15	SSC	99.948%
16	SRN	99.940%
17	DVW	99.933%
18	NES	99.931%
Upper quartile threshold		99.973%

Rank	Identifier	Average Score 2011-12 to 2013-14
1	TMS	99.980%
2	SWT/BWL	99.978%
3	WSX	99.977%
Remove Bournemouth Water		
4	AFW	99.973%
5	BRL	99.973%
6	SES	99.973%
7	PRT	99.970%
8	SVT	99.967%
9	YKY	99.963%
10	WSH	99.963%
11	ANH	99.961%
12	UU	99.957%
13	SEW	99.950%
14	SSC	99.948%
15	SRN	99.940%
16	DVW	99.933%
17	NES	99.931%
Upper quartile threshold		99.973%

Water supply interruptions

At PR14, Bournemouth Water was the 1st ranked company based on average performance over 2011-12 to 2013-14 and so within the upper quartile. As an enhanced company, South West Water was not subject to the interventions that applied to other companies where we set an upper quartile challenge. Nevertheless,

the company confirmed it would report its performance on water supply interruptions with an objective, on a reputational basis, of targeting upper quartile performance.

Table A17 Number of hours lost due to water supply interruptions for three hours or longer, per property served.

Rank	Company	Average - 2011-12 to 2013-14
1	BWL	2.76
2	PRT	4.66
3	NES	7.12
4	SSC	7.8
5	DVW	12.2
6	TMS	12.6
7	SES	12.7
8	YKY	13.2
9	SEW	17
10	SRN	17.7
11	UU	17.8
12	ANH	19.2
13	AFW	20.8
14	BRL	22.7
15	SWT	22.8
16	SVT	27
17	WSX	28
18	WSH	41.8
Upper quartile		12.3

UQ

Rank	Company	Average - 2011-12 to 2013-14
Remove BWL		
1	PRT	4.66
2	NES	7.12
3	SSC	7.8
4	DVW	12.2
5	TMS	12.6
6	SES	12.7
7	YKY	13.2
8	SEW	17
9	SRN	17.7
10	UU	17.8
11	SWT/BWL	18.6
12	ANH	19.2
13	AFW	20.8
14	BRL	22.7
15	SVT	27
16	WSX	28
17	WSH	41.8
Upper quartile		12.6

Table A17 above demonstrates that the impact of the loss of Bournemouth Water from the upper quartile is a reduction in the number of hours lost due to water supply interruptions for three hours or longer, per property served from 12.3 minutes to 12.6 minutes.

The financial value of this movement in the upper quartile benchmark is quantified by applying company specific penalty rates for those companies where we intervened in the final determinations to set an upper quartile challenge. It is estimated at £6.0 million per annum which results in a net present value of £16 million over the 3 years for which upper quartile targets were set in AMP6.

While the company specific penalty rates are most appropriate to the valuation of detriment as they relate to the companies subject to upper quartile challenge there is a wide variation in penalty rates adopted by companies for the reasons discussed above. Table A18 below shows the range of detriment obtained using different penalty rate assumptions. Our adopted range for detriment under the static approach is £3-£16 million.

Table A18 Penalty rate scenarios

"Static" approach (AMP6) - Interruptions	
Penalty Rate Scenario	**PV Impact £m**
Median penalty rate	£3m
Average penalty rate	£12m
Company specific penalty rate	£16m

At PR14 we rounded the upper quartile benchmark of 12.3 minutes to 12.0 minutes. While we cannot say exactly how we would have applied this calculation to the revised upper quartile target of 12.6 minutes, rounding the upper quartile to 13.0 minutes would have produced a significantly higher detriment.

Table A19 Static approach – summary of results

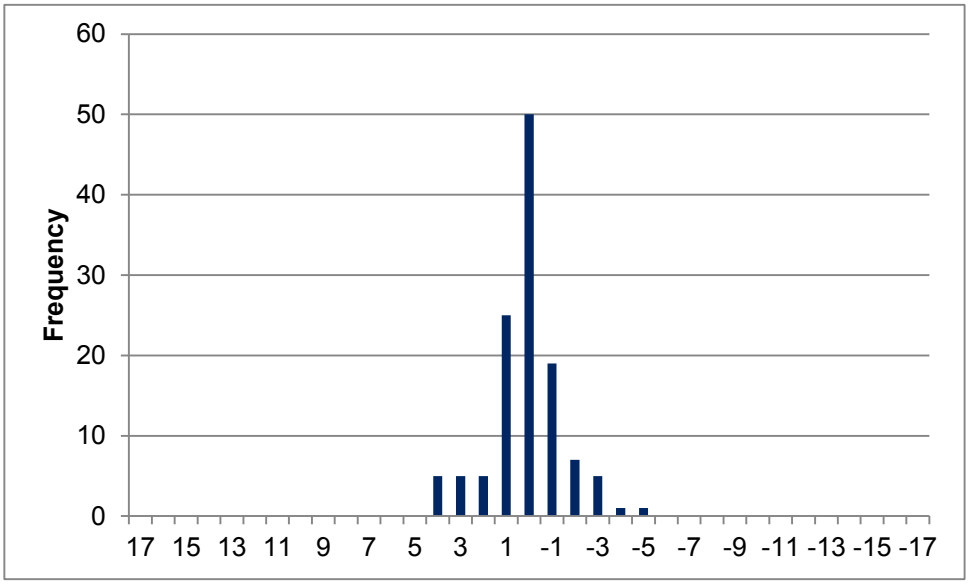
ODI	PV Impact £m
Water quality contacts	£9 – 35m
Mean zonal compliance	£0m
Water supply interruptions	£3 – 16m
Total	**£12 – 51m**

A3.5.3. Forward looking approach

While historic performance information is available for each of these outcome delivery incentives, the introduction of financial rewards and penalties at PR14 introduces a strong incentive on the companies to achieve performance that is in line with the historic upper quartile on which the performance commitments for 2015-20 were based. We expect this could lead to convergence in different companies' performance over a relatively short period of time and so it is not possible to say precisely what the rankings of companies will be at the next price review or whether we will continue to adopt an upper quartile assessment at future price reviews. For this reason we have carried out the analysis only until 2025.

In order to estimate forward looking impacts from outcome delivery incentive mechanisms we considered applying changes matrices consistent with our analysis of wholesale comparator prejudice. However, we have observed that year on year changes in company rankings in these specific areas have been very limited. We attribute that to the fact that companies have not been financially incentivised for these outcomes in the past. The limited degree of rank change is illustrated in the figure below for customer contacts. The frequency of zero changes during the seven-year period is relatively high.

Figure A2 Frequency of changes over seven years for water quality contacts



We have, as a consequence of the limited historical rank change, adopted an approach where we simply make assumptions of convergence in performance over time. In setting convergence profiles we have assumed that all companies improve

to close the gap with the frontier company while preserving the same relative rankings used in the static approach.

For water quality contacts we assume that the worst performing company will make up 50% of its gap to the PR14 upper quartile challenge by 2019-20. In the case of interruptions, we have made a slightly different assumption because the worst performing company is substantially behind the second worst and a similar degree of convergence does not seem realistic.

The upper bound is defined throughout by the current performance of the frontier company, as we do not apply a frontier shift over time. Individual company performance over time is fixed by the upper and lower bounds with each company maintaining the same relative position within the range over time. The narrowing of the range as poorer performing companies respond to incentives results in an improvement in upper quartile performance each year.

Table A20 below compares the upper quartile performance during 2020-25 for both interruptions and contacts assuming the factual and counterfactual scenarios. The financial values associated with the change in upper quartile performance targets have been derived by applying company specific penalty rates used in PR14 to change in targets set for non-upper quartile companies. The total prejudice estimated during 2020-25 has a net present value of £53 million comprising:

- £17 million relating to Supply Interruptions
- £36 million relating to Water Quality Contacts

Table A20 Forward Looking Prejudice Values

	Interruptions (upper quartile)	Water quality contacts (upper quartile)
Counterfactual benchmark (18 companies)	9.78	0.92
Factual benchmark (17 companies post merger)	10.00	1.09
AMP7 Impact (£m NPV)	17	36

It should be emphasised the above upper quartile benchmarks are illustrative and are based on the historic upper quartile benchmarks that we used in the PR14 review (the upper quartile in the PR14 review was based on the upper quartile performance coming into the review rather than the forecast upper quartile

performance at the end of the review). We consider that the introduction of financial rewards and penalties will both encourage companies to meet historic upper quartile performance and also encourage those companies that were above the historic upper quartile to improve their performance still further. Consequently the convergence scenarios are based on a narrowing of the gap between the top and bottom performers. The financial incentives would not, in our opinion, encourage all companies simply to achieve historic upper quartile performance.

The forward-looking assessment is impacted by the uncertainty of the approach we may adopt in future price controls (where we could extend the use of horizontal comparisons or introduce a dynamic upper quartile benchmark). A number of other issues reduce the reliability of the estimates:

- The assumed convergence profiles are not underpinned by historical evidence other than drawing parallels with the convergence observed in SIM where financial rewards and penalties are in place.
- The penalty rates used to attach values to changes in performance targets vary significantly between companies, particularly in the case of contacts, and while being underpinned by customer willingness to pay may have been influenced by the overall package of ODIs proposed by each company and the risk appetite of companies and customers.

In order to address these concerns we have undertaken sensitivity analysis covering convergence and penalty rate assumptions in the forward looking approach. These are summarised in Table A21 below for water quality contacts.

Table A21 Water Quality Contacts Sensitivity Analysis

Forward looking approach - Water Quality Contacts - NPV Impact £m			
Penalty Rate Scenario	Convergence Scenario (% of the gap between worst company and upper quartile closed by 2020)		
	25%	50%	75%
Median penalty rate	£11m	£8m	£5m
Company specific penalty rate	£45m	£36m	£22m
Average penalty rate	£85m	£63m	£39m

As stated above, the average penalty rate assumption is unduly impacted by the penalty rate for a single company. We have therefore based our forward looking

range of detriments on the company specific and median penalty rate scenarios. Our adopted range is £8-£45 million.

Table A22 below shows the equivalent detail for the supply interruptions ODI.

Table A22 Interruptions Sensitivity Analysis

Forward looking approach - Interruptions - NPV Impact £m			
Penalty Rate Scenario	Convergence Scenario (% of the gap between worst company and upper quartile closed by 2020)		
	10%	35%	60%
Median penalty rate	£4m	£3m	£3m
Company specific penalty rate	£21m	£17m	£13m
Average penalty rate	£19m	£15m	£11m

The range of detriment for the supply interruptions under the forward looking approach is £3-£21 million.

A3.5.4. Conclusion

It is not possible to say precisely what the impact of the loss of a Bournemouth Water will be on future ODI benchmarking analysis because:

- The methodology for the comparative use of benchmarks at future price reviews is not settled (although we may consider extending the use of comparative benchmarks and move towards a dynamic performance benchmark at the next price control), and
- We expect to see convergence in company performance as the result of the introduction of financial rewards and penalties to the ODIs that have been subject to comparative analysis.

However, Bournemouth Water was upper quartile across each of the ODIs that were subject to comparative analysis at PR14, and it had leading performance on water supply interruptions. The loss of Bournemouth Water as an independent comparator results in the loss of a high performing company in outcomes. We quantify this to be within a range of £8-£66 million using a forward looking approach. We consider this range to be illustrative as it reflects in part the value customers place on the marginal levels of performance based on willingness to pay data that companies gathered at PR14.

A3.6. Service incentive mechanism

A3.6.1. PR14

The service incentive mechanism (SIM) is a financial incentive mechanism. We introduced it in 2010 to encourage companies to provide better customer service by comparing service delivery performance and providing financial rewards and penalties associated with company relative performance. It replaced the overall performance assessment (OPA) incentive used in PR09, PR04 and PR99. Under the SIM, companies that perform comparatively well are rewarded and those that perform comparatively poorly are penalised.

The SIM measures and incentive properties were set out in IN 11/01, 'Service incentive mechanism – auditing, scoring and levels of service reporting'. We made some minor updates to the measurement guidance in IN 12/03, 'Service incentive mechanism (SIM) guidance'.

The SIM measures two aspects of customer service delivery:

- where customers have made contact when something has gone wrong – for example, phoning about a billing error or writing to the company to complain – how well companies have dealt with it quickly and effectively; and
- how well the companies have handled all types of customer contacts, not just when things have gone wrong (this is measured using a customer survey).

As a comparative measure, the survey measures performance against consumers' expectations, which are likely to change over time. Companies compete with each other to receive a reward and avoid a penalty which we set at each price review – as would happen in a competitive market.

