

Staff Paper 12

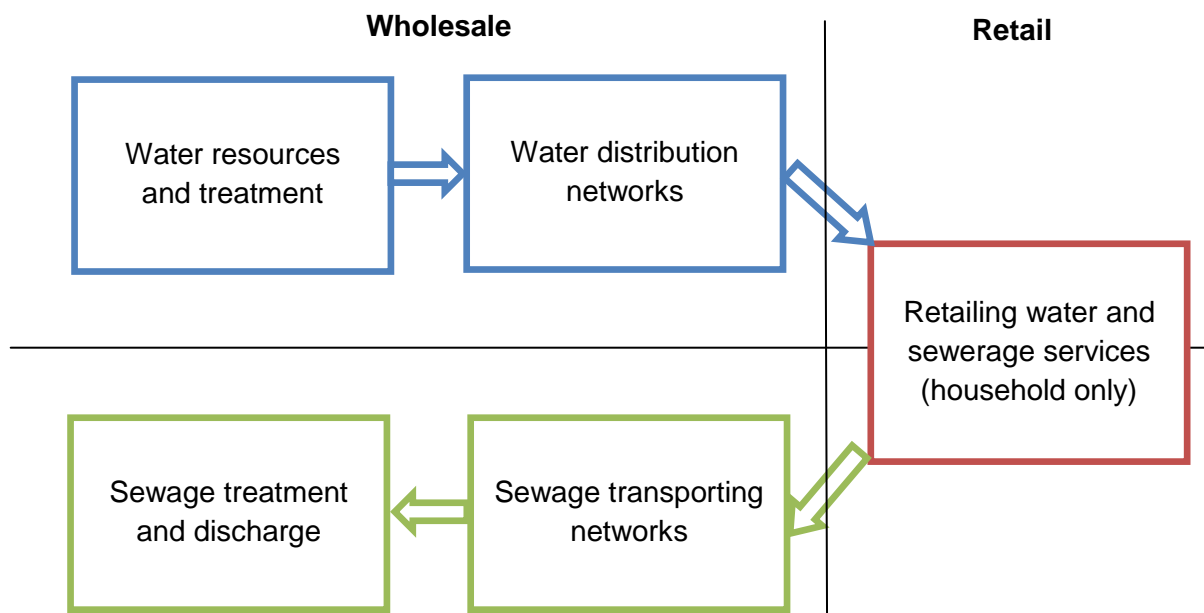
Update on value chain analysis

This staff paper has been produced by our office to assist stakeholders in responding to the Draft Determination. The material reflected in this staff paper has informed the preparation of the Commission’s proposed conclusions. However, this staff paper does not form part of the Draft Determination. Accordingly, this staff paper should not be relied upon as expanding upon or replacing anything contained in the Draft Determination.

12.1 Introduction

The proposed charge caps for Scottish Water are based on the costs of providing services at a retail level to households and at a wholesale level to licensed providers. The approach was based on a traditional ‘vertically integrated’ view of a water and sewerage company, but with adjustments to charges to non-household customers to account for retail services (which for these customers are now competitive). However, these overall caps include activities that may be considered to be economically distinct. Underlying the charge caps is a ‘value chain’ as illustrated in Figure 12.1.

Figure 12.1: Summary of Scottish Water’s value chain



This paper outlines:

- recent developments in the water and sewerage industry that may impact on the way in which the water industry is regulated;
- the Commission's proposals to require Scottish Water to account separately for different parts of its network;
- the business areas that the Commission expects Scottish Water to account for separately;
- the information base that was used;
- the costs that were analysed in the Draft Determination; and
- indicative cost allocations for different parts of Scottish Water's network.

12.2 Recent developments

While regulation of Scottish Water as a vertically-integrated company has served Scottish customers well to date, there are a number of reasons why it may be desirable to understand costs at a more detailed level in the future. These include:

- ensuring that economic regulation remains robust;
- the implications of the Albion Water Case; and
- the possible impacts of the 'Cave Review' of water and sewerage competition and innovation in England and Wales.

Economic regulation

Analysis in this Strategic Review relies on econometric and unit cost models that compare Scottish Water's vertically-integrated costs with the costs of the water and sewerage companies in England and Wales. Adjustments are then made to account for differences caused by the separation of retail activities for non-household customers into a separate entity. This is possible because in 2007-08 – the 'base year' for this Review – there remained a single retail operation in Scotland and the costs and service impacts of competition were yet to be realised.

