

# How the civil service responded to our proposal for changing the pricing system for Scottish Water

Jim Cuthbert, Margaret Cuthbert, January 2011

## 1. Introduction

1.1 Water is one of Scotland's most vital and largest industries. It is an input into all other forms of economic activity as well as being part of every family's expenditure. It is therefore important, both for living standards and for the economy, that the pricing of water in Scotland is taken extremely seriously and that efforts are made to have an appropriate, sustainable charging system. Since 2002, when the office of the Water Industry Commissioner for Scotland was established<sup>1</sup>, we have analysed the various methods used to determine water charges, and have shown that each of the various methods have major faults. See for example our previous articles in the Fraser of Allander Commentary, (Cuthbert and Cuthbert, 2007, 2009).

1.2 In 2008, the Cabinet Secretary for Finance raised with us the problem of capital charges on the water industry: it was expected that changes in Treasury policy would make water capital charges an increasing real burden to the Scottish government budget. As a result of both this concern and our 2007 Commentary paper, (which had set out the problems with the current method of setting water charges), we proposed a new charging system for Scottish Water, details of which we published in the Fraser of Allander Commentary in February 2009. Under our proposed charging system, net new capital formation financed from customer charges would be regarded as being paid

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<sup>1</sup> The Commissioner was replaced by the Water Industry Commission for Scotland in 2006, which body regulates Scottish Water and determines the caps to be placed on water revenues: in effect determining water charges.

for by a notional loan from the customer base as a whole to Scottish Water. We suggested that the body of customers as a whole would then earn a return: this would be in the form of a rebate, equal to historic cost interest and depreciation on the notional loan. In our paper, we showed how this approach would be fully sustainable, and would lead to significantly lower charges for customers than the present regulatory capital value pricing system. The approach would also have had significant benefits as regards the capital charge which, (when the paper was written), the Treasury levied from departments on the capital assets of public corporations.

1.3 Although we received no response from the Water Industry Commission for Scotland, (WICS), or the Scottish government civil service with responsibility for water to this or our earlier paper, it transpires that the civil service did provide a briefing on our paper to Ministers. In the summer of 2010 we were given a copy of the brief which had been put to Ministers by the civil service, commenting on our proposal. This brief was originally prepared for Ministers in 2009, and a slightly revised version was put to Ministers again in mid 2010. It is the later version of the brief which has now been given to us. A copy is attached as an annex to this paper.

1.4 This paper represents our critique of the civil service comments on our proposal. We will demonstrate that the advice put to Ministers was seriously flawed: in several respects the advice was factually wrong – and we believe that there were major omissions relating to matters which should have been covered in advice given to Ministers. Our conclusion is that Ministers would have found it impossible to make a properly informed decision about the relative properties of different charging methods, or about the merits of our specific proposal, on the basis of the civil service brief.

1.5 Section 2 is the main part of this paper, where we examine what the civil service said about our proposals, and explain why their analysis is flawed. In section 3, we take the opportunity to consider the implications for our proposed charging system of the change that the Treasury has subsequently announced in the operation of capital charges.

## 2. Our critique of the civil service brief which commented on our original proposals

2.1 The civil service brief commenting on our proposals set out in our Fraser of Allander paper of

February 2009 is reproduced in the annex to this paper.

2.2 Before considering the civil service argument in detail, it is necessary to give some background on the RCV method of setting utility prices, (as used by the WICS and by OFWAT in England and Wales.)

According to the definition given by the WICS, the RCV of a utility like Scottish Water is "The capital base used in setting charge limits. The value of the regulated assets on which Scottish Water can earn a return." (WICS, 2005, p38)

Starting from some initially estimated value, the RCV is then rolled forward by a process of annual updating. This process involves:

- a) uprating the previous year's RCV figure for inflation;
- b) adding in the nominal value of investment undertaken during the year;
- c) subtracting off depreciation, assessed in current cost terms.

How this RCV fits in to the determination of charges is as follows. The basis for setting charge limits in any given year is:

- i) an appropriate allowance for the operating costs of the undertaking;
- ii) plus an allowance for the cost of capital, worked out as an appropriate interest rate applied to the RCV;
- iii) plus an allowance for current cost depreciation and infrastructure renewal expenditure.

Details of the application of this process can be found in (WICs, 2005, p294, and WICS 2009, sheet P4). (Note that, when the WICS first introduced the RCV approach in the 2006 Strategic Review of charges, their initial estimate of RCV was for the year 2009/10, and this was then rolled back to 2006/07 by reversing the above procedure: this does not affect our comments below, on the general properties of the RCV approach.)

