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Regional Water Resources Planning: next steps

Daniel Johns FCIWEM
Managing Director

Fenland SOIL conference

17 April 2023

WRE's board members and funders

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love every drop
anglianwater

Affinity Water

CAMBRIDGESHIRE & PETERBOROUGH COMBINED AUTHORITY

Norfolk County Council

ESSEX&SUFFOLK WATER living water

Suffolk County Council

CAMBRIDGE WATER COMPANY

NFU

Broads Authority

Essex County Council

ada Representing Drainage Water Level & Flood Risk Management Authorities

The Rivers Trust

RWE

WRE's operating costs are funded by membership fees:
70% water companies, 30% other organisations

Wildlife and Countryside LINK


SEMLEP
South East Midlands Local Enterprise Partnership
BritishSugar
An AB Sugar company
The Stamford Canal Society
Carter Jonas
RHS
Biomation
Urban&Civic plc
CAMBRIDGE AHEAD
Natural Cambridgeshire
Ely Group of Internal Drainage Boards
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the Environment Bank
Essex County Council
Cambridgeshire County Council
Nene Park
THE JOCKEY CLUB
love every drop
anglianwater
CAMBRIDGE WATER COMPANY
Affinity Water
Your local supply, on tap
Lincolnshire COUNTY COUNCIL
Suffolk County Council
INLAND WATERWAYS ASSOCIATION
NORTH NORFOLK DISTRICT COUNCIL
Norfolk County Council
ESSEX & SUFFOLK WATER
Natural Cambridgeshire
Borough Council of King's Lynn & West Norfolk
Breckland Council
SEVERN TRENT
Broads Authority
Energy UK
East Suffolk Drainage Board
South Holland Drainage Board
RWE
NEWANGLIA
Local Enterprise Partnership for Norfolk and Suffolk
University of Suffolk
Suffolk New College
EDF ENERGY
IBRCC
bmk Waterway Park
ada
Representing Drainage Water Level & Flood Risk Management Authorities
Norfolk Rivers Drainage Board
UNIVERSITY OF LINCOLN
UEA
University of East Anglia
Cambridgeshire ACRE
Working to strengthen local communities
Broads Drainage Board
Water Management Alliance
Cranfield University
CAN
Community Action Norfolk
CPRE
Campaign to Protect Rural England
Standing up for your countryside
Black Sluice Internal Drainage Board
NORTH LEVEL DISTRICT INTERNAL DRAINAGE BOARD
King's Lynn Drainage Board
NFU
CLA
The Nature Conservancy
WildAnglia
Nature is our business
rspb
H & J Nevile & Son
IRRIGATION IN UK
BAWAG
SOMELCO
ANGLING TRUST
FISH LEGAL
NORFOLK RIVERS TRUST
NORFOLK FWAG
T.W. Page & Son ltd
East Suffolk Water Abstractors Group (ESWAG)
WOODLAND TRUST
BIODIVERSIFY
Essex and Suffolk Rivers Trust
FeCRA – The Federation of Cambridge Residents' Associations
BROWN&CO
waterwise
RWC TITTLESHALL LIMITED
Bedfordshire Cambridgeshire Northamptonshire
BEDFORD GROUP OF INTERNAL DRAINAGE BOARDS
Managers of the local water environment
Sustainable Water Solutions
Dr Jilly Hall
Supporting the People who Support Nature
Sustainable Direction Ltd
Essex Wildlife Trust
RCCE
RURAL COMMUNITY COUNCIL OF ESSEX
National Trust
CVF
CAMBRIDGE CITY COUNCIL
South Cambridgeshire District Council
Uttlesford District Council
WILLMOTT DIXON
SINCE 1852
Lincolnshire Wildlife Trust
REVIVE
Cam Valley Forum
Protecting and enhancing the environment of the river Cam and its tributaries
The River Lark Catchment Partnership
Lark Abstractors Group
Fenland CAMBRIDGESHIRE
Fenland District Council
Broadland District Council
Community at heart
South Norfolk COUNCIL
COSTAIN
ES INTERNATIONAL
Consultation Group
Department for Environment Food & Rural Affairs
NATURAL ENGLAND
Environment Agency
dwi
Forestry Commission
CCW
RAPID
Ofwat
Wash Frontage Group
Norfolk Farm Management Limited
GREAT GLEMHAM FARMS
The land app
SOMERLEYTON
SPAINS HALL ESTATE
ROYAL ESTATE Sandringham
Nature Friendly Farming Network
Wilson Wraight
Thelveton Farms
Voluntary CENTRE Services
Helping everyone to make a difference
Drip UK
Better Together
Cavs
Stantec

River Witham, Boston

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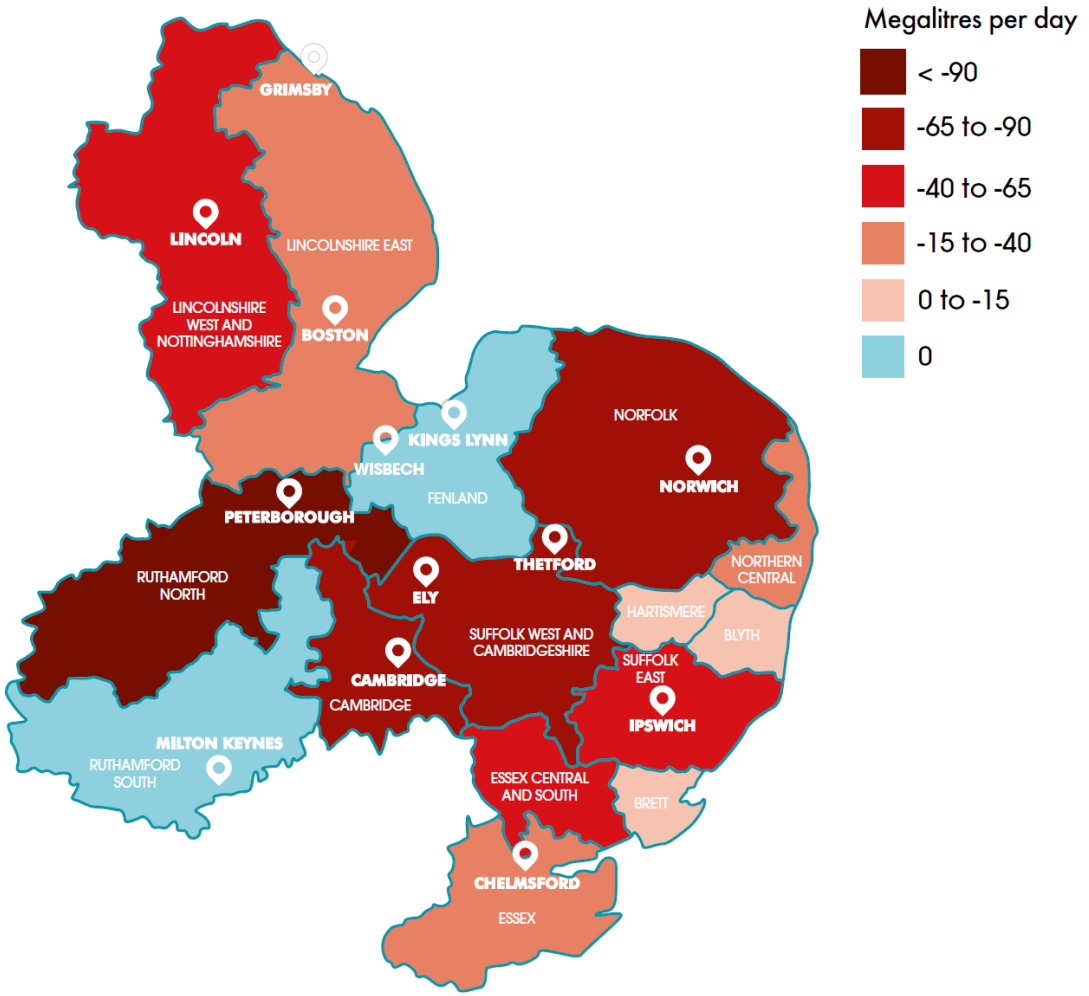
Draft Regional Water Resources Plan for Eastern England

Urgent action needed by all sectors to manage the region's scarce water resources



Projected supply-demand deficits in 2050 (Public Water Supply only)

- Whole of Eastern England is classified as 'seriously water stressed' by the Environment Agency
- 92% of rivers and other waterbodies fall short of 'good' ecological status
- A deficit of 640 million litres of water per day (Ml/d) projected for 2050
- Unless action taken, increasing water scarcity will:
  - constrain agricultural production
  - curtail economic and housing development
  - endanger the East's iconic chalk rivers, peatlands and wetlands

