UNITED UTILITIES WATER PLC

Annual Review of Water Resources Management Plan 2010/11
# ANNUAL REVIEW OF WATER RESOURCES MANAGEMENT PLAN

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1 BACKGROUND

1.1 PURPOSE


The 2009 FWRMP presents a comprehensive statement of UUW’s water supply and demand forecasts, and strategy to maintain supply reliability throughout the UUW region. The plan also presents detailed information on UUW’s methodologies, policies, assumptions and key data.

In compliance with the Water Industry Act 1991, this Annual Review provides an update to the plan. Section 37 A of the Act states:

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

(a) review its plan

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

We are also sending this Annual Review to the Environment Agency and to Ofwat in line with reporting requirements for the June Return.

This report presents data for 2010/11, describes progress made on implementing the plan and provides commentary on the key issues, in accordance with the Ofwat reporting guidelines for June Return Table 10b and the Environment Agency Annual Water Resources Management Plan Guidelines.

The review has assessed whether there have been any material changes that would trigger a formal review of the FWRMP through the statutory process. The annual review also provides the opportunity to update the plan to incorporate any minor changes.

It was concluded that no formal review of the FWRMP was required this year and no minor changes needed to be made.

1.2 OVERVIEW OF 2010/11

The North West experienced an exceptionally dry start to 2010, with December 2009 to June 2010 receiving only 57% of the long term...
average (1961-90) rainfall expected for the region. This represented the driest start to the year since our records began in 1929. Further details of the drought are covered in section 1.3.

UUW has maintained an extensive programme of leakage control actions and met the Ofwat leakage target of 464 Ml/d for 2010/11. Total leakage across the region averaged 464 Ml/d. This was achieved despite the very severe winter weather conditions. More details are presented in Part 2 of this report.

Despite the extreme weather events an adequate supply/demand balance was maintained across the region. This is due to the actions that were taken to manage customer demand and control leakage. We are pleased to report that the Security of Supply Index score has remained at 100 for both dry year and critical period assessments.

UUW also implemented a wide range of water efficiency measures and exceeded the water efficiency target set by Ofwat. More details are presented in Part 2 of this report.

In accordance with the FWRMP, UUW has commenced plans for water supply-demand schemes to maintain adequate future water supplies in West Cumbria. More details are presented in Part 2 of this report.

1.3 DRUGHT 2010

The most significant event experienced by UUW in 2010/11 was the drought experienced during 2010. This section details some of the activities which were undertaken during the year.

During the first half of 2010/11 the North West was drier than all other parts of the UK (Figure 1) and as a consequence reservoir levels in the North West declined rapidly between April and June leading to UUW implementing a hosepipe ban on 9 July and applying for drought permits at Ennerdale Water, Lake Windermere, Longendale and Rivington.

In July the North West received 190% of the long term average rainfall (1961-90) and 89% in August. This subsequently led to the recovery of the Cumbrian reservoirs. The hosepipe ban was therefore removed on 19 August and the drought permit applications for Ennerdale Water, Lake Windermere and Rivington were withdrawn. Overall, the 2010 calendar year was the third driest year in our records, drier than 1995 and 1996 (see Figure 2).
Figure 1 – Cumulative rainfall January-June 2010

Figure 2 – Graph above shows 2010 (calendar year) being the third driest on record
Figure 3 – Graph above shows the first six months of the year were the driest first six months on record

1.3.1 ACTIVITIES UNDERTAKEN
UUW undertook a number of activities during the drought. This included:

- Enhanced communications
- Additional leakage detection
- Extra pumping when available
- Imposition of a domestic hosepipe ban
- Applied for drought permits.

DROUGHT COMMUNICATIONS
During the lead up to the drought, UUW embarked on an extensive communication programme highlighting the importance of water efficient behaviour amongst our customers. Adverts in local papers, radio adverts and numerous appearances from key UUW personnel reinforced the important message of the effects of the dry weather that the North West was experiencing.
In conjunction with these communications, UUW carried out a number of water efficiency roadshows across the region and also targeted particular regions such as the Pennine towns where resources were stretched. UUW also continued to promote the water efficiency packs available to customers and requests increased from approximately 300 per week to around 3,000.

UUW also maintained weekly communications with all regulators through June, July and August and held joint press calls with the respective media teams from the key regulators and other interested parties. Weekly updates detailed the activities which were being undertaken, reservoir stock levels, weather forecasts and any press communication which was planned.

UUW also provided updates to environmental groups, angling and fishing organisations, local wildlife trusts and many others on water resources in the region and included these in drought permit applications to ensure they had the opportunity to take part in the process.

**LEAKAGE**

Increased leakage detection was put in place to ensure resources were maximised. Activities included:

- Increased leakage detection resources deployed, including extended hours and weekend working, in zones supplied from the Lake District and Pennine reservoirs and Ennerdale

- Prioritised all customer reported leaks to Priority 1 (inspection within 24hrs including weekends)
Large volume leaks were being prioritised for urgent repair as next day repairs

Increased frequency of leakage checks at service reservoirs including the reviewing of any high level alarms

All pressure management sites were being reviewed and pressure reduced where feasible whilst maintaining standards of service

Rapid response to high and low pressure alarms on the network (alarms sending text messages direct to local network operators)

Carried out a review of leakage from redundant mains.

SOURCE OPERATIONS

Full abstraction and pumping took place when and where appropriate to ensure the UUW abstraction system was operating at its most efficient.

One of the principal actions was the operation of the Rivington Aqueduct, enabling water abstracted from the River Dee at Chester to be pumped to the Thirlmere Aqueduct for supplying Greater Manchester via the Manchester Ring Main. Pumping was optimised to help reduce the amounts abstracted from Haweswater and Thirlmere reservoirs and thereby conserve storage.

