ESSEX & SUFFOLK WATER

Annual Review of the Water Resources Management Plan

January 2012

DOCUMENT CONTROL SHEET

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Exclusions on the Grounds of National Security

Northumbrian Water Limited has not excluded any information from this plan on the grounds that the information would be contrary to the interests of national security.

Under Section 37B(10)(b) of the Water Industry Act 1991, as amended by the Water Act 2003 ("the Act"), the Secretary of State can direct the company to exclude any information from the published Plan on the grounds that it appears to him that its publication would be contrary to the interests of national security.

Northumbrian Water is a trading division of Northumbrian Water Limited which is a group company of Northumbrian Water Group

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SUMMARY OF ANNUAL UPDATE

Essex & Suffolk Water published its Final Water Resources Management Plan (FWRMP) in January 2010. The FWRMP confirmed that the Company forecasts a supply demand shortfall in its Essex Resource Zone over the 25 year planning horizon and that this will be met by a resource scheme known as the “Abberton Scheme”.

This is the Company’s second annual review of its Final Water Resources Management Plan (FWRMP) that was published in January 2010.

This review provides an overview of the water resources situation in the year 2010/11, and it reports on progress with implementation of the FWRMP.

This review confirms that 2010/11 was overall within our definition of a normal year although seasonal extremes were encountered. The Company had no concerns over the supply demand position.

The outturn figures for the reported year are broadly consistent with the figures in the FWRMP for the year 2010/11, and there is no need to change any of the forecasts within the FWRMP. The Company remains confident that following implementation of the Abberton Scheme, the supply demand balance will remain in surplus throughout the 25 year planning period.

CONTENTS

1. INTRODUCTION

1.1 Purpose of Report

Northumbrian Water Limited (NWL) published its final Water Resources Management Plan (WRMP) (www.eswater.co.uk) for its Essex & Suffolk Water operating area in January 2010 following permission from the Secretary of State on the 18th December 2009 to publish.

Water companies are required to review their WRMP's within twelve months of them being published, taking account of relevant material changes in circumstances.

This document is the Company's Essex & Suffolk Water WRMP 2011 Annual Update. Outturn data based on the Company's annual June Return covering the period from 1 April 2010 to 31 March 2011 has been used to inform the review. This is consistent with the DEFRA/Environment Agency guidance[1].

This review is a statutory requirement of the Water Act 2003 which states that:

'Before each anniversary of the date when its 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

The purpose of the annual review is to identify any material changes to the FWRMP, and to report on progress made with updating and implementing the plan. The review has been undertaken using guidelines provided by the Environment Agency.

The guidance provided by the Environment Agency identifies that water companies should report on the following:

- An overall summary of the supply/demand balance situation
- Items identified by DEFRA and the EA following Statement of Response
- publication
- Progress with implementation of the FWRMP
- Changes to the components of the FWRMP

[1] Annual Review of Water Resources Management Plans Guidance. Environment Agency 2010

2. Summary of the Supply Demand Situation in 2010/11

2.1 Overview of April 2010 to March 2011

2010/11 for both Essex and Suffolk has been classed as a normal year.

Annual rainfall totals were variable across Essex and Suffolk with slightly above average totals at Hanningfield (108%), average totals at Ormesby (97%) and below average totals at Layer (84%), Barsham (88%) and Lound (89%). Generally, the months of April to July had below average rainfall totals while August and September had above average rainfall totals.

Due to the dry spring, combined storage values for Hanningfield and Abberton reservoirs were generally at or slightly below average through the summer months although were above average at the end of the March 2011. Essex river flows were healthy in the early part of the year although these reduced and required support from the Ely Ouse to Essex Transfer System.

In Suffolk, Fritton Lake water level remained above average all year while in Ormesby Broad, lake levels were below average during the summer (reflecting the below average rainfall in the preceding months) but quickly recovered to average levels by March 2011. Suffolk rivers flows, specifically the Waveney, were below average during the summer months and were supported by the Environment Agency's Waveney Groundwater Augmentation Scheme.

On the whole, groundwater levels remained at or just above average levels during the period.

The year was most noticeable for the freezing weather that began after the middle of December 2010 and only began to thaw in January 2011. December saw very heavy snowfall and the coldest winter for over 100years was experienced. Although leakage levels rose very sharply in January as the thaw set in and pipes were bursting at record rates, the good position we were in before the bad weather, and the unprecedented effort and resources put in to leakage find and fix, meant we hit our annual leakage target.

2.2 Average Distribution Input

Essex
The average daily Distribution Input at 389Ml/d was identical to last year. Within this figure all of the individual components changed slightly but none to any great significance. For example the measured non-household water delivered increased by 2Ml/d, showing a gradual recovery for industry from the recession, which was netted off by an improvement of the leakage level by 2Ml/d. A number of small changes in non-household / household splits came about from our continuous improvement to the customer data base but these

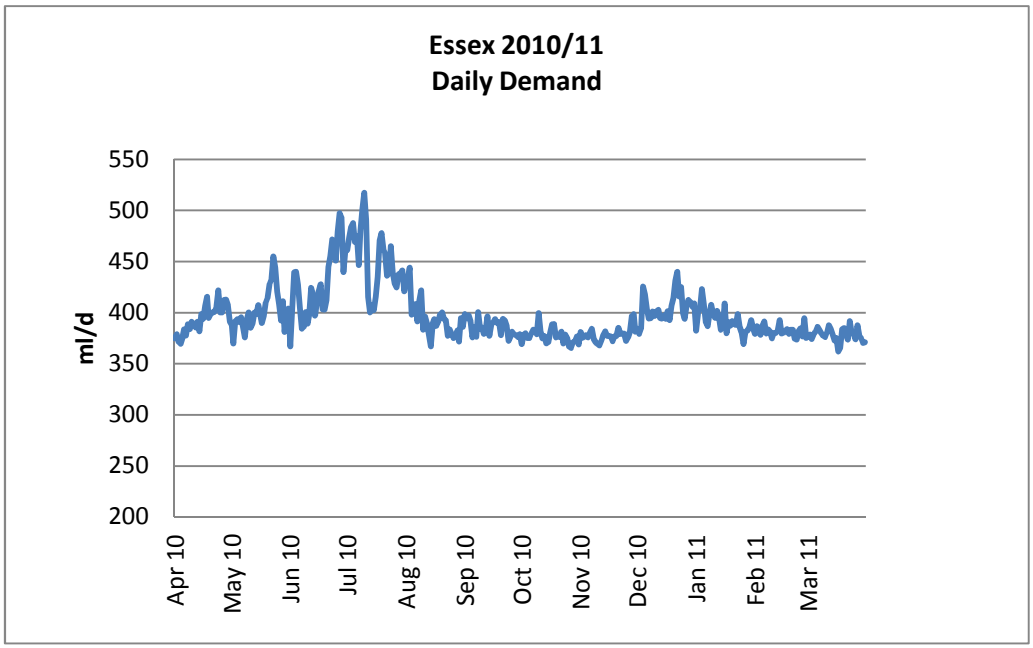
had a very small effect on the water balance. The lower level of selective meters and new build properties (2071 vs 4307 forecast) resulted in a slightly higher than forecast unmeasured population but the unmeasured total consumption benefitted from a reduction in the unmeasured pcc of 3.2l/h/d. Measured pcc increased in line with the recent trend, probably as a result of optants now accounting for a much smaller proportion of the measured base.

Suffolk

The average daily DI was broadly similar to last year at 67.06Ml/d. All of the other factors mirrored what was seen in Essex eg non-household demand slightly higher, leakage slightly lower, unmeasured pcc down by 4 l/h/d while measured pcc has risen by 5 l/h/d.

