



# Protecting and Restoring Water Resources - delivering a Natural Capital approach to adapt our ecosystems to climate change

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What is the WRSE?



Challenges, today and in the future



Meeting these challenges



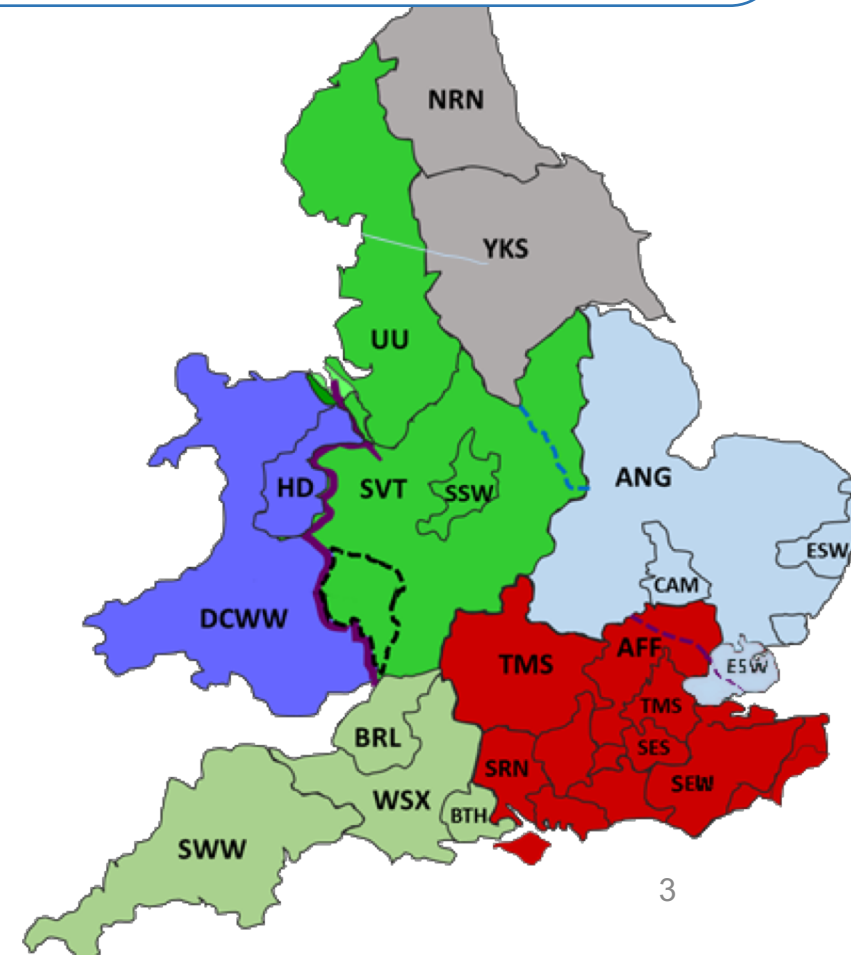
Future considerations

# Water resources in the South East of England



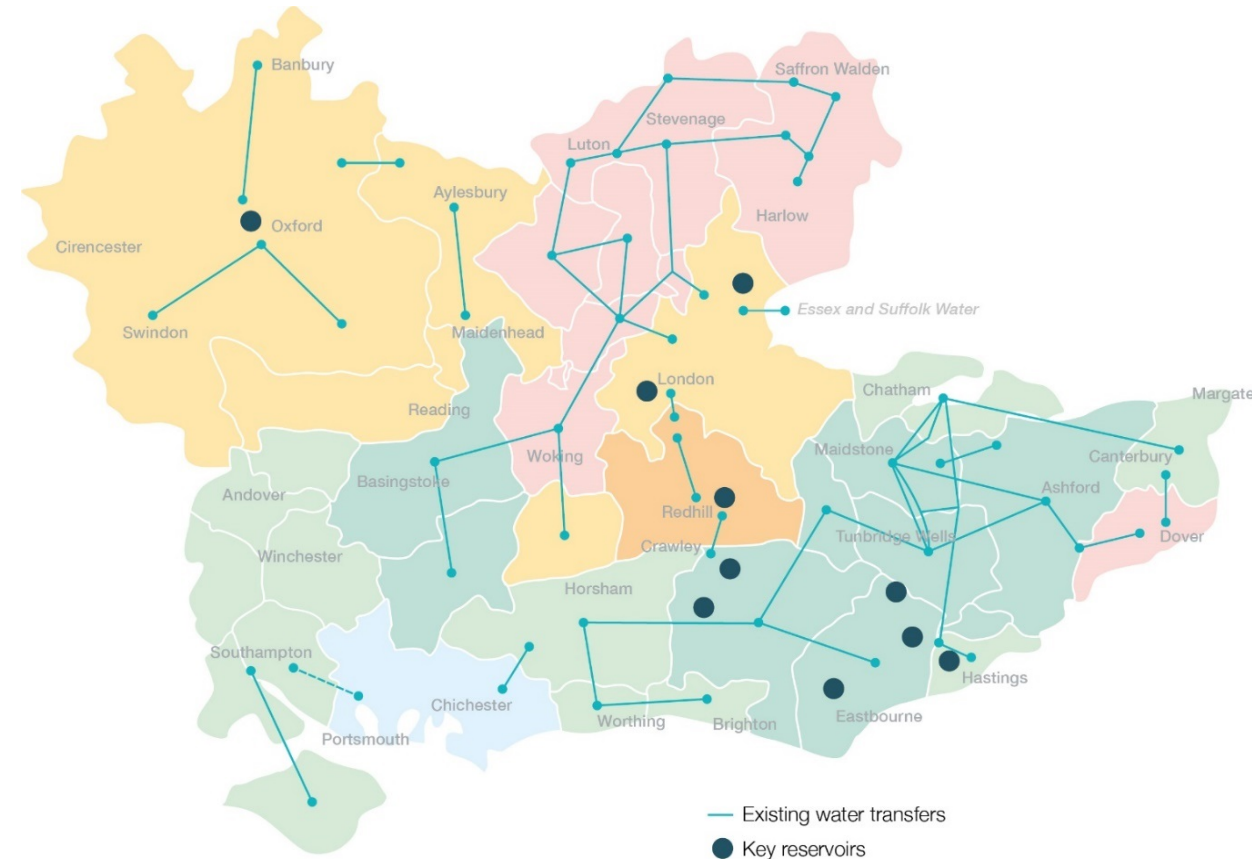
- Home to 40% of UK population: 19m households and 2m businesses supplying 5 billion litres of water supplied per day rising to nearly 6 billion when it's hot
- Contributes £627bn to UK economy in an Environmentally sensitive area

- Established in 1996 to address regional optimum solutions for the South East
- Partnership of water companies and regulators with input from consumer and environmental champions
- First regional group of its kind: focus on security of public water supply and greater collaboration between water companies
- The WRSE has evolved over 20 years: however its objectives are still relevant today due to the region's water scarcity and unique environmental challenges. The remit has continued to expand into resilience
- WRSE strategy *informs* company WRMPs, optimising company modelling by considering a wider range of options and identifying no-regret solutions and joint investments
- Current work is the most advanced yet and results highlight need for step-changes in demand, supply and catchment investment to increase resilience across the region



**Estimated cost of severe restrictions = £1.3 billion per day through a 37% reduction in Gross Value Added**

- The South East region is facing a significant range of challenges in the future
- To meet these challenges strategic solutions will be required to help meet a range of deficits from 960 Ml/d to over 2,000 Ml/d over the next 80 years
- The next regional plan will be multi-sector and seek to improve the overall resilience of the region, from a water perspective for customers, industry and the environment
- To find robust solutions it is important that we understand the range of uncertainty, to insure we put the right solutions in place today to meet the challenges tomorrow, whilst making the region more resilient



# Regional plans to date

- Modelling work has typically identified supply and demand side measures to be invested in over the next 80 years
- One set of measures that still have to make it across into these types of plans are the catchment based solutions. Some companies have already made headway into these areas. Further work will be required.
- These solutions take into account of the future challenges for the region, including meeting environmental challenges by certain deadlines