As the SIM is a comparative performance measure, it prevents companies from aiming for an arbitrary performance level. There is pressure to continually innovate and improve relative to the sector. The company that stays still when its peers improve will find itself bottom of the rankings.

At PR14, we reviewed each company's three-year SIM performance against the information provided by all companies. We used average data reported from the three years 2011-12 to 2013-14 to apply rewards and penalties in the range of +0.5% to -1.0% of company turnover.

Table A23 in the following section sets out the rankings of each company at PR14. Bournemouth Water was the second best company and received the highest possible reward (+0.5), South West Water was 15th and received a -0.5 penalty, reflecting the considerable difference in performance between the two companies.

A3.6.2. Impact on the SIM benchmark - Static approach

For the purposes of assessing this merger, we have used the scores from the counterfactual to calculate an expected score for the merged entity as the weighted average of the expected scores of South West Water and Bournemouth Water, weighted by number of customers. Using the score of the merged entity, we recalculated the industry total of rewards and penalties using a static approach.

Table A23 SIM scores

Rank	Identifier	Average Score 2011-12 to 2013-14
1	SST	86.6
2	BWL	86.0
3	WSX	85.7
4	BRL	85.2
5	CAM	85.2
6	ANH	83.2
7	WSH	81.8
8	NES	81.2
9	SES	80.4
10	AFW	79.1

Rank	Identifier	Average Score 2011-12 to 2013-14
1	SST	86.6
Remove Bournemouth Water		
2	WSX	85.7
3	BRL	85.2
4	CAM	85.2
5	ANH	83.2
6	WSH	81.8
7	NES	81.2
8	SES	80.4
9	AFW	79.1

Rank	Identifier	Average Score 2011-12 to 2013-14
11	YKY	78.8
12	SVT	76.5
13	UU	76.1
14	DVW	75.4
15	PRT	71.4
16	SWT	70.5
17	SEW	68.1
18	SRN	67.4
19	TMS	65.4

Rank	Identifier	Average Score 2011-12 to 2013-14
10	YKY	78.8
11	SVT	76.5
12	UU	76.1
13	DVW	75.4
14	SWT/BWL	73.6
15	PRT	71.4
16	SEW	68.1
17	SRN	67.4
18	TMS	65.4

We assess the merger to result in a present value detriment to customers of £6.1 million.

We acknowledge however that, to the extent that separate datasets would have been available for historic performance this would not have altered the overall adjustment we would have made for the SIM at PR14.

A3.6.3. Impact on the SIM benchmark – Forward looking approach

As our modelling indicated a high degree of convergence in SIM performance after 2020 (assuming the SIM applies in the same way post 2020, we assumed convergence in SIM to a score of around 89[16] between 2020 and 2025), we have assumed the SIM would be replaced after 2025. Therefore the assessment of prejudice and benefit was assessed only to 2025 consistent with the assumption that

[16] We forecast the scores to 2025 using a simple regression with score change as the dependent variable and starting score as the driver. The regression is run to estimate the trend in the three years of data available.

we would consider amending or introducing a different mechanism at this point to ensure companies continue to deliver the level of service that is expected by customers.

We have quantified the benefits for SIM performance in a similar way to the approach adopted for wholesale costs. We have used changes matrices (based on 1-year changes in ranking) to estimate the probability of a company achieving a particular rank. While SIM data was available from 2010-11, we used data from 2011-12 to 2013-14 for the purposes of determining the incentive rewards and penalties at PR14 as 2010-11 was the trial year in which the SIM was introduced.

We used this data to estimate a changes matrix showing probabilities for 1-year changes in ranking. Consistent with the approach adopted in the small company uplift work at PR14, we have considered, but subsequently rejected, the development of changes matrices based on OPA data, in particular because the OPA was a broader metric that included areas such as leakage, environmental impact and security of supply which suggested the OPA was not directly comparable to the SIM.

Using the matrix, and the distribution of scores we estimated from our historic data, we calculated the expected value of the score for each company for until 2025. Based on these scores we estimate each company's reward or penalty for each year, as well as the industry total.

For the period 2020-25 we assumed that each company's reward or penalty depended on its ranking, assuming that the distribution of scores remains the same over time, although subject to convergence. The assumptions around the degree of convergence do not affect the rewards or penalties as we assume these will be calculated in the same way as at PR14, that is based on a company's deviation from the mean, divided by the standard deviation of the SIM scores.

In each year, the result is a detriment for customers, as merger is between a below-average performer (South West Water) and an above average performer (Bournemouth Water) resulting in a below-average performer.

As a result, the merger leads to a decrease in the forecast average SIM score, implying lower penalties and higher rewards. The total detriment is about £1.9m for 2016-17, decreasing to £850k in 2024-25, with a net present value of £10m.

A3.6.4. Further comment on the analysis

While we made some amendments to the SIM at PR14 to encourage leading companies to continue to push the frontier of performance under the SIM, we expect that the SIM will continue to mainly promote a 'catch up' efficiency of the poorly performing companies (not least as penalties for relatively poorer performance exceed those related to the best performance) and so we expect company performance to continue to converge. As part of our work on the approach to setting price limits at PR19, it is possible that we will consider amending or introducing a different mechanism at this point to ensure companies continue to deliver the level of service that is expected by customers. This may include seeking to benchmark companies against comparators from other sectors.

A limitation of the analysis is the assumption that on average companies' relative rankings do not change. While each company's expected score tends towards the forecast average score, their expected rankings – which we use to calculate the expected rewards and penalties – do not change. Given that the rewards and penalties depend on each company's retail household service revenue, while we assumed a constant distribution of scores, the possibility that companies' ranking might change is clearly a material factor.

A3.6.5. Conclusion

Based on our forecast of each company's expected future scores, as well as the expected future scores of the merged entity, we estimate that the merger could reduce penalties and increase rewards by a total of £10m, in present value terms to 2025.

A4. The impact of the merger on the precision of our wholesale benchmarking models

This chapter sets out our assessment of the impact of the merger on criterion 4 of our draft Statement of method: the number and quality of independent observations that remain.

We have not used econometric models in assessing benchmarks for outcome delivery incentives or the service incentive mechanism and so an assessment of precision is not necessary for these benchmarks. While an econometric modelling approach was adopted to assessing bad debt adjustments to the retail cost to serve at PR14, we have not assessed the impact of this merger on the precision of the bad debt econometric model as we do not consider this to be an approach we will adopt in the future.

A4.1. Basis of our assessment

A4.1.1. Theoretical basis for assessment

At price reviews we make extensive use of benchmarking models to set price limits, most recently in the area of wholesale for PR14. As a general statistical principle, if we have less data we are able to produce less precise estimates from econometric models. Therefore any reduction in the number of comparators can have an impact on the robustness of our benchmarking analysis by reducing the number of independent observations. If the models we produce are less robust then we can place less reliance on their results. This means it becomes harder for us to set stretching cost thresholds, which means it is harder to keep bills lower for customers.

At PR09 we had 21 independently managed water companies[17] and 10 sewerage companies. Changes in the industry meant that by PR14, there were only 18 independent water comparators and 10 independent sewerage comparators. In order to better incentivise efficiency and encourage companies to develop innovative and low-cost solutions to meeting the needs of their customers, and address

[17] Note: this includes the three water companies that were under the ownership of Veolia and which were subsequently merged under a single licence. While these three companies were independently managed and so treated independently in our models, we did not consider they should form part of the benchmark as they were under common ownership and shared certain attributes, such as the functions provided by the shared services centre.

concerns about a bias towards capital over operational solutions and expenditures[18] we moved to a totex approach at PR14. To increase the data available for us to develop robust totex models we made use of panel data for the first time. On the water side we used five years of data (2008-09 to 2012-13) to produce robust totex models. We supported our water cost assessment with base totex (botex) models and unit cost models.

On the sewerage side we had fewer observations to support the models and found it harder to develop robust totex models. To overcome this we considered making use of sub-company data but as we only had opex sub-company data, this would not have allowed us to develop totex models and the sub-company models would not have captured trade-offs between opex and capex, or between treatment and network activities. We also considered using a longer panel to give us more observations but had to weigh up the increased observations against the assumption that relative efficiency remained constant over the length of panel (under some of the estimation methods). Even using a longer panel, we were unable to produce robust totex models on the sewerage side. Instead we produced botex models using a seven year panel (2006-07 to 2012-13) and placed higher reliance on our unit cost models.

The merger of South West Water and Bournemouth Water only concerns the water wholesale models, three totex models and two botex models, supplemented with three unit cost models.

A4.1.2. Building on our approach at PR14

As part of the PR14 price control process, we estimated the impact on the precision of our wholesale cost models of losing a comparator[19]. In this work we concluded that, while our wholesale cost models become less precise if a company is removed from the sample, we would still be able to use an upper quartile efficiency challenge. So there would be no need to set a less stringent efficiency challenge to compensate for any lack of precision in our models and there would therefore be no material impact on customers. However, we also acknowledged that while retaining the upper quartile was the most appropriate assumption to make in that piece of analysis, in reality how we apply an efficiency challenge in the future would likely be influenced by the precision of the PR19 wholesale cost models, which would in part depend on the number of observations included in the models. We have therefore considered it

[18] Ofwat Final price control determination notice: policy chapter A3 – wholesale water and wastewater costs and revenues, December 2014, page 2.
[19] Annex 3: Benefits assessment of an uplift to the cost of capital

prudent to carry out further analysis to assess the impact of the loss in precision in the future.

In Valuing the Impact of Mergers and Identifying Undertakings in Lieu, Europe Economics developed an approach to measuring the impact of losing a comparator on precision. Europe Economics recommended a three stage approach to assessing the loss of precision:

- simulating the merger by re-estimating models, also known as the "**specific approach**";
- assessing the theoretical impact of a reduction in sample size, also known as the "**general approach**"; and
- bootstrapping.

We have further developed the work we carried out at PR14 in line with this approach to assess whether we think there will be an impact to customers due a reduction in the precision of the models.

We note that even though we have taken the work forward, this is an area where analysis requires significant assumptions. Results should be interpreted with caution. The analysis in this section is undertaken only in the context of estimating the change in precision rather than an assessment of the underlying models.

Our analysis and conclusions are summarised in the following sections.

A4.2. Assessment of the impact on precision of our regulatory models

A4.2.1. The "specific approach"

Our starting point is to re-run the models used at PR14 with the merging companies' data combined. This gives us an idea of the impact of this merger on the results of our models. However, this impact will be made up of both changes due to the reduction in precision of our models, but also by the relative efficiency of different water companies. To identify how much of this impact is due to loss of precision we have also considered the specific circumstances of each of the merging parties.

Methodology for re-estimating our models

We adopted the following process to re-estimate our models with the merged company data:

1. We added South West Water's and Bournemouth Water's costs together to create the costs for the merged company.
2. For the majority of cost drivers we added together South West Water's and Bournemouth Water's cost driver to produce a cost driver for the merged company. For those cost drivers which were proportions or calculations we combined the drivers using a weighted average of the appropriate denominator.
3. We used statistical software to re-estimate our econometric models using this new dataset, we also re-estimated our unit cost models.
4. Using the results from our re-estimated models we re-calculated the upper quartile.
5. We compared this recalculated upper quartile to the upper quartile challenge we applied in the final determinations to calculate the change in upper quartile caused by using the merged company data.

If we were to translate the percentage changes into absolute values, we would add the following two steps.

6. We applied this change in upper quartile to the total forecast totex to produce an estimate of the impact in £m.
7. We then have assumed that the impact in this price control would be assumed to last over 30 years, and future impacts should be discounted at the STPR rate identified in HMT Green Book (currently 3.5 per cent).

Findings

The results from the re-estimated models are shown in the table A24 below. Re-running the models with the merged company results in a less stringent upper quartile assessment, increasing the upper quartile position by 0.57%.

Table A24 Results of re-estimated model

Model	Upper Quartile	Change in Upper Quartile (%)
Upper Quartile used in the final determinations	93.5%	N/A
Scenario 1 – Re-estimated with merged company	94.1%	0.57%

Sensitivity testing

In our base case we assumed that the costs of the merged company will be the sum of the costs of the two pre-merger companies. However one of the proposed benefits of the merger is that there will be synergy savings, partly in the area of wholesale costs. We have therefore also re-estimated the models making different assumptions about the costs of the merged company to see what impact they have on the results. We tested two further scenarios:

- Scenario 2 - [redacted]
- Scenario 3 - [redacted]

These yield different increases in the upper quartile position.

