

WRE

WATER RESOURCES EAST

Introduction to WRE

Water Resources East

One of 5 regional water resources planning groups.

WRE became an independent, not-for-profit, membership organisation in 2019.

In March 2020 the Water Resources National Framework (Environment Agency) tasked WRE to develop a regional, multi-sector water resources plan for Eastern England to 2050.

The multi-sector nature of our work reflects the strategic importance of water to the regional economy including agriculture and the natural environment.

We published the first plan in December 2023. Government have confirmed there will be a second round of planning. The National Framework is to be updated in early 2025.



WRE's board member and funders

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Affinity Water

love every drop
anglianwater

Cambridge Water

ESSEX&SUFFOLK WATER living water

The Rivers Trust

NFU

Norfolk County Council

RWE

ada Representing Drainage Water Level & Flood Risk Management Authorities

Essex County Council

Suffolk County Council

REVIVEL

CAMBRIDGESHIRE & PETERBOROUGH COMBINED AUTHORITY

Urban&Civic plc

5th studio

ada Representing Drainage Water Level & Flood Risk Management Authorities

DANINO CONSULTING

Affinity Water

giki zero.

Marshall

AT Delta-T Devices

DOWNHAM MARKET GROUP OF INTERNAL DRAINAGE BOARDS

Agri-Tech East

East Mercia Rivers Trust

CROSSLEY FARMS

AEL AE Lenton Group

Thelveton Farms

the Environment Bank

BEDFORD BOROUGH COUNCIL

Ely Group of Internal Drainage Boards
The Drainage Office, Main St, PRICKWILLOW, Nr Ely, Cambridgeshire, CB7 4UN

North Level District Internal Drainage Board

AtkinsRéalis

CATOR+CO SPECIALIST RURAL PROPERTY ADVISORS

Carter Jonas

love every drop

Norfolk Rivers Trust

BAWAG

anglianwater

Angling Trust

East Suffolk Drainage Board

Nexsys analytics

Norfolk Association of Local Councils

L&Q ESTATES

EDF ENERGY

Norfolk Wildlife Trust

STATERA ENERGY

sustainable direction thinking of the future

ESSEX&SUFFOLK WATER living water

King's Lynn Drainage Board

CAN Community Action Norfolk

Jacobs

Naish Farms

The Nature Conservancy
Protecting nature. Preserving life.

INA Independent Networks Association

fh AquaInform

Great Yarmouth Borough Council

Broadland District Council

South Norfolk Council

BIODIVERSIFY

Black Sluice Internal Drainage Board

B&MK Bedford & Milton Keynes Waterway Trust

ES INTERNATIONAL

NEWANGLIA
Local Enterprise Partnership for Norfolk and Suffolk

North Lincolnshire Council

Aquagrain

BROWN & CO

The Rivers Trust

Fenland Cambridgeshire
Fenland District Council

Essex and Suffolk Rivers Trust

NORFOLK FWAG

Cambridge Water

Great Glemham Farms

CAMBRIDGE CITY COUNCIL

SANDRINGHAM

Energy UK

Essex Wildlife Trust

FeCRA – The Federation of Cambridge Residents' Associations

River Lark Abstractors Group

CAMBRIDGESHIRE & PETERBOROUGH COMBINED AUTHORITY

NewShoots

Essex County Council

SEVERN TRENT WATER

SPAINS HALL ESTATE

SOMELCO

NFU

Osberton Grange Farm

Beds RCC Bedfordshire Rural Communities Charity

H & J Neville and Sons

IDB Bedford Group

SUN SURVEYING & ENGINEERING

TIH

Breckland Council

CLA

The River Lark Catchment Partnership

CAMBRIDGE AHEAD

McCain

Cambridgeshire County Council

Collison & Associates Ltd

Suffolk Growth

Blankney Estates

Nene Park

Independent Water Networks

GROUNDWORK EAST

South Holland Drainage Board

isle

Drip UK

Stantec

Konings

South Cambridgeshire District Council

Suffolk County Council

Cambridgeshire ACRE

Royal Horticultural Society

IndigoSwan

UNIVERSITY OF LINCOLN

BritishSugar

INLAND WATERWAYS ASSOCIATION

Borough Council of King's Lynn & West Norfolk

Aponic Vertical Aeroponic Farming Systems

BOSTON BOROUGH COUNCIL

UK

MANCHESTER 1824
The University of Manchester

Stanley-Jones Consulting

Better Together Cavs

RT FARMS

uniper

UEA University of East Anglia

waterwise

Wash Frontage Group

L F Papworth Ltd
"Excellence in practical farming"

