

**Bristol Water plc**

**A reference under section 12(3)(a)  
of the Water Industry Act 1991**

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**Report**

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Presented to Ofwat on 4 August 2010



## **Members of the Competition Commission who conducted the determination**

Laura Carstensen (*Chairman of the Group*)

Roger Davis

Richard Farrant

Professor Robin Mason

Edward Smith

## **Chief Executive and Secretary of the Competition Commission**

David Saunders

Material has been omitted from the text of this report pursuant to section 15(6) of Water Industry Act 1991. Omissions are indicated by the insertion of the symbol [✂] in the text.

# Determination on a reference under section 12(3)(a) of the Water Industry Act 1991

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## Glossary

## Summary

1. Bristol Water plc (Bristol Water) disputed the price determination that the Water Services Regulatory Authority (Ofwat) made on 26 November 2009. On 8 February 2010 Ofwat made a reference to the Competition Commission (CC). Under the terms of reference, we had six months to investigate and determine the adjustment factor 'K', which limits the price which Bristol Water may charge for supplying water for the period 2010–15.
2. Bristol Water is a subsidiary of the Spanish company Agbar, and is ultimately controlled by Suez Environnement. It is responsible for supplying some 1.1 million people in the Bristol area with clean water. It does not supply sewerage services.
3. We were required to make our redetermination in accordance with the principles set out in section 2 of the Water Industry Act 1991 (WIA 1991) which apply in relation to such determinations by Ofwat.<sup>1</sup> These are to: (a) further the interests of both existing and future water consumers (the 'consumer objective'); (b) secure that water companies properly carry out their functions; and (c) secure that they are able to finance those functions, in particular, by securing reasonable returns on their capital.
4. Ofwat's framework for determining prices can be summarized as: (a) a five-year price cap that is (largely) independent of actual operating costs over the period, and so encourages cost savings; (b) a regulatory capital value (RCV) that reflects what the company's owners have invested in the business, and on which they are permitted to earn a return equal to the cost of capital that Ofwat determines; (c) an asset management assessment (AMA) intended to ensure efficient capital maintenance, and a capital expenditure (capex) incentive scheme (CIS) that is intended to encourage realistic and well-evidenced capex planning; (d) an adjustment to reward companies which provide good quality of service, and penalize those that do not (known as the overall performance adjustment); (e) full periodic reviews every five years, including explicit efficiency challenges to both operating expenditure (opex) and capex; and (f) provision for interim determinations between these periodic reviews.
5. Since we were obliged to undertake a redetermination (rather than decide an appeal), we used the best data available to us, focusing on areas where Ofwat and Bristol Water disagreed. This involved using data updated from those used by Ofwat, and further information that Bristol Water supplied and our investigations produced. We assessed and built on the work undertaken by Bristol Water, Ofwat, and Bristol Water's 'Reporter' (an independent engineering consultant appointed by Ofwat to assess Bristol Water's proposals). We also appointed our own engineering consultants, Halcrow Management Services (Halcrow), to assist us.
6. We estimated Bristol Water's capex, opex and likely cost of capital over the next five years. We followed the parties in dividing capex into (i) base capex or capital maintenance, which is the investment needed to attain or maintain stable serviceability (as defined by Ofwat), and (ii) enhancement capex, designed to improve supply demand balance, resilience, or water quality above the statutory minimum.
7. The parties were sharply at odds with regards to capital maintenance: Bristol Water considered that it needed to make a step change in investment, particularly in mains replacement and relining, to maintain an aged system to protect customers' service

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<sup>1</sup>Section 12(3)(b) WIA 1991.

levels and to cope with significant predicted population growth. Ofwat, however, considered that Bristol Water had achieved stable serviceability, and could see no reason why Bristol Water's system should deteriorate below that level in the review period or the foreseeable future if it was not given the funds it requested.

8. Regarding specific capital maintenance proposals we decided that:
  - (a) We agreed with Ofwat's decisions to refurbish the Line of Works Aqueduct and to increase Bristol Water's meter replacement rate (items that Bristol Water did not dispute).
  - (b) There was an issue regarding water quality, due to increased corrosivity of raw water, leading to higher levels of iron sediment in some of the Bristol Water mains (including Shipton Moyne). Although the evidence we saw was insufficient to persuade us that the full relining that Bristol Water sought was necessary, we funded the scheme because the Drinking Water Inspectorate (DWI) had accepted an undertaking that made it a statutory requirement for Bristol Water to complete the relining.
  - (c) The levels of mains replacement that Ofwat had funded in its final determination were insufficient to ensure continued stable serviceability. We decided that an increased rate of 47.5 km a year was appropriate, in line with Halcrow's advice.
  - (d) Work needed to be undertaken at the Purton reservoir due to issues that had arisen since Ofwat's final determination, which we funded.
  - (e) Work also needed to be undertaken at Chew Stoke and we funded this too.
9. We considered the application of the AMA to Bristol Water. While we approved of a challenge system that reviewed the processes Bristol Water used in estimating its capital maintenance expenditure, we were concerned that it might have resulted in an excessive challenge to Bristol Water. In particular, Ofwat's methodology depended on double the difference between capital maintenance that Bristol Water proposed for this review period, and its actual expenditure in the last, and we thought that Bristol Water as a small company had a naturally 'lumpy' investment profile. Further, Ofwat had penalized Bristol Water for using a model to predict burst rates that we considered reliable. On reflection, we decided to assess several schemes outside the AMA, and allowed them as exceptional items (ie Victoria, Blagdon and Chew Stoke pumping stations, and work at Purton reservoir), as we thought that they were specific projects rather than general maintenance. However, we were aware that Ofwat was reviewing the AMA and we did not intend our treatment of the AMA in this case to set a precedent.
10. With regards to enhancement capex to improve supply demand balance, we:
  - (a) approved Bristol Water's plans to reduce leakage via active leakage control (ALC) and pressure management;
  - (b) approved Bristol Water's plans for preparatory work at Cheddar Reservoir (although we decided that land purchase need only proceed in the next review period);
  - (c) did not approve the Honeyhurst to Cheddar scheme to return Honeyhurst source to use, since we were not persuaded that this was necessary in this review period to ensure adequate supply demand balance;

- (d) increased Bristol Water's expenditure to allow for an increased rate of selective meter optants (based on the latest available data);
  - (e) did not approve Bristol Water's proposals for a smart meter trial, since we thought that this could be conducted most efficiently at an industry-wide level; and
  - (f) made some minor adjustments regarding new connections.
11. We assessed Bristol Water's proposed investment to enhance resilience. We noted Bristol Water's evidence regarding the Gloucester floods of 2007. However, we had concerns about the data and methodology used in Bristol Water's cost benefit analysis (CBA). We took into account the length of time that water supplies could reasonably be expected to last should particular assets fail, how many people might be affected as a result and the cost of putting mitigation systems in place. On this basis, we approved Bristol Water's plans for Victoria pumping station (although we treated this as capital maintenance) and Durdham Down, but not its Oldford, Tetbury or Southern resilience schemes.
  12. As we agreed with Ofwat's view of categorization of capital investment projects and the transfer of a number of schemes from quality to capital maintenance, there remained no difference between the parties when it came to quality enhancement capex. We considered how much capex efficiency could improve, and found that the 0.4 per cent a year target that Ofwat had set was the appropriate rate.
  13. Regarding Ofwat's CIS framework, we agreed with the principle that companies should have incentives to provide Ofwat with accurate projections of their capex. While we were less certain that they should be penalized for proposing schemes for which Ofwat saw no need (such as resilience schemes), we were satisfied that there was sufficient transparency about the CIS and sufficient opportunities for companies to abandon such schemes that we did not need to adjust Ofwat's determination in this regard.
  14. We adjusted Bristol Water's opex allowance over the review period when we were satisfied that costs would increase and that reasonable management action could not mitigate the effects of such increase. We recommended that Ofwat put in place a 'notified item' (NI) for items where we thought that costs might increase, but we were uncertain as to the amount or timing, and that management action could not mitigate such costs effectively. NIs allow the company or Ofwat to seek adjustment to prices between periodic reviews. We recommended NIs sparingly: they undermine the RPI + K formula by which prices are set by passing risk to consumers and reducing companies' incentives to manage costs.
  15. With regard to specific items, we found that:
    - (a) For pension-related items, Bristol Water should be funded to recover 90 per cent of the deficit in its defined benefit schemes (which are now closed) as at 31 December 2009 over a 15-year period, with ongoing service contributions being funded at 18 per cent of salary until 1 April 2011 and 24 per cent thereafter.
    - (b) Bad debts were likely to increase for reasons beyond Bristol Water's reasonable control despite having in place procedures to recover them. In particular, Bristol Water cannot disconnect non-paying domestic customers. Accordingly, we adjusted Bristol Water's bad-debt allowance (although by less than it requested) and recommended that Ofwat put in place an NI that it or Bristol Water could trigger.

- (c) For energy costs, Ofwat had made an adequate allowance, and Bristol Water had sufficient control over such costs for an NI not to be appropriate.
  - (d) For training costs we should make no opex adjustment, despite Bristol Water's claim that its costs would increase due to the high number of staff likely to retire over the review period. We considered that it should be able to manage this issue, and that this was a normal business risk.
  - (e) For abstraction charges, we should make an opex allowance, given the additional information we obtained from the Environment Agency confirming its forecast increases in charges.
  - (f) For Highways Agency inspection costs, we should make no allowance, as this small cost would adequately be captured by the RPI.
  - (g) Changes to water efficiency targets might amount to a new target (as claimed by Bristol Water but contested by Ofwat). However, these costs were within Bristol Water's reasonable control and could be mitigated by management action.
16. We made a small adjustment to operating costs following completion of certain quality schemes funded in the 2004 periodic review as base year costs were unusually low.
  17. We reviewed the opex efficiency target that Ofwat had set for Bristol Water, namely continuing efficiency improvement of 0.25 per cent a year and relative efficiency improvement of 0.92 per cent a year. We assessed the modelling that Ofwat had done to derive these figures, as well as alternative approaches proposed by Bristol Water and those used by Ofgem. We found Ofwat's targets reasonable and decided to use them in our determination for both base and enhancement opex.
  18. We saw no need to recommend that Ofwat make an NI for possible tax changes, but we did adjust the treatment of depreciation.
  19. We based Bristol Water's price cap on the revenue required by Bristol Water to cover its efficiently-incurred costs, including a return on its RCV. We considered that Bristol Water's return on its RCV should be equal to its expected cost of capital. We considered that a return below the cost of capital would not be consistent with our duty to secure that Bristol Water can finance the proper carrying out of its functions, while a return above the cost of capital would not be consistent with the consumer objective.
  20. We considered Bristol Water as a stand-alone company (notwithstanding its subsidiary status) since this is required in its licence, and over the five-year review period only.
  21. The cost of capital is a weighted average of the cost of debt and the cost of equity (which is the return required to induce the marginal investor to purchase shares in the business). We directly estimated Bristol Water's cost of existing debt, and applied benchmark data from the bond market to estimate the cost of new debt (taking into account yields on traded and recently issued bonds, together with expected trends in interest rates). For the cost of equity we used the capital asset pricing model (CAPM) as we considered that it is the best way to measure the returns required by shareholders. We estimated the cost of capital to be 5 per cent.
  22. We considered that we fulfilled our duty to secure that Bristol Water can finance the proper carrying out of its functions by determining appropriate capex, opex and a

reasonable cost of capital. However, since it is a condition of its licence that Bristol Water retains investment grade issuer status, before determining the price control we assessed whether our findings on capex, opex and cost of capital would prevent it from retaining such status. Starting with Bristol Water's existing gearing, we considered financial projections against target credit ratios that we considered to be consistent with an appropriate investment grade credit rating. In calculating Bristol Water's cost of capital, we assumed a level of gearing of 60 per cent that is somewhat below its current gearing of 69 per cent but which we thought Bristol Water could reasonably attain. We also thought that it was reasonable to expect that Bristol Water, as a company undertaking a substantial capital investment programme, may need to seek additional funding from its investors rather than to require customers to fund all such investment by increasing prices. On the basis of this assessment, we were satisfied that our determinations regarding capex, opex, and cost of capital were reasonable and that Bristol Water would be able to comply with its licence conditions.

23. The K we determined for 2010/11 matches that of Ofwat, since Bristol Water has already issued water bills. We smoothed K over the remaining four years to assist Bristol Water's customers, by avoiding the sharper increase in 2011/12 that an unsmoothed determination would have produced.

24. Accordingly, we determined that K should be:

<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>	<i>2013/14</i>	<i>2014/15</i>
0.60	3.90	3.90	3.90	3.80

25. We made some concluding comments regarding the determination process and methodology that Ofwat has established under the WIA 1991.

# Findings

## 1. The reference

- 1.1 Bristol Water plc challenged the price determination that Ofwat made on 26 November 2009. On 8 February 2010 Ofwat made a reference to us (see Appendix A). The reference provided six months for us to investigate and determine the adjustment factor 'K' for the period 2010–15, which limits the price which Bristol Water is able to charge for supplying water. We published provisional findings on 18 June 2010.<sup>2</sup>
- 1.2 Non-commercially-sensitive versions of written submissions from the main parties and third parties and summaries of hearings with third parties are on our website<sup>3</sup> along with other relevant documents. We cross-refer to them where appropriate.

## 2. Background

### *Bristol Water*

- 2.1 Bristol Water is responsible for the sourcing, treatment and distribution of water to a population of over 1.1 million people and businesses in an area of some 2,400 sq km encompassing the City of Bristol and the surrounding area.<sup>4</sup>
- 2.2 The geology of the Bristol Water Region is varied. It includes Devonian and Carboniferous rock and modern peat bogs. The Cotswolds Escarpment occupies the north of the Bristol Water Region. The Mendip Hills are the principal feature of the central section and the southernmost part is taken up by the Somerset Levels. Accordingly, Bristol Water has to deal with the varied geology and topography in its area which entails using several types of raw water sources and treatment processes and over 6,500 km of mains of varied types and sizes.<sup>5</sup> The following map shows Bristol Water's supply area.

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<sup>2</sup>[www.competition-commission.org.uk/inquiries/ref2010/bristol/provisional\\_findings.htm](http://www.competition-commission.org.uk/inquiries/ref2010/bristol/provisional_findings.htm).

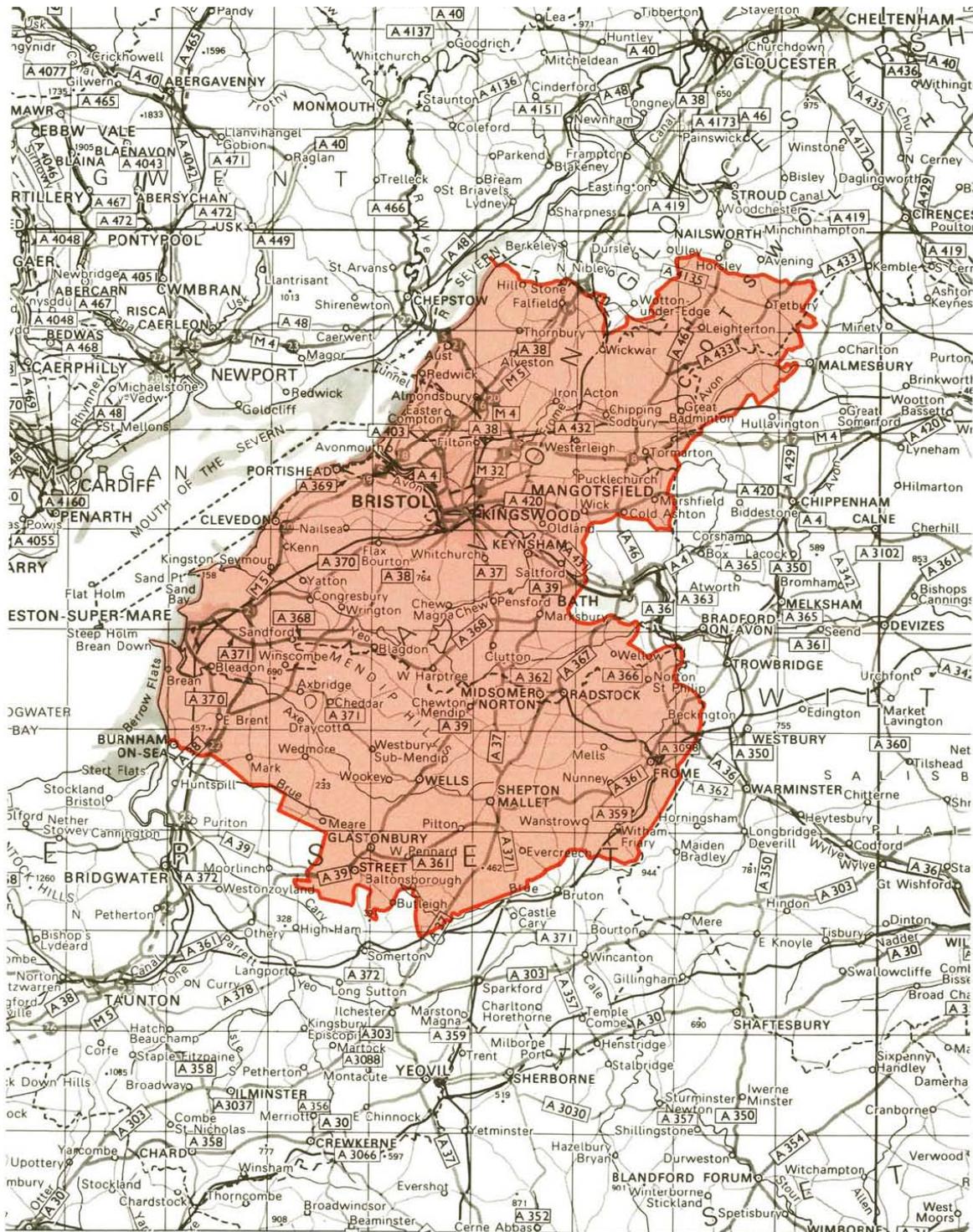
<sup>3</sup>[www.competition-commission.org.uk/inquiries/ref2010/bristol/index.htm](http://www.competition-commission.org.uk/inquiries/ref2010/bristol/index.htm).

<sup>4</sup>Bristol Water also has a small number of non-regulated activities.

<sup>5</sup>Bristol Water Statement of Case (SoC), paragraphs 3 & 188.

FIGURE 1

**Bristol Water's supply area (Scale 1:500,000)**



Source: Department of the Environment.

2.3 The Bristol Waterworks Company was incorporated as a statutory company by Act of Parliament in 1846. It originally focused on supplying Bristol with clean water and developed a number of raw water sources, including a reservoir at Barrow Gurney, and embarked on a programme of building the relevant distribution infrastructure. As demand grew, it began to supply surrounding areas. It also grew by acquisition, starting in 1952 with the takeover of the Portishead District Water Company.

Eighteen further local water undertakings, owned by a mixture of local rural and urban councils, were amalgamated into Bristol Water between 1952 and 1964.

- 2.4 In 1991, the Bristol Waterworks Company became Bristol Water plc, a subsidiary of Bristol Water Holdings plc. The shares of Bristol Water Holdings plc were listed on the London Stock Exchange until 2003, but a new holding company, Bristol Water Group plc, was created as part of a company reorganization and the shares of this company were admitted to the stock exchange in November 2003. In June 2006, all of the shares of Bristol Water Group plc were acquired by Sociedad General de Aguas de Barcelona SA (Agbar) at an acquisition cost of £170 million. It was renamed Agbar UK Ltd in 2009. Agbar is a water services company headquartered in Spain. It has over 20,000 employees, operating revenues of €3,108 million and profit of €235.3 million in 2008.
- 2.5 Suez Environnement, incorporated in France, holds 75.01 per cent of Agbar's shares and its partner in Spain, La Caixa, holds 24.03 per cent of Agbar's shares. Suez Environnement is a French utilities group with revenues of €12.3 billion in financial year 2009.

### **Statutory framework**

- 2.6 When the water industry in England and Wales was privatized in 1989,<sup>6</sup> existing statutory water companies<sup>7</sup> such as Bristol Water were appointed by the Secretary of State as 'water undertakers' (often referred to as water-only companies, or 'WoCs'). The instrument of appointment ('licence') specifies the geographic area in which the company is to supply water as a water undertaker<sup>8</sup> and imposes conditions of appointment on the company concerned.
- 2.7 A water undertaker has power to make charges for any services provided in the course of carrying out its statutory functions in relation to water.<sup>9</sup> These charges are capped under the terms of its licence. A water undertaker must ensure that the weighted average charges increase in any charging year (which starts on 1 April) when expressed as a percentage does not exceed its charges limit,<sup>10</sup> which is a percentage calculated as RPI+K+U (ie the percentage change in the RPI in the year November to the preceding November, plus the relevant Adjustment Factor 'K', plus unused price charges carried forward 'U'<sup>11</sup>).
- 2.8 The licence also provides for a review of the business of the water undertaking at five-yearly intervals (known as a 'periodic review') so that Ofwat can determine the appropriate Adjustment Factor K for the following five years.<sup>12</sup>
- 2.9 If the water undertaking disputes Ofwat's determination of K, following a periodic review, it can require Ofwat to refer the matter to the Competition Commission (CC) for redetermination.<sup>13</sup> This is what Bristol Water did.

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<sup>6</sup>By the Water Act 1989 (repealed); the relevant provisions as amended are now consolidated in the WIA 1991. Different arrangements apply in Scotland.

<sup>7</sup>That is, any company which was a statutory water company for the purposes of the Water Act 1973 (repealed) immediately before 1 September 1989: section 219(1) WIA 1991.

<sup>8</sup>Water undertakers (which provide water services only) are to be distinguished from the Water and Sewerage Undertakers (which provide both water and sewerage services) and from Licensed Water Suppliers, which supply water, taken from an undertaker's water supply system, to non-domestic premises under a section 17A WIA 1991 licence (provisions added by the Water Act 2003). Water and Sewerage undertakers are often referred to as WaSCs, ie water and sewerage companies.

<sup>9</sup>Section 142 WIA 1991.

<sup>10</sup>Condition B3.1.

<sup>11</sup>Condition B 3.2; see also Appendix A, Schedule 1 (Ofwat letter to Bristol Water setting out its final determination).

<sup>12</sup>Condition B1.2 and Part III.

<sup>13</sup>Condition B 15(3); section 12(2)(b) WIA 1991; see Schedule 2 to Appendix A (Bristol Water letter requiring the reference).

- 2.10 The CC must reach its redetermination in accordance with the principles set out in section 2 of the WIA 1991 which apply in relation to such determinations by Ofwat.<sup>14</sup> The primary principles relevant to this determination are to: (a) further the interests of both existing and future water consumers (the 'consumer objective');<sup>15</sup> (b) secure that water companies properly carry out their functions;<sup>16</sup> and (c) secure that they are able to finance those functions, in particular, by securing reasonable returns on their capital.<sup>17</sup>
- 2.11 Other relevant principles, subject to these primary principles, are: to promote economy and efficiency on the part of water companies; to secure that there is no undue preference or discrimination in the fixing of their charges; and to contribute to the achievement of sustainable development. In addition, the CC is required to have regard to the principles of best regulatory practice (including the principles under which regulatory activities should be transparent, accountable, proportionate, consistent and targeted only at cases in which action is needed).<sup>18</sup>
- 2.12 We refer to these principles as appropriate throughout this determination.

### ***The regulatory task***

- 2.13 To set K, we had to determine the revenue that Bristol Water needs over the period 2010 to 2015. Ofwat set its price cap using a common framework that it applied to 22 water companies.<sup>19</sup> This framework is described in Appendix B, and can be summarized as:
- (a) a five-year price cap that is (largely) independent of actual operating costs over the period, and so encourages cost savings;
  - (b) an RCV that reflects what the company's owners have invested in the business, and on which they are permitted to earn a return equal to the cost of capital that Ofwat determines;
  - (c) an AMA intended to ensure efficient capital maintenance and a CIS that is intended to encourage realistic and well evidenced capex planning;
  - (d) an adjustment to reward companies which provide good quality of service, and penalize those that do not (currently known as the 'overall performance adjustment');
  - (e) full periodic reviews every five years, including explicit efficiency challenges to both opex and capex; and
  - (f) provision for interim determinations between these periodic reviews.
- 2.14 Under the framework, the licensed business (in this case Bristol Water) is treated as a stand-alone entity and, as noted, the key step is to calculate the revenue it requires over the period of the price cap. Once the required revenue of the business has been

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<sup>14</sup>Section 12(3)(b) WIA 1991.

<sup>15</sup>Section 2A(a) WIA 1991.

<sup>16</sup>Section 2A(b) WIA 1991.

<sup>17</sup>Section 2A(c) WIA 1991. Before April 2005 the duty to protect the interests of customers had been subject to the duties to secure that the company (a) carried out its functions; and (b) was able to finance the proper carrying out of its functions. From April 2005, the new duty 'to further the consumer objective' is not subordinate to any other duty (see section 39 of the Water Act 2003).

<sup>18</sup>Sections 2(3) and (4) WIA 1991.

<sup>19</sup>Three of these are owned by Veolia and two by Northumbrian. There are also some other companies which are outside Ofwat's price-cap framework.

calculated, the revenue needed from the price cap can be calculated by subtracting projected revenue from non-price-capped customers (commercial revenue) and making certain adjustments.

- 2.15 The main factors affecting Bristol Water's required revenue (apart from its RCV at the beginning of the period) are the projections for the period of capex, opex, and cost of capital. These are the main building blocks of the price control. In addition Ofwat applied a number of adjustments, as part of a process designed to ensure that Bristol Water had incentives both to supply Ofwat with accurate projections and to be as efficient as possible.

