

Water resources review

April 2015 to March 2016

1. Progress with delivering our 2015 Water Resources Management Plan

About this report

This report provides an update on our water resource activities for 2015/16, as measured against our 2015 Water Resources Management Plan, which covers the period 2015-2040.

It includes an overview of regional supply and demand; a summary of recent achievements; and an update on the development of our 2016 draft Drought Plan and our 2019 Water Resources Management Plan.

If you have any questions about the content of this report, we would be happy to answer them. Please send correspondence to:

water.resources@uuplc.co.uk

	In 2015/16 we...	In 2016/17 we will...	In future years and future plans we will...
	Outperformed our regional leakage target by more than 10 MI/d, but despite this leakage in West Cumbria has increased.	Concentrate our efforts in West Cumbria to deliver the South Egremont boreholes and improve leakage performance to meet our targets.	Continue extensive leakage control activities. Continue to spread the water efficiency message and encourage customers to take up the free meter option.
	Exceeded our annual water efficiency target and achieved regional savings of 3 MI/d, including savings of 0.29 MI/d in West Cumbria.		
	Installed free water meters at 27,197 households, but unfortunately this is below our forecast.	Continue with enhanced actions to promote free meter options across the region and monitor progress.	
	Maintained the supply-demand surplus in all our resource zones.		
	Removed constraints on our existing assets in the Carlisle resource zone to make more Water Available For Use for the future from 2016/17.		
	Completed the Summergrove scheme to reduce abstraction from Ennerdale Water.		
	Progressed the South Egremont borehole project, which was scheduled for completion in 2015. However delays have hit the project and additional work is ongoing. The boreholes will start supplying water into West Cumbria in summer 2016.	On completion, use the South Egremont boreholes to reduce abstraction from Ennerdale Water.	Mitigate the impacts of our activities in West Cumbria as much as possible. This will be achieved through: <ul style="list-style-type: none"> • Use of the interim measures, the Summergrove scheme and South Egremont boreholes, to reduce abstraction from Ennerdale Water • Delivery of the package of compensatory measures. We are committed to working with Natural England, the Environment Agency, local stakeholders and experts in order to find the best solution to the protection of the River Ehen SAC and public water supplies in light of emerging evidence. • Delivery of the Thirlmere transfer scheme to allow abstraction from Ennerdale Water and other West Cumbria sources to cease
	Progressed delivery of the Thirlmere transfer scheme and submitted the full planning application in January 2016, supported by the Environmental Impact Assessment.	Continue to progress the Thirlmere transfer scheme which includes having a planning decision in autumn 2016, launching a fourth phase of public consultation and explore proposals for a community investment fund that will leave a lasting legacy in Cumbria.	
	Launched a specific website to engage with customers on the Thirlmere transfer scheme: cumbria.unitedutilities.com	Update the Thirlmere transfer Contingency Plan Technical Report as part of the annual Water Resources Review.	
	Reviewed our contingency plan in case the Thirlmere transfer scheme proves undeliverable.		
	Completed a modification project at Helvellyn Gill to reduce the environmental impacts of our abstraction.	Continue to progress delivery of sustainability reductions to safeguard sensitive aquatic species and habitats and reduce the environmental impacts of abstraction.	Deliver sustainability reductions to safeguard sensitive aquatic species and habitats.
	Continued to deliver the package of compensatory measures.		
	Worked to develop our 2016 draft Drought Plan. New information about Crummock Water, a source in West Cumbria, is a material change to our currently published plan.	Submit our draft 2016 Drought Plan to Defra by 26 July 2016.	Publish our draft 2016 Drought Plan once we have received direction from Defra and open a 6 week window for public consultation on our plan.
	Started to develop our 2019 Water Resources Management Plan by writing methodologies and engaging with the Environment Agency on our approach to key areas of our plan.	Continue development of our 2019 Water Resources Management Plan. We'll discuss our proposed approaches with regulators and stakeholders, and complete pre-consultation on our plans.	Submit our draft 2019 Water Resources Management Plan by December 2017.

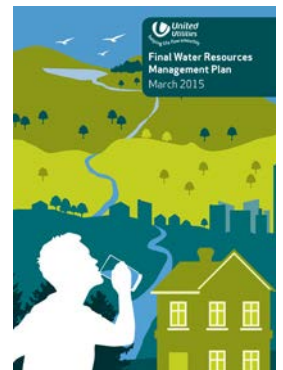
2. Introduction



2.1 Purpose

In this Annual Water Resources Review we report our water resource position for the year 1 April 2015 to 31 March 2016 (2015/16). In compliance with the Water Industry Act 1991, the primary aim of this report is to provide an update to the Water Resources Management Plan. We do this by assessing actual events and performance against the forecasts in our plans. It describes progress made on implementing the plan and provides commentary on the key issues, following the Environment Agency Water Resources Planning Guidelines¹. The report also includes an annual update of our Drought Plan, and other activities and plans that may influence water resources.

We are sending this Annual Review to the Secretary of State, to the Environment Agency and to Ofwat. We are also publishing it on our website for interested customers and/or stakeholders.



2.2 Background to the Water Resources Management Plan

A new Water Resources Management Plan was published in March 2015, which became effective from 1 April 2015. This supersedes the 2009 Water Resources Management Plan forecasts that we measured our performance against last year. Therefore, for the purpose of reporting on 2015/16, actual performance and events are compared to the 2015 Water Resources Management Plan forecasts as the formally adopted plan.

The 2015 Water Resources Management Plan covers the period 2015/16 to 2039/40 and in developing the plan we reviewed customer and stakeholder priorities, changes in our supply system, accounted for future effects of climate change and set out our proposed plan for securing the future for water resources in the North West. In this annual review we present the key items of progress and upcoming activities to deliver the 2015 Water Resources Management Plan. The Final Water Resources Management Plan 2015 is available at corporate.unitedutilities.com/waterresourcesplan.

¹: *Water resource management plan annual review and annual return data, April 2016*

2.3 Links to our other plans

Our Water Resources Management Plan is one of a number of plans that influence the provision of secure water resources for customers and the environment. As described above, this report also provides an update on, or reference to our:

- Statutory Drought Plan – see Section 10 for an update. Our Drought Plan is available at: corporate.unitedutilities.com/waterresourcesplan
- PR14 Business Plan – see Section 3.1. A publically available summary can be found at: corporate.unitedutilities.com/ourbusinessplan.
- 2019 Water Resources Management Plan – as a minimum, we have to update the Water Resources Management Plan every 5 years. We’ve already started work on development of our next plan, and provide a short update in Section 11.1.

2.4 Structure of the document

The table below shows the coverage of each section of this report:

Section	Coverage	Page
1. Progress with delivering our 2015 Water Resources Management Plan	The first section of this report provides an overview of our performance during 2015/16 as well as upcoming activities in future years	2
2. Introduction	This section is an introduction to the 2015/16 Annual Review and provides the context for our published Plans	3
3. General	Within this section we comment on our performance for 2015/16 against the Customer Promises, Outcomes and Measures of Success. We also give an overview of our activities in 2015/16 towards delivering the 2015 Water Resources Management Plan, discuss the weather we experienced, and the overall supply-demand balance position.	5
4. Supply	This includes details of our supply position in 2015/16, including Water Available For Use, outage, and sustainability changes.	9
5. Demand	This section outlines the demands we experienced in 2015/16, comparing them to the “dry year” forecast that we included in our 2015 plan. We discuss our 2015/16 performance for leakage, water efficiency, and customer metering.	16
6. Headroom	Within this section we discuss the target headroom component of the supply-demand balance.	27
7. Options	This includes an update on our delivery of the Thirlmere transfer scheme, and the activities to reduce abstraction in West Cumbria until its implementation. We also provide updates on the West Cumbria compensatory measures package and Thirlmere transfer contingency plan.	28
8. Supply-demand balance	In this section we pull together all of the material presented in earlier sections into the supply-demand balance. We show the 2015/16 supply-demand balance position for each resource zone and compare it to our forecast position.	31
9. West Cumbria summary	West Cumbria is a focal point in our 2015 plan, this section gathers all of the information from other sections of the report to provide a view on our activities and progress within the resource zone.	32
10. Making sure we are prepared for drought	This section includes an update on our activities in developing our new 2016 draft Drought Plan.	35
11. Forward look	Within this section we provide a forward look to the coming activities in 2016/17, and also provide an update on the development of our 2019 Water Resources Management Plan.	36
12. Conclusions	Concluding comments.	38
Appendix A	We present the key outturn data for 2015/16 compared to the dry year forecasts for 2015/16, which we have amended to reflect the weather experienced in the year.	39

3. General



3.1 Our Customer Promises, Outcomes and Measures of Success

We developed Customer Promises and Outcomes as part of our PR14 Business Plan. Each Outcome is underpinned by one or more Measures of Success, which allow customers and stakeholders to judge our performance in delivering against our targets. The Measures of Success that align to our 2015 Water Resources Management Plan are shown below. Our performance for 2015/16 and annual targets between 2015 and 2020 are shown in Table 1, and an introduction to each is below:

Total leakage at or below target:

- This measures leakage levels across the North West compared to our target, which is to maintain leakage at or below an annual target of 462.7 MI/d.
- Incentivised with financial penalties and rewards.
- More information on our leakage performance for 2015/16 is in Section 5.3.

Security of supply index:

- The Security of Supply Index (SOSI) measures our success in meeting the region's demand for water, and is expressed as an index score out of 100. A score of 100 means we have an adequate supply-demand balance.
- Incentivised with financial penalties only.
- More information on our SOSI performance for 2015/16 is in Section 8.

Thirlmere Transfer into West Cumbria:

- This measures the delivery of the major scheme to protect the environment in West Cumbria and ensure security of future supplies. Progress is measured as a percentage, with a value of 100 indicating that the project has been completed and is in use, supplying water from Thirlmere to customers in West Cumbria.
- Incentivised with financial penalties and rewards.
- Our progress with the Thirlmere transfer scheme during 2015/16 is described in Section 7.1

Contribution to rivers improved:

- This measures the delivery of environmental projects and changes to our abstraction regime to make it more sustainable. It is primarily achieved by delivering a range of projects agreed with the Environment Agency under the National Environment Programme.
- We are also incentivised to, where possible, make operational changes to our abstraction at four environmentally sensitive sites in the North West under this performance commitment.
- Incentivised with financial penalties and rewards.
- More information on our sustainability changes is in Section 4.4, and detail on our Abstraction Incentive Mechanism (AIM) performance for 2015/16 is in Section 4.7.







Number of free water meters installed:

- This measures the number of free water meters we have installed for customers. The target is based upon the numbers originally forecast within our plans.
- As customers who stand to benefit most from a free meter continue to have them installed, the market of potential customers becomes smaller. The figures have been calculated based on the historic decrease in take-up already observed.
- More information on our free meter installation performance for 2015/16 is in Section 5.5.

Per household consumption of water:

- This measures the average consumption per household in litres per property per day (l/prop/d). It allows us to track customer consumption against forecast levels, and over time can provide an indication of the effectiveness of our promotion of water efficiency across the region.
- Per household consumption reduced over the last nine years, and the trend is forecast to continue through 2015 to 2020 and beyond.
- More information on per household consumption in 2015/16 is in Section 5.2.1.

Table 1 Our Promises, Outcomes and Measures of Success relating to water resources

Promise	Outcome	Measure	Units of Measure	Target 2015/16	Performance 2015/16	Target 2016/17	Target 2017/18	Target 2018/19	Target 2019/20
Provide you with great water 	You have a reliable supply of water now and in the future 	Total leakage at or below target	MI/d Variance from 462.7 MI/d (NB. positive values represent leakage below target)	0.0	+10.8	0.0	0.0	0.0	0.0
		Security of supply index (SOSI)	Index out of (100.000)	100.000	100.000	100.000	100.000	100.000	100.000
		Thirlmere transfer into West Cumbria	% of project complete based on earned value tied to milestones	2	2	5	21	53	82
We promise to protect and enhance the environment 	The natural environment is protected and improved in the way we deliver our services 	Contribution to rivers improved	km river length	-	36.8	6.6	6.6	6.6	159.5
We promise to give you value for money 	Bills for you and future customers are fair 	Number of free water meters installed	Number per year	61,644	27,197	59,325	57,393	47,421	46,054
		Per household consumption of water ²	litres/property/day	290-322	303	287-319	285-316	282-313	280-311

2: A range is provided for per household consumption because it depends on the weather conditions experienced in the year. The upper end of the range is consistent with our "dry year" planning assumption in the water resources management plan.

3.2 Weather in 2015/16

Over the full year there has been a complex and varied weather pattern, with hot sunny periods and flooding being experienced in the same year. Summer 2015 (April to September) was both hotter and drier than the long-term averages, but was not as severe as the 1995/96 records. Data from the Met Office shows that the summer sunshine duration was also above long-term average. The last six months, from October to March, were very mild and notably wet, with rainfall above the long-term average and average temperatures higher than expected. Overall in 2015/16 no drought powers were required. Table 2 below gives a comparison of temperature and rainfall against the long-term averages and 1995/96. Detail of how the weather we experienced has impacted demands across the region is included in Section 5.2.

Table 2 Comparison of rainfall and temperatures in 2015/16 with long-term averages and 1995/96 values

	April to September	October to March	Full year (April to March)
Regional rainfall (mm)			
2015/16	593	1,437	2,030
Long-term average	654	906	1,560
1995/96	320	571	891
Average maximum daily temperatures (°C):			
2015/16	17.9	10.9	14.4
Long-term average	16.0	8.5	12.3
1995/96	19.0	8.4	13.7

3.3 Supply and demand in 2015/16

We have maintained a surplus in all our water resource zones for 2015/16, with a Security of Supply Index score of 100. More detail on the supply-demand balance components is included in Section 4 and Section 5 of this report.