Water Transfer Ltd

RSPB

WILLMOTT DIXON CONSTRUCTION

WATERSIDE GREEN ENERGY

Water Management Alliance

Urban&Civic

THE JOCKEY CLUB

Lincolnshire COUNTY COUNCIL

wheatley solutions
unrivalled utility metering software

Lincolnshire Community and Voluntary Service CVS

Wilson Wraight

Wildlife Trust for Beds, Cambs & Northants

Stormsaver
right as rain

middle level commissioners

RCCE RURAL COMMUNITY COUNCIL OF ESSEX
empowering local communities

Wynn Business Partnerships

Natural Cambridgeshire
putting nature at the heart

WILD EAST

Nature Friendly Farming Network

Trees & Design Action Group

UTTLESFORD DISTRICT COUNCIL

KISTERS

Lincoln Water Transfer Ltd

WildAnglia
Nature is our business

wsp

NORWICH City Council

COSTAIN

Norfolk Rivers Drainage Board

NFM

Volunteer CENTRE Service

WOODLAND TRUST

wrc independent | trusted | innovative

GREATER THETFORD PARTNERSHIP

T.W. Page & Son Ltd

CVF

Biomation

Howseman Agriculture Ltd

Suffolk New College SUFFOLK RURAL

RWC Tittleshall Ltd

JBA consulting

seneye

North Kesteven DISTRICT COUNCIL

NORTH NORFOLK DISTRICT COUNCIL

RWE

Lincolnshire Wildlife Trust

PROCTOR BROS LONG SUTTON, LINCS

EAST SUFFOLK WATER ABSTRACTORS LTD

SEMLEP
South East Midlands Local Enterprise Partnership

Consultation group

Forestry Commission

Department for Environment Food & Rural Affairs

Environment Agency

RAPID

Ofwat

CCW The voice for water consumers Llais defnyddwyr dŵr

Historic England

NATURAL ENGLAND

Sustainable Water Solutions

The land app

The Stamford Canal Society

Cranfield University

BARNHAM BROOM

CPRE The countryside charity Norfolk

REVIVE

wave

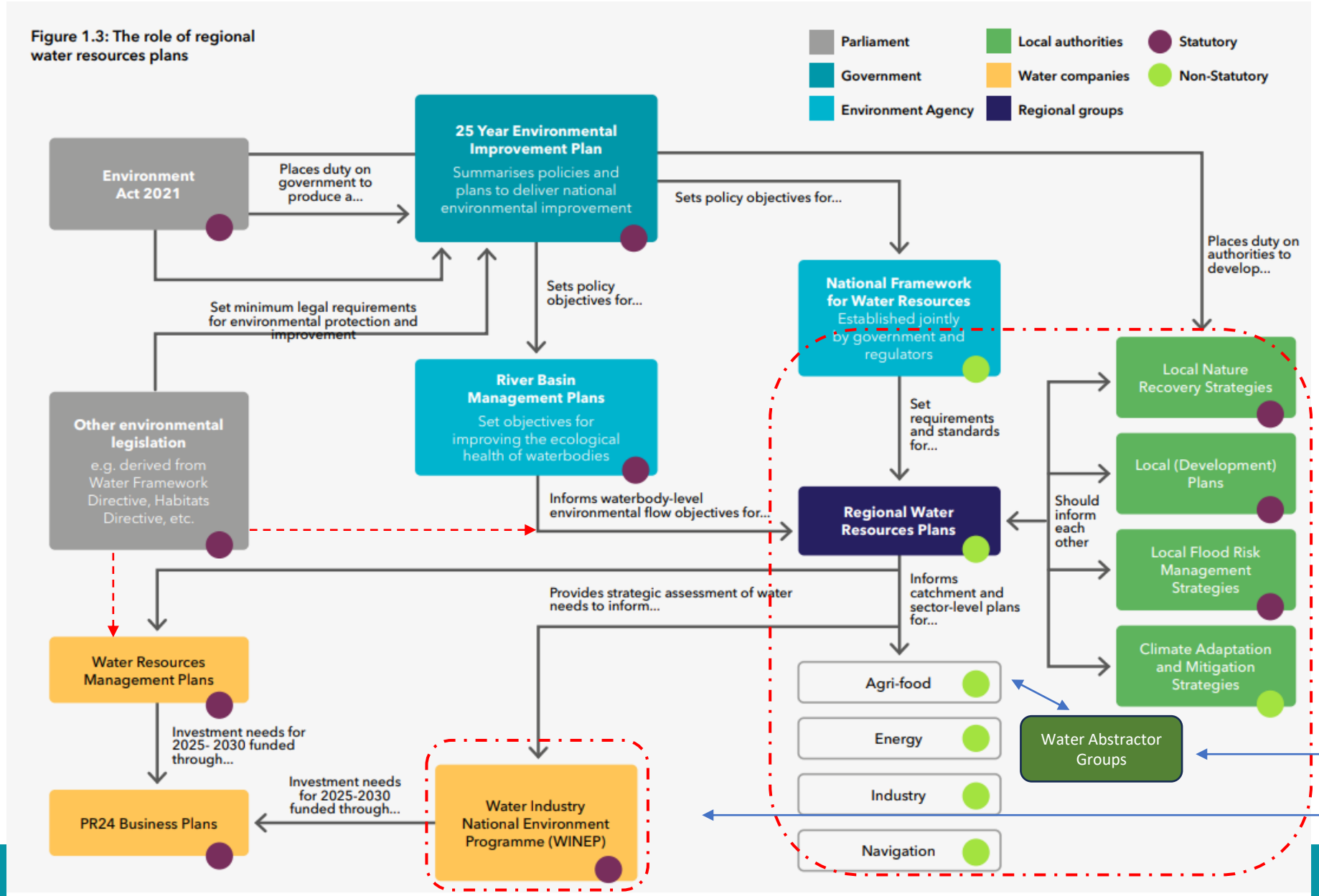
Norfolk County Council

SizewellC Doing the power of good for Britain
EDF CGN

University of Suffolk

WRE's Regional Water Resources Plan in context

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Catchment-scale environmental evidence and ambitions

Local scale water needs evidence and local resource options

Vision and strategic priorities

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WRE's vision is for Eastern England to have sufficient water resources to support a flourishing economy, a thriving environment and the needs of its population and for the region to be seen as an international exemplar for collaborative integrated water resource management

1. Develop a more comprehensive, fully multi-sector, regional water resources plan for Eastern England.
2. Support catchment-scale activity across the region to enable long-term planning and environmental improvement across sectors.
3. Increase our membership, engagement and influence within the region.
4. Be thought leaders and pioneers of collaborative approaches to integrated water management, helping to shape international best practice, national government policy and local delivery.
5. Continue to strengthen WRE's governance and funding.

WRE's Regional Water Resources Plan

Our regional plan:

Outlines the needs of different sectors for water in the region, now and in the future.

Forecasts the amount of water available for supply, resulting from factors such as climate change, improving resilience to drought, and the need to reduce abstraction from current water sources to improve the environment.

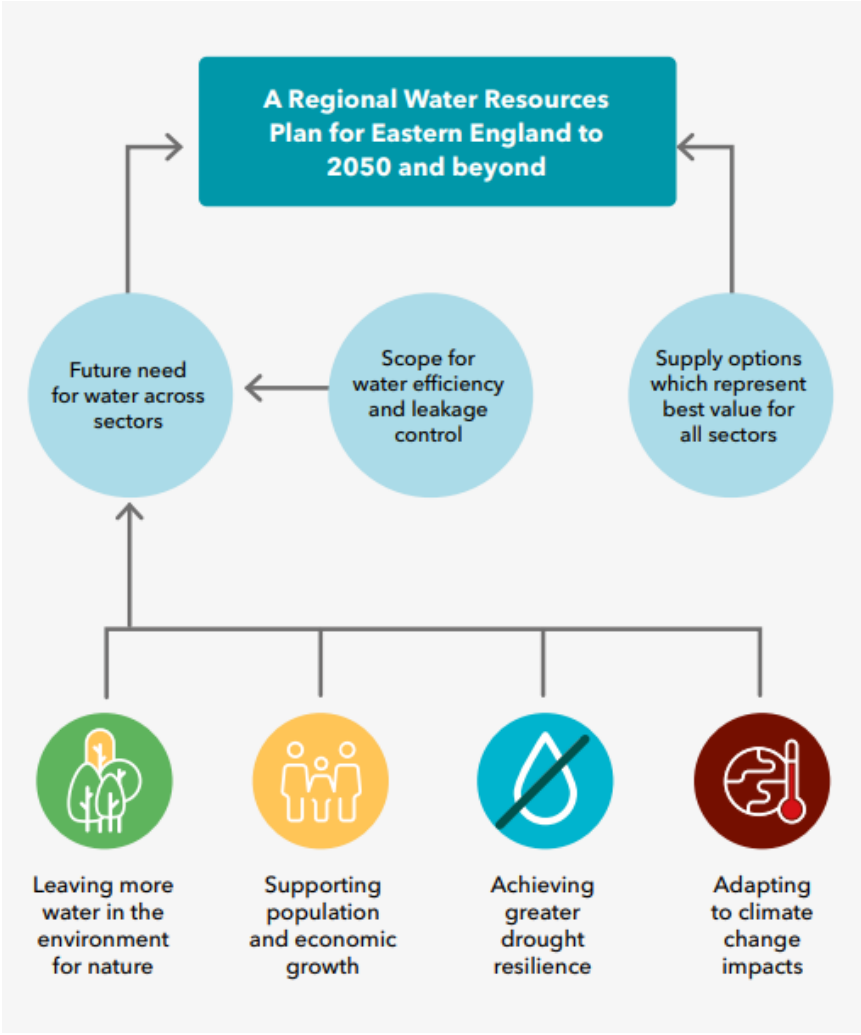
Identifies the ‘best value’ plan for meeting the projected supply-demand deficits for the public water supply in a way that maximises co-benefits for other sectors and the environment.

Describes the work that has started and is proposed at a catchment scale to identify the water needs and solutions to address deficits for other sectors such as agriculture, power generation and navigation.