2.3 For present purposes, the important thing about the version of the RCV method as used in the water industries in Scotland, and England and Wales, is that it is applied in current cost terms: specifically, when the RCV is uprated each year, the previous year's RCV is uprated for inflation: and when depreciation enters the process, what is used is an estimate of current cost depreciation. (There

are versions of the RCV approach applied elsewhere in the world where the process is done in historic cost terms.) It was this current cost aspect of the RCV approach as applied in the UK which was the basis of our Commentary paper of 2007.

2.4 We refer the reader to that article for the full details of our critique of the current cost version of the RCV method. In that paper, we developed the financial model of an idealised utility, which undertakes a constant amount of real investment each year, and which finances this investment by borrowing. We assumed that the utility was funded as if it were charging customers RCV prices: that is, as if it were charging customers an interest charge based upon current cost RCV, and also charging customers to cover current cost depreciation. We then compared the company's income from these sources with the loan charges it would have to pay on its borrowing. We also assumed that the company started off with an initial RCV of zero.

What the model showed was that, if inflation was positive, then the company's RCV rapidly came to exceed the company's outstanding financial debts: in effect, a substantial part of the RCV was being generated through inflation, rather than as a direct result of the capital the company had borrowed and invested. The effects were substantial: for example, if inflation was at 2.5%, and assuming the company was investing in assets with a 30 year life, then in the long run, 20% of the RCV would be generated by inflation, rather than directly relating to investment. If inflation was at 5%, then 34% of the RCV in the long run would be generated by the effects of inflation.

In terms of customer charges, what the company received by way of charges from customers rapidly came to exceed what it had to pay out by way of loan charges. In other words, the company was making a substantial profit over and above what was needed to fully fund its capital investment.

The detailed modelling in our 2007 paper related to the version of regulatory capital value pricing originally implemented in Scotland, under which the interest charge is calculated by applying a nominal rate of interest to the RCV. As noted in that paper, OFWAT applies a different version of regulatory capital value pricing, under which a real interest rate is applied to RCV. Note, however, that if real interest rates are positive, the OFWAT variant still implies that the charge to customers significantly exceeds the funding cost of the capital invested.

It is important to note that these effects stem from the way that current cost RCV pricing uprates the RCV each year: and that the long term effects are

independent of how the initial RCV estimate is calculated.

2.5 Let us now consider the argument in the civil service brief. The brief claims that there are two key errors in our analysis of the regulatory model being applied by the WICS. The first of these claimed errors is outlined in paragraphs 4 to 6 of the brief.

Paragraph 4 first of all states that “...the Cuthberts assume that the regulatory capital values (RCV) used in the water industry (both in England & Wales and in Scotland) are an estimate of the value of the assets employed, derived from how much it would cost to create those assets. This is incorrect.”

This claim is, however, in itself incorrect. In our 2007 paper we made it clear, (paragraph 2.2), that in practice a number of different approaches were possible towards the basis of calculation of RCV. The important point, however, is that in the modelling developed in that paper, we considered the steady state, (that is, long run), position of a notional utility, with an initial RCV which started at zero, and which was then rolled on from year to year using exactly the same approach as employed by WICS/OFWAT. The long run RCV in our model is on exactly the same basis as implied by the WICS/OFWAT approach.

The civil service’s first claim that we have made an error is, therefore, wrong.

2.6 As seen in the previous paragraph, there is no difference in the basis of the RCV with which we are working. The question then boils down to the issue of how that RCV should be remunerated: that is, what return needs to be earned on that RCV to adequately compensate investors.

The only reasonable interpretation of what the civil service are saying in their paragraph 5 is that the RCV has to be remunerated in line with the charges implied by the current cost RCV pricing method, or else investors would not fund any further investment. However, no evidence is given in the brief to justify this implicit assertion that what is required is remuneration in line with current cost RCV. In other words, once we have removed the incorrect civil service claim in paragraph 4 of the brief that we are dealing with the wrong definition of RCV, the civil service’s first attempt at rebutting our criticism of the current cost RCV pricing method amounts to no more than an unsubstantiated claim that we are wrong.

2.7 We now consider the second error which the brief claims we have made. This is described as

follows: “The second error the Cuthbert’s analysis appears to make is that the RCV, together with the cost of capital, are the sole determinants of customer charges. In practice, WICS (like OFWAT) has used the RCV as a guide but has set charges on a cash basis.”

