





Consumer Council for Water

London and South East Committee

Meeting in Public

22 April 2016







Welcome and Introductions

Sir Tony Redmond Committee Chair



Delivering Water for Future Generations

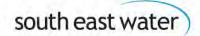






Metering:

Understanding and Influencing Consumer Demand



Metering: Understanding and influencing consumer demand Helen Chapman

MEETING IN PUBLIC
CONSUMER COUNCIL FOR WATER LONDON & SOUTH EAST
Mary Sumner House, Westminster, London
Friday 22 April 2016 at 2pm- 4.45pm

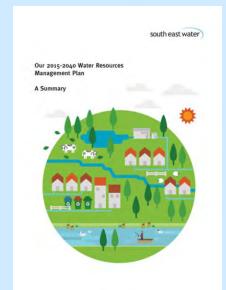
South East Water's supply area



Customer Metering Programme

Why Compulsory Metering?

- Key part of Statutory 25-year Water Resources
 Management Plan (published in June 2014)
 - Sets out how we plan to maintain the balance between available supplies and predicted future demands
 - Received a high level of engagement throughout the whole process, including input and steer from Environment Focus Group
- Water stress, population growth and further climate change
- Customers used on average, more water per person than in other regions
- We believe Metering is the fairest method of charging customers
- It encourages change by providing information on water efficiency and a cost benefit award to customers
- Metering allows us to consider further innovative tariffs to help manage future demand

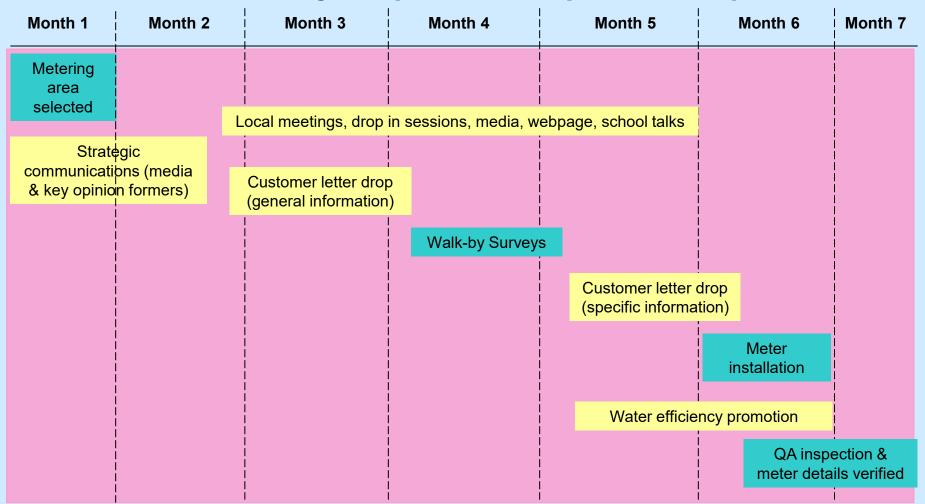


South East Water's Customer Metering Programme

- Customer Metering Programme (CMP) started in July 2011 aiming to install 200,000 water meters and ensure 90% of our household customers are metered by 2020. To date, over 184,000 meters have been installed.
- Metering Penetration:
 - 37% in 2007
 - 41% in 2010
 - 74% in 2015
 - 90% by 2020
- Our research demonstrates characteristics and correlations between the way that people answer surveys about water use and their actual water use. These explore how people's views and habits change as they move onto a water meter.
 - Over 2,200 detailed postal and online questionnaires
 - Over 3,500 face-to-face surveys
 - Data analysis of the amount of water used

Engaging with customers

We have continually adapted and improved the process



south east water



The impact of the Customer Metering Programme on customer demand

The CMP has resulted in, so far sustained, savings of 18% compared with unmeasured water use

(14% more than existing metered households)

A moderate correlation exists between customers' survey responses and actual consumption.

The top 10% of water users are more likely to be	The lowest 10% of water users are more likely to be
Higher income households	Careful with their money
Internet users	Retired
Keen gardeners under the age of 70	Couples whose children have moved out
Higher occupancy	In terrace houses
Families	Environmentally aware

Counterintuitively, some activities that were previously considered 'Green' within the door step survey actually **indicate an increase in average consumption rather than a decrease** - car washing with a bucket and sponge, and using economy setting on the washing machine or dishwasher.

The impact of the CMP on customer demand

There's an upward trend in the number of water saving activities that people claim to be engaging in to save water from pre to post metering

Since having the meter installed, over half the people questioned (57%), said their water usage had stayed the same. Over a third (35%) said they either know or think they use less water whilst a minority (2%) said they either think or know that they use more water.

What activities people believe they have been changing:

- Length of time spent in the shower (17% prior. 33% after)
- Turning off the tap whilst cleaning teeth (52% prior. 67% after)
- Turning the tap off whilst washing the dishes (42% prior. 48% after)
- Using washing up water for other things (22% prior. 28% after)
- Placing a save a flush device in the cistern (14% prior. 24% after)

The CMP positively impacts on customers' perceptions of their behaviour, usage and their bills

- Of the customers who said they either think or know they use less water since having a water meter installed, the vast majority (81%) stated that this was due to a conscious decision to change their behaviour. **Altruism** (30%) and **protecting the environment** (56%, partly) were key drivers in behaviour change for many participants, along with **financial reasons** either purely (25%) or partly (62%).
- There has also been a clear and significant impact on participant's perceptions of their bills with the stage at which they were at in their customer journey again being a key factor in the extent to which they felt their bills were fair the later the stage in their customer journey the more likely they were to find their bills to be fair (an observable 22% uplift).
- There does appear to be a ripple-out effect when it comes to behaviour change with those further into their customer journeys being more likely to have seen change spread to all other members of their household.

Lessons from CMP that we have incorporated into our wider water efficiency campaigns

- Tailor material in order engage customers. Evidence and information of the Company's
 activities in the local community will encourage people to adopt water-saving practices.
- Using the internet and email is a good way to promote water efficiency as higher
 water consumers tend to also use the internet. Characteristics of the high consuming
 individuals include being younger in age, families and generally technology users.
- Promotion of the following water-saving tips can affect average consumption:
 - Using a bowl with tap off while cooking
 - Washing hands and face, and shaving in a plugged basin.

A bath contributes less of an increase to consumption than a power shower; therefore, tips regarding having fewer baths do not seem to improve water usage.

- Target customers who are already environmentally aware: Environmental concerns and behaviours increase the possibility of adoption of appliances that reduce consumption.
- **Data:** Occupancy, Maximum mean temperature for summer, and minimum temperature for summer are important variables.

south east water



Thank You

Securing water for future generations

CCWater London and South East Committee Meeting in Public



About us

3.5 million million customers litres per day

16,500k 1,100 locally mains employed staff

8 communities
3 geographical regions

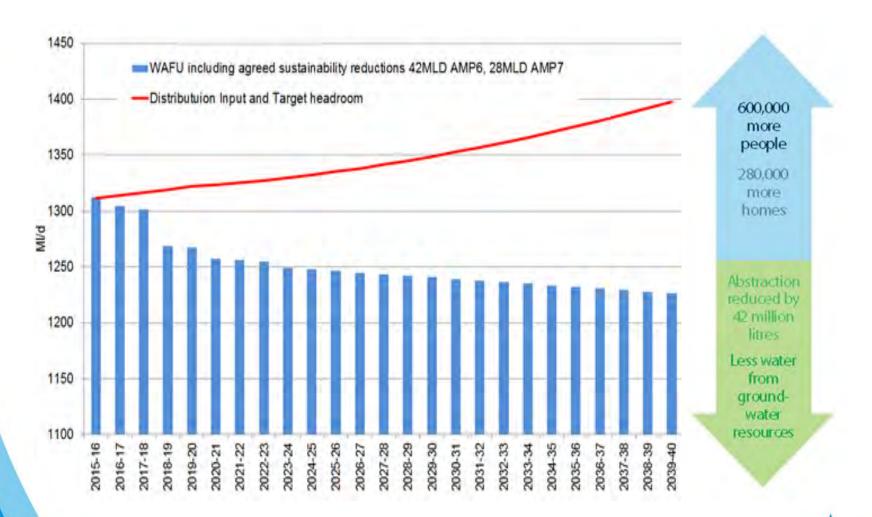


Our Vision

To be the leading community-focused water company

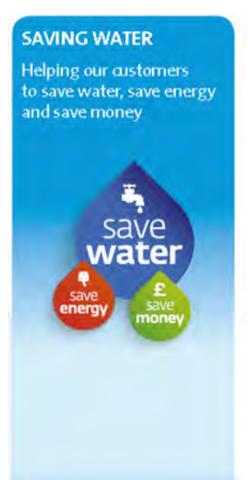


Our Challenge





Our Water Saving Programme

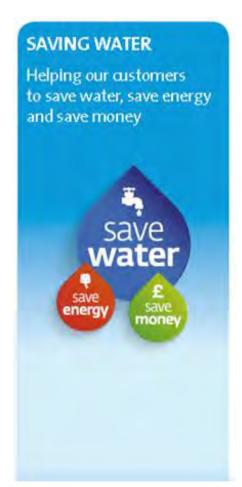








Where we are focusing our efforts



- Helping our customers to understand their water use through advice surgeries
- Our Water Saving Squad is active in our 8 communities giving our free water saving devices
- Our Education Services team is proactively educating students on water in our environment as well as how to save it



Targeting leakage



- Passionately committed to reducing leakage by 14% by 2020
- Between 2015 and 2020 we are increasing investment in our infrastructure to more than £500 million to make it more resilient.
- We will install new pipes to allow us to move greater volumes of water between communities when needed.



