Environmental Destination

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CaBA Water resources training workshop

2nd May 2024

Environmental Ambition

National Framework for Water Resources

- The EA tasked regional groups to develop an agreed long term environmental destination and a plan to achieve it
- In 2020, the EA identified scenarios and estimated potential licence reductions required by 2050
- “To consider where the scenarios and other evidence suggests the largest abstraction recovery might be required”

WRE Environmental Destination

- In 2021, WRE assessed the scale of possible licence reductions for each of the EA scenarios and to determine the possible implications of these scenario adjustments on water availability.
- To establish the licence reductions required by 2050 to meet the flow target for each waterbody, known as the Environmental Flow Indicator (EFI).

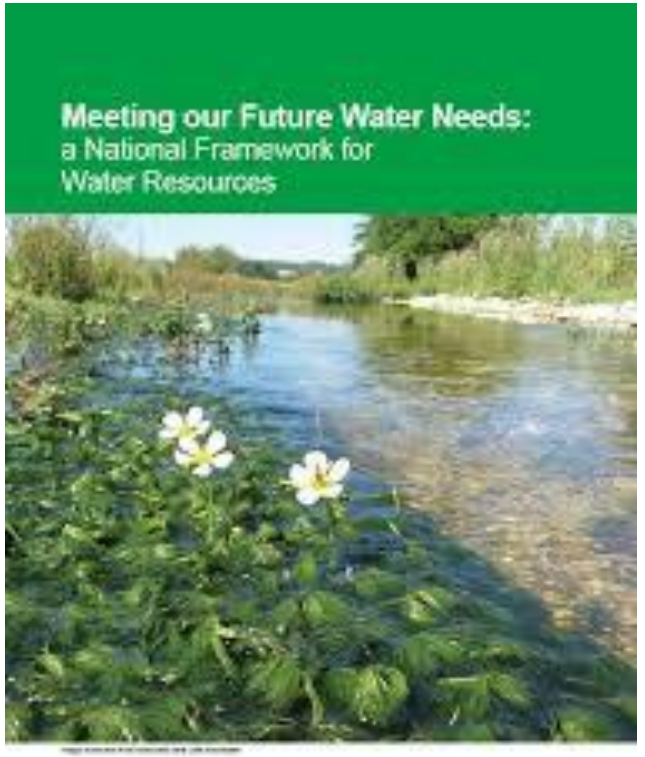
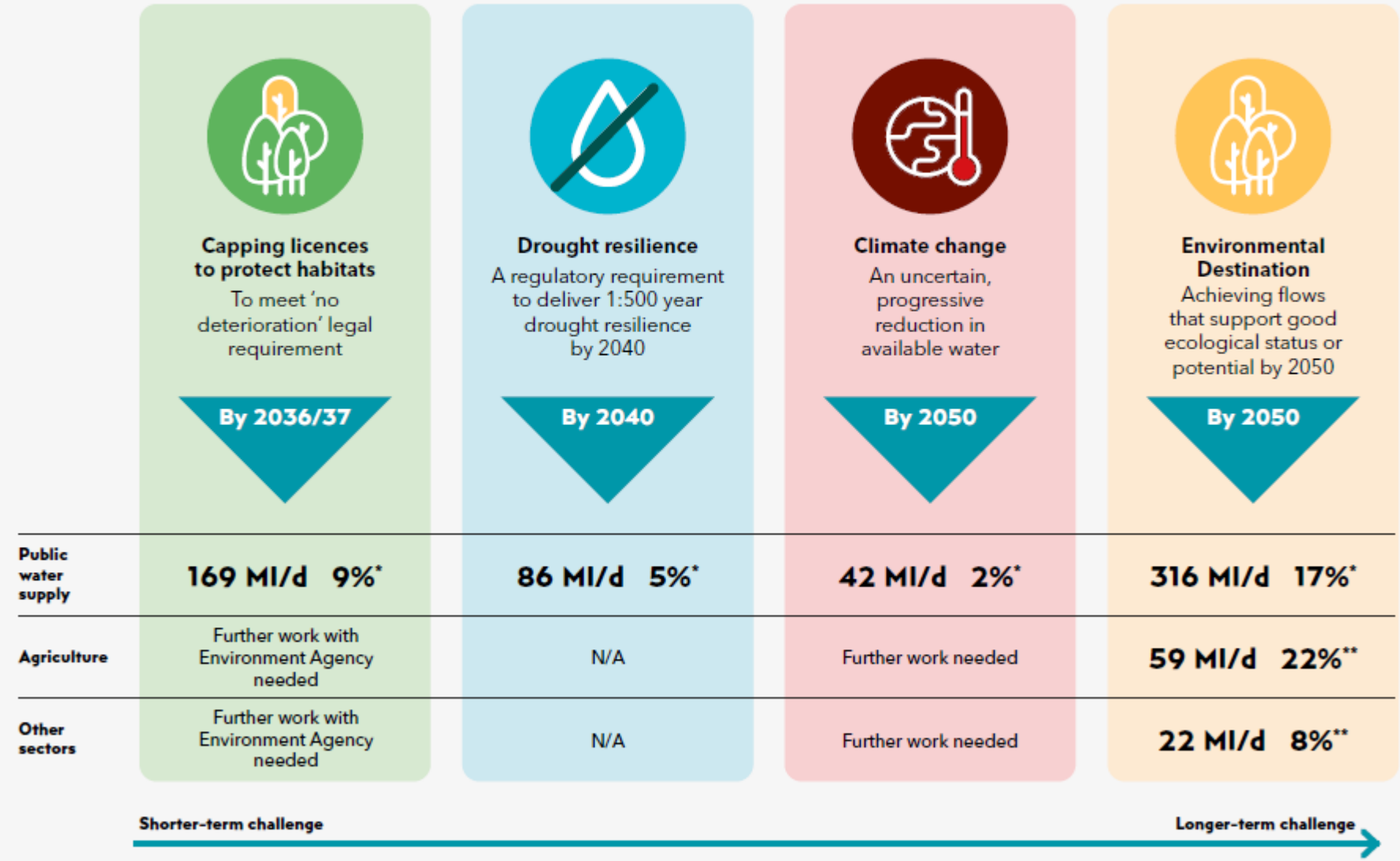
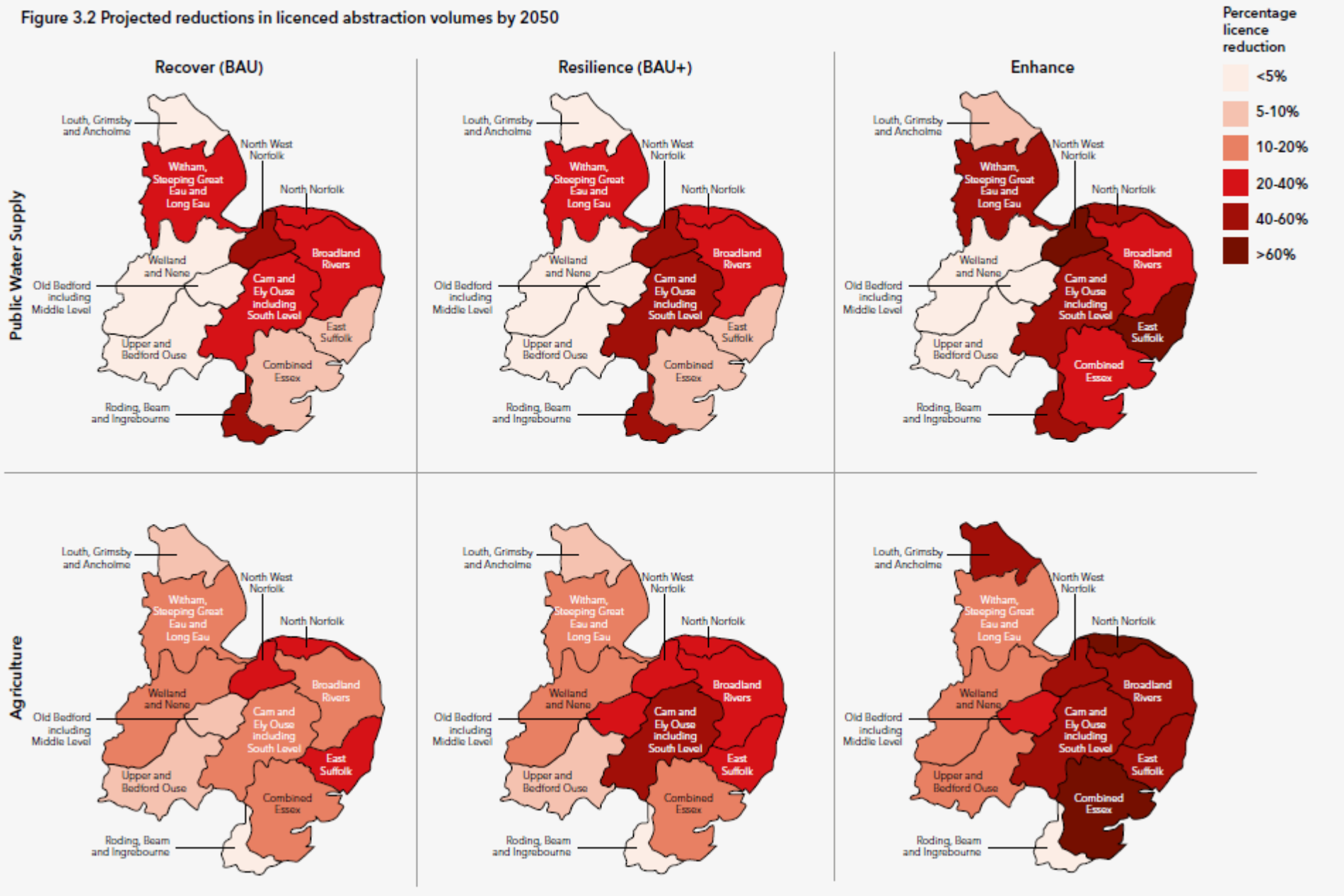