After this Review, however, the costs and service levels in Scotland may diverge from the costs and service levels observed in England and Wales, given the difference in the competitive framework. This will likely reduce the Commission's ability to rely on comparisons with the water and sewerage companies for benchmarking purposes.

The Commission will consult with stakeholders on its proposed approach in advance of the next Strategic Review. However, it already considers that its approach is likely to involve understanding the costs of different activities that Scottish Water undertakes – in order, possibly, to carry out a form of 'internal benchmarking'.

Albion Water Case

In a series of judgements over 2007-09¹, the Competition Appeals Tribunal found that Dwr Cymru had abused its dominant position. It concluded that Dwr Cymru had conducted a 'margin squeeze' by charging Albion Water an excessive price to access its water network in order to transport water. The Tribunal was notably critical of Dwr Cymru's ability to understand how its costs related to different activities and how these related to the price it proposed to Albion Water.

In general, the Water Services etc. (Scotland) Act 2005 reduces the likelihood that some potential competition challenges to Scottish Water would be successful. The Act regulates access to Scottish Water's networks, allowing new entrants to provide retail services. It also creates an offence of introducing water to Scottish Water's networks, unless Ministers specifically provide for this to occur (by Order). It is, however, silent on the sale of treated water to Scottish Water.

The Cave Review

In April 2009, Professor Martin Cave published his report 'Independent Review of Competition and Innovation in Water Markets'. It recommended that the water industry in England and Wales should adopt a model of retail competition like the one that has been introduced in Scotland. However, Professor Cave's Review went further than the current retail competition model in Scotland, promoting a phased approach to the introduction of 'upstream' competition. This may include competition for water resources and competition for treated water.

While Professor Cave's Review relates to competition in England and Wales, it raises some important issues that are relevant to Scotland.

12.3 Broad outline of the Commission's proposals

The Commission intends to develop regulatory reporting requirements that separate Scottish Water's business units. The costs these businesses report (and therefore, notionally, the prices they charge one another) should reflect the full economic costs of supply, including all operating expenditure, depreciation and a cost of capital. The Commission has been advised that such an approach is more likely to be robust to future challenge under competition law.

The degree of separation of the business units may evolve over time. For example, it may initially be appropriate for continuity to continue to require a single regulatory submission covering the full Scottish Water wholesale business. However, as understanding develops, the Commission may seek separate submissions from the different parts of the business. Having separated the units, it may then be appropriate to define how they should transact with one another.

¹ Albion Water Limited & Albion Water Group Limited v Water Services Regulation Authority (Dwr Cymru/Shotton Paper) Case 1046/2/4/04, [2006] CAT 23, [2006] CAT 36, [2008] CAT 31 and [2009] CAT 12.

By undertaking this process of accounting separation, the Commission is not trying to define how Scottish Water should run its business. That is properly a matter for the management of Scottish Water. However, the Commission has had legal advice to the effect that a failure to make progress in this area could expose Scottish Water to challenge under the Competition Act 1998.

12.4 Business areas proposed for accounting separation

In order to understand wholesale costs of supply, it is the intention to separate Scottish Water's costs of retail services to household customers. It should be possible to make quick progress in this area as there is already a degree of separation in the regulatory accounting information, the activities are reasonably well understood and the costs are significantly linked to the joint billing with council tax.

Having separated household retail activities, the intention is to separate water and wastewater activities. Again, there should be quick progress in this area as many of the costs are already separated between water and wastewater and many of the assets used are different.

Once water and wastewater costs have been separated, the Commission would like to separate these costs further into treatment activities and network activities. As this approach may be different from the way in which the industry has considered its costs to date, the proposals are considered in more detail below.

Network business units

When referring to network businesses, this is taken to mean the underground network of pipes and sewers and other assets, such as pumping stations, that are used to transfer treated water to customers and transport wastewater from customers. The network will be required for the foreseeable future.

As the Commission acts to ensure that its economic regulation of Scottish Water remains robust, it is mindful that in the long term it is likely that water and sewerage network businesses may continue to be characterised by natural monopoly. This may suggest that network businesses may need to bear the cost of ensuring that social obligations – such as ensuring continuous supplies of water, draining rainwater or maintaining universal tariffs across Scotland – are met.