The Rivington Aqueduct was built during the 1995-96 drought as part of UUW’s £80 million investment to improve water supply security. This asset has played a major role in safeguarding supplies during 2010, particularly since storage in the River Dee regulating reservoirs has been higher than in other parts of the UUW region.

Pumping from Windermere and Ullswater took place when levels allowed the activity and pumping from the River Lune also took place.

UUW brought its reserve water sources into use across the region, for example Scout Moor reservoir (Rossendale supplies), Adlington boreholes (Stockport supplies) and Churn Clough reservoir (Burnley supplies). The use of groundwater sources was optimised throughout the region in order to conserve reservoir stocks.

HOSEPipe BAN

Due to the continued dry weather and the reduction in resources UUW announced on 7 July its intention to apply a statutory Hosepipe Ban (under s76 of the Water Industry Act 1991) from 9 July. The ban applied to the Integrated Zone only, following the recovery of resources in West Cumbria and Carlisle. This was consistent with our commitment to customers to only put in place a ban only when necessary and only where it would be most effective.
Figure 5: Example of adverts placed announcing the hosepipe ban

Following heavy rainfall (190% of Long term Average during July) the ban was removed on 19 August.

**DROUGHT PERMITS**

UUW applied for four drought permits in summer 2010 at the following locations:

- Longdendale - to reduce the compensation into the River Etherow from 45ML/d to 23 ML/d
- Rivington - to reduce the compensation to White Coppice from 4.9 to 2.0 ML/d and to reduce the compensation to Brinscall Brook from 3.9 to 2.0 ML/d
- Ennerdale - to enable abstraction from Ennerdale Water to continue below 1.35m and down to the abstraction licence limit of 1.70m below the crest of the dam
- Lake Windermere - to reduce the level of the River Leven at which UUW is currently allowed to abstract under (from 273 ML/d July, August and September or 136 ML/d for the remainder of the year to 95 ML/d) and also to increase the annual abstraction limit.

The applications drought permits for Rivington, Ennerdale and Lake Windermere were withdrawn due to recovering levels (Rivington on 2 August, Ennerdale 12 July, Lake Windermere on 26 July). The drought permit application for Longdendale was granted, however it was not utilised due to further recovery in reservoir volumes.
1.3.2 LESSONS LEARNT

Following the drought a lessons learnt exercise was conducted to ensure that the experience is built upon in UUW’s next statutory Drought Plan. UUW also commissioned a customer research study into customer perceptions of the drought in 2010, the new legislation covering demand restrictions and their attitudes to water resources. That information will be used as a basis for our next statutory drought plan. Over 400 customers were surveyed and a number of environmental stakeholders, including Regulators took part in the survey.

A summary of the results on their experience of the 2010 drought and associated hosepipe ban is as follows:

- The majority of domestic (87%) and business customers (70%) were aware of the 2010 hosepipe ban
- Domestic customers (75%) and to a lesser extent businesses (68%), felt that the 2010 hosepipe ban was necessary, with few (one in six) affected by it
- Most were neutral in their feelings towards the ban, however a fifth of domestic customers (20%) felt negatively towards it
- Positively though, the research has shown that customer attitudes to saving water are starting to change, with a significant shift in those agreeing that they make a conscious effort to save water (74% agreed with this when we conducted a survey with a representative sample of 800 UUW customers in 2009, compared to 80% in the recent Drought Plan research).

Looking forward into 2011, UUW will be submitting its draft Statutory Drought Plan to the Secretary of State in October for approval for publication and consultation.

1.4 2010/11 IN COMPARISON TO THE DRY YEAR SCENARIO

The UUW region experienced well below average rainfall during December 2009 to June 2010. Receiving only 57% of the long term average (1961-90) rainfall expected for the region. This represented the driest start to the year since UUW’s records began in 1929. In the period October 2010 – March 2011 the region received 88% of long term average rainfall leading to recovery of reservoir levels. Average reservoir levels were around 91% full at the end of March 2011. Overall January to December 2010 was the third driest year on record, although the reporting year (April to March) experienced “normal” regional rainfall. Total rainfall between April 2010 and March 2011 was 88% of the long term average (Table A).

The average maximum daily temperatures for the region were lower than in 1995-96 and the expected increase in demand for a “dry year” was not fully experienced, therefore 1995-96 remains the reference year for water resources planning for the future.
Table A: Comparison of rainfall and temperatures in 2010/11 with long-term averages and 1995/96 values

<table>
<thead>
<tr>
<th></th>
<th>April to September</th>
<th>October to March</th>
<th>Full year (April to March)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regional rainfall (mm)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010/11</td>
<td>578</td>
<td>793</td>
<td>1,371</td>
</tr>
<tr>
<td>Long-term average</td>
<td>654</td>
<td>906</td>
<td>1,560</td>
</tr>
<tr>
<td>1995/96</td>
<td>220</td>
<td>571</td>
<td>891</td>
</tr>
<tr>
<td><strong>Average maximum daily temperatures (°C)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010/11</td>
<td>17.9</td>
<td>7.9</td>
<td>13.0</td>
</tr>
<tr>
<td>Long-term average</td>
<td>16.0</td>
<td>8.5</td>
<td>12.3</td>
</tr>
<tr>
<td>1995/96</td>
<td>19.0</td>
<td>8.4</td>
<td>13.7</td>
</tr>
</tbody>
</table>

Table B: Comparison of regional distribution input values

<table>
<thead>
<tr>
<th></th>
<th>Regional Distribution Input 2010/11 (Ml/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actual</td>
<td>1,781</td>
</tr>
<tr>
<td>'Normal year' forecast in FWRMP</td>
<td>1,802</td>
</tr>
<tr>
<td>'Dry year' forecast in FWRMP</td>
<td>1,876</td>
</tr>
</tbody>
</table>

The extreme cold weather in mid-January resulted in a region-wide freeze-thaw event that caused widespread bursts on our network and a sharp elevation in leakage levels (see section 2.5).

