Draft Financial Model v1.0

1) Introduction

It is intended that the financial model should allow WICS and Scottish Water to have important common ground on financial calculations during the process of assessing appropriate financial assumptions that underpin possible charge caps. We have indicated in our methodology consultation that we will be able to provide feedback to Scottish Water on its financial assumptions provided that our model is used.

The model is currently in draft form. We have proposed a timetable early in 2008 for Scottish Water to review its contents and for a joint workshop to be held. In view of possible changes arising from this process, we have not yet had the model independently reviewed. However, we have tested the model using data from the previous strategic review, without material differences to the modelling results.

2) New attributes incorporated into the financial model

Based on the experience gained during the previous strategic review process and on recent developments (such as the introduction of competition), the financial model has undergone a series of upgrades.

Compared with the financial model used in the last review, the model incorporates the following changes:

- **Link to tariff baskets**: Tariff baskets were used separately from the financial model in the previous review. They have now been incorporated in the model in order to calculate charge caps directly and automatically from other input assumptions.

- **Scenario modelling options**: Scenario modelling has now been incorporated as part of the standard version of the model. This will allow the user to understand the impact on prices by changing assumptions on a series of key variables in a 'user-friendly' interface.

- **Methodological changes**: The cost of capital is calculated on a real basis in order to match most of the UK regulators' approach in this respect.

- **Retail Competition**: The model has been adapted in order to calculate Household retail tariffs and licensed provider wholesale tariffs.

- **New or better information**: The model has been streamlined where improved information from Scottish Water allows this, eg Regulatory Accounts.

3) Setting charge caps

Charge caps are calculated by matching the calculated financial revenue and the implied revenue from tariff baskets (see figure 1). In the previous strategic review of charges, this process was carried out using two different models, the financial model and the tariff basket model respectively. The updated financial model now combines financial information as well as customer base information. This will allow the user to

calculate charge caps easily as well as preventing errors by keeping all information in one single file.

Figure 1: Process for calculating charge caps
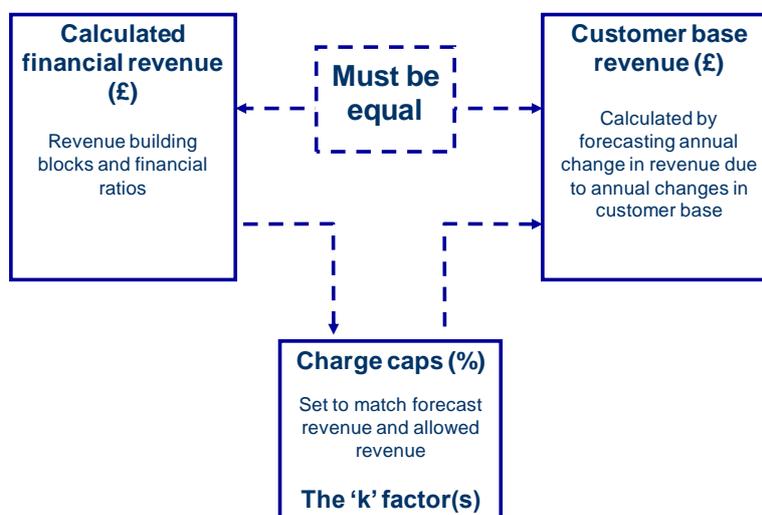
Although the financial model will calculate automatic charge caps, it also allows the user to alter manually the resultant charge to accommodate any desired 'smoothed' charges.

Another key attribute of the model is the allowance for unwinding cross subsidies among main customer groups. As such, the user should determine how the calculated 'financial' revenue should be allocated throughout the revenue groups (the composition of the revenue groups is explained in detail on the Commission's guidance for completing Section 8 of the First Draft Business Plan)

4) Revenue Building Blocks approach

As highlighted in the methodology consultation, we intend to calculate charge caps by adopting the revenue building blocks approach. In the previous review the financial model revenue was determined through requiring compliance of a series of key financial ratios (the same approach used for determining the initial Regulatory Capital Value).

