

SUTTON AND EAST SURREY WATER PLC

**WATER RESOURCES MANAGEMENT PLAN
FOURTH ANNUAL REVIEW**

(JUNE 2013)

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1. INTRODUCTION

1.1. General

The Water Industry Act 1991, as amended by the Water Act 2003, places a requirement on all water companies to prepare a Water Resources Management Plan (WRMP). Water resources plans set out how companies intend to meet their customers' needs for water over the next 25 years while protecting and enhancing the environment. Water companies across England and Wales first submitted these plans to the Environment Agency in March 1999.

Sutton & East Surrey Water (the Company) published its Final WRMP on 12th March 2010, setting out the measures needed to maintain the supply demand balance within the Company supply area over the next 25 years to 2034/35.

The Water Act 2003 (Section 37A (5)) also states that:

Before each anniversary of the date when its plan (or revised plan) was last published, the water undertaker shall:

(a) review its plan; and

(b) send a statement of the conclusions of its review to the Secretary of State.

This report is Sutton and East Surrey Water Company's fourth annual review of its Final WRMP (March 2010), for submission to Ofwat and the Environment Agency. The review is based on outturn data from the Company's data bases for the period from 1st April 2012 to 31st March 2013 also used for the Company's Annual Report 2013.

The review has been prepared in accordance with the Environment Agency's latest guidance for undertaking the annual WRMP review¹. The guidance states that water companies should report on the following:

- an overall summary of the supply demand situation
- progress on implementing the Final WRMP
- any changes made to the Final WRMP
- any actions the Environment Agency and Defra have asked the Company to work on following publication of its Final WRMP.

The timing of this fourth annual review is also in accordance with this revised guidance.

A summary of the supply demand balance situation for 2012/13 is given in Section 2.

Progress on implementing the Final WRMP and details of any changes made to the Final WRMP are set out in Section 3.

Following publication of the Final WRMP in March 2010, the Company received a letter from the Environment Agency dated 25 May 2010 setting out its comments on the Final WRMP. The Company's response to these comments and progress on any actions is set out in Section 4.

The Company's first annual review of the Final WRMP was submitted to the Secretary of State in March 2011, based on outturn data for the previous report year

¹ Annual review of water resources management plans guidance. Environment Agency (June 2013)

from 1st April 2009 to 31st March 2010. The Company subsequently received a letter from Defra, dated 11 April 2011, requesting that the Company should keep under review the small forecast deficit in peak resources beyond 2012, resulting from Ofwat's final determination of price limits for the period 2010-2015 (see section 1.3 below). No other issues concerning the Company's first annual WRMP review were identified by Defra or the Environment Agency.

1.2. Document History

The following section sets out the development of the Company's WRMPs during the period 2008 to 2013.

1.2.1. Draft Water Resources Management Plan (March 2008)

The Company submitted a Draft Water Resources Management Plan (WRMP) to Defra in March 2008, for the period to 2034/35. This Draft WRMP was prepared in accordance with the Environment Agency's Water Resources Planning Guideline (April 2007). The Draft WRMP was made available for public consultation between 6 May 2008 and 1 August 2008.

The Draft WRMP considered the options that were available to the Company for meeting growth in demand for water in the period from 2007 to 2035. The plan took into consideration:

- the future demand for water from existing customers
- growth in demand arising out of new properties
- non-household consumption
- the potential effect of climate change on resources and demand; and
- demand management (leakage, water efficiency and metering).

The Draft WRMP proposed a twin track approach (a balance of resource development and demand management measures) to meet a forecast underlying growth in demand whilst maintaining a reliable supply of high quality water. A strategic environmental assessment of the plan was carried out by consultants, and in addition, an estimate of the greenhouse gas emissions that will arise from the supply of treated water to the Company's customers over the next 25 years was produced.

As part of the planning process, all stakeholders were invited to submit comments on the Draft WRMP (representations) to Defra by 1 August 2008. All representations received by Defra were forwarded to the Company by email between 6 and 9 August. A letter from Defra, dated 12 August 2008, formally acknowledged the end of the consultation period and listed the responses received. As required by the Water Resources Plan Management Regulations 2007, the Company prepared and published a statement in response to those representations.

The "Statement of Response" set out the Company's response to all representations received from Defra. As required by the Act, it detailed:

- the consideration that the Company gave to those representations
- any changes that we made to the Draft WRMP as a result of consideration of those representations, and the Company's reasons for doing so; and
- where no change was made to the Draft WRMP as a result of consideration of any representation, the reason for this.

In addition, it detailed:

- the consideration the Company gave to other representations or comments it received on the Draft WRMP
- any other changes that the Company made to the Draft WRMP, and the reasons for those changes; and
- work the Company was carrying out that might result in a change to the Draft WRMP.

1.2.2. Final Draft Water Resources Management Plan (February 2009)

In conjunction with the “Statement of Response”, the Company prepared a Final Draft of its WRMP (excluding tables), which was published on the Company’s website in February 2009.

1.2.3. Final Water Resources Management Plan (March 2010)

In a letter dated 6 August 2009 Defra confirmed that the Secretary of State had considered the Company’s Draft WRMP, the representations made in respect of that draft plan, and the Company’s statement of response to those representations (published on 2 February 2009). The letter confirmed that the Secretary of State was satisfied that the Company should publish its Final WRMP in accordance with regulation 6 of the Water Resources Management Plan Regulations 2007, subject to the changes to the Company’s Draft Plan in response to representations received.

The Company’s Final Water Resources Management Plan was subsequently published in March 2010 (note that revised tables were issued with the first Annual Review – March 2011 – following discussion with the Environment Agency).

1.2.4. Water Resources Plan (April 2004) – Annual Review (June 2010)

In June 2010, the Company submitted an annual review of its 2004 Water Resources Plan to the Environment Agency and Ofwat. This review reported on work carried out since April 2004 including preparatory work for the Final WRMP (March 2010).

1.2.5. Water Resources Management Plan (March 2010) – Annual Reviews

The first annual review of the Final WRMP (March 2010) was submitted in March 2011, followed in June 2011 by the second review. The purpose of the second review was to align submissions with annual returns to Ofwat. A revised set of WRMP tables was issued with the first annual review.

A third annual review was submitted in June 2012.

This document is the fourth annual review, submitted in June 2013. This year is the start of transition between new figures derived for the Draft WRMP (March 2013), see below, and numbers that are still consistent with the Final WRMP (March 2010). We have dealt with this as follows:

- deployable outputs are the latest assessment and take into account actual changes (arising out of physical work carried out) and any desk study reassessments made;
- changes to the number of properties are consistent with actual changes recorded on the Company’s billing database;
- changes to the population figure are consistent with changes in property numbers using the assumptions made for the Final WRMP (2010);
- headroom, outage, treatment works losses, and other minor components, are consistent with the Final WRMP (March 2010).

Actual figures used in the report are for “report year” 2012/13 (1 April 2012 to 31 March 2013)

1.2.6. Draft Water Resources Management Plan (March 2013)

The Company submitted a Draft Water Resources Management Plan (WRMP) to Defra in March 2013, for the period to 2039/40. This Draft WRMP was prepared in accordance with the Environment Agency’s Water Resources Planning Guideline (October 2012). The Draft WRMP has been made available for public consultation from 13 May 2013 to 5 August 2013.

As indicated above, this document is an Annual Review of the Final WRMP (March 2010). Therefore some figures, in particular forecast supply figures, will not be consistent with the Draft WRMP (March 2013).

1.3. Impact of Final Determination on Final WRMP

After receipt of the Secretary of State’s confirmation that the Company could publish its Final WRMP, Ofwat completed its assessment of the Company’s Final Business Plan and gave the Company formal notification of its determination of price limits for the period 2010-15. The determination did not support all elements of the Company’s planned strategy for maintaining the supply demand balance for the period 2010-15 as set out in the Company’s Final WRMP. The Company chose not to appeal the determination and as a consequence some areas of expenditure have been deferred.

Changes to the strategy for 2010-15 as a result of the determination are summarised below:

- The allowance made within the PR09 Final Determination has allowed the Company to increase the peak output of the WTW C by a further 5 Ml/d to 50 Ml/d capacity, rather than the 25 Ml/d increase included in the Company’s Final WRMP. Construction of the Phase 2 scheme commenced on site in December 2010 and completion is planned for 2012/13. The Company intends to seek a further 20 Ml/d increase in peak deployable output for WTW C during 2015-20, subject to the next WRMP update for PR14.
- No allowance was made in Ofwat’s Final Determination for the Company’s proposed schools water efficiency programme for 2010-15. Notwithstanding this, the Company has finalised plans for a schools retrofit programme “Learn2save” which is being carried out in conjunction with Waterwise. Preparations for this innovative self-financing programme commenced in 2011/12 and installation commenced in 2012/13.

All other elements of the Company’s water resources strategy including the planned metering programme have been fully funded.

As a consequence of changing the supply/demand balance strategy for 2010-2015, the risk of supply side restrictions to the Company’s customers is marginally increased until WTW C Phase 3 can be developed. The Company will seek additional funding as part of the next Periodic Review in 2014 to maintain the supply demand balance and minimise the risks of future supply side restrictions to customers during dry years.

Meanwhile, the Company continues to actively manage its surface water and groundwater sources to minimise the risk of supply failure. When appropriate, as part of the Company’s water efficiency programme, additional effort is made to influence

customers' behaviour by encouraging them to use water wisely especially during dry periods when resources are challenged. The Company has also explored the option of making greater use of the bulk supply from Thames Water.

2. THE SUPPLY DEMAND SITUATION IN 2012/13

2.1. Company overview

Rainfall, in particular winter rainfall, in both 2010/11 and in 2011/12 was below long term average (83% in 2010/11 and 75% in 2011/12) resulting in 323 mm less rainfall than average over the period 1st April 2010 to 31st March 2012. By March 2012, ground water levels in monitoring boreholes were at lowest ever recorded levels and Reservoir A was only 76% full. Trigger levels in the Company's drought plan had been passed, and so reluctantly, along with the other companies in the south east of England, we implemented a temporary use ban (principally banning the use of hosepipes) from April 2012.

Over 1100mm of rain fell in 2012/13; 350mm or 45% more than the long term average. Over 450mm of this fell in the first four months of the year, and as a consequence ground water levels rose rapidly until August 2012 by when they were significantly above long term average. The exceptionally high level of spring rainfall also allowed us to refill Reservoir A. The unprecedented rise in ground water levels, and the refilling of Reservoir A, meant that we were able to remove the temporary use ban in July 2012.

Ground water levels, and the level of water in Reservoir A, remained above average for the remainder of the year and by 31 March 2013 Reservoir A was full and ground water levels were significantly above long term average.

2.2. Demand

The average daily distribution input in the report year was 153 MI/d which is around 6.9 percent below the 17 year average (after correction for changes in the number of properties and leakage). The corrected 17 year average is within 0.6 MI/d (0.4%) of the forecast average demand from the Final Water Resources Management Plan (March 2010), after updating for actual changes to properties and population.

That it was a year of below average demand is not too surprising because the spring and early summer was very wet, and August was dull. As reported above, rainfall for the year was significantly above average and we had no warm dry weather so gardening water, and other recreational use, would have been low.

Distribution input in the critical period (peak week) of the report year reached 167 MI/d (3 to 9 September), giving a peak to average ratio of 1.10, which was a little lower than the previous year's (1.18). The highest peak to average ratio since 1987/88 is 1.49 which was experienced in 1995/96.

2.3. Supply

2.3.1. Resources

Recharge in the report year was very healthy due to the above average rainfall. Ground water levels, and the level of water in Reservoir A, remained above long term average throughout 2012/13.

Average DO in the report year was 215.8 MI/d compared to the actual average distribution input of 152.6 MI/d.

The peak week DO in the report year was 291.0 MI/d compared to the actual peak week demand of 167.1 MI/d.

2.3.2. Resource development

Deployable outputs have been revised in accordance with any reassessments made in the report year.

East Surrey Water Resource Zone

Phase 1 of the uprating and refurbishment of WTW C was substantially completed in 2010/11.

Phase 2 of the uprating and refurbishment of WTW C was substantially completed by 31 March 2013, resulting in a revised peak deployable of 50 MI/d (an increase of 5 MI/d). Average deployable output was increased by 1.9 MI/d to 28.9 MI/d following further Aquator modelling carried out in the report year.

The Company completed drilling of a new Greensand borehole at Source 39 in 2011/12. Following submission of the test pumping results, and discussions with the Environment Agency, an application was made for an abstraction licence of 3.5 MI/d at average and peak. The application was subsequently withdrawn at the request of the Environment Agency to allow further environmental investigations to be carried out. These investigations were completed in the report year and a revised application will be submitted in 2013/14. The licensed volumes are likely to be dependent on antecedent rainfall.

A review carried out in the report year of the deployable output of the WTW F group of Greensand boreholes revealed that Source 29 boreholes licence was not correctly aggregated into the group licence. Correcting this error increased the deployable output by 3.50 MI/d.

Sutton Water Resource Zone

During 2009/10, The Company's new borehole at Source 40 within the Sutton Water Resource Zone (WRZ) was licensed and connected to the raw water main feeding the WTW B. Connection of mains power to the site was completed in 2011/12.

The groundwater source at Source 6 was taken out of supply in 2012/13 due to detections of bacteria in the raw water. Although some of its Deployable Output has been reassigned to other sources, the total average Deployable Output for this licence group was decreased by 2.07 MI/d and the peak Deployable Output was decreased by 4.54 MI/d.

Peak deployable output at Source 10 was increased in the report year by 1.8 MI/d to 6.8 MI/d corresponding to an increase in pump capacity.

2.3.3. Raw water quality

Metaldehyde

Water quality testing in 2008 first revealed the presence of the previously undetected pesticide metaldehyde in Reservoir A. Seven PCV failures for metaldehyde were recorded in 2008 for water leaving the treatment works and eight in 2009. No failures have been recorded since 2010, but pesticides, and metaldehyde in particular, continue to give the Company cause for concern.

Metoldehyde has been found in the raw water sources of many other water companies in the UK and it has been demonstrated that it is not possible to guarantee the removal of metoldehyde from water to a level that secures treated water compliance using conventional established pesticide treatment processes.