We also tested the sensitivity of the £m impact to applying the percentage increase to the AMP6 BCT or the modelled totex.

Table A25 Results of sensitivity testing

Sensitivity	Upper Quartile	Increase in Upper Quartile
Scenario 1	94.1%	0.57%
Scenario 2	94.0%	0.52%
Scenario 3	94.0%	0.54%

The results of the sensitivity testing show that the impact is relatively insensitive to the assumptions we make about the costs of the merging company. Making different assumptions about the costs is likely to change the relative efficiency rankings produced by the re-estimated models, so the fact that the overall impact seems quite stable with different cost assumptions might suggest that a large proportion of the impact is due to loss of precision. We investigate this further in the section below.

Methodology for decomposing the impact into loss of precision and changes in relative efficiency

Given the nature of the econometric benchmarking there is no specific technical method for decomposing the impact calculated above in to the efficiency loss (changes in the prediction line) and precision loss (confidence in the prediction line). One approach that we consider can give some quantitative insight into this issue is to identify whether the merged companies data would subsume any particular characteristics of the merging companies that set them apart from other companies. This is because, if a merging company's data is at the extreme for a certain variable, the company's data may affect the coefficient of that variable more than if it was closer to the average value across the sample. As South West Water is five times the size of Bournemouth Water, it is likely that information from Bournemouth Water would be subsumed by South West Water in the merged company.

We identified the following characteristics which would likely have the greatest impact on the model's parameters if lost:

- South West Water has the lowest network density in the industry, therefore, its relationship of costs and density contribute significantly to the estimation of the density coefficient(s).
- Bournemouth Water has the highest usage per property in the industry but the merged company would have average usage.

Our testing of these characteristics is set out below.

South West Water's key feature is that it has relatively low customer density compared to the other companies in the industry (in fact only Wessex Water has a lower density). While the merged company's data would lead to an increase in its overall density (and thus a loss of a set of low density observations), the merged company would still remain in the lower quartile of the industry. We tested the impact on the model coefficients (and historical predictions) by removing Bournemouth Water from the sample and running the five econometric models. This resulted in insignificant changes in the coefficients, except on the usage elasticity in the full model. The predicted costs however were effectively unchanged (less than 1% or £2m difference across companies). The relevant efficiencies of companies did not materially change.

The main impact of the merger on the prediction line is therefore likely to come from losing the comparator features of Bournemouth Water. To isolate this effect, we dropped Bournemouth Water from the sample and estimated the range of

inefficiency deltas. This range can then be compared (subtracted) from the range calculated after merging the companies' data. The difference provides a proxy of the effect due to precision loss. The true impact may also be slightly affected by the loss of South West Water's characteristics to some extent but those are difficult to decompose as the new company is more likely to resemble the larger of the two merging entities.

Table A26 below shows the results – a reduction in precision by £0.21%.

Table A26 Decomposition of precision impact (specific approach)

Model	Min annual change in inefficiency (£m)	Max annual change in inefficiency (£m)	Range of inefficiencies (£m)
Dropping Bournemouth Water	-1.8	3.9	5.7
Merging Bournemouth Water and South West Water	-7.2	6.3	13.5
Difference			7.8
Reduction in precision (%)	0.21%		

We consider 0.21% to be the lower bound of the precision detriment calculated under the specific approach. The upper bound is the average of the AMP6 impact (Scenario 3 in Table A25 above).

Table A27 Summary of results (specific approach)

Precision detriment	Impact (%)
Upper bound	0.54%
Lower bound	0.21%

The range is particularly wide and should be compared to the impact of the other approaches.

A4.2.2. The 'general approach'

The precision of an estimate derived using an econometric model can be measured by estimating the width of its confidence interval. These confidence intervals are derived using standard errors, a statistic which provides an estimate of the extent of uncertainty that should be attached to an estimate given the variation in the data used to derive that estimate.

The standard error of a coefficient estimate in a panel model is given by the following formula:

$$s.e. = \sqrt{\frac{1}{(nt-k)} \times \frac{SSR}{SSX}}$$

Where:

n = the sample size;
k = the number of parameters being estimated;
SSR = the sum of squared residuals = $\sum(y_i - \widehat{y_i})^2$
SSX = the sum of squared deviations in the independent variable from the mean = $\sum(x_i - \bar{x})^2$

Therefore, all else being equal, a decrease in the sample size as a result of a merger will lead to an increase in the standard errors of the coefficient estimates and a widening of the confidence intervals around them. The wider the confidence interval, the less precise the estimate is and the less reliance we can place on the results of the model.

Using this formula[20], in a similar way to the Competition Commission in the South Staffordshire Water/Cambridge Water merger, we have calculated for each of the models we used at final determinations the change in standard errors we would expect if we reduced the number of observations available to us by one (but keeping the underlying data constant). Note that this approach does not take any account of the specific features of the company that is lost from the sample and assumes that the characteristics of the sample do not change as a result of the merger, i.e. that all remaining firms maintain the same relative efficiency. However it can be carried out without re-running regressions and has been used by the Competition Commission in the past to give a theoretical view of the loss of precision.[21]

[20] The formula for the random effects models is slightly different
[21] Competition Commission. South Staffordshire plc/ Cambridge PLC Merger Inquiry. May 2012. Appendix E, p. E5.

Table A28 Change in width of confidence intervals for econometric models

	Full Totex	Refined Totex	Botex
Number of observations (n)	18	18	18
Number of years of data (t)	5	5	5
Number of parameters estimated (k)	27	12	12
Change in width of confidence interval when losing one observation	4.2%	3.4%	3.4%

Table A29 Change in width of confidence intervals for unit cost models

	Supply demand		Lead		New development	
	Regression	Log regression	Regression	Log regression	Regression	Log regression
Number of observations (n)	18	14	14	11	18	18
Number of years of data (t)	1	1	1	1	1	1
Number of parameters estimated (k)	2	2	2	2	2	2
Change in width of confidence interval when losing one observation	3.3%	4.4%	4.4%	0%	0%	3.3%

These results show that the increase in width of confidence interval is greater in models with fewer observations (such as the lead log regression model) and with more parameters (such as the full model).

Methodology

We use these theoretical results to estimate the impact on precision across our whole suite of models. To do this, we adopted the methodology set out in the draft Statement of method, as set out below:

1. We calculated the standard errors of the coefficients in each model (with n = 18)
2. We used the results above to estimate the standard errors of the coefficient estimates in each econometric model with n=17.
3. We calculated the range in historical predicted costs for the model runs with 18 observations:
    - We increased the coefficients for the independent variables by one standard error and estimated the efficiency scores of each company relative to the new regressions, we then carried out the triangulation process, and estimated the total efficiency scores across all companies.
4. We repeated this but decreased the coefficients for the independent variables by one standard error. We calculated the mean deviation in total industry inefficiency compared to the upper quartile target:
    - We calculated the total level of industry inefficiency from the upper quartile target in the original models by applying the UQ target and measuring the distance of submitted costs to this target.
    - We repeated this for the cases where coefficient estimates had been increased or decreased by one standard error (the UQ target was recalculated in each case).
    - We compared each of these estimates of total efficiency with the original models and calculated the average of the two differences (the "mean deviation").
5. We then calculated the mean deviation for the model runs with 17 observations by repeating the steps outlined in points 3 and 4 above
6. We calculated the difference between the mean deviation based on 18 observations and that based on 17 observations
7. We then worked out the change in mean deviation as a proportion of the mean deviation with 18 observations.

However it is difficult to apply the general approach on such complex models due to the interaction of the translog terms and the high level of multi-collinearity between some of the variables (especially in the full totex model). We have therefore carried out some alternative analysis to try and calculate the theoretical loss of precision of losing a comparator.

The econometric models at PR14 are somewhat more complex than those used in previous determinations as they capture a larger variety of variables and contain a more comprehensive functional form by way of the translog specification. The interaction terms contained therein make the direct application of the General Approach, as per previous CMA analysis,[22] less intuitive. Therefore, instead of calculating confidence intervals for parameter estimates and recalculating the model forecasts, we test by constructing confidence and prediction intervals around the predicted historical values themselves. We do this as follows:

1. Estimate models using the full historical sample.
2. Calculate logged-fitted historical values.
3. Construct confidence (and prediction) intervals around each fitted value in log-form (and level form for some unit cost models):
    - Confidence interval: use the standard error of the residual given by $\mathrm{se}(\hat{y})$
    - Prediction interval: use the standard error of the prediction error given by $\mathrm{se}(y - \hat{y}) = \sqrt{1 + \mathrm{se}(\hat{y})^2}$
4. Adjust the above interval for reduced degrees of freedom (in the same way as is suggested by Europe Economics).
5. Convert both the fitted values and confidence intervals into level (i.e. £) form, including application of the alpha factor.
6. Apply the original upper quartile (0.9347) to the modelled values.
7. Calculate the difference between the UQ modelled costs and the actual costs to estimate each company's inefficiency to the UQ.
8. Add up individual company inefficiencies/efficiencies to get an industry level inefficiency for lower and upper bound of the original.
9. Compare the mean deviation of the industry inefficiency to the original mean deviation (i.e. with unadjusted standard errors) in £million.

As pointed out in the draft Statement of method[23], the impact on standard errors is somewhat trivial as it is directly related to the ratio of the degrees of freedom from the original model versus the reduced degrees of freedom. However, this impact on forecasts is not as straightforward as standard errors are added (not multiplied) with fitted values and the final triangulated value (and efficiencies) calculated in level terms (i.e. after applying the non-linear exponential function).

[22] Competition Commission. South Staffordshire plc/ Cambridge PLC Merger Inquiry. May 2012. Appendix E, p. E4.
[23] See page 64 of the Europe Economics paper.

Findings

We have used the methodology set out above to estimate the impact on precision of losing a comparator. Our findings are summarised in Table A30 below.

Table A30 Reduction in precision impact (shifting coefficients by one standard error)

	Distance to Upper Quartile (£m)	Deviation from baseline (£m)
Baseline	153	
+1 se	948	795
-1 se	-2111	-2264
Mean deviation	-	1530
+1 se (adjusted)	947	794
-1 se (adjusted)	-2312	-2465
Mean deviation	-	1630
% Increase in mean deviation		6.54%

The mean deviation around the model results can be considered a measure of precision. Our analysis shows that the mean deviation around our upper quartile results increases by 6.54% when we test the theoretical impact of losing a comparator. We have also attempted to consider the calculated percentage change in mean deviation as a monetary impact. This is equal to £100m each year (£500m over 5 years). As noted above, this estimate is an exaggeration of the impact as it assumes all the coefficients move in the same direction despite correlations and interaction terms.

We also ran the alternative approach of calculating the increased width of confidence and prediction intervals for the fitted values (described above). The range of

efficiencies grows by approximately 3.7% with the adjusted degrees of freedom on confidence intervals of fitted values.[24] This is shown in Table 31 below.

Table A31 Results from 'General Approach' under confidence interval

	Inefficiency to upper quartile	Deviation from baseline
Baseline	153.5	
+1 se	-10.7	-164.2
-1 se	308.8	155.3
Mean deviation		159.7
+1 se (adjusted)	-16.9	-170.4
-1 se (adjusted)	314.3	160.9
Mean deviation		165.6
% increase in mean deviation		3.7%
Annual increase in mean deviation		**5.9**
Annual increase in mean deviation as % of original range		3.8%

As set out above, the increased range in efficiency due to a change in the degrees of freedom (only) associated with the merger is similar to that found by the CMA in their investigation of the previous merger (3.41%).[25] This translates into an average increase in uncertainty of total industry inefficiency of approximately 3.8%.

Table A32 below summarises the impacts under the three approaches we have tested.

[24] Prediction intervals were also tested and yielded very similar results in terms of percentage.
[25] Competition Commission. South Staffordshire plc/ Cambridge PLC Merger Inquiry. May 2012. Appendix E, p. E5. Table 3.

Table A32 Summary of loss of precision using the alternative general approaches

Approach	Percentage change of mean deviation
Original	6.5%
Confidence interval	3.8%
Prediction interval	8.4%

As stated above, the approach adopted in previous merger analyses is not as applicable to the complex econometric models applied at PR14 as it was to the univariate models at PR09, which were used by the Competition Commission in the last merger assessment. Moving all of the coefficients in the same direction exaggerates the precision range and consequently the change in precision range. We therefore believe that the percentage change derived under this approach is significantly overestimated and should not be used as an indicator.

