

## C3 Asset Inventory

### Changes from the draft Business Plan

Where Company cost models have been used for the purposes of GMEA valuations, these have been updated to reflect the latest version in line with the Company's C2 Cost Base submission.

Where other models have been used on-costs have been applied in line with the Company's C2 Cost Base submission.

The Company has reviewed its net MEA valuations and improved links between the C3 condition grade and remaining useful life assumptions to its B3 Capital Maintenance modelling.

The Company is assessing net MEAv on the basis of remaining useful life (i.e. Type A assets) for all assets for which a condition grade is reported. Type B assets (life extended) and Type C (book life) are now used for a much smaller group.

Two significant mistakes have been corrected for the Sewage Treatment Works (STWs) and Sludge Treatment Centres (STCs) valuation.

Water Tower size bands corrected.

One Sewage Pumping Station (SPS) removed from size band 1.

Rework of the condition grade as %GMEA to reflect the application of the updated cost models.



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## Reporting Requirements

### Material assumptions

The audit of the information submitted by the Company shall be such as to ensure full exposure of all material assumptions that the Company has made.

Material in this context shall be taken as any assumption that singly or in combination with other assumptions would, for example:

- cause the outputs from studies linking the state of the assets with service to customers and to the environment to significantly increase or decrease company projections of capital expenditure; and

Although the Company has made some assumptions in the derivation of condition grades for the purposes of the asset inventory, in the majority of cases it has not used condition alone to drive its projections of capital expenditure.

In deriving its Table C3.1a mains profile, the Company has chosen to extrapolate a sample of its pipe data (for which all required attributes are present) to reconcile with historic June Return burst frequency data. We describe this in more detail in our commentary (which corresponds to the Company's headings).

The Company's GIS data holds individual pipe segments as sections that do not necessarily correspond to a complete pipeline i.e. short pipe lengths. Therefore the scaling up of the very short pipe lengths to reconcile with June Return data means there is a risk that the profile of condition grade arising from the cohorts analysis could be worse than reality. This does not impact on the Company's proposed investment on water mains as the approach used for the cohorts analysis is different and described in detail in Part B3 commentary on DEAM.

Therefore in this context we do not consider there are any material assumptions that apply. We have disclosed a full list of assumptions later on in this commentary.

- cause a significant change in the allocations to size (or asset type) band, or condition grade in Tables C3.1 and C3.3.

With reference to the issue with Table C3.1a outlined above, we consider the assumptions used in the extrapolation used by the Company in its cohorts methodology for water mains to be the only material assumption potentially affecting the condition grade profile in Table C3.1. However, as we explain in subsequent sections, we do not consider it to have a material effect on the Company's investment plan.

The Reporter shall also comment on any material omissions, including the consequences of the omission.

We do not consider there are any material omissions in the Company's final Business Plan submission for C3.

The Reporter shall:

Disclose (if not fully exposed by the Company) the material assumptions and company policies that underpin the data submitted in Tables C3.1 and C3.3, and the scope and extent to which these have been challenged by the Reporter and/or the auditor;

In its commentary the Company has listed all its material assumptions for its final Business Plan. In Appendix B we have summarised all the assumptions made by the Company in its draft Business Plan along with our key challenges, and commented on the extent to which we consider they have been addressed or have been demonstrated as not being material. This aligns with Appendix D of the Company's commentary.

For completeness we have listed below our view of the material assumptions as applied Part C3 of the Company's final Business Plan submission. We have expanded the details throughout in this commentary, though we give an indication of our views:

There are no M&E assets older than 40 years (if M&E assets are identified with an age in excess of 40 years, the Company has assumed that they have been replaced and the data not captured so they are recorded as replaced in 1978). We have challenged this and based on the Company's explanation and justification consider the assumption reasonable. However, we point out we have first hand experience of operational M&E assets in excess of 40 years in other companies, though accept these are not all that common.

There are no ICA assets older than 25 years (if an ICA asset is found within the system to be over 25 years old then the Company assumes it is a mistake and that the asset was actually replaced at some point but not captured in the system; in these cases the Company assumes a replacement date of 1993). We have challenged this and again based on the Company's explanation and justification consider the assumption reasonable

If historic expenditure representing over 50% of the asset value is identified in the fixed asset register, the date of this spend has been taken as the date built. We have challenged this assumption and although we do not consider it to be material in the majority of cases, the exception is the sewage treatment works where this has affected 11% by GMEAv of the asset base. We discuss potential implications further on in this commentary.

Remaining life assumptions link condition grade to remaining life where condition grade is given. We have challenged the rationale behind the assessments and consider the assumptions underpinning it to be justified from an engineering perspective as the Company demonstrated its validation against capital maintenance assumptions and engineering experience.

Remaining life assumptions for IS assets and vehicles are based on book life (Type C) or stretched life (Type B). We have not challenged these assumptions because we consider them to be reasonable due to the asset type and the Company's replacement policy for these assets.

A proportion of M&E value has been assigned to ICA in the absence of suitable models for ICA. We have challenged the proportional allocations; in response the Company has undertaken a sensitivity analysis which we have audited and consider demonstrates that the approach is justified on the grounds that even when the allocation was pushed to extremes, the effect was not material.

The Company has used the following assumptions to justify its charging of CCD on written down assets still in service:

- Some assets' operational lives have been extended through small scale maintenance without triggering a rebuild date.

- By extending asset lives, the Company is delaying the need for new assets and their associated CCD.

We continue to consider the Company view has merit.

Report any significant areas where the Reporter's opinion is materially different from that of the Company;

There are no issues where the Reporter's opinion is materially different to that of the Company.

Give a brief assessment of the quality assurance procedures used in relation to the production of the asset inventory information;

The Company has validated a large proportion of the information used to compile its Part C3 submission using different approaches. The existence of specific quality assurance procedures vary from informal consultation exercises to fully documented quality assurance procedures in line with ISO 9001:2000 depending on the area in question.

Validation of the central asset inventory list has taken the form of verification against Ellipse, JR08 data, site surveys and consultation with Operations staff. We have seen some evidence of this validation in the form of email communications, notes of meetings and site visit reports produced by the Company's consultant partners. We are satisfied that the quality control stage did take place.

A central document outlining the basis of the methodology for valuation has been produced, referencing other supporting documents. A review of the methodology and the Part C3 submission was undertaken by senior management to verify ownership of the process at senior level.

Overall we consider the Company's quality assurance in the production of its Part C3 submission to be good as the QA validation has been extensive. In response to our draft Business Plan challenges, the Company has significantly improved its documentation of its Asset Inventory process and methodologies and as such has a much better audit trail surrounding key decisions around differing opinions.

Disclose (if not fully exposed) and give an assessment of the reasons for changes in information submitted in the previous Business Plan (March 2004) and June returns since JR03 (2002-03); and

The majority of changes relate to better information, often obtained through survey. These include:

Alterations to the numbers of water towers reported at PR04 (removal of Halfway Inn Water Tower due to its abandoned status).

Correction of asset attributes (e.g. Restormel Sewage Pumping Station) in line with actual.

Correct assignment of Sludge Treatment Centres.

An overall reduction of 61 sites for water pumping stations due to reclassifications, abandonment and disposals.

Give an opinion of the Company's assessment of the accuracy and reliability of data submitted including comment on the role played by both company and Ofwat indicators in informing the confidence grading of condition and performance data for each asset group.

We have reviewed and discussed at audit the Company's explanations for its confidence gradings. From our systems audit and other supporting documents

supplied by the Company we are able to support the Company's assessment on the confidence grades of its asset data.

The Company's methodology for undertaking the assessments breaks each asset group down into processes. Company indicators at process level are used for condition (and performance) assessment which are then combined to give an overall condition grade. This approach gives appropriate weight to those parts contributing to the grade and, in our view, is consistent with the use of reliability band B. The Company's assessment is based on the Ofwat reporting requirements for PR09 Company guidance.

We have identified late on in the process an issue with one small WWTW assessment that has led us to question the reliability of observations on condition for this asset group. We have not concluded whether or not this is indicative of a wider issue and we will be investigating further as part of our normal June Return Reporting activities.

### **Company management information systems**

The Reporter shall provide her professional opinion as to the adequacy of the information systems used by the Company for the purposes of efficient management and operation of its assets.

Despite legacy issues associated with data collection and the Ellipse hierarchy, we consider the Company's information systems to be adequate for the purposes of efficient management and operation of its assets.

The Company has undertaken a complete review of its systems and an appraisal of whether it was collecting the correct data at appropriate granularity to inform its capital maintenance investment. This is described in Part C3 Section 3.4 and also Part B3. We have added our detailed commentary in our sections to match the Company's.

### **For underground assets**

Confirm whether company asset management information systems are consistent with the requirements of Condition L of the Instrument of Appointment; and

We confirm the Company's statement that its asset management information systems for underground assets are consistent with the requirements of Condition L of the Instrument of Appointment. The Company has developed additional risk assessment studies to supplement its programme of drainage area plans and zonal studies. We viewed:

- the systems,
- a live demonstration of the data contained within
- the process for updates

and can confirm the Company's statement that modifications and improvements to the networks are systematically captured.

Confirm whether the methodology being used to maintain and update company asset management information systems for all distribution mains for quality purposes (as set out in the DWI Information Letter 5/98), is both soundly based and satisfactory.

We can confirm that the methodology being used to maintain and update the Company's management information systems for all distribution mains for quality purposes (as set out in Bill Emery's letter of 1 February 1996 and DWI Information Letter 5/98) is soundly based and satisfactory.

### **For surface assets**

The Reporter shall review the extent of the coverage of company asset management information systems and comment on the Company report and the detailed information base underpinning the report. The Reporter shall also comment on the effectiveness of computerised records such as geographical information systems used by the Company, in informing decisions in respect of surface asset management.

For non-infrastructure assets the Company systems have been used mainly for validation at site level rather than at process or equipment level. We queried the Company as to why the management information systems were not used as the primary data source, with verification surveys part of business as usual. Our discussions with the Company on this issue leave us satisfied that this was not driven by a lack of confidence in the asset systems or the data within, but rather by the need to reconcile changes from the previous valuation at PR04.

We audited the methodology used to maintain the Company's management information systems, focusing on the update process for GIS (and the ongoing improvements to enable a better interface between Ellipse and GIS). We challenged the Company that the process is passive. During our draft Business Plan audits we witnessed more than one scheme over 12 months old on the backlog list for system updates and although these represent a small proportion of the overall waiting list (typical turnaround 1-3 months), suggest that more could be done to chase and follow up the backlog. The Company accepts our comments and has improved this step for its business as usual process. We believe this represents a significant step change improvement from the PR04 position.

For the PR09 valuation the feedback from survey work has been incorporated into a process for updating the Company asset data systems. We have seen evidence of this step and its incorporation into business as usual processes

Where the information on underground and/or surface assets is incomplete, the Company may have derived summary information on a statistical basis, by extrapolating the results of a limited number of surveys to cover larger sections of the asset stock. The Reporter shall highlight what coverage has been achieved through surveys, comment on company reasons for adopting this approach and confirm, or otherwise, that the approach is based on a sound methodology, using statistical expertise. The Reporter shall also comment on the robustness of the relevant sections of the Company's Business Plan.

The Company has derived 100% of its surface asset condition data from surveys although we make comments on the approach further on in this commentary.

The Company's coverage of its network assets with its corporate asset management systems is very good, particularly with regard to its clean water network. However, historic datasets are not always complete and as such many entries are missing pipe attribute data. This is due to historic complexities in the asset hierarchy on the Ellipse system. This has resulted in some extrapolation particularly in the cohorts analysis. In addition, where pipes have been replaced the Company systems do not automatically hold attributes such as material relating to the previous pipe. This has meant the Company has had a reduced dataset to work with for the cohorts analysis. The Company has extrapolated the complete dataset to match June Return figures.

The Company has developed with its partner consultant [Excised] a methodology for modelling condition of sewers based on its Sewer Location Modelling project. The methodology is partially based on Markov-chain. The methodology for inferring condition grade is reasonable. Depth, where missing, has been assigned an assumed value and this has been used with appropriate other parameters to drive the valuation.

We have viewed the Company's methodologies for statistical extrapolation and assumptions to be used in the event of missing data. The methodologies appear reasonable.

For Combined Sewer Overflows (CSOs), Emergency Overflows (EOs) and Other Sewer Structures inspection survey results were extrapolated using a number of methods including archive data, intervention assessment reviews (undertaken for the Capital Maintenance submission, B3) and other South West Water sources. We consider the result to be a reasonably robust assessment as we support the Company's proposals for these asset types in Part B3.

We provide more extensive comments in the following sections and in the section of our commentary that relates to the Company's.

#### **Summary asset inventory, condition and, for underground assets, age**

The Reporter shall summarise the Company's surveys of its asset stock valuation, condition, and summary age profiles as at 31 March 2003.

For PR04 the Company did not undertake an extensive survey exercise. A small number of surface assets were surveyed mainly for validation of the base asset stock. The valuations were based on a combination of:

- PR99 valuations inflated by RPI in accordance with the PR04 guidance
- TR61 cost models
- Site Specific Values (SSVs)

No Company specific cost models were used at PR04. Remaining asset life was calculated on the basis of remaining book life from installation date taken from the Fixed Asset Register, and from assumed condition profiles indicating a trend in worsening condition. We understand this had the potential to carry through errors not picked up in PR99.

The Reporter shall:

Comment on how the Company has derived the information required for Tables C3.1 and C3.3, including:

- the extent to which the asset stock has been re-surveyed;

The table included in the Appendix B of our commentary was developed during the course of our audits and we believe helps to summarise the Company's approaches for the different asset groups.