Our 2007 critique of the current cost RCV approach is based on the published descriptions of how OFWAT and the WICS use RCV in setting prices. As regards OFWAT, our paper not merely describes the way they say they use RCV in setting prices: it also then draws inferences about the likely results of this approach, which are entirely consistent with the outcomes observed in practice – such as the extremely high returns earned on the equity capital actually invested: the high prices paid for water and sewage companies in England in post-privatisation trading (often described by commentators as “irrational”); and distortion of the English companies capital programmes. Given all this, it is disingenuous to say that, in effect, OFWAT do not really rely on RCV, but are primarily setting prices on some other basis.

Exactly the same comment applies when we consider the potential impact of RCV pricing on Scottish Water prices. The statement in the critique that “The cash basis is driven by financial ratios, such as gearing and free cash flow, that investors see as critical indicators of a company’s financial health”, does not reflect what the published Final Determination for 2010 actually says and does. We quote from Final Determination papers:

### “Staff Paper 3

*The Commission signalled in the last review that it would move towards the method of charge setting that is widely used by other utility regulators in the UK. This method sets an assumed annual rate of return on a ‘regulatory capital value’ (RCV).*

### Staff Paper 9

*The level of revenue is calculated using the RCV approach.”*

In addition, the detail of the financial model, published with the final determination, shows the calculation of rolling the RCV forward, and calculating a capital charge by applying an interest rate to this RCV.

It is perfectly true that the process of setting prices in the final determination cross checks the results against key financial ratios: we have never sought to deny this. But to imply, as the brief does, that the RCV approach is almost irrelevant, and that prices are actually being driven by some quite different

approach, simply runs counter to the published final determination of charges.

2.8 The civil service brief is therefore wrong in its claim that we made two “key errors”. But the brief is not just wrong in what it says, but also in what it omits to say. As we will now argue, the advice given to Ministers should have included discussion of certain important topics which are just not featured in the brief at all.

2.9 Consider, for example, paragraph 5 of the brief. We have already noted above (para 2.6), that paragraph 5 of the brief amounts to making a particular assertion about the answer to the following question: namely, what return needs to be generated on the RCV in order that the funding cost of the capital invested in the company can be fully reimbursed? Now the RCV of the company, and the funding cost of the investment capital, are related to one another in a straightforward, but nevertheless fairly complex manner, depending on parameters like the inflation rate, interest rate, and asset life. Sensible statements about the relationship can therefore only be made in terms of some form of mathematical model, which takes these parameters into account. This is precisely the approach we adopted in our 2007 paper, where we developed one specific model of the evolution of RCV for an idealised utility. We are not claiming infallibility for our approach: but the important point is that criticism of our approach has to be along the lines either of pointing out a specific error in the calculations within our model, or in the assumptions underlying that model. The civil service brief, however, does not attempt to do this – but instead, relies on a loose and unsubstantiated assertion.

In our view, it is a major weakness of the brief that, in advising Ministers on a subject where an appreciation of modelling issues is paramount, the brief makes no attempt to use the tools which are essential for discussing and appreciating the relevant issues.

2.10 There is another grave omission in relation to what the brief claims is the second error in our approach. We have already discussed the civil service claim that water prices in Scotland are set, not using the RCV method, but actually on the basis of certain financial ratios, which “investors see as critical indicators of a company’s financial health.” Surely, however, if it was indeed true that water prices were set like this, then the brief should go into detail about what method is actually used – and what the implications are. How are the key ratios actually applied: why is it appropriate for pricing for a publicly owned utility like Scottish Water, which

can borrow at significantly lower costs than market rates, to be driven by financial ratios which would satisfy private investors: what are the implications of the approach which the WICS actually uses for the future trajectory of customer charges: and crucially, how does this trajectory compare with the trajectory which would result from the application of our proposed charging scheme.

Ministers are in no position to make a rational decision about the comparative methods of different charging schemes unless they are provided with the sort of detail implicit in these questions – and yet this detail is completely lacking in the civil service advice to Ministers.

2.11 We have dealt so far with the two main criticisms which the brief attempts to make of our approach. Before concluding, however, it is worth remarking on certain other aspects of the brief which are surprising.

2.12 In paragraph 11, the brief in effect second guesses what the likely reaction of HMT and HMRC would be to our customer loan proposal. It is not our business to second or third guess what the likely reaction of government departments would be. However, we would say that:

- a. If Treasury did oppose, they would have to justify going against World Bank advice that it is desirable to reward customers for customer financed capital.
- b. As regards the imputed HMRC position, since the notional interest and debt repayment are taken out of customer charges before they are even set, they would not feature at all in the accounts of SW, and hence are unlikely to be of any concern to HMRC.

