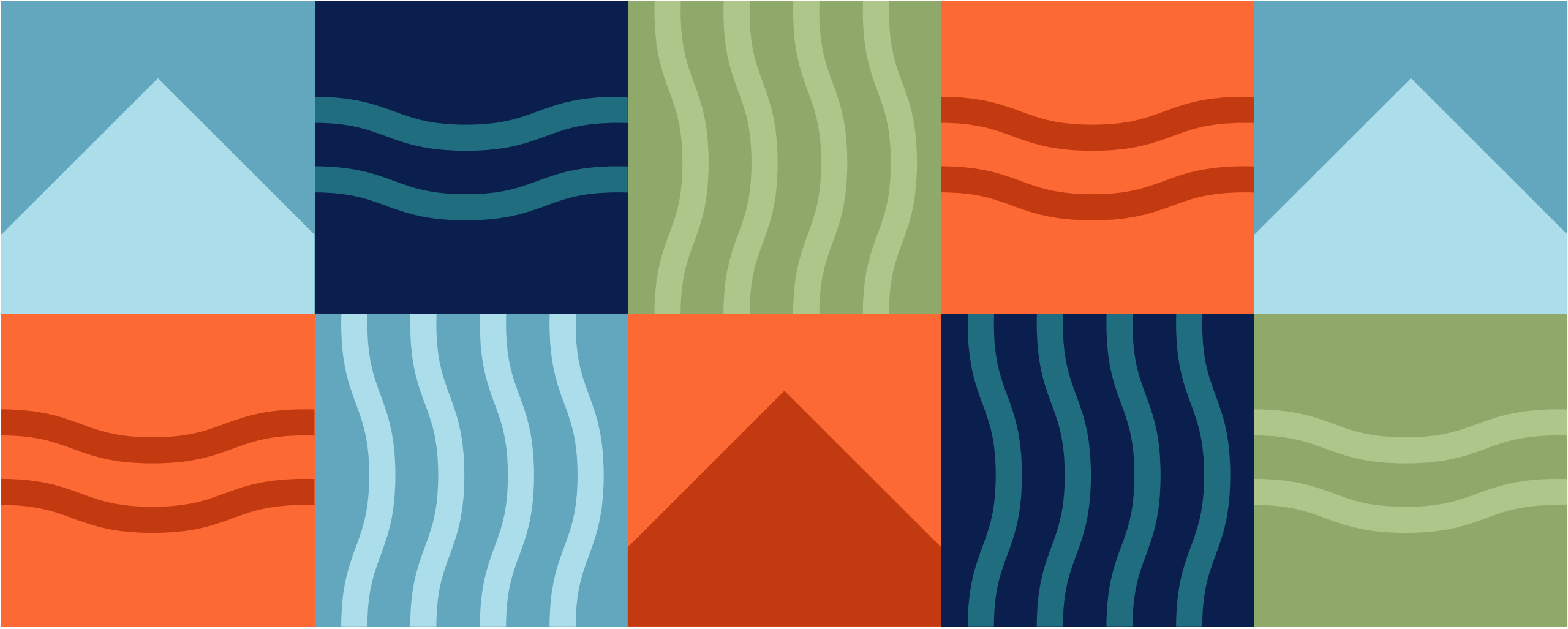


Anglian Water Developer Day 2023

Enabling Water Smart Communities

ENABLING WATER SMART COMMUNITIES

Running Order

1. National Context

Paul Shaffer

Director of Innovation & Delivery

Chartered Institution of Water and Environmental Management (CIWEM)

2. Anglian Picture

George Warren

Integrated Water Manager

Anglian Water

3. The EWSC Project

Rebecca Radford

EWSC Project Manager

Anglian Water

Vikki Williams

Digital Water Leader

Arup

Ask of you all

What would be the best way to engage with you on this work to ensure it continues to be of value to you?

- Future Homes Hub
- Home Builders Federation
- Professional Institutes (CIWEM / CIBSE / ICE / RICS / RTPI / RIBA / etc.)
- Individually
- Other

In your view, if this project could help address ONE thing related to sustainable water management in new housing what would it be?

FREE TEXT

Are there any developments relevant to this project that you think we should be made aware of, both existing and proposed?