300Ml/day more water needed by 2050

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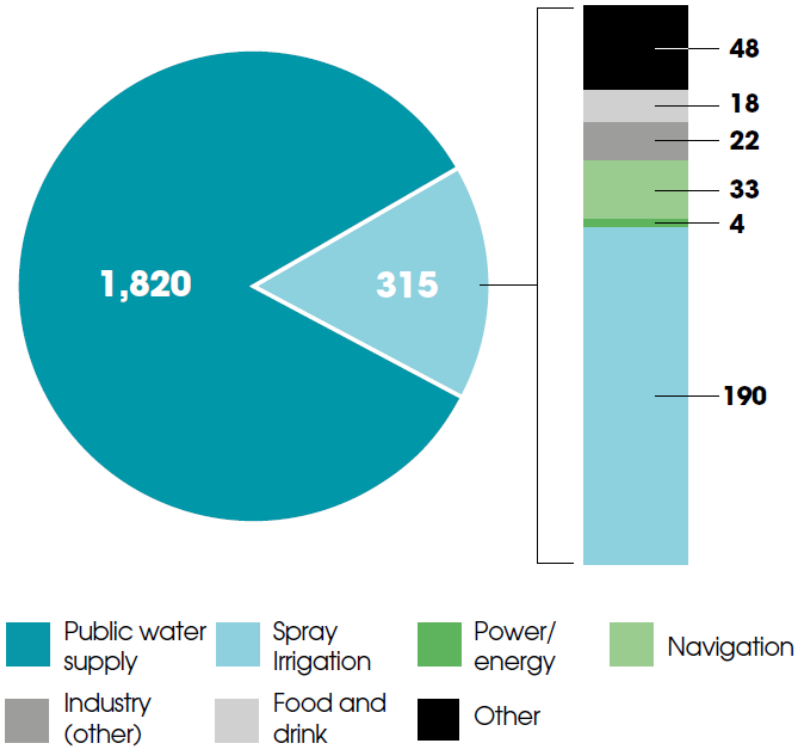
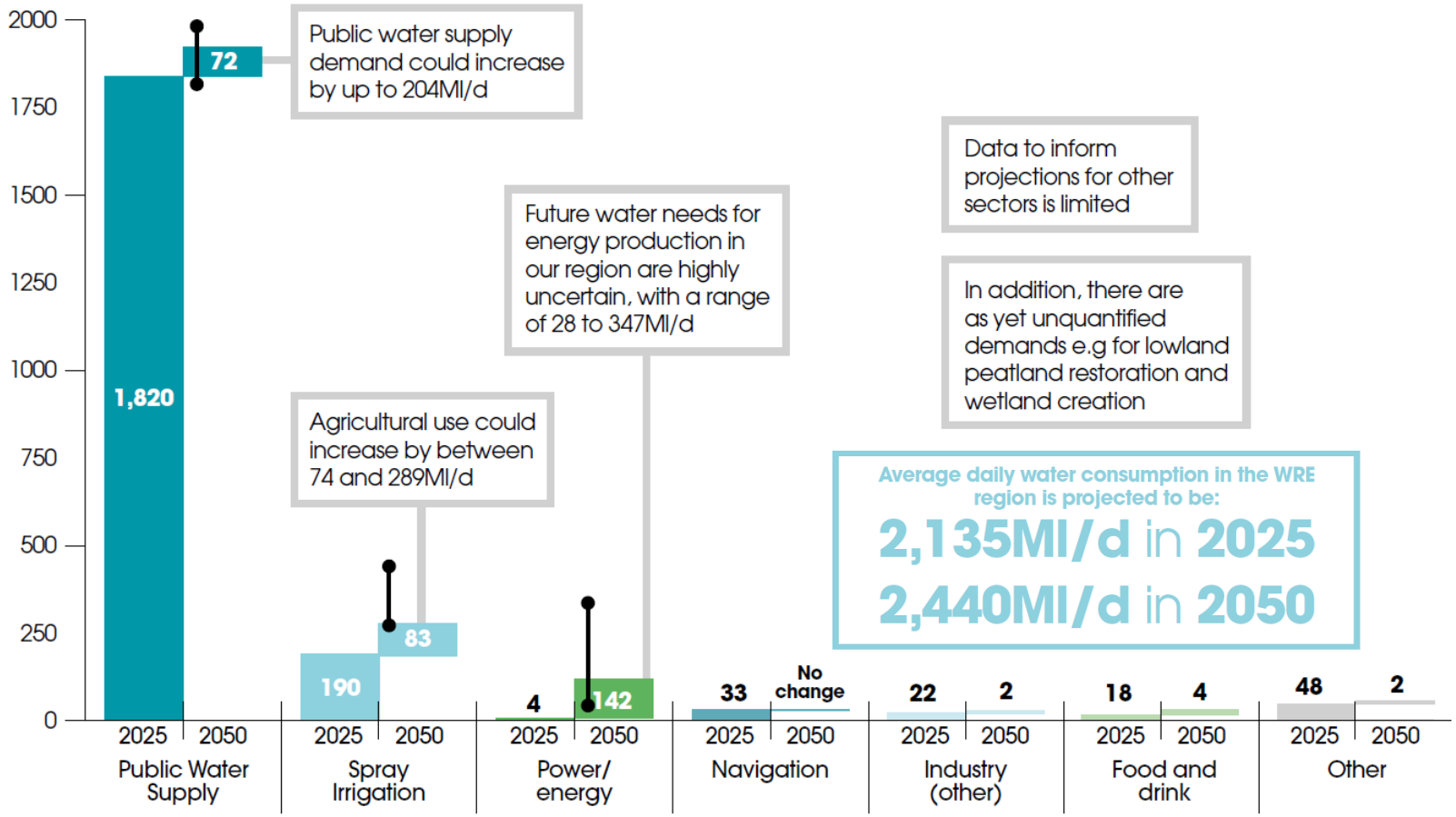


Baseline water demand in 2025



Projections and uncertainties in future water demand

Water available from existing sources will fall

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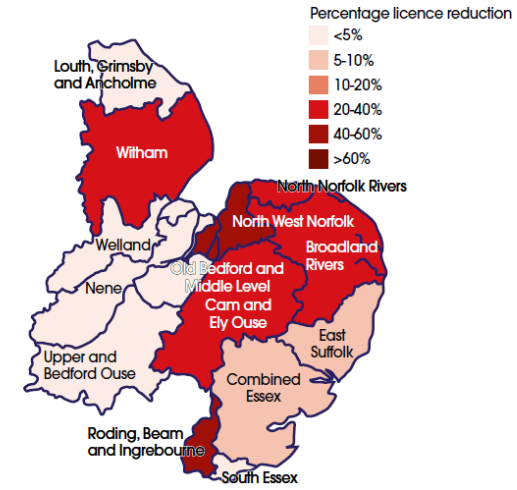
	Capping licences to protect habitats To meet 'no deterioration' legal requirement	**Drought resilience** A regulatory requirement to deliver 1:500 year drought resilience by 2040	**Climate change** An uncertain, progressive reduction in available water	**Environmental Destination** Achieving flows that support good ecological status by 2050
	By 2035	**By 2040**	**By 2050**	**By 2050**
Public Water Supply	**148Ml/d** **8%**	**85Ml/d** **5%***	**23Ml/d** **1%***	**337Ml/d** **19%***
Agriculture	**Further work with Environment Agency needed**	**n/a**	**Further work needed**	**59Ml/d** **22%****
Other Sectors		**n/a**		**22Ml/d** **8%****



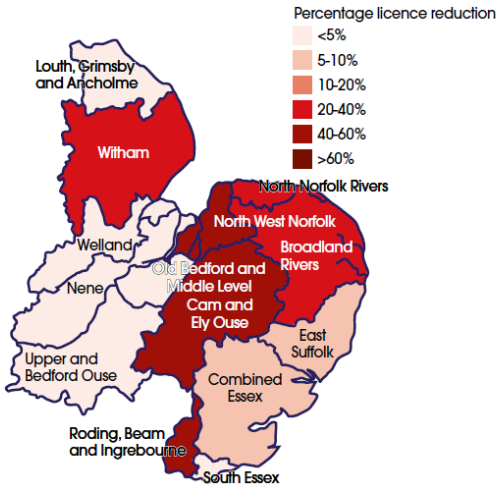

Shorter-term challenge → **Longer-term challenge**

Some areas could lose 60%+ of licenced volumes

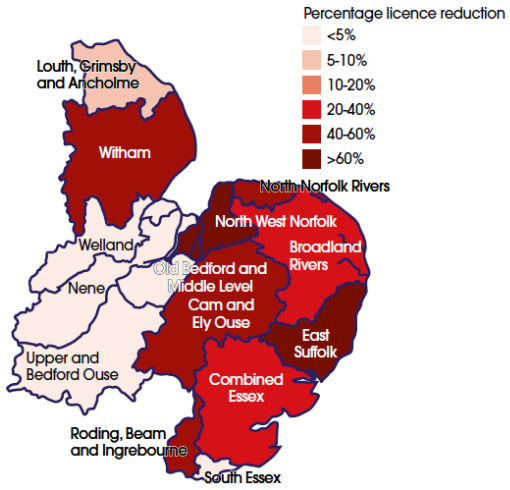
Public water supply: Recover (BAU)



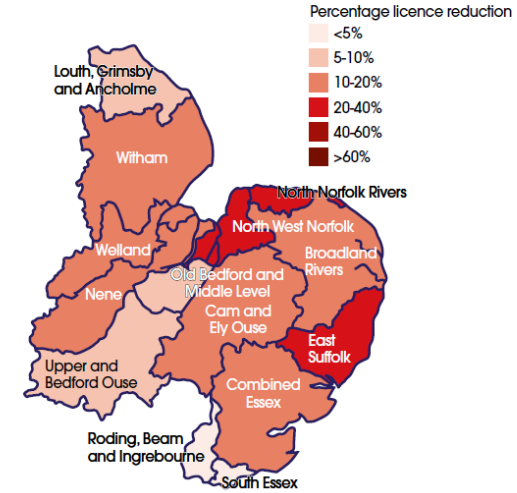
Public water supply: Resilience (BAU+)