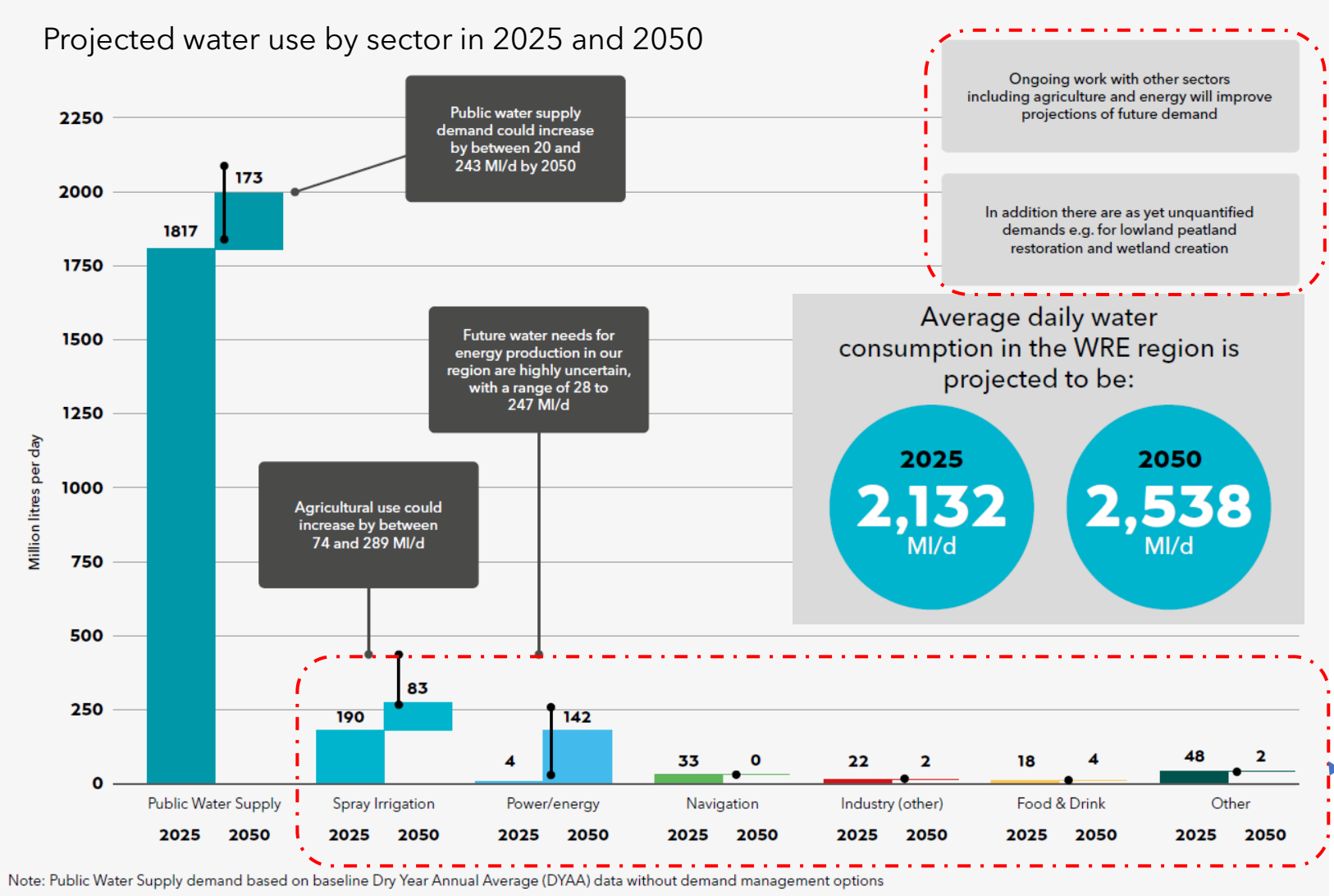
How we develop our plan

- WRE regional simulator to support multi-objective decision-making.
- Aggregated multi-sector water demands at a catchment scale.
- Simulator outputs track risks to public water supply, agriculture, energy and the environment.

Supply forecasts	Demand forecasts	Options identification and screening
Scenario development	Environmental assessments	Cost-benefit assessment
Local environmental targets	Climate change assessment	Policy review



Demand for water is increasing



Note: Public Water Supply demand based on baseline Dry Year Annual Average (DYAA) data without demand management options