### ***Our approach***

- 2.16 While we had discretion to choose another framework in determining the price cap, we found no reason to depart from Ofwat's framework (which is similar to those of other utilities and to those recommended by the CC for Heathrow and Gatwick).<sup>20</sup> There are also significant benefits associated with regulatory certainty. Bristol Water accepted the Ofwat framework in principle (although it challenged many aspects in detail). Accordingly, in this determination we adopted that framework. We assessed Bristol Water's objections to its application as part of our redetermination.
- 2.17 In determining K, we took account of the work undertaken during the process leading to Ofwat's final determination. Key steps included:
- December 2007, Bristol Water published its Strategic Direction Statement;
  - August 2008, Bristol Water submitted its Draft Business Plan to Ofwat;
  - December 2008, Ofwat published its draft CIS baseline
  - April 2009, Bristol Water submitted its Final Business Plan (FBP) to Ofwat;
  - June 2009, Bristol Water submitted its June Return 2009 to Ofwat;
  - July 2009, Ofwat issued its draft determination;
  - September 2009, Bristol Water submitted its comments on the draft determination to Ofwat; and
  - November 2009, Ofwat issued its final determination 2009 (FD09).
- 2.18 Additional steps included internal challenges within Bristol Water, and external challenges by the Reporter. The Reporter is an engineering expert (Ms WJ Staden) within a consultancy (Atkins Business Analysis) whose task is to review and challenge Bristol Water's business plans and to report to Ofwat her view of those plans. We refer to her report (and her view of certain proposals) as appropriate.
- 2.19 Accordingly we did not seek to start afresh, but rather to assess and proceed on the basis of this work. We engaged consultant engineers, Halcrow, to advise us in particular with regard to Bristol Water's capex proposals. We also used the best data available to us, which meant that in some cases we used data that had been updated

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<sup>20</sup>BAA Ltd: A report on the economic regulation of the London airports companies (Heathrow Airport Ltd and Gatwick Airport Ltd), presented by the Competition Commission to the Civil Aviation Authority 28 September 2007. [www.competition-commission.org.uk/inquiries/ref2007/heathrow/index.htm](http://www.competition-commission.org.uk/inquiries/ref2007/heathrow/index.htm).

since Ofwat's final determination, as well as information that Bristol Water had not provided to Ofwat or that our own investigation generated. We shared such information and data with the parties.

- 2.20 We included in our review of the price control imposed by Ofwat consideration of matters which were common ground between the parties, but focused more on the issues in dispute. We noted that Bristol Water's incentives were to submit the most compelling submissions on areas where it thought Ofwat had not made adequate allowances: it did not have the same incentives to emphasize issues where it thought Ofwat may have been generous. Bristol Water challenged a very large number of elements of Ofwat's final determination, some of which related to relatively small sums. In the interests of proportionality we paid most attention to those items that could have the greatest effect on K. Where appropriate we made findings that diverged from either party's position.
- 2.21 Competition is key to determining prices in non-regulated sectors. It is the lack of competition that is the reason for regulation and in these circumstances it is the regulator that determines prices. We found an analogy with competitive markets useful when considering items of opex (ie how a company would be able to behave in a competitive market), but we did not attempt directly to mimic prices that might prevail in a water industry where there was effective competition. Accordingly, at a high level, we considered that our task was to set prices that were in the best interests of current and future customers (which entailed ensuring that Bristol Water fulfils its functions and receives funds adequate to do so).
- 2.22 Both parties and the Consumer Council for Water (CCWater) provided us with surveys relating to customer attitudes towards the bills they pay (or might in future have to pay) for water. We saw two possible roles for survey evidence. First, to generate 'willingness to pay' data that can be used with confidence in a CBA (discussed in paragraphs 3.1 to 3.6 and Appendix C). Second, to provide a backdrop against which we can assess the acceptability to customers of possible increases in bills. Our view of the general surveys on customers' attitudes to prices that we reviewed (in Appendix D) was that their results meant that we should require strongly persuasive evidence to justify work that went beyond that needed to sustain stable serviceability (discussed in paragraphs 3.10 and 3.11). Conversely we saw no direct role for survey evidence where we were satisfied that costs were necessary to sustain stable serviceability.

### ***An initial question on financeability and incentives***

- 2.23 Bristol Water raised an initial question that it argued strongly throughout its submissions<sup>21</sup> that we consider at the outset, given its general applicability. Bristol Water stated that our duty to secure that it could finance its functions under section 2A(c) of the WIA 1991 meant that 'what is needed ... is a "subjective" approach, which takes the appointed company as it finds it and respects its financial structure'.<sup>22</sup> It said that section 2A(c) was concerned 'with that entity which the authorities have seen fit statutorily to appoint. It is the actual licensed-entity; not a nominal entity; not a differently-structured entity; nor a hypothetical "efficient water company"'.<sup>23</sup> Further, it said we must focus on 'practical affordability, capable of delivering the financing necessary to carry out the functions'.<sup>24</sup>

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21 [redacted]  
22 [redacted]  
23 [redacted]  
24 [redacted]

- 2.24 This issue arose most directly when we considered financeability (see Section 10), but was also relevant to how we applied the CIS, the AMA, and in assessing capex and opex. In each case, Bristol Water argued we should take central estimates of the costs that we considered it needed, and make a full allowance, ie our approach should be to secure Bristol Water's financing having regard only to its actual circumstances.
- 2.25 Ofwat told us that the structure that it had established under the WIA 1991 amounted to 'incentive regulation' designed to drive certain behaviour, in particular to give companies strong incentives to become more efficient and to reduce costs.<sup>25</sup> A system that took a company 'as is', without regard to its efficiency, past dividend policy, or gearing, and gave the company a rate of return (ie the cost of capital) on this basis, would not be able to provide financial incentives for Bristol Water to improve its performance.
- 2.26 We agreed with Ofwat that a framework that did not provide incentives for companies to carry out their functions properly would have undesirable similarities to a 'cost plus' system, since it would guarantee a company a return on capital regardless of how poorly it performed. Such a system would place insufficient pressure on a poorly performing company to improve. We did not think that this is what the WIA 1991 requires. Ofwat (and we) had to further the consumer interest and secure that the functions of a water undertaker and of a sewerage undertaker are properly carried out, and we considered that this required us to provide appropriate incentives to promote efficiency. We considered that our overall assessment of these issues allowed us to consider how current financial circumstances had arisen, not simply to accept them as a *fait accompli*.
- 2.27 Accordingly we considered that we had the discretion under the WIA 1991, which we exercised where appropriate, to make adjustments to financial assessments for the purpose of creating appropriate incentives, including critical evaluation of the assumed financial structure of Bristol Water. We have indicated where we have done this, and why, at the appropriate points in this determination.
- 2.28 The remainder of this determination assesses:
- Bristol Water's capex requirements (Sections 3 to 5);
  - its opex requirements (Sections 6 to 8);
  - the appropriate cost of capital and Bristol Water's financeability (Sections 9 and 10); and
  - how the costs of this determination should be allocated (Section 11).

Our findings are summarized in Section 12 while Section 13 contains some final comments.

### **3. The capital investment programme of Bristol Water**

#### ***Categories of capex and their appraisal***

- 3.1 We adopted the parties' categorization of capex into capital maintenance (or base capex), which is the capex needed to maintain Bristol Water's assets in the condition

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<sup>25</sup> [redacted]

necessary to deliver stable levels of serviceability (see paragraphs 3.10 and 3.11), and enhancement capex, which is capex to create new assets to deliver improved levels of supply demand balance, resilience, and water quality.<sup>26</sup> The categorization matters (and so was occasionally contested by Bristol Water) because it affected how Ofwat scrutinized, and the evidence it required to justify, capex proposals.

- 3.2 Ofwat told us that for base service (ie to provide stable serviceability) it took maintenance of current levels of service as the reference level, as it had not seen evidence that customers wanted to see any deterioration in service levels.<sup>27</sup> Accordingly, Ofwat did not subject base capex to an individual CBA (based on survey evidence of customers' willingness to pay), but rather used the AMA process (see paragraphs 3.46 to 3.65) as a means of challenging the efficiency of processes for incurring base capex).<sup>28</sup>
- 3.3 Equally, schemes to maintain supply demand balance at existing levels were not assessed via a CBA. Instead, companies had to demonstrate that the proposed investment represented the best value optimal solution (including consideration of options such as leakage control, water efficiency and tariffs) for balancing supply and demand.<sup>29</sup>
- 3.4 For quality enhancements, Ofwat did not expect companies to use CBA to challenge the need for the statutory requirements, but where there was discretion over the choice of solution each company should demonstrate that it had considered alternative options and that its choice of outputs minimized costs and maximized benefits.
- 3.5 However, where a company proposed an increase in service levels it had to demonstrate that its proposals were cost-beneficial. Typically, companies' CBAs would be based on survey evidence of customers' willingness to pay for enhanced services, but companies and Ofwat also made use of broader survey evidence assessing customers' views on the entirety of companies' FBP proposals, and also of Ofwat's draft determinations (see paragraph 2.22). In fact, Ofwat told us that no company had proposals for discretionary investment approved purely on the basis of CBA results.<sup>30</sup>
- 3.6 Bristol Water's use of CBA is discussed further in Appendix C. As we saw shortcomings in Bristol Water's use of surveys of customers' willingness to pay and its CBA, we have not relied on its CBA analysis when making our decisions. As noted, all capex is subject to the CIS (see Section 5).

### ***Introduction to Bristol Water's capex proposals***

- 3.7 Bristol Water told us that in previous price review periods its expenditure was focused on meeting drinking water quality standards and, during PR04, delivery of a major resilience scheme. Expenditure on growth and balancing supply and demand had been constrained because of low population growth forecasts and declining industrial demand. Expenditure on maintenance had aimed to extract maximum value from existing assets and to minimize the impact on bills. Bristol Water said that Ofwat had further reduced the level of funding in setting prices for PR04. According to Bristol Water, there had been a steady erosion of the capability and capacity of its

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<sup>26</sup>Ofwat response to Bristol Water SoC, Annex D, paragraph 1.1.

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<sup>28</sup>Although 'exceptional items' may be removed from this process.

<sup>29</sup>[www.ofwat.gov.uk/pricereview/prs\\_web\\_dftwatresplans](http://www.ofwat.gov.uk/pricereview/prs_web_dftwatresplans).

<sup>30</sup>

asset base over successive price review periods. It therefore considered that much higher levels of investment were now required to safeguard services to customers<sup>31</sup> and to address projected population growth.<sup>32</sup> Bristol Water said that its investment per property had been less than two-thirds of the industry average over the past 20 years.<sup>33</sup>

- 3.8 Ofwat denied that there had been historic under-investment. It told us that at price reviews every five years, it assessed each company's outputs in recent years and its plans for future maintenance. Price limits were then set at a level (the 'reference level') that Ofwat believed funded sufficient maintenance of the asset systems—'serviceability'. Ofwat requires each water company to maintain (or achieve and maintain) stable serviceability as a minimum standard.<sup>34</sup> According to its most recent review in 2008/09, Bristol Water had maintained such stable serviceability.<sup>35</sup> While alert to the consequences of catastrophic failure, Ofwat told us that serviceability tended to decline slowly.<sup>36</sup> Accordingly, companies need to justify step changes in capex (such as Bristol Water proposed).
- 3.9 We describe and assess Bristol Water's plans regarding capital maintenance and enhancement capex in the following sections. An overview of Bristol Water's capex proposals is in Appendix E.

## **Capital maintenance**

### *Stable serviceability*

- 3.10 Ofwat measures serviceability by reviewing the trend in the number of actual incidents on the companies' networks, such as regulatory compliance failures at water treatment works for above-ground assets, and burst water mains for under-ground assets. The reference level of service is determined from a specific subset of public health, environmental and customer service indicators.<sup>37</sup> Unless demonstrably sub-optimal or atypical, the reference levels of service and asset performance are set as the best historical levels achieved by the company.<sup>38</sup>
- 3.11 Detailed indicators for stable serviceability are set out in Ofwat's report on water company performance 2008–09.<sup>39</sup> At a high level they are to maintain assets fit for purpose, to comply with statutory standards, to deliver other defined service levels, and to deliver the 2010–15 enhancement programme throughout the period 2010–15 and beyond.

### *Bristol Water's proposals*

- 3.12 In the PR04 period (ie the period following Ofwat's 2004 periodic review), Bristol Water spent £94.9 million maintaining stable serviceability. For PR09, it proposed to

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<sup>31</sup>Bristol Water SoC, paragraph 535.

<sup>32</sup>Bristol Water SoC, paragraph 536.

<sup>33</sup>Bristol Water SoC, paragraph 685.

<sup>34</sup>*Service and delivery—performance of the water companies in England & Wales 2008–09*, p26.  
[www.ofwat.gov.uk/regulating/reporting/rpt\\_los\\_2008-09.pdf](http://www.ofwat.gov.uk/regulating/reporting/rpt_los_2008-09.pdf).

<sup>35</sup>Ofwat response to Bristol Water SoC, Annex D paragraph 2.1.2.

<sup>36</sup>[X]

<sup>37</sup>Service indicators reflect the degree of compliance with statutory regulations, regulatory and company standards and customer preferences. Asset performance indicators, measured at system level, are drawn from a specific subset of measures that inform current and future levels of service.

<sup>38</sup>*Service and delivery—performance of the water companies in England & Wales 2008–09*, p65.  
[www.ofwat.gov.uk/regulating/reporting/rpt\\_los\\_2008-09supinfo.pdf](http://www.ofwat.gov.uk/regulating/reporting/rpt_los_2008-09supinfo.pdf).

<sup>39</sup>*Ibid*, p66.

spend £130.9 million on capital maintenance,<sup>40</sup> an increase of £36.0 million. The undisputed elements of this proposed expenditure related to:

- (a) Line of Works Aqueduct. This is a raw water main over 17 km long that carries water from springs at Chewton Mendip in the Mendip Hills for treatment at Barrow Treatment Works. Following a detailed internal inspection, Bristol Water identified numerous lengths as being in poor structural condition. Their refurbishment would cost £9.0 million in the PR09 period; and
- (b) a £3.5 million scheme to increase the meter replacement rate based on age, following Bristol Water's analysis that the optimal age at which to replace meters is 13 years.<sup>41</sup>

3.13 Ofwat and Bristol Water agreed on expenditure for these two items, and Ofwat treated them as exceptional and so outside the AMA (see paragraph 3.46). We considered their submissions on these two items, thought that they were reasonable, and so found that these sums should be funded as Ofwat determined.<sup>42</sup>

3.14 The proposed expenditure also related to:

- (a) a trunk mains relining scheme including the Shipton Moyne–Tolldown main;
- (b) mains renewal, including the Axbridge–Barrow raw water main planned overlap programme;
- (c) Purton raw water reservoirs; and
- (d) Chew Stoke,

which Ofwat either disallowed in whole or part. We assess these four items in turn.

### *Trunk mains relining scheme including Shipton Moyne to Tolldown*

#### *The project*

3.15 Bristol Water proposed to spend £23.8 million on trunk mains relining, while Ofwat provided £15.9 million in its final determination (after the AMA challenge). Bristol Water stated that corrosivity of raw water from its reservoirs had been increasing, in turn increasing the rate of corrosion of the trunk mains (since most are made of iron). This was leading to higher levels of iron sediment in trunk and distribution mains, discoloured water complaints, and failures against regulatory quality standards.<sup>43</sup> Bristol Water identified 58.6 km of trunk mains of greater than 300 mm diameter whose condition (coupled with the increased corrosivity) was leading to failures of the iron quality standard and to discoloured water complaints from customers, meaning that these lengths of main should be replaced. It considered that the large diameter of the trunk mains precluded any form of cleansing.<sup>44</sup> The majority of these mains (37.4 km) are supplied from Barrow treatment works. Shipton Moyne Treatment Works feeds into 19.7 km with the remaining 1.5 km fed with a mix of water from

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<sup>40</sup>Although we did not accept Bristol Water's categorization of all this proposed capex.

<sup>41</sup>Bristol FBP, Part B3, p132—based on a replacement age of 13 years, all meters currently installed prior to 2002 will need to be replaced by 2015. Taking into account planned replacement of 6,000 meters in each of 2008/09 and 2009/10 the required number of customer meter replacements over this review period is 63,439. The anticipated cost of replacing these meters is £3.5 million.

<sup>42</sup>'Funded' means that we have used the sums in the modelling to calculate K.

<sup>43</sup>Bristol Water SoC paragraph 320.

<sup>44</sup>Such as flushing or ice pigging, a process by which ice slurry is forced down pipes to clean them.

Littleton and Purton Treatment Works.<sup>45</sup> Bristol Water considered that expenditure on this counted towards water 'quality'.

- 3.16 The Reporter supported Bristol Water's view on the extent of the overall relining scheme required but not on its allocation to Quality.<sup>46</sup> In respect of the Shipton Moyne-Tolldown main, the Reporter supported the inclusion of the mains in the relining programme, but was not convinced that the iron quality failures related to all of the mains and considered that it might be a localized problem. She suggested that Bristol Water needed to investigate the issue further with regard to certain lengths before committing itself to relining the whole system.<sup>47</sup>
- 3.17 Ofwat, however, considered that mains relining should be transferred to capital maintenance. It funded £10.6 million as an exceptional item within capital maintenance and challenged the remaining £6.9 million through the AMA assessment. This resulted in a figure of £5.3 million,<sup>48</sup> which together with the £10.6 million 'exceptional item' produced Ofwat's total allowance of £15.9 million. It said that the £6.9 million represented its view of the structural benefit of the scheme, and that it believed that the ongoing maintenance of trunk mains should be targeted effectively and efficiently as part of Bristol Water's day-to-day maintenance activities and that it would expect future maintenance of the trunk mains to be assessed as part of the main body of capital maintenance expenditure.<sup>49</sup>
- 3.18 Ofwat transferred the Shipton Moyne to Tolldown relining (with a cost of £6.3 million) to capital maintenance and excluded it entirely from price limits as Ofwat believed that there was a more cost-effective solution, namely targeted mains rehabilitation or mains flushing. It said that this was funded within overall capital maintenance infrastructure expenditure and no specific allowance was required.<sup>50</sup>
- 3.19 Halcrow assessed this issue and considered that more investigatory work was necessary to reach a conclusion on the most cost-effective solution to this issue,<sup>51</sup> a view that appears to be consistent with the Reporter's appraisal.

#### *The DWI Undertaking*

- 3.20 The DWI supported the Shipton Moyne scheme as proposed by Bristol Water (ie relining of the full length). Its statutory remit requires it to secure drinking water quality, but it told us that it was also interested in the solutions that deliver the outcomes and that it challenged the water companies on these during PR09 in respect of the sustainability of the solutions proposed and their cost-effectiveness.<sup>52</sup>
- 3.21 Ofwat told us that it was the DWI's task to ensure water quality, but it was up to Ofwat (and the CC in this determination) to determine the most cost-effective solution to the water quality problem identified. It was inappropriate for the DWI to take on this role, for which it did not have appropriate economic and engineering resources.<sup>53</sup>

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<sup>45</sup>Bristol Water SoC, paragraph 321.

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<sup>48</sup>Bristol Water SoC, section F.4.2.4, Table 51.

<sup>49</sup>

<sup>50</sup>Annex D of Ofwat response to Bristol Water SoC—paragraphs 2.6.3 & 2.6.4.

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- 3.22 Nonetheless the DWI accepted a ‘Section 19 Undertaking’ from Bristol Water on 15 June 2010 that requires Bristol Water to remedy the problem by relining the entire main by 31 March 2015 (see Appendix F).<sup>54</sup>
- 3.23 Ofwat told us that Section 19 Undertakings could be and have been modified in the past, leading to a subsequent logging down of capex. Bristol Water accepted this, but told us that right now, it was obliged to implement the scheme as specified in the Undertaking, regardless of any possible future modification.

#### *The CC’s finding*

- 3.24 We noted the DWI’s support for the scheme and that Bristol Water had signed a legally binding undertaking with the DWI in relation to this scheme.
- 3.25 The evidence we saw did not persuade us that the relining was the most cost-effective solution to the undisputed problem: in our provisional findings, we stated that further investigations should be carried out to ensure that the most cost-effective solution was identified.
- 3.26 We noted Ofwat’s submission that section 19 Undertakings may be amended. However, we concluded that we must accept that the Undertaking Bristol Water had given amounted to a statutory requirement under s.19(2) of the WIA 1991 that we must comply with under s.2(7) of that Act. We therefore allowed £6.3 million for this scheme, and agreed with Ofwat that any investment needed should be considered as capital maintenance, rather than enhancing quality. We treated it as an ‘exceptional item’ outside the AMA, since it was a specific scheme that we were obliged to fund. We comment further on this chain of events in Section 13.

### *Mains renewal including the Axbridge–Barrow raw water main planned overlap programme*

#### *The project*

- 3.27 Bristol Water’s FBP included capex of £63.5 million for mains replacement. It stated that this was equivalent to a replacement rate of 1.0 per cent a year. Bristol Water considered that the level of mains replacement Ofwat funded in FD09 was likely to lead to an increase in the number, frequency and severity of mains bursts. This would result in a poorer service for customers, greater leakage and likely a higher funding requirement in future price control periods than would otherwise be the case.<sup>55</sup>
- 3.28 The Reporter supported Bristol Water’s proposal, finding it appropriately and well justified, and disagreeing with Ofwat’s view that mains replacement could be better targeted.<sup>56</sup> She was satisfied that Bristol Water’s modelling was robust (since it had accurately predicted the burst rates that had occurred after 2003) and responded to trends in observed data. She said that the company had targeted the ‘burstiest’ mains, but that as a result, the amount of benefit in terms of burst rates that Bristol Water achieved was reducing. Increased rates of replacement would be needed in

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<sup>55</sup>Bristol Water SoC, paragraph 790.

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future as eventually the balance would tip in favour of age-based degradation,<sup>57</sup> and result in an increase in burst rates.<sup>58</sup>

- 3.29 Ofwat disallowed £19.7 million of mains replacement expenditure through the 'exceptional item' process for capital maintenance (ie on a case-by-case basis outside the AMA challenge process)<sup>59</sup> and stated that 'We note that both burst mains and distribution losses are stable with the renewal activity achieved in [Asset Management Plan 4]'. It had doubts about Bristol Water's model and assumptions (see further Appendix E on Capex). In particular, Ofwat still saw Bristol Water's model as a 'black box' since it did not understand how the model worked, nor why it predicted significantly higher rates of deterioration than other company analysis.<sup>60</sup>
- 3.30 Ofwat said that Bristol Water's network largely comprised cast iron mains. Age is one of a number of explanatory measures of the degree of exposure to deteriorating agents. Compared with the national data set, Bristol Water's mains (predominantly, but not exclusively, cast iron) seem to be fairly robust against exposure to deteriorating agents and performing relatively well, considering their age. It stated that cast iron mains deteriorated slowly as they aged, with burst rates increasing gradually between 60 and 90 years old. Ofwat said that Bristol Water had not explained why there should be the rapid change in deterioration that Bristol Water was claiming at this point in the life cycle of its mains network.<sup>61</sup> Responding to our provisional findings, it told us that in the previous period, Bristol Water had moved from a 'marginal' to 'stable' serviceability, despite rehabilitating less mains than Ofwat had funded.<sup>62</sup>

#### *The CC's finding*

- 3.31 This was a significant issue (given the sums at stake) where the parties were substantially at odds. Bristol Water told us that:

in the same way that an old car becomes increasingly unreliable and expensive to maintain with age, the asset base needs an increased level of investment to ensure no overall deterioration in performance, reliability and serviceability to ensure continuity of customer service and the meeting of enforced regulatory standards.<sup>63</sup>

Ofwat, however, was satisfied that Bristol Water had achieved stable serviceability, and had seen no compelling reason why the future should differ so significantly from the past: cast iron pipes deteriorate only slowly.

- 3.32 Halcrow assessed Bristol Water's model (known as 'ELLEN'), and considered that it could produce satisfactory predictions of burst trends in the short term.<sup>64</sup> Halcrow produced predictions of burst rates and leakage under various replacement rates. While it did not make a specific recommendation to us, it considered that a replacement rate of between 45 and 50 km a year would be required to maintain stable serviceability in terms of the number of bursts serviceability indicator, with a

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<sup>57</sup> [REDACTED]

<sup>58</sup> [REDACTED]

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<sup>60</sup> [REDACTED]

<sup>61</sup> [REDACTED]

<sup>62</sup> Ofwat response to CC provisional findings, paragraph 2.4.8.

<sup>63</sup> [REDACTED]

<sup>64</sup> The model was based on historic and current burst rates for individual pipe sections, gave future projections based upon past trends for each section, and within the time frame of this review period, the type of asset replaced would remain largely unchanged (so that the future would not be different from the past in this respect). Halcrow comment dated 27 May 2010 on Ofwat and Bristol Water submissions on Halcrow report.

reasonable level of confidence. It considered that Ofwat's allowance of 37 km would present a serious risk to Bristol Water maintaining a stable serviceability rating.<sup>65</sup> It considered that Bristol Water's proposed replacement rate would be expected to lead to an improving future rate of bursts.

- 3.33 Halcrow also noted that Bristol Water's Ofwat target value for bursts was low within the industry. It suggested that tolerating a higher level for bursts could be considered as an alternative to increasing the length of mains requiring relining, although this might affect several serviceability measures (such as bursts, unplanned interruptions to supply, and leakage).<sup>66</sup>
- 3.34 Both parties had concerns with Halcrow's report, but we agreed with Halcrow's view that an enhanced rate of replacement was necessary, in the range of 45 to 50 km per year. For the purposes of calculating costs, we therefore decided that we should fund a rate of 47.5 km a year.
- 3.35 We noted Bristol Water's claim (disputed by Ofwat) that this might be insufficient for Bristol Water to meet its current leakage targets. Halcrow thought that the risk level was reasonable and manageable through optimum targeting of mains rehabilitation.<sup>67</sup> As noted by Bristol Water, Ofwat may adjust targets for individual companies, and accordingly it may consider if it is appropriate to do so for Bristol Water.