In the financial model, the revenue building blocks are the following:

Operating Costs
+
PPP costs
+
Depreciation
+
Working capital adjustments
+
Allowed return on RCV
+
Tax

These building blocks will be calculated from the assumptions input in the model. This calculation resembles Ofwat's approach for setting prices during its Periodic Review 2004. However, it is worth noting the specific adjustments made to the 'Allowed return on RCV' building block to adapt it to the Scottish context.

In the previous strategic review, the financial model forecast Scottish Water's financial accounts as a vertically integrated company. As such, the calculated initial Regulatory Capital Value also contained a portion for the value of the retail business. Given the full separation of the non-household retail business from 2008, the allowed return on RCV would need to be adjusted accordingly in order to identify the portion that would belong to the allowed return of licensed retailers. As such, the model calculates an assumed return for the licensed retail industry and subtracts it from the main calculated 'vertically integrated' return on RCV.

An additional adjustment made for the Scottish water industry is the adjustment for embedded debt. As in the last review, the financial model allows any difference between the cost of debt assumption used for cost of capital calculations and the actual weighted average interest rate paid on embedded debt. This adjustment is done on a real basis.

Finally, there is an adjustment for any dividends 'forgone' by the Scottish Government. This reduces the amount of calculated commercial allowed for cost of capital (one of the building blocks) for the return on equity that the Scottish Government is willing to forgo during the regulatory period. This is an assumption input to the model and is expressed as a percentage of the unleveraged portion of the RCV.

5) Structure of the model

The model contains seven main sections:

- Base Historic Data
- Assumptions
- Process Sheets
- Outputs
- Tariff Baskets
- Modelling
- Alternative inputs

There are two additional sections (Working Sheets, Others) but the user does not need to interact with these.

- **Base Historic Data**

  The user should input in this section any 'historic' financial information. This implies inputs for years 2006-07 and 2007-08. Financial information is based on the Regulatory Accounting Rules (any deviations to these are explained in the First Draft Business Plan definitions for Section 7).

  This section comprises seven worksheets:

  B1. Profit and Loss account
  B2. Balance Sheet
  B3. Cash Flow

B4. Working Capital and other non-trade debtors/creditors
B5. Tax
B6. Maturity profile of closing (embedded) debt (as of 31 March 2008)
B7. Depreciation and amortisation of closing assets

Although Tables B6 and B7 involve assumptions beyond 2007-08, these are related to closing assets to the 'base year' (2007-08). For instance, B6 inputs are related to the maturity profile of the closing debt as of 31 March 2008 and B7 inputs refer to the expected historic and current cost depreciation and amortisation of closing assets at 31 March 2008.

- **Assumptions**

This section contains inputs on variables that could affect revenue or charges for the period 2008-09 to 2017-18.

This section comprises seven worksheets:

A1. Inflation
A2. Financing
A3. Capital expenditure
A4. Asset Disposals
A5. Non Fixed assets
A6. Licensed Retail business
A7. Tax

Worksheet A6 information has already been pre-input by the Commission and comprises a high-level approach for calculating the licensed industry cost of capital.

- **Process sheets**

This section deals with all necessary calculations for calculating the revenue building blocks and well as the main inputs for the calculation of forecast financial information. The worksheets included in this section are:

P1. Capital Expenditure
P2. Depreciation
P3. Book Value
P4. Regulatory capital value
P5. Interest income and interest expense
P6. Capital allowances
P7. Tax
P8. Licensed retail industry
P9. Cost of capital
P10. Current Cost reserve adjustments
P11. Revenue calculation formula

The calculations in this section form the basis for the 'key outputs' of the financial model.

- **Outputs**

This section contains the key outputs of the model. Worksheets in this section include:

O1. Profit and Loss Account
O2. Balance Sheet
O3. Cash Flow
O4. Financial ratios and debt calculations
O5. Investment summary
O6. Charge caps

The first three worksheets display the forecast financial account information for Scottish Water. These are expressed in Historic Cost as well as Current Cost accounting.

The fourth worksheet calculates referential ratios. These are the same as those used in the previous review and resemble those used by Ofwat in its Periodic Review 2004. The table also informs the user if the resultant modelled scenario complies with the reference range targets for the financial ratios.

Finally, the table also contains important information regarding the use of funds provided by the government and informs the user if the modelled scenario requires an amount of public borrowing that exceeds the amount made available by the government (input to the model).