Increasing metering penetration and take up



- We will install 280,000 household meters by 2020.
- Our customers support metering but do not engage in its rollout.
- One third of our total network leakage occurs on our customers' supply pipes, on their side of the stop tap.



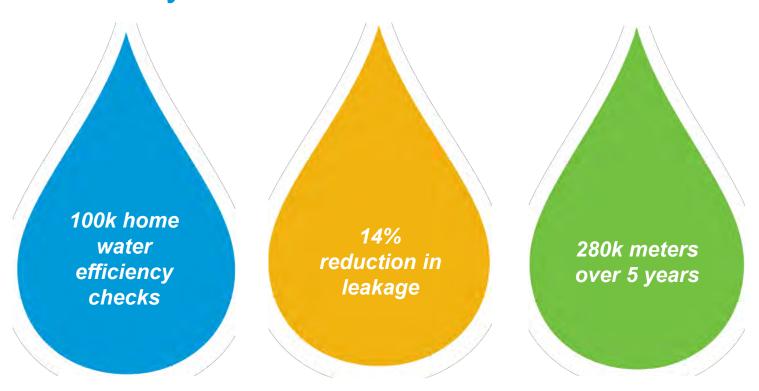
Our customers

Pre-meter awareness 6 month 12 month 18 month 24 months review review review - 3 months - 1 month Meter Cost Cost Cost First comparison to information information measured bill comparison. comparison survey to austamer to austomer rateable value to R.V to R.V (RM)Pre-meter install Install Post-meter install Engaging with local Assisting customers communities · Providing advice and water saving devices to reduce water bills · Website and social media · Helping customers to understand their water usage and take control of their bill communications · Showing how a customer's bill compares to other water bills Working with high water use customers to reduce consumption.

Support to identify leakage on customer property



Sustainable improvement in water efficiency



Delighting our customers



Any questions?









Innovations in Water Re-Use: Waste Water Recycling



Water re-use – wastewater recycling

Nigel Hepworth

CCWater Meeting in Public April 2016

Outline



- About Southern Water
- Water Resources Management Plan
- What did customers want?
- Consultation response water re-use
- Ensuring customer acceptance
- What is water re-use?
- Aylesford water re-use scheme
- Ford water re-use scheme
- Water re-use next steps

About Southern Water



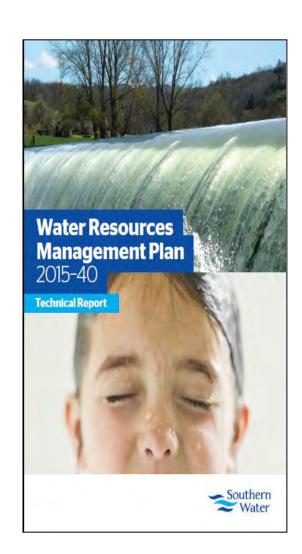
Water Wastewater



Water Resources Management Plan



- The Water Resources Management Plan (WRMP) is a statutory plan
- It sets out how we intend to meet the expected demands for water over the next 25 years
- These plans are reviewed and updated every 5 years
- They are developed on the basis of comparing future demands with the water available during a drought – the more stressful time
- The WRMP sets out the investments required to maintain supplies in each of our Water Resource Zones
- Southern Water's WRMP plans for droughts more severe than those experienced in the past
- They are statutory documents, subject to public consultation and extensive preconsultation engagement



Pre-consultation work on Water reuse



- Two main areas of focus for this work: technical and customer
- Technical work looked at:
 - Feasibility of several water reuse options across the region;
 - Defined the level of treatment required to meet the environmental requirements;
 - Determine the volume of water that could be derived from these schemes either as standalone or working in conjunction with other sources;
 - Determine the impact that restrictions on water use will have on these schemes and therefore how reliable they potentially are;
- Customer work looked to:
 - Understand whether customers would accept of reject this type of solution;
 - What were their main concerns;

Research Programme



A combined approach of qualitative and quantitative methodologies

Stage 1 8 extended, deliberative focus groups 8 face to face depths

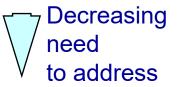
> Stage 2 1000 household telephone interviews

> > Stage 3
> > Analysis & Reporting

Priority of Issues to Address



Attribute	Importance
	Ranking*
Public Health	1.48
Drinking Water Quality	2.00
River Water Quality	3.38
Regulation	3.44
Planning Permission	5.47
Has it been done before	5.69
Demographics	6.21
Ethnicity & Cultural	6.92
Issues	



Key Issues that need to be Addressed



The most important issues were:

- Tap water quality and public health
- These were seen as closely correlated by respondents
 with the two issues coming either first or second for most.
 Many said that it has to be of good quality as you drink it
 as well as ensuring there will be no long term health
 implications
- At the lower end of the scale ethnicity, cultural issues & religious beliefs as well as planning permission and has it been done before were all mentioned.

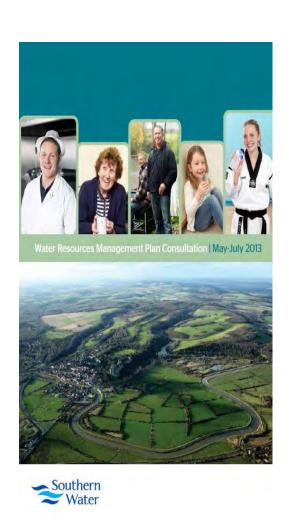
Conclusions



- Nearly all respondents agree that water shortages are likely to happen
- Most respondents have no issue with water re-use
- Before these types of schemes are implemented, customers want to be given some explanation; a twin track approach is recommended of both a detailed and a rudimentary level of information based on customer feedback
- The information given to customers must be simple and concise enough for all people to understand easily but must also include facts and figures about the WWR process

Draft Water Resources Management Plan





Consultation responses



Do you think it is sensible for us to plan for more severe droughts in the future?

85% Yes 11% No 4% Don't know





Do you want us to continue to set a target of saving one litre of water per property per day until 2040?

92% Yes 6% No 2% Don't know Do you think desalination has a role to play in securing water supplies for the future?

79% Yes 16% No 5% Don't know





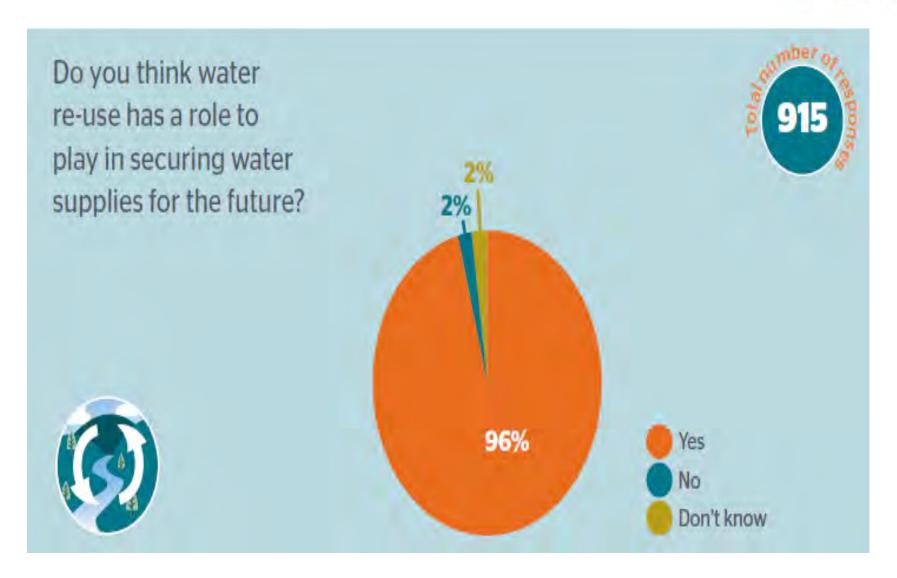
Do you support schemes to work in partnership with landowners, farmers and river trusts?*

96% Yes 1% No 3% Don't know

*To improve the quality and flow of water in rivers and help keep them available for water supplies for longer.

