

Scottish Water Opex Special Factors Submission Overview Document June 2004

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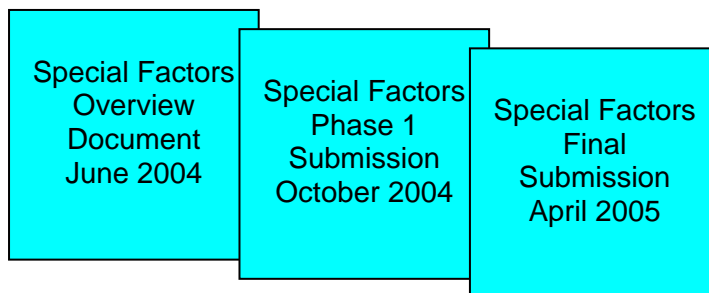
1.0 Introduction

This report sets out an overview of the special factors affecting Scottish Water which result in higher operating costs than those predicted by the Water Industry Commissioner's econometric models.

In undertaking an analysis of the factors affecting Scottish Water's operating costs, the Special Factors have been grouped under the main themes differentiating between the operating environment in Scotland and that in England and Wales. These differences are:

- the geographical and environmental operating conditions;
- the inherited Asset Base; and
- the legal status of Scottish Water and its statutory obligations.

This overview document provides a high level summary of the special factors. Detailed submissions on each special factor will be provided to the WIC in two phases. Phase 1 submissions will be submitted with the Scottish Water draft business plan in October. A final submission will be made with the Scottish Water final business plan in April 2005.



2.0 Geographical and Environmental Context

Scottish Water operates with a number of unique geographical and environmental factors which has a significant impact on operating costs.

- Compared to England and Wales the population is spread over a wide geographic area and often living in small settlements. This requires increased travel and a high number of small works to service these small communities.
- Operating costs are increased by the higher costs of utilities, materials and services in rural Scotland. Major impacts include the cost of electricity, chemicals and fuel. These increased costs reflect the higher operating costs incurred by other companies operating in rural Scotland.
- The very low proportion of raw water coming from cheap underground sources, due to the lack of suitable aquifers and the highly variable nature of a number sources;
- High levels of unemployment coupled with a billing and collection system operated by the local authorities leading to increased levels of bad debt.

A summary of the geographical and environmental factors is presented below

2.1 Area Served

Scottish Water serves a total area of 7,997,600 hectares, approximately one third of the total UK land area. By comparison the largest area served by a WaSC in England and Wales is 2,209,000 hectares (Anglian Water) and the smallest area served is only 940,000 hectares by Northumbrian Water. The average area served by the WaSCs is 1,478,100 hectares.

2.2 Population Sparsity

Scottish Water serves a population of around 5 million. However, these customers are spread across a far greater area than any company in England and Wales. Using data from the unitary authorities and local authorities mapped onto the operating areas of Scottish Water and the WASCs, a comparison of population densities across Great Britain has been made. The results are presented in the table below (Note: – small variances may exist between the annual return data and the data presented below.)

Company Name	URBAN			RURAL			TOTAL		
	Popl'n (000s)	Area (000s)	Pop / Hectare	Popl'n (000s)	Area (000s)	Pop / Hectare	Popl'n (000s)	Area (000s)	Pop / Hectare
TMS	9973.1	478.3	20.85	1356.7	575.6	2.36	11329.8	1054.0	10.75
NWT	5508.5	528.8	10.42	1221.3	881.9	1.38	6729.8	1410.6	4.77
SRN	2382.0	222.6	10.70	2468.0	869.6	2.84	4849.9	1166.6	4.44
SVT	6090.2	525.6	11.59	2370.0	1721.6	1.38	8460.2	2247.2	3.76
YKY	4195.8	461.8	9.09	1036.6	1129.2	0.92	5232.4	1591.0	3.29
NES	2264.9	235.8	9.60	250.6	621.5	0.40	2515.4	857.3	2.93
WSX	1394.1	152.9	9.12	1213.5	915.5	1.33	2607.6	1068.4	2.44
ANH	2836.4	377.8	7.51	3001.1	2228.2	1.35	5837.5	2606.0	2.24
SWT	481.5	19.0	25.38	1094.7	1008.0	1.09	1576.2	1026.9	1.53
WSH	2264.4	973.9	2.33	638.7	1099.4	0.58	2903.0	2073.2	1.40
SW	3904.5	1264.8	3.09	1157.5	6527.7	0.18	5062.0	7792.4	0.65
GB Totals	41295	5241	7.88	15808	17578	0.90	57103	22893	2.49

The table below provides an analysis of population sparsity for Scottish Water's four operational areas.