FREE TEXT

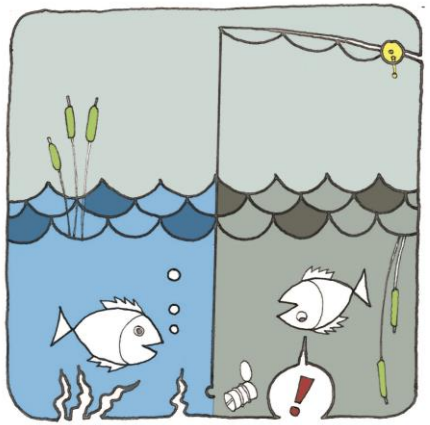
Link to Q&A

CIWEM Chartered Institution of Water and Environmental Management

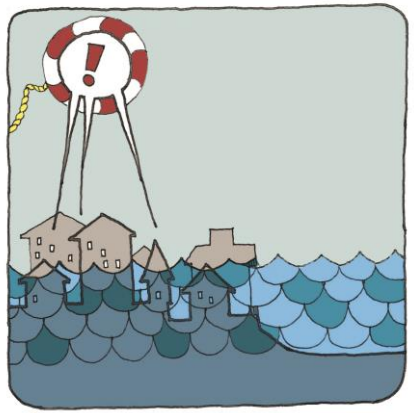
National context

Paul Shaffer

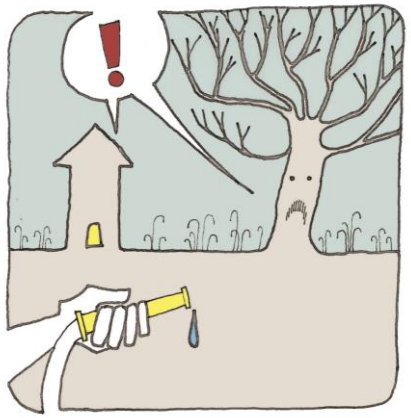
The context for better water management



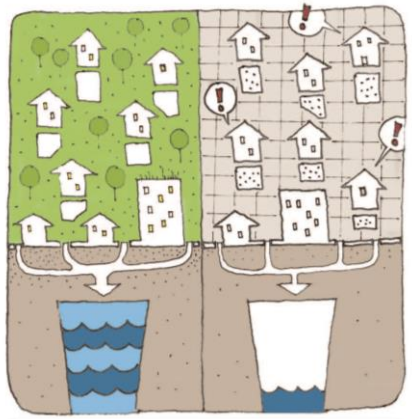
Water quality - river health



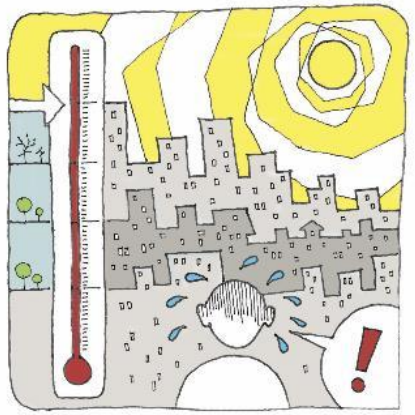
Flooding – people & property



Water availability



Support growth – people & economy



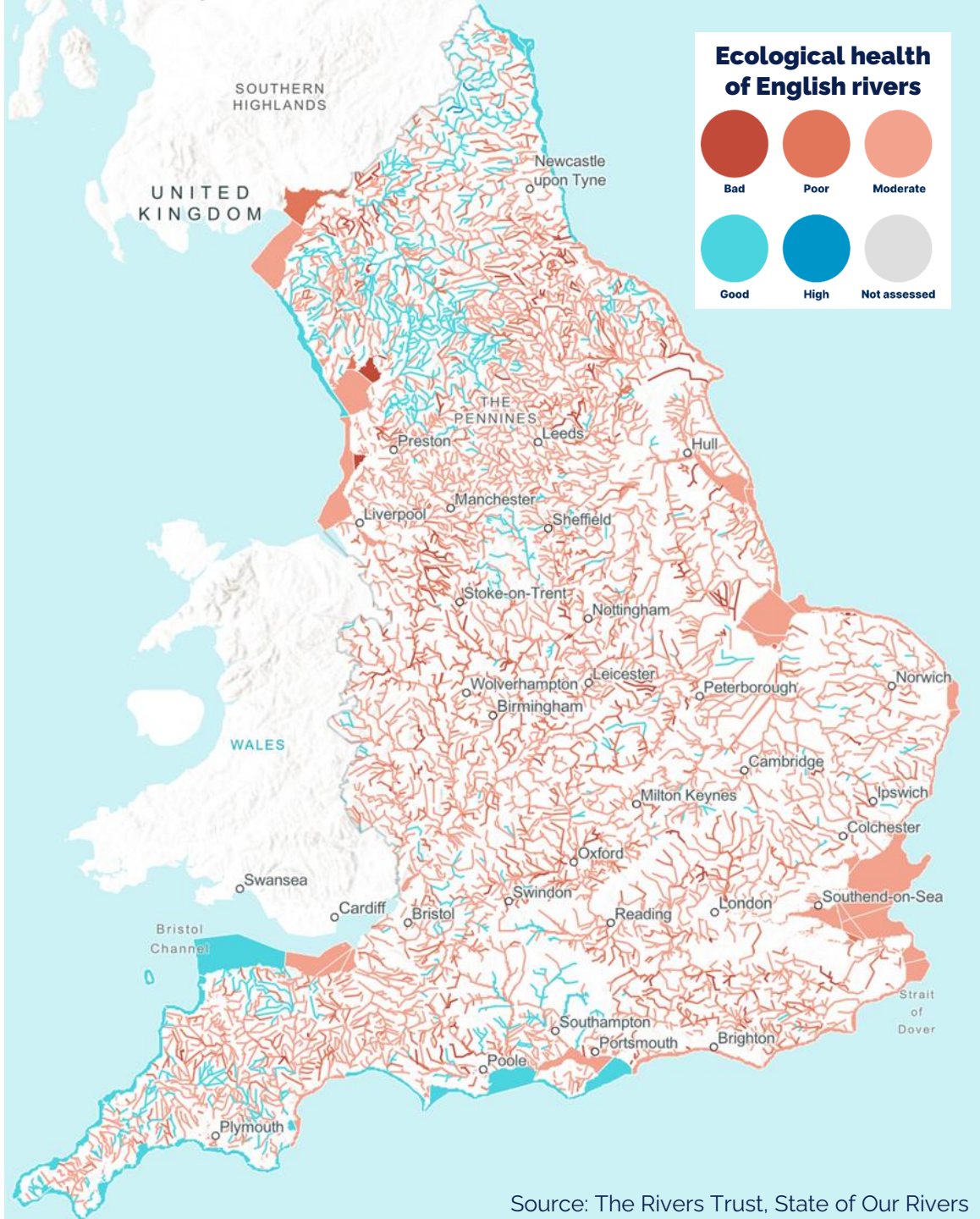
Liveable & lovely places & spaces

Legislation, policy & planning

Images: CIRIA C723 WSUD in the UK

Water quality

- 16% of surface water bodies achieve good ecological status.
- Only 14% of rivers achieve good ecological status – **no** rivers meet good chemical status.
- Reasons for not achieving good status include (in order):
  - Agricultural activities
  - Water sector activities
  - Urban and transport sector
- Government require water companies to address storm overflows.
- Approaches to tackle the challenges include better monitoring and management, Nature Based Solutions i.e. wetlands, SuDS.



