



Ofwat Reconciling 2010-15 Performance: Technical Review

Ofwat

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Section 1

Introduction

Introduction

How to use the report

How to use the report

To facilitate the review of this report we have summarised the key sections below:

- We have started with a **summary of the work we performed**.
- We have then pulled out an overview of the **high level observations and themes**
- We then move into looking at the specific legacy areas **RCM, OIA, CIS, RCV, Logging Up/Logging Down, Overlap and Aggregation**.
- The Appendices contain a **list of the models reviewed**.

Structure of Points Raised

Each of the specific legacy areas of the report starts with a high level description of the purpose of this part of the legacy mechanism to provide context.

We have presented the points identified in each section categorising them into three groups:

1. Base model v Policy – mentioned in the representation – this covers discrepancies between the base models that we reviewed (Appendix) and the Policy we reviewed that were mentioned in the Severn Trent representations.

2. Base model v policy not mentioned in the representation – this covers discrepancies between the base models that were reviewed (Appendix) and the Policy reviewed that were not mentioned in the Severn Trent representations.

3. Between/within Base models – this is where there is an inconsistency in the use of discounting or tax within a base model or between two base models (e.g. inconsistent Tax in RCM and OIA)

Categorisation of Issues

Within each specific legacy area we have further categorised the issues into one of three groups:

a) Inconsistency between policy and the modelled mechanism

There are a few examples where the policy has not been appropriately applied in the models.

b) Lack of clarity and detail in the policy

There are several instances where there is a treatment of adjustments in the models which has been questioned in the representations, or we have identified a possible inconsistency, but for which Policy is not clear, either as the detail is not sufficient or the specifics are omitted from the Policy to reach a conclusion.

c) Representations we do not believe are accurate

Where a representation has been made, and we do not feel is consistent with policy, we have stated this in the appropriate section.

Introduction

Summary of work performed

Background to work performed

You provided us with:

- base case models for RCM, OIA, CIS, RCV, Logging up/down/shortfall, Overlap and Aggregation.
- a series of policy documents.
- written representations from Severn Trent and South East water (pension specific paragraph (page 10, paragraph (1))).

We agreed a scope with you to understand the extent to which the policy was represented in the base case models and have undertaken this work. Note that we have not yet reviewed any of the company specific models (over 55 individual models in total) other than to provide a summary of the inconsistencies with the base model.

This report has been commissioned through a separate tender and therefore this PwC team worked in a separate and distinct capacity to the PwC Delivery Partner team.

Summary of work performed

- We collated a list of the documentation produced by Ofwat in relation to the legacy adjustments at PRO9 and in the period up to issuing draft determinations.
- We worked with Ofwat colleagues to understand where the relevant sections of the documents were. We reviewed the documents provided by Ofwat colleagues and available online. We captured the relevant materials and noted precise sections/pages etc.
- We reviewed the spreadsheet models – the ‘base models’ that were used to calculate the legacy adjustment in PRO9 (see Appendix).
- We have reviewed the legacy models for consistency of application of indexation factors, taxes, currencies etc.

People consulted

We consulted the Ofwat staff responsible for the individual mechanisms.

Limitations of the review process

- We did not review the representation’s supporting documentation prepared by the Water companies’ advisors.
- We only reviewed the pension paragraph in the South East Water Representation.
- We did not review the base models such as logging up/down/shortfall, overlap, legacy aggregation models against company specific models.
- We did not review the Service Incentive Mechanism (SIM) and related legacy policy following instructions from Ofwat.
- We did not review the integrity and quality of the Fountain system.
- We did not check that outputs of one model flows as inputs to the other models (e.g. outputs of overlap model flowing as inputs into the OIA or legacy aggregation models).
- It is important to note that in preparing this report we have reviewed only the policy documentation provided to us by you, and only consulted Ofwat staff. We have not spoken to Severn Trent, any of the other Water companies, or their advisors. This necessarily limits the conclusions of the report.

Introduction

High level observations and themes

Overview of Findings

There are three key areas of findings, which we have summarised below:

1. Issues on indexation in the CIS model

- i. The basis of the indexation of actual and allowed capex used to calculate the financing cost under/overfunded, which flows into the ex post revenue adjustment, is not explicitly stated in policy, but is currently calculated on a consistent basis to capex values used by Ofwat in presenting annual updates to the RCV (http://www.ofwat.gov.uk/regulating/prs_web_rcvupdates)
- ii. In the calculation of the RCV midnight adjustment, the allowance capex used is not indexed on a consistent basis to the allowance capex used in the financing cost adjustment (above) but again is not covered explicitly in policy.