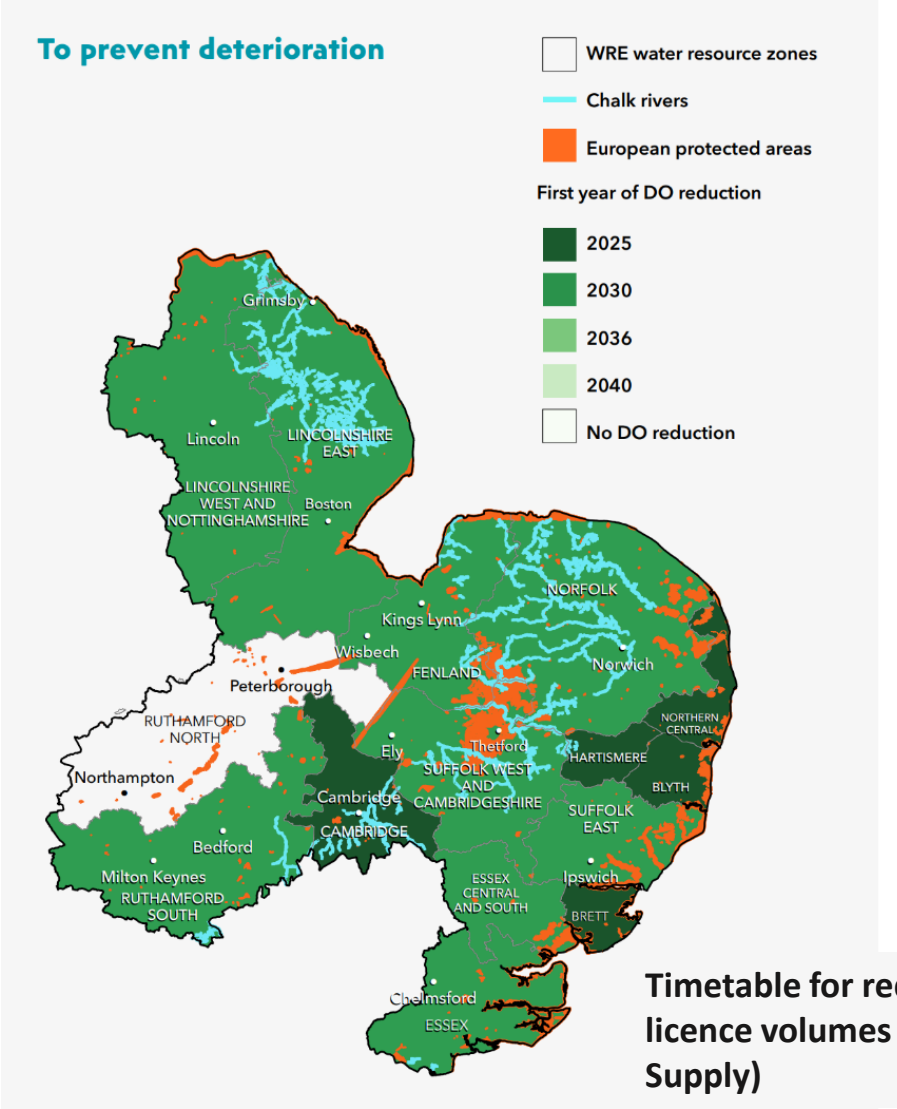
400 Ml/day more water needed by 2050

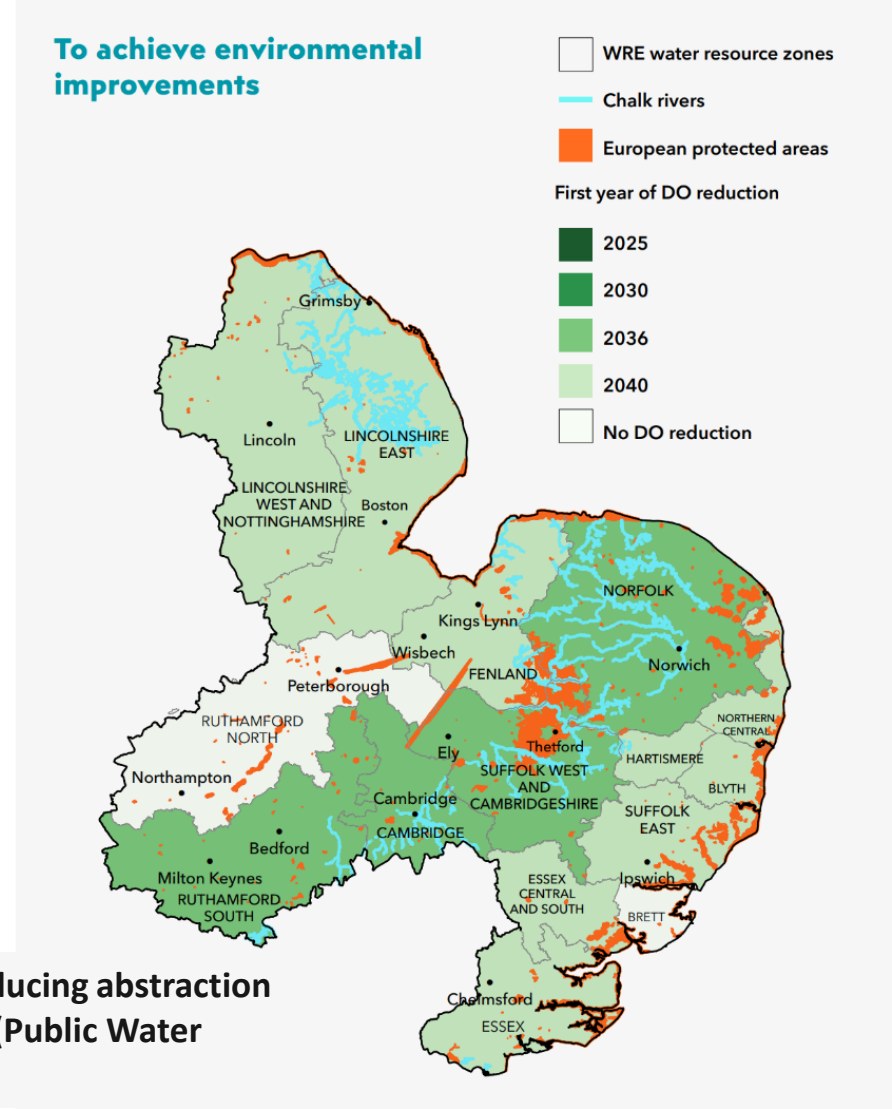
- Public water supply figures updated to align with revised draft Water Resources Management Plans
- Impact of government policy measures removed from projections of future water use, included instead in demand management options

"Non-public water supply" (Non PWS) abstractors

Returning water to the environment

- Licence restrictions driven by Water Framework Directive and Habitats Directive ‘no deterioration’ requirements (left)
- By Environmental Destination flow improvements (right, “BAU+” scenario)
- Will review assumptions and look to prioritise as part of environmental destination investigations



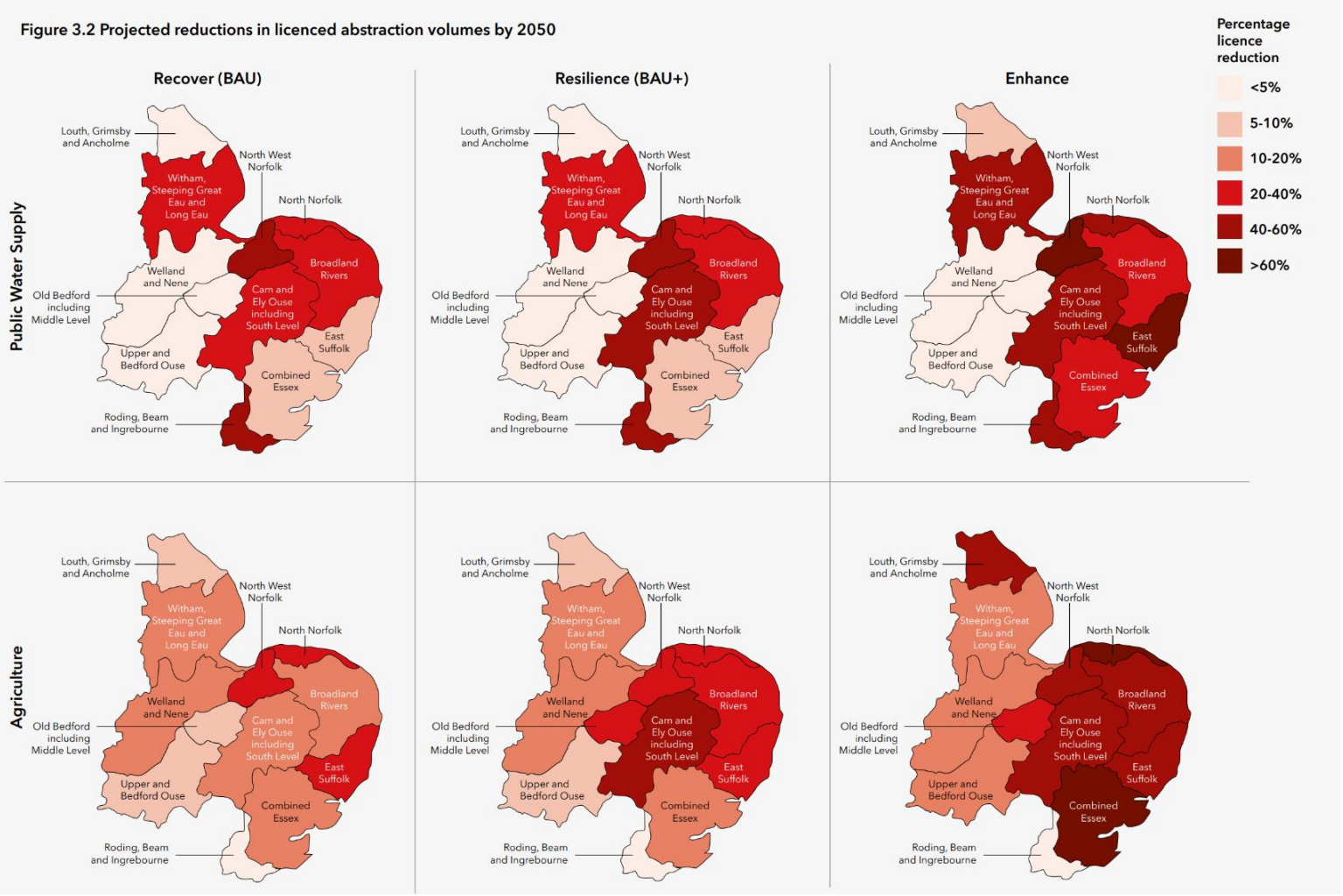


Timetable for reducing abstraction licence volumes (Public Water Supply)

