



Ofwat response to CMA Provisional Findings

1. Background

1. On 10 July 2015, the Competition and Markets Authority (CMA) provided us with its Provisional Findings for its re-determination of the price limits we set for Bristol Water (BRL) for the 2015-20 period.
2. This document sets out the key issues we identified within the Provisional Findings. We provide an overall summary that explains our overarching thoughts, as well as some key arguments for specific aspects. We then provide more detailed comments on the Provisional Findings, following broadly the same structure as the Provisional Findings itself.

2. Overall summary

We welcome aspects of the Provisional Findings but consider CMA needs to go further to ensure that customers' interests are protected

3. We welcome the Provisional Findings, which would see customers of BRL continuing to benefit from an overall package of substantial price reductions and improved performance. We support the CMA conclusion that BRL are financeable on this basis. We are also pleased that the CMA has recognised that many aspects of our methodology for PR14 (such as outcomes and ODIs and our approach to reconciling 2010-15 performance) worked well and delivered real benefits for customers.
4. When we set price limits, our central focus is to deliver what is in the interests of customers. This is because water and waste water services matter to customers and because we cannot rely on markets which have effective competition to ensure that customers get a good deal. This is reinforced through our **statutory duties**, which (in summary) are:
 - to further the consumer objective (to protect the interests of consumers, wherever appropriate by promoting competition);

- to ensure that companies properly carry out their functions;
 - to ensure that companies can finance the proper (including efficient) carrying out of their functions; and
 - (now) to further the resilience objective.
5. These duties are not in constant tension. For example, resilience matters to customers and if we did not ensure that efficient companies could finance their functions then the sector would not get the investment it needs and there might be a higher cost of capital raising overall costs for customers.
6. In reaching its decision, the CMA must consider the same set of duties as we do and so must consider how best to protect customers' interests.
7. We recognise that in the Provisional Findings the CMA has gone some way to protecting customers. But based on the evidence, and the CMA's own analysis, we consider the CMA should do more. It can do so by:
- reducing cost allowances below the level in the Provisional Findings and more in-line with our Final Determination;
 - updating all elements of the cost of capital, including taking into account BRL specific information that was not available to us at the time of our final determinations; and
 - ensuring there are no perverse incentives for companies to appeal. This is best achieved by taking further steps, supported by the evidence, to ensure that the redetermination is not a one way bet.

We have significant concerns with CMA's presented approach to wholesale costs. The evidence supports the need for greater protection for customers than in the Provisional Findings.

8. Customers should only fund the efficient cost of delivering service and performance levels that are demonstrated through need. Our final determination for BRL took into account our concern over the quality of BRL's justification of its proposed level of expenditure. In such circumstances it was important that we sought to protect customer's interests.

9. The CMA's engineering consultants, Aqua Consultants, were clear on its view of BRL's overall approach to its business plan. It stated that:

"Overall, our view is that based upon the information reviewed BW does not appear to have a strategic plan and their Business Plan consists of individual elements that are proposed in isolation with no regard for any inter-relationships. It is unclear if the consultants employed by BW are given a narrow brief or if they have not considered the possibility the work they are undertaking is having an impact on

other areas within BW. The end result is a lack of coherency and is potentially resulting in BW believing they need to invest more than they have to.”¹

10. Given these conclusions, it is appropriate that CMA challenges BRL’s proposed expenditure. In fact, we believe this conclusion strongly supports a final determination where the ‘benefit of the doubt’ is firmly with customers not BRL.

11. **Based on the evidence presented, we have significant concerns that the CMA’s approach to wholesale costs in the Provisional Findings may be relatively generous for BRL. We consider a revised level of totex of £393 million would be fully consistent with our statutory duties.**

12. In relation to **base expenditure**:

- the CMA’s own econometric modelling of base costs (which despite our reservations) gives a very similar range of costs to the Ofwat base allowance when using the 5 year smoothed data set.
- the substantive reasons that CMA makes a higher allowance for base cost include the use of 7 year unsmoothed data which we believe unreliable, a special cost factor adjustment for regional/city wages which does not appear to be necessary and a special cost factor adjustment for mains replacement that significantly over estimates the level (if any) of the appropriate adjustment.

13. We back the application of supporting checks on the results of benchmarking analysis where it is appropriate and practicable to make such checks, and, that the checks properly protect the interests of customers. Our final determination for base expenditure was £318 million. The CMA’s low case supporting check on base costs is £329 million, but this includes inappropriately generous assumptions in respect of operating costs and infrastructure renewals expenditure. This appears inconsistent with protecting the interests of customers. The very most the CMA should allow for base costs is the £318 million in the Final Determination.

14. In relation to **enhancement expenditure** we note that:

- where BRL’s forecasts have been subject to most detailed scrutiny – in relation to the Cheddar 2 reservoir, Southern Resilience and the Cheddar WTW – then very significant savings in costs have been identified
- the total forecast capital expenditure in the BRL business plan for these projects was £91.7 million against an allowance in Provisional Findings of £23.2 million. Bearing this in mind the CMA should not give BRL the benefit of the doubt and

¹ Para 12 Aqua Consultants report Bristol Water Price Determination – Technical Support for Competition and Markets Authority

make no adjustment in respect of the £50.4 million of 'other' enhancement expenditure

- this is reinforced by the important new information revealed by Aqua Consultants 'BRL have generally not demonstrated that the need exists, that their selection process has not been sufficiently robust, have taken a highly risk averse position and have included higher costs in their business plan than is necessary to achieve the outcomes that are required'²
- applying the benchmark reduction of 16% to other enhancement expenditure would give a revised total level of enhancement spending for BRL of £75 million.

15. Combining a base estimate of £318 million with enhancement spending of £75 million gives totex of £393 million. This compares to an estimate of £409 million in the Final Determinations and £429 million in the CMA's Provisional Findings.

16. A revised level of totex of £393 million would be fully consistent with our statutory duties. It would send a clear signal to BRL and other regulated companies that the failure to provide a high quality business plan will not be rewarded and that where a company fails to clearly demonstrate efficiency it will not be given the benefit of the doubt. To the extent that this level of totex creates risks that the company would need to spend more to meet its licence and statutory obligations the company would in part be protected by totex cost sharing, with remaining costs rightly falling to shareholders. This would create balanced incentives, with shareholders needing to contribute towards costs that arise from inefficiency and relatively poor business planning information.

17. We also have concerns about some of the CMA's wider comments in respect of modelling – not because they generate significant differences in cost allowances for BRL but because of the prominence that the CMA has chosen to give to these matters in its Provisional Findings. In particular in the context of a price review of 18 different companies and 28 wholesale cost baselines we are strongly of the view that aspects of our approach may remain appropriate.

² Paragraph 375 Aqua Consultants report Bristol Water Price Determination – Technical Support for Competition and Markets Authority

We consider that the CMA should take a consistent approach, and use latest market evidence, to assess the cost of capital

18. There is much we support in the CMA's approach to the cost of capital for example:

- taking a notional approach to the cost of debt,
- the use of notional gearing of 62.5%; and
- the risk free rate.

19. However, we do not support some elements of the approach taken to the cost of capital. We consider that the BRL redetermination should be based on the latest available evidence. We note that the CMA has calculated updated figures for some elements of the cost of capital calculations, for example on inflation and asset betas, but not for others such as the notional cost of debt.

20. We consider that all elements of the cost of capital should be updated, including taking into account BRL specific information that was not available to us at the time of our final determinations.

21. Our specific concerns on the cost of capital relate to:

- Our customer benefits test – the application of which we continue to consider was an appropriate exercise of our duties under the Water Industry Act 1991;
- Inflation where the CMA should take into account evidence from longer-term gilts, the most up to date spot rates and forward curves, all of which indicate that the inflation assumption should be higher than 2.6%;
- Cost of embedded debt where the CMA should take account of the latest iBoxx rates which have fallen since we calculated the notional cost of debt;
- Cost of new debt where we consider that unadjusted gilt forward rates may overestimate future rises in corporate bond yields (and so the CMA's uplift of 30 basis points may be over stated) and BRL's use of class B debt comparators may overstate the size of WoC premia;
- Asset beta where we consider that the asset beta estimate is inconsistent with previous CC/CMA decisions and is overstated;
- Asset beta uplift which we consider is inconsistent with market evidence (for example on water company gearing and market to asset ratios), does not have a robust theoretical basis and could lead to spurious results if applied to other water only companies; and
- Wholesale adjustment which incorrectly double counts the allowance for new retail assets and working capital.

22. In these areas, it is not clear to us how the CMA Provisional Findings fully accounted for the latest available information (including information submitted

during the process), or what the rationale for departing from the approach in other CC/CMA determinations are.

We are supportive of the broad approach to financeability

23. We welcome the CMA's overall approach to financeability, in particular basing the assessment on a company with a notional capital structure and using the level of efficient costs for the company. This reinforces incentives to deliver cost efficiencies and an important principle that risks around company structure should sit with the company, not customers. We note that:

- CMA concludes that BRL is financeable under its provisional findings based on a 17% reduction in bill.
- Since CMA's Provisional Findings the Chancellor has announced changes to the UK corporation tax regime which reduce the statutory corporation tax rate to 19% in April 2017 and 18% by 2020. It would seem appropriate for the CMA to take these changes into account in the final determination.

Our menu approach provides incentives to companies, which are real and benefit customers and should not be discounted.

24. While we can understand the practical considerations that encouraged the CMA not to use a menu for BRL's redetermination, we disagree with the CMA that the menu does not incentivise companies to provide more accurate expenditure, and that the perceived complexity of menus is sufficient reason to disregard their use.

25. We consider the incentive to reveal accurate data exists; but the incentive applies at a different stage compared to other similar schemes. Indeed, it is clear from menu choices made by some companies in January 2015 that the incentives are real and that customers will benefit from them. We consider it important that such benefits realised both now and potentially in the future are not completely discounted.

3. Our view on Section 4 CMA report - Wholesale cost assessment based on econometric benchmarking analysis

Our view

26. Below we comment on section 4 of the CMA's Provisional Findings on wholesale cost assessment and econometric modelling. We do not find large differences in the results of the Ofwat and CMA modelling of base costs and on balance consider that the Final Determination allowances for base costs remain appropriate. In this chapter we set out our views on:

- a comparison of Ofwat and CMA models
- the CMA's assessment of Ofwat's models
- assessment of the substantive factors driving the differences in the allowance, and
- other matters – efficiency benchmarks.

Comparisons of Model Results

27. As we have previously explained to the CMA our approach to cost assessment was based on both benchmarking models and special cost factor adjustments – and when considered in the round we consider that our approach remains robust and appropriate.

28. The main points of the CMA's critique are rebutted in summary form in annex A, but the unbalanced nature of the CMA's assessment is best illustrated by considering the key features of the econometric models – the extent to which the modelling process has reasonably identified statistically significant explanatory variables and the impact of different model specifications on the model predictions.

29. The table below compares the statistically significant variables in the Ofwat base expenditure models and the CMA's unit cost models.

Table 1: Comparison of CMA unit cost models (5 year smoothed data) with Ofwat models

	<u>CMA</u> Log unit cost model with NHH consumption (LgUC EV2)	<u>CMA</u> As EV2 but with W3/W4 Complexity (LgUC EV3)	<u>CMA</u> As log EV2 but linear unit cost (LnUC EV2)	<u>CMA</u> As log EV3 but linear unit cost (LnUC EV3)	<u>Ofwat</u> Base expenditure OLS	<u>Ofwat</u> Base expenditure RE
Number of explanatory variables	12	11	12	11	12	12
Number significant (at 95%)	1	1	0	1	3	6
Significant Variables	Constant term	Constant term	-	Mains/property	Length mains Pop density Prop mains rest	Length mains Density Length* density Wages Pop density Prop mains rest

30. As the table illustrates, the unit costs models that the CMA has developed have virtually no statistically significant cost drivers – despite being of similar complexity (in terms of number of variables) to Ofwat’s models. Further, the model specification includes arbitrary assumptions in respect of constant returns to scale and that unit costs are most appropriately defined in terms of costs per connected property rather than costs per unit of distribution input or costs per length of mains. Since base costs include both operating costs and capital maintenance, defining costs per unit of distribution or per length of main would have at least as much engineering or economic justification as cost per connected property. Bearing all of the above in mind they would not appear to form a reliable basis for sector wide benchmarking.

31. Notably, only when the CMA considers base models with a similar specification (logarithmic aggregate cost models) to those considered by Ofwat does it produce more credible results.

Table 2: Comparison of CMA’s aggregate cost models (5 year smoothed data) with Ofwat models

	CMA Log aggregate cost model with NHH consumption (LgAgC EV2)	CMA As EV2 but with W3/W4 complexity (LgAgC EV3)	Ofwat Base expenditure OLS	Ofwat Base expenditure RE
Number of explanatory variables	13	12	12	12
Number significant (at 95%)	3	2	3	6
Significant variables	Prop/mains Length mains Constant term	Prop/mains Length mains	Length mains Pop density Prop mains rest	Length mains Density Length*density Wages Pop density Prop mains rest

32. Both the Ofwat base models use a trans-log functional form, which incorporates a degree of complexity. In contrast the CMA base models all impose an assumption of constant returns to scale and use a Cobb Douglas functional form. In the context of an inquiry focusing on BRL, which is neither a very small or large company and does not serve a very low or high density area, a Cobb Douglas form may be a reasonable simplifying assumption. This is supported by consideration of the results of the modelling – as demonstrated below where like for like comparisons are made the models produce almost identical results.
33. Our modelling (after the impact of the upper quartile adjustment) produced an estimated level of base expenditure of £261 million. The CMA notes that ‘the nature and quality of raw water available to a company is a potentially important cost driver’³. We made a £18 million special cost factor adjustment for W3/W4 complexity (although this was after triangulation and the impact on the base model alone was £26 million). This gives a range for the Ofwat base models of £279 million to £287 million. The CMA’s EV3 aggregate cost model (including W3/W4) gives £283 million (using the same upper quartile adjustment) – almost exactly in the middle of the range. Using the CMA’s alternative complexity specification

³ Paragraph 4.124, CMA’s Bristol Water Price Determination Provisional Findings, 10 July 2015

(EV2) gives £289 million – a fraction above the high end of the range quoted above for the Ofwat analysis.

34. **Even looking more broadly at the results of the modelling for BRL the main differences do not appear to relate to model specification – despite our reservations about unit cost models with no statistically significant cost drivers. As noted above the range for base costs from the Ofwat models is £279 million to £287 million (assuming we make the special cost factor adjustment for water treatment complexity) while the range for the CMA modelling across all its EV2 and EV3 models and using the same 5 year smoothed data set is £280 million to £294 million – a very similar range.**
35. Bearing the above in mind we do not think it is reasonable for the CMA to conclude ‘all of these models provide estimates of BRL’s base expenditure requirements that are significantly greater than the corresponding figure for base expenditure used by Ofwat for its final determinations’⁴. It also does not appear appropriate to suggest that ‘the smaller set of explanatory variables we used, and some differences in the way that these are specified (e.g. not taking the logarithms of variables that are already expressed as proportions), has a material effect on the estimates’⁵.
36. **Rather than model specification, the differences in final allowances for base expenditure appear to be driven by the CMA’s use of:**
- **7 year unsmoothed data alongside the 5 year data set used for the Ofwat modelling;**
 - **a special cost factor adjustment for regional wages; and**
 - **a further special cost factor adjustment for mains renewal.**
37. Taken together these 3 factors drive approximately £25 million out of the £30 million differences in base cost allowances.
38. **Before addressing these 3 substantive issues it is important to address some of the CMA’s wider comments in respect of modelling – not because they generate significant differences in cost allowances for BRL but because the prominence that CMA has chosen to give to these matters in its Provisional Findings and the potential precedent that stakeholders may consider this commentary creates.**

⁴ Paragraph 4.91 CMA’s Bristol Water Price Determination Provisional Findings, 10 July 2015

⁵ Paragraph 4.92 CMA’s Bristol Water Price Determination Provisional Findings, 10 July 2015

The CMA's Assessment of Ofwat's Models

39. As the CMA concedes, it 'decided it was not proportionate to carry out an extensive econometric development process'⁶ and it does not appear to have engaged with a full range of companies or other stakeholders in relation to these matters. The time available for comment and discussion of its Provisional Findings is also short and the CMA's focus is also quite properly BRL. In these circumstances it may be entirely reasonable for the CMA to adopt an approach that focuses on base modelling and the Cobb Douglas functional form (which in the context of the water sector is a highly restrictive). Nonetheless, it should acknowledge that a broader approach to modelling may be appropriate in the circumstances of a wider price control review.
40. BRL is neither a very small or very large company and does not serve a very low or high population density area, so its costs may be reasonably estimated by a Cobb Douglas approach. This is much less likely to apply to companies that are either very small or large and/or have very low or high density. While we do accept that there are complexities associated with trans-log models, these should not be exaggerated. Our base models had 12 explanatory variables compared to 11 to 13 variables for the CMA's preferred models. The smallest water company we set price limits for was able to develop a special cost factor claim relating to the operation of the trans-log terms and demonstrated a good understanding of the operation of these models. The use of trans-log models is also a standard approach in the academic literature on cost function modelling. Bearing this context in mind it is not clear it is appropriate for the CMA to reject such modelling on the grounds that the models involve 'relatively complex explanatory variables'⁷ or because the model allows for diseconomies of scale.
41. As noted above the use of Cobb Douglas compared to trans-log does not appear to make a significant difference for BRL, but it would for other companies in the data set. If benchmarking models cannot reasonable proxy the complex effects of scale and density then they will not prove to be effective in dealing with companies in these circumstances. This would create the risk that an approach to benchmarking might collapse, and the advantages of benchmarking to customers over the medium and longer-term would fail to be realised. **It is important to recognise, as a minimum, that a more flexible approach to returns to scale may be appropriate when considering a wider set of companies to BRL.**
42. The CMA also expresses reservations about 'the number of explanatory variables relative to sample size'⁸ and the existence of multi-collinearity between some of

⁶ Paragraph 4.78 CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

⁷ Paragraph 4.48e CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

⁸ Paragraph .4.48c, *ibid*

the explanatory variables. We note that the majority of our models have a similar number of explanatory variables to the CMA models and that our models have in general more statistically significant explanatory variables, indicating that multi-collinearity is only a limited problem. In any case it is possible to investigate the impact of multi-collinearity on a model by looking at the variables concerned and assessing the effect on coefficients in question. In most cases the historical pattern of data will be reflected in the forecasts and so poorly determined coefficients will not distort the forecasting performance of the model. Where this is not the case, either reflecting that a particular company has asymmetric values of the variables concerned or because it expects the relationship between the variables to change then this can be adjusted for by a modelling or special factor adjustment.