### *Purton raw water reservoirs*

#### *The issue*

- 3.36 After Bristol Water finalized its business plan, it identified additional work costing £[redacted] million at Purton raw water reservoir to address a high level of leakage, which did not commence until after the FBP was completed.
- 3.37 Ofwat did not include the expenditure in the FD09 because it considered Bristol Water's failure to include the work in the FBP, before the leakage had occurred, indicated an inadequacy in Bristol Water's business planning approach.<sup>68</sup> It told us that there had been problems at the reservoir in 1995, 1996, 2005 and 2007, which suggested that the event may have been foreseeable.<sup>69</sup> It did, however, accept that there was new information, but making an allowance would rebalance the risk the company faced, which should be reflected in, for instance, its cost of capital.<sup>70</sup>
- 3.38 Halcrow considered that remedial works for Purton Reservoir were necessary in order to comply with the Reservoirs Act. However, it noted that a solution had not been fully appraised and that costs were outline costs (although they were a reasonable reflection of the scale of works required). It considered that further scrutiny of the costs and the scope was required to gain assurances over their accuracy and reliability.<sup>71</sup> Halcrow did not think that the need for additional work at Purton was reasonably predictable or should have been foreseen by Bristol Water earlier in the process.<sup>72</sup>

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<sup>65</sup>[redacted]

<sup>66</sup>[redacted]

<sup>67</sup>[redacted]

<sup>68</sup>Bristol Water's SoC paragraph 692.

<sup>69</sup>[redacted]

<sup>70</sup>[redacted]

<sup>71</sup>[redacted]

<sup>72</sup>[redacted]

### *The CC's finding*

- 3.39 We noted Ofwat's submission regarding predictability of the Purton Reservoir leak, and the rebalancing of risk should companies appeal on the basis of new information, as well as the history of problems at the reservoir that Ofwat reported. However, our view was that the best information currently available indicated that the work needed to be done in order to maintain the condition of the asset and that it should proceed.
- 3.40 Accordingly, we found that we should fund this scheme, and treated it as an exceptional item assessed outside the AMA. However, Bristol Water claimed a significant sum, and we considered that such claims should be supported by detailed and reliable information. Since the costings provided were based on an estimate from a single contractor, we decided not to fund the full amount claimed by Bristol Water, but to provide an amount of £[redacted] million (ie the amount remaining following a challenge of 10 per cent).
- 3.41 Ofwat told us that when it reaches the point at the next price review when it 'trues up' the CIS, it will make sure that the capital costs and financing costs associated with this scheme are included in the CIS. Ofwat considered it important to scrutinize such costs to ensure that only efficient costs, reasonably attributed to the outputs, are recovered.<sup>73</sup> We agree, and have funded the Purton scheme on this basis.

### *Chew Stoke*

- 3.42 After Bristol Water finalized its business plan, it identified additional work costing £ million at Chew Stoke to address additional capex requirements.<sup>74</sup> Ofwat did not fund this work, as it had seen insufficient evidence to appraise the scheme.<sup>75</sup>
- 3.43 Bristol Water did not provide us with evidence regarding why the additional work at Chew Stoke was required and how the £[redacted] million proposed capex requirement was calculated in its SoC, although it did provide more information in response to our provisional findings and to Halcrow.<sup>76</sup>
- 3.44 Bristol Water told us that it had deferred the Chew Stoke scheme from 2009/10 (and that over the previous five years it had spent £3.2 million less on pumping stations than Ofwat had allowed at the previous periodic review).<sup>77</sup> We were concerned that, if we included the scheme in projected capex for Asset Management Plan (AMP) 5, it would be double counted in Bristol Water's RCV (once in 2009/10 projected capex and again in projected capex for AMP5). We ensured this was not the case by basing RCV on Bristol Water's actual 2009/10 capex. We also noted that a company's actual capital maintenance spending during the previous period is taken into account in the AMA challenge process (see paragraph 3.54).
- 3.45 We received reassurance from Halcrow that this work was necessary. Accordingly, we have provided £[redacted] million for this scheme (which excludes an amount of 10 per cent that Bristol Water had included as a general contingency), and treated it as an exceptional item assessed outside the AMA, which means that Bristol Water must deliver this scheme in this review period, or this sum will be logged down. See further paragraphs 3.46 to 3.65.

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<sup>73</sup>Ofwat response to CC provisional findings, paragraph 2.1.7.

<sup>74</sup>Bristol Water reply to Ofwat's response, paragraph 226.

<sup>75</sup>Ofwat response to Bristol Water SoC, paragraph 2.4.6.

<sup>76</sup>[redacted] Water comments on provisional findings, section 6, paragraphs 11–22 [redacted].

<sup>77</sup>[redacted]

## The Asset Management Assessment process

### The process and Bristol Water's objections

3.46 Ofwat aims to ensure that companies incur capital maintenance costs efficiently. While it examines individual projects, and has put in place the Reporter to give it assurance regarding individual engineering assessments, it has also established the AMA process. This challenges general capital maintenance expenditure by considering the quality of companies' asset management and planning processes rather than by examining each investment component.<sup>78</sup> Ofwat first assesses and scores each company's asset management and planning processes and then applies the resulting AMA score to the company's capital maintenance expenditure baseline in four steps by:<sup>79</sup>

- (a) adjusting the figures for transfers and 'two-sided' adjustments;<sup>80</sup>
- (b) removing exceptional items, which are assessed separately outside the AMA process. Ofwat defines 'exceptional items' as items where:
  - (i) the expenditure is not typical and is a step change from recent historic expenditure;
  - (ii) the investment delivers benefits that other regulatory indicators would not detect or there is a discrete output in addition to serviceability parameters;
  - (iii) they have defined outputs, activities or operational cost savings associated; or
  - (iv) the business case might be more appropriately assessed independently of the AMA;<sup>81</sup>
- (c) determining the expenditure subject to AMA challenge. This is twice the uplift amount (the difference between 2005–10 expenditure and the proposed expenditure, as adjusted in steps (a) and (b)); and
- (d) calculating the reduction or increase in capital maintenance expenditure allowance ('the challenge amount') in accordance with the formula:

$$\text{Challenge amount} = (\text{AMA score} - 4) \times 25\% \times \text{Expenditure subject to challenge.}$$

3.47 The process is set out in more detail in Appendix G. As a result, Ofwat reduced Bristol Water's funded capital maintenance expenditure by £21.5 million in its final determination.

3.48 Bristol Water stated that it 'does not believe that Ofwat's application of the AMA process has resulted in an appropriate assessment of Bristol Water's capital maintenance processes nor its maintenance needs'.<sup>82</sup> It challenged the process on several grounds,<sup>83</sup> but in particular because the challenge process had no

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<sup>78</sup>In this respect it is similar to statutory financial audits in which internal controls and business processes are evaluated to provide confidence in the accuracy of the accounts.

<sup>79</sup>The process is set out in Appendix A of PR09/23.

[www.ofwat.gov.uk/pricereview/pr09phase2/pr09phase2letters/ltr\\_pr0923\\_amabaselinesettingannex.pdf](http://www.ofwat.gov.uk/pricereview/pr09phase2/pr09phase2letters/ltr_pr0923_amabaselinesettingannex.pdf).

<sup>80</sup>See paragraph 5.4 for explanation of two-sided adjustments. Transfers are items which Ofwat believes companies have misclassified as other types of capex (eg quality enhancement).

<sup>81</sup>

<sup>82</sup>

<sup>83</sup>Set out in Appendix G.

relationship to underlying physical, engineering or performance characteristics of the assets,<sup>84</sup> and because the setting of the amount subject to challenge (see step (c) above) penalized companies with historically low levels of capital maintenance expenditure or with 'lumpy' capital maintenance expenditure plans.

### *Analysis*

- 3.49 The AMA process is based on a common framework and a planning tool which has been used for several years and so is familiar to the industry. We noted that Ofwat made changes as a result of companies' responses to the CIS baseline, but we considered that adapting methodologies as a result of consultation is a feature of good regulatory practice, and companies had sufficient time to assimilate the effects of the changes into their FBPs.
- 3.50 The AMA challenge amount is designed to be a penalty for a type of inefficiency, namely poor project planning and asset maintenance processes. Ofwat assumes that companies which do not meet its AMA criteria do not manage their asset maintenance efficiently.
- 3.51 We agreed with the principle that effective planning should lead to efficient expenditure, and that maintenance expenditure might be assessed and challenged using a method such as AMA which looks at the quality of management processes and controls. However, we had some concerns with the AMA process used by Ofwat for PR09, in that it may have penalized Bristol Water even though Bristol Water may not have been inefficient in the way that the AMA should address.
- 3.52 First, by using its own methodologies rather than those endorsed by Ofwat, Bristol Water appears to have been penalized, although its preferred methodologies appeared appropriate (for example, its ELLEN model that predicts burst rates was endorsed by the Reporter and Halcrow, but marked down under the AMA).<sup>85</sup> The contrary view was that such use entailed deliberately running an AMA risk.
- 3.53 Second, while the AMA scoring criteria are wide-ranging, the process is necessarily subjective as it amounts to Ofwat's view of Bristol Water's processes. We were concerned that the AMA may present an overly rigid set of requirements regarding asset management planning, and that the scoring process may encourage companies to tailor their asset management programmes to obtain Ofwat's approval and, as a result, a higher AMA score, rather than focus on efficient planning and capital maintenance projects.
- 3.54 Third, we appreciated that Ofwat's rationale for setting the expenditure subject to challenge ensured that companies had to justify increases in maintenance expenditure and provide a disincentive for companies to overstate planned expenditure.<sup>86</sup> We noted that Bristol Water proposed spending for this review period at a much higher level than its historical expenditure, but over the last five years had underspent by approximately £10 million on the capital maintenance budget that Ofwat allowed in that period.<sup>87</sup>
- 3.55 However, there may be legitimate and efficient reasons why companies' maintenance expenditure might vary between periods, and the penalty may affect

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<sup>84</sup>Bristol Water SoC, paragraph 827.

<sup>85</sup>Appendix E (Capex) explains why Ofwat did not support the ELLEN model.

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<sup>87</sup>Bristol Water's June 2010 return shows actual maintenance expenditure at 2009/10 prices of £93.0 million, compared with £103.4 million included in Ofwat's PR04 determination.

smaller companies more than larger ones as they may naturally have more lumpy investment profiles.

- 3.56 Fourth, Ofwat addresses variation in expenditure between periods through the removal of exceptional items from the planned expenditure base, with these items considered separately and outside the AMA process. We considered that the definition of an exceptional item (see paragraph 3.46(b)) was somewhat unclear. We note the case of Dee Valley Water, where some 76 per cent of its non-infrastructure capital maintenance expenditure was treated as exceptional and considered outside the AMA process.<sup>88</sup> The figure for Bristol Water in Ofwat's final determination was 6 per cent.<sup>89</sup> If many items are assessed outside the AMA, this may suggest a limitation in the AMA process.
- 3.57 We considered several options to address these concerns and set the expenditure subject to challenge at 25 per cent of the adjusted proposed expenditure in our provisional findings. Accordingly, the AMA challenge amount in our provisional findings was £8.6 million<sup>90</sup> over the PR09 period, a reduction of £12.9 million from Ofwat's final determination.
- 3.58 Even so, Bristol Water considered that the capital maintenance allowance in the provisional findings remained insufficient to deliver outputs, that the 'exceptional item' challenge to mains replacement expenditure was not justified and that the AMA challenge amount was determined by a subjective approach, which was particularly inappropriate in respect of Bristol Water's non-infrastructure maintenance expenditure.<sup>91</sup> It also said it believed that the amount subject to challenge should be related to the underlying asset base, rather than historical spend.<sup>92</sup>
- 3.59 Ofwat understood our concerns that small companies that had naturally more lumpy capex profiles would be more exposed to the AMA.<sup>93</sup> While it did not agree, it acknowledged that it may be more difficult for small companies to balance investment 'lumps' across their programme.<sup>94</sup> However, it disagreed with the approach in our provisional findings to address them.<sup>95</sup> It was concerned to ensure that the correct incentives remained in place to encourage companies to adopt risk-based planning management.<sup>96</sup> Setting a cap at 25 per cent would give companies incentives to inflate their capital maintenance claims, knowing that the AMA could not reduce such claims by more than 25 per cent. It considered the better approach would be to reassess whether certain items counted as 'exceptional', and in particular proposed that the Victoria pumping station and Blagdon pumping station schemes could be considered as 'exceptional items' and so excluded from the AMA challenge.

### *Finding*

- 3.60 We noted Ofwat's points and in particular accepted that the 25 per cent cap we proposed in our provisional findings would give strong incentives to companies to inflate their capital maintenance claims. We also accepted Ofwat's submission that historical expenditure could act as a guide to reasonable future expenditure, and a

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<sup>90</sup>This takes into account our treatment of the Victoria pumping station scheme as capital maintenance; see paragraphs 3.133–3.136.

<sup>91</sup>Bristol Water comments on provisional findings, section 4, paragraph 29.

<sup>92</sup>

<sup>93</sup>Ofwat response to provisional findings, paragraph 2.7.3.

<sup>94</sup>Ofwat response to provisional findings, paragraph 2.8.2.

<sup>95</sup>Ofwat response to provisional findings, paragraph 2.7.3.

<sup>96</sup>Ofwat response to provisional findings, paragraph 2.7.6.

25 per cent cap would break the link between the amount challenged and such historical expenditure.

- 3.61 Accordingly, while we retained some reservations about expanding ‘exceptional items’ as this may undermine the rationale of the AMA process (as Bristol Water pointed out), we considered that this was the best way of addressing our concerns regarding the application of the AMA and reducing its effect on Bristol Water.
- 3.62 We therefore considered whether certain other schemes might reasonably fall within the definition of ‘exceptional item’ (see paragraph 3.46(b)). We decided to treat the Victoria and Blagdon<sup>97</sup> pumping station schemes (as Ofwat proposed), as well as the Purton reservoir and Chew Stoke pumping station schemes, as exceptional. These schemes related to major refurbishment or replacement of assets and therefore appeared to fulfil the criteria set out by Ofwat for exceptional items.
- 3.63 We did not think that replacement of the Axbridge Barrow raw water main or works on Barrow No 3 reservoir counted as exceptional (as Bristol Water suggested). While expensive, they did not appear to fulfil the criteria set by Ofwat. In particular, we decided that the Axbridge Barrow raw water main replacement should be considered within the general mains replacement category and was therefore covered by the increased allowance that we had made for mains replacement. Equally the works on Barrow No 3 reservoir did not appear to constitute a ‘step change’ but rather was part of normal ongoing maintenance, and we note that they were not identified by Bristol Water within its SoC as an exceptional item.<sup>98</sup>
- 3.64 The changes that we made reduced the AMA challenge from the figure in Ofwat’s final determination of £21.4 million to £16.6 million. After allowing for the additional expenditure on mains replacement that we funded (above the amount in Ofwat’s final determination) and for Bristol Water’s actual PR04 expenditure (which was significantly lower than the projected figure used in Ofwat’s final determination), the AMA challenge amounted to £21 million. Accordingly, we funded £158 million of capital maintenance for this review period, which is 76 per cent more than Bristol Water spent on capital maintenance during the last review period<sup>99</sup> and is sufficient, in our view, for Bristol Water to deliver its programme.
- 3.65 We were satisfied that our adjustments reduced the effect of the AMA on Bristol Water sufficiently to address our concerns. However, we stress that we do not intend our treatment of the AMA in Bristol Water’s case to set a precedent that might unduly influence future Ofwat determinations. See further Section 13.

## **Enhancement capex**

### *Introduction*

- 3.66 Bristol Water proposed capex to invest in (a) its supply demand balance, (b) resilience, and (c) water quality. We had to decide the capex that Bristol Water needs in each category, as well as the optimal timing of these proposals.

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<sup>97</sup>According to Bristol Water’s FBP (Part B3 page 111, section 4.8.5.4), this pumping station lifts raw water from Blagdon Reservoir either to Barrow or Banwell treatment works. The pumps were installed in 1948, their efficiency is poor by modern standards, they are becoming increasingly unreliable and suffer from low suction head. The scheme involves building a new station behind the existing building and installing new suction pipework from the reservoir.

<sup>98</sup>See Bristol Water SoC Table 27.

<sup>99</sup>See Table 2 in Section 12. The £158 million is before CIS adjustments (as a result of which our projections include additional capex equal to 25 per cent of the difference between Bristol Water’s FBP capex and our funded capex, but also apply a negative revenue adjustment, see Appendix H. The source for Bristol Water’s AMP4 expenditure is its June 2010 return adjusted to 2007/08 prices for comparability purposes.

## Supply demand balance

- 3.67 Bristol Water argued for total capex of £61.2 million in relation to supply demand balance, ie investment to increase levels of water supply relative to demand in Bristol Water's territory, via leakage reduction, source development and capacity increases. Ofwat provided £45.1 million.
- 3.68 Bristol Water told us that over the last 20 years increases in household water use in the Bristol Water Region had been offset by reductions in non-household water use. As such, total water use had been relatively stable and Bristol Water had needed to invest little in new trunk mains or service reservoirs. However, it now had to cater for a step change in the demand for water driven by a rapid increase in population and housing growth, which entailed an increase in the level of investment to maintain adequate and safe levels of service to customers.<sup>100</sup>
- 3.69 Ofwat said that between its draft and final determinations it listened to the arguments put forward by Bristol Water, in particular those that attracted strong support from the Reporter. It made significant adjustments to its decisions where it had removed expenditure at the draft determination. It also took into account new information where it seemed reasonable to do so, for example the effect of new Office for National Statistics population projections on long-term resource development enabled it to make an allowance at final determination for Cheddar reservoir.<sup>101</sup>
- 3.70 We noted the issue sometimes referred to as 'inter-generational equity'. Under Ofwat's model, capital schemes enter Bristol Water's RCV as money is spent: they do not have to be operational before customers must pay for them. This contrasts with a competitive market, where a company could not increase its prices in order to finance an increase in business. Both parties accepted the principle that ideally current customers should not pay for investments that benefit future customers,<sup>102</sup> but pointed out difficulties that could be caused with its application. We accept that in this case the current approach is reasonable, since it spreads the costs of investment, and costs and benefits should balance in the longer term for customers. We note, however, that in cases of lumpy investment patterns, current customers must pay for benefits that future (possibly different) customers enjoy.
- 3.71 There were six areas of difference regarding Bristol Water's proposals to improve its supply demand balance:
- (a) leakage reduction;
  - (b) Cheddar Reservoir;
  - (c) Honeyhurst–Cheddar scheme to return the Honeyhurst source to use;
  - (d) meter optants;
  - (e) smart metering trial; and
  - (f) new connections.
- 3.72 We explain and assess these items below.

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<sup>100</sup>Bristol Water SoC, paragraphs 555–557.

<sup>101</sup>Ofwat response to Bristol Water SoC, Annex D, 3.1.1.

<sup>102</sup>

## *Leakage reduction*

- 3.73 Total leakage consists of ‘background leakage’, which is leakage that is roughly constant due to the state of repair of the network and can only be reduced by pressure reduction or network refurbishment (ie replacement or relining), and ‘burst leakage’, which is leakage which occurs during a pipe burst (from the time it occurs until the time it is repaired). Key factors affecting burst leakage are the numbers of bursts and their total run time. Network replacement can affect overall leakage by reducing background leakage and by reducing the number of bursts.<sup>103</sup>
- 3.74 Bristol Water said that leakage reduction was a central feature of its plan. Given its ageing mains network, Bristol Water expected leakage to increase by 5 MI/d over the PR09 period without intervention. Bristol Water’s leakage reduction plans seek to avoid this projected increase and provide a further 5 MI/d of leakage savings. It planned to reduce leakage through (i) ALC; (ii) mains replacement; and (iii) pressure management.<sup>104</sup>
- *Active leakage control*
- 3.75 Bristol Water proposed to invest £1.3 million in ALC<sup>105</sup> through employment of additional leakage inspectors and improvements to the surveillance of district metering areas (ie a sub-division of a supply area that allows for easy monitoring to check for the possibility of leaks) with high leakage.<sup>106</sup>
- 3.76 Ofwat reduced this by £0.321 million since it was not convinced of the ‘interactions effect’ between the various proposed leakage options. However, Halcrow received sufficient additional evidence (such as Bristol Water’s experience of reducing leakage over a 20-week period which had not been available to Ofwat), for it to agree that there were interactions between the leakage programmes.<sup>107</sup> Ofwat accepted this in response to our provisional findings.<sup>108</sup>
- 3.77 We reviewed Halcrow’s conclusions, noted that it supported Bristol Water’s position, and found that the ALC scheme should be fully funded in this review period at the level of 3.6 MI/d (which includes the 0.9 MI/d interactions effect). Accordingly we reinstated the £0.321 million deducted by Ofwat from the FBP in its FD09.
- *Mains replacement*
- 3.78 With regards to leakage reduction through mains replacement, Bristol Water said that it had assessed its mains replacement requirement through a detailed analysis that took into account the benefits from fewer bursts and interruptions, together with the benefits to balancing supply and demand that arise from lower leakage. The proposed replacement rate of 1.0 per cent a year was appropriate and in the best interests of customers.<sup>109</sup>
- 3.79 Since the issue appears to be one concerning the maintenance of existing assets, we considered the question of mains replacement under capital maintenance (see paragraphs 3.27 to 3.34).

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<sup>103</sup> [ ]

<sup>104</sup> Bristol Water SoC, paragraphs 708–712.

<sup>105</sup> ALC is the identification of unreported leaks in the water network and the location and control of such leaks.

<sup>106</sup> Bristol Water SoC, paragraph 711.

<sup>107</sup> [ ]

<sup>108</sup> Ofwat response to provisional findings paragraph 2.10.1.

<sup>109</sup> Bristol Water SoC, paragraph 793.

- *Pressure management*

- 3.80 Pressure management entails selectively reducing pressure to the extent possible: water infrastructure under lower pressure leaks less. Bristol Water proposed investing £1.0 million in this, an amount Ofwat funded in full. Halcrow supported the scheme as an accepted least cost option. We agreed.

#### *Cheddar Reservoir*

- 3.81 Bristol Water told us that Cheddar Reservoir was an offline storage structure (ie a river does not flow into it) that captured the discharge of the Cheddar Gorge Spring, primarily in winter for use in the following summer. Originally it was designed as two 6,000 Ml adjoining reservoirs. However, at the time of construction, a decision was made not to store all the water locally but pump into the reservoirs at Barrow to ensure proximity to the key areas of demand. As a result only one of the two reservoirs was built.<sup>110</sup>
- 3.82 Bristol Water's FBP and Ofwat's FD09 included preliminary works for the 'second half' reservoir to allow full construction on a 'just-in-time' basis in a subsequent period when demand materializes. However, while Bristol Water proposed to spend £9.85 million on preparatory work for a new reservoir at Cheddar, Ofwat reduced this by approximately 15 per cent (£1.5 million). This was because Bristol Water had not provided sufficiently detailed evidence in its FBP of both the costs involved and the specific work to be undertaken.<sup>111</sup> In addition, it had not discussed any outputs for this scheme against which Ofwat could measure efficiency of the scheme, progress and completion.
- 3.83 Halcrow investigated the disputed costs with the parties and obtained more detail regarding the cost of the preparatory works for Cheddar Reservoir. It considered that these were robustly derived, and comparable to experience from other reservoir schemes. It recommended allowing the amount in full if detailed outputs could be specified by Bristol Water for the remaining years of this review period. Bristol Water provided such outputs, justifying the sum of £9.85 million.<sup>112</sup>
- 3.84 Ofwat urged us to reconsider this scheme, given reduced council housing targets and that a commercial supply contract [redacted] the promoter of a power station, was no longer needed.<sup>113</sup>
- 3.85 As noted, we redetermined on the basis of the best data available to us. We accepted Bristol Water's costing and outputs, although we noted that Ofwat considered that the sum of £[redacted] million that Bristol Water claimed for land purchase was excessive. Bristol Water indicated that this would occur at the very end of this review period. We decided that this could be deferred until the next review period, in order to allow Ofwat to reappraise land prices in light of more up-to-date data and assess whether updated predictions meant that the reservoir was still necessary.
- 3.86 Accordingly, we funded £[redacted] million for preparatory work within this review period.

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<sup>110</sup>Bristol Water SoC, paragraphs 237 & 238.

<sup>111</sup>[redacted]

<sup>112</sup>[redacted]

<sup>113</sup>Ofwat response to provisional findings, paragraphs 2.10.2–2.10.8.

*Honeyhurst to Cheddar scheme to return Honeyhurst source to use*

- 3.87 Bristol Water proposed the Honeyhurst to Cheddar supply scheme which entails construction of a new main to take water from the Honeyhurst Well directly to Cheddar treatment works, making new water available in 2015/16 to contribute to meeting the projected increase in demand. The estimated cost of the scheme is £2.9 million.<sup>114</sup> It claimed that since the scheme is included in Bristol Water's Water Resource Management Plan (WRMP) which has been accepted by Defra, it amounted to a legal obligation that we must fund.<sup>115</sup>
- 3.88 Ofwat did not allow this scheme, on the basis that it could be delayed until the following review period without endangering Bristol Water's supply/demand balance.<sup>116</sup> Halcrow equally did not support the scheme.<sup>117</sup> The Reporter was generally supportive of the timing of the scheme in this review period on the basis that it would help maintain the supply demand balance for that period, but did not comment specifically on the possibility of deferral.<sup>118</sup>
- 3.89 Bristol Water did not show that this scheme was necessary to maintain its supply demand balance within the PR09 review period, nor that it would suffer a supply demand imbalance if it did not undertake this scheme within this period. We did not think that acceptance of the WRMP by Defra meant that any scheme it contained amounted to a legal requirement that we must fund. In particular, we noted that no binding timing had been specified and that EA guidance on WRMPs allows for projects to be revised and rescheduled subsequent to acceptance by DEFRA. Ofwat agreed and said that no water undertaking is legally committed to discharge its WRMP.<sup>119</sup> Accordingly, we found that this scheme should not be funded.