In December 2009 we agreed an undertaking with the DWI to formalise the activities to be taken in respect of metoldehyde during the AMP5 period. The activities proposed include the following:

- provision of support to all national, regional and local catchment management initiatives aiming to reduce concentrations of metoldehyde in the raw water entering the reservoir (these activities actually commenced in 2008 and have included working at a local level in conjunction with Consultants, the Environment Agency and the Campaign for the Farmed Environment)
- continued implementation of an enhanced operational sampling regime for both raw and treated water
- investigations to determine the extent of metoldehyde usage in the Reservoir A catchment
- a review of the abstraction regime from the River A
- agreement to participate in and support national investigations of treatment processes that might remove or reduce concentrations of metoldehyde in treated water whilst investigating the effectiveness and feasibility for cost effective optimisation of existing treatment processes.

We have submitted biannual reports to the DWI regarding progress with the agreed activities and these confirm that we are on target for completion.

We continue to work with consultants, agronomists, farmers and other stakeholder groups to try to reduce the amount of pesticide in the raw water supplying the works.

Since 2010 our compliance with the metoldehyde standard has been greatly assisted by the installation of additional carbon in the pesticide treatment process and a planned enhanced carbon regeneration programme. In the report year however, this was severely challenged when metoldehyde levels in the river rose sharply following heavy rainfall. We have developed a procedure for rapidly determining metoldehyde levels in the river which meant we were able to defer taking water from the river until metoldehyde levels started to fall, however, we were very close to failing the PCV in the treated water.

Reliance on this approach is not a long term solution. The best way to secure compliance is being discussed at a national level with the involvement of the DWI and currently centres on a catchment management approach involving engagement with the manufacturers and the end users of the product.

General

Raw water quality generally remained good throughout 2012/13 although groundwater contamination continued to affect two small Greensand sources. Treatment to remove ammonia is being considered for the first of these (Source 25). Treatment for removal of hydrogen sulphide or a replacement borehole will be required for the second (Source 34).

The spring source at Source 38 (deployable output 1 Ml/d) has remained out of commission due to an occurrence of cryptosporidium oocysts in the raw water in

2000/01. Provision of UV treatment at the source is being considered as an option. Alternatively, the Environment Agency has agreed in principle that the licence could be transferred and aggregated with the Source 34 licence for any new borehole(s) planned to replace Source 34 and Source 38.

It was originally intended that the new borehole at Source 39 would replace the Source 34 and Source 38; however the Environment Agency has indicated that this should be considered as a standalone source. The Company will therefore look for a suitable site for a further Greensand source in the vicinity of Source 38 and Source 34.

3. ENVIRONMENT AGENCY COMMENTS ON FINAL WRMP 2010

3.1. General

Following publication of the Final WRMP in March 2010, the Company received a letter from the Environment Agency dated 25/5/2010 setting out its comments on the Final WRMP.

The Company's responses to the comments raised were discussed at a meeting with the Environment Agency on 8/9/2010. A table summarising the comments raised and the Company's detailed response is provided in Appendix A.

The Company will continue to review its WRMP on an annual basis and will maintain regular contact with the Environment Agency's water resources team.

4. PROGRESS ON IMPLEMENTING THE FINAL WRMP 2010

4.1. Overview

This section reports on progress on implementing the Final WRMP (March 2010), and reviews the components of the Final WRMP as required by section 5.1 of the Environment Agency guidance.

The tables provided in the Environment Agency guidance have been included within this section, to indicate which items are applicable to the Company's annual WRMP review.

4.2. General Issues

General			
Item	EA guidance		Company response
Water resources zones	Any changes to boundaries	Requirement triggered by change	There have been no changes to the Company boundaries following publication of the Final WRMP in March 2010
Level of Service	Any changes to the proposed target level of service	Requirement triggered by change	See section 4.2.1

4.2.1. Levels of service

As a consequence of changing the supply/demand balance strategy for 2010-2015 (see 1.3 above), the risk of supply side restrictions to the Company's customers is marginally increased until Reservoir A Phase 3 can be developed. The Company will seek additional funding as part of the next Periodic Review in 2014 to maintain the supply demand balance and minimise the risks of future supply side restrictions to customers during dry years.

Meanwhile, the Company will continue to actively manage its surface water and groundwater sources to minimise the risk of supply failure. When appropriate, as part of the Company's water efficiency programme, additional effort is made to influence customers' behaviour by encouraging them to use water wisely especially during dry periods when resources are challenged. The Company has also explored the option of making greater use of the bulk supply from Thames Water (see also 4.3.3).

4.3. Supply

Supply			
Item	EA guidance		Company response
Deployable output	Any changes to deployable output	Requirement triggered by change	See section 4.3.1
Outage	Explain reasons for any outage incidents and any work being done to reduce outage	Requirement	See section 4.3.2
Bulk supply	Explain any changes to bulk supply agreements	Requirement triggered by change	See section 4.3.3
Sustainability reductions	Detail any alterations to the sustainability changes required. (changes to existing definite sustainability changes or new definite sustainability changes) Detail any alterations to the sensitivity testing from updates to indicative sustainability changes	Requirement triggered by change	There have been no changes following publication of the Final WRMP in March 2010. See section 4.3.4
	Report on progress with implementation of sustainability changes	Requirement	See section 4.3.4

4.3.1. Deployable output Reservoir A Phase 1

Substantial completion of the Reservoir A Phase 1 enhancement scheme in 2010/11 increased the peak DO of the WTW by 9 MI/d from 36 MI/d to 45 MI/d. The scheme has also resulted in a marginal reduction in the average DO of WTW C (-1.3 MI/d) due to the increased utilisation of the reservoir storage during the peak period.

Reservoir A Phase 2

After receipt of the Secretary of State's confirmation that the Company could publish its Final WRMP, Ofwat completed its assessment of the Company's Final Business Plan and gave the Company formal notification of its determination of price limits for the period 2010-15. The determination did not support all elements of expenditure set out in the Company's Final WRMP. The Company chose not to appeal the determination and as a consequence some areas of expenditure have been deferred.

The allowance made within the PR09 Final Determination has allowed the Company to increase the peak output of the WTW C by a further 5 MI/d to 50MI/d capacity, rather than the 25 MI/d increase included in the Company's Final WRMP. Construction of the Phase 2 scheme commenced on site in December 2010 and was substantially completed in 2012/13 allowing the 5 MI/d increase in peak deployable output to be realised.

Reservoir A Phase 3

In its draft WRMP (March 2013) the Company has included within its preferred plan, a proposal for a further 20 MI/d increase in peak deployable output for WTW C. Work to increase the reservoir treatment capacity would commence during 2015-20, with the peak output available from 2020/21.

As a consequence of changing the supply/demand balance strategy for 2010-2015, the risk of supply side restrictions to the Company's customers is marginally increased until Reservoir A Phase 3 can be developed (see 4.2.1 above).

Source 40 Borehole

During 2009/10, SESW's planned new borehole at Source 40 within the Sutton WRZ was licensed and connected to the raw water main feeding the WTW B. Connection of mains power to the site was completed in 2011/12. The borehole increased annual average deployable output by 0.25 MI/d and peak period DO by 3.02 MI/d in 2009/10.

Source 39 Borehole

The Company completed drilling of a new Greensand borehole at Source 39 in 2011/2012. Following submission of the test pumping results, and discussions with the Environment Agency, an application has been made for an abstraction licence of 3.5 MI/d at average and peak (see 2.3.2). The licensed volumes are likely to be dependent on antecedent rainfall. To utilise any increase in deployable output that might be available once an abstraction licence has been granted, it will be necessary to construct headworks and lay a raw water main to WTW F. This has been included as an option within the draft WRMP (March 2013), however it is not selected under the Company's preferred plan.

4.3.2. Outage

Outage is defined as a temporary loss of deployable output, and may arise through either planned or unplanned events. Planned outages would result from the maintenance or repair of source works. Unplanned outages may result from pollution of sources, turbidity, nitrates, algae, power failures, and system failures.

The Company's outage assessment is set out in Section 3.6 of the Final WRMP 2010. The analysis was based on the observed characteristics of historic events that have affected the output available from each source. On the assumption that such events with similar characteristics could occur again in the future, outage values at Company level of 8.95 MI/d for dry year annual average and 6.23 MI/d for the critical period (peak week) were derived.

The Company has undertaken an updated outage assessment for PR14. A risk assessment model has been created to derive outage estimates for both average and peak demand periods. A 95 %ile (1:20 year return period) for outage has been used. Outage values at Company level of 5.07 MI/d for dry year annual average and 2.27 MI/d for the dry year critical period planning period were derived.

All significant outage events are recorded and reported at monthly intervals for each of the Company's water treatment works. There were no significant outage events during 2012/13. WTW D was out of service for plant maintenance for two periods of 28 days, and WTW F was taken out of service between December 2012 and January 2013.

4.3.3. Bulk supplies

There has been one additional bulk supply agreement following publication of the Final WRMP 2010 in March 2010. The Company commenced an export of less than 0.1 MI/d on 29 October 2012 under a bulk supply agreement to Scottish and Southern Energy for the site at Park View, Chessington. The average volume of supply for the report year was 0.084 MI/d. As this supply was only in place for part of the report year the average for the report year was therefore 0.35 MI/d.

The Company continues to export a small quantity of potable water to Southern Water, equivalent to approximately 0.05 MI/d in total. A small bulk supply to South East Water ended in 2011/12.

The Company also has an agreement with Thames Water for a bulk import of up to 13.6 MI/d into its Sutton WRZ, although in recent practice, the quantity available has been limited to 5 MI/d. Thames Water has confirmed that the bulk supplies cannot be guaranteed during a drought year and hence the Company has not included an allowance for this bulk supply in its baseline assessment for the Draft WRMP 2013.

Two transfer links allow the Company to transfer over 20 MI/d of water from the East Surrey (WRZ) into the Sutton WRZ. These transfer links enable the Company to meet demand in the Sutton WRZ in a dry year. The Company recognises that some network constraints exist within both WRZs. These are considered to be issues of resilience which will be addressed by the Company in the relevant part of its PR2013 Business Plan.

4.3.4. Sustainability reductions

There has been no change since the Final WRMP (March 2010) to investigations relating to sustainability reductions affecting the Company's supply area. At the time of publishing its Final WRMP, the EA had not requested or specified the Company to make any sustainability reductions. None were identified for the Company in the National Environment Programme for the period 2005-10.

In its letter to the Company dated 28 November 2008 the EA set out the resource investigations that the Company should carry out during 2010-2015 under the National Environment Programme (NEP). The Company is required to carry out two investigations by 2015 to investigate the potential impact of its abstractions on the environment as follows:

- the Reigate Heath and Reigate Lower Greensand study (Driver: split between "Quality Enhancement" and "Supply Demand"); and
- the River Wandle study (Driver: "Supply Demand").

The Company included an allowance for these schemes within its Final Business Plan in order to carry out the necessary investigations during 2010-2015, and funding was provided within the Final Determination for Periodic Review 2009 (PR09). Specialist consultant Royal Haskoning was appointed in 2010 to carry out the investigations on the Company's behalf. The scope of work was agreed with the Environment Agency's NEP team based at Frimley. Phase 1 of these investigations

(collection of base data) was completed in 2010/11. A further meeting was held with the Environment Agency in March 2011 to agree the scope of work to be carried out in Phase 2. This included the drilling of monitoring boreholes on Reigate Heath and adjacent to the River Wandle at Carshalton. The investigations will continue until 2015.

In a letter to the Company dated 22 January 2013, the Environment Agency set out the National Environment Programme (NEP) schemes that the Company is required to complete during the period 2015-2020. At the time of publishing our Draft WRMP, the EA had not requested or specified the Company to make any sustainability reductions. However, as there are two ongoing Phase 1 NEP investigations (described above) and two other WFD investigations that are currently being carried out or proposed by the Environment Agency, there is the potential that sustainability reductions may affect the Company's supply in future.

4.4. Demand

Demand			
Item	EA guidance		Company response
Demand forecasting	Highlight and explain any changes to the demand forecast. Give details of any change to the data-set used	Requirement triggered by change	The Company has revised its demand forecast for the draft WRMP 2013. However, for the purpose of this review, the only change to the Final WRMP 2010 is an annual correction for actual property and population figures. This is not material.
Per capita consumption (PCC)	Highlight and explain actual PCC over the year	Requirement	See section 4.4.1
	Explain any change to the forecast PCC	Requirement triggered by change	There has been no change to the Company's PCC forecast since publication of the Final WRMP in March 2010.
Metering	Provide an update on progress with household metering (please distinguish your baseline metering from any included in the final planning scenario)	Requirement	See Section 4.4.2

Demand			
Leakage	Provide an update on progress with leakage reductions (please distinguish your baseline leakage reductions from any included in the final planning scenario)	Requirement	See Section 4.4.3
Water efficiency	Provide an update on progress with water efficiency initiatives (please distinguish your baseline water efficiency initiatives from any included in the final planning scenario)	Requirement	See Section 4.4.4

4.4.1. Per Capita Consumption

The Company has updated its forecast PCC for the Draft Water Resources Management Plan (WRMP) submitted to Defra in March 2013. As the Draft Water Resources Management Plan 2013 is still under consultation and the final population forecasts are subject to revision, the Company has made no material changes to forecast PCC for the purposes of this review. Assumptions concerning the PCC forecast including population growth, occupancy rate and water delivered assumptions are set out in Section 4 of the Final WRMP. Outturn 2012/13 PCC values for measured and unmeasured households are provided in the following table, and compared against the forecast dry year PCC values from the Final WRMP (revised tables, issued March 2011 – see section 4.7).

PCC	Company Average		Company Peak	
	2012/13 Final WRMP (Dry year)	2012/13 Outturn	2012/13 Final WRMP (Dry year)	2012/13 Outturn
Measured household PCC (l/h/d)	160.19	131.03	263.82	145.67
Unmeasured household PCC (l/h/d)	201.35	179.41	334.57	199.89

4.4.2. Metering

The Company's planned metering programme for the period 2010-15, for the installation of 32,000 new meters was fully funded in Ofwat's Final Determination for PR09. The Company plans to achieve the proposed programme for this period through a combination of metering of optants (8,400 meters) and metering on change of occupancy (23,500 meters). No compulsory metering will be required. In its Draft WRMP 2013, the Company proposes a similar metering programme for the period 2015-2020 installing a further 32,000 using change of occupancy and optant metering. The Company plans to introduce compulsory metering from 2020.

Over 6790 meters were installed in the report year at previously unmeasured properties. Approximately 4,000 were selectively metered (change of occupancy) and the remainder were free meter optants. Household meter penetration at the end

of the report year was around 40%, and total meter penetration 43% of billed properties.

