

Economic perspectives

How the Strategic Review of Charges 2002-06 Casts a Long Shadow over Future Water Charges in Scotland

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1. Introduction

1.1 The findings of the research described in this paper are that there were significant errors made in the setting of water charges in 2002-06 in Scotland, such that there was substantial overcharging of customers. This will continue at a lesser extent over the period 2006-10. The amounts involved are large: total overcharging in cash terms is likely to be at least £650 million cumulatively over the eight year period from 2002 to 2010, and could well be close to £1 billion. This affects both households and businesses in Scotland.

1.2 Water charges in Scotland are determined through reviews carried out every four years. Charges for 2002-06 arose from the Strategic Review of Charges 2002-06 (SR2001), carried out in 2001 by the Water Industry Commissioner (WIC). In June 2005 the Draft Determination for 2006-10, (DD), was issued for consultation: final decisions on the basis of the DD were announced in November 2005: (ref: Final Determination).

1.3 This paper is a follow up to an earlier paper¹ in which we argued that there had been errors in the application of Resource Accounting and Budgeting (RAB) control in SR2001 and that this had led to water customers in Scotland being over-charged. Our earlier paper was based on the very limited evidence available at that time about how the calculations underlying the application of the new RAB control regime for water in Scotland had actually been carried out. We had suggested that there were mistakes in the application of RAB control: because, in particular, although the implementation of the new control regime was meant to be neutral, in fact, the amount of borrowing available to the water industry under the new regime was clearly very restricted compared to the borrowing limits previously applied to the industry. We argued that the effect was likely to have been significant overcharging of water customers.

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1.4 In this paper, we review the latest available evidence, including the detailed information published in the DD. We then consider the implications for water charges. The evidence confirms that very significant errors were indeed made in the application of RAB control to the water industry. The primary effect of these errors was to over-inflate the estimates of depreciation included in the strategic review calculations, while at the same time restricting the available room for manoeuvre within the public expenditure control limits in operation. The result is that there was substantial overcharging of water customers in the SR2001 period.

1.5 The structure of the paper is as follows:

- Section 2 outlines some relevant historical background.
- Section 3 sets out, in the light of the latest available evidence, a record of errors and unresolved issues concerning SR2001.
- Section 4 briefly outlines the methodology adopted in the DD, and considers the implications of SR2001 for the revenue caps proposed in the DD.
- Section 5 gives a summary of our findings, and sets out conclusions.

1.6 As noted above, the final determination of water charges for 2006-10 was announced before this paper was submitted for publication. This paper has been drafted, however, in relation to the draft determination rather than the final determination figures, for two reasons:-

- a) the primary reason is that, in respect of the key variables which bear on the argument of this paper, (namely, investment, depreciation and borrowing), the final determination figures differ only marginally from the draft determination: so our conclusions are independent of whether the draft or final determination figures are used.
- b) in addition, supporting background figures are available in much more detail for the draft determination than for the final determination: so there is an important advantage in terms of internal consistency in using the draft determination figures throughout.

2. Some historical background

2.1 As noted in the introduction, this paper is a follow up to our paper, Cuthbert and Cuthbert (2003), which was published in December 2003. In November 2003, we had provided a pre-publication draft of that paper to the Finance Committee of the Scottish Parliament. The Finance Committee took oral evidence from ourselves, the WIC, and the responsible Scottish Executive Minister and officials.

2.2 In their evidence, both the WIC and the Scottish Executive stated that there had been no error in the application of RAB control, or any resulting overcharging. The Finance Committee itself split on this topic: a majority agreed with the Scottish Executive, but three members published a minority report: (Finance Committee 2004: (a) and (b)) The minority report held that there had been substantive errors, both in the way RAB control had been applied, and in the calculation of a key financial ratio, the interest cover ratio: as a result, there had been substantial overcharging of water consumers, probably by some £300m cumulatively over the strategic review period. Both the majority and minority reports of the Finance Committee can be accessed on the Water Customer Panel website. The evidence of the WIC, ourselves, and the Scottish Executive can be accessed on the Finance Committee website: see the proceedings of the meetings of 2nd December 2003, 27th January 2004, and 3rd February 2004 respectively.

2.3 With one exception, it is not our intention to reprise the arguments surrounding the Finance Committee hearings, since these arguments have to a large extent been overtaken by later evidence, such as the publication of Scottish Water accounts up to 2004-05, the publication of the ONS technical note (ONS 2005), and the information contained in the Draft Determination. It is this later evidence which is discussed in detail in the present paper.

2.4 The single exception, is a piece of evidence which the Scottish Executive provided to the Finance Committee, in the form of a letter from the Treasury, containing the following quotation:

“As far as we are aware, the Scottish Executive have adopted the normal accounting treatment”.
(Letter from Mark Parkinson, HM Treasury, dated 24th February 2004 to David Reid, Scottish Executive, about the Scottish Executive’s handling of Scottish Water.)