*Meter optants*

- 3.90 Meter optants are customers who choose to have a meter installed. The WIA 1999 gave all household customers the right to opt for a meter free of installation charges, provided that it is not impracticable for the company to install a meter. Bristol Water does not therefore charge those customers individually for meters, but instead the costs of the meter and its installation are borne as a capital investment.
- 3.91 Bristol Water predicted that 45,508 unmeasured customers would opt for a meter during the PR09 period. In the FD09, Ofwat assumed that only 35,389 optional meters would need to be installed.<sup>120</sup> Bristol Water also included in its plan the installation of 16,800 selective meters<sup>121</sup> to meter customers with large gardens on change of occupier and to install meters when communication pipes are replaced. These were included by Ofwat within FD09.
- 3.92 In our provisional findings, we used the Bristol Water forecast implying 6,361 meter optants more than Ofwat had allowed in its final determination, at Bristol Water's FBP average unit cost of £[redacted]. The additional meter optants therefore implied an increase to FD09 funded capex of £[redacted] million.

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<sup>114</sup>Bristol Water SoC paragraph 660.

<sup>115</sup>Bristol Water comments on provisional findings, section 6, paragraph 33.

<sup>116</sup>[redacted]

<sup>117</sup>[redacted]

<sup>118</sup>[redacted]

<sup>119</sup>[redacted]

<sup>120</sup>Bristol Water SoC paragraph 803.

<sup>121</sup>Bristol Water SoC, Table 27, p157.

- 3.93 Since then, we received Bristol Water's June Return for 2010, which showed that it installed 7,807 during the reporting year, rather than the 8,250 it estimated. The June return also showed that the number of installations had fallen compared to 2008/09. Ofwat urged us on this basis to revert to the estimates it used in FD09.<sup>122</sup> It also thought that the applicable unit cost should be £[redacted], and that operating costs should be £[redacted], as in FD09.
- 3.94 Bristol Water thought the provisional findings underestimated optants, but overestimated unit costs, and on balance considered the expenditure allowed by the provisional findings sufficient to meet Bristol Water's obligations.<sup>123</sup>
- 3.95 We considered the latest available evidence provided by Bristol Water's June Return for 2010 and concluded that we should fund 5,818 meters more than Ofwat had funded in its final determination over AMP5.<sup>124</sup>
- 3.96 We agreed with the parties that the unit capex cost per meter of £[redacted] figure in our provisional findings included selective metering costs. Halcrow agreed with Bristol Water and Ofwat that a unit capex cost per meter of £[redacted] was a reasonable central estimate<sup>125</sup> and we therefore used this estimate and made an additional capex allowance of £[redacted] million<sup>126</sup> over Ofwat's final determination.

#### *Smart metering trial*

- 3.97 'Smart meters' are measuring devices that are capable of storing data and being interrogated remotely. Currently, most meters installed are 'dumb' and need to be read manually on site.<sup>127</sup>
- 3.98 Bristol Water said that smart metering could help reduce demand, increase the sustainability of the water industry, and assist Bristol Water to meet its environmental and carbon targets. It could deliver benefits to customers by producing more accurate bills at lower cost and, by displaying real-time information on water use, encourage water efficiency as well as simplifying bill management through more timely information. This technology would enable a wider range of tariffs that could, in future, help to control demand growth. Additionally, through the provision of improved information on where and when leaks occur, smart meters enable significant reductions in supply pipe leakage.<sup>128</sup> The Walker Review of Charging for Household Water and Sewerage Services supported their introduction.<sup>129</sup>
- 3.99 Bristol Water proposed spending £2.0 million on a smart metering trial, but Ofwat disallowed this, on the grounds that smart meters should be assessed at an industry level, so it was not necessary for Bristol Water customers to fund an independent trial.<sup>130</sup>

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<sup>122</sup>Ofwat response to provisional findings, paragraph 2.10.12.

<sup>123</sup>Bristol Water comments on provisional findings, section 6, paragraph 27.

<sup>124</sup>June Return 10 shows 543 fewer meters to be installed than the February 2010 forecast provided—Bristol Water June Return 2010, p39 of 54.

<sup>125</sup>[redacted]

<sup>126</sup>Calculated as 5,818 meters at a unit cost of £[redacted] = £[redacted].

<sup>127</sup>Bristol Water SoC, paragraph 108, footnote 34.

<sup>128</sup>Bristol Water SoC, paragraph 667ff.

<sup>129</sup>A copy of the final report can be found at:

[www.defra.gov.uk/environment/quality/water/industry/walkerreview/documents/final-report.pdf](http://www.defra.gov.uk/environment/quality/water/industry/walkerreview/documents/final-report.pdf).

<sup>130</sup>Ofwat response to Bristol Water SoC, Annex D paragraphs 3.6.1 & 3.6.2.

- 3.100 Halcrow reviewed the issue, and saw benefits, but was conscious that the outcome of any Bristol Water trial was uncertain for customers.<sup>131</sup> We were not persuaded by Bristol Water's CBA (see Appendix C).
- 3.101 We appreciate that smart meters may bring benefits, but we saw no good evidence that this trial was the most efficient way of discovering if they would. We saw merit in Ofwat's proposal of an industry-wide scheme, where costs may be shared with possible meter manufacturers as well as other WoCs and WaSCs. Responding to Bristol Water's point<sup>132</sup> that we had not allowed funds for such a trial in our provisional findings, if the industry did propose such a scheme, we would expect individual participating companies to cost their share, and include the cost as part of the business plans that they submit to Ofwat in the usual way. Alternatively, the capex could be logged up by Ofwat in due course, although we note that companies would start to obtain benefits (such as lower opex and reduced leakage) immediately. We saw no immediate competition concern (that Bristol Water raised<sup>133</sup>) with water companies collaborating in a smart meter trial, not least because they are not competitors and any trial could be limited to technical feasibility rather than commercial cooperation. This informal view is of course without prejudice to applicable competition law.
- 3.102 We therefore found that this proposed trial should not be funded in price limits in PR09.

#### *New connections*

- 3.103 Bristol Water needs to make new connections to the water system but developers may contribute to the cost by any or all of three types of capital contribution: (a) mains requisition charges, which relate to the extension of water distribution systems to serve areas remote from existing services; (b) new development charges, which relate to the immediate connections from a property to the water distribution system; and (c) infrastructure charges, which are for connecting premises to the water system where they had never previously been connected.
- 3.104 Bristol Water expected to connect 26,000 new properties during this review period, at a cost of £4.6 million for mains requisitions.<sup>134</sup> Ofwat deducted £400,000, on the basis that Bristol Water had overestimated the cost per connection.
- 3.105 In its SoC, Bristol Water reduced its estimate by £4 million, so the difference between the parties on this issue was only £0.4 million. As the Bristol Water figures took into account 2008/09 out-turn information,<sup>135</sup> we adopted the figure used by Bristol Water.
- 3.106 With regard to contributions for new connections, a difference of £0.498 million arose between the parties due to Ofwat's allocation of 70 per cent of the North Bristol Trunk Mains Phases 2 and 3 to new development drivers (Bristol Water allocated this scheme entirely to growth drivers).<sup>136</sup> The Reporter supported the classification of a part of the expenditure for the scheme to the new development driver.<sup>137</sup>

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<sup>131</sup> [REDACTED]

<sup>132</sup> Bristol Water comments on provisional findings, section 6, paragraph 30.

<sup>133</sup> Bristol Water comments on provisional findings, section 6, paragraph 31.

<sup>134</sup> For housing development sites or commercial or industrial developments or redevelopments, a new water main to extend Bristol Water's existing water distribution system to the site can be requested by the developer. When the water main is to be provided to supply water for domestic purposes, the request is called a 'water main requisition'.

<sup>135</sup> Bristol Water SoC, section E.2.2, paragraph 692.

<sup>136</sup> [REDACTED]

<sup>137</sup> [REDACTED]

- 3.107 The difference between the parties on this issue of £0.498 million is not large in the context of overall capex. Since the Reporter supported the classification of a part of the expenditure for the scheme to the new development driver,<sup>138</sup> we found that we should use the FD09 figures.
- 3.108 The parties agreed over the additional infrastructure charge revenue of £0.6 million included in FD09, due to a higher assumed infrastructure charge per connection (as the amount included in the FBP of £253.00 per connection was lower than the legal minimum infrastructure charge of £276.81).<sup>139</sup> We agreed that this should be funded.

## **Resilience schemes**

### *Applicable standard of resilience*

- 3.109 Improving resilience means increasing the resilience of service to Bristol Water's customers, ie reducing the likelihood that a fault in its system will interrupt customers' water supplies. Bristol Water told us that it was concerned to improve the resilience of supply to consumers 'at risk of an extended interruption of supply in the event of a failure of single critical assets'.<sup>140</sup> Its thinking was reinforced by the inundation of Severn Trent's Mythe treatment works during the Gloucester floods in July 2007, which led to a civil emergency with over 300,000 people in and around Gloucester losing their mains water supply for two to three weeks.<sup>141</sup> Bristol Water told us that it aimed to ensure that by 2020 no areas with a population of more than 25,000 people would be dependent on a single water supply asset.
- 3.110 Ofwat told us that it was reasonable for companies to aspire to the elimination of major single sources of supply over time in order to increase resilience. However, the risks associated with single sources could often be reduced without the need for high-cost capital investment. Single sources in the water industry are common, but are not a frequent source of long-term interruptions to supply. It thought that each element of Bristol Water's resilience proposals had some merits and were of equivalent quality. However, it had reservations regarding specific parts of Bristol Water's methodology, and was concerned about the schemes' effect on bills. Ofwat stated that consumer research strongly indicated that Bristol Water's proposed increases were unacceptable (see Appendix D). In such circumstances, Ofwat's approach was to remove or reduce in scope proposals for discretionary investment where it also had concerns about the justification of individual schemes.<sup>142</sup>
- 3.111 Halcrow advised us that in its experience, where a plant failure was due to a failed piece of equipment or component, if spares were held, then it should be possible to replace the failed part within 24 hours (so supplies would not be interrupted within that period).<sup>143</sup> Bristol Water said that it:

accepts that 24-hours is a reasonable time to deal with the majority of plant faults. However, there will on rare occasions be times when 24 hours is not sufficient, and in any case 24 hours is unlikely to be sufficient to deal with many of the other hazards [...] for example fire, loss of power supply or contamination of source water.<sup>144</sup>

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<sup>138</sup> [redacted]

<sup>139</sup> [redacted]

<sup>140</sup> Bristol Water SoC, D.3.3.1, paragraph 639.

<sup>141</sup> Bristol Water SoC, paragraph 333. [redacted]

<sup>142</sup> Ofwat response to Bristol Water's SoC, Annex E, paragraphs 3.1–3.3.

<sup>143</sup> [redacted]

<sup>144</sup> [redacted]

- 3.112 We did not identify an industry-wide standard for resilience, and did not see it as within our terms of reference to do so. However, we considered that relevant factors may include how long an asset must be out of operation before supplies are affected, the likelihood of failure, the number of consumers likely to be affected as a result, the likely duration of any outage, and the cost of increasing resilience. Bristol Water suggested that other relevant factors would be customer views, analysis of the cost benefit and the presence in an area of particularly vulnerable customers (such as hospitals and dialysis patients).<sup>145</sup>
- 3.113 Bristol Water also stressed that in considering resilience in our provisional findings we had not adequately considered low frequency, high impact events, such as [X].<sup>146</sup> We noted Bristol Water's point that risks with high impact cannot be ignored just because they occur with low frequency and that it would be wrong to adopt a 'bolting the stable door' approach to problems by waiting for an event to occur before doing something.<sup>147</sup>
- 3.114 Ofwat accepted that there was a fundamental difference between it and Bristol Water, in that Ofwat, based on its observation of events within the industry, thought that operational measures can usually reduce resilience risk to a reasonable and acceptable level.<sup>148</sup>
- 3.115 In light of these submissions, our aim was to provide for a reasonable level of resilience taking into account the factors set out in paragraph 3.112, for both asset breakdown or failure, and low frequency, high impact events, on a case-by-case basis, based on the advice and evidence available to us.

### *Bristol Water's proposals*

- 3.116 Bristol Water proposed five schemes to improve the resilience of supply to 643,000 consumers, who it said were at risk of an extended interruption of supply in the event of a failure of single critical assets.<sup>149</sup> These were: (i) Durdham Down Support scheme; (ii) Oldford scheme; (iii) Tetbury scheme; (iv) Southern scheme; and (v) renovation of Victoria pumping station, which Bristol Water claimed would benefit 203,000 customers if this were completed alongside the Durdham Down and Southern schemes. Bristol Water estimated that the overall likelihood of a one-week interruption to supply in each of the relevant areas was at least once in 20 years and once in eight years for Oldford.<sup>150</sup>
- 3.117 We consider each scheme in turn, mindful of the synergies that Bristol Water alleged would flow should they be completed in combination (see Appendix E on capex).

### *Durdham Down*

- 3.118 Bristol Water said that this scheme entailed installing mains from Filton and Victoria Reservoir to Durdham Down, along with a new pumping station at Filton, improving the security of supply to 185,000 people in Bristol, including Bristol's two major hospitals.<sup>151</sup>

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<sup>145</sup>Bristol Water comments on provisional findings, Section 3, paragraph 10.

<sup>146</sup>Bristol Water comments on provisional findings, Section 3, paragraph 16.

<sup>147</sup>Bristol Water comments on provisional findings, Section 3, paragraphs 17 & 25.

<sup>148</sup>Ofwat response to provisional findings, paragraph 2.12.6.

<sup>149</sup>Bristol Water SoC, D.3.3.1, paragraph 639.

<sup>150</sup>Bristol Water FBP, Part B6, p29 and SoC, paragraph 704, p183.

<sup>151</sup>Bristol Water SoC, paragraph 703, Table 40.

- 3.119 Ofwat funded the Durdham Down resilience scheme in full, despite reservations regarding Bristol Water’s approach to resilience, in particular its quantification of the risks to service and its willingness-to-pay methodology, on the basis that the scheme offered tangible benefits to consumers and had the largest cost benefit ratio of Bristol Water’s network resilience proposals.<sup>152</sup>
- 3.120 Halcrow noted that failure of the Victoria pumping station would rapidly place 185,000 consumers at risk, and that refurbishment of Victoria pumping station (see paragraphs 3.133 to 3.136) and implementation of Durdham Down would safeguard those consumers against failure scenarios involving the pumping station, mains and Durdham Down Tower and Service Reservoir.<sup>153</sup>
- 3.121 Given Halcrow’s findings that there was a risk to supply to a substantial number of consumers [redacted] if the Victoria pumping station failed, we decided that the Durdham Down scheme should be funded in full as a resilience scheme.

### *Southern Resilience scheme*

- 3.122 Bristol Water told us that this scheme comprised three new trunk mains sections (28.8 km in total), two new pumping stations, additional storage and improvements to valving arrangements in Weston-super-Mare area that would benefit 204,000 customers. It would cost £29.5 million, of which £8.3 million would be spent in this review period and the remainder in the next.
- 3.123 Halcrow reported that the existing system had a reasonable level of existing resilience, since Halcrow considered that 24 hours was a reasonable time to deal with likely plant faults using spares, temporary equipment or supplies and emergency plans.<sup>154</sup> Accordingly, it was not convinced of the need for the scheme, and did not think that Bristol Water’s risk assessment or CBA were robust.<sup>155</sup> In particular, Halcrow was concerned that Bristol Water did not appear to have adequately considered local risk mitigation measures. It thought that the residual risk and associated return periods used by Bristol Water to justify resilience investment had not been robustly developed to demonstrate adequately that the provision of alternative sources was the most cost beneficial and effective option.<sup>156</sup>
- 3.124 We were not convinced by the CBA analysis performed by Bristol Water in relation to this scheme (see Appendix C), which meant that we did not think that it was justified on the basis of addressing the risk of low frequency high impact events.
- 3.125 We were also concerned that Bristol Water had not adequately considered local risk mitigation measures, which may be a more cost-effective solution. Bristol Water accepted that it might be able to do more by way of local mitigation, although it reiterated its concern regarding longer-term resilience that such measures would not address.<sup>157</sup>
- 3.126 We accepted Halcrow’s advice that 24 hours’ supply was a reasonable level of resilience in the event of failure in this case, and that evidence available showed that the risk of low frequency high impact events was too low to justify this scheme, and accordingly decided that this scheme should not be funded.

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<sup>152</sup> [redacted]  
<sup>153</sup> [redacted]  
<sup>154</sup> [redacted]  
<sup>155</sup> [redacted]  
<sup>156</sup> [redacted]  
<sup>157</sup> [redacted]

<sup>157</sup> Bristol Water comments on provisional findings, Section 3 paragraph 38.

### *Oldford resilience scheme*

- 3.127 Bristol Water said that its Oldford borehole was vulnerable to flooding and quarrying activities in the Mendip Hills. It proposed a resilience scheme to install a 24 km main between Paulton reservoir and Frome Town reservoir, allowing Stowey treatment works to supply 41,000 people in and around Frome works in the event of a failure of the Oldford treatment works or its source, the Oldford borehole. The scheme also included additional pumps at Stowey. It would cost £14.2 million.<sup>158</sup>
- 3.128 Halcrow reviewed the scheme. Bristol Water confirmed that in the event of Oldford Water Treatment Works failing, the area could be sustained for 24 hours. Halcrow considered this a reasonable period to deal with plant faults using spares and emergency plans.<sup>159</sup> It was not convinced by Bristol Water's risk assessment or CBA (for the same reasons outlined regarding the Southern resilience scheme above), and did not consider that Bristol Water had established a robust and compelling business case for investment.<sup>160</sup> Bristol Water considered further local mitigation to flooding and agreed that there would be some benefit in further local mitigation, although it considered that this would not address the residual risks of source contamination, the impact of quarrying on this source or access to the site in the event of flooding.<sup>161</sup>
- 3.129 We accepted Halcrow's advice that 24 hours' supply was adequate resilience in the event of failure in this case, and that the evidence available showed that the risk of low frequency high impact events was too low to justify this scheme. We accordingly decided that this scheme should not be funded.

### *Tetbury resilience scheme*

- 3.130 Bristol Water said that there was evidence that the condition of the Tetbury borehole was deteriorating. It proposed a scheme to install a new main between Shipton Moyne treatment works and Babdown pumping station and partially reinforce the main between Pucklechurch reservoir and Tolldown reservoir, to reinforce supplies to Tetbury. This would benefit 10,000 customers, at a cost of £2.9 million.<sup>162</sup>
- 3.131 Halcrow again found that the existing system provided a reasonable level of resilience (exceeding 24 hours) should the Tetbury supply fail,<sup>163</sup> and that the scheme was likely to benefit some 8,500 consumers (rather than 10,000).<sup>164</sup> It was not convinced by Bristol Water's risk assessment or CBA for reasons outlined under the Southern resilience scheme, and did not consider that Bristol Water had established a robust and compelling business case for investment.<sup>165</sup>
- 3.132 We decided that this scheme should not be funded. While less expensive than the other two resilience schemes that we have not funded, it appeared likely to benefit just 8,500 consumers (notwithstanding Bristol Water's assertion that considerable growth is expected),<sup>166</sup> and the current system would provide supplies for over 24 hours in the event of failure, which we considered adequate in this case.

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<sup>158</sup>Bristol Water SoC, paragraph 703, Table 40.

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<sup>161</sup>Bristol Water comments on provisional findings, section 3 paragraph 39.

<sup>162</sup>Bristol Water SoC, paragraph 703, Table 40.

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<sup>166</sup>Bristol Water comments on provisional findings, Section 3, paragraph 47.

## *Victoria pumping station*

- 3.133 Bristol Water told us that Victoria pumping station in central Bristol pumps water to Durdham Down service reservoir and tower. It said that the pumps at Victoria pumping station were installed in 1950 and their efficiency was poor by modern standards. They were becoming increasingly unreliable and replacement was required urgently. Loss of Victoria pumping station, or the mains feeding it, would result in 185,000 consumers in central and west Bristol losing their water supply, including two hospitals. The storage capacity of the Durdham Down Reservoir is equivalent to [redacted] average supply.<sup>167</sup>
- 3.134 Bristol Water proposed to refurbish the pumping station at a cost of £4.9 million, allocating half of this expenditure to capital maintenance, and half to increasing resilience. Ofwat funded this scheme, but allocated the cost entirely to capital maintenance.
- 3.135 Halcrow reviewed the scheme, and noted that should the pumping station fail, then 185,000 consumers would be at risk of being without water [redacted]. Any recovery plan could easily take longer [redacted]. Accordingly it considered that the scheme should go ahead in addition to the Durdham Down resilience scheme.<sup>168</sup> However, it considered that this scheme should be assessed as capital maintenance rather than resilience. The pumping station required refurbishment, and it would be sound engineering practice to increase pumping capacity to improve standby capability (to allow for maintenance). This would have the consequence of increasing resilience in the system. However, this should be seen as a side effect of the need for capital investment, rather than an independent driver of the scheme.<sup>169</sup>
- 3.136 We considered that [redacted] supply in the event of failure was not an adequate level of resilience, given the large number of consumers that would be affected. Accordingly we found that this scheme should be funded in full. We considered whether this should count as base or enhancement capex. We accepted that the pumping station was in need of maintenance while the proposed scheme would also increase resilience. On balance, we found that the capex should be classified as capital maintenance, rather than the split Bristol Water proposed, as refurbishment of the existing asset is the principal reason for this scheme. However, we treated it as an exceptional item, outside the AMA (as noted in paragraph 3.62).

## **Quality enhancement expenditure**

- 3.137 Investing in this category should improve the quality of water that Bristol Water provides. Ofwat defines this as the investment required to deliver the quality enhancement (drinking water service) programme<sup>170</sup> and stated that this programme was limited to those instances where either raw water quality had deteriorated significantly or lead levels at consumers' taps made further work necessary, rather than for any company to maintain or regain compliance with its current drinking water quality obligations, or to reassess its risk of non-compliance which should be addressed when making capital maintenance plans.<sup>171</sup>

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<sup>167</sup>Bristol Water SoC, paragraphs 305 & 306.

<sup>168</sup>[redacted]

<sup>169</sup>[redacted]

<sup>170</sup>[redacted]

<sup>171</sup>Setting price limits for 2010–15: Framework and approach—a consultation paper, paragraph 3.8.4. [www.ofwat.gov.uk/pricereview/pap\\_pos\\_pr09method080327.pdf](http://www.ofwat.gov.uk/pricereview/pap_pos_pr09method080327.pdf).

- 3.138 There was disagreement between the parties regarding allocation of expenditure between quality and capital maintenance categories. In particular, the trunk mains relining scheme was transferred by Ofwat to capital maintenance (and we agreed, see paragraph 3.26).
- 3.139 Of the schemes that remained within the Quality category in FD09, the parties broadly agreed, with the exception of the issue relating to lead communication pipes. Bristol Water told us that it had one of the industry's highest proportions of such pipes in its supply system, which were a minimum of 40 years old (with many over 100 years old), that were increasingly prone to leak. It proposed spending £0.3 million to replace these, of which Ofwat funded £0.2 million, excluding the aspect of the output not supported by the DWI. Bristol Water subsequently accepted this exclusion.<sup>172</sup>
- 3.140 The difference was very small in terms of overall capex, and we found that £0.2 million should be provided for the part of the scheme supported by the DWI.

#### **4. Construction output price index and capex efficiency**

##### ***Construction output price index***

- 4.1 The level of construction prices is an important factor affecting companies' capex. Under Ofwat's PR09 process, companies submitted capex figures on the basis of 2008/09 prices, and these figures were then inflated according to the increase in the construction output price index (COPI). In its final determination, Ofwat assumed COPI increased in line with RPI in 2009/10, then increased by RPI+0.5 in 2010/11, RPI+1.5 in 2011/12 and RPI+0.5 thereafter.<sup>173</sup>
- 4.2 We received no submissions on construction prices prior to our provisional findings and those findings adopted Ofwat's final determination projections for COPI.<sup>174</sup> Subsequently, Ofwat drew our attention to a substantial decline in COPI during 2008 and 2009. In the light of the latest data, we became concerned that our forecasts of COPI were no longer reasonable. We noted that:
- (a) there had been a significant decline in construction prices associated with the recession and a decline in construction activity;
  - (b) there appeared no immediate prospect of a sharp recovery in construction activity. Indeed, cuts in public spending may well be expected to lead to further decline; and
  - (c) with regard to consistency with other aspects of our determination, our forecasts of bad debt were based on consensus forecasts of unemployment showing an increase in 2010 and only a gradual decline after that.
- 4.3 We also saw Office of Government Commerce (OGC) construction price forecasts produced by Experian which OGC use to understand demand and market capacity.<sup>175</sup> These forecasts showed a further decline in COPI during 2010 and only

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<sup>172</sup>Bristol Water SoC, paragraph 675.

<sup>173</sup>Ofwat final determination published document section 5.11.

<sup>174</sup>As our assumptions on the increase in COPI were the same as Ofwat's and our assumptions on RPI (see Appendix K paragraph 120) were slightly higher than Ofwat's, our assumed growth in COPI relative to RPI was slightly lower than Ofwat's.