Our alternative approaches, confidence and prediction intervals of the regression, generate lower values as they take into account the movement in the regression line as a whole. The confidence interval is narrower than the prediction interval as expected and it therefore generates a lower impact of industry efficiency. This is because the prediction interval takes into account additional uncertainty in the variation of the unobserved error (i.e. unobserved factors affecting costs).

As this is a relatively new use for the case of loss of comparator in a merger investigation, and this method itself is not without limitations, we take a conservative approach and use the confidence interval value of 3.8% as our central estimate of the general approach.

The general approach, however, is not very robust on its own as it assumes that everything in the modelling, apart from the degrees of freedom of the standard errors, is held constant. It is therefore rather simplistic in the way it draws conclusions about the reduced precision of the models when a merged company is present. Importantly, it does not take account of any potential changes to parameter estimates that may occur from a merger, or of potential cost savings from a merger.

A4.2.3. Bootstrapping

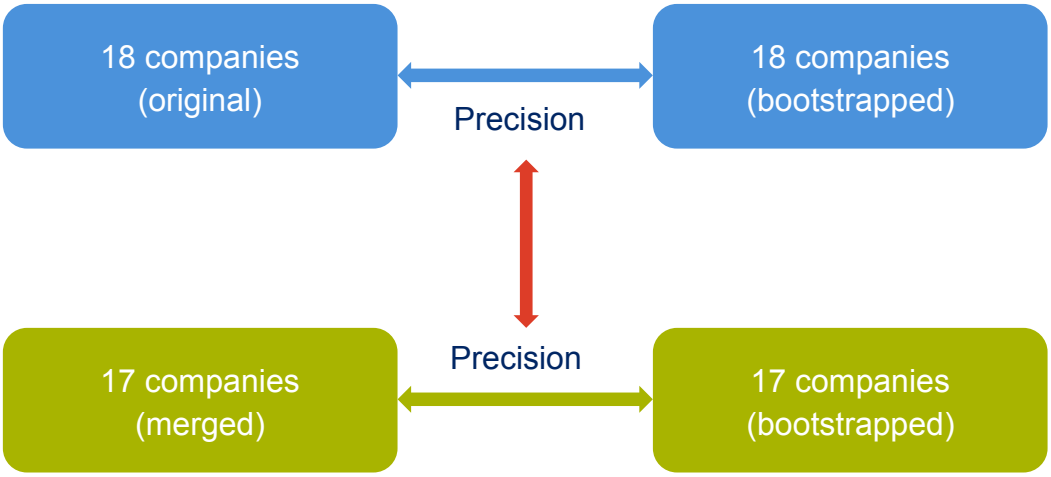
Bootstrapping analysis allows us investigate the precision of our estimates and how this is affected by having fewer/more companies but does not estimate the direct

monetary impact of fewer comparators on industry efficiency or total costs. However, it is still a useful metric to consider since the confidence one may place in the models is directly related to the precision of our estimates and, by extension, the confidence in our estimate of precision.

Methodology

As described in our draft Statement of method, bootstrapping refers to repeated calculation of an estimator based on resampling. It therefore tells us something about the distribution of our estimator based on the sample at hand. The method simulates having multiple samples (i.e. having 'more' data). By comparing the effect of 'more' data in the absence of the merger, to the impact of having 'more' data in a sample with a merged company, we can determine if the loss in precision is material. In other words, we can see if we are relatively less confident with 17 companies than we are with 18 companies. This is summarised in the diagram below.

Figure A3 Use of bootstrapping



Again, the models used in PR14 are relatively more complex than those used previously in that they capture more cost drivers and a more complex functional form. The results of bootstrapping analysis, as it has been carried out by the CMA in the past, may not be as applicable as for the Cambridge and South Staffordshire case. Multicollinearity may therefore feature more heavily when considering only standard errors. However, multicollinearity in itself does not imply poor models. We follow the steps described in Box 3.18[26] to derive the bias for 18 and 17 companies. We then apply a few additional steps for our triangulated translog models:

[26] Europe Economics. Valuing the Impact of Mergers and Identifying Undertakings in Lieu. May 2015.

1. Take the average of the calculated percentage bias for each variable to establish a change of the precision of the model.
2. Triangulate the results to get an overall change in bias.

This provides an estimate of the loss of precision in our overall cost estimate as, in practice, some of the uncertainty inherent in the models may be mitigated by the use of several models and other policies such as upper quartile efficiency targets.

Findings

Table A33 shows the impacts of the two normalised bias estimates. Both measures have been used by the Competition Commission in the last merger and the first is described in the Europe Economics report.

Table A33 Change in bias

Bias	Full totex	Refined totex OLS	Refined totex RE	Botex OLS	Botex RE	Average
As % of s.e. of s.e.	4%	26%	-4%	289% (15%)*	-25%	**10% (1%)**
As % of original s.e.	21%	8%	27%	245% (-18%)*	21%	**11% (3%)**

*Tested without time trend impact

The high bias in the Botex OLS model stands out as an unusual result and it distorts the unweighted average. It is driven by one variable, the time trend. This is due to the very high original precision (i.e. small bias in the 18 company models) on this particular coefficient. Although the result is high in percentage terms, it just reflects a very small starting point; not particularly high imprecision. If we ignore this variable (i.e. bring the change in bias down to zero), then the average bias is substantially lower: 1% under the approach that normalises by the standard error of the standard errors and 3% if normalised by the original standard error.

A4.3. Conclusion

The combination of specific, general and bootstrap approaches supports the conclusion that there is a detriment from loss of precision of is in the range of 0.21%-3.8% If we were to apply the CMA approach to getting a value as in the previous merger inquiries, the range would translate into £83m-£260m.

Results of our analysis

The outputs of the three approaches above are expressed in terms of percentage change impacts.

As discussed, the general approach generates a range of impacts based on how you define the standard error. It only shows the isolated impact of losing a company, all else remaining constant. We have pointed out that we consider the confidence interval value (3.8%) to be the most realistic estimate here. The specific method supplements this approach by assessing the impact of the precision of the upper quartile if the specific merger occurs. We consider that the impact can be more detrimental if different assumptions are made in the specific approach.

Approach	% loss of precision
Specific	0.21%
General	3.8%

The bootstrapped analysis serves as a cross-check to our general approach. The bias expressed as percentage of the original standard error is similar to the percentage change in the mean deviation in the general approach. Both are expressed as a percentage of the original range around the estimate. As shown in the table below, the numbers are very similar, which gives us confidence in the estimate of the general approach.

Approach	% loss of precision
General	3.8%
Bootstrap	3%

Potential for impact in the future

It is difficult to estimate the future impact as there are a range of developments (such as access pricing) that may occur at the next price controls that would result in different wholesale model specifications.

A5. Loss of a comparator with important similarities or differences

As well as making quantitative use of comparators in setting price limits we also make use of comparisons in a number of other areas (as well as wholesale cost assessment, ACTS, SIM and ODIs). This section considers the fifth and sixth criteria in our draft Statement of method. These are:

- Criterion 5 – a loss of a comparator with important similarities for comparisons
- Criterion 6 – a loss of a comparator with important differences for comparisons

A5.1. Loss of a comparator with important similarities

If at least one of the pre-merger companies operates in similar circumstances to a limited number of other companies in the regulatory regime that is useful to us in making comparisons then this would have the potential for a greater detriment. Our assessment therefore focuses on:

- the extent to which the pre-merger companies operate in similar circumstances to other companies in the industry (or a subset of companies); and,
- areas where the merging companies currently provide valuable comparators for us (or perhaps for a subset of other firms in the industry, or in respect of one or more specific areas of operation) which would no longer be the case post-merger.

A5.2. Loss of a comparator with important differences

The extent to which a merger results in a loss of the differences between merger parties and other undertakers could introduce a detriment to our ability to make comparisons. Our assessment therefore focuses on:

- if one or more of the merging companies takes an approach which is different from other companies in the industry; and,
- if the merging companies currently provide a useful comparator would this still be the case post-merger.

A5.3. Assessing potential impact

To assess the potential impact of losing a comparator with either important similarities or differences we have considered whether either merging party has previously demonstrated best practice or poor practice in certain areas. Losing a comparator who currently shows best practice might have a greater detriment than losing a comparator who is a poor performer.

When assessing the potential impacts of the merger in relation to comparators we have also assessed whether the merged entity might form a more useful comparator than the pre-merger companies would independently. As set out in our draft Statement of method, it is possible that merging a poor performing company with a well performing company could result in the sharing of best practice; we consider the relative benefits of this in Appendix B.

In order to determine what the detriment of losing comparators might be we have considered the potential impacts on our qualitative use of comparators across a range of selected areas where we use comparators in undertaking our regulatory functions[27]. These areas are:

- Customer engagement
- Specific cost adjustments
- Company behaviour
- Accounting and reporting data
- Financeability, risk and reward
- Performance commitments (PCs) and Outcome Delivery Incentives (ODIs) [28]

We undertook a similar approach to the risk based review of companies' business plans at PR14 where we carried out a structured qualitative (and quantitative) assessment of the plans before considering the need for interventions to these plans in setting price limits. The potential impacts in each area have been allocated a score from A to D using criteria defined in the following table.

[27] We set out examples of the areas where we make qualitative use of comparators in our initial actual submission to the CMA.

[28] We that while we have considered ODIs in the quantitative analysis, there were also qualitative aspects to our assessment of ODIs at PR14 and it is those aspects that are the subject of the analysis in this section.

While our assessment in this instance applies only to South West Water and Bournemouth Water, we consider the criteria could potentially be applied to any company we regulate.

Table A34 Criteria applied to the qualitative assessment

Score	Assessment definition
A	One or other companies, if remaining independent, has attributes that are especially useful in making comparisons with other companies, or a sub-set of companies that Ofwat regulates. Evidence is available that the attributes have been especially useful in undertaking our relevant regulatory functions, which include applying challenges to other companies in respect of setting price limits, improving service quality or monitoring, enforcing or spreading best practice.
B	One or other companies, if remaining independent, has attributes that assist Ofwat in making comparisons with other companies or sub-set of companies that Ofwat regulates. There is scope to apply these comparisons across the sector to benefit consumers, including applying challenges to other companies in respect of setting price limits, improving service quality or monitoring, enforcing or spreading best practice.
C	One or other companies, if remaining independent, has attributes of limited help to Ofwat in making comparisons with other companies or sub-set of companies that Ofwat regulates. There is limited scope to apply across the sector to help deliver an efficient, high quality service to customers
D	One or other companies, if remaining independent, has attributes that have not helped to Ofwat in making comparisons with other companies or sub-set of companies that Ofwat regulates. There is no evidence of making use of the comparator across the sector to help deliver an efficient, high quality service to customers

A5.3.1. Customer engagement

Customer engagement was a critical part of PR14 and we anticipate it will continue to be an important part of the regulatory approach. For customer engagement we considered three separate areas for each company. Our assessments in each area are shown below.

Table A35 Qualitative assessment of customer engagement

Customer Engagement	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
Was either merging party identified as having best practice with regard to customer engagement?			A	B	SWT scored very highly on customer engagement in its business plan and it was one of the key areas which led to it being awarded enhanced status in PR14. SWT showed best practice and had a strong focus on engagement and balancing the need to keep customers' bills affordable while also investing in the environment and service improvements. For example, the company's engagement programme ran for two years across two phases – understanding its customers' priorities and then presenting customers with them with investment and bill options to choose from. SWT's high quality approach was especially useful in enabling Ofwat to challenge other companies, so we have scored it as "A". We have scored BWL as "B". There was evidence of BWL responding positively to the CCG's challenges throughout the process and the plan reflected customers' priorities.
Could Ofwat rely on the engagement undertaken to support the first business plan to guide its price limits?			A	C	SWT scored very highly and provided exceptional evidence of an effective customer engagement process and sufficient and convincing evidence of a robust approach to gathering willingness to pay information and applying it to PCs and ODIs. This was especially helpful to Ofwat in making comparisons with other companies, therefore we have scored this attribute as an "A". We assessed BWL's overall approach to customer engagement in the risk based review to be more evidence required.