Regional distribution input during 2010/11 was lower than that predicted in the FWRMP for a 'normal year' and a 'dry year' (see Table B). This is due largely to household customer demand being lower than forecast. Distribution input for the West Cumbria resource zone is presented in Figure 7 below.

1.5 RESOURCE ZONES IN 2010/11

UUW has four water resource zones:

- Carlisle zone
- Integrated zone
- North Eden zone
- West Cumbria zone

There have been no changes in resource zones since 2004.
Figure 6: Regional distribution input 2010/11 (Ml/d)

Figure 7: Weekly distribution input for West Cumbria resource zone 2010/11
1.6 OUTTURN DATA FOR 2010/11

Table C below presents key outturn data for each resource zone for 2010/11, including observed water production and consumption values together with the values forecasted for 2010/11 from the 2009 FWRMP. The majority of components of the water balance have performed close to expectations, but some minor variances from the plan have been identified:

- The number of metered households is generally higher than forecast in 2009. This is despite the economic recession impact on house-building, and results from the particularly high take-up of the free meter option. Metering in West Cumbria has been less than forecasted, which may be partly because of the different socio-economic profile and the current rateable values in the area.

- Regional population is slightly lower in 2010/11 (by 38,000) than predicted in the FWRMP. This is because the FWRMP estimate for 2009/10 was based on the ONS 2006-based projections; whereas the latest ONS population monitors show that population has grown more slowly. This remains consistent with last years reported variance of 35,000.

- Water consumption volumes by households and non-households are close to expected values, in the smaller zones; however there is a larger variance in the integrated zone with household consumption lower overall, but miscellaneous water use volumes (water taken unbilled and distribution operational use) has reduced significantly.

- The FWRMP considered the Media City development within its metered non-household consumption. Subsequently it has been recognised as an inset appointment: In 2010/11 Media City has taken 0.09 Ml/d, which has been reported as a bulk supply export to Peel Water Networks.

When compared to the FWRMP these variances have less than 2% effect on distribution input, and have had no appreciable impact on security of supply measures. Therefore UUW does not intend to revise its FWRMP in 2010/11.

In reviewing the critical period distribution input (DI) for West Cumbria, the peak distribution input was experienced during the freeze-thaw in a critical period during December/January and not during the summer drought. During this freeze-thaw period the surplus over target headroom was 1 Ml/d as reported in June Return Table 10a (critical period).

In the December/January critical period West Cumbria experienced a DI of 55.52 Ml/d. At this time Ennerdale and Crummock were between 95-100% full. During the time when reservoirs were drawing down in the summer, critical period DI was 51.95 Ml/d. This gave a surplus of Water Available For Use (WAFU) over DI plus target headroom of 3.7Ml/d during the summer drought period.
Table C: Key zonal outturn data for 2010/11 compared with dry year forecasts for 2010/11 in UUW’s 2009 FWRMP

<table>
<thead>
<tr>
<th></th>
<th>Carlisle Resource Zone</th>
<th>Integrated Resource Zone</th>
<th>North Eden Resource Zone</th>
<th>West Cumbria Resource Zone</th>
<th>Region Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water available for use (own water sources) (Ml/d)</td>
<td>36</td>
<td>1,953</td>
<td>9</td>
<td>58</td>
<td>2,096</td>
</tr>
<tr>
<td>Total population (000's)</td>
<td>107</td>
<td>6,261</td>
<td>13</td>
<td>145</td>
<td>6,585</td>
</tr>
<tr>
<td>Number of unmeasured households (000's)</td>
<td>33</td>
<td>1,665</td>
<td>4.0</td>
<td>50</td>
<td>1,982</td>
</tr>
<tr>
<td>Number of metered households (000's)</td>
<td>13</td>
<td>838</td>
<td>2</td>
<td>12</td>
<td>862</td>
</tr>
<tr>
<td>PCC unmeasured households (/hd-d)</td>
<td>147</td>
<td>140</td>
<td>154</td>
<td>162</td>
<td>141</td>
</tr>
<tr>
<td>PCC metered households (/hd-d)</td>
<td>122</td>
<td>116</td>
<td>119</td>
<td>122</td>
<td>116</td>
</tr>
<tr>
<td>Water consumption by households (Ml/d)</td>
<td>14</td>
<td>859</td>
<td>2</td>
<td>21</td>
<td>997</td>
</tr>
<tr>
<td>Water consumption by non-households (Ml/d)</td>
<td>8</td>
<td>375</td>
<td>2</td>
<td>12</td>
<td>396</td>
</tr>
<tr>
<td>Miscellaneous water use (Ml/d)</td>
<td>&lt;1</td>
<td>21</td>
<td>&lt;0.1</td>
<td>&lt;1</td>
<td>22</td>
</tr>
<tr>
<td>Total leakage (Ml/d)</td>
<td>5</td>
<td>441</td>
<td>2.0</td>
<td>16</td>
<td>454</td>
</tr>
<tr>
<td>Distribution input (Ml/d)</td>
<td>28</td>
<td>1,896</td>
<td>5.4</td>
<td>50</td>
<td>1,779</td>
</tr>
<tr>
<td>Security of supply Index</td>
<td>In balance</td>
<td>In balance</td>
<td>In balance</td>
<td>In balance</td>
<td>100</td>
</tr>
</tbody>
</table>

Key to table: 2010/11 Normal year data

Note: Figures may not sum due to rounding.