Company Name	URBAN			RURAL			TOTAL		
	Popl'n (000s)	Area (000s)	Pop / Hectare	Popl'n (000s)	Area (000s)	Pop / Hectare	Popl'n (000s)	Area (000s)	Pop / Hectare
Scottish Water	3904.5	1264.8	3.09	1157.5	6527.7	0.18	5062.0	7792.4	0.65
South West	2295.5	714.2	3.21	133.3	578.0	0.23	2428.8	1292.2	1.88
South East	793.2	175.4	4.52	254.5	1115.8	0.23	1047.9	1291.1	0.81
North East	815.6	375.2	2.17	391.3	1235.9	0.32	1207.0	1611.1	0.75
North West	0	0	0.00	378.3	3598.0	0.11	378.3	3598.0	0.11

The key points to note from this comparison are:

- Scotland has a total population density that is smaller than any of the WaSCs in England and Wales.
- The North West operational area is completely rural. 47% of the total area served by Scottish Water is in the North West area but only 7% of the population. This emphasises just how rural this part of Scotland is.
- The average population density for the whole of Great Britain is 2.49 persons per hectare which is over 3.8 times bigger than that of Scottish Water.

2.3 Settlement Size

Scottish Water has undertaken an analysis of the relative size of settlements in Scotland compared with England and Wales. Along with the analysis of population sparsity this information is key to understanding the need for a high number of treatment works in Scotland compared with England and Wales.

The key findings are as follows:

- Scottish Water has 514 settlements¹ compared with a total of 1859 for England and Wales and 347 for the largest individual WaSC (Anglian Water)
- The average population per settlement in Scotland is 12,377 compared with 24,069 in England and Wales.
- The area covered by settlements in England and Wales is nearly seven times the area covered by settlements in Scotland
- The average area per settlement in Scotland is about half that in England and Wales
- Some of the highland communities are very small and consist of fewer than 10 properties.

2.4 Socio Economic Factors

Scottish Water is currently undertaking a socio-economic analysis of its operating environment. The key findings to date are:

- 2.91% of the working age population served by Scottish Water claim unemployment benefit, which is significantly higher than the UK average of 2.12%. Only one WaSC is higher, with 2.98 % claiming unemployment benefit.

¹ Definition of Urban settlement as per the Office of the Deputy Prime Minister. Urban settlement defined as having a population of at least 1000 and covering an area of at least 20 hectares.

- All four operational areas served by Scottish Water have percentages of the working age population claiming unemployment benefit which are above the UK average. The South West operational area has 3.95% claiming unemployment benefit, the highest of the operational areas, and almost 1% more than the highest WaSC.

Scottish Water is considering the implications that can be drawn from this data.

2.5 Rural Subsidies

Scottish Water has identified a number of companies that receive subsidies for operating in the North of Scotland. These subsidies are a reflection of the uneconomic costs that they incur for working in this environment. Subsidies amounting to around £90 million in 2002-03 have been identified and are tabulated below

Type of Subsidy	Subsidy Amount in 2002-03
Hydro Benefit Subsidy ²	£38.6 million
Caledonian MacBrayne (Calmac) ³	£10-£12 million + investment in tonnage
Northern Isles Ferries and Tariff Rebate ⁴	£14.2 million
Calmac Piers and Harbours ⁵	£2.8 million
Independent Piers and Harbours ⁶	£9.6 million
Lifeline Air Services ⁷	£1 million
Highlands & Islands Airports Ltd ⁸	£12 million

These subsidies are designed to offset the high costs of providing services and transport to small and remote communities. The findings set out above support the view that Scottish Water's operating environment in Scotland is significantly different from that of the WaSCs in England and Wales and should be taken into account in comparing operating costs.

² Press release from Scottish and Southern Energy plc published on 17/11/0

³ News release by Caledonian Macbrayne on 16/12/2003 "Caledonian MacBrayne reports year of consolidation"

⁴ Annual Expenditure of the Scottish Executive:2003-04, page 49

⁵ Annual Expenditure of the Scottish Executive:2003-04, page 49

⁶ Annual Expenditure of the Scottish Executive:2003-04, page 49

⁷ Annual Expenditure of the Scottish Executive:2003-04, page 49

⁸ Annual Expenditure of the Scottish Executive:2003-04, page 49

3.0 Inherited asset base

Water and Sewerage companies in England and Wales have invested heavily in improving asset stock since privatisation in 1989.

Investment has been driven by the regulatory environment in areas such as:

- Water Quality
- Environmental Compliance
- Serviceability Indicators
- Customer Service
- Leakage

Scottish Water has been subject to economic regulation since 2000 and is now assessed on performance criteria similar to England and Wales. Historic investment has, however, been at a lower level in Scotland and not targeted at the same outputs (e.g. Serviceability Indicators & Leakage).

Scottish Water's asset stock is not yet therefore able to perform at a level comparable to England and Wales.

Detailed issues are discussed in the following sections.

3.1 Leakage

Scottish Water currently has leakage levels that are significantly higher than comparator companies in England and Wales. Scottish Water therefore incurs additional treatment costs compared to England and Wales. However, due to the form of the Resources and Treatment model, Scottish Water is actually granted less predicted opex than it would if leakage levels were lower. Scottish Water estimates that the predicted opex would actually increase by **£6m**⁹ if leakage levels in Scotland were comparable to England & Wales.

In drawing comparisons between Scottish Water and England and Wales companies, consideration has to be taken of:

- The relative timing of comparisons
- The condition of assets and relative funding
- The Impact of Regulation

A discussion of these points is presented in the following paragraphs.