The Company has undertaken extensive surveys of its surface asset stock for the purposes of the asset inventory. The coverage reported in the Company's commentary is by asset number not by value, nevertheless, it demonstrates comprehensive coverage and verification. The asset stock assessment is based mainly on survey data for non-infrastructure assets with little extrapolation, therefore we believe the Company has reported a true reflection of its asset stock.

We have verified the presence of assets at a sample of sites (Wimbleball reservoir, Pynes WTW, Capel Lane WPS and Tavistock STW) and can confirm that for those

sites selected the processes itemised for valuation are present on site and the asset stock listing is a fair representation of the assets physically present.

- the extent to which asset surveys and the 2002-03 judgements of condition have been updated since 31 March 2003,

The Company has updated judgements of condition since 31 March 2003 for all assets.

- the method used by the Company for updating its 2002-03 judgements of condition,

For all surveyed surface assets, judgements of condition have been updated from survey observations.

For Emergency Overflows and Other Sewer Structures, an assessment of worsening condition has been made by mostly extrapolating the PR04 condition.

For water mains the Company has used the cohorts methodology as outlined in the PR09 final Business Plan Reporting Requirements Company Guidance. The Company has used all its burst data. However due to a limited dataset carrying all the required attributes, some extrapolation has been necessary. We discuss this further in the section on Table C3.1a but in summary we believe the Company's approach to be a reasonable one for dealing with a limited dataset.

For sewers, sewer ancillaries and communication pipes the Company has based its methodology on modelling using sampling. We have reviewed the methodology and agree it is reasonable. We discuss further the validation of the techniques in the following section.

For water mains and raw water aqueducts the Company has used a cohorts based bursts methodology to update its judgements of condition. This is a change from draft Business Plan where it used a mixture of desk studies and non-destructive testing (NDT).

- the present coverage of company asset surveys,

We consider the present coverage of the Company's asset surveys to be very good, with 100% of surface assets surveyed, exceptions being Raw Water Aqueducts (10%), CSOs (90%), EOs, (20%) and Other Sewer Structures (10%). Sewers and water mains were not surveyed, other than routine CCTV for sewers to support the capital maintenance programme.

- the procedures, including any statistical techniques adopted by the Company to extrapolate the results of individual surveys to larger groups of assets; and

The Company has described its statistical analysis in its commentary and has included full details in its appendices.

The Company has used statistical extrapolation where it has not been feasible to obtain condition grade data.

- the procedures adopted by the Company to feed the outputs from the studies into the common framework for capital maintenance planning;

The Company has used the asset observations derived from its capital maintenance planning to inform its judgment of condition in many cases, such as for the large sewage treatment works. In other cases, such as clean water non-infrastructure

assets, the inspections (of civils assets) for the purposes of asset inventory have been used to inform the degradation models. Even where the condition grading approaches have been slightly different e.g. for water mains, it is the same base data that has been used. In the case of the latter, the Company has not used the C3 cohorts analysis to inform its water mains capital maintenance programme due to the timescales within which the Capital Maintenance model (Distribution Economic Assessment Model (DEAM)) was developed compared to the confirmation of the C3 reporting requirements.

Comment on any differences between the asset condition grading procedure used by the Company for this submission and that used by the Company for the compilation of Tables C11 and C13 of the 2004 Business Plan;

In the majority of cases (with notable exceptions being the water mains and sewage rising mains and sewers) the asset condition grading methodology has not changed significantly as it is based on engineering judgement based on the Ofwat guidance. The Company has given detailed explanations of the variances in condition grading between the two periods and it is clear which variations are due to differences in the methodology.

For surface assets the Company did not use questionnaires to inform condition grade, although for some asset types general guidance was issued. For the majority, observations on condition were based on engineering judgement & interpretation of the guidance. The Company removed observations of performance to inform condition for its final Business Plan as it was not clear from the audit trail whether indicators of performance were surrogates of condition or due to incorrect specifications.

Comment on how well asset observations used to assign condition grades align with those to inform business plans through application of the capital maintenance planning common framework;

The Company uses its observations from surveys to inform condition grade for non-infrastructure assets for deterioration analysis in many categories, which we feel shows an integrated approach towards data collection and application. Surveys for above ground assets were conducted to inform both condition for asset inventory and capital maintenance. Although some of the asset observation questions were more biased towards Capital Maintenance than the Asset Inventory, we are satisfied that the Company will be integrating both types of observations as business as usual.

We have identified our concerns that the Small Catchment Economic Assessment Model (SCEAM) for small sewage treatment works is considerably under-predicting the investment required at small sewage treatment works in our commentary for Part B3. We consider the links with asset surveys for the purposes of asset inventory could be better integrated in this area.

For underground assets we are satisfied that the Company's modelling of condition grade shows sufficient links with serviceability of the assets, even though the modelling methodologies for sewers and water mains used to inform capital maintenance planning are not the same as those used for asset inventory. This is because the Company's investment models use risk based approaches rather than indicators of condition grade alone. Observations of condition grade using the same base data are however used to inform the approaches.

Confirm that the Company has assigned condition grading of water and sewage pumping mains solely based on burst mains as set out in this guidance. Include

commentary on the sensitivity of the outcome to the Company's selection of cohorts and the Company's validation by spatial analysis. (The approach follows the methodology developed and presented in UKWIR Report No 08/RG/05/22 Volume 2 – Mains Condition Grading);

We can confirm the Company has assigned condition grade for mains and sewage pumping mains based solely on bursts.

The condition grade assessment for water mains and sewage rising mains has been undertaken in line with the UKWIR Report 08/RG/05/22 Volume 2 – Mains Condition Grading, using the Company GIS records as the basis for stock. The Company states that burst records do not give the specific point along a pipe section for the burst, only the pipe to which the burst is allocated. On this basis we support the Company's view that a spatial analysis will not necessarily yield any validation of the cohort methodology. However, through our B3 audits we have verified that the Company has undertaken an exercise to pinpoint burst location along pipe length with a reasonable degree of accuracy. This has been undertaken for approximately half of the Company's mains records; however, the assessment has been used for DEAM and potable water mains assessment rather than asset inventory.

We consider that the outcome to infer condition grading of these assets is reasonable, and that the Company's selection of cohorts has been as good as it could have been given the parameters and legacy data issues. It is important to note that a small number of cohorts yield the most burst data sensitivity. In addition, there are a number of cohorts of relatively short length that have a very low burst rate.

In order to meet the Reporting Requirements for PR09, the Company has used a smaller dataset that is complete, as legacy data issues mean that not all the fields required for the cohorts analysis have been populated in the Company information systems. This has invariably meant that the Company has ended up with a much reduced dataset than the reported June Return burst numbers. For this reason it has extrapolated the figures to reconcile with June Return reported numbers. The pipe unique identifiers or IPIDs used in the Company's GIS records mean that often there are very short pipe segments which, during the reconciliation to June Return figures and the scaling up to bursts per 1,000km, may indicate higher burst rates for that cohort than has actually been observed. There is the risk that the extrapolation may give rise to a higher burst profile than is currently being experienced for some cohorts although the total numbers remain the same.

Whereas this could be considered a material issue if the cohorts from the C3 analysis were used to inform investment decisions, the DEAM model used to assess distribution mains capital maintenance requirements (as described in Part B3) does not use the reconciliation back to June Return figures therefore is not affected by this potential issue. However, both models use the same source data from Company information systems. We can verify that this provides consistency between the two.

We are also supportive of the Company's view that the cohort methodology is not a particularly accurate way of inferring condition grades for its sewage pumping mains, due to the relatively low numbers of the assets within the Company. Other Companies, including those with larger rising main asset bases, have also struggled with the accuracy of this methodology, which does not appear sufficiently sensitive for sewage rising mains (aka sewage pumping mains). The Company has also elected to present condition grading based on the PR04 methodology for sewer rising mains to give a comparison with the PR09 methodology, which it believes to be more

representative of its profile. We confirm that the figures reported in Tables C3.3 and C3.4 relate to the PR09 methodology.

Additional commentary relating to the collocation of bursts to mains is provided in Part B3.

Confirm the figures that the Company has used for the nominal expected total number of bursts per year per cohort in Company guidance, in particular 1.0 for mains over 320 mm and not 0.1, shown in the UKWIR report (at page 57), which relates to 'significant mains' (mains for which the scale of the consequences of failure is significantly greater than for other mains);

The Company has used cohorts with a burst rate of 2.61 per annum for mains up to 321mm and 1.03 per annum for mains over 320mm. This is within the tolerances set in the Reporting Requirements.

Comment on difference between the mains condition profile by GMEA and that by length of main, which the Company has presented in their table commentary. Also confirm that the Company's a graph of cumulative annual average bursts (y-axis) versus cumulative mains length (x-axis) reported in the table commentary is aligns with the assigned condition grading;

The mains condition profile by GMEA and that by length of main match exactly for mains up to 320mm and those over 320mm. For mains up to 320 mm the bulk of assets (and value) is in Condition Grade 1 ([Excised]), closely followed by Grade 2 ([Excised]). For mains over 320mm all are in Condition Grade 1 with only 3 bursts experienced in the preceding 5 year period.

We confirm the Company has included a graph of cumulative annual average bursts versus cumulative length in its commentary, and that it aligns with the assigned condition grade.

Comment on the suitability of the grading approach and cohort selection criteria where the Company has elected to sub-divide grading, for example for significant mains;

The Company has not elected to subdivide grading.

Confirm the linkage and alignment between the Company's assigned condition grading of water mains with performance in respect of numbers of burst mains reported by the Company from JR04 to JR08. Note that it is possible there may changes to burst mains reported following new guidance on June return reporting from 2008. Include discussion with the Company the merit of revisiting historic numbers due to the new guidance to improve the quality of the grading (it is not proposed that JR data itself should be overwritten); and

The Company has always separated its records on bursts from fittings and bursts on pipes and therefore has always had good visibility on the differences, even ahead of the new JR Reporting Requirements. The Company was able to adapt to the new Reporting Requirements without changing its fundamental methodology, as verified through the course of our JR audits. We do not consider there would be much merit in the Company revisiting the historic numbers as the Company has promoted its investment plan on the basis of maintaining stable bursts on pipes, though we consider the Company could do this without too much effort if there was a requirement to do so.

Comment on the linkage between the Company's assigned condition grading of sewers with performance in respect of numbers of collapses and blockages reported by the Company.

The Company has used a modelling methodology based on semi-Markov chain but influenced by its blockage and collapse records. On this basis we have assessed that the reported condition gradings are consistent with the numbers of blockages and collapses.

The Company's methodology is significantly different to that used in PR04, where the worst condition along the pipe between manhole-to-manhole lengths was taken to be the condition grade, and we are supportive of the Company's view that the PR04 methodology exaggerated dereliction in sewers, particularly when compared to the numbers in PR99.

Reporters should also for Lines 39 in Table C3.1 and Line 36 in Table C3.3:

check that the sum of the lengths of main and sewer in lines correspond respectively to the sum of Lines 24, 25 and 26 of Table C3.1 and Lines 1, 2 and 3 of Table C3.3;

We have assumed this is a typo on the Reporter guidance notes and have undertaken our validation against Lines 38 Table C3.1 and 39 Table C3.3.

We have assumed there is a typo in the Reporter guidance referring to Lines 24, 25 and 26 of Table C3.1 and have therefore validated against Lines 21, 22 and 23. We can confirm that the sum of Lines 21, 22 and 23 of Table C3.1 does correspond to the sum of Line 38.

We can confirm that the sum of Lines 1, 2 and 3 of Table C3.3 corresponds to the total lengths of sewer presented in the age profile in Line 39.

confirm the Company has correctly identified the construction date in line with the guidance where the pipe has been relined; and

We confirm that the Company has correctly identified the construction date in line with the guidance where the pipe has been relined, although the Company has not had a historical policy of structural relining therefore the number of assets this affects is relatively small.

confirm the confidence grading by assessing the process through which the date constructed profile has been derived by the Company, with reference to the amount derived from sound records and on how well the Company has derived the date constructed grouping where the data is not specifically attributed on records.

A very low percentage of the sewerage asset records contained valid construction date data. The Company's partner consultant [Excised] has derived constructed dates for missing data based on epoch, inferred from date of construction of surrounding housing. This is a reasonable assessment for gravity sewers (less reliable for rising mains). We also agree with the Company's confidence grading in this respect.

For water mains the Company has not specifically commented on its methodology for assigning date constructed. On the basis of our audits we can confirm that the Company's systems have 100% coverage of construction date data on potable mains, and therefore infer that that the age data has been taken from the Company asset information systems.

## **Changes in asset lives**

The Reporter shall comment on any inconsistency between differences in asset lives used by the Company for accounting purposes to establish the net MEA value and those lives also used by the Company for the purposes of taking decisions in respect of asset renewal or replacement.

The Company has a defined set of financial book lives for groups of assets which are used for both project level and financial assessments. These are applied when the asset is capitalised and both the HCD and initial CCD charge are calculated on the basis of the same book lives (although the asset spend will be averaged for the purposes of CCD). Once an asset has undergone a revaluation, it may have its asset life reassessed as part of that process, at which point the CCD calculation will be based upon remaining useful life.

Our draft Business Plan audits of Parts C3 and B3 highlighted some discrepancies between the asset lives used for accounting purposes and those used to assess remaining useful life, particularly those used to inform Part B3. For example, the book life for ICA assets is 7 years but the Company is working on 10 - 15 years for capital maintenance financial projections. Other inconsistencies include meter asset life (12 years against 13 years used for capital maintenance), Ebco boundary boxes (60 years against 40 years suggested for capital maintenance, pending verification) among others.