This Treasury letter appears, at first sight, to endorse the approach adopted by the Scottish Executive towards the financial control of Scottish Water under the RAB system.

2.5 Subsequent to receipt of a copy of the Treasury letter, we engaged in correspondence with the Treasury to clarify the precise meaning of their letter. This was a difficult process which took several months, but we eventually established that the Treasury comment related to the way in which Scottish Water’s expenditure is reflected in the Scottish Budget, that is, in its accounting to the Treasury. This is a matter which was never at issue. The point which was at issue concerned the form of financial control exercised over Scottish Water by the Scottish Executive. The final letter from the Treasury, (letter from Conrad Smewing, 2005, which can be accessed under the Finance Committee papers for their meeting of 28th June 2005), makes clear that the Treasury have no locus to comment

on this aspect: the original letter in fact provides no endorsement of the Scottish Executive approach.

3. Errors in the strategic review of charges 2002-2006

3.1 When we wrote our earlier paper, only partial information was in the public domain about how RAB had been applied to the water industry. Following the publication of that paper, much more information has emerged about how the RAB control limits were set and how SR2001 was carried out. This section sets out, in the light of the latest available information, a record of errors and unresolved issues in SR2001. These are:

- Inconsistency in the treatment of depreciation of non-infrastructure assets in setting and applying the RAB limit.
- Error in the expensing of infrastructure renewal balances.
- Error in the calculation of infrastructure renewal expenditure.
- Double counting of infrastructure renewal expenditure in the RAB limit.
- Choice of accounting treatment for infrastructure renewal expenditure.
- Error in the calculation of a key financial ratio, the Interest Cover Ratio

3.2 As a public corporation, Scottish Water can borrow only from government. In 2001, in line with the general introduction of RAB, the government replaced the former borrowing limit for the water industry in Scotland by a control measure based on RAB. Essentially, RAB allows non-cash items such as depreciation to be brought into consideration. The government abandoned RAB control on water in 2003, returning to control on borrowing: but, crucially, during the period when SR2001 was being carried out, the financial control on the water industry was by means of the RAB limit. This is of key importance because it was the decisions on revenue caps made during this period which determined charges up to 2006.

3.3 In addition to setting a lower limit on profits, in SR2001 a combined control on capital investment and profits was set for water in Scotland²: namely, capital expenditure had not to exceed a capital budget made up of a fixed amount plus profit. This fixed amount was referred to in Annex A to Allan Wilson's letter (Feb2004) as the "RAB resource allocation for the year", which we will simply call the limit on RAB expenditure or RAB limit. Note that this approach to RAB control, of setting a limit which combines capital investment and profits, is a non-standard approach to RAB: the standard RAB approach is to set separate limits on capital and profits.

It is known exactly how the RAB resource allocation was calculated.³ In particular, (see SR2001, Tables 32.1 to 32.6), RAB expenditure was calculated as

$$\text{RAB expenditure} = \text{operating expenditure} + \text{investment} + \text{depreciation} + \text{capital charge element}^4 - \text{revenue} \quad (1)$$

The problem for the WIC, in carrying out the strategic review, was to model the financial operation of the water industry so as to achieve reasonable and feasible values for each of the terms on the right hand side of this equation, subject to the constraint that the overall value for RAB expenditure given by formula (1) had to fall within the RAB limit specified by the Scottish Executive, (and allowing a reasonable safety margin for contingencies).

3.4 The water industry has a considerable stock of capital assets which are depreciated by conventional methods. However, the water industry shares with the road network the characteristic that a significant part of its capital assets consists of long lived network type assets, which it is difficult to handle by conventional book value depreciation methods. Instead, expenditure on keeping the network at a constant level of functionality is used as a proxy for the formal depreciation of the asset. For the water industry this is known as infrastructure renewal. What is actually spent on infrastructure renewal is called infrastructure renewal expenditure (IRE), and what is charged to the Income and Expenditure statement is the infrastructure renewal charge (IRC). The IRC may differ from the IRE: for example, if in the past an element of IRE has been financed by borrowing rather than from revenue, then it may be desired to recoup this element from current revenue, by charging more to the Income and Expenditure account (as IRC) than is currently being spent as IRE. As will be seen later, this kind of adjustment was made in SR2001: for each of the years of the strategic review period, the relationship between IRC and IRE was:

$$\text{IRC} = \text{IRE} + \text{£43.2m.}$$

This £43.2m term is referred to in SR2001 as "expensing of infrastructure balances". Thus, cumulatively, over the four year period of the review, IRC was £172.8m greater than IRE.

The "depreciation" term in formula (1) consists of the sum of conventional depreciation of non-infrastructure assets plus the IRC.

3.5 It can be seen from formula(1) that if depreciation increases after the RAB limit has been set, and if there is no room to squeeze operating expenditure or investment, then either revenue will need to rise, or the RAB limit will be breached. It is therefore important to examine in detail the depreciation figures assumed in SR2001.