All sectors will need to contribute to improving the water-dependent environment

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Projected reductions in licenced abstraction volumes by 2050

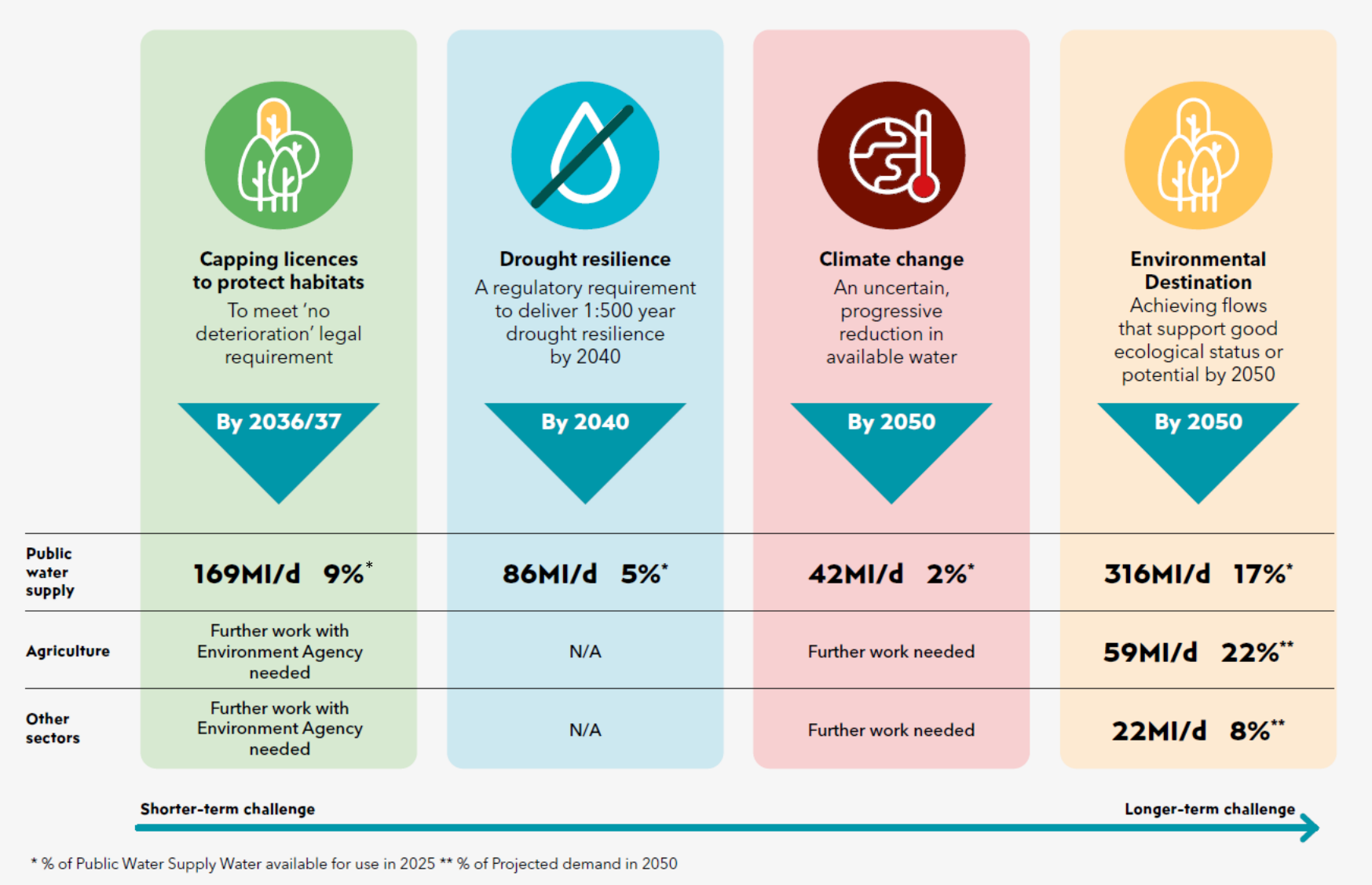


Projected returns of water to the environment by 2050 for Public Water Supply (*top row*) & Agriculture (*bottom row*):

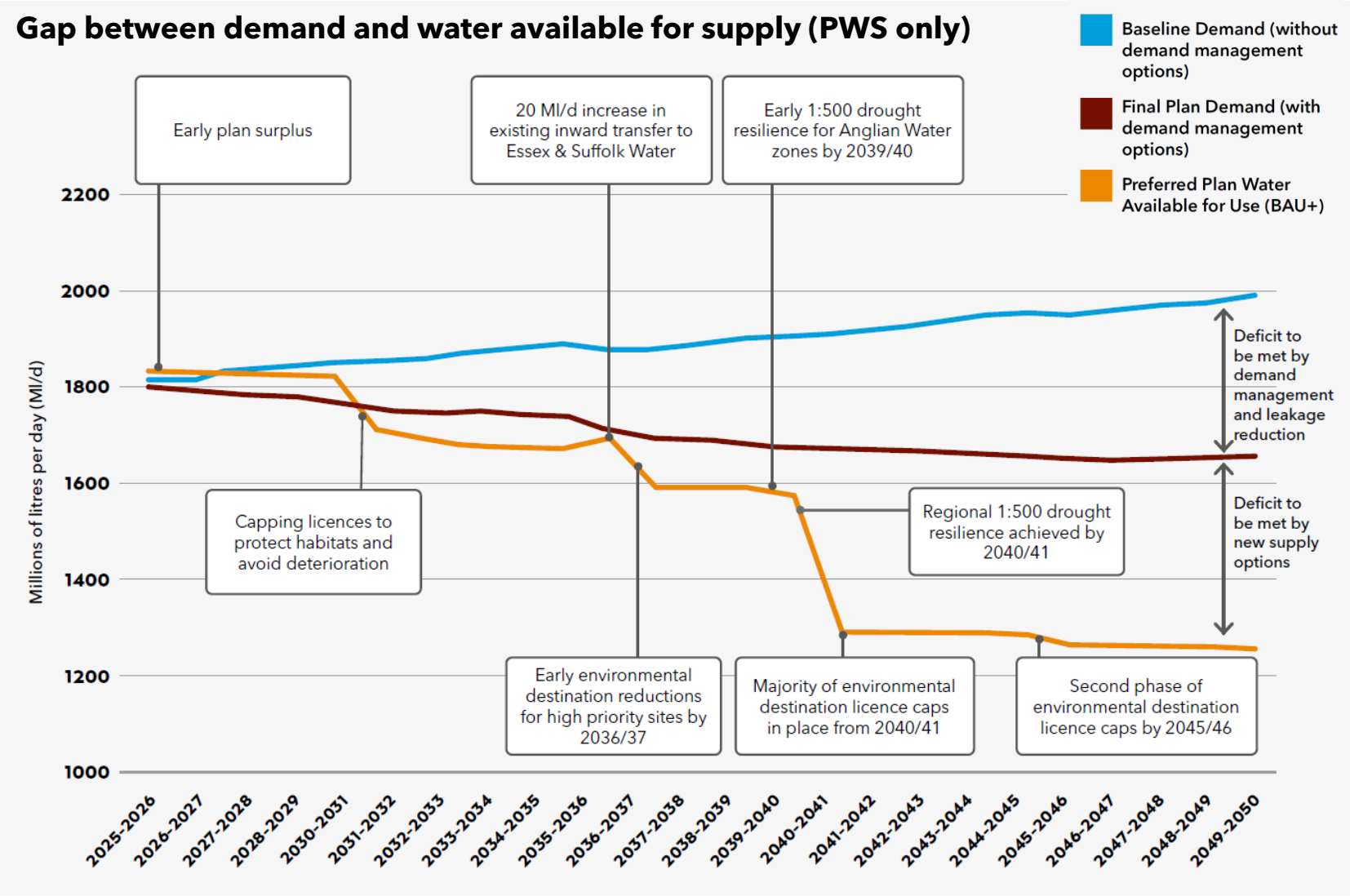
- **Recover ('Business As Usual'):** to meet existing legal requirements, excluding 'uneconomic' waterbodies
- **Resilience ('BAU+'):** extra protection for internationally designated habitats
- **Enhance:** including 'uneconomic' waterbodies plus extra protection for UK designated habitats, chalk rivers,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