Source: The Rivers Trust, State of Our Rivers

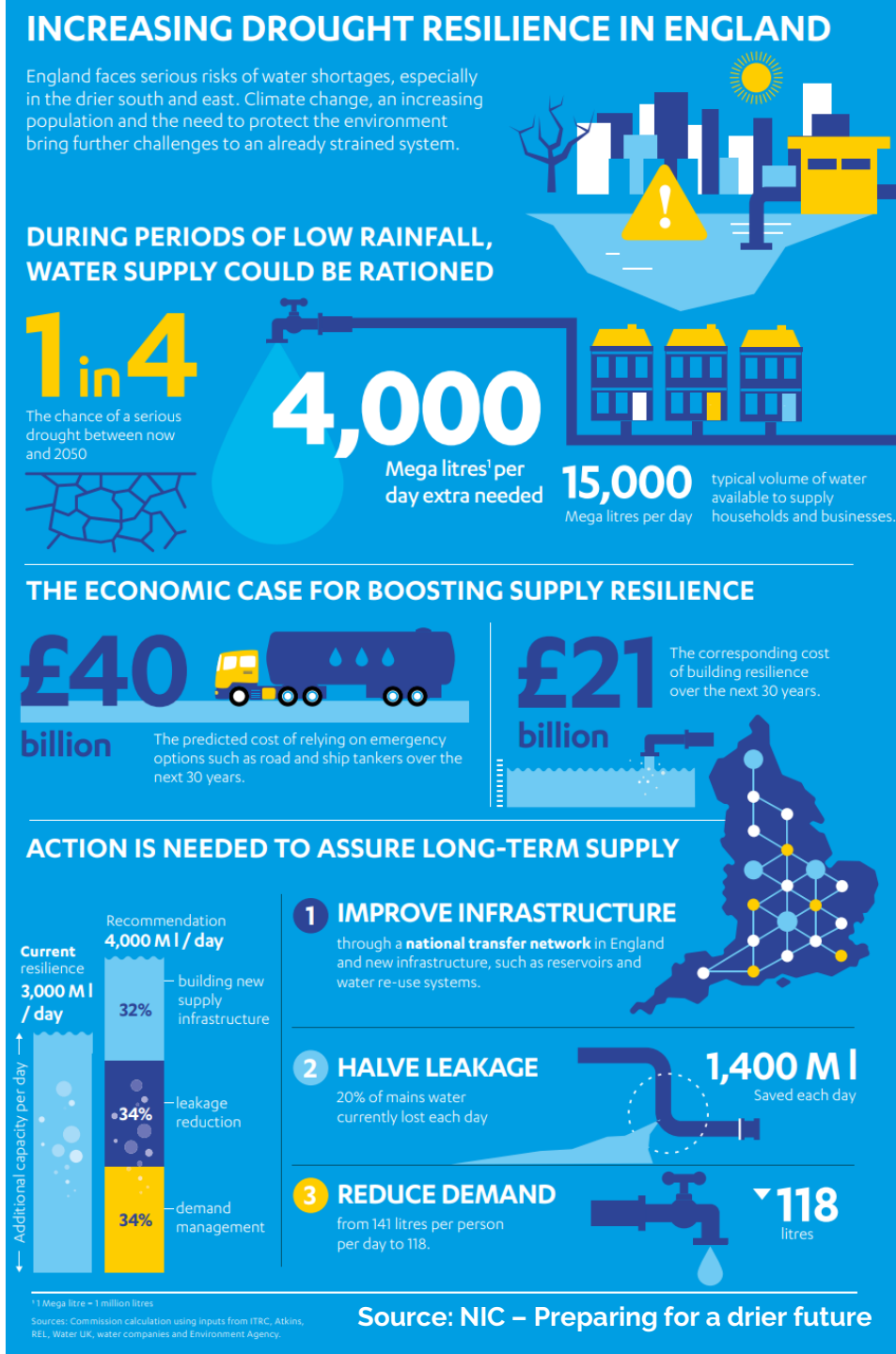
Flood risk

- Over 5.2m homes are at high risk from flooding & coastal erosion.
- Climate change & urbanisation is increasing flood risk.
- 325,000 properties are in areas of high risk of surface water flooding. 85% of these are in towns & cities.
- Water companies are actively involved in managing local flood risk (partnerships, DWMPs etc)
- Improved adaptation is recommended & proposed (NBS, SuDS & Property Flood Resilience).
- Government is minded to implement Schedule 3 of the FWMA mandating SuDS – consultation awaited.

SuDS @ Woodberry Down, London

Water availability

- By 2050 there will be 4bn litre/day gap in public water supply - “jaws of death”.
- Challenges supporting growth in parts of East Anglia
- Continue to use a twin track approach.
- Environment Act 2021 – to reduce public water supply (by head of population) by 20% by 2038.
- Reduce water use to 122 l/p/d by 2038, leakage & other water use.
- Government’s Plan for Water identifies taking an integrated and catchment approach.



Housing and water

- Government target of 300,000 houses built a year seem very aspirational
- Glenigans overview (August 2023)
  - Residential work commencing is 26% lower than last year.
  - Detailed planning approvals is 17% higher than last year
- Interactions between housing and water:
  - Water supply
  - Water quality
  - Flooding
- Possible future influences
  - Levelling-up & Regeneration Bill
  - Environment Act 2021
  - Schedule 3 (SuDS) implementation
  - Building Regulations/Water Efficiency Labelling
- Integrated water management at all levels delivers multiple outcomes for everyone.

love every drop
anglianwater

Anglian Picture

George Warren

The challenges

Largest geographic area
covered by a water and water recycling company in England