Scenario	DI	Drought	Uncertain SR	TUBS	Permits and Orders	Abingdon	Transfer to Affinity	Desal in HSW	Havant Thicket
Scenario 1	Medium	Severe	50%	Yes	Yes	No	No	Yes	Yes
Scenario 2	Medium	Extreme	50%	Yes	Yes	Yes	Yes	Yes	No
Scenario 3	Medium	Extreme	100%	Yes	Yes	Yes	Yes	Yes	No
Scenario 4	Medium	Severe	50%	Yes	No	Yes	Yes	Yes	Yes
Scenario 5	Medium	Severe	50%	No	No	Yes	Yes	Yes	Yes
Scenario 6	Medium	Extreme	50%	Yes	No	Yes	Yes	Yes	No
Scenario 7	Medium	Extreme	100%	Yes	Yes	Yes	Yes	Yes	No
Scenario 8	Medium	Extreme	100%	Yes	No	Yes	Yes	Yes	No
Scenario 9 (prev. 14)	Medium	Severe	100%	Yes	No	Yes	Yes	Yes	Yes
Scenario 10 (prev. 15)	Medium	Severe	100%	Yes	Yes	No	No	Yes	Yes
Scenario 11 (S5 with earlier Uncertain SR start)	Medium	Severe	50%	No	No	Yes	Yes	Yes	Yes
Scenario Set2-AFF (based on Scenario 4)	Medium	Severe	50%	Yes	No	Yes	Yes	Yes	Yes
Scenario Set2-PRT (based on Scenario 4)	Medium	Severe	50%	Yes	No	Yes	Yes	Yes	Yes
Scenario Set2-TWU (based on Scenario 7)	Medium	Extreme	100%	Yes	Yes	Yes	Yes	Yes	No
Scenario Set2-SES (based on Scenario 8)	Medium	Extreme	100%	Yes	No	Yes	Yes	Yes	No
Scenario Set2-SEW (based on Scenario 11)	Medium	Severe	50%	No	No	Yes	Yes	Yes	Yes
Scenario Set2-SWS (based on Scenario 7)	Medium	Extreme	100%	Yes	Yes	No	No	Yes	No
Scenario Set3-1 (comparable to S4)	Medium	Severe	50%	Yes	No	Yes	Yes	Yes	Yes
Scenario Set3-2 (comparable to S3)	Medium	Extreme	100%	Yes	Yes	Yes	Yes	Yes	No
Scenario Set3-3 (comparable to S8)	Medium	Extreme	100%	Yes	No	Yes	Yes	Yes	No
Scenario Set4-1c (comparable to S4)	Medium	Severe	50%	Yes	No	Yes	Yes	Yes	Yes
Scenario Set4-2c (comparable to S3)	Medium	Extreme	100%	Yes	Yes	Yes	Yes	Yes	No
Scenario Set4-3c (comparable to S8)	Medium	Extreme	100%	Yes	No	Yes	Yes	Yes	No

## Environmental requirements

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- Currently defined through WINEP, RBMP, WFD or water quality requirements
- Some work has been undertaken by companies looking at natural capital techniques; shadow pricing, potential landscape impacts on the environment or by considering potential societal futures which give rise to different environmental outcomes.
- These pieces of work has informed the debate but we still have to resolve some fundamental points in a manner that they can be used to inform investment decisions



# Catchment based schemes



First reviewed to help alleviate water quality issues in a catchment, e.g. nitrates, pesticides, suspended sediments



Studies have looked at the effectiveness of measures (Champ in the Brighton block) as well as promote more innovative solutions such as trading platforms



Catchment schemes have also been promoted to return flows to more natural conditions .e.g. releases from Bewl Water reservoir into the Bewl stream or improve the resilience of the natural habitat to drought events.



The opportunities expand even more when you consider how improving the soils in catchments could retain more water in the catchment over a longer period of time, helping to improve resilience at a catchment scale



This timescale aligns with the key decision points required for the region and the next phase of the strategic schemes will be in 2021 and therefore it vital that the options are continued to be developed to sufficient detail to allow help determine the optimum mix of solutions to promote a sustainable, resilient South East

## We will need to develop new approaches for new challenges

**Five planning principles underpin all technical work:**  
Adaptive, Forecast, Resilience, Environmental net-gain, Stakeholder

Technical developments to strengthen a world class regional approach

### Consistency

- Common data sets
- Shared forecasts
- Common standards of resilience / levels of service / application of drought measures
- Application of methodology

### Common platform

- One modelling platform
- Regional simulation to provide one view of existing system

### Enhanced techniques

- Develop and test enhanced new methodologies and techniques in areas including natural capital, environmental net-gain, trading, resilience, demand management and leakage, drought management measures, customer engagement