Consultation response – water re-use





What is water re-use?



- We discharge 320 MI/d to sea and 540 MI/d to estuaries
- Current dry year peak period demand is 750 Ml/d.
- Re-turning the treated water back into the catchment provides a resource to help secure supplies.
- We intend indirect water re-use:- the treated water is released to river, supporting abstraction downstream.
- Once abstracted it is treated to drinking water standard.
- Our customer panel sessions on water re-use found:
 - High level of customer acceptability;
 - Reliability of the supply -greater resilience during droughts;
 - Economic additional treatment costs are now much less than.

Aylesford indirect water re-use



- Wastewater from Aylesford WTW is recycled back into the River Medway. The discharge point would be moved to upstream of our abstraction point boosting river flows to allow more water to be abstracted at Burham WSW.
- Volume of additional water available:
 25 million litres of water per day
- Cost to build: £36 million
- Cost to operate: circa £900,000 per year
- Total cost over 25 years: £59 million
- Benefit date: 2022
- South East Water will also benefit from this scheme.



Ford indirect water re-use scheme



- Treated wastewater from Ford
 Wastewater Treatment Works
 would be used to support flows
 within the River Rother upstream
 of Hardham Water Supply Works.
- Volume of additional water available:
 - 15 million litres of water per day
- Cost to build: £35 million
- Cost to operate: circa £500,000 per year
- Total cost over 25 years: £48.7 million
- Benefit date: 2026



Water re-use next steps



- Already completed feasibility of the two selected schemes.
- The next stage of investigations which will include:
 - Customer acceptability surveys and stakeholder engagement
 - More detailed design; environmental permit conditions; planning permissions.
 - Environmental Impact Assessments.
- Work closely with the EA, NE and DWI
- Aylesford investigation due by 2020.
- Ford water re-use study by 2024.
- Potential of further Re-use options for other water users.







Shared Responsibility, Shared Benefits: Reducing Leakage



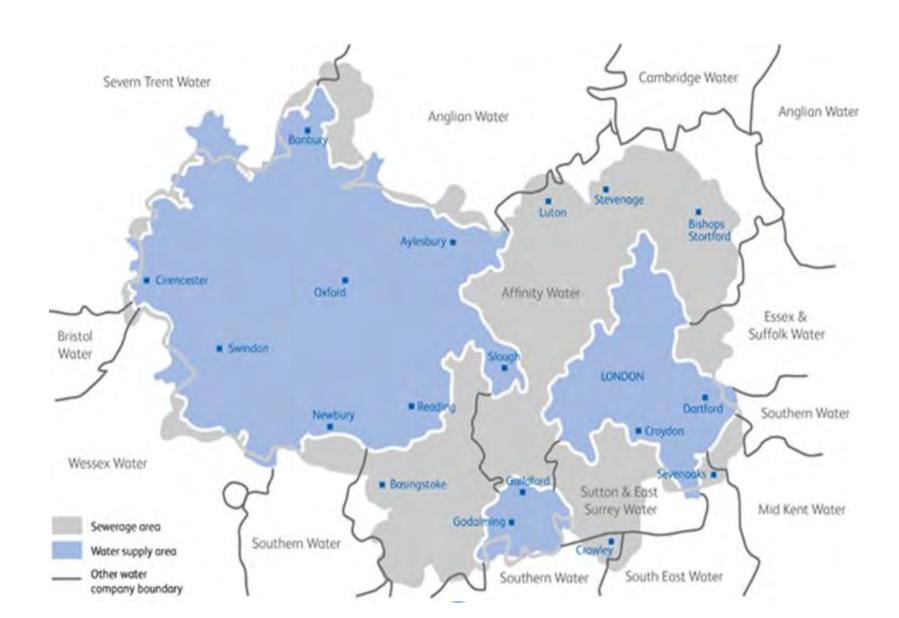
Shared responsibility, shared benefits

Reducing leakage

22 April 2016

Simon Hughes
Water Resource Stakeholder Lead

Thames Water



The three types of leakage:

1. Visible leaks

15,000 repairs per year - but only account for **2**% of leakage

2. Hidden leaks ('active leakage')

27,000 detected and repaired per year – more than **60%** leakage

3. Leaks on customers' pipes

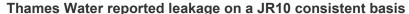
10,300 detected / reported and repaired per year – **25%** to **30%**

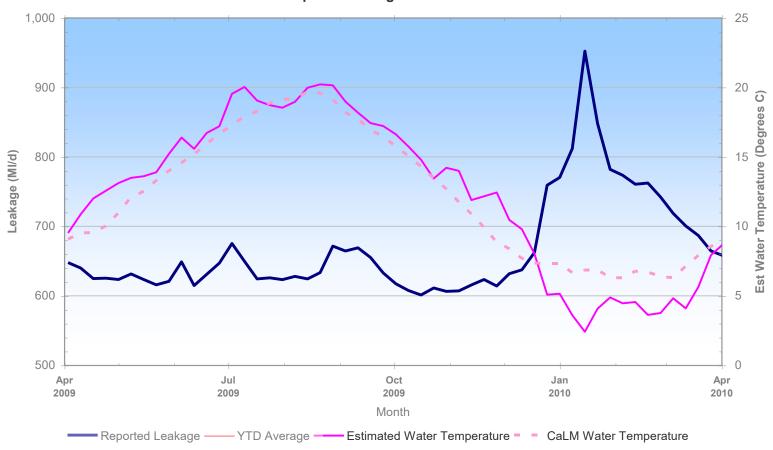




The impact of cold weather

Leakage can increase by more than 50% (350 MI/d)



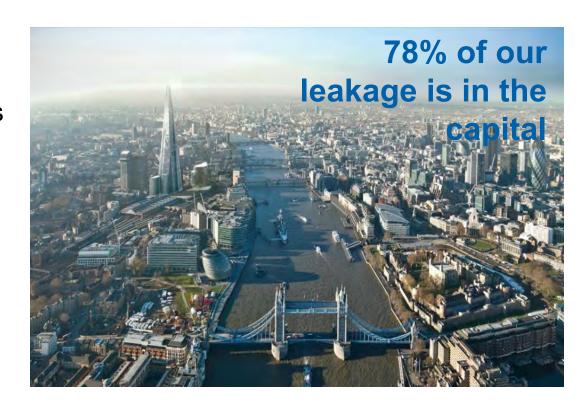




The London factor

Our performance is dominated by the capital...

- 3.69 million properties
 77% in London
- 31,100 km of water mains
 58% in London
- 50,000 repairs per year
 72% in London
- Leakage 644MI/d to 605MI/d by 2020 78% in London



 Distribution input 2,567 MI/d 78% in London



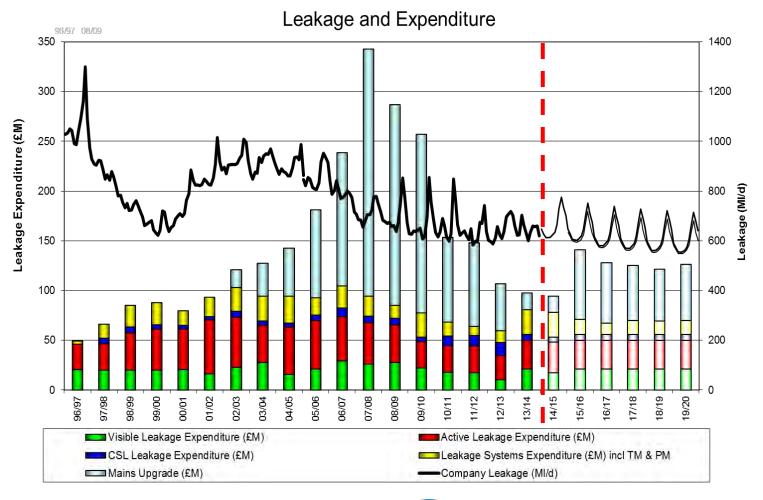
Past and present

Investment, activity and performance



1. b) Approach to leakage

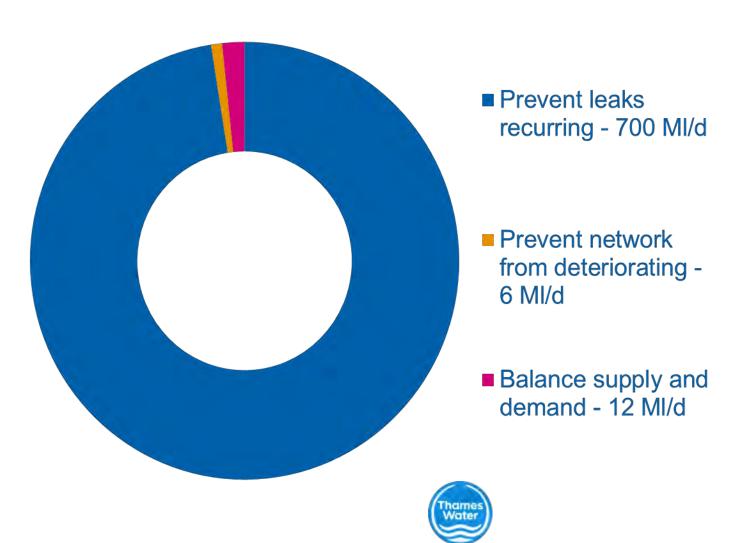
Leakage down by over 300MI/d (32%) in 10 years