Customer Engagement	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					Lack of evidence of a robust approach to gathering Willingness to Pay information and mapping this to outcomes led to BWL's risk based review categorisation of more evidence required and to the company revising its business plan before we made our draft and final determinations. We assess this attribute being of limited help to Ofwat as an example of good practice, we have scored BWL as a "C".
Was either merging party identified as having best practice with regard to its affordability measures?			B	B	At the risk based review, overall we categorised SWT as acceptable and determined it provided sufficient evidence of affordability. SWT had carried out 2 stages of acceptability testing. Following only 62% of customers finding its first plan acceptable SWT updated its plan and reached 84% acceptability. Therefore we have assessed SWT's approach to affordability as of significant help to Ofwat, and have scored this attribute as a "B". BWL provided sufficient and convincing evidence that most of its customers found its proposals for 2015-20 affordable. BWL carried out its customer engagement in this area to a good standard and its CCG was fully supportive of this aspect of its Plan. Therefore, we have also scored it as a "B".

To summarise, for each company's value as a comparator for the qualitative measure of customer engagement, SWT has two "A" scores and one "B". BWL has two "B" scores and one "C". On balance we consider both South West and Bournemouth have attributes as independent companies that are useful to Ofwat in

making comparisons, however, the additional benefits of Bournemouth as an independent comparator were relatively limited in this new area of PR14.

A5.3.2. Specific cost adjustments

Our assessment of the impacts of retaining independent comparators in the area of specific cost adjustments focuses on the most recent set of requests that companies made for special cost claims to our sector-based wholesale and retail cost assessments at PR14. Our assessment is shown below.

Table A36 Qualitative assessment of specific cost adjustments

Specific cost adjustments	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
Do either of the merging parties share similar operating characteristics with a small number of other companies to inform assessment of special cost adjustments for allowed wholesale service expenditures? For example, in relation to density, rural coverage, , topography, water quality, etc.	B	B			The key PR14 wholesale cost modelling drivers were network length, housing density and population density. SWT operates in a relatively rural region, with a similarly low network density as Wessex Water (measured as properties per kilometre of main). Therefore, we have scored this attribute as a "B" for SWT, as being an area that assisted us in our comparative analysis of the impact of these specific cost drivers on affected companies' efficient costs. In respect of BWL, there are some aspects which make it useful for making sub-sample comparisons. For example, we have made use of BWL for sub-sample comparisons with Bristol Water in the CMA's investigation into Bristol Water's price referral where we have noted BWL has similar characteristics and cost allowances to Bristol. Other sub-company comparisons where BWL could be useful include that the company has the highest proportion of water from rivers, a little more than DVW and TMS; it has

Specific cost adjustments	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					no mains relining, which is similar to ANH, SEW and SRN; it has similar network length and similarly low pumping head to DVW and PRT; and similar potable water volumes as PRT and SES. While, in practice, none of these were key drivers for wholesale cost models at PR14, it is possible these could be in the future. BWL is also different to other companies in that it receives a very large proportion of its revenue from a single large user, for which it was the only company we made an adjustment to its wholesale costs at PR14. Given the use of BWL to make sub-sample comparisons in the Bristol Water referral and the potential for further use of sub-sample comparisons in the future, we have assessed this attribute to be a "B".
Was either merging party identified as having outlying costs for areas in which specific cost adjustments were considered for bad debt, new costs or input price pressure claims in setting retail controls?	A	A			For SWT a specific adjustment was made to its retail cost allowance in respect of bad debt costs. Indeed its analysis was used by Ofwat to help it assess whether an adjustment should be made for other companies, based on the variety of other evidence provided by these companies to support their business plan proposals. Therefore, we consider the evidence in this area from SWT to have been especially helpful to Ofwat in making comparisons with other companies, and so score this attribute as an "A". No bad debt adjustment was considered for BWL based on the evidence it submitted. The company provided good evidence on the need for investment associated with its new

Specific cost adjustments	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					billing system with options analysis, details on the robustness of its cost estimates and details on customer protection. This example of what good evidence should look like would have made it more difficult, although not impossible, for us to challenge the requests of Thames and United Utilities that included billing system investment for significant sums with poor evidence. Our challenge in this area resulted in a £5m shortfall for Thames and the introduction of performance commitments and outcome delivery incentives for Northumbrian Water, Bournemouth Water, Thames Water & United Utilities on billing system investments, to the benefit of customers. This benefit may not have been realised without the evidence from Bournemouth Water's plans.

To summarise, for each company's value as a comparator for the qualitative measure of specific cost adjustments, South West Water has one "A" score and one "B", whereas Bournemouth Water has one "A" score and one "B" score. We consider South West Water and Bournemouth Water to exhibit attributes that make them both particularly useful comparators but for different reasons. Therefore the loss of Bournemouth Water as an independent comparator may reduce our ability to make effective comparisons (with the merged company) to some extent in this area.

A5.3.3. Company behaviour

Company behaviour is important for maintaining trust and confidence in the companies we regulate and maintaining trust and confidence in the sector, in line with Ofwat's wider regulatory strategy. In assessing business plans in PR14, and in monitoring actual performance against these plans, we look at statements from company Boards which set out how they have assured their business plans and assured the information provided in regulatory reporting. We also oversee the

Governance arrangements in place to ensure companies meet our board leadership, transparency and governance principles. In these areas, we use comparisons to identify examples of best and good practice, and to decide annually on the graduated assurance requirements to place on each company's reporting.

We assessed company behaviour in five specific areas and set out the results of our assessments below.

Table A37 Qualitative assessment of company behaviour

Company behaviour	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
Were issues identified in Ofwat's risk based review with respect to the degree of Board assurance for either merging party?			B	B	No issues were identified in Ofwat's risk based review with respect to the degree of Board assurance for either merging party. (Board assurance was scored B in RBR for both.) We score both companies as a "B" as it is unlikely we would assign a score of an "A" to this criterion.
Was either merging party identified as having best practice with regard to business planning (e.g. did it achieve enhanced status)?			A	B	SWT was identified as having best practice in its business plan and achieved enhanced status following a pre-qualification process This was especially helpful to Ofwat in challenging other companies, and so this attribute has been scored as "A". BWL was not an enhanced company, although we did identify best practice in some areas and, for wholesale, there remained a (small) gap between its Plan and Ofwat's allowance at FD. Overall, we assess BWL's business planning as a "B".
Have any issues been identified with either merging party meeting Ofwat's board leadership, transparency and governance principles?			C	B	We have raised concerns to SWT regarding it not having an independent chair as the chair is also chair of Pennon. SWT have not provided evidence that this departure from our principles of board leadership, transparency and governance is appropriate. Therefore, for this attribute, SWT is of limited help to Ofwat as a comparator, and we have scored it as a "C". We have identified no issues with BWL, we have scored this

Company behaviour	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					attribute as a "B" for BWL. A "B" is the highest score we consider we would apply for this attribute.
Has action been taken against either of the merging parties following investigation of non-compliance with market rules?			B	B	We have found no evidence that SWT or BWL are non-compliant with market rules. Given that this is also the case for many other companies, this can be of no more than significant help to Ofwat for comparability purposes and so we assess a "B" is the highest score we would apply for this attribute so both SWT and BWL score as a "B" for the attribute.
Has action been taken by Ofwat against either of the merging parties following investigation of non-compliance with their duties under the Water Industry Act 1991 or their licence conditions?			C	B	SWT has had minor non-compliance with its duties under the WIA 91 in a case between Staverton Holdings Ltd and SWT. A determination was made in favour of the claimant. SWT was required to make a payment of £1,500. Therefore, SWT can be of no more than of limited help to Ofwat for comparability purposes in this attribute, and so has been scored as a "C". For BWL, we have not taken action for non-compliance with its duties under the WIA 91 or with licence conditions in the assessment period. Given that is also the case for many other companies, this attribute is of no more than significant use for comparability purposes, and so has been scored as a "B", as the highest score we would assign for this attribute.
Do the companies benefit from the current suite of ring-fencing licence conditions?			D	B	Although the subject of recent discussions with the company, SWT does not have the current suite of ring-fencing licence conditions that provide protection to customers to ensure that a company has sufficient financial and managerial resources to carry out its functions as a water company and is appropriately ring-fenced from the rest of the group. For this reason we assess SWT

Company behaviour	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					to be a "D". Customers of BWL benefit from the current suite of ring-fencing licence conditions which are included in BWL's licence. We assess BWL as a "B", which is the highest score we would assign for this attribute, unless a company voluntarily introduced licence amendments that go beyond the current licence ring-fence standard.

To summarise the results, for each company's value as a comparator for the qualitative measure of company behaviour, South West Water has one "A" score, two "B" scores, two "C" and a "D". Bournemouth Water has six "B" scores. Overall, we consider both companies as independent companies to have some attributes that assist Ofwat in making comparisons with other companies or sub-set of companies that Ofwat regulates. BWL is consistently a good comparator. A key issue in this area is that customers of South West Water do not benefit from the suite of ring-fencing licence conditions that have been adopted by most other companies.

A5.3.4. Accounting information

We make use of comparisons to identify concerns, for example in relation to meeting cost allocation guidelines and to establish and spread best practice. For accounting information, we considered six areas for each company, our assessments in each area are set out below.

Table A38 Qualitative assessment of accounting information

Accounting information	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
Has the company previously been challenged with respect to			B	B	Minimal queries were required from either SWT or BWL but any raised were dealt with fully and completely first time. No issues were raised by

Accounting information	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
transparency and/or reporting of data?					independent auditors. Given that this was also the case for many other companies we assess this can be of no more than a "B" for comparability purposes, and so has been scored as "B".
Has the company previously been challenged by Ofwat with regard to its tax assumptions in its business plans?			B	B	SWT is an outlier with view that Infrastructure charges remain taxable on receipt following adoption of IFRS, FRS101 or FRS102.However, as SWT was one of only 2 companies that currently report under IFRS, its data (both in terms of historical and future projections) was a useful benchmark when considering other companies future projections on things like percentage of Infrastructure Renewals Expenditure taxable on receipt etc. so we have scored this attribute as a "B". For BWL Ofwat has had no reason to challenge the tax assumptions made by the company and any clarifications that have been required to be made have been minor. However, given that this is also the case for many companies, this attribute can be of no more than significant use for comparability purposes, and so has been scored as a "B" as the highest score we would assign to this attribute.
Has the company previously been challenged for not following cost allocation guidelines in			B	B	SWT's cost allocation submission for PR14 was strong at all stages (business plan, revised business plan and DD representation), so we consider it to be of significant help to Ofwat for comparability purposes,

Accounting information	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
regulatory reporting?					scoring a "B". We identified some issues for BWL at the risk based review stage but BWL was very proactive in addressing issues and produced the best cost allocation in its revised business plan. In comparison to some other companies it did not have any cost allocation issues to address in its Draft Determination, so we also consider this attribute to be of significant use to Ofwat for comparability purposes, and so score it as a "B".
Has either merging party been identified as having best practice with regard to regulatory reporting?			B	B	Neither SWT or BWL showed any examples of best practice with regard to regulatory reporting but both had only minor infringements in 2012-13. Therefore, we have scored both companies as being as a "B".
Is either of the merging parties an outlier in any policies other than cost allocation or tax?			B	B	SWT is an outlier as it is one of 2 companies to adopt the IFRS accounting standard. All companies will move to this basis from 2015-16., Therefore we consider this attribute as being an important difference to help Ofwat in benchmarking and assessing the possible impact adoption of IFRS might have on other companies from 2015-16. We have scored this as a "B". BWL is not an outlier in any policies other than cost allocation or tax. Therefore we have scored it as a "B".

To summarise the results, for each company's value as a comparator for the qualitative measure of Accounting and reporting data, South West has six "B" scores and Bournemouth Water has six "B" scores. We assess that both South West and Bournemouth Water are useful as independent comparators in this area.

A5.3.5. Financeability, risk and reward

We have put in place a performance reporting and assurance framework which will require companies to increase the transparency around their performance reporting in different parts of their business, as well as the structure and governance arrangements of the water and companies and their ownership structures. This work, including companies' need for graduated assurance in their 2015-16 reporting, draws on comparisons we made on information reported to us by each company during the PR14 price setting process. We are also consulting on a financial monitoring framework.

We also made comparisons across companies in assessing the evidence provided in their business plans. This led in some cases to us making interventions to companies' business plan financial assumptions when we set price limits in PR14, in areas such as the RCV run-off rate, the pay-as-you-go rate and assumptions around asset lives.

For Financeability, risk and reward, we considered five areas for each company, our assessments in each area are shown below.