3.1.1 Comparisons of Efficiency and Impact of leakage

In modelling the efficiency of Scottish Water relative to the England & Wales companies, Scottish Water considers that it is penalised in the water resources & treatment and distribution models.

In practice, the different measures that might be used in these sub-models as the key *scale* driver are very highly correlated. For example, total population, water delivered, water distribution input and total properties are individually all over 90% correlated with one another. Hence the choice of scale factor often comes down to a combination of engineering

⁹ Analysis includes allowance for benefits gained in Power model

judgement and what rewards/penalties the regulator wishes to introduce within the econometric modelling.

In the case of the water resources & treatment and distribution models, *population* is used as the key scale driver. However, in the case of SW, this ignores the company's high level of leakage relative to England & Wales. In 2003, SW had leakage of 47.6% compared to the England & Wales total of 23.5%. Of the England & Wales companies, Thames has the highest leakage, at 33.0%.¹⁰

The impact on SW of this may be illustrated by using *distribution input* as a scale driver in the models. Using this effectively does not penalise companies with high leakage, since the higher leakage is reflected in a higher distribution input figure. It is notable that using distribution input as the scale variable results in an improvement in the observed efficiency of SW.

SW understands that one of the reasons why Ofwat uses population, as opposed to distribution input, as a scale driver, is that to do otherwise might *reward companies in England & Wales* who have high leakage. But such a position is more justified when the companies in question have had the same opportunity over time, under a system of economic regulation, to tackle the leakage problem. This is arguably the case in England & Wales. In addition to having the time *per se* to have tackled leakage, companies in England & Wales have either been *funded* explicitly in previous periodic reviews to tackle leakage (eg, through allowances for maintenance or quality spend), or have been able to *reinvest retained earnings* generated from the operating and capital efficiencies achieved over time.

However, whilst Ofwat's use of population as the scale driver might not generally penalise England & Wales companies in respect of leakage, WIC's use of the Ofwat models does implicitly penalise SW. This is because:

- SW has not had the same time period to improve its leakage performance, under a system of economic regulation, as the England & Wales PLCs;
- Related to this point, SW has not had the past funding, or the opportunity to reinvest efficiencies, to tackle leakage.

Therefore, SW believes that a special factor allowance should be made for leakage, since this represents an *inherited* legacy issue for SW that, only over time, will become more within management's control. The England & Wales companies have had the same window of opportunity to tackle this problem and, for most of these, leakage is now more within managerial control.

It is of interest to note, however, that in its 2002-03 report on unit costs and relative efficiency, even Ofwat has made company-specific factor adjustments for two companies with particularly high burst rates. This indicates that Ofwat recognises the problem of leakage being outside the control of certain companies to a degree, although this is probably more due to *inherent*, as well as *inherited*, reasons (eg, the nature of the operating area).

For SW, tackling leakage will still take time, and will require adequate funding. It will be some time before district metering areas (DMAs) are fully established within Scotland (these were established in England & Wales over the 1990s). The current DMA programme, when complete, will bring coverage up to 60%. Once established, SW will be in a better position to reduce leakage.

¹⁰ Expressed as total leakage / distribution input. Source: Ofwat June Returns 2003, and SW June Returns 2003.

3.1.2 How have England & Wales companies been able to tackle leakage?

The private water companies in England & Wales have had funding allowances at periodic reviews for delivering the outputs required under the quality and environmental programme. Given that the England & Wales water sector has been subject to economic regulation since its privatisation in 1989, it is therefore not surprising that the sector as a whole has a higher level of environmental and water quality compliance than Scotland, which has only been subject to formal economic regulation since 2000. The water companies in England & Wales have also been able to reinvest efficiencies achieved since 1989 in improving quality and other outputs further through discretionary spend allowances.

In a similar vein, the companies in the England & Wales water sector have had the funding and opportunity over time to reduce leakage. It is therefore not surprising that there are lower levels of leakage in England & Wales, relative to Scotland. SW is penalised in the OPEX efficiency models because this timing mismatch is not recognised.

The ways in which England & Wales companies have been *funded* to tackle leakage over time are as follows:

- In the periodic reviews, funding allowances have been made for *maintenance* of the network, including allowances for tackling bursts. The assumed base level of service has subsequently ratcheted up at periodic reviews. Historically, Ofwat has used a top-down 'serviceability' methodology for assessing maintenance needs. Going forward, for the 2004 review (PR04), companies have been developing a 'common framework' approach to maintenance;
- Funding through the quality programme has had overlaps with the maintenance programme. For example, replacement of old iron pipes over the 1990s, for water quality reasons, had the additional benefit of improving the overall condition and reliability of the network, with the effect of reducing leakage in England & Wales;
- in the 1999 periodic review (PR99), Ofwat made funding allowances available to certain companies for improving security of supply. Companies would have targeted leakage reduction, as part of their strategy.

