

## **A COST BASE**

### **Guidance for the data and commentary submission**

#### **CONTENTS**

Section 1	Objectives
Section 2	Format of the submission
Section 3	Methodology and guidance
Section 4	Reporter guidance
Appendix One	Examples of completed infrastructure and non-infrastructure CBS tables
Appendix Two	Detailed specification for standard costs

## **Section 1 Objectives**

The principal objective of the cost base is to inform the assessment of the relative efficiency of capital unit costs in comparison with companies in England & Wales. The assessment enables us to make appropriate assumptions about capital efficiency when we set price limits. Accordingly, our information requirements are the same as Ofwat's.

The cost base comprises a set of capital cost estimates referred to as 'standard costs', which reflect typical activity that has been undertaken and is likely to be undertaken as part of the planned capital investment programme covering 2010-14 which will be submitted as part of the Strategic Review of Charges 2010-14 (SRC10-14). By using the same data and method for deriving standard costs and business plan estimates the standard costs can be used to represent typical levels of capital unit cost efficiency. As well as efficiency in procuring and delivering capital programmes, this may reflect the benefits of alternative innovative solutions that are included in business plans.

We aim to assess efficiency based on the spread of activity across different asset types for infrastructure and non-infrastructure in both water and wastewater services. Comparison with previous submissions of the same standard costs (at a common price base) enables us to track unit costs and reasons behind changes in capital efficiency over time.

## **Section 2 Format of the submission**

### **Guidance on completion of the cost base**

General guidance for completion of main and supporting tables is provided in this document, written in MS Word. Two MS Excel documents contain tables and line by line definitions. Guidance for Scottish Water is given in Section 3 and guidance for the Reporter is in Section 4.

### **Scottish Water submission**

There will be two submissions of the cost base:

Initial submission	30 <sup>th</sup> May 2008	with WICS feedback by	31 <sup>st</sup> July 2008
Final submission	13 <sup>th</sup> March 2009		

The submission comprises:

#### **Main tables of standard costs**

Forecast expenditure tables	1	Water infrastructure
	3	Water non-infrastructure
	5	Wastewater infrastructure
	7	Wastewater non-infrastructure
Standard cost tables	2	Water infrastructure
	4	Water non-infrastructure
	6	Wastewater infrastructure
	8	Wastewater non-infrastructure
Comparison with 2005 data	9	Water service
	10	Wastewater service

#### **Supporting tables (with line by line commentary)**

Cost breakdown (CBS) tables	2.1 - 2.11	Water infrastructure
	4.1 - 4.14	Water non-infrastructure
	6.1 - 6.4	Wastewater infrastructure
	8.1 - 8.15	Wastewater non-infrastructure

#### **Scottish Water Commentary**

General commentary	Containing elements prescribed in this guidance Section 3 and any supporting information or clarification Scottish Water wishes to bring to WICS attention.
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### Reporter's commentary

The Reporter is to provide commentary as specified in Section 4 two weeks after each submission of the Scottish Water cost base i.e.

Initial submission	14 <sup>th</sup> June 2008
Final submission	27 <sup>th</sup> March 2009

### Section 3 Methodology and guidance

The standard costs are intended to represent typical activity and are stylised to remove atypical costs so that comparison can be made with water and sewerage companies in England & Wales (WASC). Specification of which elements of work and/or materials and finishes are to be included in (or excluded from) standard costs are provided as follows:

Forecast expenditure tables 1, 3, 5, 7	General specification Appendix Two
Water infrastructure table 2	General specification Appendix Two
Water non-infrastructure table 4	Common elements in Appendix Two
	Project specific elements in line definitions
Wastewater infrastructure table 6	General specification Appendix Two
Wastewater non-infrastructure table 8	Common elements in Appendix Two
	Project specific elements in line definitions
Cost breakdown common inclusions/exclusions	Steps 3 & 4 of the adjustment process

Key aspects of the methodology are set out below.

### WICS analysis of standard costs

We will base the efficiency assessment on the average percentage by which submitted costs exceed benchmark costs in the sub-service activity areas, weighted by forecast expenditure. We will exclude from this calculation categories where there are no standard costs or no standard costs have been completed. The worked example below demonstrates the methodology which will be followed.

Suppose the SRC10-14 expenditure breakdown for the water service in table 3 included the information shown in the table below. SW should complete as many standard costs as possible in the water treatment works and pumping stations categories in table 4 and for household meters in table 2, but it should not complete either of the standard costs for treated water storage in table 4 because expenditure in this category is less than or equal to 2%.

For each standard cost we will identify a benchmark. Where SW has completed one (or more) standard costs in tables 2 & 4, we will calculate the percentage by which each standard cost exceeds its benchmark and the average percentage for each investment category in table 3. Suppose these average percentages are as follows:

<b>Investment Category</b>	<b>Proportion of SRC10-14 expenditure in table 3</b>	<b>Av. % above benchmark for all std costs in category</b>	<b>Product Col C = Col A x Col B</b>
<i>Column</i>	A	B	C
Water treatment works	20%	9%	1.8%
Storage	1%	Not completed	
Pumping stations	10%	11%	1.1%
Household meters	5%	12%	0.6%
<b>Total</b>	<b>35%</b>		<b>3.5%</b>
<b>Weighted average percentage</b>	<b>Total Col C/ Total Col A</b>		<b>10%</b>

Dividing 3.5% by 35% we conclude that SW's costs for water non-infrastructure are 10% above the benchmark.

Each standard cost (or group of costs) has an associated cost breakdown structure (CBS), which splits up the component parts of the cost build up. We will base the comparative assessment solely on the total standard cost, but the breakdown will be used to check for consistency and compliance with the standard cost definitions (i.e. to help identify where there are differences in efficiency and to identify non-efficiency related variance).

### **Scottish Water commentary**

Scottish Water should provide a general commentary setting out:

- the reasons why standard costs have not been completed;
- the link between forecast expenditure in the Cost Base submission and the business plan expenditure forecasts;
- an overview of the sources of cost data used and the method adopted for achieving consistency between costs used in the business plan submission and the cost base;
- a summary of the process for identifying the treatment process solution (non-infrastructure standard costs only) and the method for achieving consistency with scoping the solutions in the business plan;
- the approach taken to calculate indirect costs, pain/gain and corporate overheads and whether/how this varies from the values used in the business plan. If there are differences between values used in different activity areas (for example water treatment and water storage), this should be explained;
- the basis of any pain/ gain adjustment at both project and programme level;
- the general level of current standard cost estimates and the reasons for differences from those submitted in 2004, as detailed in Appendix Two;
- the basis for any claims that special factors apply – no adjustment is to be made to the standard costs submitted for special factors.

Detailed line by line commentary is to be provided chiefly through completion of the appropriate cost breakdown structure (CBS) Excel spreadsheet forms. The CBS provides a template for specific commentary about the methodology, source data and assumptions relating to the breakdown (or build up) of each standard cost. We do not expect any additional commentary about each standard cost within the general commentary. If there is additional information that SW wants to include that cannot be satisfactorily explained in the CBS then SW should reference it within the appropriate cell in the CBS and submit it within the general commentary.

### **Scottish Water data submission**

- 1 The estimates of all standard costs must be derived using cost data sources, unit cost data, estimating systems and procedures that are consistent with those used to produce the capital expenditure estimates in the business plan. Scottish Water (SW) should compile its standard costs independently of WASC and should not submit final standard cost estimates derived by other companies.
- 2 All adjustments and assumptions needed to comply with the standard cost definitions must be clearly set out as described in the following section. Adjustments must be based on SW typical costs for the type of work excluded. A set of pro-forma tables (cost breakdown structure – CBS) has been included with the main data tables to structure explanations for

adjustments and exclusions for each line (or activity).