Some of these discrepancies are acknowledged as they may be related to minor changes in company policy or in some cases the nature of the asset and its application may require an alternative approach. We have discussed these with the Company and in some cases the asset lives have been changed for the final Business Plan, for example, EBco boundary boxes have been confirmed as 50 years (based on manufacturer's recommendations) for capital maintenance purposes. The Company still uses a 60 year life for accounting purposes although we understand that the finance department is fully aware of the asset lives used for capital maintenance purposes. For meters, the Company still uses 12 years for accountancy purposes although the asset life for capital maintenance has been revised to 15 years following our draft Business Plan challenge to the Capital Maintenance metering spend.

For the purposes of calculating remaining useful life for the net MEAv, the Company has validated its assumptions against the capital maintenance modelling for assets where a condition grade has been assigned. Even though an exact match is not feasible, the Company has made some adjustments to the remaining useful lives used and this is reflected in its commentary. Based on our audits we consider the Company has matched the remaining life assessment with its B3 modelling as well as is reasonable.

We have discussed with the Company the assumptions based around asset life extension. For the purposes of clarity we refer to cases where the asset has been fully written down (in HCD terms) but is still in service, i.e. Type B assets in the methodology the Company presented at draft Business Plan. The Company is no longer using Type B designations for assets where a condition grade is assigned for the final Business Plan; however, the assumed replacement for assets of a certain age is still being carried out. The latter is used by the Company mainly for ICA and M&E assets where obsolescence would trigger a forced replacement even though

the asset may still have a remaining useful life. Through our final Business Plan audits we gained a better understanding of the Company's position on this, which generally seems well founded although it is difficult to point to non-anecdotal historic evidence of real replacement that has been forced by obsolescence for M&E assets (for ICA the case links in with capital maintenance far better). We discuss this in more detail further on in this commentary.

### **Changes in asset condition since 31 March 1993**

The Reporter shall comment on:

The Company's explanation of changes in the proportions of asset value in the asset condition categories from the 1992-93, 1997-98, 2002-03 positions reported in the 1994, 1999 and 2004 Business Plans. In particular, attention is to be given to assets that have moved into and out of condition grades four and five in Tables C3.1 and C3.3, where this is suggested by the Company to be attributable to better information quality or asset deterioration.

Changes in GMEAV have been attributed to asset disposals, new assets constructed, reclassifications (of intake and source PS within WTW), increase in size / capacity, increases / decreases in replacement costs as appropriate. Therefore in response to the Reporting Requirement, the movement between grades is thought by the Company to be attributable to a mixture of deterioration and better information quality (through validation as a result of site surveys).

We support the Company's explanation. Since draft Business Plan we have clarified a potential discrepancy regarding the allocation of borehole sites across water treatment works and source pumping stations and are satisfied that the Company is reporting this in the correct manner.

The Company's assessments for changes in condition grade relating to changes in methodology are discussed in the section below. Generally we support the Company's explanations for the movements between condition grades. We have highlighted one potential issue regarding the condition grading of small sewage treatment works which the Company is currently investigating, which could mean there should be more assets moving into condition grades 4 & 5 than the Company's assessment. As we did not identify this until late on in the process, we cannot conclusively say whether it is a one-off or reflective of the Company's assessment of small sewage treatment works. We describe this issue more fully later on in this section.

The Company's reasons for differences between asset condition assessed from revised grading systems.

We fully accept the Company's reasons for the differences in condition grades based on the revised methodologies, particularly in the case of water mains, sewage pumping mains and sewers.

The condition profiles in Tables 3.2 and 3.4, explain the nature of and comment on the effectiveness of the Company's intent for the five year expenditures on each of the asset groups. (We have reproduced these from June Returns Tables 32 for Base Service which is expressed in Tables 3.1 to 3.4 as a percentage of GMEA.) Are the outcomes for 2007-08 better or worse than the Company was aiming for? Is the Company making best use of the expenditure, could it have been done better and what were the constraints? What interdependency exists between preservation and enhancement expenditure?

Based on our audit of B3, the planning objective for each asset category is clear. For some asset groups e.g. sewage pumping stations, the Company has had to increase its expenditure in the current AMP over that planned to address serviceability issues. The condition grading profile of this asset group is seeing an increase in condition grades 4 & 5, and the Company feel that this is a reflection of its increased expenditure requirements in AMP4 We consider the Company's assessment to be justified.

How the Company's management of risk is reflected in changes to reported condition grading, by making reference to commentary in section B3. The Reporter should comment on the likely impact on the condition grading going forward and whether (or over what period) the Company's approach is sustainable.

Our view is that the Company's management of risk is not necessarily reflected by the changes in asset condition due to changes in both reporting and assessment methodologies for condition grading, compounded by the Company's risk assessment methodologies not being exclusively linked to condition grading.

We do not feel it is useful to try to comment on the sustainability of the Company's approach in isolation of the factors governing the detailed business case for investment as described in B3 and B6.

We do, however, highlight the potential issue regarding historic investment in small sewage treatment works raised earlier in this commentary and discussed in the assets survey section, which could indicate the Company's management of risk is not well represented by the condition grade profiles for these assets.

Comment on the Company's views on relationships between quinquennial capital maintenance expenditure and its proportion of GMEA and the condition grading for each group of assets;

In general, the Company has stated that the condition profile for its assets supports its quinquennial capital maintenance expenditure. In some instances e.g. clean water pumping stations, the Company has stated that its increase in condition grade 4 & 5 and gradually deteriorating condition represents the increase in capital maintenance expenditure modelled by CWEAM to maintain serviceability at the current level. Whereas this assumption seems reasonable, for this and other asset groups we emphasise the limitations of using condition alone to justify investment and a worsening trend in condition does not necessarily imply deterioration in serviceability.

We support the Company's statement that investment in assets for quality enhancement purposes in previous AMP periods has resulted in an increase in maintenance requirements for these new assets.

The Company's account of the impact on the state of the assets of both capital maintenance and new assets constructed as a result of quality and other enhancement programmes over the period, on asset condition; and state whether or not, in her professional opinion, the Company has, during the period 1 April 2003 to 31 March 2008:

- managed its asset base such that there has been no substantial change to the risk of service, non-compliance with statutory requirements; or
- through not having carried out sufficient routine or capital maintenance, created a distinct likelihood that there will be a subsequent need for increased capital maintenance in the next five years or future years.

The Company has managed its asset base so that serviceability has been stable, as confirmed by Ofwat 12<sup>th</sup> August 2008, therefore we believe it is reasonable to say

that there have been no substantial changes to risk of service and non compliance with statutory requirements.

However, we have some issues (as does the Company) regarding the basis of the methodology for capital maintenance for small sewage works catchments (SCEAM) and therefore cannot always use the proposed investment in Part B3 as supporting evidence of a deterioration in condition. We are concerned that the current capital maintenance expenditure proposals could be seriously understated for this asset type.

We discuss this further in our commentary in Section B3.5. We are concerned that the historic levels of under funding of small sewage treatment works capital maintenance may not have been picked up through the asset inventory asset condition grading process. [Excised]. The assets have all been assigned a condition grade of 3 through the asset inventory process, therefore this under-investment is not reflected in the condition profile. This issue is discussed further in the section relating to asset surveys.

Additionally, we consider that promotion of investment based on condition grading alone is not compliant with CFCMP and therefore a comparison of condition grade profile in isolation to the capital investment profile is not reflective of the risk-based approach encouraged by CFCMP.

#### **Modern equivalent asset valuation**

The Reporter shall:

Review the methodology utilised by the Company in performing the modern equivalent asset valuation;

The Company has used a combination of approaches (confirmed at audit) towards the valuation of its assets as a reflection of the spread of asset types within its ownership, available cost data based on recent construction projects within the Company area and constraints relating to physical location. Where possible the Company has attempted to use the cost models and approach that best represents the value of its assets. The Company has also taken the approach that its current assets can be considered modern equivalent assets and has therefore undertaken its valuation on a like-for-like basis.

For PR09, the Company introduced the use of its Engineering Estimating System (EES), which forms the centre of the Cost Base submission, for use in the valuation of its assets where possible. We accept that it has not always been possible for the Company to apply its own cost models for some asset groups due to a lack of recent cost models and we generally believe it has taken a pragmatic approach towards the valuation of its assets. Where the Company has had to rely on TR61 models, it has applied on-costs and Company uplifts in order to make them South West Water specific and representative of the Company.

Comment on the suitability of the Company methodology, giving the basis of that opinion;

Although we generally agree that the methodology is suitable, at draft Business Plan we suggested some methodologies were examined more closely, particularly:

- Boreholes
- Small sewage treatment works
- Use of SSVs e.g. for Intake pumping stations

### Cost sources

For boreholes, the Company has used TR61v7 as the basis of its valuation driven by borehole depth only. We challenged the Company on this at draft Business Plan as we consider that the cost of a borehole can be materially influenced by its depth, its material and its bore. The Company has insufficient cost data of its own to undertake the valuation of this asset type, therefore we consider the use of TR61 is a suitable alternative. The latest release of TR61 allows the development of the cost based on the bore in addition to depth therefore our challenge was directed as to why this was not used. South West Water does not carry data on bore therefore it has not undertaken the valuation on this basis. The Company has undertaken a sensitivity analysis for its borehole sites which concluded that the impact of using depth alone is not material. We have audited this and consider the Company's conclusion to be justified. Therefore, we consider the Company's approach to the valuation of boreholes to be suitable.

For small sewage treatment works the Company uses generic cost values per site (based on treatment type and valued using TR61). However, in some cases (septic tanks) there is a 1000% increase on the PR04 value. We think this has arisen because of the use of TR61 model for RBC minus circular humus tanks, RBC and standby generation which gives a higher valuation on the current version of TR61. Therefore for septic tanks the Company has reverted to the PR04 value, inflated by RPI. Generally, we consider that the methodology for small sewage works is reasonable and with circa 500 sites in this category, is an acceptable approach towards undertaking the valuation. At draft Business Plan we expressed concerns regarding the high variance on the PR04 valuation for septic tanks and suggested to the Company that simply uplifting PR04 costs for septic tanks might not be as accurate as implied in its draft Business Plan commentary. However, we accept this is a pragmatic approach towards the valuation and consider the Company's methodology for the valuation of these assets to be suitable. We consider that to introduce another cost source e.g. supply chain costs for septic tanks, would simply introduce a further source of variation.

For unique or unusual assets, particularly Intake Pumping Stations which tend to be bespoke in their configuration, the Company has used Site Specific Values or SSVs. These were also used in PR04, and their inclusion for PR09 is to enable a fast appraisal and also to enable a MEA to be assigned consistently. Our concerns are that SSVs were built up at PR04 and have simply been inflated to 2007/08 prices for PR09 which can give rise to compounding errors and loss of accuracy. However, the use of this method reflects that the Company does not have access to reliable cost data to allow the revaluation of these assets. Therefore, even though we may question the accuracy of SSVs, we accept that the Company's use of SSVs is reasonable for the purposes of the valuation within the constraints of available cost data. Therefore, although not ideal, we consider the Company's methodology for the valuation of intake pumping stations to be suitable.

The Company has undertaken extensive consultation with its costing department responsible for its Cost Base submission and has used a combination of EES and TR61 models for its valuation. Where TR61 models have been used the Company has applied these in line with its own guidance to make the costs South West Water-specific. At draft Business Plan we expressed concerns that the Company had not demonstrated consistency between C3 cost model sources and those used for its B3 and B4 submissions. We are now satisfied that the Company has tried to demonstrate consistency where possible and that where it has not been able to it is

down to the constraints of suitable cost models. Therefore we consider the Company's methodology to be suitable.

State whether the methodology was consistently applied across the asset base;

As there were different methodologies for different asset types, the Company has not applied one methodology consistently. We can, however, confirm that the Company has consistently applied each particular methodology within that asset group. We consider this is appropriate.

Comment on the suitability of any sampling exercise, providing the reason for that opinion, and stating whether and if so why the size of the sample is sufficient to adequately represent the total population of assets;

Where sampling has been used for the purposes of valuation, the Company has included its statistical sampling methodology in the Appendix of its commentary. We have no reason to question the basis of the sampling and consider the techniques to provide an adequate level of representation across the total population of assets. We summarise the areas where the Company has taken a sample based approach as follows:

- Combined Sewer Overflows (CSOs) and Emergency Overflows (EOs)
- Other Sewer Structures – Attenuation Tanks
- Raw water mains (for survey although condition grading was assigned on bursts methodology)
- Potable water mains (sample forced through availability of complete dataset)

Review the assumptions and limitations underlying the revaluation exercise, and comment on whether these are reasonable and explain the basis for your opinion;

We have already raised our main concerns earlier in this section.

Identify where the Company has made assumptions about a modern equivalent asset that is substantially superior in functionality to the current asset; review and comment on whether an asset with similar functionality to the current asset could alternatively be obtained at a materially lower cost than the Company has assumed in its MEA valuation;

Generally, the Company has assumed that the modern equivalent asset would be the equivalent one that it would build or purchase today, but does not necessarily meet current process standards (which may be better). We consider this approach to be in line with RAG1.04, otherwise the Company would be at risk of valuing a modern equivalent asset that is substantially superior in functionality to the current asset, and could increase the value of its asset base on the basis of service capacity / capability it does not own.