However, the network businesses are also likely to be characterised by a relatively stable business model. Their main function may be to maintain the networks of pipes and sewers in perpetuity. Any additions to the network are likely to be financed by those wishing to connect².

The water industry has adopted a model of renewals accounting for infrastructure assets. Each year, water and sewerage companies estimate the long-run costs of

² Save for 'reasonable cost contributions', which should, by definition, be self financing over a reasonable period.

maintaining infrastructure assets and charge this to their profit and loss account. In any individual year, the expenditure required may be different to this long-run charge and this may give rise to a financing requirement. However, over a long period the sum of annual charges and the sum of annual expenditure should be broadly equal.

The RCV of Scottish Water, given the level of depreciation that has been allowed for in customers' charges, is largely accounted for by the assets that have been built or improved to respond to the need for higher standards of public health and environmental compliance. These are primarily assets relating to water resources and treatment and waste water treatment and discharge. It is important that our understanding of the costs of a water and sewerage company, and the remuneration of the asset owner are, and are seen to be, consistent. For example, this understanding is critical to an assessment of the true economic and sustainable level of leakage. We would expect that the value of water and waste water treatment assets would similarly dominate the current RCVs of the companies south of the border, especially given that the levels of compliance required are broadly similar.

The natural monopoly nature of the network business suggests that robust benchmarking models will continue to be required. This may mean internal benchmarking of Scottish Water's costs of the treatment business. The relatively stable and predictable nature of its business should make this benchmarking a realistic possibility. The Commission therefore intends to work with Scottish Water to develop and refine models that benchmark its network activities. This is likely to require a greater understanding of the drivers of costs and more detailed information than has existed to date.

Our analysis suggests that the principal activity of water and sewerage companies is the management, design and delivery of water and sewage treatment assets and their operation. And this is fully consistent with how the owners of water businesses earn their return: by investment in improving their asset based (principally in treatment) and not from their ownership of the legacy network.

Treatment business units

When referring to treatment businesses, this is taken to mean slightly different functions on the water and wastewater sides of the business. On the water side, this refers to sourcing raw water; storing raw water in a reservoir; transferring raw water to a treatment works; treating the raw water to appropriate standards and transferring the water into a service reservoir. On the wastewater side, it covers receiving sewage flows at a treatment works; treating the waste water to an acceptable standard; discharging treated waste to the environment and disposing of any sludge.

As outlined above, the Commission is keen to develop cost information that, if challenged, would not suggest that a 'margin squeeze' was taking place. It therefore intends to develop reporting requirements that identify the full economic costs. This may mean understanding the different types of treatment processes that Scottish Water undertakes. The Commission also intends to make more transparent the costs associated with developing new sources and providing varying levels of wastewater treatment.

Water network separation

Figure 12.2 sets out how the separation of a water business into a treatment and a network business may operate³.