- 3 SW should complete the main tables 1, 3, 5 and 7 to identify the forecast expenditure for investment categories in each sub-service activity area (water and wastewater infrastructure and non-infrastructure).
- 4 For categories where forecast investment is greater than 2% of the total expenditure in the activity area, SW must complete in tables 2, 4, 6 and 8 as many standard costs in those categories as possible (with a minimum of one per category, even if the definitions do not align with the planned activity). For example, if the forecast expenditure on water pumping stations (table 3, line 5) is greater than 2% of total water service investment then SW must complete at least one of the pumping station lines (12 – 14) in table 4.
- 5 Where forecast expenditure in an investment category is not greater than 2% of total expenditure in the activity area SW should not complete the associated standard costs. For some categories (for example water resources and management and general) there are no standard costs.

### **Adjustments and assumptions**

In practice the cost information available will be a mix of completed project costs, tender data, framework contract agreed rates, allowances for pain/gain incentive payments, external industry data and quotations from suppliers. Source data should be adjusted (for both cost and scope) to comply with the standard cost definitions and as necessary to reflect the proposed outputs in the business plan. All adjustments must be directly related to typical costs experienced or forecast. We set out a four-step process for adjustments and assumptions below.

All companies have different procurement and contractual arrangements which can significantly impact the way cost data is collected and analysed. However, we expect SW to have (or be able to access) sufficient information to produce standard costs that comply with the standard cost definitions, whilst being representative of typical costs. We expect data collected and analysed to be used throughout the delivery of the capital programme.

The total cost to the business for constructing or repairing an asset is the sum of costs applied directly and indirectly through a cost allocation procedure. Terminology is not standardised across the industry (e.g. on-costs, management costs and indirect costs are similar but include different elements across the industry). Therefore we have split the costs into three categories which are defined below. SW may not use this terminology or group its costs in this way and it is not necessary to disaggregate SW costs to align with this grouping. The important factor is that all costs have been either included or excluded in line with the standard cost definition.

The CBS proformas provide for the breakdown of costs and explanations for adjustments in the following cost allocation categories:

Direct costs	Labour, plant and materials costs of the asset
Indirect costs	Design, commissioning, project and construction management
Corporate overheads	Programme-wide costs such as programme management, planning, vehicles & buildings overheads

### **Completing the CBS**

There are five sections within the CBS and SW should complete each section:

- general information;
- direct cost (and associated adjustments);
- indirect costs (and associated adjustments);
- corporate overheads; and
- confidence grades.

SW should state the cost or percentage adjustment (where applicable) and related assumptions and

explanations associated with each cost element within the CBS.

SW may not use the three defined cost allocation categories to group its costs. It is not necessary to disaggregate SW costs to align with this grouping but the differences must be explained. The important factor is that all costs have been either included or excluded in line with the standard cost definition.

SW should clearly set out within the CBS where the costs have been included. For example, if all outline and detailed design is embedded within the direct costs because those activities were carried out by the contractor and cannot be disaggregated, then this must be clearly stated in the "assumptions" column of the design costs to make it clear where the costs have been included. SW can add additional lines for direct costs and associated adjustments into the CBS if they are required, as shown in the examples of an infrastructure and non-infrastructure standard costs in Appendix One. The standard lines for indirect costs, associated adjustments and corporate overheads should be retained.

No line should be left blank; a zero adjustment must be specified.

CBS entries with a positive value represent a cost to be included in the standard costs and negative value represents exclusions. SW should sum the total direct, indirect and overhead costs and transfer the total to the main tables (2, 4, 6 and 8).

The following guidance sets out our expectations in terms of demonstrating the link between source data and the cost base (step 1) and for making adjustments to the source data in each of the three cost allocation categories (steps 2 - 4).

### **Step 1 Aligning source data to standard cost definitions**

#### *Cost data*

Where possible standard costs should be based on specific completed projects. These projects must represent typical unit costs expected to be achieved for that category of work in the future capital investment programme. Where possible the cost base estimate should be based on several completed projects. Sources of data should be specified within the CBS (e.g. data taken from unit cost model or framework agreed rates).

Where historical data is not available then SW should follow its normal procedures for ensuring the estimate is robust. For example, if capital delivery procedures require three quotes to be obtained before procuring an asset then this must also be carried out in deriving the standard cost.

SW should also utilise its own cost data to value the exclusions required to comply with the cost base definitions as outlined in step 2.

#### *Scope / process choices*

For non-infrastructure standard costs SW should specify the solution being costed. There must be a clear link between the scope of the standard cost and proposed business plan solutions. Within the CBS Scottish Water should:

- reference any best or standard practice documents to demonstrate the solution is its normal practice. It is also acceptable to reference similar completed or proposed projects;
- demonstrate that the solutions represent the lowest 'whole life cost solution' (lowest NPV), evaluated over an appropriate period and incorporating **standards of service and levels of risk in line with SW policy and the business plan submission**; and
- if SW's standard practice differs from the solution stated in the standard cost definition but achieves the same output then SW can submit the cost of an alternative innovative solution, providing that it will be included within the SRC10-14 business plan submission.

### **Step 2 Direct costs**

Direct costs cover all construction costs (traditionally split between labour, plant and materials) needed for both the construction phase and the actual output (e.g. including site prelims, cranes etc

## Scottish Water First Draft Business Plan – Guidance

### Appendix A - Cost Base

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as well as plant, labour and materials of the new assets/ output). We anticipate there will be more adjustments necessary to derive the direct costs than the indirect costs.

To produce the direct costs SW should make two forms of adjustment:

- The cost of construction or installation should be adjusted to meet the standard cost definitions e.g. capacity, equipment list and pipe depth;
- The unit costs of actual projects should be adjusted to exclude atypical site factors and to comply with the stylised definitions.

In general SW should exclude:

- The effects of severe weather and limited working hours;
- Additional costs arising from environmental and planning constraints (eg requirement for stone-clad buildings in National Park areas).

Specific guidance relating to the direct cost build up of each standard cost is included in Appendix Two.

SW should state the size/capacity, data source and cost of each item (and exclusion) as well as providing brief commentary about how the data has been collated within the CBS.

The costs given should be representative of work done in the past (and likely to be done in future) and historical project data should not be excluded as atypical without good reason.

### Step 3 Indirect costs

Indirect costs cover all other costs in addition to direct costs that are needed to complete the project and include:

- design (from initial inception through to detailed design);
- commissioning;
- project management (including planning and quality audits); and
- construction management (including site supervision, traffic management, Health and safety management).

The following adjustments may also be required, depending on how SW captures project costs:

- If the direct costs are derived from tender costs then a tender to outturn ratio adjustment must be made. This adjustment must be based on several projects completed within the last 8 years. SW should explain in commentary how it has calculated the adjustment.
- If SW intends to include additional contingency allowance (project or program level) in the business plan submission then a risk allowance should also be included in the standard cost to reflect SW's normal level of risk. It should cover those items included in the standard cost definition.
- Where SW operates a pain/gain agreement with its partners then an adjustment must be made to reflect this at both project and programme level. The adjustment must be the same for each investment category. For example, all mains laying costs must have the same adjustment even if different contractors are employed and have delivered the schemes with a different pain/gain split. The average (weighted by activity levels) pain/gain adjustment must be applied. The project and programme level adjustments should be based on the current assessment of SRC06-10 performance. The basis of this adjustment should be explained in the general commentary.

The indirect costs should be calculated for groups of similar standard costs. SW should assume that all tasks that would normally be required when delivering a capital project must be included in the cost. For example, typical network modelling and optioneering costs must be included regardless of

the fact that the solution has been stated in the standard cost definition.

Outlier costs can be removed from the source data set where an event outside SW's control or unusual circumstances has resulted in extremely high or low costs. Otherwise, all costs should be used to calculate an average value of indirect costs for each group of standard costs (e.g. design costs for mains laying regardless of diameter or ground surface).

In general SW should exclude the costs of:

- Public meetings;
- Customer communication;
- Land purchase;
- Legal work.

SW should use its own data to value these exclusions and state the associated percentage adjustment within the CBS.