Water available for use falling by 700Ml/d

- Reductions in water company abstraction brought forward
- Higher estimate of climate change impacts
- All sectors' abstraction impacts to be reviewed as part of Environmental Destination investigations being initiated in 2024



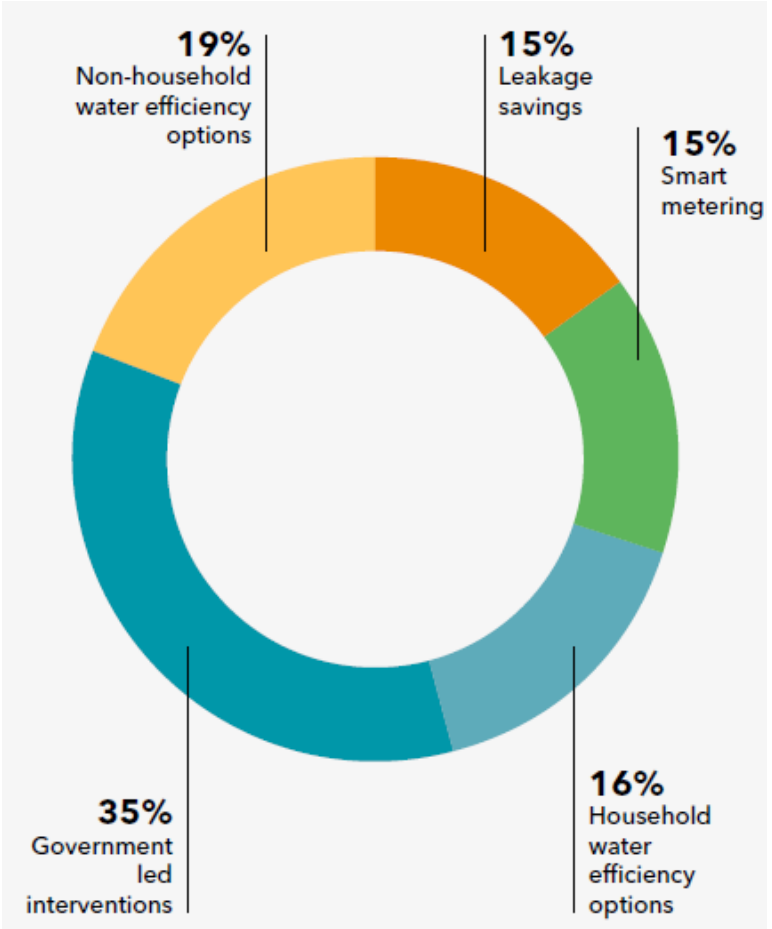
An 800 Ml/day deficit by 2050



- Demand management and leakage control more than offset growth in water consumption
- Early surplus becomes a deficit by 2030
- Some Environmental Destination improvements delivered by 2036, and almost entirely by 2040
- Resilience to 1:500 drought by 2040

Demand management strategy

- **Leakage:** Regional reduction of 39% by 2050
- **PCC:** expecting to achieve 110l/p/d per capita consumption with assistance of government led interventions.
- **Non-household demand:** Regional reduction by approximately 9% and 13% by 2038 and 2050 **relative to growth**.
  - This represents a 3% increase against the 2019/20 baseline.
- All water companies face significant challenges in meeting current and future business demand growth.



Supply options

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Supply option capacity c.485 Ml/d



Reservoir storage
c. 280 Ml/d

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

Lincolnshire Reservoir into supply by 2039-2041 supports delivery of drought resilience and Environmental Destination.

A smaller winter storage reservoir in North Suffolk by 2040.



Desalination
c. 110 Ml/d

Likely need for schemes in Essex, Norfolk and Lincolnshire supporting longer term environmental goals from 2040.



Effluent water reuse
c. 23 Ml/d

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

An additional reuse option may be required by Essex & Suffolk Water in response to possible Habitat Regulations licence caps.



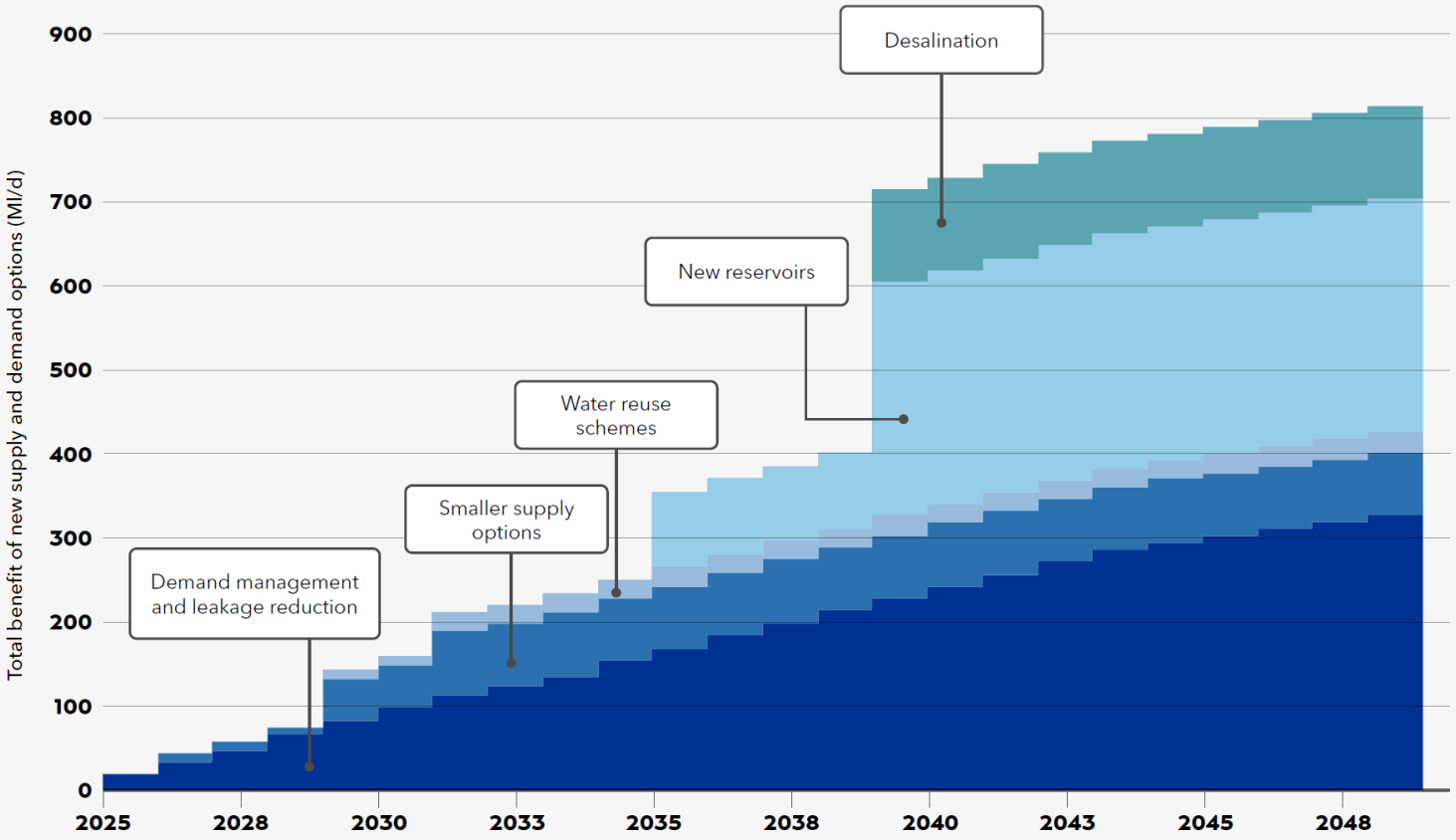
Smaller options and transfers
c. 75 Ml/d

