



United Utilities Draft Water Resources Management Plan 2018 Consultation Events

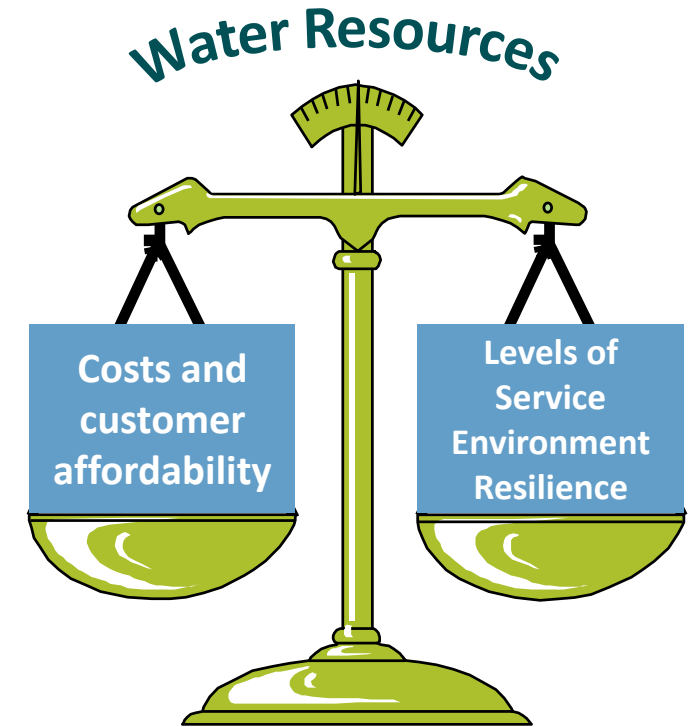
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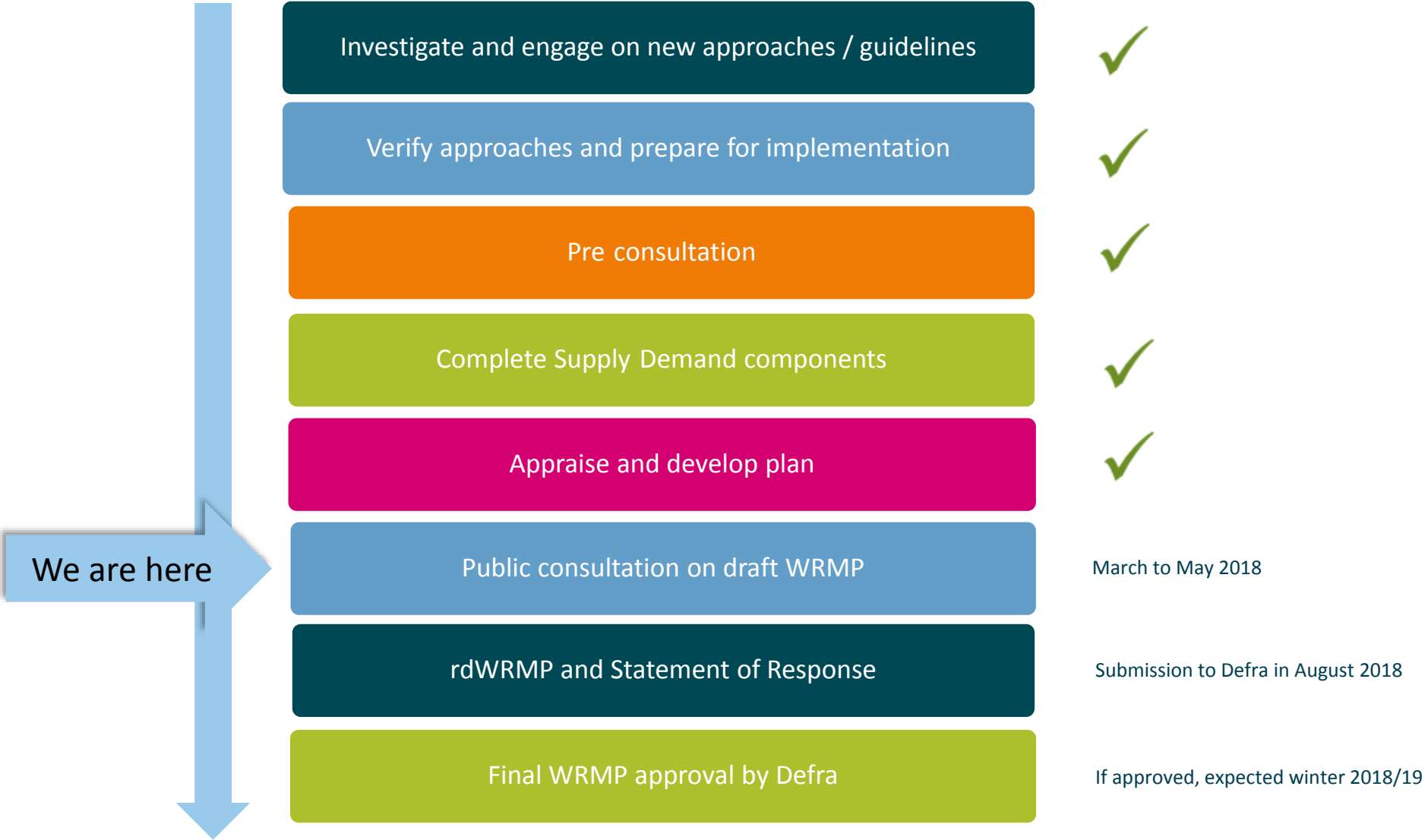
Introduction to the WRMP & building the draft WRMP19

What is a Water Resources Management Plan?

- We have a **statutory duty** to prepare and maintain a WRMP
- We follow **guidance** and **detailed methodologies**, which ensure a consistent framework across the industry
- It's a detailed and robust plan to make sure we have **sufficient water available** to keep supplying our customers for the next 25 years (and beyond) and needs to:
 - Balance the needs and preferences of all our customers and stakeholders
 - Consider future uncertainty and climate change
 - Provide evidence to enable informed decisions about our proposed strategy
 - Ensure that we carry out our statutory duty to protect the water environment
 - Protect the visual amenity of the areas we live, work and play in



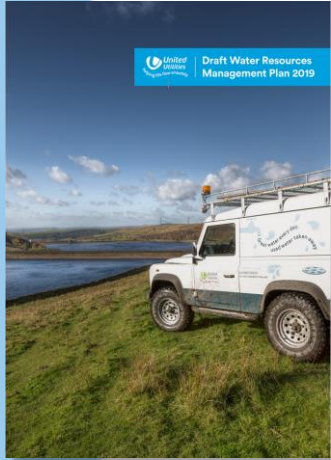
Stages of WRMP19 development



WRMP19 submission structure

- Executive Summary
- Introduction
- Customer & Stakeholder
- Supply system
- Baseline Position
- Options Identification
- Strategic Choices
- Preferred Plan
- Testing Our Plans
- Assurance
- Conclusions

Main document & Executive summary



Customer summary & Welsh exec summary



Technical reports

- Supply forecasting
- Water supply resilience
- Options appraisal
- Demand forecasting and management
- West Cumbria legacy
- Customer and stakeholder
- Target headroom
- Options identification
- Assurance and governance

Environmental reports

- Strategic Environmental Assessment
- Habitats Regulation Assessment
- Water Framework Directive Assessment

Supporting evidence / detail

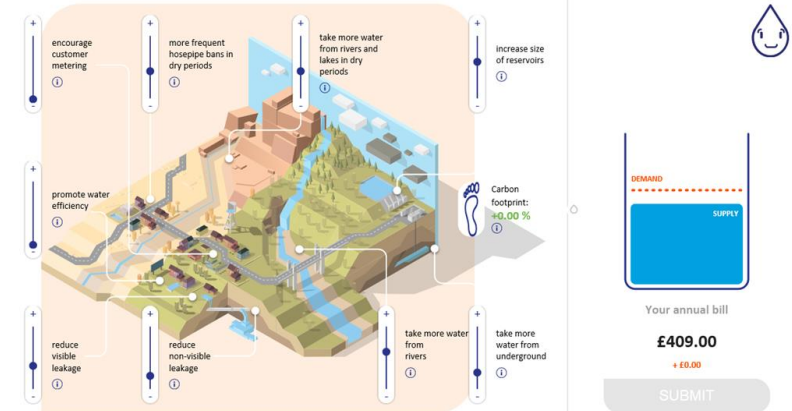
Influences and development of the draft WRMP19

National themes – guidance / national studies / policy work



Customers and stakeholders

Three principles:
Engaging...early; widely; using different or innovative techniques



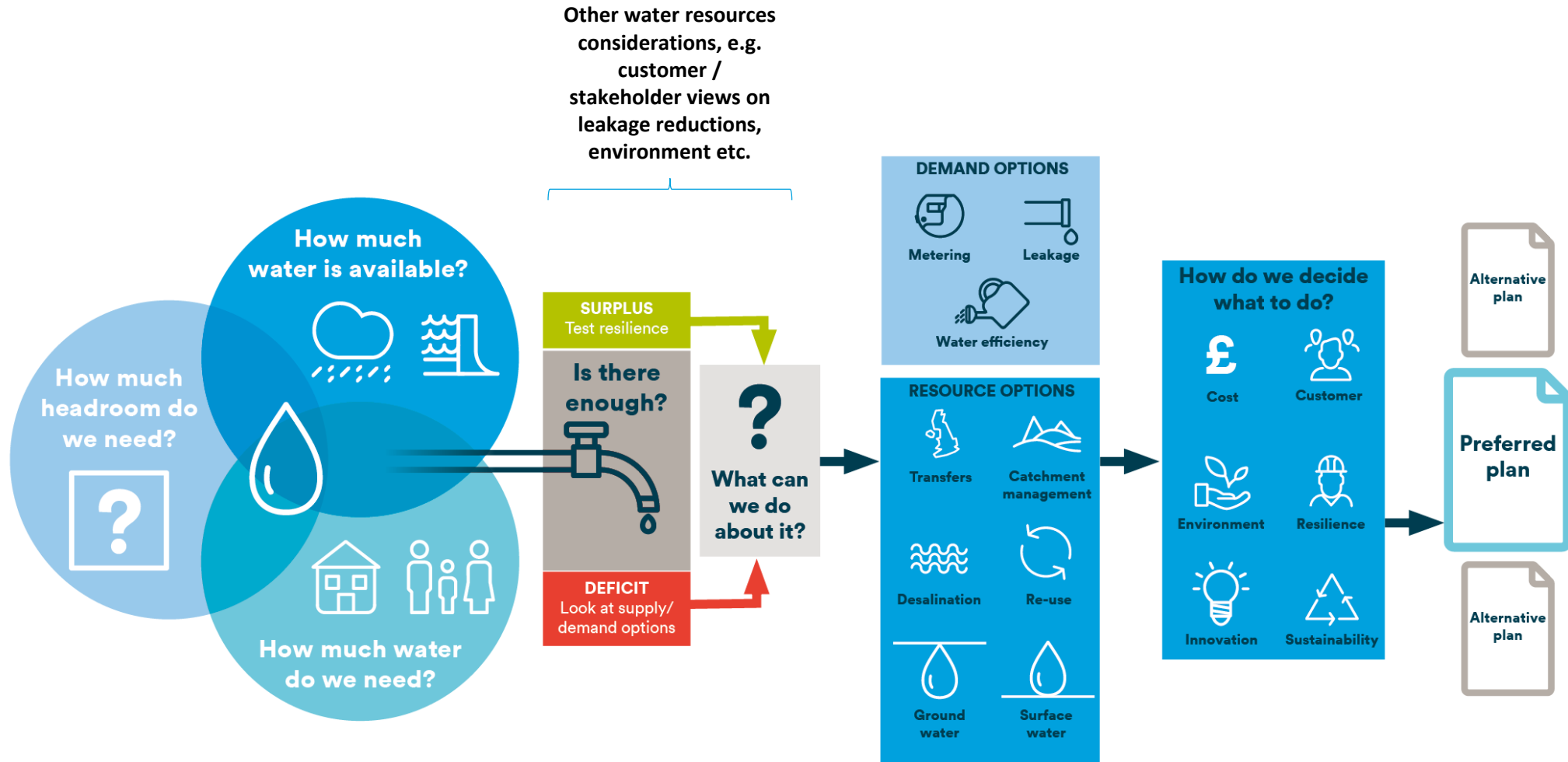
Customer Research – programme choice experiment

Protecting and enhancing the environment

- Sustainability reductions from WINEP delivery (e.g. WFD, Habitats Directive)
- Non-yield impacting WINEP schemes (e.g. Eels Regs, WFD etc.)
- SEA / HRA / WFD assessment and environmental/social costs of plan options – embedded in WRMP process

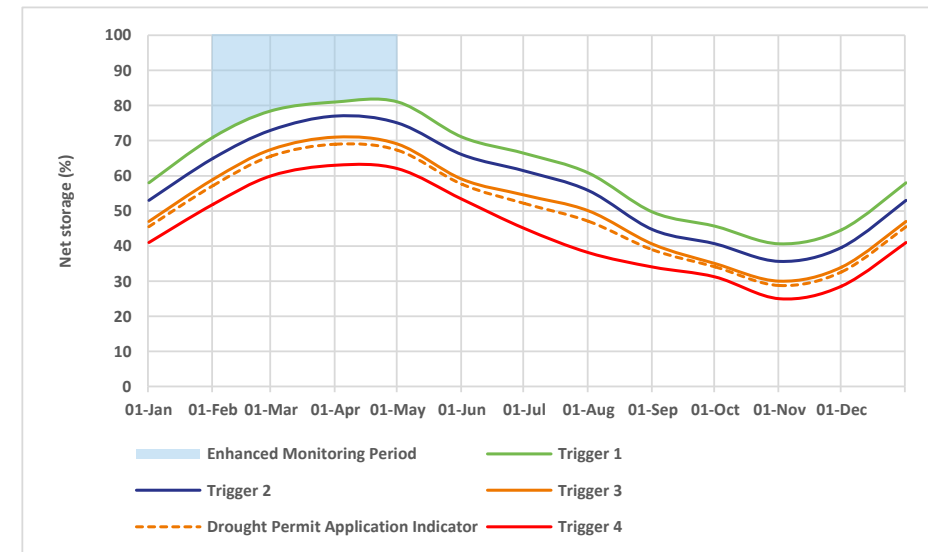
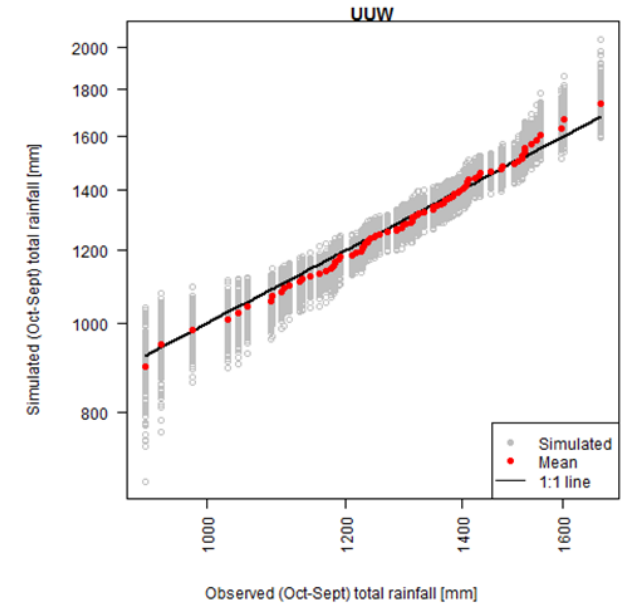