Moreover, companies in England & Wales have, over time, had the *opportunity* to reduce leakage, even though this has been assumed by Ofwat to not have a direct effect on bills:

- companies in England & Wales have been able to *reinvest efficiencies* in leakage reduction over time;
- in PR99, companies needed to weigh-up different options for addressing the supply-demand balance, as part of a least cost strategy. By targeting an economic level of leakage (ELL), leakage reduction formed part of this strategy. Other options would have included demand management, pressure reduction, optional metering, targeted metering, leakage reduction, distribution enhancements, bulk supplies, extension of existing resources and new resources.

There is a debate in England & Wales as to how much supply-demand balance expenditure requires *funding* and how much is *self-financing*. For example, Ofwat argued in PR99 that increased demand due to new development or growth in demand (excluding optional metering) did not have a net effect on bills.¹¹ The regulator looks set to modify its stance in PR04, in particular for companies with a large unmeasured customer base.¹² In PR99, Ofwat also argued that targeting an ELL should not have a net impact on bills (since the reduction

¹¹ See Ofwat (1999) 'Final determinations: future water and sewerage charges 2000-05', November.

¹² See Ofwat (2003) 'Setting water and sewerage price limits for 2005-10: Framework and approach', March.

in distribution input reduces costs elsewhere), although targeting a level of leakage below the ELL might.¹³ For companies lying significantly above the ELL, however, it is arguable that there could be a net impact on bills of reducing leakage. Notwithstanding these points, which remain contentious in England & Wales, the PLCs have still had the opportunity over time to reduce leakage.

As highlighted above, Thames Water has particularly high leakage relative to the England & Wales average. In its final business plan for PR04, Thames has proposed replacing over 1000 miles of mains in inner London hotspots, to renew the network and to tackle leakage. Additional funding is also being sought by the company for resource enhancements. SW will also need sufficient funding over time for it to reduce its inherited leakage problem.

3.2 Prop-up cost

England and Wales companies have benefited since 1974 from structural changes that did not occur in Scotland until 1996. The Water and Sewerage Authorities were set up in 1974 to address investment issues and manage the whole water cycle. Funding was targeted specifically at Water Authorities via charges raised locally and through government borrowing. Whilst many would argue that insufficient funding was made available, the funding that was available was more effectively targeted at infrastructure than in Scotland where Councils ran Water Services. It is therefore insufficient to compare spending on a per capita basis between England and Wales and Scotland. Consideration also has to be given to how well the investment was spent in terms of efficiency and in terms of asset management and customer service.

Scottish Water considers that due to the funding and structure of the industry it has inherited a number of under performing assets. Service levels at these assets are maintained through a high level of operational intervention.

This impacts costs in the following areas:

- excess manning levels – can be 24 hour coverage;
- increased sampling costs due to high monitoring requirements (collection and testing);
- increased power;
- increased chemicals; and,
- increased sludge costs.

Scottish Water is currently undertaking a study to confirm the extent of intervention and the level of additional costs involved. Further details will be provided in the October 2004 submission.

¹³ See Ofwat (1999) *op cit.*

4.0 Geography Related Special Factors

4.1 Travel Costs

Travel costs constitute a disproportionately high level of Scottish Water's operating expenditure compared with the E&W companies. This is due to several factors:

- Scottish Water's operational area is more than three times the size of the largest operational area of any water company in England or Wales;
- the population of Scottish Water is more sparse than that of other water companies; and
- Scottish Water is the only water company which serves communities on many islands.

Asset employees within Scottish Water are required to travel extensively on a daily basis in the course of their work. The activities associated with operating and maintaining water and waste water treatment works and networks are similar to those of any other water company, but in Scotland are carried out in an area proportionately larger.

Staff from other directorates such as:

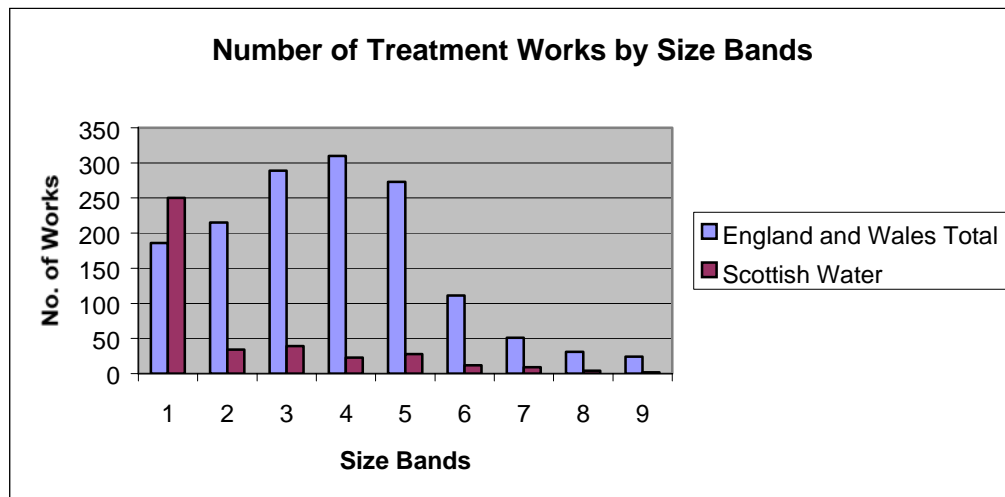
- Customer Service,
- Business Services,
- Laboratory Services,
- Contract Services

are also involved in activities such as field visits to customers, sampling activities and building/works maintenance.