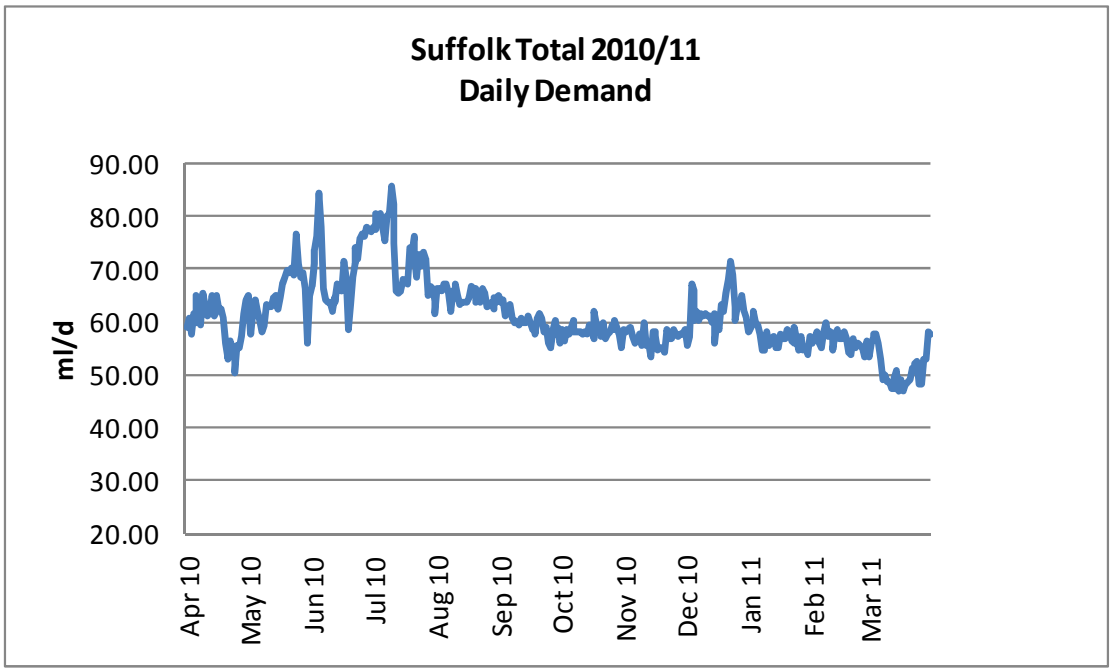
The existing forecasts therefore remain appropriate and will not be updated.

Essex Water Supply Zone

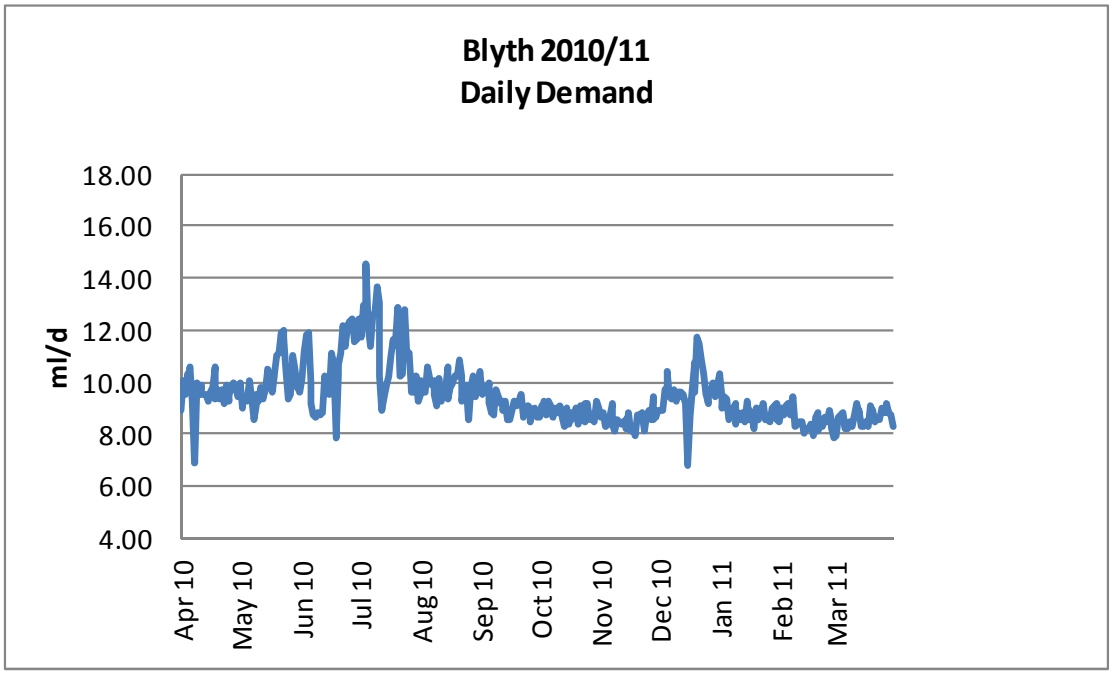


Distribution Input (DI) averaged 388.95Ml/d compared to 389.05Ml/d the previous year. The forecast DI for a normal year was 381.34Ml/d and a dry year 389.37Ml/d, putting the outturn DI towards the dry year end of the forecast. This is not unexpected given the very dry spring and the significantly higher leakage levels during the early part of 2011. However, the outturn was within 2% of the forecast for a normal year, which we class as insignificant.