3.6 The following table sets out the components of depreciation actually assumed in SR2001.

Depreciation Figures from SR2001 £ million cash terms

	2002/03	2003/04	2004/05	2005/06	Total
Depreciation of non-infrastructure assets	133.5	161.7	173.3	173.8	642.3
IRC: expensing balances component	43.2	43.2	43.2	43.2	172.8
IRC: IRE component	83.8	80.1	140.3	147.7	451.9
Total Depreciation	260.5	285.0	356.8	364.7	1,267

Source: SR2001 table 32.2 and page 404

Note that the Scottish Executive effectively set a constant baseline RAB limit throughout the SR2001 period: see, for example, SR Table 32.6. When the original RAB limit was set, the Scottish Executive had assumed an annual allowance for depreciation of £202m (Allan Wilson 2004), that is, £808m over the four year period.

The amount assumed in SR2001 for depreciation is therefore some (£1,267m -£808m) that is, £459m more, cumulatively, than was assumed by the Scottish Executive in setting the RAB limits.

3.7 For reasons which will become apparent later, it is important to split this increase of £459m into components

relating to the different types of depreciation. This can be done as follows:

Given that the audited actual IRE for the water industry in 2000-01 was £81.6m, and that the WIC assumed IRE of £83.79m and £80.06m for the first two years of the strategic review period, (SR2001 p404), it seems reasonable to assume that approximately £80m of the Scottish Executive's annual depreciation figure of £202m would relate to IRE, that is, £320m over the four year period, leaving £122m per annum, that is, £488m in total, as non-infrastructure depreciation. Hence:

Calculation of Increase in Depreciation in the Strategic Review Relative to Level Assumed by Scottish Executive in Setting RAB Limits: Cumulative Figures over Period 2002-06. £ million cash terms

	SR2001	Scottish Exec. Baseline	Increase
Depreciation:non-infrastructure assets	642.3	488	154.3
Expensing infrastructure renewal balances	172.8	0	172.8
IRE	451.9	320	131.9
Total	1,267	808	459

3.8 Having established this background, we now consider in turn each of the errors and unresolved issues in the strategic review referred to in paragraph 3.1

Inconsistency in the treatment of depreciation of non-infrastructure assets in setting and applying the RAB limit

3.9 The outturn figures for the depreciation of non-infrastructure assets published in the accounts of Scottish Water are respectively £105.1m, £119m, and £114.5m for the years 2002-03 up to 2004-05. These figures are explicitly stated in the accounts as being on the historic cost basis for calculating depreciation. Moreover, in calculating the outturn of RAB expenditure against the RAB limit on page 53 of its accounts for 2002-03, it is the figure

of £105.1m which is used by Scottish Water. Similarly, the Scottish Executive has used historic cost depreciation in publishing its figures for the outturn against the RAB limit: (see Scottish Executive 2004 for outturn figures). It is clear from the figures that historic cost depreciation was used by the Scottish Executive both in setting the RAB limit and in calculating outturn against that limit.

However, in setting the revenue caps in SR2001, the WIC did not use straight forward historic cost depreciation, but instead used what he termed a "modified historic cost basis", under which depreciation is calculated on the original price of assets uprated by the Construction Operators' Price Index, or COPI: (SR2001, page 101).

The depreciation basis used in SR2001 might be regarded as a form of current cost depreciation - which results in figures significantly higher than historic cost depreciation. It seems likely that this accounts for a large part of the £154.3m increase in non- infrastructure depreciation relative to the values used when the RAB limit was set.

3.10 In summary, therefore, the RAB limit was set by the Scottish Executive using historic cost depreciation: a form of current cost depreciation was used in SR2001 calculations but without any modification to the original RAB limit: and when the Scottish Executive calculated outturn against the RAB limit it went back to using historic cost. This inconsistency is a clear error in the conduct of the strategic review. In effect, because of this error, a given amount of public expenditure would go further for the Scottish Executive in its budget than it would for the WIC in his strategic review calculations.

This might explain a puzzling aspect of water finance over the period covered by the strategic review: namely, that the Scottish Executive was able to transfer significant amounts of public expenditure out of the funds allocated for water in its budget, even though the WIC stated in the strategic review that he would use up all of the available public expenditure.

Further, if the RAB limit had been adjusted for the changed basis of depreciation actually used in SR2001, then the WIC would have had an extra £150m available within his public expenditure constraint. Thus the WIC could have lowered his revenue caps by £150m while still maintaining the same public expenditure contingency margin that he felt was required.

Error in the expensing of infrastructure renewal balances

3.11 As regards the “expensing of infrastructure renewal balances”, this kind of adjustment is introduced where there is a wish to recoup from water charges any past IRE which may have been financed by borrowing rather than revenue. The justification given for this in SR2001 is the following quotation

“I have expensed any infrastructure balances as at 1st April 2001 through the Income and Expenditure Account: I have done this over 10 years to eliminate the balances gradually”: (SR2001 page 101).

