

## **B5 MAINTAINING THE SUPPLY/DEMAND BALANCE**

### **Objective**

The purpose of this section is to provide information on the likely expenditure needed to maintain a balance between supply and demand. For the water service these expenditure projections should be consistent with those contained in Scottish Water's resource plan.

Broadly there are two main reasons to seek additional expenditure for balancing supply and demand:

- to meet or manage growth in demand from customers (either existing or new);
- to restore the security of supply to customers in the light of improved data, for example, a downward revision in yields or contingencies related to the possible climate change.

For both services Scottish Water should include relevant supporting material to demonstrate their approach to the identification of an optimal set of interventions to maintain supply / demand balance.

For the water service, much of the supply demand appraisal should be covered in a water resource plan. So we have not sought to duplicate water resource plan guidance here. But the supply demand appraisal does have slightly different coverage to water resource plans. Scottish Water should provide further commentary where the issues identified in this guidance are not covered fully in their water resource plans.

For the sewerage service, Scottish Water should plan to a

ten to fifteen year horizon.

### **Introduction**

Scottish Water should set out its strategy for maintaining the balance between supply and demand.

The focus should be on the implications for expenditure on maintaining service levels in the face of future influences on the balance between supply and demand. Scottish Water should set out how these costs are related to demand forecasts and associated revenue expectations. Supporting analysis should be provided if Scottish Water considers that supply/demand balance costs are not offset by increased revenue generation.

Scottish Water should also provide details in this section under enhanced security of supply of expenditure intended to provide a stepped improvement in the levels of service for water supply reliability.

### **Proportional allocation**

Schemes having multiple cost drivers should be proportionally allocated across all relevant expenditure categories. Expenditure Tables B5.2W and B5.5S should only include costs relating to the supply demand balance.

### **Water and sewerage costs**

Capital costs for both services are to be reported in their infrastructure and non-infrastructure constituents. In addition, growth costs in the water service have been split into 'growth excluding demand management', 'growth selective meters', and 'growth other demand management'

**The costs if meters were to be installed in new properties**

The capital cost of any meters installed in new developments is recovered through the Connection Charge. We wish to see if new development costs in the water service can be partially financed by developers' contributions (namely table B5.2W, line 19 'Developer and other contributions', line 20 'Grants, line 21 'Infrastructure charges', and 'Contributions from developers'), the capital cost of any meters installed in new properties should not appear anywhere in this section, unless Connection Charges are included as part of contributions from developers' contributions. The operating cost of these meters should be included in table B5.2W line 25 'Opex new development' for the water service and in table B5.5S line 20 'Opex new development - wastewater.

**Security and Emergency Measures Directive (SEMD) costs**

No costs associated with schemes to comply with the SEMD should appear in this section. These costs should be reported in section B4, tables: B4.5W, B4.6W, and B4.7W.

**Guidance for Reporters**

**Structure**

We suggest that this part of the submission should be divided into sections for each service (see below). This structure should provide a framework for Scottish Water to explain its strategy for maintaining the supply demand balance in its own way.

<b>Maintaining the supply demand balance</b>	
<b>Section 1</b>	Demand and supply forecasts
<b>Section 2</b>	Expenditure implications of maintaining the supply demand balance
<b>Section 3</b>	Leakage control (water service only)

## **Section 1 Demand and supply forecasts**

Scottish Water should explain its policy options and the resulting impact on forecasts of demand and supply for water. The commentary will need to explain the assumptions on areas such as demand growth projections, per capita consumption and identify the key drivers behind any expenditure that is needed to balance supply and demand.

In the sewerage service Scottish Water should discuss the main drivers of demand (in terms of flow and/or concentration), in the context of established trends and past experience.

In addition to the commentary, Scottish Water should submit specific strategy plans for water resources and leakage. The water resource plan should be prepared in line with best practice and correspond with any agreements with SEPA. The leakage strategy plan requirements are described in Section 3

The commentary should relate forecast costs to a long-term (ten to fifteen years planning horizon) plan for the development of sewerage service assets to meet future demands, in the context of quality obligations and capital maintenance requirements. Comments should be included on 'no deterioration' policies if it considers it to be a significant driver of future investment. Scottish Water should also clearly set out the basis for its chosen solutions from a least cost perspective over the period of the plan.