Building our plan

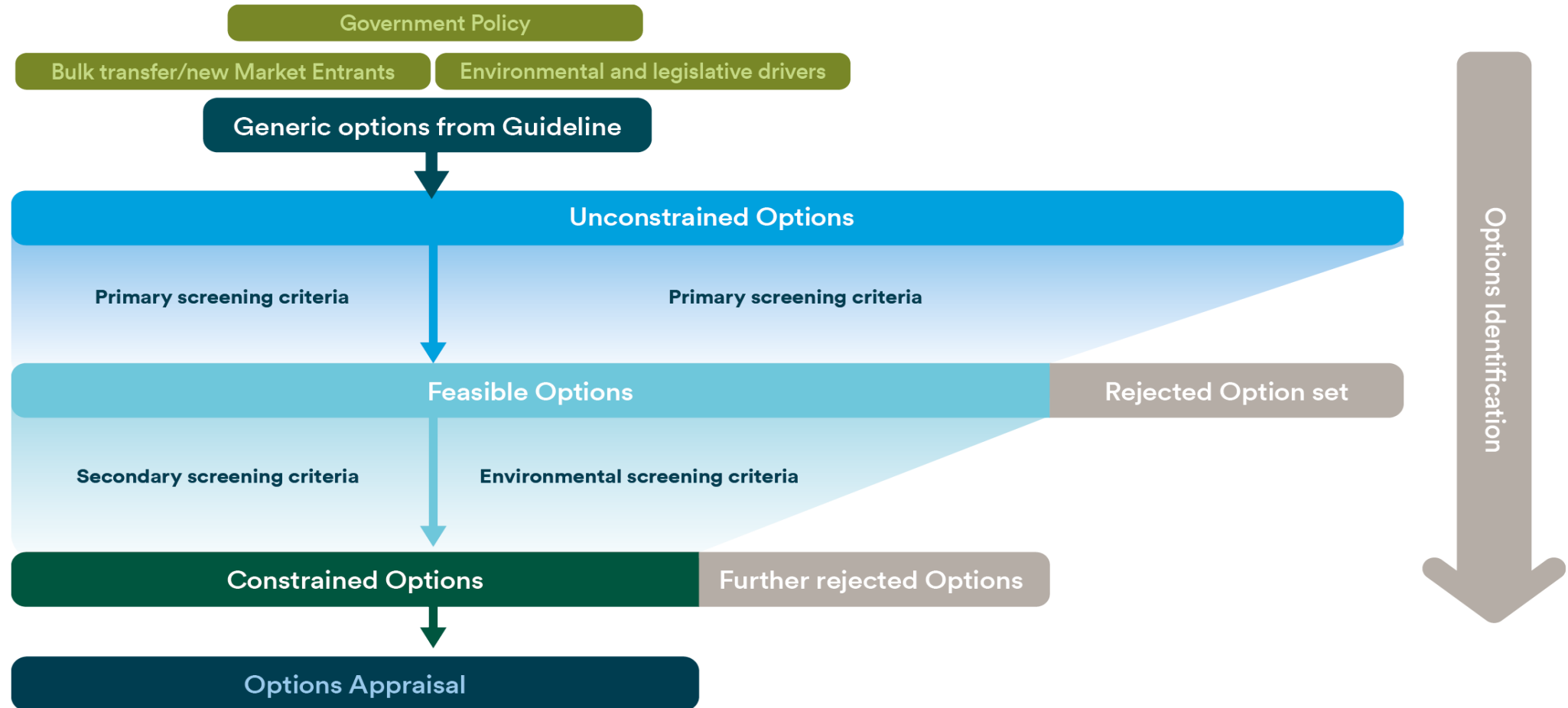


Innovations to assess drought risk / resilience

- We use computer models to estimate the frequency that we will cross the different Drought Triggers and our level of drought resilience
- Droughts are rare so we have used very long hydrological time series to predict risk with greater confidence
 - Historic record < 100y
 - Synthetic record > 17,000y
- We have developed innovative new tools and techniques to support plan development, particularly to support planning for more severe/extreme droughts
- Return periods are subject to uncertainty, and best referred to in % annual risk terms



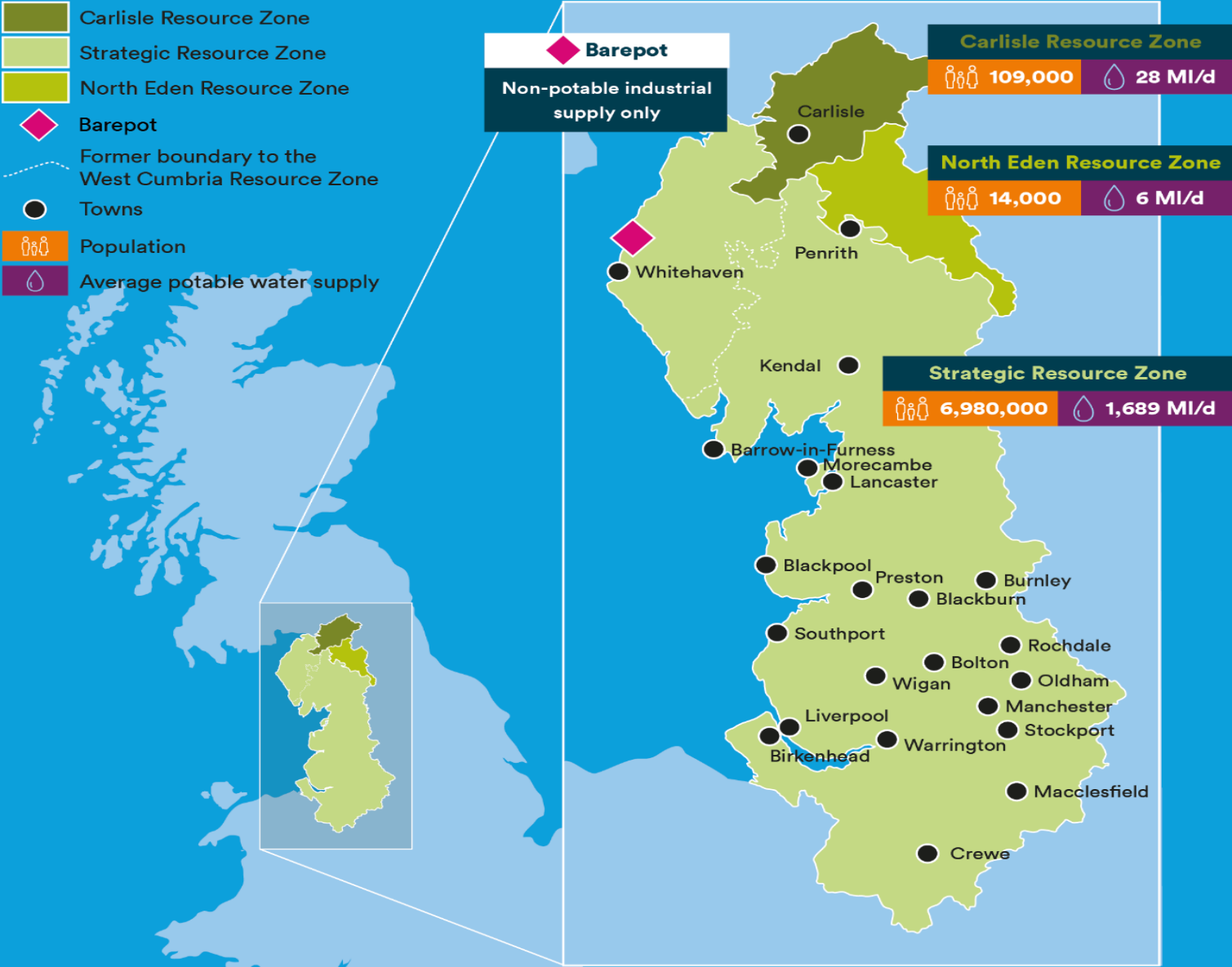
Options identification



Environmental and social costs are included in appraised options

Changes to Resource Zones

WRMP19 developed to reflect implementation of Thirlmere transfer by 2022/23 (as defined in WRMP15)



Strategic choices and alternative plans

Strategic choices informed by customer / stakeholder engagement and regulatory / government objectives

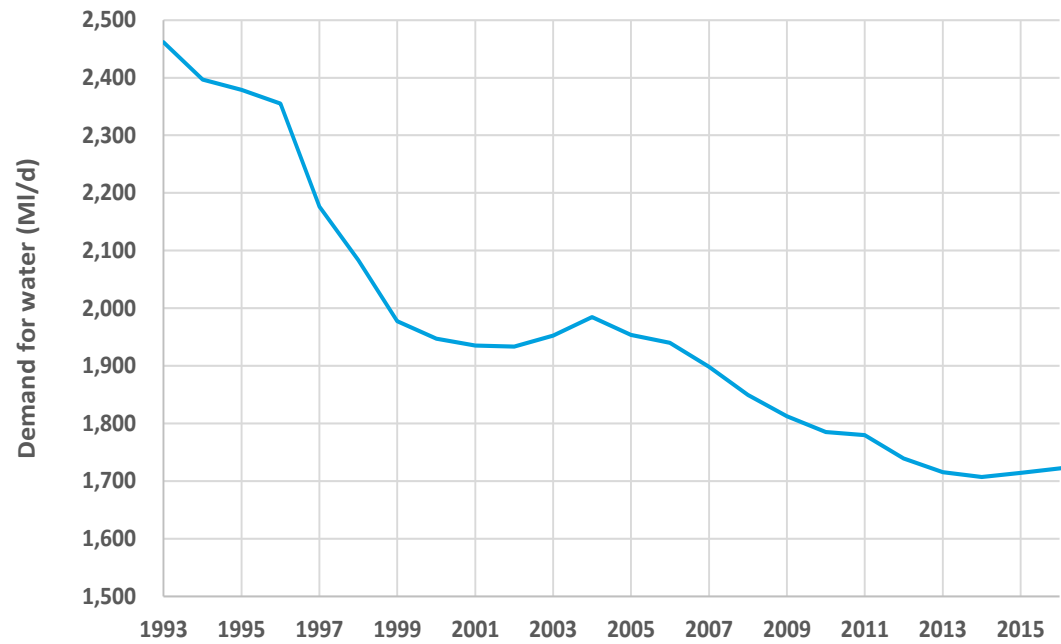
		Strategic choices			
		Enhanced leakage reduction	Improved level of service – frequency of drought permits and orders to augment supply	Water supply resilience to hazards other than drought	National water trading
Alternative plans	Plan 1 Continued demand management	x	x	x	x
	Plan 2 Plan 1, plus enhanced leakage reduction, with improved level of service for drought permits/orders to augment supply	✓	✓	x	x
	Plan 3 Plan 2, plus resilience to other hazards	✓	✓	✓	x
	Plan 4 Plan 3, plus national water trading	✓	✓	✓	✓

Alternative Plan 1 – Baseline position

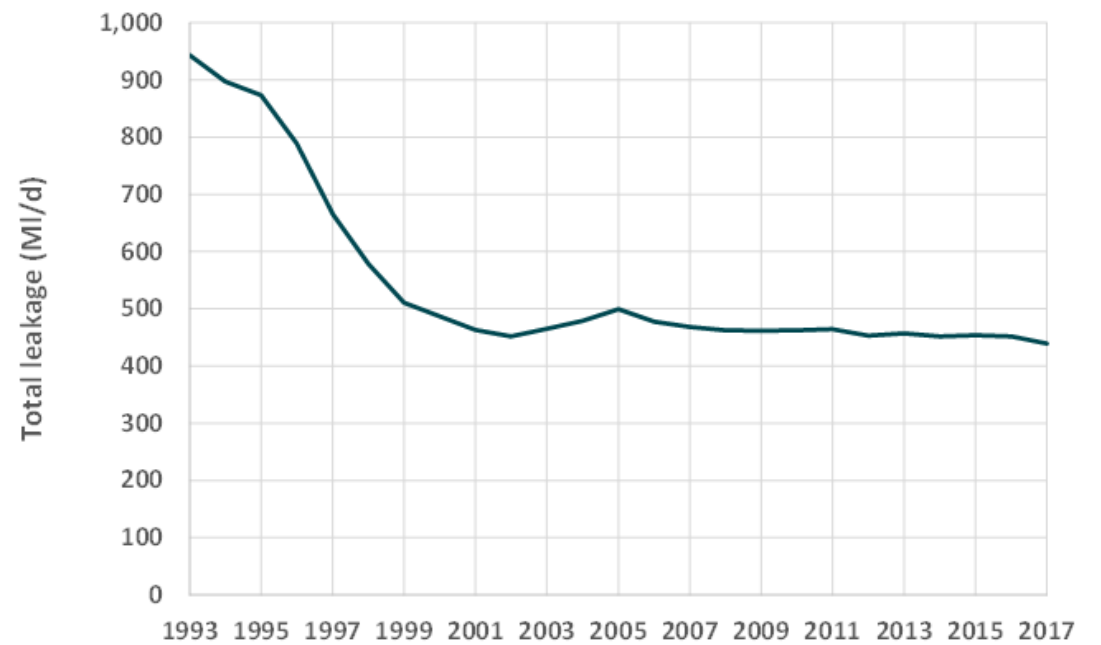
(Continued demand management)

Regional demand and leakage – historic trend

Demand



Leakage



Baseline supply-demand position

- Supply-demand forecasts reflect full update using latest data and methods.
- The baseline position also reflects continuation of significant 'demand management' activity
- Effective demand management is key to balancing supply and demand and includes:
 - Managing leakage
 - Promotion and implementation of customer metering
 - Promotion of water efficiency with customers



Leakage

- A significant level of resource is involved in managing and achieving existing target levels, and without this, leakage would rise significantly. This includes investment in infrastructure as well as in personnel who detect and repair leaks
- The previous 2015 WRMP maintained our leakage target at 463 MI/d through the planning horizon (2015-2040)
- The baseline adopts the lowest of the following:
 1. Sustainable Economic Level of Leakage (SELL)
 2. 3-year average leakage performance FY15-FY17
- **Baseline** regional leakage forecast is 448 MI/d, 3% lower than the WRMP15 level (3-year average outperformance), before any further plan choices / options applied...

Metering

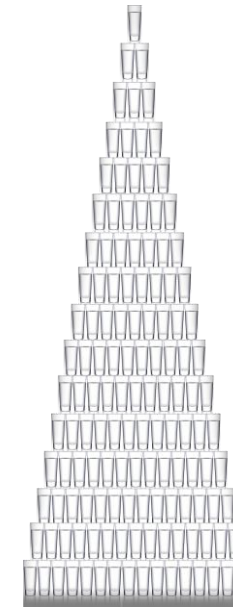
- Customers with a meter typically use less water than those without one
- Currently around 40% of household customers are on a water meter
- Compulsory metering of new premises was introduced in 1990, and customers have a right to opt for a meter to be fitted for free
- We forecast between 2020 and 2025 to install 180,000 water meters (modelling by Artesia Consulting)
- By 2045 we forecast that 76% of households will have a water meter
- Meters are an essential part of our strategy to manage and reduce demand for water in the longer term
- Currently piloting “Price Promise” where customers can switch to a meter without the risk of their bills increasing; potential to remove initial barriers or disincentives to opt
- All new meters installed are AMR (automatic meter reading) enabled



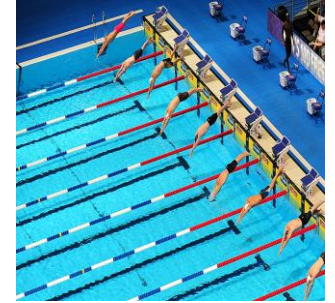
Water efficiency

- At WRMP15 we committed to achieve 1 litre per property per day efficiency savings, and propose to maintain this target for this draft plan (equivalent to ~3.5 Ml/d reduction / year)
- Currently delivered by a wide ranging water efficiency campaign including customer education, supplying water efficiency gadgets, free water efficiency visits to customers homes
- Water efficiency initiatives and research, examples:
 - Customer engagement highlighting the need to communicate in a personal way, and target different segments of the population in different ways
 - Development of United Utilities online account management tool to change behaviour and encourage more efficient use of water (this is due for launch in June 18)
 - Use of targeted campaigns on social media to encourage customers to order free water efficiency devices via our website

1 litre / prop / day per annum



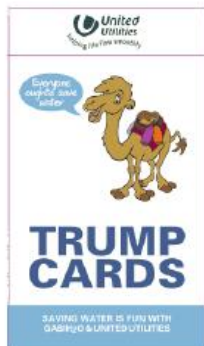
1500 glasses of water a year per household