3.4 Progress with our 2015 Water Resources Management Plan

In 2015/16 we have made good progress in delivering our 2015 Water Resources Management Plan. As well as outperforming our regional water efficiency and leakage targets we have also progressed with the Thirlmere transfer scheme. Our 2015 Plan, informed by the Examination in Public (September 2014), concluded that the Thirlmere transfer scheme should be progressed to address the future supply-demand deficit in West Cumbria. In 2015/16 we have progressed this solution with key activities including:

- Completion of a third phase of public consultation activities
- Further design and engineering activities
- A series of site investigation works around the pipeline route and the proposed water treatment works site. We have also concluded the ecological and archaeological surveys of the proposed route.
- Submission of the full planning application in January 2016, supported by the Environmental Impact Assessment

We have launched a bespoke website to enhance communication with customers about the scheme. By visiting cumbria.unitedutilities.com customers can readily access information including our plans, timelines, and areas affected. Further detail on the Thirlmere transfer scheme progress is included in Section 7.1.

We have already outlined our progress in Table 1 for free meter installations. During the year we have seen a drop in the number of customers requesting a meter, and overall we are below target. This is discussed further along with actions to recover performance in Section 5.5.

This year we have also progressed interim measures and compensatory measures to protect Ennerdale Water in West Cumbria. We have completed the Summergrove scheme, which allows us to operate our network differently enabling reductions in abstraction from Ennerdale Water in the region of 3 MI/d. The South Egremont borehole project was also scheduled for completion in 2015/16.

A delay to the completion of this project has occurred in relation to the blending of water from Ennerdale Water with the boreholes and the need to ensure we continue to meet the drinking water quality standards. Enhancements to Ennerdale water treatment works were identified and work has been ongoing to ensure these are delivered as soon as possible. The forecast completion date is summer 2016.

Further detail on the interim measures, compensatory measures, and Thirlmere transfer scheme is included in Section 7.

Following the publication of our 2015 plan Defra indicated that we should continue to work with the Environment Agency during the delivery of this plan and preparations for the next planning round. We have held regular meetings with the Environment Agency and provided updates with our activities during the reporting period. We are also engaging with the Environment Agency regarding the next planning round and the approaches that we intend to apply in the development of the 2019 Water Resources Management Plan (see Section 11.1 for more information).

We have continued to engage with communities in West Cumbria, having held numerous stakeholder events for the Thirlmere transfer scheme and also as part of the 2016 Drought Plan pre-consultation. The launch of the bespoke Cumbria website supports and continues our engagement with customers.

3.5 Water resource zones

A water resource zone is the largest area across which water resources can be balanced, and within which customers therefore experience the same risk of supply failure from a resource shortfall. We have four of them:

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

The resource zones were assessed for the 2015 Water Resources Management Plan through the Water Resource Zone Integrity Review. There have been no changes in resource zones boundaries since 2004.

We are currently preparing for our 2019 Water Resources Management Plan. Our water resource zone assumptions for the 2019 plan account for completion of the Thirlmere transfer scheme by March 2022. Following this the West Cumbria resource zone will cease to exist and be absorbed into a larger Integrated resource zone. However, for the purpose of this Annual Review, there have been no changes to water resource zone boundaries for 2015/16.

3.6 Levels of service

There has been no change to our levels of service, which remain as:

- Temporary Use Bans (often referred to as hosepipe bans, although their remit is broader than this) and drought permits/orders to augment supply no more than once in 20 years;
- Drought orders to ban non-essential water use no more than once in 35 years;
- No standpipes or rota cuts during a repeat of the worst drought on record.

Maintaining this level of service was supported by customer research, with additional research being undertaken for the PR14 Business Plan as part of our 2015 Water Resources Management Plan. Our level of service for this planning period (covered by our 2015 plan) remains the same as in the 2009 plan.

4. Supply



4.1 Assessing Water Available For Use

The Water Resources Management Plan is a strategic plan covering a period of 25 years. The supply-demand tables are presented on a year by year basis, but there may be shorter-term variances in the plan components against original forecast and assumptions. For example, delivery of aspects of the capital programme, the implementation of sustainability reductions, or licence changes, may vary to reflect changing circumstances and/or priorities. Further to this, for some assets there is a shift of capability away from the 2015 Water Resources Management Plan assumptions as new information comes to light. Such aspects are reviewed regularly and we report any changes in the Annual Water Resources Review. An explanation of these changes for 2015/16 follows below.

For the 2015 plan we forecast the Water Available For Use³ (a term used to represent our available supplies in a dry year) across the planning period. To do this we used long-term asset capability assumptions in line with the strategic nature of the plan, and accounted for our anticipated capital maintenance activities. We reflected the expected position following delivery of capital interventions during the 2015-2020 planning period⁴ to determine how much water we are able to supply.

The pace and delivery of capital interventions can be subject to change, and we expect it to vary with normal business prioritisation of the capital programme. In some cases it is also possible for new asset considerations to arise, which can be increases or decreases to asset capability. Changes are not necessarily associated with asset deterioration, but also the resolution of existing issues (not covered by outage).

To ensure that we fully reflect the situation for the reporting year, and to ensure that an appropriate supply-demand surplus is maintained for the benefit of customers and stakeholders, we closely monitor

3: Deployable output is a source yield assessment that results from consideration of a particular set of constraints and rules, for example abstraction licence limits and asset capabilities. From deployable output a number of deductions are made, including outage, raw water and process losses, and net exports. This is the calculation used to derive Water Available For Use.

4: This included activities originally planned to be completed by 2015, which had subsequently been deferred

and review Water Available For Use in line with changing circumstances. This adjustment does not account for any short-term reductions in asset capability that are associated with, and captured as part of, outage management (see Section 4.3).

For 2015/16, we have applied an adjustment in Water Available for Use to reflect any variance against the original supply forecasts. The adjustments are for the West Cumbria and Integrated resource zones away from the 2015 plan assumptions (Table 3). It should be noted that this is an interim adjustment to Water Available For Use, which will predominantly be recovered on delivery of projects in the capital programme. The supply-demand surplus is maintained (as detailed in Section 8) and this is not considered to be a material change from the 2015 Water Resources Management Plan assumptions.

Table 3 Summary table indicating current Water Available For Use appraisal and adjustments from our forecast values

Water resource zone	Forecast Water Available For Use for FY16 (MI/d)	Current Water Available For Use appraised for FY16 regulatory reporting (MI/d)	Adjustment (Asset Assumptions) (MI/d)
Integrated	2,144	2,097	-47
West Cumbria	62	59	-3
Carlisle	35	N/A	0
North Eden	8.74	N/A	0

4.1.1 Integrated resource zone

Due to the complexity and interconnectivity of the Integrated resource zone the changes identified to asset capability were implemented into the latest Aquator Water Resources model to appraise changes in Water Available for Use. This allows us to assess the net impact on Water Available for Use based on the latest position. This results in a 47 MI/d reduction in Water Available For Use relative to forecasts, primarily driven by a number of capital projects that are either underway or temporarily deferred, and so have not yet reached completion. In addition, for some assets there is a shift of capability away from the 2015 Water Resources Management Plan assumptions⁵. The adjustment reflects the net impacts of model development and the changes to capability as outlined above.

4.1.2 West Cumbria resource zone

The South Egremont borehole project was scheduled for completion in 2015/16. A delay to the completion of this project has occurred and the forecast completion date for the project is summer 2016. The delay reduces the 2015/16 Water Available For Use by 3 MI/d relative to forecasts, derived using the latest modelling. In 2016/17, it is anticipated that we will report Water Available For Use in line with the 2015 plan values.



Figure 1 The completed South Egremont scheme pumping station at Gullely Flatts which transfers untreated borehole water to Ennerdale WTW

⁵: This includes Stockswell borehole, which we are considering for inclusion as a supply option in our 2016 Drought Plan

As well as providing an additional supply of water in the resource zone, the scheme will also offset and allow a reduction in abstraction from Ennerdale Water until completion of the Thirlmere transfer scheme in March 2022. The South Egremont borehole project is one of a several interim measures to reduce abstraction from Ennerdale Water in the 2015 Water Resources Management Plan, further detail on which can be found in Section 7.2.

4.1.3 Carlisle resource zone

There is no adjustment to Water Available For Use in the Carlisle resource zone for the 2015/16 period.

However, for the 2016/17 reporting period we will reflect an increase in supply capability in this zone. When we developed our previous Water Resources Management and Drought Plans, we included water quality constraints on the use of river pumping to support reservoir storage in this zone. Since the development of these plans we have completed modifications to our assets to mitigate water quality risks. This was completed in April 2016, and the increased reliability means that we are now able to pump at an earlier stage than previously assumed. We will include the additional Water Available For Use (over 1.5 MI/d benefit) for reporting in the 2016/17 period in line with our current operating practices and asset capability. We are also planning to reflect this change in our draft Drought Plan 2016 (see Section 10), as previously communicated to the Environment Agency.

4.1.4 North Eden resource zone

There are no changes to Water Available For Use in the North Eden resource zone away from the 2015 Water Resources Management Plan forecast assumptions.

4.2 Bulk supplies

There are no changes to our existing bulk supply arrangements relative to the allowance we made in our 2015 Water Resources Management Plan. This reflects imports and exports of water, and non-potable exports.

4.3 Outage

The outage allowance determined for the 2015 Water Resources Management Plan takes into account any asset failures which would affect ability to supply during a “dry year”. Actual outages during 2015/16 have occurred at a range of source work types. Only those that would affect supplies during a drought are included in the outage reported. The level of outage experienced this year is 8.5 MI/d lower than the outage allowance in our 2015 Water Resources Management Plan, and is shown in Table 4.

Table 4 Outage data for 2015/16 compared with forecasts for 2015/16 in our 2015 Water Resources Management Plan

	Carlisle	Integrated Zone	North Eden	West Cumbria	Regional
Outage Experienced (MI/d)	0.0	69.8	0.0	0.0	69.8
Outage allowance (MI/d)*	2.0	75.3	0.1	0.9	78.3
Difference (MI/d)	-2.0	-5.5	-0.1	-0.9	-8.5

**2015/16 “dry year” forecast from the 2015 Water Resources Management Plan*

Outages occur for a variety of reasons such as pollution events, poor raw water quality, asset failure necessitating emergency repairs, and routine maintenance. Outages may be planned (i.e. scheduled maintenance) or unplanned. Where planned, operationally a risk assessment is undertaken for each outage request to consider hydrology, headroom, resilience and contingency. The programming of planned outages is often subject to timing constraints relating to seasonal demand and/or completion of dependent outages. The production planning outage process is designed to minimise the risk to water resources and the supply-demand balance whilst at the same time enabling essential repair and maintenance work to be undertaken. A breakdown of the types of outage experienced during 2015/16 is shown in Table 5.

In 2015/16 we experienced three significant incidents with considerable customer impact. Firstly, an incident at Sweetloves water treatment works affected customers in Bolton. Whilst this interrupted local supplies to customers in the short-term it did not impact water resources or our ability to meet demand over the course of a dry year.

Table 5 2015/16 Regional Outage experienced by type

Reason for Outage	Planned	Unplanned	Total
Impounding Reservoirs	9.9	0.0	9.9
Asset failure	0.0	33.1	33.1
Maintenance	0.3	15.3	15.6
Pipeline	0.9	2.1	3.0
Raw water quality	0.0	8.1	8.1
Total (MI/d)	11.2	58.6	69.8

Notes:

Impounding Reservoirs includes the impact of all reservoir drawdowns for maintenance and/or safety reasons.

Asset failures are reactive and include loss of capacity due to faulty equipment such as borehole pumps and process control instrumentation.

Maintenance includes inspections, cleaning and refurbishment activities. Unplanned maintenance is associated with addressing issues that become apparent during other activities (e.g. inspections) that are a risk to asset failure.

Pipeline outages are generally for repairs of leaks and bursts on raw water or potable mains that have an impact on water resources “dry year” availability

Raw Water Quality outages are due to short-term or seasonal deterioration of raw water quality.

Secondly, there was a boiled water notice for customers across Lancashire after routine sampling detected traces of cryptosporidium in the water. This affected areas fed by Franklaw water treatment works. Whilst there has been restricted output of Franklaw water treatment works, which has been accounted for in the outage calculation for 2015/16, this outage event has not affected water resources security of supply.

Finally, major flooding in Cumbria during winter 2015 affected a number of water assets. This did not impact our ability to supply water to customers, which we maintained throughout the incident. Whilst there were some significant localised asset impacts, the majority of these were relatively short-lived and would not have had an adverse impact on dry year availability given the nature of the event. Two sources are still unavailable following the flooding event, although this has not impacted on supplies to customers, which have been met from alternative sources. The abstraction main was destroyed at Leaches Spring, one of several spring sources in the Carlisle resource zone. In the West Cumbria resource zone, the Sail Beck intake was also lost to the floods and we are currently progressing work to reinstate the asset. In both cases, the impacts on outage for 2015/16 are negligible given the small size of the sources, and the duration over the year that the assets have been unavailable.

4.4 Sustainability changes

In our last Annual Review we reported that we had applied for new abstraction licences to realise more sustainable abstraction at a number of sites (mainly associated with the EU Habitats Directive). In 2015/16 the licences have been granted by the Environment Agency, and a number of sites are now operating under these new licence conditions to benefit the environment:

- Heltondale (Haweswater catchment, Integrated resource zone)
- Cawdale (Haweswater catchment, Integrated resource zone)
- River Gelt (Carlisle resource zone)
- Dash Beck (West Cumbria resource zone)

In addition the Environment Agency granted a new licence, effective from 1 April 2015 that permitted abstraction from Deeside until 30 September 2015 only. From that date our abstraction at Deeside ceased and the licence now only allows abstraction from Heronbridge and Huntington.

The above changes are fully incorporated in the reported Water Available for Use (where appropriate), in line with the 2015 Water Resources Management Plan expectations. In some cases we have received new licences, however, interventions to implement these are still underway, as shown in Table 6. The Environment Agency has been fully engaged on these delivery timescales.

To safeguard sensitive aquatic species and habitats we have a number of additional sustainability reductions scheduled for the next 5 years as defined and accounted for in our 2015 Water Resources Management Plan (Table 6). These are mainly associated with the requirements of the EU Water Framework Directive. As sustainability changes are implemented we will reflect them in our Water Available for Use assessment in subsequent reporting years.