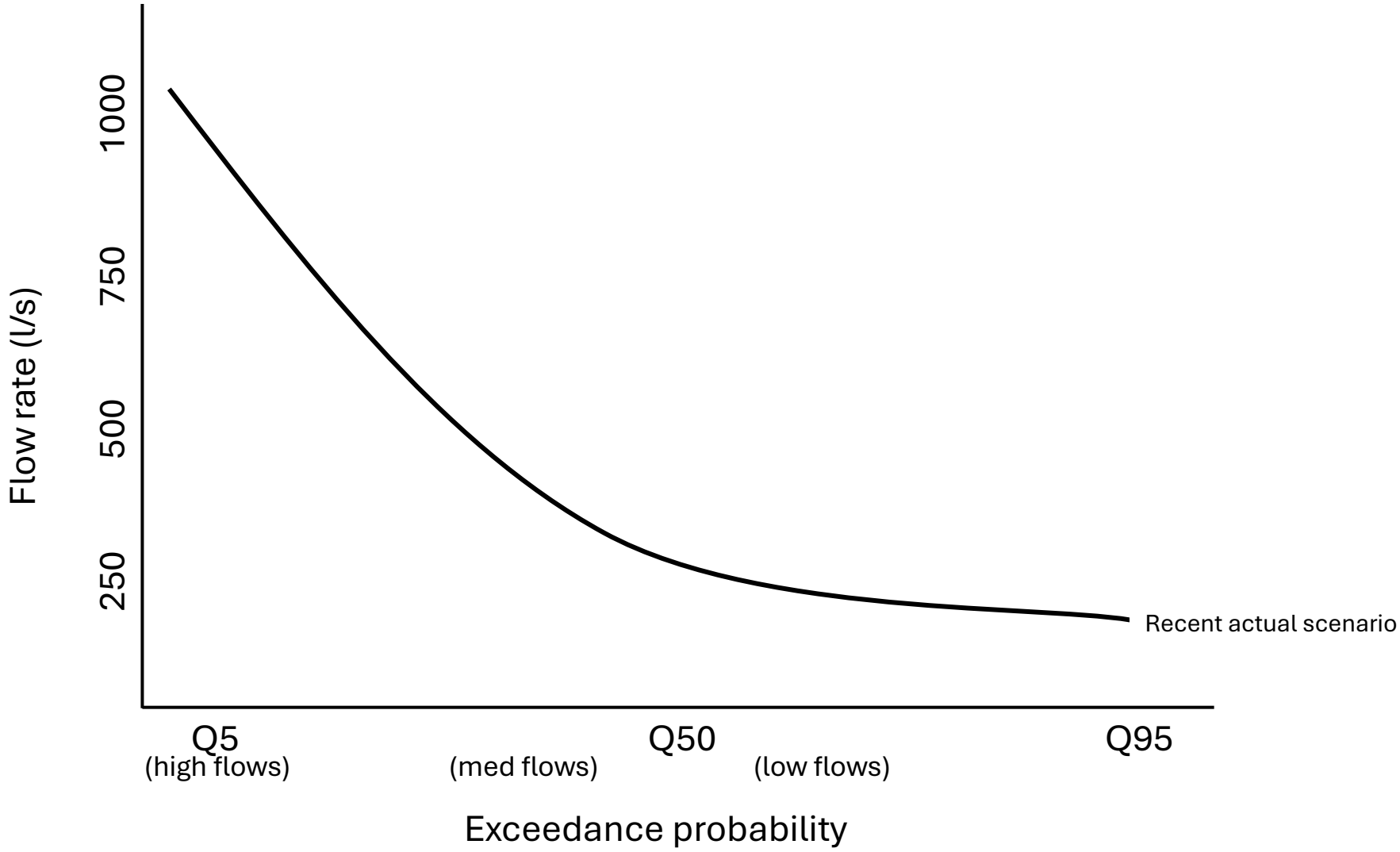
Figure 3.1: Reduction in water availability – meeting environmental targets, climate change and increasing drought resilience