2. Issues on OIA Pension Adjustment

Representations have been made on the treatment of the pension deficit repair contributions as part of the OIA, where 100% of deficit recovery costs in the outperformance calculation are included in actual opex in 2010-15 although just 50% were funded as part of FDo9 assumptions. The methodology Ofwat has applied where 100% deficit recovery costs are included, is consistent with the latest policy of April 2014.

3. Issues on Tax

There is inconsistent application of tax throughout the feeder models and financial model, where a number of different approaches are taken. However they are not explicitly contrary to policy.

The issues raised were responded to by the Legacy team. Where relevant we have updated our commentary accordingly.

Number of each issue categories in 'Points identified' sections

For each section of our review, we have summarised the number of issues which fall into each category as set out on page 3.

Category*	a	b	c	n/a	Total
1 Revenue Correction Mechanism	0	3	1	0	4
2 Operating Expenditure Incentive Allowance	0	2	1	0	3
3 Capital Expenditure Incentive Scheme	1	3	0	1	5
4 RCV midnight adjustment model	1	8	0	0	9
Total	2	16	2	1	21

* The list of categories: a=Inconsistency between policy and the modelled mechanism; b=Lack of definitive clarity and detail in the policy; c=Representations we do not believe are accurate based on policy

No issues were found with the logging up/down, overlap and aggregation models.

Section 2

Revenue Correction Mechanism

High level description of RCM

The Revenue Correction Mechanism deals with the differences between actual tariff basket revenue for 2010-15 and forecasted tariff basket revenue at the final determination (FD) 2009.

RCM is designed to incentivise companies through:

- **revenue true-up:** it compares forecasted revenue at FDO9 and actual revenues. In the process, it will provide an incentive for a company to promote water efficiency to metered customers. Ofwat reduces the revenue requirement for PR14 by the amount of revenue that the company over-performed for 2010-15. It is visa-versa if the revenue is lower than the expected revenue level. The total sum of positive or negative corrections is adjusted for tax and annualised over the five years for PR14 in NPV terms.
- **billing incentive:** this incentivises companies to bill all eligible properties. If a company bills more or fewer properties than expected, Ofwat sets the incentive as the difference between expected and actual number of billed properties multiplied by 42% (the efficiency billing factor) of the average bill.
- **back-billing incentive:** this incentivises companies to identify properties that have been charged less than they should have been due to reasons out of the company's control.

Ofwat makes an adjustment to the incentives amount to take account of the reduced customer numbers lost through competition to new appointees. Ofwat will reduce the revenue correction by a further 58% of the average bill for each lost property., because the billing incentive will already have reduced it by 42% of the average bill.

Points identified

Type of point	Area	Detail	Category
2.1. Base model v Policy – mentioned in representation	Discount rate	a) The RCM policy says that the PR09 or/and PR14 discount rates should be used but is not clear if they should be pre or post tax. Both of them are used at difference points in the model but it is not directly contrary to policy.	b
	Discount factor	b) 'PR09/31 Revenue correction mechanism – technical details, Appendix E' prescribes the usage of the “pmt” excel function for the calculation of annualised payments of the revenue true up for the next five years. By default this formulae discounts at the end of the period. Discounting to the end of the period is not explicitly described in the policy.	b
2.2. Base model v policy – no representation	n/a	n/a	
2.3. Between/ within Base models		We have not identified any deviation in the RCM base model from the legacy policy and guidance on RCM.	
		a) We would like to note that there are some inconsistencies in treatment of billing and back billing incentives which are pre-tax whilst revenue correction is post-tax. However, this calculation is in-line with the legacy policy and guidance. The nature of the inconsistent treatment is explained in the legacy workshop reconciling 2010-15 performance (p. 33-37) dated 9 April 2014.	b
		b) The corporation tax used in the RCM is a marginal rate of corporation tax taken from HMRC. At the same time the same corporation tax in the OIA is a current tax charge as a percentage of historical cost profit before tax in 2012-13 with a lower cap of 0%. This is different to the marginal rate of corporation tax taken from HMRC. This is in line with policy.	c

* The list of categories: a=Inconsistency between policy and the modelled mechanism; b=Lack of clarity and detail in the policy; c=Representations we do not believe are accurate

Section 3

Operating Expenditure Incentive Allowance

High level description of OIA

The operating expenditure incentive allowance (OIA) mechanism was introduced at the 1999 price review. It is intended to recognise the full incentive effect of operational savings – regardless of when the savings are made. The operational savings are retained and ‘rolled up’ into price controls for the following price control period as long as the savings result in sustained operating cost reductions.