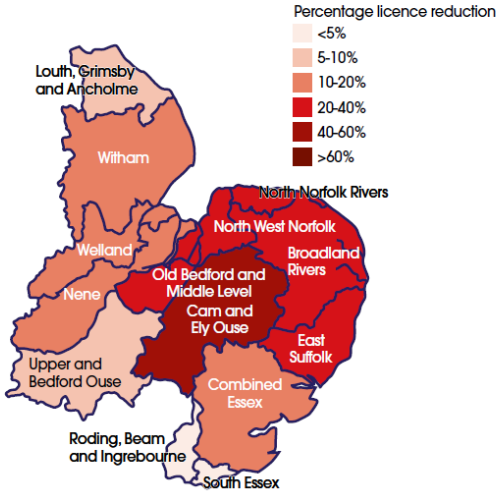
Public water supply: Enhance



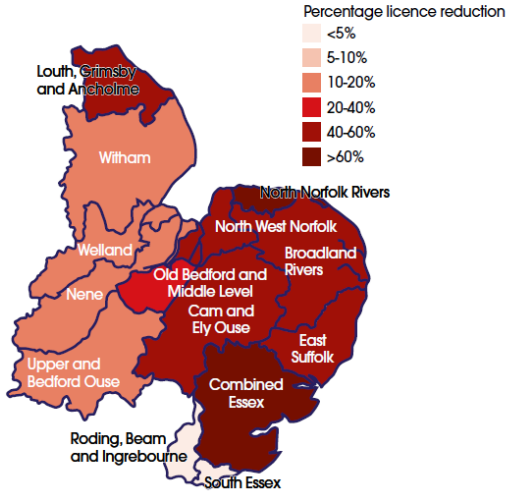
Agriculture: Recover (BAU)



Agriculture: Resilience (BAU+)



Agriculture: Enhance



Potential returns of water to the environment for Public Water Supply (*top row*) and agriculture (*bottom row*) by 2050:

- **'Business As Usual':** to meet existing legal requirements, excluding 'uneconomic' waterbodies
- **BAU+:** extra protection for internationally designated habitats
- **Enhance:** including 'uneconomic' waterbodies plus extra protection for UK designated habitats, chalk rivers, headwaters and wetlands

Our proposed Regional Plan: Public Water Supply

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Demand management
c. 160Ml/d reduction

- Household consumption falls to an average 110 l/h/d (versus 135l/h/d in 2025) including as a result of policy support from government.
- Significant leakage reduction from already industry-leading levels. Targets by company vary depending on their current position.
- Metering penetration rises to 97% (from 84% at present), with full roll-out of smart metering by Anglian Water (by 2030), Essex and Suffolk Water (by 2035), Cambridge Water (by 2035) and Affinity Water (by 2040).
- No net change assumed in non-household water use.

Supply option capacity
c. 510Ml/d

Reservoir storage
c. 270Ml/d

Cambridgeshire Fens Reservoir into supply by 2035-2037 to support delivery of abstraction licence caps reductions.

South Lincs Reservoir into supply by 2039-2041 supports delivery of drought resilience and Environmental Destination. A smaller winter storage reservoir in North Suffolk by 2045.

Effluent water reuse
c. 60Ml/d

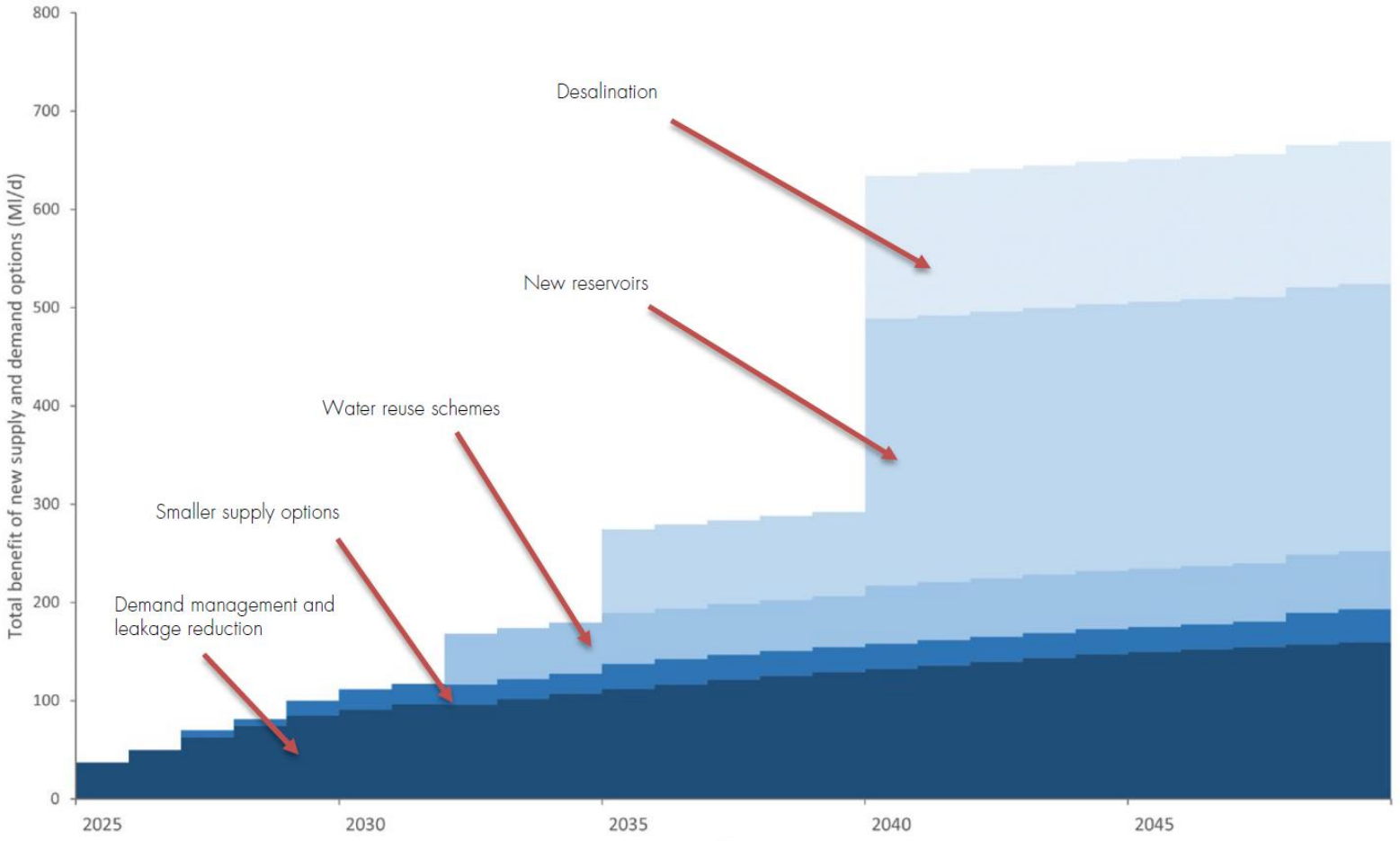
29Ml/d from reuse schemes needed by early 2030s to balance supply and demand as licence caps are imposed.

Desalination
c. 145Ml/d

Likely need for schemes in Essex, Suffolk and Norfolk, with a possibility in Lincolnshire – supporting longer term environmental goals from 2040.

Transfers and smaller options
c. 34Ml/d

Transfers are developed early in the plan for water to be moved from new schemes to where it's needed.



Bridging the projected PWS deficit over time

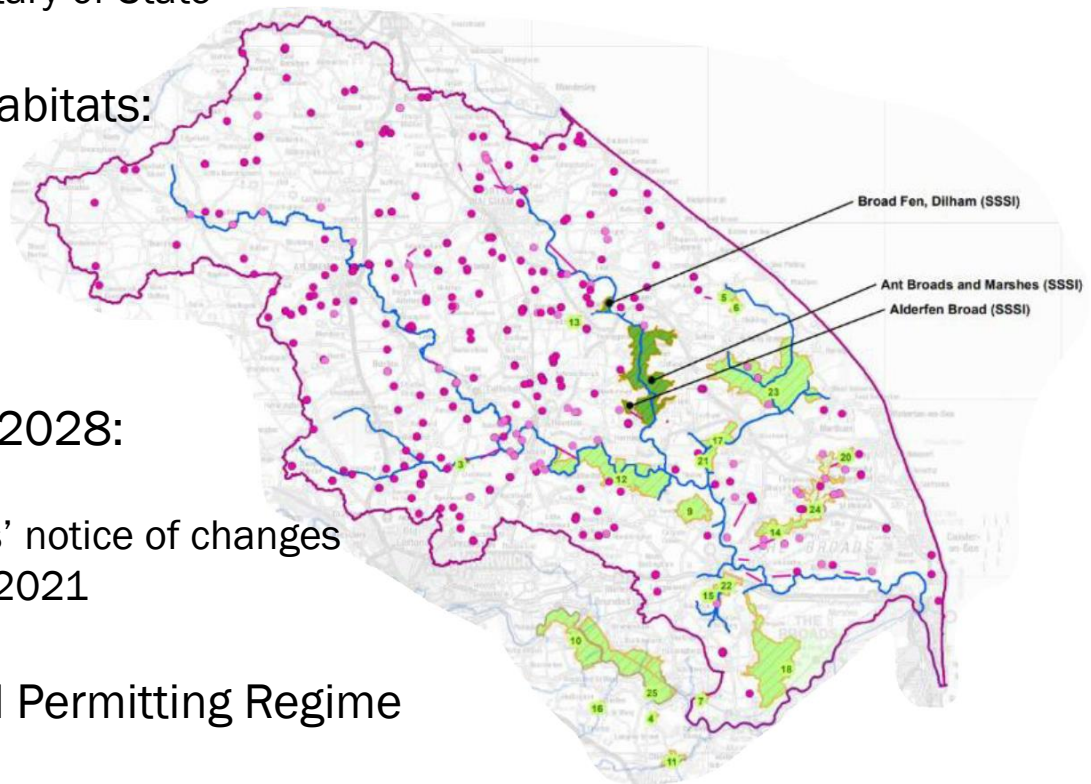
Proposed abstraction reforms

- Time-limited licences were reviewed by Environment Agency in 2018 to avoid deterioration in waterbody health. Further reductions are needed to restore healthy flows:
  - Licenced volumes were reduced to 'Max Peak' usage based on a reference period (2000-2015)
  - Could be reduced again in 31 March 2024 – approach to be announced by EA soon
  - Scope is 277 irrigation licences in East Anglia catchments
  - 28 days to appeal once notice served, final decisions rest with Secretary of State