Table A39 Qualitative assessment of financeability, risk and reward

Financeability, risk and reward	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
Is the financing structure and governance arrangements of the Appointee and its parent companies transparent and easily accessible to			B	C	Both SWT and BWL have put in place governance codes which will allow them to meet Ofwat's "Board Leadership, transparency and governance" principles. Transparency in this area is important to stakeholders. Ofwat's analysis of both companies' 2014 reporting showed that both companies were largely meeting

Financeability, risk and reward	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
stakeholders and appropriate?					the principles in relation to transparency although we considered both companies had some further work to do on improving the reporting of their ownership structures. Therefore we assess BWL to be a "C", we assess SWT's score of a "B" reflects the greater transparency associated with the listing of Pennon.
Is the financing structure that has been put in place by the merging companies prudent and/or have concerns been raised around the financing structures of the merging companies?			A	B	SWT and BWL have conservative financing structures with a level of gearing (SWT: 56% at 31 March 2014, BWL: 58% at 31 March 2014) which is at the lowest level of the 18 companies. There is no evidence that SWT is considering gearing up as a result of the merger and Pennon has already raised the equity necessary to fund the merger. As South West is a company that is listed (through the ownership by Pennon) on the London Stock Exchange, we assess it to be an 'A' as the additional external commentary available as a consequence of the listing is particularly useful to us. We assess Bournemouth to be a 'B' based on its conservative level of gearing.
Did Ofwat intervene in either company's choice of PAYG rate, RCV run-off rate or asset lives at PR14?			B	C	Ofwat made an insignificant intervention adjustment of the PAYG rate at Final Determination for SWT, however the PAYG rate proposed by the company was considered appropriate. In respect of BWL, Ofwat had to make a larger intervention in BWL's choice of PAYG rate (79.6% to 75.0% in the final determination). In

Financeability, risk and reward	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					consequence, we assess BWL to be of limited use to Ofwat for comparator purposes, and so scores a "C".
Were the merging companies' choices of PAYG rate, RCV run-off rate and asset lives consistent with customer views?			B	D	SWT's bill profiles were consistent with the figures that they had shared with customers and reflected customer views. BWL did not provide any evidence for the draft determination of customer support for the company's proposed use of PAYG to smooth bills between AMP6 and AMP7, which led Ofwat to intervene. This attribute was unhelpful to Ofwat for comparator purposes and so has been scored as a "D".
Did each company provide appropriate Board (or external) assurance that their plan was financeable on an actual and notional basis?			B	B	SWT and BWL provided appropriate assurance from their Boards that they were financeable on an actual and notional basis based on their business plans. Both companies subsequently also stated that their household retail businesses were not financeable due to Ofwat treatment of legacy depreciation and the level of cost allowances - however, that was outside the scope of the Board assurance we sought of the companies in PR14. Because most companies provided appropriate Board assurance, this attribute cannot be of more than significant help to Ofwat for comparator purposes, so we have scored it as a "B" for both companies, the highest score we would assign to this attribute.

To summarise the results, for each company's value as a comparator for the qualitative measure of financeability, risk and reward, South West has one "A" score and four "B" scores. Bournemouth Water has two "B" scores, two "C" scores and one "D" score. Overall, we assess South West to be a useful comparator in the assessment of financeability and risk and reward; the assessment of Bournemouth Water is rather more mixed.

A5.3.6. Performance commitments (PCs) and Outcome Delivery Incentives (ODIs)

Company specific outcomes, performance commitments and outcome delivery incentives were introduced at PR14 for the first time. Companies were required to demonstrate that their proposals were supported by customer willingness to pay. Companies were expected to demonstrate the performance commitments were consistent with their legal obligations, were reasonable, appropriately allocated to the correct price control, were consistent with the long term interests of customers, represented value for money and could be measured, recorded and reported consistently. Companies were expected to demonstrate their proposals for outcome delivery incentives conformed to our framework, represented the appropriate balance of risk and reward, were consistent with consumers' interests and took proper account of other financial incentives.

For Performance Commitments (PCs) and Outcome Delivery Incentives (ODIs) we considered three areas for each company, our assessments in each area are shown below.

Table A40 Qualitative assessment of performance commitments and outcome delivery incentives

PCs and ODIs	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
Has either merging party developed an innovative set of performance commitments that have not been used by other companies?			A	C	SWT had the largest set of PCs covering a wide range of issues. The company provided evidence that the performance commitments were innovative in the original PR14 business plan and were based on customer preferences. This was especially useful to Ofwat for comparator purposes, and so has been scored as an "A". BWL's

PCs and ODIs	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					choices of PCs were nearly all standard measures which it and the rest of the industry have reported on before. There was one example of limited innovation, namely B2: large scale interruptions. This was of limited use to Ofwat for comparator purposes, and so has been scored as a "C".
Has either merging party adopted an innovative approach to setting outcome delivery incentives that has not been used by other companies?			A	A	Both SWT and BWL provided evidence that their approach to ODIs was innovative and consistent with the PR14 methodology – in particular that each company made use of financial incentives. SWT had large potential rewards for bathing water quality to reflect the importance of the issue to their customers. BWL chose 67% of its PCs to be financial (either penalty or reward and penalty) – which we considered to be a leading approach in terms of the original business plans received at PR14. We consider both companies' attributes to be especially useful for comparator purposes, and so have scored them both as "A".
Does the company's proposal for reporting and sharing out- and under-performance represent a leading approach?			A	B	SWT had the highest score of all 18 companies for reporting and monitoring in the risk based review. At PR14 we considered SWT's WaterShare scheme to be industry leading. We considered this attribute of SWT to be especially useful to Ofwat for comparator purposes, and so score it as an"A". Ofwat had no concerns with BWL's approach for assuring and reporting performance commitments at the

PCs and ODIs	Similarities		Differences		
	SWT	BWL	SWT	BWL	Commentary
					final determination. We consider this attribute to assisted Ofwat for comparator purposes, and we score it as a "B".

To summarise the results, for each company's value as a comparator for the qualitative measure of PCs and ODIs, South West Water has three "A" scores, while Bournemouth has one "A" score, one "B" score and one "C score. Assuming South West Water continues to lead the industry forward in the development of outcomes, performance commitments and outcome delivery incentives, as it did at PR14, customers in the Bournemouth Water region may benefit. However, the aspects of Bournemouth Water's approach to the business planning which led it to allocate financial incentives to a large proportion of performance commitments was helpful as a leading approach in the original business plan.

A5.4. Overall assessment of similarities and differences

Both companies show they have attributes that are useful to Ofwat in making comparisons with other companies or sub-sets of companies, and provide significant scope to apply across the sector to help deliver an efficient, high quality service to customers. We summarise below our conclusions in respect of the impact on similarities and differences.

A5.4.1. Similarities

There are certain aspects of the comparative analysis of wholesale costs that have made South West a useful comparator. Its relatively low network density make it useful as a comparator for a subset of two other companies. South West Water was an outlier on bad debt and it delivered an econometric bad debt model that we used for assessing bad debt claims of other companies at PR14. None of these issues will change following the merger.

Bournemouth Water has some attributes relevant to its wholesale activities that are similar to those of a subset of some other companies and so may be helpful for making use of comparisons in the future, however none of these were key drivers at PR14. However, despite these similarities, Bournemouth Water is also different to other companies in that it receives a very large proportion of its revenue from a

single large user, for which it was the only company we made an adjustment to its wholesale costs at PR14.

Bournemouth Water's similarity to some of the smaller water only companies, was useful in challenging company claims for a small company uplift at PR14 and in demonstrating that the approach to addressing the concerns raised by us through the price review process, which was not adopted by some other companies.

A5.4.2. Differences

South West Water has demonstrated a leading approach to development of its business plan, customer research and the development of outcomes, performance commitments and outcome delivery incentives. As an early adopter of the IFRS accounting standards, South West is a useful comparator in this area, however, it was an outlier in terms of its position on the assumptions around tax at PR14.

Customers of South West Water do not benefit from the full suite of ring-fencing licence conditions as these have not been adopted by the company.

As for the majority of companies at PR14, we identified some issues with Bournemouth Water's business plan that it had to rectify, or which led to interventions in the final determination.

Despite its relatively small size, the company was proactive in addressing issues raised through the price review process. There were however, some instances of best practice demonstrated by Bournemouth Water which included the scope of outcome delivery incentives that were subject to financial incentives. The evidence it provided in respect of its cost claim associated with the billing system was useful in challenging similar claims made by other companies at PR14.

We have not identified the need to trigger any investigations into Bournemouth Water in respect of its obligations under the Water Industry Act 1991 and we have no issues with compliance with the board, leadership, transparency and governance principles. It has a prudent financing structure in place and, unlike customers of South West Water, its customers benefit from the current suite of ring fencing licence conditions.

A5.4.3. Conclusion

We have identified a number of areas where we consider Bournemouth Water is useful as an independent comparator to enable us to carry out our functions. This

introduces a level of detriment over and above the detriment that it is possible to quantify in monetary or percentage terms. There are numerous examples where the relatively good performance of Bournemouth Water is of value to us (such as in relation to regulatory reporting and governance arrangements). However, the areas we have identified where Bournemouth Water is particularly useful as a comparator relate to:

- Leading approach to the delivery of financial outcome delivery incentives in the original business plan for PR14.
- Evidence provided in the price review process in support of costs associated with a new customer relationship and billing system that helped us to challenge similar claims by other companies.
- Potential for sub-sample comparisons in respect of wholesale costs (as evidenced in the Bristol Water price limit referral)
- Despite its relatively small size,Bournemouth Water responded positively to the challenges we put to it through the price review process.
- Conservative financial structure.

A6. Possible approaches to offset the prejudice arising from the loss of this comparator

A6.1. Overview

The analysis in the previous sections has considered whether the merger will impact on our ability to make comparisons. This has considered both the impact on how we use comparisons now, and how this impact might change as our approach to regulation changes in the future.

In this section we consider whether there are potential changes to our regulatory approach that would offset the detriment from the loss of Bournemouth Water as a comparator. This has focused on the key areas of potential detriment wholesale water cost modelling, retail cost to serve, outcome delivery incentives and the service incentive mechanism.

A6.2. Potential changes to wholesale cost modelling

The wholesale cost modelling used at PR14 was based on panel data econometric models and unit cost models for enhancement expenditure. These models used data from the 18 water companies. Five separate models were used and the outputs from these models combined to provide a forecast of costs. We used the upper quartile cost forecast to set efficient cost thresholds. As it is a reasonably efficient company then the loss of Bournemouth Water would mean that the upper quartile cost forecast would be less challenging if we applied the same approach in the future. There are a number of changes that we could make to this modelling approach which would possibly offset the loss of Bournemouth. However, there are limitations to the extent to which these perform better in smaller samples than we currently have. We discuss these below.

A6.2.1. Adjust the upper quartile benchmark

We could adjust the benchmark so that it no longer reflects upper quartile efficiency, for example moving to upper quintile or frontier efficiency. However it becomes more difficult to justify using more stringent targets, especially when the sample size is smaller as one of the functions of the upper quartile is to adjust for unobserved heterogeneity in OLS models. This issue would not disappear with a smaller sample (and could well be exacerbated) and therefore this presents a limitation to the extent to which we can push the benchmark towards the frontier rather than the average. In

the past when we used a frontier challenge we made adjustments to the frontier to reflect the fact that our modelling was not perfect and did not capture all difference across companies. We would have to consider whether to apply similar adjustments if we applied more stringent targets in the future.

A6.2.2. Extending the time series in our models

We have considered whether using a longer time series in our wholesale cost models could offset the impact of the loss of Bournemouth Water. Increasing the time series in our models would increase the number of observations, potentially increasing the robustness of the model estimates.

While this might be a way of overcoming potential issues with the precision of wholesale cost models, it would not address the change in the benchmark from the loss of a high performing company.

In addition it is not always straightforward to extend a panel. To use a longer panel we would need to be confident that the data definitions did not change over time, and there had been no external shocks that impacted on the data during the time period. For example at PR14 we tested a 11 year panel dataset for wholesale wastewater costs, but discounted the first two years because of a serious outbreak of foot and mouth in the preceding year which caused costs and drivers to not be consistent with the rest of the dataset because of the additional cost of disposing of the sludge or storing it for a longer period.

We would also need to consider the assumptions made by the types of models we are using with the panel data, for example random effects models assume that relative efficiencies stay constant over the period being modelled which becomes a harder assumption to justify as the panel lengthens. In addition model coefficients may not be constant over time, which could reduce the robustness of efficiency estimates.

Furthermore, although panel datasets provide more data points and allow for more complex modelling, they also have limitations. If N-K is less than 5 (where N is the number of comparators and K is the number of drivers in the regression), panel model performance is less robust. Losing a comparator would therefore limit the number of cost drivers that can be used to derive the cost curve. We note that the current models already use a relatively long panel through the smoothing of capex (based on a five-year rolling average), extending the panel length does not alleviate the N-K problem which was a binding constraint on our water cost modelling at PR14.