Figure 12.2: Example separation of water treatment from water networks

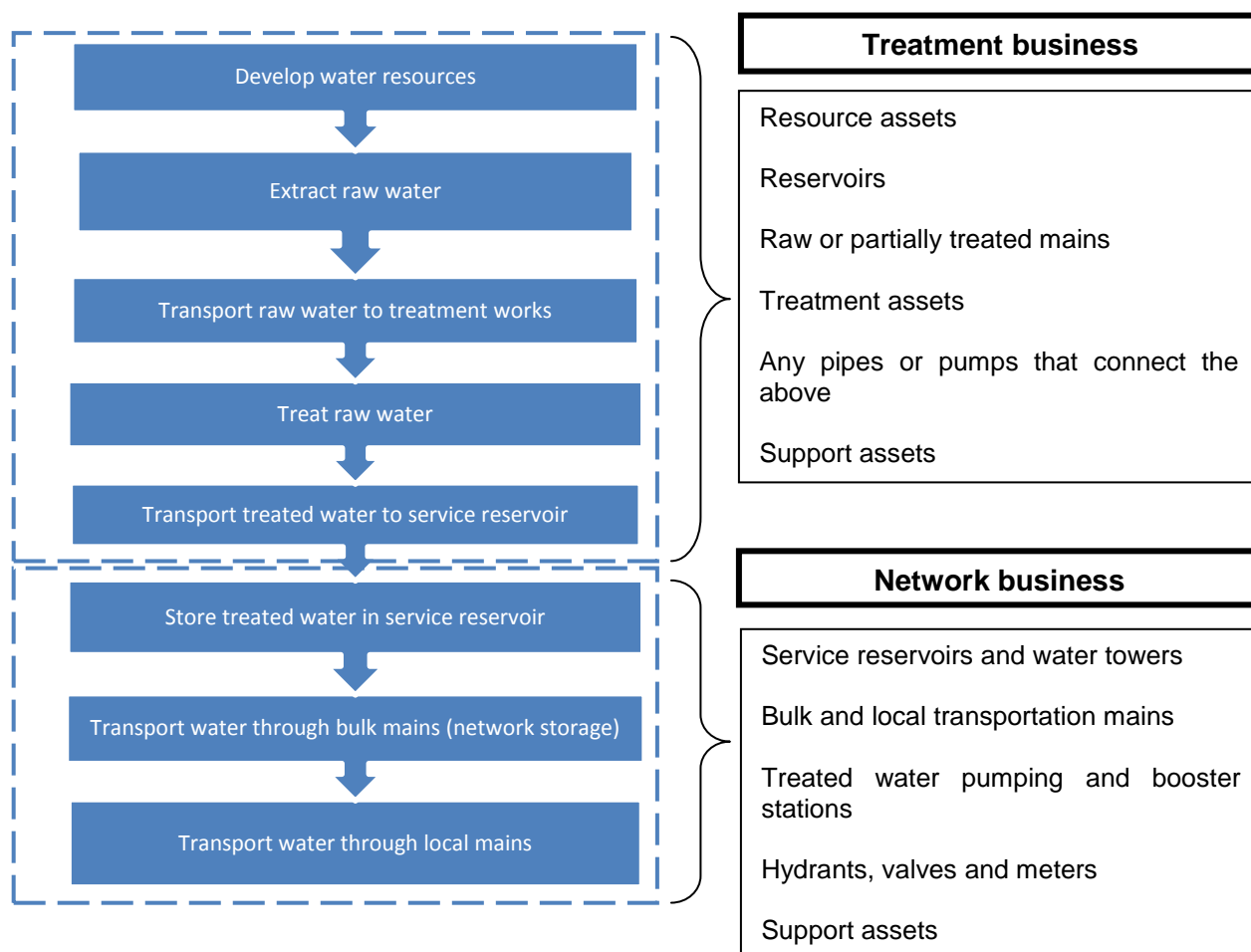


Figure 12.2 sets out a broad overview of the proposals. However, it is recognised that further detailed work will be required to refine the definition of assets, activities and costs that are allocated to each business unit. In particular, the Commission will wish to scrutinise closely the accounting boundary between treatment and network activities.

12.5 Information base

In order to provide transparency to stakeholders in relation to the Draft Determination, the Commission is publishing indicative cost allocations to the various business units.

³ The Commission's proposals for separating the wastewater networks into treatment and distribution businesses are similar.

As part of its Business Plan submission, Scottish Water was asked to provide analysis of its value chain. Figure 12.3 outlines the wholesale business units that Scottish Water was asked to report on. For each of these units, Scottish Water provided the following categories of information:

- Annual costs of supply:
 - operating expenditure, split by operating expenditure that can be directly attributed to an activity and operating expenditure that is apportioned to an activity;
 - depreciation: split by current cost depreciation⁴ and infrastructure renewals charge;
 - an apportionment of interest and tax expenses.