This falls far short of the detailed justification for such an enhancement that OFWAT would require from an English water authority.⁵

Moreover, as we have seen, the WIC intended this adjustment to apply over a 10 year period up to 2011. However, this component of depreciation has been abandoned in the DD, apparently without any comment.

On both of these grounds, the inclusion of the “expensing of balances” element of £172.8m in SR2001 appears to be an error.

Error in the calculation of infrastructure renewal expenditure

3.12 On page 86 of the DD Executive Summary it is stated that

“We analysed the infrastructure renewals charges of the companies south of the Border relative to the assets and customers served. This analysis would suggest that the total infrastructure renewal charge (IRC) for Scottish Water in 2003-04 should have been in the range £45 million to £75 million. Its actual IRC in 2003-04 was £143 million.”

(Note that the £143m referred to in this quotation is from the published accounts of Scottish Water). In the light of this, far from increasing by £131.9m the IRE figure assumed by the Scottish Executive, the WIC should have been reducing it: on the basis of our estimates, (made in the light of the above quotation from the DD), we estimate that the IRE used in SR2001 was too high by a cumulative total of £180 million over the four year period of the review.

Double Counting of Infrastructure Renewal Expenditure in the RAB Limit

3.13 A further distortion to water charges arises because IRE is double counted in formula (1). That double counting of IRE does indeed take place is established in Annex 1. The consequence of the double counting of IRE in formula (1) is that unduly high water charges will result if IRE is increased after the RAB limit has been set: the algebra underlying this effect is set out in Annex 2.

3.14 Given that, as can be seen from the table in para 3.7, IRE increased by a cumulative total of £131.9m after the RAB limit had been set, (and, in the light of paragraph 3.12, by £180 million relative to what it should have been), the double counting error will indeed have had a significant impact on water charges.

Choice of Accounting Treatment for Infrastructure Renewal Expenditure

3.15 A recent ONS publication (ONS 2005), throws light on how the double counting error arose. The ONS note sets out two ways of accounting for infrastructure renewal type expenditure: these are denoted the “renewals” and “depreciation” approaches. If IRE is accounted for under the “renewals” approach, it is not double counted in formula(1) above: but if it is accounted for under the “depreciation” approach then it is double counted. It is clear, both from SR2001 and Annex A to Allan Wilson’s letter of 24th February, that the approach adopted for infrastructure renewal expenditure in the Scottish water industry is indeed, in the ONS terminology, the “depreciation” approach.

3.16 Interestingly, the Treasury do not appear to have issued any guidance to departments on which accounting approach should be used for infrastructure renewals type expenditure. Presumably this is because, under the standard approach to RAB control, since separate limits are set for profit and capital expenditure, the double counting problem does not arise. The mistake made by the Scottish Executive was in combining a non-standard approach to RAB control, (which was not in itself wrong), with an inappropriate choice of accounting method for IRE.

Error in the calculation of a key financial ratio, the Interest Cover Ratio

3.17 In SR2001 page 63, the WIC writes “I have reviewed a number of financial ratios and have concluded that a ratio of free cash flow ... to interest payable is the most appropriate.” This ratio is also referred to as the interest

cover ratio. The WIC went on to state that “My review of the equivalent ratio in England and Wales would suggest that interest cover in Scotland is not as healthy as would be desirable.”

In fact, the WIC made a fundamental error in the comparison of the ratios between Scotland and England. In producing the Scottish ratios in SR2001, the numerator of the ratio was calculated, incorrectly, as revenue - total cash outgoings + interest: this means that the WIC effectively used as numerator of the Scottish ratio:-

Revenue - Operating Expenditure - Investment

The following table shows the derivation of the numerator used in the review in calculating the Scottish interest cover ratio.

Derivation of Free Cash Flow as used in Strategic Review: £ million cash terms

	2002/02	2002/03	2003/04	2004/05	2005/06
Revenue (A)	825.9	888.2	957.2	1000.9	988.3
Total outgoings	1064.4	1038.4	1059.6	1047.2	982.5
less Interest	142.7	150.6	153.8	154.9	152.9
equals Outgoings less interest (B)	921.7	887.4	905.8	892.3	829.6
(A) - (B) equals Free Cash Flow	-95.8	0.4	51.4	108.6	158.7

All of the figures in the first three rows of this table are taken from SR Table 32.4. The last row in this table, (that is, revenue less all cash outgoings except interest payments), is equal to the figures for free cash flow given in Table 32.7.

3.18 However, in calculating the interest cover ratio for England and Wales, (WIC, 2004), the WIC calculated the numerator of the ratio as

Revenue - Operating Expenditure

(This is one of the standard definitions used by OFWAT). This latter approach is much less stringent than the way the WIC had calculated the interest cover ratio for Scotland.

3.19 The effect of this error was very significant. On the basis of his mistaken calculation, the WIC had estimated the interest cover ratio at -0.7 for Scotland in 2001-02: however, had he used the same definition he used for England and Wales the ratio for Scotland would have been 2.9, compared with a value of 1.5 for England and Wales.