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1.7 WORK NEEDING TO BE CARRIED OUT DURING 2011/12

The following activities will be carried out during 2011/12:

- Continue the extensive leakage control activities. Although it is still early in the year, UUW is on track to achieve the 2011/12 leakage target of 464 ML/d (annual average).
- Carry out a specific leakage reduction plan in West Cumbria to reduce leakage levels to the current target of 15.5 ML/d for this zone.
- Continue the wide range of activities to promote water efficiency and carry out enhanced activities to achieve the Ofwat water saving targets. The Company will continue to promote the free meter option on its website and the billing leaflet.
- Continue to maintain close liaison with the EA concerning the review of consents arising from implementation of the EU Habitats Directive, the implications for UUW’s plans to maintain adequate supply/demand balances, and other key water resources planning issues.
- Progress our supply/demand programme for West Cumbria, including the progression of the new groundwater scheme in South Egremont, water efficiency research programme and further reductions in leakage by 2014/15.

Further details on these activities are presented in Part 2 below.

2 PROGRESS ON FURTHER WORK

2.1 SUSTAINABILITY REDUCTIONS

The EA is reviewing the conditions for some of UUW’s abstraction licences:

- Water sources that fall within Special Areas of Conservation (SAC) under the European Union Habitats Directive
- Water sources with national or local environmental drivers, identified under the EA’s Restoring Sustainable Abstraction Programme.

These reviews will result in changes to the abstraction licence conditions, in some cases to ensure more sustainable water abstraction and protect the environment at times of low flows in certain watercourses. In such cases the quantity of water that we will be able to abstract in dry weather will be lower in the future than at present. These impacts on our deployable output are known as ‘sustainability reductions’.

The EA has informed us of those sites where they are certain that abstraction licence conditions will be modified and the changes that will take place. In our calculations of deployable output for the FWRMP we have fully included modifications to licences where the EA reviews were completed and the outcomes certain. This is in accordance with regulatory requirements.
The sustainability reductions are summarised in Table D below. We have assumed that the changes will come into effect in 2014/15.

The EA is continuing with its reviews of our abstraction licences, and so may later identify further proposed changes that we will need to incorporate into our 2014 WRMP. For example, there is a possibility that sustainability reductions could be introduced at Overwater Reservoir: Natural England is undertaking further work to identify whether a ‘hands-off’ lake level condition should apply, but no allowance was made for this in the 2009 FWRMP as the outcome is too uncertain. The EA is currently reviewing abstraction licences at Swindale Beck and compensation flows from Ennerdale Water to the River Ehen, the details of the changes are still to be confirmed. Depending on the level of changes and timing of changes required to these licences, this may trigger a review of the 2009 FWRMP.

In accordance with regulatory guidance from Defra and the EA, no allowance for abstraction licence changes that can be expected to occur as a result of the European Union Water Framework Directive has been included. It is possible that substantial further sustainability reductions could occur in the Integrated water resource zone over the Water Framework Directive implementation period up to 2027, but we have not included any potential effects in our forecasts.

Table D: Expected sustainability reductions between 2010-2015

<table>
<thead>
<tr>
<th>Site</th>
<th>Driver</th>
<th>Issue</th>
<th>Estimated sustainability reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thirlmere catchment</td>
<td>Habitats Directive</td>
<td>Increased prescribed flow in Mill Gill and Helvellyn Gill. Provision of spate flows in Mill Gill and Helvellyn Gill. Provision of spate flows from Thirlmere Reservoir to St John’s Beck.</td>
<td>18.6 Ml/d</td>
</tr>
<tr>
<td>Rivers Brennand and Whitendale</td>
<td>National (Site of Special Scientific Interest)</td>
<td>Increased prescribed flow in Rivers Brennand and Whitendale and closure of minor intakes.</td>
<td>14.3 Ml/d</td>
</tr>
<tr>
<td>Carlisle Zone</td>
<td>Habitats Directive</td>
<td>Increased prescribed flows on New Water and River Gelt.</td>
<td>3.8 Ml/d</td>
</tr>
</tbody>
</table>

North Eden Zone – No sustainability reductions expected
<table>
<thead>
<tr>
<th>Site</th>
<th>Driver</th>
<th>Issue</th>
<th>Estimated sustainability reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Cumbria Zone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dash Beck Intake</td>
<td>Habitats Directive</td>
<td>Increased prescribed flows on Dash Beck.</td>
<td>0.4 Ml/d</td>
</tr>
</tbody>
</table>

2.2 WATER EFFICIENCY INITIATIVES DURING 2010/11

Ofwat has introduced mandatory water efficiency targets for water companies from 2010/11 to 2014/15.

UUW takes an active role in promoting the efficient use of water by all types of household and non-household customers. A range of measures have been included and many publicity, education and advisory activities undertaken.

In order to achieve the water efficiency target, UUW has promoted and distributed shower regulators as well as continuing to promote the 'Save-a-Flush' cistern displacement devices to all of its customers. The devices, along with other water saving ideas, are promoted in the billing leaflet which is sent to all customers. UUW also promotes these on its website, through advertisements in local council magazines, local press, at community events and through road show activities using the 'Big Toilet' display.

The devices are mainly sent out in free "Water savers packs" which are available on request from UUW's leaflet request line or call centre, and website. There are two packs to choose from. The first includes:

- a Save-a-Flush water saving device
- a water conservation self assessment questionnaire
- advice and tips on saving water in the home and garden
- advice on preventing bursts and reducing wastage through leaks
- a water butt promotion
- facts and information on being water wise for younger customers.

The second pack UUW promotes to its customers includes:

- a shower regulator
- a water conservation self assessment questionnaire
- advice and tips on saving water in the home and garden.
In the year 2010/11, UUW has distributed over 258,000 cistern devices, and over 91,000 shower regulators. UUW has either given away, or sold through its partners, 1,355 water butts. This was achieved through on-line offers on UUW’s web site, free entry competitions and at public relations events.