However, RAG1.04 also refers to “modern construction techniques and materials”. This can mean substantially cheaper construction to deliver the same service, therefore there is the risk assets could be “overvalued” if they have been priced on the basis of the original construction techniques and materials.

We support the Company's logic on its statement for this assumption, and accept the Company's argument that the use of TR61 and EES, both with the appropriate Company uplifts applied, helps to mitigate this possibility. These cost models are updated to incorporate the latest available data, which inherently include current construction methods.

There is still the possibility that for some asset types an asset with similar functionality to the current asset could be obtained at a materially lower (or higher) cost. Companies often have very different views as to what would be deemed an acceptable modern equivalent asset, which may be linked to the risk profile that the Company in question chooses to take and any associated operational costs that are not reflected by a lower capex valuation.

Therefore, even though we have challenged the Company on this point, particularly with biological filters for sewage treatment, we concede that its approach is appropriate and any differences may not be material.

For small sewage treatment works, assets have been valued on the basis of generic process units for the required size. There is the risk that the selected generic modern equivalent asset may be substantially superior in functionality to the current asset. However, having viewed the rationale for process selection and comparing against a selection of existing processes, we consider the assessment to be reasonable and appropriate.

Review the Company's assessment of confidence grade for each asset class, and comment on whether you agree with the confidence grade assigned within Tables B7.13 and B7.14 for this exercise;

Our assessment is that the Company has completed this table in accordance with the Reporting Requirements and that its assessment of confidence grades is consistent with Ofwat's requirements..

*Table B7.13 Group 1 Water Resources Confidence Grade C4*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall. The low grading is because of the lack of suitable cost models for these assets.

*Table B7.13 Group 2 Water Treatment Works Confidence Grade B4*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall.

*Table B7.13 Group 3 Water Storage Confidence Grade B3*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall.

*Table B7.13 Group 4 Pumping Stations Confidence Grade B3/4*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall.

*Table B7.13 Group 5 Water Mains Confidence Grade B2 with exceptions*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall. The exceptions are Ancillaries (customer infrastructure) Line 16 for which a confidence grade of C4 is used – this is as expected for an asset on the customer side for which not much is known about – and Other Mains (Line 15) which is a nil return.

*Table B7.13 Group 6 Management & General Confidence Grade B2-4*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall. The exception is the Other category (Line 23) which is a nil return

*Table B7.14 Group 1 Sewers Confidence Grade B4*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall.

*Table B7.14 Group 2 Sewer Structures Confidence Grade C4 / B3*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall. The low grading on CSOs is reflective of the amount surveyed.

*Table B7.14 Group 3 Sewage Pumping Stations Grade B3*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall.

*Table B7.14 Group 4 Sewage Treatment Works Grade B3*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall.

*Table B7.14 Group 5 Sea Outfalls Grade C4*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall. The confidence grade of C4 is reflective of the lack of confidence in the cost models.

*Table B7.14 Group 6 Sludge Treatment Grade B3*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall. Where the Company has a nil return it has been assigned AX.

*Table B7.14 Group 7 Management & General Grade B2-4*

We agree with this on the basis that we have audited the methodology presented in the Company commentary for Part C3 which also reflects this assessment of the group overall. The exception is the Other category (Line 23) which is a nil return

Explain whether you agree with the Company's assessment of the key drivers of change for net MEA detailing the rationale behind your decision;

We agree with the Company's assessment of key drivers for change in MEAv as provided in Tables C3.1, C3.2, C3.3 and C3.4, which the Company has referenced against Tables B7.13 and B7.14, with its detailed commentary provided against Tables B7.13 and B7.14, for which we have undertaken a detailed audit.

The Company has reported a net MEA value for infrastructure assets. This is because the figures have been carried through from the Part B7 tables which present the data as showing a value for Net MEA which is the same as for GMEA value. The differences in the gross and net valuation figures presented in this section are due to adjustments for the re-allocation of assets to another group, most notably the re-

classification of CSOs to sewer structures. This is shown in B7.14 Columns 14 and 15.

The principal reasons for material (+/- 10%) changes in Net MEAv are listed as follows:

#### Water Storage

The Company's assessment is *"The replacement costs have increased and this reflects the additional capacity of the remaining service reservoirs. The significant changes in the net valuations reflect those previously written down, those associated with the change in replacement costs and in relation to the asset lives."*

We agree with the Company's assessment as the assets were not surveyed at PR04. Surveys at PR09 have corrected asset capacity and the revaluation has also picked up enhancements / new assets built since PR04. This has resulted in the increased replacement costs and change in net MEA value (also the change in the Gross MEA value).

#### Water Pumping Stations

The Company's assessment is *"There has been a significant shift in the number of WPS reported at PR09 compared with PR04. In particular, a number of intake and source pumping stations have been reclassified with the WTWs. Abandoned, disposed and new assets contribute towards the reduction of 61 sites since PR04. This asset group is difficult to compare because of this change in the asset base."*

Furthermore,

*"The increase in the change of the net valuation reflects those assets no longer in use, those previously written down that have been assigned a longer asset life and those assets where the asset life assessment has been reduced. Further, a combination of asset life changes, asset stock changes and at a site level some increase in the kw, has resulted in a positive change in replacement cost"*.

We agree with the Company's assessment as the corresponding Gross MEAv shows a reduction whereas the net MEAv shows a great increase, reflecting the re-assessment of remaining useful life of assets which are in better condition than the previous assessment in PR04 implied. We discuss this significant relative change in more detail below.

#### Management and General – Water Service

The Company's assessment is *"The reduction in the replacement cost of the computers and vehicles has significantly reduced the GMEA value. This change in replacement cost is reflected in the reduction in the net MEA. This is offset by the change in asset life resulting in a net MEA that has changed relatively less since JR08."*

We accept the Company's assessment on the basis that the Company uses Type B assets to represent the remaining useful life of assets which are beyond their book life but still in operation.

#### Sewage Pumping Stations

The Company's assessment is *"The number of SPSs reported at PR09 together with an increase of the kw at site level has increased the gross MEA value of this asset group. The increase in the net MEA values reflects this change in replacement cost. The PR09 asset life assessment has increased the net value of those assets previously written down and asset lives."*

We agree with the Company's explanation for the change in net MEAv. We consider the assessment reflective of the remaining useful life re-assessment used by the Company on the calculation of its net MEAv. However, although the life-stretch assumptions for assets previously written down have been replaced with an assessment of remaining useful life, some assets in this category are believed to have assumed build dates as they are in excess of the 40 years assumed maximum for M&E assets. This has an effect on the net MEA valuation, although we do not consider it to be a material impact, on the basis that engineering judgement dictates there is a reasonable probability that this reflects what has happened in reality. We discuss the relative change between gross and net MEAv below.

#### Sewage Treatment Works

The Company's assessment is *"The change in the gross MEA value reflects those assets no longer in use and the change in replacement costs. The change in the net MEA value reflects those assets that are no longer in use, those previously written down and in relation to asset lives."*

We agree with the Company's explanation for the change in the net MEA valuation. We consider the assessment demonstrates the remaining useful lives of these assets are much less than predicted at PR04. We discuss relative change between gross and net MEAv below.

#### Management and General – Sewerage Service

The Company's explanation is *"The reduction in the replacement cost of the computers and vehicles has significantly reduced the GMEA value. This change in replacement cost is reflected in the reduction in the net MEA. This is offset by the change in asset life resulting in a net MEA that has changed relatively less since JR08."*

We consider the Company's assessment reasonable as it is reflective of some stock being in use beyond the end of its book life, therefore the relative change between gross and net MEAv will be less than a change observed through a change in the replacement costs alone.

Provide explanations where there is a significant relative change between the gross and net MEA position;

#### Water Storage

The replacement costs have increased on both the GMEAv and net MEAv. However, the replacement costs on the Net MEAv have increased at a proportionally higher rate than the GMEAv. This is reflective of the remaining useful life assessment of the assets.

#### M&G – Water Service & Sewerage Service

The reduction in replacement costs have had the biggest impact on the GMEAv, however, the net MEAv has increased out of step with this. This is reflective of a number of assets still in operation but that have had their book life extended for PR09.

Sewage Pumping Stations

There has been a large increase in replacement costs due to better information. However, there is a disproportionate increase on the net MEAv due to reassessment of remaining useful life to reflect the functionality of the assets.

Sewage Treatment Works

There has been a reduction in replacement costs for the GMEAv but a disproportionate reduction due to remaining asset lives. This is due to many assets having a shorter remaining asset life than assessed at PR04 (i.e. the remaining useful life has reduced from AMP4 by more than the expected 5 years) including some write-offs ahead of the asset being fully depreciated.

Provide quantitative and qualitative explanations as to how the CCD charge for both water and sewerage as been effected by:

(i) changes in gross MEA value;

We refer to our B7 commentary, with particular reference to the Company's Part B7 commentary Section 2 (and our corresponding comments) for details of how the CCD charge has been affected by changes in the MEA value. We summarise as follows:

The overall gross MEAv has not changed significantly; however, fluctuations have occurred at sub-service level. This has not materially affected the CCD charge. The changes to GMEAv at sub-service level (relative to the 2008 Regulatory Accounts) are as follows:

- Water service non-infrastructure 0.97%
- Water service infrastructure 3.47%
- Sewerage service non-infrastructure -3.77%
- Sewerage service infrastructure 3.6%

The impact on the CCD charge is relatively small.

(ii) changes in net MEA value; and

As above, we refer to our B7 commentary and the Company's Part B7 commentary Section 2 (and our corresponding comments) for details of how the CCD charge has been affected by changes in the net MEA value. We have summarised these as follows:

The overall net MEAv has not changed significantly; however, fluctuations have occurred at sub-service level. The changes to net MEAv at sub-service level (relative to the 2008 Regulatory Accounts) are as follows:

- Water service non-infrastructure 9.83%
- Water service infrastructure 3.51%
- Sewerage service non-infrastructure 0.97%
- Sewerage service infrastructure 3.86%

The overall net MEAv has not made a significant impact on the overall CCD charge due to the effect of new assets in AMP5. The effect of the revaluation is most visible in the early years as it does not have the masking effect of the capital maintenance and enhancement programmes.

Comment on the reasonableness suitability and robustness of the variations quantified within the tables.

We consider the reasonableness, suitability and robustness of the variations quantified in the tables to be as expected for the Company's methodology.

### **Condition grading based on mains length Table C3.1a**

The Reporter shall:

Comment on how closely the Company has followed the condition grading by mains length methodology and identify shortcomings in their approach;

The Company has, to the best of its ability, followed the Ofwat PR09 methodology as closely as possible. Limitations in the way historic data has been captured has meant that some inference has been required to reconcile burst figures back to June Return reported figures.

Comment on company's approach to grading by mains length to inform the Company's ability to target investment interventions;

The Company uses the condition grading by mains length as an overall indication of asset condition, however, it uses its DEAM model (which uses the same source data) to target investment interventions. The DEAM model uses burst frequency among other factors and a cohorts approach, however, the cohorts used in DEAM are not within the tolerances required for the C3 model. We consider the DEAM model reasonably robust and describe our views in more detail in our commentary for Part B3.

Confirm that the bursts reported in the analysis reconcile with June Returns;

The bursts in the analysis reconcile with June Returns; however, the Company has needed to extrapolate a dataset that contained the complete attributes for the analysis to reconcile with these figures.

Comment on the suitability of the Company's adjustment made for deterioration; and

The Company has not made any adjustment for deterioration in the C3 burst model.

Confirm that the Company has provided a graph of cumulative annual average bursts versus cumulative mains length as described in the guidance.

We confirm that the Company has included a graph of cumulative annual average bursts versus cumulative mains length as described in the guidance.

### **Company Specific Guidance**

The Reporter will confirm for the final Business Plan that capital maintenance expenditure, which had been included in PR99 and PR04 valuations, has not been included within the valuation. Capital maintenance expenditure should be removed so the Company does not over-value its assets.

We confirm that capital maintenance expenditure that had been included in the PR99 and PR04 valuations has not been included in the PR09 valuation. This was identified early on in the process and we are satisfied that the Company has removed this expenditure from its valuation.

The Reporter will provide an extensive list of changes to previous Business Plan (PR04) and June return data (from JR03), that has been used within the final Business Plan.

The changes between PR04 and PR09 are as follows:

Use of EES cost models where possible, and where not feasible the use of Company on-costs to make these costs Company specific.

Use of Type A assets only in the assessment of remaining useful life of assets for which a condition grade is reported.

Type B and Type C assets are now only used for assets for which a condition grade assessment is not held

Removal of capital maintenance expenditure from the valuation.

Adjustments to the asset stock for assets no longer in service.

Adjustments to the asset stock for new assets commissioned since PR04.

Adjustments to the asset stock as a result of asset surveys confirming discrepancies.

Revision of remaining useful life policies to improve alignment with those used for capital maintenance planning purposes; civils, M&E and ICA remaining life assumptions linked to condition grade.

Use of revised Ofwat PR09 guidance for condition grade assessments for infrastructure assets.

Reclassification of Source PS in line with changes in guidance.

Reclassification of CSOs into Other Sewer Structures.

The asset stock presented in Tables C3.1 and C3.3 has been either mapped from PR04 to the PR09 position and the changes in asset numbers understood, or are consistent with the JR08 reported figures. Where the Company has used June Return reported numbers dating from JR03, as in the potable mains condition grade profiling, it has reconciled back to the relevant June Return figures. This is described in more detail in section 3.1.2.

The Reporter will discuss with South West Water the assumed replacement of assets fully written down but still in operation for the purposes of calculating net MEAV. We would like the outcome of this discussion to be documented within the final Business Plan submission.