In this sense, adding further years of data may not resolve the loss of a comparator.

A6.2.3. Stronger menu incentives

Another option would be to make further use of menus and enhancement incentives that would encourage companies to operate more efficiently. However, such a solution is likely to rely significantly on robust cost assessment.

A6.2.4. Use of alternative modelling approaches

We have considered whether there are alternative modelling approaches which could offset the impact of the loss of Bournemouth Water.

- **Stochastic frontier analysis** (SFA) estimates a production (or cost) function indicating the maximum attainable output (or minimum costs) for a given set of inputs and makes assumptions about the decomposition of the error term. SFA is used by some other regulators to estimate cost functions and relative efficiency, for example the Office of Rail Regulation use it to benchmark Network Rail's costs. SFA is estimated through maximum likelihood techniques which require many data points and models can fail to converge if there are too few data points. SFA has been tested on the current dataset (with 18 companies) and has not resulted in robust models due to small sample size among other things. Further reduction in the sample size is unlikely to make the use of SFA more robust as it is a particularly data-intensive approach.
- **Data envelopment analysis** (DEA) is a non-parametric technique that uses linear programming to calculate the efficient frontier of a sample. Those companies producing the most outputs for a given set of inputs are defined as efficient. As DEA does not identify the most efficient combination of inputs a number of companies can be on the efficiency frontier. DEA can also be very sensitive to the number of data points. In particular, if one of the companies that "disappears" from the sample was a "benchmark" for other companies, then companies that were relatively inefficient might end up as 100 per cent efficient. This approach is not particularly favoured in UK regulation in general as it does not allow for statistical testing. Furthermore, it is unclear that DEA has better small sample properties than parametric approaches such as OLS and Random Effects (RE).
- **Sub-company data** analysis would involve the use of data at below the company level, for example the use of data on individual water treatment works. This would increase the number of data points in the sample and so could potentially offset the impact of a loss of a comparator. However sub-

company data would not be fully independent, as, for example, water treatment works from the same company might be expected to operate in the same way. Sub-company data would also increase the amount of data we would need to collect from companies and may only be appropriate for some items where different levels of performance could be distinguished, such as treatment works, rather than other areas where it might be more difficult such as mains renewals/replacement which could be carried out by the same sub-contractor across a company's area. Use of sub-company data also becomes more difficult to capture trade-offs between different areas such as between treatment and distribution. Cost allocation issues become more significant the further the dataset is disaggregated as the volume of data increases significantly and the degree of separate reporting within companies differs. This would require substantial data collection and cleaning. This would increase the cost to the companies and the regulator of collecting and assuring the data which would be unlikely to offset the impact of this merger.

- **Engineering review** can be applied to a greater extent. This is a bottom-up approach that we have applied to a limited degree in the risk-based review for material special cost claims. This is a resource-intensive method and often focuses on either scope or unit cost rather than total cost. In addition it is likely the scope of detailed engineering analysis that can be undertaken in a periodic review of 17 or 18 companies is likely to be limited. As for sub-company data above, it also increases the regulatory burden on the companies.

A6.2.5. Alternative comparators

We could make use of additional comparators, although this is not ideal as it would involve substantial data collection and cleaning and so increase the regulatory burden on companies that are not just inside England and Wales (even if other jurisdictions were willing to report data on the same basis). It might not provide an appropriate efficiency challenge (as many water companies outside England and Wales are public sector):

- **Use of wider UK comparators**: Scotland and Northern Ireland operate in similar environments to England & Wales companies although they differ in topography, regulatory regimes/incentives, and ownership structures.
- **Use of international comparators**: international comparison can be particularly burdensome and has been used in regulation only if no national comparators are available (e.g. ORR for Network Rail). It can take a significant amount of time to compile robust datasets on a comparable basis (the amount of data required to maintain the current complexity of the models

is relatively high) and it requires close working with the international comparators to ensure buy-in and consistent data collection. Additional issues would be cost allocation (particularly where water supply is part of a wider multi utility or municipal enterprise), treatment of staff costs (where pension and other employment costs can often be state funded), asset age and design, environmental standards and purchasing power parity and exchange rate movements.

As set out above there are a number of alternative approaches that we could consider that might help to mitigate the effects of losing a comparator. However all of the alternatives require us to make different assumptions, have their limitations and/or have substantial data requirements. Many would increase the regulatory burden placed on the companies and the regulator associated with collecting, assuring and validating the data, which may not offset the impacts of this merger. Most of the approaches have been tested previously and have been found less robust than the current modelling techniques, so it is not clear that any of them would fully remedy the impact of the loss of a comparator.

A6.3. Retail

In "Setting price controls for 2015-20 – final methodology and expectations for companies' business plans" we said:

"As the new arrangements become better understood, data improves and high cost companies become more efficient, we hope to continue our evolutionary approach and move towards an efficient cost to serve, based on efficient frontier companies' costs rather than average costs."

We have therefore set realistic expectations that we will be using a different approach to setting an efficiency challenge for household retail in the next price review. Our thinking on how to do this is at an early stage, but it would be reasonable to expect that our approach would be based on comparative analysis of companies' efficiency. This could be through an assessment of costs similar to our approach for PR14, but using an upper quartile or most efficient company approach, for which having more comparator companies would be beneficial.

Alternative approaches include a stochastic frontier analysis approach, which could incorporate factors such as deprivation directly into our core modelling. If we were to follow such an approach, as large a data set as possible is necessary to ensure the robustness of such models and so the loss of an efficient comparator could reduce

our scope to use such an assessment tool, which could be to the detriment of customers.

An alternative approach might involve use of comparators for retail activities from outside of the water sector. We have considered this option in the past, however, to date we have not identified a transparent and independent dataset that allows us to draw comparisons for retail activities that are carried out in the water sector.

A6.4. Outcome delivery incentives

PR14 was the first price review that made use of ODIs. We expect the approach to outcomes will evolve for PR19 to ensure that the adopted by companies continue to deliver the best result for customers. Our programme of work in this area will include considering the relative balance between bespoke outcomes or more consistency to allow for greater benchmarking and efficiency. The sector is also looking at whether there is scope for greater use of benchmarking in the UK water industry with UKWIR carrying out a project. This project could suggest more common performance commitments for PR19.

For consistent performance commitments at PR19, the loss of a leading, or upper quartile company will have an impact on the targeted performance levels for the sector. As we expect to see greater convergence in the levels of performance where financial rewards and penalties are introduced, we could adopt alternative target levels based on, for example, frontier levels of performance. However it is unlikely that we would choose a frontier based target simply to offset the loss of a comparator as we would need to consider the appropriate degree of challenge for companies and the variation across companies which would not materially change with the loss of Bournemouth Water. Going forwards we are likely to consider whether it would be appropriate to incentivise continued performance improvement (possibly not just reliant on catch-up) and could possibly extend the use of comparators to other horizontal ODIs, which could increase rather than reduce the impact of a loss of a comparator.

A6.5. Potential changes to the service incentive mechanism

The service incentive mechanism uses quantitative and qualitative measures to identify the customer service performance of water companies. While each company is given a SIM score out of 100 the financial rewards and penalties are based on relative performance. In PR14 companies only received a financial reward or penalty if they had performance significantly above or below average performance across the 2011-14 period. As rewards and penalties are based on relative performance,

the loss of a company will shift average performance and therefore the level of performance required to obtain a reward or penalty.

We expect (based on historic evidence from the SIM and the OPA) that companies will continue to converge in their performance. However, as the rewards and penalties depend on the relative performance of companies against one another, this does not necessarily mean that the range of rewards and penalties, based on standard deviations from the mean, would be invalid in the future, as the SIM is designed to deliver competition between companies in the provision of the service levels that customers expect.

We have considered whether we could change the way that the service incentive mechanism operate to offset the loss of Bournemouth Water (as Bournemouth Water has historically been a good performing company). One potential way to offset the impact could be to move the point at which rewards and penalties are paid. However as with wholesale cost modelling while we know the performance of Bournemouth Water in this control period, it is more difficult to forecast that performance going forwards. Consequently it will not be possible for us to precisely adjust the point at which rewards and penalties are paid to accurately compensate for the loss of the company.

Alternatively as Bournemouth Water is a high performing company we could reduce the number of companies that would receive a reward, although this assumes that Bournemouth Water would continue to be a high performing company and so again might over compensate for the loss of the company. Consequently while there are a number of measures that we could take to offset the impact of the loss of Bournemouth, none of these would be precise and all would involve an element of judgement.

Appendix B: Synergy Savings

This section sets out the initial assessment we have made of the synergy savings that could arise as a result of the merger and so the benefits that could arise to customers through lower prices in the South West Water and Bournemouth Water regions.

B1.1 Basis of our assessment

In assessing the impact of a merger on costs, we have adopted Europe Economics' recommendation which concludes that potential cost savings should be estimated on a bottom up basis.

At this stage our assessment of potential synergy benefits has been based on the statements made by Pennon Group plc in its stock exchange announcement of the acquisition of Sembcorp Water Investment Limited (RNS Number 3884K) on the 16 April 2015, the conference call for analysts and investors hosted by Pennon on the same day, and publicly available financial information.

However, the merger parties will have access to better information on which to determine possible synergy benefits. We expect the merger parties to set out a merger and integration plan which quantifies potential cost savings. Independent verification could be used to provide assurance that the estimated savings are robust. We consider the merging parties should provide a public commitment or undertaking to deliver those benefits as we consider the approach to assessing mergers provides incentives on merging parties to overstate the potential benefits that are expected to be achieved and subsequently under-deliver.

The key considerations in our assessment of synergies and potential benefits for customers are:

- Business integration would not commence until clearance has been received from the CMA.
- Pennon intends to combine the retail operations.
- South West Water is significantly larger in scale, providing water and sewerage services to a population of approximately 1.7 million compared to Bournemouth Water which supplies drinking water to a population of approximately 440,000 customers.

B1.2 Relevant customer benefits

B1.2.1 Lower customer bills

Our initial assessment of synergy benefits and associated assumptions are tabulated below.

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
[redacted]			
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	
[redacted]	[redacted]	[redacted]	

[redacted]	[redacted]	[redacted]	[redacted]
[redacted]			
[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]		

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted]

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

We attach more weight to the five year period as there is significantly more uncertainty about customer benefits beyond 2020 as they should be measured relative to the targets that are set for the following price control period rather than assuming that they are maintained at 2015-20 levels.

[redacted]

The sharing rates with customers are based on the assumption that benefits are shared with customers through the wholesale totex menus. There is no regulatory mechanism that automatically shares retail savings with customers if they were to exceed the levels in our indicative synergy analysis. Indeed the totex savings through the menu could dissipate if there were offsetting variances elsewhere in the wholesale business. We note that the only way of guaranteeing savings to customers is through a firm commitment to reduce prices. This is consistent with the Competition Commission ruling on the merger of South East Water and Mid Kent Water[29] which considered that merger savings may not accrue to customers without a formal price reduction undertaking. The "Watershare" mechanisms in place at South West Water and Bournemouth Water provide a possible means to pass on savings more directly and should be considered further with the merging parties.

Our analysis of previously completed acquisitions raises concern that synergies identified ahead of integration may never be realised in practice and may not ultimately provide any benefit to customers. For example, in the merger between South Staffordshire Water and Cambridge Water the headcount reported in the regulatory accounts shows no material change between the pre-merger level of 509 employees in 2011/12 and the post-merger level of 511 employees in 2013/14. Following the merger between South East Water and Mid Kent Water the merged business was allowed a real increase in customer bills of 1.8% compared to an industry average of 0.5% in the 2010-15 price determinations. While the increase in bills will be related to factors that are beyond the remedy in that instance, it is not possible to say definitely that the Competition Commission ruling that £3.1 million of synergy savings should be reflected in that price determination ultimately benefited customers as intended[30].