Table 6 Sustainability changes included in the 2015 Water Resources Management Plan

Site	Driver	Sustainability solution	Expected completion date
Integrated resource zone			
Haweswater intakes*	Habitats Directive	Increased prescribed flow and lower abstraction limits at Swindale Beck*	Implementation expected by 30 September 2018 New transfer licence granted by the Environment Agency on 10 November 2015
River Calder, Barnacre	Water Framework Directive	New prescribed flow to be provided to downstream river before abstraction can occur	1 October 2018 New abstraction licence issued 27 June 2014
Tarnbrook Wyre river intakes, Lancaster	Water Framework Directive	New prescribed flows at the three main intakes	31 March 2020
Afon Cownwy and Marchnant, Lake Vyrnwy	Water Framework Directive	New prescribed flows at the two river intakes and abstraction limited to 75% of available flow above this	31 March 2020
Holden Wood reservoir	Water Framework Directive	Increase to compensation flow provided to downstream river	31 March 2020
Poaka Beck reservoir	Water Framework Directive	New compensation flow provided to downstream river	31 March 2020
Readycon Dean reservoir	Water Framework Directive	New compensation flow provided to downstream river	31 March 2020
Horse Coppice reservoir	Water Framework Directive	New compensation flow provided to downstream river	31 March 2020
Carlisle Zone - No sustainability reductions planned			
North Eden Zone – No sustainability reductions planned			
West Cumbria Zone			
Ennerdale Water	Habitats Directive	Revocation of abstraction licence	1 April 2022
Quarry Hill system	Site of Special Scientific Interest (SSSI)	Hands-off lake level in Overwater	1 April 2022 New abstraction licence issued 27 June 2014
	Water Framework Directive	Increased prescribed flow on River Ellen	1 April 2022

* The Environment Agency's original decision for changes to our Swindale Beck (Haweswater) abstraction licence planned for 31 March 2015 (included in our 2009 plan) have been altered following a review by the Environment Agency of environmental data. The Environment Agency have agreed to a revised implementation date of 30 September 2018, although we aspire to deliver in advance of this date.

4.5 Structural abstraction asset modifications

In 2015/16 we have completed structural modification projects to reduce the environmental impacts of abstraction. We have delivered one site (Helvellyn Gill) and are progressing work to enable a second site at Swindale Beck as mentioned in Section 4.4 and shown in Figure 2.

Figure 2 Swindale Beck intake following modifications to deliver sustainability changes



4.6 Climate Change

In our 2015 Water Resources Management Plan we fully assessed the effects of climate change on water source yields, water demand and target headroom. We worked with the Environment Agency and National Resources Wales to utilise the UK Climate Impacts Programme climate projections (“UKCP09”) in the 2015 plan using a best-practice approach.

Assessments show that while the overall effect of climate change in our 2015 plan is greater than in the 2009 plan, resource zones still retain a supply-demand surplus over the 25-year planning period. The impact of climate change on supply availability for 2015/16 is small given the impacts of climate change are lowest at the start of the planning horizon. Climate change impacts remain the same in 2015/16 as forecast in the 2015 Water Resources Management Plan.

4.7 Abstraction Incentive Mechanism

Ofwat’s abstraction incentive mechanism (AIM) is a way of encouraging water companies to manage their abstraction in a more sustainable way. We have been closely involved in the development of AIM and had a representative on Ofwat’s AIM task force⁶.

AIM sites are in environmentally sensitive areas and abstraction at times of low river flow has the potential to cause harm. AIM measures the amount of abstraction that occurs at times of low river flows and compares this to an average baseline period (covering the period between 2007 and 2013); indicating whether current abstraction is higher or lower than the recent past. For each site, we estimate the equivalent length of downstream river that the abstraction reduction contributes to improving.

AIM has been initiated as a reputational assessment from 1 April 2016. However, we have already incorporated an AIM component in our “kilometres of rivers improved” environmental Measure of Success (see Table 1 for information), which supports our Promise “to protect and enhance the environment”. We have a financial incentive for this Measure of Success, which means that we can be rewarded or penalised depending on whether abstraction is lower or higher than it was historically. At the time of producing our Measure of Success the Ofwat definition did not exist, and therefore we developed our own approach based on “AIM principles”.

⁶: The Ofwat website gives an overview of abstraction and the Abstraction Incentive Mechanism, visit: www.ofwat.gov.uk/regulated-companies/improving-regulation/abstraction/

We are committed to reporting our performance against AIM in this annual review, which is ahead of the majority of other water companies who are implementing AIM for the first time during 2016/17. In future years we will report performance against the reputational Ofwat measure, and relative to our own.

There are four AIM sites included in our Measure of Success:

- Old Water (River Gelt, Cumbria)
- Ennerdale Water (Cumbria)
- River Calder (Lancashire)
- Aughertree Springs (Cumbria)

This year the river flows at the four AIM sites has not dropped below the AIM low flow threshold at any time. This is consistent with the weather experienced in the year (see Section 3.2) which, despite hot sunny periods in summer 2015, has total rainfall above the long-term average. This benefits the environment as river flows have not dropped to low levels. As a result there has been no abstraction at times of low river flow which results in the maximum length of river improved under AIM as shown in Table 7. The significance of AIM really comes to the fore during dry periods, and we plan to adapt our abstraction in the coming years as much as we can during times of lower river flow, whilst still maintaining security of supply.

Table 7 AIM performance

Abstraction site	Low flow threshold (Ml/d)	Historic average abstraction below threshold (2007-2013) (Ml/yr)	2015/16 abstraction below threshold (Ml/yr)	Contribution to river improved (km)	Ofwat Normalised AIM score (Ml)
Old Water (Carlisle resource zone)	8.8	41.9	0.0	0.4	0.0
Ennerdale Water (West Cumbria resource zone)	80.0	2,200.9	0.0	21.0	0.0
River Calder (Integrated resource zone)	33.1	34.2	0.0	10.3	0.0
Aughertree Springs (West Cumbria resource zone)	25.9	0.4	0.0	5.2	0.0
TOTAL				36.8	

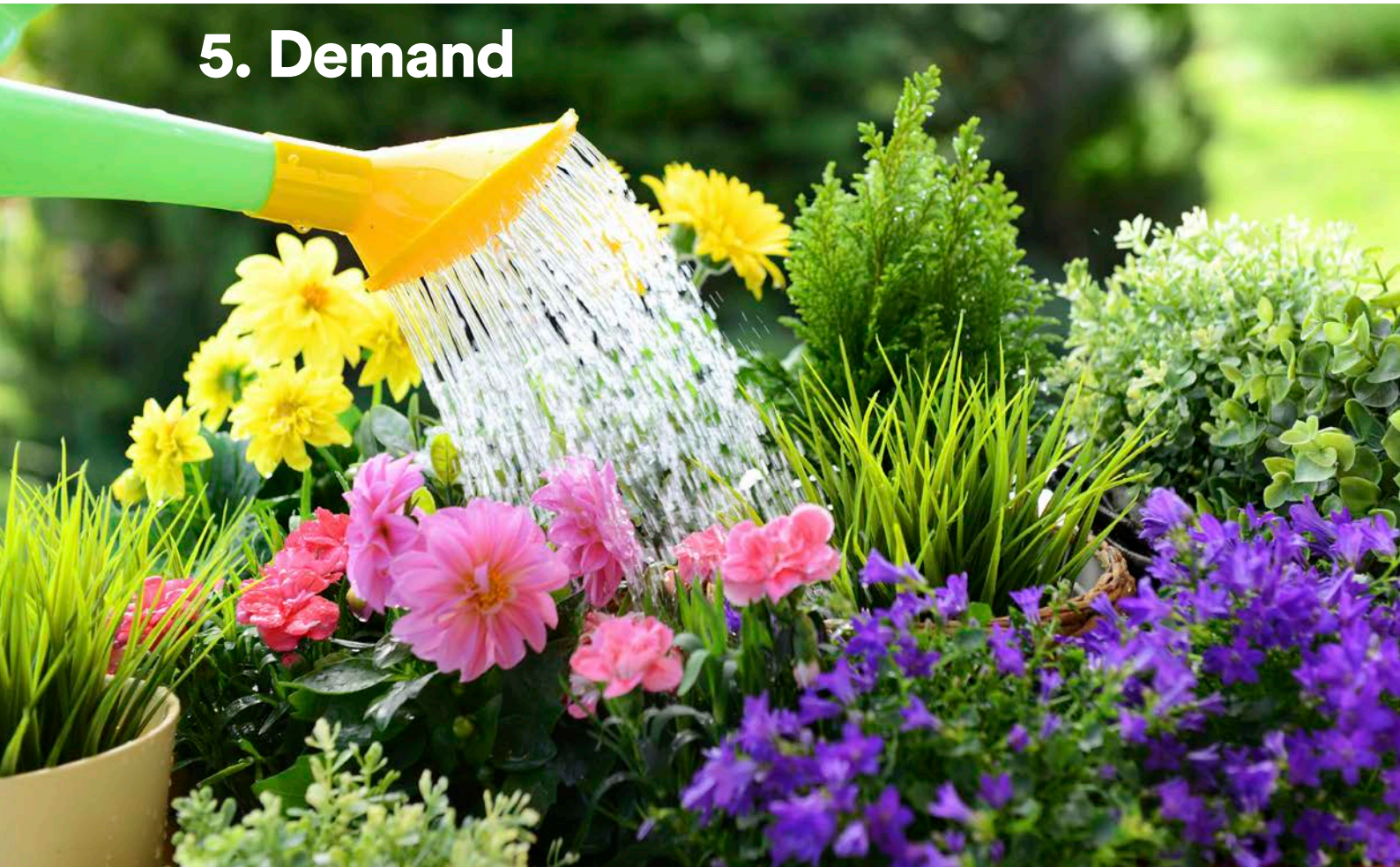
4.8 Distribution, production and resource developments

For the 2015/16 period a number of developments have occurred in the West Cumbria supply system:

- Completion of the Summergrove project in March 2016. The project allows us to operate our network differently enabling reductions in abstraction from Ennerdale Water in the region of 3 Ml/d.
- The South Egremont borehole project was scheduled for completion during 2015/16. A delay to the completion of this project has occurred in relation to the blending of water from Ennerdale Water with the boreholes and the need to ensure we continue to meet the drinking water quality standards. Enhancements to Ennerdale water treatment works were identified and work has been ongoing to ensure these are delivered as soon as possible. The forecast completion date for both projects is summer 2016.

In the Carlisle resource zone we have removed constraints on existing assets. We completed a project to remove the water quality constraints on the use of river pumping to support reservoir storage in this zone. The work ensures that this can be undertaken reliably at a higher storage level, and brings Water Available For Use benefits from 2016/17 onwards. As discussed in Section 4.1.3 we will look to declare this additional benefit as part of the next Annual Water Resources Review.

5. Demand



5.1 2015 Water Resources Management Plan demand forecast

The Water Resources Management Plan is focussed upon ensuring an adequate supply-demand balance in a “dry year”. In developing the demand forecast for the 2015 Water Resources Management Plan we used a new approach to estimate demand in a “dry year” (or dry year critical period). In collaboration with the Met Office we used a sophisticated weather-demand model to consider, based on the weather experienced in any given year, how this influences demand. The model was used to derive an accurate demand uplift in order to estimate the equivalent “dry year”. It also gives a better understanding of how the weather experienced has influenced reporting year demand. As well as using this method in our 2015 plan demand forecasts we continue to use it to examine the weather and demand patterns for the previous year and include this in our Annual Water Resources Review.

The previous method used in the 2009 plan simply classified a year as either “normal” or “dry”, with a static uplift factor applied to all components of the recorded demand for the year.

This year there has not been any change to the demand forecast methods that we used to produce the 2015 Water Resources Management Plan. However, since submission of our 2015 plan the Met Office have updated their weather-demand model. We assessed the impacts of this change on the 2015 plan forecasts and shared it with the Environment Agency in autumn 2015. A summary of the findings shows:

- We are now using the latest weather-demand models from the Met Office. Overall this approach is still consistent with our 2015 Water Resources Management Plan.
- The impact of this update is a reduced “dry year” uplift, which results in lower “dry year” demand, and a subsequent increase in target headroom (due to added uncertainty).
- In all resource zones, this results in a negligible change to the supply-demand balance.

As a result we have a new set of forecast values, which we are declaring in this Annual Water Resources Review, and subsequently refer to as the “aWRMP16 forecast”. A comparison of the forecast submitted with our 2015 plan and the aWRMP16 forecast is shown below in Table 8, using the Integrated resource zone as an example. The impacts on target headroom and the overall supply-demand balance are also discussed in Section 6 and Section 8 of this report. However, as evident in the values, the aWRMP16 forecast does not comprise a material change to our 2015 Water Resources Management Plan, due to the reasons discussed above.

Table 8 A comparison of the 2015 plan and the aWRMP16 demand forecasts for the Integrated resource zone

Component	Forecast	2015/16	2020/21	2025/26	2030/31	2035/36	2039/40
Key to table	WRMP 2015 forecast data						
	Updated forecast data (aWRMP16)						
	<i>Difference</i>						
Water Available For Use	WRMP 2015	1,885.1	1,863.4	1,831.2	1,802.7	1,792.5	1,784.3
Dry Year Demand	WRMP 2015	1,687.8	1,662.3	1,641.8	1,635.5	1,630.3	1,620.4
	aWRMP16	1,668.1	1,642.8	1,622.7	1,616.3	1,611.1	1,601.3
	Difference	-19.7	-19.5	-19.1	-19.2	-19.2	-19.1
Target Headroom	WRMP 2015	60.7	53.6	53.2	57.1	63.0	68.0
	aWRMP16	82.5	73.2	72.1	75.5	82.1	87.1
	Difference	+21.8	+19.6	+18.9	+18.4	+19.1	+19.1
Supply-Demand Balance	WRMP 2015	136.5	147.6	136.2	110.0	99.2	96.0
	aWRMP16	134.6	147.3	136.4	110.9	99.4	96.0
	Difference	-1.9	-0.3	+0.2	+0.9	+0.2	0.0

5.2 Demand in 2015/16

Distribution input is the average volume of water put into the water supply network. Regional distribution input during 2015/16 was higher than the previous year however it is still between the ‘normal year’ and ‘dry year’ forecast (see Table 9 and Figure 3). Distribution input for the reporting period is influenced by the weather experienced throughout the year, which is discussed later in this section.