- Permanent licences not immune where they harm designated habitats:
  - Could result in licences being heavily constrained or withdrawn
  - For example, changes to 17 permanent licences affecting Ant Valley SSSIs now confirmed for 1 October 2024
  - EA widening scope to entire Broads SAC, following judicial review

- All permanent licences to be reviewed and changes made from 2028:
  - Thousands of permanent licences potentially in scope
  - Licence holders contacted this year – EA aim to provide several years' notice of changes
  - No compensation will be paid, as per Section 88 of Environment Act 2021

- EA propose all licences to become permits under Environmental Permitting Regime



Toward multi-sector, catchment scale planning

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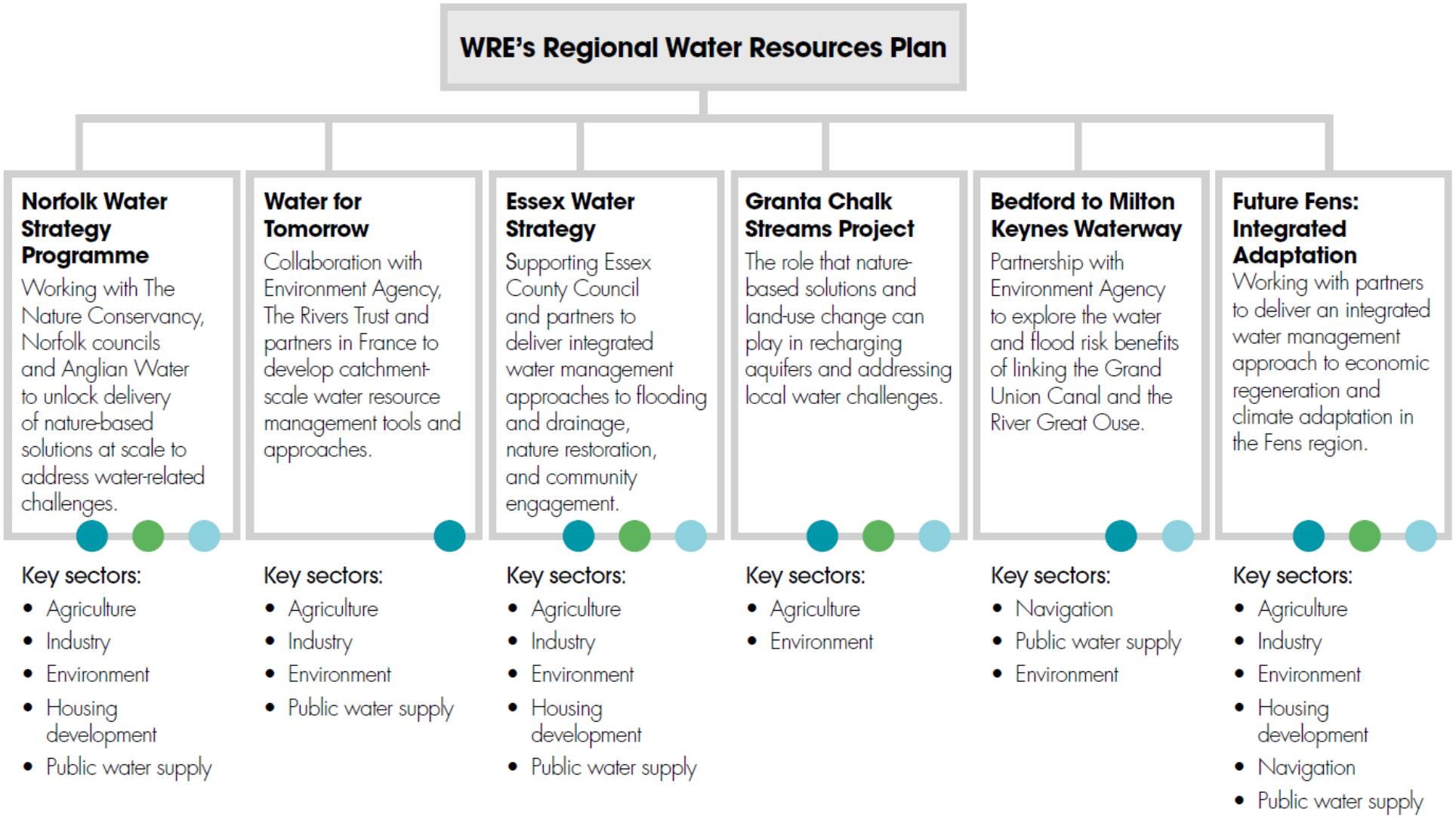

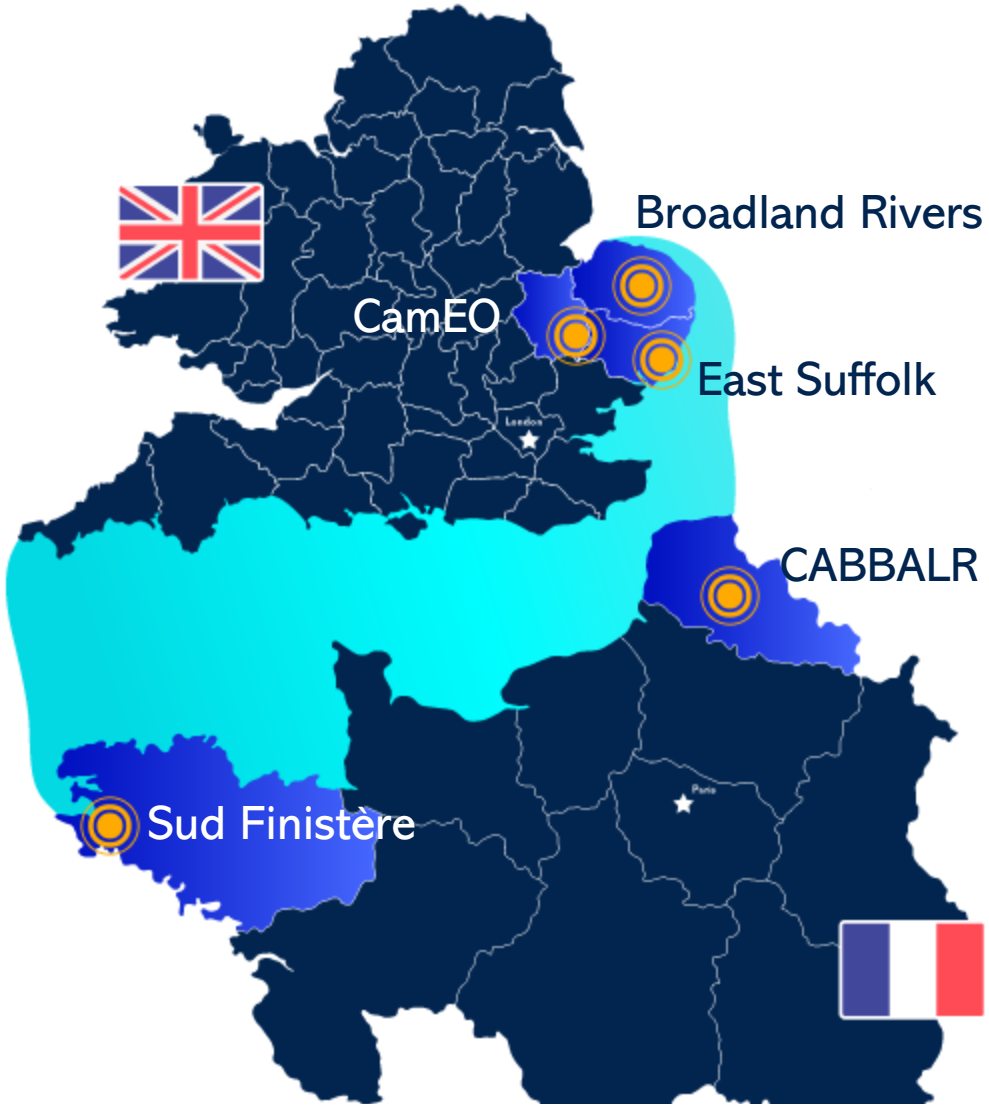

Interreg
EUROPEAN UNION
France (Channel Manche) England
Water For Tomorrow
European Regional Development Fund

Water for Tomorrow

https://water-for-tomorrow.com

The Rivers Trust

Communauté d'Agglomération Béthune-Bruay Artois Lys Romane

Environment Agency

Géosciences pour une Terre durable brgm

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Supporting long-term, local water resources plans

Interreg France (Channel Manche) England
Water For Tomorrow
European Regional Development Fund

What is the scale of the problem?

Hydrological modelling at a detailed local scale (sub catchments based on CAMS Assessment Points)

Testing different climate and environmental scenarios

What local options might be available?

Unconstrained list, for example:

- Demand management
- Rainwater harvesting
- Nature-based solutions
- Winter storage reservoirs
- Licence trading
- Licence sharing

How are the options likely to perform given future uncertainty?