A table summarising the number of household meters installed in 2012/13 is included in Appendix B.

In the first three years of the quinquennium we have installed a total of over 18,900 meters and are therefore on track to meet the output from the Final Determination. The total number will of course be dependent on the state of the housing market and the number of customers that opt for a free meter.

All new properties are metered. Over 1,800 new connections were added to the billing database in the report year. This was significantly less than the forecast number (2,474) of new connections, almost certainly as a consequence of the economic situation which continues to affect the housing market.

4.4.3. Leakage

The Company takes a very positive approach to managing leakage which is its most significant water saving initiative.

The Company continued the hard work invested in 2011/12 which achieved the Company's lowest ever leakage figure of 23.6 MI/d in 2011/12. The strong start position to the report year, additional resources due to the drought, and the relatively mild weather conditions for the majority of the year, ensured that the Company achieved its second lowest ever leakage figure of 23.7 MI/d in the report year. However, the cold weather of snow and ice experienced in February and March 2013 has created a challenge for 2013/14 because the Company started the year with leakage at a comparatively high level.

Following completion of the Company's ELL assessment included in the Draft WRMP (March 2008), Ofwat issued new guidance on the calculation of the Sustainable Economic Level of Leakage (SELL). The SELL takes into account a wider array of environmental, social and carbon related costs and benefits, as well as customers' preferences for leakage reduction. The SELL replaces the previous ELL calculation.

The latest assessment indicates that the Company's SELL is 27.3 MI/d. The Company is therefore currently operating below its calculated SELL and has no justification for further leakage reductions in the period from 2010-15. The Company's stated strategy for 2010 to 2015 was therefore to maintain leakage at the current level of 24.5 MI/d to 2015. The events of 2010 and 2011 have however led the Company to review this strategy and an internal target of 24.25 MI/d has been set for the current year. The SELL has been re-calculated as part of the work for the WRMP2014.

In its Draft WRMP 2013, the Company proposes to reduce leakage by a further 6 MI/d from 2020. The Company believes that this longer term target can only be achieved through a substantial mains renewal and metering programme and that further reductions in leakage are unlikely to be economic when compared to other demand management or supply side options. The Company believes however that further leakage reduction should be progressed as it is such an important issue for our customers. Reducing leakage also promotes the right message that water is a precious resource and must be conserved.

The Company believes that allowing leakage to rise above current levels to the SELL would not be acceptable to Government or the Company's customers. The

Government's Water White Paper, "*Water for Life*" (December 2011) promises a review of the SELL methodology to ensure that the externalities of the calculation are properly valued. "*Water for Life*" also states that Ofwat will take the conclusions of this review into account when considering how best to incentivise companies to reduce leakage through the next price review. As a consequence of this review, it is most likely that the SELL will be lower when it is calculated as part of the work for the WRMP2014.

Information concerning the Company's mains replacement programme, leak repairs and number of bursts for 2012/13 is provided in Appendix C.

Despite the very cold weather experienced in February and March 2013, the number of bursts (227) remains extremely low and the lowest we have ever recorded. We still have one of the lowest burst records in England and Wales.

4.4.4. Water efficiency

The Company's water efficiency programme is a key element of its demand management strategy which is carried out on a Company-wide basis.

A detailed summary of each demand management initiative is provided within Appendix D.

The Company plans to meet Ofwat's annual base service water efficiency target of 1 l/prop/d for the period 2010-15 by implementing a wide range of water efficiency initiatives as set out in section 4.4.6 of the Final WRMP March 2010 including providing consumers with information about how to use water wisely. Annual savings are calculated by totalling the assessed savings achieved through each individual water efficiency measure. The assessed water efficiency savings are calculated in accordance with guidance issued by Ofwat. The Final WRMP included expected annual savings of 0.16 MI/d for households and 0.11 MI/d for non households up to 2015. These were included within the Company's demand forecast.

The wide range of water efficiency related activities the Company undertakes, clearly demonstrate that it is meeting its obligation to promote water efficiency as well as making an effective contribution to the supply demand balance. A balanced approach between behavioural change ('soft') measures and device ('hard') measures has been adopted to strengthen the robustness of the programme. This has enabled the Company to achieve a level of assumed water savings above the Ofwat mandatory target of 0.27 MI/d, with total water savings of 0.33 MI/d for the current year. This places the Company in a good position to meet the target across the 2010 to 2015 period, with savings to date at 1.22 MI/d. The Company's target for the period is 1.35 MI/d.

Water efficiency activity in 2012/13 has concentrated on distributing devices at events, website self-audits, the installation of devices during visits to customers, and the schools education programme. In the report year almost 9,500 children have been given a talk or taken part in a workshop on saving water, or have visited our WTW C education centre.

Since the drought of 2004-06, the Company has focussed on encouraging consumers to continue to use water carefully, so that changes in behaviour become entrenched in everyday life. We recognise that the move towards adopting a sustainable lifestyle with an increasing regard to our impact on the environment can be used to engage

consumers, for example by highlighting the link between water use, energy consumption and carbon emissions. We continue to offer all our customers free of charge a number of devices that can help them save water and energy. A total of - 1061 *Showersave* devices, 507 aerated shower heads, and 2,801 kitchen and washbasin tap inserts or attachments were distributed in 2012/13.

It is difficult to judge the success of the Company's water efficiency programme because consumption is affected by so many other factors, weather in particular. However, it does appear that customers do respond to a clear message to use water wisely. Demand in the report year was around 6.9% below the 17 year average (after correction for changes in property numbers and leakage). However, figures in the report year were distorted by the temporary use ban that was imposed between April and July 2012, and the wet spring and summer.

Schools Water Efficiency Programme

The Company's Final WRMP 2010 included an option for installing water efficiency devices within schools. It was proposed that the Company would install a range of water efficiency measures in schools across the Company supply area during 2010-15 including:

- Urinal controllers;
- Cistern Displacement Devices (Save-A-Flush);
- Push taps; and
- Tap aerator inserts.

No allowance was made in Ofwat's Final Determination for the Company's proposed programme. Notwithstanding this, the Company is carrying out "Learn2save", a school water efficiency programme, in conjunction with Waterwise. Over 150 schools have had a water audit completed, with 16 to date opting to have water efficiency devices installed under this self-financing scheme.

The schools initiative will provide additional opportunities to educate children about the benefits of water efficiency and will allow the Company to make real savings in consumption and to gain valuable knowledge about the costs and benefits of water efficiency measures. The Company sees education of young people as a key element in changing the behaviour of its customers and their attitude to the use of water.

The updated WRMP tables that were submitted as part of the first annual WRMP review (March 2011), as discussed under section 4.6.2 make no allowance for any savings arising out of this schools retrofit programme.

4.5. Climate Change

Climate Change			
Item	EA guidance		Company response
UKCP09	Any work progressed on assessment of UKCP09 impacts on resources or demands.	Requirement triggered by change	See section 4.5.1

4.5.1. UKCP09

Climate change predictions for the Final WRMP (March 2010) were made using UKCIP02 scenarios.

For its Draft WRMP (March 2013), the Company has updated its supply and demand forecasts (including headroom) to take account of the latest climate change scenarios from UKCP09. As the Draft Resource Management Plan is still under consultation and some further refinements to the climate change analysis are anticipated between Draft and Final, this work is not reported on here.

4.6. Headroom and Options

Headroom and Options			
Item	EA guidance		Company response
Headroom	Give details of actual headroom	Requirement	See section 4.6.1
	Any changes in actual headroom and target headroom	Requirement triggered by change	See section 4.6.1
Options	Progress with the planning and delivery of all options (Include all options in the final planning scenario. For example additional supply or demand options; sustainable economic levels of water efficiency (SELWE), selective metering, additional leakage control options)	Requirement	See section 4.6.2
	Any changes to the options chosen	Requirement triggered by change	See section 4.6.2

4.6.1. Headroom

The Company has reassessed target headroom for its Draft WRMP 2013, however, for the purposes of this review, no changes have been made to the Company's headroom assessment following publication of the Final WRMP in March 2010.

Planned levels of available headroom for 2012/13 are stated within the revised Final WRMP tables (Tables WRP4-FP, March 2011) as 26.3 MI/d for the dry year annual average scenario and 46.0 MI/d for the critical period scenario.

For 2012/13 actual headroom was reported as 50 MI/d for annual average demand, and 113 MI/d for the critical period.

4.6.2. Options

As discussed above, Ofwat's PR2009 Final Determination did not support all elements of the Company's planned strategy for maintaining the supply demand balance for the period 2010-15 as set out in the Company's Final WRMP. The Company chose not to appeal the determination and as a consequence some areas of expenditure have been deferred.

Changes to the strategy for 2010-15 as a result of the determination are summarised below:

- The allowance made within the PR09 Final Determination allowed the Company to increase the peak output of the WTW C by a further 5 MI/d to 50 MI/d capacity, rather than the 25 MI/d increase included in the Company's Final WRMP. Construction of the Phase 2 scheme was substantially completed in 2012/13. The Company intends to seek a further 20 MI/d increase in peak deployable output for WTW C during 2015-20, subject to the next WRMP update for PR14.
- No allowance was made in Ofwat's Final Determination for the Company's proposed schools water efficiency programme for 2010-15. Notwithstanding this, the Company has finalised plans for a schools retrofit programme "Learn2save" which is being carried out in conjunction with Waterwise. Preparations and installation work for this innovative self financing programme commenced in the 2011/12.

All other elements of the Company's water resources strategy including the planned metering programme have been fully funded.

As a consequence of changing the supply/demand balance strategy for 2010-2015, the risk of supply side restrictions to the Company's customers is marginally increased until Reservoir A Phase 3 can be developed. The Company will seek additional funding as part of the next Periodic Review in 2014 to maintain the supply demand balance and minimise the risks of future supply side restrictions to customers during dry years.

Meanwhile, the Company will continue to actively manage its surface water and groundwater sources to minimise the risk of supply failure. When appropriate, as part of the Company's water efficiency programme, additional effort will be made to influence consumers behaviour by encouraging them to use water wisely during dry periods when resources are challenged. The Company has explored the option of making greater use of the bulk supply from Thames Water (see 4.3.3).

4.7. Updated WRP tables

Following consultation with the Environment Agency the Company submitted updated WRMP tables as part of the first annual WRMP review in March 2011. The tables have been updated to include the 50 MI/d peak upgrade to WTW C in 2012/13, followed by a further 20 MI/d peak increase in 2017/18. Minor reductions to the average deployable output from WTW C have also been incorporated within the updated tables to take account of the phased increase in peak output.

All other table data has been kept the same as the Final WRMP Tables (March 2010), including property and, population projections, the demand forecast, and headroom and outage allowances.

Minor corrections to the WRMP Tables submitted in March 2011 include:

- correction to the Distribution Operation Use rows
- correction to the dry year critical period PCC values at Company level (Table WRP4-FP).
- adjustments to Source 40 DO in 2009/10.
- adjustment to the demand forecast to remove savings arising from the schools water efficiency programme (0.55MI/d).

The revised WRMP tables show that the phased approach to WTW C, results in a small deficit in water resources to meet demand during the critical period (peak week) from 2012-2017, ranging from around 2-6MI/d, until the full 70MI/d peak output capacity is provided in 2017. As a consequence, the risk of supply side restrictions to the Company's customers during 2010-15 is marginally increased (see 4.6.2).

No further changes have been made to the revised WRMP tables submitted in March 2011, and none are planned.

Appendix A: Company Response to Environment Agency comments on Final WRMP March 2010 (ref: EA letter dated 25/5/2010)

Statement of Response	Evidence in the final plan	Further work required
<p>1. The Company stated it would incorporate its economic level of leakage analysis into the final plan.</p>	<p>Results are presented, but for method we are referred to a Business Plan appendix which is not publicly available.</p>	<p>We would like to see the analysis presented as an appendix of the final WRMP as we need to examine it to understand the evidence of the results.</p>
<p>Company Response</p> <p>Section 4.4.4 of the Final WRMP (March 2010) sets out the results of the Company’s Sustainable Economic Level of Leakage (SELL) Assessment. The Company’s SELL report, providing the detailed analysis and derivation of the SELL, was included in our Final Business Plan submission to Ofwat in April 2009.</p> <p>A copy of our SELL report entitled “Sustainable Economic Level of Leakage Report for Final PR09 Submission”, dated 3 April 2009 was issued to the EA by email on 6/9/2010.</p> <p>At a meeting held on 8/9/2010 the EA confirmed that there is currently no need for the SELL report to be placed in the public domain and that they have no comments on the content of the SELL report. No further actions are required by SESW.</p>		

Statement of Response	Evidence in the final plan	Further work required
<p>2. The Company should explain why it fails to meet Defra's Per Capita Consumption (PCC) aim of 130 litres per head per day.</p>	<p>The Company states in the final plan that it "...fully recognises Defra's ambition" and has planned for average per capita consumption decreasing from 175 to 165 l/h/d by 2035. However, the final plan shows PCC as 6-7 litres per head per day higher than at draft plan stage at the base year, and not falling below draft plan PCC until after 2020.</p> <p>The Company has also made large changes to some of its micro component forecasts which it has not accounted for. See issue A2 below.</p>	<p>We have consistently challenged the Company's high PCC and we will continue to review its PCC annually and will work with the Company towards Defra's vision. Specifically, we would like the Company to address the following:</p> <ul style="list-style-type: none"> • Confirm whether or not the upward shift in early PCC values is entirely due to the change of base year. • To further investigate its abnormally high peaking factor which leads it to plan for peak period PCC >300 litres per head per day throughout the planning period.
<p>Company Response</p> <p>Within Section 4.4.1 of the Final WRMP (March 2010) the Company has provided information on the assumptions made concerning PCC growth for both existing and new households. Our demand forecasts for the final planning scenario show a decrease in normal year average household consumption from 174.5l/h/d in 2007/08 to 164.9l/h/d in 2034/35, a reduction of 9.6l/h/d.</p> <p>Section 4.4.1 of the Final WRMP (March 2010) also includes additional commentary, setting out the Company's views on Defra's aim of achieving 130l/h/d by 2030 and the barriers to achieving this goal. We have also provided information on what steps the Company will be taking over the next four year period to monitor PCC trends so that its forecasts of PCC can be updated for PR14.</p>		

a) Change between Base Year Pac values from Draft WRMP (March 2008) to Final WRMP (March 2010)

With regard to the query concerning base year PCC, we confirm that the differences between the Draft WRMP and the Final WRMP are due to re-basing the demand forecast to 2007/08. For the Draft WRMP we used 2006/07 as the base year using April 2007 consumption data to derive base year PCC values for unmeasured and measured households. For the Final WRMP the demand forecast was rebased to 2007/08, using consumption data from April 2008 and updated population estimates for 2007/08. As a result of using the most up to date information available, the normal year average household PCC value for 2007/08 was 174.5l/h/d in the Final WRMP, compared to the corresponding value of 169.5l/h/d in the Draft WRMP, an increase of 2.9%.