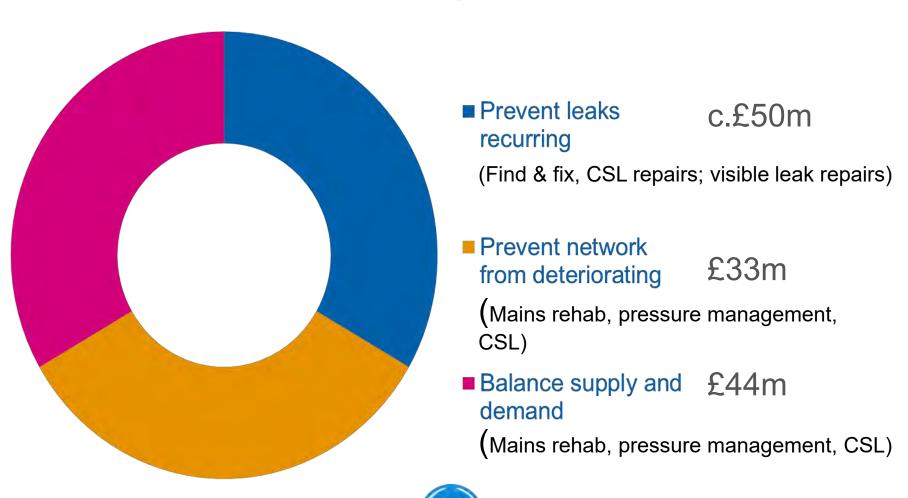
Running hard to stand still

Annual components of our work

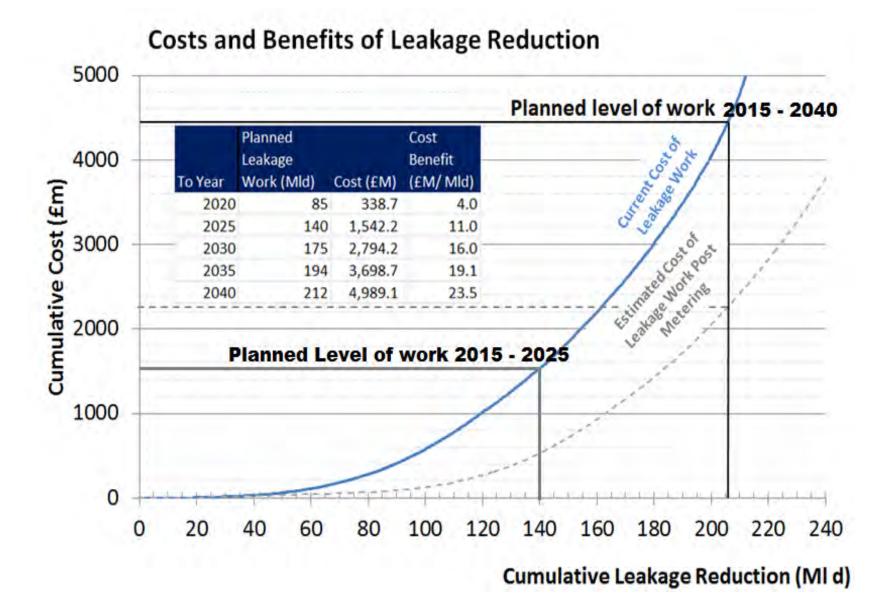


But at what cost?

Annual cost of the components



Why not reduce leakage further than planned? Further reductions wouldn't represent value for money



What does the future hold?

Growing population and diminishing resources

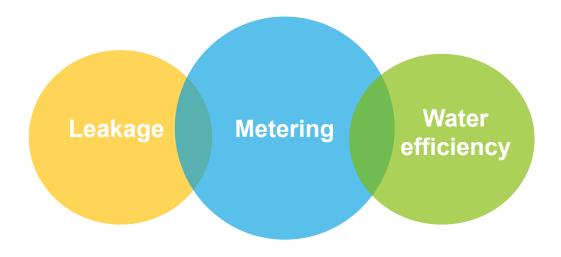


Balancing supply and demand

"Water demand is outstripping supply and Londoners face drinking water shortfalls...the [new] Mayor will need to debate options for a potential new major water source."



Reducing demand







Summary



Thinking ahead...

- Pressure on water resources are set to increase, leakage and demand management and a core part of our response
- Leakage targets must reflect customers' priorities, which sometimes conflict
- Despite mains replacement we still have old assets.
- Find and fix has its limits
- The biggest step change in reducing leaks in the short term will come from metering.