A range of company-level supply schemes are needed by the early 2030s.

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

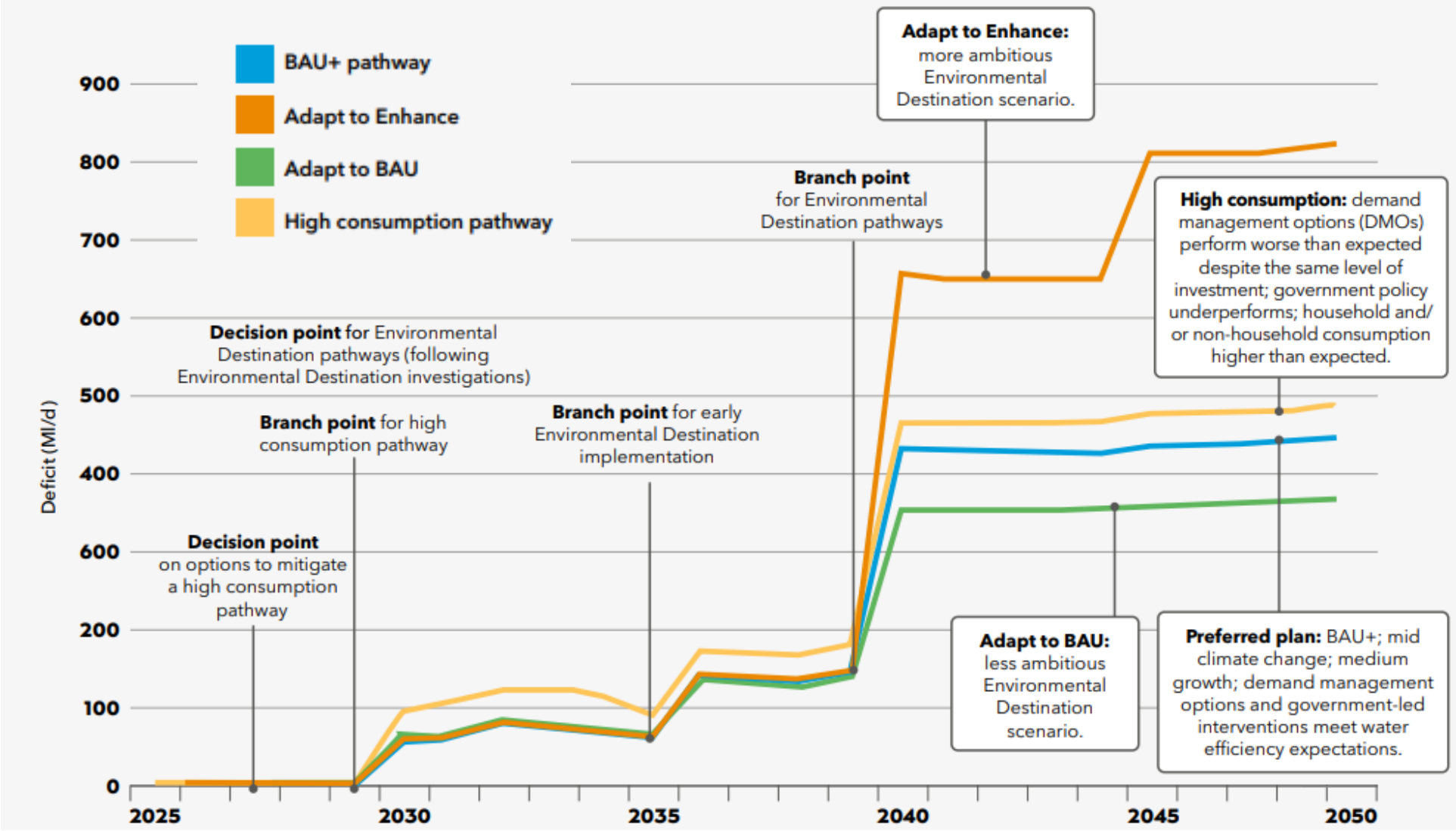
Components of the Best Value Plan

Bridging the projected public water supply deficit over time



- 39% reduction in leakage by 2050
- Growth in non-household consumption limited to 3%
- Water use per capita reduces by 19.1% by 2038
- Significant reliance on government water efficiency policy