Assessment of costs, water availability and supply resilience in a variety of future scenarios, examining trade-offs

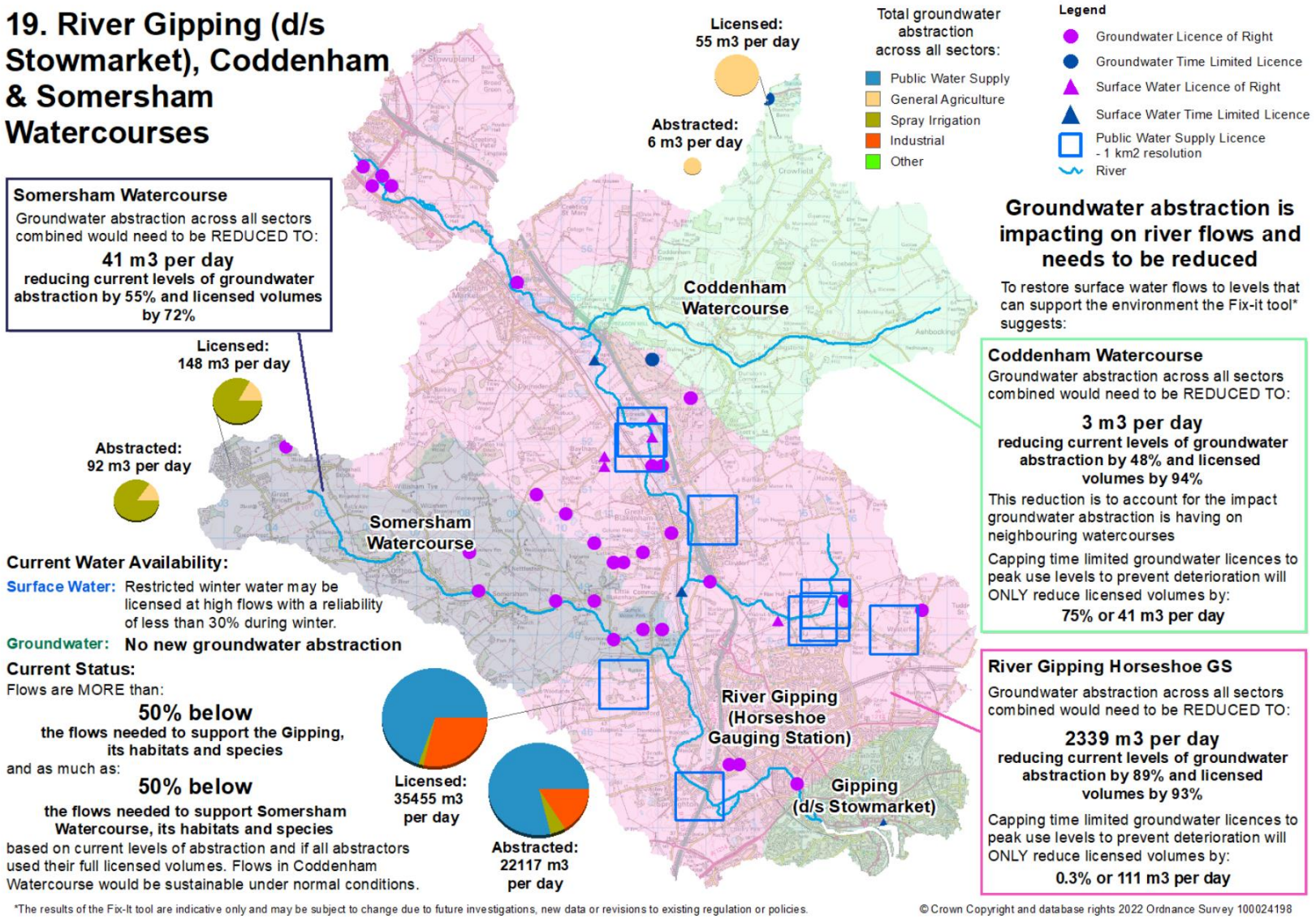
Create a portfolio that balances needs.

Catchment Management System

Allows non-technical users to run and visualise 'What if?' scenarios, based on combinations of:

- Selected water resource options and approaches
- Growth in water needs
- Extent of environmental returns necessary
- Severity of climate change impacts

Understanding the scale of the challenge



Environment Agency groundwater abstraction maps:

- Is there scope for new abstraction licences to be granted?
- How much might groundwater abstraction licences need to be reduced by to protect the environment?
- Will capping time-limited licences to ‘max peak’ historic usage be sufficient?

See: https://water-for-tomorrow.com/abstraction-map-gallery/

Where options are available?

Water efficiency
- Drip/trickle/boom irrigation
- Soil moisture deficit sensing
- Water efficient crops and varieties
- Indoor and vertical farming

Water capture & reuse
- Rainwater harvesting
- Treated effluent reuse
- Recycling of IDB water

Water storage
- Winter storage reservoirs
- Managed aquifer recharge
- Linear reservoirs using drainage networks

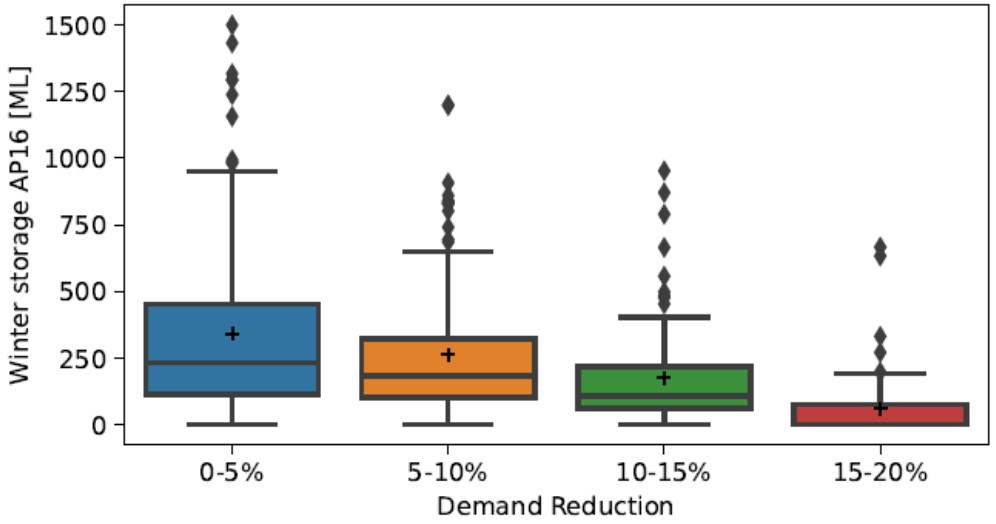
Water sharing

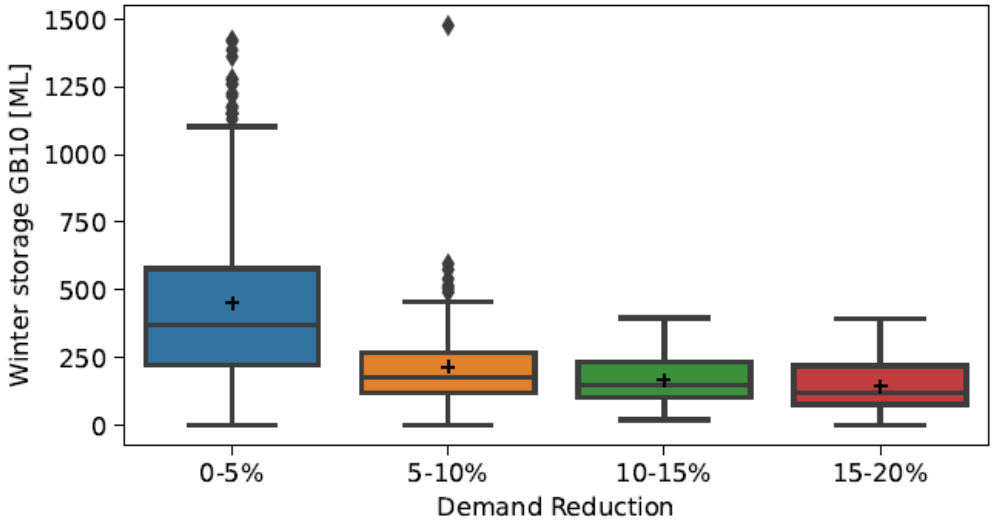
Water trading

Case studies:
- Place UK
- Felixstowe Hydrocycle (recycling and MAR)
- Lincoln Water Transfer Ltd
- Heronhill LLP
- Lower Nene Partnership
- Ely Group flood storage scheme
- Spains Hall Estate 'Whole farm reservoir' approach
- BAWAG Master Plan

Tools and forums:
- EA's 'Help for licence trading' mapping tool
- Wheatley Watersource
- ##New WRE Drought Group##

Demand reduction key to planning need for reservoirs





- In general, the lower the water used the less investment needed in reservoir storage
- But in some areas the benefits of demand reduction tails off (see bottom chart)

- Also, tightening up demand management means farm businesses can plan for and size reservoir projects with more confidence
- This is shown by the uncertainty bands for the amount of reservoir storage needed shrinking with more demand reduction