Suffolk Total

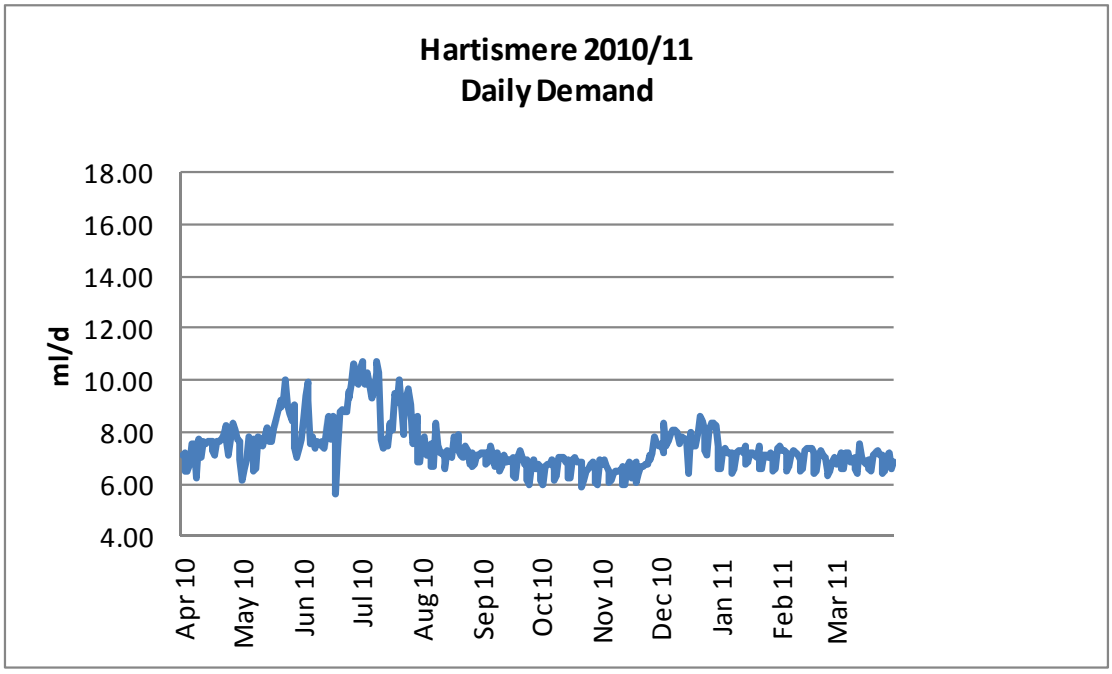


Blyth Water Supply Zone



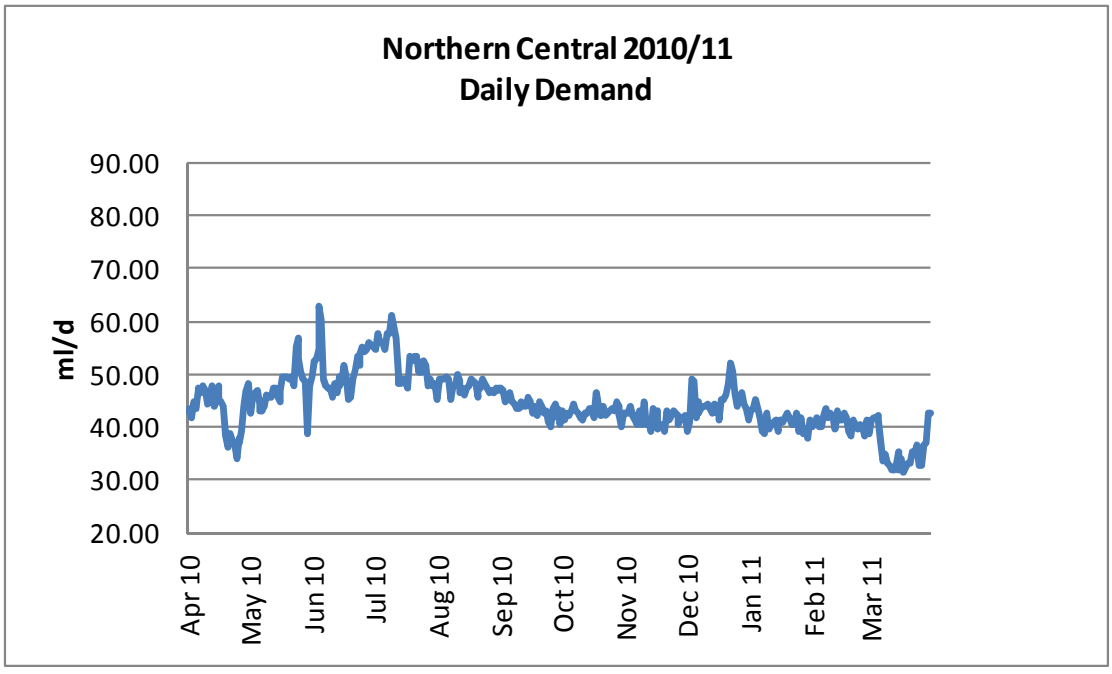
DI averaged 10.03Ml/d compared to the previous year's average of 9.89Ml/d and the WRMP forecast of 9.64Ml/d. The increase over forecast can be accounted for by the dry spring and increased winter leakage.

Hartismere Water Supply Zone



DI averaged 7.05Ml/d compared to the previous year's average of 7.10Ml/d and the WRMP forecast of 6.92Ml/d. The slight increase over forecast can be accounted for by the dry spring and increased winter leakage.

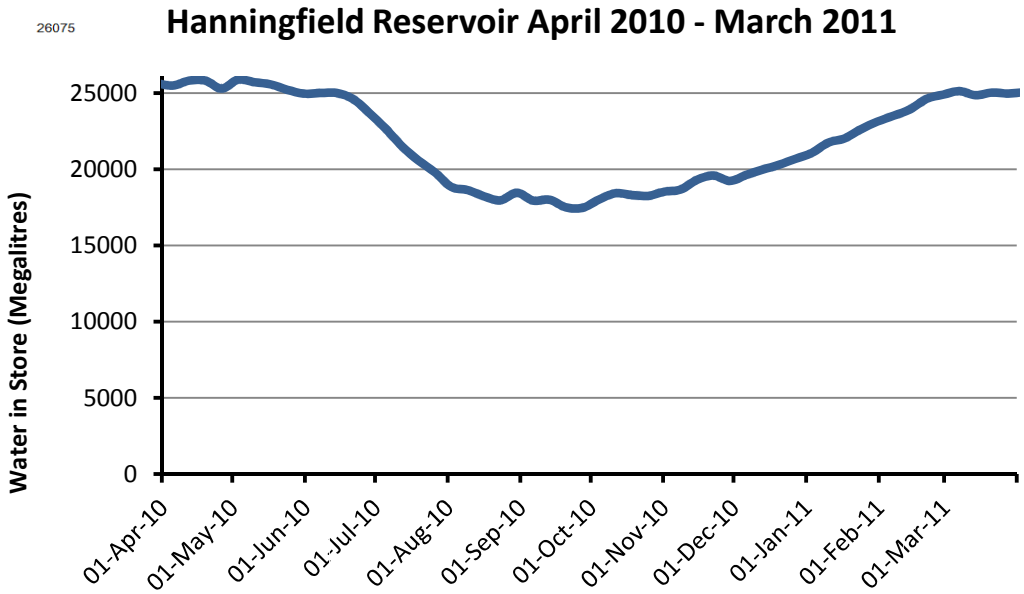
Northern / Central Water Supply Zone

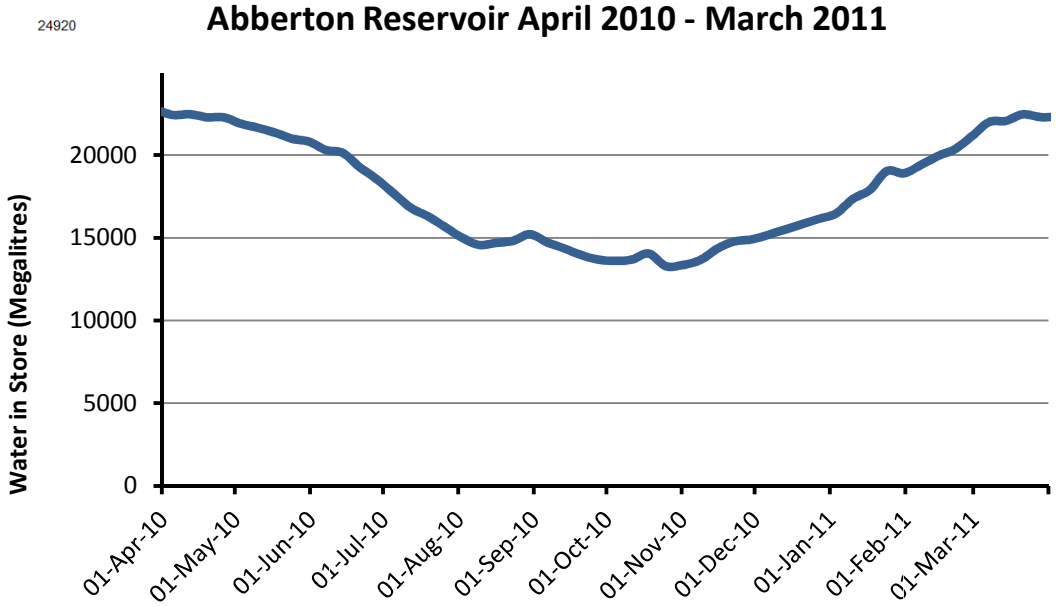


DI averaged 49.98Ml/d compared to the previous year's average of 49.08Ml/d and the WRMP forecast of 48.70Ml/d. The increase over the previous year can be accounted for by the dry spring and increased winter leakage.

2.3 Reservoir Levels

Essex Water Supply Zone





2.4 Security of Supply Index

A Security of Supply Index of 82 was reported in the June Return to OFWAT. This is as expected with the SoSI likely to gradually deteriorate until the Abberton scheme is fully commissioned in 2013.

3. Progress with Implementation of the FWRMP

The FWRMP demonstrates that the Company forecasts a supply demand shortfall in the Essex Resource Zone over the 25 year planning horizon and that this will be met by a resource scheme known as the "Abberton Scheme".

Progress on items such as sustainability investigations, and outturn figures for individual components such as leakage and metering are described in section 4 below.

3.1 Essex Water Supply Zone

In Essex and Suffolk there were no abstraction licence exceedances in the reporting period. No abstraction licences were due to expire in 2010/11 and so no licence renewals were required.