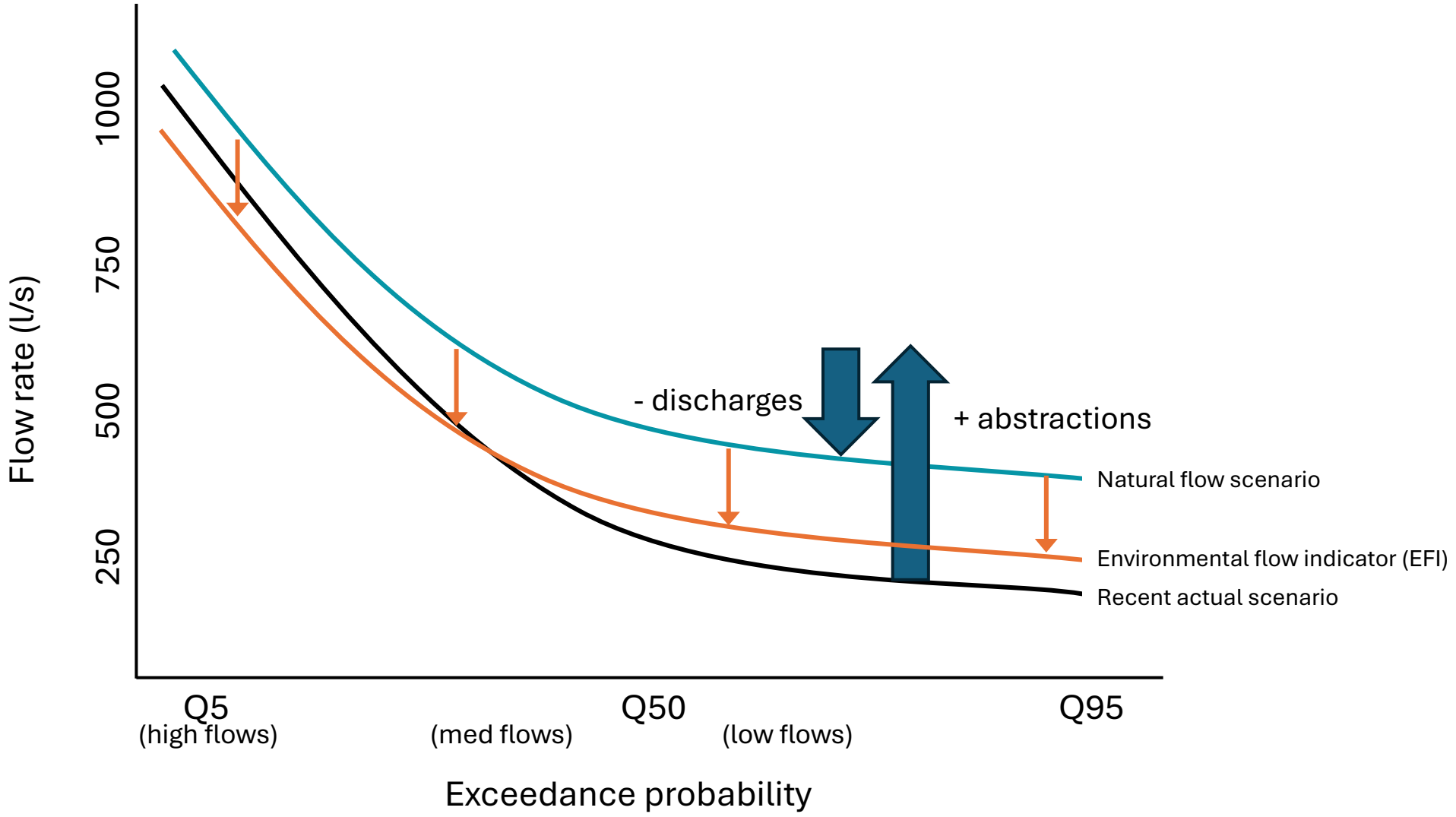


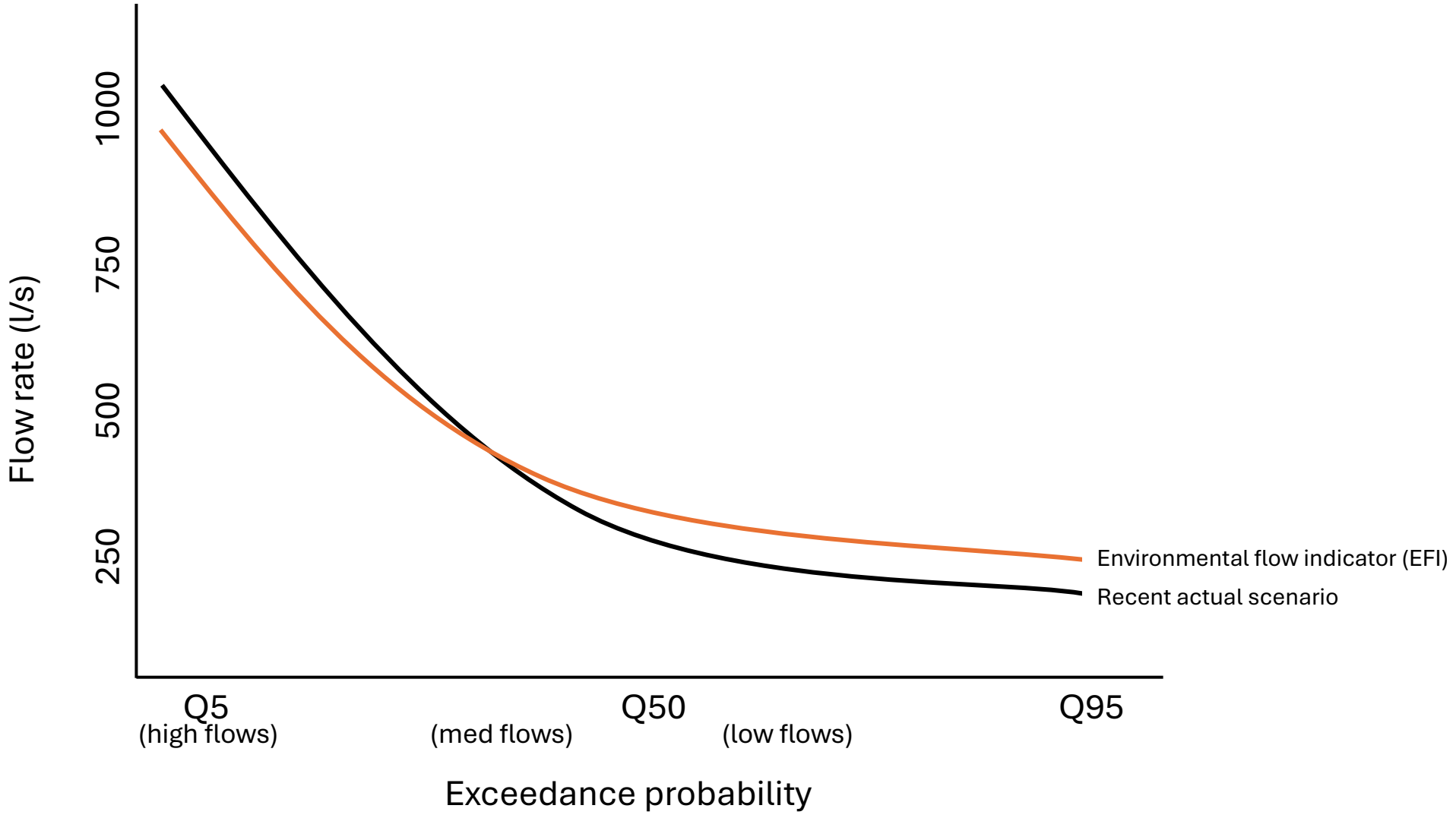
* % of Public Water Supply Water available for use in 2025 ** % of Projected demand in 2050

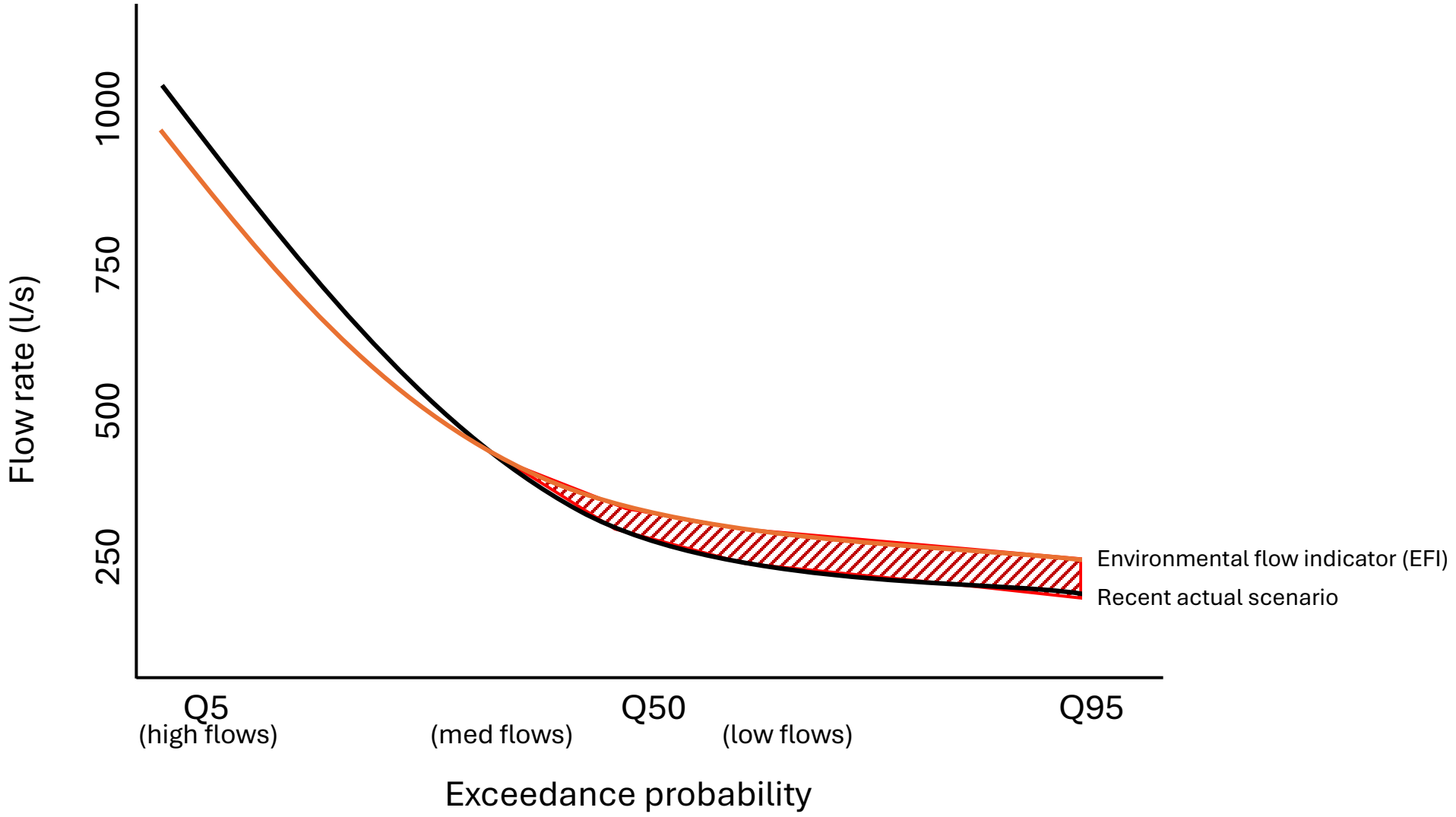
Figure 3.2 Projected reductions in licenced abstraction volumes by 2050




Flow rate (l/s)
1000
750
500
250
Recent actual scenario
Q5
(high flows)
Q50
(med flows)
(low flows)
Q95
Exceedance probability