The fundamental importance of this mistake can be seen from the WIC’s appearance before the Finance Committee of the Scottish Parliament on 2nd December 2003, (which occurred before we had identified the WIC’s error in calculating the interest cover ratio), where the WIC explicitly used the mistaken interest cover ratio figure for Scotland to justify the charging policy in SR2001. The WIC said:

“We were trying to bring cash flow cover of interest payments to a ratio of 1”:

and he brought in the English and Welsh comparison to justify this as a sensible goal. But as we have seen, if the figure for Scotland had been calculated on the same basis as England and Wales, it would have been immediately apparent that the ratio in Scotland was already well above 1, and indeed well above the position in England and Wales.

The Effect of the Errors

3.20 It is worth taking stock here to assess what the probable impact of all of the above was in terms of

overcharging. On the basis of SR2001's own arithmetic, investment was planned at £1,860m over the period 2002-06, and depreciation was estimated at £1,267m. On a normal view of prudence, and assuming the depreciation figure was justified, this would suggest that borrowing would be around (£1,860m - £1,267m), that is, £600m. However, the review itself predicted that borrowing would actually be £293m, (SR2001, table32.4), which is some £300m below the prudent level.

In addition, as we have seen, at least £350m of the planned depreciation in the review looks unjustified: (this is the expensing balances error of £172.8m and the error in calculating IRE of £180m). A more reasonable estimate for depreciation, therefore, would be (£1,267m - £350m), that is, £917m. On the basis of this estimate, prudent borrowing could actually have been around (£1,860m - £917m), that is, about £950m: that is about £650m higher than the borrowing of £293m planned in SR2001.

Of course, it cannot be assumed that all of this £650m represents overcharging for water: it is only sensible to allow a margin for contingencies, particularly as the WIC was looking for substantial efficiency savings whose delivery could not be regarded as certain. But even if a generous margin of £150m to £250m were allowed for contingencies, (which is consistent with the £220m margin in the strategic review), this still suggests, on a conservative estimate, that overcharging in SR2001 was in the probable range £400m to £500m or more.

3.21 Is there other evidence to suggest that overcharging of this size actually took place? How could there be an elephant of this magnitude in the fridge without its footprints being obvious in the butter? We note here three relevant pieces of evidence which do indeed provide these footprints.

- (a) First, there are other puzzling internal features of SR2001 itself: for example, how could it happen that the review foresaw the industry actually starting to repay debt by 2005-06 even though investment then was still running at a very high level.
- (b) Second, there is evidence from the published accounts of the water industry, now available up to 2004-05. Total investment over the three year period 2002-05 has been around £1,275m: total depreciation has been £766.3m, (of which IRC was £428m): and total borrowing has been £188m. However, given the DD evidence quoted at para 3.12 above, a better estimate of IRC for the three years is £195m, thus giving a total depreciation estimate of £533.3m, rather than the £766.3m in the accounts. If the maximum prudent level of borrowing is taken as (Investment - Depreciation), prudent borrowing would equate to £741.7m over the three year period. Hence actual

borrowing has been some £553.7m less than the level of borrowing which would normally be regarded as prudent. Note that this estimate is based on depreciation calculated on a historic cost basis: so it would be reduced somewhat if depreciation were moved on to a current cost basis. However, the effect of such a change would probably be no more than to reduce the figure of £553.7m by £150m: so there is firm outturn evidence of overcharging by £400m over these three years.

- (c) During the period 2002-06, the Scottish Executive transferred out of the water budget to other parts of the Scottish Budget no less than £248m. (Midwinter, 2004).

3.22 All of this evidence is consistent with our conclusion that water charges in Scotland have been seriously distorted over the strategic review period.

4. The Draft Determination of Charges for 2006-10

4.1 The Draft Determination of Charges, published in 2005, set out proposed revenue caps for 2006-2010 for comment. The primary approach towards setting revenue caps in the DD is quite different from that adopted in SR2001. The basic approach is called the Regulatory Capital Value, (RCV), approach. A full definition of RCV is given in the DD: but for present purposes, it can be regarded as a notional assessment of an underlying capital value for the industry, increased each year by investment and inflation, and decreased by depreciation. The industry is required to operate so as to generate a cash return of 4.6% on RCV. The total revenue required by the industry is then assessed in terms of the following formula:

Revenue required = Allowed for Operating Costs + Allowed for PPP costs
 + Depreciation + Infrastructure Renewal charge + Tax
 + Cash Return on the RCV + Working Capital Adjustment.

(Source: DD, Executive Summary, page 110)

4.2 Leaving aside the small terms of tax and working capital adjustments, this formula implies that the required revenue should be set to cover operating expenditure (that is, allowed for operating costs and PPP costs), depreciation (of both non-infrastructure and infrastructure assets), and RCV return.