Table 9 Comparison of distribution input values to “dry year” and “critical period” forecast values

	Carlisle Resource Zone	Integrated Resource Zone	North Eden Resource Zone	West Cumbria Resource Zone	Region
Key to table	2015/16 actual data				
	2015/16 forecast data (aWRMP16)				
	<i>Difference</i>				
Dry year distribution input (MI/d)	28	1,658	6	48	1,740
	27	1,668	5	48	1,748
	+1	-10	+1	+0	-8
Critical period distribution input (MI/d)	29	1,658	6	52	1,744
	28	1,668	5	51	1,752
	+1	-10	+1	+1	-8

Note: numbers may not sum due to rounding

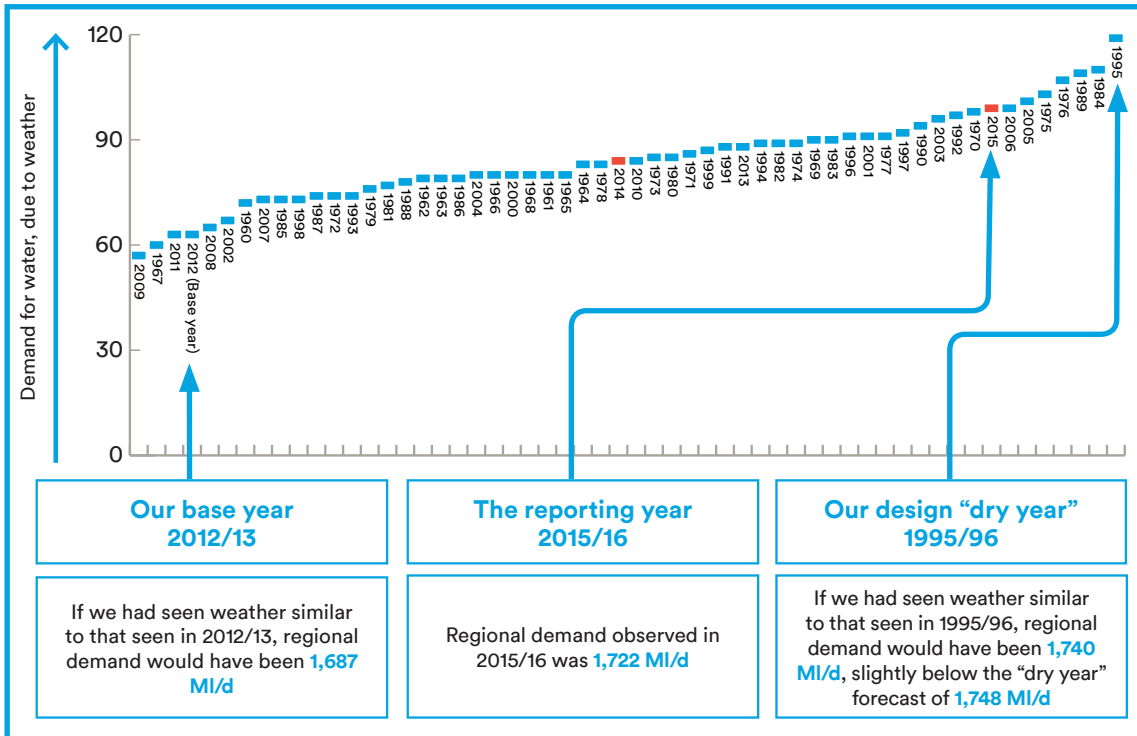


Figure 3 Demand for water in 2015/16 due to weather with Met Office analysis showing the dry influences of summer in 2014 and 2015⁷ (red) relative to historic data

Figure 4 below shows the weekly regional distribution input for the last three years. Average distribution input for 2015/16 has been slightly higher than the previous year. The demand from April to June is higher than the previous year, and there are noticeable increases during the hot, sunny spells in June and July 2015. Demand during the winter months is not as pronounced as the previous year, which reflects the milder winter temperatures compared to winter 2014/15.

Met Office analysis to estimate dry year uplifts shows that summer 2015 had a significant weather influence⁸ on demand, resulting in consumption being higher than a 'normal' or base year. This supports the observation that distribution input has been between normal and dry year forecast levels (Table 9). The weather-demand model shows a 2% uplift should be applied to observed demand to uplift it to a "dry year".

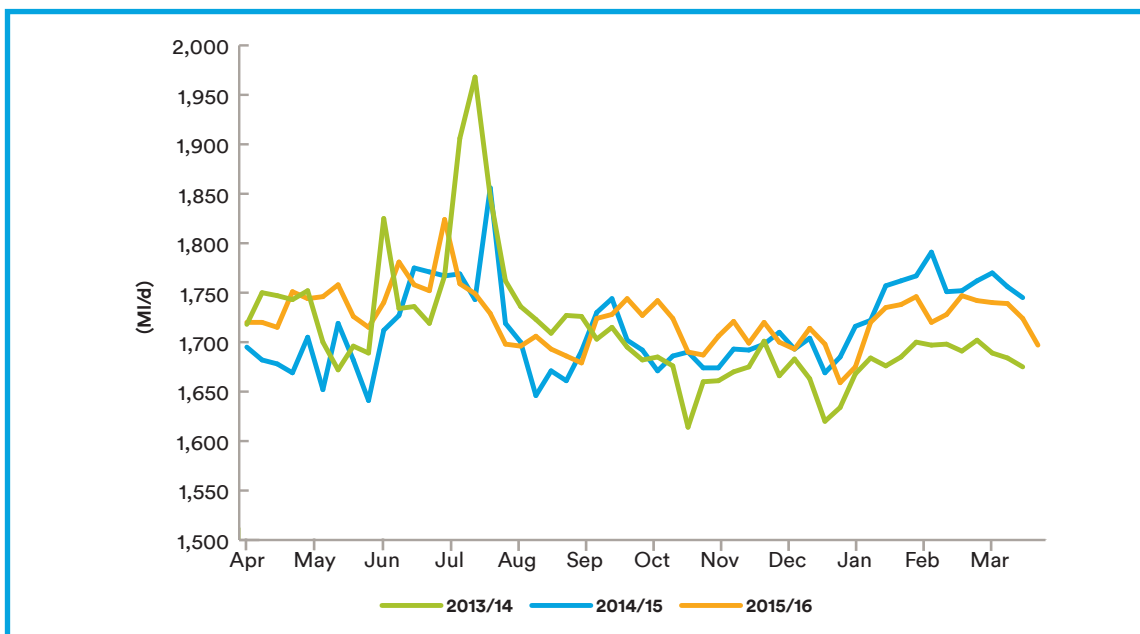


Figure 4 Weekly regional distribution input for the last 3 years

7: Summer 2015 refers to the summer months, April to September 2015, for the year 1 April 2015 to 31 March 2016.

8: The Met Office models uses several parameters including rainfall, temperature, and sunshine hours.

Over the full year, there has been a complex and varied weather pattern, with both summer rainfall being below long-term average (but not as low as 1995/96) and flooding being experienced in the same year. However, the summer period is the primary driver of weather dependent demand. During the summer period temperature was around the long-term average, sunshine duration was above average and rainfall was below average. Figure 3 shows how this year compares to historic years in terms of dry year influence. A lower ranking would correlate with a smaller proportion of weather dependent usage, and a higher uplift would be required to bring the demand in line with a dry year.

As well as the weather we have seen changes in different demand components that, overall, comprise an increase in regional distribution input from the previous reporting year. There have been increases in consumption by non-households and miscellaneous water use which, in combination with decreases in leakage, net a 7 MI/d increase in distribution input from the 2014/15 period.

Demand values need to be compared on a like for like basis. The 2015/16 demand uplifted for a “dry year” is 1,740 MI/d, compared to our “dry year” forecast of 1,748 MI/d. This shows that on a comparable basis we are within 8 MI/d of the “dry year” forecast. Relative to the overall demand this is considered negligible in context of demand variability. This demonstrates that demand is in line with the expectations set out in our 2015 plan and the aWRMP16 forecasts. The outturn data in Appendix A shows a like for like comparison of 2015/16 actual demand and the aWRMP16 forecast adjusted for the 2015/16 weather.

Non-household demand showed the biggest variance against forecast of 22 MI/d. This variance may be related to improving economic circumstances. For the second quarter of 2015, RBS estimated that the North West’s economy was the UK’s equal second fastest growing region. For the third quarter the NatWest Regional Economic Tracker reported that *“The North West has been climbing the job growth leader board recently and now sits in 3rd place at 2.7% in the year to Q3 2015. That comfortably beats the UK wide figure of 1.9% and helps compensate for a relatively weak 2014.”*⁹ We anticipate that as the non-household retail market develops from 2017, that non-household demand may be lower as retailers develop innovative ways of helping customers reduce their bills.

5.2.1 Per capita consumption

Per capita consumption is a standard way of monitoring consumption, and in recent years the North West has had one of the lowest rates in the country. In 2015/16 our regional average household per capita consumption is 130 l/hd/d, which shows no change since the previous year. This is between the 2015 Water Resources Management Plan forecasts for normal and “dry” years (Figure 5). Analysis by the Met Office indicates that this is primarily due to the impact of the weather that we experienced in 2015/16. Therefore on a comparative basis it is likely that underlying consumption has still decreased.

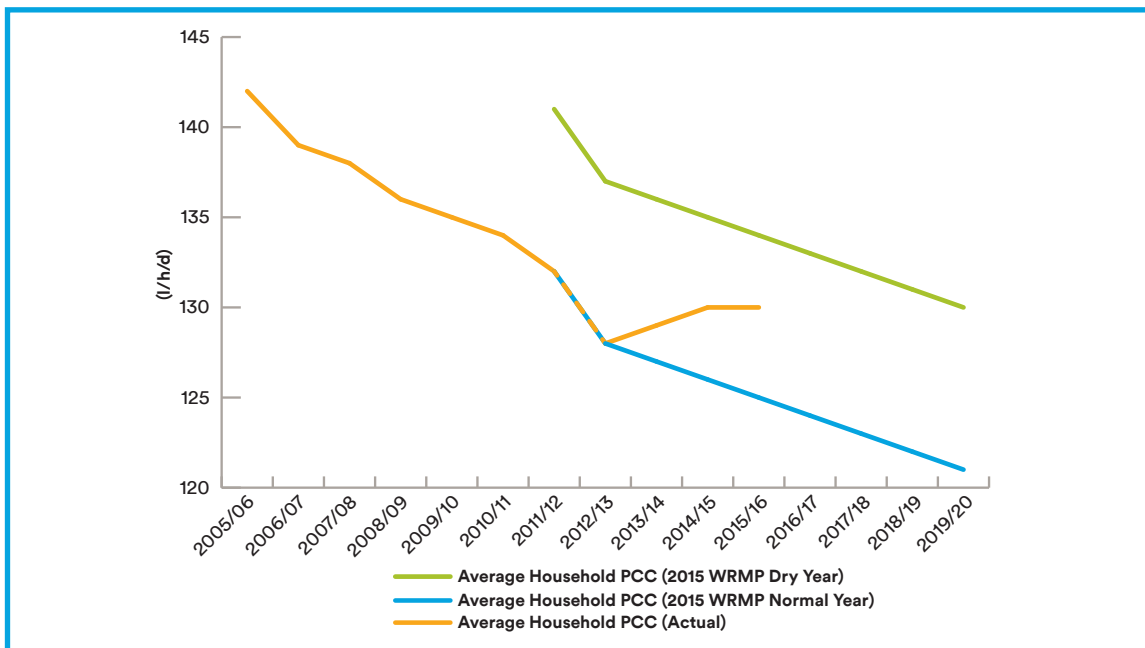


Figure 5 Average household per capita consumption since 2005/06¹⁰

9: <http://www.rbs.com/news/2015/october/regional-growth-figures-released-for-q2-2015.html> and <http://www.rbs.com/news/2016/april/regional-growth-mixed-across-the-uk.html>

10: A slight decrease in the trend appears from 2014/15 to 2015/16 due to rounding

Table 10 below shows the average per capita consumption for each resource zone for this reporting year compared to 2014/15.

Table 10 Average household per capita consumption from 2014/15 to 2015/16

Resource zone	2014/15 (l/hd/d)	2015/16 (l/hd/d)	Change (l/hd/d)
Carlisle	133	131	-2
Integrated	130	129	-1
North Eden	134	134	-
West Cumbria	144	147	+3
Region	130	130	-

As a company we consider per household consumption to be a better comparator than per capita consumption. This is due to the relative uncertainty around occupancy and population estimates that are used to calculate per capita consumption. For this reason, we chose per household consumption as one of the Measures of Success (see Section 3.1). Per household consumption for 2015/16 was 303 l/prop/d, which is a slight reduction on the previous year and within our target range.

5.2.2 Changes in demand in West Cumbria

There has been an increase in distribution input in West Cumbria compared to 2014/15 (Figure 6). This is mainly caused by an increase in leakage (see Section 5.3), however, the weather experienced will have also influenced demand (as discussed above). We take our responsibility to reduce demand in West Cumbria as far as practically possible very seriously given the environmental sensitivity of Ennerdale Water in particular. Therefore plans are in place to recover our performance in this zone throughout 2016/17 to reduce demand below current levels, as described in the sections that follow.