The OIA mechanism compares actual operating expenditure (opex) incurred for the period of 2009-14 to the revised FDo9 expectation on operating expenditure.

The revised FDo9 opex expectations are opex at FDo9 corrected for the adjustments from:

- logging up/down/shortfall;
- merger savings; and
- overlap programme (please see section “Points identified” for details).

The revised actual opex is actual reported opex corrected for the following adjustments from:

- pensions; and
- atypical items or exceptional costs.

The cost savings are brought forward for six years capped by the constrained 2013-14 year level. The introduction of this constrained year level is to encourage a company to make sustained reductions in operating costs that will be retained and ‘rolled up’ into price controls for 2015-20 in the same manner for all companies.

The policy adds the additional incremental outperformance for each year using the previous year as a base.

The effective tax rate which has a lower cap of 0% is the current tax charge as a percentage of historical cost profit before tax in 2013-14.

Points identified

Type of point	Area	Detail	Category
3.1. Base model v Policy – mentioned in representation	n/a	n/a	
3.2. Base model v policy – no representation	n/a	a) The OIA model includes the adjustment “Baseline view of one-sided adjustments to water/sewerage service total opex for shortfalls relating to serviceability” to the revised FDo9 expectations. This adjustment is not covered in the policy.	b
		b) Furthermore, the policy does not clearly state what items should be picked up from the overlap model for the OIA model calculations. The “Operating expenditure outperformance feeder model” description and “Setting price controls for 2015-20 – business planning expectations - A consultation” mentions using inputs from the overlap programme but is not explicit to which.	b
3.3. Between/ within Base models		a) The corporation tax used in the RCM is a marginal rate of corporation tax taken from HMRC, whereas the corporation tax in the OIA is a current tax charge as a percentage of historical cost profit before tax in 2013-14 with a lower cap of 0%. The uses of different tax charges in the RCM and OIA models is in line with policy.	c

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Section 4

Capital Expenditure Incentive Scheme

High level description of CIS

The intent of the CIS is to appropriately incentivise companies. At the business planning stage, it encourages companies to submit challenging business plans based on realistic forecasts of what they will need to invest. At the implementation stage, it gives companies strong incentives to continually seek out more efficient ways of delivering the expected outputs.

Each company recovers its actual expenditure plus or minus rewards or penalties that depend on the expenditure forecast it chooses and how actual expenditure compares to forecast. This is the foundation for:

- deciding a 'baseline' level of expenditure for each company;
- comparing a company's forecast to the baseline to calculate an expenditure allowance for setting prices for the first five years (PR09);
- providing an incentive for further outperformance which declines as the ratio of a company's forecast to baseline increases;
- calculating ex-post rewards/penalties as the difference between the expenditure allowance and actual outturn expenditure multiplied by the incentive rate, plus an additional element to benefit submission of realistic business plan forecasts that are aligned with the expected outturn level of costs; and
- making an ex-post reconciliation between the expenditure allowance used to set prices and actual expenditure plus or minus any rewards or penalties. This amount is then carried forward for price setting for the next five-year period (PR14).

Description of key challenges

Policy

- Policy relating to CIS is clear in setting out the purpose and intent of the mechanism with the exception of net present value (NPV). There is limited policy discussion of the process used to make the carry-forward NPV-neutral. The future value of the ex-post revenue adjustment is calculated using a pre-tax WACC whereas the profiling mechanism to unwind this adjustment over 2015-20 uses a post-tax WACC.
- Despite the variation between the forecast and actual RPI, Ofwat's policy is to use published indices ex-post, in line with the model and other policy documents.

Interactions between Policy/model and model with other models

- In general the policy describing CIS does not clearly describe the operation and mechanics of the model (except through the illustrative model 'Capital Expenditure incentive scheme (CIS) –illustrative worked example', which does not contain indexation). It instead describes the intended consequences and outcomes of the model.
- There is not an explicit definition within the policy on the precise application of indexation within interim calculation steps. This is exemplified in the application of different RPI assumptions to the capex allowance in RCV adjustment and ex-post financing cost true-up element of the revenue adjustment calculations, giving rise to a mismatch in rates used.

Key features and details of CIS

The CIS mechanism is a combination of incentives ex-ante, plus a true-up ex-post.

Incentive scheme (ex-ante allowances)

A company can choose to spend more than either the baseline set or the capital expenditure allowance included in price limits. This expenditure is reflected in the RCV following the next price review, but at the cost of lower outperformance incentives and reduced returns within the price limit period. The intent of the policy is that CIS rewards/penalties provide sufficient disincentives to contain any tendency to incur capital investment unnecessarily.