In the previous section, it will be recalled that we took as a normal view of prudence for the industry that borrowing should equal (Investment - Depreciation): which is essentially equivalent to saying that revenue should cover operating expenditure, depreciation and interest charges. The RCV has been set in the DD at a level where the required cash return on RCV is of a similar magnitude to

interest payments. The implication is that the RCV approach should, in the short term, result in charges being set at about the same level as would result for an industry operating with normal prudence.

4.3 In addition to the required revenue as calculated by the basic RCV method, the final revenue caps as

recommended in the DD incorporate an element called a “financeability adjustment”: (FA).

The calculated revenue, the FA, and the final total revenues are set out in the following table.

Revenue Caps 2006-2010 £million cash terms

	2006-07	2007-08	2008-09	2009-10
Calculated Revenue from basic RCV approach	852.9	916.2	974.5	1018.2
Financeability Adjustment	129.7	89.3	34.7	0.0
Total Revenue	982.7	1005.5	1009.2	1018.2

Source: DD Table 7.10

Relatively little is said in the DD about the logic of the financeability adjustment, although the statement “in line with Ministerial Guidance, we have smoothed the change in revenue” presumably refers to it. Note that, unlike a traditional form of smoothing, which might be expected to average to zero, all of its terms are positive: adding a total of £253.7 million over the four year period to the basic revenues coming out of the RCV approach.

4.4 More light can be thrown on the Financeability Adjustment by considering Figure 1, which shows the proposed revenue from SR2001 (for years 2002-06), and the DD (for the years 2006-10). The chart also shows for the latter years, the revenue requirement from the basic RCV method, (so the difference between the two lines for 2006-10 is the financeability adjustment). It can be seen clearly from the chart that the effect of the financeability adjustment is to lead smoothly from the 2005-06 revenue as determined in SR2001, to the 2009-10 revenue as determined by the basic RCV approach.

4.5 If the financeability adjustment is indeed primarily designed to fulfil this smoothing function, then it represents a carry over into the DD period of the overcharging that has already been identified in the SR2001 period. In effect, if SR2001 had got it right in the first place there would have been no need for a tapering financeability adjustment in the DD period. The implications of this are very serious, given that, as we have seen, the financeability adjustment amounts cumulatively to some £253 million.

5. Summary and conclusion

5.1 In this paper, we have identified a number of errors and questionable aspects in the determination of water charges in Scotland for both of the periods 2002-06, and 2006-10. These include:

- (a) the inconsistency in the basis of depreciation used in setting and applying the RAB limit in SR2001.
- (b) the error in the calculation of infrastructure renewal expenditure in SR2001.
- (c) the expensing infrastructure balances error in SR2001.
- (d) the double counting of infrastructure renewal expenditure in the RAB limit in SR2001.
- (e) the error in calculating a key financial ratio, the interest cover ratio, in SR2001.
- (f) the questionable basis of the financeability adjustment in the Draft Determination.

5.2 To put these errors in context, consider the following estimates, based primarily on a combination of outturn figures for the period 2002-05, and planned figures from the Draft Determination thereafter.

Over the eight year period 2002-10,
 investment =£4,208.6m
 depreciation (est. current cost basis and including IRE) =£2,133.2m
 borrowing =£1,114.7m

This gives an excess of investment over depreciation of £2,075.4m. This means that there is a gap of (£2,075.4m - £1,114.7m) = £960.7m of investment in net new capital assets which is being met from revenue. Given that the normal principles of equity and prudence suggest that today’s customers should not pay out of revenue to fund the creation of significant net new assets which will also be of benefit to future generations of customers, this gap of £960.7m needs to be explained and justified.

5.3 A number of the factors we have identified and quantified in this paper will contribute directly to this gap. These are set out in the following table.

Failure to adjust RAB limit for inconsistency in basis of depreciation in SR2001	£154.3m
Error in Calculation of Infrastructure Renewal Expensing Infrastructure Balances Error	£180m
Error in Double Counting IRE in the RAB Limit	£172.8m
DD Financeability Adjustment	£180m
Total	£253.7m
Total	£940.8m

The total of these factors corresponds well to the gap identified in paragraph 5.2.

5.4 The key question is: how many of the items in the above table is it justifiable to charge to revenue? In the table, the first four items, which sum to £687.1m, relate directly to errors: charging these items to revenue thus appears definitely unjustifiable.

To this must be added an unknown element of the financeability adjustment which represents a carry-over of overcharging from SR2001, rather than relating to justifiable requirements of the Draft Determination.

5.5 Given the above, our conclusion is that, over the period 2002-10, the revenues in the Strategic Review and the Draft Determination represent overcharging of at least £680 million and possibly approaching £1 billion. It has to be said that a final assessment of the exact scale of overcharging would require further work, looking at long term financial modelling of the industry, which goes beyond our present scope. Such further refinement, however, would not materially alter the scale of overcharging identified above.

5.6 It will be apparent that overcharging of this scale will have had, and will continue to have, very adverse effects on private water customers, and on the competitiveness of Scottish business. The implication is that the issues in this paper need to be seriously and urgently addressed by the Water Commission, the Scottish Executive, and indeed, by bodies like Audit Scotland.