**Step 4 Corporate overheads**

Corporate overheads for the capital programme include non-project specific costs that are capitalised in the business plan submission and therefore need to be included in the standard cost build up. We anticipate only minor adjustments being necessary to derive the corporate overhead costs. Depending on capitalisation policy, this will include items such as:

- Programme planning;
- Management of the delivery of the whole capital programme;
- Capitalised buildings (offices, stores);
- Capitalised vehicles used in delivery of the capital programme.

SW should calculate a single overhead value/percentage adjustment for groups of standard costs to mirror the overheads used in the business plan. For example, a different overhead percentage may be calculated for water infrastructure and water non-infrastructure to reflect the differences in overheads between the two areas of the business delivering those schemes. Any adjustments must be clearly explained in the general commentary. SW should make it clear what the percentages have been applied to, for example the total of direct and indirect costs, or just direct costs, and adjust formulae in the CBS accordingly.

**Price base**

All standard costs submitted should be presented in base year 2007-08 prices. SW should use COPI index figures at the time of expenditure (mid-project) and for financial year 2007/08. The table below contains COPI indices from 1997-98 to 2006-07 with an estimate for 2007/08. This includes a provisional figure of 159 for Q2 of 2007 and assumptions of 161, 162 and 162 for Q3 and Q4 of 2007 and Q1 of 2008 respectively.

COPI financial year average indices (1995=100)

97/8	98/9	99/0	00/1	02/2	02/3	03/4	04/5	05/6	06/7	07/8
106.50	111.25	116.25	121.25	125.50	128.25	135.25	145.00	151.00	156.50	161.00

**Robustness of standard costs (confidence grades)**

SW should judge the robustness of its standard costs based on the key principles relating to estimating best practice, set out in table 1 below. This replaces the reliability and accuracy bands used in previous price reviews.

Table 1 below sets out the definitions relating to each grade. The definitions refer to "small", "reasonable" and "significant" samples of similar projects. These terms should be interpreted having regard to the number of projects, the degree of similarity and how recently they were carried out. For

**Scottish Water First Draft Business Plan – Guidance**  
**Appendix A - Cost Base**

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example, five or six projects might constitute a 'reasonable' sample, but only if they were straightforward, similar projects carried out in SRC06-10. SW should exercise judgement and should seek to agree its approach with the Reporter.

We will use this assessment to understand how robust the source data is as well as being a function of the care SW has taken in adjusting the source data, to ensure compliance with the standard cost definitions.

A grade of 3 or better in each category is expected. Where grades are below this level, SW should document the reasons. For example, lack of (recent) experience in such projects, potential use of new technology, as well as its process for improving the robustness of cost estimates if it is being used within the business plan.

Certain grade combinations should not be assigned. For example the compliance grade cannot be 5 where the basis of the cost data is assessed as 1. SW should avoid assigning these combinations to its standard costs.

Scottish Water First Draft Business Plan – Guidance

Appendix A - Cost Base

Table 1

Criteria	Grade				
	1	2	3	4	5
1. Scope	SW has no previous experience of this type of activity.	SW has had some experience of delivering similar projects, but not within last 8 years.	SW has carried out similar projects but in significantly different size bands.	SW has experience in similar projects, within similar size bands to the definition.  SW has standard solution(s) for this type of activity which has been assessed as providing the least WLC solution.	SW has considerable experience in similar projects and similar size bands to the definition.  SW has standard solution(s) for this type of activity and a process for updating them. It has been assessed as providing the least WLC solution.
2. Cost	Cost data is from external sources. Used industry parametric data (e.g. TR61).	Significant use of external sources, costs from dissimilar projects or costs from projects completed more than 8 years in the past.	SW has reasonable internal data. Some source data may be from an external source (e.g. contractors' estimates with limited or no internal input).	Standard cost represents activity where reliable internal cost data is available (few data points).	Standard cost represents activity where reliable internal cost data is available (reasonable number of data points).
3. Risk	A generic contingency is included – no basis of value.	A generic contingency is included – based on generic risk register.	Risk register produced qualitatively (risks identified and scored). <b>Or</b> Tender to outturn ratio applied / outturn estimated based on a small sample (or old data set) of projects.	Risk register produced and quantified risk assessment modelled. <b>Or</b> Tender to outturn ratio applied / outturn estimated based on a reasonable sample of similar (and recently completed) projects.	Risk register produced and quantified risk assessment modelled. <b>Or</b> Tender to outturn ratio applied / outturn estimated based on a significant sample of similar (and recently completed) projects.
4. Compliance with standard cost definition	Adjustments have not been made as required in the specification.  SW is not able to disaggregate costs to allow adjustments / exclusions to be made.	SW is less confident that all adjustments for direct costs have been made as specified in the guidance. Indirect and overhead costs have been derived but from a small sample of similar projects.  Cost data is only available at a site / system level (e.g. cost of 30Ml/d treatment works) making it difficult to derive the adjustments / exclusions.	SW is less confident that all adjustments for direct costs have been made as specified in the guidance. Indirect costs and overheads are based on a small sample of similar projects.  Cost data is captured at process unit / system level (e.g. rapid gravity filters) with high level breakdown of indirect costs, risk allowances and overheads. Adjustments and exclusions can be made on a representative basis.	SW is reasonably confident that all adjustments for direct costs have been made as specified in the guidance. Indirect costs and overheads are based on a reasonable sample of similar projects.  Cost data is captured at sub-process level (e.g. backwash pumps). Indirect costs are broken down and risk allowances are based on specific risk log. The required adjustments / exclusions can be made on a representative basis.	All adjustments for direct costs have been made as specified in the guidance and are based on a robust historic data. Indirect costs and overheads are based on a significant sample of similar projects.  Cost data is fully disaggregated and sufficiently detailed to allow all adjustments and exclusions to be calculated with high confidence.

## **Special factors**

In the general commentary, SW should set out clearly where it considers that a special factor affects the comparability of its standard costs. SW should not make any adjustments for special factors in this submission. SW should address the following questions in its commentary:

- What is different about SW's circumstances that cause it to experience materially higher costs than those of other companies?
- Why do these circumstances lead to materially higher costs than those of other companies?
- What is the net monetary impact of these costs? What has SW done to manage the additional costs arising from the special circumstances and to limit their impact?
- Provide details of the adjustment needed to offset the impact of any other special circumstances that reduce SW's costs relative to industry norms, so it only reports net additional costs.
- For capital maintenance claims; make clear the value of the claim for each relevant year of expenditure and the expected adjustment to average expenditure for the SRC06-10 period.

## **Section 4 Reporter guidance**

### **Introduction**

The Reporter should refer to the guidance in Section 3 for a general introduction to the format of SW's submission, cost base objectives and methodology including the cost breakdown structure (CBS). Appendix One includes examples (one for infrastructure and one for non-infrastructure) of completed CBS spreadsheets.

### **Role of Reporter**

The Reporter shall give the SW cost base submission focused scrutiny and comment on aspects that are material to the cost base objectives (see Section 1).

The Reporter shall provide a general commentary (see below) and answer the specific questions detailed in relation to each CBS table, making it clear the main table(s) to which its answers refer. Where the same answer applies to more than one CBS table, it need not be repeated. However cross reference(s) to the CBS tables to which the commentary refers should be included in the commentary.

### **Questions on SW CBS submissions**

The CBS is divided into blocks, and the Reporter should address the questions on each block shown in bold below. The remaining bulleted text provides further explanation and guidance. Where the answer to any of the questions is 'no', the Reporter should estimate the adjustment required to make the submitted standard costs compliant.

#### **Block 1 General information:**

The Reporter shall:

- Check SW's reference to standard practice documents/generic solutions or completed similar projects and confirm or otherwise whether the proposed solution is SW's normal practice. For example, is this the process design SW would typically choose?
- For non-infrastructure, comment on the suitability of process choice. For example, comment on is it likely to work and on whether it is the least whole life cost solution where the process is appropriate to be used (the process might not always offer the least whole-life cost solution).