Scottish Water has already undertaken work to quantify the impact of the costs associated with excess travel. The travel and labour costs involved in Scotland that are in excess of a typical WASC will be set out in a special factor claim in October.

4.2 High Number of small Water Treatment Works

Scottish Water serves a population spread over a large geographic area, often in small communities. The sparsity of the population requires Scottish Water to operate a large number of small treatment works. A comparison of the profile of assets in Scotland compared with England and Wales is given in the graph below



WIC has stated that “ The water resources and treatment econometric model takes explicit account of the number of water sources (and by extension the number of water treatment works) – reducing the number of sources would decrease the predicted opex.”¹⁴

Scottish Water incurs operating costs over and above those calculated in the econometric models for the following two reasons;

- the predicted opex is calculated using the E&W asset profile and is therefore valid for the mix of assets and observations used. Scottish Water was not included within the modelling; and
- the assertion by WIC that the number of sources is a proxy for scale is valid within the E & W data set used. However, the model does not adequately cover costs for the large number of small works operating in Scotland.

Scottish Water does agree with WIC that the Resources and Treatment Model provides additional opex for increased sources. However, as works reduce in size, manning levels and operational costs reach a base level below which a reduction in plant size has little impact on opex. For example a treatment works serving a population of 50 will have similar operational costs to a works serving 100 people. Scottish Water considers that the model does not therefore take full account of the costs of operating small treatment works

Scottish Water is currently undertaking further work to confirm the extent of this under recovery and will submit a quantification of costs in October 2004.

¹⁴ Letter from WIC to Scottish Water, 20 Feb 2004

4.3 Flashy Supplies

Scottish Water operates proportionately far more small water treatment works than the Water and Sewerage Companies in England & Wales. Many of these water treatment works suffer from supplies which are difficult to treat due to the changeable nature of the raw water quality.

Scottish Water has used the term “Flashy” to describe these highly variable sources. A flashy supply has been defined as a supply where **“there is greater than or equal to a four fold change in colour in a twelve hour period”**.

To cope with the variable nature of the supply Scottish Water is often required to invest in more sophisticated treatment processes and thus incurs increased opex and capex.

Although this problem is not unique to Scotland its impact is greater in Scotland as Scottish Water has more small sites linked to upland sources than the companies in England and Wales. As such Scottish Water incurs a higher cost than typical companies in England and Wales.

Scottish Water is currently undertaking a study to confirm the number of sites with flashy supplies and the operational costs associated with dealing with the highly variable supply. The table below summarises the extent of the investigations to date. A full report will be submitted in October 2004

	Flashy – Confirmed	Flashy – Under Investigation	Total Flashy	Confirmed Non Flashy
Band 1	43	52	95	137
Band 2	4	10	14	16
Band 3	1	9	10	24
Band 4	2	6	8	13
Band 5	0	11	11	17
Band 6	0	1	1	10
Band 7	1	2	3	6
Band 8	0	2	2	2
Band 9	0	1	1	1
Total Flashy	51	94	145	226

4.4 Electricity

Scottish Water incurs costs above those predicted by the econometric model for three reasons:

1. **The nature of the electricity network in Scotland:** Scottish Water is obliged to connect its sites to the electricity distribution networks of the monopoly distributors in Scotland, whose unit charges are higher than those in England and Wales.
2. **The nature of the water network in North West Scotland:** The geography and demographics of the Highlands and Islands necessitates many small water treatment works serving small communities. These can only be connected at low voltage and therefore incur higher distribution costs than typical England & Wales sites, regardless of the higher unit charges for electricity distribution in Scotland.
3. **The formulation of the Water Power Model (econometric model):** The model calculates predicted operating costs solely as a function of the work required to pump water in England & Wales. Scottish Water's water sources are very different from those in England & Wales and it therefore uses much less electricity for pumping. The model has no component to reflect non-pumping electricity costs above the proportion in England & Wales and so the application of the model to Scottish Water creates a shortfall in the predicted costs.

4.4.1 Distribution Use of System Charges

The higher use of system (UoS) charges in Scotland arise from:

- **Higher maintenance costs** for the local transmission and distribution companies of longer networks over a wide geographic area; and
- **Losses** forming a higher proportion of total generation in Scotland where electricity is transported over long distances and often at lower voltage

Scottish Power and Scottish Hydro supply the same large, predominantly rural area, with a low population density, as Scottish Water. This leads to maintenance costs in excess of those companies in England and Wales to be allocated between all customers.

Distribution and transmission charges are published and capped each year by OFGEM. Distribution and transmission costs in Scotland are amongst the highest in the UK for a typical low voltage site. Average UoS charges in England & Wales are around 27% cheaper than in the North of Scotland and **24%** cheaper than in Scotland as a whole.