For the Final WRMP, using updated assumptions for PCC growth for existing and new households, normal year average household PCC falls from 174.5 l/h/d in 2007/08 to 164.9l/h/d in 2034/35, an overall reduction of 9.6l/h/d. This compares to the Draft WRMP where normal year average household PCC was forecast to increase by 4.2l/h/d over the planning period from 169.5l/h/d to 173.7l/h/d in 2034/35. Hence there has been a substantial reduction in the Company's PCC forecast, between the Draft and Final WRMP.

In summary, we confirm that the upward shift in the base year PCC value is due to the change in base year and the revised data that became available after submission of the Draft WRMP.

b) Micro component forecast.

Please see response below under Section A2.

c) Peak PCC values

The Company has based its peaking factor assessment on historical peak factors at WRZ and Company level for the period 1992/93 to 2007/08, as set out in Section 4.5.2 of the Final WRMP. The highest unrestricted peak factor during this period was in 1995/96 at 1.49 and this value has been used as the dry year critical period peaking factor within the demand forecast. Our dry year annual average peaking factor of 1.05 has also been based on actual data recorded in the same report year hence there is no double counting within our assessment.

The Company has historically experienced high peaking factors during dry springs and summers, which is influenced by the high level of affluence within the Company supply area and associated demand for garden watering. Whilst changes have occurred to our customer base since 1995/96 in terms of population growth and household metering we have no evidence to suggest that the peaking factors experienced in 1995/96 would not re-occur should the same climate conditions of low rainfall and high temperature re-occur.

The applied peaking factors result in dry year critical period average household PCC values of 310l/h/d in the base year (2007/08). As a result of the Company's accelerated metering programme, where 90% metering will be achieved by 2025, this value then falls to 287 l/h/d

in 2034/35 under the final planning scenario. During preparation of this response we have identified an error in the input data for Table WRP4-FP of the Final WRMP, in rows 33, 37 and 44 which has resulted in a change to the peak PCC values at Company level. This table has since been corrected and included as part of the updated WRP tables, submitted with the first Annual WRMP review.

We will continue to review the Company's dry year and critical period peaking factors as part of the preparation of the next WRMP, taking into account relevant industry research on peak factors, such as the impact of metering, as it becomes available.

Change to the plan	Impact on the plan
<p>A1. The Company has stated that the upgrade to the water treatment works at Reservoir A will have to be carried out in two phases as only partial funding was included in Ofwat's final determination.</p>	<p>The plan tables have not been adjusted. Footnotes in the text explain that the Schools Retrofit programme will need to be delayed until after 2015, and the Reservoir A scheme enhancement completed in two phases, the second subject to further investigation into climate change. The planning tables are therefore not an accurate indication of what the Company proposes to do.</p> <p>If the upgrade works are not fully completed as shown in the final plan, the Company will have a deficit of 4-6 MI/d instead of a surplus of 14-16 MI/d from 2012 until whenever it can implement the second phase of the reservoir scheme (the deficit increases after 2020). This is under the Company's current climate change assumptions.</p> <p>The Company states that the second phase of the upgrade will be implemented once further climate change analysis has been completed. The Company should set out when it intends to implement the second phase of the upgrade to ensure that it will achieve its planned supply-demand balance. The Company should also submit updated planning tables that reflect the two phase approach to the upgrade to ensure that the impacts on the plan are transparent.</p>

Company Response

We confirm that only part funding for the upgrading of WTW C has been obtained for AMP5. This scheme will now be completed in two separate phases, with the first phase, which will provide an increase in peak deployable output of 5 MI/d, programmed for completion by 2012/13. The re-phasing of the upgrading of WTW C means that there will still be a deficit in resources to meet peak target headroom (taking into account the Company's current climate change predictions) until the final phase is carried out.

The Company intends to seek funding for the final phase of the Reservoir A scheme as part of the next Periodic Review for completion during the period 2015/16 to 2019/20. It is anticipated that the final phase will provide a further 20 MI/d increase in peak deployable output, increasing the output of the WTW C to the full peak licence limit of 70 MI/d. For PR14 the Company will also review the justification for the Schools water efficiency programme and will seek funding for implementation from 2015/16 to 2019/20, provided that this scheme is still cost effective when compared against other options.

As agreed at the meeting with the EA on 8/9/2010 an updated set of tables has been provided with the first Annual WRMP Review, incorporating the staged approach to WTW C (5 MI/d during 2009-14, and 20 MI/d during 2014-19).

As agreed with the Environment Agency the updated tables show the change in DO resulting from the Reservoir A scheme, and other minor corrections, to show the impact on the supply demand balance. All other table data has been kept the same as the Final WRMP Tables (March 2010), including property and population projections, water delivered components, and headroom and outage allowances etc.

Minor corrections made to the WRP tables include:

- **Correction to the distribution operation use rows as noted previously by DG.**
- **Correction to the dry year critical period PCC values at Company level (Table WRP4-FP as attached to this response).**

Change to the plan	Impact on the plan
<p>A2. The Company has made a couple of major changes to its micro component forecast which it has not accounted for. Forecast PCC until 2020 is now even higher than in the draft plan.</p>	<p>The micro component changes cancel out, but imply different drivers for changes in demand. This information was not available at revised draft plan stage and raises new questions. In particular we would like to understand:</p> <ul style="list-style-type: none"> • Why there is such a large disparity between measured and unmeasured miscellaneous use and between resource zones; • Why unmeasured PCC increases more in the final planning solution than in the baseline; • Whether there was an error in the original assumption for dish washing.
<p>Company Response</p> <p><u>a) Miscellaneous use</u></p> <p>Since completion of the Draft WRMP the Company has updated its micro components model, which has been developed to forecast changes in household consumption for existing households, based on updated information from Waterwise as set out in Section 4.4.1 of the Final WRMP.</p> <p>Following completion of the Draft WRMP we carried out further micro component analysis on the underlying rate of PCC growth for existing household customers. In the Draft WRMP we had assumed an underlying PCC growth rate of 0.2% per annum throughout the planning period at Company level. Following an update of the micro component assumptions based on latest available data from Waterwise we have reduced the underlying growth rate to 0%. This has led to a reduction in forecast PCC and lower rate of demand growth.</p> <p>The Micro component model has been used to investigate growth in PCC by assessing the most likely growth in consumption for each micro component category including dish washing, garden use, clothes washing, hand basins, showers, baths and toilet flushing. A comprehensive list of assumptions made for each category is set out within Appendix G of the Final WRMP. The analysis has shown no overall change in average household consumption through the planning period, i.e. by summing each micro component in terms of l/h/d.</p> <p>The 0% growth factor has then been taken from the micro component model and applied to the demand forecast model for existing households, in order to derive the overall change in consumption through the planning period. It should be noted that overall PCC growth</p>	

is a result of many other factors, including the rate of metering (optants and selective metering), assumptions regarding the consumption of measured properties (optants, selectively metered properties and new properties) and meter savings assumptions, as set out in Sections 4.4.1 and 4.4.2 of the Final WRMP.

The miscellaneous use figures for unmeasured and measured households presented in Table WRP7 are calculated for the base year by subtracting the summation of the micro component values from the total base year PCC values. The miscellaneous use values are then kept at this level throughout the planning period. For the purposes of the micro component model it has been assumed that miscellaneous use will remain constant throughout the planning period, i.e. 0% growth.

We confirm that the Micro component analysis will be reviewed and updated for the next WRMP taking into account new information as this becomes available.

b) Unmeasured PCC growth

Dry year average unmeasured household PCC increases from 194.5l/h/d in 2007/08 to 222.7l/h/d in 2034/35 for the final planning case as shown by Table WRP4 – FP at Company level. This compares to a slightly lower rate of growth under the baseline scenario from 194.5l/h/d in 2007/08 to 214.3 l/h/d in 2034/35 as shown by Table WRP7 at Company level.

We confirm that the difference between these two sets of values is the result of assumptions made regarding occupancy rates for measured and unmeasured properties and the rate of metering during the planning period. All assumptions are set out within Section 4.4.1 and 4.4.2 of the Final WRMP (March 2010).

c) Dish washing

The assumptions made concerning automatic dishwasher use and dish washing by hand are set out within Appendix G of the Final WRMP (March 2010).

Following publication of the Draft WRMP our update of the Micro component analysis, using latest available data from Waterwise, resulted in a decrease in consumption for dishwashing. This decrease was due to updated assumptions regarding ownership and volume per use for dishwashers. We confirm that the Final WRMP (March 2010) shows the Company's latest projections of dishwashing consumption.

Appendix B: Metering Programme 2012/13

Metering Progress in 2012/13	East Surrey WRZ	Sutton WRZ	Company Supply Area
Household			
Metered properties at 01/04/12	57,739	41,671	99,410
New properties	1,032	769	1,801
Free meter optants	1,662	1,190	2,852
Selectively metered	2,386	1,554	3,940
Other (eg voids/re-occupied etc)	-50	-53	-103
Metered properties at 31/03/13	62,769	45,131	107,900
Meter penetration	45%	37%	42%
Non-household			
Metered properties at 01/04/12	9,047	4,385	13,432
New properties	52	34	86
Free meter optants	0	0	0
Selectively metered	9	13	22
Other (eg voids/re-occupied etc)	-131	-71	-202
Metered properties at 31/03/13	8,977	4,361	13,338
Meter penetration	89%	85%	88%

Note: Further information on the Company's metering programme is provided in Appendix D, section D5.

Appendix C: Leakage Control

Details of the Company's mains replacement programme, leak repairs and bursts for 2012/13 are set out on the tables below.

Mains replacement/refurbishment by Resource Zone in 2012/13 (km)	East Surrey WRZ	Sutton WRZ	Company Supply Area
Total length of main at 01/04/11	2331	1114	3445
Mains renewed	11	2	12
Mains relined	0	0	0
New mains	2	3	4
Mains abandoned	13	2	15
Other changes	0	0	0
Total length of main at 31/03/13	2331	1116	3447

Leak repair and Burst details in 2012/13	East Surrey WRZ	Sutton WRZ	Company Supply Area
Number of leak repairs	1274	756	2030
Average leak repair time (days)	10.6	8.2	9.7
Emergency leak repair time (days)	N/A	N/A	<1
Average volume lost	N/A	N/A	N/A
Number of leaks reported	1054	618	1672
Number of leaks detected	220	138	358
Average hour/day factor	23.0	22.0	22.5
Number of bursts	150	77	227
Total number of connected properties at 31/03/13	128,941	153,075	282,016

Leak repairs are sub-divided into a number of different types and location of leak. The "leaks reported" figure on the table represents the number of leaks that have been reported to the customer service department, or the control room. The majority of leaks are detected from daily review of the district metering data. Even when a leak is reported it has often been detected first.

The average time to repair a leak, in calendar days, is the time from when the leak is detected or reported to when the leak has been repaired. In the report year 40% of leaks were repaired in 5 calendar days or less.

97% of properties in the Company's supply area are covered by district metering. Details of the Company's District Meter Areas by resource zone are included on the following table.

District Meter Area information	East Surrey WRZ	Sutton WRZ	Company Supply Area
Number of DMAs	188	111	299
Average number of properties	843	1177	967
Average Zone Night Pressure (AZNP)	51.5	48.0	50.2
Background leakage	4.8	4.1	8.9

Note: Further information on the Company's leakage control programme is provided in Appendix D, section D3.

Appendix D: Demand Management Strategy

D1: General

The Company's demand management strategy is generally carried out on a Company-wide basis.

The key elements of the strategy are:

- efficient operation of the Company's water treatment and distribution plant
- leakage control
- metering
- promotion of the efficient use of water.

A summary of each initiative is given below.

D2 Efficient operation of treatment and distribution plant

In order to effectively promote the efficient use of water, the Company must first ensure that its own system is in order. The Company maintains existing plant in a good operational state in order to minimise wastage. Plants, especially wastewater recovery systems, are operated as efficiently as is practical. New plant is designed to be water efficient in use.

The Company will also continue to look at ways of minimising losses from its treatment works, raw water mains, trunk mains and service reservoirs. During preparation of the Final WRMP (March 2010) the Company's specialist consultant, Atkins, investigated raw water losses and submitted a report on treatment works operational use. These were reviewed for PR14 and it has been established that no change is required.

The Company continues to ensure that the quality of the water put into supply meets the required standards. In particular, iron and turbidity problems (which often result in water being run to waste) are dealt with by providing the necessary treatment at works and by carrying out a programme of mains renovation and replacement.

D3 Leakage control

The Company remains the only company in the UK water industry to operate a performance contract where its leak detection contractor is paid solely on measured reductions in night flow rates. It is capable of doing this because of its well developed, stable and reliable leakage management approach which comprises:

- a comprehensive district metering system providing continual night flow monitoring for 97% of properties;
- fully automated daily downloads of data from all district meter sites;
- bespoke systems which automatically analyse incoming data and which highlight areas requiring further investigation; and
- an incentive driven leak detection contract based on performance

The Company achieved its second lowest ever leakage figure of 23.7 MI/d in the report year, beating the pragmatic target set by Ofwat (24.5 MI/d). The current leakage level is considerably below the Company's latest assessment of the Sustainable Economic Level of Leakage (SELL) which is estimated to be 27.3 MI/d (see Section 4.4.3).

D4 Leakage in customers' premises

The Company has continued to encourage customers to be aware of and take action regarding leakage in their own properties (including supply pipes) by the following means:

- Free supply pipe leak location and repair scheme for household customers (subject to conditions) introduced in October 1997.
- Subsidised supply pipe replacement scheme for household customers where the Company considers pipework to be beyond repair.
- Customer Waste Notification Procedure maintained to give easy to understand notification and advice to customers on the action to be taken in the event of a leak occurring on their pipework.
- Control room facility manned continuously and standby staff made available in order to react immediately to emergencies involving leakage in customers' premises.
- Water efficiency audit service available free of charge at the request of commercial customers who wish to receive advice on water saving at their premises.