Thank you







Leakage

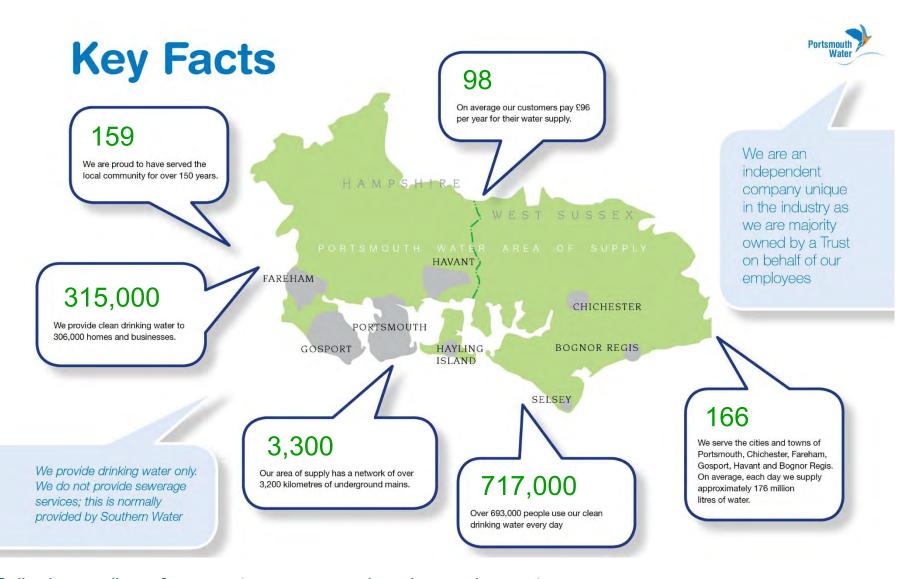
Shared Responsibility – Shared Benefits

Jamie Jones – Distribution Project Manager

Delivering excellence for our customers, our people and our environment

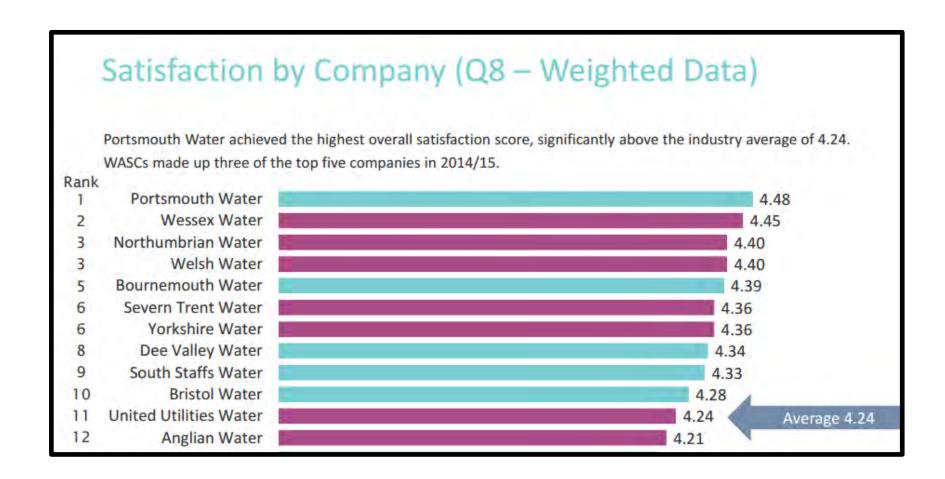
Portsmouth Water





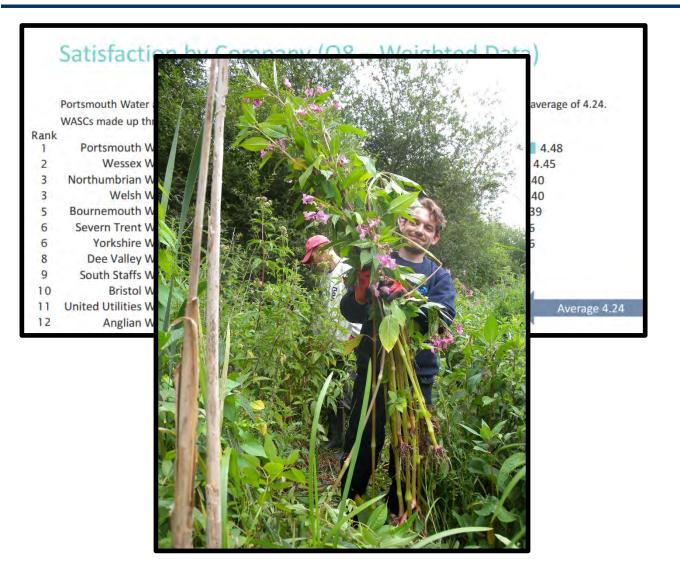
Customer Ethos – Part 1





Customer Ethos – Part 2





Customer Ethos – Part 3





Customer Ethos – Complete









Why 30 MI/d

Why 30 MI/d - SELL







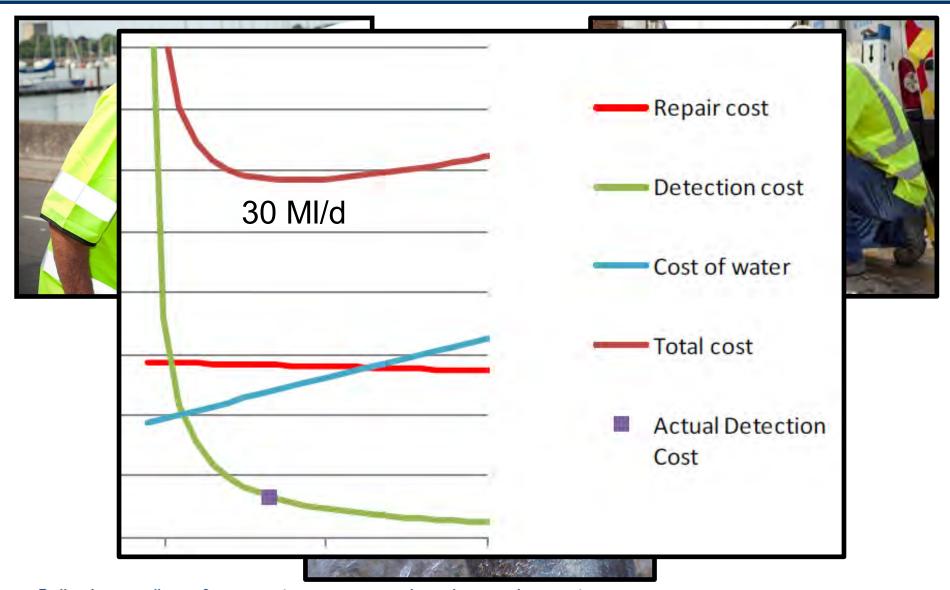




Delivering excellence for our customers, our people and our environment

Why 30 MI/d - Complete

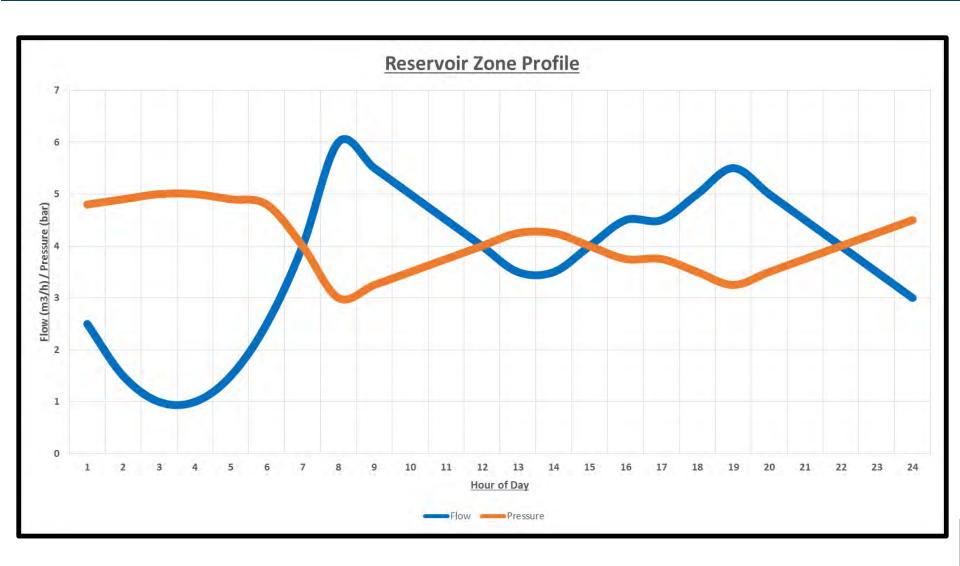




Delivering excellence for our customers, our people and our environment

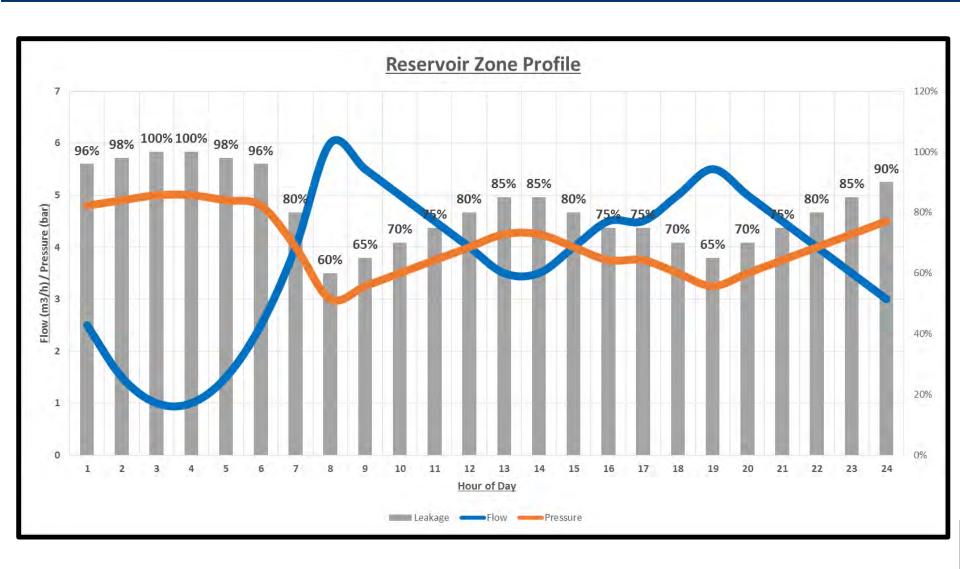
AMP5 Issues – Hour to Day Factor – 1





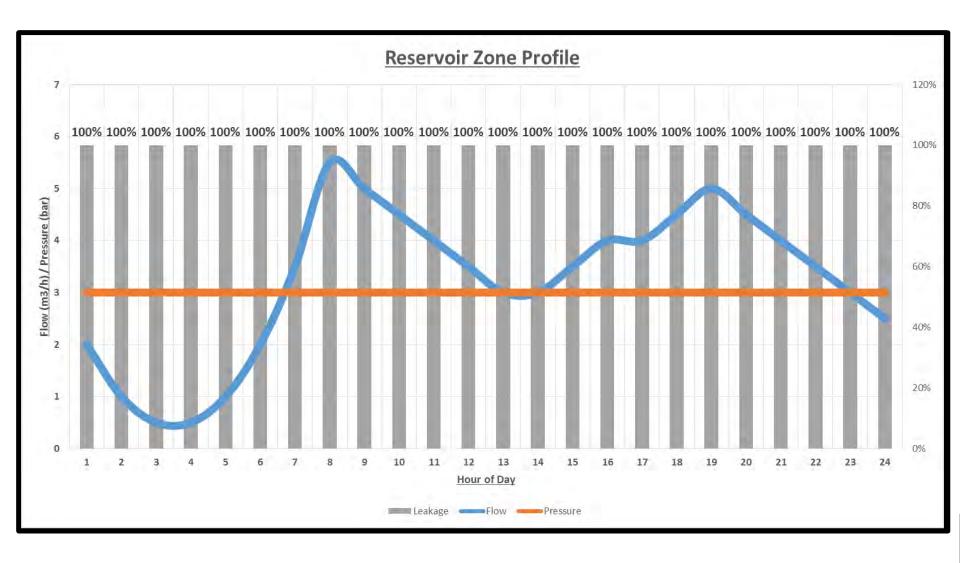