#### **Block 2a Direct costs:**

The Reporter shall:

- Confirm whether the cost data represents SW's typical costs.
- Comment on the link between the data used in the cost base and that being used to develop the draft business plan.
- Where SW has not been able to extract direct costs from its cost capture system, examine and comment on SW's method for estimating these costs. The estimating method should be appropriate in detail for the scale of investment expected in SRC10-14; for minor investment, the quality of estimating may be less important.

#### **Block 2b Adjustments and exclusions:**

The Reporter shall:

- Confirm whether the items included, assumptions and methods are consistent with standard cost definition and table guidance.
- Confirm whether adjustments are typical or representative of actual costs;
- Check and confirm whether direct cost adjustments or exclusions have been derived in accordance with the methodology described in Section 3 and the specific guidance on each sub-service in Appendix Two;
- Comment on factors SW cannot control that affect costs, eg being limited to sub-optimal lengths for pipe/sewer laying. Are these material and do they mean that standard costs do not comply with the definitions?

**Block 3 Indirect costs:**

The Reporter shall:

- Confirm whether the indirect costs are representative of actual costs.
- Confirm whether comparable costs are being used to develop the draft business plan.
- Where SW has not been able to extract indirect costs from its cost capture system, examine and comment on SW's method for estimating these costs.
- Confirm whether SW has used a suitable averaging method (e.g. across water infrastructure or water non-infrastructure) for indirect costs such as asset management, design, supervision and commissioning costs.
- Check and confirm whether SW has not adjusted indirect costs based on the argument that the standard costs represent 'easy' projects.
- Where costs are based on tender data, confirm whether a tender to outturn adjustment factor has been applied, based on the average tender to outturn ratio.
- Where costs are based on outturn costs, confirm whether SW has allowed for the typical level of risk, e.g. by including an appropriate contingency allowance.
- Examine how risk allowances in standard costs align with risk allowances in business plan estimates.
- Confirm whether where applicable a pain/gain adjustment has been made at project and programme levels.

**Block 4 Corporate overheads:**

The Reporter shall:

- Confirm whether all corporate overheads been allocated and whether the same overheads are being used to develop the draft business plan.
- Verify and confirm whether percentage allowances for overheads in the standard costs include all capitalised overheads e.g. non-project staff, buildings, vehicles, etc.
- Check and confirm that SW has not reduced the percentage on the grounds that projects used to derive standard costs are 'straightforward'.

**Block 5 Confidence grades - Reporter assessment:**

- The Reporter should confirm the confidence grades provided by SW or, where they do not agree, submit his/her own assessments, referring to table 2 in Appendix Two of the SW guidance.

**General commentary in written report**

The Reporter shall provide general commentary under the following headings:

**Sources of data and methodology**

The Reporter shall:

- Confirm or otherwise whether the data sources, unit cost data, estimating systems and procedures used to derive all standard costs are consistent with those being used for providing the capital expenditure estimates in developing SW's draft business plan.
- Verify and confirm whether SW has completed the CBS in line with the information requirements. Where SW's cost breakdown does not align with the CBS, check and confirm or otherwise whether SW has clearly explained where the costs are included.
- Verify and confirm whether SW has completed standard costs only for those categories that represent 2% or more of planned expenditure for the activity area (see Section 3). Where SW has not completed such a standard cost, confirm or otherwise whether the reasons given by SW for non completion are in line with the guidance in Section 3.

### **Special factors**

Where SW claims that special factors affect the comparability of standard costs, the Reporter shall review these claims critically and comment on SW's answers to the questions under this heading in Section 3 of the guidance. SW itself should **not** make any adjustments to standard costs to reflect special factor claims; the Reporter shall check whether this is the case.

### **Independence of SW estimates**

The Reporter shall:

- Confirm or otherwise that SW has compiled its standard cost submissions largely independently of other water and sewerage companies.
- Where there have been exchanges of technical information between companies on design and processes, identify whether amendments to standard costs are also reflected in the investment projections submitted by SW.
- Identify whether this transfer of information has resulted in lower unit costs assumptions in capital expenditure projections than would otherwise have been the case.

### **Comparison with 2004 standard cost estimates**

The Reporter shall:

- Provide an assessment of the change in the level of standard cost estimates submitted in tables 9 and 10, and of the reasons given by SW for the differences between current estimates and those submitted in 2005.
- Confirm the extent to which SW has updated its costing methodology for unit costs to take account of technological and other efficiencies since SRC06-10.
- Where there are significant differences between unit costs for projects based on SRC06-10 guidance and similar unit costs for projects based on current guidance, comment on the reasons for the differences and whether there is any evidence of savings being made. **Significant** means an increase of at least 10% or a reduction of 10%.

### **Balance of workload**

The Reporter should focus on those standard costs that represent a larger proportion of SW's capital programme and on those aspects of the methodology and those special factors that are the most material.

Reporters should balance their workload on the cost base report as follows:

Sources of data and methodology	60%
Special factors	10%
Confidence grades	15%
Independence of SW estimates	5%
Comparison with 2005 standard cost estimates	10%

Following SW and Reporter submissions, we expect to raise queries to test comparability with companies in England and Wales. This will require additional input from the Reporter, which should be allowed for in work planning.

## Appendix One

### Examples of completed infrastructure and non-infrastructure CBS tables

**Scottish Water First Draft Business Plan – Guidance**  
**Appendix A - Cost Base**

**COST BREAKDOWN STRUCTURE - EXAMPLE**

Mains laying - grassland					
<b>1. General information</b>					
Reference to standard practice / generic solutions or completed similar projects	See scope of works outlined in mains laying schedule of rates and recently completed projects ref: A & B				
<b>2a. Direct costs</b>					
Provide brief description of the source, quantity and age of the cost data and method for ensuring it represents typical costs	Cost data is based on the average of three AMP4 contracts (all using schedule of rates) that represent grassland areas (private land, verge and development sites). The three contracts used has totalled £65m in completed projects since 2000/01.				
<b>Items to be included in cost - provide breakdown:</b>	<b>Cost (£)</b>				<b>Assumptions/ details</b>
	<b>100mm</b>	<b>150mm</b>	<b>200mm</b>	<b>300mm</b>	
pipe supply	15000	17000	20000	25000	all based on MDPE, 10 bar rated
pipe laying	40000	45000	50000	55000	productivity rate assumed = 20m/day
reinstatement (temporary & permanent)	1000	1000	1000	1000	labour only - re-use excavated material in line with frequency table, assume all fittings are polyethylene.
fittings supply	3000	3200	3400	3600	in line with frequency table. Same costs have been used for unplanned pits as trials holes - schedule of rates doesn't differentiate between them
fittings installation	700	800	900	1000	
traffic management	0	0	0	0	included within pipe laying rates
assumed mains length used in estimate (m)	1000	1000	1000	1000	based on typical length of infrastructure schemes in AMP4
<b>2b. Adjustments and exclusions</b> (provide a breakdown and brief description of the adjustments)					
unusual ground conditions	0	0	0	0	schedule of rates is based on normal ground conditions
disposal to landfill	1000	1000	1000	1000	disposal costs not included in rates. Disposal costs on project A used as representative (i.e. was approx 1km)
adjust for abnormally high storage costs	0	0	0	0	storage costs not included in schedule of rates
NRSWA costs excluding lane rental	0	0	0	0	not applicable in grassland
to align with required 900mm pipe cover	0	0	0	0	fixed rates allows cover depth up to 1.2m
to align with specified fixtures and fittings	1000	1100	1200	1300	assumed all fittings are polyethylene - schedule of rates used to build up cost
<b>Total direct cost</b>	<b>61700</b>	<b>69100</b>	<b>77500</b>	<b>87900</b>	
<b>3a. Indirect costs</b>					
	<b>% of direct costs</b>		<b>Assumptions/ explanation of how typical costs have been derived</b>		
Design (inception to detailed design)	3.0%		Based on average design costs of all completed AMP4 schemes. Detailed design is embedded within "pipe laying" rates		
Commissioning	0.0%		Embedded within "pipe laying" rates		
Project management (including planning and quality audits)	1.5%		Based on average of all water infrastructure projects		
Construction management (including prelims, site supervision, site overheads)	0.0%		Embedded within "pipe laying" rates		
<b>3b. Adjustments</b>					
gain/ loss	0.0%		No incentive mechanisms in place for these contracts.		
tender / outturn	-5.0%		Based on average ratio over AMP4 completed projects (under these 3 contracts)		
<b>Total indirect cost (£)</b>	<b>-308.5</b>	<b>-345.5</b>	<b>-387.5</b>	<b>-439.5</b>	
<b>4. Corporate overheads</b>					
	<b>% (specify what of)</b>		<b>Assumptions/ explanation of how typical costs have been derived</b>		
Programme planning	0.8%		Ave percentage for water infrastructure planning team over last 3 years		
Management of delivery of the whole capital programme	1.0%		Standard adjustment for all service areas of capital delivery		
Capitalised building costs (offices, stores)	0.0%		Embedded within "management of delivery of whole programme"		
Other capitalised items (e.g. vehicles)	1.5%		Infrastructure team vehicles are capitalised.		
<b>Total overheads (£)</b>	<b>2025.9</b>	<b>2268.9</b>	<b>2544.7</b>	<b>2886.2</b>	
	<b>100mm</b>	<b>150mm</b>	<b>200mm</b>	<b>300mm</b>	
<b>Total Cost (£)</b>	<b>63,417</b>	<b>71,023</b>	<b>79,657</b>	<b>90,347</b>	
<b>Total Standard cost (£/m)</b>	<b>£ 63.4</b>	<b>£ 71.0</b>	<b>£ 79.7</b>	<b>£ 90.3</b>	
<b>5. Confidence grades</b>					
	<b>Scope</b>	<b>Cost</b>	<b>Risk</b>	<b>Compliance</b>	
Company assessment	4	5	5	4	