Adaptive pathways to 2050

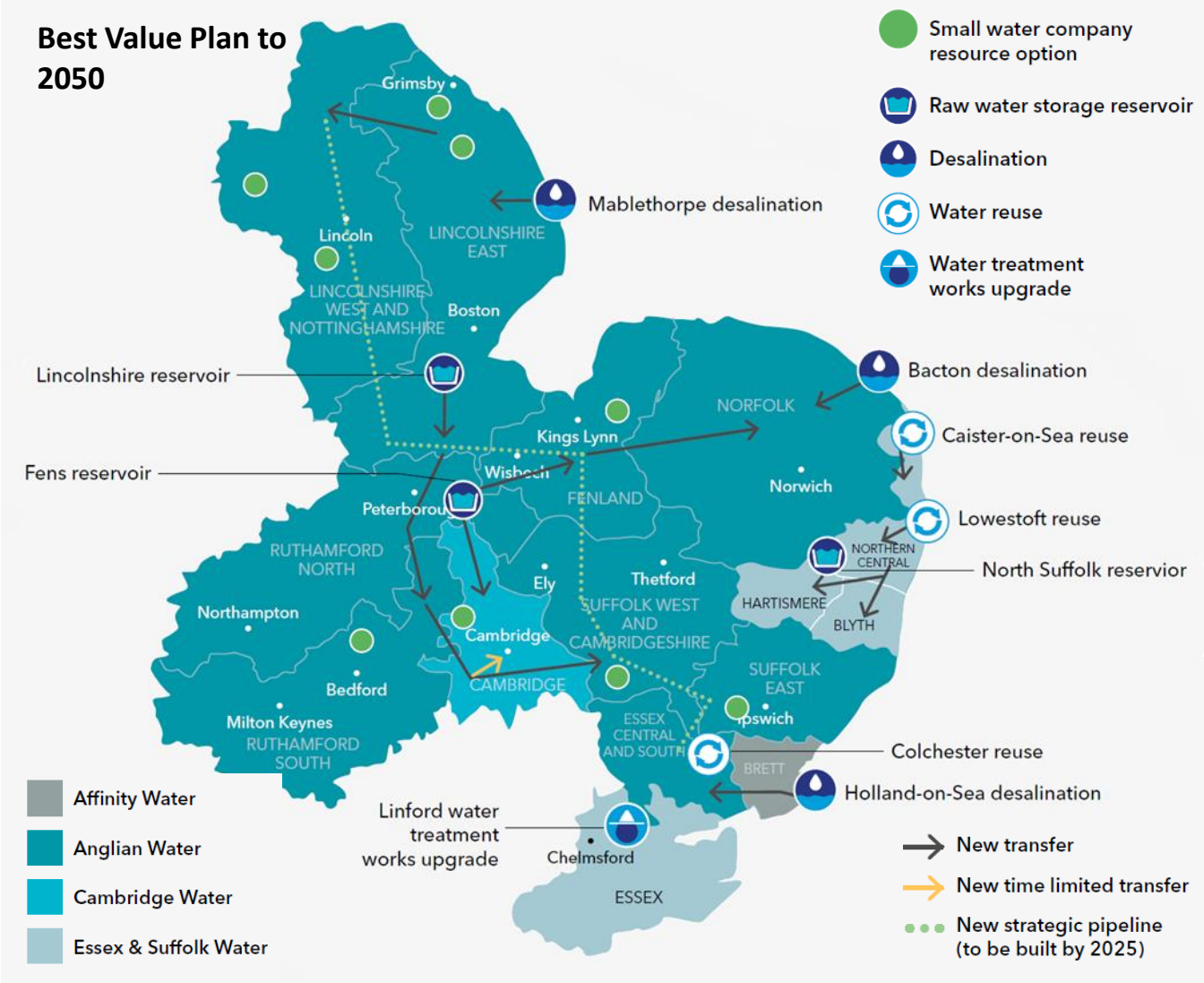


Adaptive pathways to address regional supply-demand deficits (public water supply only)

Decision point: the point in time when a decision would need to be taken to influence future pathways, investments and objectives, taking into account the lead-times involved.

Branch point: the point at which alternative adaptive pathways diverge, made possible by decisions taken at an earlier stage.

WRE's Regional Water Resources Plan



Water efficiency
Soil moisture deficit sensing
Water efficient crops and varieties
Indoor and vertical farming

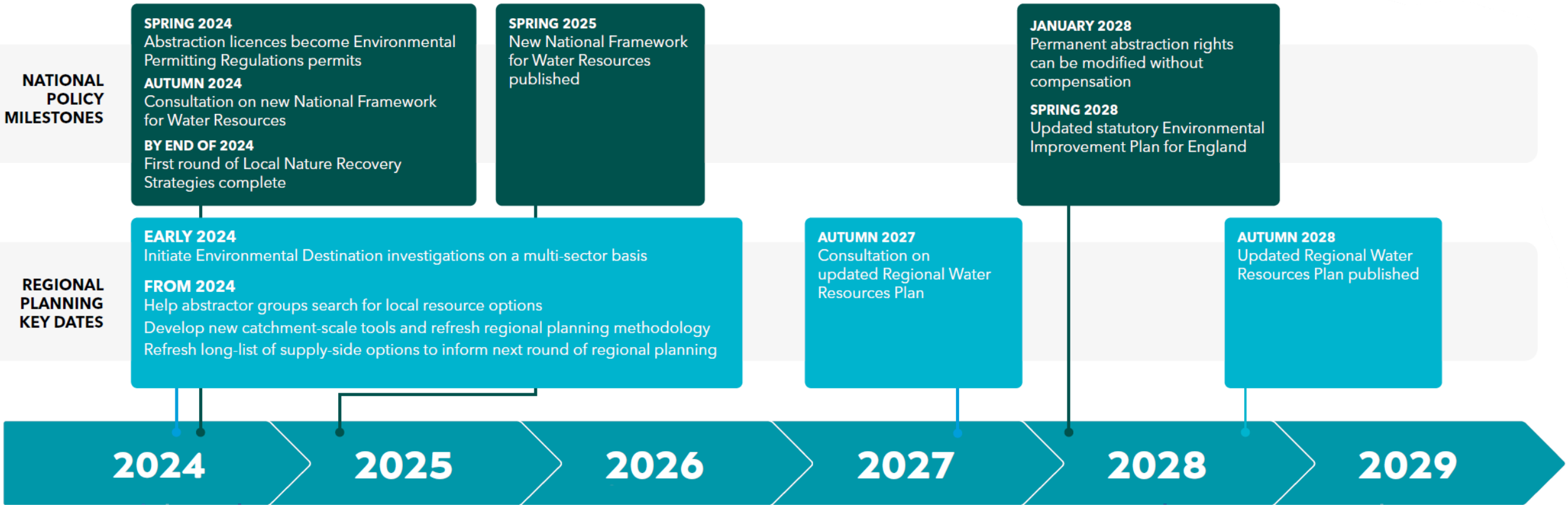
Water capture & reuse
Rainwater harvesting
Treated effluent reuse
Recycling within IDB-managed systems

Water storage
Winter storage reservoirs
Managed aquifer recharge (MAR)
Linear reservoirs using drainage networks

Water sharing and trading

Environmental improvements
Nature Based Solutions

Timetable for next planning round



Supporting catchment-scale activity across the region

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Regional Water Resources Plan for Eastern England

Norfolk Water Strategy Programme

Working with The Nature Conservancy, Norfolk councils and Anglian Water to unlock delivery of nature-based solutions at scale to address water-related challenges.

Key sectors:

- Agriculture
- Industry
- Environment
- Housing development
- Public water supply

Water for Tomorrow

Collaboration with Environment Agency, The Rivers Trust and partners in France to develop catchment-scale water resource management tools and approaches.

Key sectors:

- Agriculture
- Industry
- Environment
- Public water supply

Essex Water Strategy

Supporting Essex County Council and partners to deliver integrated water management approaches to flooding and drainage, nature restoration, and community engagement.

Key sectors:

- Agriculture
- Industry
- Environment
- Housing development
- Public water supply

Wensum NbS Monitoring and Evaluation

The role that nature-based solutions and land-use change can play in recharging aquifers and addressing local water challenges, in partnership with the Environment Agency.

Key sectors:

- Agriculture
- Environment

Bedford to Milton Keynes Waterway

Partnership with Environment Agency to explore the water and flood risk benefits of linking the Grand Union Canal and the River Great Ouse.

Key sectors:

- Navigation
- Public water supply
- Environment

Future Fens: Integrated Adaptation

To deliver an integrated water management approach to economic regeneration and climate adaptation in the Fens region.

Key sectors:

- Agriculture
- Industry
- Environment
- Housing development
- Navigation
- Public water supply

Water resources

Water quality

Flood risk management

Water resources Water quality Flood risk management

Broadlands Catchments

- The Broads catchments (Bure, Ant and Yare) are priority catchments for the Norfolk Water Strategy Programme, which is looking to is to address water security challenges by increasing collective investment in Nature-based Solutions (NbS) through establishing a Norfolk Water Fund.
- WRE have worked with EA and JBA to do opportunity mapping of where different NbS could be most effective, and economic analysis of the cost benefit of a £30m portfolio of NbS in Norfolk - see business case.





Now we are reaching out to stakeholders in the priority catchments to carry out pilot projects to trial NbS on the ground. Contact Hannah Gray, NbS Programme Manager if you would like to find out more (nwsp@wre.org.uk)