43. Accepting a model has limitations and investigating and if appropriate making corrections designed to adjust for deficiencies appears a better approach than ignoring cost drivers on the basis of inevitable correlations in the data. This should be considered on a case by case basis, depending on the strengths and weakness of the models and data and scope for making adjustments. **It would certainly not seem appropriate to appear to reject in principle the use of models which use a richer set of cost drivers and/or where there is a degree of multi-collinearity between the explanatory variables.**
44. We have always accepted that the modelling of enhancement is not straightforward – but it is important to emphasise that totex models were only one component in our approach to enhancement benchmarking. For instance the largest category of enhancement spending in the water sector relates to supply/demand enhancement spending. We have used an approach to this spending based around a cost driver that explicitly takes account of the forecast water supply deficits deriving from Water Resource Management Plans, which appears both to be an appropriate cost driver and to reflect the circumstances of individual companies.
45. Given the circumstances of this redetermination the CMA may consider that it should focus on a bottom-up assessment of BRL's enhancement programme. Nonetheless, in the wider context of a review of 28 wholesale cost business plans there are clear advantages in continuing to develop the benchmarking of enhancement expenditure. The experience of all 18 companies, across 28 wholesale cost baselines is that the issues identified around the timing of investment needs are manageable – particularly where the very large one-off projects associated with resilience (such as Cheddar 2 and Elan Valley) are considered outside the scope of benchmarking. The process that the CMA has gone through does not appear to have fully explored the benchmarking models or results for enhancement spending across all companies. **It would not be appropriate to conclude that 'Ofwat's models do not include any**

explanatory variables that measure differences in companies' investment needs'⁹ or to infer that as part of a wider price control review the benchmarking of enhancement expenditure may be inappropriate.

46. Below we comment on the 3 factors identified above as driving the substantive differences between Ofwat's projections of base costs and the projections made by the CMA.

Assessment of the Substantive Factors Driving the Differences in the Allowances for Base Costs

47. Earlier in this section, we explained that, rather than model specification, the differences in final allowances for base expenditure appear to be driven by the CMA's use of:

- 7 year unsmoothed data;
- a special cost factor adjustment for regional wages; and
- a further special cost factor adjustment for mains renewal.

Here, we discuss our analysis of each of these drivers in turn, identifying the concerns we have with each one.

Use of 7 year unsmoothed cost data

48. The CMA uses models based on 7-years of unsmoothed capital expenditure data alongside its models based on 5-years of smoothed capital expenditure data. On the basis of the CMA's analysis the unsmoothed 7-year data models appear to give BRL circa £30 million extra for base expenditure compared to the smoothed 5-year data models used by the CMA.

49. The CMA recognises the advantages of using smoothed capex. It points out that smoothing capital expenditure takes into account longer investment cycles (nine years) than unsmoothed capital expenditure. It notes that smoothing capital expenditure reduces the risk of drawing misleading conclusions about efficiency differences between companies by averaging fluctuations in capital expenditure.

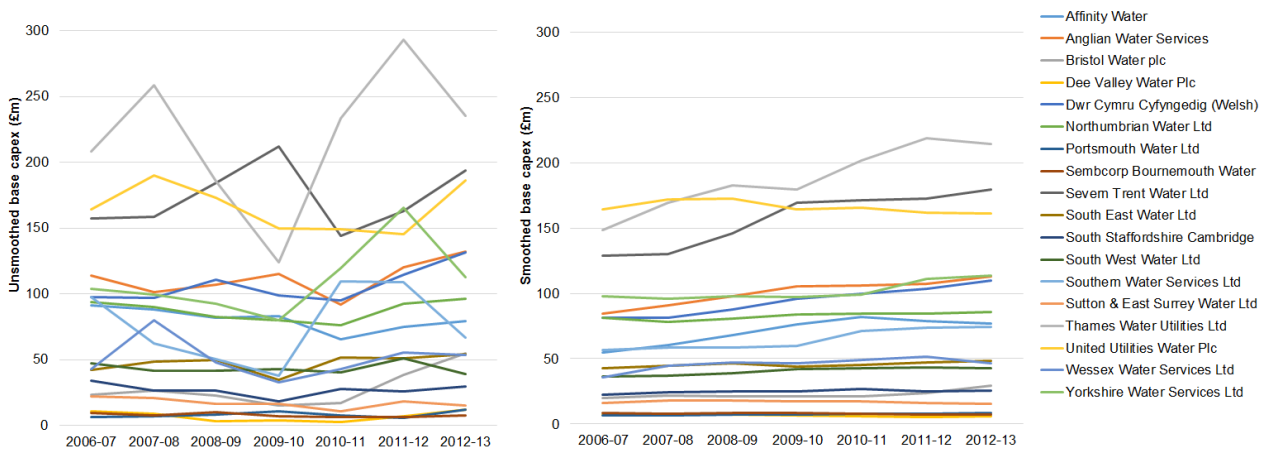
50. We welcome the CMA's partial support of smoothed capital expenditure and suggest there are 4 main arguments against the use of unsmoothed data. **Taken together these suggest that the CMA should either significantly modify or abandon its use of 7 year unsmoothed data models.**

⁹ Paragraph 4.46, ibid

(1) Lumpy expenditure

51. Underlying capital expenditure is lumpy and projects may span a number of years. Therefore, the impact of the explanatory drivers on capital expenditure is not likely to be visible in the year of expenditure. Figure 1 below show the movement in base capital expenditure (smoothed and unsmoothed) over the period modelled by the CMA. As illustrated the unsmoothed expenditure varies significantly and appears to be related to the price control cycle. The unsmoothed models suffer from trying to explain these variations while the scale and density of the networks remain relatively constant.

Figure 1: Comparison between smoothed and unsmoothed base capex



52. To illustrate the point that the cost drivers (e.g. proportion of mains renewed or relined) do not move in the same year as the capital spending, we looked at the correlation between these variables across the 7 year period for each company. The average correlation in the industry is only 0.14, with only four companies exhibiting strong positive correlations (i.e. greater than 0.5).

(2) Model robustness

53. We tested unsmoothed capital expenditure while we were developing the econometric models (both five and seven years) and rejected it, as on the whole models using smoothed data performed better than models using unsmoothed data. As explained above unsmoothed models suffer from trying to explain the profiling (e.g. annual peaks and troughs) rather than the efficient level of costs. It appears that that the CMA has experienced similar issues – we note from tables 4.8 and 4.9 in the Provisional Findings that the CMA has rejected 2 out of the 6 (EV2 and EV3) models that use the 7 year data because of concerns about robustness. In part this may stem from the use of time series dummy variables,

which have a very significant impact on the estimated coefficients in the 7 year unsmoothed models – but do not affect the forecasts. This would also appear to significantly undermine the robustness of the cost forecasts derived from the 7 year models.

54. We note that the CMA says that it has carried out sensitivity analysis that excluded the times series dummy variables¹⁰. We have attempted to replicate this analysis. The 5 year models perform reasonably well without the time series dummy variables. In marked contrast there are very large changes in the coefficients of the 7 year models and they would no longer pass the CMA’s own tests of model selection (e.g. having positive coefficients on the regional wage variable). Therefore, on the basis of the CMA’s own testing and model selection criteria the 7 year unsmoothed data models do not appear fit for purpose.

(3) Best representation of underlying spending

55. Furthermore, using unsmoothed 7 year data appears to put undue weight on the historical spending cycle with peaks in mid-AMP expenditure and lower spend in the first and last years of the AMP. HM Treasury has commented on the adverse implications of this cyclicity for sector supply chains “All parties concerned with the delivery of investment programmes in the water sector should challenge the embedded culture associated with the cyclical nature of delivery and should actively seek to challenge the profile of delivery by the rebalancing of risk.”¹¹ The use of 7 year data captures a disproportionate share of the peaks – 5 out of 7 years (71%) compared to the underlying cycle of 3 out of 5 (60%) and so appears to amplify their impact. It also increases the incentives on companies towards cyclical spending rather than reducing these perverse incentives.

(4) Model selection criteria

56. The regional wage coefficient is very close to zero in the CMA’s 7 year linear unit cost which does not seem a credible result. We note that where a model has a negative regional wage coefficient then the CMA has dropped the model from its final modelling set. This should also apply to the 7 year linear unit cost model as it does not seem credible that the regional wages have virtually no impact on base costs.

Special cost factor adjustment for regional/city wages

¹⁰ Paragraph 4.71, footnote 114, CMA’s Bristol Water Price Determination Provisional Findings, 10 July 2015

¹¹ HM Treasury. “[Smoothing investment cycles in the water sector](#)”. July 2012. p. 61

57. We support the CMA's view that companies that operate in parts of the country with relatively high wages (for similar occupations) are likely to have higher costs than companies that operate in parts of the country with relatively low wages – and that preferred models should not have a negative coefficient for the regional wages variable.

58. Nonetheless, as set out below we are concerned that the CMA is proposing a special cost factor adjustment in relation to regional wages.

59. The regional wage coefficients that are derived from the CMA's EV3 models are already very low. These models almost certainly understate the benefit that BRL derives from the relatively low wage cost in the South West. Therefore, for these models the special cost factor adjustment should be reversed, with a reduction rather than increase in allowed base totex.

- The regional wage variable was purposely chosen to represent the region rather than the local area wage differentials. This was because we and CEPA considered that 'companies are not restricted to sourcing workforce from the county/area of operation'¹². This is particularly true of relatively small water companies.
- BRL's analysis is based upon the ONS' ASHE data for hourly wages (excluding overtime) by local authority and shows a wide range of average wages across the South West. Drilling down into average wages across the city of Bristol we find that two of the four parliamentary constituency areas have lower wages than the South West average¹³. Looking more broadly North Somerset (which is within BRL's operating area) average hourly wages are not significantly different (at the 95% level) from the South West average. The lower average wages away from the centre of Bristol are important as BRL has its headquarters and operational sites on the very edge of the city or in the surrounding rural areas. On balance, there is no persuasive evidence that BRL is required to pay wages that are significantly higher than that of the South West as a whole.
- The CMA acknowledges that its adjustment may be too high for BRL given the mix of occupations, however it simply states that there is not sufficient information available from the ONS to determine the occupation mix. Given the variations between closely located parliamentary constituencies we suggest that it is highly likely that differences in the ONS dataset are in part driven by occupational mix and it does not form a robust basis for a special cost factor adjustment.

¹² CEPA report (2014), page 6.

¹³ Bristol East and Bristol South had average wage estimates below that of the rest of the South West in 2012 and 2013 (based on Table 9.6a of the ASHE 2012 and 2013 datasets).

60. The combination of these points – that BRL has the flexibility to recruit from across the region, that outside the centre of Bristol wages are lower and that its sites are on the very edge of the city or in rural areas, that in any case the ONS ASHE data is ambiguous and it is not possible to reasonably conclude that BRL faces higher wages, and, that any effect would be reduced given BRL’s mix of occupations – **comprehensively undermines the case for a special cost factor adjustment for regional/city wages.**

Special cost factor adjustment for mains renewal

61. The CMA also makes a special cost factor adjustment for mains renewal. It calculates an implicit allowance from its models by looking at the historical rate of renewal (and relining) across the industry (0.59%) and comparing it to BRL’s forecast rate of (0.69% at the start of AMP6 and 0.78% at the end)¹⁴. The CMA then converts the delta (0.19%) into length of mains renewed and multiplies this by a calculated unit cost of £166 per metre. This gives an adjustment of £10.6 million over AMP6.

62. This analysis has a number of limitations and significantly overstates the adjustment (if any) that should be made in relation to mains renewal:

- Aqua Consultants reveal serious flaws in BRL’s model of mains replacement, which is disconnected from the relevant driver (burst rate rather than age)¹⁵. This suggests that BRL is overstating the volume of mains replacement and that as the CMA use this volume in calculating its special cost factor adjustment then it is overestimating the appropriate level of any adjustment
- as the CMA notes that BRL’s mains renewals was lower than the industry average in previous periods does not in itself justify a requirement to do more in AMP6¹⁶. Further, if the historical levels reflect a degree of neglect by BRL this would be a strong reason for not making extra allowances, as these costs should be borne by shareholders and not customers
- the CMA highlights that it has only limited evidence to make a judgement on the efficient level of mains replacement. Given that BRL was meant to have completed a robust business plan in December 2013, it is a clear failing of its business processes that it has not provided such evidence by July 2015 and so should not receive the benefit of the doubt with respect to such funding
- mains replacement is a typical activity for a water company, and while it might have slightly higher levels than average there will be other aspects of its

¹⁴ Paragraph 4.285, CMA’s Bristol Water Price Determination Provisional Findings, 10 July 2015.

¹⁵ Page 6, Aqua Consultants, Bristol Water Price Determination Technical Support – Report of Findings June 2015

¹⁶ Paragraph 5.87, CMA’s Bristol Water Price Determination Provisional Findings, 10 July 2015.

investment plans that will have lower than average volumes, so it does not appear to be a clear cut case that a special cost factor adjustment is necessary

- the CMA indicates that if a different period was used for the industry comparison, then the industry average renewal rate would not be lower than BRL's forecast rate and therefore the adjustment would be zero¹⁷.
- the Ofwat base models include a mains replacement variable and an allowance based on our forecast of the efficient length of mains that BRL would replace (181km in AMP6). If we were to increase the length of mains renewed to 233km in our models then this would increase BRL's allowance by £3m, not £10.6 million.

63. Overall we consider that the above considerations raise very significant doubts as to whether a special cost factor adjustment is necessary for mains replacement, and, if such an adjustment were to be justified the CMA have significantly over estimated its appropriate value.

Other Matters – Efficiency Benchmarks

64. We note the CMA's findings that 'what matters, overall, is the combined effects of the efficiency benchmark applied to the econometric benchmarking results as the assumed cost trend over time relative to the RPI'¹⁸. We also note that the impact of the CMA's average efficiency benchmark plus RPI-1% per year cost trend has broadly the same impact over the 5 year period of the price control as using our assumption of upper quartile efficiency with a cost trend derived from the historical data.

¹⁷ Paragraph 4.296 (b) CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015.

¹⁸ Paragraph 4.208 CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

4. Our View of section 5 CMA report - Review of base costs from Bristol Water's business plan

Our view

65. In the Provisional Findings, the CMA chose to carry out additional cross-checks on its econometric assessment of base costs by separately considering forecasts and projections of operating costs (opex), infrastructure renewals expenditure (IRE) and maintenance of non-infrastructure assets (MNI).
66. We support the application of supporting checks on the results of benchmarking analysis where it is appropriate and practicable to make such checks. Nonetheless, it should be for companies to demonstrate that their costs are efficient and why there are weaknesses in benchmarking models, rather than for regulators to demonstrate the feasibility of the results of benchmarking.
67. In respect of opex:
- the CMA's projections of opex show (as summarised in table 5.8 of the Provisional Findings) a reduction in opex of approximately 8% over 5 years;
 - the CMA shows (as summarised in its table 5.2 of the Provisional Findings) that BRL has opex 16% above average; and
 - no information appears to be provided that explains why BRL should have above average operating costs.
68. **We conclude that there is likely to be scope for significantly greater savings in opex than those identified by the CMA.**
69. The findings of Aqua Consultants are relevant both to the assessment of IRE (which includes mains replacement) and MNI (which includes the routine replacement of treatment works assets).
70. In respect of IRE and mains replacement we note the conclusions of Aqua consultants that:
- 'BW [Bristol Water] have relied upon a model to demonstrate what lengths of distribution mains are to be replaced, this we believe has a fundamental flaw in that it relies on the age of the mains ...
 - we cannot establish how BW have determined the sum they have included for distribution mains in their Business Plan

- we believe that BW's cost estimate for trunk mains includes too high a level for risk and contingency'¹⁹

71. In these circumstances customers' interests are best protected by making conservative assumptions on replacement volumes and unit costs, with shareholders funding any excess. This would provide clear incentives to BRL and its shareholders to ensure that the company's business processes are robust and fit for purpose. Bearing the above in mind it is difficult to understand why the CMA has concluded it should not adjust the scope of mains replacement within the business plan.
72. We support the more robust assessment that is associated with the lower end of the CMA's estimates for MNI. We note the CMA's findings that 'the lower estimates would give most weight to the concerns identified in our review of BRL's supporting data which suggests limited evidence to justify where BRL has proposed an increases in the level of costs relative to AMP4 and AMP5. There is some risk that this could support insufficient investment'²⁰.
73. As we suggest in relation to enhancement expenditure where BRL has failed to provide convincing business plan information it is important that the CMA makes robust and challenging assumptions with respect to costs. This is necessary to both protect the interests of customers in the short term but also to send appropriate signals to the water sector and other regulated companies in the medium term. In particular companies should not get the benefit of the doubt if they fail to demonstrate that their costs are efficient or benefit from a CMA investigation if their business planning information is weak or unconvincing. If the company regards the resulting cost allowances are insufficient then any shortfall that arises should be a matter for shareholders and not customers.
74. Our final determination for base expenditure was £318 million. The CMA's low case forecast for base expenditure is £329 million. As we have explained above, even the CMA's low case contains assumptions that are inappropriately generous to BRL and its shareholders. This appears inconsistent with protecting the interests of customers and the very most the CMA should allow for base casts is the £318 million in the Final Determination.