Significant scope for water sharing and trading

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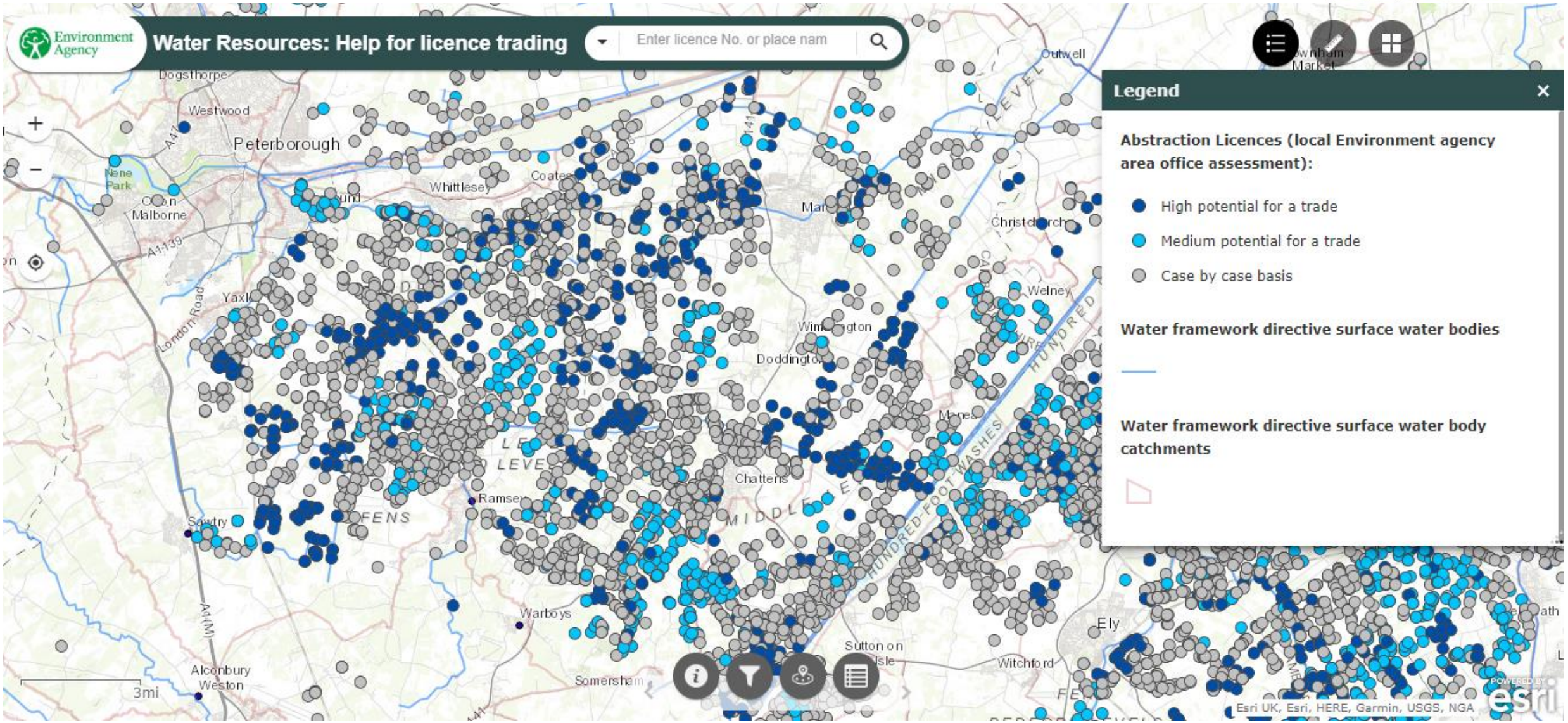
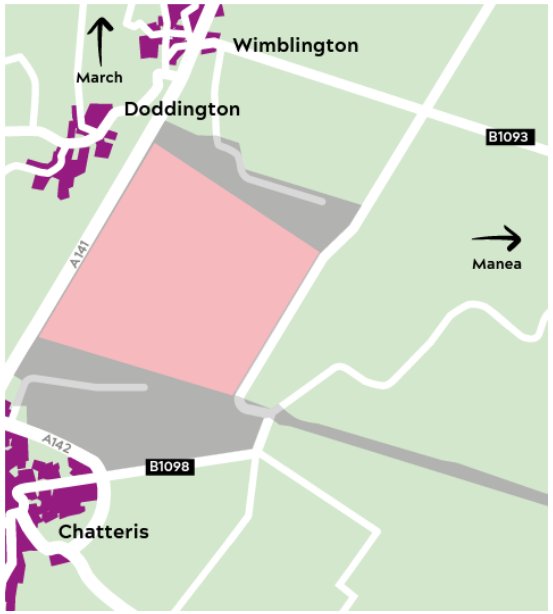
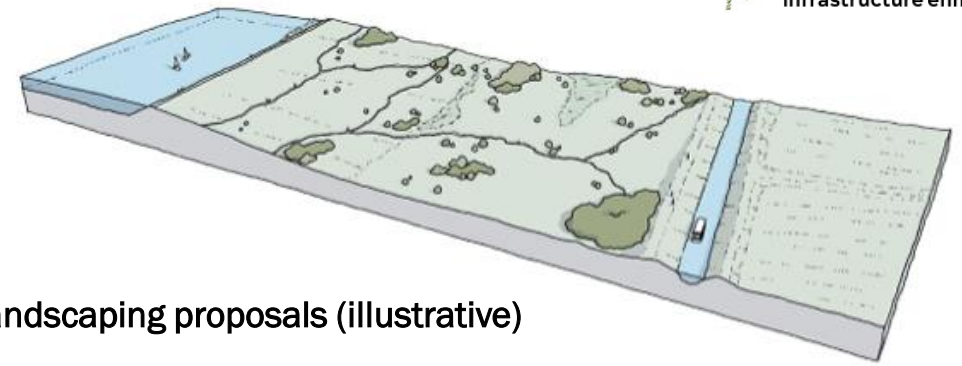
Water For Tomorrow



A new strategic reservoir in the Fens



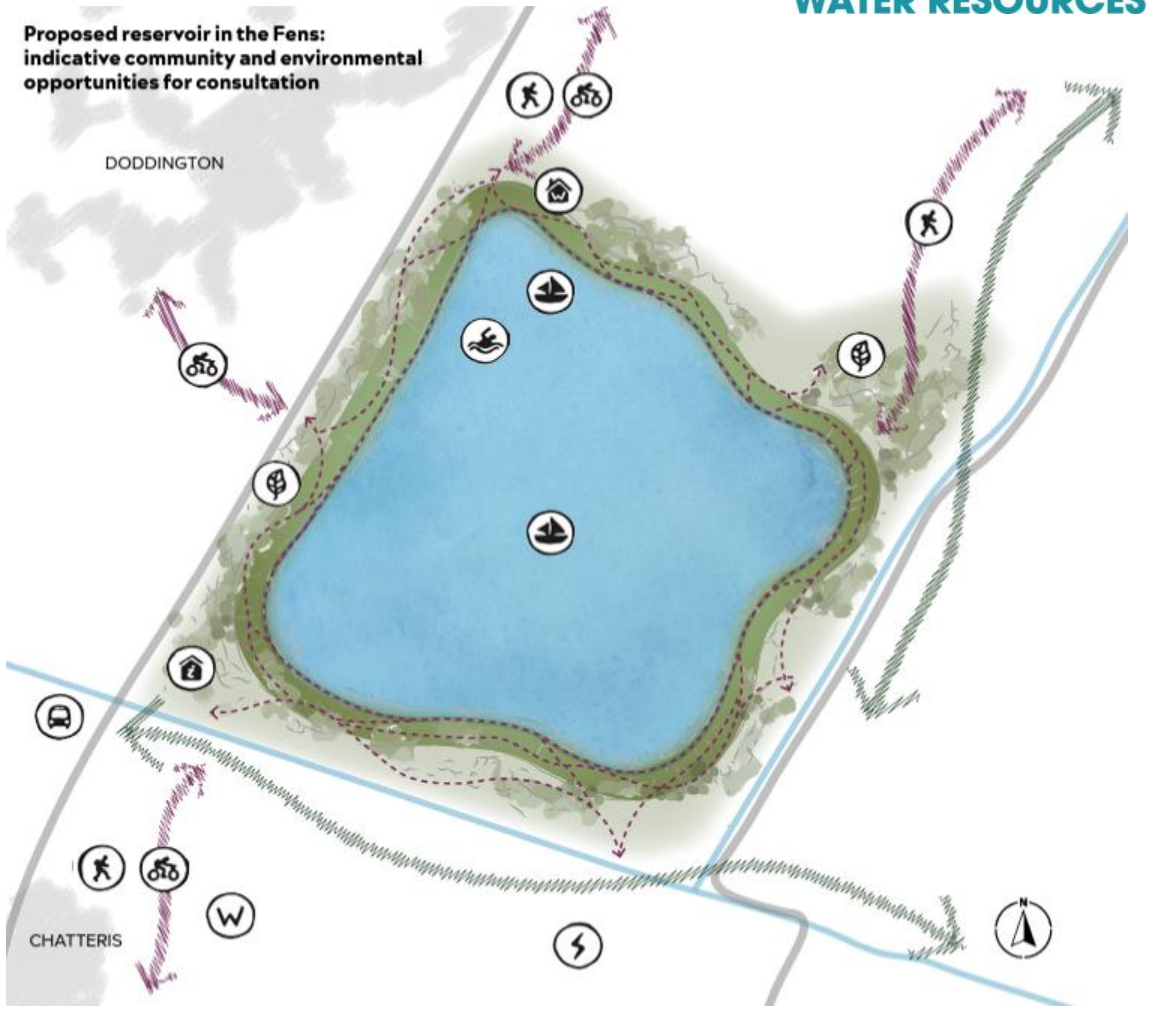
Proposed location for Fens Reservoir



Landscaping proposals (illustrative)