D5 Metering as a demand management measure

The Company continues to increase domestic meter penetration as part of its overall strategy for managing demand.

Water Industry research suggests that domestic consumption can decrease by up to 21% when a property is metered. Whilst this would appear to present an effective method of conserving supplies, specific Company experience has shown that this is dependent upon the type of property being metered, the circumstances of the occupants, and any aspiration to achieve financial savings. For example, customers who opt for a free meter are already likely to be low volume consumers and are likely to have little or no incentive to want to make savings to their already much lower water bill.

The Company currently assumes within its demand forecasts that free meter optants will reduce their consumption by 5% after a meter is fitted; and that customers who opt for a meter because they have a swimming pool, or so that they can use a sprinkler, will reduce consumption by 10% after a meter is fitted. The Company also assumes that the demand from properties fitted with a meter on change of occupancy will reduce by 10% following installation of the meter. In addition the Company assumes that the supply pipe leakage of an externally metered property is 50% less than that of an unmeasured property.

The Company continues to increase its penetration of meters at domestic properties by metering on change of occupancy and by offering free meters to all customers. In 2008/09, the Company substantially completed a programme across its entire area of supply to fit meters at properties where a customer wished to continue using an unattended garden watering device or owned a swimming pool with a capacity greater than 10m³ and which automatically topped up from the mains water supply.

Customers are made aware of the Company's meter option scheme through information on bills, the Company's customer magazine, and on its website. In accordance with the final determination for the PR09 Business Plan, the Company has now extended the coverage of its Change of Occupancy metering programme to apply across its entire area of supply. However, the average total number of meters to be installed in each year during the forthcoming period (6,400) will remain broadly the

same as the annual number installed during the AMP4 period. Additionally, all new properties are metered.

Over 6,790 meters were installed in 2012/13 at previously unmeasured properties. Approximately 4,000 were selectively metered (change of occupancy) and the remainder were free meter optants. Household meter penetration at the end of the report year was around 40%, and total meter penetration 43% of billed properties.

The Company's preferred location for installing meters at domestic properties is adjacent to the principal stopcock at the boundary of the property. The majority of meters are positioned at this point, and provide further benefit compared to internal installations in that they reduce external supply pipe leakage.

The Company is pioneering the use of radio read technology, with nearly 3,000 units installed randomly throughout the company area including 1,000 properties in two developments. This technology enables monitoring for leakage and would potentially allow the Company to introduce variable tariffs. Similar benefits are expected from the BedZed project in Hackbridge, Surrey.

The Company is playing an active role in the development of the industry's involvement in the energy Smart Metering project. The Company believes that the use by the industry of the Smart Metering project communications infrastructure will dramatically alter the way in which it engages with its customers. The switch from reading meters on a six monthly cycle to having data available in 'real time' (at whatever data intervals are agreed) offers significant potential to directly influence customer use. The implementation of the project should also be seen as an opportunity to engage with customers and the communications path that will then exist could offer the possibility to upgrade the services currently provided, for instance by offering particular advice or advance notice on an individual basis.

Water efficiency information is provided to all households and businesses that are newly metered.

D6 Promotion of the efficient use of water

General

Over the year the Company has continued to implement an extensive programme of activities to promote and enhance water efficiency. In April we were in drought and temporary use restrictions had to be imposed. Whilst these measures were able to be lifted after significant rainfall during the rest of spring and early summer, the fluctuating resource situation emphasises the need for water efficiency initiatives to be in place.

The Company focuses on encouraging consumers to use water carefully through behavioural change messages, supported by the installation of devices. The effectiveness of water efficiency devices is often dependant on the level of engagement with the consumer and their understanding of the need to protect water resources. We recognise that each consumer will have different motivational factors to saving water; for example, some customers may purely be interested in saving money on their household bills, whilst others are keen to ensure local river habitats are protected.

The wide range of activities the Company undertakes demonstrates that we are meeting our obligation to promote water efficiency, as well as making an effective contribution to demand management. A balanced approach between behavioural change ('soft') measures and device ('hard') measures has been adopted to strengthen

the robustness of the programme. This has enabled the Company to achieve a level of assumed water savings above the Ofwat mandatory target of 0.27 MI/d, with total water savings of 0.33 MI/d for the year. This places the Company in a good position to meet the target across the 2010 to 2015 period, with savings to date at 1.22 MI/d. The Company's target for the period is 1.35 MI/d.

The savings have been calculated on the same basis as previous years, using the Ofwat guidance issued in 2011.

June Return 2013

The June Return has been replaced by a Compliance Report which can be found in the Company's Annual Report. The Company has however completed a Table 1 in the same format as JR2011. A copy of the table can be found at the end of Appendix D. The following sections refer to this table.

Section A: Cistern Displacement Devices

These devices can be effective in reducing both household and non-household consumption, providing their distribution is targeted appropriately and that consumers are given sufficient details on whether the devices are suitable for their property. The devices benefit from being easy to fit and having little impact on the consumers' behaviour or lifestyle.

Requests for both Save-a-flush and Hippo bags are at a slightly higher level to that in 2011/12, with 5,448 devices issued or installed, of which 4,107 are assumed to be fitted. The devices are promoted in our customer magazine, in meter information packs, and are available to order online on the Company's partnership website with *Save Water Save Money*.

The Company has also continued to provide them at/to:

- Water audits at non-households
- Water Tasting / Water Saving public events
- Other events for distribution to staff or the public
- Housing Association plumbers
- Contractors completing energy retrofit schemes

In addition, during the year a new programme with has been initiated with Sutton and East Surrey Water Services (SESWS), whereby a selected group of engineers fit a range of water saving devices, including Save-a-flush, during visits to complete repairs to the customer's plumbing system. This programme accounts for 911 cistern displacement devices out of the total distributed.

In non-households, to ensure the devices are fitted correctly and appropriately, the majority of installations are overseen by the Company's Water Regulations and Efficiency team, who have the necessary plumbing expertise and experience with customers (also see Non-household audit section).

Total savings assumed from cistern devices equals 0.045 MI/d, of which 0.041 MI/d is from households and the remaining 0.004 MI/d from non-household properties.

Section B: Retrofit Devices

For WCs, we have continued to distribute the Ecobeta dual flush kit to Raven Housing Trust to install in their properties whilst completing repair work. In addition, as part of the water audits carried out at non-households, adjustments are made those toilets found to be capable of being converted to dual flush. In the year, 57 Ecobeta devices were fitted, with an additional 202 toilets 'converted', in a total of 79 properties, providing savings of 0.007 MI/d.

For showers, the Company has continued to provide the *Showersave* device, a shower flow regulator, within the free water saving packs. Aerated showerheads have also been installed through the SESWS retrofit programme. A total of 1,061 *Showersave* devices and 507 aerated showerheads have been distributed or installed, of which 1,249 devices are assumed installed. The assumed savings from these devices is 0.037 MI/d.

A total of 2,801 kitchen and washbasin tap inserts or attachments were distributed or fitted to 2,756 households. Of these, most are requested through the free water saving packs offer, managed through *Save Water Save Money*. From this 1,996 devices are assumed to have been installed, achieving savings of 0.056 MI/d. The new swivel-type kitchen tap attachments have been particularly popular as they provide added functionality over fixed tap outlets, allowing sinks to be cleaned more easily and without using as much water.

Section C: Outdoors

457 water butts were distributed by Allmat (East Surrey Ltd), a group company, as a result of the customer offer promoted by the Company. This is higher than the preceding year, mainly due to an increase in sales in response to communications about the drought and hosepipe ban. The Company promotes the offer in meter packs, in its customer magazine, on the website, and at summer events. An additional 11 water butts were sold through the *Save Water Save Money* partnership website. A further 22 hose trigger-guns were sold by Allmat, with 1,480 gel sachets for pot plants requested as part of the free water saving packs.

Total savings from outdoor devices is estimated to be 0.001 MI/d.

Section D: Additional Activity

This category includes shower timers and other devices which lead to savings mainly through behavioural change.

A total of 2,386 shower timers were distributed over the year to 2,381 households, mostly in response to requests from the *Save Water Save Money* website, but also the Company's programme.

The bespoke *Every Drop Counts* beakers with messaging about turning off the tap when brushing teeth continue to be given to school children following a talk or workshop on Saving Water, at specific events and now also through the SESWS retrofit programme. Savings from beakers given to school children are not counted in this category since assumed savings from the education programme are allocated under Behavioural Change. The 1,303 beakers distributed through the SESWS programme and at events are included in this category.

A new device, *LeakyLoo*, was launched in March 2013, resulting in 113 being requested. This followed research in conjunction with several other water companies

which showed leaking toilets is a common and significant issue in households. The *LeakyLoo* strip is designed to detect leaks where the toilet has an internal overflow, as these are often not noticeable to the customer. Based on the research findings, it is assumed 50% will use the device and 10% of these will find a leak averaging 400 litres a day. Further research is being carried out to substantiate these figures.

Total assumed savings from this category is 0.025 MI/d.

Section E: Behavioural Change

The Company has calculated savings from these measures in accordance with the UKWIR spreadsheet, achieving assumed savings of 0.198 MI/d. However, as Ofwat has capped the contribution from this category at 30% of the Company's water efficiency target, unless savings can be substantiated through feedback, only 0.103 MI/d of this is included in the total. Further details are given below:

Category	Number	Assumed Savings (MI/d)
Educational programme	9,525	0.107
Website Self-audits	2,786	0.027
Community Talks	235	0.002
Graphical displays of consumption on metered bills	56,109	0.049
Events and shows	2,806	0.012
Water self-audits	2,720	0.013
Total	74,181	0.198

As shown in the above table, the largest proportion of savings resulted from the educational programme, a total of 0.107 MI/d. This is an increase over the previous year. The Company's education team focuses its activities on Key Stage 2 pupils, engaging with around 60% of the primary schools in the Company's supply area, with a strong emphasis placed on water saving messages. The Saving Water Workshop, a maths-based session, continues to be popular, whilst there has been a large rise in the number of schools booking Saving Water Assemblies.

A total of 1,272 pupils were given a workshop on Saving Water, with a further 8,253 pupils given messages on using water wisely whilst visiting the Education Centre at WTW C or during an assembly talk. Those children taking part in a Saving Water Workshop receive a comic and a pledge certificate to reinforce behavioural change at home, as well as an *Every Drop Counts* beaker.

During the year we switched from having our own self-audit calculator to hosting the Energy Saving Trust's *Water Energy Calculator* on our website. The new calculator has greater functionality, using a virtual home to work out how much water, energy and carbon is being used by the household. We also benefit from receiving more detailed information from completed audits. A total of 2,143 customers viewed our self-audit calculator whilst 643 received a Water Energy Calculator report. A further 1,787 customers requested a copy of our *Every Drop Counts* leaflet, which incorporates a self-audit sheet, whilst 933 customers received this leaflet during a home retrofit visit.

Customers billed on a measured basis with at least two years of meter readings receive graphical displays of their current and past consumption, given in litres per day, with a table allowing them to compare their usage against that for typical and water efficient households of the same size. Just over 56,000 customers received graphs in the year, an increase on the previous year.

In addition 2,806 people were recorded as having visited our water tasting and water efficiency stand at various shows and events held across the Company supply area during the summer, with a further 235 given a talk by a Company representative.

Section F: Non-household Audits

The Company's Water Regulations and Efficiency team has continued to promote water efficiency whilst visiting businesses and community establishments, mainly hotels, public houses and restaurants in the year. Self-audit packs specifically aimed at non-households are given to the staff or owner of every property visited, as well as newly metered non-households, along with water efficiency recommendations.

Savings from devices installed in non-households are counted in separate sections of the table, depending on the type of devices involved. Properties that are given only cistern displacement devices are counted under Section A, with savings estimated according to the standard assumptions. Otherwise, where an extensive audit has been carried out and additional devices are fitted, such as tap aerators, shower flow regulators and water efficient showerheads, then actual savings are calculated from meter readings. These savings are allocated under this section of the table. Readings are taken at the time of audit and approximately 6-8 weeks later to calculate the difference in consumption before and after the audit. Total savings from these audits, at 10 properties, was 0.017l/d in the year, an average of 1.7m³/day per property.

In addition to these audits the team also evaluates plans of new non-household properties sent in by developers. Advice is given at this stage to incorporate good practice in water efficiency prior to the building work commencing.

Preliminary results are available for 10 of the schools taking part in the Company's Learn2Save scheme in conjunction with Waterwise and Aqualogic. The total savings are 0.015 Ml/d, or 1.5m³/day per school.

The Company invested £5000 into the Industry-wide Collaborative Fund, of which £3000 is allocated to the year 2012/13. In accordance with Ofwat guidance, this equates to 0.0176 Ml/d of savings. The Company is a member of the Fund Steering Group.

Initiatives

a) Consumer Education

Information has been given to consumers via the Company's magazine, e-newsletter, bills, leaflets, and website, and through publicity on a local and national level.

The magazine 'Water', which is distributed to all properties with bills, included several articles on water efficiency, highlighting links between hot water use and energy bills, and the availability of free bespoke water saving packs and other special offers. The *Every Drop Counts* e-newsletter is also sent out to over 1000 customers who have signed up to receive water efficiency information.

The 'Saving Water' section of the Company's website features:

- links to our *Save Water Save Money* partnership site', which offers a range of water efficient products for the home and garden
- the Water Energy Calculator, an interactive water audit to help customers find out how much water they are using at home. The results are displayed in a tailored report provided estimates of savings and suggested tips.
- details of our water butt offer
- links to other companies and organisations offering products or services to help save water
- information targeting various groups - businesses, children and schools

The website is regularly updated with press releases as they are issued. All releases include specific advice on the need to use water with care.

The distribution of relevant leaflets comprised:

- *Every Drop Counts*
- Its precious....make it your business not to waste it
- A guide to Drought Resistant Gardening
- Water Butt Offer
- Having a water meter fitted
- How we help you to detect and repair leaks

b) Local Authorities

Local Authorities are key stakeholders in achieving water efficient homes and businesses. The authorities have been engaged in educating the public by publishing water saving articles within residents' newsletters, handbooks and guides.

The Company continued to take part in the Kent Water Demand Management Group, working with Kent County Council, the Environment Agency, CC Water and other Water Companies supplying residents in Kent.