Four different capex values are used from start to finish in the CIS calculations of an AMP:

1. Bid (what the company thinks)
2. Baseline (Ofwat's counterview of the Bid)
3. Allowance (by-product of the matrix)
4. Outturn (actuals)

To derive a central estimate, Ofwat adjusted expenditure forecasts to an achievable level of efficiency for a middle ranking company.

From the Bid to the baseline, CIS ratios are created. The CIS ratios are the key drivers of the overall CIS incentives. For example, a CIS ratio of 120 would mean the company view of expenditure was 20% higher than the central baseline. A change protocol exists to accommodate changes to scope of the CIS.

For rewards and penalties Ofwat include 25% of the difference between their baseline and companies' final business plan forecasts in their modelling for PR09 price limits, with specific rules for those companies above 130.

At the next price review, Ofwat reconciles the rewards or penalties due under CIS, taking account of actual capital expenditure along with the expenditure assumptions and additional income allowed in price limits.

True-up (ex-post reconciliation)

The True-up compares outturn capex with baseline capex to establish the outturn ratio, used to determine reward/penalty. Ofwat will adjust each company's RCV to reflect actual 2010-15 capital expenditure in 2015. Ofwat also carries out a reconciliation to deliver the appropriate NPV of rewards and penalties under the CIS matrix.

Details of the true-up calculation were not completed at time PR09 was set, but part-way through the AMP (per IN12/08 July 2012), following queries on methodology of the calculation from companies.

The model produces two outputs for each of water and sewerage:

1. the CIS revenue adjustment (profiled where applicable), which is fed into the financial model, and
2. the RCV adjustment, which is fed into the RCV midnight adjustment feeder model

As part of the change protocol, any differences in agreed outputs inform Ofwat's decisions on logging up and down, shortfalls and interim determinations ('IDoKs').

Points identified

Type of point	Area	Detail	Category
4.1. Base model v Policy – mentioned in representation	NPV	a) Policy “Ofwat’s views on companies’ draft business plans, Dec 2008)” refers to ‘a reconciliation to deliver the appropriate NPV of rewards and penalties under the CIS matrix’. The policy states that the revenue adjustments granted based on performance in AMP5 and realised in AMP6 are on a NPV neutral basis. The model determines NPV of the ex-post penalties/incentives from AMP5 using a pre-tax cost of capital. However, when the incentives are unwound through AMP6, the NPV effects are calculated using a post-tax cost of capital. The policy does not set out the rationale for the use of these two WACCs with different bases but this approach will not give an NPV neutral result (i.e. we would expect to see the WACC used in AMP5 and AMP6 to be on the same basis, even though the absolute values will differ).	a
		b) Although the policy states that it should be NPV neutral it does not explicitly detail how this should be achieved. We note that there are mechanisms in the model to this but there are other ways to achieve it.	b
		c) We note additionally that as per RCM the discounting mechanisms in the NPV calculations all implicitly assume that cash flows are on the last day of each year. This is not explicitly detailed in the policy.	b
	Indexation	d) There appears to be an inconsistent application of indexation factors within the true up calculations, specifically the indexation of the capex figures used. The capex allowance used in the RCV adjustment is rebased using outturn RPI, whereas the capex allowance used in the financing cost adjustment is rebased using the RPI forecasts from the PR09 Final Decision, creating a mismatch between the two. Policy is not explicit on which indexation factors should be used but they appear to be inconsistent.	b
4.2. Base model v policy – no representation	Model mechanics	a) On the “Summary of ex ante outputs” sheet, there are some rows with incorrect signage, meaning the output will not be accurate. Please note that this does not flow through to fountain.	n/a
4.3. Between/ within Base models	n/a	n/a	

* The list of categories: a=Inconsistency between policy and the modelled mechanism; b=Lack of clarity and detail in the policy; c=Representations we do not believe are accurate

Section 5

Regulated Capital Value

High level description of RCV

High Level Description of the RCV Feeder Model

One of Ofwat's regulatory objectives is to ensure that efficient companies can finance their functions. A company that is efficiently financed and run can deliver its services to consumers earning a return on its capital base (measured by the RCV) at least equal to the cost of capital.

RCV therefore acts as a proxy for the value of the asset base of each business over the pricing period. A reasonable cost of capital, as determined by Ofwat, is applied to the RCV, and the resulting return on capital feeds into the financial model to be included in the revenue requirement.