# Scottish Water First Draft Business Plan – Guidance

## Appendix A - Cost Base

### COST BREAKDOWN STRUCTURE - EXAMPLE

**C2.4 Line 1 New treatment works, SW4 30 MI/d**

1. General information				
Reference to standard practice / generic solutions or completed similar projects	Solution based on standard practice documents X, Y & Z for water treatment. See similar AMP4 projects A, B and C			
Provide a brief commentary to outline whether this is the lowest whole life cost solution (lowest NPV)	The process for deriving a standard practice solution includes a review of whole life costs. Each SPD has a document owner who is responsible for ensuring it is up to date (which includes reviewing WLC as more operating experience is gained). Design procedures include a review of WLC for each project therefore using outturn costs ensures the solution is in line with the WLC choices made as part of delivering the capital programme.			
2a. Direct costs				
Provide a brief description of the source, quantity and age of the cost data and method for ensuring it represents typical costs	All outturn costs are captured in the unit cost database and unit cost models (process unit level) have been derived and used to generate the direct costs. All data in the models is no more than 6 years old and there are at least 7 data points in each model used (except GAC pressure filters).			
Company to list main components (e.g. process units, structures, equipment)	size/ capacity	units	Cost (£)	Assumptions/ details
Inlet works - civil structure	220	m3	220000	1 concrete wet well located within a building
DAF tanks	210	m3	270000	Including flow splitter chamber feeding into 3 streams, each with flocc tanks preceding the DAFs and civil works for saturated air system. Based on hydraulic de-sludge. Full flow can be treated with one tank off line.
RGF tanks	240	m3	950000	4 prefabricated tanks, based on sand and anthracite media. Full flow can be treated with one tank off line. Includes associated air scour system. Filtration rate 6m/hr.
Interstage pumping station	180	m3	150000	Concrete tank within building
GAC pressure filters	280	m3	1500000	7 pressurised vertical adsorbers based on total vessel volume of 85m3 each (45m3 = media). Only got 2 previous project costs for GAC pressure filters, benchmarked costs using TR61. Filtration rate 6m/hr. Backwash rates based on 20m/h for 10 mins - automatic control based on headloss.
Backwash water holding tanks (clean & dirty)	300	m3	150000	Based on 2 concrete tanks (150m3 each). Complete filter backwashing once/ 24 hours at rate of 170m3/ wash
civil works	625	m3	170000	Based on 30 mins retention time to achieve 1mg/l chlorine residual
Contact tank				All process plant, control room and chemical storage is held within buildings, dirty washwater tank is uncovered.
Buildings			350000	Including compressors
Air saturator plant			120000	2 pumps - duty/ assist operation
Interstage pumps	37	kW	100000	4 pumps (2 dirty, 2 clean) duty-assist operation
Backwash water pumps	13	kW	140000	Includes coagulant (92/h ferric chloride), polyelectrolyte (520 l/h), chlorination (70kg/h sodium hypochlorite), plumbosolvency control (orthophosphoric acid 1mg/l) and de-chlorination (22/h sodium bisulphate), and all associated pipework (includes pumping, dosing and mixing plant)
Chemical dosing	various	various		Based on providing 28 days storage for all chemicals
Chemical storage	various	m3		Site wide pipework and flow control. Calculated as 1.2% of direct costs
Interconnecting pipework	n/a		400000	All sample lines, monitoring equipment and manual taps
Water quality monitoring	n/a		100000	Fully automated plant, based on un-manned works
Automation and control equipment	n/a		140000	All telemetry is connected to the central (on site) control room
Control panels and telemetry	n/a		400000	
2b. Adjustments and exclusions (provide a breakdown and brief description of the adjustments). The company should amend the list below to reflect the adjustments that they have made (see guidance for table C4)				
	Cost (£)	Assumptions/ explanation of how typical costs have been derived		
Planning permission and associated costs	0	No adjustment necessary - planning permission costs are captured separately		
Effects of seasonal working or limited hours	0	Not possible to disaggregate these costs. Projects are delivered through out the year so costs are balanced - no adjustment deemed necessary.		
Dealing with contaminated land	0	Costs are not embedded - no adjustment necessary		
Restricted access to site	-25000	All projects used to populate unit cost data base were located in heavily populated urban areas, with very difficult access restrictions. Project A, B & C costs were scrutinised to calculate average adjustment.		
<b>Total direct cost</b>	<b>5135000</b>			
3a. Indirect costs				
	Cost (£)	% of direct costs	Assumptions/ explanation of how typical costs have been derived	
Design (inception to detailed design)	179725	4%	All based on average of stated projects. Outline and detailed design costs are embedded within each process unit of the 'direct costs'.	
Commissioning	77025	2%	Covers company costs only, commissioning costs incurred by contractor are embedded with direct costs	
Project management (including planning and quality audits)	77025	2%	Based on average of all water non-infrastructure projects	
Construction management (including prelims, site supervision, site overheads)	0	0%	Embedded within direct costs	
3b. Adjustments				
pain/ gain tender / outturn	-205400	-4%	based on last 3 years performance of all 3 WNI partners (only run a project p/g system - no programme level incentives in place)	
	0	0%	Not applicable, outturn costs used	
<b>Total indirect cost</b>	<b>128375</b>			
4. Corporate overheads				
	Cost (£)	% (of direct +indirect costs)	Assumptions/ explanation of how typical costs have been derived	
Programme management	15790.125	0.3%	Ave. percentage for water non-infrastructure planning team over last 3 years	
Management of delivery of the whole capital programme	52633.75	1.0%	Standard adjustment for all service areas of capital delivery	
Capitalised building costs (offices, stores)	42107	0.8%	Includes the engineering offices and a proportion of the operational stores used for capital projects.	
Other capitalised items (e.g. vehicles)	0	0.0%	no other items are capitalised	
<b>Total overhead costs (£)</b>	<b>110530.88</b>			
<b>Total Cost (£)</b>	<b>5373905.9</b>			
<b>Total Standard cost (£/MI/d)</b>	<b>179130</b>			
5. Confidence grades				
Company assessment	Scope	Cost	Risk	Compliance
	5	4	3	5

## Appendix Two

**Detailed specification for standard costs**

## Water infrastructure

### Table 1: Water mains forecast expenditure

In table 1 Scottish Water should submit an indicative breakdown of total investment on water mains by project type and location. This should cover all planned mains activity in all investment categories. The sum of lines 1 to 7 should be 100%. The forecast investment in water infrastructure should also be stated in pounds. For the initial submission SW should input this value. For the final business plan submission it will be copied from the total gross infrastructure expenditure stated in Section 1 of the business plan.