UUW has also held giveaway days around the region where over 14,500 shower heads have been distributed.

We continue to offer our web based Water Calculator. This calculates the customer’s daily water usage and informs them if they are an above or below average water user as well as providing them with an individual report which outlines further ways they can save water in the home and garden. This calculator can be viewed at the following website link: [http://www.unitedutilities.com/CalcCarbonWater.htm](http://www.unitedutilities.com/CalcCarbonWater.htm).

UUW also has an interactive Water Efficient Home on the website. This provides help and advice for customers for saving water in and around their homes [http://www.unitedutilities.com/WaterEfficiencyHouse.aspx](http://www.unitedutilities.com/WaterEfficiencyHouse.aspx).

UUW’s “Guide to using water wisely” contains a section on saving water in the home. This self water audit enables household customers to calculate their daily water usage. In the year 2010/11, UUW has distributed 97,226 audits in total. There is an increasing trend in customer requests for this leaflet, due to better online visibility and availability. There were also an additional 2,367 completed audits of our online Water Calculator.

![Figure 8: Interactive water efficient home available on UUW's website](image)

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10/06/2011
UUW’s “A self-audit guide for small businesses” booklet contains sections on how businesses can save water for different budgets. It also contains a self water audit where they can calculate how much water their business uses and can be used to identify areas where they could save water and therefore money.

The 2010/11 base service water efficiency programme saved an estimated total of 4.73 ML/d (excluding free meter options), as summarised in Table 1 of the June Return, at a cost of £750k. This represents a significantly increased level of activity over the comparable volume of 1.02 ML/d at a cost of £355k in 2009/10.

UUW has been providing a free meter option since April 2000, and promotes the free meter option on the bills sent out to all unmeasured customers during main and half year billing. During 2010/11 the scheme has fitted 40,207 meters, which has resulted in estimated water saving of 1.36 ML/d.

The FWRMP identified an optimum programme of water supply and demand reduction solutions for the next 25 years. The plan identified deficits in the supply/demand balance in AMP5 in the West Cumbria Resource Zone. A proportion of this will be met by sufficient sustainable economic level of water efficiency (SELWE) activities. As part of the SELWE activities, UUW held a number of Give Away Days at supermarkets within the West Cumbria area, giving away nearly two thousand free water efficient shower heads.

### Table E: Summary of UUW water efficiency programme 2010/11

<table>
<thead>
<tr>
<th>Water Efficiency Activity</th>
<th>Number</th>
<th>Estimated water saving (ML/d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cistern devices distributed to customers</td>
<td>254,343</td>
<td>1.88</td>
</tr>
<tr>
<td>Water efficiency customer self audits (saving capped at 30% of 1.95 ML/d as per Ofwat reporting requirements)</td>
<td>99,751</td>
<td>0.89</td>
</tr>
<tr>
<td>Water butts distributed to customers</td>
<td>1,351</td>
<td>0.004</td>
</tr>
<tr>
<td>Crystal packs distributed to customers</td>
<td>3,818</td>
<td>0.002</td>
</tr>
<tr>
<td>Retrofit devices distributed to customers</td>
<td>96,051</td>
<td>1.96</td>
</tr>
<tr>
<td>Base Service Water Efficiency Programme Total</td>
<td></td>
<td>4.73</td>
</tr>
<tr>
<td>Free meter options</td>
<td>40,207</td>
<td>1.36</td>
</tr>
<tr>
<td>West Cumbria Sustainable Level of Water Efficiency Programme (shower heads, regulators and audits)</td>
<td>2,481</td>
<td>0.97</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>6.15</td>
</tr>
</tbody>
</table>
During 2010/11 UUW also maintained its commitment to promote water conservation by the following activities:

- continuing a communications campaign to encourage customers to use water wisely via annual billing leaflets, local press releases, educational and public relations services
- continuing to leave a pack called “A simple guide to your water meter” (including water saving information) with household customers after a meter is installed.

UUW has approximately 200,000 non-household customers of which around 440 are allocated key customer status. This group is made up of large industrial/commercial customers and some institutional customers who meet the key status allocation criteria.

Each key customer is assigned a manager who is responsible for developing the inter-company relationship, resolving disputes and proactively providing advice on matters that will impact their business operations including water efficiency. During 2010/11 UUW has contacted each key customer at least one occasion.

UUW has continued to hold water efficiency events with its key customers, providing water butts, shower regulators and Save-a-Flush cistern devices to their staff. Events have taken place at organisations such as:

- Cheshire East Council
- BBC
- Warburtons
- Stockport Town Council
- Cheshire West Council
- BAe Systems
- Robert McBride
- Salford University
- Park Cakes
- Givaudan.

UUW has attended and/or supported similar events at other business customers' premises including Ikea, 3M, e.on, Cheshire Police & Cheshire Fire and Rescue and the National Trust.

UUW has continued to maintain partnerships with external bodies to promote water conservation and to deliver water efficiency information. Examples of these partnerships include Groundwork Trust who target small to medium sized business customers, Wirral 21 Network, local councils, housing authorities and the Environment Agency.

UUW continues to distribute its Hotel Wise cards to hotels and guesthouses around the region. The Hotel Wise cards are aimed at encouraging hotel guests to think about their water usage whilst on holiday and once they return home. Hotels around the region are able to request as many cards as they require. To facilitate distribution of these
and the distribution of the 'Get waterwise in the workplace' leaflets, UUW has joined forces with the Tourist Boards to promote water efficiency to their members and ultimately their guests.

UUW partnered with energy companies to promote water saving packs to our domestic customers and also to offer water and energy efficiency audits, and depending on the results the appropriate water efficient devices were discussed and offered to the customer.

UUW also developed a number of partnerships to help reach customers that we may have little interaction with other than to send them an annual bill. These partners included the Rugby Football League, the Energy Saving Trust and Faiths 4 Change.