Progress with the Abberton scheme

We had planned to vary our River Stour abstraction licence along with the Environment Agency's Denver Licence which allows transfers of water through the Ely Ouse Transfer System. However, we were required by the Environment Agency to provide additional justification of need for the Denver Licence Variation which has since been accepted. The licence variation was submitted to Defra on the 26th July 2011 and permission was given to the EA to vary the licence on 28th September 2011. The variation was issued in December 2011. The River Stour licence has not yet been granted as we objected to the proposed change to the previously agreed Hands of Flow conditions at Wormingford. We are continuing to work with the EA to understand their justification for the proposed changes.
Work on the various elements of the Abberton scheme has proceeded according to, or faster than, plan due to the dry weather conditions aiding the construction work. The major task for 2011 was the removal of the crest of the main dam prior to this dam being raised by 3.2m. For this work to be successfully undertaken it was necessary to draw Abberton reservoir down to a set profile, with storage in the reservoir being lower than would be expected in a normal year. To compensate for lower levels being maintained in Abberton reservoir, storage in Hanningfield reservoir was to be kept above normal levels. This left the combined storage at normal levels. The plan worked well with any additional adverse impact on our ability to supply avoided. The dry spring started to stretch our supplies but this was purely down to the very dry conditions, not the work on Abberton reservoir. The reservoir was "handed" back to the company on the agreed date of the 16th November 2011 for unrestricted refill to the existing reservoir top water level. This, however, proved to be academic because of the dry autumn giving rise to abnormally low river conditions. To date the reservoirs have been refilling in December and early January bit still remain some 10% below their long term

average levels. Refill reliability curves still show a 94% probability of refill by the end of April 2012.

The other significant event for water resources in Essex has been the granting of a permanent discharge consent for the Langford Recycling scheme. The original licence was for 10 years, expiring on the 31st December 2011. A report was produced correlating and interpreting all of the data required under the original discharge consent to accompany the application. As a result of the monitoring undertaken, which showed the scheme had little, if any, impact on many of the areas being monitored, the new discharge consent has been simplified and the range of monitoring reduced. The accompanying abstraction licence variation has been issued which includes the higher MRF required for the estuary. The impact of this MRF had already been taken into account in the deployable output of the Essex system in the 2009 WRMP.
The scheme has been used extensively this year and produced over 20 Ml/d continuously from April 2011 to almost the end of December 2011. This has added significantly to the Water Available for Use in such a dry year.

3.2 Blyth Water Resource Zone

No work carried out.

3.3 Hartismere Water Supply Zone

No work carried out.

3.4 Northern / Central Water Supply Zone

No work carried out.

4. A review of the Components of the FWRMP

The Environment Agency Guidance for the Annual Review of Company Water Resources Management Plans identifies a range of items that should be reported against. The Company has reported on all items identified by the guidance as a 'requirement'. Items identified as 'requirement triggered by change' have only been reported on where there has been any change to the FWRMP.

The full list of items identified within the draft guidance are included within the following tables. Where changes have been made or where there is a requirement to report outturn information, then additional commentary is provided.

4.1 General Issues

Items Identified for Review in the DEFRA/EA Guidelines

General	Item	Review Criteria	Summary of Company Review
Water resources zones	Any changes to boundaries	Requirement triggered by change	No change to boundaries
Level of service	Actual level of service for the year	Requirement	See 5.1.2
	Any changes to the proposed target level of service	Requirement triggered by change	No change

4.1.1 Water Resources Zones

There are no changes to the water resource zone boundaries.

4.1.2 Actual Levels of Service

There were no restrictions on use during 20010/11 therefore our Levels of Service were met.

4.1.3 Target Levels of Service

In the WRMP the Restrictions on the Use of Water (Hosepipe bans) were reduced from 1 in 25 years to 1 in 20 years following research into our customers "Willingness to Pay". We do not intend to alter this Level of Service for the remainder of this AMP.

4.2 Supply

Items Identified for Review in the DEFRA/EA Guidelines

General	Item	Review Criteria	Summary of Company Review
Bulk supply	Explain any changes to bulk supply agreements	Explain any changes to bulk supply agreements	No change
Sustainability reductions	Detail any alterations to the sustainability changes required. (changes to existing definite sustainability changes or new definite sustainability changes)	Requirement triggered by change	See 4.2.4
	progress with implementation of sustainability changes.	Requirement	See 4.2.4

4.2.1 Deployable Output

For all areas we have used the deployable output for 2010/11 published in the Final Water Resource Management Plans, adjusted for any changes in licence conditions as a result of variations or sustainability reductions.

4.2.2 Outage

Essex

Actual outage for 2010/11 in the Essex zone is calculated to be **25.40Ml/d**. This is 10.61Ml/d higher than the outage allowance figure calculated for the WRMP of 14.79Ml/d, and between 7Ml/d and 11Ml/d higher than the actual outage figures calculated for the three previous periods. The increase from the previous periods was largely due to an increase in unplanned outage due to turbidity and algae, with less significant increases in planned outage and outage due to power failure and system failure. Outage due to nitrate was lower compared to the previous period.

All of the outage in the Essex resource zone due to turbidity occurred at Layer treatment works, and contributed 5.68 Ml/d to the total for the year. This was largely due to the removal of the concrete edge around Abberton reservoir, part of the Abberton Scheme construction work, and turbidity increasing in the raw water due to wind and wave action on the unprotected edge. The

increase in total outage due to algae was the result of an increase at Chigwell TWs and Langham TWs compared to last year, whilst the amount of outage due to algae at Layer was largely the same as the previous year, and Langford did not experience any outage due to algae this year.

Chigwell TWs experienced an increase in planned outage and unplanned outage due to algae, power failure and system failure, giving an overall total increase for this treatment works of 1576 Ml (4.3 Ml/d) from the previous year.

Langford TWs experienced less planned outage and unplanned outage due to nitrate and algae during this period, but an increase in unplanned outage due to system failure, giving an overall reduction in total outage for this works of 847 Ml (2.3 Ml/d) compared to the previous year.

Langham experienced an increase in planned outage and unplanned outage due to algae and power failure, but a reduction in unplanned outage due to nitrate, resulting in an overall increase for this works of 1004 Ml (2.8 Ml/d) from the previous year.

Layer TWs experienced a substantial increase in unplanned outage due to turbidity, but a reduction in planned outage and unplanned outage due to algae, power failure and system failure, resulting in an overall increase for this works of 1738 Ml (4.8 Ml/d) compared to the previous year.

In 2010/11 we have undertaken substantial work on our Abberton Reservoir Scheme. This work includes shoreline re-profiling, main dam raising activities and excavation works within the existing reservoir site. In addition to this work associated with the Abberton scheme to construct 32km of underground steel main has begun. Our anticipated completion date for the scheme remains on target for 2014.

Suffolk

Actual outage for 2010/11 in the **Northern/Central** zone is calculated to be **1.41Ml/d**. This figure is 0.87Ml/d lower than the outage allowance figure calculated for the WRMP of 2.28Ml/d, and 0.31Ml/d less than the actual outage figure calculated for the previous period 2009/10, which was 1.72Mld.

Broome TWs was out of supply for the whole 12 month period as a result of bacteria contaminating the groundwater supply, and contributed 1.26Ml/d to the total actual outage for this zone. Investigation boreholes are currently being drilled to test groundwater quality with a view to drill a replacement production borehole. Therefore, although the period of outage is greater than 3 months, the situation is considered temporary and has therefore been included in this assessment.

Halesworth TWs was out of supply for the whole 12 month period and has now been decommissioned, with the supply area being fed by the upgraded Walpole TWs. This outage has not been included in this assessment.