<sup>175</sup>The OGC forecasting model for COPI is determined by the following key variables: (i) the supply of skilled labour, (ii) the level of future demand which will influence the pressure on materials and labour (iii) other external pressures on the price of construction materials and raw materials such as oil.

a gradual recovery after that (see Figure 2). We noted also that Experian's forecasts of construction activity were among the more optimistic of available forecasts.<sup>176</sup>

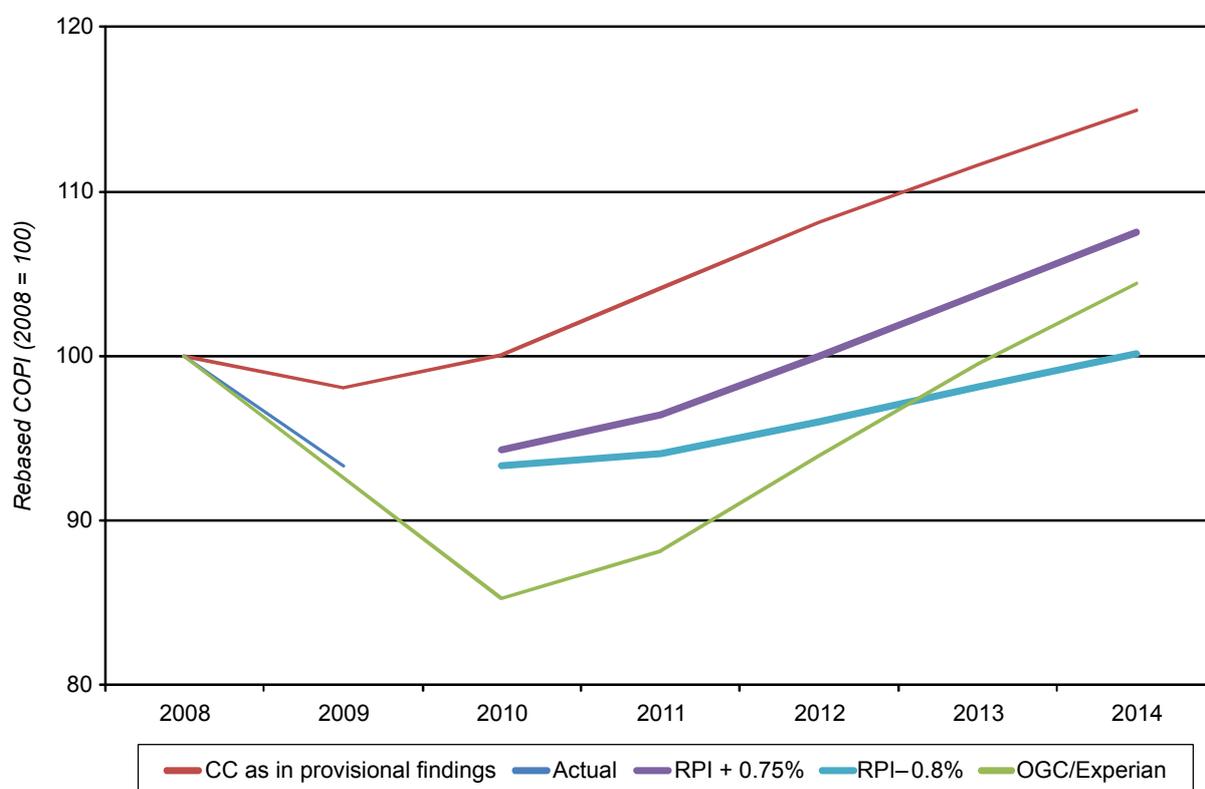
4.4 We therefore considered two alternative forecasts (illustrated in Figure 2, which also includes the OGC forecasts and the figures we used in our provisional findings), which we put to Bristol Water and Ofwat:

(a) that COPI would change from current levels by RPI+0.75 per cent a year, reflecting the trend growth assumption we made in our 2007 and 2008 airports reports.<sup>177</sup>

(b) that COPI would change from current levels by RPI-0.8 per cent a year, reflecting the long run (1976 to 2010) trend in COPI relative to RPI. This might be more appropriate than the RPI+0.75 per cent a year assumption that reflected approximate trend growth from 1991 to 2006, as this may now be regarded as a period of unusual economic stability.

FIGURE 2

**Actual and forecast COPI indices**



Source: CC calculations and data provided by OGC.

4.5 Bristol Water said that historical data suggested COPI showed a high rate of increase relative to RPI following the 1990s recession and that, given this, Bristol Water believed that COPI at the end of the period was likely to be higher than RPI +0.75 per cent. Bristol Water also said its recent experience was that its capital costs had not fallen in the way indicated by the COPI index. Bristol Water's view was that,

<sup>176</sup>This is shown for example in the forecasts at <http://brickonomics.building.co.uk/2010/01/>.

<sup>177</sup>CC reports on BAA Ltd and Stansted Airport plc, presented to the CAA on 28 September 2007 and 23 October 2008 respectively.

while there had been a slowdown in house building and general construction, this was not the case for network industries and consequently the market pressures leading to cost reductions in many construction sectors were not present in the water sector, where capital costs had increased relative to COPI. Bristol Water added that we needed to ensure that our assessment of frontier capex efficiency was consistent with the estimate of COPI.

- 4.6 Ofwat commented that, of our two forecasts, RPI-0.8 per cent seemed to be the more plausible short- to medium-term outlook given the current downturn in the published index values and the economic climate in the UK following recent government spending cutback announcements.
- 4.7 Although the outlook for construction prices is uncertain, we considered it important to adopt a central estimate of capex prices over the next five years. We noted Bristol Water's point that assumed capex prices depend both on projections of COPI and on the extent to which the industry is assumed to be able to reduce its real capex prices. Taking into account that we assume a real capex price reduction of 0.4 per cent a year (see paragraph 4.11), we decided that a reasonable central assumption for COPI was an annual increase from 2009 levels of RPI+0.75 per cent.

### **Capex efficiency**

- 4.8 We received limited submissions on this element of Ofwat's determination (and none in response to our provisional findings). Bristol Water repeated a point made in the context of its criticism of Ofwat's opex efficiency work that Ofwat's assessment was not consistent with the results of its own consultants, Reckon, or with a First Economics study for Water UK.<sup>178</sup> Bristol Water argued that in these circumstances it would be inappropriate to apply a continuing capital efficiency challenge.
- 4.9 We did not accept this argument either on the point of principle or on the basis of our assessment of the evidence. We noted that there was a significant future capital programme included in this price review totalling £22 billion for all companies.<sup>179</sup> This being the case, we thought that it was important for Ofwat to ensure that the industry delivers the planned capex programmes efficiently.
- 4.10 In assessing Ofwat's estimate of continuing efficiency improvement for capex we drew on the analysis we carried out as part of our assessment of opex efficiency (see Appendix K), and in particular on our views about labour cost inflation which is the biggest single component in the input mix for capex.<sup>180</sup> Based on the evidence we reviewed,<sup>181</sup> we took the view that the gap between private sector wages and the RPI would narrow over the PR09 relative to the historic trend, and that this, in combination with productivity improvements, would provide the companies with an opportunity to reduce the costs with which they deliver capital projects.
- 4.11 We also considered the additional, more detailed information, provided by Ofwat<sup>182</sup> about the various components of its capex efficiency calculations. We agreed with Ofwat that the industry is capable of reducing capital unit costs at a rate of 0.4 per cent a year.

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<sup>178</sup>Bristol Water SoC, paragraph 858.

<sup>179</sup>Ofwat response to Bristol Water SoC, Annex C, paragraph 4.3.1.

<sup>180</sup>Appendix K, paragraphs 103 & 108.

<sup>181</sup>[REDACTED]

<sup>182</sup>[REDACTED]

## 5. Capital Incentive Scheme

### *The scheme*

- 5.1 Ofwat determined, and we had to redetermine, how much capex Bristol Water needs to incur over the next five years to serve the best interests of its current and future customers. A key source of information is Bristol Water, as owner of the assets and the party most familiar with their condition. However, Bristol Water, as a commercial entity, may also have an incentive to increase its projected capex, as this increases the RCV on which it earns a return, and because it is easier to achieve savings from spending less than projected capex if projected capex is higher in the first place.
- 5.2 The CIS is a method that Ofwat has devised to encourage companies to make realistic and well-evidenced capex plans without undermining their incentives to achieve efficiencies in realizing those plans. It is intended to penalize companies that do not make such plans.
- 5.3 It is analysed in detail in Appendix H. Broadly, companies' incentives depend on ratios derived from three figures: how much capex Bristol Water projects that it will incur; how much capex Ofwat projects that Bristol Water will incur; and how much capex Bristol Water actually incurs over the review period (although this will not be known until the end of the review period, which will be April 2015 for the current review period). The CIS ratio is the ratio between Bristol Water's projection and Ofwat's projection. It is used to work out how much of Bristol Water's projected capex is allowed into its projected RCV and hence on how much of it Bristol Water earns a return during the review period.
- 5.4 In calculating the CIS ratio, Ofwat makes two types of adjustment. It makes one-sided adjustments where it excludes capex from its own projection (this increases the CIS ratio). It makes two-sided adjustments where it excludes capex both from its own projection and from Bristol Water's projection. Two-sided adjustments are neutral: Bristol Water is not penalized for having included the relevant amount in its capex projection.

### *The parties' views*

- 5.5 Bristol Water made several criticisms of the CIS, in particular that a company that accurately projected its capex (that it incurred efficiently) might yet be penalized if Ofwat projected a lower spend. We note, however, that this is inevitable if the regulator takes a different view from the company. As discussed in Appendix H, a further consequence of Ofwat's CIS adjustments is that a company with a CIS ratio of above 100 earns less than its cost of capital even if its actual capex is the same as Ofwat's own projection (ie the penalty on shareholders arises for over-projecting).
- 5.6 However, Ofwat argued that it and we should be concerned with the cost of capital that would be earned by an efficient company, and that an efficient company would be able to produce well-balanced, evidence-based business plans that Ofwat would endorse and so achieve a CIS ratio of 100.
- 5.7 Bristol Water also argued that we have a duty to secure that Bristol Water is able, in particular by securing reasonable returns on its capital, to finance the proper carrying out of its functions (section 2(2A)(c) of the WIA 1991) and this duty expressly takes

priority over our duty to promote economy and efficiency (section 2(3)(a) of the WIA 1991).<sup>183</sup> We considered this issue in paragraphs 2.23 to 2.27.

- 5.8 Bristol Water also argued that if we did not fund the Shipton Moyne to Tolldown Trunk Main, Purton raw water reservoir, its proposed smart metering trial or its resilience schemes, then we should make two-, rather than one-sided adjustments, since these amount to a disagreement between regulator and regulated over the output. It said that it should not be penalized for proposing schemes it believes to be in customers' best interest.<sup>184</sup> We assess this argument below.

### **Assessment and finding**

- 5.9 We accepted that a key aim of the CIS should be to ensure that companies supply Ofwat with well-balanced, evidence-based projections of capital requirements which we consider is part of companies' proper carrying out of their functions (as Ofwat and now we must ensure as a primary duty contained in section 2A(c) of the WIA 1991). Accordingly, we agree with Ofwat that it is reasonable for an inefficient company (that is, one which fails to produce well-balanced, evidence-based business plans) to earn less than the cost of capital.<sup>185</sup>
- 5.10 We considered whether we should distinguish between projections related to agreed outputs (where any adjustment should be one sided) and projections related to outputs where the company and regulator disagree on whether additional capex is needed, where adjustments should be two sided, as Bristol Water said. There may not need to be the same incentives to ensure that companies do not propose unnecessary schemes as to ensure that a company's projections for an agreed output are accurate, since it may be easier for Ofwat to dismiss unnecessary schemes than it is for it to evaluate costings proposals.
- 5.11 However, we thought that drawing such a line between the two would prove difficult in practice. We agreed with Ofwat that the CIS should go beyond encouraging cost reductions and should give companies incentives to prepare well-balanced and evidence-based business plans. We also noted that the periodic review process (which includes Ofwat providing companies with drafts of its determinations) provided companies with the opportunity to abandon proposals rather than persevere to a foreseeable adverse outcome. Accordingly, they could avoid negative CIS adjustments due to differences in opinion regarding appropriate outputs. Ofwat told us that there were several opportunities for companies to abandon proposals without a CIS penalty: principally following publication of Ofwat's draft baseline in December 2008 (which Ofwat published after receipt of draft business plans), but as late as in response to publication of Ofwat's draft determination in July 2009.<sup>186</sup>
- 5.12 We also considered it relevant that we found little evidence to support the schemes that we did not fund (ie Bristol Water's resilience and smart metering proposals). In

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<sup>183</sup>Bristol Water comments on provisional findings, Section 4, paragraph 2.

<sup>184</sup>Bristol Water comments on provisional findings, Section 4, paragraphs 10–23.

<sup>185</sup>This has the consequence that we applied a financeability cross-check before we applied the CIS adjustment, see paragraph 10.11.

<sup>186</sup>In its response to our provisional findings, Bristol Water said that it accepted reluctantly our exclusion of the smart metering trial from our proposed capex. We considered whether this acceptance should change our CIS treatment of the smart metering trial. We concluded it should not. First, it was not clear that Bristol Water's acceptance (at a late stage in the determination) of our not funding this project amounted to amendment of its capex plans. Second, Bristol Water had already had many chances to amend its capex in the light of Ofwat's not funding the smart metering trial, starting with its FBP and including its SoC to us. In its SoC Bristol Water had excluded some of the capex in its FBP and we consequently excluded this capex from our CIS calculations. To allow amendment at such a late stage in the process would not provide good incentives for future references since companies would be able to include possibly unnecessary schemes in their SoCs in the knowledge that such schemes could be withdrawn later.

respect of these proposals, Bristol Water did not provide strong evidence that the benefits exceeded the costs (see Appendix C). Our decision not to fund these projects was due to the lack of evidence and did not arise just because we thought they were unaffordable at this time.

- 5.13 Accordingly, we agreed with Ofwat's application of the CIS to Bristol Water, and have not made adjustments two sided that were previously one sided. On the basis of Bristol Water's projected capex in its SoC and our capex assessment, we have calculated a CIS ratio of 128. This is below Ofwat's CIS ratio of 138 because we have included more capex than Ofwat.

## 6. Opex

### *Introduction*

- 6.1 We followed the parties in assessing opex in terms of base opex (ie the expenditure necessary to maintain stable serviceability), and enhancement opex, ie expenditure necessary to support enhancement capex (in terms of resilience, supply demand balance, and quality). We consider enhancement opex in paragraphs 6.81 to 6.85. Over the review period, Ofwat also assumed that Bristol Water (along with all the other water companies) would become more efficient. We consider efficiency improvements in Section 7.
- 6.2 In its determination of price limits, Ofwat began with an assumption that base opex in each year will be the same as the base year (in real terms), less assumed efficiency improvements.<sup>187</sup> Bristol Water proposed to spend £276.3 million<sup>188</sup> (comprising an additional £32.3 million over the base year 2008/09<sup>189</sup> relating to base opex adjustments, £14.2 million on opex relating to capital projects and a £14.5 million 'real price increase'<sup>190</sup>) during the review period (before any efficiency challenge). Ofwat allowed £234.2 million (an additional £8.8 million<sup>191</sup>) over the review period on opex. Ofwat's and Bristol Water's arguments are set out in Appendix I on opex.
- 6.3 The parties assessed opex under ten categories. They agreed with regard to three: Chemicals, Business rates and Telecommunications. We reviewed their submissions and agreed with their conclusions.
- 6.4 However, Bristol Water challenged seven categories of operating costs in Ofwat's final determination:
- (a) pension-related items;
  - (b) bad debts;
  - (c) energy costs;
  - (d) training costs;
  - (e) abstraction charges;
  - (f) Highways Agency inspection costs; and

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<sup>187</sup>Bristol Water SoC, paragraph 892.

<sup>188</sup>Bristol Water SoC, paragraph 901, Table 57.

<sup>189</sup>Bristol Water SoC, paragraph 895, Table 56.

<sup>190</sup>See Appendix I, Table 2.

<sup>191</sup>Bristol Water SoC, paragraph 1057, Table 89.

(g) changes to water efficiency targets.

It also (h) sought an adjustment to the level of base opex.

- 6.5 In deciding whether to allow or reject costs claimed by Bristol Water (in whole or in part), we considered the evidence and arguments of Bristol Water and Ofwat in light of the principles which apply in relation to determinations made by Ofwat, set out in paragraphs 2.10 and 2.11.
- 6.6 There are two sources of dispute regarding items (a) to (g) above. First, whether the base operating costs should be adjusted. Second, whether a category of costs should be the subject of an NI.

### *Test for adjusting opex*

- 6.7 We considered the parties' submissions (see Appendix I). In our view, the opex used to calculate K should reflect the expenditure, efficiently incurred, that Bristol Water needs to fulfil its statutory duties.
- 6.8 Accordingly, we increased opex (above that allowed by Ofwat) where the evidence was sufficiently detailed and strong for us to be confident that costs would increase by a predictable amount (so that we could make a central estimate), but only where we considered that effective management would not be able to mitigate or avoid the effects of such costs. We noted Bristol Water's point (responding to our provisional findings) that we should not make two efficiency challenges in respect of the same item (so that if we disallowed an item on the basis that costs could be absorbed within the business, we should not make a separate opex efficiency challenge). However, we did not consider that our approach amounted to 'double counting'. The opex efficiency targets are set as an incentive for Bristol Water progressively to improve its underlying efficiency. By contrast, businesses typically have fluctuations in individual cost items from year to year and manage their overall annual budgets for the business as a whole accordingly.
- 6.9 The RPI+K formula is intended to give companies strong incentives to manage their costs. It is deliberately unresponsive to the individual cost circumstances of any one company, and so in this respect is like a competitive market. Although we are not applying a 'competitive price' test, we are mindful that in competitive markets if an individual company's costs increase, it cannot necessarily increase its prices since its customers would switch to rival suppliers.
- 6.10 Responding to Bristol Water's submission that it is not in a competitive market, is under a duty to supply customers and cannot choose to scale back its operations,<sup>192</sup> as noted (paragraph 2.21), the fact that Bristol Water is not in a competitive market is the reason for the regulatory regime established under the WIA 1991. Our view is that the WIA 1991 does not mandate the 'cost plus' regime that Bristol Water appeared to be urging us to adopt.
- 6.11 We noted that Bristol Water made submissions where it thought that its opex would or might exceed Ofwat's allowance: it did not have the same incentives to tell us of categories where it thought that its costs were or may be below the Ofwat allowance. Finally, RPI captures many increases in costs and we noted that there were other

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<sup>192</sup>Bristol Water comments on provisional findings, section 7, paragraphs 51 & 52. It made the point in respect of training costs, should it face a shortage of specific technical skills, but we considered it had broader application.

mechanisms within the regulatory regime which may mitigate the risk of variation in costs beyond RPI.<sup>193</sup>

- 6.12 Accordingly, we adjusted opex for those costs where:
- (a) our central estimates indicated that Bristol Water's costs will increase;
  - (b) the costs would increase for reasons beyond Bristol Water's reasonable control;
  - (c) reasonable management action could not substantially mitigate the effect of such increases; and
  - (d) the RPI did not adequately capture the increase in costs.

### *Test for an NI*

- 6.13 An NI under Condition B of a water company's licence is an item which: (i) is not allowed for, in full or in part, in the determination; and (ii) has been formally notified to the company by Ofwat as being an NI. Bristol Water can make a claim for an Interim Determination of K (IDoK) in respect of costs attributable to NIs, and if the materiality amount calculation specified in the licence exceeds 10 per cent of the turnover of the business in its latest financial statement, Ofwat may change K accordingly.<sup>194</sup>
- 6.14 For items termed a 'one-way' NI, Ofwat makes no adjustment to base opex and only the company can trigger an (upwards) IDoK if the increase in costs is above the materiality threshold. For items termed a 'two-way' NI, Ofwat's practice is to include its estimate of the expected increase in base opex and both it and the company can trigger an IDoK if actual costs differ from the estimated level by more than a materiality threshold of 10 per cent of relevant turnover.<sup>195</sup>
- 6.15 Ofwat's decisions (a) to make an NI and (b) if so to make it one-way or two-way, are discretionary. In law, NIs are two-way unless Ofwat excludes the operation of its power under Condition B.14.1 when it notifies the NI to the company.
- 6.16 It was outside the terms of our reference for the CC to make NIs. We could, however, recommend to Ofwat that it makes an NI.<sup>196</sup> Accordingly, we considered the arguments of the parties on when it is appropriate to make an NI, and if so, whether this should be one- or two-way (see Appendix I).
- 6.17 As noted, the structure of the current regulatory regime envisages Ofwat setting prices every five years, which gives the company strong incentives to minimize its costs over that period (since it has more influence over its costs than its revenues).

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<sup>193</sup>For example, if company-specific factors cause a company's costs to be unusually low in the base year this could mean its costs increase unusually fast, but would also mean that its efficiency catch-up factor was lower.

<sup>194</sup>See Appendix A Schedule 1 (Ofwat's letter to Bristol Water with the final determination) for a list of NIs included in PR09.

<sup>195</sup>That is, the turnover in the latest financial year for which accounting statements have been delivered to Ofwat, as shown in those statements. Costs for each item must have a net present value of at least 2 per cent of appointed business turnover (the threshold for triviality) but can be aggregated together to exceed the 10 per cent materiality threshold. For example, in Bristol Water's 2007 IDoK, the costs associated with two of the items were individually less than 10 per cent but were still recovered through the IDoK.

<sup>196</sup>This is because the notification to a water company of an NI by Ofwat appears to amount to a licence modification. (This is shown most clearly in the case of a one-way NI, where the notification will exclude the right of Ofwat, under the terms of the licence, to initiate an interim determination in respect of the relevant NI.) The CC has power to modify licence conditions on a reference made under section 14 (licence modification) of the WIA 1991, but this reference has been made under section 12 (price control determination) only. The CC nevertheless considers that it has power to recommend to Ofwat that it makes an NI of any item to the extent that it has not been allowed for (either in whole or in part) in the CC's price control determination.

- 6.18 NIs take certain costs out of that regime and are more akin to setting prices on a 'cost plus' basis. They may therefore undermine the incentives in the current regime on companies to manage costs. There is also a burden on the regulated company in making IDoK applications and on Ofwat in considering applications (although the company making the application is likely to incur substantial costs). Additionally, two-way NIs envisage an increased regulatory burden on Ofwat to monitor costs and in following the process to trigger an IDoK to reduce prices (which might well be contested by the company).<sup>197</sup> Further, if there is a significant information asymmetry, Ofwat may not be aware that a company's costs have in fact fallen, which would reduce its ability to intervene effectively. It would also have to demonstrate that the material reduction in costs was not attributable to management action, which we agreed with Ofwat should be one of the central aims of management.<sup>198</sup>
- 6.19 We noted the role of an NI as a safety valve, so that a company can return to Ofwat if it turns out that its costs increase significantly for reasons beyond its control. This can reduce volatility in companies' profits by transferring risks to consumers, but this may be appropriate in certain circumstances. Our view of these circumstances is set out below.
- 6.20 Accordingly, we were sympathetic to Ofwat's view that an NI was not appropriate to address a 'normal business risk',<sup>199</sup> which we saw as a risk that could be managed by the company and was not an appropriate risk for customers to bear. We thought that NIs (and two-way NIs in particular) should be used sparingly.
- 6.21 Our view was that a one-way NI is appropriate to deal with circumstances where:
- (a) Bristol Water's costs might increase significantly;
  - (b) the costs would increase for reasons beyond the Bristol Water's reasonable control;
  - (c) reasonable management action could not substantially mitigate the effect of any such increase;
  - (d) there was a high degree of uncertainty about the resulting level of costs that the company would incur, or when they would occur; and
  - (e) RPI did not adequately capture those costs.
- 6.22 Our view was that a two-way NI must in addition meet the following conditions:
- (a) Bristol Water's costs may decrease (as well as increase); and
  - (b) the relevant costs were so transparent that there was no significant information asymmetry between Bristol Water and Ofwat that would materially inhibit Ofwat's ability to trigger an IDoK.
- 6.23 Having established our tests for adjusting opex, and for recommending an NI (one- or two-way), we assessed each item contested by Bristol Water, as set out in paragraph 6.4.

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<sup>197</sup> Ofwat emphasized its agreement with these points in the response to our provisional findings, paragraphs 5.1–5.5.

<sup>198</sup> Ofwat response to Bristol Water SoC, Annex F, paragraph 3.1.

<sup>199</sup> Ofwat response to Bristol Water SoC, paragraph 2.9.1.

## ***Pension-related items***

- 6.24 Bristol Water operates two defined benefit pension schemes, which have been closed to new entrants since 2002. Employees joining Bristol Water after this date can join a defined contribution scheme. Details are in Appendix J.
- 6.25 Bristol Water argued that it should be allowed an additional £6 million in opex in respect of four items: (a) deficit recovery payments on its defined benefit pension schemes; (b) ongoing regular contributions on the same schemes; (c) future obligations arising from the Pensions Act 2008 with regard to the defined contribution scheme; and (d) an error in the base opex used by Ofwat.

## ***Deficit recovery payments***

- 6.26 Bristol Water claimed total deficit recovery payments of £5.7 million. It said that for PR09 the most recent available actuarial valuation of the deficit and recovery payments should be taken into account, which calculated a deficit of £14.0 million, significantly higher than the £1.2 million deficit calculated at the last triennial valuation at 31 March 2008.
- 6.27 The parties' views are summarized in Appendix J. We determined an appropriate allowance for three key variables: (i) the proportion of the deficit which should be allowed; (ii) the size of the deficit; and (iii) the period over which it is assumed recovery should be made.
- 6.28 Having regard to the proportion of the deficit which should be allowed, we assessed the extent to which the deficit is outside Bristol Water's control, and the steps taken by Bristol Water to control its defined benefit pension liabilities. We noted that the defined benefit schemes were closed to new members, contributions are determined by the independent trustee, additional contributions were made by Bristol Water during PR04, and the recent increase in the deficit was largely due to financial market returns. We allowed 100 per cent in our provisional findings.
- 6.29 In response to our provisional findings, Ofwat argued that Bristol Water had some remaining ability to influence the size of the deficit, in that it could influence the rate of accruals, the benefits paid (albeit as part of a negotiation process with the trustee), management of the fund and levels of contribution.<sup>200</sup> Although we did not think that Bristol Water had much control over these items, which are largely determined by the trustee, we noted that it had some options to control its pension liabilities, such as increasing employee contribution rates or even closing the schemes to future accrual.
- 6.30 We considered the criteria in paragraph 6.12. Although appropriate pension deficit recovery payments are difficult to forecast, we did not consider that Ofwat's allowance of 50 per cent of the deficit reflected the degree of control that Bristol Water had over the size of the deficit recovery payments. Since a pension deficit on a defined benefit scheme reflects that, with hindsight, past employment costs were understated, and that this understatement must be corrected for the company to meet its contractual obligations to employees and pensioners, we acknowledge that there is an inevitable inter-generational transfer of costs from past customers to current and future customers.

