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22 June 2007

Re: RD10/07 Capital Maintenance Relative Efficiency Modelling for the 2009 Periodic Review

Dear George,

We welcome this opportunity to contribute to the development of your assessment of comparative efficiency of capital maintenance.

As you know we have major concerns about the efficacy of the models used to assess comparative efficiency and, given the nature of the industry and the diverse nature of water companies, it has proven very difficult to produce models that can be used to distinguish high/low costs from high/low efficiency. Given the weak discriminatory power of the models it would seem to us that there is more merit in consulting on how the output of the models is to be used in setting efficiency targets, especially in conjunction with implementation of the Common Framework.

I enclose our commentary on the report published with RD10/07. This should be seen very much as work in progress as we are constantly reviewing our efficiency. We will endeavour to get any further thoughts we have on your paper in good time for the workshop.

The main points that we would like to bring to your attention are:

- In the context of assessing efficiency of capital maintenance expenditure, the main determinants are number, size and complexity of above ground assets (both operational and non-operational) and length and condition of below ground assets.
- The timetable that you have included in section 4 of the report only allows June and July of next year for completing special factors, challenging any revised models or generating alternative models with a full dataset. Given that this is the time of the heaviest workload, on June Returns and production of Draft Business Plans for submission in early August, we would ask that you review this.

As you have requested in your subsequent letter we will inform Jayne Gregory in the near future of our attendees to your workshop on 11th July

Kind regards,

Peter Jones
Head of Economic Regulation

Capital Maintenance Relative Efficiency Modelling for the 2009 Periodic Review – May 2007

Dwr Cymru Comments (Numbering follows Ofwat report)

2 Issues to resolve

2.2 Dating of explanatory variables

You propose using 2002/03 data, which is a mixture of Asset Inventory, JR03 and additional data.

We have put in place a significant data improvement programme in recent years and, as a result, we have much better data than that which was used to populate the Asset Inventory. Another significant change is that, as a result of the major procurement exercise undertaken in 2004/05 we have changed the way we procure our capital maintenance. One particular consequence is that the number of sub-areas that are used to capture costs in the sewerage service have changed from 3 areas to 7 areas. If Ofwat wish to utilise 2002/03 as the base year for the asset stock and or explanatory variables we would have to undertake a significant re-assessment of the 02/03 data.

We see no reason why the current data could not be used. Dynamic data can be a useful measure of how effective capital maintenance spend is. The example in the report of the relationship between expenditure and number of bursts is a good case in point: a high burst rate and high spend in one year which resulted in a declining burst rate and a declining spend in subsequent years would be a sign of efficient spending. This could be explored using the time-series panel data modelling as has been suggested in the recent UKWIR report.

2.3 Benchmark Selection

Due to the nature of the sub-service modelling there should be a further cross check that the benchmark company is consistently performing consistently across all models, i.e. it does not derive its position from exceptional performance in some of the sub-service models and average or poor performance in the other models.

2.4 Special Factors

We have already shared with Ofwat, as part of the UKWIR steering Group, our suggestion for a robust methodology for submitting and agreeing special factors. A robust approach is especially important if symmetrical adjustments are being considered.

We agree that there should be sight of the econometric models before we are required to submit our claim. We also support the sharing of special factor adjustments.

If Ofwat do decide to make the special factor adjustments before modelling this would need to be added to the timetable to ensure that robust challenges to any revised data and/or modelling could be made.

3 Development of models

Before looking at the individual models it is useful to consider, what drives Capital Maintenance in general. The discussion is split into above ground and below ground assets.

General – What Drives Capital Maintenance

Non-infrastructure

The bulk of capital maintenance expenditure in non-infrastructure is on mechanical, electrical and instrumentation assets (ME&I). Therefore, assets that have greater proportions of ME&I equipment will generally have greater CM spends. This implies that the greater the complexity of the asset the higher the expected maintenance cost.

Numbers of asset per customer also has an effect as demographics and geography can dictate the proportion of the customer base that can be served by any one asset and therefore the size of that asset.