The RCV midnight adjustment feeder model calculates the opening RCV value by considering:

- Land sales over 2010-15
- Actual capital expenditure in 2009-10
- The output from the CIS model
- Enhanced rewards
- Serviceability shortfalls
- 'Other' adjustments.

The revised RCV is then indexed to 2012-13 prices for inclusion in the financial model. The opening RCV is one of the key opening inputs in the PR14 financial model.

Description of key challenges

Policy

- Policy documentation is limited in describing the RCV midnight adjustment feeder model. The impact of limited policy documentation is that the RCV calculations have no prescribed methodology.

Model

- The model is not internally consistent in its treatment of RCV calculations.
- For example, within the adjustment for 2009-10 actual expenditure, the indexation treatment for IRE is different to other capital expenditure. We note that the inconsistency appears to be the exclusion of the notified index from the IRE calculation, which results in a comparison error (discussed below). We believe that the inputs for the RPI and COPI elements that are common to both calculations are the same. Also, the policy does not prescribe separate indexation treatment of capital expenditure types.
- With regard to land sales, the discounting methodology applied to the land sales adjustment is inconsistent with the basis of indexation used throughout the rest of the model. There is no prescriptive guidance in the policy stating how Land sales will be rebased. Further, the discount rate applied to determine the NPV of the land sales appears to be the pre-tax WACC rather than the post-tax WACC used elsewhere.

Interaction between Policy/model and model with other models

- Policy documentation is limited in describing the midnight adjustment feeder model.

Points identified

Type of point	Area	Detail	Category
5.1. Base model v Policy – mentioned in representation	IRE expenditure comparison (2009-10)	a) The indexation treatment for IRE in PR09 midnight adjustment is different to other capital expenditure. The treatment is summarised as follows: - Capex: $(\text{Actual} * (07 \text{ RPI} \div 09 \text{ RPI})) - (\text{Expected} * 09 \text{ COPI} * \text{change in notified index})$ - IRE: $(\text{Actual} * (07 \text{ RPI} \div 09 \text{ RPI})) - (\text{Expected})$	b
		b) We note that there is an exclusion of the notified index and COPI from the expected IRE calculation, however we believe that the inputs for the RPI element of the calculation is consistent for both Capex and IRE.	b
		c) There is no policy setting out how 2009-10 outperformance adjustment (IRE) is calculated.	b
	Land	d) The discounting methodology applied to the land sales adjustment is inconsistent with the basis of indexation used throughout the rest of the model.	b
		e) There is no prescriptive guidance in the policy stating how Land sales will be rebased, however the rate applied appears to be the pre-tax WACC rather than the post-tax WACC used elsewhere.	b
5.2. Base model v policy – no representation	Capital Expenditure indexation (2009-10)	a) Expected capex which is on the 2002-03 price level has been inflated by COPI to 2007-08 price level and inflated by NI to 2009-10. This creates inconsistent indexation throughout period of 2002-03 to 2009-10. There is no policy explicitly covering application of this indexation.	b
	Rebasing inconsistencies	b) There is no rebasing of discretionary capex spend in 2009-10 and virement in the model. For discretionary capex spend this value is subjected to the Notified Index which is an inconsistency in the application of COPI.	b
	Capex spend cap	c) Discretionary spend in 2009-10 is double counted in the calculation of the Capex cap (Inputs row 18-20).	a
	Indexation	d) The opening RCV for 1 April 2015 is produced by the model in an average year price. If the closing RCV from the previous price review which comes from the fountain inputs is based on year-end RPI, it would be expected that the closing RCV values would also be rebased to year-end RPI. The rebasing method is not explicitly stated in the policy but we understand having inputs in year average prices for the PR14 model is in line with the requirements of the modelling inputs.	b
5.3. Between/ within Base models	n/a	n/a	

* The list of categories: a=Inconsistency between policy and the modelled mechanism; b=Lack of clarity and detail in the policy; c=Representations we do not believe are accurate

6. Appendix

List of reviewed models

Summary of Models Reviewed

We have included a list of the models ‘base models’ reviewed below:

#	Model Label	Model name
1	PL14Lo10	Revenue Correction Mechanism.xlsx
2	PL14Lo11	Opex outperformance model.xlsx
3	PL14Lo12	CIS model.xlsx
4	PL14Lo13	RCV midnight adjustment.xlsx
5	PL14Lo14	Overlap model.xlsx
6	PL14Lo15	Logging up, down and shortfall model.xlsx
7	PL14Lo17	Legacy aggregation model.xlsx
8	PL14Lo20	Legacy decision model

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