Scottish Water may wish to forecast its requirements for dealing with the impact of growth using a mix of approaches, depending upon the availability of data. A simple approach might be to determine future requirements

by reference to historic activity levels with respect to asset performance. An intermediate approach might be to classify catchments as low, medium or high risk. Future investment requirements could be based on historical experience, depending upon the risk category assigned and using a unit cost / property approach. A more robust approach might involve modelling the impact of growth on asset performance at the drainage area zone level, costing solutions to return the asset to current performance.

In all cases, an integrated approach to solutions, taking account of quality, enhanced service levels and capital maintenance requirements, should be followed with total costs proportionately allocated across the purpose categories.

Scottish Water should set out the key assumptions about future demands, with reference to housing and population trends and development plans. The plan should set out the impact demand is expected to have on asset performance, and the contribution of supply/demand factors to costs driven by the requirement to maintain compliance with river needs consents and prevent deterioration of existing asset performance e.g. the emergence of new unsatisfactory intermittent discharges.

## **Section 2 Expenditure implications of maintaining the supply demand balance**

Scottish Water should explain its judgements on the expenditure needed to maintain a balance between supply and demand in accordance with the strategy set down in part A. It should demonstrate that the strategy represents a least cost combination of measures necessary to maintain the supply demand balance and set down its plan for the

financing of these costs. Scottish Water should draw on the detail provided in part B8 on charges, and have reference to long run marginal costs in support of the judgements in this section. Scottish Water should set out how supply/demand costs relate to any relevant quality enhancements (eg low flow alleviation in relation to water resource planning, or CSO improvements in relation to sewerage capacity planning).

For the sewerage service, Scottish Water should set out forecast investment requirements and the basis on which they have been identified. Proposals should demonstrate long term least cost planning, covering a period of ten to fifteen years, to meet future demands on its sewerage service assets, recognising overlaps with quality obligations and capital maintenance.

Scottish Water should set out the impact of supply/demand balance investment on sewerage service assets through a forecast of the number of properties that will become at risk of sewer flooding and that which will be dealt with on a reactive basis during the plan period as a result of growth in the sewerage service. Scottish Water should also forecast the number of unsatisfactory combined sewer overflows during the plan period. The forecast number up to 31 March 2006 should take into account the latest data on the number of unsatisfactory combined sewer overflows and any planned reduction due to investment funded in Q&SII.

#### **Data tables**

#### **Tables B5.1W, B5.3W and B5.4S – Demand and supply forecasts for water and sewerage services**

Tables B5.1W, B5.3W and B5.4S should be completed to show, for example, forecasts of deployable output, water available for use and the demand for water resulting from the implementation of the Scottish Water strategy. These three tables set out comprehensive forecasts of demand and supply upon which the expenditure forecasts should be based. An economic justification is required for any proposed changes in the levels of service and/or headroom compared with 2003-04.

No category has been provided on table B5.3W for process losses. Scottish Water should treat line 1 of table B5.3W as “Deployable output minus process losses” and must make explicit in the supporting commentary the quantity of process losses that have been factored into this line.

#### **Table B5.2W Expenditure to balance supply and demand – water service**

The information in this section should be drawn from and reconcile with any Water Resources Plan. Aggregate expenditure projections reported in table B5.2W should be consistent with Q&SIII. Efficiency assumptions, consistent with other enhancement costs, should be applied. These are reported in part B2. Total capital expenditure and operating expenditure (net of savings in base opex) associated with the preferred strategy should be included in table B5.2W, other than:

- leakage control opex/capex, or the implementation of any demand management policy (these costs are allowed for in base); and

- expenditure for water resource-related environmental quality enhancements (e.g. low flow alleviation schemes) which appear in the quality section.