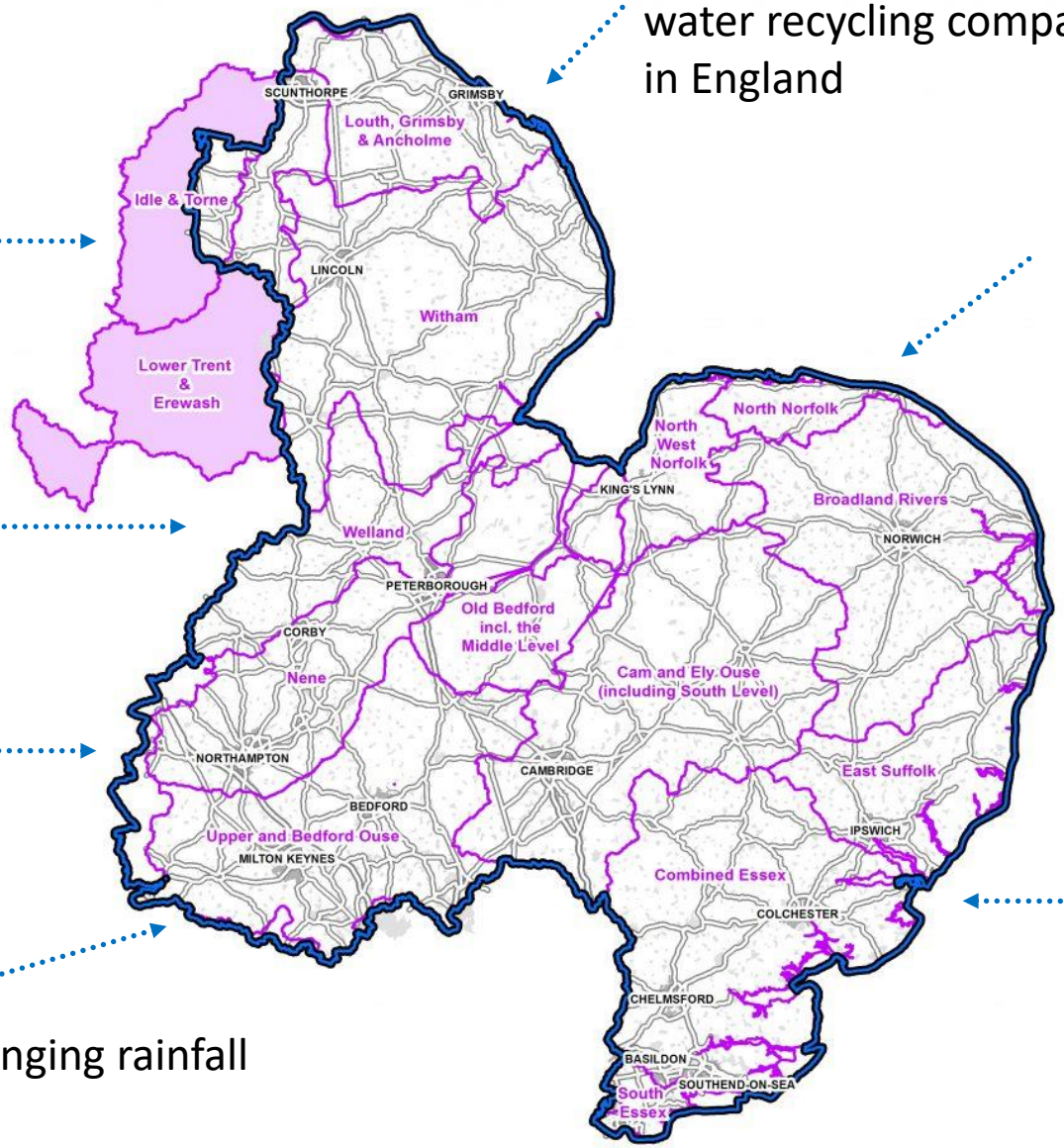
Significant Infrastructure

- 76,000km of sewers (twice the earth's circumference)
- 1,100 Water Recycling Centres

Environment
over 3,300km of rivers, 47 SSSIs and the UK's only wetland national park (Norfolk Broads)

Driest region
in the UK, two-thirds of average UK rainfall

Long coastline
over 1,200km from the Humber to the Thames estuary, long stretches vulnerable to erosion