Devices and leaflets were distributed to residents in the London Borough of Sutton region through their contractors Bioregional at public events. Within the same region, 57 homes were given information and devices as part of the London-wide RE:NEW scheme.

c) Other Groups

Information and water saving devices are provided via other groups, including B&Q, Balfour Beatty, Toyota, the Transition Network and Housing Associations.

The Company has also been working with various horticultural, turf growing and sports grounds groups in association with other local water companies and Waterwise, to promote water efficiency in these areas.

d) South East England Water Efficiency Partnership

The Company is an active member of this partnership, being represented on its steering group, which is a collaboration to foster a regional approach to water efficiency. The group is chaired by the Environment Agency. Managed by Waterwise the group is producing a number of reports based on key objectives including effective communications, providing support to stakeholder groups as well as how to tackle household and non-household properties.

D7 Water efficiency savings

Table A3.1 in Appendix G summarises the water efficiency savings by water resource zone.

The total estimated savings of the Company's water efficiency strategy are as shown in the following table.

Water efficiency savings	Total saving MI/d	Saving in PCC l/h/d
Household Saving in consumption	0.289	0.450
Non-household Saving in consumption	0.036	2.755
Total Saving in water	0.326	0.496

It should be noted that these savings are theoretical and may not match actual savings achieved. It is also unknown whether the savings are permanent or temporary.

Summary of water efficiency savings (equivalent to June Return Table 1)

Model	JR2013		
Version			
Company	SES		
Table	1		
			2012-13
Line	Description	Unit	
A	Household and non household cistern displacement devices		
1	Number of cistern displacement devices distributed	nr	5,448
2	Number of cistern displacement devices installed	nr	4,107
3	Total savings assumed	MI/d	0.05
B	Retrofit devices		
4	Number of toilet devices assumed installed	nr	259
5	Number of tap devices assumed installed	nr	2,799
6	Number of shower devices assumed installed	nr	1,568
7	Total savings assumed	MI/d	0.10
C	Outdoors		
8	Number of water butts distributed to households and non-households	nr	468
9	Number of trigger guns/crystal packs distributed	nr	1,481
10	Total savings assumed	MI/d	0.00
D	Additional activity		
11	Total savings assumed	MI/d	0.04
E	Behavioural change		
12	Total savings assumed from behavioural change (information/education) activity	MI/d	0.10
F	Other non-household activity		
13	Other non-household activity - total savings assumed	MI/d	0.03
G	Totals		
14	Total savings assumed	MI/d	0.33
15	Total cost of initiatives	£000	106.94
16	Total savings (excess or shortfall) assumed carried forward from previous year	MI/d	0.00
H	Sustainable economic level of water efficiency		
17	Savings claimed in the report year to meet selwe targets	MI/d	0.00
18	Total cost of initiatives	£000	0

Appendix E: JR12 Table 10B(i) and Table 10B(ii)

Sutton and East Surrey Water		Out turn year: April 2012 to March 2013		AVERAGE		
Row ref	Derivation	WATER BALANCE COMPONENT	Units	Actual		
				East Surrey WRZ	Sutton WRZ	TOTAL
BASIC RESOURCES						
2	Input	Deployable Output	M/d	139.4600	76.3700	215.8300
3	Input	Outage Allowance	M/d	6.1800	2.7700	8.9500
4	2-3	Water Available For Use	M/d	133.2800	73.6000	206.8800
RAW WATER						
5	Input	Raw Water Abstracted	M/d	93.3720	68.7660	162.1380
6	Input	Raw Water Exported	M/d	0.0000	0.0000	0.0000
7	6-7	Raw Water Retained	M/d	93.3720	68.7660	162.1380
8	Input	Raw Water Imported	M/d	0.0000	0.0000	0.0000
9	8+9	Raw Water Collected	M/d	93.3720	68.7660	162.1380
10	Input	Raw Water Losses	M/d	0.9000	2.0000	2.9000
11	Input	Raw Water Operational Use	M/d	0.0000	0.0000	0.0000
12	Input	Non Potable Supplies	M/d	0.0000	0.0000	0.0000
13	10-11-12-13	Raw Water Into Treatment	M/d	92.4720	66.7660	159.2380
POTABLE WATER TO POINT OF DELIVERY						
14	13-15-16	Treatment Works Losses	M/d	4.1170	1.5337	5.6507
15	Input	Treatment Works Operational Use	M/d	0.3000	0.7000	1.0000
16	19+18-17	Potable Water Produced	M/d	88.0550	64.5323	152.5873
17	Input	Potable Water Imports	M/d	0.4510	3.6650	4.1160
18	Input	Potable Water Exports	M/d	3.6660	0.4863	4.1523
19	Input	Distribution Input	M/d	84.8400	67.7110	152.5510
20	Input	Distribution Losses	M/d	8.2581	6.5060	14.7641
21	19-20	Water Taken	M/d	76.5819	61.2050	137.7869
22	Input	Distribution System Operational Use	M/d	0.1100	0.1100	0.2200
23	21-22	Water Delivered	M/d	76.4719	61.0950	137.5669
POTABLE WATER CUSTOMER BASE						
24	Input	Unmeasured Household - Population	000's	209.1767	195.1009	404.2776
25	Input	Unmeasured Household - Properties	000's	78.4685	77.0055	155.4740
26	24/25	Unmeasured Household - Occupancy rate	h/pr	2.6657	2.5336	2.6003
27	Input	Measured Household - Population	000's	135.9878	102.4110	238.3988
28	Input	Measured Household - Properties	000's	60.2540	43.4010	103.6550
29	27/28	Measured Household - Occupancy rate	h/pr	2.2569	2.3596	2.2999
30	Input	Unmeasured Non-Household Population	000's	0.6032	0.3911	0.9942
31	Input	Unmeasured Non-Household - Properties	000's	1.1370	0.7740	1.9110
32	Input	Measured Non-Household - Population	000's	8.2785	3.8249	12.1034
33	Input	Measured Non-Household - Properties	000's	9.0120	4.3730	13.3850
34	24+27+30+32	Total Population	000's	354.0461	301.7278	655.7740
35	Input	Void Household - Properties	000's	2.7970	2.5960	5.3930
36	Input	Void Non-Households - Properties	000's	0.9480	0.4610	1.4090
37	25+28+31+33+35+36	Total Properties	000's	152.6165	128.6105	281.2270
POTABLE WATER DELIVERED						
38	23-39	Water Taken Unbilled	M/d	0.2150	0.2696	0.4846
39	40+44+48+51	Water Delivered Billed	M/d	76.2569	60.8254	137.0823
40	Input	Unmeasured Household Water Delivered	M/d	40.7442	38.0050	78.7492
41	Input	Unmeasured Household - USPL	M/d	3.1387	3.0802	6.2190
42	40-41	Unmeasured Household - Consumption	M/d	37.6054	34.9248	72.5302
43	(42*1000000)/(24*1000)	Unmeasured Household - PCC	l/h/d	179.7783	179.0089	179.4070
44	Input	Measured Household Water Delivered	M/d	18.8263	14.5645	33.3908
45	Input	Measured Household - USPL	M/d	1.2408	0.9116	2.1525
46	47-48	Measured Household - Consumption	M/d	17.5855	13.6529	31.2383
47	(47*1000000)/(27*1000)	Measured Household - PCC	l/h/d	129.3165	133.3143	131.0339
48	Input	Unmeasured Non-Household Water Delivered	M/d	0.5401	0.3677	0.9077
49	Input	Unmeasured Non-Household - USPL	M/d	0.0455	0.0310	0.0764
50	48-49	Unmeasured Non-Household - Consumption	M/d	0.4946	0.3367	0.8313
51	Input	Measured Non-Household Water Delivered	M/d	16.1464	7.8882	24.0346
52	Input	Measured Non-Household - USPL	M/d	0.1776	0.1395	0.3171
53	51-52	Measured Non-Household - Consumption	M/d	15.9688	7.7487	23.7175
54	Input	Void Properties - USPL	M/d	0.1142	0.0947	0.2089
LEAKAGE						
55	20+41+45+49+52+54	Total Leakage	M/d	12.9750	10.7630	23.7380
56	(55*1000000)/(37*1000)	Total Leakage	l/prop/d	85.0170	83.6868	84.4087
SUPPLY DEMAND BALANCE						
68	(4+8+17-6-18)-19	Available Headroom	M/d	45.2250	9.0677	54.2927
69	Input	Target Headroom	M/d	10.2400	6.3200	16.5600

**Table 10B (i) - Environment agency data - annual average out-turn
Commentary by COMPANY**

Commentary by Line

Section A : Basic resources

10B(i).02 : Report year deployable output takes into account changes made since submission of the 2004 Water Resources Plan (WRP). Adjustments include increases in deployable output achieved as part of the ongoing source improvements programme and reassessments carried out as part of the process for the Water Resources Management Plan. The following table is a reconciliation between the 2004 Water Resources Plan, the Final Water Resources Management Plan (March 2010), and this Annual Review 2013.

Deployable Output	East Surrey WRZ		Sutton WRZ		Company	
	Average MI/d	Peak MI/d	Average MI/d	Peak MI/d	Average MI/d	Peak MI/d
WRP 2004	130.21	156.93	70.42	90.13	200.63	247.06
Water quality 04/05	- 0.45	- 1.20	-	-	-0.45	-1.20
Reassessment 04/05	- 1.01	- 1.14	-	- 3.00	-1.01	-4.14
Improvements 04/05	-	-	0.90	3.84	0.90	3.84
JR2005	128.75	154.59	71.32	90.97	200.07	245.56
Water quality 05/06	-	-	-	-	-	-
Reassessment 05/06	-	9.50	1.40	-1.80	1.40	7.70
Improvements 05/06	0.80	0.80	-	5.18	0.80	5.98
JR2006	129.55	164.89	72.72	94.35	202.27	259.24
Water quality 06/07	-	-	-	-	-	-
Reassessment 06/07	1.40	1.40	-	-	1.40	1.40
Improvements 06/07	4.75	9.96	1.66	6.22	6.41	16.18
JR2007	135.70	176.25	74.38	100.57	210.08	276.82
Water quality 07/08	-	-	-	-	-	-
Reassessment 07/08	2.02	-6.65	-0.19	0.59	1.83	-6.06
Improvements 07/08	1.21		5.68	5.68	6.89	5.68
JR2008	138.93	169.60	79.87	106.84	218.80	276.44
Water quality 08/09	-	-	-	-	-	-
Reassessment 08/09	-3.57	-	-1.68	0.28	-5.25	0.28
Improvements 08/09	-	-	-	-	-	-
JR2009	135.36	169.60	78.19	107.12	213.55	276.72
Water quality 09/10	-	-	-	-	-	-
Reassessment 09/10	-	-	-	-	-	-
Improvements 09/10	-	-	0.25	3.02	0.25	3.02

Deployable Output	East Surrey WRZ		Sutton WRZ		Company	
	Average MI/d	Peak MI/d	Average MI/d	Peak MI/d	Average MI/d	Peak MI/d
JR2010	135.36	169.60	78.44	110.14	213.80	279.74
Improvements 10/11	-1.30	9.00	-	-	-1.30	9.00
JR2011	134.06	178.60	78.44	110.14	212.50	288.74
Improvements 11/12	-	-	-	-	-	-
WRMP AR2012	134.06	178.60	78.44	110.14	212.50	288.74
Reassessments 12/13	5.6	-	-2.07	-2.73	3.53	-2.73
Improvements 12/13	-0.2	5.0	-	-	-0.2	5.0
WRMP AR2013	139.46	183.6	76.37	107.41	215.83	291.01
Final WRMP (2010)	133.34	183.6	78.44	110.14	211.78	293.74

10B(i).03 : Outage figures are taken from the Final Water Resources Management Plan (March 2010). The figures are consistent with the third Water Resources Management Plan Annual Review (published March 2011).

10B(i).04 : The Water Available for Use figure on this table is not the same as the figure used in the SOSI calculation (the equivalent of JR table 10A(i)) from which raw water losses and treatment works losses have been deducted (EA definition). The following table provides a reconciliation.

	East Surrey WRZ		Sutton WRZ		Company	
	Average MI/d	Peak MI/d	Average MI/d	Peak MI/d	Average MI/d	Peak MI/d
Deployable Output	139.46	183.60	76.37	107.40	215.83	291.00
Outage	6.18	3.85	2.77	2.38	8.95	6.23
WAFU table 10B line 4	133.28	179.75	73.60	105.03	206.88	284.78
Raw water losses	0.90	0.90	2.00	2.00	2.90	2.90
TW losses	0.30	0.40	0.70	0.80	1.00	1.20
WAFU table 10A column 2	132.08	178.45	70.90	102.23	202.98	280.68

Section B : Raw water

10B(i).05 : Raw water data abstracted from the company's database, consistent with submissions to the Environment Agency (EA). Note that compensation water abstracted for maintaining the levels in ponds at Carshalton, Ewell, and Fetcham is not included in these totals (or in reported deployable output).

10B(i).06 to 9 : The Company has no raw water imports or exports. In previous years, a raw water transfer was reported from Source 12 (East Surrey water resource zone) to WTW B (Sutton water resource zone). The Source 12 licence has been amended by the

Environment Agency and is now part of the WTW B group licence and included in the deployable output for the Sutton water resource zone.

10B(i).10 : An assessment of raw water losses was made in 2007/08 by the Company's specialist consultant, Atkins.

10B(i).11 : Raw water operational use is not measured separately and is included in line 14.

Section C : Potable water to point of delivery

10B(i).14 : The treatment works losses included in line 14 are the difference between 'Raw Water into Treatment' (line 13) and 'Potable Water Produced' (line 16).

The 'Raw Water into Treatment' figure is the amount of water abstracted (as reported to the Environment Agency) less the assessed raw water losses reported in line 10. The difference between this figure and the 'Potable Water Produced' includes some or all of the following:

- a) raw water pumped to waste when starting up a borehole;
- b) raw or treated water pumped to waste because of a pollution incident;
- c) raw water lost as a result of a burst main;
- d) raw or treated water pumped to waste during testing or commissioning of new plant;
- e) any other raw water losses not included in the allowance made in line 10;
- f) treated water pumped to waste when starting up a treatment works after a shutdown;
- g) raw water used for quality testing;
- h) washwater that has not been recovered; and
- i) meter error.

Some of these are raw water losses, raw water operational use, treatment works losses or treatment works operational use, but others, (b), (c) (d) and (e) in particular, could be deemed to be outage. Because it is not possible to measure all of these quantities and allocate them to the appropriate line, they have been kept together in line 14.