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<sup>200</sup>Ofwat response to provisional findings, paragraph 5.6.9 (i).

- 6.31 In response to our provisional findings, Ofwat said that to make customers fully responsible for deficit reduction contributions ‘removes all incentives on the company to take appropriate action to manage its pension liability’.<sup>201</sup> In considering the allocation of responsibility for the deficit between shareholders and customers, we wished to retain an incentive for Bristol Water to manage its defined benefit pension liabilities, whilst also recognizing the steps which it had taken to control those liabilities and the potential for further management action. We agreed with Ofwat’s point on incentives and noted the significant steps Bristol Water had taken to control its pension liabilities, the residual level of control it had and the further steps it might take. Balancing these considerations, we decided that 90 per cent of pension deficit recovery costs should be allowed for the defined benefits schemes that are closed to new entrants.
- 6.32 While Ofwat considered all water companies in the pension allowance contained in its final determination, our redetermination reflects the specific circumstances of Bristol Water and its pension schemes. Accordingly, our view of how its pensions should be treated in this review period should not unduly influence Ofwat in future determinations.
- 6.33 With regard to the size of the deficit, we took the deficit as at the most recent update date, ie 31 December 2009. The triennial valuation at 31 March 2008 was the most detailed calculation of the deficit, but both asset returns and economic conditions had underperformed the assumptions since then, an issue recognized by Ofwat when it asked companies with older triennial valuations to provide updates. The updated valuations rely on rolling forward much of the triennial data and only revisiting key assumptions (eg inflation) and adjusting for asset performance. They appeared to be the most recent data available to us, and so we considered it appropriate to rely on them. We did not accept Ofwat’s submission that using such updated (if less rigorous) valuation meant that Bristol Water’s shareholders enjoyed reduced risk, so that we should make a counter-balancing adjustment elsewhere.<sup>202</sup>
- 6.34 With regard to the repayment period, both parties assumed a period of ten years. However, our view was that 15 years is appropriate, a period consistent with Ofwat’s treatment of other companies which had had their last formal valuation on or before 31 March 2008. A longer recovery period also smoothes the effect of the inter-generational transfer arising from the deficit.
- 6.35 The total deficit recovery contributions we treated as allowable opex was £2.772 million over the PR09 period.<sup>203</sup> We noted that the actual amounts Bristol Water was likely to pay will depend on the size of the deficit at the next triennial valuation (due at 31 March 2011) and the subsequent agreement with the pension trustees.

### *Ongoing contributions to defined benefit schemes*

- 6.36 At the 2005 triennial valuation, the trustee and Bristol Water agreed an employer contribution rate of 18 per cent of salary, with additional lump-sum contributions culminating in a final payment of £0.9 million in the 2010/11 financial year. In its SoC, Bristol Water stated that in the absence of these lump-sum contributions, the employer contribution rate would have been 24 per cent. It also cited the most recent

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<sup>201</sup>Ofwat response to provisional findings, paragraph 5.6.5.

<sup>202</sup>Ofwat response to provisional findings, paragraph 5.6.9 (ii).

<sup>203</sup>This figure is calculated in Appendix J, paragraph 46.

update valuation which suggests that employer contributions should rise to 27 per cent of salary from April 2011.

- 6.37 We found that for 2010/11, the appropriate allowance should be the actual cash which had been agreed to be paid, ie 18 per cent of salary or £1.051 million. Contributions in subsequent years will depend on the agreement with the trustees after the next triennial valuation. We were not persuaded by Bristol Water's suggestion that contribution rates should rise to 27 per cent of salary, as this figure was only set out in the latest update valuation, so we allowed contributions at a rate of 24 per cent of salary for the remaining four years of the period, which formed the basis of ongoing contributions set out in the last triennial valuation. This amounts to £[redacted] a year.
- 6.38 Based on the above, the total additional allowance for ongoing contributions that we made is £[redacted] over the PR09 period. This compared with Bristol Water's claim of £[redacted] in its SoC and Ofwat's additional allowance of £[redacted] in its final determination. As for the issue with deficit recovery contributions above, we recommend that Ofwat reflects any difference between this allowance and the actual amounts paid when it makes its next determination.

### *Pension Act obligations with regard to defined contribution scheme*

- 6.39 The Pensions Act 2008 requires all employees to be enrolled automatically into their employers' pension scheme or to be entered into the new Personal Accounts scheme. Bristol Water had 47 staff not taking part in any of its pension schemes and these staff were required to enrol in a pension scheme, likely to be Bristol Water's defined contribution scheme. Under the Pensions Act, the minimum employer contribution is 3 per cent of salary.
- 6.40 Bristol Water argued for an allowance of £57,000 in each of the years 2012/13, 2013/14 and 2014/15, which represents 6 per cent (the employer contribution rate under Bristol Water's defined contribution scheme) of the salaries of the 47 staff currently not enrolled.
- 6.41 We accepted that Bristol Water will face higher costs. However, we considered it unreasonable for an allowance to be made at a rate higher than the statutory minimum (3 per cent). It was also unlikely that all 47 employees will still be working for Bristol Water at 1 April 2012.
- 6.42 On this basis, the actual amount allowable would be less than half the £57,000 a year claimed by Bristol Water. We found that no allowance should be made as Bristol Water could control the effects of such a small amount as part of its general actions to manage costs.

### *Error in pensions base opex*

- 6.43 In its SoC, Bristol Water claimed that the base opex figure for pensions was £61,000 too high. The difference arose from the move to a cash basis for the determination of regular pension contributions. While Bristol Water told us that its lower figure was 'more appropriate',<sup>204</sup> Ofwat said that the figure was inconsistent with Bristol Water's FBP, June returns and other documents. For the reasons given by Ofwat, we found

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<sup>204</sup> [redacted]

that the higher figure used by Ofwat in its final determination was correct and no opex adjustment was necessary.

## **Bad debts**

### *Opex adjustment*

- 6.44 Due to the long-term upward trend in the water industry of bad debt and the impact of the recession, Bristol Water argued for an opex adjustment for household and commercial bad debt costs.
- 6.45 Bristol Water told us that its bad debt performance had been better than the industry average<sup>205</sup> during 2008/09. It said that its debt collection practice was prudent and innovative. However, it had already experienced an increase in bad debt costs compared with the base year 2008/09. Its figures for 2009/10 showed bad debt of £3.7 million, an increase of £1.4 million on 2008/09.<sup>206</sup> However, we noted that Bristol Water's debt write-offs in 2009/10 were only £1.4 million, the remainder of the charge being accounted for by provisions. Bristol Water noted that it had used a consistent method of calculation of its bad debt charge between the years,<sup>207</sup> but did not provide a convincing explanation of why its bad debt provision had increased by such a large amount in 2009/10. Ofwat considered that bad debt was a normal business risk, and that Bristol Water could manage debt collection better.
- 6.46 Ofwat acknowledged that water companies were deprived of the most direct way of encouraging payment, namely disconnection.<sup>208</sup> Companies also cannot install pre-pay meters or reduced flow mechanisms. However, it made no adjustment for Bristol Water, principally on the basis that it was very difficult to make reliable estimates and might undermine Bristol Water's incentives to collect bad debt.<sup>209</sup>
- 6.47 Regarding a possible adjustment to base opex for bad debts, we considered the points in paragraph 6.12. We noted that section 61(1A) WIA 1991 (added by the Water Industry Act 1999 section 1(1)) removed Bristol Water's ability to disconnect domestic customers who do not pay their bills. Equally we were aware that any allowance for bad debts amounts to a subsidy by customers that pay their bills of customers that do not. The Walker Independent Review of Water Charging<sup>210</sup> found that bad debt was an industry-wide issue and that changes to the regulatory regime were required to address the issue.<sup>211</sup>
- 6.48 These issues have existed for some time and it was unclear that further increases in bad debt over the next five years were likely to arise because Bristol Water had lost the ability to disconnect domestic customers some ten years ago. Nevertheless, the effects of the recession might mean that Bristol Water's bad debt costs would increase over the base year (2008/09) for reasons outside its control.

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<sup>205</sup> [redacted]

<sup>206</sup> Bristol Water June Return 2010, Board Overview.

<sup>207</sup> [redacted]

<sup>208</sup> [www.ofwat.gov.uk/publications/focusreports/prs\\_inf\\_baddebt.pdf](http://www.ofwat.gov.uk/publications/focusreports/prs_inf_baddebt.pdf).

<sup>209</sup> Ofwat response to Bristol Water SoC, Annex C, section 2.4.

<sup>210</sup> [www.defra.gov.uk/environment/quality/water/industry/walkerreview/documents/final-report.pdf](http://www.defra.gov.uk/environment/quality/water/industry/walkerreview/documents/final-report.pdf)—Chapter 7 Recommendation

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<sup>211</sup> Specifically the Walker review found that:

- (a) the charging system should incentivize the efficient use of water;
- (b) efficient management through metering was the biggest contributor to affordability;
- (c) that the regulatory regime needed to incentivize behaviour; and
- (d) debt in the water industry is three times higher than in the energy sector, although bills are one-third of energy bills and urgent legislative changes to allow water companies to bill named customers are required.

- 6.49 We considered whether management action could mitigate increased costs. We noted Bristol Water's arguments regarding its debt recovery processes, that its bad debt performance had been 'better than the industry average over this period'<sup>212</sup> (although we noted that this applied only to 2008/09 rather than to the entire previous review period<sup>213</sup>) and in particular, that its collection processes were in line with those of Wessex Water, with which it had joint venture billing and debt collection arrangements.
- 6.50 Our view was therefore that reasonable management action could not substantially mitigate these costs and that an opex adjustment was therefore appropriate. We agreed with Ofwat that setting a reliable central estimate was difficult and that we should support incentives to manage bad debt to the extent possible.
- 6.51 With regard to the amount, we considered the £12.8 million estimate that Bristol Water had set out.<sup>214</sup> We reviewed the assumptions that Bristol Water had made and in particular considered the appropriateness of the use of Experian forecasts to predict household debt levels across this review period,<sup>215</sup> and its assumptions about the impact of forecast increases in unemployment on bad debt levels.<sup>216</sup>
- 6.52 We found an average of independent forecasts<sup>217</sup> suggested an average increase in unemployment of 46 per cent for the five years compared with the 2008/09 base year. We also found that over the last two years water companies in aggregate had increased their bad debt opex by about 40 per cent of the national increase in unemployment over that period. We therefore allowed for Bristol Water's bad debt opex to increase by 40 per cent of the increase in unemployment compared with the base year.
- 6.53 Allowing also for underlying growth in the revenue on which bad debt is charged (see Appendix I), we decided to allow £3.3 million additional bad debt costs over the five years.

## NI

- 6.54 Bristol Water also argued for a two-way NI which would allow price limits to be adjusted up or down depending on the actual bad debt that it suffered. Ofwat agreed that there should be an NI because of the continuing difficult economic climate and included a one-way NI for this purpose that is expressly linked to worsening economic circumstances in a company's operating area.<sup>218</sup> It said that a two-way NI was not appropriate for this issue because of the information asymmetry involved and the importance of maintaining an incentive to collect revenue.<sup>219</sup>
- 6.55 As noted, we were reluctant to recommend NIs. However, Bristol Water and Ofwat agreed that bad debt should be the subject of an NI. We also considered that any adverse effects on incentives would be minimized if the triggering of an IDoK was linked to the increase in unemployment in Bristol Water's area compared with the

<sup>212</sup>Bristol Water reply to Ofwat's response, paragraph 154.

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<sup>214</sup>Bristol Water SoC, Section G.2.5, paragraph 985, Table 74.

<sup>215</sup>Bristol Water SoC, Section G.2.5, paragraphs 971–974 and Appendix 121 to the SoC.

<sup>216</sup>Bristol Water SoC, Section G.2.5, paragraphs 983 & 984.

<sup>217</sup>*Forecast for the UK economy: a comparison of independent forecasts*, HM Treasury, May 2010. For 2013/14 and 2014/15, we used the forecasts for 2013.

<sup>218</sup>A one-way NI had also been included for bad debts in previous price reviews. However, this was to allow companies to claim material increases in bad debt arising from the 1999 prohibition on the disconnection of domestic customers. Ofwat said that it did not see a compelling reason to continue the NI for this purpose beyond 2010 as companies now had more experience of managing bad debt following the disconnection ban. Ofwat response to Bristol Water SoC, Annex C, paragraph 2.4.3.

<sup>219</sup>Ofwat response to Bristol Water SoC, Annex C, paragraph 2.4.3.

base year. Consequently, we recommend that, in calculating whether the threshold for an IDoK has been met, Ofwat calculate the change in opex as 40 per cent of the change in local unemployment compared with our assumed level multiplied by our projection of Bristol Water's opex for bad debt (these amounts are shown in Table 2 in Appendix I).

- 6.56 As the level of local unemployment may be higher or lower than we have assumed and is observable by both parties (ie there is no information asymmetry), we consider such an NI should be two way.
- 6.57 Ofwat said that, in order to protect customers' interests, it would expect to establish a NI based on cash collection experience and costs rather than the bad debt accounting charge, as it was concerned that the charge was too dependent on judgements and models which were subject to change and regarded reported collection experience and costs as a significantly more robust basis on which to calculate any necessary bill increase. As noted in paragraph 6.55, we considered that the calculation regarding whether the IDoK threshold is met should be based on the increase in local unemployment and our projections of opex for bad debt. We agree that, if an IDoK is triggered, Ofwat may wish to have regard to Bristol Water's actual cash collection experience and costs in assessing the increased level of costs to reflect in any adjustment of prices. We also agree with Ofwat that any adjustment of prices should not be based on Bristol Water's actual bad debt charges.
- 6.58 Accordingly, we recommend that the NI should be two-way and linked to the rate of growth in unemployment in Bristol's operating area.
- 6.59 With regard to including commercial customers within the NI, our view was that this is not a significant item in the context of overall price limits (see further Appendix I) and so should not be included in the two-way NI we are recommending.

## **Energy costs**

### *Energy adjustment to base opex*

- 6.60 Ofwat's FD09 gave Bristol Water an opex allowance of £5.07 million for energy costs. This was higher than both the amount included in Bristol Water's FBP and also its latest forecast (of £4.69 million, including the impact of increased distribution charges)<sup>220</sup> and therefore Bristol Water did not dispute the adjustment made.
- 6.61 We found that Ofwat's revised allowance in the FD09 was adequate given its proximity to recent forecasts and its acceptance by Bristol Water.

### *Energy NI*

- 6.62 Regarding making energy costs an NI, we considered the points set out in paragraphs 6.21 and 6.22. We noted that fluctuations in energy prices would increase Bristol Water's costs but would also increase its revenue since its revenue was linked to RPI and energy was a significant component of RPI.<sup>221</sup>

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<sup>220</sup>Bristol Water SoC, Table 98, p289.

<sup>221</sup>Bristol Water told us that its energy costs in 2008/09 were £5.1 million. This represented about 5.4 per cent of its turnover in that year, which was somewhat lower than the energy component weights of RPI in 2009, which were 8.5 per cent in total (4.9 per cent for fuel and light and 3.6 per cent for petrol and lubricating oil). We also noted that the impact of raw energy price fluctuations on RPI would be reduced because these components would be affected by non-energy elements (gas and electricity distribution costs and petrol tax) but would be increased because energy prices affected other components of RPI such as manufactured goods.

- 6.63 We considered the following points relevant in deciding whether to recommend an NI for energy costs:
- (a) although increases in energy prices were outside Bristol Water's control, it could influence both the nature and terms of procurement contracts (which would affect its unit price paid) and its efficiency in the use of power;
  - (b) a company may have to incur additional management and procurement costs in managing its electricity costs effectively, particularly when prices are volatile. However, if a company had a more limited exposure to energy costs (for instance if it were subject to an NI) this may reduce incentives to manage the risk efficiently; and
  - (c) there is potential for information asymmetry as it is difficult for Ofwat to determine the extent to which higher costs could have been avoided by management action.
- 6.64 In addition, we considered Bristol Water's suggestion that energy costs be made a two-way NI. This might benefit consumers in that significant cost reductions could be passed on to them (although they would also be at risk of having cost increases passed on to them). However, the information asymmetry may mean that a two-way IDoK would be difficult to trigger in practice with regard to energy costs.
- 6.65 Accordingly, we were not persuaded by Bristol Water's arguments. Energy costs are a normal business risk that applies to all water companies, which they are best placed to manage. An NI would create disincentives for the company to do so and we also noted the regulatory burden involved. We concluded that an NI for energy costs was not appropriate.

### **Training costs**

- 6.66 Bristol Water estimated that it would need to recruit an additional 57 staff to replace staff retiring during the PR09 period, while only six skilled workers retired in the previous six years. Its FBP included an estimate of an additional £1.8 million to cover the human resources planning, recruitment and training costs associated with addressing this (ie over £31,500 per employee). It told us that it had taken steps to assess and minimize the required expenditure to the extent possible, and was unaware of any method beyond its current commercial practices for eliminating or severely cutting the costs associated with hiring new technical workers.<sup>222</sup> It said that if it were required to absorb the costs elsewhere, this would amount to increasing the scope of the efficiency challenge.<sup>223</sup> It disputed our provisional finding that a competitive market is indifferent to the age profile of the employees of companies within it, since even in such a market, companies must recover their costs.<sup>224</sup>
- 6.67 Ofwat considered that this was a normal business risk driven by an unusually high number of retirees in a short period. Ofwat took the view that a well-managed and efficient company would consider these matters and take steps to smooth expenditure over the longer period using accounting provisions if necessary.<sup>225</sup>
- 6.68 We considered the points set out in paragraph 6.12 and Bristol Water's submissions, and found that human resources costs, including training costs must be considered to be within Bristol Water's reasonable control and were adequately reflected by the

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<sup>222</sup>Bristol Water comments on provisional findings, section 7, paragraphs 46 & 47.

<sup>223</sup>Bristol Water comments on provisional findings, section 7, paragraph 50.

<sup>224</sup>Bristol Water comments on provisional findings, section 7, paragraphs 51 & 52.

<sup>225</sup>Ofwat response to Bristol Water SoC, paragraph 2.5.1.

RPI increases that Bristol Water will receive. Accordingly, we decided that we should make no opex adjustment.

### **Abstraction charges**

- 6.69 Bristol Water said that abstraction charges levied by the Environment Agency (EA) would increase at a faster rate than inflation over the PR09 period and that the latest forecast at 2009/10 was £1.9 million.<sup>226</sup> Ofwat made an NI for this item given the uncertainty surrounding future cost increases in abstraction charges after 2009–10 at the time of its final determination.
- 6.70 The EA provided us with up-to-date information on its future charges, telling us in particular that there would be a 10 per cent increase for 2010/11 for the EA Midlands region (which accounts for approximately 60 per cent of Bristol Water's costs).
- 6.71 Given that we could take into account the most recent available information in our redetermination, we found that that these charges are reasonably certain and for the reasons set out in paragraph 6.12, made an allowance of £2.4 million in total (an increase of £1.9 million over Ofwat's final determination amount), but that given the certainty around these costs, an NI is not appropriate.

### **Highways Agency inspection costs**

- 6.72 Bristol Water informed us that the Department for Transport was increasing the fee for random highway inspections from £25 to £50 per inspection from 6 April 2009. This equates to an increase of £93,000 a year or £465,000 over this review period.<sup>227</sup> Ofwat considered this immaterial in the context of overall opex and noted that almost no other company raised it.<sup>228</sup>
- 6.73 We agreed with Ofwat that this small cost did not merit an increase separate from the RPI increase that is built into the price cap. Accordingly, we found that that no opex adjustment was necessary.

### **Changes to water efficiency targets**

- 6.74 Bristol Water said that Ofwat had set out proposals to introduce 'new water efficiency targets' to promote sustainability and requested an appropriate adjustment to opex. Ofwat denied that the water efficiency targets were a new obligation, but rather had been in place since 1996.
- 6.75 Given that the efficiency targets were put into place at the time of the June returns in 2009 there did appear to be an argument for describing them as 'new' targets. We noted, however, that subsequent to this, in December 2009, the Walker Independent Review of Water Charging<sup>229</sup> recommended that Ofwat should ensure that its regulatory approach gave companies incentives to promote water efficiency by calculating the operational efficiency of water efficiency activity separately from other operational activity, which may be taken to indicate that this is viewed by the industry as an ongoing obligation.

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<sup>226</sup>Bristol Water SoC, paragraph 1122, p292.

<sup>227</sup>Bristol Water SoC, Table 76, p259.

<sup>228</sup>Ofwat response to Bristol Water SoC, Annex C, paragraph 2.1.

<sup>229</sup>[www.defra.gov.uk/environment/quality/water/industry/walkerreview/documents/final-report.pdf](http://www.defra.gov.uk/environment/quality/water/industry/walkerreview/documents/final-report.pdf)—Chapter 7 Recommendation xxv.

- 6.76 Further, this item did not appear to meet our criteria for making an adjustment to opex as these costs are within Bristol Water's reasonable control and could be mitigated by management action. Companies were already expected to promote the efficient use of water.
- 6.77 Accordingly, we found that an additional allowance in price limits to meet these targets was not justified.

### **Adjustment to base opex**

- 6.78 In FD09, Ofwat made a reduction of £[redacted] (compared with the FBP) because it believed that Bristol Water had overstated the extra cost attributable to operating certain treatment plants that had been part of Bristol Water's capex during the last review period, but which had not been fully operational in the base year (2008/09).<sup>230</sup> Ofwat subsequently accepted that, although some of the plants were at least partly operational in 2008/09, Bristol Water incurred less operating expenditure than normal due to wet weather conditions.<sup>231</sup> This meant that Ofwat considered that opex (pre-efficiency) should be increased by about £[redacted] and catch-up efficiency targets (see Section 7) remained the same as in FD09.
- 6.79 The remaining difference of view of £[redacted] related solely to the Banwell Treatment Works/Blagdon DAF plant, where Bristol Water noted that Ofwat made its adjustment based on the difference between the level assumed at FD04 and actual base year costs. Bristol Water's forecast was based on the difference between actual 2009/10 costs and the actual base year costs, which it said was a more accurate assessment as the costs assumed at FD04 had proven to be incorrect.<sup>232</sup>
- 6.80 We agreed that operating costs following completion of the quality schemes allowed for in PR04 should be increased as base year costs were unusually low. We based the allowance on the most recent figures available (as Bristol Water had done) and therefore the up-front allowance made should be for the full £[redacted] difference rather than the £[redacted] considered appropriate by Ofwat.

### **Enhancement opex**

- 6.81 Enhancement opex is opex associated with the enhancement capex that we allowed (in the categories of supply demand balance and resilience).
- 6.82 In relation to the opex associated with supply demand related capital investment projects, we agreed with Ofwat in terms of capex items relating to the supply side (reservoir expansion, mains reinforcement and construction, and deferral of the Honeyhurst–Cheddar connection detailed in Appendix E) and therefore adopted Ofwat's view of the opex allowed in FD09 for these schemes.
- 6.83 In relation to the demand side (selective metering; connection of new customers; optional metering and 'other' demand management detailed in Appendix E), the only difference between the CC view and FD09 which may affect the opex funded in this review period, related to the operating cost for optional meter installations.

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<sup>230</sup>[redacted]

<sup>231</sup>This increased its estimate of costs for completion of the PR04 quality programme to £2.1 million, compared with £0.6 million in FD09 and the variance between the parties on this issue is now £275,000 over this review period.

<sup>232</sup>Bristol Water reply to Ofwat's response paragraph 180.

- 6.84 With regard to operating costs, Ofwat suggested £[redacted], Bristol Water £[redacted], while Halcrow considered a range between £[redacted] and £[redacted] would be reasonable. Following consideration of the parties' submissions, and Halcrow's view, we decided that £[redacted] was the appropriate operating cost. This amounted to an adjustment to base opex of £[redacted] million over this review period (£[redacted] million for meters included in FD09 and £[redacted] million for the 5,818 extra meters for which we have allowed additional capex, in line with the latest actual figures for 2009/10 in Bristol Water's June Return<sup>233</sup>).
- 6.85 As we found that we would fund the Durdham Down resilience scheme, we adopted Ofwat's view of opex for Resilience (since it also allowed Durdham Down and excluded the other three schemes) and so included £0.6 million in price limits rather than the £0.8 million suggested by Bristol Water.