### Table 2: Water infrastructure standard costs

SW should provide a breakdown of the estimates for the infrastructure standard costs in the CBS tables 2.1- 2.11. SW should transfer the total standard costs into main table 2.

SW should base the standard cost estimates on previously completed project costs wherever possible. So that broad comparisons can be made between companies it is necessary to reduce the external factors that are beyond companies' control and ensure the standard costs are typical of situations where adverse conditions and complications are generally minimal. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance on adjustments the following assumptions, specifically relating to the **direct costs** must be made:

#### Assumptions applicable to all infrastructure standard costs (lines 1 – 14)

- There are no unusual ground conditions. Omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock.
- Excavation costs should be included.
- Excavated materials are not contaminated and can be used to refill trenches and entry and exit points in grassland surface type and new communication pipes and meters.
- Trenches and entry and exit points should be refilled with granular material in rural/suburban and urban highways and renewed communication pipes and meters. Excavated material is disposed of to a landfill tip 1km distant (include landfill tax, assuming all material is not contaminated).
- Include both temporary and permanent reinstatement.
- The pipe and fittings materials should be based on SW standard practice and stated in the CBS.
- All necessary working space and areas for storage of materials are readily available at no cost.
- When pipe, fittings and other equipment are 'free supply' by SW, the cost of these items and associated procurement and stores costs must be included within the standard cost.
- Include direct costs associated with commissioning.
- Include traffic management to meet the minimum requirements of NRSWA 1991 (applicable in rural/suburban and urban highways, at entry and exit pits for rehabilitation and communication pipe and meter renewals).
- Allow for the costs associated with the implication of NRSWA 1991 but exclude the lane rental costs as defined by Street Works (Charges for Occupation of the Highway) (England) Regulations 2001.
- Include costs required to comply with relevant Health, Safety and Environmental regulations. Temporary fencing costs associated with Health and Safety regulations should be included.

#### Mains laying (including by directional drilling) and rehabilitation (lines 1-10)

- There is an average, non-complex requirement for trench water pumping. Allow for non-complex geotechnical investigations.
- No allowance needs to be made for maintaining flows or over-pumping.
- Disconnection or re-connection to services is not required. Assume there are no uncharted services or other underground obstructions.
- Connection (and re-connection) to trunk and distribution mains is not required.
- Diameters relate to the nominal internal bore of the pipe. For PE pipe specified by outside diameter, select nearest internal bore size and state dimensions in the CBS).

- The depth of cover of the mains is 900mm to the crown of the pipe.
- All pipes are pressure rated at least 10 bar.
- Assume fixtures, fittings and ancillary works as defined in table 2. Assume reception pits are 3m<sup>2</sup>.
- The costs of communication pipes, stop cocks and meter boxes should be excluded.
- For pipe bursting standard costs protective sleeves should be excluded.
- If the SW cost information does not result in a cost per meter mains laid or rehabilitated then the SW should base the cost on a length that is representative of the typical schemes (SW should specify the length used in the CBS).
- Assume average cost (weighted by activity) if SW has different schedules of rates across different areas in the region.
- Exclude costs for crossings (e.g. railways, rivers).

#### **Communication pipes (lines 11 and 12)**

- Assume lengths of 3m for the short side and 7m for the long side.
- The depth of cover of the pipe is 750mm to the crown of the pipe.
- Assume that new communication pipes refer to a new development site.
- Renewal of communication pipes corresponds to replacement by open cut or moling technique in a suburban location as part of a planned programme. Costs should be for communication pipe renewal separately or with mains rehabilitation / renewal, depending on SW's policy and business plan.
- A new ferrule installation and stop tap for a 25 or 32mm outside diameter service should be included.
- Exclude cost of the meter.
- Water sampling is not required
- Reconnection of services is required.

#### **Household meters (lines 13 and 14)**

- Assume that **manually read** household meters are to be installed. For internal meters a digital external meter outreader is not required.
- Include cost of survey for internal meters (include costs associated with abortive house visits).
- Boundary box should be unsealed type.
- Exclude costs for demolition/ removal of existing boundary box.

Where SW's project costs are based on assumptions different from those specified (e.g. different frequency of fittings, depth of cover etc) then SW should make appropriate adjustments such that the standard costs submitted reflect the assumptions specified. SW should only make adjustments if it is able to demonstrate that the differences would result in a change to the cost (e.g. if the cost is the same whether there is 0.9m or 1.2m cover between ground level and the crown of the pipe then SW should not make an adjustment).

#### **Column definitions**

Estimates in each column must be consistent with the definitions as follows:

##### **Grassland**

Urban/rural verges, new development sites or open field normally used for grazing. Allow for reinstatement of original surface but assume that no imported backfill material other than pipe surround is required. Include the cost of restoring land drainage in open fields. Exclude the costs of traffic management and temporary fencing.

##### **Rural/suburban highway**

Type 3 or 4 reinstatement and non-traffic sensitive in accordance with the New Roads and Street Works Act (NRSWA) 1991, for example, secondary or minor roads, housing estates. Alternative forms of reinstatement are permitted under the NRSWA 1991. For standard costs, assume the cheapest method permitted by the Act will be used.

##### **Urban highway**

Type 2 reinstatement and traffic sensitive in accordance with the NRSWA 1991. For example, cities and town centre trunk roads. Alternative forms of reinstatement are permitted under the NRSWA

1991. For standard costs, assume that the cheapest method permitted by the Act will be used.

**Mains rehabilitation - Relining**

Encrustation from an existing main is removed and the pipe lined internally by applying a surface coating. Typically used for relining of cast iron mains.

**Mains rehabilitation - Pipe insertion**

Encrustation is removed and a structural pipe is inserted into the existing main. The inserted pipe is of a smaller diameter than the existing one. SW should state the material and the internal and external diameters of the inserted pipe.

**Internal meter: New**

Cost of fitting a new, manually read internal meter in an existing property. Assume typical requirements for joinery work and allow for the cost of customer communications. Exclude the cost of abortive house visits.

**Internal meter: Renew**

Cost of renewal of a manually read, internal meter. Assume typical requirements for joinery work and allow for the cost of customer communications. Assume that the existing fittings are satisfactory and are suitable without modifications. Exclude the cost of abortive house visits.

**External meter (excluding boundary box): New**

Cost of fitting a new, manually read, external meter in an existing boundary box for an existing property. Assume that the boundary box is located in the path outside the property and is suitable to accept new meter without any modifications. Assume no internal cleaning of the boundary box is required.

**External meter (excluding boundary box): Renew**

Cost of renewal of a manually read meter in an existing boundary box. Assume that the meter chamber is located in the path outside the property and is suitable to accept new meter without any modifications. Allow for internal cleaning of the boundary box prior to replacing the meter but otherwise assume that the existing boundary box is in satisfactory condition.

**External meter (including boundary box): New**

Cost of fitting a new, manually read, external meter including a new boundary box for an existing property. Assume that the new boundary box is of unsealed type and is located in the path outside the property.

**External meter (including boundary box): Renew**

Cost of renewal of a manually read meter including the renewal of the boundary box. Assume that the existing boundary box is located in the path outside the property and the replacement boundary box can be located in its place.