Use of system charges account for around 38% of Scottish Water's total electricity bill. A significant element of Scottish Water's electricity costs is therefore due to higher UoS charges in Scotland.

4.4.2 Electricity – High number of small sites in remote areas

Scottish Water's sites are assigned to three broad tariffs depending upon the level of consumption¹⁵:

Block tariff: Typically aimed at small businesses that do not consume sufficient kWh to benefit from economies of scale. This tariff comprises simply a daily standing charge and a volumetric charge.

Maximum demand tariff: For moderate consumers of electricity. This tariff is more complex comprising a standing charge, a capacity charge, a maximum demand charge, a volumetric charge which varies by time of day or night.

Half-hourly: This tariff is designed for very large sites whose highest monthly demand exceeds 100kVA and which have meters that record half-hourly consumption. Each site has a different tariff structure depending on a number of factors that reflect the variability of consumption, the maximum demand on the system, the supply voltage and losses specific to that site relating to the distance from the transmission network.

Many of Scottish Water's customers in the North West live in small remote settlements. Therefore, Scottish Water's assets tend to be smaller but more numerous than in England and Wales. Individually, these sites use relatively little electricity. As a result, of some 4,200 supply points, approximately **3,500** are assigned to the more expensive **Block Tariff**.

Scottish Water has calculated that it incurs additional costs through higher costs inherent in taking electricity supplies for water pumping and treatment at many small sites in isolated rural areas in the Highlands and Islands.

4.4.3 Under estimation of econometric model

Scottish Water considers that the water power model underestimates energy requirements in Scotland due to the following factors:

- As a result of the high proportion of water drawn from upland sources, Scottish Water has the lowest pumping head by far in the British water industry; and
- Predicted Opex in the Water Power Model is determined solely by the energy required to pump water.

The Water Power Model is intended to predict costs for all the power used both for water pumping and other water treatment purposes. The model uses pumping head as a means of predicting all power opex and then **extrapolates** this to all electricity usage, rather than predicting just the pumping and having a separate explanatory factor for all other processes.

In Scotland approximately 70% of electricity used by the water element of the business is used for pumping, the remaining 30% is used for all other purposes, such as treatment, lighting etc. In comparison the average WASC would use around 85% of its electricity for pumping and only 15% on the non-pumping element.

Therefore Scottish Water is penalised because the model estimates that non-pumping costs will equate to only 15% of a company's electricity bill. In the case of Scottish Water, non-pumping costs form 30% of total electricity costs.

¹⁵ A few legacy contracts remain where supply points are still charged on the domestic tariff. However these amount to very little consumption or cost. Supply points are no longer assigned to this tariff.

Scottish Water considers that the element of the bill used for non-pumping will increase as a number of new water treatment works come into operation. New Treatment Works which are not yet included in current power costs include numerous membrane plants in the North of Scotland and the future Milngavie Water Treatment Works.

4.5 Sludge treatment costs – topography

Scottish Water serves an extensive geographical area that is considerably larger and more sparsely populated than the areas served by WASCs in England and Wales¹⁶. Treatment works are consequently spread over a larger geographic area and greater in number.

Sewage treatment works in rural areas generally serve small communities. It is not therefore economic or practical to construct sludge processing facilities at these sites.

Scottish Water is therefore required to transport sludge from many small rural treatment works to one of Scottish Water's 20 dedicated sludge treatment centres for processing and disposal.

Scottish Water is currently undertaking work to identify the additional costs that are incurred due to transporting sludge from rural areas. A full report will be submitted in October 2004

4.6 Purchase of Operational Materials

Scottish Water incurs increased operating costs associated with the supply of materials to rural locations. This is an additional cost, which is not incurred by companies operating in England and Wales.

Scottish Water incurs additional costs due to two principal reasons;

Increased cost of delivery of materials: The majority of materials and chemicals used by Scottish Water are purchased from companies based in England. Therefore there is an additional cost to the delivery of this material to Scotland. In addition to this, a large number of Scottish Water small sites are located in rural areas (for example in the North of Scotland) which will also impact on delivery and ultimately the charge to Scottish Water.

Quantity of materials: Scottish Water has a high number of small sites based in rural locations throughout the country. As such, the quantity of material and chemicals required by these sites are less than the average site in England and Wales would use. Whilst Scottish Water has mitigated costs through centralised purchasing of chemicals and materials, the unit cost of small batches is almost always more expensive than a bulk unit cost. Bulk delivery and storage is often unrealistic at these sites as many do not have adequate storage and would not be able to use bulk quantities within the useable lifetime of the product.

Scottish Water will submit a quantified claim in October 2004.

¹⁶ See Sections 2.1 to 2.3

4.7 Domestic Bad Debt, Billing, Collection and Metering

Scottish Water has a level of bad debt that is approximately £20million higher (over £8/household) than the average level in England and Wales. The level of bad debt has a significant impact on the assessment of efficiency by WIC.

Scottish Water recognises that bad debt cannot be considered in isolation from the related issues of billing, cost of collection and metering. In preparing an assessment of the impact of bad debt Scottish Water will assess the gains and losses in each of these areas.