Scottish Water should report incremental capital and operating expenditure on leakage control where this has been identified as a cost-effective means of balancing supply and demand and results in a stepped change in leakage. This should be consistent with economic leakage appraisal.

Scottish Water should report the capex and opex for:

- enhanced security of supply;
- growth excluding demand management;
- selective meters
- other demand management
- new development; and
- optional metering.

Aggregate expenditure projections reported for each of these categories should be consistent with the quality and other capital projects in Q&SIII. Details provided should be on a scheme specific basis where data is available, or at the water resource zone level otherwise.

Scottish Water should also set out anticipated capital receipts for requisitions, infrastructure charges and grants and other contributions.

There are also 3 lines in table B5.2W to set down the agreed forecast capex and opex for the 'early start' programme. These lines are not included in the efficiency calculations.

### **Efficiency profiles**

Scottish Water should report the combined efficiency improvements expected in capital and operating costs for both services.

### **Enhanced service levels**

For the water service, Scottish Water should report expected capital and operating costs associated with enhancements to service levels. This may take the form of investments to restore or enhance headroom and/or to reduce the target frequency of supply restrictions such as hosepipe bans. If expenditure is projected in this category, evidence of customers' support and willingness to pay for such service enhancements must be provided.

### **New development costs – water and sewerage services**

New development costs are associated with reinforcing local water distribution and sewerage network assets to cope with increased demands from new customers. These costs should be consistent with new revenues and capital contributions associated with new developments. The capital cost of any meters installed in new properties is recovered through the Connection Charge. As we check to see if new development costs in the water service can be partially financed by third party (namely table B5.2W, line 19 'Developer and other contributions', line 20 'Grants, line 21 'Infrastructure charges' and 'Contributions from developers'), any capital cost of meters installed in new properties should not appear anywhere in this section, unless Connection Charges are included as part of contributions from third parties. The operating cost of these meters should be included in table B5.2W line 25 'Opex

new development' for the water service and in table B5.5S line 20 'Opex new development - sewerage'.

### **Optional metering costs**

Scottish Water should report any projected optional metering capital and operating costs. These should be consistent with the location mix indicated in the commentary. Scottish Water should explain cost assumptions according to meter location assumptions.

Operating costs in the wastewater service are expected to comprise only the extra costs associated with a measured account.

The information in this section should be drawn from and reconcile with the supplementary information in part B2.

### **Outputs**

Scottish Water should set out details of its forecast position for security of supply, in terms of maintaining existing performance levels in the face of expected changes in demands.

### **Table B5.5S Expenditure to balance supply and demand – wastewater service**

In table B5.5S Scottish Water should report the expenditure (net of savings in base operating expenditure) associated with the effects of growth in flows to sewers on sewage treatment works and the sewerage network. Growth in flows to sewers can occur due to:

- additional flows from new customers, including infill development;

- additional flows from existing customers;
- increased hard area drainage;
- illegal connections; and
- changes in storm intensity.

Scottish Water should report capital and operating costs under the following categories:

- sewage treatment (growth);
- sewerage (growth);
- new development; and
- optional metering (opex only).

Aggregate expenditure projections reported in table B5.5S for each of these categories should be consistent with quality and other Q&SIII proposals. Details provided should be on a scheme specific basis where data is available, or otherwise at the sewage catchment level.

Expenditure on first time rural sewerage to meet quality obligations should be excluded from supply / demand balance expenditure.

Anticipated capital receipts for requisitions, infrastructure charges and grants and other contributions should be set out.

Scottish Water should set out supporting material and commentary explaining the approach it has used to forecast costs.

### **Sewage treatment (growth)**

These costs relate to individual schemes that Scottish Water anticipates carrying out during the plan period to accommodate increased flow and / or concentration at

treatment works. Where work is anticipated but the detail costs and solutions are not known, a single item covering these grouped schemes may also be reported. These costs should include schemes which reflect any 'no deterioration' policy. The total forecast additional expenditure should reconcile with the proportionally allocated costs from schemes driven primarily by growth and schemes driven by primarily by quality, with a supply demand balance element.