Actual outage for 2010/11 in the **Blyth** zone was calculated to be **0.23Ml/d**. This figure is 0.86Ml/d less than the outage allowance figure calculated for the WRMP of 1.09Ml/d, and around half that of the actual outage calculated for the previous three periods. The majority of outage for this zone was planned, involving routine maintenance of TWs assets.

Actual outage for 2010/11 in the **Hartismere** zone was calculated to be **0.008Ml/d**. This figure is lower than the outage allowance calculated for the WRMP of 0.64 Ml/d and lower than the previous three periods. There were only a small number of short term minor events, resulting from planned maintenance work, power failure and minor system failure.

4.2.3 Bulk Supply

There have been no changes to the bulk supply arrangements detailed in the WRMP.

4.2.4 Sustainability Reductions

National Environment Programme / Review of Consent
The Sizewell Marshes SSSI and Leiston Aldeburgh AMP4 NEP investigations have now been completed and signed off by the Environment Agency and Natural England. Further work has been undertaken on the Trinity Broads SSSI Options Appraisal. This will be completed along with the Geldeston Meadows SSSI Options Appraisal during 2011/12.

The Environment Agency has undertaken further work on the Alde Estuary and has informed us that the indicative sustainability reduction for our Benhall / Saxmundham / Parham group licence has increased to 1.5Ml/d. It has indicated that a local compensation flow would be acceptable although the quantity would still be taken from the existing group annual licensed quantity. Further discussions will be held with the Environment Agency over the coming months.

4.3 Demand

4.3.1 Per capita consumption

Essex

The average unmeasured pcc was 161.56 l/h/d and the measured 153.99 l/h/d. This compares to the previous year's unmeasured pcc of 164.87 and measured pcc of 149.98 l/h/d. The differences are not significant and sit

comfortably within inter-year variation that is expected by weather variation. However it is interesting to note that despite a dry spring, which would bring about more garden watering, it is again the measured customer's who have increased their water usage whilst the unmeasured have reduced their consumption slightly. It is interesting to summise that the measured customers, whilst judicious with their use of garden watering are not willing to see their plants suffer. The unmeasured presumably continue to use water as they have previously therefore no noticeable increase is seen. Both sets are likely to have used below average amounts during the summer and winter.
The WRMP forecast pcc was unmeasured 163.61 l/h/d and measured 146.82 l/h/d. The slight increase in the measured pcc against the forecast would seem to reflect the measured customers relaxing their self imposed restrictions on water use during very dry periods for gardens.

Suffolk

Measured and unmeasured pcc for the 3 Suffolk WRZs are determined and forecast as a single Suffolk figure. This is due to the small size of the Blyth and Hartismere zones making individual WRZ pcc calculation statistically unsound.
Suffolk outturn pcc was 151.13 l/h/d for the unmeasured and 134.33 for the measured. This compares to the previous year's 155.33 l/h/d for unmeasured and 128.75 for the measured. These annual variations are within those expected from different year's weather conditions. The WRMP forecast pcc was 149.61 l/h/d for unmeasured and 127.89 l/h/d for the measured. The differences are not significant and reflect the pattern seen in Essex.

The differences in outturn pcc against forecast pcc is not significant and the WRMP pcc forecast will not be updated.

4.3.2 Metering

For Suffolk the number of optants at 1181 was slightly above the PR09 forecast of 1,100 for the year.

Essex, with 4837 optants was close to the 5,000 forecast but the number of selective meters fitted on change of occupier was very disappointing. Only 5,620 selective meters were installed compared to the 11,500 forecast. This shortfall is solely down to the housing market failing to recover to any extent from the recession. With new builds remaining at a low level and available mortgages remaining scarce there is, as yet, no real sign of a pick-up. We hope that in the later years of the AMP there will be sufficient economic recovery for the number of movers to be above trend and some of the shortfall in selective meters will be made up.

4.3.3 Leakage

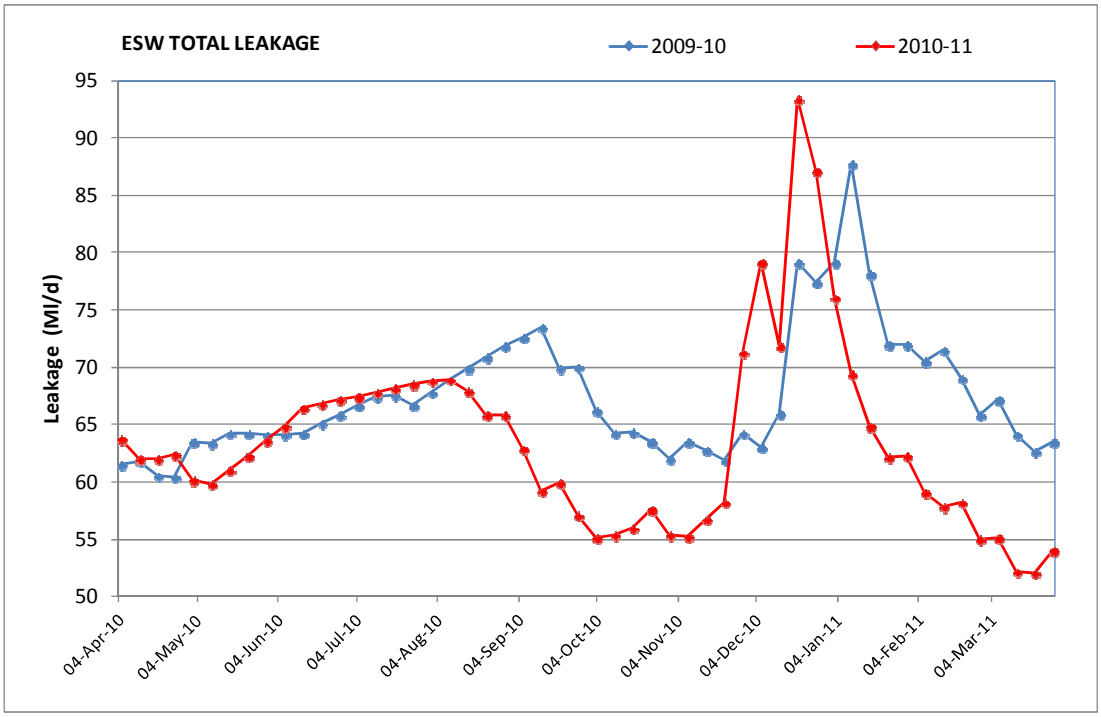
Introduction

In 2009-10 we narrowly exceeded our leakage target and were asked to provide quarterly reports on leakage performance during 2010-11. This report sets out how leakage has been managed throughout 2010-11, based on our final quarterly report to Ofwat.

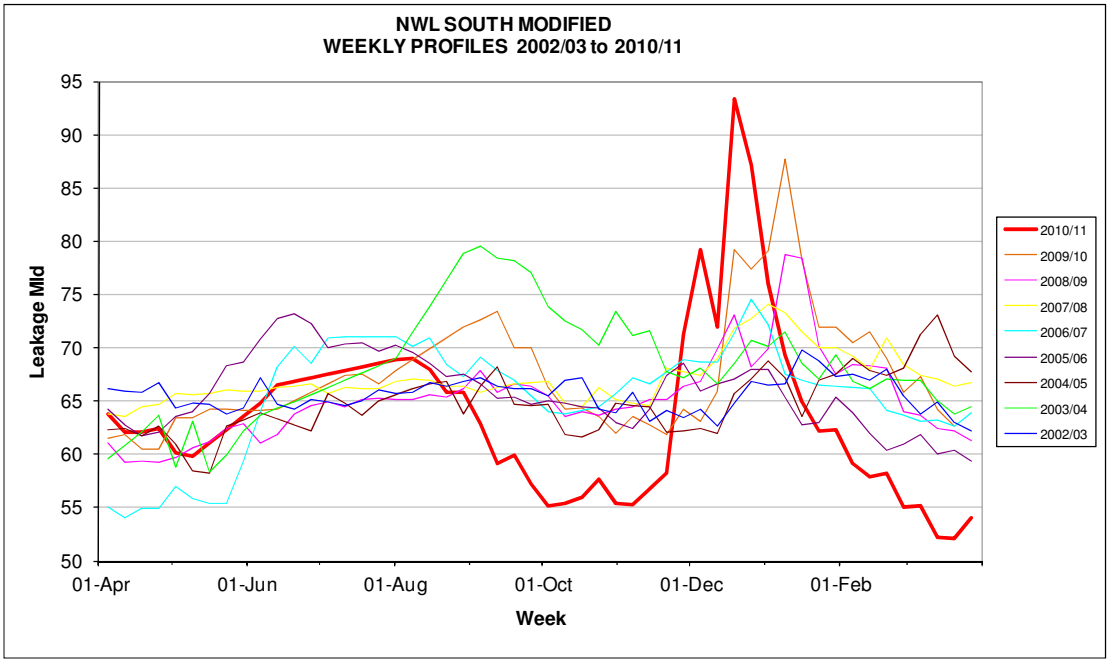
Overall, the position is that, following periods of very good performance in the autumn of 2010, and again in February and March 2011, we have met our target for 2010-11 despite the difficult winter.