Table 2: Table of frequencies

Nominal bore (mm)	Frequency of occurrence (number / 100m)								
	Access pits	Sluice valves	Hydrants/ flush valves	Tees	Bends	Trial holes	Samples	Unplanned pits	Air valves
100	1.5	1.0	1.0	0.75	0.5	0.75	0.2	0.63	N/A
150	1.5	1.0	1.0	0.75	0.5	0.75	0.2	0.63	N/A
200	0.75	0.2	0.2	0.2	0.07	0.4	0.2	0.33	N/A
300	0.75	0.2	0.2	0.2	0.07	0.4	0.2	0.33	0.07
450	0.75	0.07	0.07	0.07	0.07	0.2	0.2	0.17	0.07
600	0.75	0.07	0.07	0.07	0.07	0.2	0.2	0.17	0.07
Frequencies:									
1.5 = 1 per 67m		0.5 = 1 per 200m		0.17 = 1 per 600m					
1.0 = 1 per 100m		0.4 = 1 per 250m		0.1 = 1 per 1,000m					
0.75 = 1 per 133m		0.33 = 1 per 300m		0.07 = 1 per 1,500m					
0.63 = 1 per 160m		0.2 = 1 per 500m							

Where project costs are based on assumptions different from those specified above (i.e. different frequency of fittings, depth of cover etc) then SW should make appropriate adjustments to its project costs such that the standard costs submitted reflect the assumptions specified in this document. The fittings, fixtures and associated structures included in the standard costs should be appropriate to the type of work being undertaken i.e. mains laying, directional drilling or mains rehabilitation. For example access pits would not normally be needed in a mains laying situation.

## Water non-infrastructure

**Table 3: Water service - forecast expenditure by asset type**

SW should submit an indicative breakdown of total projected water service investment by asset type in table 3. This should be consistent with forecasts contained in Section 1 of the draft business plan recognising the uncertainty around investment programmes at this stage. The sum of lines 1 to 9 should be 100%. The forecast investment in water service should also be stated in pounds. For the initial submission SW should input this value. For the final business plan submission it will be copied from the total gross expenditure stated in Section 1 of the final business plan. Unless otherwise stated, definitions of asset types are provided in RAR 2.

**Table 4: Water non-infrastructure standard costs**

SW should provide a breakdown of the estimates for the non-infrastructure standard costs in the CBS tables 4.1- 4.14. SW should transfer the total standard costs into main table 4.

Table 4 contains a series of standard costs that cover installation of new assets as well as replacement or refurbishment of existing assets. The selection of these has been based on an assessment of significant activity carried out in the current price limit period, which is likely to be required in the next price limit period to meet existing and new obligations.

The standard cost definitions seek to exclude any components of cost relating to site specific factors in order to allow comparison between companies, for example, specifying green field sites with no complications. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance given in Section 3 for indirect costs and overheads the following assumptions, specifically relating to all of the water non-infrastructure direct and indirect costs must be made:

- There is no planning constraint on the phasing or construction of works; omit costs of planning application and planning studies (excepting normal feasibility studies and design, which should be allocated to indirect costs).
- Accessible land is available and legal/land purchase costs are to be excluded.
- There are no restrictions requiring seasonal working or limiting working hours.
- There are no unusual ground conditions. Omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock. Include for non-complex geotechnical investigations.
- Excavated materials are not contaminated and can be reused for embankments on-site. Assume no need to import fill.
- A public highway suitable for all types of vehicle exists to the boundary of the working area.
- The site is unobstructed and that no trees or ground clearance, drainage, diversion of existing services or preparatory works are needed.
- Exclude site drainage, roads, fencing and landscaping.
- Estimates are for greenfield sites except where specified. All necessary working space and areas for storage of materials are readily available without cost.
- When pipe, fittings and other equipment are 'free supply' by SW, the cost of these items and associated procurement and stores costs must be included within the standard cost
- Exclude demolition costs except where reconstruction is indicated or may be selected, and assume that all necessary services (power, water, phone etc) are available on sites.
- There is no limit on the height of structures, no requirements for screen walling or shielding earthworks, no covering of plant which under SW normal practice would operate in the open. All new process plant should be housed within a building unless there is clear SW policy and evidence that such equipment is located in the open.
- Provide lighting, power, heating, ventilation, telephones, welfare facilities, intruder and fire alarms and entry control and surveillance within all new buildings.
- Existing services do not need to be diverted and they are of adequate capacity to meet new requirements e.g. new electricity transformers are unnecessary.
- Telemetry and automation included in standard costs should be limited to local and site control, and provision of suitable signals only, for subsequent capture by an assumed existing

- regional telemetry system.
- Standby generators and associated switchgear are not required.
- Estimates are to be built up as an average cost for the size of works specified in the standard cost and not a nearest equivalent derived from SW's unit cost database or similar source. Where SW has standardised sizes of process units/plant to achieve efficiency, and the standard cost requires an intermediate size, estimate for the size specified but assume that economies will be achieved to the same extent as would be present if the plant had been provided to the nearest SW standard size i.e. use the same cost equation.
- Sizes and capacities quoted are to be taken as design requirements, i.e., there is to be no additional provision for growth.
- No pumping is required at the inlet or within the site, except as required for recirculation, reclamation etc.
- Include the costs of all interconnecting pipework.
- Mechanical and electrical costs must include installation and performance tests and commissioning.
- Assume that performance will be satisfactory first time and that process/plant modifications are not required.
- Exclude official opening costs for showpiece sites.
- There is no requirement for a high standard of finish to works for aesthetic or environmental reasons.
- No special measures are required for acoustic or odour control purposes. For exceptions see individual standard cost specifications.

Glossary of terms for mechanical and electrical (M&E) equipment

ICA	Instrumentation control and automation
MCC	Motor control centre
PLC	Programmable logic controller
DNO	Distribution Network operator (previously REC)
FAT	Factory acceptance test
SAT	Site acceptance test

## Wastewater infrastructure

### Table 5: Sewerage forecast expenditure

In table 5, SW should submit an indicative breakdown of total infrastructure investment for sewerage by project type and location. This table should cover planned activity in all investment categories. The sum of lines 1 to 4 should be 100%. The forecast investment in sewerage infrastructure should also be stated in pounds. For the submission due in April 2008 SW should input this value. For the final business plan submission it will be copied from the total gross infrastructure expenditure stated in Section 1 of the final business plan.

### Table 6: Wastewater infrastructure standard costs

SW should provide a breakdown of the estimates for the infrastructure standard costs in the CBS tables 6.1- 6.4. SW should transfer the total standard costs into main table 6.

SW should base the standard cost estimates on previously completed project costs wherever possible. So that broad comparisons can be made between companies it is necessary to reduce the external factors that are beyond companies' control and ensure the standard cost definitions are typical of situations where adverse conditions and complications are generally minimal. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance given in Section 3 SW should make the following assumptions, specifically relating to sewerage infrastructure direct costs:

- There are no unusual ground conditions. Omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock.
- There is an average non-complex requirement for trench water pumping. Allow for non-complex geotechnical investigations.
- No allowance needs to be made for maintaining flows or over-pumping.
- Excavated costs should be included. Excavated materials are not contaminated and can be used to fill trenches and entry and exit points in grassland areas.
- Trenches and entry and exit points are refilled with granular material in urban/ suburban and urban highways. Excavated material is disposed of to a landfill tip 1km distant (include landfill tax, assuming all material is not contaminated).
- Include both temporary and permanent reinstatement.
- Disconnection or re-connection to laterals and other sewers is not required. Assume there are no uncharted services or other underground obstructions.
- Diameters relate to the nominal internal bore of the pipe.
- The depth of cover to the sewer is 2.0m to the crown of the pipe.
- Include for sewer junction and cap at 10 metre intervals.
- Allow for 50m intervals between manholes. This means that the number of manholes required is the sewer length in metres divided by 50, rounded up to the next whole number plus one eg 51m would need three manholes and 100m would still need three manholes.
- There are no requirements for backdrops to manholes, ventpoles or flushing chambers.
- The pipe and fittings materials should be based on SW standard practice and state material within CBS.
- When pipe, fittings and other equipment are 'free supply' by SW, the cost of these items and associated procurement and stores costs must be included within the standard cost.
- If SW cost information does not result in a cost per meter sewer laid or rehabilitated then the SW should base the cost on a length that is representative of the typical schemes (SW should specify the length used in the CBS).
- Assume average (weighted if applicable) cost if SW has different schedules of rates across different areas in the region.
- Adequate water supply is available on site.
- All necessary working space and areas for storage of materials are readily available at nominal cost.
- Costs are to be based on open-trench pipe laying with all other assumptions consistent with the relevant design and construction guidelines in Sewers for Adoption (6th edition).
- Include traffic management to meet the minimum requirements of NRSWA 1991 (applicable in rural/suburban and urban highways and at entry and exit pits for rehabilitation).