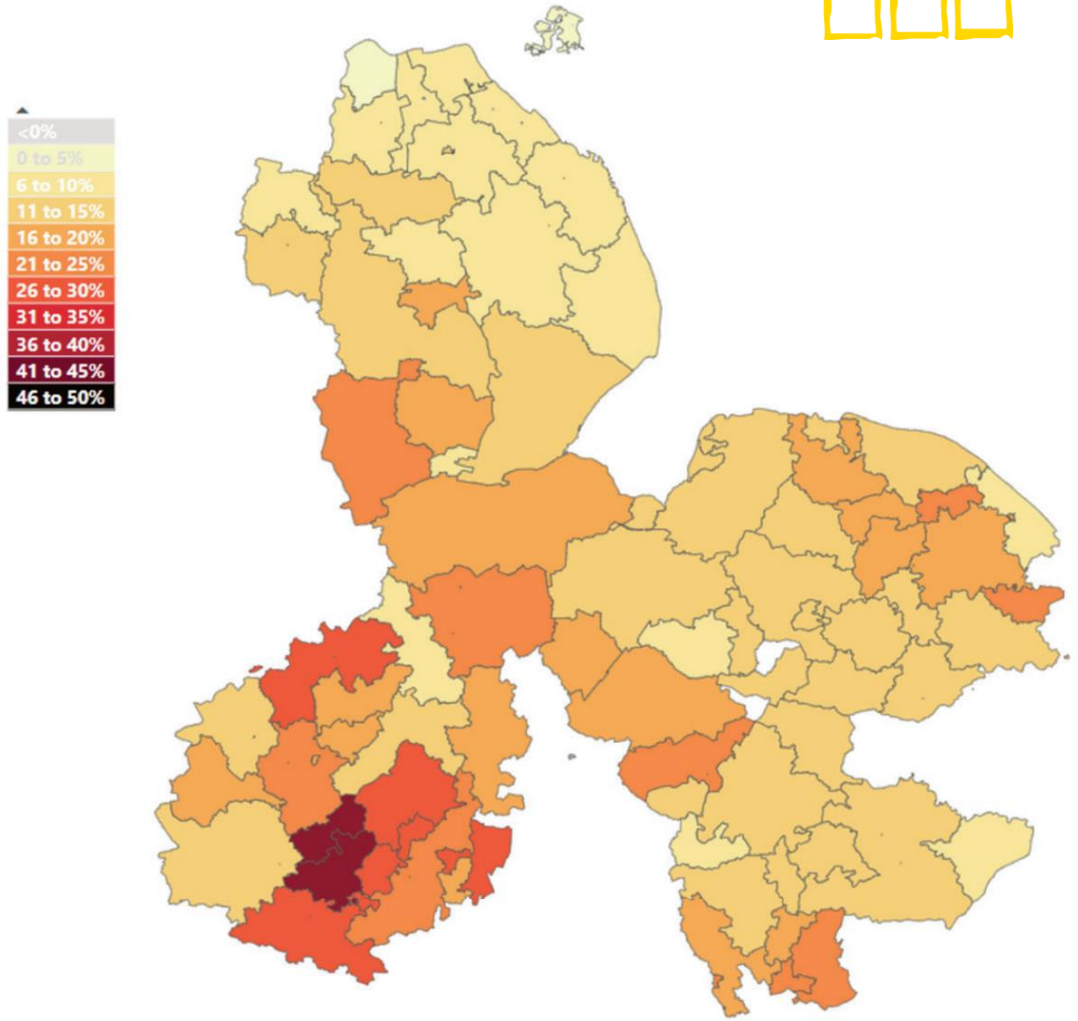


Housing and population growth
Experienced highest population increase in England (2011-2021)

Significant flood risk
with low-lying areas at risk of tidal surges, plus fluvial and surface water flooding

Climate change
Higher temperatures, changing rainfall patterns, sea level rise

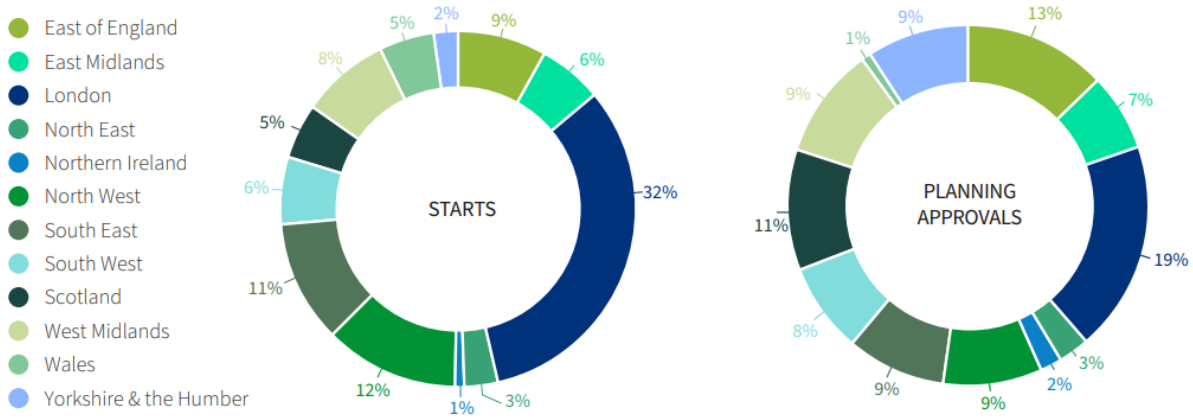
Growth



Population growth - % change from 2025-2050 (WRMP24)