There is also a significant cost associated with non-operation (or abandoned) assets.

Infrastructure

Infrastructure maintenance is dominated by reactive work. Generally these are tasks such as bursts, blockages and leaks. Age, condition, soil types and potential ground instability can affect integrity of mains and sewers. Mains can also be affected by working pressures and water quality, for example. The total workload will be proportional to the length of the network.

3.1 Water Service

3.1.1 Water Resources and Treatment

The current measure of £/connected properties is crude. It makes no allowance for the number, size and types of WTWs and sources. Most capital maintenance in this section is in treatment works and pumping (inc intakes and boreholes). The simplicity of the existing model should be compared with the STW model (discussed later).

Work we have undertaken supports the argument that there is a reasonable relationship between capacity and expenditure. We would suggest a model based on the number of works, their mean capacity and the treatment level, all of which data should be readily available from companies and would fit Mark Stewart's five criteria.

Comments on the alternatives suggested by Ofwat:

Length of aqueduct – this would not reflect ME&I aspects;

Ratio groundwater to surface water – this would reflect the likely complexity of treatment but not the average treatment capacity or numbers of assets involved;

Number of dams and reservoirs – no real indicator of treatment requirements which are the main component of spend in this area;

Distribution input – as one of the main size variables it should still be tested in the modelling;

Proportion of DI from WTWs > 25 Ml/d – could account for economies of scale.

Changes to Table CM1

We agree that Percentage of MEAV in grade 4/5 can be removed (this applies for all of the subsequent references in other tables)

As stated above we would like to see capacity of works captured.

3.1.2 Water Distribution Infrastructure

The current model is probably not too removed from describing factors that affect CM spends particularly in that the model is spend per unit of asset.

Regarding the alternatives discussed –

Proportion of mains < 150 mm dia –

Number of connected properties per km – interesting that this resulted in a constant returns to scale not what we would have expected;

Comms pipe material – no longer used. This might have a small significance, useful to test;

Length of unlined iron and steel mains – might be useful if combined with age;

DG3 > 12 hours – We would prefer numbers of bursts;

Asset age – This would be a reasonable measure. We could provide fairly good data but would need consistency across the industry;

Asset condition – this is a good measure but need consistent assessments across the industry.

Changes to table CM2

For mains, a reliable assessment of age and/or condition – or more appropriately remaining life – would be helpful. As Ofwat say, this is difficult owing to differences in assessment between companies, quality of data and coverage of data. Similarly, asset age gives an indication of likely overall condition but data across the industry may not be consistent.

3.1.3 Water Distribution Non-infrastructure

We agree that the capacity of pumping stations is a major influence. There may be a need to account for numbers of WPS's to allow for influences of scale. Each WPS will have a panel, a building, valve sets, telemetry, etc. therefore it is not just the total kW that's important.

In the current model, the service reservoir capacity seems to have a high impact on results. Service reservoir maintenance should not have a large effect on overall maintenance. Moreover, it is difficult to see the current explanatory variable (SRV and Tower capacity [ml] / WPS capacity [kw]) has anything other than the result of data-mining.

Alternatives suggested by Ofwat –

Connected properties – We cannot see how this could logically be an alternative to pumping capacity;

Metering – worth considering given the change in meters since 1997/98;
Water towers – these are clearly more expensive to maintain but probably not significant;
Proportion of small sites - This is a factor that needs consideration for reasons given above;
DI instead of kW – not reasonable for the same reasons as connected properties;
Age – has some effect on long life assets but probably not relevant for most ME&I assets;
Condition - this is a good measure but would need consistency across the industry. Moreover it is difficult for non-infra to summarise a complex situation.

Changes to Table CM3 – nothing to add at this stage

3.1.4 Water Management & General

We agree with Ofwat that this is a difficult area. This must be especially true for us with the outsourcing model. In addition, it doesn't really deal with just maintenance as several other aspects are included in the costs.

The current explanatory factor of proportion of households could also be construed as the result of data-mining

Regarding the alternatives discussed –

Length of potable mains – why only potable?;
Households billed, etc. - All right as an alternative to customers or properties; a total size variable would make more sense than the current explanatory variable;
Number of offices and depots, etc.