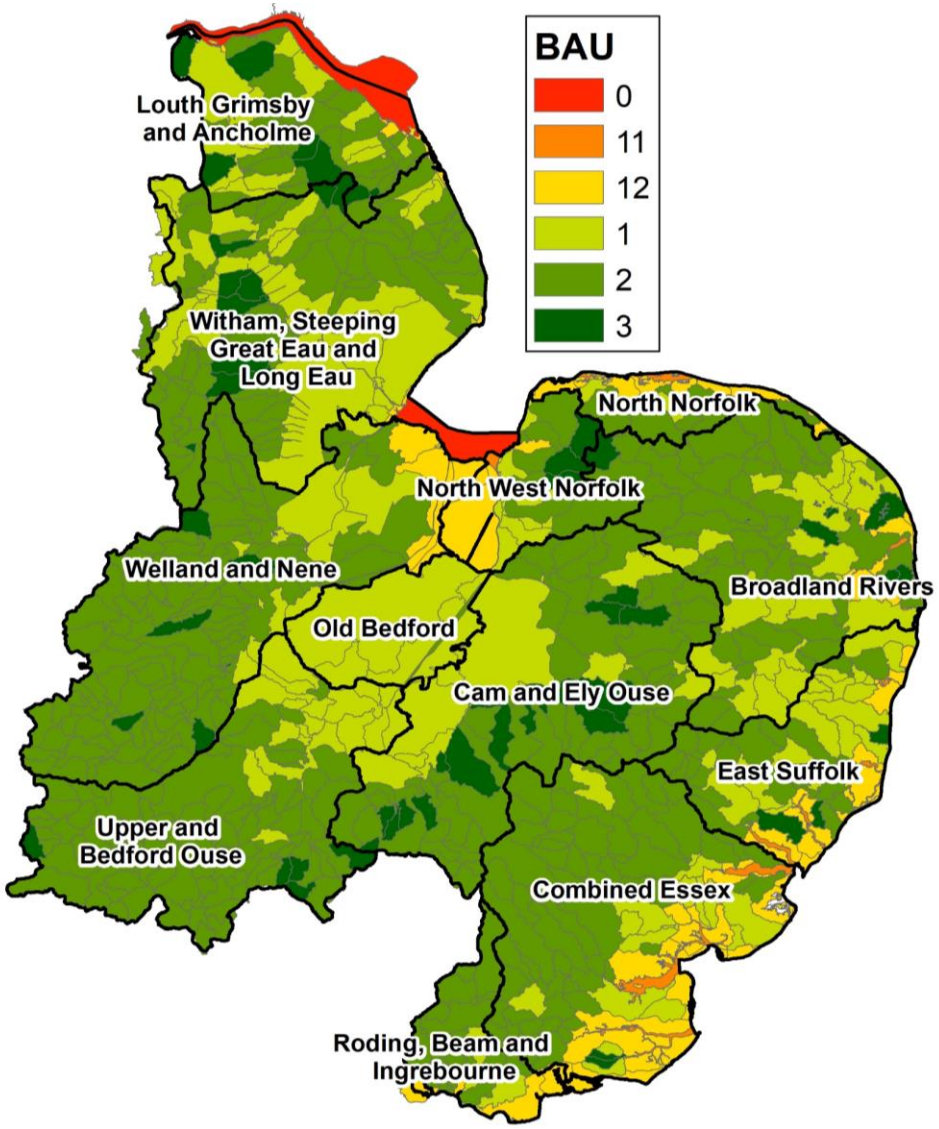

Flow rate (l/s)
1000
750
500
250
- discharges
+ abstractions
Natural flow scenario
Environmental flow indicator (EFI)
Recent actual scenario
Q5
(high flows)
Q50
(med flows)
(low flows)
Q95
Exceedance probability


Flow rate (l/s)
1000
750
500
250
Q5
(high flows)
Q50
(med flows)
(low flows)
Q95
Exceedance probability
Environmental flow indicator (EFI)
Recent actual scenario


Flow rate (l/s)
1000
750
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(high flows)
Q50
(med flows)
(low flows)
Q95
Exceedance probability
Environmental flow indicator (EFI)
Recent actual scenario

Flow targets

- The EA calculated the flow required to support good ecological status under the Water Framework Directive (WFD)
- The proportion of flows that are protected depends on the sensitivity of a water body
- Captured by a waterbody's Abstraction Sensitivity Band (ASB)
- A greater ASB assigned to a water body seeks to protect a greater proportion of natural flows
- The WRE environmental destination scenarios incorporate adjustments in Abstraction Sensitivity Bands (ASBs) for waterbodies in close proximity to protected sites.



Environmental Destination	EFI calculation	Water returns to the environment needed by 2050
BAU Achieve sufficient flows in waterbodies to support 'Good' ecological status or potential, apart from waterbodies considered uneconomic to improve within River Basin Management Plans (RBMPs).	Retaining the same ASB and EFI that currently applies, except for in waterbodies considered uneconomic.	311 Ml/d of which: • Public water supply: 238* • Power: 0 • Agriculture: 51 • Other: 21
BAU+ As 'BAU', with extra protection for European Protected Sites.	Enhanced ASBs applied to waterbodies representing Special Protection Areas (SPAs), Special Areas of Conservation (SAC) and Groundwater Dependent Terrestrial Ecosystems (GWDTE).	397 Ml/d of which: • Public water supply: 316* • Power: 0 • Agriculture: 59 • Other: 22
Enhance Achieve flows to support 'Good' in all waterbodies including those considered uneconomic within RBMPs, with extra protection for European Protected Sites, chalk streams, sensitive headwaters and SSSIs.	Greater environmental protection for protected areas and Sites of Special Scientific Interest (SSSI) rivers and wetlands, principal salmon and chalk rivers is achieved by applying the most restrictive ASB. Uneconomic waterbodies were also included. A recovery to a lower EFI in some heavily modified waterbodies as classified by the Environment Agency is assumed.	897 Ml/d of which: • Public water supply: 741* • Power: 0 • Agriculture: 100 • Other: 56

Next steps & workstreams

- WRE ED working group
- Water company WINEP
- Anglian Water ED investigation
- Local attention likely on an ongoing basis
- Ofwat project - Chalk Streams First
- Environment Agency ED workstream – developing new scenarios and datasets
- UKWIR project developing tools and consistent approaches