¹⁹ Paragraph 135, Aqua Consultants, Bristol Water Price Determination Technical Support – Report of Findings June 2015

²⁰ Paragraph 5.169, CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

5. Our view of section 6 CMA report - Review of enhancement expenditure from the Bristol Water business plan

Our view

75. The Provisional Findings include a detailed assessment of a number of BRL's enhancement expenditure projects. We have the following observations in relation to the three biggest enhancement projects assessed by the CMA:
76. For **cheddar 2 reservoir**: we support the CMA's conclusion that funding should not be allowed. This is consistent with the Final Determination and represents the majority of the difference between Ofwat's projections of enhancement spending and the business plan forecasts made by BRL.
77. For the **Southern Resilience scheme**: we support the CMA's conclusions, the additional efficiencies identified by Aqua Consultants and the additional benefits of the scheme in terms of enhancing resilience in the Cheddar area.
78. For **Cheddar water treatment works (WTW)**: in light of Aqua Consultants' review of the scheme and the additional information it has revealed then we also support the removal of funding for this project. Nonetheless, we question whether an uncertainty mechanism is needed in respect of this project:
- the CMA is suggesting a higher overall level of totex in its Provisional Findings than the Ofwat Final Determination, providing BRL with more flexibility to outperform its price control assumptions and fund any necessary spending on Cheddar WTW
 - the CMA is proposing totex cost sharing incentives that would provide partial funding if BRL were to overspend its totex allowance, which would in any case provide a degree of protection for BRL
 - the CMA is suggesting a higher overall cost of capital in its Provisional Findings compared to the Final Determination and so BRL would receive more funding to manage risk, and
 - it is clear that BRL has not provided the high quality information in respect of the Cheddar WTW and it should not be rewarded for this by extra protections from the risk of cost over runs – in these circumstances any extra costs (over and above those already compensated for by generous allowances elsewhere or through totex cost sharing) should be a matter for shareholders and not customers.
79. More generally we note that where BRL's forecasts have been subject to most detailed scrutiny – in relation to the 3 main projects discussed above (Cheddar 2 reservoir, Southern Resilience and the Cheddar WTW) then very significant savings in costs have been identified. The total forecast capital expenditure in the

BRL business plan for these projects was £91.7 million against an allowance in Provisional Findings of £23.2 million. Bearing this in mind it is not clear that the CMA's approach of then appearing to give BRL the benefit of the doubt in respect of the remainder of its enhancement programme is appropriate. In particular we note that in its allowance for raw water deterioration the CMA appears to give no weight to the Chandler KBS benchmarks of £6.4 million for the Barrow and Stowey schemes (a potential reduction of 16% in costs) and instead allows the full cost as per BRL's business plan of £7.6 million. We also note that CMA is proposing to make full allowances for NEP and growth schemes despite the evidence being 'particularly finely balanced'²¹. Similarly the CMA makes no efficiency assumption with respect to the remaining £18.9 million of 'other enhancement expenditure'.

80. The apparent generosity of these assumptions is reinforced by consideration of the overall conclusions of Aqua Consultants on BRL's business planning processes.

'Following our review and investigation of information provided we conclude the following:

- BW do not appear to have a strategic plan
- the lack of a strategic plan does not allow BW to consider the interaction of schemes upon each other
- BW appears to decide on the required solution and then provide justification of the position. Several proposals have failed to consider relevant information.
- BW and their consultants omit the value management (optioneering and comparison of different proposals to select a scheme) stage of projects and commence with value engineering (refining of the selected scheme).
- BW have used models to build-up their requirements without the models being tied to reality. There is a disconnect between the model output and how the work will be carried out.'²²

'As can be seen in the table below our opinion is that BW have generally not demonstrated that the need exists, that their selection process has not been sufficiently robust, have taken a highly risk averse position and have included higher costs in their business plan than is necessary to achieve the outcomes that are required'²³.

²¹ Paragraph 6.204 CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

²² Paragraph 344, Aqua Consultants, Bristol Water Price Determination Technical Support – Report of Findings June 2015

²³ Paragraph 375, Aqua Consultants, Bristol Water Price Determination Technical Support – Report of Findings June 2015

Table 3: Summary of Aqua Consultants assessment of the Bristol water’s business plan schemes

	<u>Need</u>	<u>Selection</u>	<u>Risk</u>	<u>Cost</u>
Cheddar 2	x	x	x	x
Bedminster Reservoir	x	x	x	✓
Mains Replacement	✓	x	x	x
Replacing treatment works	x	x	x	x
TW enhancement (Cheddar)	x	x	x	x
Southern Resilience	✓	x	x	x

81. Applying the benchmark reduction of 16% identified above to BRL’s raw water deterioration, growth, National Environment Plan and other enhancement projects would have the following impact on costs.

Table 4: Forecasts and projections of Bristol Water’s enhancement expenditure

	Bristol Water Plan	CMA Provisional Findings	Efficient Benchmark
Cheddar 2	42.8	0.0	0.0
Southern Resilience	28.1	22.2	22.2
Cheddar WTW	20.8	1.0	1.0
Asset reliability	10.2	9.5	9.5
Other schemes	50.4	50.4	42.3
Total enhancement	152.3	83.1	75.0

82. In the light of the extra information revealed by the Aqua Consultants’ report (including the broad nature of the conclusions with respect to the inadequacy of BRL’s business planning processes) we strongly suggest that it is not appropriate for the CMA to give BRL the benefit of the doubt with respect to the majority (£50.4m out of £83.1m) of its proposed allowances for enhancement expenditure. This is particularly important to protecting the interests of customers in the circumstances of an appeal to the CMA:

- the wider expectations that a CMA appeal might create and the danger that companies will consider that only the costs of major capital projects will be challenged; and

- the danger of creating incentives that might be regarded as a 'one-way bet' for companies to appeal to CMA – companies should expect that if the redetermination process identifies additional evidence suggesting their approach was not of sufficient quality their cost allowances may be reduced.

83. Bearing the above in mind we suggest that it is appropriate and necessary to apply efficiency assumptions to all of BRL's enhancement programme – even if these assumptions are based on a sample of smaller projects.

6. Our view of section 7 CMA report - Overall wholesale totex assessment

Our view

84. We set out in previous sections are comments on specific aspects of the CMA's Provisional Findings in relation to wholesale costs. Here, we set out our conclusions on the CMA's proposed allowances for BRL's wholesale totex.
85. We consider there is substantial evidence that suggests that Ofwat's Final Determination estimate of base costs is robust and reasonable evidence that suggests the allowance for enhancement costs was relatively generous:
- the CMA's own econometric modelling of base costs (which despite our reservations about functional form and the lack of statistically significant costs drivers in the unit cost models produces) gives a virtually identical range of costs to the Ofwat base allowance when using the 5 year smoothed data set
 - the substantive reasons that CMA makes a higher allowance for base cost include the use of unreliable 7 year unsmoothed data, an unnecessary special cost factor adjustment for regional/city wages and a special cost factor adjustment for mains replacement that significantly over estimates the level (if any) of the appropriate adjustment
86. We support the application of supporting checks on the results of benchmarking analysis where it is appropriate and practicable to make such checks, and, that the checks properly protect the interests of customers
- in respect of opex:
 - the CMA's projections of opex show (as summarised in its table 5.8) a reduction in opex of approximately 8% over 5 years
 - the CMA shows (as summarised in its table 5.2) that BRL has opex 16% above average
 - no information appears to be provided that explains why BRL should have above average operating costs, and
 - we conclude that there is likely to be scope for significantly greater savings in opex than those identified by the CMA.
 - in respect of IRE and mains replacement we note
 - the conclusions of Aqua consultants that 'BW [Bristol Water] have relied upon a model to demonstrate what lengths of distribution mains are to be replaced, this we believe has a fundamental flaw in that it relies on the age of the mains ... we cannot establish how BW have determined the sum they have included for distribution mains in their Business Plan ... we

- believe that BW's cost estimate for trunk mains includes too high a level for risk and contingency'²⁴
 - bearing the above in mind it is difficult to understand why the CMA has concluded it should not adjust the scope of mains replacement in the Bristol Water business plan, and, on this basis it is overstating the reasonable level of IRE
- we support the more robust assessment that is associated with the lower end of the CMA's estimates for MNI.

87. Our final determination for base expenditure was £318 million. The CMA's low case supporting check on base costs is £329 million. As we have explained above even this low case includes assumptions that are inappropriately generous to BRL and its shareholders. This appears inconsistent with protecting the interests of customers and the very most the CMA should allow for base costs is the £318 million in the Final Determination.

- In relation to enhancement expenditure we note that where BRL's forecasts have been subject to most detailed scrutiny – in relation to the Cheddar 2 reservoir, Southern Resilience and the Cheddar WTW – then very significant savings in costs have been identified.
- The total forecast capital expenditure in the BRL business plan for these projects was £91.7 million against an allowance in Provisional Findings of £23.2 million. Bearing this in mind the CMA should not give BRL the benefit of the doubt and make no adjustment in respect of the £50.4 million of 'other' enhancement expenditure.
- This is reinforced by the overall findings of Aqua Consultants 'BRL have generally not demonstrated that the need exists, that their selection process has not been sufficiently robust, have taken a highly risk averse position and have included higher costs in their business plan than is necessary to achieve the outcomes that are required' ²⁵.
- Applying the benchmark reduction of 16% identified in the section above to BRL's raw water deterioration, growth, National Environment Plan and other enhancement projects would give a revised total level of enhancement spending for BRL of £75 million.

88. Combining a base estimate of £318 million with enhancement spending of £75 million gives totex of £393 million. This compares to an estimate of £409

²⁴ Paragraph 135 Aqua Consultants, Bristol Water Price Determination Technical Support – Report of Findings June 2015

²⁵ Paragraph 375, Aqua Consultants, Bristol Water Price Determination Technical Support – Report of Findings June 2015

million in the Final Determinations and £429 million in the CMA's Provisional Findings.

89. Given the extra information revealed by Aqua Consultants on the lack of robustness, inappropriately risk averse and high costs nature of the BRL business plan it is particularly important for the CMA:

- to set a level of costs that robustly protects the interests of customers
- this should take proper account of the poor business planning processes that have been identified by the CMA's consultants and provide a clear incentive for BRL and other companies to adopt best practice in the future
- on this basis the CMA should not be unduly concerned that 'there is some risk that this could support insufficient investment'²⁶ – given the failure of BRL to provide robust and convincing business plan information these are risks properly borne by shareholders and not customers, and
- the danger of creating incentives that might be regarded as a 'one-way bet' for companies to appeal to CMA – companies should expect that if the redetermination process identifies additional evidence suggesting their approach was not of sufficient quality their cost allowances may be reduced.

90. **All of the above suggests a lower allowance for totex than in the Final Determination, and certainly not a higher allowance.**

²⁶ Paragraph 5.159, CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

7. Our view on CMA provisional findings on Menu schemes

Our view

91. In its Provisional Findings, the CMA chose not to apply a menu in BRL's determination. In support of its decision, the CMA puts forward the arguments that:

- Ofwat's implementation of the menu does not achieve the objective to incentivise companies to provide more accurate expenditure forecasts in their price control review business plans;
- It does not consider that the menu provides real flexibility for companies to manage the risks of delivering their business plans given the interaction of their choice with the total revenue allowed to the company; and
- The menu is complex, which, among other things, complicates the financeability analysis.

92. The CMA also suggested that the basis on which we have treated menus in our financeability test was confusing.

93. We understand the CMA's decision not to apply a menu in the context of the BRL determination of a reference after the conclusion of the normal price review process. In a context of a single company appeal, the balance of costs and benefits from use of menus may differ from that at final determination, where the menu was applied across the entire industry as part of a broader package of incentives to secure information and allow companies' flexibility to develop their business plans with customer engagement during the review process.

94. However, we do not agree with the specific arguments that the CMA has put forward to justify its decision and think the CMA should review its arguments.

95. As we explain below, our approach to menus does provide incentives to reveal accurate information. It is important to recognise that, in the final menu choice made by companies in January 2015, seven companies chose a lower menu choice than the implied one (no company has chosen a higher menu choice than the implied one). Companies that provided an explanation for their choice said that they took the opportunity to further challenge themselves. Thus real choices were made – some companies moved further from their business plan propositions than others. We therefore consider that this approach worked for the benefit of customers.

96. As we transition to a framework of 'light touch' regulatory approach it is important to maintain tools and mechanisms that provide appropriate incentives for companies both to provide accurate information to the regulator and to take more accountability for managing their own risks efficiently. We consider that the menu is an important tool within a regulator's toolkit with significant static and dynamic benefits to customers.

97. We will be reviewing the use and operation of menus for PR19 in light of experience at PR14 and our wider consideration of how we set price limits. But it is important that CMA’s assessment considers the wider role and benefits to customers of menus in normal price review processes.

98. Finally, for clarity we set out below the reasons why we tested financeability at PR14 in the way that we did.

Menu incentives

99. A menu scheme is a general mechanism that provides companies an incentive to reveal accurate information (under certain conditions). The mechanism was designed to mitigate the informational constraints that regulators face – particularly over the details of individual companies’ efficient costs in each review - and allow them to set more efficient controls on regulated companies. The general mechanism is particularly relevant when the regulator seeks to avoid detailed and intrusive review of each company’s business plans where possible – a key feature of Ofwat’s PR14 methodology in line with the recommendations of the Gray review.

100. We distinguish between two basic alternative approaches to implementing a menu scheme:

Approach 1 (Ofwat PR14):	Approach 2 (Ofgem, Ofwat PR09):
Step 1: Companies submit their expenditure forecasts as part of their business plans	Step 1: Companies submit their expenditure forecasts in their business plans
Step 2: The regulator estimates an efficient cost baseline for each company, consistent with the outcomes expected from business plans	Step 2: The regulator estimates an efficient cost baseline for each company in parallel
Step 3: The menu is revealed in full before companies respond to the regulator’s cost baseline proposals	Step 3: Companies are ‘locked’ in a specific menu ‘contract’ based on the consequent ratio of their forecast to that of the regulator.
Step 4: Companies are allowed to respond to the regulator’s proposals (including adjusting their business plans following relevant customer engagement) and then choose their preferred position on the menu (ie, their preferred ‘contract’).	

101. We draw out three differences between the two basic approaches:

- i. **The timing of the “truth telling” incentive:** under approach 1 the incentive comes into effect in step 4. Namely, the incentive works after the menu has been revealed and companies make a choice under complete information.

Under approach 2 the incentive comes into effect in step 1 – when companies submit their original forecasts.

- ii. **The availability of choices:** Approach 1 provides companies with a real and transparent menu of choices. Approach 2 does not. We recognise that the flexibility is limited as it interacts with the total revenue allowed for the company. But the flexibility is there, particularly in relation to shorter term expenditure consequences, and may be acted on by certain companies making marginal decisions (eg a risk averse company may seek to buy additional insurance from customers, especially where the risks of forecast errors are more substantial, by transferring additional cost risk to its customers for a fee that is set by the menu matrix). Similarly Approach 1 enables cost and delivery risks of particular performance commitments in a business plan to be better calibrated, in the light of the regulator’s decisions on outcome commitments and incentives. Approach 1 enables marginal company choices to share risks more efficiently with customers: Approach 2 does not.
- iii. **The additional pre-requisite:** Approach 2 requires an additional pre-requisite for the menu scheme to work efficiently as an information incentive: in submitting their cost forecasts, companies must believe that their forecast will not affect the regulator’s baseline. This is a strong assumption which is not required under approach 1. Further, this pre-requisite can only occur if the outcome assumptions used by the regulator to set baselines match those in all the relevant business plans. Again, this is a very strong assumption, particularly where a variety of different companies develop their own individual outcome proposals, with the form of emphasis on local engagement and willingness to pay which the CMA commends in its Provisional Findings.

102. The main conclusion from this comparison of the approaches is that **an incentive to reveal truthful information is there under both approaches, just at different stages**. Further, the incentive under our PR14 approach is ‘cleaner’ as it does not require the strong and unrealistic assumption that the regulator’s baselines are completely independent from the companies’ cost estimates and associated business plans.

103. We note that for the purpose of setting allowed revenues over the longer term, it does not matter if the incentive comes into effect early or late in the review. Arguably, the advantage of having accurate information early in the review is that the regulator can use it to inform its own assessment. But such behaviour would then undermine the credibility of the regulator to use such scheme in the future because the pre-requisite would have been seen not to have held (and in any

case such approach would fail the additional pre-requisite due to mismatch of outcomes assumptions as discussed above).