Performance

The graph below shows leakage for 2010-11, compared with 2009-10. Leakage through the spring and summer was very similar to last year. However, as we did not have a repeat of the 2009 August/September dry spell, leakage from mid-August to late November was much lower than in the previous year.



In fact leakage levels through the autumn were the lowest ever recorded for this time of year, due to the benign weather conditions, low burst rates, and the fact that we had taken on additional Leakage Technicians over and above the economic level of resources. This is illustrated by the following graph, which compares the leakage profile for 2010-11 with the previous eight years.



However, December 2010 was the coldest December for more than 100 years across the UK. Significant quantities of snow fell in Essex and Suffolk in the first and third weeks of the month, and temperatures remained below zero during the day on both occasions. The average temperature across East Anglia for December was zero degrees, which is 5 degrees below normal.

In the winter event of 2009-10, leakage rose by 25 Ml/d. However the winter event in 2010-11 was much greater, starting three weeks earlier and rising by 38 Ml/d. In the third week of December, leakage reached 94 Ml/d, which is the highest weekly leakage level ever recorded in Essex and Suffolk. However, temperatures improved in the last week of December, and leakage fell steadily and continuously from that date onwards until the end of the year. By the third week of March, leakage had fallen to 52 Ml/d, which is the lowest weekly leakage level ever recorded in Essex and Suffolk. It was a remarkable recovery over a period of only 12 weeks.

This profile of leakage for 2010-11 gives a full-year average of 65.10 Ml/d (post-MLE), which is 0.9 Ml/d below our target of 66 Ml/d.

We believe that we have achieved this result, despite the exceptional winter conditions, because we took all steps necessary in our operations to optimise our leakage management in 2010-11. We retained the same acute focus on minimised burst repair times which was introduced in the winter of 2008-09 and has been maintained ever since. As a result, bursts have been repaired as quickly as possible, even out of hours and on weekends. Leakage analysis and DMA prioritisation were carried out daily throughout December and January.

In addition to this, we increased leak detection resources in 2010. In previous correspondence with Ofwat, we have maintained that the economically optimum policy is to maintain leak detection resources at a constant level, regardless of the leakage level. While we still subscribe to this view, we accepted that it would be damaging for NWL's reputation to exceed the leakage target in two consecutive years. For this reason we have been operating since April 2010 with 44 Leakage Technicans in Essex and Suffolk, though the economic optimum number is 35. We have now reduced our resources back to 35 technicians from the beginning of April 2011.

4.3.4 Water Efficiency

The Ofwat Water Efficiency Target of 1 l/prop/d p.a. (equating to 1.12 Ml/d in NW and 0.74 Ml/d in ESW) has led to a very significant increase in activity in this area over the last year, and an increased expenditure. Ofwat has recently agreed to a single combined target (1.86Ml/d) to cover the whole company which is applicable this year. The target comprises a base level of information provision and the requirement to contribute to the evidence base as well as the volumetric component. The 1 l/prop/d base target should be met through a variety of approaches and savings can be claimed in 3 ways:

- assumed savings provided by Ofwat for each "hard" measure provided eg cistern displacement devices, low-flow showerheads etc,
- meter reading based savings for non-households and approaches without defined assumed savings,
- and a behavioural element. To date the behavioural component has been capped at 30% of the total base target, although Ofwat has relaxed this to 50% on request and justification by ESW. Savings in this category are determined by engagement levels from different approaches (eg website information, home audits, school visits) defined by UKWIR and adopted by Ofwat.

We are currently showing water savings as below:

Ml/d	North	South	Total Saving	Contribution Towards target	Target
Total (with cap)	1.68	1.90	3.58	3.44	1.86
Hard Measures	1.23	1.39			
Behavioural	0.45	.37 (0.51 without cap)			

The cumulative target for the 5 years must be met annually. NWL over achieving this year means a lower annual target for the remaining 4 years. However, we have taken advantage of the "low hanging fruit" in the first year

meaning that even having to achieve a lower target in future years will become progressively more difficult.

ESW

H_2eco Phase 5

H_2eco is a successfully run domestic retrofit project run over the last 5 years. It provides the opportunity to customers in a selected area to book a free appointment for a fully qualified plumber to visit their property and assess how water efficient their water using appliances are. Suitable water saving products are then provided and fitted for free. The information on how much water each water saving product would save the customer was passed on straight away therefore engaging the customer. While in the home the plumbers also offered advice about where else water can be saved through the changing of bad habits into good habits such as spending one minute less in the shower. Mouchel Ltd were contracted to co-ordinate the projects running.

Phase 5 was based in the Wickford area, following on from the projects previous area of Chelmsford. 15,085 customers were mailed with the offer in early October 2010 and appointments were booked up until mid March 2011. 10 free water saving products were on offer covering gardens, bathrooms and kitchen use. Overall 2266 appointments were completed with the following number of products fitted:

ecoBETA	377
Save-a-flush	661
Tap Magic	293
Showerheads	473
Miracle tap Adaptor	882
Bath Measures	312
Water Saving Crystals	2217
Trigger hose guns	2193
Water butts	1770
Shower Timers	2209

As well as these water saving products a pack to educate children on how water can be saved was provided to any household with children to increase the awareness of the whole family, not just the person attending the appointment. At the end of the appointment additional information leaflets were left with the customer providing additional information on how to save water in the garden, tips on buying water efficient white goods and information on carbon reduction and recycling.

A meter reading was taken 3 weeks before the appointment, at the appointment, 3 weeks after the appointment and 6 weeks after the

appointment to assess the actual savings. Point of use flow measurements were also taken to provide a comparison of the individual savings seen from the installation of products such as Tap Magic, Miracle Tap Adaptor and a showerhead. Phase 5 produced a saving of 77765.5 litres per day, which equates to 34.3 litres per property per day, established through the use of the Ofwat savings.

Water Saving Kits

NWL has developed a Water Saving Kit, containing several easy-to-install products aimed at helping householders save water in and around the home. The kits contain a shower timer, an inline shower aerator, a pair of tap inserts, a Save-a-flush cistern displacement device, a universal plug and a leaflet offering guidance and tips to save water.

A number of different projects, initiatives and schemes have been undertaken in 2010/11, resulting in 12,883 being distributed to customers upon request. All kits were requested in accordance with the reporting guidance.

Key projects, whereby large numbers of Water Saving Kits were requested by customers, are documented in further detail separately. However, one of the significant contributors to the number of kits being requested was the effort made by ESW staff to promote where the company already has customer contact. 1,701 kits were requested by customers at water quality sample visits, 676 via meter optant surveys and many via Customer Call Centre staff. These initiatives, along with newspaper advertisements, washroom posters in shopping centres, advertisements on hospital appointment cards, leaflet drops, environmental events and so on, have resulted in the successful distribution of 12,883 Water Saving Kits during 2010/11. Promotion codes were used for customers to request kits, which allowed tracking of requests. Analysis of this data will allow identification of the most cost-effective means of distributing the kits, which will ultimately be employed throughout 2011/12.