Share Value of Housing Starts and Planning Approvals in the Last 3 Months

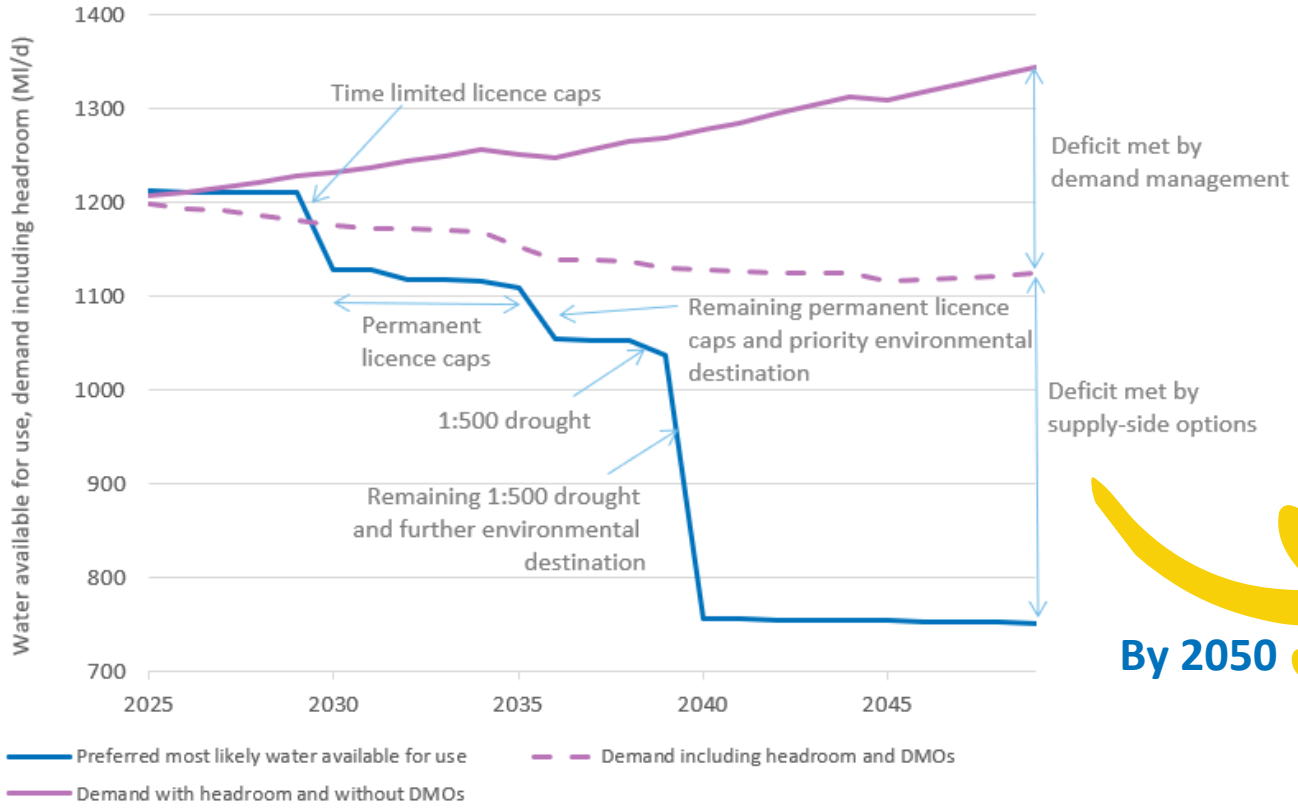
Source: Glenigan



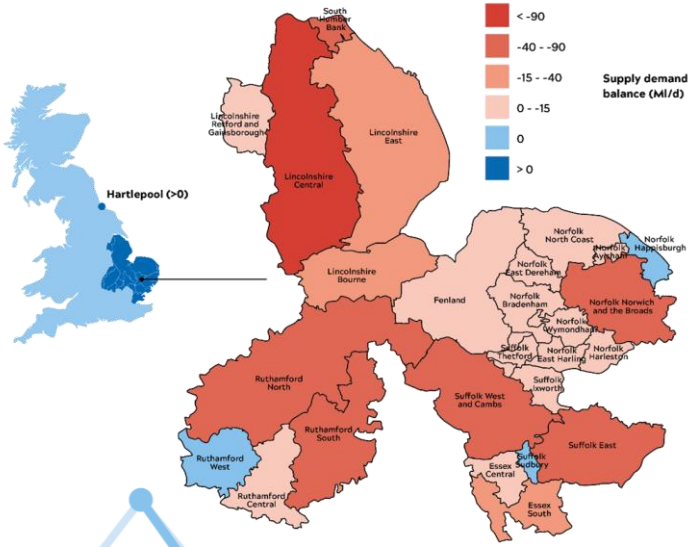
- Planning applications are down 14% this year, although approvals are up 14% compared to last year – backlog
- Expecting a population increase of 911,000 more people by 2050
- Expecting an 11% increase in non-household demand by 2050 (304 Ml/d up to 337 Ml/d)
- 43 currently active Nationally Significant Infrastructure Projects (NSIPs) - 20% of all NSIPs nationwide

Water resources

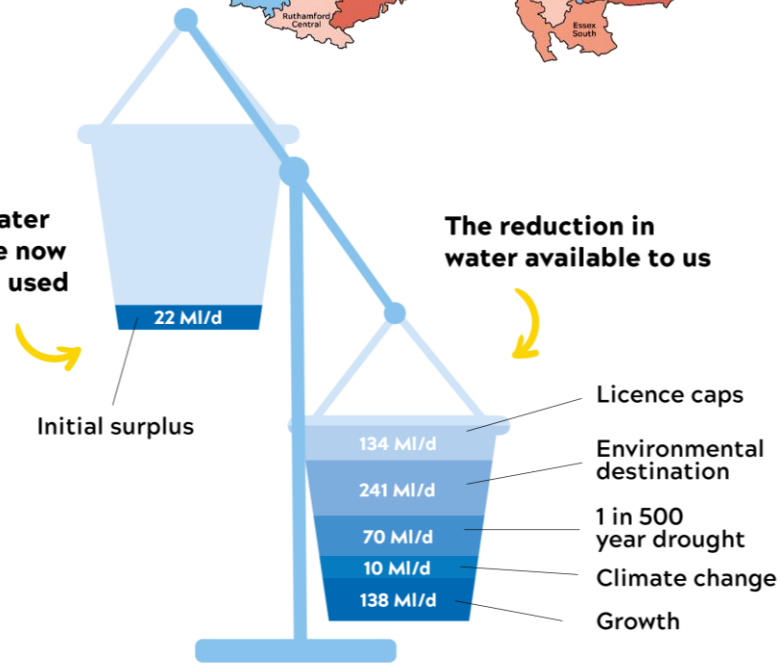
By 2050 we will have 38% less water to supply our customers