- **Tariff Baskets**

As mentioned previously, tariff basket information has been added into the financial model in order to calculate charge caps directly. Tables T3 to T22 contain detailed information on tariff baskets. The structure of these tables resembles that of the Business Plan guidance section 8. Table T2 summarises the information of the former tables into tariff basket information and Revenue group information and T1 summarises revenue information on a service level basis.

However, unlike the Business Plan tables, all tariffs that affect primary revenue have been put together in a single worksheet ("TA1"). This has been done for the purpose of mapping tariffs with their respective Customer Revenue Group.

Assumptions on changes in tariffs are also input on table TA1. Tariffs changes are input on a revenue group basis (i.e. Household water retail, wholesale water charges (measured) to licensed providers through charges scheme in respect of supply points consuming greater than 1,000Ml/annum).

- **Modelling:**

This section is made of three worksheets: "K solving", "scenarios" and "allocations".

The table "K solving" is the worksheet that contains the 'macro' that calculates charge caps. This is done by matching the revenue from the financial modelling worksheets and the revenue from the tariff basket worksheets.

This worksheet also contains key outputs such as charge caps (expressed in real terms), financial ratios and the use of available public borrowing.

In this worksheet the user will also select if he/she wants the macro to use the 'building blocks' calculated revenue or a manually input revenue profile. A third option is to select revenue from a desired tariff basket revenue assumption (if this third option is selected, the user does not need to use the macro button).

The "scenarios" worksheet allows the user to model different scenarios by selecting alternative inputs to those input in tables A1 to A7. Alternative inputs include capital expenditure, operating expenditure, cost of financing, and borrowing limits. Alternative assumptions are input in worksheets E1 to E7, but the model also allows to input 'custom' assumptions in this worksheet as well.

The "allocation" worksheet is also key for charge cap setting as it defines any unwinding of cross subsidies at a customer revenue group level. As such, before running the macro, the user should determine *how* the calculated financial revenue will be distributed among revenue customer groups throughout the regulatory period 2010-14. The model then assumes equivalent charge cap increases among all customer revenue groups.

The user has been given three alternatives to solve the revenue allocation targets. Alternative 1 allows to user to input the 2013-14 targets and let the model assume a straight line apportionment between this breakdown and that calculated for 2009-10. Alternative 2 allows the user to input percentage targets to year 2010-11 and then let the model calculate a straight line until the 2013-14 target. Alternative 3 allows to user to custom revenue allocation throughout the entire regulatory period. Whatever alternative is selected, the user will need to confirm his/her selection by selecting the relevant alternative number in worksheet "K solving" block "Revenue proportion allocation".

- **Alternative inputs:**

  The model allows the user to input alternative assumptions to those included in some key variables throughout tables A1 to A7. Alternative assumptions can be input in the following tables:

  E1. Operating costs, PPP and inflation scenarios
  E2. Q&S3b: Capital enhancement (total investment and apportionments) scenarios
  E3. Q&S3b: Capital maintenance (total investment and apportionments) scenarios
  E4. Q&S3a: Capital enhancement (total investment and apportionments) scenarios
  E5. Cost of Capital, Financing Costs and Dividend Scenarios
  E6. Revenue Options

  The first scenario for each variable is by default the 'base case' and is sourced from its related input in the tables A1 to A7. The user can then input 2 new pre-determined scenarios. Finally, a fourth (called 'custom') scenario is that input in the "scenario" worksheet should the user wish to manually insert an assumption without wishing to save it.

6) Solving K and smoothing revenue

<u>Using the financial model macro:</u>

Currently, the financial model 'K solving' macro calculates the charge caps that exactly match the calculated revenue (or an alternative input revenue phasing) and the building blocks revenue This macro works by applying the Microsoft Excel's 'goal seek' function by iterating inputs in worksheet "TA1" block "Tariff increases per revenue group" so that they match the desired 'revenue proportion' target set in the worksheet "allocation".

The macro does this calculation for all customer groups for all years until 2013-14. Beyond this year, the macro seeks for a single charge cap (applied to all groups) that would match the entire tariff basket revenue with the modelled revenue.