Self audits – Romford

Following the success of previous self-audit projects in Southend, Brentwood, Romford, Thurrock and Canvey Island, a further phase has now been completed in another part of Chadwell Heath.

In October 2010 we mailed 7,536 customers to inform them that we will be in their area delivering free water efficiency packs. The free pack contained a self audit leaflet, a trigger hose gun, water saving crystals, Save-a-flush, beaker, and a using water wisely leaflet. An aerated showerhead could also be requested as well as further Save-a-flush's, if required. Also included in the pack were the necessary tools (a shower flow bag and dripping tap gauge) to enable the customer to calculate water use around the home. Once a self audit form had been returned to us by a customer, any further product requests were fulfilled as well as any additional information requested about

saving water in the bathroom, kitchen, and garden and saving carbon. Children's activity sheets were also sent out if requested. A tea towel with key water saving tips was also sent as a thank you for returning their self audit form. 5,000 of the 7,536 customers mailed, requested water saving packs representing a 66% take-up rate. Of these, 656 customers completed a survey of their water use and returned the results to us on their self audit forms.

Showerdrop trial

In July 2010, we invited 1,736 customers in and around Mayland, Essex to participate in the trial, which offered the chance to try the Showerdrop for free. The Showerdrop, a new product aimed at helping customers save water whilst showering, is calibrated to the shower flow rate, which then allows it to calculate the number of litres of water being used. It also sounds an alarm when the recommended amount of water (35 litres) has been used. 375 Showerdrops were distributed to 233 customers.

Two questionnaires, one left at the time of delivery and one sent three weeks after, helped assess the customers' perceptions of their water use and the product. Notably, the questionnaires showed that participating customers spend an average of one minute and twenty-three seconds less in the shower compared with before receiving the Showerdrop. Meter readings were also taken three weeks before the delivery date, on the delivery date, and three weeks after, in order to calculate water savings. Analysis of the data shows a reduction in total household water consumption of 7 litres per property per day.

Shopping Centre stands – Water Saving Kits

Essex & Suffolk Water worked with LBV TV in August and September 2010 to offer visitors to a number of shopping centres in Essex the opportunity to request a Water Saving Kit. LBV TV organised six community roadshows at shopping centres in Essex, five of which were within ESW's supply area. Working in collaboration with Essex & Suffolk Water, LBV TV produced a HD commercial to help promote the Water Saving Kits. The 60 second commercial, which was shown on a multi-screen HD Plasma Videowall, focused on the importance of water for everyday life before explaining that the kits were available to request. Over 2,600 customers requested Water Saving Kits, making this a successful route of communication.

The Beach Radio station – Water Saving Kits

Between January and March 2011, ESW teamed up with a local radio station serving customers in Suffolk to offer people the chance to request a Water Saving Kit. The Beach Radio station ran an intensive campaign, starting with presenter-led discussions, using regular adverts over a period of three months. Linda Bellingham provided the voice-over, resulting in three excellent

adverts reaching thousands of customers with water efficiency messages. 870 customers went onto request a Water Saving Kit as a result of this campaign.

Waterwise Tap Into Savings – Water Saving Kits

Waterwise ran their tap into savings project in Braintree this year, working in partnership with Greenfields Housing association. There were 2,200 Greenfield's properties near Witham which fell within the Essex & Suffolk area. A letter and eventual reminder was sent to these customers offering them a free water saving kit which resulted in 520 requests.

Water Saving Toolkit – Research into sustainability of water savings

In the spring of 2010, Essex & Suffolk Water initiated a hugely successful research project, which aimed to revisit customers who took part in the Water Saving Toolkit project back in 2006/7. We worked with Marketing Assistance to contact customers three years after they took part to find out what they thought. The original Water Saving Toolkit project involved 1,073 customers in Chelmsford, Essex, choosing from a list of 17 water-saving products and services based on a credit system. 855 of the 1,073 were identified as having the same occupants three years later. These customers were sent a letter inviting them to take part in the follow-up research project. 267 interviews were conducted, which is a very positive participation rate.

There was good recall of the original initiative, indicating a very high impact programme. Recall included not only the water saving message, but also the range of products offered and selected by customers. The product still being used by most customers is the water butt. The garden related products were extremely popular. There is strong evidence of a change in water usage habits, with customers using water crystals in their garden tubs and pots, using a hose gun, using the shower timer, turning off the tap whilst brushing teeth, installing dual flush toilets and changing to water meters.

Water efficiency audits in schools

In July 2010, 55 schools in the Southend Borough were invited to take part in a project whereby they would be offered a free water efficiency audit.

48 schools (representing a take-up rate of 87%) indicated their interest in taking part in the project, leading to initial surveys being carried out at each by a qualified plumber. The initial visit included a survey of the schools current water using appliances; namely the taps, toilets, urinals and showers. A detailed report of the findings was then sent to each school following the survey. The report recommended suitable water saving devices and the associated potential water and cost savings to be made by the school, should they proceed with the audit. Following receipt of the initial survey reports, 42 schools went on to have full audits between December 2010 and January 2011.

Meter reads were taken three weeks before the audit, on the date of the audit and three weeks after. Analysis of the data showed that schools saved on average 780.80 litres per day, representing an 11.69% saving. Due to the success of this project, a further phase will take place in 2011/12.

Water efficiency audits in Elderly Persons Homes

Between November 2010 and March 2011, Essex & Suffolk Water embarked on a project that aimed to carryout water efficiency audits in 30 Elderly Persons Homes. The project started by sending a letter inviting the owner to have a survey which aimed to assess whether there was scope to fit water saving products. ESW's Water Regulations team was utilised to carry out the audits during their routine site visits. 26 surveys were carried out.

Full audits including the fitting of water-saving products were carried out at 11 sites. Products fitted included:

- 30 ecoBETA dual flush retrofit devices
- 2 tap aerators
- 65 Save-a-flush
- 9 aerated showerheads
- 9 trigger hose guns

The audits resulted in total water savings of 2,930.90 litres per day, which equates to each property saving on average 183.18 litres per day.

Workshop – 'A Journey Through Knowledge

In November 2010, Essex & Suffolk Water hosted a specialist one day workshop entitled 'Water Efficiency – A Journey through Knowledge'. The workshop, which was attended by approximately 25 delegates from water companies and regulators, explored the latest developments in knowledge about water efficiency.

A number of presentations, from Essex & Suffolk Water, Northumbrian Water and consultants, focused on our experiences with promoting water efficiency. Specific focus was given to 'retrofits and customer engagement', 'retrofits and measuring water savings' and 'changing behaviour'. Each session of presentations was followed by discussions facilitated by Professor Adrian McDonald (University of Leeds). Professor Adrian McDonald summarised the workshop by saying that "it was an excellent workshop that revealed how far ahead ESW/NW are in the water efficiency arena and also demonstrated, for the first time, several quantifiable indexes of performance (actual versus expected savings, scale of regression, uptake performance and so on)".

Smartview trial

The summer of 2009 saw Essex & Suffolk Water undertake a trial of a small solar powered unit called Smartview, which shows on a screen the customer's water use over the last day, year and month. 100 customers living in Boreham, Essex took part in the trial, aimed at assessing whether up to date water use information taken straight from their meter and displayed on a screen in their home would affect the way they used water.

We experienced several problems throughout the trial. Common problems revolved around signal and insufficient light for the solar panel. Having said this, the customers that had working Smartviews spoke very highly of the product. One customer commented how high the readings were on the device after their "washing day". This highlights how a customer can then link their everyday habits and the amount of water they use. It is especially relevant as the comparison information is in litres per day which is a widely understood unit of measure compared to the m^3 which appears on water bills.