- Non-exhaustive list of projects and programmes



Thank you for listening

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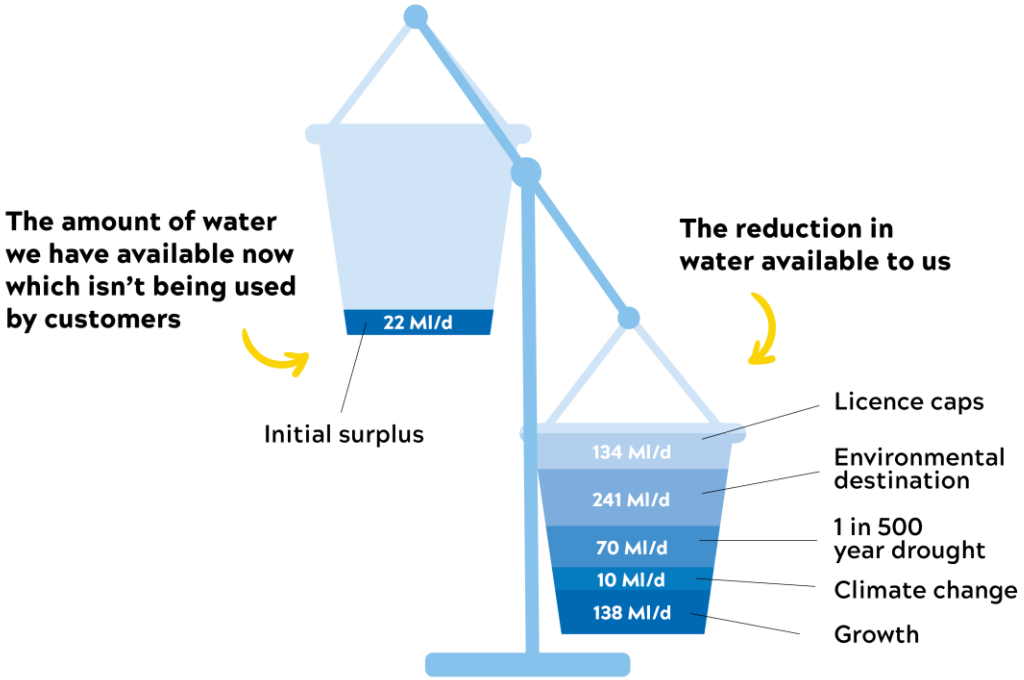
Water Resources East

Environmental Destination- planning for the future

Water Resource Training Workshop | 2nd May 2024

The challenges for WRMP24

WRMP24 has highlighted the significant water resource challenge our region will face by 2050.



We will have 593 Ml/d less water available to use by 2050. 63% of this reduction is due to abstraction reductions.

Reducing our water abstractions will leave more water in the environment. This will provide a host of benefits such as:

- Supporting healthy ecology
- Enhancing natural resilience to drought
- Ensuring that rivers continue to support wellbeing and recreation
- Support resilience of our rivers, wetlands, and aquifers

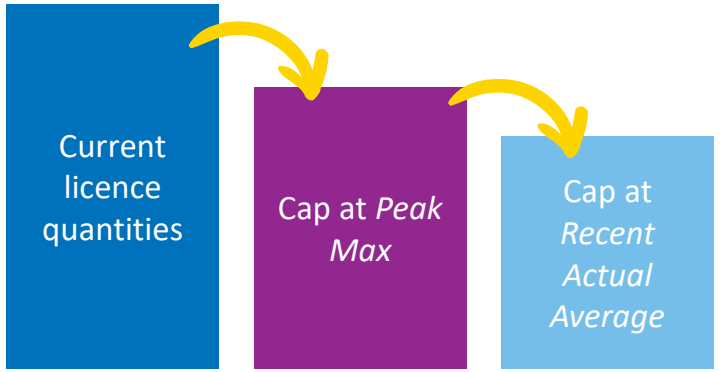


The short-term: licence caps

Water Framework Directive

Aims to ensure 'no deterioration' of surface water and groundwater body status, based on the Environment Agency's 2023 River Basin Management Plan classifications.

Abstraction reductions:



We are planning to cap our groundwater abstractions to recent actual averages between 2030 and 2036, increasing water in the environment.

Habitats Directive

- Aims to maintain/restore natural habitats and species of European importance.
- Following investigations by the EA and Natural England, we have closed our abstractions at Ludham (Ant Broads and Marshes SSSI) and East Ruston and Witton.
- We have planned for three more sites to cease abstraction in our WRMP24: Postwick/Thorpe St Andrew and Kirby Cane.
- Since our revised draft WRMP24 was published, we have become aware that the EA are investigating further licences in the Norfolk area; combined these are c.195 Ml/d (c.10% of all our licences by volume).

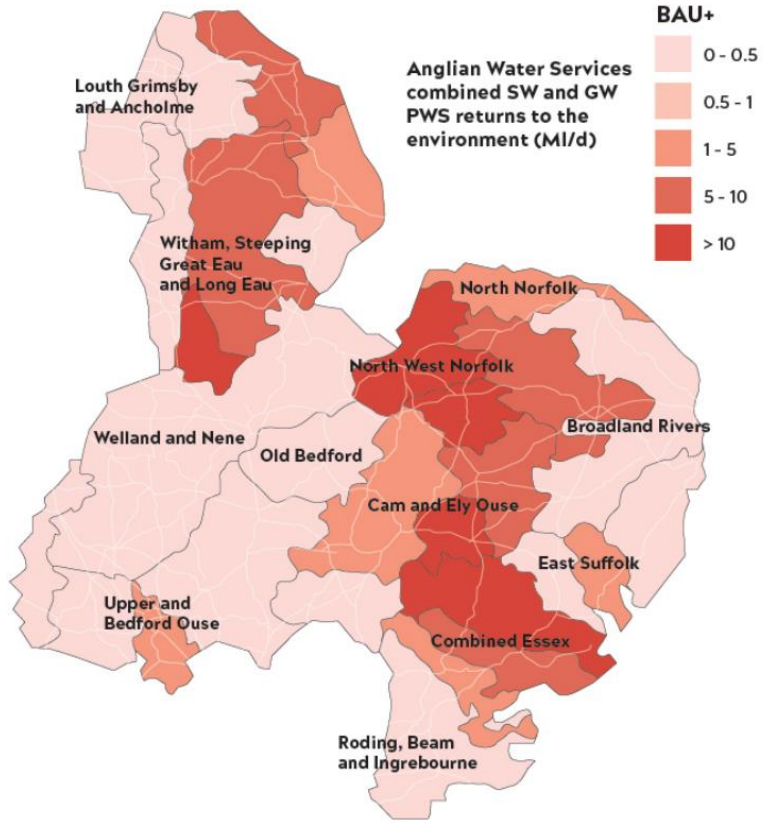
The long-term: environmental destination

The 2020 National Framework for Water Resources has asked for a **clear long-term destination for environmental improvement** and agreed approach to getting there.