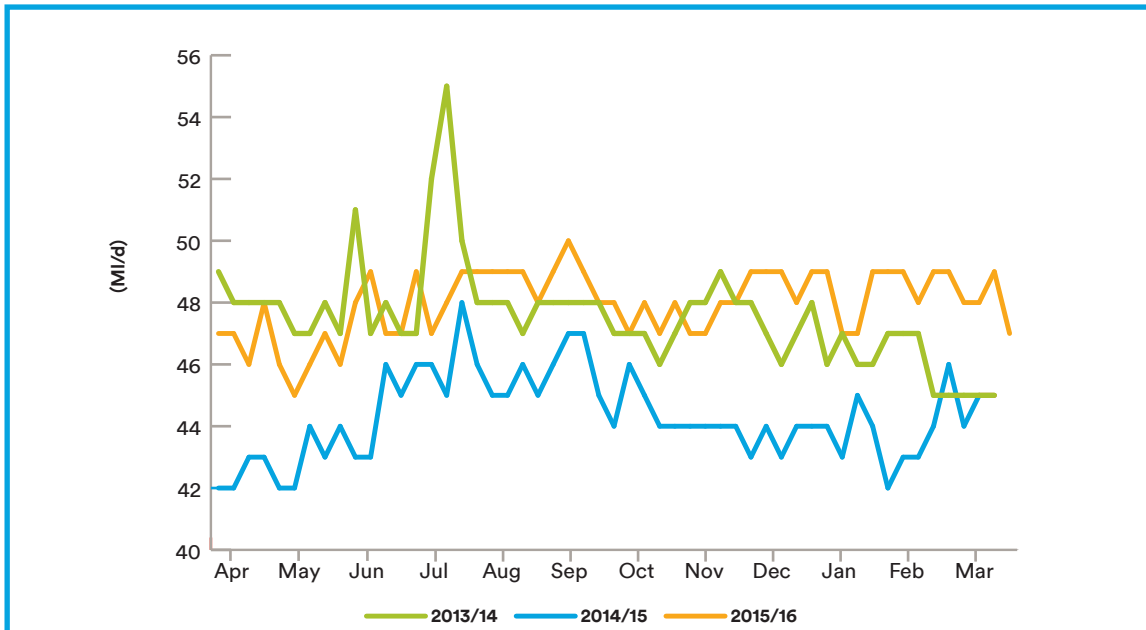


Figure 6 Weekly West Cumbria resource zone distribution input for the last 3 years

5.3 Leakage

We continue to carry out an extensive range of leakage control activities in all water resource zones. As a result, the regional level of leakage averaged 452 MI/d in 2015/16. This means we outperformed the Ofwat published target of 463 MI/d for 2015/16. We continue to provide a private supply pipe repair/replacement service for household customers. We also offer unlimited free repairs or one free replacement supply pipe in a 12-month period, subject to conditions.

Table 11 and Table 12 below show leakage in the four water resource zones. Historically, leakage in North Eden has been slightly over the target and has been maintained from the 2014/15 position. The resource zone is very small, with few properties and a water balance across such an area is difficult to reconcile. There has been an increase in leakage in Carlisle and West Cumbria zones. Carlisle remains in supply-demand surplus, however, we are taking proactive actions to address this increase and avoid risks to the supply-demand balance in future years. In spite of extensive efforts throughout the year to reduce leakage, in West Cumbria leakage remained higher for the majority of the year compared to our performance in 2014/15. This resulted in total leakage for this zone being higher than the target. We are taking proactive actions to recover our performance in this zone throughout 2016/17, these include a particular focus upon:

- upstream leakage reduction – targeting leakage on our trunk mains and service reservoirs;
- maintaining a focus on DMA leakage reduction
- meter verification programme to ensure reliability of our distribution input meters;
- further pressure optimisation

Table 11 Zonal leakage levels 2014/15 to 2015/16 (MI/d)

Resource zone	Carlisle	Integrated	North Eden	West Cumbria	Region Total
Actual total leakage 2014/15	5.6	432.4	2.6	13.3	453.6
Actual total leakage 2015/16	5.9	427.4	2.6	16.1	451.9
Change	+0.3	-4.9	0.0	+2.8	-1.8

NOTE: Numbers may not sum due to rounding

Table 12 Zonal leakage levels: 2015/16 actual against 2015 Plan (MI/d)

Resource zone	Carlisle	Integrated	North Eden	West Cumbria	Region Total
2015/16 forecast from our 2015 Plan	4.80	441.90	2.00	13.95	463.20
Actual total leakage 2015/16	5.87	427.43	2.58	16.09	451.86
Variance	+1.1	-14.48	+0.58	+2.14	-10.8

Regionally there was a decrease in leakage compared to the previous year, and it remains significantly below the target. This is reflective of our extensive leakage reduction programme and also an exceptionally mild winter.

5.3.1 Leakage in West Cumbria

We have been working hard to find and fix leaks and achieve further leakage reductions this year across our region. However, despite our efforts leakage in West Cumbria is higher than the target set in our Water Resource Management Plan 2015. Since last year, total leakage in West Cumbria has increased by 2.8 MI/d, resulting in a failure to meet the resource zone target by 2 MI/d. However leakage per kilometre of water main is still 14% lower than the regional average.

Leakage can be split into district meter areas and the trunk mains upstream of them. District meter areas (DMAs) are the part of the water network where most of the leakage occurs, typically the pipes under roads near where we live and work.

During 2013/14 and 2014/15, we significantly improved our data through a series of studies and initiatives to better understand the location of losses in our upstream network. Following this 2015/16 was the first year we reported upstream losses calculated using a tile analysis approach, i.e. using actual metered data instead of estimates based on empirical flow rates. This work has indicated lower upstream losses in all our water resource zones except for West Cumbria, where the upstream losses turned out to be greater than we previously thought. This has contributed to the increase seen in total leakage for this zone, but

provides us with better understanding of where losses occur and will enable us to target our resources more effectively in 2016/17.

We have an on-going programme of demand management, including DMA leakage reduction, in West Cumbria. Actions include:

- Increased active leakage control by using additional resources to enhance daytime activity. We also continue to survey regularly for leaks in unmetered areas.
- Increased active leakage control at night and permanent night detection resources.
- On-going focus on supply pipe leakage to ensure that repair times are optimised (either through using our contractors to repair or working with the customer to repair via their insurance company).
- An on-going upstream losses campaign including distribution input meter validation and service reservoir investigations as part of trunk main leakage and losses detection process.
- Extensive pressure reduction programme.
- Successful use of helium leak testing technology on distribution mains.
- Successful use of acoustic technology on trunk mains to locate leaks.
- Upstream leakage reduction targeting high leakage tiles.
- Drop tests to identify and target leaks at our service reservoirs where appropriate.
- Meter verification and a review of the pressure management programme to identify potential for further pressure reduction.
- Data validation including operability investigations, void properties status, industrial users and allowances for concessionary supplies.

We will continue our extensive efforts throughout the 2015-2020 planning period to bring leakage back on track for the 2016/17 period and beyond.

5.4 Water efficiency and impact on consumption

Water efficiency plays an important role in balancing supply and demand. We have outperformed our target for 2015/16 by 0.05 MI/d, against the annual baseline target of 2.95 MI/d (Figure 7). Cumulative reported water efficiency savings are not currently shown as an increasing trend as we are only one year into the targets set in our 2015 Water Resources Management Plan.

Table 13 summarises the benefits of our water efficiency and metering activity for the year. These actions contribute to the overall change in consumption by customers.

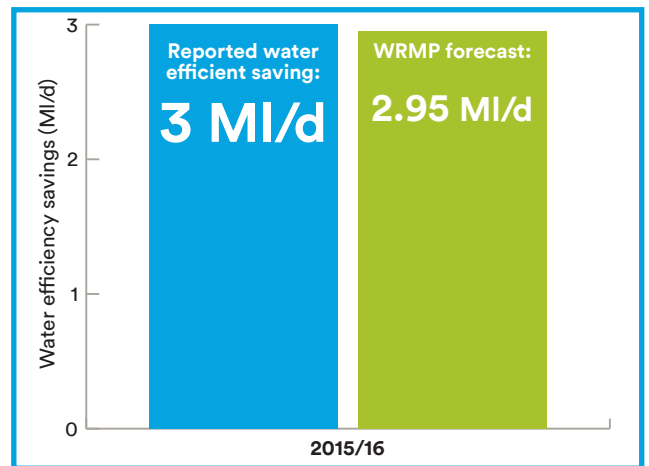


Figure 7 2015/16 water efficiency savings against the baseline regional target

Table 13 Summary of United Utilities water efficiency programme 2015/16

Water Efficiency Activity	Number	Estimated water saving (MI/d)
Cistern devices distributed to customers	35,995	0.41
Water efficiency customer self-audits	119,689	1.00
Water butts distributed to customers	631	0.001
Water Efficiency Education Programme, pupils visited	8,575	0.48
Crystal packs / water sticks distributed to customers	1,670	0.001
Retrofit devices distributed to customers	81,317	1.10
Base Service Water Efficiency Programme – Total		3.00
Free meter options	27,197	0.92
West Cumbria Sustainable Level of Water Efficiency Programme – all products	11,724	0.19
West Cumbria education programme	1,984	0.11
TOTAL SAVING		4.22

NOTE: Numbers may not sum due to rounding

During 2015/16, we have demonstrated our commitment to promoting water conservation by the following activities:

- 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.
- Carrying out nearly 1,700 audits in customer homes, leading to the installation of over 6,000 water efficient products.
- Delivering a water saving education programme to over 8,500 Key Stage 2 pupils.
- Offering a water usage calculator on our website, used by 67,000 customers in 2015/16, which gave them advice on how to save water across their homes.
- Supplying over 37,500 customers with a range of water efficient products including Save-A-Flush’s, Shower Regulators, Tap Inserts, Toothy Timers, Shower Timers, Showerheads and Bathbuoys, to install in their properties.
- Attending local events such as the Cheshire Show where we distribute water saving products and engage with customers, impacting water saving behaviours.
- Continuing to work with Project Viridis, a collective of Councils and Housing Associations across the Liverpool region that have come together to pool resources to lift people out of fuel poverty, to link water efficiency and affordability.
- Following the success of last year’s bill insert this year we included a separate special offers leaflet in both metered and non-metered customer bills, for example to remind customers of what free water saving products are available via the website.
- Speaking to 1,200 customers across the North West as part of a behaviour research study. This helped us to understand how receptive metered and unmetered customers in the region (which has a traditionally wet climate) are to receiving information and messages on water efficiency. The study also looked at the effectiveness of different distribution channels by measuring customer’s reaction and acceptance of them.
- Continuing to promote water efficiency through our education programme.

5.4.1 Water efficiency in West Cumbria

In our 2015 Water Resources Management Plan we committed to maintain the enhanced level of demand management activity delivered from 2010-2015. As part of realising on-going benefits we are continuing to undertake enhanced demand management activity to minimise abstraction in West Cumbria. This year we have seen cumulative savings of 0.29 Ml/d in the zone, exceeding the previous year performance by 0.03 Ml/d. These further savings follow on from successful results, having more than doubled the cumulative target through the 2010-2015 planning period (see Figure 8).

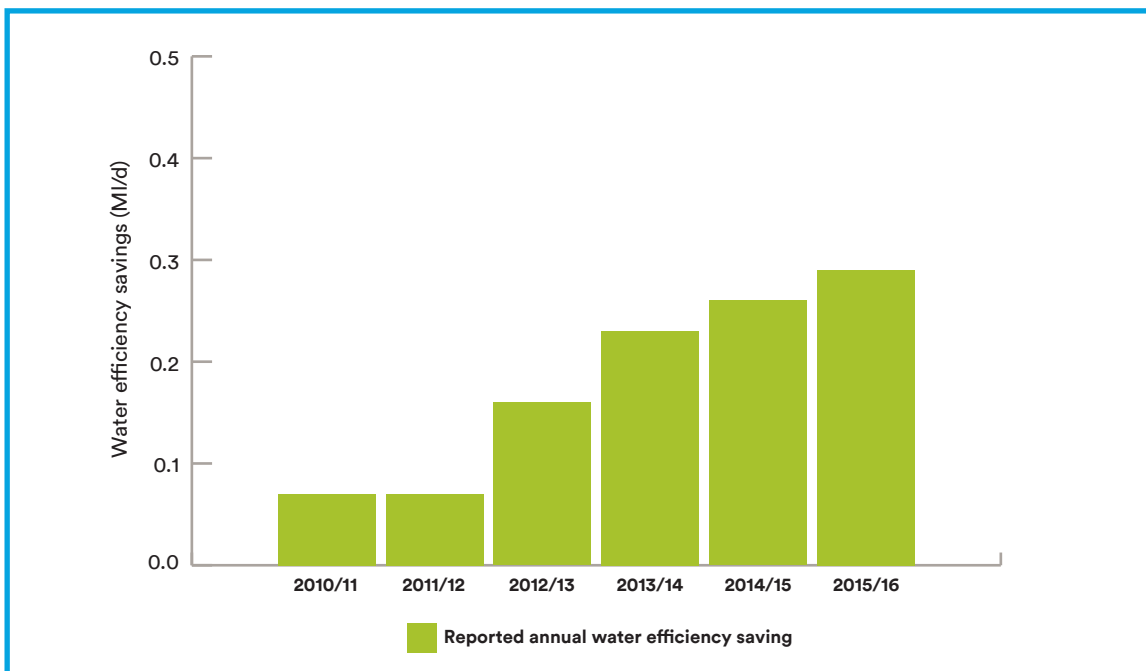


Figure 8 West Cumbria cumulative water efficiency savings

This year we distributed over 50,000 leaflets to customers' homes, highlighting the need to save water and promoting our free home water audit service, installing over 2,000 water efficient retrofit products where appropriate.