Please refer to the Company's B7 commentary and our associated comments for full details of how this is carried out.

Our outcome of the discussion is as follows:

At draft Business Plan the Company included Type B assets in its valuation, i.e. those which were fully written down (in terms of being beyond their book life) but still in operation for which there was no remaining useful life assessment. For Type B assets an extension of life was added as follows:

Civils - 27 years

M&E equipment - 10 years

ICA - 5 years

Although this was intended to be an indication that the asset was still useful, we were not satisfied with the arbitrary nature of the stretched life assumptions.

Since draft Business Plan, and in consultation with the Reporter, the Company has decided to move away from the inclusion of Type B assets for its final Business Plan where possible. All assets in service (including those outliving their book lives) are now assessed for remaining useful life where a condition grade is reported, and are now Type A according to the Company methodology.

However, Type B and Type C assets are still used for assets for which a condition grade assessment is not held, i.e. vehicles and IS assets under M&G.

For the purposes of the net MEAv calculation, the Company uses asset age plus remaining useful life as the denominator. In some cases it has identified assets with build dates that give the asset an unusually long life, and has therefore assumed that the asset has been replaced at some point but the replacement date has been missed. We have audited the basis of the Company's rationale behind these assumptions, which are based on forced replacement due to obsolescence, which we consider rational and reasonably reflective of what is actually experienced. However, we point out our experience of operational M&E assets in other companies that exceed the tolerances set by the Company, although these are not common. For these assets an installation date of 1993 (ICA) or 1978 (M&E) has been assumed to calculate the asset age portion.

In summary:

- Type A - Remaining useful life inferred from condition grade
  - o Net MEAv = GMEA x Remaining useful life/(Age + Remaining useful life)
- Type B - Remaining life added as a predetermined value for assets fully written down (in terms of book life)
  - o Net MEAv = GMEA x predetermined value /(Age + predetermined value) OR
  - o Net MEAv = GMEA x predetermined value /(book life)
- Type C - Remaining life as remaining book life based on current age
  - o Net MEAv = GMEA x remaining book life /(book life)

All assets that have a condition grade are treated as Type A.

Assets that have no associated condition grade assessment cannot be Type A and must be either type B or C. Hence vehicles and IS assets must be B or C as they have no associated condition grade.

Assets that have no associated condition grade assessment that have exceeded their book life but are still in service cannot be Type A or C therefore must be Type B.

Furthermore, if an assumed built date is used to infer the age of the asset, either because of substantial capital investment which means an assumed replacement, or as a result of an assumed replacement date of 1978 or 1993 for especially old assets, this affects the "current age" portion of the net MEAv calculation but not whether it is a Type A, B or C asset. The reason for this is that the remaining useful life would still be calculated from condition grade if it has one.

If an asset has exceeded its book life (i.e. is fully written down on the HCD register) and it has a condition grade it would still be treated as Type A.

The Reporter will seek evidence of verification of reasons for change in NMEAV values in the following categories for the final Business Plan:  
Water Storage

The Company reasons for change are described above in the section relating to changes in net MEAv.

We have verified this through our audits.

**Water Pumping Stations**

The Company reasons for change are described above in the section relating to changes in net MEAv. We have verified this through our audits.

**Sewerage Pumping Stations**

The Company reasons for change are described above in the section relating to changes in net MEAv. We have verified this through our audits.

**Sewerage Treatment Works**

The Company reasons for change are described above in the section relating to changes in net MEAv. We have verified this through our audits.

The Reporter will confirm their position for the final Business Plan regarding discrepancies between asset lives used for accounting purposes and those used to assess remaining useful life.

We are satisfied following discussions with the Company that the asset lives are as consistent as is practicable at this point. The Company has re-assessed its remaining useful life assumptions to better match the engineering life assumptions as described in its methodology, which we consider reasonable based on our audits. See below for further details.

The Reporter will also investigate further the basis of assumptions regarding assumed replacement for when the asset is older than book life for the final Business Plan. The Reporter will also review inconsistencies in book life and remaining useful life for accounting purposes. The Reporter has also identified a discrepancy where some civil assets have not had any changes to remaining useful lives.

Regarding the assets with no change to the remaining useful lives, we can confirm that this has since been altered as all assets have been re-assessed in terms of remaining useful life

The following differences between book life and engineering useful life remain; however, we confirm the Company is fully aware of the differences and has undertaken a reconciliation between the remaining useful life used to infer net MEAv from condition and the engineering useful life. Although there are still differences we agree with the Company that this is as close as reasonably practicable.

<b>Excised</b>			

\*depends on the application

At draft Business Plan we identified some civils assets without any changes to the remaining useful lives since PR04 e.g.:

- LYNTON\_WTW\_LYNTON
- RIALTON\_WTW\_NEWQUAY
- UTON BH\_WTW\_CREDITON

We now confirm that as the Company has reassessed remaining useful life for all assets with an associated condition grade, this has now changed and there should be no more occurrences of such assets.

### **MEA Revaluation**

South West Water has heavily relied on TR61 cost data. For the final Business Plan Ofwat would like the Reporter to evidence the extent to which the Company has tailored this costing tool for its own use.

The Company has tailored TR61 models for its own use through applying the on-costs and uplifts as outlined in its commentary. We have verified this through the course of our audits and also through tracking the valuation spreadsheets supplied by the Company for a sample.

### **Additional General Guidance**

Ofwat is concerned that where as a result of the MEA revaluation, companies have brought back into life – previously written down assets – CCD will be charged twice on the same assets.

Please refer to our commentary for Part B7 for further details on the Company's policy on CCD.

The Company's methodology takes account of Ofwat's requirements as set out in RD 27/03: Periodic Review 2004: Overall Check on the level of depreciation where Ofwat requires that *"In making projections of CCD, we expect companies to consider the serviceability and remaining lives of their assets and the implications this has for the timing of asset replacement. The asset lives assumed for depreciation purposes should match those assumed for operational purposes. This applies equally to the remaining lives for existing assets and to the projected lives for new or replacement assets."*

We have confirmed that the CCD charge has been calculated from the Net Modern Equivalent Asset Value (NMEAv), that the NMEAv has been appropriately derived from the Gross Modern Equivalent Asset Value (GMEAv) and that, wherever possible, the GMEAv has been derived from the Company's cost models, based on the Company's cost data and consistent with the Cost Base.

For the PR09 revaluation (as previously) the Company calculates the GMEAv of each process level asset based on process level costs curves. The NMEAv has then been calculated (in general terms) as:

$$\text{NMEAv} = \text{GMEAv} * \frac{\text{remaining useful asset life}}{\text{total expected life}}$$

This NMEAv then forms the basis of the Company's CCD calculation. The Company's overall methodology remains the same as used at PR04 and is consistent with the method used to derive the annual CCD charge calculated in the June Return Table 33. Each year the Company calculates the written down value (WDV) for each asset which is calculated by applying RPI for the year in question to the previous year's WDV (or NMEAv if in a re-valuation year) and then reducing the value by one year's worth of depreciation based on the remaining asset life.

Starting from the PR09 NMEA value (excluding land), South West Water calculates the depreciation for each asset for 2008/09 as above (although the valuation will not be activated in terms of the JR until instructed by Ofwat, expected to be for JR10).

The options for calculating remaining useful life are described earlier in this commentary, as are the options for calculating total expected life.

The Company's explanation in its C3 commentary is set out as:

*“Straight line depreciation has been applied to the gross MEA values to obtain the net valuation. The calculation for the net values for Type A assets is:*

$$\text{GMEA} \times \text{Remaining life} / (\text{Age} + \text{Remaining life})$$

*Type A assets have remaining life assessments based upon the model outputs for the Capital Maintenance analysis and the assessment of its condition. The condition grade effectively determines the expected life of the asset, which will be Age + Remaining Life.*

*If the Age + Remaining Life is less than the Book Life, the Net value will be lowered. The overall amount the customers pay through the CCD charge will also be lowered on that particular asset, representing a shorter asset life. However, a new CCD charge on the replacement asset will come into effect sooner.*

*If the Age + Remaining Life is greater than the Book Life, the Net value will be higher. The overall amount the customers pay through the CCD charge will be higher on this asset, representing a longer asset life. However, the CCD charge on the replacement asset is deferred.*

*Therefore for Type A assets the CCD is not charged on the same asset twice.”*

We note that the Company's approach is consistent with RD27/03 and the draft Business Plan Reporting Requirements, changes to which were not consulted upon. Unlike other Companies which take a straight line depreciation based on book lives, the Company's approach using remaining useful life is its **business as usual** approach incorporating an update to the NMEA<sub>v</sub> and remaining useful lives at each Periodic Review. We can understand Ofwat's concerns if companies' usual business practices are to take a book life, asset used approach to depreciation; to then assess assets on the basis of remaining useful life for the Periodic Review is inappropriate. However, where companies' approaches have always been forward looking, to remove the CCD charge so derived seems incorrect to us.

The Company does have book life expired assets (which would be fully depreciated in HCD terms) still in use, against which CCD is charged, although these assets are not 'brought back into life' as they don't actually 'run out of life'. The Company's approach to CCD allows for assets which exceed their book lives but are still operational by stretching lives at a revaluation. For clarity the CCD charge may exceed the straight line book life expected CCD charge although the Company would argue that it is not charging CCD twice, but is varying the CCD charge in line with revaluation and asset life experience (which we believe is consistent with RD 27/03)

We also note that we joined South West Water in presenting the Company's approach to CCD to Ofwat following PR04 when we fully explained the mechanisms

and the effects, which have been part of the Company's standard approach for many years.

Where companies have brought such assets into life, Ofwat will be allowing the NMEAV, but will not be allowing the associated CCD on such assets. We will confirm where such assets have been brought back to life, that no associated CCD has been included.

Please refer to our B7 Section 2 commentary for a detailed explanation of the Company's policy on CCD. We have repeated the main points here:

*"Unlike the draft Business Plan guidance, Ofwat's C3 final Company Guidance sets out that no CCD should be allowed where the remaining life was estimated to fall to zero before 2008 however at the MEA revaluation the asset was judged to have a greater life than was previously estimated.*

The Company's approach is consistent with the draft Business Plan guidance in this regard, but not fully consistent with the final guidance. However, we consider there to be merit in the Company's position, for the following reasons:

1. The Company does not carry out straight line depreciation. Instead, its approach is consistent with a symmetrical portfolio effect in which asset lives (and therefore CCD) are increased for some assets and reduced for others. Where asset lives are assessed as shorter than previously expected, the Company does not claim full straight line depreciation on these assets. It would therefore appear to be appropriate for the Company to receive more than full straight line depreciation on assets whose lives are extended. In this sense, the Company's method appears to be consistent with the general approach set out in Ofwat's C3 guidance for extending asset lives where they would not otherwise have been written off.
  
2. The Company has pointed out that some assets' operational lives have been extended through small scale maintenance without triggering a rebuild date. This has effectively kept the NMEAV higher than it otherwise would be. We consider it to be appropriate for the increased asset value obtained through this maintenance spend to result in a higher CCD charge. Indeed this is the basis for line 22 in Table B7.3.

We have carried out a simple validation exercise which has demonstrated the link between remaining asset lives and planned capital maintenance investment. The following service reservoirs have been identified as having a remaining useful life of 5 years or less:

Service Reservoir	Planned AMP5 capital maintenance from CWEAM (£k)
Excised	

Capital maintenance interventions are planned in the next AMP for all service reservoir assets assessed as having a remaining useful life of 5 years or less. This is likely to increase their NMEAv and may mean that they are assessed as having remaining useful operational life at the next revaluation.

We are therefore supportive of the Company’s approach.”

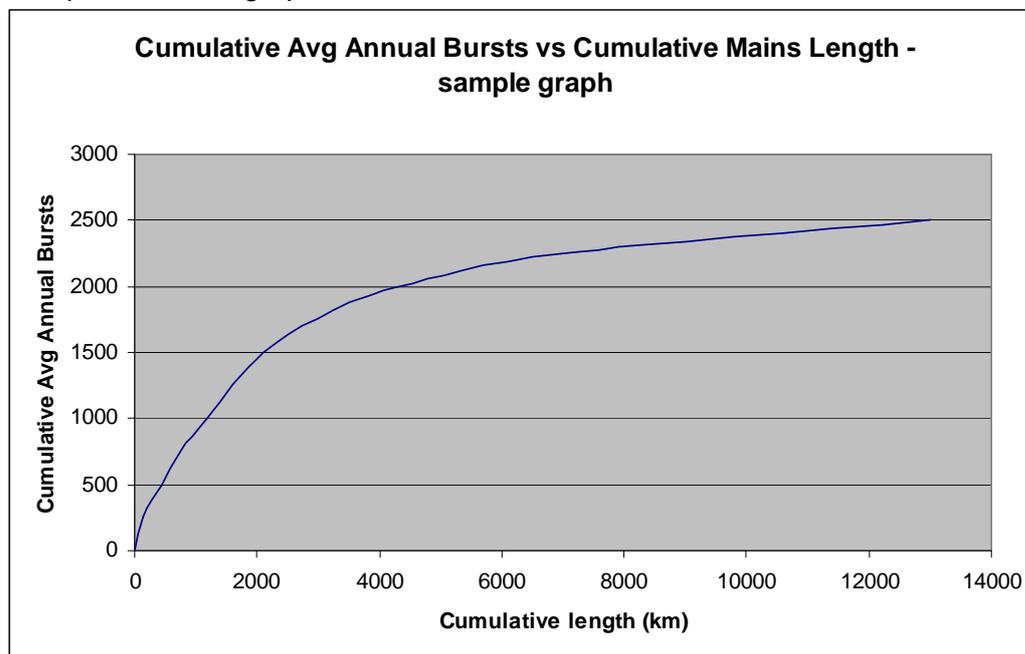
**WATER MAINS up to 320 mm DIAMETER**

**Generic Guidance**

In many of the CIS feedback Reports (but not South West Water’s) Ofwat wrote: "We have compared the amount of water mains renewals you propose with data in Table C3.1 and commentary and it seems to us that your investment targeting could be more effective. We will be looking closer at this and recommend that you review, revise downwards or strengthen your case for potable mains renewals up to 320mm diameter as you prepare your final Business Plan."