### Multi-sector need

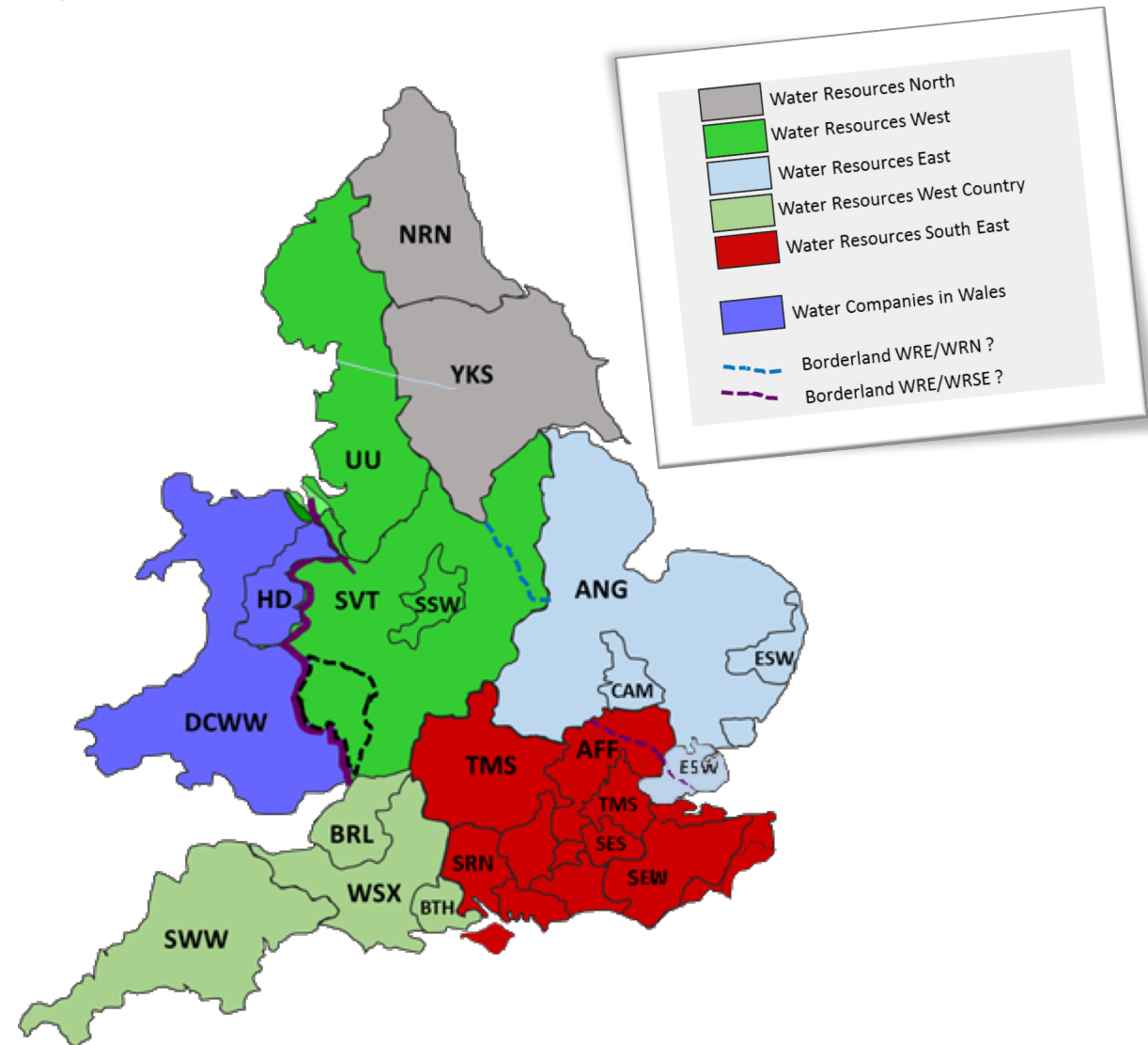
- Assessment and understanding of the needs of other major water users
- Develop regional vulnerability map that considers a range of climatic events
- Identification of interdependencies across the wider system





## WRSE recognises the potential for inter-regional solutions

- Members of WRSE sit on a number of other regional groups in order to assist with the development of a broader set of solutions
- We will aim to develop these links further where necessary and share any technical work with the other regions, if it is of help.
- We will also share outputs from our sprint workshops such as extreme droughts, water efficiency, leakage.



## Summary

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- The challenges over the next 80 years will require a range of options; this isn't a single solution type problem
- As we consider the broader framework of challenges then we will also have to turn to other partners for potential solutions further evidence and regulatory acceptance of these types of solutions will be required
- Catchment solutions will feature in future plans
- Wouldn't it be good if not only can we have a 100 resilient cities but 100 resilient catchments