Changes to Table CM4 – nothing to add at this stage.

3.2 Sewerage Service

3.2.1 Sewerage Infrastructure

The PR04 model seems to cover the important elements. Length of sewer, some indication of CSOs and the proportion of critical sewer seem realistic drivers.

Alternatives suggested by Ofwat –

Proportion of critical sewers in condition grades 4&5 – this would be helpful but need consistency across the industry;
Section 24 sewer – inconsistent data across the industry would be a problem. Also, I'm not convinced it's relevant. What might be more important in the future is an indicator for the private sewers we will have to take over;
Sewer collapses – this would be a useful addition;
Proportion of brick sewer – included in critical sewers; so not needed.

Changes to CM5

No suggestion is made (as in the water section) by Ofwat related to condition or age, Whilst these might prove to be inconsistently measured across the industry, condition, at least might be useful.

3.2.2 Sewerage Non-infrastructure

This should be similar to the water situation except that the equivalent to service reservoirs is not needed. Ofwat have a unit cost model at present utilising the number of stations. From an assets/engineering point of view the capacity of the SPSs is just as important as the number. Costs of equipment rise according to the size and complexity of pumps, panels, etc.

Alternatives suggested by Ofwat –

Average pumping station capacity – this would be all right if combined with some overall size factor such as number of SPSs or customers;

Connected properties per pumping station – This would be reasonable if combined with a SPS size factor;

Proportion of SPS in size bands – This might be helpful if combined with overall capacities.

We would like to see some combination of capacity (kW) and numbers of SPSs used in the model.

Changes to CM6 – Nothing to add at this stage

3.2.3 Sewage Treatment

The PR99 model appears to give a better spread of parameters than the PR04 and 2005-6 models. Interestingly, the R^2 is better too. We would favour reverting to the PR99 parameters, they provide measures of treatment complexity, size of works and numbers of works.

It is also interesting to compare the WTW and STW models. There is a significant difference in complexity of models whereas there should be similarities based on treatment given and capacity.

Regarding the alternatives discussed –

Split tertiary to highlight complex treatment (e.g. UV) – this seems sensible in view of the vast range of tertiary treatment types;

Number of SPSs – Difficult to see how this is a factor in treatment. The number of terminal SPSs might be a minor factor but unlikely to be significant;

Odour control – we have the data but there may be inconsistencies across the industry. Probably worth consideration;

Consent standards – this should be reflected by treatment type.

Changes to CM7 nothing to add at this stage

3.2.4 Sludge Treatment & Disposal

The current unit cost model is based on £ / weight of dry solids. This is a reasonable main parameter although given the change in complexity of sludge treatment process since 1997/98 we think it should be bolstered by consideration of treatment process type and number of assets.

Regarding the alternatives discussed –

Disposal route – this affects the degree of treatment and hence influences costs. Something like this should be included although it would be preferable to use treatment process;

Treatment process – as above this would be a useful addition;

The period of expenditure – averaging out over a period is all right provided the technology is representative of the short term future. That is, are we comfortable that sludge treatment assets in 1998-9 are similar to those we will use next year?

Possibly not;

There is no measure of numbers of assets in the model which we would like to see.

Changes to CM8 – Capture Treatment Process

3.2.5 Sewerage Management & General

As with Water M&G, this is a difficult area and is especially true for us with the outsourcing model. In addition, it doesn't really deal with just maintenance as several aspects are included.

4 PR09 Workplan

We are very concerned that the timetable only allows for June / July 2008 for companies to:

- Review any new models;
- Do their own modelling work with the Ofwat dataset; and
- Prepare Special Factor Claims.

This a short period of time to undertake any one of these with any degree of thoroughness let alone all three, but it also coincides with the completion of the June Return and the finalizing of the Draft Business Plans. We would urge you to release the data as soon as it is ready and undertake the modelling in a collaborative manner during April and May.

Dwr Cymru
22/06/07