<u>Worked Example:</u>

Before running the macro, the model has the following data:

- Calculated revenue from building blocks: £100m
- Desired proportion of revenue to be allocated to Revenue Group 1: 25%
- Tariff for Revenue Group 1 (i.e. same as previous year): £1
- Number of customers in Revenue Group 1: £20m
- Implied tariff basket revenue from Revenue Group 1 with current inputs: £20m

Running the macro

Given that the difference in target revenue from the revenue group is £25m (£100m multiplied by 25%) and that of tariff basket worksheet, the macro will run the goal seek function and vary the revenue from the tariff basket worksheet by increasing/decreasing the tariff (s) for the revenue group. In this example, the tariff would need to increase in 25% in order to match the target revenue of £20m.

<u>Shared tariffs:</u>

An additional factor to consider is that some tariffs are 'shared' among different customer groups (i.e. revenue groups 3, 4, 5 and 6). As such, changes made in tariffs for a specific revenue group (i.e. group 3) could affect another group (i.e. Revenue group 6). To solve this problem, the macro first solves the revenue target for the group which tariffs affect the most other groups. It then goes on until it reaches the group in which there are tariffs that do not affect any other group. A clear tariff example for the latter is a change to the tariff "Standard charges: > 20mm meters (former LUVA): volume greater than 1,000,000m3"

<u>Worked example:</u>

We use the same assumptions as per the previous worked example, but in this example there is an additional revenue group with the following characteristics:

- Desired proportion of revenue to be allocated to Revenue Group 2: 60% (or £60m)
- Revenue group 2 is made of two subgroups of charges A and B. Charge A is equivalent to that in Revenue group 1 (i.e. £1). Charge B is £2.
- Tariff multipliers for Group A and B are 25m and 10m respectively.
- Current implied tariff basket revenue is £45m (25m * 1 + 10 m * 2)

Running the macro

As indicated previously, the macro would first solve revenue for the group whose tariffs affect other groups (in this example, group 1). As such, the resultant tariff for revenue group one would be £1.25 (or an increase of 25%).

With this change, revenue group 2 would have been affected via Tariff A (as this is a shared tariff). As such revenue in group two is at this stage £51.25m (25m * *1.25* + 10m * 2). At this stage the macro would solve the tariff that is not shared (i.e. tariff B). As such, the resultant tariff for subgroup B is £2.875 (or an increase of 43.75%). After this adjustment, the final revenue for the group would be £60m (25m * *1.25* + 10m * *2.875*).

It is worth noting that for the model, the overall cap for Revenue groups 1 and 2 is 25% and 33% respectively.

Smoothing revenue:

The user may wish to 'smooth' the resultant 'macro' calculated charge caps. The model does not have a mathematical approach for smoothing revenue, as there may a wide range of criteria for 'smoothing' charge caps that the user might want to apply. As such, the user will need to manually smooth the results. As indicated earlier, tariff changes are managed in the worksheet 'TA1'. The use would also need to select option '3' in worksheet "K solving" block "revenue approach" in order to see the impact of these charges in the financial accounts (and ratios).

7) Ten steps for calculating charge caps

In order to calculate charge caps, it is suggested that the user follows the following steps:

1) Complete base historic information (worksheets 'B1' to 'B7').
2) Complete forecast assumptions information (worksheets 'A1' to A7').
3) Complete tariff multiplier information (worksheets 'T3' to 'T19').
4) Complete Schedule 3 and non-primary revenue forecast (worksheets 'T20' to 'T23').
5) Complete primary revenue tariff information (worksheet 'TA1').
6) Complete target revenue allocation in the relevant option table (worksheet 'Allocation').

7) Select 'revenue' input information (i.e. revenue building blocks, manual revenue inputs) in worksheet "K solving" block "Revenue approach".
8) Confirm revenue allocation approach (that selected in step 6) by selected the relevant option in worksheet "K solving" block "Revenue proportion allocation".
9) Click on 'Solve K' button in worksheet "K solving".
10) Smooth calculated charge caps by increasing/decreasing tariffs in worksheet 'TA1' block "Percentage change in tariffs per revenue group (net of Schedule 3 agreements)"