104. The CMA argues that “the menu does not achieve the objective for companies to provide more accurate expenditure forecasts in their price control review business plans”. While this statement is not inaccurate if it is intended to be focused on companies’ originally-submitted business plans, it mis-represents the objective of our PR14 menu scheme. This was to provide an incentive for companies to provide accurate information later in the review, following the prior operation of the incentives in the Risk Based Review.
105. Thus, without these additional intended stages in the process being acknowledged, the CMA’s views as expressed in its Provisional Findings for the BRL reference could well lead readers to the wrong conclusion - that our menu scheme does not provide an incentive to reveal accurate information at all.
106. We remind the CMA that our choice of implementation approach for PR14 was a conscious one, enabled by the PR14 methodology but pursued in the light of companies’ variable responses to the new approach to business planning in the last price review, where we set out much fewer requirements in advance and allowed companies more discretion in assembling their plans. Our specific implementation choices therefore largely reflected practical considerations (poor company data for timely independent baselines initially provided in 2013, lack of clarity over outcome/cost relationships in some initially-submitted business plans, and a range of other evidence gaps requiring further targeted work in some business plans), and the fact that our menu scheme was part of a broader set of incentives, including the ‘enhancement’ as a tool to incentivise companies to submit early efficient business plan forecasts. Although our specific PR14 implementation approach was driven by such practical considerations, it did not undermine the underlying virtues of a menu scheme as a tool to help extract accurate information.²⁷

Complexity

107. The CMA repeatedly describes the menu scheme as complex, or “a particularly complex part of [the] price control framework”, (para 2.55, 2.58, 3.44, 3.45) and uses it as part of its justification not to adopt a menu for BRL in the context of the price control referral.

²⁷ In fact, our implementation approach is more in line with the approach in the original (academic) literature. See, for example, Laffont and Tirole (1993), “A theory of incentives in procurement and regulation”, MIT press, Chapter 1.

108. We do not agree that the menu scheme was a particularly complex element of the price review – the regulatory framework is generally complex and includes a number of non-trivial tools (eg econometric benchmarking and outcome incentives). In line with our wider approach to assess costs and set incentives in a more targeted way through separate controls within the integrated value chain (consistent with the CMA’s own Provisional Findings on targeted cost assessment) PR14 introduced a number of new incentive initiatives. However the concept and basic structure of the menu was not new – it repeated the form put in place in PR09 for the sector for capital expenditure via the CIS. The menu scheme is therefore well-established, and so is the financeability assessment that is carried out under a menu framework.
109. Although the principles of a menu scheme are not easily intuitive, the application is relatively straightforward – companies choose a point within an offered range, which in turn automatically determines their cost sharing rate and cost allowance for the following control period.
110. We recognise that simplicity is a virtue that should be taken into consideration in the design of the regulatory framework. But we do not think that the complexity of rules (and mechanisms) should necessarily represent an obstacle to efficient regulation. Dismissing regulatory tools on grounds that they are ‘complex’ can stifle future innovation in mechanism design for efficient regulation. It would be more appropriate that the relevance of ‘complexity’ is set out in a more neutral way, based on an accurate description of the source of complexity (e.g. about the relative mathematical sophistication of the tool), rather than as an argument to dismiss the use of menu schemes.

Menus and financeability

111. In Appendix 2.4 to their Provisional Findings report (paragraph 79) the CMA described the basis on which we have treated menus in our financeability test as confusing. For clarity, we set out below the reasons why we have tested menu financeability in this way.
112. As the CMA have stated, the Ofwat financeability test is carried out on the basis of an efficient company, reflecting our statutory duties.
113. Therefore our starting position for undertaking the financeability test assumes that revenues are based on totex which is in line with the Ofwat baseline expenditure, point 100 on the menu.
114. However where a company chooses a position which is different from point 100 on the menu then this is treated as the efficient level of expenditure for the purposes

of the financeability assessment. The allowed revenue figures used in the financeability assessment are consistent with the totex position given under the menu as if that were the efficient level of costs, but it does not change our overall view of what an efficient level of costs should be.

115. To explain why we take this approach, consider first the situation where a company selects a position which is below 100 on the menu. In this scenario the company are saying that they will spend below the baseline totex, if we then assessed financeability using the baseline totex and corresponding revenue then we would potentially be giving the company too much revenue and overstating its financeability.
116. In the case of BRL, they have selected a menu position which is greater than 100, and which is above the Ofwat baseline level of costs. By selecting this menu position they are able to increase the level of allowed revenue that they are able to collect in the AMP slightly, which may assist them with short term cashflows.
117. The financeability assessment is then carried out based on the company's totex under the menu as if that were efficient and allowed revenue (before any penalty) is consistent with those costs.
118. We could test financeability using the Ofwat baseline costs, but it would not reflect the short term (in AMP) cash flow benefits of selecting a higher menu position noted above.
119. The menu penalty is calculated to reflect the fact that the company's choice of totex is different to the level that has been deemed to be efficient. It is excluded from the financeability test as it reflects the fact that the company has chosen a position which is inefficient.
120. We do not take account of any menu penalty, positive or negative, when we assess company financeability. The reason for taking this approach is that if a company were to spend efficiently then the difference in expenditure would offset the impact of the menu penalty. Consequently our assessment of financeability takes into account both the company's allowed revenues and its efficient level of expenditure.
121. For example if BRL's expenditure is in line with the Ofwat view of efficient costs, rather than the totex allowed based on their menu choice, the lower level of expenditure will provide a cash flow benefit which is able to offset the revenue penalty calculated via the menu. In this situation there would be no adverse impact on the company's financeability as a result of the penalty.

8. Our view on section 8 CMA report - Reconciling 2010-2015 performance

Our view

Serviceability performance

122. We welcome the CMA's Provisional Findings in relation to serviceability performance. The CMA agreed with our assessment that BRL's water infrastructure serviceability performance for the 2010-15 period was less than stable. The CMA also retained the same shortfall adjustment to the RCV of £4.1 million.
123. We consider this to be good for customers as it ensures money is returned to them where outputs were not delivered and incentivises companies to achieve committed performance levels.
124. Specifically, we acknowledge the CMA's Provisional Findings which support our determination, namely that:
- Our expectations for each company to monitor its performance against each indicator and timeline on shortfall consequences
 - BRL breached its targets for Unplanned Interruptions >12 hours in multiple consecutive years and therefore could not be assessed as stable;
 - The target levels and control limits we set at PR09 were appropriate;
 - Our assessment methodology, which recognised the volatility of the Unplanned Interruptions >12 hours indicator, was sufficiently clear for BRL to comply with it; and
 - We note the CMA's comment that²⁸:

"The aim of outcome-based assessments is to allow the companies some flexibility in their management processes to provide their services. They are therefore designed as a measure of the effectiveness of the management process in determining how to achieve the required outcomes (one of which is avoiding long duration disruptions to customer supplies) and then managing their systems to ensure the desired outcomes are achieved."
125. It remains our view that the evidence BRL provided in relation to the four major incidents, that caused the company to significantly exceed its PR09 targets for interruptions to supply, showed that these incidents were not outside management control.
126. We note the comment from CMA that²⁹:

²⁸ paragraph 8.20 CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

“For example, Bristol Water stated that following the Luckington Bridge event, it has now implemented operational procedures and checks to ensure no such cause is repeated. We would expect that these are the forms of management control that should have been used to prevent the event in the first place, particularly when operating in areas fed by a single supply resulting in higher risk of interruption.”

127. This example provides additional support for the view that there were shortcomings in the way the company managed its systems and there was a lack of effective management processes to remain prepared and respond to such incidents.

128. As the CMA states, it is for companies to manage their systems to ensure outcomes are achieved. Where this is not the case and such failures affect a significant number of customers (through the loss of water supply in this instance) it is appropriate to make a shortfall.

129. Finally, in paragraph 8.2(a). The text should be amended, as below, to include the additional text in bold:

“Ofwat set a series of outcome metrics aimed at ensuring that the company manages and maintains its assets so that they remain fit for purpose. If these metrics are missed or are unstable, Ofwat is able to clawback **allowed** spend (by applying a shortfall to the RCV (reducing its value)).”

RCV capping

130. We welcome the fact that CMA’s Provisional Findings retained the £4.8 million RCV adjustment for capital expenditure capping in 2009-10. We also welcome the CMA’s support of our policy to use the updated 1995 COPI series in this reconciliation, as we consider this is the most appropriate index to use for the 2005-10 time period.

CIS indexation methodology

131. We support the CMA’s position on the CIS issue but note that these are still Provisional Findings. Bearing the provisional nature of these findings in mind we do not intend to reach a conclusion on the CIS issue until later in the year after the CMA’s process has ended.

²⁹ footnote 300 CMA’s Bristol Water Price Determination Provisional Findings, 10 July 2015

9. Our view on section 9 CMA report - Outcome delivery incentives

CMA approach to ODIs

132. We welcome the CMA's general support for the outcomes framework introduced at PR14 (paragraph 9.16).

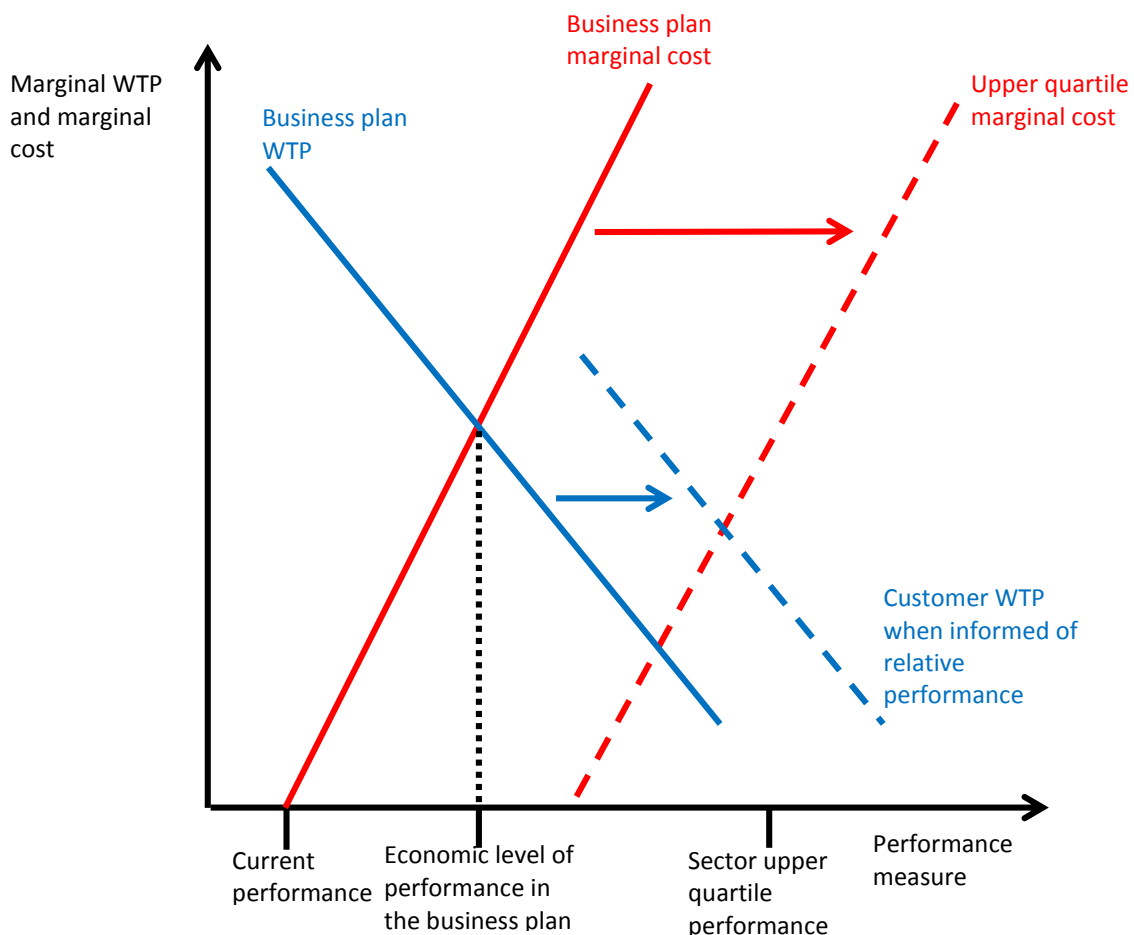
133. The CMA's Provisional Findings identified three concerns about how Ofwat applied the outcomes framework. While the CMA recognises the impact of these concerns are not particularly material (paragraph 9.17) we respond to each point below.

Upper quartile performance and the economic level

134. In paragraph 9.16(a) the CMA raise a question over whether upper quartile performance can be considered to match the economic level for a performance commitment.

135. We carried out the comparative assessments for outcomes because it became clear from reviewing the June 2014 revised business plans that some companies were able to deliver much better performance than others and that customers were not fully informed of companies' comparative performance when giving their views through customer engagement. These two factors are likely to influence the economic level for a performance commitment and to move it closer to the upper quartile performance level.

Figure 2 Comparative assessments and the economic level of performance



136. Figure 2 illustrates how the economic level of performance might change. The solid red line represents the company's marginal cost for performance improvements in its business plan. The solid blue line represents customers' marginal willingness to pay (WTP) for performance improvements in the business plan. The economic level of performance is where these two lines intersect. In the diagram the economic level of performance is higher than current performance.
137. The comparative assessments identified that some companies were historically able to achieve much better performance than other companies. This might indicate cost inefficiency in those relatively poor performing companies. The diagram shows the efficient marginal cost of performance improvement as a red dashed line. If the company was cost efficient the economic level of performance would shift to the right at a higher level of performance. In the particular case of BRL, we, the CMA and Aqua consultants have all found that the company's costs appear to be too high so we might expect the efficient marginal cost curve to be to the right of the one set out in the business plan.
138. Our review of companies' customer engagement revealed that in many cases customers were not fully aware of their company's relative performance when expressing views on willingness to pay and performance targets. If customers had been fully aware that their company was a relatively poor performer, their willingness to pay might have reduced to nothing for small improvements in performance that represented catch up. But they might have been willing to pay more for larger improvements close to or beyond the upper quartile (for which previously they were willing to pay little or nothing due to diminishing marginal willingness to pay). The effect is to shift customers' willingness to pay to the right (to the blue dashed line).
139. We gave companies the opportunity to comment on the upper quartile approach following draft determinations. Companies raised 24 company-specific factors which we assessed against 3 criteria³⁰. Companies did not provide sufficient evidence to convince us there was a need to adjust our approach to the upper quartile although we did introduce a reward for Dŵr Cymru on supply interruptions following its representations on network interconnectivity.
140. We consider that the comparative assessments we carried out on outcomes mean that the economic level of the performance commitments for historically poor performing customers should be set at a higher level than the evidence in those companies' business plans implies. The economic levels of the performance

³⁰ See pages 43 to 46 of Final price control determination notice: policy chapter A2 - outcomes

commitments are likely to have moved closer to the historical upper quartile level of performance from the level identified in business plans. We consider that the upper quartile approach was subject to extensive challenge by companies during PR14 and they provided insufficient evidence that it needed to be altered.

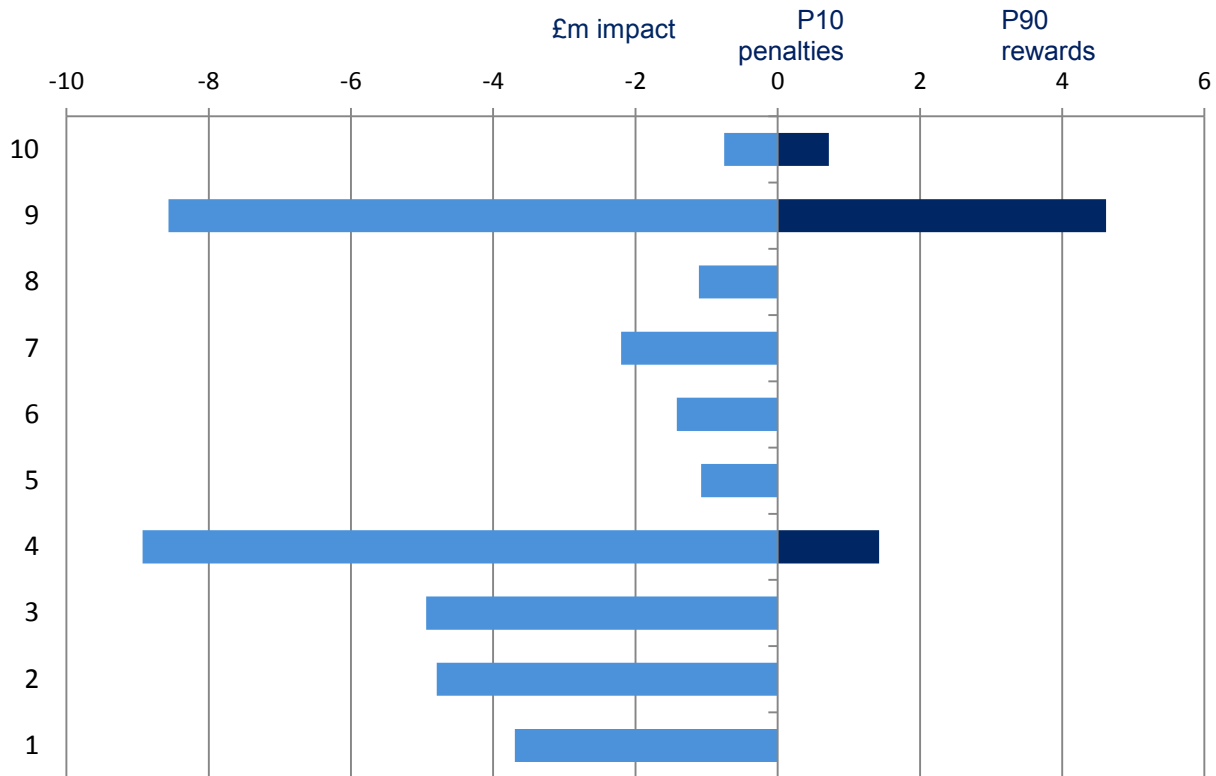
Output-focussed performance commitments and ODIs

141. In paragraph 9.16(b) the CMA explains that not all ODIs focus on outcomes for customers. We agree that in the final determinations there were several instances of performance commitments and ODIs linked to specific schemes. This was the first price review in which the sector had used the outcomes approach and the first where the shortfalling and logging up/down processes did not apply. We intervened in several cases to introduce penalty-only ODIs to compensate customers in the event that a company did not deliver a scheme it had received funding for at PR14 through a special cost claim. We will be looking at alternative approaches to dealing with protecting customers in relation to major schemes as part of our Water 2020 programme, which is developing our approach to PR19.
142. In the specific case the CMA cites BRL's performance commitment "Population in centres >25,000 at risk from asset failure," the reward and penalty do not relate to the delivery of a specific scheme but to the number of people in population centres >25,000 at risk from asset failure.