In terms of measured water savings, analysis of meter reads and logger data show inconclusive results. It was not possible to identify water savings by customers using the device.

Long-term analysis of Variable flush project

In 2004, Essex & Suffolk Water participated in a project with the Environment Agency and eight other water companies. The national project involved fitting two types of variable flush devices in order to assess the water savings. Essex & Suffolk Water continue monitoring the properties that participated in the trial. Six years after having the devices installed in 30 properties, analysis shows that those with the devices still installed continue to save 9.8 litres per property per day.

Each customer has been contacted every year since 2004. 50% of the original 30 participating customers have removed their devices for varying reasons, most notably the replacement of bathroom suites or due to experiencing flushing problems. The water consumption at the remaining 15 properties will again be monitored in 2011.

H_2eco Analysis

Research was commissioned into the last 4 phases of H_2eco to provide in depth analysis and provide conclusions to improve future phases of our large retrofit project, savings analysis, product analysis and demographic profiling. Some key conclusions were:

- Collecting logger data at 15 minute intervals had little benefit to the calculation of savings or identifying individual appliance usage behaviour

- 1 occupancy households fulfilled their potential of water savings, low income households had the lowest water saving potential
- Both ecoBETA and save-a-flush were proven to have statistically significant water savings when installed in a household.

RE:NEW (formally HEEP)

Havering Council were selected as one of the pilot Boroughs for the Homes Energy Efficiency Programme (HEEP), now known as RE:NEW. Essex & Suffolk Water, along with EDF Energy, were key partners in the collaborative project. Between January and June 2010, Essex & Suffolk Water contributed the following devices to the scheme:

- 1,414 Save-a-flush's
- 1,320 aerated showerheads
- 508 Miracle Tap Adaptors
- 292 pairs of wash basin tap aerators
- 701 trigger hose guns
- 740 shower timers
- Leaflets

The project was very successful in utilising the 'whole house' approach, and we are now looking to the role-out to other London Borough's.

Start - Garden Party

In September 2010, NWL took part in an initiative inspired by The Prince of Wales, called Start. The project aimed to fill an important void in the area of sustainability – namely helping the general public understand where to start. ESW supported the Beth Chatto dry garden. Our CEO, Heidi Mottram, joined The Prince of Wales on the Royal Train.

Resource Efficiency East – Water efficiency review

Essex & Suffolk Water worked with Resource Efficiency East (REE) to offer 128 small/medium sized business owners in Essex and Suffolk a free Water Efficiency Review.

The service consisted of a two-day package of professional advice on water efficiency provided by specialists over a six month period. This would conclude with a report identifying opportunities and measures to reduce water and associated energy. An action plan detailing water use recommendations and the environmental and financial benefits associated with them would be incorporated into the report. A DVD of practice case studies was enclosed with the letter, sent in March 2010. Unfortunately the take up was minimal.

Energy Saving Trust

In April 2010, Essex & Suffolk Water teamed up with the Energy Savings Trust by sending out letters to 3,000 homes in Rainham, Essex. The objective was to encourage customers to think about their water use in relation to energy costs and their carbon footprint. A Water Energy Check (WEC) was enclosed with each letter. 290 customers returned their WEC, after which they were sent a report suggesting a number of ways they can achieve savings in these areas.

Carbon-saving calculator

Essex & Suffolk Water have recently developed a calculator allowing us to estimate the carbon and water savings when planning new water efficiency projects and initiatives. The savings are forecast 30 years into the future. The calculator also allows the user to alter factors such as the number of audits to take place and the product take-up expected in any given project. The calculator will be useful in the planning and development of future water efficiency projects.

WRc Research project into water efficiency device savings

ESW took part in the WRc "CP359 Water Efficiency Devices – Savings Assessment" research that aimed to measure the impact of conducting water audits and retrofitting water-efficiency devices in homes at the micro-component level. Identiflow data loggers were installed on the water meters of 28 properties from the third phase of our H_2eco project.
The report highlighted the highest water savings resulting from toilet retrofits and that aerated showerheads make the greatest difference if fitted to showers 8 litres per minute or greater.

Leaking Valve Questionnaire

This research was completed to evaluate if their was a significant problem with new dual flush toilets leaking as there had been some reports of some leaking large quantities of water, in some cases up to 500 litres per day. A questionnaire was sent to 841 customers in the Great Leigh's area as they are new homes most likely to have a dual flush toilet. 199 responses have been received so far. These results will contribute towards industry wide research currently being completed by Artesia Consulting.

Plans for 2011/12 include a continuation of the successful elements from 2010/11 including the water saving kits and the H_2eco / water saving project, and a further series of Little Green Riding Hood performances at schools. New initiatives include an educational programme aimed at secondary schools, introducing a text service for customers to request water saving devices more conveniently and working with energy suppliers and others to

audit homes and deliver products during their visits to homes for boiler servicing, energy efficiency, etc.

4.4 Climate Change

Items Identified for Review in the DEFRA/EA Guidelines

General	Item	Review Criteria	Summary of Company Review
UKCP09	Any work progressed on assessment of UKCP09 impacts on resources or demands.	Requirement triggered by change	No change

4.4.1 UKCP09

Work on the effects of climate change on supply and demand using UKCIP09 will be carried out for the next WRMP following the production of guidance.

4.5 Headroom and Options

Items Identified for Review in the DEFRA/EA Guidelines

General	Item	Review Criteria	Summary of Company Review
Headroom	Give details of actual headroom	Requirement	See 4.6.1
	Any changes in actual headroom and target headroom	Requirement triggered by change	No changes
Options	Progress with the planning and delivery of all options (include all options over and above those included in the baseline. For example additional supply or demand options; SELWE, selective metering, additional leakage control options)	Requirement	See 3.1
	Any changes to the options chosen	Requirement triggered by change	No changes

4.5.1 Actual Headroom

Essex

The Deployable Output from the WRMP for 2010/11 was 409.99Ml/d and process losses of 0.17Ml/d. Actual outage was 25.40Ml/d giving a Water Available for Use (WAFU) of 384.42Ml/d. Average demand of 388.95Ml/d gives a negative headroom for 2010/11 of 4.53Ml/d.

Blyth

The Deployable Output from the WRMP for 2010/11 was 14.66Ml/d and process losses of 0.39Ml/d. Actual outage was 0.23Ml/d giving a Water Available for Use (WAFU) of 14.04Ml/d. Average demand of 10.03Ml/d gives an actual headroom for 2010/11 of 4.01Ml/d.

Hartismere

The Deployable Output from the WRMP for 2010/11 was 8.42Ml/d and process losses of 0.34Ml/d. Actual outage was 0.008Ml/d giving a Water Available for Use (WAFU) of 8.07Ml/d. Average demand of 7.05Ml/d gives an actual headroom for 2010/11 of 1.02Ml/d.

Northern / Central

The Deployable Output from the WRMP for 2010/11 was 62.02Ml/d and process losses of 1.87Ml/d. Actual outage was 1.41Ml/d giving a Water Available for Use (WAFU) of 58.74Ml/d. Average demand of 49.98Ml/d gives an actual headroom for 2010/11 of 8.76Ml/d.

4.5.2 Target Headroom

No changes have been made to the Essex or Suffolk WRZs target headroom allowances since last year.

4.5.3 Options

See section 3.1.

5. Conclusions

This review confirms that 2010/11 was a relatively normal year with a very dry spring and an extremely cold and snowy December / January. However, the Company had no concerns over its supply demand position. The Company reported a Security of Supply Index of 82.

The outturn figures for reported year are broadly consistent with the figures in the FWRMP for the year 2010/11, and there is no need to change any of the forecasts within the FWRMP.

The Company is confident that the supply demand balance will remain in surplus throughout the 25 year planning period once the Abberton scheme becomes available during 2013.