(See, however, section 3 of this paper, where we examine the implications of the Treasury’s recent decision to abolish the capital charge).

2.13 The civil service brief claims in paragraph 6 that the WICS initial estimate of the RCV of Scottish Water is likely “to approximate the value investors would pay to own Scottish Water”. The initial RCV estimated by the WICS for 2009-10, when the WICS introduced the RCV method in Scotland, was £5.4 billion: and the WICS rolled this backwards, (as noted in paragraph 2.2 above), to give a value of £4.1 billion in 2006-07. The strategic review of charges for 2010-2015, however, recorded the outcome of an exercise undertaken by Scottish Water to assess the modern equivalent asset value of its assets. This resulted in an

estimate of £42.7 billion in 2009-10 for the current cost net book value of Scottish water's assets, (rising to almost £50 billion in 2014-15.). It seems extraordinary that the brief did not alert Ministers to the huge discrepancy between the WICS estimate of the sale value of Scottish Water, and the value of the assets over which control would be lost in the event of a sale.

2.14 Overall, therefore, we see no merit, and much that is surprising, in the civil service critique of our findings on the RCV method and of our proposed replacement. The critique is not merely factually wrong in key respects: what is really surprising are the omissions from the civil service brief. In particular, it attempts to deal in a purely verbal basis with issues that are fundamentally matters of modelling: and it undertakes no serious analysis of the model which forms the basis for our critique of the current cost RCV method, nor does it undertake modelling of its own. Moreover, despite its surprising and implausible claim that prices are actually set on the basis of certain key financial ratios, rather than the RCV method, it then fails to specify what the resulting long term trajectory of charges would be on the basis of applying these ratios. Our conclusion is that Ministers would have found it impossible to make a properly informed decision about the relative properties of different charging methods, or about the merits of our specific proposal, on the basis of the civil service brief.

### **3. Postscript: the implications of the Treasury decision to abolish the capital charge**

3.1 A primary reason why we structured our proposal for a revised charging system for Scottish Water specifically in terms of a notional customer loan was because of the capital charge which the Treasury levied on departments in respect of capital assets – including the assets of public corporations like Scottish Water. (Indeed, the reason we addressed the issue was because of the concerns addressed to us personally by the Cabinet Secretary for Finance about the cost of the capital charge relating to Scottish Water). As we explain in our 2009 paper, our approach would have given the Scottish government a strong case to pursue with HM Treasury for exemption from a large part of the capital charge on Scottish Water's assets.

3.2 Since publishing our earlier paper, however, there has been an important development – in that, in 2010, the Treasury effectively announced the abolition of the capital charge: (Treasury, 2010, page 20). This change opens up

the opportunity for an even simpler, and ultimately even cheaper, approach to charging for water in Scotland – namely, moving to a position where all Scottish Water's capital expenditure is funded directly from customer charges. This approach would be entirely feasible for a body of the size of Scottish Water, which has a large and stable investment programme. We have undertaken some further work in modelling both the long term and transitional arrangements of this approach. It is not the place here to go into the full detail of this modelling work: but, to summarise, this work does indicate that:

- a) the transition to funding capital directly from revenue could be achieved at the price of a relatively small extra cost burden on customers in the short term.
- b) the long term implications of this policy would be a very significant cost reduction for customers.
- c) And since Scottish Water would no longer need to borrow at all, the annual saving to the Scottish government would build up to the full £140 million annual provision for Scottish Water borrowing which is currently in the Scottish government DEL.

3.3 What we would now propose, therefore, given the recent change in capital charge rules, would be moving to a system where all of Scottish Water's capital expenditure was funded direct from customer charges, rather than the proposal set out in our 2009 paper of treating customer financed capital as a notional loan.

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### **References**

Cuthbert, J.R., Cuthbert, M.: *"Fundamental Flaws in the Current Cost Regulatory Capital Value Method of Utility Pricing"*: Fraser of Allander Institute Quarterly Economic Commentary, Vol 31, No.3: 2007.

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Treasury: *"Public Expenditure Statistical Analyses 2010"*.

Water Industry Commission for Scotland: *“The Strategic Review of Charges 2006-10: The Final Determination”*: 2005.