The appropriateness of rewards

143. We strongly support the CMA's proposal not to make an intervention to remove any of BRL's rewards (Paragraph 9.19). Even after taking account of the Risk and Reward Guidance BRL's Final Determination ODIs remain dominated by penalty-only incentives (see Figure 3). The most significant potential reward relates to reductions in leakage beyond the Sustainable Economic Level of Leakage (SELL) and BRL provided evidence of customer support and willingness to pay (WTP) for these initiatives.

Figure 3 Overview of financial ODIs for Bristol Water in its final determination



144. In paragraph 9.16(c) the CMA mentions that CCWater and the LEF suggest it is inappropriate to fund financial rewards for out-performance through higher customer bills. The CMA also refers to BRL’s customers rejecting the concept of rewards being funded through an increase in bills. In paragraph 9.19 you encourage us to take more account of customers’ views on rewards in future price reviews when designing the risk and reward framework.

145. Our support for rewards reflects the views made by David Gray in his independent Review of Ofwat and consumer representation in the water sector in 2011³¹, as well as the benefits that we consider rewards can deliver for customers and the fact that the customer engagement results at PR14 showed mixed evidence on support for rewards.

146. The Gray review stated that “we are sympathetic to the suggestion that the balance of risk and reward is tilted too far towards uncertain and potentially large penalties for failure, with relatively limited rewards for outperformance or innovation.” (Page 30) The review recommended:

³¹ Review of Ofwat and consumer representation in the water sector, D Gray (2011).

“Recommendation 5: As part of its review of incentives in its Future Regulation programme, Ofwat should seek to ensure that the future framework of incentives provides the right balance between rewards and penalties in the context of the challenges facing the companies, with increased emphasis on incentives for behavioural change.” (Page 30)

147. The Gray Review made its recommendations after extensive consultation with stakeholders.

148. We consider that rewards can deliver considerable benefits to customers. We reviewed the rewards proposed by companies at PR14 to check that they were only available for stretching performance and reflected customers’ willingness to pay for improvements. We intervened where this was not the case.

149. There are also benefits to customers beyond the direct value of the improved service customers receive. Customers benefit from companies innovating to achieve rewards and delivering service improvements, which endure beyond the end of the price control and which feed into the cost and service level baselines for future price controls. The present value of these benefits could be many times the reward payments customers make during one price control period.

150. While CCWater and BRL’s LEF suggest it is not appropriate to fund financial rewards for out-performance through higher customer bills there was a considerable amount of mixed evidence on rewards from customers during PR14. And while BRL’s customers might have rejected the concept of rewards being funded through an increase in bills when other companies asked the question in the context of different starting bills with different reward options they found customer support for rewards. BRL customers also expressed a willingness to pay for service improvements across a wide range of service measures such as water supply interruptions, hosepipe bans, stoppages, taste and odour, discolouration, low pressure³², leakage, water conservation devices, metering and river flows³³.

151. Below we provide some Examples of companies finding customer support for rewards:

South West Water:

“the results show that customers agree that bills should be reflective of performance and when improvements in service are delivered, and that

³² Page iv, “PR14 Domestic Customer Stated Preference Survey - A Report for Bristol Water”, NERA Economic Consulting, 12 December 2012

³³ Page 3, “PR14 Stage 2 Domestic Customer Stated Preference Survey, Regarding Leakage, Metering and Water Conservation Devices”, NERA Economic Consulting, 11 July 2013

customers are supportive of bill mechanisms that encourage South West Water to innovate to improve service and ensure bills are lower in the future, certainly reflecting the balance of a lower cost of capital and higher incentives. [...] there is a limit to the extent this should be the case.”³⁴

United Utilities:

“Customers accept the idea of rewards and penalties, particularly if this is focused more on penalties than rewards. In general customers agree that bills should be reflective of our performance. When service improvements are delivered, customers are supportive of bill mechanisms that encourage us to innovate to improve service and ensure bills are lower in the future.”³⁵

South East Water:

“60% [$\pm 4.8\%$] considered it was a good idea to link water bills to the performance of South East Water (61% [$\pm 4.9\%$] in previous wave). 11% [$\pm 3.0\%$] did not think it was a good idea and 29% [$\pm 4.4\%$] were unsure (12% [$\pm 3.2\%$] and 28% [$\pm 4.5\%$] in the previous wave)”³⁶

Thames Water:

“there is also strong support (78%) for the principle of penalties encouraging Thames Water to meet its targets. Two thirds of respondents indicated that the principle of rewards is just as important.”³⁷

And Yorkshire Water:

“When customers saw the maximum bill increase would be £12 in return for exceptional levels of service, the majority preferred the revised plan to the original plan submitted to Ofwat in December 2013”³⁸

³⁴ Eftec and ICS Consulting “South West Water. Risk and Reward Customer Research. Final Study Options” March 2014, unpublished.

³⁵ United Utilities “RD005 Outcome Delivery Incentives and Cost Benefit Approach (new guidance)”, June 2014, unpublished.

³⁶ Accent “Customer attitudes towards outcome delivery incentives wave 2, Final Report”, June 2014, unpublished.

³⁷ Eftec and ICS Consulting, “Thames Water - Customer Research to Inform and Support Revised Outcome Delivery Incentive”, June 2014

³⁸ Yorkshire Water presentation to its customer forum “Response to Ofwat’s Risk Based Review: Customer Research Headlines”, June 2014, unpublished.

152. We welcome the CMA's encouragement for us to take more account of customers' views on rewards in future price reviews when designing the risk and reward framework (paragraph 9.19). Given the mixed evidence from customers on rewards at PR14 we consider it would have been impossible for both companies and us to an approach to rewards that was consistent with all customers' views on rewards. However, going forward we will be considering all aspects of customer engagement and outcomes in consultation with stakeholders including the appropriateness of rewards as part of our Water 2020 programme.

Unplanned customer minutes lost

153. We strongly support the CMA's Provisional Findings in relation to unplanned customer minutes lost. While we can see a case for replacing BRL's company-specific measure of supply interruptions with the Ofwat KPI, we came to the same conclusion as the CMA that it would not be appropriate to override the LEF's engagement in the choice of metric (paragraph 9.29).

154. We strongly support the CMA's change to the unplanned customer minutes lost performance commitment in 2017/18 to 2019/20 from 7.2 minutes in BRL's final determination to 6.15 minutes (paragraph 9.32). With hindsight we recognise it would have been more robust for us to use 3 years of data to calculate the adjustment to BRL's performance commitment rather than a single year of data. The 3 years the CMA has chosen for the adjustment are consistent with the 3 years of data we used to calculate the upper quartile for the KPI measure, so we agree that the CMA's Provisional Findings to change the performance commitment to 6.15 minutes is particularly appropriate.

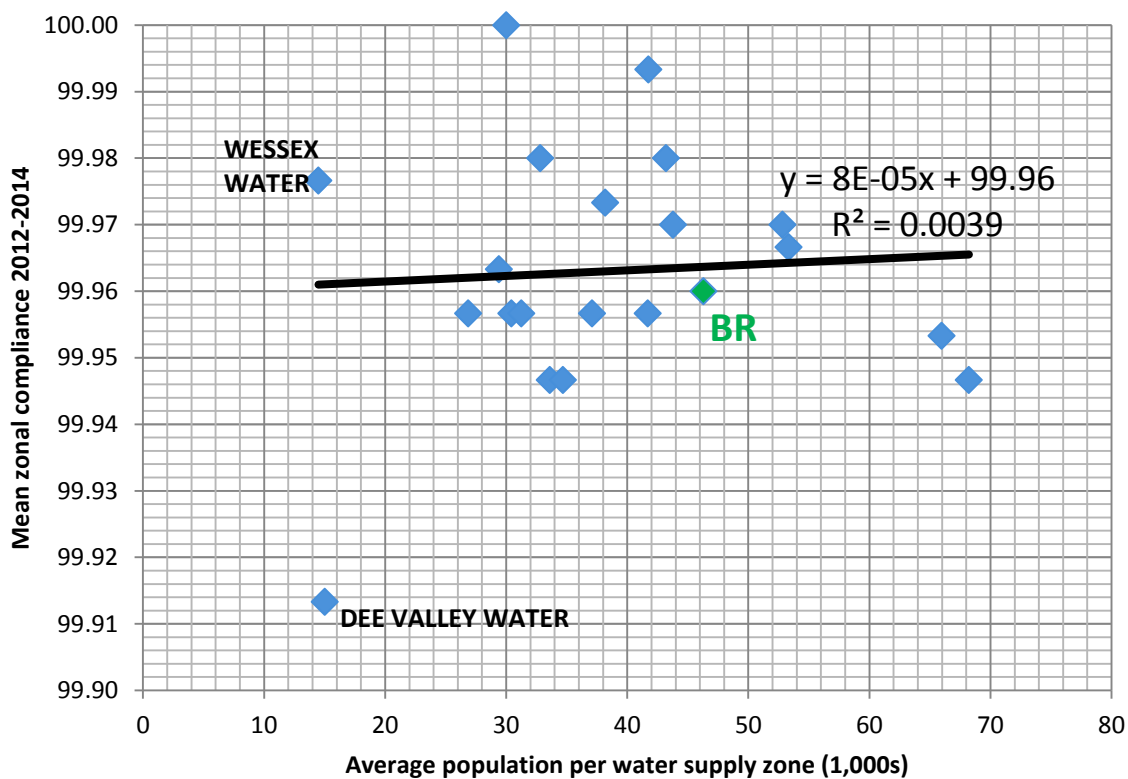
Mean zonal compliance

155. We strongly support the CMA's Provisional Findings on mean zonal compliance that no adjustment is necessary to the penalty deadband and penalty collar for BRL (paragraph 9.45). The CMA has recognised that mean zonal compliance is a statutory obligation, that BRL has received funding for lead reduction at PR09, that the 2014 upper quartile has remained at 99.97% despite the tightening of the lead standard on 25 December 2013 and that BRL's performance on mean zonal compliance was the second worst in the industry in 2014.

156. The CMA refers to the sensitivity of mean zonal compliance to smaller water supply zones, which is an argument BRL has used for why its mean zonal compliance target should be loosened (paragraph 9.46). We have analysed the data in the DWI 2014 annual report, which was released on 9 July 2015, and we have found no evidence that smaller water supply zones are associated with worse performance on mean zonal compliance.

157. Figure 4 shows mean zonal compliance (2012-14 three-year average) versus the average population per water supply zone³⁹. We found no relationship between the two ($R^2 = 0.0039$). We also found that BRL has the fifth largest population per water supply zone out of 21 companies⁴⁰ which means it does not have small water supply zones on average compared with other companies. We therefore consider that the CMA could dismiss BRL's argument more strongly than it currently does in paragraph 9.46 of the Provisional Findings.

Figure 4 The lack of a relationship between Mean zonal compliance (2012-14 average) and water supply zone size



³⁹ All the data used come from the DWI 2014 annual report, Water Company Statistics at: <http://dwi.defra.gov.uk/about/annual-report/2014/stats.pdf>

⁴⁰ We used all 21 DWI companies that form the 18 main water companies in this analysis i.e. the 18 main water companies plus Cambridge Water (part of South Staffordshire Water), Essex and Suffolk Water (part of Northumbria Water) and Hartlepool Water (part of Anglian Water). When we included Cholderton and District Water and the 5 new appointees the R^2 fell slightly to 0.0031 i.e. there was still no relationship between average water supply zone size and mean zonal compliance performance.

Negative water quality contacts

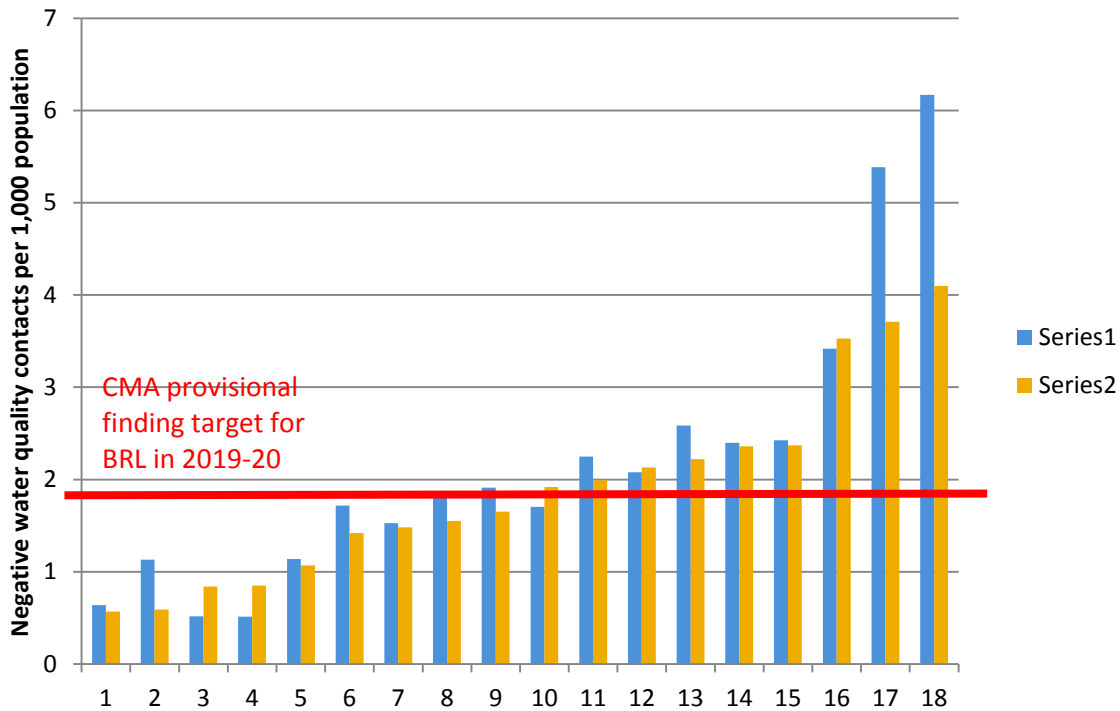
158. We disagree with the CMA's Provisional Finding in relation to negative water quality contacts. The CMA proposes to weaken the performance commitment from 1,439 in 2017/18 to 2019/20 in the final determination to 2,322, 2,275 and 2,221 for 2017/18, 2018/19 and 2019/20 respectively (paragraph 9.59) i.e. a 58% worsening of the target on average for the 3 years. However, we strongly support the CMA's Provisional Findings that the reward deadband and reward cap should be unchanged so that BRL only receives a reward for upper quartile or better performance.
159. We calculate that BRL's customers could be left just under £1 million worse off due to this intervention. Table 5 assumes that BRL achieves the performance commitments set out in your Provisional Findings. We then consider what penalties BRL would incur if it remains subject to our final determination for BRL.
160. In 2015-16 and 2016-17 BRL would have incurred no penalties, but in 2017-18 to 2019-20 BRL would have incurred the maximum penalty of £0.32m per year. This means that BRL's customers would miss out on £0.97m of penalties due to the CMA's Provisional Findings.

Table 5 Lost penalty payments to Bristol Water customers as a result of the CMA's Provisional Findings (under various assumptions)

	2015-16	2016-17	2017-18	2018-19	2019-20	Total
BRL performance assuming it achieves CMA target (number of contacts)	2,422	2,409	2,322	2,275	2,221	
Contacts incurring a penalty under final determination (number of contacts)	0	0	55	55	55	
Penalty rate (£m)	0.005895	0.005895	0.005895	0.005895	0.005895	
Penalty (£m)	0	0	0.32	0.32	0.32	0.97

161. BRL is a relatively poor performer on negative water quality contacts. Figure 5 shows that BRL was the 11th best performer out of 18 companies in 2011-13 and had slipped to the 12th best performer out of 18 companies in 2014.