Scottish Water considers that the levels of domestic bad debt are outwith management control due to the following factors:

- Domestic billing is undertaken by local authorities (LAs) and not by Scottish Water;
- The Scottish Executive has decided to maintain the current arrangements which link water charges with Council Tax band. These arrangements are dependent on the local authorities collecting water charges.¹⁷
- Collection performance of many LAs is poor (some have policies of not pursuing bad debt);
- Scottish Water has never had a power of disconnection;
- A company operating in a poorer area is more likely to encounter problems with debt management and is consequently likely to have higher levels of bad debt;
- The social Economic Report highlighted Scotland as being one of the poorest areas of the UK;
- The average water and sewerage bill may have a bearing on the level of domestic bad debt especially in poorer areas. This is made even more prevalent in the Scottish Water area as the water and sewerage charges are included in the council tax bill.

Scottish Water is currently investigating the total cost of the domestic billing process including the benefits and disbenefits of bad debt, billing, collection and metering. A quantified special factor will be submitted in October 2004.

¹⁷ Bill and Collection Order, A Consultation, The Scottish Executive, March 2004

5.0 Legal Context

5.1 Creation of Scottish Water

Scottish Water was formed in April 2002 from the merger of the three former Water Authorities: East of Scotland Water; North of Scotland Water; and West of Scotland Water.

Scottish Water is the only public sector water utility operating in Great Britain. It remains answerable to the Scottish Parliament. Scottish Water is expected to operate at the same level of efficiency as private sector comparators.

5.2 Scottish Legislation

Separate legislation exists in Scotland specifically governing the activities of the water industry in Scotland. This legislation includes the following acts of Parliament:

- The Sewerage Scotland Act 1968
- The Water (Scotland) Act 1980
- The Water Industry (Scotland) Act 2002
- The Water Environment and Water Services (Scotland) Act

Scottish Water's activities are also affected by other acts of Scottish legislation including:

- Land Reform (Scotland) Act 2003
- Freedom of Information (Scotland) Act 2002

6.0 Legal Special Factors

6.1 Sewer Laterals

Under Scottish legislation a drain becomes a sewer vested in Scottish Water at the point where it passes out of the curtilage of the household. Drains are the responsibility of the householder.

All private sewers connected to the public sewer were automatically vested in the Sewerage Authority in 1968 or on completion afterwards. The only private sewers in Scotland are those connected to private sewage treatment works.

In England and Wales, however, the responsibility for drains rests with the household (or households where a drain serves a number of adjacent curtilages) right up to where the drain joins the public sewer.

Scottish Water therefore has responsibility for 13200 km of sewer laterals due to additional obligations in Scotland compared with England and Wales.

The WIC has granted Scottish Water an allowance of £2m to cover the additional costs of operating these laterals. WIC has advised Scottish Water that this figure is based on an analysis using the Ofwat sewerage network econometric model. The model is generated using data from the English and Welsh Water and Sewerage Companies (WASCs) and therefore contains no sewer laterals within the data set. Scottish Water considers that the analysis significantly underestimates the true cost of operating sewer laterals.

DEFRA has recently undertaken a review of private Sewers and Drains in England and Wales¹⁸. This document highlighted the following problems with private sewers and laterals;

- Flooding due to structural defects of private sewers – 46,000 incidents per annum
- Flooding due to hydraulic inadequacy of private sewers - 20,000 incidents per annum
- Premature failure of pitch pipes - 50,000 incidents per annum
- Problems with lateral drains – 58,000 incidents per annum

The costs of dealing with problems affecting private sewers in England and Wales was calculated to be approximately £125m per annum.

The DEFRA consultation document has estimated the annual costs of operating these sewers to be 80p per metre.

Scottish Water considers that the DEFRA report supports its view that the allowance granted by WIC is insufficient to cover the costs of operating and maintaining sewer laterals.

Sewer laterals tend to be at minimum depth and are more susceptible to damage from other utility companies, tree root ingress and traffic. Sewer laterals are more prone to blocking than normal sewers due to their smaller diameter (typically 100mm) and because there is little flow to flush any potential build up of rags away. This is particularly the case where a lateral serves only one household. Clearing such blockages can be extremely problematic, especially if no disconnecting manhole exists. Screening blockage calls at the call centre to ascertain whether or not the blockage is in the private drain or public lateral is also extremely difficult.

¹⁸ Review of private Sewers and Drains in England and Wales, DEFRA, Jul 2003

Blockage clearance is the single largest task undertaken on these sewers. Relative to English and Welsh comparators, Scottish Water experiences an increased level of blockages leading to an increased level of internal and external flooding.

A quantified claim for the additional costs of operating sewer laterals will be submitted in October 2004

6.2 Freedom of Information Act

The Freedom of Information (Scotland) Act 2002 comes into force on January 1st 2005. As a public body Scottish Water will be bound by this act. The Freedom of Information Act 2000 (FOIA) for England and Wales does not affect the English and Welsh PLC's as they are private companies owned by shareholders. The FOIA only encompasses publicly owned bodies. However, the Secretary of State, under section 5, has the power to designate other private organisations that would not otherwise be covered by the FOIA but who exercise functions of a public nature. Ofwat¹⁹ is not aware of any plans by the Secretary of State to designate water and sewerage companies in England and Wales to be bound by this act.