438 Olympic sized swimming pools per year



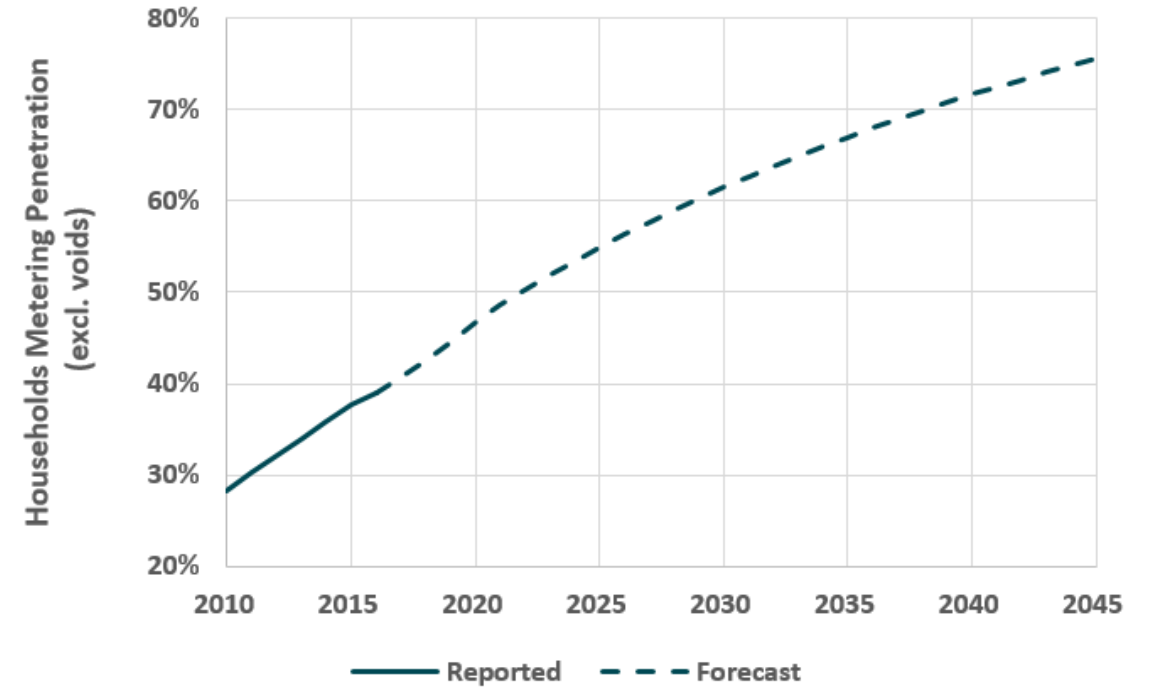
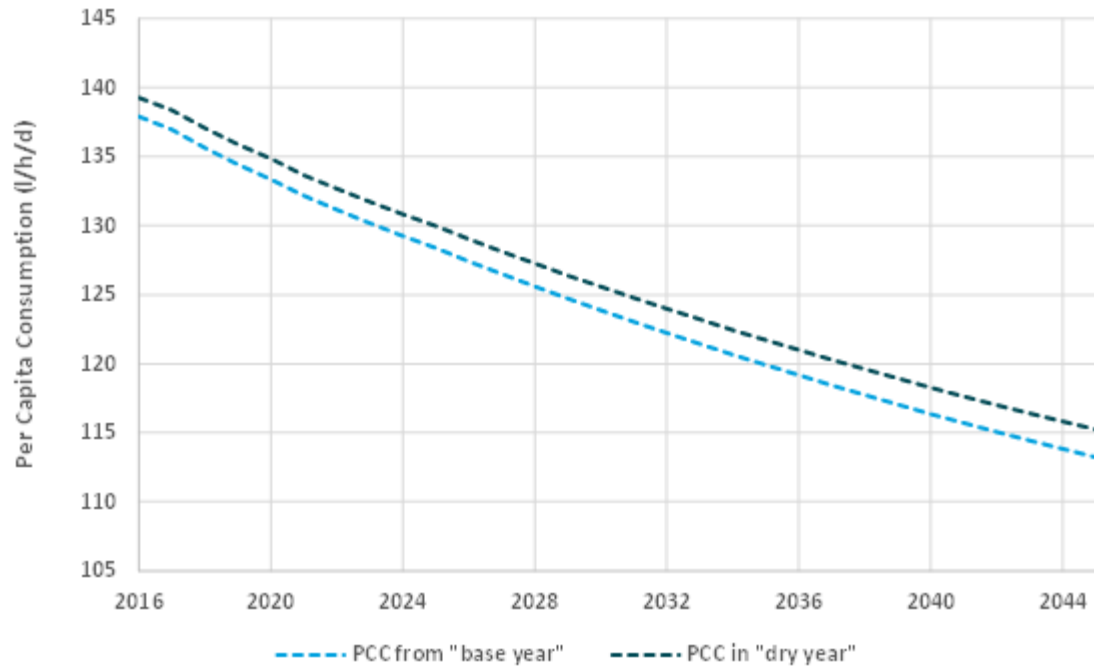
Volume of Upper Rivington reservoir!



We are currently assessing our targets against the goals in the Government's 25 Year Environment Plan

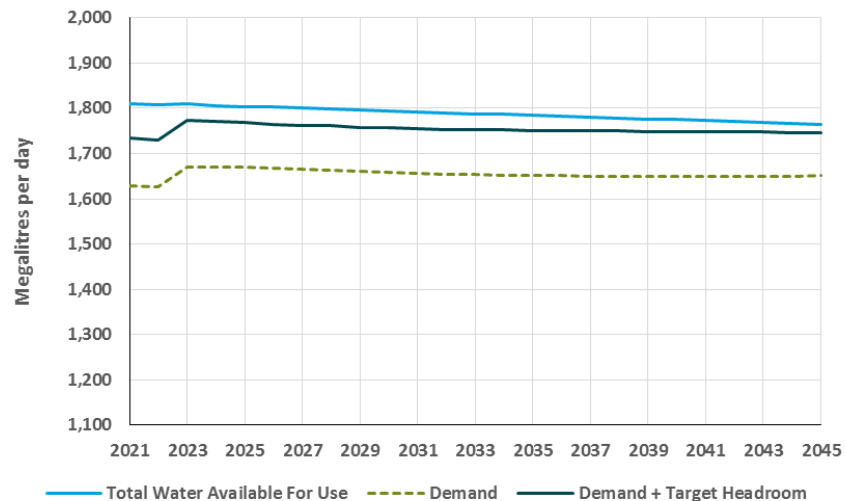
PCC and metering forecasts

Water efficiency and metering

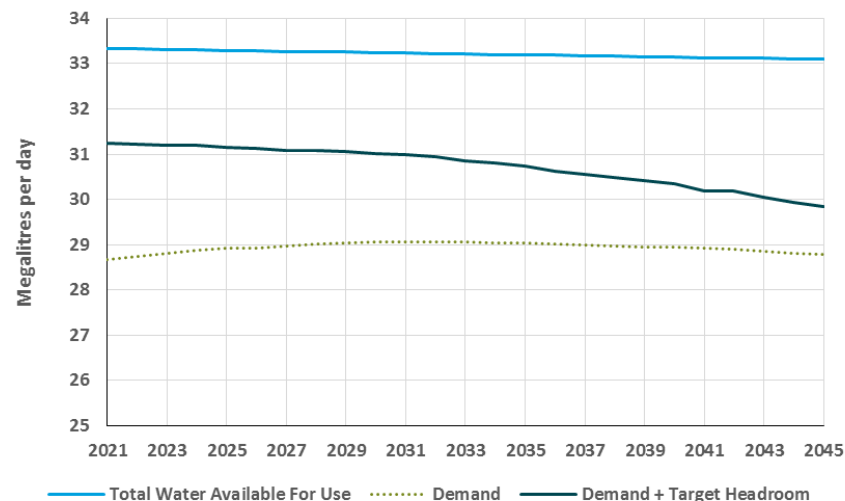


Our baseline supply-demand balance for draft WRMP19

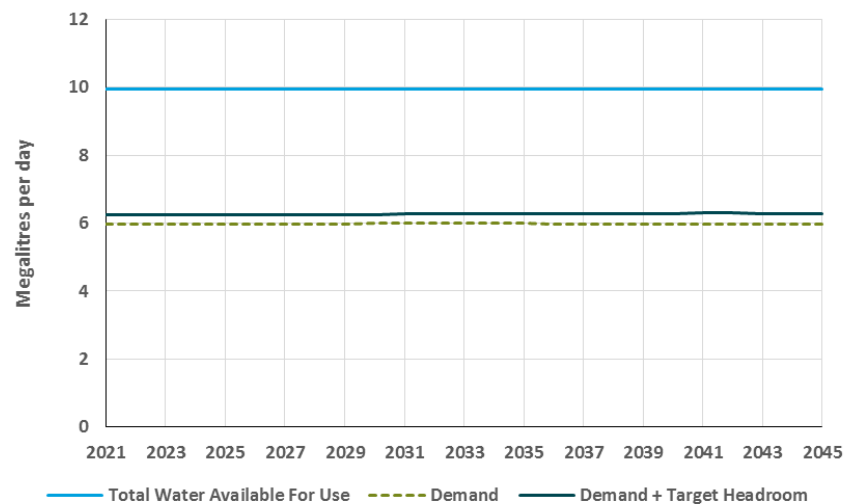
- Subject to change for revised draft WRMP19
- Position BEFORE further plan choices applied...



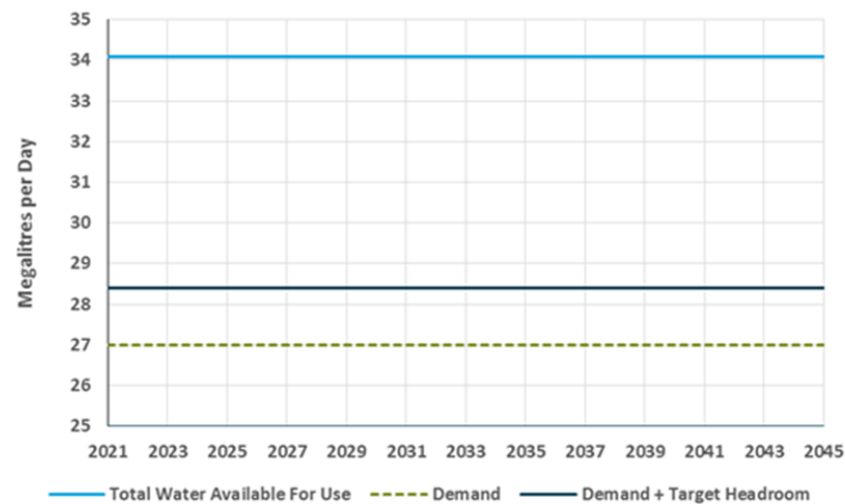
Strategic Resource Zone



Carlisle



North Eden



Barepot

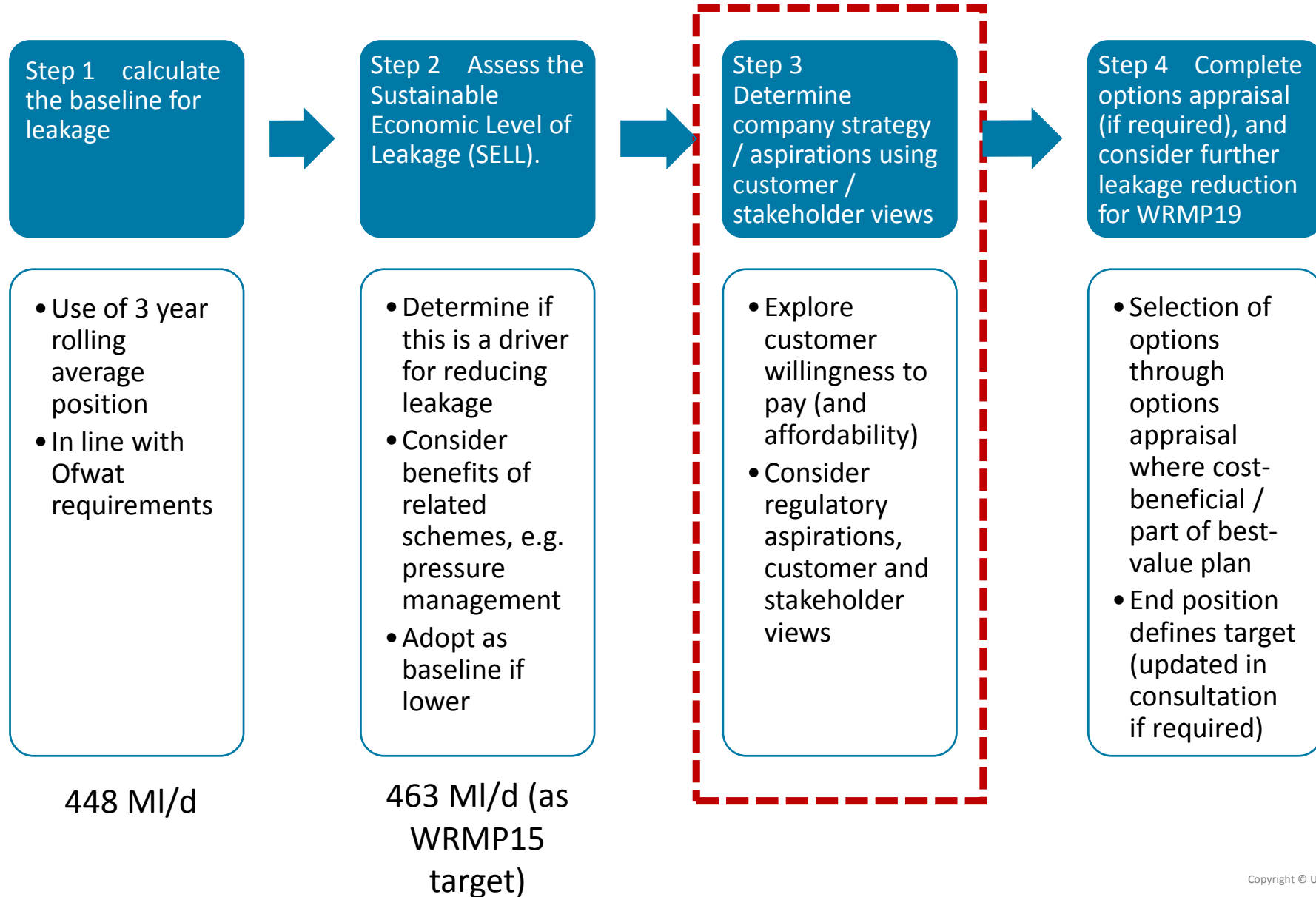
**Strategic choice:
Enhanced leakage reductions
and improved levels of service for drought
permits / orders**

(Alternative Plan 2)

Considering enhanced leakage reductions

- Leakage reductions can both enhance the supply-demand balance, whilst offering other supplementary benefits
- There is a cost to reducing leakage further (we are below the SELL), which needs to be balanced with customer affordability and other business investment requirements
- We continue to explore innovations to make our leakage management activities even more cost-effective. We expect reductions to become increasingly cost-effective over time.
- Example feedback / guidance relevant to leakage reductions:
 - Leakage frequently ranks highly as a priority in customer research / engagement (e.g. leakage WtP research showed over 90% of customers believe it is important for us to reduce leakage)
 - Ofwat have specifically challenged companies to reduce leakage by 15% in AMP7 (2020-2025), or otherwise justify why this is not appropriate
 - Pre-consultation, business plan and other engagement with regulators and stakeholders shows this to be a priority area
 - Customer research showed willingness to pay in this area, with our innovative programme choice experiment supporting a reduction of 44 MI/d (~10% reduction)
- We continue to explore this area as we move to revised draft WRMP19 and our business plan submission