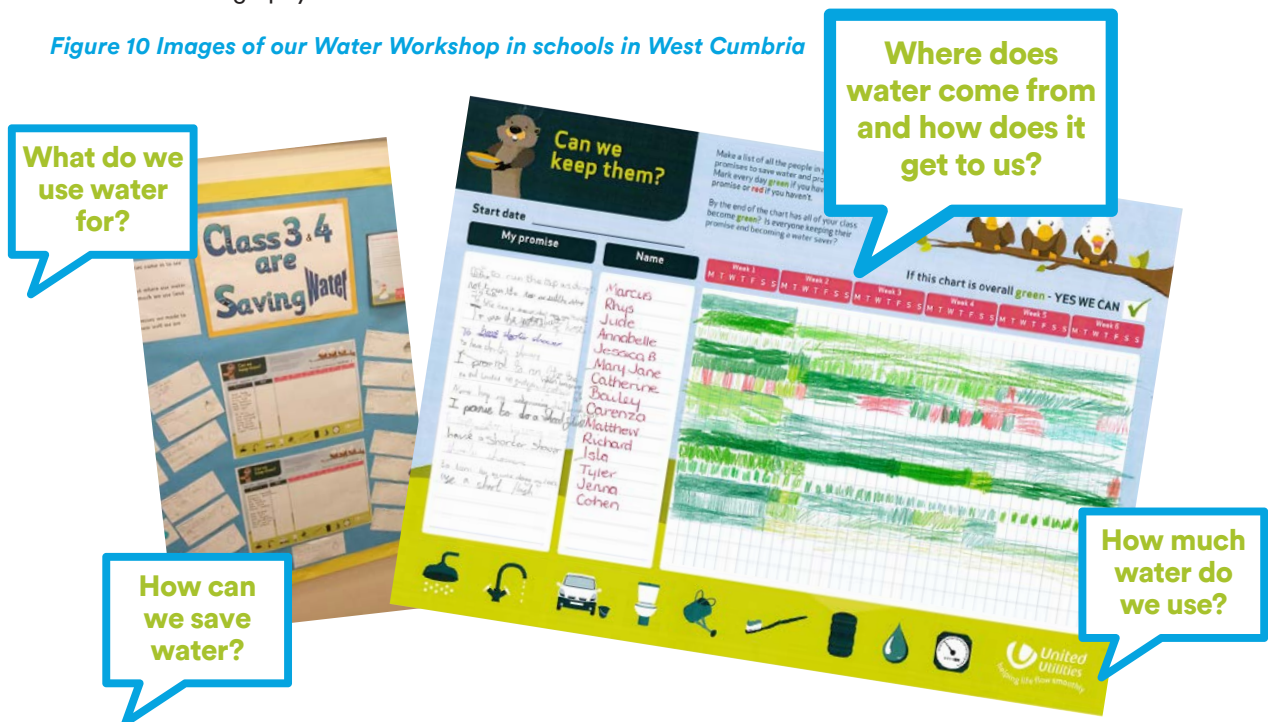
Figure 9 Leaflet promoting our free water audit service



As with previous years we held a series of give-away days at supermarkets and events in West Cumbria, giving away 1,465 free water efficient showerheads, over 6,000 water saving products and over 1,400 handy information booklets.

Working in partnership with the Lake District National Park we have developed a free Water Workshop, which was delivered to nearly 2,000 key stage 2 pupils in 2015/16. The workshop is extremely interactive, allowing all the children to participate. The programme covers a number of topics from Key Stage 2 Science and Geography:

Figure 10 Images of our Water Workshop in schools in West Cumbria



5.5 Customer metering

We continue to meter all new properties, and under our free meter option scheme household customers can opt for a meter. The number of unmeasured non-households is relatively small following a programme to compulsorily meter unmeasured non-households several years ago (where practical to do so). Household customers therefore drive most of the annual growth in metering.

During 2015/16, we installed meters at:

- 19,273 new households
- 27,197 households, which opted for a free meter
- 719 new non-households

This year, we have seen a drop in the number of customers requesting a meter from 2014/15, which is below the forecast in our 2015 Water Resources Management Plan. Bills have reduced from the previous reporting year which will have reduced the incentive to switch. Figure 11 shows the uptake under our free meter option scheme over the last eleven years. The number of optants each year varies due to a wide range of factors, including water tariffs. This may in part be due to the wider economy, as already discussed in Section 5.2, with peaks in the free meter option uptake during the recession when it is likely that customers who would financially benefit would have been encouraged to reduce household bills. We recognise this drop and therefore have reviewed our approach to promoting meters, explained below, to try and tackle this issue.

The number free meter installations is generally expected to decline in future, as the metering penetration increases the number of unmetered customers who still stand to benefit most from a free meter reduces. This is reflected in our “Number of free meters installed” Measure of Success (see Table 1), which shows the expected number of new installations to decrease year on year. To address the lower than expected meter uptake and counter the expected trend we have initiated a number of actions to improve our performance for 2016/17.

We have extended the period for all customers to switch back from being metered to unmetered from 12 to 24 months. This gives customers more time to decide whether they will benefit from being on a metered tariff. It is widely accepted that customers with a meter use less water than those without one and makes the option more attractive. Metering is an opportunity for customer engagement which, if sustained, can also be useful for promoting water efficiency. Metered customers are able to review the impact of their behaviour on their bills, and metering also gives us the opportunity to use flexible tariffs based on consumption patterns. “Paying for what you use” is a well-supported principle.

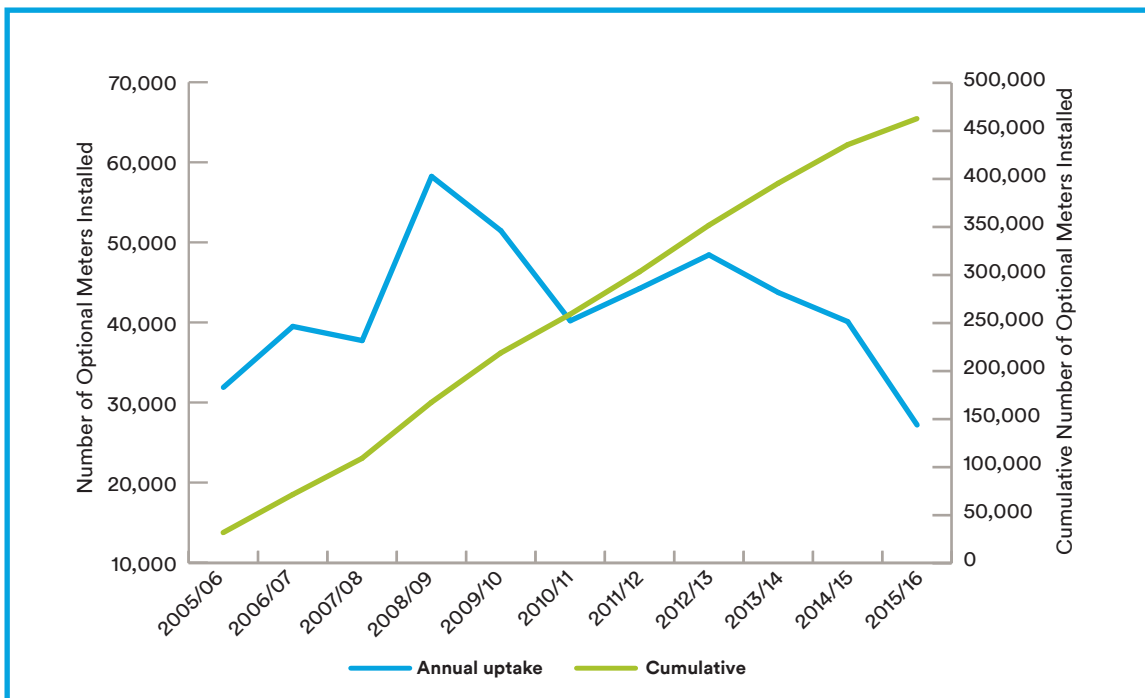


Figure 11 Free meter option uptake since 2005/06

Our actions in the previous year, and those we have identified for 2016/17, are shown below:

- Social media activity, for example promotion of the free meter option and our online water calculator through Facebook and Twitter
- Over 30,000 promotional emails to select customer segments such as ‘Empty Nesters and Retired Pensioner’ and a further 7,600 letters to these segments
- We directly targeted over 1,900 customers whose supply pipe arrangements would accommodate a simple ‘meter screw in’ meter installation, meaning no excavation work would have been required
- During our main billing campaigns, we sent in the region of 22,000 SMS text messages to customers who we believe would benefit from a measured charge
- Messaging on our paperless bills was implemented with hyperlinks taking customers to the appropriate pages on our website to encourage applications
- We promoted metering on all our envelopes used during our main billing activity
- A new promotional banner on our website

Figure 12 Promoting metering on our envelopes used during main billing activity in 2016



5.6 Population and property forecasts

The April 2015 population projections from the Census agent indicated that in the shorter term there is little variation from the 2015 plan assumptions. By the year 2040 there is a 4% difference between the population projections. Given that these are long-range forecasts they are likely to shift over time. So the future variation is not unique, and is not material in the context of the options we are progressing from the 2015 plan.

We will continue to review the latest population forecast projections on an annual basis. This latest view gives assurance around the population forecast used to derive the 2015 plan supply-demand balance and there is no change to the 2015 plan forecast. We will continue to track this through the Annual Water Resources Review process for any changes in the long-term and towards our 2019 Water Resources Management Plan.

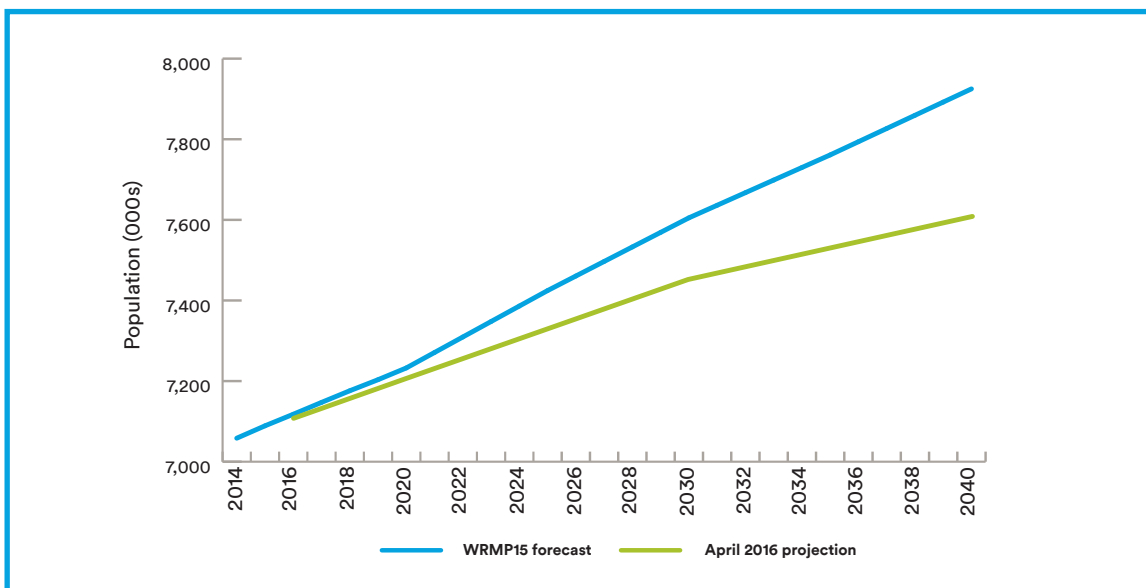


Figure 13 2015/16 regional population forecast against the 2015 plan forecast

6. Headroom



As discussed in Section 5.1 an update to the Met Office weather-demand model caused changes to the dry year demand and target headroom components of the supply demand balance. This is associated with the reallocation of seasonal variation from demand into the uncertainty element and in turn, target headroom. The impact of the Met Office model update is a reduced “dry year” uplift, which results in lower “dry year” demand, and a subsequent increase in target headroom due to added uncertainty (see Table 8 for Integrated resource zone values as an example). In all resource zones, this results in a negligible change to the supply-demand balance. Therefore, there is no material change to the strategic Water Resources Management Plan position and the required delivery of options or other activities. We discussed this change with the Environment Agency in autumn 2015.

7. Options

Our 2015 Water Resources Management Plan outlines the preferred plan to deliver the Thirlmere transfer scheme. We also outlined a set of interim measures to mitigate our impact in the region until delivery of Thirlmere transfer scheme. As an outcome from the Examination in Public we also have a contingency plan that would come into effect in the unlikely event that the Thirlmere transfer scheme is undeliverable. These three key aspects of our 2015 plan are discussed in turn in the sections below.

7.1 Thirlmere transfer scheme

Our 2015 Water Resources Management Plan, informed by the Examination in Public in September 2014, concluded that the Thirlmere transfer scheme should be progressed to address the future supply-demand deficit in West Cumbria. The delivery date included in our 2015 plan is 31 March 2022. As a result of good engagement with local communities and planning/highways officers we are sufficiently confident that planning is capable of being achieved in late 2016. However, it should be noted that there are still project risks (associated with planning and construction), some of which are outside the company's control, which may have an impact on the completion date for the project. We continue to monitor these closely to mitigate any impacts.

The project team has already made good progress towards final delivery of the scheme. The key items of work undertaken in 2015/16 include:

- Completion of a third phase of public consultation activities on the scheme. So far over the three phases of consultation this includes:
 - Distribution of a number of newsletters to over 40,000 properties
 - Over 30 widely advertised public exhibitions
 - Attendance of a series of country shows
 - Consultation questionnaires for completion online have also been distributed at public events or by post



West Cumbria public consultation at Sunderland

- Further design and engineering activities - we have used the feedback from the public consultations in conjunction with more detailed engineering studies to refine the pipeline to a defined single proposed route. We have concluded talks with landowners who may be affected by the scheme and have now served all notices. We have also hit our targets for the tendering process having awarded some contracts and are in the process of assessing others.
- We have carried out a series of site investigation works around the pipeline route and the proposed water treatment works site. We have also concluded the ecological and archaeological surveys of the proposed route.
- We launched a bespoke website for the project in this year to enhance our communications strategy.
- Planning submission – all of the above has accumulated in being able to complete the Environmental Impact Assessment and submit the full planning application on schedule. We are now working closely with the planning authorities via a Planning Performance Agreement to continue to provide evidence and commentary to any ongoing queries. We are hoping to have a planning decision in early autumn 2016. To see some of the documents that make up the planning application please visit cumbria.unitedutilities.com/west-cumbria-planning-submission

Further information on the work we expect to complete to progress the Thirlmere transfer scheme in the coming year is included in Section 11.