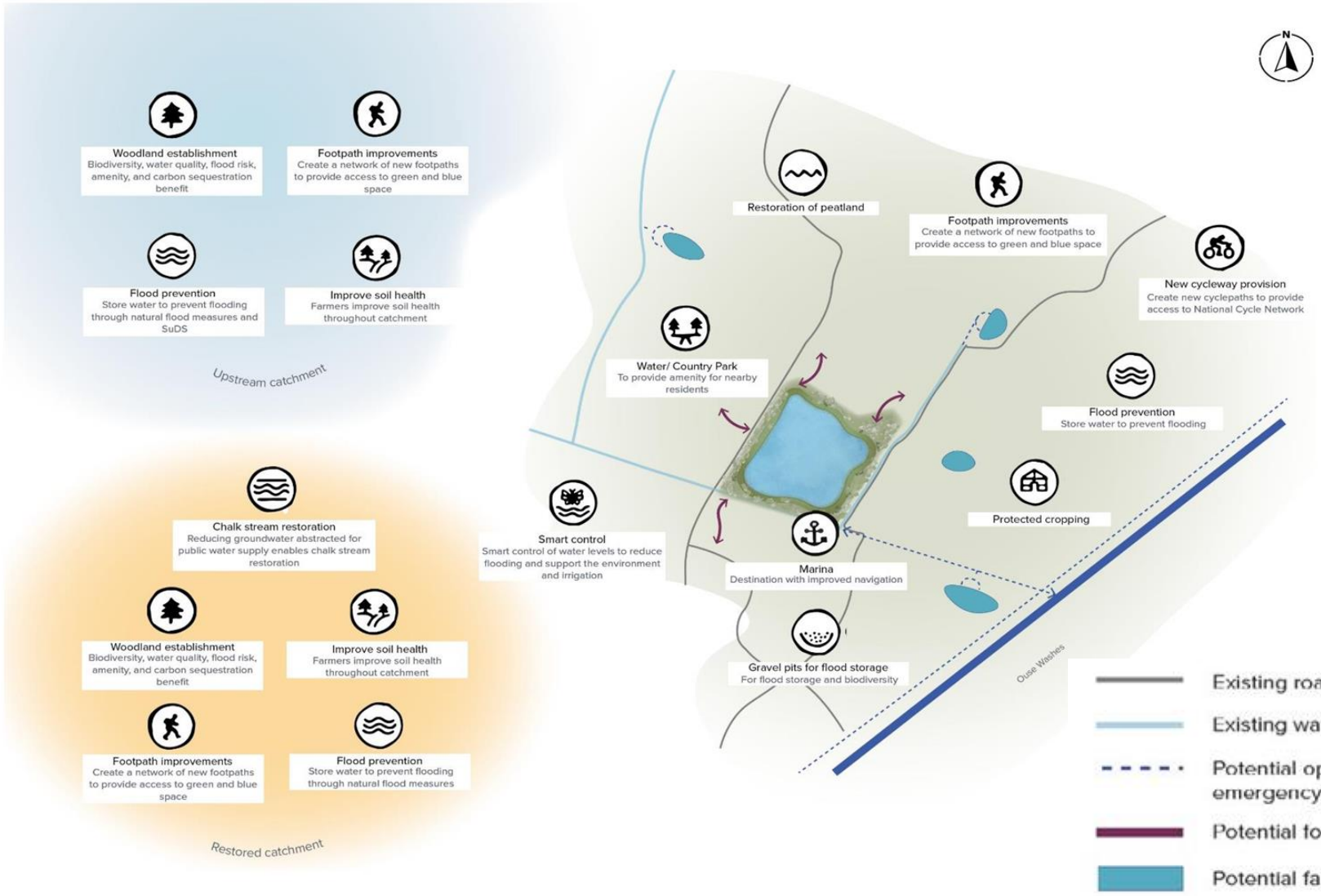
Key:

- Watersports Centre
- Visitor Centre
- Footpath improvements
- New cycleway provision
- Sustainable transport opportunities
- Renewable energy opportunities
- Sailing / watersports
- Biodiversity opportunities
- Water treatment works
- Wetland habitat areas within reservoir
- Multi-use recreation routes
- Opportunities for cycle / footpath connections
- Opportunities for green / blue infrastructure enhancement



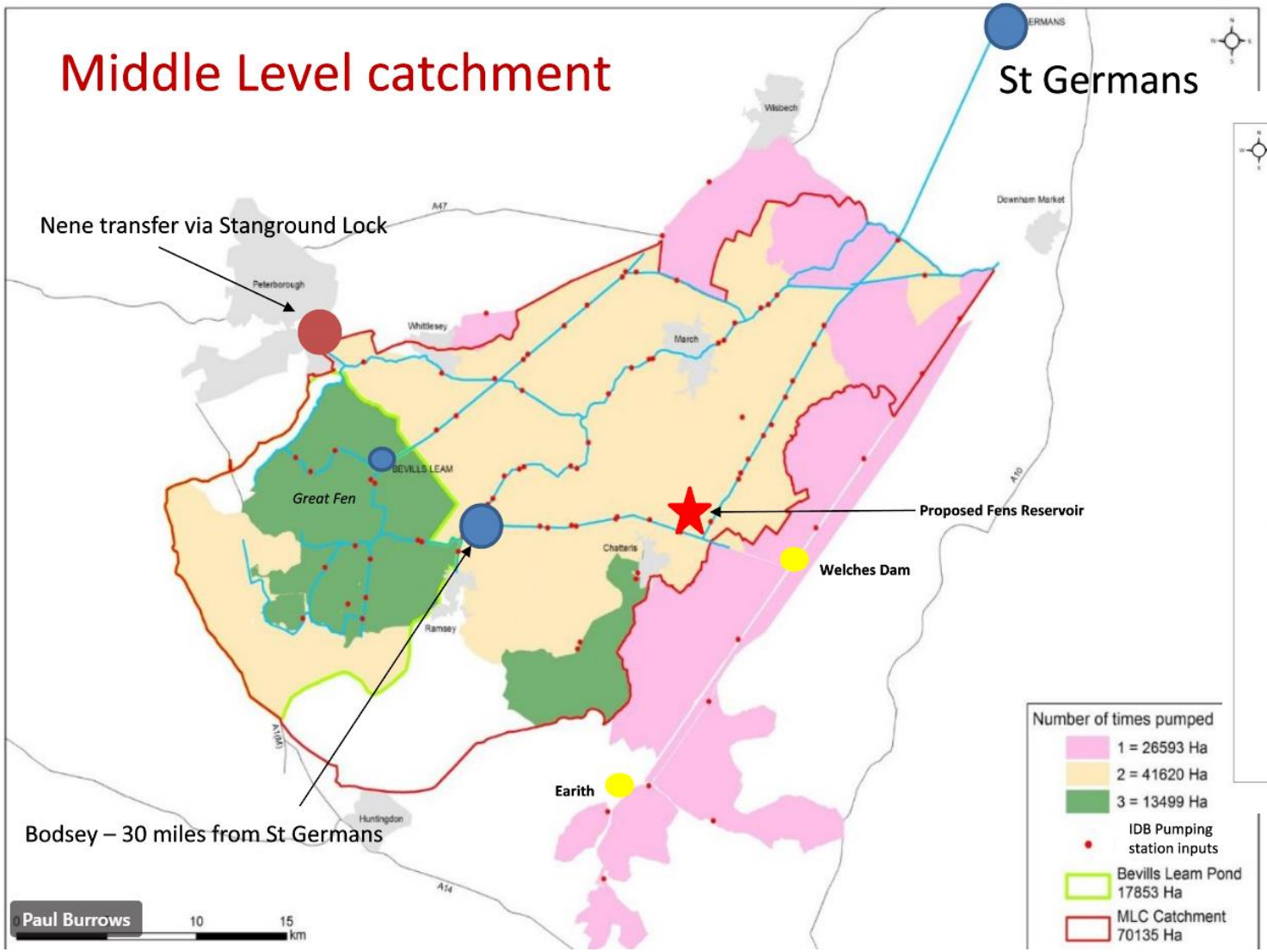
Indicative community and environmental benefits

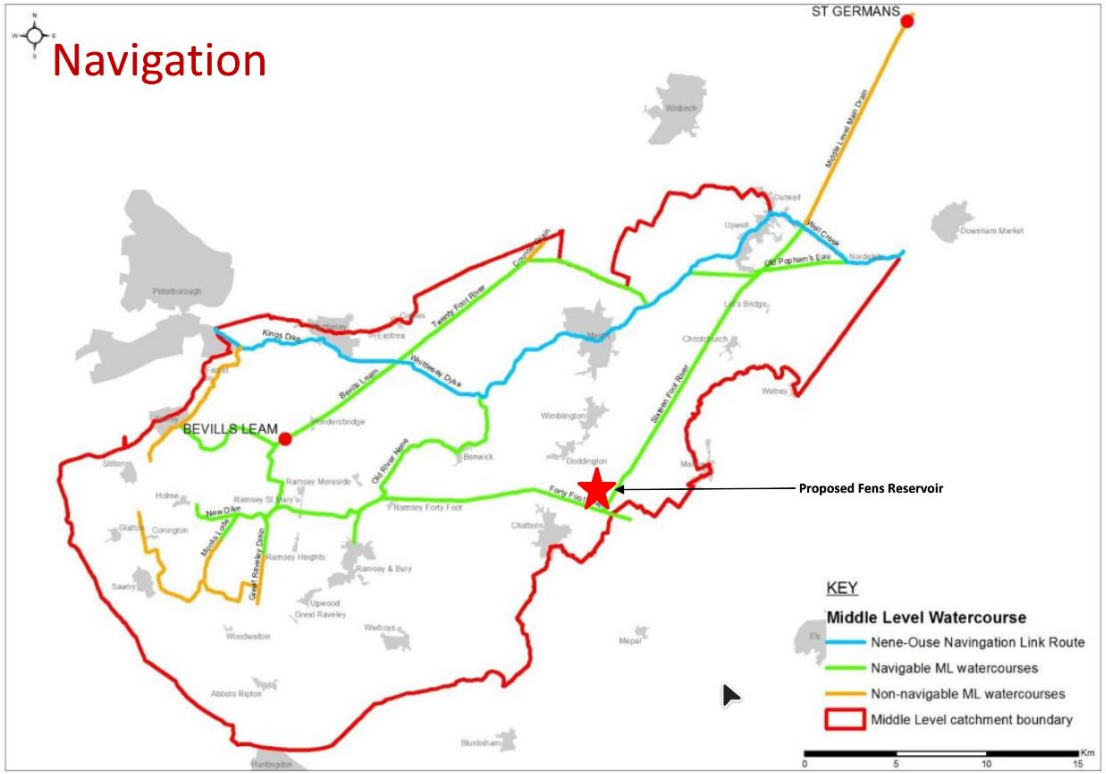
Delivering wider 'system' benefits



Intervention type	Intervention	Total cost	Total benefit
Landscape	Woodland creation	160	1,860
	Floodplain reconnection	40	940
	Fens - peatland restoration	40	450
	Bankside storage washland	50	300
	Multi-use wetland	10	200
	Grassland/other	10	100
Agricultural	Soil health improvement	6	460
	Agricultural water storage	330	150
	Public water supply (PWS) - conjunctive use	TBC	10
	Hydroponics	200	1,200
Social	Public access cycleways	10	30
Other	Open water[5] channel	TBC	TBC
	Total	**860**	**5,700**