Deciding on leakage forecast for draft WRMP19



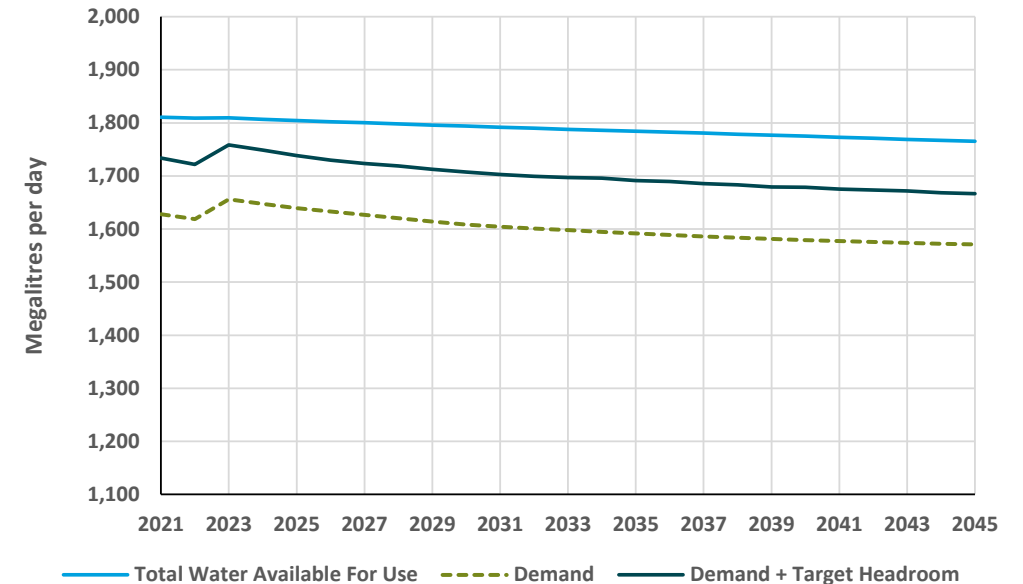
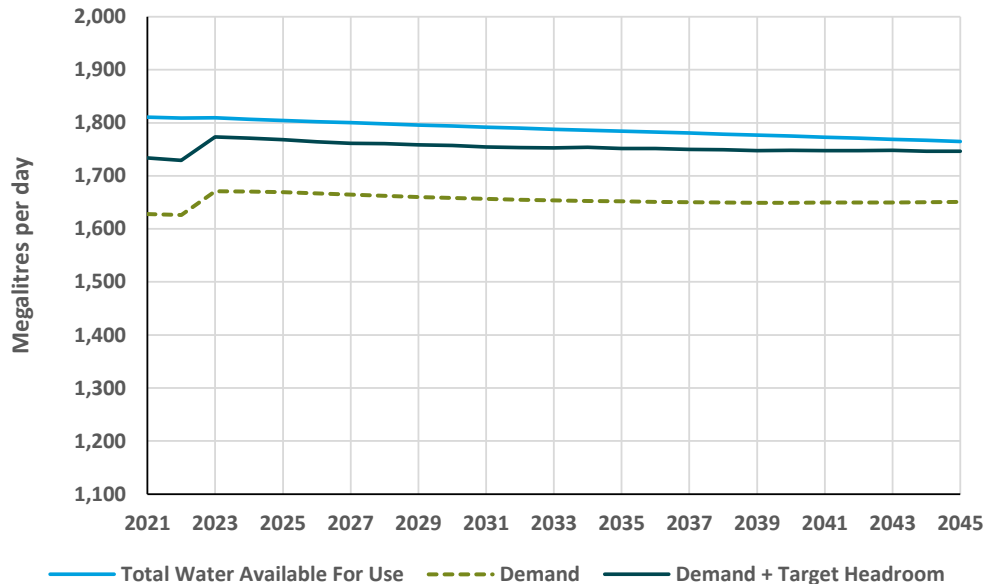
What have we proposed in draft WRMP19?

	Baseline	2024/25	2029/30	2044/45
Total leakage (MI/d)	448.2	418.2	398.2	368.2
% reduction from dWRMP19 baseline	0%	7%	11%	18%
MI/d reduction from dWRMP19 baseline	0	30	50	80
% reduction from AMP6 commitment or WRMP15 target	3%	10%	14%	20%

£0.68 maximum annual bill impact

NB: Reductions are to be achieved over the full AMP (5-year) period via profiled delivery

Strategic Resource Zone








Why have we proposed these reductions in draft WRMP19?

- Plan designed to be “*the most cost-effective, sustainable long-term solution*” (plan assurance)
- Factors balanced:
 - Draft WRMP19 supply-demand balance position and SELL
 - Customer and environmental benefits
 - Customer engagement outcomes (finely balanced CBA) & affordability
 - Cost-effectiveness of delivery pace (increasing innovations to deliver step-change)
 - Stakeholder and regulator feedback

Customer and stakeholder research has shown that this is considered a priority area and they want us to do more. There is customer willingness to pay for leakage reductions, but these are finely balanced with corresponding costs. Our customer 'programme choice experiment' showed a 44 MI/d willingness to pay on bills.

- We set out long-term aspirations to reduce leakage further by 80 MI/d over the next 25 years, but at a pace customers can afford. We propose reductions of 50 MI/d by 2030, with 30 MI/d of these by 2025. Completing the reductions in stages allows us to achieve this in a more cost effective manner by allowing us to implement new innovations over time.

#	Description	 Cost	 Cost	 Customer	 Customer	 Environment
		Cumulative cost 80 year NPV including environmental and social costs (£m)	Estimated bill impact (£/annum)	Change in the likelihood of temporary use bans	Change in drought resilience	Change in river flows and implementation length of drought permits to augment supply
1	Continued demand management	0	0	No Significant Change	No Significant Change	No Significant Change
2	+ enhanced leakage reduction and improved LoS for drought permits to augment supply	46.7	0.68	+++	+	++

Draft WRMP19 – Balancing reliability with innovation

Reductions from
baseline

2020-25 Focus on reliability with some innovation	<ul style="list-style-type: none"> Leakage reduction through additional find/fix and pressure optimisation 	28MI/d (UU)	7%
	<ul style="list-style-type: none"> Reduce leakage and improve water efficiency by identifying customer side leakage and use patterns 	2MI/d (third party)	
2025-30 Balance of reliability and innovation	<ul style="list-style-type: none"> Pressure reduction in distribution network resulting in leakage reduction and reduced open-tap demand 	10MI/d (UU)	11%
	<ul style="list-style-type: none"> Reduce leakage and improve water efficiency by identifying customer side leakage and use patterns 	10.5MI/d (third party)	
2030-35 Innovation	<ul style="list-style-type: none"> Temporary logging of large customers 	4MI/d (UU & third party)	13%
	<ul style="list-style-type: none"> Proactive monitoring of all household meters to identify and fix supply pipe leaks 	4MI/d (UU & third party)	
	<ul style="list-style-type: none"> Splitting DMAs 	2MI/d (UU & third party)	
2035-40 Innovation	<ul style="list-style-type: none"> Reduce leakage and improve water efficiency by identifying customer side leakage and use patterns 	10.5MI/d (UU & third party)	16%
2040-45 Innovation	<ul style="list-style-type: none"> Enhanced logger verification 	8MI/d (UU & third party)	18%
	<ul style="list-style-type: none"> Temporary logging of large customers 	1MI/d (UU & third party)	

Leakage – example customer / stakeholder research material

How important do you consider:

5. Reducing the amount of water that leaks from our pipes?

Working on your behalf

We've cut the amount of water that leaks by 50% since 1993.

The challenges we face

We currently take 1,700 million litres of water per day from reservoirs, rivers and underground sources.

However, 448 million litres of this leaks back to the environment. If we reduce this even further, then less water would need to be taken from rivers, lakes and reservoirs which could bring benefits for wildlife – particularly in dry periods when river levels are low.

Until now, we've balanced the costs of reducing leakage against other ways of ensuring that we have enough water available at the lowest possible cost.



What you've told us so far

We're aware that you care about reducing leakage – even when this is going to cost more.

When we've spoken to home and business owners about their willingness to pay for a further reduction in leakage from our network of pipes, around 80% routinely say that they're willing to pay for improvements.

However, we don't suffer from a shortage of water in the North West to the same extent as other regions in Britain and – consequently – reducing leakage has historically been a lower priority for us.



What we've achieved so far

We delivered a particularly good performance against our leakage targets in the year to April 2017. In short, we beat our targets for the year and achieved our best ever leakage performance.

But our leakage is relatively high compared to other regions.

We're constantly looking for new ways to reduce leakage without a major bill impact. We aim to strike the right balance between the cost of looking for and repairing those hard to find, minor leaks from pipes against the cost of not fixing them.



Our objectives and plans

In the short term, major changes to the amount of water that leaks are likely to mean bill increases. This is mainly because of the expense of detecting and fixing smaller and more difficult to find leaks. We are proposing a 7% reduction in leakage by 2025, with further reductions beyond then.



Your options

Currently, 448 million litres of water leaks every day.

Between 2020 and 2025, we're proposing to reduce the amount that leaks by 7% to 418 million litres of water a day, which will add around £1 to an average annual bill.

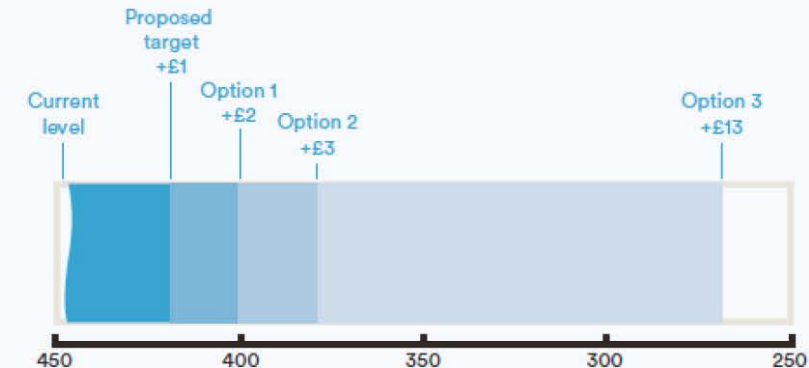
We could reduce the current leakage levels by 10% to 400 million litres per day at an additional cost of approximately £2.

Or we could reduce the total by 15% to 378 million litres per day, which would cost around £3.

Alternatively, we could cut the amount of water that leaks by 40%, which will add around £13 to an average annual bill.

- Should we reduce the amount of water that leaks by around 7%?
- Should we target a reduction of around 10%?
- Should we aim to cut this number by around 15%?
- Or should we attempt to reduce leakage by around 40%?

Reducing leakage



Leakage – example customer / stakeholder research material



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Reducing leakage



Drought Permits

Taking more water from water sources such as rivers, lakes and reservoirs during drought.

- All water companies have a licence to take water from rivers, lakes, boreholes and reservoirs for public water supplies.
- During a drought, UU may need to take more water than normal and will have to apply to the Environment Agency for a 'drought permit'.
- Water sources are likely to already be stressed due to drought conditions and may be showing low water levels.
- Drought permits may adversely impact the environment, such as habitats for plants and wildlife.
- There may also be impacts to the appearance, recreation or business use of the water source (e.g. lake cruises). In some cases this may impact on tourism or the local economy.
- In some cases drought permit sites are located in protected environmental locations and/ or in National Parks.

Water use restrictions and drought permits to augment supply on average
once in 20 years
(5% annual average risk)



WRMP15 to WRMP19 LoS – drought permits

Salient customer and stakeholder views

WRMP15 commitment to explore improved LoS

EA request to consider applying for drought permits only once TUBS are in place

Some stakeholders have strong views on the frequency (and/or the consequences) of drought permits

Lower level of customer acceptability than TUBs, but still seen as relatively low priority for investment compared to other service areas

Customer choice experiment showed appetite for only small / marginal improvement (1 in 24 years)

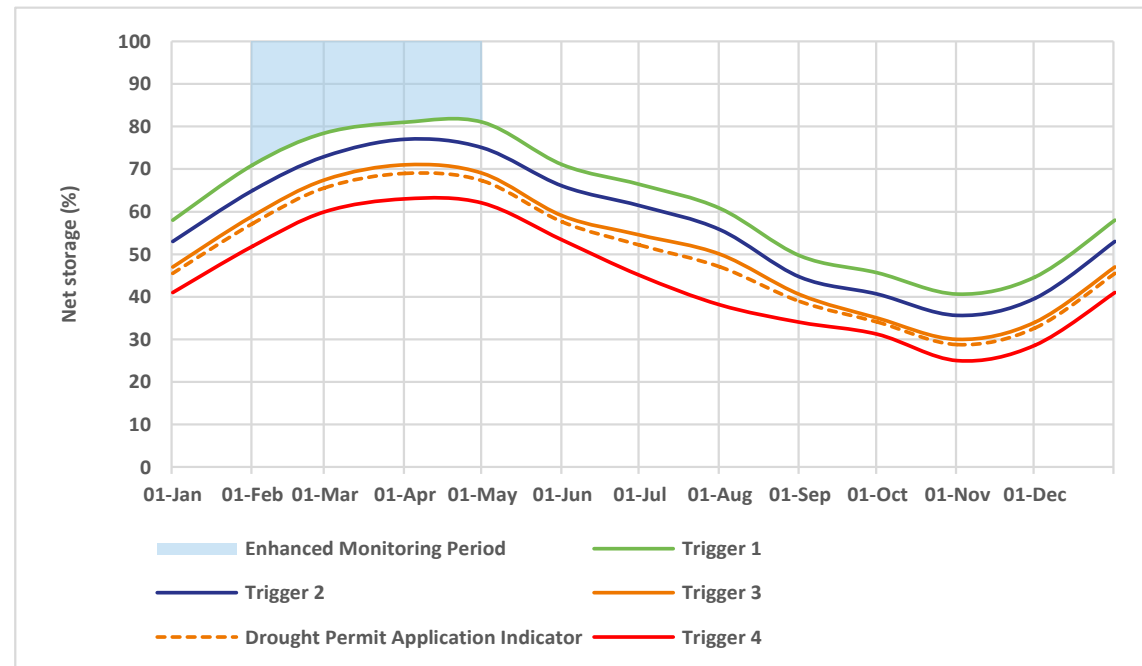
More traditional / limited Willingness to pay methods showed support for improvement to 1 in 40 years (sufficient to cover costs)

WRMP19 proposal

Consult on an improvement to improve LoS to 1 in 40 years (2.5% annual chance)

If this goes ahead will involve creation of a new “drought trigger 5” in future WRMP / Drought Plan

Apply from 2025 (following 1st tranche of leakage reductions, offsetting lost water from later point of drought permit implementation)



Drought resilience and baseline / existing levels of service

Drought resilience (emergency drought orders – standpipes/rota cuts/bowsers): New focus driven by government and regulators:

- WRMP scenario with emergency drought orders 1 in 200 years or 0.5% annual risk (Defra reference LoS)
 - Forecast actual levels of service over the 2020-45 planning period (Defra directive)
 - Populate a new “Drought links” WRMP table to assess supply availability under severe / extreme drought
- Resilience level is high – currently estimated at being resilient to a 1 in 1000 year (0.1% annual chance) event. Strategy is to **protect** our drought resilience in future (e.g. following other interventions or under water trading).
- Whilst resilience is high, we recognise stakeholders have concerns on the consequences of drought interventions



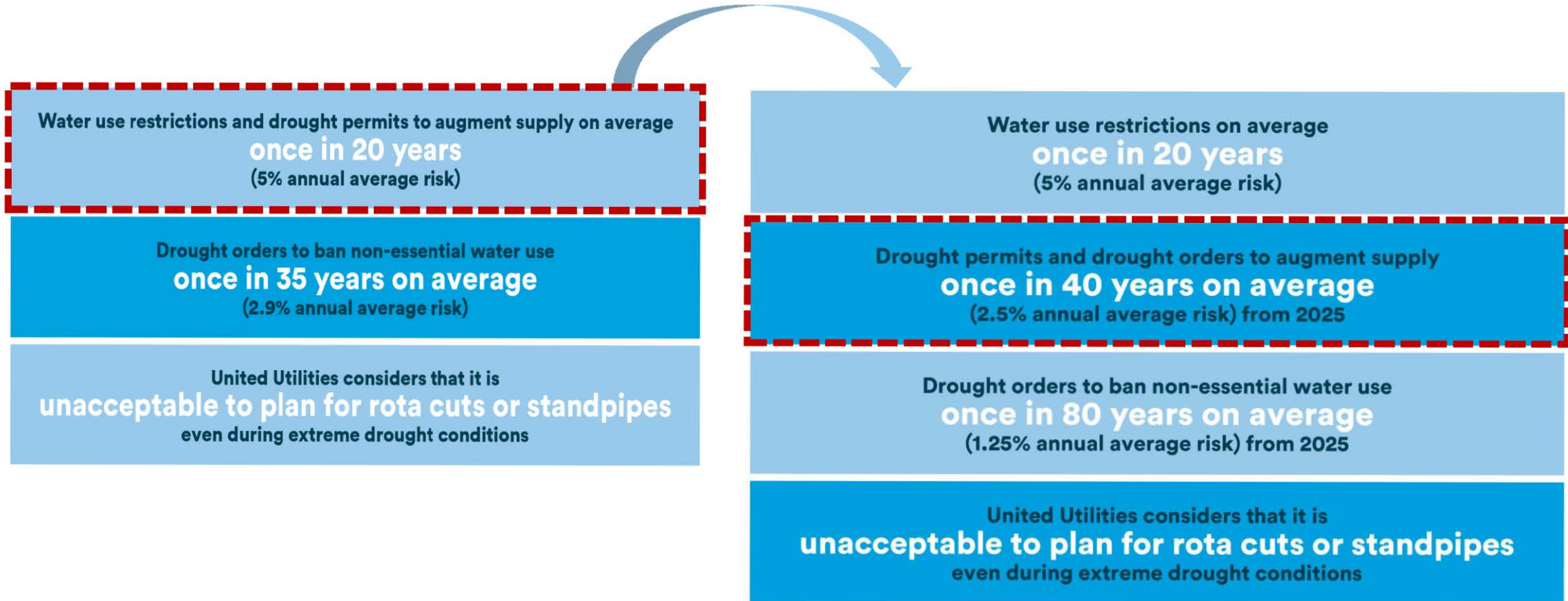
Temporary Use Bans (Hosepipe Bans): No customer support to invest to specifically improve this element of Level of Service; seen as a relatively low business priority