Ofwat has estimated from the data provided in DBPs that the median age of the England and Wales company water mains stock is some 44 years, and ranges from some 29 to 68 years. Similarly the median burst rate over the last 5 years is some 163 b/1000km/annum, ranging from 93 to 437.

In particular, Ofwat looked at the graph of cumulative bursts versus cumulative length of mains up to 320mm diameter. The graph should be this shape, with axes in the units shown in the example below (fabricated data). Please check that the majority of data points on the graph are left near the Y axis.



We note that the Draft Baseline South West Water CIS did not include this comment., we expect because the Company had not included the relevant graph in its draft Business Plan. We have audited the Company’s proposals for clean water infrastructure capital maintenance and any comments we have are discussed in Part B3.3. We do not consider that a comparison of the Company’s proposals for capital maintenance with the condition grade presented for the purposes of asset inventory

is an effective way of assessing the suitability of the Company's capital maintenance programme. This is because a risk-based Common Framework approach requires the consideration of factors other than condition grade.

We can verify that the Company has provided this graph in its final Business Plan Part C3 commentary and can verify that the majority of data points are near the Y axis. The appearance of the graph implies that there are more data points to the right; however, this is not the case as it is due to superimposed data points within the first quartile and short lengths with few bursts in the upper decile. The Company has marked on the median point on its graph to demonstrate this effect.

In addition to company specific guidance, please also challenge the nature of the intervention, because full structural renewal is not the only technology available. Also challenge the Company's approach to managing risk posed by the distribution of burst mains across the network.

We consider this is a question relating to water service infrastructure capital maintenance. We have provided a detailed commentary on the Company's approach to targeting mains bursts in our commentary for Part B3.3

We have challenged the nature of the intervention during our B3 audits, although the Company proposals are still for a structural renewal for work proposed under capital maintenance.

We have challenged the Company's approach to managing risk and are satisfied that the work considers severity of consequences e.g. numbers of customers affected and likely duration of interruption in addition to bursts when targeting replacement.

Where there has been a change or adjustment in the mains condition profile by length in the commentary to Tables C3.1 as a result of query or internal review, please check that the GMEA condition profile in Table C3.1 has been adjusted to correspond with it.

We verify this has been done.

### **Company Specific Guidance**

Graph 2 on p22 of section C3 of the DBP seems completely wrong. Whilst at first sight it is the right shape, Ofwat expects to see most data points close to the Y axis, whereas the SWT graph shows most data points furthest away from the Y axis. We will check that the Company has followed the guidance in the FBP and also takes into account the renewals during AMP4 by reference to the additional Table C3.1a.

The Company has reproduced the graph and it is now correct and demonstrates the data in the correct way. The median of all data points is now marked on the graph in the Company's commentary. The majority of the data points are close to the Y-axis although it may not appear so at first glance. This is because there are several cohorts of short lengths responsible for the majority of bursts and several superimposed points. There are also a number of cohorts with short lengths with very low burst frequencies to the right of the graph – this gives the impression that the majority of the data points are furthest away from the Y axis. We have audited the Company's graphs and data and verify that the graph does represent the data in line with the guidance.

The main aim of the small mains rehabilitation activity is to help maintain a stable risk profile through maintaining the annual burst rate against gradual deterioration. Perfect targeting of the proposed renewals would reduce bursts significantly. Some

companies are evidently able to target activity more effectively than others. The average age of the Company's network is some 36 years, well below the median, and the DBP the Company proposes to renew 0.8% (125 km) for base service) of the network in the period. The graph when drawn correctly will enable us to see how this length corresponds to bursts in the worst cohorts.

The Company's methodology for targeting capital maintenance in its small mains is aimed at reducing bursts but it also considers other factors, as described in Part B3.3, with the focus being on interruptions to supply rather than bursts. We are satisfied with the Company's modelling approach in DEAM for capital maintenance purposes. The Company was not able to directly transfer its DEAM cohorts to the asset condition methodology required by Ofwat as the tolerances did not fall within the prescribed guidance, but nevertheless, the methodology looks at other issues such as

- soil/environment
- propensity for soil creep/stress
- quality issues (turbidity, Fe etc)
- performance issues (low pressure, etc)
- feedback from rehabilitation coupon e.g. degree of encrustation, tuberculation etc.

The Company's methodology also accounts for likely duration of interruption and numbers of customers affected by the interruption when targeting mains for replacement.

Therefore, even though we consider the asset inventory approach suitable for benchmarking asset condition across all companies, we do not consider it an effective tool to inform capital maintenance for water mains. We do not consider that assessing the Company's investment proposals on burst rate alone is compliant with risk-based Common Framework principles therefore we would ask Ofwat to consider the Company's case for investment in water mains based on the Company's methodology in Part B3 rather than the cohorts analysis for Part C3.

Furthermore, the average age of the Company's distribution mains asset stock is reflective of the Company's historic policy for mains rehabilitation which was primarily driven by Section 19 undertakings to address discolouration and other issues, rather than targeting bursts. Therefore, reviewing the cohorts graph for Part C3 will not give a good indication of the robustness of the Company's AMP5 proposals for mains rehabilitation.

The Company's analytical process and targeting methodology is unclear. Please make that challenge, being sure to take account of the age and condition profiles of the mains and review company's approach to:

- the assembly of cohorts set out in the guidance for condition grading;

The Company has set out its analytical approach and targeting methodology in Part B3 of its commentary. We have commented on the methodology in our Part B3 Section 3 commentary and confirm that age and condition grading as inferred from burst frequency (although following a different set of cohorts to the C3 methodology) form part of the Company's assessment.

We confirm that the assembly of cohorts is as set out in the guidance for condition grading.

- spatial analysis validation of grading;

The Company states *"The Tynemarch report considered cohort and spatial analyses as alternatives, with cohorts being preferred. Therefore, we have focussed on the*

*cohort approach*". It has therefore not undertaken a spatial analysis validation of grading. The Company data systems only allow a burst to be assigned to the midpoint of the pipe therefore it has not considered this will yield any meaningful information.

We do not consider this to be material as in our experience many other companies also have this issue. Where companies are able to assign burst location more precisely, this doesn't necessarily mean it is more accurate as quite often the burst cannot be pinpointed and if the pipe is replaced, the burst location is lost.

Nevertheless, the Company has considered spatial information as part of its DEAM model. This is discussed in Part B3.3.

- deterioration modelling assumptions; and

Deterioration modelling assumptions are also discussed in Part B3 Section 3.

- choice of solutions available to optimisation process.

We discuss this in more detail in our commentary for Part B3 Section 3.

The choice of solutions in the DEAM model are based around open cut replacement. Structural lining has been considered as an alternative but discounted on the basis that the unit cost for open cut pipes in grassland is often comparative with structural relining (which can be significant, although the Company does not have much historic experience of structural relining).

All proposals under B3 are for structural work, with discolouration requirements covered by its enhanced service levels programme under B6. When it comes to detailed appraisal of schemes the Company has stated it will look for opportunities to use sliplining and other methods where the site specific factors allow.

For the B6 mains rehab proposals to address discolouration, a mixture of relining and replacement has been assumed.



## Introduction

The following commentary is laid out in accordance with the Company's commentary in order to provide clarity for the reader. Where we have no additional comment or we have already made our points in the Reporting Requirements section above, we have stated this in the relevant section.

## 1 Asset Stock

### 1.1 Sampling Exercise

The information presented by the Company on percentage of assets surveyed represents the proportion by number / length, not value, nevertheless, demonstrates good coverage by survey. The Company has undertaken extensive surveys for its surface assets in an extremely short timescale, resulting in an almost complete re-survey and revaluation. We commend the Company on this achievement.

We have, however, raised a concern regarding the accuracy of the surveys, particularly for small STWs, where we have identified one, Kenton / Mamhead (Starcross) STW, in an apparent state of near dereliction (based on photographs of peripheral assets taken for the security surveys) but with a condition grading of 3 assigned in the asset inventory. We have not had time to visit the site ahead of final Business Plan submission so we have not confirmed the photographic evidence. If confirmed (visit planned as part of the JR09 site visits) we will investigate whether it is a one-off or if this is representative of surveys across the whole of the asset group. We have suggested to the Company that it may wish to revise its procedures for asset surveys through standardised questionnaires in future. The Company is considering its position and we are assured it will be investigating as part of business as usual. We will further investigate this as part of our JR09 site visits

The Company used the PR04 list as the basis for its site list. The PR04 list was checked against Ellipse and updated with site survey data; the Company has evidenced its plans to feed back survey data into Ellipse and report on the numbers of changes.

We consider, despite our concerns in certain areas, that the methodologies used by the Company to update its judgements on asset condition for the asset stock profile are reasonable and represent a greater degree of accuracy than that used in PR04.

#### 1.1.1 Infrastructure

We verify the Company's statement and have nothing further to add to the Company's commentary.

#### 1.1.2 Non-Infrastructure Site Lists

We verify the Company's statement.

For the purposes of clarity we point out that the asset list used by the Company in its valuation at PR04 was updated using data from the Company information systems, supplemented with site visit observations. The Company has undertaken to complete a reconciliation of the final list with its corporate information systems as part of its

business as usual activities. This will feed into a review of data requirements in order to collect as much of these requirements as possible through business as usual activities in preparation for PR14 and beyond.

## 2 Revaluation

### 2.1 Gross MEA Values

We consider that the Company's development of EES since 2006 represents a significant improvement in the way it analyses and uses its cost data, leading to a consistent estimating tool and a systematic way of capturing its actual cost information. During the course of our audits we have developed a comprehensive understanding of EES and the cost models contained within.

The Company has tried to use EES where possible in the valuation of its assets though limitations with some of the cost models e.g. negative gradients, insufficient data points or simply lack of a suitable model has meant that it has had to consider alternatives. We verified the accuracy of a sample of cost models at audit.

We have included the following comment for the purposes of clarity over this table presented in the Company's commentary:

Asset Type	Process Type	Total value and % of the GMEA
Excised		

The percentages on the right refer to the use of historic PR04 values inflated by RPI where no suitable models were available. The percentages refer to the percentage of the GMEA value of the asset type not of the overall GMEA value.

In line with clarification note PR09 FBP/006 we confirm that the Company has included PRV costs in its water mains valuation in Line 21.

### 2.2 SWW On-costs

As verified at audit, we consider that the Company on-costs are consistent with those derived from the Cost Base and we can confirm they were used consistently within the revaluation.

The on-costs and uplifts applied to non-EES cost models have been applied in accordance with the (very comprehensive) guidance for the purposes of the valuation therefore it is our view that the costs can generally be considered South West Water specific, even where we have queried the original source.

## **2.3 Service Capacity**

We have no comments to add to the Company's commentary other than we consider the Company's approach to be acceptable given the features of its population base.

## **2.4 Net Values and Asset Lives**

We are satisfied with the Company's reconciliation of remaining useful life with engineering definitions used for capital maintenance purposes. We have seen evidence that the Company has attempted to validate the engineering judgements.

### **2.4.1 Type A Assets**

We confirm that all assets with an associated condition grade valued for the final Business Plan are Type A. Since draft Business Plan the Company has undertaken a reconciliation of the remaining useful life with those used to inform capital maintenance investment decisions, particularly with the CWEAM modelling process. Through the course of our audits we have had the opportunity to fully understand the Company's methodology and rationale behind the assumptions for the remaining useful life assessment and consider it to be robust.

We confirm the adjustments made to the Company's net MEAv valuation as a result of this review and are supportive of the impacts.

The Company has included a table summarising the changes to the draft Business Plan GMEAv and net MEAv arising from its improved methodology for the final Business Plan. We note that for Water Service assets the net MEAv has increased by 9% over its draft Business Plan value; however, much of this is as a result of changes to the GMEAv, which has increased by 7% over its draft Business Plan value. For Sewerage Service assets the GMEAv has barely changed over the draft Business Plan valuation (0.003%); however, the changes in the Company's remaining useful life assumptions have resulted in an increase to the net MEAv of 9% over the draft Business Plan value.

### **2.4.2 Type B Assets & 2.4.3 Type C Assets**

We confirm the Company has used Type B and C valuations for those asset groups for which there is no associated condition grade, namely IS assets and vehicles.

## **2.5 Analysis of the Date Built**

As outlined in our response to the Reporting Requirements, the Company has discussed with us the basis behind its assumptions for assuming a replacement of an asset where the date built held in the asset register is in excess of 40 years for M&E and 25 years for ICA processes. Although we have experience of companies with M&E equipment far in excess of 40 years of age, we accept that this is not common place. Therefore we are satisfied that these assumptions appear reasonable as they reflect experience of obsolescence-driven replacement for these asset types. Even though it was difficult for the Company to present firm evidence of this occurring, this

is due to the way historic capital expenditure has been recorded as often project data has not captured this requirement for a refurbishment. In our experience of the industry we believe the Company's assessment to be reflective of what happens in reality.