**WATER EFFICIENCY RESEARCH**

In order to help determine our water efficiency strategy UUW undertook a customer research project in 2010/11 to understand our customers' perception of UUW's water savers pack.

This research was carried out by interviewing 500 of our customers, who had ordered the water savers pack, over the telephone. The headline result of the survey is that over two thirds of customers would recommend the shower regulator to others and would be likely to order other water saving devices.

**WATER EFFICIENCY STRATEGY AND FUTURE PLANS**

Our anticipated AMP5 water efficiency plan was published in UUW's 2009 FWRMP. At the time these plans represented our current thinking. Following our water efficiency research programme last year our AMP5 water efficiency plan was updated as we gained more experience in the water efficiency products and delivery routes, and reviewed the cost effectiveness of different measures. We anticipate the programme changing over the AMP as we continue to gain more experience in delivering such a large water efficiency programme, and as relative effectiveness of the various existing and new water saving devices changes over time.

In addition to UUW's existing water efficiency activities the water efficiency plan for 2011/12 will involve continuing to distribute flow regulators to customers to save water whilst showering. These will be provided alongside a household water audit and guide to using water wisely in the home, to reinforce water saving behaviour, and will be provided free of charge to our customers via our customer call centre and website. UUW will be predominantly aiming the devices at customers who are requesting a free water meter. It is believed that they are an appropriate set of customers to target as they are already thinking about their water consumption and are therefore seeking to reinforce their behaviour.

UUW plans to continue with SELWE activities in West Cumbria:

- Issue 1,000 water efficient showerheads free of charge
- Offer domestic water audits to newly metered households
Issue 2,000 water savers’ packs free of charge.

The AMP5 plan also includes a targeted water efficiency research programme. This programme of research has been designed to improve water industry knowledge of the cost/benefit balance of a range of water efficiency projects, where current industry knowledge is limited. UUW plans to undertake the ‘Green Zone’ West Cumbria water efficiency project. This project will evaluate the effectiveness of alternative methods of influencing customer behaviour to save water.

This project will contribute to the Ofwat requirement for each water company to increase the industry knowledge of water efficiency.

2.3 RESOURCE ZONE LEAKAGE

UUW continues to carry out an extensive range of leakage control activities, at significant cost, in all water resource zones. As a result the regional level of leakage averaged 464 ML/d in 2010/11. UUW has therefore achieved the Ofwat published target of 464 ML/d for 2010/11 despite very severe winter conditions. Table F below shows the levels of leakage in each of the four water resource zones.

**Table F: Zonal leakage levels (ML/d)**

<table>
<thead>
<tr>
<th></th>
<th>Carlisle Resource Zone</th>
<th>Integrated Resource Zone</th>
<th>North Eden Resource Zone</th>
<th>West Cumbria Resource Zone</th>
<th>Region Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forecast for 2010/11 in ARMP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual total leakage 2010/11</td>
<td>5.2</td>
<td>442</td>
<td>2.0</td>
<td>16.4</td>
<td>464</td>
</tr>
<tr>
<td>Actual total leakage 2009/10</td>
<td>5.0</td>
<td>439</td>
<td>1.8</td>
<td>17.1</td>
<td>462</td>
</tr>
</tbody>
</table>

Our actions during 2010/11 across the region have included:

- Maintaining a high level of leak detection resource. UUW has employed around 125 full-time equivalent (FTE) detection resources, increasing to over 200 during the severe winter period.

- Maintaining average zonal night pressure (AZNP) at or below the target level of 38m. This was achieved by continuing to maintain and optimise our 3000 Pressure Management Valves (PMVs). AZNP was for the year is 39.2m. This is slightly higher than the target level due to an increase in pressure during the severe winter period. The peak pressure in December 2010 was 41.8m.

- Implemented a new leakage monitoring and reporting system (Netbase) which has a number of advantages including:
- Automated links to other corporate systems enabling regular updates of customer billing information and asset data
- Includes reservoir and water treatment production data
- Auto-generation of daily leakage reports to assist direction of leakage detection resources
- Modern and fully supported software system

Continuing to provide a private supply pipe repair/replacement service for household customers, limited to 1 repair or replacement per supply pipe in a 12-month period, subject to conditions.

A graph of weekly leakage levels in DMAs is presented in Figure 9 below. It can be seen that there was a significant winter peak due to the coldest winter on record. During the month of December there was an increase in District Meter Area (DMA) leakage in the region of around 300 ML/d, in response to this we have had every available resource working to detect and repair leaks. This compares to a peak of 230ML/d which we experienced in the January 2010 event. However, the situation was recovered quickly with a period of enhanced intensive leakage control activity including media campaigns and enhanced detection and repair resources. Figure 9 shows the unprecedented peak in DMA leakage, compared with the exceptional peak in the previous year.

![Graph showing weekly DMA leakage from January 2005 to March 2011 (ML/d).](image)

**Figure 9: Regional weekly DMA leakage January 2005 to March 2011 (ML/d).**
**WEST CUMBRIA LEAKAGE**

In West Cumbria, leakage has been particularly difficult to control (see Figure 2). The average level for 2010/11 was 16.4 ML/d, which although lower than the previous year remains above the baseline target of 15.5 ML/d for 2010/11. Progress had been made on controlling leakage levels until the severe winter event (December 2010), which has led to substantial elevations in leakage levels over the winter.

The freeze-thaw event caused a large increase in leakage in West Cumbria (see Figure 10) similar to that experienced across the region. Leakage levels reduced quickly after the event, but not as rapidly in West Cumbria as in the rest of the region. This is because the West Cumbria resource zone is characterised as having long lengths of rural mains and many remote customers, which make the leaks more difficult to locate.