## 7. Opex efficiency

### *Ofwat's opex efficiency targets*

- 7.1 In each periodic review, Ofwat reaches a view on the scope for future efficiency savings for the regulated companies, which it uses to calculate how much it must allow them for opex over the coming period. This is based on an explicit recognition of the existence of an efficiency frontier based on the best practice firm in the industry, and the potential for others to catch up (and so to be more efficient in the next period than they have been in the last). Accordingly, the efficiency savings that the regulated companies are expected to achieve have two components:
- (a) a relative (or catch-up) efficiency factor. This component is based on an econometric analysis and regulatory judgement which Ofwat uses to set the efficiency benchmark, and then establish a challenge to each company to improve relative to that benchmark; and
  - (b) a continuing (or frontier shift) factor. This is based on Ofwat's assessment of the efficiency improvement that could be expected from the leading or frontier company in the water industry, taking into account the trend in the price of inputs needed to provide water services.<sup>234</sup>
- 7.2 Ofwat's efficiency challenge to Bristol Water for PR09 amounted to £7.8 million (or 3.3 per cent of its total opex). Of that, £6.1 million was attributable to catch-up efficiency and £1.7 million to continuing efficiency.<sup>235</sup>

### *Bristol Water's objections*

- 7.3 Bristol Water objected to both components (ie relative and continuing) of Ofwat's efficiency assessment. It submitted that there were serious flaws and uncertainties in Ofwat's catch-up assessment. According to Bristol Water, these related both to Ofwat's econometric modelling and to the exercise of its regulatory judgement in

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<sup>233</sup>Bristol Water June Return 2010, p39 of 54, paragraph 165.

<sup>234</sup>Ofwat final determination 2010–15, section 4.10 and Relative efficiency assessment 2008–09—supporting information, section 2.

<sup>235</sup>Ofwat's efficiency challenge in the final determination was presented in terms of percentages. The actual amount in pounds was calculated by Bristol Water in its SoC, Table 90, p278. The figures were quoted by Ofwat in its response to Bristol Water SoC, Annex C paragraph 4.2. They represent the difference between Ofwat's base opex assumptions for Bristol Water for the total PR09 period before and after its efficiency challenge.

relation to the number of off-model adjustments made in the process of determining the catch-up rate for Bristol Water.<sup>236</sup>

- 7.4 Bristol Water argued that Ofwat's assessment of continuing efficiency lacked transparency and adequate reasoning, and that its judgement about the scope for the industry to make further real efficiency gains was erroneous and at odds with both the work of Ofwat's own consultants (which Ofwat had commissioned to advise on this aspect of efficiency assessment) and with regulatory precedents.<sup>237</sup>

### ***Finding***

- 7.5 We assessed both the relative and continuing efficiency targets for base opex and enhancement opex. The parties' arguments and the analysis we undertook in reaching our decisions are set out in more detail in Appendix K.

### ***Base opex***

#### ***Relative efficiency***

- 7.6 We considered whether Ofwat's econometric models provided a reasonable means of estimating inefficiency levels. We considered this by looking in detail at the models themselves and at the model outputs, comparing estimates of inefficiency over time.
- 7.7 Having assessed the evidence, we found that Ofwat's methodology and data were sufficiently reliable to provide for a comparison of relative efficiency and to estimate inefficiency scores for each company.
- 7.8 We also assessed the 60 per cent catch-up target rate. We analysed results from Ofwat's models to see if actual catch-up rates supported Ofwat's catch-up target and considered the evidence submitted to us on this point by the parties. We also compared Ofwat's approach in setting catch-up rates with that used by Ofgem and used Ofgem's method to cross-check Ofwat's results.
- 7.9 We carefully considered Bristol Water's special factor claim and concluded that in the light of the evidence we saw, and given the exceptional size of Bristol Water's claim, we could not identify sufficiently convincing evidence to justify an allowance above the amount determined by Ofwat.
- 7.10 In our provisional findings we endorsed Ofwat's relative efficiency challenge to Bristol Water for base opex, which was equivalent to 0.917 per cent a year. In its response to our provisional findings, Bristol Water raised several points which we considered in detail including additional econometric evidence on efficiency estimates for Bristol Water (as set out in Appendix K).
- 7.11 We reviewed this evidence against other evidence available to us, including our own analysis using Ofgem's approach and the evidence submitted by Oxera. Our view was that, on balance, the weight of the evidence was consistent with Ofwat's classification of Bristol Water as falling within efficiency Upper Band B. Therefore we decided that the efficiency target contained in our provisional findings, namely 0.917 per cent a year, was appropriate for base opex.

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<sup>236</sup>Bristol Water SoC, section H.4.

<sup>237</sup>Bristol Water SoC, section H.4.

### *Continuing efficiency*

- 7.12 In order to assess the reasonableness of Ofwat's continuing efficiency challenge to Bristol Water, we first looked at historic productivity growth in the water and energy sector and its relationship with productivity growth in other sectors of the economy, to see if we could properly infer the prospects for future productivity growth in water. We also considered the work undertaken by other sector regulators and their consultants to estimate productivity improvements that can be expected from other regulated sectors. We then considered how input price inflation may affect opex. Using the most up-to-date information available, we developed our own forecasts for individual parts of the overall real price effect<sup>238</sup> (RPE) for a notional water company. We were conscious that assuming excessive increases in RPE would not only be detrimental to customers' interests over the next five years (by leading to a higher opex allowance and higher K), but might also relax the pressure on companies to achieve efficiency savings. In a competitive market, we would expect that the higher the increase in real prices, the greater the pressure on management to improve efficiencies.
- 7.13 On the basis of our analysis we estimated that leading water companies remain capable of reducing opex in real terms over PR09 at a rate of 0.5 per cent a year, which is lower than Ofwat's estimate (0.62 per cent<sup>239</sup>) but higher than Ofwat's final figure (0.25 per cent). However, we accepted Ofwat's argument that there may be a case for erring on the side of caution given the uncertainty about several components of continuing efficiency calculations. On account of this, we decided that a lower target of 0.25 per cent a year was appropriate, as Ofwat determined.
- 7.14 In its response to our provisional findings, Bristol Water raised several issues concerning the forecasts of RPE those findings contained. In particular, it suggested that we should have made a separate allowance for power costs and specialist labour in our calculations. We disagreed. We noted that Ofwat included an uplift to power costs for Bristol Water at prices which are well above current electricity prices and that therefore it would not be appropriate to include an additional allowance in our RPE calculations. Regarding the issue of specialist labour, we saw no evidence from Bristol Water that our use of an economy-wide wages index was inappropriate for water industry opex. Accordingly, we saw no compelling reasons to change our forecasts (as set out in Appendix K). Consequently, we applied the efficiency target described at paragraph 7.13 above.

### *Enhancement opex*

- 7.15 In our provisional findings we adopted Ofwat's assumption that the efficiency challenge for enhancement opex should be 1.5 times that of the efficiency challenge for base opex. However, in light of the argument put to us by Bristol Water,<sup>240</sup> and having considered Ofwat's response, we decided that enhancement opex should be subject to the same efficiency challenge as base opex. We saw no grounds for different treatment.

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<sup>238</sup>The extent to which a company's input costs are increasing ahead of inflation.

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<sup>240</sup>Bristol Water comments on provisional findings, section 5 on opex efficiency, B5 paragraphs 81–84.

## 8. Other issues

### *Tax changes*

- 8.1 In its SoC, Bristol Water referred to two potential changes to the taxation regime which it believed might have the effect of increasing its corporation tax liability substantially. It requested that two-way NIs were put in place for each of these changes. Evidence from the parties is set out in Appendix L.
- 8.2 The first issue was the impact of a change in accounting convention from UK Generally Accepted Accounting Practice (UK GAAP) to International Financial Reporting Standards (IFRS).<sup>241</sup> The UK Accounting Standards Board is currently consulting on this issue and, if successful, plans to implement the change in 2013.
- 8.3 Currently, Bristol Water uses renewals accounting, which means that all infrastructure maintenance expenditure is capitalized in its statutory accounts. With the adoption of IFRS, Bristol Water stated that renewals accounting would no longer be permitted. This could lead to a less favourable tax treatment and a higher corporation tax charge.
- 8.4 We found that the risks arising from changes in corporation tax within a price determination period were normal business risks, and it was not appropriate for customers to bear them. Further, our view was that Bristol Water may be able to mitigate the effects of the change through changes to its accounting policies and possibly through negotiation with HM Revenue & Customs (although we noted the evidence that Bristol Water supplied regarding the HM Revenue & Customs' inflexibility on this issue). Therefore we do not recommend that Ofwat put an NI in place for this item.
- 8.5 The second issue was the effect of changes made to the UK corporation tax regime by the new Government, specifically a reduction in capital allowances. Bristol Water stated that this could increase its tax liability by up to £1.7 million a year and that tax changes were not a normal business risk for it, as unlike companies in competitive market sectors it was unable to increase its prices to pass on tax increases.
- 8.6 Since publication of our provisional findings, the Government announced changes to corporation tax rates and capital allowances in its June 2010 Budget. We took such changes into account as we modelled K. In its response to our provisional findings, Bristol Water said that the NI for this issue was no longer required.<sup>242</sup>

### *Depreciation*

- 8.7 In its FD09, Ofwat reduced Bristol Water's Current Cost Depreciation (CCD) allowance by £2.5 million as it was not satisfied with Bristol Water's modern equivalent asset (MEA) revaluation process. It reduced the CCD allowance by a further £1.6 million after applying a cross-check mechanism comparing CCD to planned maintenance expenditure. A summary of the parties' evidence is set out at Appendix M.

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<sup>241</sup>This would occur either by mandatory adoption of IFRS, or convergence of UK GAAP with IFRS.

<sup>242</sup>Bristol Water response to provisional findings, Section 8, paragraph 3.

## *MEA revaluation*

- 8.8 We considered that the adoption of a revaluation exercise every ten years was reasonable. Bristol Water did not appear to address the specific issues raised by Ofwat,<sup>243</sup> but restated its confidence in its revaluation. However, it appeared within Ofwat's remit to judge otherwise and to note the low degree of confidence Bristol Water places on the accuracy of its revaluation.
- 8.9 Regarding inflation indices, we noted that although chosen for reasons of good regulatory practice (to avoid the perverse incentive of companies not using up-to-date valuations), Ofwat's use of RPI as the inflation index for the MEA revaluation exercise was inconsistent with its use of COPI in its financial model. We therefore found that £0.9 million should be removed from the CCD reduction.
- 8.10 Ofwat based the remaining £1.6 million of its CCD adjustment on a review of asset classes and the effect of the revaluation on asset values and lives. Given its concerns with Bristol Water's revaluation, and the low confidence grade assigned by Bristol Water to this revaluation, we found that this £1.6 million adjustment was appropriate.

## *Depreciation cross-check*

- 8.11 We found the relationship between the revaluation challenge and the depreciation cross-check somewhat unclear. In particular, it appeared that companies are challenged on the level of their CCD if they do not meet one criterion (an acceptable, explainable change in the CCD charge), and are then challenged again if they do not meet another criterion (CCD charge within 5 per cent of maintenance expenditure). Ofwat said that the revaluation challenge primarily focused on CCD at one point in time whereas the depreciation cross-check assessed CCD over a much longer time frame (1998–2025). This 'cross-check' appeared to be more of a second-stage challenge than confirmation that the results from the first stage are appropriate.
- 8.12 Notwithstanding the previous point, the tolerance threshold of 5 per cent appears low (given the degree of accuracy possible when estimating CCD and maintenance expenditure over 30 years), although we note that it has increased from previous levels. From Bristol Water's point of view, the success of the cross-check depends on the quality of its explanation of its figures to Ofwat more than the quality of those figures themselves.
- 8.13 On the issue of allocation of depreciation, Ofwat and Bristol Water continued to take opposing positions. Bristol Water believed that if the correct CCD reduction was used then the £1.6 million depreciation adjustment arising from the cross-check no longer applied. Ofwat stated that even if Bristol Water's CCD reduction was used, a depreciation adjustment of £1.4 million would apply. We found that Bristol Water's method of allocating depreciation was more granular than Ofwat's, and took better account of the revaluation profiles of older and newer assets. Using Bristol Water's allocation method in the cross-check brings the difference between projected CCD and maintenance expenditure to within the 5 per cent tolerance level, and accordingly we found that no further adjustment to depreciation needed to be made.

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<sup>243</sup> [redacted]

## Shortfall

- 8.14 Shortfalling is the process by which Ofwat penalizes a failure to deliver schemes prescribed in previous final determinations according to the time limits set.<sup>244</sup>
- 8.15 Bristol Water stated that Ofwat had applied a shortfall penalty of £0.3 million to the rephasing of AMP3 expenditure (ie expenditure for the review period starting 2000) in respect of the scheme to deal with excessive nitrate at Purton and Littleton treatment works. Bristol Water had found a lower-cost solution with which the DWI was satisfied, and Ofwat had said that it would not attempt to recover the additional funded costs that had proved unnecessary.<sup>245</sup>
- 8.16 Ofwat stated that since Bristol Water did not deliver this scheme on time Ofwat applied a shortfall to remove the benefit Bristol Water had received from the revenue that would have financed the output. As the output was still required, Ofwat did not remove the allowance but took steps to recover the financial benefits that had accrued to Bristol Water from having the money but delaying the delivery of the nitrate scheme. Accordingly, Ofwat reduced Bristol Water's revenue in this review period by just over £63,000 a year, a total of just over £316,000.<sup>246</sup>
- 8.17 This was one of several small issues that Bristol Water raised. However, we were satisfied with Ofwat's explanation. It did not appear to have recovered the funding, but rather to have removed the benefit that Bristol Water obtained from receiving the funding but delaying the delivery of the required output. We decided not to disturb Ofwat's shortfall adjustment.

## Revenue

- 8.18 More than two months after the submission of its SoC, in an update of developments that Bristol Water stated were potentially material, Bristol Water told us of several possible changes to its volume projections, including higher tariff volume and lower large user volume.<sup>247</sup> We noted that the changes mentioned in Bristol Water's letter went in opposite directions in terms of their impact on K for 2010/11 to 2014/15. Having regard to the fact that such projected figures for the period up to 2014 were inherently uncertain, that changing the volume projections would, therefore, not necessarily result in a more accurate determination of K, and that the volume projections in Ofwat's FD09 and Bristol Water's SoC were the same, we decided not to make any changes to these figures.

## 9. Cost of capital

- 9.1 Our approach was to base Bristol Water's price cap on the revenue required by Bristol Water to cover its efficiently-incurred costs, including a return on its RCV. We have set out our assessment in detail in Appendix N and summarize it here.
- 9.2 We consider that Bristol Water's return on its RCV (its required return) should be equal to its expected cost of capital. A return below the cost of capital would not be consistent with the duty contained in section 2(2A)(c) of the WIA 1991 to secure that the company can finance the proper carrying out of its functions. A return above the cost of capital would not be consistent with our section 2(2A)(a) duty to further the

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<sup>244</sup> [www.ofwat.gov.uk/publications/pricereviewletters/ltr\\_pr0938\\_serviceability](http://www.ofwat.gov.uk/publications/pricereviewletters/ltr_pr0938_serviceability).

<sup>245</sup> [REDACTED]

<sup>246</sup> [REDACTED]

<sup>247</sup> [REDACTED]

consumer objective, since consumers would pay higher prices than if the company's return was equal to the cost of capital. In calculating return, the relevant costs are those projected for an efficiently managed company and may be above or below those actually incurred. They may be above actual costs where the company benefits from positive incentives (as a result of being more efficient than the benchmark) and below actual costs where the company is less efficient than the benchmark.<sup>248</sup> Bristol Water said that it was not valid to exclude inefficiently incurred costs except to the extent that management might be able to remove such inefficiency over time.

9.3 We consider two initial issues:

- (a) Which company's cost of capital is relevant—that of the regulated (appointed) company or its ultimate holding company?
- (b) Which time period is relevant—the period over which we are determining the price cap (2010/11 to 2014/15) or the longer term?

### ***Relevant company***

9.4 Bristol Water is a subsidiary of Agbar, and is ultimately controlled by Suez Environnement. However, under the existing regulatory regime for water, Bristol Water, like other water companies, is treated as a 'ring-fenced' company.<sup>249</sup> In particular, Bristol Water is required at all times to conduct its regulated business as if it were substantially a free-standing business and a separate public limited company. Bristol Water is also required to use all reasonable endeavours to ensure that it maintains at all times an investment grade issuer credit rating.<sup>250</sup>

9.5 We were therefore concerned with the cost of capital of Bristol Water as a stand-alone ring-fenced company.

### ***Relevant period***

9.6 We are calculating the required return over the period 2010/11 to 2014/15 and, in our view, it was the expected cost of capital in that period that was relevant. Long-run averages are relevant only to the extent that they affect the cost of capital in that period. They may do so for two main reasons:

- (a) Regulated companies finance long-life assets in part through the issue of fixed-rate debt with long maturity and the cost of existing fixed-rate debt is affected by interest rates at the time the debt was issued.
- (b) Asset prices and/or yields may have a tendency to revert to a longer-run mean value and, if so, past levels are relevant to estimating the expected level over the relevant period.

9.7 It is sometimes suggested that regulators should seek explicitly to set required return equal to some concept of long-term average cost of capital rather than the expected cost of capital for the specific price-cap period. We did not consider that this would be consistent with our duties in this determination. Setting required return below

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<sup>248</sup>Additionally, efficiency incentives may relate to an earlier period—for example, the Overall Performance Adjustment relates to performance in the previous five-year period; and CIS adjustments relate to capex planning which was mostly carried out prior to the start of the period.

<sup>249</sup>This is set out in section 6A of the licence: Bristol Water plc is the 'Appointee', and as such is the subject of the obligations the licence contains, in particular the ring-fencing obligations in Licence Condition F6A.

<sup>250</sup>This also applies to any associated company as issuer of corporate debt on its behalf.

the expected cost of capital for the period would not be consistent with our section 2(2A)(c) duty to secure that the company can finance the proper carrying out of its functions. Equally, setting the required return above the expected cost of capital in the relevant period would not be consistent with the consumer objective under section 2(2A)(a) (because periods when return is above expected cost of capital would never be balanced by periods when return is below).

### ***Weighted average cost of capital and required return***

9.8 The cost of capital is a weighted average of two components:

- (a) the cost of debt; and
- (b) the cost of equity, which is the return required to induce the marginal investor to purchase shares in the business.

The return required by the marginal investor will depend on other aspects of price-cap setting, for example projections of opex. If, for example, the opex projections are relatively conservative and consequently the market expects the company to outperform, the marginal investor's required return will be lower and hence the cost of equity will be lower. In setting K, we make central projections of opex and other elements in the price control (which we interpret as expected values). Consequently, we can estimate the cost of capital without considering effects from opex or other elements.

9.9 The weightings (proportion of debt and equity, known as gearing) reflect the relative importance of each type of financing in the company's capital structure.

9.10 Both Ofwat and Bristol Water calculated required return as the sum of the cost of capital and projected tax (corporation tax) payments, where the projected tax payments are calculated within a financial model. We used the same approach. This involves calculating a simple weighted average of the cost of debt and cost of equity (sometimes referred to as the 'vanilla WACC') and feeding it into a financial model.<sup>251</sup>

9.11 At the most general level, there are three potential approaches to estimating the WACC:

- (a) direct estimation of the company's cost of capital;
- (b) direct estimation of the cost of capital of comparator companies; and
- (c) model-based estimation of the company's cost of capital, either based on data for the company itself or comparators or both.

We directly estimated the company's cost of debt (its cost of existing debt is a known quantity), and applied benchmark data from the bond market to estimate the cost of new debt (taking into account yields on traded and recently issued bonds, together with expected trends in interest rates). For the cost of equity, we had to use model-based estimation. As in previous inquiries, we used the CAPM as we considered it was the most robust way to measure the returns required by shareholders. Ofwat and Bristol Water also expressed the cost of equity in terms of the CAPM but relied

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<sup>251</sup>During the process leading to Ofwat's final determination, both Ofwat and the water companies used Ofwat's financial model within its 'Reservoir' modelling suite. Ofwat provided us with an Excel version of its financial model and both Ofwat and Bristol Water provided us with the inputs to this model that generated their proposed Ks. We used this financial model to calculate our Ks and the implied financial ratios. The general approach is set out in Appendix B on the regulatory framework.

on overall judgment about the cost of equity rather than estimation of the components of the CAPM.<sup>252</sup>

- 9.12 The CAPM states that the cost of equity is equal to the risk-free rate plus the equity risk premium (ERP) multiplied by beta, where beta measures the extent to which the price of a particular share fluctuates with the market (referred to as systematic risk). Bristol Water is no longer quoted, but it was still possible to measure beta for four quoted WaSCs. However, it was then necessary also to consider whether and to what extent Bristol Water's beta differed from those of the quoted WaSCs.
- 9.13 Our detailed analysis is set out in Appendix N. In summary the main points of our assessment are that:
- (a) We considered that the gearing assumed in the WACC should be consistent with the gearing used to assess financial ratios and to calculate tax.
  - (b) The assumed level of gearing should generate financial ratios consistent with the company maintaining investment grade issuer shadow status (see Section 10). On a cautious basis, we have chosen a lower initial level of gearing (60 per cent) than Bristol Water's existing 69 per cent in order that our projections are consistent with Bristol Water maintaining investment grade issuer shadow status.
  - (c) Our estimate, expressed in real terms, of Bristol Water's cost of existing debt is 3.8 per cent and of its new debt is 4.0 per cent, giving an overall average cost of debt of 3.9 per cent.
  - (d) As regards the cost of equity:
    - (i) current index-linked yields are about 1 per cent. As they may still be affected by market distortions we considered that a range of 1 to 2 per cent for the risk-free rate was appropriate;
    - (ii) a reasonable range for the market return was 5 to 7 per cent, implying an ERP of 4 to 5 per cent;
    - (iii) we estimated WaSCs' asset beta to be in the range 0.27 to 0.36. We accepted that Bristol Water had higher systematic risk than the WaSCs. After allowing for this, we estimated Bristol Water's asset beta to be 0.32 to 0.43 and hence its equity beta (at 60 per cent gearing) to be 0.64 to 0.92; and
    - (iv) we did not allow for any explicit small company equity premium (SCEP) in addition to Bristol Water's higher systematic risk.
- 9.14 We noted that a number of cross-checks indicated that the top of our range would be appropriate. Accordingly, bearing in mind continuing uncertainties in the financial markets, we decided to set the cost of capital at the top end of our range: 5 per cent. Our cost of capital estimates and those of Bristol Water and Ofwat are summarized in Table 1.

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<sup>252</sup> [ ]

TABLE 1 Estimated cost of capital for Bristol Water

					<i>per cent</i>
	<i>CC range</i>	<i>CC projected</i>	<i>Ofwat original</i>	<i>Ofwat regeared*</i>	<i>Bristol Water</i>
Gearing	60	60	52.5	60	60
Cost of debt (pre-tax)	3.9	3.9	4.0	4.0	4.3
Cost of equity (post-tax)	3.6–6.6	6.6	7.1	7.9*	10.4
WACC (vanilla WACC)	3.8–5.0	5.0	5.5	5.5*	6.7
<i>Cost of equity calculation</i>					
Risk-free rate	1.0–2.0	2.0	2.0	2.0	2.5
ERP	4.0–5.0	5.0	5.4	5.4	5.4
Equity beta	0.64–0.92	0.92	0.94	1.10*	1.06†
SCEP	0.0	0.0	0.0	0.0	2.2†

Source: CC calculations.

\*The Ofwat equity beta, cost of equity and WACC are adjusted to 60 per cent gearing for comparability with CC and Bristol Water estimates.

†The quoted equity beta for Bristol Water is not strictly comparable with CC figures since its SCEP includes an allowance (1.5 per cent) for higher systematic risk compared with WaSCs. If, for consistency with CC and Ofwat figures, this is instead added to the equity beta figure, equity beta would increase to 1.33 and the SCEP reduce to 0.7 per cent.

- 9.15 Even though we set the cost of capital at the top of our range, our projected figure remains below those of Ofwat and Bristol Water.
- 9.16 Our cost of capital was below Ofwat's because we based our equity beta on estimates of beta for quoted WaSCs (although we also allowed for Bristol Water having higher systematic risk than the WaSCs) whereas we understood Ofwat to have made a judgement about the cost of equity and then worked backwards to derive the implied equity beta. Our cost of capital was also lower than Ofwat's because our ERP was below that of Ofwat—our figure reflected our review of the evidence, which is set out in Appendix N.
- 9.17 Our cost of capital was below Bristol Water's for the same two reasons and also because we projected a lower cost of debt and lower risk-free rate and because we did not include an explicit SCEP. Our reasons are set out in Appendix N.
- 9.18 In considering the impact of the WACC on required return and hence on K, we also had to take into account the treatment of corporation tax. Unlike Ofwat and Bristol Water, we adopted a consistent treatment of tax in the WACC and in the financial projections, which recognized that lower gearing reduces the (vanilla) WACC but increases tax payments. Our treatment of tax offset our lower WACC to a considerable extent (see Appendix N, Table 13).
- 9.19 We received a considerable volume of comment regarding the cost of capital in our provisional findings and considered all these comments carefully.
- 9.20 Bristol Water, Water UK and some individual water companies argued that our cost of capital was inconsistent with regulatory precedent. We accept that changes in the regulatory cost of capital need to be satisfactorily explained. We explain in detail the basis of our projected cost of capital and why it differs from Ofwat's in Appendix N.
- 9.21 We also accept that consistency with regulatory precedent is a relevant consideration and that any significant changes should be satisfactorily explained and well justified. Differences that arise due to changes in approach may need to be particularly well justified, as there are benefits to a stable and well understood regulatory framework. As discussed in further detail in Appendix N, our approach to setting the cost of capital for Bristol Water is consistent with that adopted in our 2007 and 2008 reports

covering Heathrow, Gatwick and Stansted airports. Differences may arise despite adopting a consistent approach because of the need to use case-specific and up-to-date data. For example, in airports references we adopted a higher beta than in the current case because water companies have a lower risk than airports. Further, since we are redetermining Bristol Water's price cap, Ofwat's cost of capital was not a binding regulatory precedent. We had to form our own view of key factors affecting the price cap, including the cost of capital.