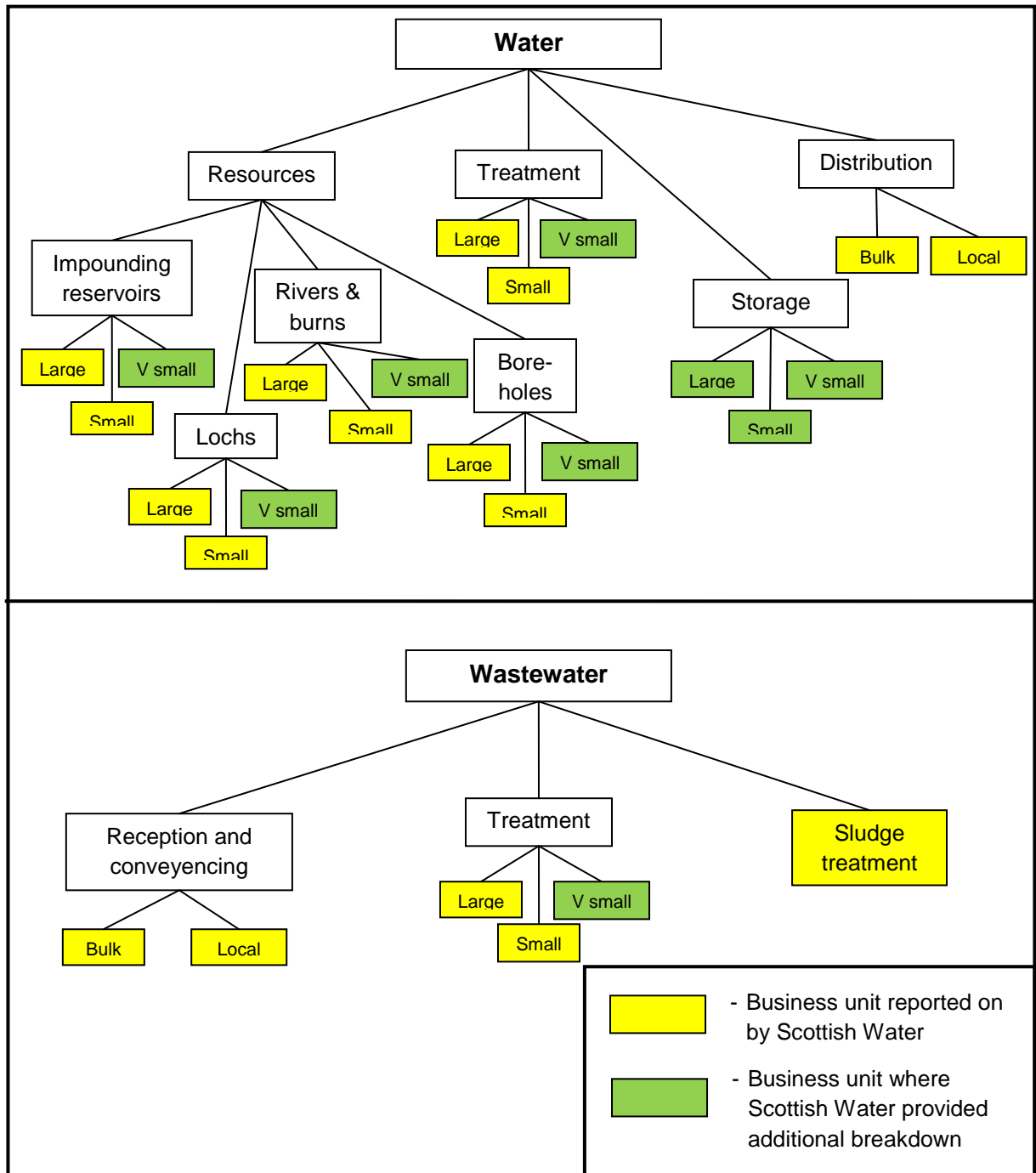
- Assets used in supply:
 - historic cost book value of assets;
 - modern equivalent asset value of non-infrastructure assets (net and gross);
 - modern equivalent asset value of infrastructure assets;
 - working capital.

While this information was beyond the level of detail that had previously been collected, Scottish Water was generally able to comply with the Commission's guidance and provide the requested information. The detailed commentary that Scottish Water provided made it possible to follow how Scottish Water had developed its information base and the assumptions it had made.

The Commission requested information from Scottish Water about its network and treatment costs for the base year of 2007-08 and forecast to 2010-14. The remainder of this section presents information from 2007-08. There is then a brief discussion about how this may change over time.

⁴ Scottish Water provided historic cost depreciation instead of current cost depreciation.

Figure 12.3: Outline of wholesale information reported by Scottish Water



12.6 Cost areas analysed

Scottish Water's 2007-08 information was analysed and indicative costs allocated to four business units – water treatment, water networks, wastewater networks and wastewater treatment. For each of the business units that were considered, the following were allocated:

- operating costs;
- maintenance costs;
- PPP charges; and
- cost of capital⁵.