We note that wherever possible the Company reviewed the significant expenditure (over 50% of the GMEAv) in the fixed asset register and used this to review the built dates. This approach was based on preliminary discussions with the Reporter and correlated well with the D&E valuation classes for built date extensions. By doing this the impact of the arbitrary built date extensions since PR04 has been reduced. We consider the assumptions to be reasonable.

However, we note that for STWs (11.1%) this is quite a high percentage. In light of concerns we have regarding potential underfunding of capital maintenance and potential inaccuracies regarding condition grading on small sewage works, we seek to continue our discussions with the Company at the June Return.

## **2.6 Calculation of the Net Values and CCD Charge**

We are satisfied with the validations presented to us of the Company's methodologies for validating engineering judgements used to infer remaining useful asset lives. We are satisfied with the Company's explanation that this does not represent double charging of CCD.

## **2.7 Allocation of the M&E Cost Models**

This is consistent with what we saw at audit and are satisfied that the sensitivity analysis effectively addresses the issues we highlighted at DBP. We consider the methodology to be reasonable.

## **2.8 Revaluation and Confidence Grades by Asset Type**

### **2.8.1 Dams and Impounding Reservoirs**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.2 Raw Water Aqueducts**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.3 Water Treatment Works**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.4 Water Pumping Stations**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.5 Service Reservoirs**

This is consistent with what we saw at audit. We can verify that the cost curves for the Company cost models show some negative gradients which support the use of an alternative by the Company.

### **2.8.6 Water Towers**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.7 Water Mains**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.8 Communication Pipes**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.9 Meters**

This is consistent with what we saw at audit. However, we highlighted some issues at draft Business Plan on the apparent lack of consistency between asset lives used for valuation purposes, book lives and those used for calculating remaining useful life. We have discussed this with the Company and confirm that, in a change from the draft Business Plan, for capital maintenance purposes the asset life is now considered to be 15 years.

### **2.8.10 M&G Buildings**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.11 Vehicles**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.12 IS Assets**

The reference to PR04 at the start of the Company's commentary for this section should say PR09. .

We have nothing further to add to the Company's commentary.

### **2.8.13 Sewers**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.14 Rising Mains**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.15 CSOs**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.16 Other Sewer Structures**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.17 Sewage Pumping Stations**

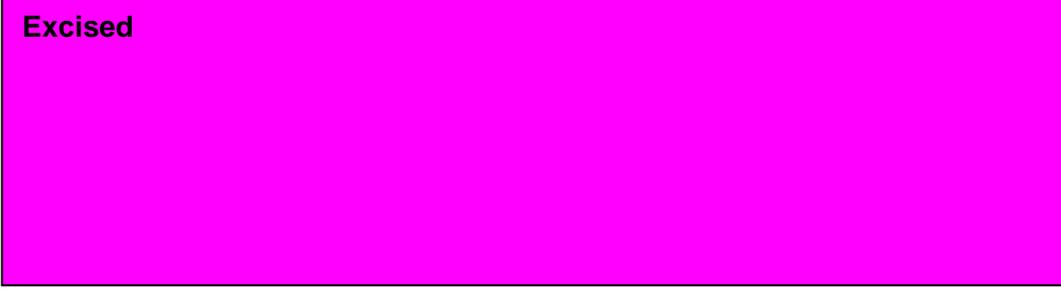
This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.18 Sewage Treatment Works**

This is consistent with what we saw at audit.

However, in section 1.1 we have drawn Ofwat's attention to a potential inconsistency in the small WWTW identified by a site survey

**Excised**



We have also raised concerns in our B3 commentary that the Company is likely to be materially underestimating its capital maintenance funding requirements for small sewage treatment works based on our assessment of the SCEAM model. The apparent situation at this STW appears to support our concerns. The issue has arisen late on in the PR09 process therefore the Company has not had the opportunity to fully address this. We can confirm that the Company is giving the matter its full attention and is considering its response to our concerns.

We have raised this for information although we have not used it to influence our opinion at this stage as we are unclear as to whether the effects are material.

### **2.8.19 Sea Outfalls**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **2.8.20 Sludge Treatment Facilities**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

## **2.9 MEA Confidence Grades**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

## **2.10 Key Drivers for Change in GMEAs and net MEAs**

We note that the Company has reported a net MEA value for infrastructure assets. This is because the figures have been carried through from the B7 tables which present the data as showing a value for Net MEA which is the same as for GMEA value. The differences in the gross and net valuation figures presented in this section are due to adjustments for the re-allocation of assets to another group, most notably the re-classification of CSOs to sewer structures. This is shown in Table B7.14 Columns 14 and 15.

## **2.11 Water Storage**

The Company's reference to "*additional capacity of the remaining service reservoirs*" is related to the improved survey data that has resulted in an adjustment of capacity at some sites.

## **2.12 Water Pumping Stations**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

## **2.13 Management and General – Water Service**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

## **2.14 Sewage Pumping Stations**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

## **2.15 Sewage Treatment Works**

This is consistent with what we saw at audit. We refer to our comment in section 2.8.18 of Part C3 of our commentary.

## **2.16 Management and General – Sewerage Service**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.



## **3 Condition Assessment Methodologies and the condition of Assets today compared with the previous assessment**

### **3.1 Water Service**

#### **3.1.1 Water Mains**

We confirm the Company's statement and observations.

#### **3.1.2 Cohort approach to mains bursts**

Please refer to the Reporter Guidance section and the Company Specific guidance section for our detailed comments on the Company's cohorts methodology.

##### **3.1.2.1 Table C3.1a**

This is consistent with what we have audited.

In Table C3.1a the Company has included fittings for the purposes of reconciling back to previous June Returns. However, for the purposes of clarity, it has also presented the snapshot table where it has reconciled the data to JR08 burst numbers. On the block below it has shown what the burst rate would look like if the reconciliation is carried out to JR08 mains lengths numbers (total mains). Some mains e.g. raw water mains have been excluded from the cohorts analysis therefore this reconciliation ties in with the total reported burst rate for JR08 i.e. 144 vs 144.5.

#### **3.1.3 Raw Water Mains**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

#### **3.1.4 Communication Pipes**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

#### **3.1.5 Dams and Impounding Reservoirs**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

#### **3.1.6 Water Treatment Works**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

#### **3.1.7 Service Reservoirs & Water Towers**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.1.8 Pumping Stations**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

## **3.2 Sewerage Service**

### **3.2.1 Attenuation Tanks**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.2.2 Combined Sewer & Emergency Overflows**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.2.3 Rising Mains**

The use of the cohort methodology has given rise to a significant difference with the sewage pumping mains. The Company has stated its view that the PR04 methodology was more accurate, as the current methodology grades the majority of the assets into condition grade 1. From our knowledge of other water companies we can confirm that this is a common complaint. We note that the Company's prioritisation model for capital maintenance under SEAM (Sewerage Economic Assessment Model) uses factors in addition to bursts to infer investment requirements.

This is consistent with what we saw at audit.

### **3.2.4 Cohort Analysis**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.2.5 Gravity Sewers**

The new methodology for gravity sewers reports condition grade more accurately as it does not over-report dereliction as the PR04 methodology did.

### **3.2.6 Sewage Pumping Stations**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.2.7 Sewage Treatment Works**

This is consistent with what we saw at audit. We refer to our comment in section 2.8.18 of Part C3 of our commentary.

### **3.2.8 Sludge Treatment Facilities**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.2.9 Sea Outfalls**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.3 Maintenance, GMEA and change in overall condition grading**

This is consistent with what we saw at audit. We have no further comments to add to the Company's commentary.

### **3.4 Asset Management Inventory and Systems Assurance Processes**

#### **3.4.1 Overview**

Confidence in clean water networks is high although many records have at least one attribute such as pipe material missing; with wastewater networks the Company has reasonably high confidence regarding location of pipes but less confidence regarding the material, depth, diameter and other attributes. We reviewed an assessment of missing company data on GIS; the most frequently missing attribute is pipe depth. The Company has stated high confidence in the populated attributes and the systems in place for ensuring updates give the Reporter reason to support its confidence. Company systems have been used to derive the infrastructure asset stock supplemented with amendments made for JR08 (to be subsequently added to the corporate systems) for sewerage.

#### **3.4.2 Key Developments in K4**

We have no further comments to add to the Company's commentary.

#### **3.4.3 Core Systems Supporting Asset Management**

We have no further comments to add to the Company's commentary.

### **3.5 The Ellipse Database**

#### **3.5.1 Equipment Register**

We have no further comments to add to the Company's commentary.

#### **3.5.2 Work Orders**

We have no further comments to add to the Company's commentary.

#### **3.5.3 Capital Projects**

We have no further comments to add to the Company's commentary.

#### **3.5.4 Other Databases Holding Asset Related Data**

We verify this is consistent with what we saw at audit.

#### **3.5.5 Asset Management – Surface Assets (Clean & Waste)**

We verify this is consistent with what we saw at audit.

#### **3.5.6 Asset Management – Infrastructure Assets (Water)**

We verify this is consistent with what we saw at audit.

### **3.5.7 Asset Management – Infrastructure Assets (Sewerage)**

We verify this is consistent with what we saw at audit.

### **3.5.8 Quality Assurance**

We have no further comments to add to the Company's commentary.

### **3.5.9 Key Issues**

This is consistent with what we have been presented with at audit. We would like to highlight work on the DG5 Flooding Other Causes tool which the Company has effectively used to bring together operational and asset data in a visual platform that has successfully been used to reduce repeat incidents from flooding other causes. We describe this in more detail in Part B3 of our commentary.

### **3.5.10 Key initiatives for K5**

In addition to the Company's commentary, we would like to highlight the Company's move towards better integration of its asset data systems with its asset management planning. It has already begun work on this integration, through validation and improvement of asset data already on its systems, appraisal of the changing data requirements of the Company and integration of the deterioration models developed for PR09 with the asset data systems. We discuss these initiatives in more detail in our commentary for B3.

## 4 Specific Company Challenges & Responses (Commentary additional to the Company's)

Section/Table Reference	Issue	Response
C3	There are no M&E assets older than 40 years (hence any assets with age older than 40 years have been assumed as replaced in 1978). We challenge the basis for this assumption. We have first hand experience of operational M&E assets in excess of 40 years in other companies.	Engineering validation has been carried out with CWEAM model and other B3 models. Forced replacement is assumed based on obsolescence, modern health & safety and process requirements and compatibility with other plant & equipment.
C3	There are no ICA assets older than 25 years (hence any assets with age older than 25 years have been assumed as replaced in 1993).	As above. The ICA capital maintenance programme is linked to assumptions
C3	How do remaining life assumptions link condition grade?	A validation exercise of the remaining useful lives for the principal asset types was undertaken in line with the CWEAM and other capital maintenance modelling assumptions.
C3	A proportion of M&E value has been assigned to ICA in the absence of suitable models for ICA. We have challenged the proportional allocations	A sensitivity analysis has been carried out which demonstrates the impact is not material
C3	For fully depreciated assets where the life has been extended through the remaining useful life approach or the stretched book life approach, how can we be certain that CCD has not been charged twice?	See details of the methodology presented in Part B7 of the Company commentary.
C3/ B3	How have observations on mains age and condition been accounted for in the targeting of investment for water mains	The DEAM model uses these considerations (see B3 or Company commentary on Table 3.1a)
C3	For boreholes Table 3.1 and 3.2, TR61 v7 is used for the valuation, which only uses depth and does not consider bore. This could have a material impact on the valuation	A sensitivity analysis has been undertaken to demonstrate there is no material impact



## Appendix A: Summary of Company's Methodologies

Asset group	Location of asset stock data	Source of Condition Grade assessment	Level of Condition Assessment	Procedural documentation
Dams (infra)	Ellipse – includes size data	Regular site surveys as part of Reservoirs act. Supervising Engineer's interpretation of maintenance needs from Panel/Inspecting Engineer's reports South West Water risk assessment for general maintenance	Dam Civils/Buildings/M&E/ICA	Guidance for completing a survey form: Condition Assessment for Dams. South West Water Service Reservoir Condition Assessment proforma
Raw Water Mains (infra)	GIS	[Excised] report: Desktop studies; non-destructive testing (includes Ellipse burst rate data, burst analysis based on IPID)	IPID (pipe length)	Methodology explained in [Excised] report
Leats (infra)	GIS	Operational Leat (Devenport Leat) has been walked. CG based on Inspection assessment	IPID (Leat length)	Methodology explained in [Excised] report
Water Treatment Works, Intakes service reservoirs (Clearwater tanks) and Pumping Stations (non-infra)	Ellipse – Equipment Register	Site surveys SWT states Clearwater tanks assessed on same basis as Service Reservoirs (see below)	Assessed as one package. Condition assessment done at process level not at equipment level. Civils/Buildings/M&E/ICA	Guidance for completing a survey form: Condition and Performance Assessment for WTWs
Service Reservoirs including water towers (non-infra)	Ellipse & Equipment Register	Existing surveys (within last 5 years): <ul style="list-style-type: none"> <li>o SHOP Report (SR hazard &amp; Operability)</li> <li>o Narrative &amp; Inspection reports</li> </ul> PR09 surveys of external structures based on <i>condition grade matrix</i> Internal inspections at 10 year intervals	Component level (roof; joints etc)	PR09 Methodology: service reservoir/water tower survey guidance and condition grade assessment. PR09 Methodology: Data input to the Asset Inventory regarding booster pumping stations and service reservoirs/water towers PR09 Methodology: Data input to the Asset Inventory regarding booster pumping stations and service reservoirs/water towers
Booster Pumping	Ellipse & Equipment	Surveys	Pump station:	South West Water Pumping Station Condition