In response to the higher than forecast leakage levels in West Cumbria during 2010/11, UWW is continuing to carry out the "West Cumbria Leakage Strategy" to reduce leakage in West Cumbria and ensure that the longer term AMP5 targets are achieved. The strategy includes:

- Adequate detection and repair resources
- Improved targeting of leakage detection resources
- Optimisation of existing pressure management schemes
- Additional pressure management including flow modulation
- Infrastructure replacement in targeted areas.

The targeted pressure optimisation and infrastructure replacement project is well progressed in its definition phase. Hydraulic modelling has been
largely completed and potential interventions identified. It is anticipated that this £2m project will move into delivery phase during 2011/12.

FREEZE-THAW EVENT DECEMBER 2010 AND IMPACT ON LEAKAGE

Very cold temperatures were experienced in the UUW region between 24 November and 26 December 2010, with minimum night-time temperatures mostly below zero as shown in Figure 11. The lowest recorded minimum at the official weather station at Manchester Airport was -14.8°C during the night of 20 December, but even lower temperatures would have occurred in upland or more remote areas of the region. Minimum night temperatures continued to be recorded below the long term average throughout January, with further freeze-thaw events experienced, although these were not as severe as those in December.

Leakage increased very sharply during the extreme freeze thaw period 26 December to 2nd January (Figure 11). Average DMA leakage for the week ending 2 January rose to 185 Ml/d above the previous weeks level. Prior to the thaw the Winter Action Plan was implemented and leakage detection and repair teams were readied, as summarised in Table B, and so levels reduced quickly as shown in Figure 10.

![Figure 11 Minimum night-time temperature comparison (deg C)](image-url)
### Table G: Enhanced activities in the Winter Action Plan: proposed and implemented

<table>
<thead>
<tr>
<th>Proposed Activity</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequent assessment of leakage levels in order to quickly spot any marked increase</td>
<td>DMA input in each demand area has been assessed daily so that we quickly identified the increased flows following the start of the freeze on 24 November. This was reinforced by the weekly DMA leakage monitoring. In addition to this analysis of DMA input each normal working day, we also assess night flow changes at weekends during breakout periods so we can respond quickly.</td>
</tr>
<tr>
<td>Maintain leakage detection and repair resources over the Christmas and New Year holiday period</td>
<td>Around 70% of staff were available on the normal work days. An enhanced stand-by cover for the bank holidays was planned however given the level of break out on the 26th December onwards additional resources were focused on resolving customer issues rather than proactive leakage detection.</td>
</tr>
<tr>
<td>Increase leak detection resource</td>
<td>Substantial increases were made in the number of personnel on leak detection activity. Our own network resource increased time on detection from 40% of their working week to between 80 and 100%. We also improved our detection Service Level Agreement to 24 hours. Repair gangs were moved between DMA areas in order to prioritise mains repairs.</td>
</tr>
<tr>
<td>Prioritise leak repairs</td>
<td>The scheduling of leak repair jobs has prioritised leaks of higher water volume.</td>
</tr>
<tr>
<td>Increased number of repair gangs</td>
<td>The number of gangs was increased from around 40 to 79 to control the backlog of jobs to a minimum.</td>
</tr>
<tr>
<td>Enhanced Service Level Agreement (SLA) time for repairs</td>
<td>We asked our contractors to achieve 3 day repair of leaks wherever possible. In response they have increased the repair resources. We allowed a lesser SLA on fittings and low value leaks to get further improvements on significant Mains and Service leaks.</td>
</tr>
<tr>
<td>Introduce overtime and or weekend working</td>
<td>Weekend working for all leak detection and repair was introduced from weekend 18/19 December and continued in certain areas as necessary up to year end. Working days were extended by four hours for all staff that were available to work.</td>
</tr>
<tr>
<td>Publicise the free leak reporting telephone number more widely to customers</td>
<td>Winter packs were handed out to customers at events across the region to promote Leakline and pipe insulation. Approximately 50,000 packs were distributed at the events. We also ran a 4-week radio and newspaper advertising campaign to encourage our customers to protect their pipes during the cold spell and order a free winter advice pack from us.</td>
</tr>
</tbody>
</table>

### 2.4 METERING

There have been no changes in metering policy during 2010/11. UUW continues to meter all new households and non-households, and where practical, altered properties. A free meter option for households continues to be provided. A large programme to compulsorily meter unmeasured non-households was undertaken by UUW several years ago and so the number remaining unmetered is small. Installation of meters in existing unmeasured non-households is undertaken where feasible.
During 2010/11 UUW installed meters at approximately:
- 9,727 new houses
- 40,207 households which opted for a free meter
- 932 new non-households.

In addition, UUW has a pro-active programme of replacing household and non-household meters to improve the accuracy of meter readings.

The take-up of the free meter option scheme during 2010/11 was lower than the 53,544 predicted in the FWRMP. This is to be expected at a time when bills were reduced in year 1 of AMP5 following the PR09 determination. It is expected that take up will be greater as the AMP progresses and will continue to be monitored.

The total number of metered households is slightly greater than the 2009 Final Water Resources Plan forecast for 2010/11, as shown in Table C above.

2.5 DISTRIBUTION AND PRODUCTION DEVELOPMENTS

Most of the distribution and production measures included in the FWRMP comprise leakage reduction activities, as discussed above.

UUW also continues to carry out investment programmes to maintain the accuracy of all flow measurements at water treatment works, aqueducts and district meter areas by installing new, primarily electromagnetic, meters.

UUW is currently constructing a new bi-directional pipeline, known as the 'West East Link Main', between Merseyside and North Manchester. It is expected to be in operation by Summer 2011. This will help us maintain adequate supplies to Greater Manchester or Merseyside in the event of needing to temporarily reduce supply from a major reservoir, for example due to maintenance work or drought conditions. This will be an enhancement to our supply network to further increase the integration and flexibility of the supply within the Integrated zone.