7.2 Interim measures in West Cumbria

In order to protect the sensitive habitat in the River Ehen Special Area of Conservation, we plan to deliver further measures to reduce the abstraction from Ennerdale Water until the Thirlmere transfer scheme is implemented. As part of realising on-going benefits we have committed to continue with a number of activities. These include:

- Continuation of existing enhanced levels of water efficiency promotion
- Continuation of existing leakage management activities to keep leakage as low as possible, and investigate new ways of reducing leakage further
- Reconfiguration of the network to allow approximately 3 Ml/d of demand normally met from Ennerdale Water to be met by Crummock Water
- We have plans in place to tanker potable water when it is most needed, i.e. when very dry weather is being observed and the lake level in Ennerdale Water is low. However, this is not something that has been required to date due to the weather conditions experienced.

There are another two projects included in our 2015 plan to bring further abstraction reduction from Ennerdale Water:

- **Summerville:** the scheme of improvements allows the further transfer demand from Ennerdale Water to Crummock Water by allowing us to operate our network differently. This allows a reduction abstraction from Ennerdale Water by a further 3 MI/d. This project was completed in March 2016.
- **South Egremont boreholes:** are being developed at an enhanced capacity of 11 MI/d¹¹. This will reduce abstraction from Ennerdale Water, as well as further bolstering the supply-demand balance and security of supplies in West Cumbria. In our 2015 plan we expected the boreholes to be completed in 2015/16. A delay to the completion of this project has occurred in relation to the blending of water from Ennerdale Water with the boreholes and the need to ensure we continue to meet the drinking water quality standards. Enhancements to Ennerdale water treatment works were identified and work has been ongoing to ensure these are delivered as soon as possible. The forecast completion date for both projects is summer 2016.

7.3 Contingency Plan

Our 2015 Water Resources Management Plan contains a contingency plan in case the Thirlmere transfer scheme proves undeliverable. The contingency plan involves new groundwater sources in West Cumbria and acquiring existing licences held by a third-party. It may also utilise and retain existing sources with the exception of Ennerdale Water.

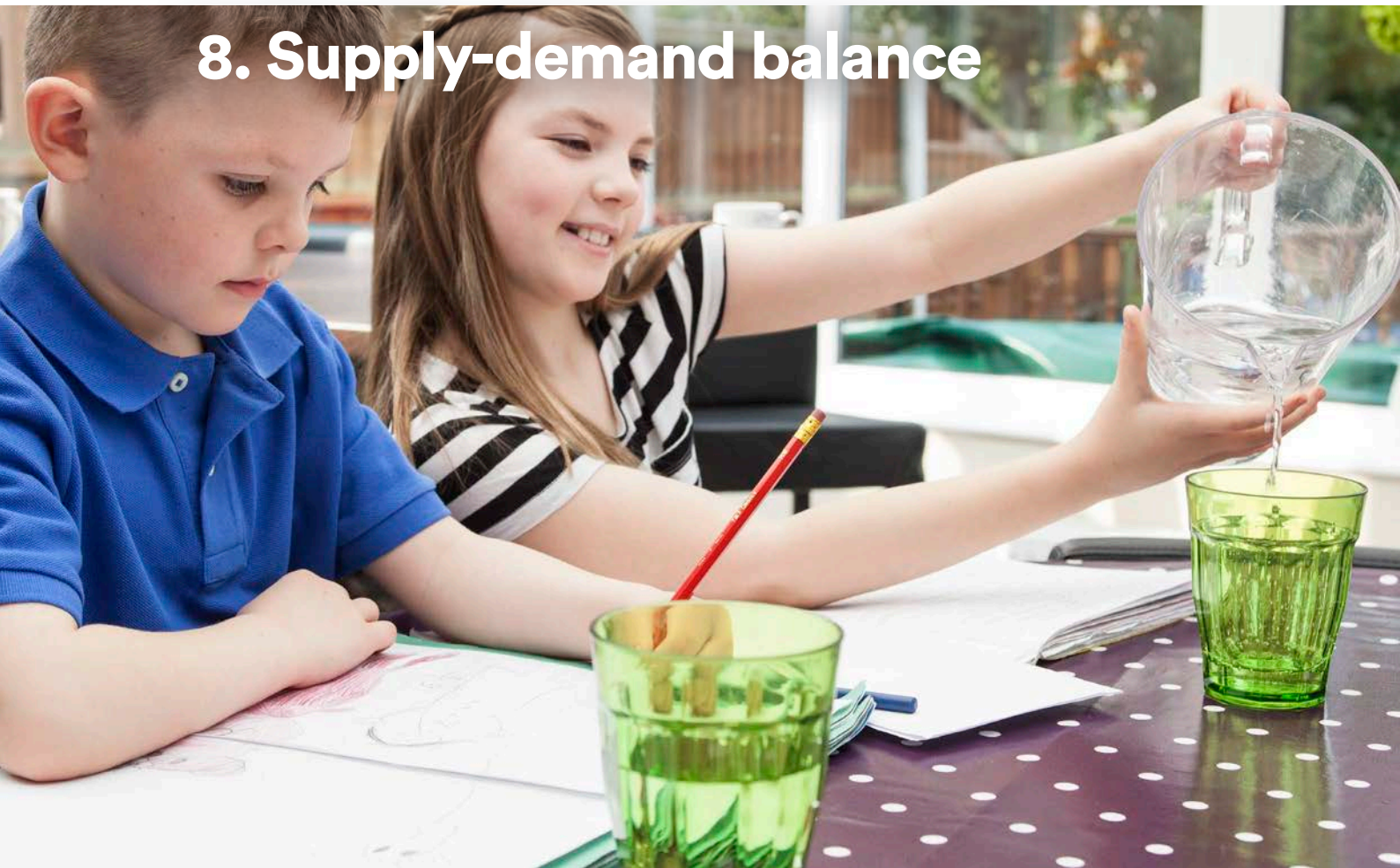
We have a high degree of confidence in the deliverability of the Thirlmere transfer scheme, which is one of the reasons why it was selected as our preferred option. The contingency plan has a greater degree of uncertainty with some of the resource components, but we are working with the Environment Agency to improve our collective understanding of resource availability should new sources need to be implemented at a later date.

The Environment Agency's re-assessment of the availability of groundwater resources for the West Cumbria aquifer has concluded that there is the potential for additional new abstraction licences. However, it is acknowledged that locating new boreholes in the Egremont area may be difficult in order to avoid environmental impacts without a more detailed appraisal of the hydrogeology. No further work is proposed to examine the potential for new licences until the current South Egremont groundwater scheme, sized at 11 MI/d capacity, has been completed and is in operation. Following this, monitoring data will be collected as part of the South Egremont abstraction licence conditions in order to understand the effects of the new abstractions. The benefits of an additional 3 MI/d to the capacity of the scheme will form part of on-going discussions with the Environment Agency as the monitoring data is assessed.

We will review the contingency plan at least annually in future to reflect changing circumstances over time, and then report on any changes through the Annual Water Resources Management Plan process.

¹¹ The original design capacity of the boreholes was 6.4 MI/d to tackle the forecast deficit identified in our 2009 Water Resources Management Plan

8. Supply-demand balance



This section brings together all of the changes and our performance for 2015/16 as detailed in the previous sections. Here we summarise what it means for the supply-demand balance across our four resource zones.

For the 2015/16 reporting period we have maintained a surplus in all four water resource zones, as indicated in Table 14. This means we have maintained a Security of Supply Index score of 100.

Table 14 Supply-demand balance for the 2015/16 period by resource zone

Component description		Carlisle (critical period)	Integrated (dry year)	North Eden (dry year)	West Cumbria (critical period)
Supply	Water available for use ¹² (MI/d)	32.13	1,922.74	8.65	55.91
Demand	2015/16 “Dry year” demand (MI/d)	29.41	1,657.54	5.83	51.52
Target Headroom	Target Headroom (MI/d)	2.66	82.46	0.28	3.27
2015/16 Supply-demand balance	This is the supply-demand balance position for 2015/16 (MI/d)	0.06	98.06	3.54	1.12
2015/16 forecast supply-demand balance	This is the supply-demand balance position for 2015/16 from the aWRMP16 forecast (MI/d)	1.26	134.55	3.97	4.86
Difference	Difference between forecast and actual supply-demand balance in 2015/16 (MI/d)	-1.20	-36.49	-0.43	-3.74

¹² Environment Agency Water Available For Use definition minus process losses and planned outage (not actual outage).

9. West Cumbria Summary



Protecting the sensitive environment in West Cumbria is the focal point of our 2015 Water Resources Management Plan. In our 2015 plan, informed by the Examination in Public in September 2014, we committed to undertake a host of different activities to protect the environment in both the short and the long-term.

This section summarises our overall performance in West Cumbria, as discussed in the earlier sections of this report. In 2015/16 within the resource zone:

- We have seen the benefits of our water efficiency efforts in the zone, outperforming the water efficiency demand savings to a cumulative total of 0.29 MI/d for the year. This is a further saving of 0.03 MI/d from our performance in 2014/15.
- Despite our efforts we have not been able to meet leakage targets. Total leakage in West Cumbria has increased by 2.8 MI/d. However, leakage per kilometre of water main is still 14% lower than the regional average.
- Demand in the resource zone has increased. Whilst in part this may be influenced by the weather during the year this is primarily due to an increase in leakage.
- The Summergrove scheme has been completed which allows Crummock Water to support the area and offset 3 MI/d of demand from Ennerdale Water.
- The first two milestones of the Thirlmere transfer scheme have been achieved ahead of time.
- We have made good progress in delivering the package of compensatory measures (see below).

In the coming year:

- We have identified and are entraining actions to tackle leakage, which include:
 - Upstream leakage reduction targeting high leakage tiles
 - Identifying and targeting leaks at our service reservoirs
 - Identifying the potential for further pressure reduction
 - Increased active leakage control in district meter areas (DMAs)

- We will complete delivery of the South Egremont boreholes. A delay to the completion of this project has occurred in relation to the blending of water from Ennerdale Water with the boreholes and the need to ensure we continue to meet the drinking water quality standards. Enhancements to Ennerdale water treatment works were identified and work has been ongoing to ensure these are delivered as soon as possible. The forecast completion date for both projects is summer 2016. Once the boreholes are operational they will offset supply from Ennerdale Water in future years until delivery of the Thirlmere transfer scheme.

9.1 Compensatory measures

During 2014/15 we worked with Natural England and the Environment Agency to commence the delivery of a package of 13 physical ecological and eight research compensatory measures. This was submitted to Defra on 28 February 2014. Implementation of the package of measures will be phased over the coming years. Defra confirmed in November 2015 that there are Imperative Reasons of Overriding Public Interest (IROPI) to keep abstracting from Ennerdale Water until the Thirlmere transfer scheme is operational.

The aim of the agreed package of measures is to improve the population of mussels and salmon by enabling more recruitment, primarily in the River Ehen SAC, and to undertake research and monitoring to understand how this outcome would best be achieved. The compensatory measures will be secured as far as possible within the River Ehen SAC and are therefore planned to both prevent and compensate for potential further damage. Additional measures will provide compensation for salmon in other Cumbrian lakes and rivers, including other Natura 2000 sites. Progress on each measure is reviewed and guided by a project steering group, which comprises representatives from United Utilities, the Environment Agency and Natural England and meets at least twice a year. A formal review of all of the research measures occurs each February, with a review of the wider package in July each year.

Below is a summary of the package of compensatory measures (further details of the package of measures are provided in our 2014 Statutory Drought Plan):

Physical measures:

- Nine physical ecological measures are largely focused on changing land use and delivering catchment management actions in the area of the River Ehen SAC in order to improve water quality, optimise freshwater mussel and salmon habitat extent and condition and enhance recruitment in both of the interest features.
- The four offsite physical measures include revocation of abstraction licences and the potential removal of associated infrastructure at Crummock Water and Dash Beck (SAC and SSSI) and at Chapel House Reservoir and Over Water (SSSI) in order to restore natural functioning and improve salmon migration in a number of designated and undesignated Cumbrian lakes and rivers.

Research measures:

- There is one research measure to trial the reintroduction of freshwater mussels and artificial encystment in an undesignated priority recovery river in close proximity to the River Ehen SAC to contribute to the body of knowledge associated with freshwater mussel recovery efforts.
- Seven research measures have been designed to inform the scope (and in some cases, the need for and feasibility) of the physical measures focused on the River Ehen SAC and elsewhere. The research measures will also enable us, along with the Environment Agency and Natural England, to monitor the effectiveness of the physical measures and improve the body of knowledge regarding factors which threaten the overall coherence of Natura 2000, particularly relating to the River Ehen SAC.

During to the year 2015/16, we have made significant progress implementing the package of compensatory measures to the scope and the timescale agreed with Environment Agency and Natural England:

- Prior to the implementation of the package of compensatory measures, UU already owned land in the upper River Ehen catchment. A portion of this land was until recently subject to agricultural production by farming tenants. However, the tenancy was terminated by UU in August 2015 removing an additional 22 hectares of land in the River Ehen catchment from agricultural use, bringing the total to 64 hectares. This significantly reduces the risk of potential future damage to the River Ehen SAC. The protection of the SAC is central to our management of the land going forward.

- We continued to work with the Environment Agency, Natural England and other key stakeholders to develop and deliver a plan to investigate and remove further risks in the catchment. This will be led by a project officer who will be hosted by a third party and will be appointed in autumn 2016.
- We have completed a review of available data on nutrient and fine sediment delivery in River Ehen catchment and have continued a long-term monitoring programme involving continuous water quality monitoring of the River Ehen. We have also undertaken a wet weather walkover survey to identify fine sediment sources to the catchment and undertaken fortnightly water quality monitoring of Ennerdale Water in 2015. The desk review and wet weather walkover survey will inform actions and prioritisation of catchment improvement works to be undertaken by the project officer.
- We continued to progress an intensive two-year project to assess and map potential juvenile freshwater mussel habitat in the River Ehen SAC, which will now extend into a third year.
- We have commenced the development of a detailed digital model of the River Ehen SAC, which is ongoing, in order to better link its morphology and changes to the flow regime with important freshwater mussel habitat.
- A four year EngD study has commenced which is hosted by Newcastle University. The student will investigate the implications of a 'return to natural' flow regime to improve understanding of the likely future flow conditions experienced by the designated species and provide context and data for other research and physical measures.
- We have contributed funding to undertake the 2015 'Lakes Tour' (a year-long environmental investigation of the major lakes and tarns in the English Lake District).
- We have commenced feasibility studies for infrastructure removal for the redundant bleaching weir in the River Ehen, and removal of abstraction related infrastructure and weirs at Crummock Water, Dash Beck, Overwater and Chapel House, all sites where abstraction will cease in 2022 when the Thirlmere transfer scheme becomes operational.