An integrated water management vision





The Fens Water Partnership

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Borough Council of King's Lynn & West Norfolk

Water Management Alliance

Natural Cambridgeshire
putting nature at the heart

The Wildlife Trusts
Bedfordshire
Cambridgeshire
Northamptonshire

rspb

Huntingdonshire
DISTRICT COUNCIL

love every drop
anglianwater

NFU

middle level commissioners

Fenland
CAMBRIDGESHIRE
Fenland District Council

Cambridgeshire ACRE

Cambridgeshire County Council

ANGLING TRUST

INLAND WATERWAYS ASSOCIATION

WWT

ESSEX&SUFFOLK WATER living water

North Level District Internal Drainage Board

Historic England

Norfolk County Council

Cambridge Water

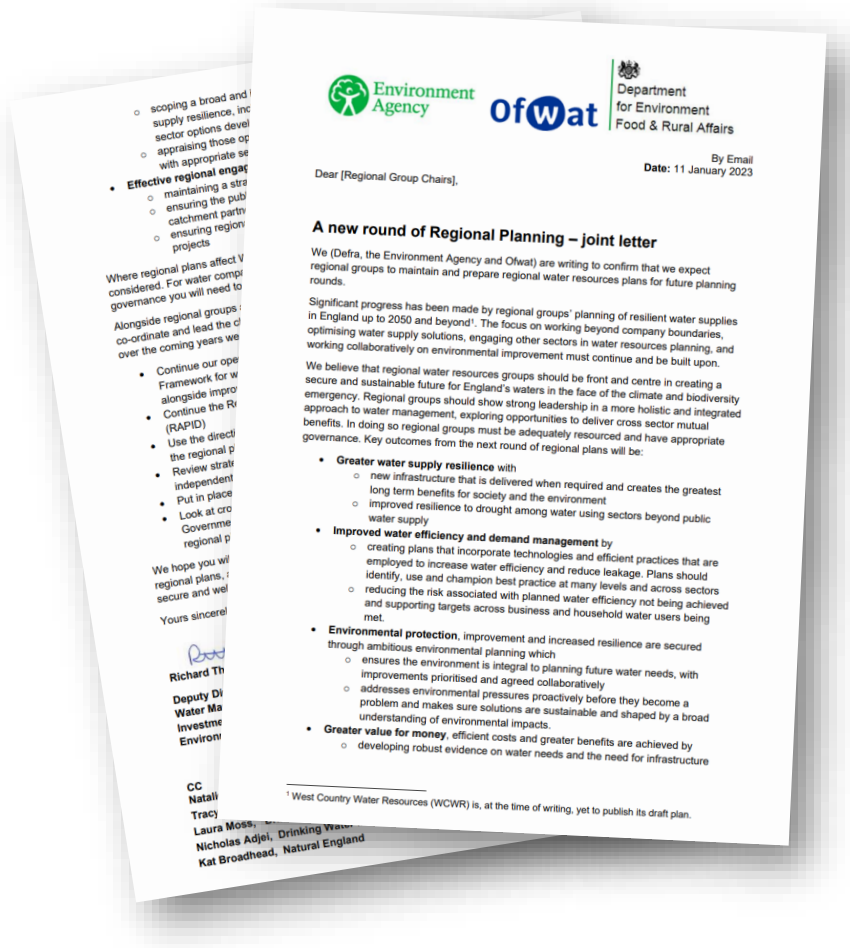
Environment Agency

Letter from Defra: a second round of regional planning

- Joint letter received from Defra, the EA and Ofwat confirming there will be a second round of regional planning through to 2029.
- Read the full letter here.

*"We believe that **regional water resources groups should be front and centre in creating a secure and sustainable future for England's waters** in the face of the climate and biodiversity emergency.*

*"Regional groups **should show strong leadership in a more holistic and integrated approach to water management**, exploring opportunities to deliver cross sector mutual benefits."*



Environment Agency | Ofwat | Department for Environment Food & Rural Affairs

By Email
Date: 11 January 2023

Dear [Regional Group Chairs],

A new round of Regional Planning – joint letter

We (Defra, the Environment Agency and Ofwat) are writing to confirm that we expect regional groups to maintain and prepare regional water resources plans for future planning rounds.

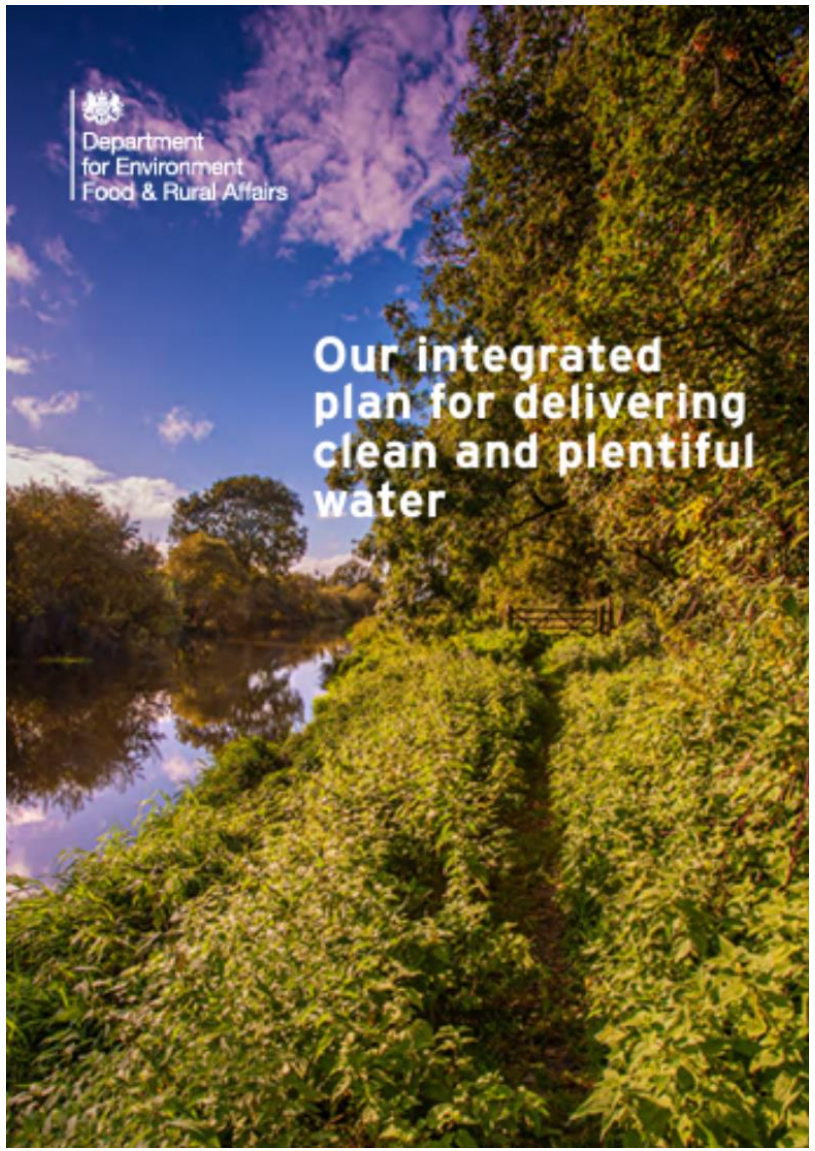
Significant progress has been made by regional groups' planning of resilient water supplies in England up to 2050 and beyond[1]. The focus on working beyond company boundaries, optimising water supply solutions, engaging other sectors in water resources planning, and working collaboratively on environmental improvement must continue and be built upon.

We believe that regional water resources groups should be front and centre in creating a secure and sustainable future for England's waters in the face of the climate and biodiversity emergency. Regional groups should show strong leadership in a more holistic and integrated approach to water management, exploring opportunities to deliver cross sector mutual benefits. In doing so regional groups must be adequately resourced and have appropriate governance. Key outcomes from the next round of regional plans will be:

- **Greater water supply resilience** with
  - new infrastructure that is delivered when required and creates the greatest long term benefits for society and the environment
  - improved resilience to drought among water using sectors beyond public water supply
- **Improved water efficiency and demand management** by
  - creating plans that incorporate technologies and efficient practices that are employed to increase water efficiency and reduce leakage. Plans should identify, use and champion best practice at many levels and across sectors
  - reducing the risk associated with planned water efficiency not being achieved and supporting targets across business and household water users being met.
- **Environmental protection**, improvement and increased resilience are secured through ambitious environmental planning which
  - ensures the environment is integral to planning future water needs, with improvements prioritised and agreed collaboratively
  - addresses environmental pressures proactively before they become a problem and makes sure solutions are sustainable and shaped by a broad understanding of environmental impacts.
- **Greater value for money**, efficient costs and greater benefits are achieved by
  - developing robust evidence on water needs and the need for infrastructure

[1] West Country Water Resources (WCWR) is, at the time of writing, yet to publish its draft plan.

Defra's new 'Plan for Water': a role for WRE



- Major reforms proposed - the policy and legal framework will be more streamlined, with greater join-up between water and flood planning, and aligned with Local Nature Recovery Strategies.
- Defra will:
  - Better integrate water and flood planning by reforming River Basin Management Plans and flood risk management planning – ensuring integration with water company plans
  - Align water and flood planning with Local Nature Recovery Strategies and the future Land Use Framework to make sure we are taking actions – especially nature-based solutions – where they will have the biggest impact
  - Review the implementation of the Water Environment Regulations 2017 to improve on-the-ground water outcomes whilst retaining our goal to restore 75% of water bodies to good ecological status – we will consult on any proposed changes

Thank you for listening

To get in touch:

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Water Resources East