Using the National Framework environmental destination scenarios as a starting point, three scenarios were modelled for WRMP24 and the Regional Plan.

Business as usual (BAU)	Business as usual plus (BAU+)	Enhanced
Achieves flows to support 'Good Ecological Status' under the Water Framework Directive	Achieves flows to support 'Good Ecological Status' under the Water Framework Directive	Achieves flows to support 'Good Ecological Status' under the Water Framework Directive
Excludes uneconomic waterbodies (as assessed by the Environment Agency's Abstraction Plan by 2027)	Excludes uneconomic waterbodies (as assessed by the Environment Agency's Abstraction Plan by 2027)	Includes uneconomic waterbodies (as assessed by the Environment Agency's Abstraction Plan by 2027)
-208 megalitres a day reduction in water available	Further protections for European Protected Sites (riverine and Groundwater Dependent Terrestrial Ecosystems)	Further protections for European Protected Sites (riverine and Groundwater Dependent Terrestrial Ecosystems)
	-257 megalitres a day reduction in water available	Further protection for chalk streams, sensitive headwaters and Sites of Specific Scientific Interest
		-377 megalitres a day reduction in water available

More protections for the Environment



Key hotspots by operational catchment for environmental destination (BAU+ scenario)

We used BAU+ as the baseline for WRMP24 and the Regional Plan.

Licence scenarios

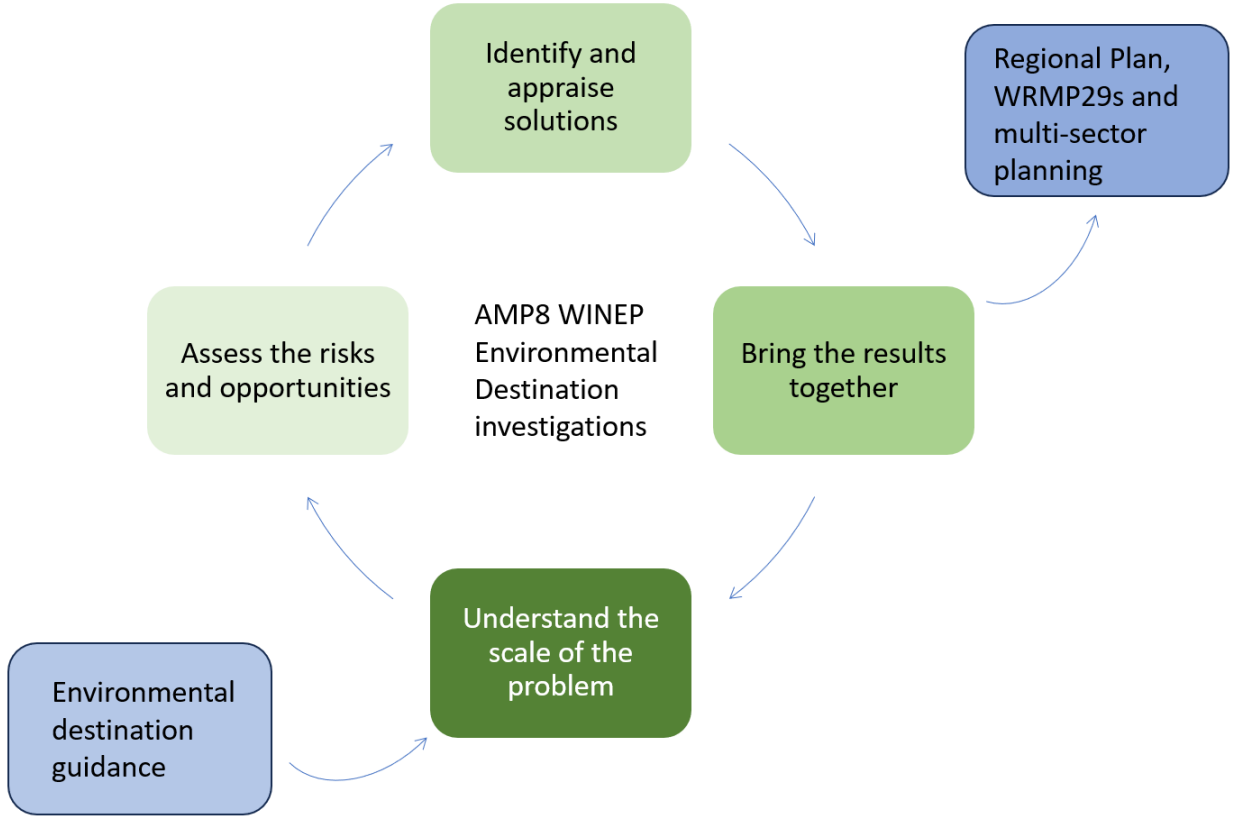


		Licence caps			Environmental destination				
Abstraction Source Name	**WRZ**	**RA Peak**	**RA TLL Average**	**RA Average**	**BAU**	**BAU+**	**ADAPT**	**BAU++**	**ENHANCED**
Costessey BHs	NTB	1248	1116	1116	936	936	94	125	125
Lyng Forge	NTB	674	514	514	360	360	360	360	360
Sparham	NTB	485	267	267	200	200	200	200	200
Swanton Morley	NED	249	116	116	116	116	116	116	116
Beetley	NED	959	585	585	497	497	497	497	497
East Dereham	NED	1165	1165	887	599	599	599	599	599
Hoe	NED								
Bowthorpe	NTB	1223	1018	1018	1018	1018	1018	459	3
Colney	NTB	1799	1661	1661	1661	1661	1661	1495	1495

2025 | 2030 | By 2036 | By 2040

Environmental destination AMP8 WINEP investigations

- For WRMP29, we have initiated a multi-sector stakeholder-led approach to refining the initial environmental destination scenarios that were developed for WRMP24.
- We have used the EA's Environmental Destination guidance to form the basis of these investigations.
- UKWIR is producing further guidance, along with water companies and the EA.
- WRE are currently leading a multi-sector working group to refine the WINEP Environmental Destination strategy.