Water use restrictions and drought permits to augment supply on average
once in 20 years
(5% annual average risk)

Drought orders to ban non-essential water use
once in 35 years on average
(2.9% annual average risk)

United Utilities considers that it is
unacceptable to plan for rota cuts or standpipes
even during extreme drought conditions

WRMP15 to draft WRMP19 – Level of service changes



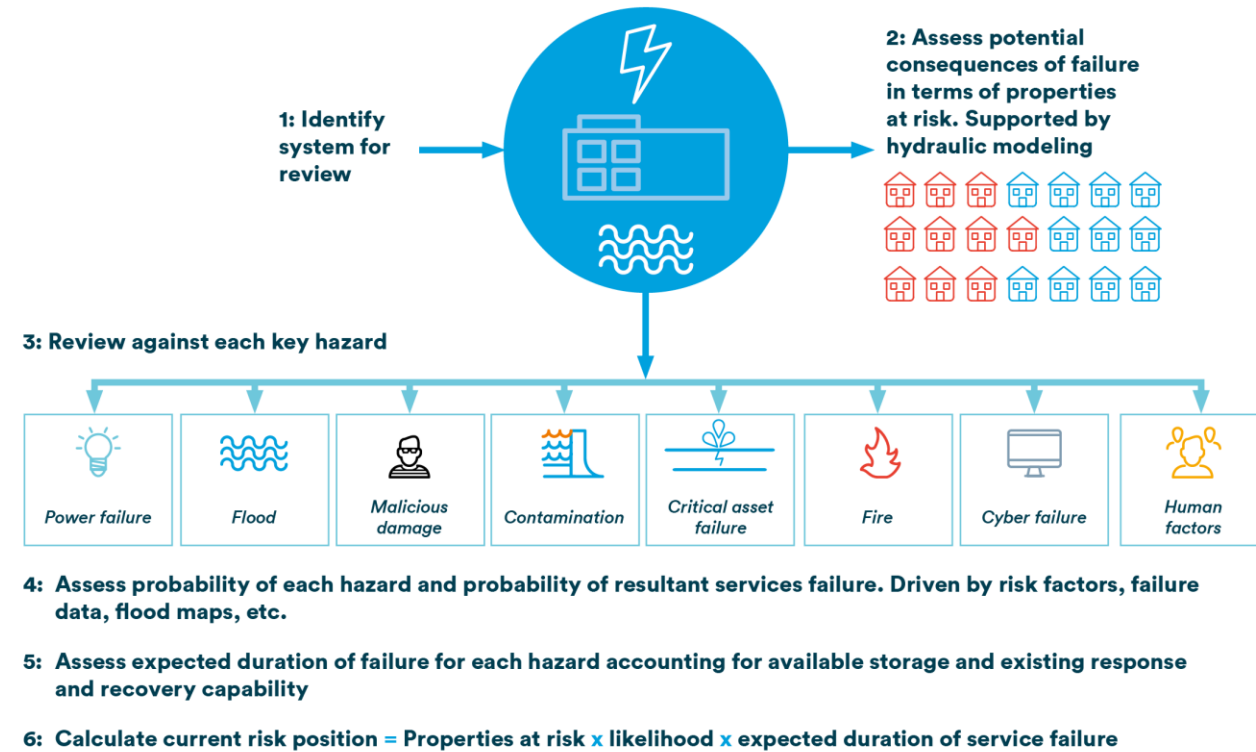
Strategic choices: Water supply resilience to hazards other than drought

(Added under Alternative Plan 3)

Resilience to non-drought hazards

Background

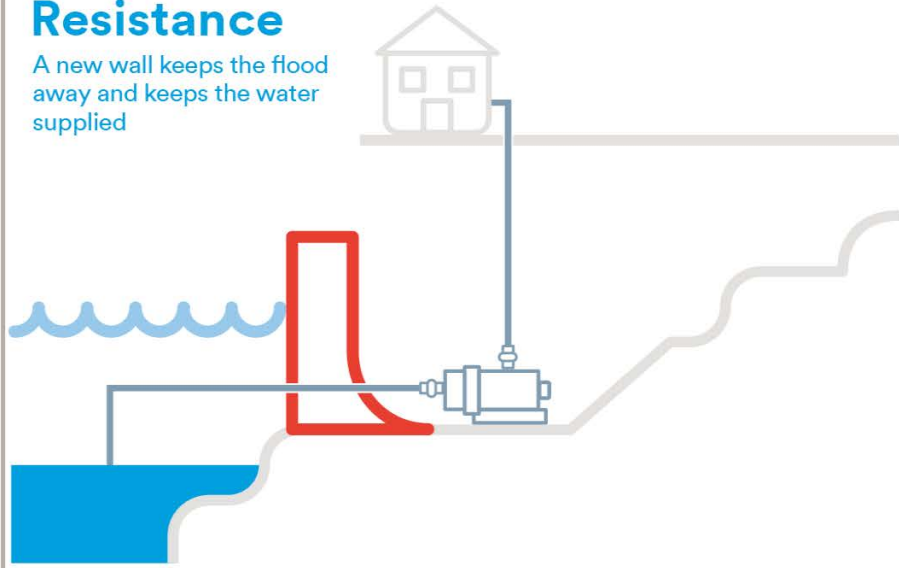
- Defra guiding principles and WRMP planning guideline now promote and require specific consideration of non-drought hazards to water supply
- Some companies have completed a more limited assessment of water supply resilience in their WRMP (e.g. non-drought resilience of the options, rather than system)
- Our WRMP presents a wider, system view of water supply resilience before and after the preferred plan has been applied
- ‘All hazards’ assessment completed, identifying 8 that are most relevant for water supply and summarised in the WRMP; this aligns to our Business Plan activity
- Our WRMP consults upon the solutions to address the highest resilience priority



Managing resilience risks

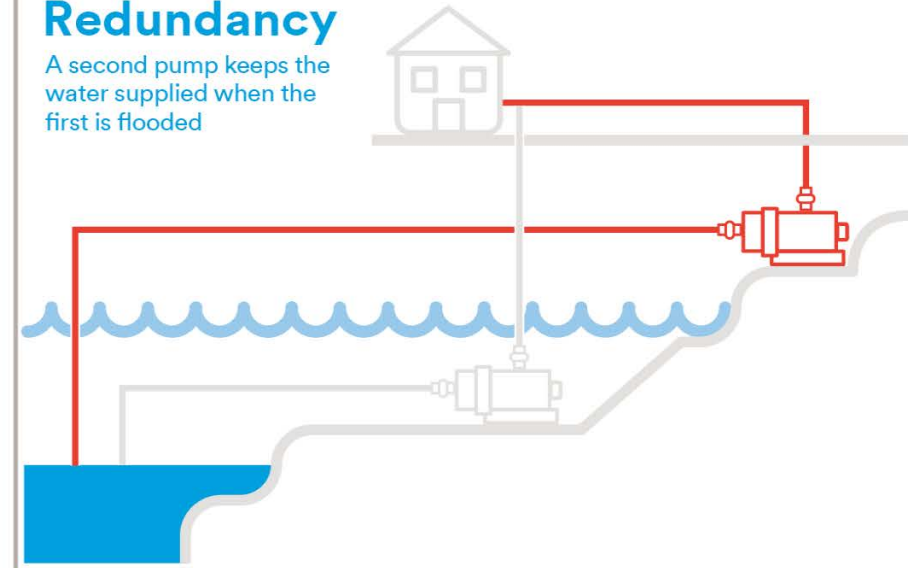
Resistance

A new wall keeps the flood away and keeps the water supplied



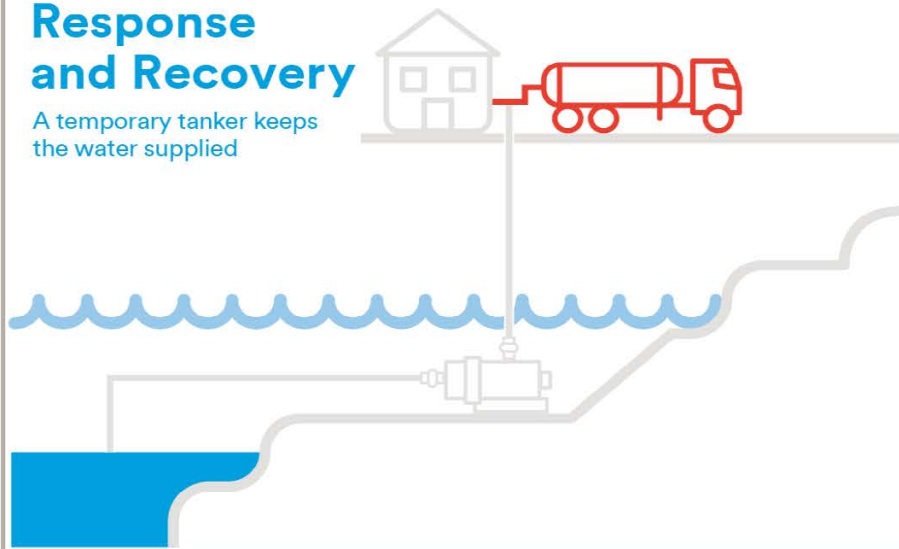
Redundancy

A second pump keeps the water supplied when the first is flooded



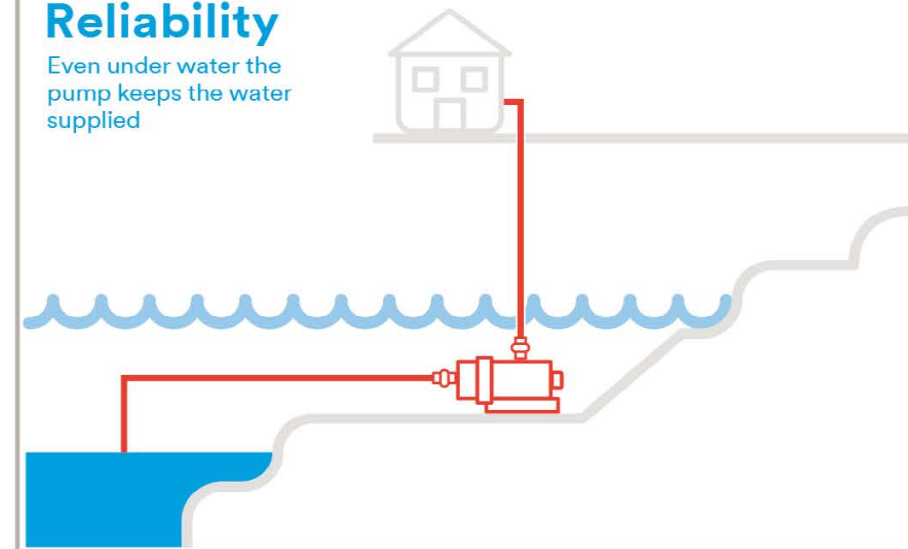
Response and Recovery

A temporary tanker keeps the water supplied



Reliability

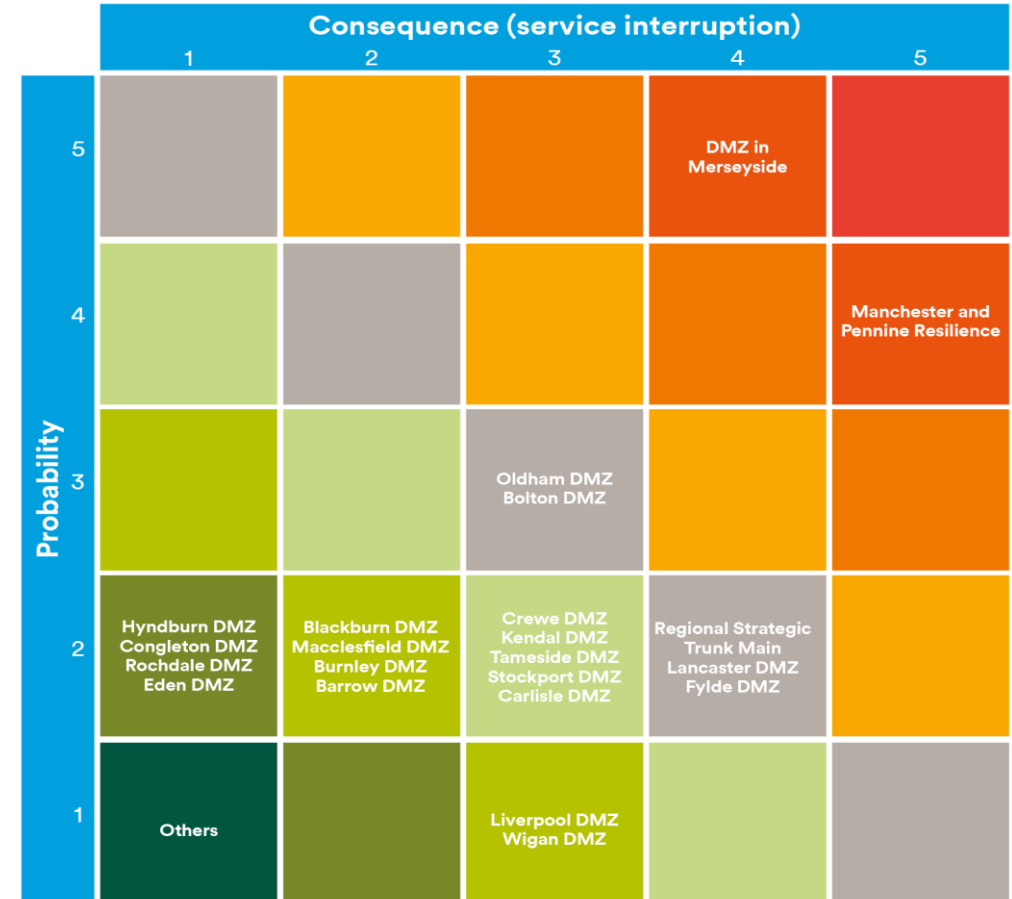
Even under water the pump keeps the water supplied



Resilience to non-drought hazards

What are we proposing?

- Resilience ranked high priority in customer and stakeholder research
- Already investing around £220 million in targeted resilience improvements (AMP6). Programme of future resilience investment to be delivered at a pace customers support and can afford, as part of our business planning processes.
- Ambition to minimise large scale service failures of >12 hours duration.
- Approx. 1/3 of customers face a resilience risk in excess of this ambition. However, risk is still very low.
- We have assessed resilience needs down to demand management zone level. Risks tackled on programme prioritised basis over planning horizon.
- For draft WRMP19, Manchester and Pennine resilience is a key focus area due to the scale of the risk (next two slides).