Figure 5 Negative water quality contacts per 1,000 population 2011-13 average and 2014



Source: DWI

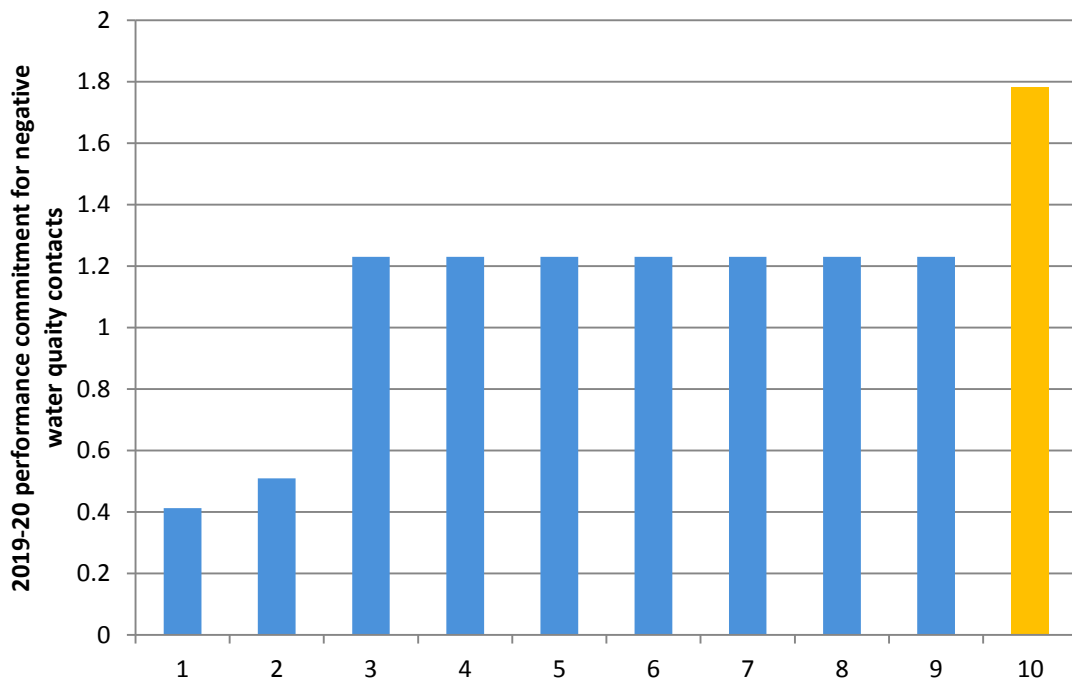
162. Figure 5 also shows that in 2014 nine companies, or half the industry, had already achieved a performance better than the CMA’s Provisional Finding target for BRL in 2019-20 of 1.78 negative water quality contacts per 1,000 population⁴¹.

163. Figure 6 shows that BRL’s performance commitment in 2019-20 following the CMA’s Provisional Findings is the least demanding of the 10 companies with performance commitments for negative water quality contacts⁴².

⁴¹ Calculated as 2,221 divided by Bristol Water population in 2014 from DWI annual report of 1.250 million = 1.78 negative water quality contacts per 1,000 population

⁴² The other water companies have performance commitments for a subset of negative water contacts such as discolouration only or taste and odour only.

Figure 6 Performance commitments for 2019-20 for negative water quality contacts per 1,000 population (following Provisional Findings)



Source: Final determinations and CMA Provisional Findings

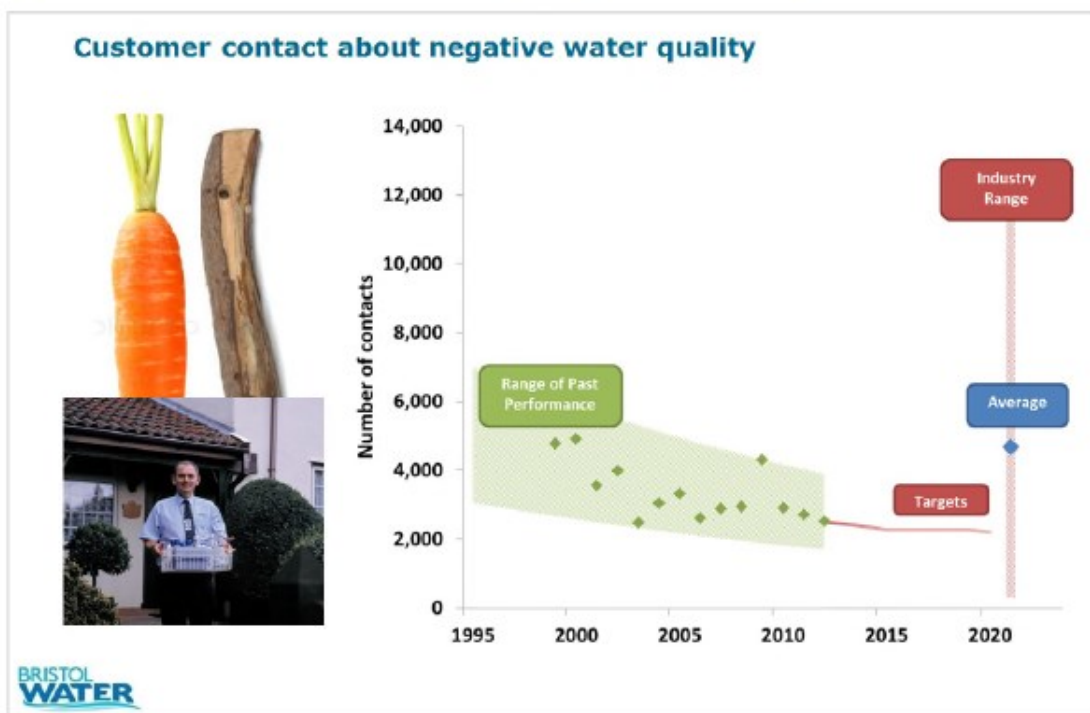
164. The CMA recognises that BRL’s targets set relatively low aspirations for improvement. The CMA considers BRL’s targets are justified because customer views are relevant and the upper quartile performance level may only be achievable through a level of investment beyond the economic level (Paragraph 9.57).
165. Our comparative assessments identified that some companies were historically able to achieve much better performance than other companies. This might indicate cost inefficiency in those poor performing companies. We, the CMA and Aqua consultants have all found BRL’s costs to be too high and therefore the company’s efficient costs should be below those set out in the company’s business plan. If BRL was more cost efficient in the delivery of improvements in negative water quality contact the economic level of performance would be at a higher level of performance.
166. In addition, our review of company engagement revealed that in many cases customers were not fully aware of their company’s relative performance when expressing views on willingness to pay and performance targets. If customers had been fully aware that their company was a relatively poor performer they

might have demanded greater improvements in performance at lower cost through customer engagement.

167. In the particular case of negative water quality contacts BRL provided the comparative information its customers were shown in its reply (see page 111). We have reproduced the information below in Figure 7.

Figure 7 Comparative information on negative water quality contacts provided to Bristol Water’s customers

Figure 13 – November 2013 Incentives Workshop - Negative Water Quality Contact stimulus material



Source: Blue Marble Rewards and Penalties research Nov 2013 (SOC186).

168. We consider that figure 7 could be misleading. It shows BRL’s target in 2019-20 to be significantly below the average for the industry in 2020. In fact BRL’s target of 1.78 negative water quality contacts per 1,000 population in 2019-20 is only slightly (6%) below the industry median of 1.89 in 2011-13 and 19% below the industry mean of 2.19 in 2011-13. We would expect the mean and median both to reduce considerably by 2020. It could be that the slide provided to BRL customers reflect data which has not been normalised for the population served by each company, in which case it is inappropriate to use. BRL is a small company relative to the sector and you would expect a small

company to have fewer negative water quality complaints because it serves fewer customers.

169. The willingness to pay report carried out for BRL⁴³ found customers were willing to pay to move from 6 in 500 to 4 in 500 days of discoloured water and from 3 in 500 to 2 in 500 days of water with non-ideal taste and odour. So BRL customers were willing to pay for at least a 33% improvement in the colour, taste and odour of their water even without full information on the company's relatively poor performance on these measures. However, the CMA's Provisional Findings performance commitment for 2019-20 represents only a 14% improvement on the company's average performance in 2011-13.
170. We strongly urge the CMA to reconsider your Provisional Findings in relation to negative water quality contacts. The Provisional Finding leads to a 58% worsening of the BRL performance commitment on average for the 3 years compared with the final determination. We estimate the Provisional Finding would cost BRL customers nearly £1 million in foregone penalties for poor performance.
171. In 2014 nine companies, or half the industry, had already achieved a performance better than the CMA's Provisional Finding target for BRL in 2019-20 of 1.78 negative water quality contacts per 1,000 population. It would make BRL's performance commitment in 2019-20 the least demanding of the 10 companies with performance commitments for negative water quality contacts. In addition, we consider that if BRL was more cost efficient and if its customers had been fully aware of the company's relatively poor performance on negative water quality contacts, the efficient level of the performance commitment would be closer to the upper quartile level that we applied at draft and final determinations. The willingness to pay research carried out for BRL identified that its customers were willing to pay for an improvement in the colour, taste and odour of their water beyond that proposed in the CMA's Provisional Finding - even without full information on the relatively poor performance of BRL in relation to these measures.
172. In reviewing the Provisional Findings, we identified some specific errors:
- Paragraph 9.18 - Part of this paragraph reads: "this would require Bristol Water to deliver service quality above the capped performance level on every metric." This should read "this would require Bristol Water to delivery service quality **at or** above the capped performance level on every metric."

⁴³ "PR14 Domestic Customer Stated Preference Survey - A Report for Bristol Water 12", December 2012, NERA Economic Consulting

- Paragraph 9.45 – The number for mean zonal compliance in the “current” column reads “99.96”. For mean zonal compliance the previous calendar year is used for the financial year so the recently released data for 2014 can be used for 2014/15 which is the “current” column. We therefore consider the CMA should replace “99.96” with “99.92” in the “current” column only.
- Appendix 9.1, paragraph 26 – the sentence “However, this level requires the companies to breach the penalty collar on every incentive” should read “However, this level requires the companies to **be at or** breach the penalty collar on every incentive.”

173. Finally, in Appendix 9.1, paragraph 21 we consider it might be more appropriate for the CMA to use a diagram of the size of rewards as a proportion of the return on regulated equity (RORE) rather than the number of rewards. We have put the data in Table 6 below. Your point that BRL’s rewards are close to the average is supported by these data with BRL ranking 8th highest out of the 18 companies.

Table 6 Rewards from ODIs as a proportion of the return on regulated equity (RORE) in final determinations⁴⁴

DVW	SRN	YKY	SBW	NES	SES	SEW	WSH	AFW
0.15%	0.25%	0.35%	0.37%	0.38%	0.42%	0.44%	0.46%	0.47%
PRT	BRL	UU	SSC	ANH	TMS	WSX	SVT	SWT
0.50%	0.60%	0.67%	0.68%	0.75%	0.76%	0.80%	0.90%	1.45%

⁴⁴ Annex B sets out the company acronyms used in this, and other tables, within this document.

10. Our view on section 10 of CMA report - Cost of capital

Our view

174. The section below sets out our views on the CMA's provisional estimate of the cost of capital for BRL. While there is much that we support in the CMA's approach, there are important differences in both the approach and parameters used which could have an impact on the ongoing regulation of the water sector as well as in this particular case. We therefore suggest that the CMA reconsider some of its assessment, in particular:

- Our customer benefits test – the application of which we continue to consider was an appropriate exercise of our duties under the Water Industry Act 1991;
- Inflation - where the CMA take into account evidence from longer-term gilts, the most up to date spot rates and forward curves; all of which indicate that the inflation assumption should be higher than 2.6%;

Cost of debt

- Cost of embedded debt - where the CMA should take account of the latest iBoxx rates which have fallen since we calculated the notional cost of debt;
- Cost of new debt - where we consider that unadjusted gilt forward rates may overestimate future rises in corporate bond yields (and so the CMA's uplift of 30 basis points may be over stated) and BRL's use of class B debt comparators may overstate the size of WoC premia;

Cost of equity

- Asset beta - where we consider that the asset beta estimate is inconsistent with previous CC/CMA decisions and is overstated;
- Asset beta uplift - which we consider is inconsistent with market evidence (for example on water company gearing and market to asset ratios), does not have a robust theoretical basis and could lead to spurious results if applied to other water only companies; and

Wholesale adjustment

- Wholesale adjustment - which has incorrectly double-counts the allowance for new retail assets and working capital.

Each of these issues is discussed further below.

Customer benefits test

175. In para 10.56 the CMA stated in relation to the customer benefits test that:

- it was unconvinced that there was a causal link between the cost of debt and the benefits outlined by Ofwat;
- consequently it was unclear why the benefits test was required to meet the duty to customers as there are a number of reasons why bills of smaller companies are different; and
- removing the company specific uplift from small companies raises the risk of stranded assets and is contrary to regulatory precedent that efficiently incurred debt should be allowed.

We respond to each of the points raised in the Provisional Findings in turn.

Causal link between the cost of debt required to finance companies and customer benefits

176. As we set out in our final determinations⁴⁵, if a typical WoC had to bear an additional 25 basis points on the cost of debt without an increase in the allowed cost of capital, the return on regulatory equity would fall by 0.3%. While this could put financial pressure on some companies, we considered that all small water companies were financeable in our final determinations including those without an uplift. However, it may increase the chance that the small company might get taken over by a larger company (as larger companies would not face higher financing costs).

177. It is important to note that the company specific uplift is one area where South West Water has committed to reducing bills, following the merger with Bournemouth Water (currently the subject of a referral to the CMA). At the time of the final determinations, we estimated that the absence of an uplift would increase the chance that a small WoC would be taken over by between one sixth and one third. We still consider that these probabilities are realistic.

178. Our estimate of customer benefits is based on the assumption that if a company is taken over then it would be lost to us as a comparator. We have made extensive representations to the CMA on the South West Water and Bournemouth Water merger on the use of water companies as important comparators. This is supported by the special merger regime which requires the CMA to consider whether the merger would prejudice our ability in carrying out our functions to make

⁴⁵ Final price control determination notice: policy chapter A7 – Annex 3: benefits assessment of an uplift on the cost of capital (p12-13)

comparisons between water companies. We would be concerned if the CMA was unconvinced of the need for us to use comparisons between water companies to carry out our functions.

The need for the customer benefits test

179. We consider that the customer benefits test for the company specific uplift was an important way in which we met our duties under Section 2 of the Water Industry Act 1991, including our duty to further the consumer objective (in summary, to protect the interest of customers). We do not consider that it is in customers' interests to pay higher charges just because their service is provided by a small water only company with higher financing costs.

Regulatory consistency

180. We do not consider that our approach would result in stranded costs or that it is contrary to allowing efficiently incurred debt in price controls. This is because we do not consider that the higher financing costs of WoCs are efficiently incurred, as they could be avoided if taken over by a larger water company.

181. We note that the CMA does not provide any supporting references for its statement that regulatory precedent is that efficiently incurred debt should be allowed. And just because a debt has been incurred by a water company does not mean it has been efficiently incurred - in particular, we note that the CMA has rightly removed a number of elements of BRL's actual debt costs which were incurred for other reasons than efficiently financing investment. We also support the calculation of the cost of capital based on a notional company, rather than specific to any particular company (even a company specific adjustment for small WoCs involves averaging across different companies).

182. We consider that the enactment of the Water Act 2014 supports a different approach, because it will change the special merger regime to reduce the disincentive on companies to merge⁴⁶, so circumstances have changed since previous price reviews. In particular we note that Defra stated that it considered that the increased mergers would result in beneficial improvements in efficiency, improved service and lower costs⁴⁷.

⁴⁶ Paragraph 10, Water Act 2014, explanatory notes

⁴⁷ Paragraph 5.5.3., Water for Life, Defra, 2011

183. We also do not consider that the application of the customer benefits test is inconsistent with our financing duty (para 10.57). We considered that all small water companies were financeable in our final determinations including those without uplift. BRL is the only company to dispute this. So we do not consider that allowing BRL a higher cost of capital - which it does not require for financeability – can be in customers’ interests.

Inflation

184. In setting an estimate for RPI inflation the CMA has provisionally selected a figure of 2.6% (para 10.67). In arriving at this estimate the CMA has relied upon evidence from OBR forecasts and implied inflation spot curves (appendix 10.1 paras 11 and 12) - where future RPI expectations are inferred from the difference between nominal gilt yields and index-linked gilt yields.

185. There are three reasons why we consider that a RPI assumption of 2.6% as being too low. Firstly, implied inflation evidence from longer-term gilts is more suitable. Secondly, spot curve data suggests market expectations of RPI have increased. Finally, forward rate evidence suggests an RPI assumption greater than 2.6% is appropriate. Each of these reasons is discussed below.

186. Ofwat also considered evidence from implied inflation spot curves when estimating RPI inflation to be 2.8%. But in doing so, we placed more weight on evidence from implied inflation from longer maturity gilts; namely, 10 year to 20 year maturities. The rationale for focusing on RPI expectations as captured by longer-term maturities was that this was consistent with the long-term nature of water industry financing. It also avoids larger swings in the RPI inflation assumption across price controls.

187. The latest evidence on from implied inflation spot curves is presented in Table 7 below. Since the data cut-off applied by the CMA, there has been an increase in RPI expectations across all maturities.