Operating expenditure

The information that Scottish Water provided on wholesale operating expenditure can be considered in two broad categories:

- Direct operating expenditure: that is, expenditure that is incurred and captured directly in relation to a specific activity. For example, Scottish Water may be able to record the electricity costs of a particular wastewater pumping station.
- Indirect operating expenditure (or overheads): that is, expenditure that does not relate to a specific activity but is necessary for Scottish Water to incur in order to provide its activities. For example, Scottish Water incurs costs relating to Human Resources that are not specific to a particular asset. These may be apportioned to a business activity by using, for example, headcount.

Table 12.1 shows Scottish Water's reported operating expenditure in 2007-08 as direct and indirect expenditure. As can be seen, Scottish Water is able to report around two-thirds of its expenditure directly to an activity⁶.

⁵ Specific corporation tax assumptions are not made as Scottish Water did not pay corporation tax in 2007-08.

⁶ If PPP expenditure is included, this rises to around three-quarters.

Table 12.1: 2007-08 wholesale operating expenditure (excluding PPP) by category

Detailed network area		Direct operating expenditure	Indirect operating expenditure	Total operating expenditure	Business area for indicative cost allocations
Water resources	Large	£4m	£2m	£60m	Treatment
	Small	£2m	£2m		
Water treatment	Large	£14m	£7m		
	Small	£18m	£11m		
Water distribution	Bulk	£7m	£6m	£65m	Networks
	Local	£30m	£23m		
Water total		£75m	£50m	£125m	Water
Wastewater reception and conveyancing	Bulk	£9m	£8m	£42m	Networks
	Local	£22m	£4m		
Wastewater treatment	Large	£6m	£5m	£64m	Treatment
	Small	£28m	£12m		
	Sludge	£11m	£3m		
Wastewater total		£75m	£31m	£107m	Wastewater
Overall total		£150m	£81m	£232	
Percentage of total		65%	35%	100%	

The indicative cost allocations use Scottish Water's apportionment of operating expenditure to individual activities (including its allocation of overheads). It is recognised that as the activity definitions and the boundaries between business units are refined, these costs may change. However, in this respect the Commission notes that Scottish Water is already able to allocate a high proportion of costs directly to activities, so movements of cost between different business units are likely to be around the margins.

PPP charges

Scottish Water incurs charges to PPP contractors for providing wastewater treatment services. In 2007-08 these were around £125 million. In the indicative cost allocations, these charges are assumed to relate only to the treatment business unit. It is unlikely that this allocation would change through time.

Maintenance costs

In its current regulatory accounts, Scottish Water accounts for the costs of maintaining its assets using two distinct categories of charge:

- an 'infrastructure renewals charge': which is a notional long-run normative charge for maintaining assets currently classified as infrastructure; and
- a 'current cost depreciation charge': which is the cost of depreciating assets that are currently classified as non-infrastructure.

Figure 12.4 sets out how these current industry accounting norms would be impacted by the separation of activities.

Figure 12.4: Current maintenance charges

	Current cost depreciation	Infrastructure renewals
Networks business units	Pumping or storage assets in the water and wastewater business.	Water mains, drains and sewers.
Treatment business units	Water treatment and storage assets.	In wastewater business, there are minimal assets in this category. Examples include sea outfalls. In the water business, this includes raw water mains and assets associated with the offtake of water.

It is the Commission's view that continuing to account for maintenance charges in the network business in two ways may not be appropriate. The network may be required to maintain its assets in perpetuity. It is therefore proposed to account for all assets in the network business using a 'network upkeep charge'. This may operate in a similar manner to the current infrastructure renewals charge, but will include all assets in the network business. At this stage, it is not proposed to alter the accounting treatment of maintenance in the treatment business unit.

The Commission would prefer to account for maintenance expenditure on non-infrastructure assets using current cost depreciation. However, in its value chain information return, Scottish Water did not provide current cost depreciation by area. The asset values that Scottish Water provides were used to estimate a current cost depreciation charge. However, there is a concern that this may be out of line with observed current cost depreciation charges in England and Wales⁷. For the purposes of the indicative cost allocations, an average has been assumed of Scottish Water's reported historic cost and the estimated current cost depreciation charges.