[29] Competition Commission, "A report on the completed merger of South East Water Limited and Mid Kent Water Limited", (1 May 2007)

[30] In its investigation of the merger between South West Water Limited and Mid Kent Water, the Competition Commission concluded on 1 May 2007 that there was limited prejudice and that a price reduction remedy would be the most proportionate solution to offset the effect of the prejudice after considering the alternatives of full or partial divestiture. It considered that cost savings arising from the merger could be lost to customers in the event of divestiture but were not persuaded that these would accrue to customers without a formal price reduction undertaking. It concluded that the most proportionate and appropriate remedy would be a price reduction comprising:

- A one-off price reduction of £4 million to be passed on to the customers of South East Water and Mid Kent Water through their bills in 2008/9; and

We consider the only way that we can be certain that customers would receive benefit from the synergy savings that might arise from the merger is for (i) the merger parties to provide an undertaking that prices will be raised to the level that would otherwise have been allowed and (ii) a baseline reduction for savings related to wholesale costs which could be implemented through the reconciliation calculations at PR19. A baseline reduction to reflect the wholesale synergy savings that should be passed to customers would ensure that the incentives placed on management to deliver synergy savings and ongoing efficiencies would be maintained.

To the extent that there is a minimum level of benefit required to offset the assessed prejudice we discuss in the remedies section the commitments that might be required to guarantee net customer gains.

Reduced financing costs

The merger could lead to reduced cost of debt financing costs, as the consolidated entity should be able to raise finance more cheaply than the separate entities pre-merger. In PR14, we identified that water only companies, including Bournemouth Water had higher debt costs of 25 basis points, which increased the weighted average cost of capital by 15 basis points. As Bournemouth Water passed the benefits test that we applied at PR14, we allowed a small company uplift for Bournemouth Water. The small company uplift for Bournemouth Water was equivalent to an annual revenue increase of £0.23 million in each year of the 2015-20 period.

- A requirement that South East Water and Mid Kent Water accept a price determination at the price review in 2009 that reflects £3.1 million annual merger savings in operating expenditure.

Appendix C: Benefits assessment for the small company uplift to the cost of capital

At PR14, the smaller companies set out that they cannot obtain finance on the same terms as larger companies. To assess the claims made by companies for an uplift to the cost of capital to reflect their circumstances, we looked at the financing costs of the smaller companies and used comparators in assessing which water only companies should qualify for an uplift on their allowed cost of debt.

We set out our policy approach to assessing claims by small companies for a company specific uplift to the cost of capital in "IN 14/10 2014 price review – Ofwat's approach to the assessment of a company-specific uplift on the cost of capital"[31]. We only allowed an increased cost of debt allowance where companies could demonstrate that there was an offsetting benefit to customers. We set out our approach in the draft determinations[32] and subsequently adapted the approach in the final determinations[33] in response to the representations we received.

In assessing the benefit to customers of each of the small companies for the final determinations, we considered three factors:

- The monetary impact on wholesale cost allowances across the industry for 30 years: this reflected the impact of each of the small companies merging on the Upper Quartile measure of efficiency when price controls are set, which took account of:
  - The probability of a merger taking place in the absence of the small company uplift.
  - The Upper Quartile being based on both historic and PR14 business plan efficiency rankings.
  - The likelihood of efficiency rankings changing over the 30 years, based on past changes in efficiency rankings.
- The monetary impact on the cost to customers of changes in the level of rewards and penalties associated with the SIM, due to changes in the

[31] https://www.ofwat.gov.uk/pricereview/pr14/prs_in1410pr14uplifts.pdf
[32] https://www.ofwat.gov.uk/pricereview/pr14/pap_tec1408pr14impactassessbenefit.pdf
[33] http://www.ofwat.gov.uk/pricereview/pr14/det_pr20141212riskrewardbenefits.pdf

average level of industry performance, against which all companies are compared.

- A non-financial assessment of the impact of each company on three measures of industry average ODIs, for negative water quality contacts, mean zonal compliance and water supply interruptions.

The result of our analysis was that only two companies - Bournemouth Water and Portsmouth Water - demonstrated that the benefits to customers were at least as large as their additional debt costs, and consequently these two companies were allowed a company specific uplift in their allowed cost of debt at PR14.[34]

[34] http://www.ofwat.gov.uk/pricereview/pr14/det_pr20141212final.pdf pg.11

Appendix D: Risk-based review and 'enhanced' status

We confirmed in our methodology statement for PR14[35] that we would carry out a risk based assessment of company business plans that were submitted in December 2013. This process introduced reputational, procedural and financial incentives for companies' Boards to produce high-quality business plans. It was designed to encourage companies to compete with each other, to deliver good business plans at an early stage and submit high-quality 'best offers'. It also implemented our principle of a proportionate approach to price setting.

The methodology statement set out that the risk-based review would contain tests against which we assessed the quality of company business plans in four key areas.

- Outcomes – the company's key proposed deliverables for consumers, including current and future customers and the environment, and the incentives associated with delivering them.
- Costs – the costs, for both wholesale and retail businesses, associated with delivering the company's proposed outcomes.
- Risk and reward – how the company's proposals balance risk and the rewards for bearing those risks between consumers, including current and future customers and the environment, and the company and its investors.
- Affordability and financeability – the impact of the company's proposals on customers' bills, and its ability to finance its functions.

For each part of our assessment, we assessed companies' business plans against a number of different key assessment criteria. In most cases, we carried out separate tests for each element of companies' business plans (household retail, non-household retail, water wholesale and wastewater wholesale), but there were some cases where we applied tests at a whole-company level.

For a business plan to be enhanced, we set out that we must be satisfied that it is in customers' interests to accept the company's plan without intervention except to set industry-wide incentives such as the average cost to serve for household retail customers.

[35] http://www.ofwat.gov.uk/pricereview/pr14/pap_pos201307finalapproach.pdf

As part of our review, we assessed that company proposals on risk and reward were not in line with our guidance. In January 2014 we published further guidance on risk and reward[36], having already flagged proposed changes in the risk based review process[37]. The risk and reward guidance set out our view on the cost of capital and other key financial parameters, which were subsequently not assessed as part of the risk based review.

The risk and reward guidance set out that any companies that passed our tests for costs, outcomes, affordability and Board assurance would pre-qualify for enhanced status. The Boards of these companies would then have to decide whether to accept the risk and reward guidance and in so doing gain enhanced status. The business plan of any pre-qualified company that chose not to accept the guidance would then be assigned as standard and follow the standard price review process.

In March 2014, we announced[38] that we had concluded that two companies – Affinity Water and South West Water – had pre-qualified as enhanced status. We set out the highlights of the plans we had received from these two companies and gave them the opportunity to accept our risk and reward guidance and to address a limited number of issues we had identified in order to receive an early draft determination.

Affinity Water and South West Water subsequently addressed the issues we had set out, accepted our risk and reward guidance and received their draft determinations on 30 April 2014.

While the two companies that were assessed as pre-qualified for enhanced status received the outcome of our risk based review assessment in March 2014, companies that were not assessed as pre-qualified for enhanced status received their risk based review assessments in April 2014. We published the results[39] of our risk based assessment of company business plans alongside the detailed methodology[40] we had set out for assessing company business plans in April 2014.

We provided each company with its assessment from our risk based review, which contained:

[36] http://www.ofwat.gov.uk/pricereview/pr14/gud_tec20140127riskreward.pdf
[37] http://www.ofwat.gov.uk/mediacentre/ibulletins/prs_ib2813pr14changes
[38] http://www.ofwat.gov.uk/pricereview/pr14/pap_pos20140310pr14pq.pdf
[39] http://www.ofwat.gov.uk/pricereview/pr14/prs_web140404pr14rbrrecboard
[40] http://www.ofwat.gov.uk/pricereview/pr14/pap_tec140404pr14internalmeth.pdf

- the recommendation document on which the Ofwat Board had made its decisions which contained the key points from the risk-based review assessment and our overall assessment for each company.
- company dashboards summarising our assessment for each company against each test for the retail household and non-household, wholesale water and wastewater, and whole company elements of business plans
- element scorecards setting out the detailed reasons for our assessment against each test for the retail household and non-household, wholesale water and wastewater, and whole company elements of business plans

Companies assessed as 'standard' in the risk based review that had relatively fewer 'gaps' to address were offered the opportunity for a draft determination in May 2014[41]. The remaining companies received their draft determination in August 2014, after submitting their revised business plans in June 2014.

All companies subsequently received their final determinations in December 2014.

Benefits associated with enhanced status

Companies that qualified for enhanced status benefited from a range of financial, reputational and procedural benefits which allowed them to focus earlier on the delivery of their plan for customers.

In particular, the enhanced companies benefited from:

- an initial financial award (£11 million to South West Water and £4 million to Affinity Water – both companies were invited to propose how the award could be recovered over time in a npv neutral manner) and an enhanced cost performance menu with a cost sharing rate that was 5% higher for both under and over performance;
- a 'do no harm' principle, to ensure that enhanced companies would not be any worse off at a later stage in the price review process for being categorised as enhanced (the companies benefited from this in particular in respect of the assessment of the cost of capital which reduced at final determinations

[41] Welsh Water and Northumbrian Water subsequently received their draft determinations on 30 may 2014.

compared with draft[42], and comparative ODIs where we did not intervene to set financial rewards and penalties as we had done for other companies[43]);
- reputational benefits – acknowledgement from Ofwat and subsequent recognition from stakeholders, customers and investors of a high quality and customer-focused plan; and
- an early draft determination in April.

Benefits of the risk-based review

All companies benefited from the opportunity in the risk based review to understand the weaknesses in their plan relative to others. Other stakeholders, including CCGs, also benefitted from early exposure to our views of the key strengths and weaknesses of the plans when compared alongside each other. Each company could reflect on our assessment and reassess their approach to their plan in light of this.

We saw that the companies that were not classified as enhanced drew on the best practice approaches of the enhanced companies when they revisited their business plans and on the best practice approaches of other companies that were set out in the scoring assessment that we published.

Areas that companies revisited, drawing on the best practice approaches of their peers included:

- Development of more customer focussed and more transparent plans
- Increased ownership of company plans by company Boards, including improved assurance processes.
- Further, and better focussed, engagement with customers to assess willingness to pay and to provide customer support in respect of the affordability of plans
- Improved reporting by companies of their performance in delivering the obligations set down in the 2009 price determinations
- Reassessment of performance commitments and the implementation of financial rewards and penalties through the use of outcome delivery incentives.
- Reviewing the content and the package of investment activity, including reconfiguration of major investment schemes

[42] See policy chapter A7 of our final determination - http://www.ofwat.gov.uk/pricereview/pr14/det_pr20141212riskreward.pdf
[43] See policy chapter A2 of our final determination - http://www.ofwat.gov.uk/pricereview/pr14/det_pr20141212outcomes.pdf

- Improved business cases for new expenditure proposed for the retail price control
- Reappraisal of the risk and reward package and financing assumptions (including pay as you go rates and RCV run-off assumptions), to ensure the plan appropriately balanced the interests of customers and investors.

Appendix E: Company acronyms

The table below sets out the company acronyms used in this document.

Company name	Company acronyms
Water and sewerage companies	
Anglian	ANG
Dŵr Cymru	WSH
Northumbrian	NES
Severn Trent	SVT
South West	SWT
Southern	SRN
Thames	TMS
United Utilities	UU
Wessex	WSX
Yorkshire	YKY
Water only companies	
Bristol	BRL
Cambridge	CAM
Dee Valley	DVW
Portsmouth	PRT
Sembcorp Bournemouth	BWL
South East	SEW
South Staffordshire	SST
South Staffordshire/Cambridge (post merger)	SSC
Sutton & East Surrey	SES
Affinity	AFW

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We regulate the water sector in England and Wales. Our vision is to be a leading economic regulator, trusted and respected, challenging ourselves and others to build trust and confidence in water.

Ofwat
Centre City Tower
7 Hill Street
Birmingham B5 4UA

Phone: 0121 644 7500
Fax: 0121 644 7533
Website: www.ofwat.gov.uk
Email: mailbox@ofwat.gsi.gov.uk

Printed on 75% minimum de-inked post-consumer waste paper.
June 2015

This document is also available from our website at www.ofwat.gov.uk.

Any enquiries regarding this publication should be sent to us at mailbox@ofwat.gsi.gov.uk.

OGL

Ofwat (The Water Services Regulation Authority) is a non-ministerial government department. We regulate the water sector in England and Wales. Our vision is to be a leading economic regulator, trusted and respected, challenging ourselves and others to build trust and confidence in water.

Ofwat
Centre City Tower
7 Hill Street
Birmingham B5 4UA

Phone: 0121 644 7500
Fax: 0121 644 7533
Website: www.ofwat.gov.uk
Email: mailbox@ofwat.gsi.gov.uk

Printed on 75% minimum de-inked post-consumer waste paper.
June 2015

This document is also available from our website at www.ofwat.gov.uk.

Any enquiries regarding this publication should be sent to us at mailbox@ofwat.gsi.gov.uk.