- Allow for the costs associated with the NRSWA 1991 but exclude the lane rental costs as defined by Street Works (Charges for Occupation of the Highway) (England) Regulations 2001.
- Include costs required to comply with relevant Health, Safety and Environmental regulations. Temporary fencing costs associated with Health and Safety legislation should be included.
- Include direct costs associated with commissioning.
- Exclude costs for crossings (e.g. railways, rivers).

Where SW's projects costs are based on assumptions different from those specified above (e.g. different frequency of manholes, depth of cover etc) then SW should make appropriate adjustments to its project costs such that the standard costs submitted reflect the assumptions specified in this document. SW should only make adjustments if it is able to demonstrate that the differences would result in a change to the cost (e.g. if the cost is the same whether there is 1.5m or 2.0m cover between ground level and the crown of the pipe then SW should not make an adjustment).

### **Column definitions**

Estimates in each column should be consistent with the definitions as follows:

#### **Grassland**

Urban/ rural verges, new development sites or open field normally used for grazing. Allow for reinstatement of original surface but assume that no imported backfill material other than pipe surround is required. Include the cost of restoring land drainage in open fields. Exclude the costs of traffic management and temporary fencing.

#### **Rural\suburban highway**

Type 3 or 4 reinstatement and non-traffic sensitive in accordance with the New Roads and Street Works Act (NRSWA) 1991, for example, secondary or minor roads, housing estates. Alternative forms of reinstatement are permitted under the NRSWA 1991. For standard costs, assume the cheapest method permitted by the Act will be used.

#### **Urban highway**

Type 2 reinstatement and traffic sensitive in accordance with the NRSWA 1991. For example, cities and town centre trunk roads. Alternative forms of reinstatement are permitted under the NRSWA 1991. For standard costs, assume that the cheapest method permitted by the code will be used.

#### **No dig/ reline**

Insertion of a flexible lining into the sewer using an inversion process. The lining is inserted under pressure of water and cured by circulating hot water. Include cleaning and CCTV; exclude over-pumping.

## Wastewater non-infrastructure

**Table 7: Wastewater service - forecast expenditure by asset type**

SW should submit an indicative breakdown of total projected wastewater service investment by asset type in table 7. This should be consistent with forecasts contained in Section 1 of the draft business plan recognising the uncertainty around investment programmes at this stage. The sum of lines 1 to 7 should be 100%. The forecast investment in the wastewater service should also be stated in pounds. For the submission due in 30<sup>th</sup> May 2008 SW should input this value. For the final business plan submission it will be copied from the total gross expenditure stated in Section 1 of the final business plan. Unless otherwise stated, definitions of asset types are provided in RAR 2.

**Table 8: Wastewater non-infrastructure standard costs**

SW should provide a breakdown of the estimates for the non-infrastructure standard costs in the CBS tables 8.1- 8.15. SW should transfer the total standard costs into main table C2.8.

Table 8 contains a series of standard costs that cover installation of new assets as well as refurbishment of existing assets. The selection of these has been based on an assessment of significant activity carried out in the current price limit period, which is likely to be required in the next price limit period to meet existing and new obligations.

The standard cost definitions seek to exclude any components of cost relating to site specific factors in order to allow comparison between companies; for example specifying green field sites with no complications. The value of the inclusions and/or exclusions must be stated on the CBS to show that they have been accounted for. In addition to the general guidance given in Section 3 for indirect costs and overheads the following assumptions, specifically relating to wastewater non-infrastructure direct and indirect costs must be made:

- There is no planning constraint on the phasing or construction of works; omit costs of planning application and planning studies (excepting normal feasibility studies and design, which should be allocated to indirect costs).
- Accessible land is available and legal/land purchase costs are to be excluded.
- There are no restrictions requiring seasonal working or limiting working hours.
- There are no unusual ground conditions; omit de-watering, soil stabilisation, deep foundations, rafts, piling, special ground support, ground anchors and excavation in rock. Allow for non-complex geotechnical investigations.
- Excavated materials are not contaminated and can be reused for embankments and there is no need to import fill.
- A public highway suitable for all types of vehicle exists to the boundary of the working area.
- The site is unobstructed and that no trees or ground clearance, drainage, diversion of existing services or preparatory works are needed.
- Telemetry and automation included in standard costs should be limited to local control and provision of suitable signals only, for subsequent capture by an assumed existing regional telemetry system.
- Exclude site drainage, roads, fencing and landscaping.
- Estimates are to be built up as an average cost for the size of works specified in the standard cost, not a nearest equivalent derived from SW's database or similar source; where SW has standardised sizes of process units/plant to achieve efficiency, and the standard cost requires an intermediate size, estimate for the size specified but assume that economies will be achieved to the same extent as would be present if the plant had been provided to the nearest SW standard size i.e. use the same cost equation.
- Estimates are for greenfield sites except where specified; assume that all necessary working space and areas for storage of materials are readily available without cost.
- Exclude demolition costs except where reconstruction is indicated or may be selected, and assume that all necessary services (power, water, phone etc) are available on site.
- Existing services do not need to be diverted and they are of adequate capacity to meet new requirements e.g. new electricity transformers are unnecessary.
- No pumping is required at the inlet or within the site, except where the process choice would require interstage pumping etc.

## Scottish Water First Draft Business Plan – Guidance

### Appendix A - Cost Base

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- Include the costs of all interconnecting pipework.
- Mechanical and electrical costs should include installation and performance tests and commissioning.
- Assume that performance will be satisfactory first time and that process/plant modifications are not required.
- Exclude official opening costs for showpiece sites.
- Sizes and capacities quoted are to be taken as design requirements, i.e., there is to be no additional provision for growth.
- There is no requirement for a high standard of finish to works for aesthetic or environmental reasons.
- There is no limit on the height of structures, no requirements for screen walling or shielding earthworks, no covering of plant which under SW normal practice would operate in the open.
- No special measures are required for acoustic or odour control purposes. For exceptions see individual standard cost specifications.
- When pipe, fittings and other equipment are 'free supply' by SW, the cost of these items and associated procurement and stores costs must be included within the standard cost.
- Provide lighting, power, heating, ventilation, telephones, welfare facilities, intruder and fire alarms and entry control and surveillance within all new buildings.

#### Glossary of terms for mechanical and electrical (M&E) equipment

ICA	Instrumentation control and automation
MCC	Motor control centre
PLC	Programmable logic controller
DNO	Distribution Network Operators (previously REC)
FAT	Factory acceptance test
SAT	Site acceptance test

## **Comparison with 2005 unit costs**

Tables 9 (water service) and 10 (wastewater service) contain:

- Downloaded unit costs taken from the 2005 business plan and indexed to 2007-08 prices (using COPI), and
- Updated cost estimates for these projects submitted as part of the 2008 cost base exercise copied from tables 2, 4, 6 and 8, where SW has provided them.

Scottish Water should not make any inputs to these tables.

SW should provide commentary on the general level of these standard cost estimates and an explanation of the differences between current estimates and those submitted in 2005. This commentary should start from the expectation that movements in standard costs will generally reflect efficiency savings, and so SW should explain the link between the movement in unit costs shown in these tables and the level of capital efficiency savings reported in their annual returns.

Where significant changes in standard costs arise from differences between the SRC06-10 and the SRC10-14 guidance, SW should explain this and provide an estimate of the difference in cost arising from this cause.

SW should also set out the changes that have been made to their costing methodology, including unit costs, to take account of technological and other efficiencies since the last review.