Table 7 Implied inflation spot curve

Average range	5 year	10 year	15 year	20 year
31st Dec 2014 to 29th May 2015	2.47%	2.74%	3.01%	3.24%
31st Dec 2014 to 30th June 2015	2.49%	2.78%	3.06%	3.29%

Source: Bank of England

188. The CMA also considered the latest RPI forecasts in the OBR’s Economics and fiscal outlook. Since the publication of the CMA’s Provisional Findings there has only been a minor change the OBR’s projections from 2.48% to 2.44%.
189. In paragraph 10.80, the CMA notes that they would not wish to take an approach which could be perceived as giving excessive weight to actual short-term debt. This is consistent with the approach taken by Ofwat in determining the real cost of debt. However, we think it is also consistent to match this longer term approach to assessing debt costs with a longer-term approach to assessing RPI inflation.
190. The most recent market evidence for 10 year to 20 year maturity gilts is consistent with Ofwat’s 2.8% estimate for RPI inflation. The spot value at the end of June for these maturities⁴⁸ was 2.93% (including a 30bps deduction for the inflation risk premium).⁴⁹ Average spot values over 2015 until the end of June yield an equivalent figure of 2.74%.
191. We therefore conclude that the most up to date market data continues to support the use of an RPI estimate of 2.8%.
192. Additionally, evidence from forward rates for both conventional gilts and index-linked gilts can provide an indication of how implied inflation will evolve of the 2015 to 2020 period. Analysing forward rates for implied inflation at the end of 2017⁵⁰ we find that estimates are significantly above the CMA’s provisional RPI assumption (see Table 8 below).

Table 8 Implied inflation forward rates

31 st Dec 2017	5 year	10 year	15 year	20 year
Implied inflation forward rates	2.94%	3.26%	3.54%	3.67%

Source: Bank of England

⁴⁸ Arithmetic mean of 10yr, 15yr and 20yr spot values.

⁴⁹ The Bank of England analysis for estimating the inflation risk premium was based upon 10 year gilts [Bank of England, Quarterly Bulletin, 2012 Q3, Volume 52, no. 3]. The magnitude of this risk premium would be expected to decrease for shorter debt maturities.

⁵⁰ Using spot yield curve data at the end June 2015.

Cost of embedded debt

193. We welcome the CMA's decision to support our use of a notional cost of embedded debt (para 10.46). In a multi-company regulatory framework, a notional approach creates incentives for companies to seek financing on the best possible terms.
194. We acknowledge that estimates of BRL's actual cost of embedded debt are an appropriate check on the suitability of the notional cost estimated, but these should be limited only to that purpose. We support the CMA's calculation of embedded debt costs. This takes account of the points that we have raised around the inclusion of preference shares, yields on artesian debt and the raising of debt for the parent company loan (see our response to the cost of capital working paper). Given the current low cost of bank debt (which is available at negative real interest rates - see page 9 of our response to the cost of capital working paper - far below the allowance for new debt), we do not consider that there should be an allowance for cash holding costs.
195. While we welcome the CMA's approach to the calculation of the cost of debt in this case, we are concerned over potential precedents that this could set for future reviews. In particular we are concerned whether, if the embedded debt cost was higher than the notional cost of debt, the CMA would use the notional cost of debt (which we would support) or use the embedded cost of debt. If the CMA were to use the latter then we would be concerned that the companies could gain - in particular, by having a notional cost of debt if either their embedded cost of debt is lower or their actual cost of debt is higher. We do not consider that this would be in customers' interests and would welcome a clear statement that this would not be the case.
196. We have reviewed the CMA's estimate of the notional cost of embedded debt. We note that while the CMA has adjusted its inflation assumption from 2.8% to 2.6%, it has not adjusted the real notional cost of embedded debt. We used our long term inflation estimate of 2.8% to calculate our notional cost of embedded debt. We note that the CMA's inflation estimate of 2.6% is a forward looking estimate based on relatively short maturity gilts. We do not consider that it would be appropriate to use this inflation assumption to deflate our notional cost of embedded debt which is based on a historic iBoxx yields for debt of longer than 10 years duration.
197. Regarding evidence on the notional cost of embedded debt, we note that long-term averages of the iBoxx indices – which were utilised by Ofwat in setting the cost of embedded debt range - have continued to fall since our final determinations (data

cut off of 31st October). Table 9 below presents the latest market evidence alongside evidence available at the time of other key PR14 benchmarks.

Table 9 Long-term average iBoxx yields

Date		10 year average (A)	10 year average (BBB)	10 year average (A & BBB)
31st Dec 2013	Risk & Reward guidance	5.41%	5.91%	5.66%
31st Oct 2014	Final determinations	5.29%	5.78%	5.54%
30th June 2015	Latest evidence	5.18%	5.65%	5.42%

198. Applying the Fisher equation and an RPI assumption of 2.8%, the latest evidence suggests that a suitable mid-point cost of embedded debt is 2.5%; 30bps lower than the 2.8% mid-point estimate applied in the risk and reward guidance.
199. There have been no new bond issuances which have a maturity of greater than 10 years since the final determinations (both Thames Water and Anglian Water have both been to market in the past 18 months but for shorter maturities of debt). In the risk and reward guidance we used a cost of embedded debt based on 15 basis points below the mid-point of the iBoxx yield to take into account company outperformance of the iBoxx index. We do not consider that there is reason to believe that water companies would still be able to outperform the iBoxx index simply because the index has fallen.
200. We encourage the CMA to review whether there should be a downward revision to the estimate of notional embedded debt cost given the persistent downward trend in long-term iBoxx averages.

Cost of new debt

201. In estimating the cost of new debt, the CMA applied two approaches (para 10.89). The first approach combined current information on iBoxx yields with a forward-looking uplift. The second approach combined forward-rates on gilts with a WoC premium.
202. We agree it is appropriate to consider forward-looking uplifts to the average cost of new debt during AMP6, because of the likely path of interest rates. We note that the CMA's forward looking uplift (30 basis points) is lower than Ofwat's (para 10.92), but this is understandable given the comments from the Governor of the Bank of England that interest rates will remain lower for longer.

203. However, regarding forward uplifts, Ofwat has previously noted⁵¹ that there is unlikely to be a one-to-one relation between movements in the risk-free rate and the cost of debt because we would expect the impact of the unwinding of Quantitative Easing and Flight to Quality effects to be different on gilts than on corporate bonds. This view implies that unadjusted gilt forward rates may overestimate future rises in corporate bond yields. The CMA should give further consideration to the asymmetric impacts unconventional monetary policy may have on forward corporate bond yields relative to gilt yields.
204. Regarding the second approach, we note that the CMA's analysis which uses estimates of future real gilt costs directly from index-linked gilt yields is preferable to BRL's approach which is based indirectly upon nominal gilt yields. Furthermore, we note that the size of the WoC premia estimated by BRL will be biased upward due to the selection of class B debt comparators. Using a broader group of investment grade comparators would result in a narrower spread, and therefore we would encourage the CMA to view conservatively the size of the premia estimated using these class B comparators alone.
205. We note that Moody's credit rating for BRL is Baa1⁵², which is equivalent to equivalent to an S&P or Fitch rating of BBB+. The table of comparator bonds used by BRL (figure 8) contains BBB and Baa3 bonds which are one to two credit rating notches below that of BRL. We consider that this is likely to overstate the premium size.

⁵¹ Ofwat (2014), 'Setting price controls for 2015-20 - risk and reward guidance', pg.22,

⁵² <http://waterbriefing.org/home/company-news/item/10386-moodys-downgrades-bristol-water-credit-rating-from-stable-to-negative>

Figure 8 BRL bond comparators

Table 113 Selected comparator Class B sterling water bonds

Issuer	Coupon (%)	Legal maturity	Rating	Size (GBPm)	Benchmark	Issued	Current spread (bps)
Anglian Water	4.5	Feb-26	Baa3/BBB/BBB +	200	UKT 5% Mar 2025	Feb-13	175/165
Southern Water	4.5	Mar-38	Ba1/BBB/BBB	250	UKT 4% Mar 2022	Mar-13	198/188
Yorkshire Water	6	Jun-25	Baa3/BBB/BBB +	450	UKT 1.75% Jan 2017	Jun-10	174/169
Wales & West	6.75	Dec-36	NR/BBB/BBB	115	UKT 5% Mar 2018	Mar-10	172/152
Thames Water	5.375	Jul-25	Baa3/BBB/NR	550	UKT 1.75% Jan 2017	Jul-10	174/169
Thames Water	5.75	Sep-30	Baa3/BBB/NR	300	UKT 4% Mar 2022	Sep-10	185/180

Source: Bloomberg, RBS as of 20th February 2015

New and embedded debt cost split

206. We support the CMA's use of a 75%:25% split of embedded and new debt (para 10.109). This is consistent with a notional cost of capital and close to the industry average forecast for the 2015-20 period⁵³. Although BRL's potential new debt requirements might be slightly lower during the period, since capital structures are a choice for the company then there is nothing to stop BRL from taking on additional new debt in the period (while interest rates are low) and therefore reducing its overall debt costs. We therefore consider a 75%:25% ratio for embedded and new debt costs is appropriate.

Risk free rate

207. We support the CMA's use of a risk free rate of 1.25% consistent with our final determinations.

Equity market return and risk premium

208. We note that the CMA has used an equity market return of 6.5% - lower than the 6.75% used in our final determinations, but consistent with the CC/CMA's determination for NIE (and the value used in the energy market inquiry).

⁵³ In their business plans companies forecast an average split of 72% embedded debt and 28% new debt, see pages 19 and 20 of the risk and reward guidance.

Industry-wide asset beta

209. In estimating the asset beta for BRL, the CMA has looked at a range of estimation windows (2-year daily, 2-year weekly, 5-year weekly and 5-year monthly) for the three listed WaSCs (Pennon, Severn Trent and United Utilities). The estimates produced by each of these estimation windows were then averaged over one year, two years and five years, as well as the most recent single day figure being given (appendix 10.1, table 5). We consider that these asset beta estimates are overstated (for estimates without a Blume adjustment) as:

- They place reliance on asset beta estimates based on a short time period of observations;
- They place over-reliance on daily and weekly estimates at the expense of monthly estimates which the CMA has previously indicated are likely to be more reliable.

210. **Time period of assessment** - in previous determinations, such as BRL 2010 and NIE, the CMA has given more consideration to longer-term series of beta. For example, the CC's 2010 determination for BRL asset beta considered evidence for the period April 2000 to May 2010 (para 37, Annex 6). But in the CMA's Provisional Findings for BRL, the maximum period averaged for asset beta was just 5 years. So we encourage the CMA to review the longer-term evolution of asset betas as they have done in past determinations for BRL.

211. Additionally, we find that single-day estimates which only provide a snapshot from a single estimation window can be subject to one-off movements which do not reflect the underlying systematic risk of a company. As long-term data series are available for each of the three listed WaSCs analysed, we would encourage the CMA to remove single-day estimates from their beta assessment, placing more weight upon time series averages in their assessment of their water industry beta assessment as these are more reflective of underlying systematic risk.

212. **Use of daily and weekly beta estimates** - in the CMA's most recent approach in the Provisional Findings for the energy market investigation⁵⁴ (published three days prior to the Provisional Findings for BRL), the CMA only applies monthly and quarterly beta estimates.⁵⁵ The rationale for adopting this lower frequency beta methodology is provided by an academic study authored by Gilbert et.al.⁵⁶ In their

⁵⁴ CMA (2015), 'Energy market investigation – Provisional Findings report'

⁵⁵ We note that this followed the publication of an earlier paper on energy market asset betas in February 2015 which calculated asset betas on a similar monthly and quarterly basis.

⁵⁶ T. Gilbert, C Hrdlicka, J Kalodimos and S Siegal (2014), 'Daily data is bad for beta: Opacity and frequency-dependent betas', *Review of Asset Pricing Studies*.

energy market Provisional Findings (para 46, appendix 10.4) the CMA state that, “We have estimated these [betas] on both a monthly and quarterly basis. This approach follows the research findings of Gilbert et.al which show that monthly and quarterly betas are generally more reliable than those estimated on the basis of high frequency data, i.e. daily or weekly betas.” As the CMA has established a case for more weight being placed upon monthly beta observations in their energy market review, for regulatory consistency we would expect similar treatment in the review of BRL’s cost of capital. If the CMA did not place similar weights upon lower frequency beta estimates (i.e. monthly), they would need to justify the difference in treatment between the energy and water sectors.

213. Lastly, in paragraph 45 of Appendix 10, the CMA cites that Ofgem recently chose an asset beta of 0.38 within the RIIO-ED1 conclusions. However, this was initially proposed for the RIIO-ED1 price control, consistent with the 6.3% cost of equity that was being employed at the time. It is unclear whether this was the asset beta chosen for the final determination. Following a consultation on the methodology Ofgem employs when calculating the cost of equity, they revised their cost of equity down from 6.3% to 6.0%. However, Ofgem did not provide individual components for this estimate and so we cannot ascertain the final asset beta; only inferences can be made. For instance, the lower cost of equity estimate may have been arrived at through a combination of asset beta and total market return reductions. We suggest that the CMA clarifies this with Ofgem if it wishes to include the RIIO-ED1 asset beta in its findings.

Asset beta uplift

214. The CMA has applied an uplift to their industry asset beta range of 0.26 to 0.31. In estimating the magnitude of this uplift the CMA followed the same approach as CC (2010). This made an ‘operational gearing’ adjustment by considering the ratio of cash-flow from operations to revenue. Comparing BRL’s specific information to the average WaSC figure yielded an uplift of 13% to industry asset beta (appendix 10, para 65).

215. We continue to consider that there is insufficient evidence to justify an equity uplift for WoCs.⁵⁷

216. We consider the conceptual basis for this adjustment to be weak, with little empirical support and inconclusive market evidence. In addition to the points raised above regarding the issues of applying this measure to a multi-company framework, the CMA failed to address all evidence sources regarding WoC-WaSC risk differentials. We note that the CMA in the energy market inquiry does not

⁵⁷ PwC (2014), ‘Company specific adjustments to the WACC’

include a small company uplift, despite a number of the small energy generators and retailers being a similar size to small water only companies.⁵⁸

217. In paragraph 59 of Appendix 10 the CMA note that the points that we have previously raised regarding PwC's historic RoRE analysis. For the reasons that we have previously stated we continue to consider that this analysis does not accurately reflect historic returns and should not be used to draw conclusions on operational gearing. It is important to note that PwC did not use this chart to support an asset beta uplift. When discussing the chart PwC noted that 'There may be a number of reasons for this [the higher RoRE variations for WoCs shown in the charts] and it is difficult to apportion historical performance to individual types of risk. Our view, consistent with Ofwat in PR09, is that WoCs have greater specific risk, possibly due to a lower level of operational diversification or sensitivity to key business events (such as management team changes)⁵⁹. It should be emphasised that specific risks do not impact on the cost of equity (which is impacted by systematic risks) but do impact on the cost of debt (where we identified a higher cost of debt for small water only companies in the final determinations).
218. In paragraph 61 of Appendix 10, the CMA consider one of a number of the theoretical approaches considered by PwC for how operational gearing could be linked to systematic risk⁶⁰. In this scenario, PwC assumed revenues were fixed and operational costs exposed to systematic risk. PwC stated that in theory, this could lead to a countercyclical or negative beta. We note that at the time Oxera acknowledged this. PwC therefore stated⁶¹ that given the empirical evidence of a positive beta for the water sector, this illustration is not likely to be representative of the actual risks facing the sector.
219. This means that water companies must be exposed to some demand or revenue risk (the first PwC theoretical illustration), despite the use of the Revenue Correction Mechanism in AMP5 and previous price controls and the use of revenue controls in AMP6. Such demand risk could come from bad debt, industrial demand or long-term growth which is not fully borne by customers through the regulatory framework. The fact that observed betas are low suggests that any demand risk is small. In such a situation there is no case to suggest a positive impact on the cost of equity for WoCs.

⁵⁸ See paragraphs 90 and 91, Appendix 10.4: cost of capital, energy market inquiry

⁵⁹ Page 33, 'Company specific adjustments to the WACC'

⁶⁰ These scenarios are set out in the PwC reports, company specific adjustments to the WACC (pages 28 – 32) and company specific adjustments to the WACC: A review of company representations (pages 9 and 10)

⁶¹ See section 2.1.3, 'Company specific adjustments to the WACC'

220. It should be noted that this was just one conceptual scenario considered by PwC. The CMA do not set out objections to the other scenarios raised by PwC. The conclusion of PwC's report was that there was an inconclusive conceptual basis for any adjustment to the cost of equity. Due to this, PwC placed more weight upon empirical evidence consisting of three elements: valuation ratios; gearing evidence⁶²; and Dee Valley Water's beta.
221. We note that the CMA has identified a difference between WoCs and WaSCs in their preferred measures of operational gearing, but have not set out how such a difference in gearing would affect the cost of equity. For operational gearing to impact on the asset beta and cost of equity it must impact on the way the company's share price would move relative to the rest of the stock market. For the general economy, share prices tend to rise when economic growth is high (as demand, revenues and profits are likely to be higher) but will tend to fall when economic growth reduces (and therefore profits are likely to be smaller).
222. As set out above, water companies could be considered to have aspects that are countercyclical as revenues will not change with economic growth (apart from the impact through the retail price indexation), but operating costs can be higher as economic growth is likely to put upward pressure on real wage and energy costs. Water companies are not fully countercyclical given the evidence of positive betas (even without the Blume adjustment).⁶³ However we are unclear of the mechanism where differences in operational gearing that the CMA notes for water only companies could result in a higher beta (if the above logic is used, then betas for water-only companies could be lower because totex makes up a higher proportion of revenue).
223. We also note that the CMA does not set out the public comparators that it has used as a comparison with WaSC and WoC gearing. If these comparators are meant to be reflective of the stock market more generally then it is unclear why the logic for a higher beta for WoCs would hold. In particular, the analysis shows that WaSCs have similar operational gearing to the comparator companies but WaSCs asset betas (based on empirical evidence) are considerably below the average for the stock market of 0.7 to 0.8.
224. Although the CMA discusses the evidence regarding Dee Valley Water's beta in paragraph 60 of appendix 10, the appendix does not acknowledge evidence presented by PwC regarding market asset ratios. PwC's analysis showed that historically price to RCV ratios for WoCs have averaged 1.27x - higher than that of

⁶² See PwC (2014), 'Company specific adjustments to the WACC – A review of company representations'.