Driving a regional environmental destination

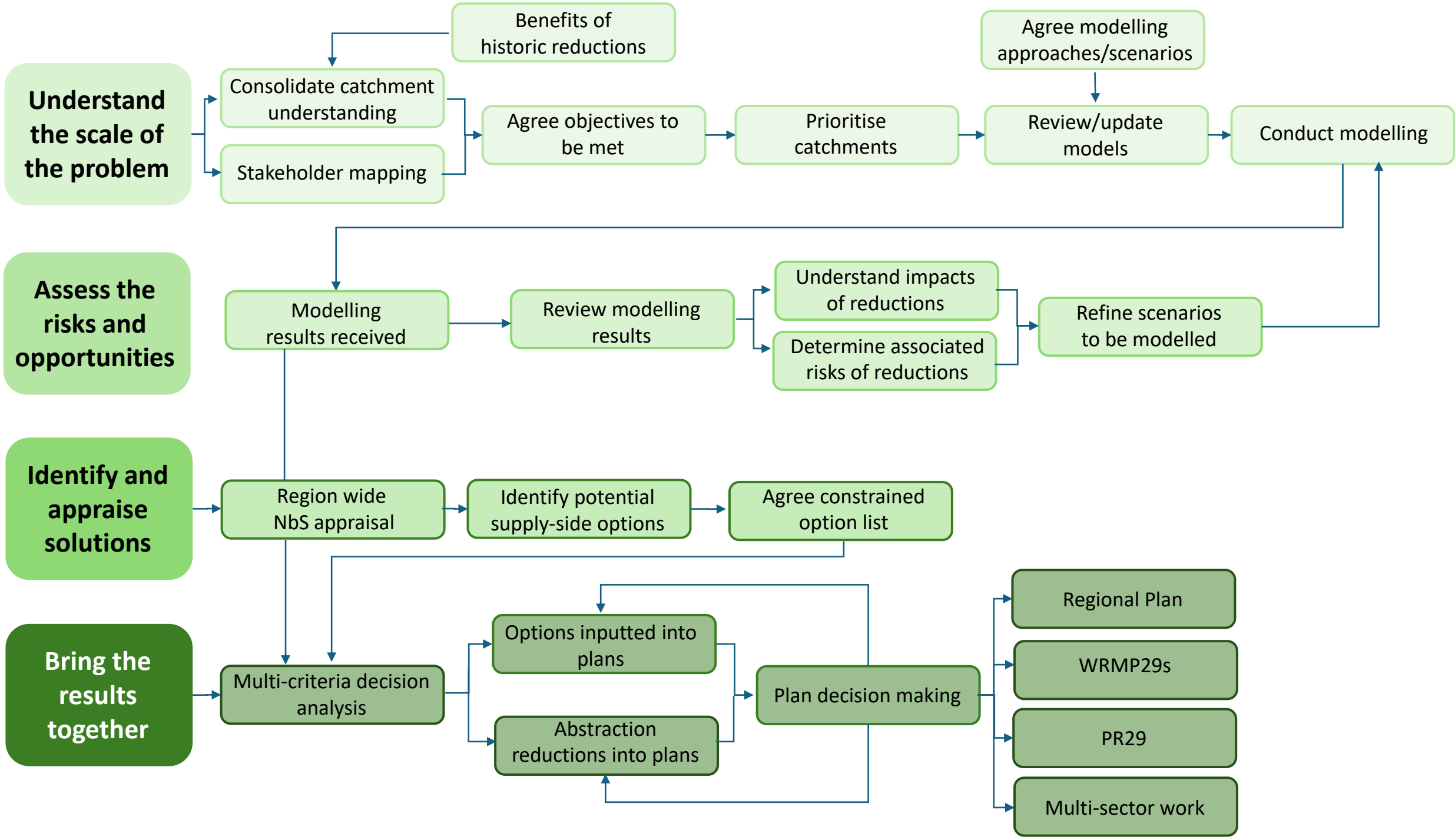
Between now and 2027, we will expect to work with partners to undertake activities such as:

- Hydroecology modelling
- Groundwater and surface water modelling
- Flood risk modelling
- Estuarine modelling
- Catchment collaboration and investigation
- Options appraisal, and
- Multi-criteria decision analysis

We expect this work to reduce the **uncertainties** and **assumptions** associated with the **initial environmental destination scenarios** developed for WRMP24.

These outputs from these scientific investigations will allow us to:

1. Determine the scale of sustainability reductions required to achieve sustainable abstraction.
2. Evaluate potential disbenefits of lower abstraction.
3. Inform the scale of deficits that will need to be considered for WRMP29 and PR29, and the size and type of strategic solutions required to deliver the environmental destination.
4. Recognise the environments that would benefit most from abstraction reductions.
5. Facilitate discussion between us and our economic and environmental regulators.


Understand the scale of the problem
Benefits of historic reductions
Consolidate catchment understanding
Stakeholder mapping
Agree objectives to be met
Prioritise catchments
Agree modelling approaches/scenarios
Review/update models
Conduct modelling
Assess the risks and opportunities
Modelling results received
Review modelling results
Understand impacts of reductions
Determine associated risks of reductions
Refine scenarios to be modelled
Identify and appraise solutions
Region wide NbS appraisal
Identify potential supply-side options
Agree constrained option list
Bring the results together
Multi-criteria decision analysis
Options inputted into plans
Abstraction reductions into plans
Plan decision making
Regional Plan
WRMP29s
PR29
Multi-sector work

Developing solutions in Norfolk

The Norfolk Water Strategy Programme

- A partnership between Norfolk County Council, Anglian Water, Water Resources East and The Nature Conservancy.
- A business case has been developed to address the water challenges facing Norfolk through Nature-based Solutions.
- Our modelling shows NbS have the potential to deliver multiple water and environmental benefits, such as increased recharge to groundwater, mitigation of nutrients in watercourses and high-quality habitats for wildlife.
- It is also expected that NbS will facilitate housing development and improve air quality.
- Each £1 invested in NbS is expected to unlock £6.70 in benefits.

Advanced WINEP (A-WINEP)

We have asked Ofwat for £26.6 million funding to deliver long-term environmental and social benefits above and beyond a traditional WINEP approach.

We plan to achieve this through partnership working, a focus on NbS, implementing solutions to water management challenges at scale, and improved multi-stakeholder governance.

Norfolk is one of our target areas.

Recap on abstraction reduction drivers

	Considers							
	Current legislation	Current condition of environment	Climate change predictions	Resilience to drought	Groundwater flooding	Sewer infiltration	Stakeholder led approach	Options appraisal
Water Framework Directive	✓	✓						✓
Habitats Directive	✓	✓						✓
Environmental destination			✓	✓	✓	✓	✓	✓