The package of compensatory measures will provide additional knowledge and ecological actions over and above the actions that are normal practice for the management of the SAC. Outside of this package of measures, considerable research, monitoring and physical action is currently being delivered by United Utilities working in partnership with other organisations focused on restoring the River Ehen SAC to favourable condition.

We are committed to working with Natural England, the Environment Agency, local stakeholders and experts in order to find the best solution to the protection of the River Ehen SAC and public water supplies in light of emerging evidence.

10. Making sure we are prepared for drought



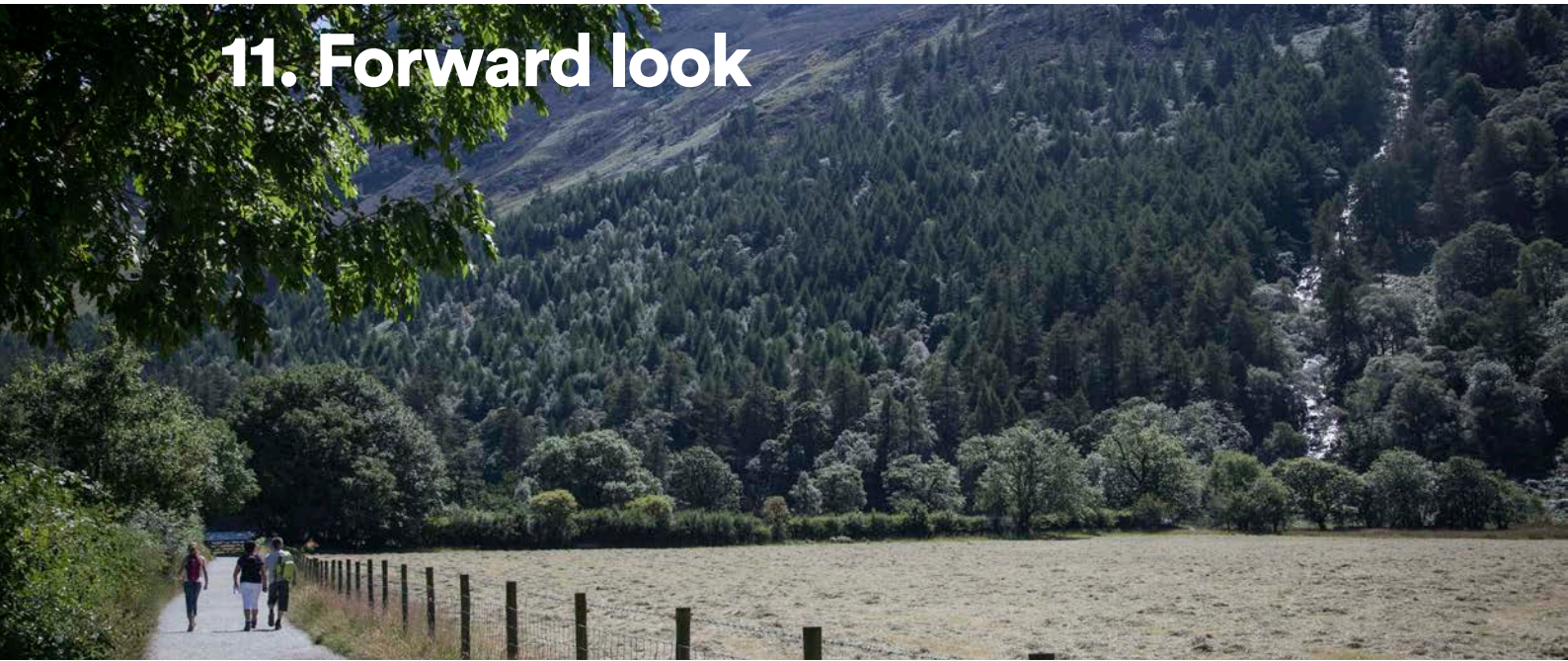
Our current Drought Plan 2014 was published on 17 July 2014. In line with the Drought Plan we have updated our environmental assessments for drought orders and permits. The updated environmental assessment report for our Crummock drought permit option (in West Cumbria) identified a reduction to the volume of water available for abstraction from this reservoir. The West Cumbria resource zone has further changes in the development of a new source of water, the South Egremont boreholes which will support Ennerdale Water. We believe that in-combination this results in a material change to our current published drought plan. We are therefore working to develop a new drought plan which will be submitted to Defra by 26 July 2016.

As part of our pre-consultation activities we contacted statutory bodies in January 2016 requesting any comments or information that they believe should be considered in preparing our draft drought plan. We also contacted stakeholders to ask their thoughts on our drought plan update and invite them to two stakeholder consultation events in Windermere and Workington in May 2016.

In March 2016 we arranged for a consultant to host a drought exercise. This event recreated a hypothetical 10-month drought event, the nature and extent of the drought was unknown to the participants prior to the day. The exercise was attended by key contacts from across the business alongside regulators from the Environment Agency and Natural Resources Wales. The purpose of the exercise was to test out our current drought plan and to raise awareness of the drought plan across the business as well as the implications of drought.

These activities are helping us to develop an improved 2016 Drought Plan. The draft plan will be submitted to Defra on 26 July 2016 and once we have received direction we will publish the plan with a 6 week window for public consultation.

11. Forward look



In this section we give an overview of some of our key activities in 2016/17 noting however that it is not exhaustive. The key activities in Table 15 are to:

- help to progress the delivery of our 2015 Water Resources Management Plan
- bring our performance in line with expectations where this review has identified a requirement to do so
- ensure security of supplies
- reduce our abstraction from Ennerdale Water

Table 15 Key items of activity in 2016/17

Item	Action
South Egremont boreholes	We will complete delivery of the South Egremont boreholes. A delay to the completion of this project has occurred in relation to the blending of water from Ennerdale Water with the boreholes and the need to ensure we continue to meet the drinking water quality standards. Enhancements to Ennerdale water treatment works were identified and work has been ongoing to ensure these are delivered as soon as possible. The forecast completion date is summer 2016. Once the boreholes are operational they will offset supply from Ennerdale Water in future years until delivery of the Thirlmere transfer scheme
Demand management activities	We will maintain our water efficiency savings and focus activities in West Cumbria to improve leakage within the zone. In Carlisle we will continue the pressure management programme.
Thirlmere transfer Scheme	Our planning application for the scheme was submitted in January 2016. By the end of autumn 2016 we will have a planning decision and will launch a fourth phase of consultation to keep Cumbria fully informed of developments. We will also be talking about our proposals for a community investment fund to recognise the disruption that Cumbria will be facing and to help fund some projects that will leave a lasting legacy in Cumbria.
Thirlmere transfer Contingency Plan	We are committed to updating the Thirlmere transfer Contingency Plan Technical Report as part of the annual Water Resources Review.
2016 draft Drought Plan	We will submit our draft 2016 Drought Plan to Defra by 26 July 2016. Once we have received direction from Defra we will publish the plan with a 6 week window for public consultation.
Thirlmere transfer Contingency Plan	We are committed to updating the Thirlmere transfer Contingency Plan Technical Report as part of the annual Water Resources Review.
Customer metering	We have identified number of actions to improve our uptake of the free meter option in 2016/17. These actions include: <ul style="list-style-type: none"> • Ongoing social media activities on Twitter and Facebook • Promotional emails and letters • New envelope messaging signposting the free meter option throughout main billing • SMS messages to customers who may benefit from switching • A new promotional banner on our website.

11.1 Developing our 2019 Water Resources Management Plan

We're already well underway towards development of our 2019 Water Resources Management Plan. We expect to publish our next plan by 1 December 2017. In developing our next plan, we will actively engage with both customers and stakeholders. As a formal stage in the process, we will contact stakeholders and regulators as part of pre-consultation during autumn 2016, however, we would welcome any early views or comments in advance of this formal activity so we can take these on board.

In particular, we've been working on the following activities for the 2019 Water Resources Management Plan:

- We've been proactively involved in a number of national steering or technical groups, working with other companies and regulators to make the new guidelines and methodologies as effective as they can be. We've also actively participated in relevant Environment Agency and Ofwat water resources consultations, and been actively involved in a WaterUK project on long-term national water resources resilience which is due for completion this summer.
- We've already started to develop internal methodologies, engaging with the Environment Agency on our approach to a number of key areas of our plan, and started technical work ready for implementation.
- There are a number of new planning methods that we can consider to support our next plan, in particular to support effective, risk-based decisions. We're currently progressing investigations and trials in order to define our approach, which we will formally engage upon these at pre-consultation.
- Resilience is a key theme that we need to explore in the next planning round, and we have been examining approaches to testing our system against droughts more extreme than historically experienced.
- It is important that we assess third-party water resource options fairly and transparently as part of the planning process. We are currently working to define our approach for third-party suppliers of water to input to the process. However, we would welcome earlier contact if you would wish to participate in this part of the process. Please email [**water.resources@uuplc.co.uk**](mailto:water.resources@uuplc.co.uk)
- As part of our Drought Plan pre-consultation events in Cumbria, we took the opportunity to update on the next Water Resources Management Plan, and to offer stakeholders the opportunity to raise questions and/or concerns.

12. Conclusions



2015/16 is the first year that our 2015 Water Resources Management Plan has come into effect. We've generally made good progress in delivering our plan, in particular outperforming our regional leakage and water efficiency targets.

Despite our efforts, in the West Cumbria resource zone leakage has increased and is above target. Recognising this we have identified activities that we need to continue to progress, and we will continue our extensive efforts throughout the planning period to bring leakage back on track for the 2016/17 period and beyond. Uptake of our free meter option is also below target, we will continue with enhanced actions to promote free meter options across the region and monitor progress.

We have maintained a supply-demand surplus and a Security of Supply Index score of 100 in all of our resource zones. We have worked to further secure supply in the short-term, such as the removal of constraints on our existing assets in Carlisle and the completion of the Summergrove scheme in West Cumbria. In the longer term we have made good progress with the Thirlmere transfer scheme by submitting the full planning application in January 2016, supported by the Environmental Impact Assessment.

There are some further key areas that need particular focus in 2016/17. We will complete delivery of the South Egremont boreholes and they will start supplying water into West Cumbria in summer 2016. Once the boreholes are operational they will offset supply from Ennerdale Water in future years until delivery of the Thirlmere transfer scheme, and we have identified actions to enhance demand management activities and further reduce leakage and demand in the zone. Milestones for the Thirlmere transfer project include the launch of a fourth phase of public consultation, and the outcome of our planning application. We expect to have a planning decision by the end of autumn 2016. We will also explore proposals for a community investment fund that will leave a lasting legacy in Cumbria.

We are updating our Drought Plan after receiving new information on Crummock Water, and will submit a draft plan to Defra on 26 July 2016. We have also commenced work on our next Water Resources Management Plan.

Our latest Drought Plan and 2015 Water Resources Management Plan can be found at the link below:

corporate.unitedutilities.com/waterresourcesplan

Appendix A

Key outturn data for 2015/16 compared with dry year forecasts for 2015/16 amended to reflect the weather experienced in the year

Note: numbers may not sum due to rounding Key to table	Carlisle Resource Zone	Integrated Resource Zone	North Eden Resource Zone	West Cumbria Resource Zone	Region
	2015/16 actual data				
	2015/16 forecast data (aWRMP16, with weather as seen in 2015/16)				
	Difference				
Water available for use (own water sources) (MI/d)	34	1,927	9	57	2,027
	32	1,970	9	59	2,069
	+2	-43	0	-2	-42
Total population (000's)	109	6,833	14	148	7,104
	110	6,845	13	149	7,118
	-1	-12	+1	-1	-14
Number of unmeasured households (000's)	31	1,678	3	48	1,760
	29	1,646	4	47	1,725
	+2	+32	-1	+1	+35
Number of metered households (000's)	16	1,090	2	16	1,124
	17	1,129	3	16	1,165
	-1	-39	-1	0	-41
Total household metering penetration (excl. voids)	34%	39%	38%	25%	39%
	37%	41%	42%	26%	40%
	-3%	-1%	-4%	-1%	-1%
Per capita consumption unmeasured households (l/hd/d)	142	142	149	158	142
	147	144	173	171	145
	-5	-2	-24	-13	-3
Per capita consumption metered households (l/hd/d)*	107	108	109	114	108
	113	106	130	115	106
	-6	+2	-21	-1	+2
Per capita consumption all households (l/hd/d)*	131	129	134	147	130
	135	129	156	157	130
	-4	+0	-22	-10	0
Per household consumption all households (l/prop/d)*	304	302	311	324	303
	310	305	301	352	306
	-6	-2	+10	-28	-3
Water consumption by households (MI/d)*	14	837	2	21	873
	15	847	2	22	885
	-1	-10	0	-1	-12
Water consumption by non-households (MI/d)	7	353	1	9	370
	7	331	1	10	348
	0	+22	0	-1	+22
Miscellaneous water use (MI/d)	0	24	0	2	27
	0	24	0	1	26
	0	0	0	+1	+1
Total leakage (MI/d)	6	427	3	16	452
	5	442	2	14	463
	+1	-15	+1	+2	-11
Distribution input (MI/d)	28	1,641	6	48	1,722
	27	1,644	5	47	1,722
	+1	-3	+1	+1	0
Security of supply	In Balance	In Balance	In Balance	In Balance	In Balance
	In Balance	In Balance	In Balance	In Balance	In Balance
	No Change	No Change	No Change	No Change	No Change

*Components where the forecast has been amended to reflect the weather experienced in 2015/16