In the commentary Scottish Water should provide evidence and supporting information to justify the proposed work to deal with the impact on treatment works of new development and other causes of growth in flows. We will monitor the impact of sewage treatment (growth) expenditure in line with our current annual monitoring of the environmental impact of sewage treatment works.

Capital expenditure relating to the provision of local distribution assets to provide a sewerage service to new customers should be excluded from sewage treatment (growth) expenditure and included under new development.

**Sewerage (growth)**

Under this category Scottish Water should report the costs of work to prevent new sewer flooding problems and increases in the number of unsatisfactory combined sewer overflows caused by additional flows to sewers downstream from new development and other causes of growth in flows to sewers. Scottish Water should set out in the commentary the basis of the forecast making reference to housing and population trends and development plans. The forecast should be supported with analysis, modelling and costings, drawing on historic experience as appropriate.

We will monitor the impact of sewerage (growth) expenditure on the sewer network with reference to the number of properties at risk of sewer flooding and the number of unsatisfactory combined sewer overflows.

**Table B5.5S line 23** (Opex total) should include all external outputs alleviated through the sewer flooding programme. This should include those properties/areas that have only flooded externally and are included in schemes which also solve internal problems. It should be noted that if a single property has flooded both internally and externally, the external output should not be included in the total. For example assume a sewer flooding programme shown below:

<b>Scheme 1</b>	<b>Internally flooded</b>	<b>Externally flooded</b>
Property A	*	
Property B	*	*
Property C		*
<b>Scheme 2</b>		
Property D		*
Area E		*

In this example the external flooding of property B is not included in the number of external outputs recorded because it has flooded internally. Therefore the total number of properties/areas flooded externally reported will be 3.

Capital expenditure relating to the provision of local distribution assets to provide a sewerage service to new

customers should be excluded from sewerage (growth) expenditure and included under new development.

The information in this section should reconcile with the supplementary information in part B3.

## **Guidance to Reporters**

### Section 3 Leakage control

Scottish Water should set out in its commentary, the position regarding leakage control. In particular, we wish to understand the following (for base year and plan duration):

- The overall leakage control strategy including costs and targets
- District Meter Area (DMA) coverage and average size (properties and km of mains)
- Flow and pressure data collection technique / frequency
- Flow and pressure data quality
- How representative is DMA coverage of the whole of Scotland?
- The quality and allocation of relevant cost records
- Progress towards establishing a robust view of 'economic leakage' levels. Does the adopted model include social and environmental costs, and examine a range of strategically different options?
- How is leakage estimated, is the model robust, and does it follow best practice? (which parameters are used, and are the supporting data satisfactory?)
- How well is the leakage control strategy integrated into overall economic base maintenance and operating cost proposals?
- The proportion of mains network benefiting from pressure management
- The adopted process for estimating leakage from trunk mains and service reservoirs
- Customer leakage policy

The commentary should contain a leakage plan showing how and when Scottish Water expects to achieve economic levels of leakage. The plan should include details of the adopted methodology for evaluating economic leakage

levels, and explain how this might vary in different parts of Scotland.

Leakage costs should be allocated as follows:

	Area of leakage expenditure	Opex or Capex
1	Mains - leak detection	Opex
2	Mains - leak repair by replacing a length of main greater than 3 metres	Capex
3	Mains – all other repairs	Opex
4	Communication pipes – leak detection	Opex
5	Communication pipes – leak repair by full-length replacement	Capex
6	Communication pipes – all other leak repairs	Opex
7	Customer supply pipes – leak detection	Opex
8	Customer supply pipes – Leak repair by part or full replacement	Opex
9	Customer supply pipes – All other leak repairs	Opex
10	Provision and maintenance of	Capex

	DMA, waste and any other leakage related meters	
11	Provision and maintenance of leakage related loggers and telemetry	Capex
12	Provision and maintenance of leakage related computing equipment	Capex

## Guidance to Reporters