5.7 On the basis of the calculations in the Draft Determination there would be £222m of public expenditure provision unused at the end of the DD period if the DD plans were fulfilled. Given this, it will clearly not be possible to redress overcharging of the scale identified above within existing public expenditure provision. This then raises the question of how much public expenditure provision has been effectively lost to the water budget over the period, either by direct transfers out of the budget, or by downward adjustments of the future baseline. The published record on this question is obscure, but it is possible to come up

with different estimates suggesting that the loss to the budget has been between £250m and £450m. It is a matter of great importance that the Scottish Executive clarify once and for all what has been lost to the water budget.

5.8 Finally, once the immediate issues raised by this paper have been addressed, another question will come into sharper focus. The errors we have identified have had the effect of obscuring the level of public expenditure provision which the Scottish Executive requires to make by means of borrowing consents, to fund the prudent borrowing requirement of Scottish Water as long as it continues to be a public corporation. It is an oddity of the way Scottish Water is currently constituted that, although it in no sense receives any subsidy from the Scottish Executive, nevertheless, Scottish Water's borrowing counts against the Scottish Executive's public expenditure control limits: but because water is privatised in England, the Scottish Executive never receives any Barnett consequentials in relation to water. This means that any increase in Scottish Water's required borrowing carries an opportunity cost, with public expenditure being diverted away from areas such as education, health, etc. There will be a requirement for a full debate to establish whether the longer term funding requirement for Scottish Water is likely to be able to be accommodated within the constraints of the Scottish budget. Even if the conclusion was that long term funding of Scottish Water does not look sustainable under present arrangements, there are viable alternatives, like the Welsh model, which fall short of full privatisation: this is fortunate, given that full privatisation could well remain unacceptable in Scotland.

Annex 1: Double Counting of IRE in Formula (1): (see paragraph 3.13)

1. In this Annex we show that infrastructure renewal is counted twice in formula (1). We apologise to the reader for what might appear to be an excessive level of detail. However, given that this is an important point, which continues to be disputed by the Scottish Executive, we feel it is essential to give the reader an audit trail which can, if desired, be followed through in the actual tables of SR2001.

2. SR Table32.6 shows how RAB expenditure, ("resource accounting forecast total" in the table), builds up from its components: in terms of the notation used in that table:

Resource Accounting Forecast Total	
= Total Capital Investment Spend	(line 2)
+ Average Capital Charge Movement	(line 4)
- Operating Profit	(line 1).

Further, the Operating Profit term can be derived from Tables 32.1 and 32.2 of the strategic review as follows:

Operating Profit	= Total Revenue (line11 of T32.1)
	- Total Operating Cost (final line T32.2)

(This relationship holds to within £3 million for each of the years 2002-03 to 2005-06).

Moreover,

Total Operating Costs
 = Total Depreciation Charge (line 10 of T32.2)
 + Operating Expenditure (line 1 of T32.4, or
 equivalently, the sum of all non-depreciation terms in
 T32.2).

Hence,

Resource Accounting Forecast Total = Operating
 Expenditure + Total Capital Investment Spend (line 2 of
 T32.6) + Total Depreciation Charge (line 10 of T32.2)
 + Capital Charge Element - Revenue.

3. We now show that IRE is a component both of total capital investment and total depreciation in this formula.

- a. **Total capital investment spend** The components of this are shown in SR2001 p404 and are the three items: IRE, quality related investment, and other investment. These sum to investment as in line 2 of Table 32.6. Thus IRE is a component of investment.
- b. **Total Depreciation Charge** From Table 32.2, this equals non-infrastructure depreciation and IRC. Comparing IRC in Table 32.2 with the IRE figures on page 404, it can be seen that each year IRC is equal to IRE + a constant addition of £43.2m. Hence IRE is a component of the total depreciation charge.

4. Thus we have established that, since IRE is a component of both investment and depreciation in the SR2001 calculation of RAB expenditure, IRE is indeed double counted in formula (1).

Annex 2: Effect on Charges of Increase in IRE after RAB Limit has been set: (see Paragraph 3.13)

1. If IRE does not change once the RAB limit has been set, then the double counting of IRE in formula (1) has no adverse effect on water charges. In this case, if the value X was assumed for IRE when the limit was set, then infrastructure renewal will contribute an amount 2X to the RAB limit: and if the outturn IRE is also X then infrastructure renewal will contribute the same amount, 2X, to the RAB expenditure to be set against the limit: there is therefore no squeeze on expenditure.

2. Now consider what happens if IRE changes after the RAB limit has been set. Suppose that the RAB limit was set using formula(1) as

$$\text{RAB limit} = O + I + D + C - R,$$

where O, I, D, C, and R are planned operating expenditure, investment, depreciation, capital charge element, and revenue respectively.