AMP5 Issues – Hour to Day Factor – 2





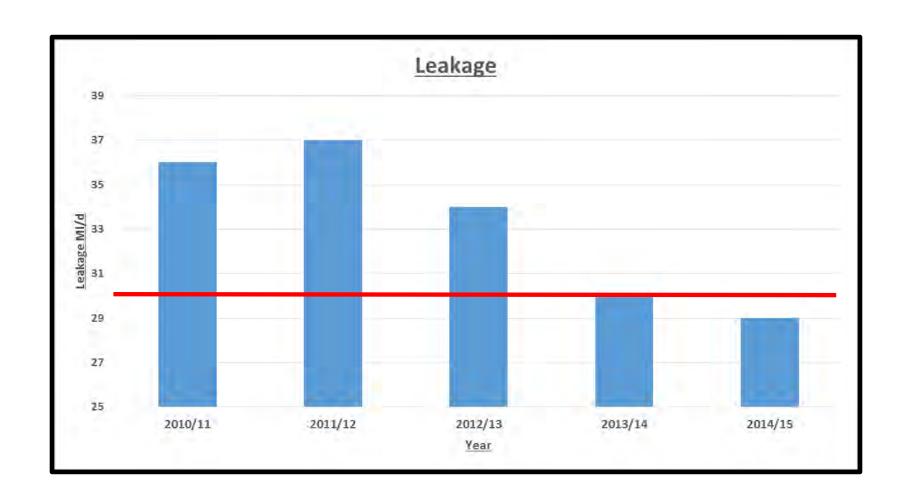
AMP5 Issues – Hour to Day Factor -Complete Portsmouth Water





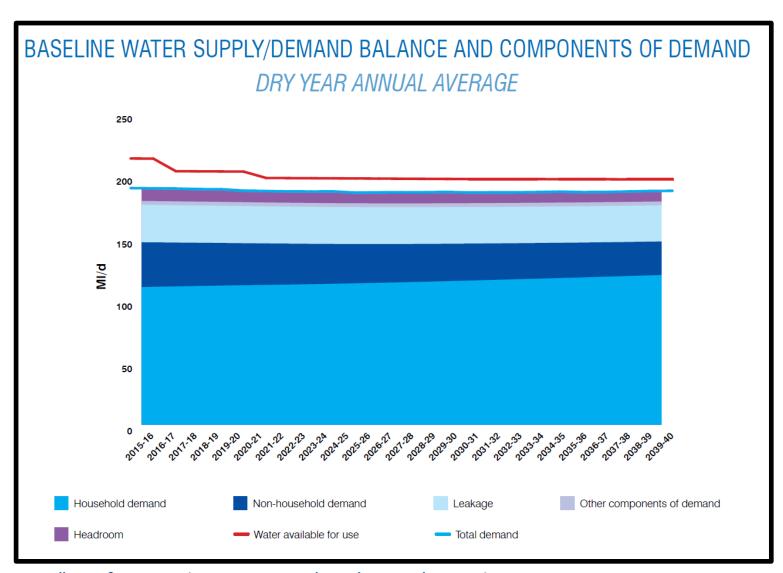
Current Leakage Position





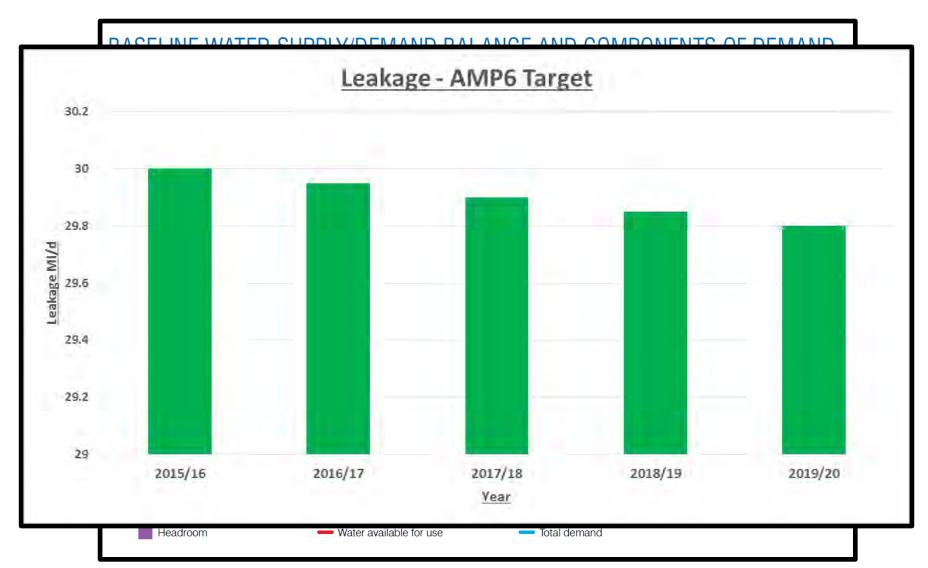
AMP6 Reduction





AMP6 Reduction









Investing in the Future

Staff





Assets

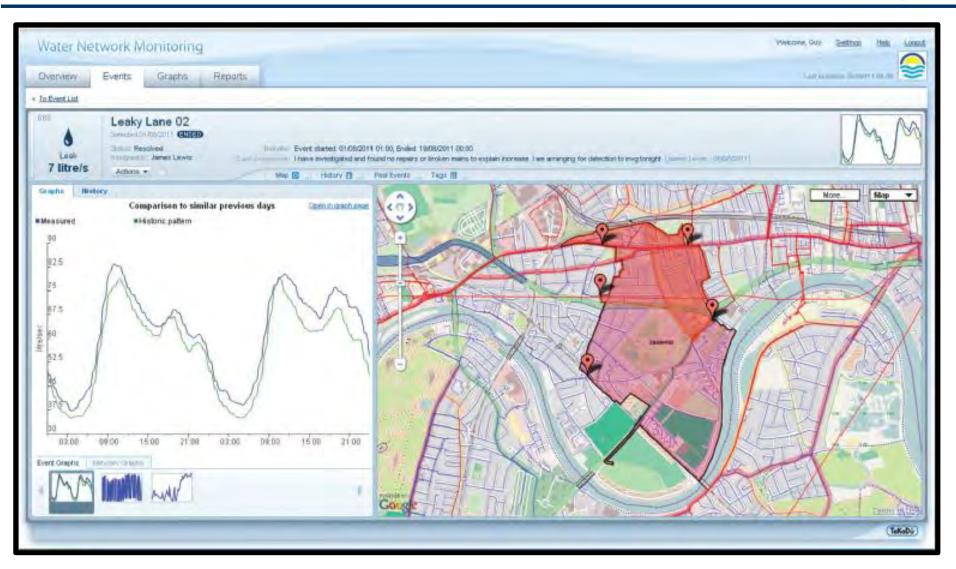




Delivering excellence for our customers, our people and our environment

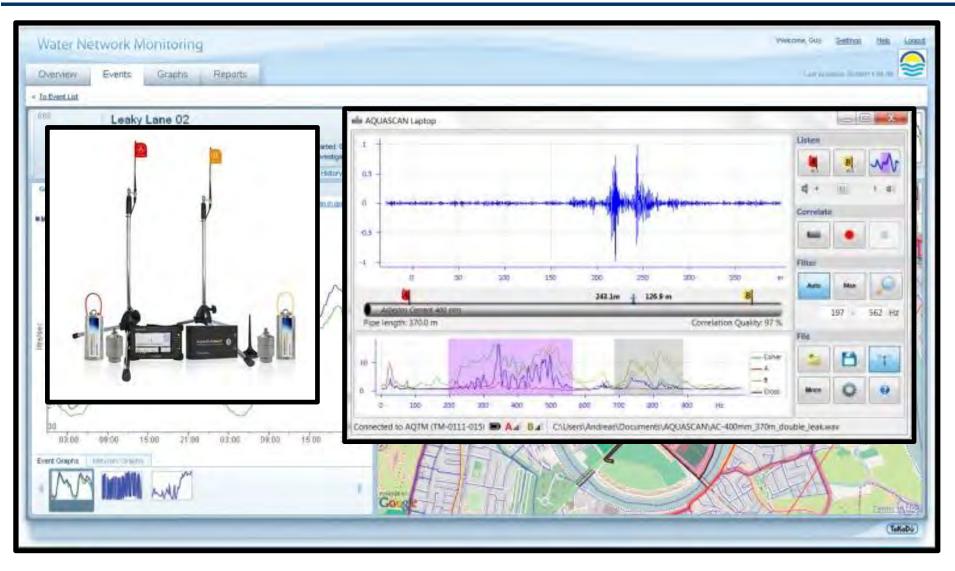
Technology





Technology





Collaboration









Shared Responsibility

Pressure Management





Delivering excellence for our customers, our people and our environment

Leaks in the Home





Delivering excellence for our customers, our people and our environment

Reporting Leaks





Aggregation of Marginal Gains









Any Questions?