⁶³ We note that asset betas for water companies have in particular periods been negative if the Blume adjustment is not made.

WaSCs at 1.18x. This indicates that investors do not perceive higher risks in WoC assets relative to WaSC assets. The CMA's own analysis of the recent Bournemouth Water acquisition shows that current WoC valuations remain consistent with these historical values.

225. In addition, the CMA failed to acknowledge evidence regarding the levels of WoC and WaSC gearing. In PR09 Ofwat used a lower financial gearing assumption in the WACC for WoCs. This decision was supported by the differences in financial gearing in actual capital structures at the time (see the 2009 column in table below). WaSCs had, on average, actual financial gearing levels 10 percentage points higher than WoCs in 2009. This ordering has now reversed, with the average WoC having marginally higher financial gearing. For WoCs to be able to maintain relatively higher financial gearing levels, suggests that company management and the financial markets do not consider that WoCs face higher risks than WaSCs.

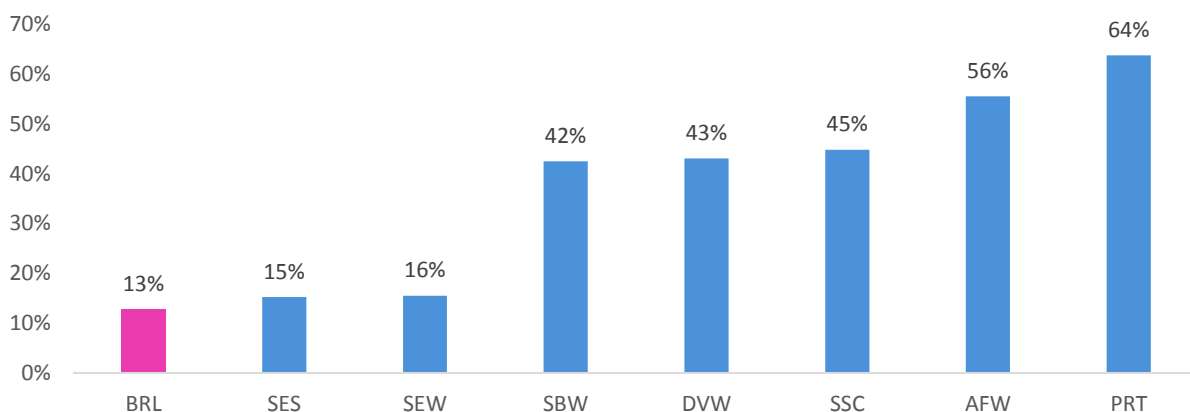
Table 10 Changes in financial gearing

Gearing (net debt / RCV)	2009	2014
ANH	90%	79%
WSH	73%	63%
SRN	95%	88%
TMS	74%	77%
YKY	66%	78%
NES	60%	61%
SVT	61%	64%
SWT	64%	56%
UU	68%	65%
WSX	71%	64%
WaSC Average	72%	70%
SEW	84%	81%
BRL	81%	71%
CAM	52%	-
DVW	65%	77%
PRT	76%	81%
SBW	55%	58%
SST	86%	-
SES	77%	76%
VWC	40%	-
VWE	23%	-
VWSE	46%	-
AFW	-	80%
SSC	-	64%
WoC Average	62%	74%

Source: Regulatory accounts

226. Notwithstanding the concerns raised above regarding the need for a WoC beta uplift, a review of the data the CMA used in estimating their asset beta uplift shows that the results from this approach can be extremely inconsistent on a multiple company basis. While this may not be important to the CMA in the context of BRL’s redetermination, it would be unhelpful to the ongoing regulation of the water industry if it could in any way be seen as a potential precedent.
227. As shown in Figure 9 below, using the CMA’s gearing measure, BRL actually has the lowest uplift out of all WoCs.
228. There does not appear to be a logical ordering to the results produced by this technique, for example, it would imply that Affinity Water would require an asset beta 0.12 higher than South East Water – both of which are large WoCs. Furthermore, even the average of the group would imply a very large risk differential between WaSCs and WoCs, a conclusion which is not supported by other empirical data (such as Dee Valley’s own equity beta).
229. This means that the CMA uplift methodology is unreliable and unworkable across a group of WOCs and therefore questions why the CMA consider this is a sufficiently robust basis to apply in the case of BRL, resulting in higher bills for customers.

Figure 9 Asset beta uplift implied by CMA methodology



Source: Ofwat final determination company specific appendices

230. Not only is this variation across companies difficult to interpret, it is also under the control of companies due to the new tools introduced at PR14. These allow flexibility over relative size of legacy RCV and greater flexibility on asset ownership versus contracting out. Collectively, these give greater control on the fixed cost exposure, and therefore reduce the requirement for the adjustment provisionally included by the CMA.

Wholesale adjustment

231. While the CMA has broadly agreed with our approach to adjusting the appointee WACC to a wholesale WACC, there are two specific points where we suggest that the CMA should consider revising its approach (paras 10.181 and 10.182).
232. Firstly, the CMA calculates a BRL specific adjustment for returns on replaced retail assets not added to RCV. This is estimated to be 3bps. However, this 3bps is deducted from Ofwat's retail return deduction expressed as percentage of RCV of 14bps. But this figure has already been adjusted at the industry level for the impact of new retail assets. Instead, the BRL specific adjustment of 3bps for new retail assets should have been subtracted from a base of 15bps - the retail return before any adjustments for replaced retail assets not added to the RCV.
233. The 15bps is estimated from Table 17 of PwC's report 'Updated evidence on the WACC for PR14'⁶⁴. The retail return before adjustments for 'retail assets not added to RCV' is £97m, which is 0.15% as a proportion of the £63,072 industry RCV. This revision avoids double counting the impact of new retail assets.
234. Secondly, the CMA has included working capital in their estimate of BRL's new retail assets. But the retail net margin applied by Ofwat was already sufficient to cover the costs of working capital.⁶⁵ Excluding the £1.4m working capital would reduce new retail assets to £2m. Applying this revision to the CMA's calculations yields an annual return of £74,000, equivalent to 2bps on the wholesale WACC.
235. Combining these two revisions results in a wholesale-appointee adjustment of 13bps.

⁶⁴ PwC (2014), 'Updated evidence on the WACC for PR14 – A report prepared for Ofwat'.

⁶⁵ See pages 31 and 32 of the risk and reward guidance where we undertook a cross check on the retail margin to ensure that it provided sufficient funds for working capital.

11. Our view of section 11 CMA report - Total allowed Bristol Water revenue and financeability

Our view

236. We support the balanced and sensible approach that the CMA has taken in respect of their assessment of whether the Provisional Findings for BRL is financeable.
237. In particular the financial ratios calculated for BRL are not out of line with the financial metrics calculated for the other water and wastewater companies all of whom have provided assurance that they are financeable (paragraph 11.25)
238. We note that the financial ratios for other companies published in our Final Determinations reflect the menu choices of those companies and that the CMA do not intend to use a menu in respect of their determination for BRL. For a sample of companies we have reviewed the impact of removing the companies menu choice on the financial ratios used for assessing financeability and have found the impact to be negligible. Therefore the inclusion or exclusion of the company's menu choice has no significant impact on our assessment of financeability and the comparisons which the CMA are using remain appropriate.
239. We are in agreement, as set out in our statement of case to the CMA that the assessment of financeability should be undertaken for a company with a notional capital structure and on the level of efficient costs that have been determined for the company. (paragraph 11.12).
240. We are pleased to note that the CMA, consistent the approach taken in CC10, have acknowledged the different approaches used by each credit rating agency and acknowledge that the financial metrics calculated by each credit rating are only one of a number of factors that they consider when determining whether a company is financeable. We previously provided the CMA (Section A3.3.2 of our Statement of Case) with reconciliations between the Ofwat calculations of financial metrics and alternative financial metrics which included some of the adjustments which certain credit rating agencies used and demonstrated that these are in line with the targets that BRL has stated that they need to achieve for them to be financeable.
241. The CMA has used an average PAYG rate of 55.3% and RCV run off rates which are consistent with the rates used by Ofwat at the final determination. The CMA has agreed that the PAYG rate used represents an appropriate natural rate. They note that the RCV run off rate is slightly above the natural rate, but acknowledged that consistent with the Ofwat methodology which allowed companies some

flexibility in setting these rates the RCV run off rate which was proposed by BRL is not unreasonable. In the Ofwat final determinations we increased the PAYG rate in the first year to allow BRL a glide path to achieve an efficient level of costs (see the BRL company specific appendix to Ofwat's final determination). We note that in the CMA's Provisional Findings the difference in totex in 2015/16 compared to the Ofwat final determination is relatively modest, however if the CMA determine that any additional increases in the totex for that year are appropriate then consideration will need to be given as to whether the initial year glide path is still appropriate.

242. Other than in 2015/16 where Ofwat allowed BRL an increase in its PAYG rate, the PAYG rates used by Ofwat are based on the submissions made by BRL in their business plan which have a declining profile. As highlighted in the CMA's Provisional Findings this increases the financial ratios at the start of the AMP at the expense of those at the end of the period. We note that this should not imply that that the financial ratios should be tight towards the end of the period as the PAYG rate could be reprofiled or the company could keep outperformance in the early part of the AMP to provide additional headroom at the end of the period.
243. In the Provisional Findings, the CMA suggests it had some concerns, in principle, about Ofwat's changes to regulatory depreciation and the RCV and the possibility of unintended consequences over the longer term. While we consider it important that companies have some flexibility, we expect companies to use these tools responsibly. As the CMA notes the PAYG and RCV run-offs rates were subject to Ofwat review which helps reduce the risk. We also note that it was not necessary for CMA to change the level of our FD14 intervention in case of BRL. Under a risk based approach our focus will remain to safeguard customers, including future customers, to support sustainable outcome delivery and affordable future bills. We are also undertaking forward looking work related to longer term outcome incentives which should help to mitigate such concerns.

Other issues

244. We note that since the preparation of the CMA's Provisional Findings the Chancellor has announced changes to the UK corporation tax regime which reduce the statutory corporation tax rate to 19% in April 2017 and 18% by 2020. The CMA may wish to take these changes into account in your final determination

Annex A: Response to the CMA’s Assessment of the Ofwat Econometric Models

245. This annex responds to the CMA’s assessment of Ofwat’s econometric models.

1. No disaggregation below wholesale water

246. The CMA states that using more disaggregated models may allow more accurate estimation of the relationship between expenditure and specific cost drivers and a greater number of costs drivers to be taken into account.

247. There are clear downsides from attempting to use expenditure for different parts of the value chain, particularly because of cost allocation differences across companies and trade-offs, which disaggregated models do not take into account, as discussed in CEPA (2013)⁶⁶. For example, a company may choose a water source further from the main area of demand because it has low treatment costs, which it uses to offset some of the extra transport costs of raw or treated water. Alternately it may choose multiple sources of raw water closer to centres of demand that are more expensive to treat but reduce its water transport costs.

248. Taken together these issues significantly undermine the case for disaggregated benchmarking. We also note that the above issues tend to differentiate wholesale water supply from other utility sectors such as electricity distribution, where a different approach may be appropriate.

2. Timing of investment needs

249. The CMA states that differences in expenditure requirements in a 5 year period may reflect differences in expenditure requirements at a point in time rather than relatively efficiency. We consider that our use of smoothed data and our broader approach involving special cost factor claims substantially mitigates these difficulties:

- the econometric models use a five-year rolling average to smooth out the “lumpiness” in capital expenditure. We considered that a longer rolling average was not appropriate due to the lack of robustness of the dataset prior to 2004-05 and the potential to place too much weight on earlier years with a different operating environment. This approach was tested based on the available data and following a review of the previous work undertaken by consultants and

⁶⁶ http://www.ofwat.gov.uk/pricereview/pr14/wholesale/rpt_com201301cepacostassess.pdf

academics in this field. It leads to more robust models than using unsmoothed data.

- We also considered special cost factor claims for very large projects not reasonably allowed for by our modelled allowances. All companies had the opportunity to make such special cost factor claims. We note that both Aqua Consultants and the CMA have supported our decision not to make allowances for Cheddar 2 reservoir.

3. Totex models that include enhancement.

250. The CMA notes that the totex models we used have limited scope to take account of the differences between companies in relation to their requirements for enhancement expenditure. The full variable totex model includes a wide range of variables, including in relation to growth and quality, which drive enhancement spending. Totex models were only also one component in our approach to enhancement benchmarking. The largest category of enhancement spending in the water sector relates to supply/demand enhancement spending. In our enhancement modelling we used a cost driver that explicitly takes account of the forecast water supply deficits deriving from Water Resource Management Plans, which appears both to be an appropriate cost driver and to reflect the circumstances of individual companies.

4. Counter-intuitive results

251. The CMA state that in a number of cases, the coefficients in our econometric models had counter-intuitive signs or magnitude. We have already noted that while the full model has a number of correlated variables (and hence the risk of multi-collinearity) it also guards against omitted variable bias. We were aware of the counter-intuitive signs and magnitude of certain coefficients but nonetheless were of the view that a model containing all the variables provided useful information on the companies' efficiency. Focusing on BRL, the full model gives it the highest allowance across the three streams (before the adjustment in respect of water treatment complexity).

252. Focusing on the refined models, we do not think there is a significant issue of counter-intuitive signs of the coefficients/drivers. Companies had the opportunity of making special factor cost claims if they did not consider the coefficients/drivers were appropriate for their circumstances – see for example the special cost factor adjustment for Southern Water relating to metering.

5. Ofwat recognised that its models did not work well for Bristol Water

253. In general the models worked very well for BRL, showing that its business plan was particularly inefficient relative to the other companies. The relative poor business planning processes adopted by BRL have now been confirmed by Aqua Consultants and the CMA's own modelling of base spending and supporting checks on both base and enhancement spending.

254. This is not to say that are models were perfect – hence the modelling and special cost factor adjustments we made to the modelling results for BRL. Nonetheless, in the wider context of the price review it is mis-leading for the CMA to suggest that 'Ofwat recognised that its models did not work well for BRL'⁶⁷ and we strongly reject this assertion. We also note that the CMA has made special cost factor adjustments to the results of its own modelling.

6. Number of explanatory variables

255. The CMA suggests that the high number of explanatory variables in the model contribute to risks of inaccuracy in the results. For the most part, the CMA's alternative models do not use fewer variables (or more degrees of freedom) than our refined variable models. There are advantages and disadvantages in the full variable model – there is a degree of multi-collinearity between variables but it guards against the risk of omitted variable bias. The refined models strike a reasonable balance between sample size and number of explanatory variables. As noted in the main text above we do not regard a degree of multi-collinearity as necessarily causing insurmountable difficulties for an econometric model.

7. Difficulty in interpreting the trans-log models and the relationship between costs and drivers

256. Also as noted in the main text, while we accept that there are complexities associated with trans-log models but these should not be exaggerated. Our base models had 12 explanatory variables compared to 11 to 13 variables for the CMA's preferred models. The smallest water company was able to develop special cost factor claim relating to the operation of the trans-log terms and demonstrated a good understanding of the operation of these models. The use of trans-log models is also a standard approach in the academic literature on cost function modelling.

⁶⁷ Paragraph 4.48b, CMA's Bristol Water Price Determination Provisional Findings, 10 July 2015

257. While we agree that it can be difficult to decompose some of the individual coefficients in the models due to the use of a translog specification this in itself does not mean that the models do not make sense from an economic and engineering perspective. Cobb-Douglas is a restrictive functional form and translog is preferred in the literature on cost function modelling to account for varying returns to scale. Both Pollitt (2011)⁶⁸ and Saal (2013)⁶⁹ argue that the most appropriate functional form to capture economies of scale is quadratic or translog with the latter being more prevalent in empirical studies. Taken together there is strong evidence for translog modelling – particular given the large variations in company size and density.
258. In terms of the counter-intuitive results, we consider there are reasons why there can be diseconomies of scale. For instance, the company in question may experience additional costs in serving particularly dense urban areas or in providing additional capacity.
259. We also note that statistical testing indicates that trans-log is strongly preferred to Cobb-Douglas.

8. Endogeneity.

260. The CMA's arguments around endogeneity appear to mainly relate to the full model (which includes leakage and quality variables) – as the variables in the refined models such as network length cannot be substantially influenced by management in the short term. Inclusion of leakage in the full model may mean we have rather understated the inefficiency of BRL, but there is no evidence that this has caused wider problems with our suite of models.

⁶⁸ Pollitt, Michael and Steven J. Steer. "Economies of scale and scope in network industries: Lessons for the UK water and sewerage sectors". *ESRC Electricity Policy Research Group*. University of Cambridge: June 2011.

⁶⁹ Saal, David et al. "Scale and scope economies and the efficient vertical and horizontal configuration of the water industry: A survey of the literature". *Review of Network Economics*. De Gruyter: 2013.

Annex B: 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