Now suppose that IRE increases by an amount δ over what was originally planned for: and that it is not feasible to squeeze operating expenditure or other elements of planned capital expenditure to accommodate this. Then the only option for keeping within the RAB limit is to increase revenue by an amount equal to twice the increase in IRE, as can be seen from the following:

$$\text{RAB expenditure} = O + (I + \delta) + (D + \delta) + C - (R + 2\delta) = O + I + D + C - R = \text{RAB limit}$$

Thus, the effect of the double counting of infrastructure renewal is to force the industry to raise charges by an amount 2δ or it will breach its RAB limit.

3. Moreover, consider the effect on borrowing: suppose that the company had originally been planning to borrow what might reasonably be defined as a prudent amount: that is, $(I - D)$. After the increase in infrastructure renewal, investment increases to $(I + \delta)$ and depreciation increases to $(D + \delta)$, so the prudent level of borrowing = $(I + \delta) - (D + \delta) = I - D$, and is therefore unchanged. But, as we have seen, the company has been forced to increase its revenue by 2δ , whereas its actual cash outgoings have only increased by δ : so its borrowing will actually be $(I - D - \delta)$, an amount δ below the "prudent" level.

Endnotes

¹ Cuthbert and Cuthbert 2003

² Commissioning Letter, 2001

³ A.Wilson 2004, and SR2001

⁴ this term is defined as "the increase in capital charge over the 2003/04 level", where the capital charge is an assessed rate of return on the net asset value of Scottish Water. The capital charge element is, for the purposes of the strategic review, a relatively small element: the assessed values in SR2001 were 0, 0, £11.3m, and £21.1m for the years 2002-03 to 2005-06 respectively.

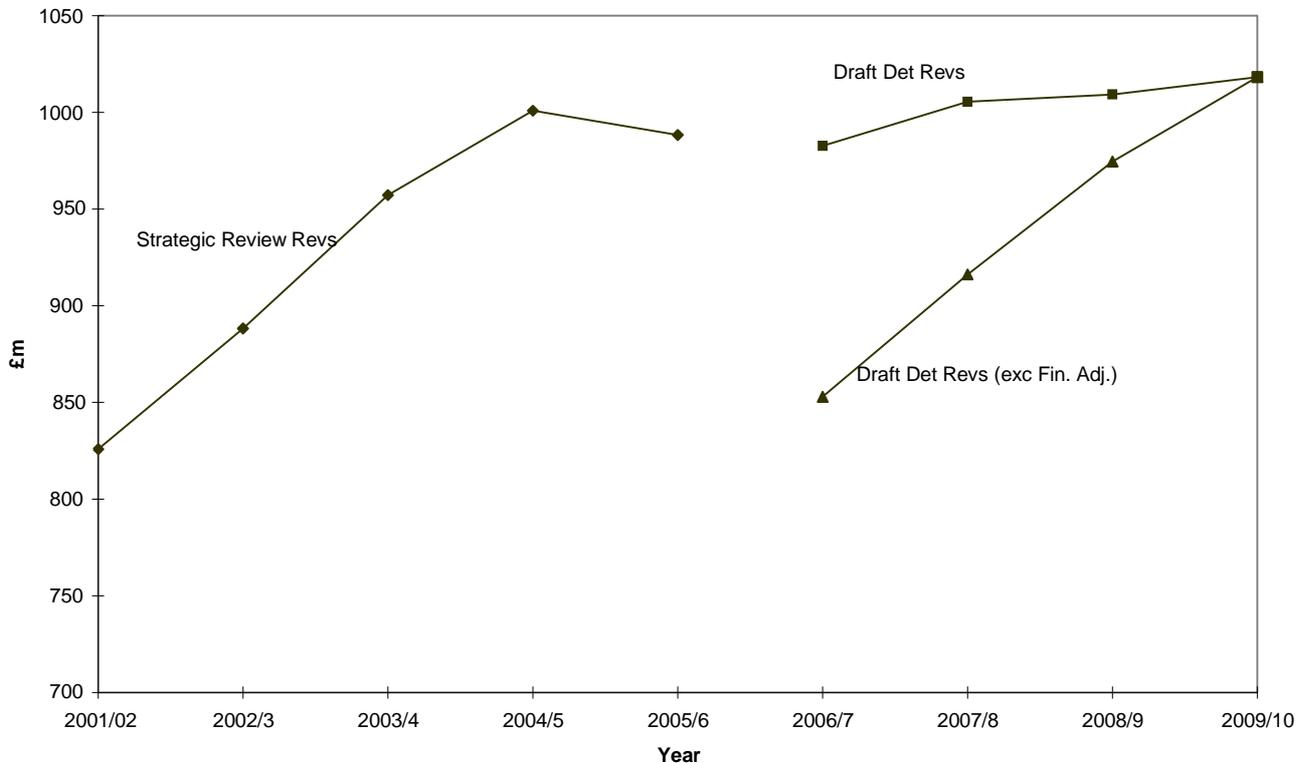
⁵ See OFWAT 2003, paras.4.33 to 4.40

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