Resilience to Climate Change

Sutton and East Surrey Water plc Working to deliver





Securing Water for Future Generations in London and the South East Resilience to Climate Change

Lester Sonden – Wholesale Services Director Alison Murphy – Water Resources Planning Manager

22 April 2016

Resilience to Climate Change The Challenge



- Customers' number one priority for the water industry is safe, reliable supplies
 of water at a price they can afford.
- Water resources will become more stressed in future as a result of climate change, increasing population, changes in lifestyle and environmental pressure.
- Climate change ???
 - Hotter, drier, summers
 - Wetter, warmer, winters
 - More frequent and more intense shock events
 - Longer droughts
- Increasing population and changes in lifestyle
 - Increased demand
- Environmental pressure
 - Reduced water available

Resilience to Climate Change

The Challenge - Drought













Flooding at Leatherhead treated water pumping station – 24 December 2013

Resilience to Climate Change The Challenge



- Recent droughts:
 - 1995
 - 2005/06
 - 2011/12
- Recent floods:
 - 2007
 - 2013/14
- More challenges = need for more resilience

Resilience to Climate Change The Challenge



- Recent droughts:
 - 1995
 - 2005/06
 - 2011/12
- Recent floods:
 - 2007
 - 2013/14
- More challenges = need for more resilience

 Water Act 2014 = new primary duty for Ofwat to "further the resilience objective

Resilience to Climate Change Resilience



Ofwat Resilience Task and Finish Working Group

Resilience is the ability to cope with, and recover from, disruption, and anticipate trends and variability in order to maintain services for people and protect the natural environment now and in the future.



Resilience to Climate Change The Challenge



- Climate change ???
 - Hotter, drier, summers
 - Wetter, warmer, winters
 - More frequent and more intense shock events
 - Longer droughts
- Increasing population and changes in lifestyle
 - Increased demand
- Environmental pressure
 - Reduced water available

Resilience to Climate Change The Challenge



- Terrorism
- Outages (plant failure)
- Water quality
- Financial shock

Resilience to Climate Change The Good News



- 1. THE RIGHT **RESILIENT** SOLUTIONS WILL DEAL WITH MANY OF THE CHALLENGES
- 2. WATER COMPANIES AND THEIR REGULATORS HAVE BEEN DELIVERING RESILIENT SOLUTIONS FOR MANY YEARS

Resilience to Climate Change Drought



- Water Resources Management Plans
- Long term plans minimum 25 years
- Consider and rank all options for meeting future demands
- Take into account:
 - Increasing demand
 - Climate change
 - Needs of the environment
 - Uncertainty
 - A range of scenarios
- Regional approaches
 - Water Resources South East
 - Water Resources East Anglia

Resilience to Climate Change Drought – solutions



Meeting the supply demand balance

- Develop more resource
- Reduce demand (demand management)
 - Leakage
 - Metering
 - Water efficiency
 - Innovative tariffs
- Increase interconnectivity (better use of available resource)

Increased resilience

- Increase headroom
- Increase interconnectivity (water transfer)

Resilience to Climate Change Flood – solutions



Kenley WTW – flooding 2014



Resilience to Climate Change Statutory Area of Supply

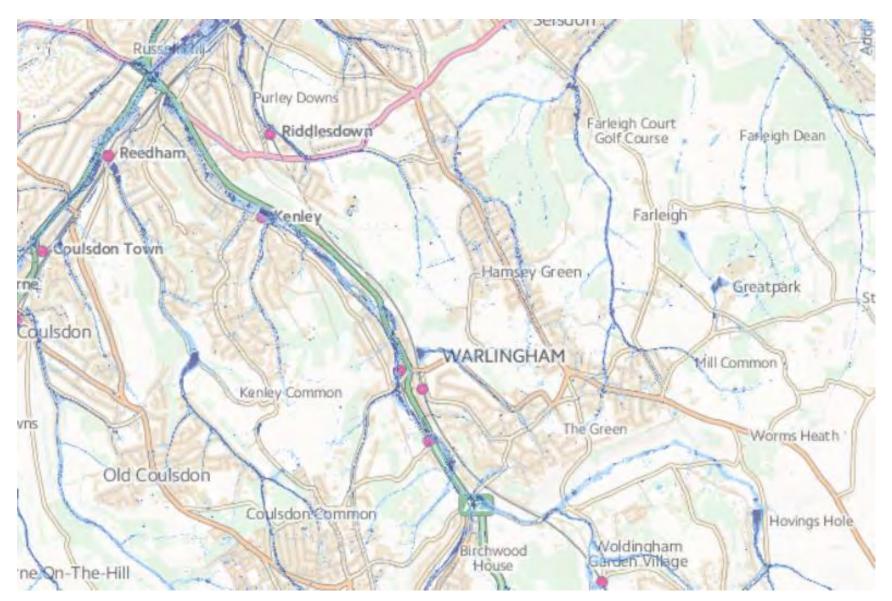




Resilience to Climate Change

Environmental impact – Environmental Investigations

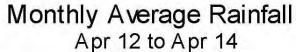


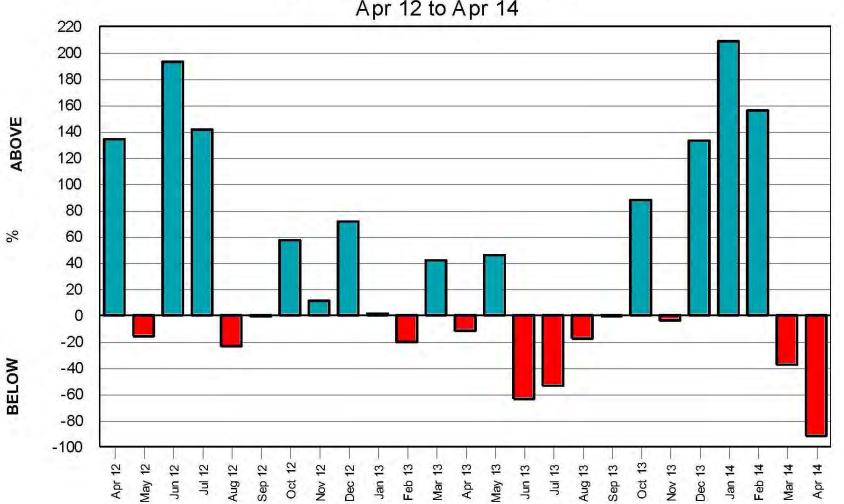


ODI delivery 2015-2020





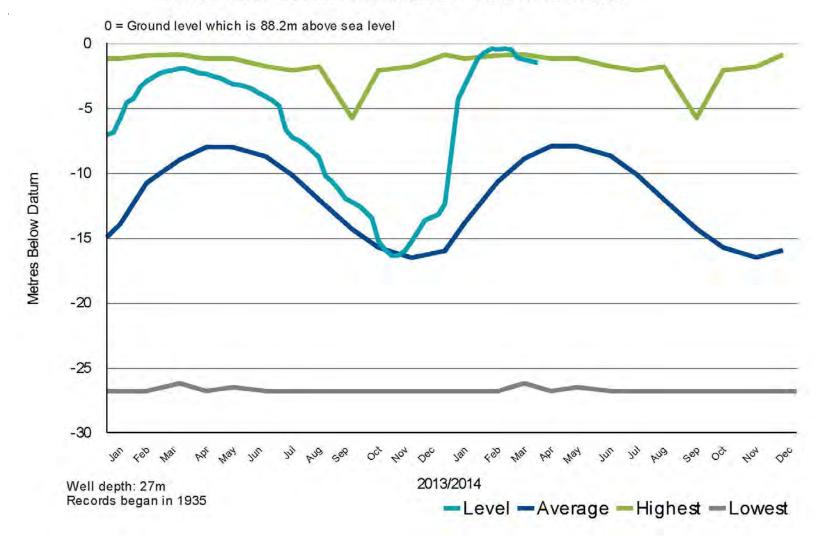




Resilience to Climate Change Environmental impact – Environmental Investigations



Rose and Crown Reference Borehole Level



Resilience to Climate Change

Kenley WTW Flooding Event Feb 2014



Bourne culvert surcharging on the treatment works site



Flood waters by main building





Multi Agencies were involved... London Fire Brigade, Metropolitan Police, the Army, London Borough of Croydon