The overall assumptions on maintenance charges for the business units are set out in Table 12.2.

⁷ Staff Paper 3 contains a more detailed discussion of this issue.

Table 12.2: Maintenance charges by business unit

	Water treatment	Water networks	Waste water network	Waste water treatment	Total
Network upkeep charge		£72m	£57m		£129m
Depreciation charge	£91m			£77m	£168m
Infrastructure renewals charge	£9m			£1m	£10m
Total	£100m	£72m	£57m	£78m	£307m

During the forthcoming regulatory control period, the Commission will work with Scottish Water to refine rules for calculating and allocating appropriate maintenance charges to different business units.

Cost of capital

For the indicative cost allocations, simplifying assumptions have been made on the cost of capital; the intention is to revise these over time. First a top-down estimate of the overall cost of capital for Scottish Water in 2007-08 was made; this was then apportioned to different parts of the network.

Scottish Water's revenue in 2007-08 was assumed to be equal to costs⁸. The 11% of household revenue that was assumed to relate to retail costs was removed from total revenue. This is consistent with the gross retail margin that was assessed for non-household customers. This gave an overall level of wholesale costs of around £912 million in 2007-08.

Next the sum of wholesale operating expenditure, depreciation and infrastructure renewals charges was deducted, to leave a value of the cost of capital of around £250 million. At this stage, a simplifying assumption was made that the return on capital is the same across each business unit. This is an assumption that the Commission will wish to revisit as the information improves.

The cost of capital was apportioned to different network businesses by using simplifying assumptions about the level of capital requirement:

- for treatment businesses, it was assumed that the capital requirement is around the net modern equivalent asset value; and

⁸ In a regulated business like Scottish Water, this should be a reasonable approximation, as regulatory reviews tend to make cost of capital assumptions that allow for an appropriate (but not excessive) level of profit. However, there may be variances in any one year caused by differences between the regulator's assumptions and actual company performance.

- for network businesses, it was assumed that the capital requirement is around double the network upkeep charge (ie that a networks business may need to finance up to two years of network maintenance in advance).

At this stage, no assumptions have been made about the need to finance working capital. Again, at a later stage, the Commission may wish to revisit this assumption and refine the information.

The resulting cost of capital allocations are set out in Table 12.3.

Table 12.3: Cost of capital allocations (2007-08)

	Water treatment	Water networks	Waste water network	Waste water treatment	Total
Cost of capital	£143m	£9m	£7m	£91m	£250m

The Commission plans to carry out more work in this area and will report its conclusions in the Final Determination.

12.7 Indicative cost allocations

The indicative cost allocations are set out in Table 12.4.

Table 12.4: Indicative cost allocations for 2007-08

	Water treatment	Waste water treatment	Water network	Waste water network	Total
Operating expenditure	£60m	£64m	£65m	£42m	£232m
PPP charges	-	£124m	-	-	£124m
Maintenance charges	£100m	£78m	£72m	£57m	£307m
Cost of capital	£143m	£91m	£9m	£7m	£250m
Total	£303m	£357m	£146m	£106m	£912m
Percentage of total	33%	39%	16%	12%	100%
Percentage of total (treatment/networks)	72%		28%		100%

The analysis was repeated for later years in this regulatory control period. This process showed that the proportionate allocation to the different parts of the network does not vary significantly from the information reported for 2007-08.

It is recognised that a number of assumptions have been made in generating the indicative cost allocations, not least in the allocation of the cost of capital to different parts of the network. The Commission intends to refine this information during the forthcoming regulatory control period and recognises that this may impose a cost on Scottish Water. The following has therefore been allowed for in the proposed charge caps:

- an additional £15 million (pre-efficiency) of capital expenditure that may be required to develop appropriate systems to capture the information; and
- £2.5 million of additional operating expenditure per year associated with capturing and reporting the information to us and the wider market place.

The Commission believes that these allowances should be sufficient to allow for Scottish Water to develop significantly improved and detailed information. It is encouraged by Scottish Water's comments in its business plan about wishing to engage with the Commission in defining this new information.

12.8 Conclusion

In the forthcoming regulatory control period, continuing to ensure that customers' interests are promoted may require the Commission to understand Scottish Water's costs in greater detail than before. The Commission will consult with stakeholders as new methodologies and reporting requirements are developed.