The West-East Link Main will facilitate UUW's integrated strategy for 2015 and beyond. It will help UUW to meet future demand requirements, transferring water in the summer from Cheshire and Merseyside to Manchester to replace the reductions in water source yield from the Lake District and Pennine supplies. It will help maintain security of supply to customers and address the long-term challenges arising from the European Union Habitats and Water Framework Directives and from climate change.

In addition to security of supply, the West East Link Main will enable UUW to deliver two further projects that currently present a major challenge which involve the inspection and maintenance of some of our large diameter trunk mains. Without the link in place, UUW would be required to construct duplicate mains, which would subsequently become large redundant assets, or else water supplies would be placed at high risk during internal inspection of the mains. The West East Link Main provides multiple benefits and is a unique opportunity to secure the robustness of
the water supply system in the North West of England for the next 100 years.

2.6 RESOURCE DEVELOPMENTS

As a result of improvements carried out during 2000-05, UUW has an adequate water supply/demand balance in all parts of the region. Therefore no water source enhancement schemes were required during the AMP4 period (2005-10).

The need for future enhancement of water supplies was reviewed in the FWRMP. It identified that the only water resource zone with a supply deficit before 2015 is West Cumbria. The supply/demand plan for West Cumbria during 2010-15 comprises:

- Construction of a new groundwater supply with deployable output of 6.4 ML/d. The work undertaken during 2009/10 included ecological survey in River Ehen, water resources assessment report to support drilling and test pumping, water features survey, and identification of test borehole sites. In 2010/11 five boreholes were completed.
- Construction of a new Hayborough to Crosby pipeline to enable more water to be supplied to North Allerdale. Design work has commenced on this project.
- Leakage control to reduce leakage in the West Cumbria water resource zone to 14.0 ML/d by 2014/15. A West Cumbria Leakage Strategy has been developed to initially achieve the current baseline target of 15.5 ML/d (see section 2.3).
- Water efficiency programme across West Cumbria to help customers save 0.3 ML/d by 2014/15, together with research study on how to trigger change in customer behaviour. UUW is on track to achieve this with 0.07 ML/d savings in 2010/11 (see section 2.2)
- Continued provision of the free meter option scheme.

2.7 CHANGES IN POLICY/PLANNING AND FORECASTING ASSUMPTIONS

There has been no change to UUW’s level of service, which remains as:

- Hosepipe ban and drought permits to augment supply no more than once in 20 years.
- Drought orders to ban non-essential water use and further augment supply no more than once in 35 years.
- No standpipes or rota cuts during a repeat of the worst drought on record.

There have been few changes since the 2009 Final Water Resources Plan in the methods used for assessment of deployable output, outage allowance, water available for use or target headroom.

Detailed assessments of water source yields, climate change impacts demand forecasts, target headroom and the economic level of leakage...
were all conducted for the FWRMP. These have been undertaken in accordance with the UKWIR and EA best practice methods. More details of the methods used are reported in the 2009 FWRMP and there have been no changes during 2010-11 to these methods.

2.8 CLIMATE CHANGE

Climate change is likely to have a significant impact on supply/demand balance forecasts, but UUW has highlighted that there is a large degree of uncertainty about the forecast impacts. The 2009 FWRMP therefore identified the need for further studies, in particular to improve the understanding of the effects of climate change on source yields.

UUW is actively supporting the UKWIR study "Impact of climate change on river flows & groundwater levels". In addition UUW is a member of the Water UK Climate Change Impacts Group, and is maintaining close links with other key water industry research studies of climate change impact for water supply.

The UK Climate Impacts Programme published new climate projections "UKCP09" in June 2009, which give an enhanced UK assessment of climate change. These were too late for use in the 2009 FWRMP, but UUW will continue the work with UKWIR and the EA to use the findings to review our calculations of climate change impact. A full reassessment of the effects on water source yields, water demand and target headroom will be carried out for the 2014 WRMP.

UUW also published its report into Climate Change Adaptation last year accordance with a direction from the Secretary of State under the Climate Change Act 2008. The report brings together all the work UUW has done, and plans to do, to adapt to climate change, specifically over the next 25 years, to 2035 which is consistent with the FWRMP, copies are available on request.

3 CHANGE TO WATER RESOURCES PLAN

UUW's FWRMP was published in September 2009. Water resource planning is a dynamic process and UUW is committed to ongoing review of the key elements to ensure that our water resources plan remains up-to-date. UUW will continue to discuss and review the key elements of the plan through constructive dialogue with the EA, in particular sustainability reductions as they become clear and how they will affect UUW's supply/demand balances.

Despite the uncertainties that exist, UUW’s plan is robust and is adaptable to take account of the likely range of changes that may occur.

UUW’s first annual review of the 2009 FWRMP was carried out in 2010 and concluded that no significant changes have arisen since publication. This annual update is the second annual review of the plan and UUW has concluded that no significant changes have been made. Although the North West experienced a drought, all the activities undertaken by UUW meant that supplies could still be met and a Security of Supply Index of 100 for all water resource zones remains in tact. Therefore UUW does not intend to revise its FWRMP in 2011/12.
4 CONCLUSIONS

UUW has made good progress on its Statutory Water Resources Management Plan during 2010/11, by pursuing studies for the West Cumbria groundwater scheme, developing plans for our water efficiency programmes, and continuing our leakage control and metering programmes. We met the Ofwat leakage target of 464 Ml/d for 2010/11 despite the very severe winter weather.

No material changes have arisen since publication of the 2009 FWRMP.

The next statutory Water Resources Management Plan annual review will take place in June 2012.

The next draft WRMP is due to be submitted to the Secretary of State in 2013.