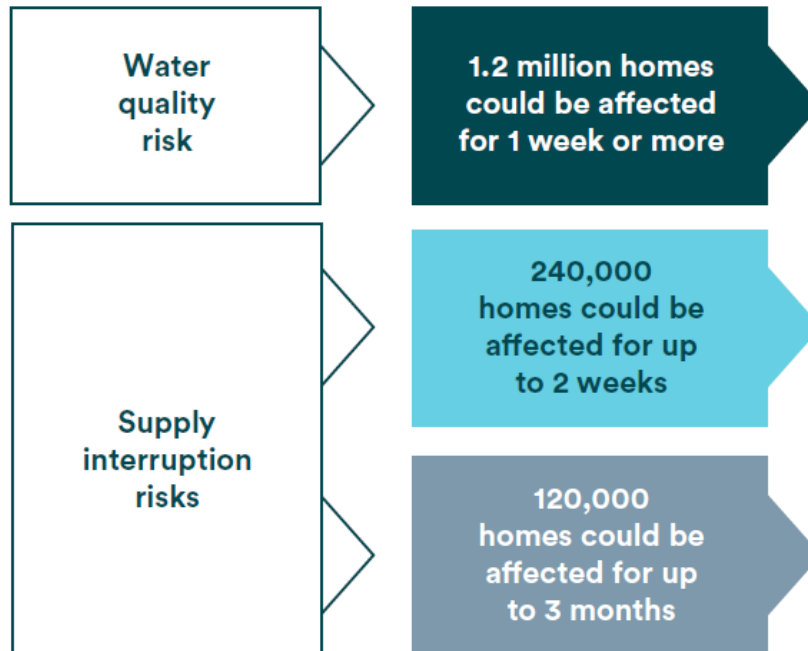


Current water service resilience risks

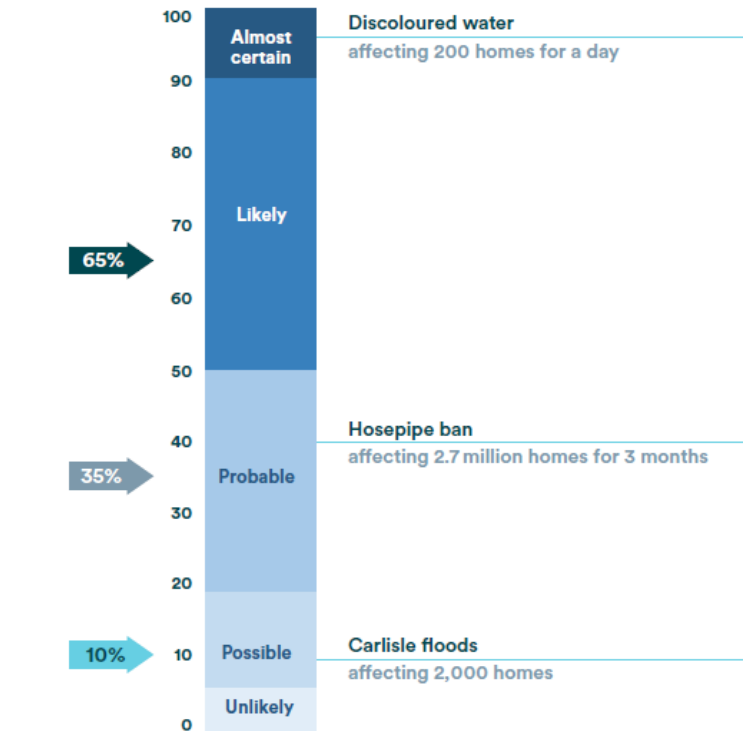
Manchester & Pennines resilience risk arising from regional aqueduct

Current situation

Service impacts over the next 10 years...



Other events unrelated to Manchester & Pennines resilience risk for comparison



Options summary

Option A: Target repairs of the two tunnel sections that are in the worst condition	Option B: Rebuild the tunnel section that is in the worst condition and provide targeted treatment for water quality	Option C: Build 5 new water treatment works	Option D: Rebuild all tunnel sections	Option E: Rebuild all tunnel sections and provide additional water sources
<ul style="list-style-type: none"> • This option focuses on addressing the highest risk to water supply. ✓ • The work required to supply customers during the rebuild would give some of them alternative water supply for the future. 	<ul style="list-style-type: none"> • This option robustly addresses the highest risk to water supply. ✓ • It also addresses the highest water quality risks. 	<ul style="list-style-type: none"> • This option will treat impurities that could enter the water supply when it is flowing through the aqueduct. ✓ • This gives flexibility in how we would maintain the aqueduct, because we would be treating the water after it goes through it. 	<ul style="list-style-type: none"> • This option addresses all water supply risks associated with the tunnels. ✓ • It also addresses the water quality risks associated with the tunnels. 	<ul style="list-style-type: none"> • This option addresses all water supply and water quality risks associated with the tunnels. ✓ • This option would enable future tunnel maintenance by providing alternative water supply whilst work is being done.
<ul style="list-style-type: none"> • Tunnel sections will continue to deteriorate and are likely to require future intervention. Furthermore, stopping the flow of water in the aqueduct for repairs causes it to deteriorate faster. ✗ • There remains a risk of service failure arising from unrepaired tunnel sections. 	<ul style="list-style-type: none"> • Other tunnel sections will continue to deteriorate and may require future intervention. ✗ • There remains a risk of service failure arising from unrepaired tunnel sections. 	<ul style="list-style-type: none"> • This option does not address the deterioration of any of the tunnel sections. ✗ • There remains a risk of service failure arising from flow being obstructed by deteriorating tunnels. This may lead to the need for future intervention. 	<ul style="list-style-type: none"> • The whole length of the tunnel sections would be rebuilt, including the areas that pose less risk of service disruption. ✗ • There would be a small residual risk of service failure from the non-tunnelled sections of the aqueduct. 	<ul style="list-style-type: none"> • The whole length of the tunnel sections would be rebuilt, including the areas that pose less risk of service disruption. ✗ • There would be a residual risk of service failure from the non-tunnelled sections of the aqueduct, but the additional sources would reduce this risk.

Options summary

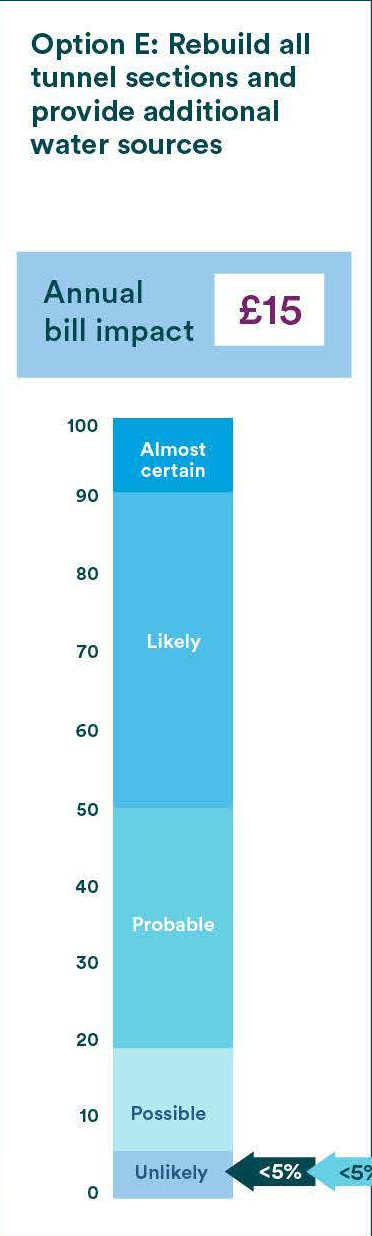
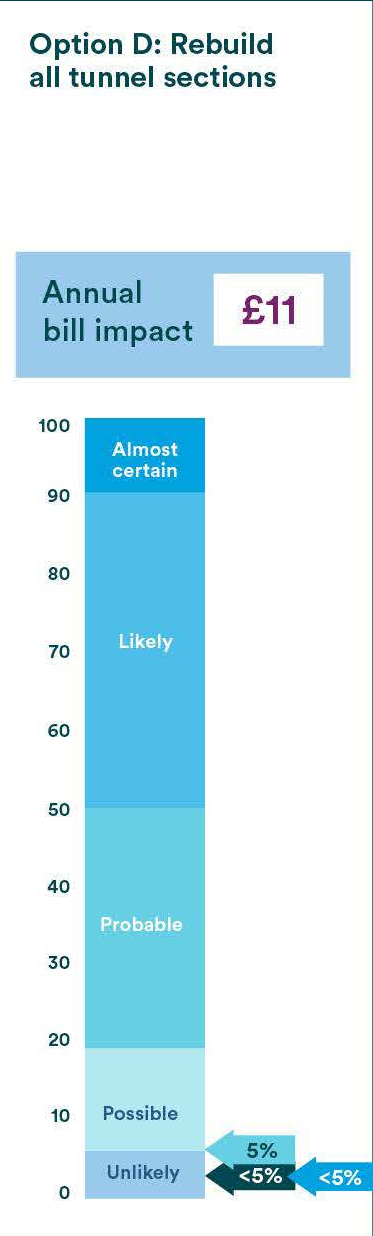
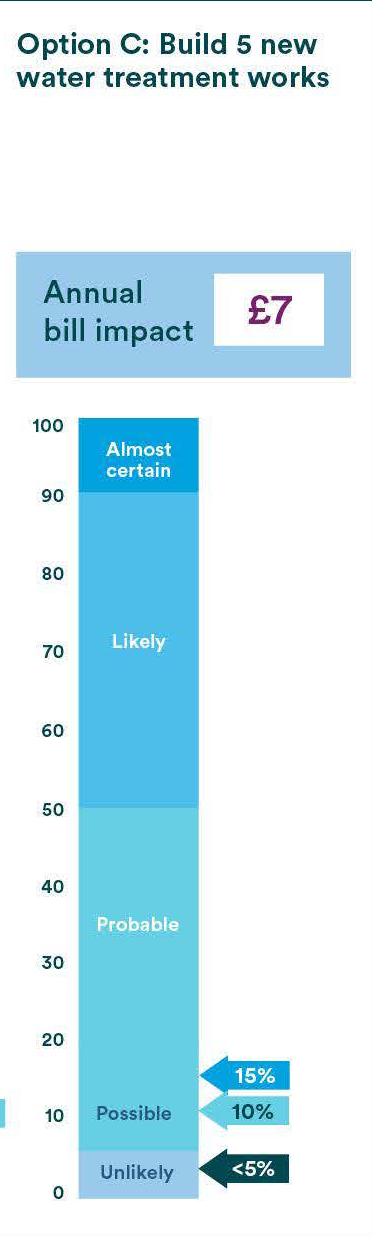
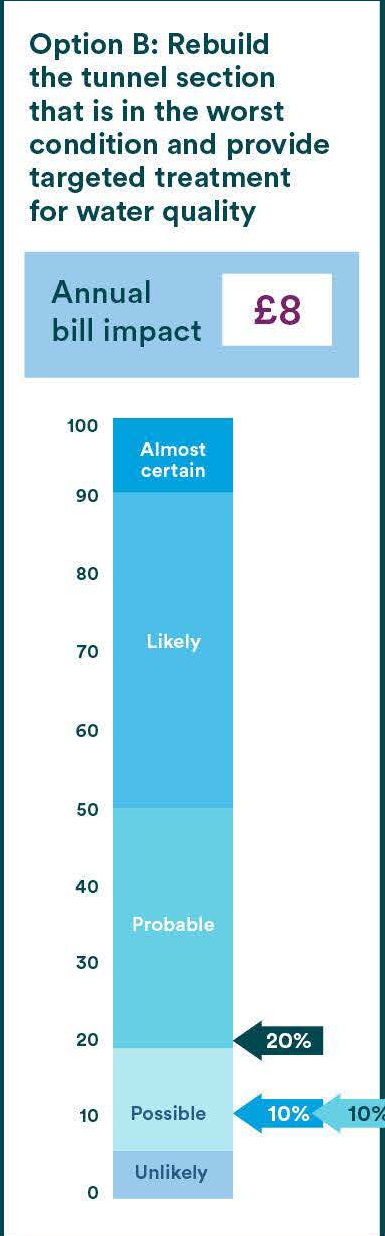
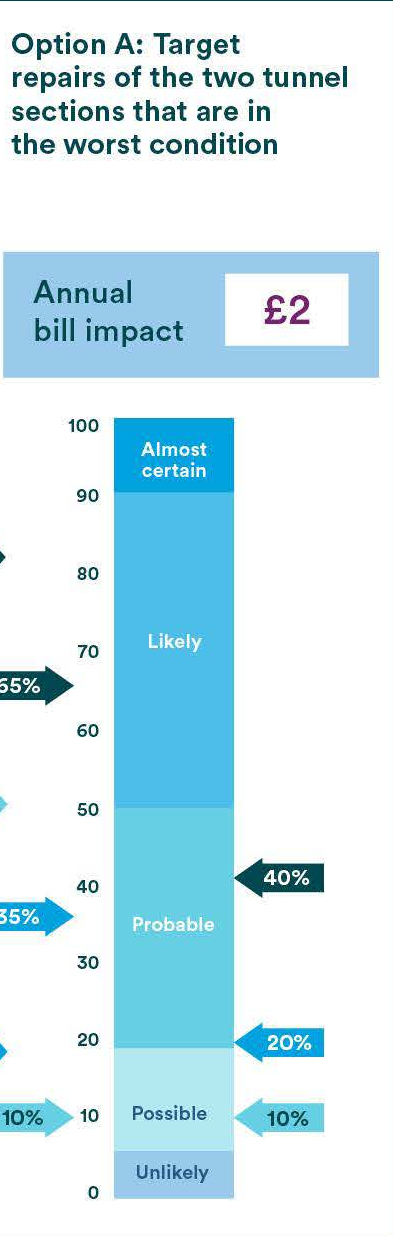
Water quality risk

1.2 million homes could be affected for 1 week or more

Supply interruption risks

240,000 homes could be affected for up to 2 weeks

120,000 homes could be affected for up to 3 months



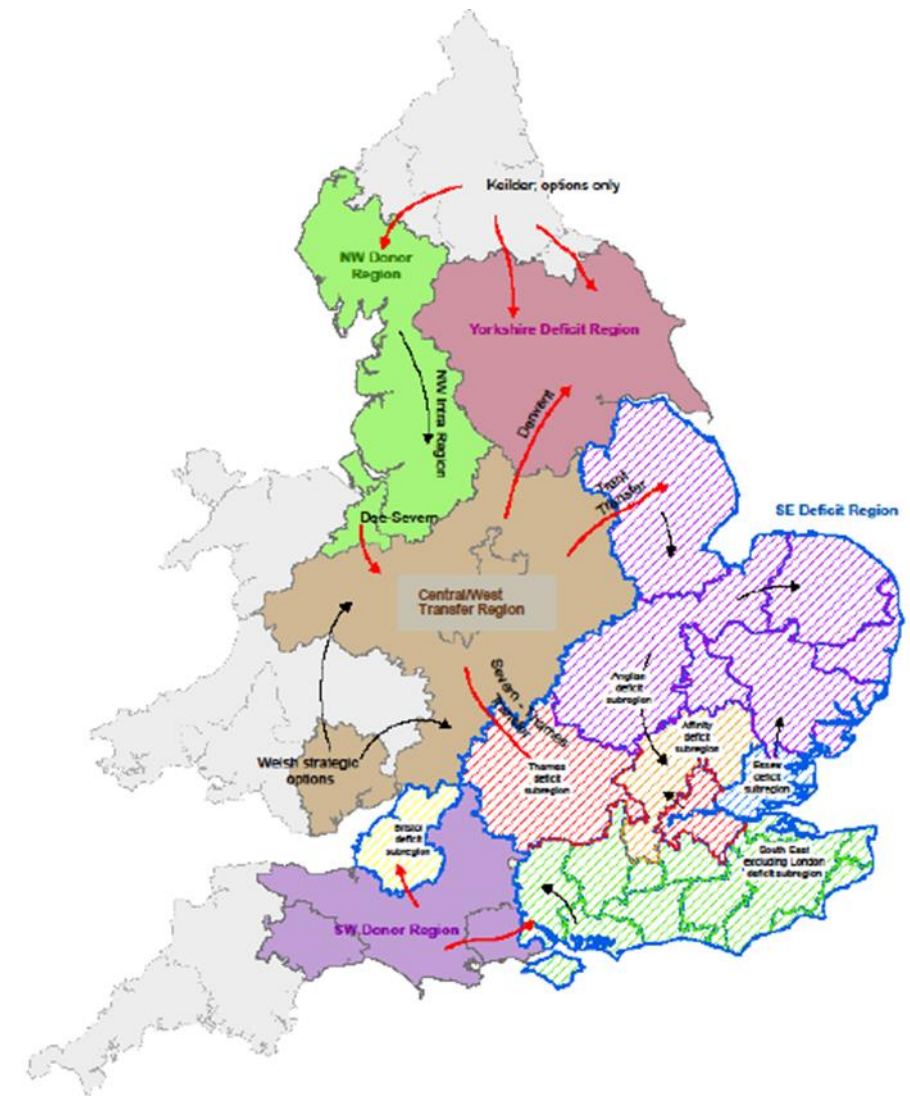
Strategic choice: National water trading

(Added under Alternative Plan 4 – Preferred plan)

National Water Trading

Background

- Defra guiding principles and WRMP planning guideline sets an expectation to collaborate and explore water transfers
- Water UK national study:
 - Significant water resources supply-demand challenges in the long-term for the South East driven by combination of climate change, sustainability reductions and growth
 - Triple-track approach advocated, including water transfers
 - North West as a potential donor region to transfer water to areas of the country with severe water shortage in future
 - Acknowledged need for further work to assess constraints and risks of options in more detail (i.e. through the WRMP process)
- High-level supply-demand scenario assessment done in WRMP15 only
- Complete assessment of potential future water trade in draft WRMP19, acknowledging this proposal would require further work in future planning rounds...