The company retained Atkins Water in 2006/07 to review the estimates of losses (including operational usage) that occur between abstraction and the outputs from the treatment works. This work was completed in the report year and the outputs are included in the Water Resources Management Plan (Final version published in March 2010). The work estimates have been reviewed as part of the WRMP2014 work.

The company has put in place procedures and methodologies for recording some of these losses. In particular, in the report year:

- operational shutdowns at WTW C (as part of the refurbishment work being carried out there) required raw water to be run to waste
- some boreholes with known quality problems were run to waste before being put through the treatment works
- WTW F was taken out of service for maintenance and had to be run to waste before being put into supply
- WTW D was only run intermittently, and had to be run to waste before being put into supply
- power interruptions at WTW C and WTW B (mostly unplanned).

10B(i).17 : Potable imports into the Sutton WRZ from the East Surrey WRZ averaged approximately 3.66 Ml/d over the year (0.09 from WTW G to Service Reservoir 2, and 3.57

MI/d from Source 24 PS to Service Reservoir 1). The 0.45 MI/d import to the East Surrey WRZ was water transferred by gravity from Service Reservoir 1 to Source 24 to keep the water in the main “sweet” whilst the pumps at Source 24 were switched off. Therefore, the net transfer from the East Surrey WRZ to the Sutton WRZ was 3.21 MI/d (3.66 - 0.45).

10B(i).18 : Potable exports include 0.001 MI/d (average) exported to Southern Water, 0.35 MI/d to Scottish and Southern Energy, and the 3.21 MI/d (net average – see commentary on line 17) export from the East Surrey water resource zone to the Sutton water resource zone (WTW G to Service Reservoir 2, and Source 24 Booster PS to Service Reservoir 1).

10B(i).19 : Distribution input data from the Company’s database.

Section D : Potable water customer base

10B(i).24 to 37 : Property figures are from the Company’s billing database. Population figures are derived from occupancy rates from the Water Resources Management Plan (Final published March 2010) adjusted to take into account actual property movements (new properties, meter optants, properties metered on change of occupancy) in the report year.

Section E : Potable water delivered

10B(i).41 : Unmeasured household supply pipe leakage based on 40 l/pr/d.

10B(i).44 : Measured household water delivered figures include an allowance of 3% for meter under-registration.

10B(i).45 : Measured household supply pipe leakage based on 20 l/pr/d for properties with external meters, and 40 l/pr/d for other metered properties.

10B(i).49 : Unmeasured non-household supply pipe leakage based on 40 l/pr/d.

10B(i).51 : Measured non-household water delivered figures include an allowance of 3% for meter under-registration.

10B(i).52 : Measured non-household supply pipe leakage based on 20 l/pr/d for properties with external meters, and 40 l/pr/d for other metered properties.

Section F : Leakage

10B(i).55 : Leakage figures are consistent with those reported elsewhere.

Sutton and East Surrey Water	Out turn year: April 2012 to March 2013
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PEAK

Row ref	Derivation	WATER BALANCE COMPONENT	Units	Peak		
				East Surrey WRZ	Sutton WRZ	TOTAL
BASIC RESOURCES						
2	Input	Deployable Output	M/d	183.6000	107.4100	291.010
3	Input	Outage Allowance	M/d	3.8500	2.3800	6.230
4	2-3	Water Available For Use	M/d	179.7500	105.0300	284.780
RAW WATER						
5	Input	Raw Water Abstracted	M/d	104.5810	66.4090	170.990
6	Input	Raw Water Exported	M/d	0.0000	0.0000	0.000
7	6-7	Raw Water Retained	M/d	104.5810	66.4090	170.990
8	Input	Raw Water Imported	M/d	0.0000	0.0000	0.000
9	8+9	Raw Water Collected	M/d	104.5810	66.4090	170.990
10	Input	Raw Water Losses	M/d	0.9000	2.0000	2.900
11	Input	Raw Water Operational Use	M/d	0.0000	0.0000	0.000
12	Input	Non Potable Supplies	M/d	0.0000	0.0000	0.000
13	10-11-12-13	Raw Water Into Treatment	M/d	103.6810	64.4090	168.090
POTABLE WATER TO POINT OF DELIVERY						
14	13-15-16	Treatment Works Losses	M/d	2.9440	-2.7320	0.212
15	Input	Treatment Works Operational Use	M/d	0.4000	0.8000	1.200
16	19+18-17	Potable Water Produced	M/d	100.3370	66.3410	166.678
17	Input	Potable Water Imports	M/d	0.4510	7.2800	7.731
18	Input	Potable Water Exports	M/d	7.2880	0.0000	7.288
19	Input	Distribution Input	M/d	93.5000	73.6210	167.121
20	Input	Distribution Losses	M/d	8.2581	6.5060	14.764
21	19-20	Water Taken	M/d	85.2419	67.1150	152.357
22	Input	Distribution System Operational Use	M/d	0.1100	0.1100	0.220
23	21-22	Water Delivered	M/d	85.1319	67.0050	152.137
POTABLE WATER CUSTOMER BASE						
24	Input	Unmeasured Household - Population	000's	209.1767	195.1009	404.278
25	Input	Unmeasured Household - Properties	000's	78.4685	77.0055	155.474
26	24/25	Unmeasured Household - Occupancy rate	h/pr	2.6657	2.5336	2.600
27	Input	Measured Household - Population	000's	135.9878	102.4110	238.399
28	Input	Measured Household - Properties	000's	60.2540	43.4010	103.655
29	27/28	Measured Household - Occupancy rate	h/pr	2.2569	2.3596	2.300
30	Input	Unmeasured Non-Household Population	000's	0.6032	0.3911	0.994
31	Input	Unmeasured Non-Household - Properties	000's	1.1370	0.7740	1.911
32	Input	Measured Non-Household - Population	000's	8.2785	3.8249	12.103
33	Input	Measured Non-Household - Properties	000's	9.0120	4.3730	13.385
34	24+27+30+32	Total Population	000's	354.0461	301.7278	655.774
35	Input	Void Household - Properties	000's	2.7970	2.5960	5.393
36	Input	Void Non-Households - Properties	000's	0.9480	0.4610	1.409
37	25+28+31+33+35+36	Total Properties	000's	152.6165	128.6105	281.227
POTABLE WATER DELIVERED						
38	23-39	Water Taken Unbilled	M/d	0.2480	0.3027	0.551
39	40+44+48+51	Water Delivered Billed	M/d	84.8839	66.7023	151.586
40	Input	Unmeasured Household Water Delivered	M/d	45.3536	41.6770	87.031
41	Input	Unmeasured Household - USPL	M/d	3.1387	3.0802	6.219
42	40-41	Unmeasured Household - Consumption	M/d	42.2149	38.5968	80.812
43	(42*1000000)/(24*1000)	Unmeasured Household - PCC	l/h/d	201.8143	197.8299	199.891
44	Input	Measured Household Water Delivered	M/d	20.9561	15.9717	36.928
45	Input	Measured Household - USPL	M/d	1.2408	0.9116	2.152
46	47-48	Measured Household - Consumption	M/d	19.7153	15.0601	34.775
47	(47*1000000)/(27*1000)	Measured Household - PCC	l/h/d	144.9782	147.0550	145.870
48	Input	Unmeasured Non-Household Water Delivered	M/d	0.6012	0.4032	1.004
49	Input	Unmeasured Non-Household - USPL	M/d	0.0455	0.0310	0.076
50	48-49	Unmeasured Non-Household - Consumption	M/d	0.5557	0.3722	0.928
51	Input	Measured Non-Household Water Delivered	M/d	17.9730	8.6504	26.623
52	Input	Measured Non-Household - USPL	M/d	0.1776	0.1395	0.317
53	51-52	Measured Non-Household - Consumption	M/d	17.7954	8.5109	26.306
54	Input	Void Properties - USPL	M/d	0.1142	0.0947	0.209
LEAKAGE						
55	20+41+45+49+52+54	Total Leakage	M/d	12.9750	10.7630	23.738
56	(55*1000000)/(37*1000)	Total Leakage	l/prop/d	85.0170	83.6868	84.409
SUPPLY DEMAND BALANCE						
68	(4+8+17-6-18)-19	Available Headroom	M/d	79.4130	38.6890	118.102
69	Input	Target Headroom	M/d	17.5100	11.2100	28.72

**Table 10B (ii) - Environment agency data - critical period
Commentary by COMPANY**

General

The Company's critical period is the peak week.

The figures in this table are for the Company peak week. Peak weeks in individual resource zones may have been higher.

Commentary by Line

Section A : Basic resources

10B(ii).02 : Report year deployable output takes into account changes made since submission of the 2004 Water Resources Plan (WRP). Adjustments include increases in deployable output achieved as part of the ongoing source improvements programme and reassessments carried out as part of the process for the Water Resources Management Plan. The figures are consistent with the second Water Resources Management Plan Annual Review (published March 2011). A reconciliation between the 2004 Water Resources Plan, the Final Water Resources Management Plan (March 2010) and this Annual Review, can be found in the commentary on Table 10B(i) line 02.

10B(i).03 : Outage figures are taken from the Final Water Resources Management Plan (March 2010). The figures are consistent with the third Water Resources Management Plan Annual Review (published March 2011).

10B(ii).04 : The Water Available for Use figure on this table is not the same as the figure used in the SOSI calculation (the equivalent of JR table 10A(i)) from which raw water losses and treatment works losses have been deducted (EA definition). A reconciliation is provided in the commentary on Table 10B(i), line 04.

Section B : Raw water

10B(ii).05 : Raw water data abstracted from the company's database, consistent with submissions to the Environment Agency (EA). Note that compensation water abstracted for maintaining the levels in ponds at Carshalton, Ewell, and Fetcham is not included in these totals (or in reported deployable output).

10B(ii).06 to 9 : The Company has no raw water imports or exports. In previous years, a raw water transfer was reported from Source 12 (East Surrey water resource zone) to WTW B (Sutton water resource zone). The Source 12 licence has now been amended by the Environment Agency and it is now part of the WTW B group licence and included in the deployable output for the Sutton water resource zone.

10B(ii).10 : An assessment of raw water losses was made in 2007/08 by the Company's specialist consultant, Atkins.

10B(ii).11 : Raw water operational use is not measured separately and is included in line 14.

Section C : Potable water to point of delivery

10B(ii).14 : Treatment works losses include raw water losses, and raw and treated water operational use. See commentary on Table 10B(i), line 14.

10B(ii).17 : Net potable water imports into the Sutton WRZ from the East Surrey WRZ averaged 7.28 MI/d in the Company peak week (3 to 9 September 2012), made up of 0 MI/d from WTW G to Service Reservoir 2 (East Surrey to Sutton) and 7.28 from Service Reservoir 1 to Source 24 (Sutton to East Surrey).

10B(ii).18 : Potable exports in the peak week include 0.001 MI/d exported to Southern Water, 0 MI/d from WTW G to Service Reservoir 2 (East Surrey to Sutton) and 0 MI/d transferred from by gravity from Service Reservoir 1 to Source 24 (Sutton to East Surrey).

10B(ii).19 : Distribution input data from the Company's database

Section D : Potable water customer base

10B(ii).24 to 37 : Property figures are from the Company's billing database. Population figures are derived from occupancy rates from the Water Resources Management Plan (Final published March 2010) adjusted to take into account actual property movements (new properties, meter optants, properties metered on change of occupancy) in the report year. Additional details of the methodology can be found in the table 7 commentary.

Section E : Potable water delivered

10B(ii).41 : Unmeasured household supply pipe leakage based on 40 l/pr/d.

10B(ii).44 : Measured household water delivered figures include an allowance of 3% for meter under-registration.

10B(ii).45 : Measured household supply pipe leakage based on 20 l/pr/d for properties with external meters, and 40 l/pr/d for other metered properties.

10B(ii).49 : Unmeasured non-household supply pipe leakage based on 40 l/pr/d.

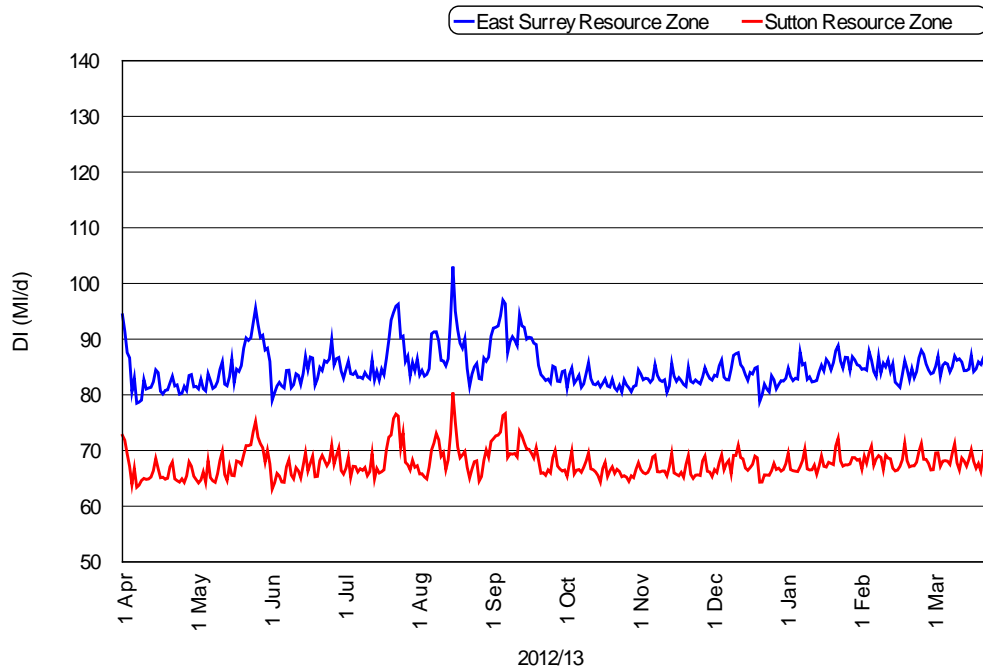
10B(ii).51 : Measured non-household water delivered figures include an allowance of 3% for meter under-registration.

10B(ii).52 : Measured non-household supply pipe leakage based on 20 l/pr/d for properties with external meters, and 40 l/pr/d for other metered properties.

Section F : Leakage

10B(ii).55 : Leakage in a peak week is assumed to be the same as average leakage. Leakage might be expected to reduce slightly in peak periods because pressures in the distribution system can be lower when demand is high.