The Act will affect Scottish Water in a number of ways that are not experienced by our counterparts in England and Wales.

The Act requires Scottish Water to:

- develop a publication scheme so that the public have visibility of the sort of information that the company holds;
- respond to any requests for information within 20 working days;
- notify an applicant where a request is for exempt information that is not required to be provided. The applicant may then request a formal review; and,
- set up records management policies as detailed in the associated Code of Practice.

The only similar act that English and Welsh PLC's are bound by is the Data Protection Act, 1998. This only applies to data of a personal nature. PLC's must maintain registers with The Office of the Information Commissioner for all information held of a personal nature, the reason for holding such data and the types of organisations that they may wish to disclose this information to. Scottish Water is also bound by this act.

Complying with the obligations of the Freedom of Information (Scotland) Act 2002 will result in Scottish Water incurring additional operating costs which are not captured within the WIC econometric models.

6.3 Political queries

Scottish Water receives a significant number of political queries from MPs. One factor that contributes to the numbers of such queries is the fact that Scottish Water is a public body and receives increased press and political attention as a result of this. English and Welsh PLCs do not face such an issue, answering mainly to shareholders. One other factor giving rise to the number of these queries is that there are more MPs (including MSPs) in Scottish Water territory than in the territory of any of the PLCs.

In Scotland there are 129 MSPs, 72MPs and 8 MEPs. This results in a large number of political queries and letters that require a Scottish Water response. A comparison of the number of MPs/ MSPs in Scotland compared with South West Water is provided in the table below.

¹⁹ E mail from XXXX, Ofwat to Scottish Water

	Scottish Water	South West Water
Number of MPs & MSPs	209	34
Number of Political Queries	1609	168

South West Water has one of the highest domestic bills in England and Wales and therefore would expect to receive amongst the highest level of political queries.

Scottish Water considers that overall it expends similar amounts of time to WASCs in responding to owner related issues.

In responding to the high level of political queries in Scotland, Scottish Water incurs additional costs that are not captured within the WIC econometric models.

6.4 Removal of Phosphorus and Nitrates

Scottish Water has a significant number of wastewater treatment works with tighter consents specifically requiring phosphorus and nitrates removal in comparison with companies in England and Wales. No specific allowance is made within the WIC econometric models for the costs of meeting nutrient removal consents.

0.8% population equivalent in Scotland is served by wastewater treatment works with phosphorus and/or nitrate consents where additional treatment is required at the works. In comparison, Yorkshire Water (a Scottish Water benchmark), serves 0.3% of population equivalent by phosphorus consented wastewater treatment works.

Scottish Water has 49 operational wastewater treatment works that include a phosphorus consent, or will have a phosphorus consent coming to force prior to 31st December 2005. Of these 49 sites, twenty-four works have required additional treatment to comply with the phosphorus consent. Twenty-five wastewater treatment works met the consent standard when it was introduced and therefore no additional costs were incurred.

Scottish Water considers that in meeting phosphorus and nitrates removal consents it incurs additional costs that are not captured within the WIC econometric models.

6.5 Crypto Standards

In December 2003 the Drinking Water Quality Regulator introduced the revised Cryptosporidium (Scottish Water) Direction 2003.

The revised Direction places obligations on Scottish Water to carry out analysis at frequencies determined by the overall risk assessment score associated with each water treatment works. This sampling requirement is in excess of sampling programmes undertaken by the companies in England and Wales.

The sampling requirements are set out in the Direction and are as follows:

Raw Water Sampling Requirements

Samples / Year		WTW Maximum Design Flow (MI/day)			
		≤ 1	>1 ≤ 10	>10 ≤ 50	> 50
Catchment Risk Score	> 55	12	26	52	52
	35 – 54	0	12	12	26
	< 35	0	0	12	12

Final Water Sampling Requirements

Samples / Year		WTW Maximum Design Flow (MI/day)			
		≤ 1	>1 ≤ 10	>10 ≤ 50	> 50
Catchment + Treatment Risk Score	> 55	52	104	365	365
	35 – 54	12	52	52	104
	< 35	12	12	52	52

The estimated cost of sampling to comply with the Direction is in the order of £2million per annum. This is based purely on the cost of the sampling and analysis and takes no account of additional opex associated with the installation of permanent cryptosporidium sampling units. The extensive monitoring regime will inevitably lead to increased opex through an increase in boiled water notices and extensive customer interactions. The extent of this impact is currently difficult to quantify.

In addition the Direction sets a benchmark standard for Scottish Water to attain in terms of operational best practice. These will undoubtedly have an impact on opex. However, the extent has not yet been quantified.

A quantified claim for the additional costs of complying with the Cryptosporidium (Scottish Water) Direction 2003 will be submitted in October 2004.