The Flooding attracted both media and political attention



Double flood defences... demountable barriers supplied by National Grid

Sutton and East Surrey Water

Resilience to Climate Change Flood resilience measures at Kenley WTW





Resilience to Climate Change Flood resilience measures at Kenley WTW



Concrete bund wall, flood doors, vent protection, and underground drainage pumping stations installed in 2014



Resilience to Climate Change Flood resilience measures at Kenley WTW



Manifold installed in 2014 to allow Purley Raw Water main to be used as drainage main



Resilience to Climate Change Flood resilience measures at Kenley WTW

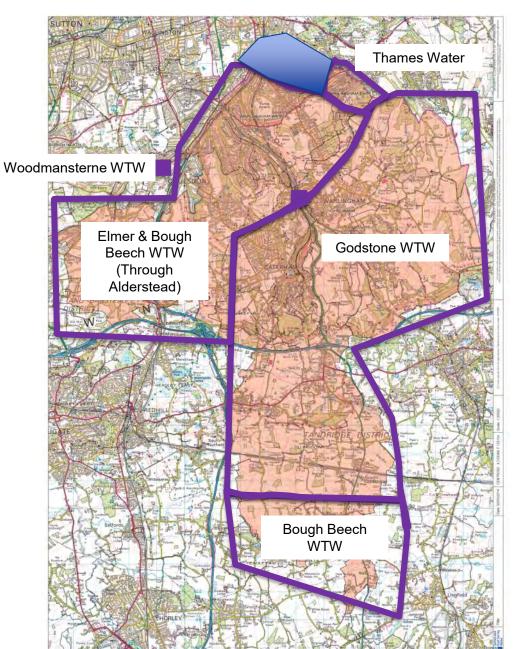


Upstream flood relief storage bund and pond (with control structure) built in 2015 by Surrey County Council



Resilience Kenley

If Kenley WTW was lost then rezoning of the water mains network would take place.





Of the 46,500 supplied by Kenley at the time of the event:

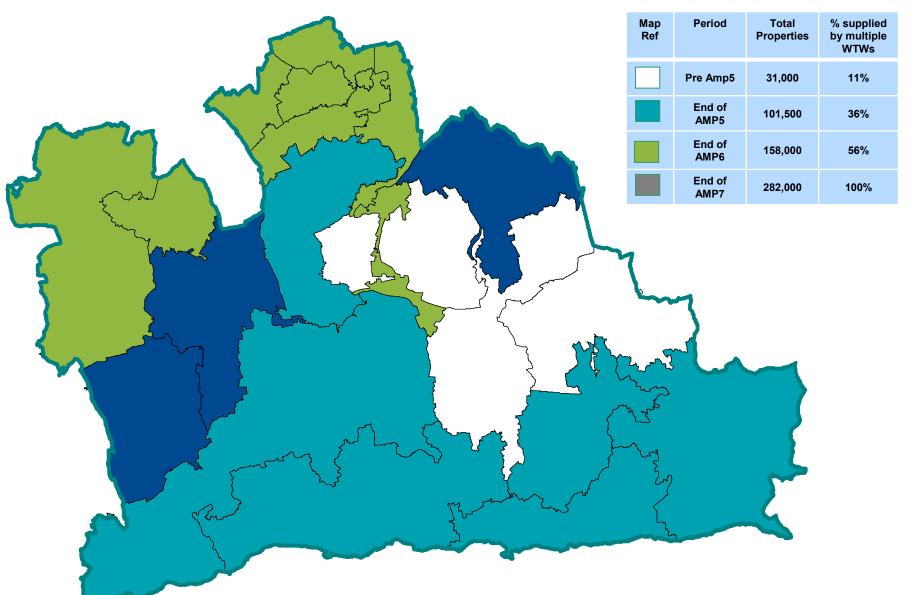
- Godstone WTW could supply c.25,500
- Thames Water could supply c. 2,000
- Bough Beech and Elmer WTW could supply 14,000
- c. 5000 may be at risk of low pressure or no water supply.



Resilience to Climate Change

Resilience – flooding – improved connectivity





Resilience to Climate Change Flood – solutions - interconnectivity



% of properties connected to more than one treatment works

Scheme Description	% of Company supplied by multiple WTWs
Pre AMP5	11%
AMP5 - Bough Beech phase 2 (increase treatment capacity from 45 to 55 Ml/d) - Two major trunk mains schemes	36%
AMP6 - Four major trunk mains schemes - Woodmansterne (increase treatment capacity from 35 to 50 Ml/d) - Woodmansterne pumping station upgrade	56%
AMP7 - Bough Beech phase 2 (increase treatment capacity from 55 to 70 Ml/d) - Two major trunk mains schemes	100%

Resilience to Climate Change

Resilience – flooding – summary



Protection against flooding due to high, intense, rainfall

- Bund wall around sites
- Improved internal drainage (pumped)

Protection against flooding due to prolonged rainfall (groundwater flooding)

- Gravity culvert converted to pressure pipe
- Control structure added
- Site drainage pumped
- Provision to pump flows further downstream using raw water mains
- Additional flood relief bunds and ponds

Increased resilience of ability to supply

 Improved interconnectivity to ensure 100% of properties can receive water from more than one treatment works







Securing High Quality Tap Water For Future Generations

Securing high quality tap water for future generations

Protecting water quality

Caroline Knight DWI Inspector

Apr 2016



Movement of water: why

- SE England is a water scarce area
 - climate change; drought management
 - population growth
- OFWAT's resilience duty
- Water trading, Abstraction reform, Upstream competition
- All drivers for movement of water:
 - raw water: transfers across catchments, new resource development
 - treated water in distribution networks : within and between company boundaries



Water Industry Act 1991; s68

Duties of water undertakers [licensed water suppliers] with respect to water quality

It shall be the duty of a water undertaker ... to ensure that:

- water supplied is <u>wholesome</u> at the time of supply; and
- so far as reasonably practicable, to ensure, in relation to each source or combination of sources from which water is supplied, that there is, in general, <u>no deterioration</u> in the quality of the water which is supplied from time to time from that source or combination of sources.



Water Supply (Water Quality) Regs 2000

Wholesomeness: (Reg 4)

 compliant with prescribed concentrations in WQ Regs and does not contain any other substance which is a danger to human health

New sources: (Reg 15)

- Analysis to demonstrate wholesomeness prior to supply
 - (for bulk supplies x-borders the supplying company responsibility)

Risk assessment: (Reg 27)

- For all supply systems to identify (and mitigate) WQ risks in whole supply chain catchment to distribution
 - (for bulk supplies x-borders the recipient company responsibility)

No deterioration

 Interpreted with reference to compliance with WQ Regs ... no deterioration if water remains wholesome and is acceptable to consumers



Options appraisal

Assessment of the management of WQ including:

- Whole life costs of: treatment, pumping, storage, networks, maintenance and operation
 - control measures necessary to mitigate the impact of the option on optimisation of plumbosolvency control;
 - fluoridation / other chemical stabilisation processes;
 - aesthetic impacts on consumers, and
 - control of disinfection by-products
- Transfers of water, or commissioning of new sources, that increase the risk of non-compliance, such as by nitrates, pesticides or discolouration, should not be permitted until steps to mitigate those risks are in place.



References

- Information Letter 1/2014 on Metaldehyde and other pesticides
 http://dwi.defra.gov.uk/stakeholders/information-letters/2014/01-2014.pdf
- DWI PR14 Guidance Water Resource Planning here:
 http://dwi.defra.gov.uk/stakeholders/price-review-process/PR14-guidance-wrmp.pdf
- Information Letter 1/2012 on Regulation 15 Compliance Arrangements here:
 - http://dwi.defra.gov.uk/stakeholders/information-letters/2012/06-2012.pdf
- DWI Response to Consultation on draft Water Resources Planning Guideline (Nov 2015)
 - http://www.dwi.gov.uk/about/working-with-others/consultancies-respon/Water-Resources-Planning-Guideline.pdf





Panel Discussion

Thank You







Our next meeting in public will be on 28 September 2016

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