Appendix F: Graphs of Distribution Input SESW Daily DI (2012/13)



SESW Monthly Daily Average DI (2012/13)



Appendix G: Impact of Water efficiency measures

Table A3.1 Impact of water efficiency measures	Units	East Surrey WRZ	Sutton WRZ	Company Supply Area
Household customers - total				
Properties	000	138.723	120.407	259.129
Population	000	345.165	297.512	642.677
Cistern device savings	MI/d	0.024	0.021	0.045
Savings due to other water efficiency initiatives	MI/d	0.134	0.110	0.244
Total savings in household consumption	MI/d	0.159	0.131	0.289
Reduction in per capita consumption	l/h/d	0.459	0.440	0.450
Reduction in water delivered per head	l/h/d	0.459	0.440	0.450
Household customers measured				
Properties	000	60.254	43.401	103.655
Population	000	135.988	102.411	238.399
Savings in measured household consumption	MI/d	0.094	0.071	0.165
Reduction in per capita consumption	l/h/d	0.694	0.694	0.694
Reduction in water delivered per head	l/h/d	0.694	0.694	0.694
Household customers unmeasured				
Properties	000	78.469	77.006	155.474
Population	000	209.177	195.101	404.278
Savings in unmeasured household consumption	MI/d	0.064	0.060	0.124
Reduction in per capita consumption	l/h/d	0.307	0.307	0.307
Reduction in water delivered per head	l/h/d	0.307	0.307	0.307
Non-household customers - total				
Population non-household	000	8.882	4.216	13.098
Total savings in water delivered to non-households	MI/d	0.025	0.011	0.036
Reduction in per capita consumption	l/h/d	2.778	2.704	2.755
Non-household customers - measured				
Population measured non-households	000	8.278	3.825	12.10335
Savings in water delivered to measured non-households	MI/d	0.025	0.011	0.036
Reduction in per capita consumption	l/h/d	2.981	2.981	2.981
Non-household customers - unmeasured				
Population unmeasured non-households	000	0.603	0.391	0.994223
Savings in water delivered to unmeasured non-households	MI/d	0.000	0.000	0.000
Reduction in per capita consumption	l/h/d	0.000	0.000	0.000

Appendix H: Supply demand balance and water resources assumptions

Table A4.1 Supply /Demand Balance Assumptions	2012/13	2013/14
Company Level	Actual	Forecast
Growth in household properties (No.)	1580	2776
Growth in non-household properties (No.)	-140	0
Occupancy rate for unmeasured households	2.60	2.59
Occupancy rate for measured households	2.30	2.31
Occupancy rate for unmeasured non households	0.90	0.90
Occupancy rate for measured non households	0.52	0.52
Occupancy rate of free meter optants	2.06	2.02
Occupancy rate for selectively metered properties	2.61	2.60
PCC unmeasured household (l/h/d)	179.1	187.9
PCC measured household (l/h/d)	131.4	152.7
USPL unmeasured households (MI/d)	6.22	5.95
USPL measured households (MI/d)	2.15	2.35
USPL unmeasured non households (MI/d)	0.08	0.08
USPL measured non households (MI/d)	0.32	0.27
Household free meter optants (No.)	2,852	1,680
Household selective meters (No.)	3,940	4,830
Leakage (MI/d)	23.7	24.5
Notes:		
1. Actual values for 2012/13 are from Table 10B(i) or Company back-up		
2. Forecast values for 2013/14 are SESW's best estimate normal year values derived from the Company's demand forecast model (v6)		
3. Underground supply pipe leakage (USPL) values are calculated assuming 40l/prop/d for unmeasured properties and 20l/prop/day for measured properties		

Appendix I: WRMP Annual Review data requirement

Sutton and East Surrey Water				Annual Return	2012/13	2 Water resource zones in supply area.		
ANNUAL RETURN - WATER BALANCE COMPONENTS								
Environment Agency Data - annual average out-turns								
Row number	DESCRIPTION	UNITS	DP		East Surrey Zone 1 of 2	Sutton Zone 2 of 2	Total 2 WRZs	
SUPPLY								
A Resources								
1 _{AR}	Raw water abstracted	MI/d	2dp		93.372	68.766	162.138	
2 _{AR}	Raw water imported	MI/d	2dp		0.00	0.00	0.00	
3 _{AR}	Potable water imported	MI/d	2dp		0.45	3.67	4.12	
4 _{AR}	Raw Water Losses and Operational Use	MI/d	2dp		0.90	2.00	2.90	
5 _{AR}	Raw water exported	MI/d	2dp		0.00	0.00	0.00	
5.1 _{AR}	Non potable water supplied	MI/d	2dp		0.00	0.00	0.00	
6 _{AR}	Potable water exported	MI/d	2dp		3.67	0.49	4.15	
7 _{AR}	Deployable output (submit data by exception)	MI/d	2dp		139.46	76.37	215.83	
B Process Losses								
9 _{AR}	Treatment works losses and operational use (submit data by exception)	MI/d	2dp		4.42	2.23	6.65	
10 _{AR}	Outage experienced	MI/d	2dp		6.18	2.77	8.95	
DEMAND								
11 _{AR}	Distribution input	MI/d	2dp		93.50	73.62	167.12	
C Consumption								
19 _{AR}	Measured non household water delivered	MI/d	2dp		16.15	7.89	24.03	
20 _{AR}	Unmeasured non household water delivered (optional)	MI/d	2dp		0.54	0.37	0.91	
21 _{AR}	Measured household water delivered	MI/d	2dp		18.83	14.56	33.39	
22 _{AR}	Unmeasured household water delivered	MI/d	2dp		40.74	38.01	78.75	
23 _{AR}	Measured non household - consumption	MI/d	2dp		15.97	7.75	23.72	
24 _{AR}	Unmeasured non household - consumption	MI/d	2dp		0.49	0.34	0.83	
25 _{AR}	Measured household - consumption	MI/d	2dp		17.59	13.65	31.24	
26 _{AR}	Unmeasured household - consumption	MI/d	2dp		37.61	34.92	72.53	
29 _{AR}	Measured household - pcc	l/h/d	0dp		129.32	133.31	131.03	
30 _{AR}	Unmeasured household - pcc	l/h/d	0dp		179.78	179.01	179.41	
31 _{AR}	Average household - pcc	l/h/d	0dp		159.90	163.28	161.46	
32 _{AR}	Water taken unbilled	MI/d	2dp		0.22	0.27	0.48	
33 _{AR}	Distribution system operational use	MI/d	2dp		0.11	0.11	0.22	
D Leakage								
34 _{AR}	Measured non household - uspl	MI/d	2dp		0.18	0.14	0.32	
35 _{AR}	Unmeasured non-household - uspl	MI/d	2dp		0.05	0.03	0.08	
36 _{AR}	Measured household - uspl	MI/d	2dp		1.24	0.91	2.15	
37 _{AR}	Unmeasured household - uspl	MI/d	2dp		3.14	3.08	6.22	
38 _{AR}	Void properties - uspl	MI/d	2dp		0.11	0.09	0.21	
39 _{AR}	Total mains and trunk mains leakage (Distribution Losses)	MI/d	2dp		8.26	6.51	14.76	
40 _{AR}	Total leakage	MI/d	2dp		12.98	10.76	23.74	
41 _{AR}	Total leakage	l/prop/d	2dp		85.02	83.69	84.41	
CUSTOMERS								
E Properties								
43 _{AR}	Unmeasured household - properties	000's	3dp		78.4685	77.0055	155.47	
42 _{AR}	Measured household - properties	000's	3dp		60.254	43.401	103.66	
46 _{AR}	Unmeasured non household - properties	000's	3dp		1.137	0.774	1.91	
45 _{AR}	Measured non household - properties	000's	3dp		9.012	4.373	13.39	
44 _{AR}	Void household - properties	000's	3dp		2.797	2.596	5.39	
47 _{AR}	Void non households - properties	000's	3dp		0.948	0.461	1.41	
48 _{AR}	Total properties	000's	3dp		152.62	128.61	281.23	
F Population								
50 _{AR}	Unmeasured household - population	000's	3dp		209.177	195.101	404.278	
49 _{AR}	Measured household - population	000's	3dp		135.988	102.411	238.399	
52 _{AR}	Unmeasured non household population	000's	3dp		0.603	0.391	0.994	
51 _{AR}	Measured non household - population	000's	3dp		8.279	3.825	12.103	
53 _{AR}	Total population	000's	3dp		354.05	301.73	655.774	
G Occupancy								
55 _{AR}	Unmeasured household - occupancy rate	h/pr	2dp		2.67	2.53	2.60	
54 _{AR}	Measured household - occupancy rate	h/pr	2dp		2.26	2.36	2.30	
H Metering								
56 _{AR}	Total Household Metering penetration (excl. voids)	%	2dp		43%	36%	40%	
57 _{AR}	Total Household Metering penetration (incl. voids)	%	2dp		43%	35%	39%	

Sutton and East Surrey Water				Annual Return	2012/13	2 Water resource zones in supply area.		
ANNUAL RETURN - WATER BALANCE COMPONENTS								
Environment Agency Data - peak week out-turns								
Row number	DESCRIPTION	UNITS	DP	East Surrey Zone 1 of 2	Sutton Zone 2 of 2	Total 2 WRZs		
SUPPLY								
A Resources								
1 _{AR}	Raw water abstracted	MI/d	2dp	104.581	66.409	170.99		
2 _{AR}	Raw water imported	MI/d	2dp	0.00	0.00	0.00		
3 _{AR}	Potable water imported	MI/d	2dp	0.00	7.28	7.28		
4 _{AR}	Raw Water Losses and Operational Use	MI/d	2dp	0.90	2.00	2.90		
5 _{AR}	Raw water exported	MI/d	2dp	0.00	0.00	0.00		
5.1 _{AR}	Non potable water supplied	MI/d	2dp	0.00	0.00	0.00		
6 _{AR}	Potable water exported	MI/d	2dp	7.29	0.00	7.29		
7 _{AR}	Deployable output (submit data by exception)	MI/d	2dp	183.60	107.41	291.01		
B Process Losses								
9 _{AR}	Treatment works losses and operational use (submit data by exception)	MI/d	2dp	3.34	-1.93	1.41		
10 _{AR}	Outage experienced	MI/d	2dp	6.18	2.77	8.95		
DEMAND								
11 _{AR}	Distribution input	MI/d	2dp	84.84	67.71	152.55		
C Consumption								
19 _{AR}	Measured non household water delivered	MI/d	2dp	17.97	8.65	26.62		
20 _{AR}	Unmeasured non household water delivered (optional)	MI/d	2dp	0.60	0.40	1.00		
21 _{AR}	Measured household water delivered	MI/d	2dp	20.96	15.97	36.93		
22 _{AR}	Unmeasured household water delivered	MI/d	2dp	45.35	41.68	87.03		
23 _{AR}	Measured non household - consumption	MI/d	2dp	17.80	8.51	26.31		
24 _{AR}	Unmeasured non household - consumption	MI/d	2dp	0.56	0.37	0.93		
25 _{AR}	Measured household - consumption	MI/d	2dp	19.72	15.06	34.78		
26 _{AR}	Unmeasured household - consumption	MI/d	2dp	42.21	38.60	80.81		
29 _{AR}	Measured household - pcc	l/h/d	0dp	144.98	147.06	145.87		
30 _{AR}	Unmeasured household - pcc	l/h/d	0dp	201.81	197.83	199.89		
31 _{AR}	Average household - pcc	l/h/d	0dp	179.42	180.35	179.85		
32 _{AR}	Water taken unbilled	MI/d	2dp	0.25	0.30	0.55		
33 _{AR}	Distribution system operational use	MI/d	2dp	0.11	0.11	0.22		
D Leakage								
34 _{AR}	Measured non household - uspl	MI/d	2dp	0.18	0.14	0.32		
35 _{AR}	Unmeasured non-household - uspl	MI/d	2dp	0.05	0.03	0.08		
36 _{AR}	Measured household - uspl	MI/d	2dp	1.24	0.91	2.15		
37 _{AR}	Unmeasured household - uspl	MI/d	2dp	3.14	3.08	6.22		
38 _{AR}	Void properties - uspl	MI/d	2dp	0.11	0.09	0.21		
39 _{AR}	Total mains and trunk mains leakage (Distribution Losses)	MI/d	2dp	8.26	6.51	14.76		
40 _{AR}	Total leakage	MI/d	2dp	12.98	10.76	23.74		
41 _{AR}	Total leakage	l/prop/d	2dp	85.02	83.69	84.41		
CUSTOMERS								
E Properties								
43 _{AR}	Unmeasured household - properties	000's	3dp	78.4685	77.0055	155.47		
42 _{AR}	Measured household - properties	000's	3dp	60.254	43.401	103.66		
46 _{AR}	Unmeasured non household - properties	000's	3dp	1.137	0.774	1.91		
45 _{AR}	Measured non household - properties	000's	3dp	9.012	4.373	13.39		
44 _{AR}	Void household - properties	000's	3dp	2.797	2.596	5.39		
47 _{AR}	Void non households - properties	000's	3dp	0.948	0.461	1.41		
48 _{AR}	Total properties	000's	3dp	152.62	128.61	281.23		
F Population								
50 _{AR}	Unmeasured household - population	000's	3dp	209.177	195.101	404.278		
49 _{AR}	Measured household - population	000's	3dp	135.988	102.411	238.399		
52 _{AR}	Unmeasured non household population	000's	3dp	0.603	0.391	0.994		
51 _{AR}	Measured non household - population	000's	3dp	8.279	3.825	12.103		
53 _{AR}	Total population	000's	3dp	354.05	301.73	655.774		
G Occupancy								
55 _{AR}	Unmeasured household - occupancy rate	h/pr	2dp	2.67	2.53	2.60		
54 _{AR}	Measured household - occupancy rate	h/pr	2dp	2.26	2.36	2.30		
H Metering								
56 _{AR}	Total Household Metering penetration (excl. voids)	%	2dp	43%	36%	40%		
57 _{AR}	Total Household Metering penetration (incl. voids)	%	2dp	43%	35%	39%		

Notes on EA tables:

1. Figures are consistent with tables in Appendix E
2. Line 7 – deployable output figures are actual for 2012/13
3. Line 9 – Treatment works losses are a calculated figure (see commentary in Appendix E).
The negative figures in the critical period table are probably as a consequence of using reservoir storage to meet peak demands.