- 9.22 Similarly, decisions of other sectoral regulators, such as Ofgem and the CAA, are subject to redetermination by ourselves and are consequently less relevant as precedent than our previous decisions (though, as we point out in Appendix N, the difference between our chosen cost of capital for Bristol Water and that used by Ofgem for electricity distribution companies was very small and the difference with the CAA's proposed figure for air traffic control was mainly due to differences in beta). We therefore concluded that our cost of capital was consistent with relevant regulatory precedent.
- 9.23 Ofwat and two quoted water companies argued that our approach to tax in the cost of capital provided an invitation to 'gear up' because we projected tax payments on the basis of the level of gearing we used to calculate the WACC (rather than projecting tax on the basis of Bristol Water's higher current gearing). We considered it necessary for there to be consistency between gearing in the WACC and in the tax modelling in order to generate a projected return equal to the cost of capital. We did not consider our approach constituted an invitation to Bristol Water to gear up further to the detriment of consumers, as consumers are protected through Bristol Water's licence obligation to maintain an investment grade credit rating and the special administration procedure for insolvency (see Appendix O). However, as discussed in Appendix N, we are conscious of possible concern over loss of share price information if our approach were applied to all companies and note that it may be possible for there to be a more transparent incentive for companies to maintain quoted status.
- 9.24 We therefore confirmed our provisional finding that Bristol Water's WACC is 5.0 per cent and used this for our final determination.

## **10. Financeability**

### ***Introduction***

- 10.1 Section 2(2A)(c) of the WIA 1991 requires us to secure that water companies can finance the proper carrying out of their functions. Bristol Water also has a duty under Licence condition F 6A.6 to use all reasonable endeavours to ensure that it 'maintains at all times an issuer credit rating which is an Investment grade rating'.
- 10.2 These provisions were the subject of considerable debate, and as a topic were collectively referred to as 'Financeability', although views differed as to what that meant. We set out the parties' views, our findings regarding our obligation, and how we fulfilled that obligation, below.

### ***Ofwat's view***

- 10.3 Ofwat considered that financeability meant ensuring that, if reasonably efficient, a company's revenues, profits and cash flows should allow it to raise finance on

reasonable terms in the capital market.<sup>253</sup> It considered that equity-based options including issuance of new equity and retained earnings could be part of the solution to easing any financing constraint.<sup>254</sup> It considered that each company was free to choose its own capital structure, but this was wholly at its own and its investors' risk.<sup>255</sup>

- 10.4 Ofwat took the balance sheet as submitted in Bristol Water's FBP, and adjusted cash balances so that net debt at 31 March 2010 was equivalent to 52.5 per cent of Bristol Water's closing RCV in 2010, consistent with the gearing assumption underpinning Ofwat's cost of capital assumption.<sup>256</sup> It also assumed that Bristol Water would raise new equity capital of £12.7 million (approximately 10 per cent of Bristol Water's notional equity implied by its RCV at 1 April 2010).

### ***Bristol Water's view***

- 10.5 Bristol Water argued that section 2(2A)(c) required us to ensure that it could maintain its investment grade rating from the revenues we determined it could raise during this review period, taking it (as the appointed company) as we found it and respecting its financial structure. In particular: we should take Bristol Water's current financial structure (ie its debt to equity ratio or gearing) as our starting point; we should make future projections on the assumptions that shareholders are not required to contribute additional funds and continue to be paid a dividend on their existing implied regulatory equity (that is, RCV less net debt); and if a high level of capital expenditure resulted in deterioration in Bristol Water's financial ratios from those that would be consistent with investment grade credit status, we should increase its price cap.<sup>257</sup>
- 10.6 Finally, Bristol Water stated that the approach in our provisional findings was out of step with precedent and 'an unheralded, radical and corrosive departure from well-established practice'.<sup>258</sup>

### ***Our finding regarding the Section 2(2A)(c) duty***

- 10.7 Bristol Water has a duty under Licence condition F 6A.6 to use all reasonable endeavours to ensure that it 'maintains at all times an issuer credit rating which is an Investment grade rating'. We accepted that we should not reach a determination that would cause Bristol Water to breach this duty.
- 10.8 We considered that the duty that falls directly on us under section 2(2A)(c) to secure that companies can finance the proper carrying out of their functions is fulfilled by ensuring that the opex and capex projections and the cost of debt and equity (and therefore the WACC) are reasonable. If these are reasonable (and Bristol Water has reasonable options which enable it to raise finance while complying with its licence conditions), then Bristol Water should be able to finance its functions.
- 10.9 Contrary to Bristol Water's submission, we did not consider that we were obliged to base our assessment on Bristol Water's actual condition, since, as noted in paragraphs 2.23 to 2.27, this was likely to guarantee Bristol Water a return regardless of how well it had performed its functions. Further, such a guarantee would be to the detriment of consumers and would prevent us providing incentives

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<sup>253</sup>Ofwat: *Setting price limits for 2010–15: Framework and approach*, paragraph 5.3.

<sup>254</sup>Ibid paragraph 5.3.5.

<sup>255</sup>[redacted]

<sup>256</sup>Ofwat: *Setting price limits for 2010–15: Framework and approach*, paragraphs 5.4.5 and 5.5.1 [redacted].

<sup>257</sup>[redacted]

<sup>258</sup>[redacted]

for Bristol Water to carry out its functions properly. Giving such a guarantee would give priority to our duty under section 2(2A)(c) over our other duties under section 2(2A) to further the consumer interest and secure that Bristol Water carries out its functions properly. Our aim was to give equal weight to those duties.

- 10.10 We agreed with Ofwat that Bristol Water's actual financial structure is for Bristol Water to determine, but that this was at Bristol Water's own risk. Accordingly, we considered it reasonable for us to conduct our assessments on the basis of assumptions as to financial structure that we considered to be reasonable in terms of gearing (as long as we applied such adjustments in calculating the WACC), and that we were entitled for this purpose to include assumptions that shareholders would supply finance in some form. Bristol Water stated that this approach 'can be used to circumvent any financing problem, making checking for financeability meaningless'.<sup>259</sup> We considered that this reasoning applied equally to Bristol Water's proposal to increase customer prices (since any financial structure could be accommodated, if necessary, by increasing prices), and our duty to further the consumer interest required us to carry out a critical evaluation of whether such a price increase was strictly necessary for a company in the situation of Bristol Water having made appropriate assumptions as to the alternatives available to it.
- 10.11 Further, since we were concerned with the financeability of an efficient company, we examined financial ratios before applying performance and incentive adjustments (such as adjustments for opex and capex outperformance, CIS and the overall performance adjustment).
- 10.12 Finally, with regard to Bristol Water's submission on precedent, our approach was consistent with the MMC's statement as far back as the 1995 South West Water report that 'in our view, as long as the overall rate of return is satisfactory, it is for the company to adapt its financial structure and policies to achieve key financial ratios'.<sup>260</sup>
- 10.13 Our approach was also the same as that taken by the CC in two previous price-cap inquiries, where it considered that projections at the company's actual gearing may not have been consistent with its maintaining adequate credit ratios. In its 2000 inquiry into Mid Kent, the CC made initial financial projections on the basis of the company's initial balance sheet, but subsequently adopted a lower level of gearing than shown in the initial balance sheet.<sup>261</sup> In its 2007 inquiry into Heathrow and Gatwick airports, the CC assessed the level of gearing likely to be compatible with an appropriate credit rating for businesses with Heathrow and Gatwick airports' characteristics.<sup>262</sup> It assessed the cost of capital using a gearing of 60 per cent, which was significantly below BAA's actual gearing.<sup>263</sup>
- 10.14 We also considered how our approach related to Ofwat's. Ofwat calculated the WACC and made its financial projections on the basis of a notional gearing assumption (which was 52.5 per cent for WoCs including Bristol Water). We did not adopt this level of gearing as a starting point for our redetermination as we considered that we should reach our own view on this issue by reference to Bristol Water's specific circumstances. However, given the relatively large number of

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<sup>259</sup> [redacted]

<sup>260</sup> *South West Water Services Ltd: A report on determination of adjustment factors and infrastructure charges for South West Water Services Ltd*, MMC, 1995, paragraph 2.117.

<sup>261</sup> *Mid Kent Water plc, a report on the references under sections 12 and 14 of the Water Industry Act 1991*, CC August 2000, paragraphs 8.54–8.59. As noted in paragraph 8.55, Mid Kent Water accepted during the course of the inquiry that the CC should reduce gearing by reversing the special dividend paid to its parent company.

<sup>262</sup> *op cit*, Appendix F, paragraph 25.

<sup>263</sup> *op cit*, paragraphs 6.7–6.9.

companies for which Ofwat sets price caps, our different approach should not be taken as a criticism of Ofwat's approach of using a standardized notional gearing assumption for WaSCs and WoCs respectively.

- 10.15 We did not consider that our assumptions about Bristol Water's capital structure should be constrained by Ofwat's notional gearing at this or previous reviews. However, we note that our assumed gearing of 60 per cent is higher than Ofwat's notional gearing for PR09 (52.5 per cent) and than the gearing Ofwat projected for Bristol Water at PR04 for the end of that period (55 per cent in 2009/10). It is therefore not correct to suggest that we assumed a lower level of debt and higher level of equity than currently or previously assumed by the regulator.

### ***Our assessment***

- 10.16 Appendix O contains our detailed assessment of financeability. It compares projected levels of certain indicators of a company's financial health (namely credit ratios), of which the two key ones are gearing (net debt/RCV) and adjusted cash interest coverage ratio (ICR ratio<sup>264</sup>), against target levels, which we set with regard to how ratings agencies assess credit strength.
- 10.17 The projected levels of these credit ratios depend on the building blocks of the calculation of required revenue, including opex, capex and cost of capital. They also depend on the company's financial structure, including its gearing and its relative proportions of conventional and index-linked debt and dividend policy.
- 10.18 We aimed to assess whether in determining the WACC we had assumed a level of gearing that was consistent with Bristol Water's duty to maintain an investment grade issuer credit rating (see section 9). That is to say, we checked that with the level of gearing used to determine the WACC, our capex, opex, and WACC findings would allow Bristol Water to fulfil its licence conditions.
- 10.19 While we took as a starting point Bristol Water's actual financial structure and condition, we also took account of the possibility of changes in the balance between equity and debt from that currently chosen by Bristol Water. We considered that 'finance' (as referred to in section 2(2A)(c)) is to be realistically construed and therefore includes both equity and debt and that we were not required to make any particular assumption about the balance between equity and debt. Our overall concern was to ensure that, at the gearing assumed in the WACC, our financial projections were consistent with Bristol Water retaining an investment grade credit rating.
- 10.20 We examined several scenarios, including constant gearing and a scenario in which Bristol Water maintained gearing around 60 per cent, consistent with our WACC assumption, and continued to pay dividends. Under the 60 per cent gearing scenario, the credit ratios that we targeted to assess Bristol Water's likely credit rating were consistent with target levels. The average adjusted cash interest cover over the five-year period was at the target level of 1.6. We found that downside stress testing put some pressure on the adjusted cash interest coverage ratio, but we concluded that Bristol Water could take mitigating actions to maintain its investment grade credit rating. See further Appendix O.

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<sup>264</sup>ICR ratio: adjusted cash interest cover ratio. Definition: Net cash flow from operating activities minus depreciation minus infrastructure renewal charges minus tax paid minus change in working capital divided by total cash interest paid.

## **Finding**

- 10.21 While we considered that the financial structure, including the timing of distributions of capital to shareholders was a matter for a company and its management to decide, such decisions are made at its own and its investors' risk and are open to critical evaluation by the CC. We expect such decisions to be made with prudent regard to the likely future financing needs of the company (and we consider that Bristol Water was well placed to predict its likely future financing needs when earlier decisions were made).
- 10.22 In this regard, we noted that Bristol Water, in common with several other water companies, increased gearing over recent years to release equity which was distributed to shareholders. Its 'return of capital' to shareholders in 2004 and 2005 amounted to 34 per cent of RCV as at the end of March 2005. Had it not undertaken such a distribution but nevertheless had paid dividends at a level of 5 per cent of implied regulatory equity per year over this period, we estimated that its gearing would now be only about 44 per cent, substantially less than both the 60 per cent gearing at which we found credit ratios to be consistent with target levels (see paragraph 10.20), and Ofwat's standard assumptions. To give effect to this 'return of capital' to its shareholders, Bristol Water made two loans totalling £68.5 million to its parent company, Bristol Water Group Ltd. If the parent company repaid the principal on these loans, this would reduce or eliminate any requirement for external finance over the next five years.
- 10.23 We also considered it relevant to our assessment that we found that Bristol Water should undertake an extensive capex programme (since we supported several of the capex claims that Bristol Water made). If those investments are made then Bristol Water will be rewarded, since it will earn the WACC on such expenditure as it enters the RCV. However, we thought it reasonable to expect that an expanding company may need to finance expansion (at least in part) through recourse to funds other than retained earnings, such as new debt or new equity.
- 10.24 We therefore did not find it consistent with the consumer objective to determine that customers should pay higher prices either to rectify a possible financeability problem resulting from Bristol Water's own earlier decisions about financial structure, or to fund future expansion that would confer a significant financial benefit on Bristol Water's shareholders.
- 10.25 Based on the assessment contained in Appendix O, we were satisfied that we had secured that Bristol Water could finance the proper carrying out of its functions by setting Ks that enable it to earn the WACC on its investments. We considered that this meant both that we had fulfilled our duty under section 2(2A)(c), and that Bristol Water could fulfil its duty under its licence to maintain an investment grade credit rating. This was because at the level of gearing assumed in our WACC, financial projections show Bristol Water's financial ratios are consistent with its retaining investment grade credit status.

## **11. Costs**

- 11.1 We were required by section 12(3A) WIA 1991 to decide to what extent it was reasonable to take into account in our determination costs incurred or borne by Bristol Water in connection with our determination. In doing so, we had to have regard to the extent to which, in our view, our determination was likely to support Bristol Water's (rather than Ofwat's) claims in relation to the determination.

- 11.2 Bristol Water's costs amounted to approximately £2.5 million. Ofwat stated that it could not claim any costs directly against Bristol Water. Our costs (which Bristol Water will have to pay to the Secretary of State under the conditions of its licence) amounted to approximately £650,000 (including external engineering consultants).
- 11.3 We considered that some elements of Bristol Water's own costs were high, but we had no grounds for believing that they had not been properly incurred, and accordingly, we took them into account in full. On some matters, Ofwat and Bristol Water were in agreement. Where the parties' claims differed, our determination has supported both Bristol Water's and Ofwat's claims to some extent. We have not supported Ofwat's reasoning and methodology in all respects, but we supported Ofwat's view that 0.4 per cent a year was an appropriate target for capex efficiency, Ofwat's CIS framework and AMA challenge somewhat modified.
- 11.4 Overall we decided that it was reasonable to take into account in our determination approximately one-fifth of the aggregate of Bristol Water's costs and our costs. Accordingly, we have provided for a one-off award of £600,000 to cover the costs of Bristol Water's reference to the CC and treated it as part of Bristol Water's opex incurred in 20010/11.

## **12. Findings**

### ***Capex***

- 12.1 For the reasons set out in Sections 3 to 5, we made the following findings with regard to Bristol Water's capex, set out as adjustments to Ofwat's FD09.

TABLE 2 Summary of capex figures (for 2010/11 to 2014/15 at 2007/08 prices)

					£ million
	BW FBP	FBP after Ofwat transfers	Ofwat final determination	CC <sup>¶</sup>	CC less Ofwat
<i>Capital maintenance</i>					
Trunk mains relining*		[X]	[X]	[X]	6.3
Mains & comm pipe replacement		[X]	[X]	[X]	6.9
Line of works aqueduct*		[X]	[X]	[X]	0.0
Meter replacement		[X]	[X]	[X]	0.0
Purton		[X]	[X]	[X]	2.9
Chew Stoke		[X]	[X]	[X]	2.2
Other		[X]	[X]	[X]	0.0
Total before AMA	130.9	186.5	160.7	179.0	18.2
AMA			<u>-21.5</u>	<u>-21.0</u>	<u>0.4</u>
<b>Total capital maintenance after AMA</b>	<b>130.9</b>	<b>186.5</b>	<b>139.3</b>	<b>157.9</b>	<b>18.7</b>
<i>Supply Demand balance</i>					
Active leakage control		[X]	[X]	[X]	0.3
Smart metering		[X]	[X]	[X]	0.0
Cheddar reservoir		[X]	[X]	[X]	-4.4
Honeyhurst to Cheddar		[X]	[X]	[X]	0.0
Metering		[X]	[X]	[X]	1.3
New development		[X]	[X]	[X]	0.4
Other		[X]	[X]	[X]	0.0
<b>Total supply demand</b>	<b>102.5</b>	<b>73.7</b>	<b>58.5</b>	<b>56.2</b>	<b>-2.3</b>
<b>Quality</b>	<b>54.0</b>	<b>29.6</b>	<b>29.4</b>	<b>29.4</b>	<b>0.0</b>
<b>Resilience</b>	<b>43.9</b>	<b>41.5</b>	<b>16.1</b>	<b>16.1</b>	<b>0.0</b>
<b>Total gross capex</b>	<b>331.3</b>	<b>331.3</b>	<b>243.2</b>	<b>259.5</b>	<b>16.3</b>
Efficiencies	0.0	0.0	-2.6	-2.7	-0.1
Grants & contributions	<u>-12.2</u>	<u>-12.2</u>	<u>-13.4</u>	<u>-13.4</u>	<u>0.0</u>
<b>Total net capex</b>	<b>319.1</b>	<b>319.1</b>	<b>227.3</b>	<b>243.5</b>	<b>16.2</b>
Ofwat 2-sided adjustments		-4.5			
Net capex after 2-sided adjustments		314.6	227.3		
Ofwat CIS ratio			138		
<b>Ofwat projected net capex§</b>			<b>244.3</b>		
SoC changes†	1.0	1.0			
CC 2-sided adjustments‡		-8.6			
Net capex after 2-sided adjustments		311.4		243.5	
CC CIS ratio				128	
<b>CC projected net capex§</b>				<b>260.5</b>	<b>16.2</b>

Source: CC calculations.

\*Ofwat treated £10.6 million of trunk mains relining and all £9.0 million of line of works aqueduct as exceptional items outside of AMA. We have also treated additional £6.3 million trunk mains relining as exceptional outside of AMA.

§As part of CIS, projected capex is increased by 25 per cent of difference between regulator's baseline and notional company capex at CIS ratios of up to 130.

†Spend of £[X] million on Purton and £[X] million on Chew Stoke which was not in FBP; reduction on FBP of £4.4 million in developer mains costs and £0.2 million in lead communication pipe replacements. (Source: table attached to Bristol Water's response to CIS working paper.)

‡Honeyhurst to Cheddar and Cheddar reservoir.

Note: Totals may not sum due to rounding.

## Opex

12.2 For the reasons set out in Sections 6 to 8, we made the following findings with regard to Bristol Water's opex, and set them out as adjustments to Ofwat's FD09.

TABLE 3 Summary of opex figures (for 2010/11 to 2014/15 at 2007/08 prices)

	£ million			
<i>Adjustments to base opex</i>	<i>Bristol Water SoC view</i>	<i>Ofwat view (FD09)</i>	<i>CC determination</i>	<i>Difference (CC—Ofwat)</i>
1. Pension deficit recovery payments	5.7	1.8	2.8	1.0
2. Regular pension contributions	2.5	0.6	1.3	0.7
3. Pension Act obligations	0.2	0.0	0.0	0.0
4. Energy	4.1	5.1	5.1	0.0
5. Training costs	1.8	0.0	0.0	0.0
6. Bad debts*	12.8	0.0	3.3	3.3
7. Abstraction charges*	2.4	0.5	2.4	1.9
8. Highways Agency inspection costs	0.5	0.0	0.0	0.0
9. Water efficiency	1.6	0.0	0.0	0.0
10. Chemicals	0.0	0.0	0.0	0.0
11. Business rates	0.2	0.2	0.2	0.0
12. Telecommunications	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.0</u>
<b>Total adjustments to base opex</b>	<b>32.4</b>	<b>8.8</b>	<b>15.7</b>	<b>6.9</b>
<i>Adjustments to enhancement opex</i>				
13. Supply and demand balance expenditure	8.1	5.8	6.3	0.5
14. Quality enhancement	5.3	3.5	5.3	1.8
15. Service enhancements	<u>0.8</u>	<u>0.6</u>	<u>0.6</u>	<u>0.0</u>
<b>Total additional enhancement opex</b>	<b>14.2</b>	<b>9.9</b>	<b>12.2</b>	<b>2.3</b>

Source: CC analysis; Tables 56, 89 and 90 of Bristol Water's SoC and Table 4.1.1 of Ofwat FD09 Bristol Water supplementary report.

\*Subject to an NI.

- 12.3 As set out in paragraph 11.4, we allowed Bristol Water costs in the inquiry in the amount of £600,000.
- 12.4 We recommend two changes with regard to the NIs that Ofwat determined in its FD09. First, there should be a two-way NI regarding bad debt, linked to the rate of growth of unemployment in Bristol Water's region. Second, there should be no NI for abstraction charges, given the updated information available to us which has improved certainty regarding the extent of these charges.
- 12.5 We do not recommend that Ofwat makes an NI for tax or energy costs, as Bristol Water requested.

### **Cost of capital**

- 12.6 For the reasons given in Section 9, we found that Bristol Water's cost of capital is 5 per cent.

### **K**

- 12.7 The K we determined for 2010/11 matches that of Ofwat, since Bristol Water has already issued water bills. We smoothed K over the remaining four years to assist Bristol Water's customers, by avoiding the sharper increase in 2011/12 that an unsmoothed determination would have produced. We did this in the way that maintains the net present value of the revenue arising from our determination.

12.8 We determined that K should be:

2010/11	2011/12	2012/13	2013/14	2014/15
0.60	3.90	3.90	3.90	3.80

### 13. Concluding comments

- 13.1 We noted several issues of more general application as we made our determination, and we record the following general comments and informal recommendations, designed to assist Ofwat and others as they prepare for the next price determination.
- 13.2 We found the relationship between our role and the DWI's role unsatisfactory. We understood DWI to be tasked with maintaining water quality, while Ofwat and the CC were the economic regulators with responsibility for efficiency. However, the DWI, by its decision to accept an undertaking during the course of our determination that specified how Bristol Water should rectify the problem at Shipton Moyne, appeared to have ventured into our remit, as this decision had cost implications which directly affected our determination of K. Since the evidence we saw did not support this decision, we recommend greater transparency and information sharing between Ofwat and the DWI (in line with their Memorandum of Understanding<sup>265</sup>) to ensure that consistent decisions are taken on a common evidence base.
- 13.3 We note the difference of view that arose between Ofwat and Bristol Water with regard to the extent of mains replacement necessary to maintain stable serviceability. This seems to have arisen because Ofwat did not fully understand or accept Bristol Water's ELLEN model. If Ofwat can only accept evidence based on its preferred UKWIR model, then we recommend that it makes this explicit, to allow companies to prepare effective submissions.
- 13.4 We approve of the principle of the AMA, in that we agree that effective planning should lead to efficient capital maintenance, and that companies should have incentives to achieve this. We note that Ofwat told us that it was reviewing its current methodology. We consider the following principles relevant. First, we expect efficient companies to have relatively smooth maintenance profiles, so that past expenditure should be a guide to efficient future expenditure. However, a proportion of such past expenditure should be exposed to challenge. Second, any increase should be challenged more vigorously (than the base level of past expenditure) although we had doubts about the 'double the difference' multiplier that Ofwat applied, which might unduly penalize companies which have good reasons for increases in expenditure. Third, this penalty may affect smaller companies more than larger ones since their maintenance programmes are likely to be more lumpy. They have fewer assets than large companies, so that when any one asset requires maintenance, this is likely to have a greater proportionate effect on their capital maintenance budgets. We accept Ofwat's points that such companies may have some control over the timing of maintenance, and that lumpiness may apply mainly to non-infrastructure, but this does not fully address our concern.<sup>266</sup> Fourth, if Ofwat maintains its use of 'exceptional items' to exclude certain items from the AMA challenge as a way of ameliorating its effect on such companies, then there should be sufficiently objective criteria to enable companies to predict with confidence if specific schemes will count

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<sup>265</sup>[www.dwi.gov.uk/about/working-with-others/Ofwat%20MOU%20Oct%2008.pdf](http://www.dwi.gov.uk/about/working-with-others/Ofwat%20MOU%20Oct%2008.pdf).

<sup>266</sup>Ofwat response to provisional findings paragraphs 2.8.7, 2.8.8, 2.8.18 & 2.8.19.

as 'exceptional', and how any subsequent challenge would be carried out. However, such exceptional treatment does weaken the AMA, and we consider it would be preferable to design an AMA that could accommodate such schemes.

- 13.5 Bristol Water invited us to establish national standards for resilience, but we declined since we considered this to be beyond the terms of our reference. Ofwat may wish to consider whether this is appropriate: we can appreciate that a single standard may not fit all regions, given varying topology and climate. However, in this regard, we consider there would be merit in Ofwat considering carefully, as part of its review of PR09, the role of CBA in its periodic reviews, in particular whether proposals for capex on enhanced services (such as resilience) should require more thorough CBA. We recommend that Ofwat should be more prescriptive about the requirements for such CBA, in particular regarding assumptions about consumers' willingness to pay for aspects of improved service such as resilience.
- 13.6 Finally, we noted that the relationship between Ofwat and Bristol Water showed signs of unusual stress. While this was to an extent inevitable given the importance of the issues and the duration of the process, we thought that effective communication and understanding were prerequisites of an effective periodic review process. We note that smaller companies do not have large regulatory teams, and we recommend that Ofwat consider how best to communicate its requirements effectively to companies with more limited resources (the ELLEN issue was an example of where we thought that such communication had been lacking). Similarly, we considered that Bristol Water had not been sufficiently responsive to the regime that Ofwat had established (which may have contributed, for example, to its treatment under the CIS).