Asset group	Location of asset stock data	Source of Condition Grade assessment	Level of Condition Assessment	Procedural documentation
Stations (non-infra)	Register		Civils/Buildings/M&E/ICA	Assessment proforma (CW) PR09 Methodology: booster pumping station survey guidance and condition grade assessment.
Water Mains (infra)	GIS	Ellipse burst rate data, burst analysis based on IPID	IPID	PR09 Potable Mains Study: Methodology for Determining Potable Mains Condition Vers 0.3 PR09 Potable Mains: Mains Age Banding Methodology Summary PR09 Potable Mains: Mains Asset Inventory Methodology Summary: Mains size Banding PR09 Potable Mains: Surface Type Methodology Summary: Lengths of Potable Mains under OFWAT surface type
Communication Pipes (infra)	Derived from property data & joint supply data base	Burst rates from work orders (Ellipse)	CP: Average burst rate for material type distributed 1/3:1/3:1/3 around indicated CG.	PR09 Communication & Service Pipe Study: Methodology for Determining Communication Pipe Condition Grade Vers 0.5 PR09 Potable Mains: Communication Pipe Condition Methodology Summary
Meters (non-infra)	Derived from RAPID	Based on age (replace when 12 years old)	meter	Asset Inventory – Meters – methodology
Gravity Sewers (infra)	GIS	Condition grade reported as part of CCTV surveys. Analysis via Sewer Location Modelling project (SLM)	IPID	South West Water PR09 Asset Inventory-Sewerage service: Methodology to determine Asset Stock, Valuation by Condition and Age profile. (NB for Gravity Sewers)
Rising Main Sewers	GIS	Burst data sourced from Stewardship reports	IPID	SWW PR09 Wastewater Risk Assessment: Condition Grading of Rising Mains

Asset group	Location of asset stock data	Source of Condition Grade assessment	Level of Condition Assessment	Procedural documentation
(infra)				
Attenuation Tanks (infra)	Ellipse & Equipment Register, attenuation tank spreadsheet	Site surveys for 12 tanks Sewer Management Contractor (SMC) surveys (between 10% and 25% have been surveyed)	Tank Civils/M&E/ICA	SWW PR09 Wastewater Risk Assessment: Condition Grading of Attenuation Tanks
CSOs and EOS (infra)	Ellipse & Equipment Register (includes GIS IPID & consent details)	Surveys: CSOs: for 570 of the 680 CSO types (approximately 90%) EOs: a sample of approximately 10% (680 Network EOs, 670 SPS EOs) Results then applied to remaining.	Structure Civils/M&E/ICA	SWW PR09 Wastewater Risk Assessment: Condition Grading of CSOs and EOs including intervention assessment review form
Continuous Marine Outfalls (infra)	Ellipse & Equipment Register	Marine outfalls seen as part of WWTW. Visual inspections carried out every 5 years with diver inspections every 10 years. Hyder: detailed surveys for interventions on 20 grade 4 and grade 5 outfalls.	Outfall (single CG)	PR09 Continuous Marine Outfalls Condition and Performance Continuous Marine Outfalls listing
Sewage Pumping Stations (non-infra)	Ellipse & Equipment Register	850+ sewage pumping stations (SPS) surveyed for DSEARS (Dangerous Substances and Explosive Atmospheres Regulations) (40 not surveyed)	Civils/Buildings/M&E/ICA	South West Water Pumping Station Condition Assessment proforma (WW) PR09 Sewage Pumping Stations Condition Methodology Summary: Sewage Pumping Station Condition and Performance Notes on Pumping Station Sample Selection
Large Sewage Treatment Works (non-infra)	Ellipse & Equipment Register	Surveys of 84 sites (82 confirmed as "large")	Process Unit level (to tie in with TR61): Civils/M&E/ICA	PR09 Large STW Condition & performance Methodology Summary Large STW Listing Example Asset assessment for Ottery St Mary STW

Asset group	Location of asset stock data	Source of Condition Grade assessment	Level of Condition Assessment	Procedural documentation
Small Sewage Treatment Works (non-infra)	Ellipse & Equipment Register	Assessment by ops	Site level: Civils/M&E/ICA	PR09 Sewage Pumping Stations Condition Methodology Summary: Small Sewage Treatment Works Supply and Demand Assessment PR09 Small Sewage Treatment Works Condition Methodology Summary
Buildings (non-infra)	Ellipse & PROMS (buildings management)			Guidance for completing a survey form: Condition and Performance Assessment for M&G Buildings Condition and Performance Assessment for M&G Buildings
IS Assets	QUETZAL Information Services Asset Inventory Database	No condition grade assessment		P0311_152_004 Computer Methodology 0.71
Vehicles	FAR March 2008	No condition grade assessment		Vehicles valuation methodology

## Appendix D: Assumptions & Key Challenges

The following table includes a list of the Company's assumptions as included in our draft Business Plan commentary. We have added a column to indicate progress since draft Business Plan.

Assumption	Material Impact?	Comments at draft Business Plan	Comments at final Business Plan
Assets are replaced on a 'like for like' basis by a modern equivalent asset, i.e. current assets represent MEA	NO	We are generally satisfied with the Company's response to provide justification in this area, however, limited evidence was presented to substantiate the Company's claims and we feel this area would benefit from further evidence to prove that the impact of any difference is not material.	We have discussed this with the Company and are satisfied its approach is correct – see the section on MEAV for further details of our challenges.
Mothballed and disused sites are included in the revaluation	YES	This is consistent with Company policy and therefore has been applied across all assets, however, it raises the question as to why a site is disused. If it is not used is it not needed & therefore why should it be valued? We fully accept the Company's explanation that it <i>"provides optimal potential for making best use of water resources in the future – e.g. retaining licences with the potential to treat – drought year bringing back into service etc. They can be brought back on line – and still need to be maintained to a certain extent"</i> , particularly in the context of the Company's considerable variations in season population.	We are satisfied that this is entirely in line with the Company's policy therefore is correct. We have made reference to this for the purposes of clarity.
Redundant and abandoned assets are not included in the revaluation	NO	This is consistent with Company policy and has been applied to all asset groups. These assets should not be valued.	As above.
Capital maintenance expenditure, which had been included in the PR99 and PR04 valuations, has been removed	NO	This is correct as otherwise the Company would have been over-valuing its assets. We audited part of the process for this undertaking but have not yet verified that these numbers have indeed been removed. We will confirm for the final Business Plan. We consider this type of expenditure should have been removed by default as this is a revaluation.	We confirm that this has been undertaken for the final Business Plan.
Capital enhancement expenditure included in the PR04 valuation has been removed	NO	As above.	As above.

<b>Assumption</b>	<b>Material Impact?</b>	<b>Comments at draft Business Plan</b>	<b>Comments at final Business Plan</b>
Remaining lives have been assessed in the context of their condition grade for some asset groups, based on engineering judgement	POTENTIAL	The condition grade assessments used are based on the Ofwat guidance for condition grade; remaining assets lives need to be linked to serviceability in the context of the ability to deliver service and may be influenced by other factors. From the case presented this is not explicit. We have expanded in the relevant section. There are also inconsistencies with Part B3.	The Company has demonstrated consistency with B3 for the final Business Plan. This is discussed further in the relevant section in our commentary. We have highlighted on potential issue with engineering judgement used to assign condition grades to small sewage treatment works, however, as it has arisen late on in the process cannot confirm if it is spurious or an issue across the asset group. We discuss this in more detail in the main commentary.
Asset build dates have been reviewed by reference to the Fixed Asset Register	NO	The dates should be consistent.	We have nothing further to add.
If ICA equipment is 25 years or older, it is assumed that the item has been renewed but that the replacement date has not been captured	UNLIKELY	Assuming a renewal date just on the basis of age gives the potential for errors. We suggest that the Company may wish to investigate a sample of assets that fall into this category to give substance to the assumptions.	We have discussed the Company's rationale behind this, which reflects forced replacement due to obsolescence observed in reality. We consider the assumptions to be reasonable.
If M&E equipment is 40 years or older, it is assumed that the item has been renewed but that the replacement date has not been captured	UNLIKELY	As above, however, the value of M&E equipment is considerably higher than ICA, therefore there is a greater potential impact. However, there are fewer assets to which this applies.	We have discussed the Company's rationale behind this, which reflects forced replacement due to obsolescence observed in reality.  We consider the assumptions reasonable, but with some reservations.
Where an asset has reached the end of its expected life, but is still in operation, the civil, M&E and ICA asset lives have been increased by 27, 20 and 5 years respectively	YES	We have asked the Company to justify the basis of these assumptions. On the whole we consider them reasonable but have yet to see underlying evidence to support and also a linkage with B3.	For its final Business Plan the Company has assessed remaining useful life for all assets with an associated condition grade.
A proportion of the M&E cost models has been allocated to the ICA component. The proportion depends upon the asset type.	POTENTIAL	We have challenged the basis of the proportional allocation with the Company and its consultant partner. The splits are based on engineering judgement however despite requests we have not seen firm evidence that supports this. When we have had an opportunity to better understand the basis of the assumptions we can confirm whether the impact is material or not.	The Company has undertaken a sensitivity analysis and we are satisfied with the results.

<b>Assumption</b>	<b>Material Impact?</b>	<b>Comments at draft Business Plan</b>	<b>Comments at final Business Plan</b>
In the MEA valuation of some asset groups, PR04 values inflated by RPI were used.	POTENTIAL	We have conducted detailed discussions with the Company over this matter and consider it has taken a pragmatic approach in the absence of suitable costings. Even though the impact could be material, the Company is aware of the limitations and seeks to gain clarity for the final Business Plan. The biggest impact is for Intake PS. We have expanded further in our commentary.	This issue still stands for the final Business Plan, however, as this relates to assets for which the Company has no suitable cost models and TR61 is not suitable, we accept the Company's approach as being appropriate.
Boreholes have been valued on the basis of depth alone.	POTENTIAL	The use of depth only in the valuation of boreholes rather than diameter, material and depth can give rise to a difference in value. We have asked the Company to undertake a sensitivity analysis or consider an alternative methodology for borehole valuation between draft & final.	We describe this in detail later on in this commentary. We are satisfied that the Company has demonstrated that the difference is not material.
Borehole sites have been allocated under Group 2 Water treatment works in Tables C3.1 and C3.2.	YES	We have reason to believe that the Company has allocated some assets to water treatment works instead of disaggregating in line with Ofwat guidance. Both are non-infrastructure assets in water service so there is no impact on the Company's bottom line MEAV, however, this does misrepresent the assets. The Company notes this is in line with June Return reporting.	We are satisfied that the Company has correctly allocated these assets.
Performance grading has been included in the condition grading observation questions for some surface assets without specifically excluding poor performance due to incorrect specification.	POTENTIAL	The Company uses a combination of condition and performance grading to infer condition grade from site surveys for surface assets. We need to confirm instances of under performance due to poor specification within the Company's asset base or else quantify that these instances are very few. Alternatively, we need to examine full details of the site survey questions to inform the asset observations to confirm that poor performance due to incorrect specification does not influence the condition grade.	As the Company could not conclusively prove this one way or the other (for many surveys observations on condition were made based on engineering judgement), it has decided to remove the performance observations altogether and has undertaken to review the protocol for assigning condition grades as part of business as usual activities.
The PR09 Asset listing derived from the PR04 list was deemed as the master asset list.	NO	The Company used its PR04 lists (which had been cleansed) as the basis for PR09. The list was verified against Ellipse and therefore is now a credible list. The Company needs to ensure that further verification through surveys is fed back into Ellipse or the impact can be material (2 sets of records).	No issues. The Company has plans to reconcile any asset observations collected through the asset inventory work with Ellipse.
All available service capacity within the Company's assets is required for normal operations.	NO but POTENTIAL	The Company claims that there is no "spare" capacity carried in its assets, due to the seasonal population fluctuations experienced in the region, therefore the asset valuation should be undertaken on the basis of the full capacity. We consider this assumption fully justified in this context and that there is no over-valuation on this basis.	No issues. We are satisfied with the Company's response.
The Company's reported critical sewer length is based on JR08.	YES	There is approximately 20% difference between the critical sewer lengths reported at JR08 and draft Business Plan and the calculated lengths from the Sewer Location Modelling project. In the draft Business Plan the Company has reported the length consistent with JR and it will undertake a validation of this difference prior to final Business Plan.	We have discussed this with the Company and the difference is only 0.2%, which we agree is not material.

<b>Assumption</b>	<b>Material Impact?</b>	<b>Comments at draft Business Plan</b>	<b>Comments at final Business Plan</b>
An assumed sewer depth of 2m where data is missing. The valuation also assumes a percentage split of ground conditions for sewage pumping mains.	NO	We did not fully challenge or validate the basis of the Company's assumptions in this context as the assumptions appear reasonable and we do not consider impacts to be material.	No issues.
The methodology used for proportional allocation of condition grades when assets rolled up at site level is not value based.	NO	We are of the view that weighting by value would be more appropriate however do not feel the impact is material.	Further discussions with the Company indicate the roll up does include a weighting by value.
Sewage pumping mains (Table C3.3 Line 3) have been excluded from the Line 39 total	YES	The Company will include the Line 3 total in its age profile (Line 39) for the final Business Plan.	The Company has included Line 3 in the Line 39 total for its final Business Plan.

We have expanded these issues in the relevant section relating to the Company commentary where appropriate.