Water Industry Commission for Scotland: *“The Strategic Review of Charges 2010-15: Staff Paper 16: Financial model for five year regulatory period 2010-15”*: 2009

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## Annex

The following is the civil service critique which was put to Ministers in reaction to our proposal on water pricing. The passages in italics were not in the original brief, but were included in the version put to Ministers in mid 2010:-

### **A critique of the Cuthbert’s analysis on the pricing mechanism currently used for Scottish Water**

#### **Background**

1. The Cuthberts contend that the regulatory model being applied by the WICS (and as it happens all other economic regulators across the UK) imposes too high charges on customers and as a corollary over high returns for the regulated utilities. Their (or conceivably another) alternative might rectify that undesirable position. They further content that an alternative regulatory model such as they one they advocate would act as a greater incentive to capital efficiency on Scottish Water’s part to the overall benefit of the Scottish economy.

2. As part of an alternative regulatory model the Cuthberts have argued that the concept of customer loans could reduce the need for lending to Scottish Water (SW) from government, thus freeing resources for other priorities.

#### **Critique of the Cuthbert’s analysis of the regulatory model applied by WICS**

3. There appear to be two key errors in the Cuthberts’ analysis of the regulatory model being applied by the WICS.

4. Firstly the Cuthberts assume that the regulatory capital values (RCV) used in the water industry (both in England & Wales and in Scotland) are an estimate of the value of the assets employed, derived from how much it would cost to create those assets. This is incorrect. The regulatory capital value for the companies in England & Wales was originally set in the early 1990s and reflected the value paid for them on privatisation. Since then the RCV has been updated each year to reflect new

(efficient) investment (over and above any investment to maintain the assets in the current state), which is funded by investors.

5. The RCVs of the companies in England and Wales therefore reflects the funds investors have put into those companies, which is why it is appropriate that this investment is remunerated. If it wasn’t, investors would not fund any further investment.

6. An absence of information on what investors would pay for SW results in the RCV being set by the WICS based on the RCV of equivalent sized companies in E&W. SW’s RCV is not therefore a reflection of the value of the assets employed, based on how much it would cost to create them. Rather it is an estimate of the regulatory value of SW, based on comparators from E&W, which is likely to approximate the value investors would pay to own SW.

7. The second error the Cuthbert’s analysis appears to make is that the RCV, together with the cost of capital, are the sole determinants of customer charges. In practice, WICS (like OFWAT) has used the RCV as a guide but has set charges on a cash basis. The cash basis is driven by financial ratios, such as gearing and free cash flow, that investors see as critical indicators of a company’s financial health.

8. These two erroneous positions lead the Cuthberts to conclude that “under the present charging model a significant financial surplus is likely to build up”, and that the utilisation of this surplus would allow customer charges to fall without borrowing from Government increasing.

9. In fact the cash basis that WICS uses is designed to ensure a tight budget constraint on SW. *With one exception, a financial surplus builds up only if SW outperforms the regulatory settlement.*

10. *The exception is that in the Final Determination for the 2010-15 period WICS explicitly funds Scottish Water to be able to pay commercial borrowing rates – that is the borrowing rates that would be incurred if Scottish Water was raising finance independently of Government. Further advice is provided on this in the annex but it should be noted that that the financial surplus does not occur as a result of the RCV methodology. Rather the surplus arises due to an explicit decision by WICS to providing sufficient finance so that SW could borrow commercially.*

## **Critique of the Cuthberts' proposals for customer loans**

11. With regards to the idea of a customer loan, we do not think that this proposal offers the possibility of replacing Government lending to Scottish Water. Further investigation has revealed that:

- HM Treasury is highly likely to view loans from customers to SW as analogous to private sector funding. Under its present structure private sector funding scores exactly the same as if the SG had lent SW the funds – i.e. as SG expenditure. Converting part of the existing charge on customers to a loan is therefore highly disadvantageous – it increases Government lending to SW without increasing the finance that is available to SW.
- The Cuthberts' suggestion assumes that Scottish Water could simply deem some of its income to be classed as loans. HMRC would require convincing that this was not a tax dodge as it is possible that there

would be a tax advantage to SW. They are likely to seek evidence of credit agreements at the individual customer level. This would effectively require SW to account for loans to every household, which would be disproportionate to any tax gain that might accrue and would pose challenging questions of how to gain consumer consent for making loans and what to do if that consent were not forthcoming.

12. It therefore does not appear that customer loans are a productive option to pursue.

### **Summary**

13. To summarise, the Cuthbert's errors in their analysis of the regulatory model being applied by the WICS have led them to a false conclusion. The bottom line is that SW's financing only comes from two sources – customer charges and borrowing from Government. If one declines, the other must increase to compensate. The Cuthberts' proposal on customer loans does not appear to be a productive option to pursue.