Example output from Water UK project showing potential transfers

Customer and stakeholder feedback examples

Water trading

WRMP19 Customer Research - Sept 16

Participants were asked to provide their views on the idea of exporting water to other areas of the country during times of need:

“As long as we don’t suffer as a result”

“There must be safeguards in place”

“As long as it doesn’t compromise the quality of our water”

“What about the cost and environmental impact?”

It’s ‘our’ water!

Isolated or minority view

Stakeholder pre-consultation feedback – Autumn 2016

Summary of stakeholder points raised on potential trading:

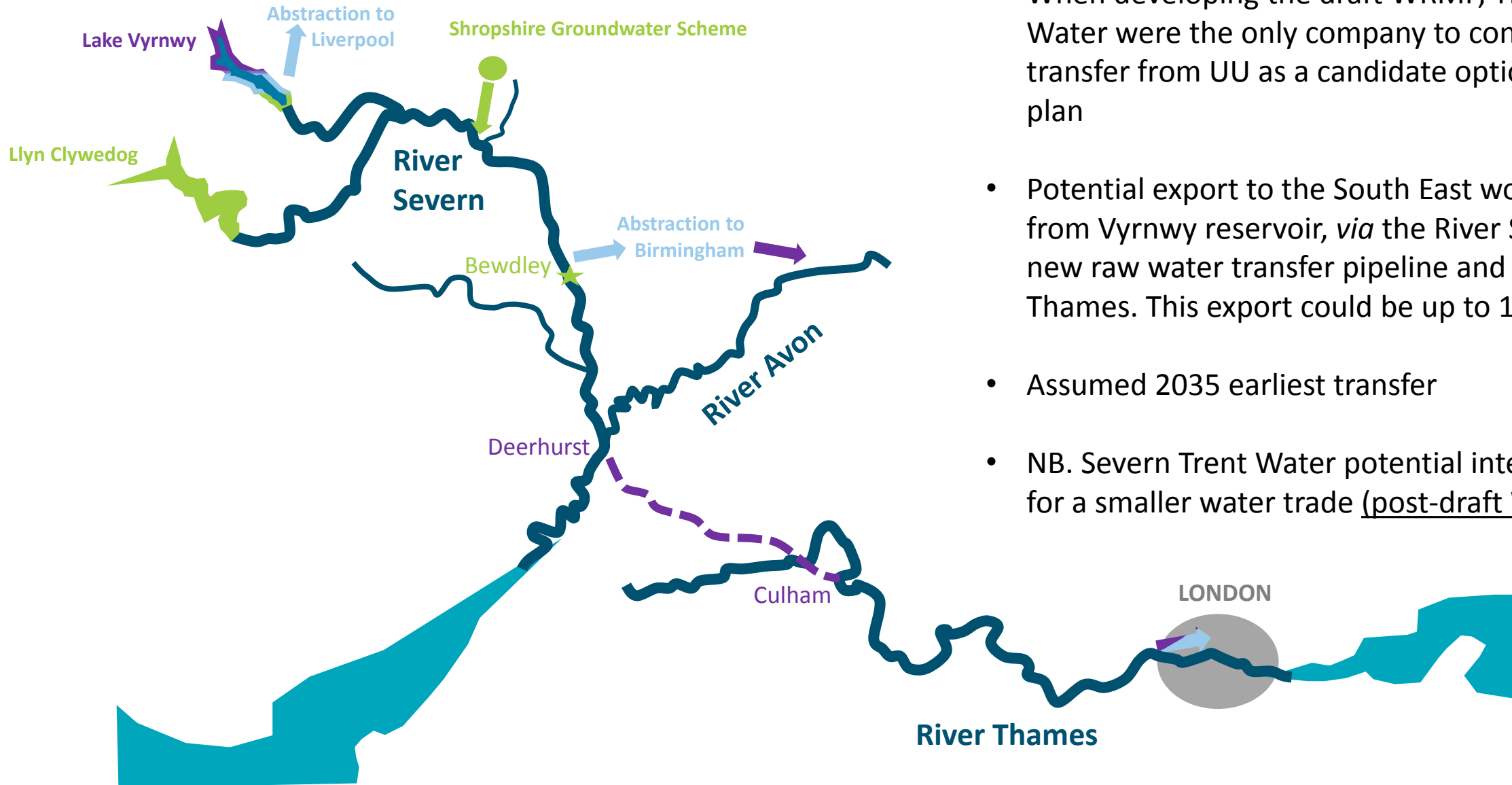
Concern that there is insufficient surplus to allow a trade

Concern / want assurance to protect against detrimental impacts in the North West

Our approach to trading – listening to feedback

- We continued our **'pathways'** approach, recognising that trading needed to be **'explored'** further
- The **supply-demand balance** is benefitted separately from leakage reductions investment. This brings benefits that should be **protected** for the North West following this investment
- We have assessed water trading in the plan with a strategy to **protecting water quality, resilience, the environment and our levels of service**
- To do this, we have developed **new, sophisticated methods** to assess the impacts of water trading on our system, and appraise the options to facilitate it (and considered all types of options)
- We recognise in the plan that, at this stage, we do not have the full picture of how water trading will progress in the future. Our plan accepts that significant future work will be required in future to build on the strategic assessment in this plan (given it aims to address large-scale, long-term national challenges)
- Our assessment, and consultation upon it, can in turn be used to inform the ongoing national water resources planning picture

River Severn transfer (example assessed in draft WRMP19)



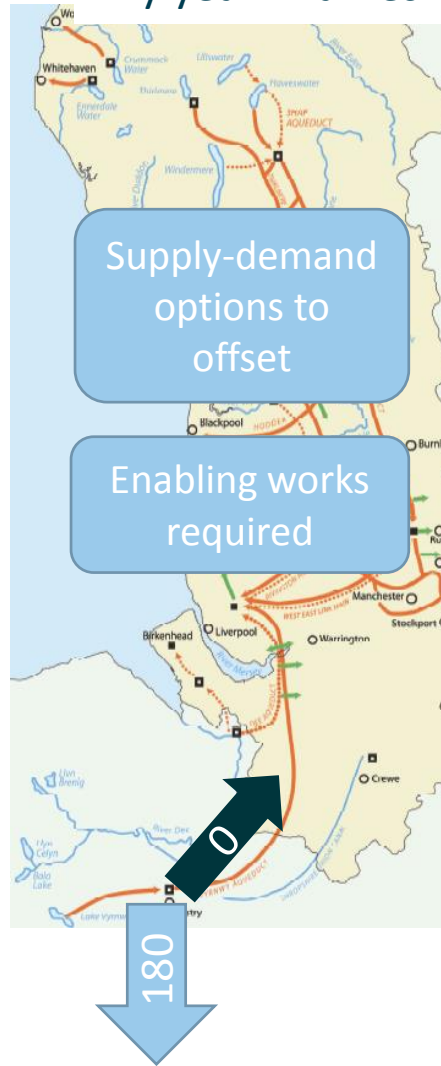
- When developing the draft WRMP, Thames Water were the only company to confirm a transfer from UU as a candidate option in their plan
- Potential export to the South East would be from Vyrnwy reservoir, *via* the River Severn, a new raw water transfer pipeline and the River Thames. This export could be up to 180 MI/d
- Assumed 2035 earliest transfer
- NB. Severn Trent Water potential interim need for a smaller water trade (post-draft WRMP19)

Water trading: Vyrnwy

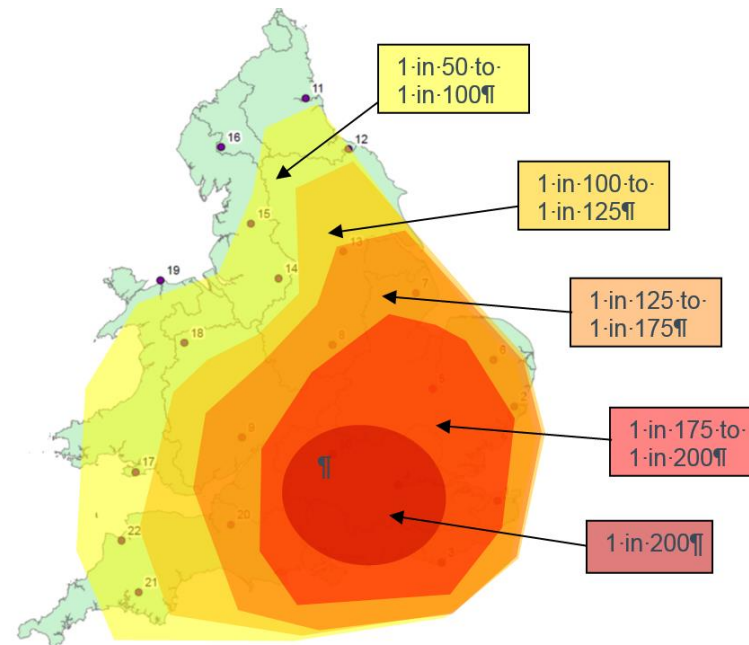
Normal/dry year UU
Normal year Thames



Dry year UU
Dry year Thames



- Export would only occur when Thames Water is experiencing dry weather need, so source is still retained for use in the North West at other times
- Joint modelling estimates trade needed 15% of the time, so supply-demand options available for North West at other times
- Exploration of spatial coherence of drought in the WRMP to assess risks and impacts, and the solutions required



Example outputs from WaterUK water resources long-term planning project – drought severity example

When creating our plan for trading we focussed on:



Customer



Cost



Sustainability



Environment



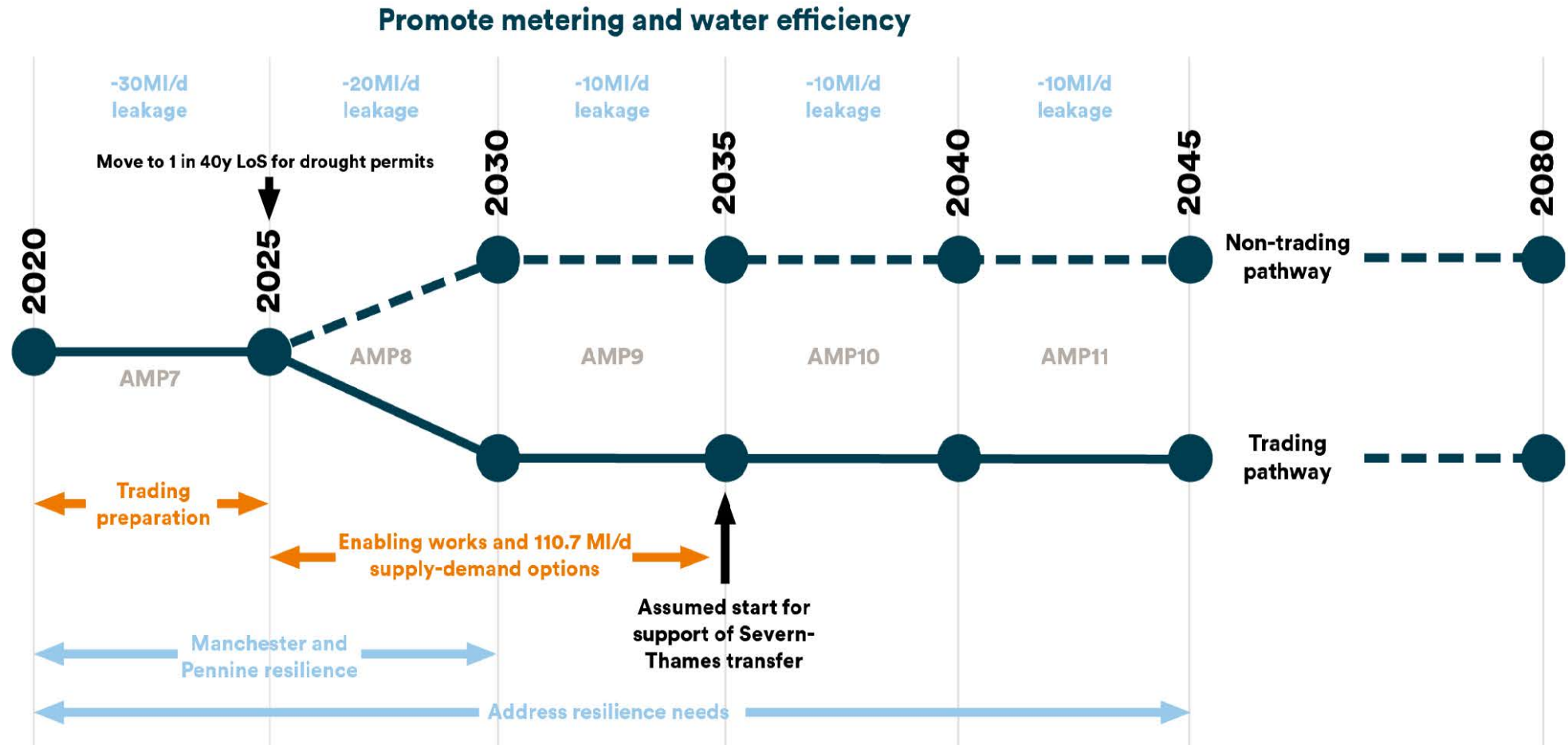
Resilience



We have considered two pathways, one without water trading and one with water trading

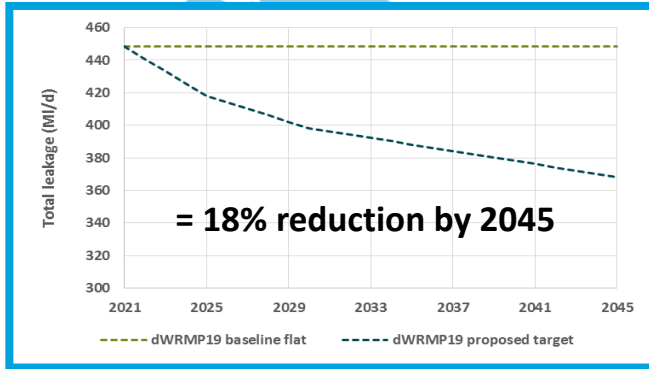
We didn't simply trade away our surplus....

Plan pathways and alternatives over time



No Water Trading

From 2020 onwards reduce leakage



- ↓ Reduction in leakage
- ↑ Improved level of service
- ↑ Environmental benefits
- ↑ Resilience enhancements



Water Trading



No Water Trading

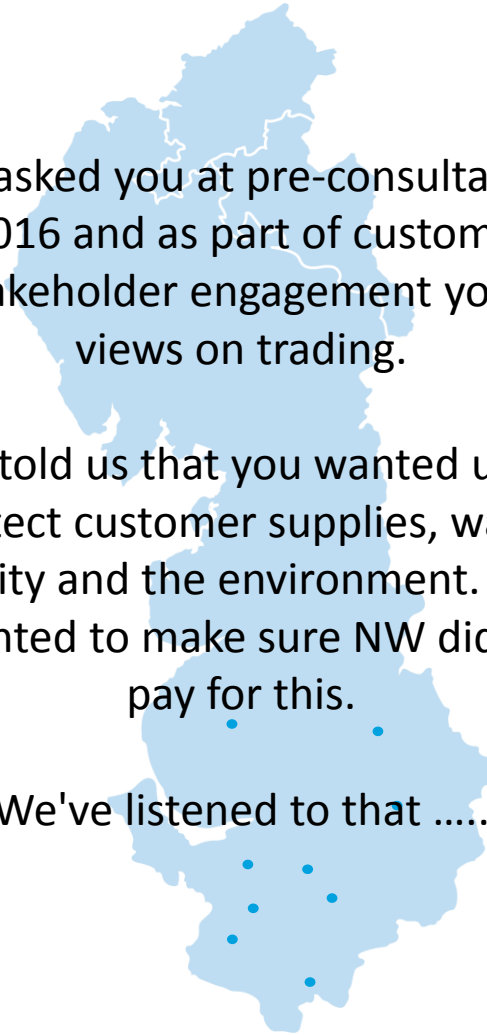


Water Trading

We asked you at pre-consultation in 2016 and as part of customer / stakeholder engagement your views on trading.

You told us that you wanted us to protect customer supplies, water quality and the environment. And wanted to make sure NW didn't pay for this.

We've listened to that

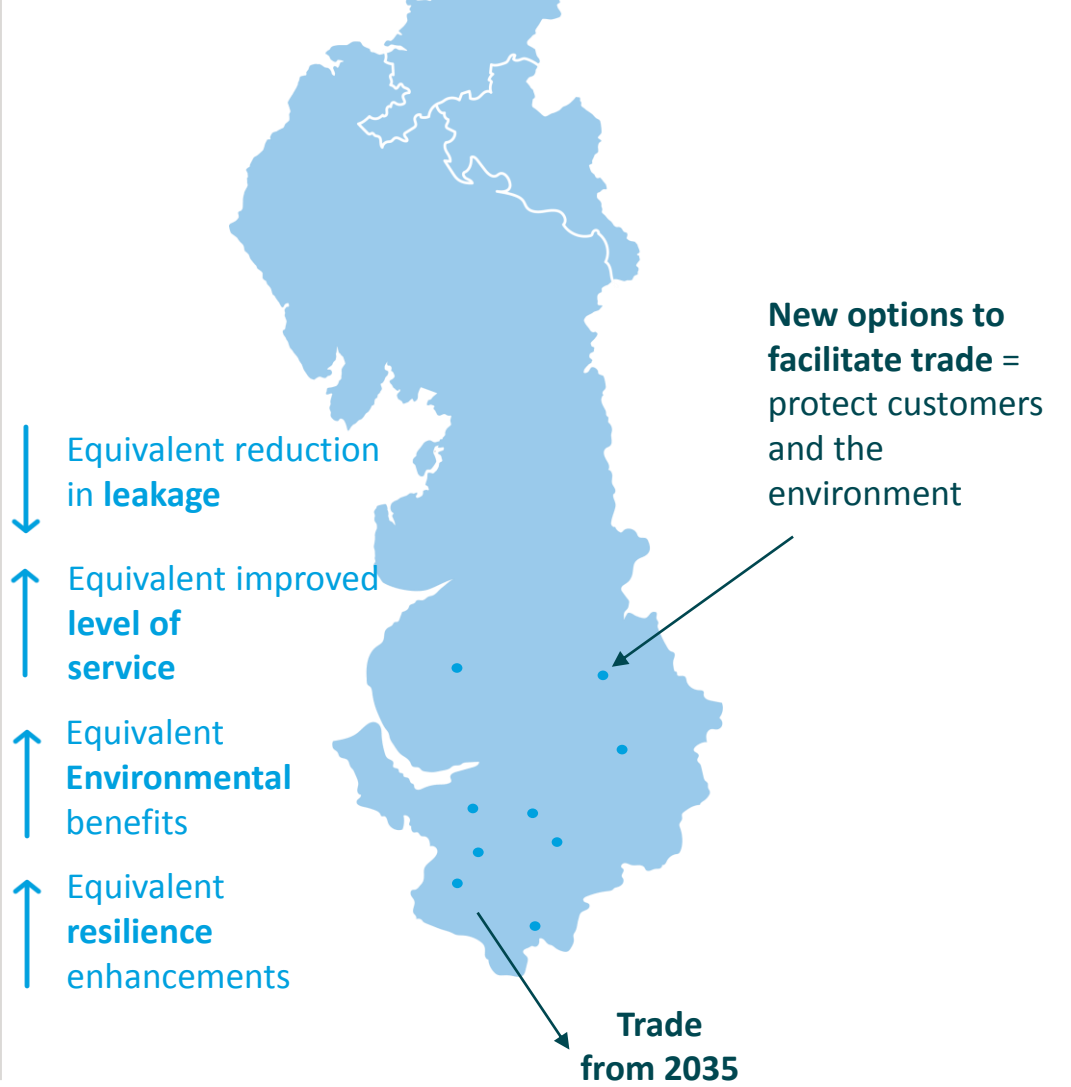


No Water Trading



Water Trading

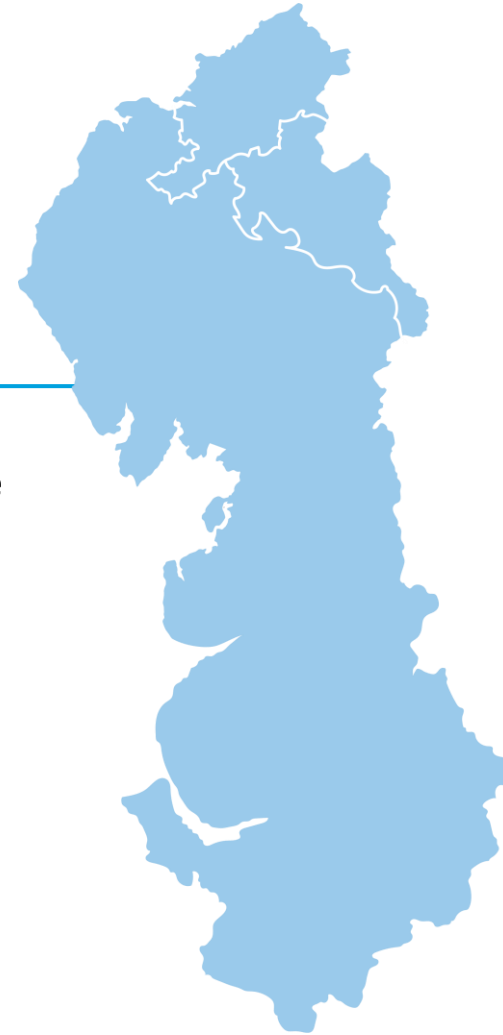
From 2020 onwards reduce leakage



No Water Trading



Water Trading



**Both pathways ensure
the NW has**

Equivalent levels of leakage

**Improved level
of service**

Environmental benefits

Resilience enhancements

Defining a best-value preferred plan

- Plan designed to be “the most cost-effective, sustainable long-term solution” (plan assurance)
- Preferred plan delivers overall customer, resilience and environmental benefits
- We have balanced these improvements with affordability
- We have protected these benefits in our proposals for water trading:
 - A lower cost trading plan results in deterioration of drought resilience and environmental metrics
 - A higher cost trading plan does not meet the most cost-effective test

Table 20 Defining a best value preferred plan

Description	Cumulative supply demand options benefit (MI/d)	£ Cost Cumulative cost 80 year NPV including environmental and social cost (£o)	£ Cost Maximum bill impact (impact	Customer Change in the likelihood of temporary use bans	Customer Change in drought resilience	Environment Change in river flows and implementation length of drought permits to augment supply
Baseline - Continued demand management	0	0	0	No Significant Change	No Significant Change	No Significant Change
2035 leakage reductions in place	60	46.7	0.68	+++	+	++
Water trading with enabling works only	60	137.1	Not calculated	No Significant Change	-	--
Preferred plan	170.7	306.6	-0.40 (saving)	+++	+	++
Example higher cost, higher performing portfolio	219.7	392.0	Not calculated	+++	++	+++

NSC no significant change +/+/+++ favourable -/-/-- unfavourable

Cost to Thames Water

Carlisle Resource Zone
 Strategic Resource Zone
 North Eden Resource Zone
 Former boundary to the West Cumbria Resource Zone
 Towns/Cities
 Option capacity
 Potential substitute option for WR114

WR100: Groundwater - Barrow-in-Furness

4.5 MI/d

- New borehole, pump, headworks
- Increase WTW capacity
- New water treatment works process, new inlet to service reservoir

WR159: Improved reservoir compensation release control at 76 reservoirs across SRZ

13 MI/d

Refer to Technical Report – Options identification (refer to Section 3.3) for full list of reservoirs

WR160: Improved reservoir compensation release control - Thirlmere, Vyrnwy, Haweswater and Rivington

9 MI/d

Refer to Technical Report – Options identification (refer to Section 3.3) for full list of reservoirs

80 MI/d AP2

Leakage reduction

10 MI/d

Water efficiency

WR101: Groundwater - Franklaw

30 MI/d

- Reinstate two existing boreholes, new pumps
- Upgrading 10 new pumps at existing boreholes
- Increase WTW capacity

WR102e: Groundwater - Bold Heath

9 MI/d

- Reinstate two existing boreholes, new abstraction licence
- New 9-10km raw water main between Bold Heath and Prescot reservoirs
- Modifications to Prescot WTW as appropriate

WR099b: Groundwater - Worsthorne

4 MI/d

- Reinstate existing borehole
- New raw water main to Hurstwood IR

WR114: Groundwater - Python Mill

3 MI/d

- Reinstate existing borehole, new abstraction licence
- New borehole pump and headworks
- New raw water main and discharge to Rochdale Canal to offset existing reservoir compensation
- New sewer connection

WR821: Canal and Rivers Trust, Shropshire Union Canal

30 MI/d

- Increase raw water abstraction volume on canal
- Install fish screens at abstraction
- Increased WTW capacity at Hurlston
- New c.6km treated water main to Mid Cheshire Main

Water trading enabling works (modification to existing Dee/Vyrnwy supplies)

WR113: Groundwater - Tytherington

3 MI/d

- New borehole pumps and headworks
- Modifications to WTW design
- New 2.9km treated water main



Options totalling 111 MI/d additional capacity to facilitate trading

- Options subject to change in future, including following consultation
- Trading options would be subject to further detailed environmental appraisal and drinking water quality post-WRMP19

Preferred plan summary and next steps

Strategic choices and alternative plans

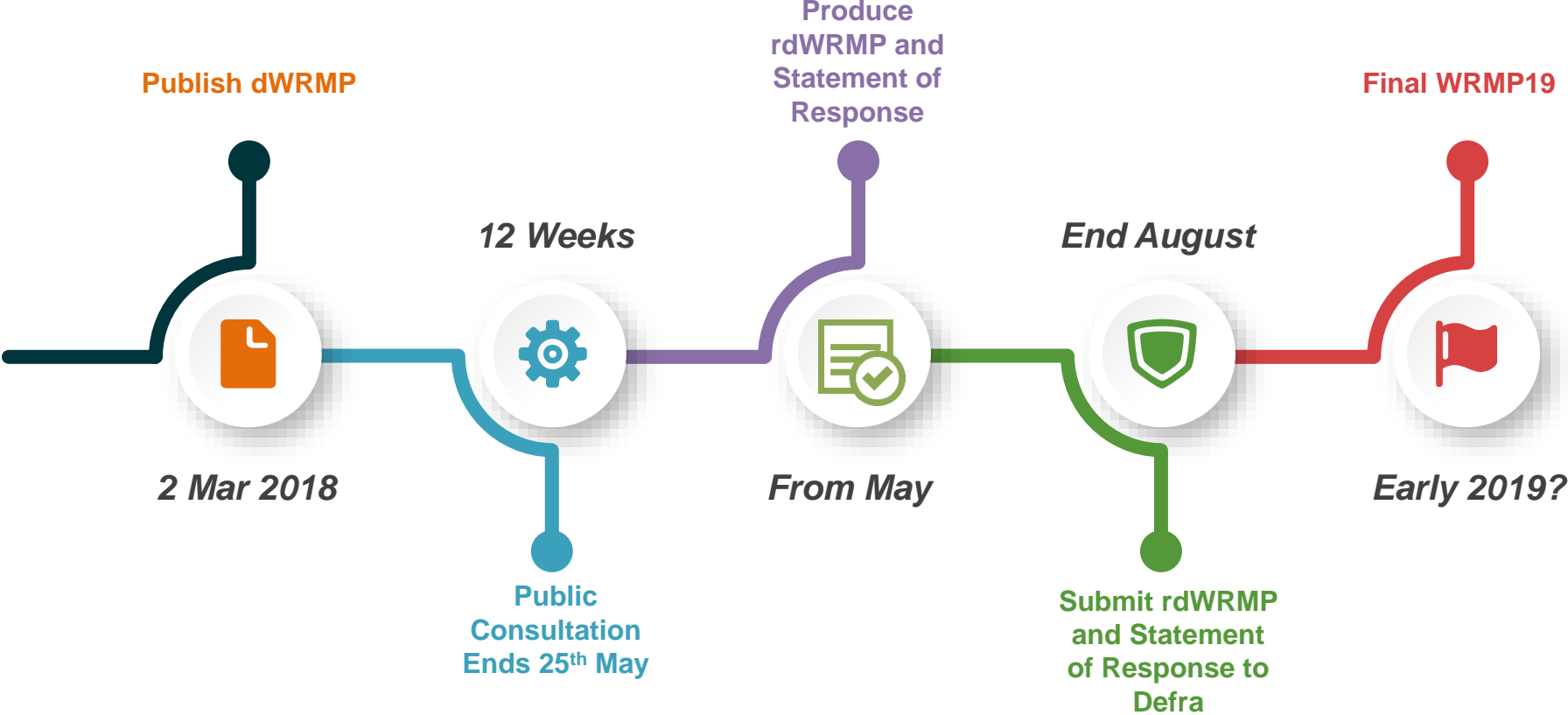
		Strategic choices			
		Enhanced leakage reduction	Improved level of service – frequency of drought permits and orders to augment supply	Water supply resilience to hazards other than drought	National water trading
Alternative plans	Plan 1 Continued demand management	x	x	x	x
	Plan 2 Plan 1, plus enhanced leakage reduction, with improved level of service for drought permits/orders to augment supply	✓	✓	x	x
	Plan 3 Plan 2, plus resilience to other hazards	✓	✓	✓	x
	Plan 4 Plan 3, plus national water trading	✓	✓	✓	✓

- 1l / prop / day / yr water efficiency
- 3% reduction in baseline leakage from WRMP15
- 7% leakage reduction by 2025
- 18% leakage reduction by 2045
- Manchester and Pennines resilience solution
- Strategic assessment of potential future 180 MI/d trade to South East; protect resilience and environment

Our preferred plan (Plan 4)

Preferred plan reflects aggregation of benefits under all alternative plans

dWRMP Next Steps



Recap on responding to our consultation

- Material published on our website (on 2nd March 2018) at <https://www.unitedutilities.com/corporate/about-us/our-future-plans/water-resources/developing-our-water-resources-management-plan/>
- Building on today's event, if you need any further clarity to help provide your response, please do get in contact with us at wrmconsult@uuplc.co.uk
- 12 week consultation period ends **25th May 2018**. *We really welcome earlier feedback too, which helps us incorporate this into the updated WRMP.*
- Remember, responses need to go to Defra, EA and Ofwat, as well as UU (postal details also on website):
 - wrmconsult@uuplc.co.uk
 - water.resources@defra.gsi.gov.uk
 - wrm@ofwat.gsi.gov.uk
 - water-company-plan@environment-agency.gov.uk

Questions and topics to aid consultation responses

- Specific areas to consider:
 - 1. Developing our plan (approaches)
 - 2. Leakage reduction
 - 3. Drought resilience
 - 4. Level of service from drought permits and orders
 - 5. National water trading
 - 6. Preferred plan
 - 7. Resilience to other hazards
 - 8. Consulting upon the plan
 - 9. Environmental report
- Within the main report we present more specific, detailed questions with stakeholders in mind who have reviewed that document.
- We understand people need to tailor responses to their interest and involvement (e.g. review of supporting technical material).....and of course welcome ‘free response’ on our plans.

Thank you