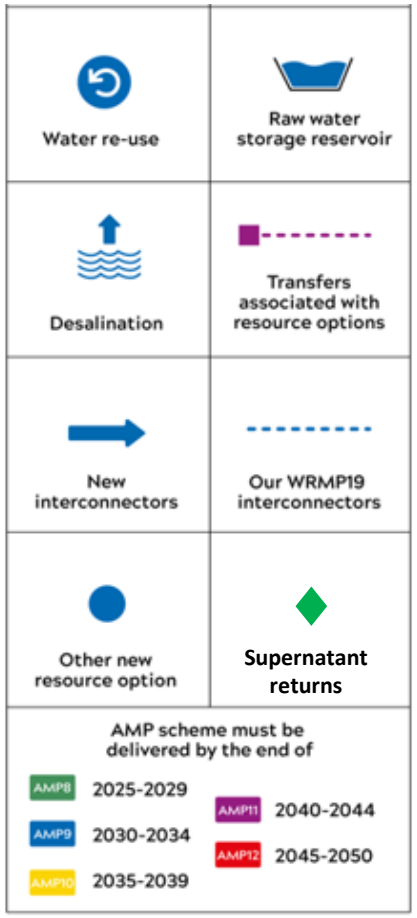
By 2050

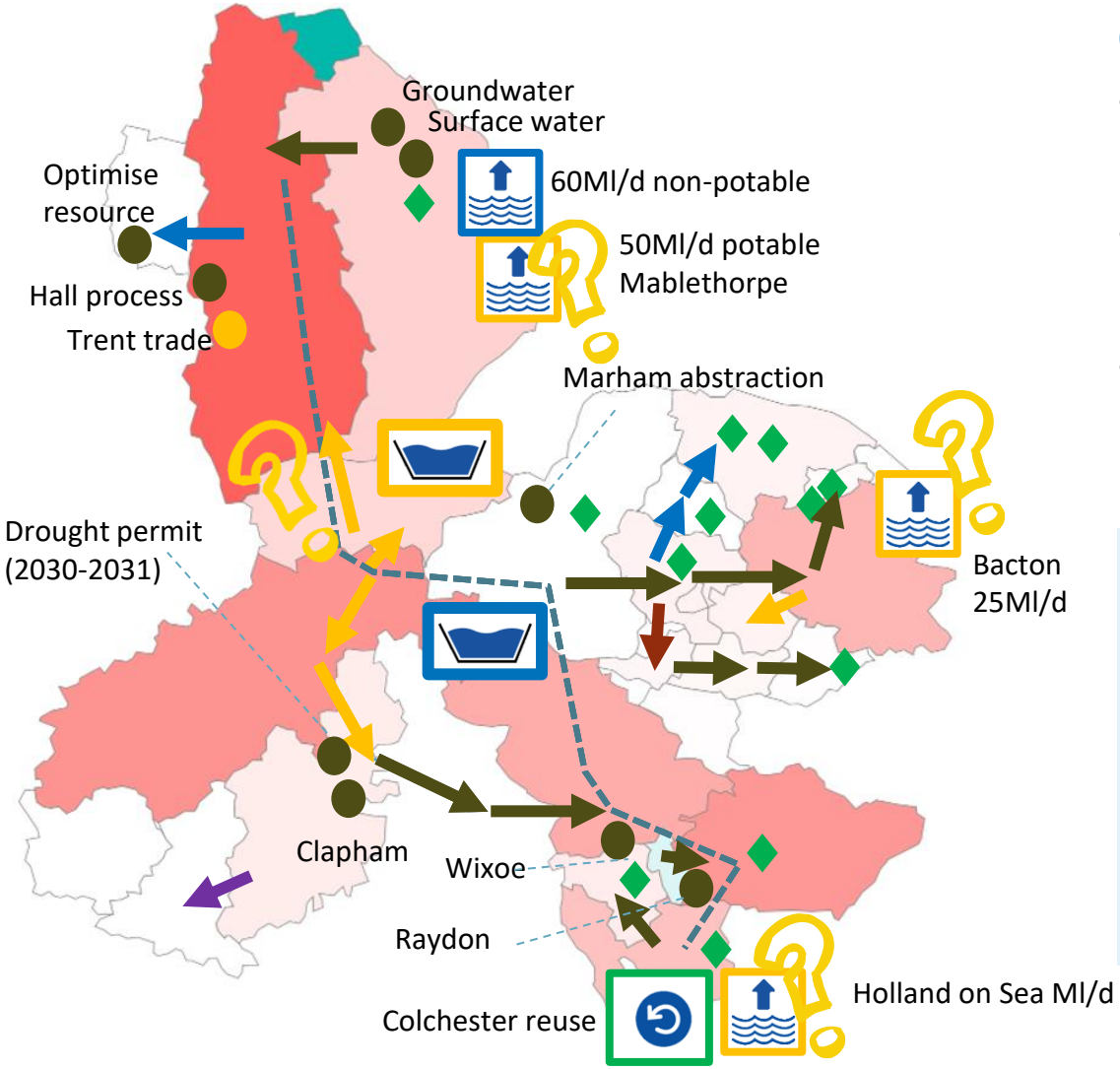


The amount of water we have available now which isn't being used by customers



WRMP24 Plan





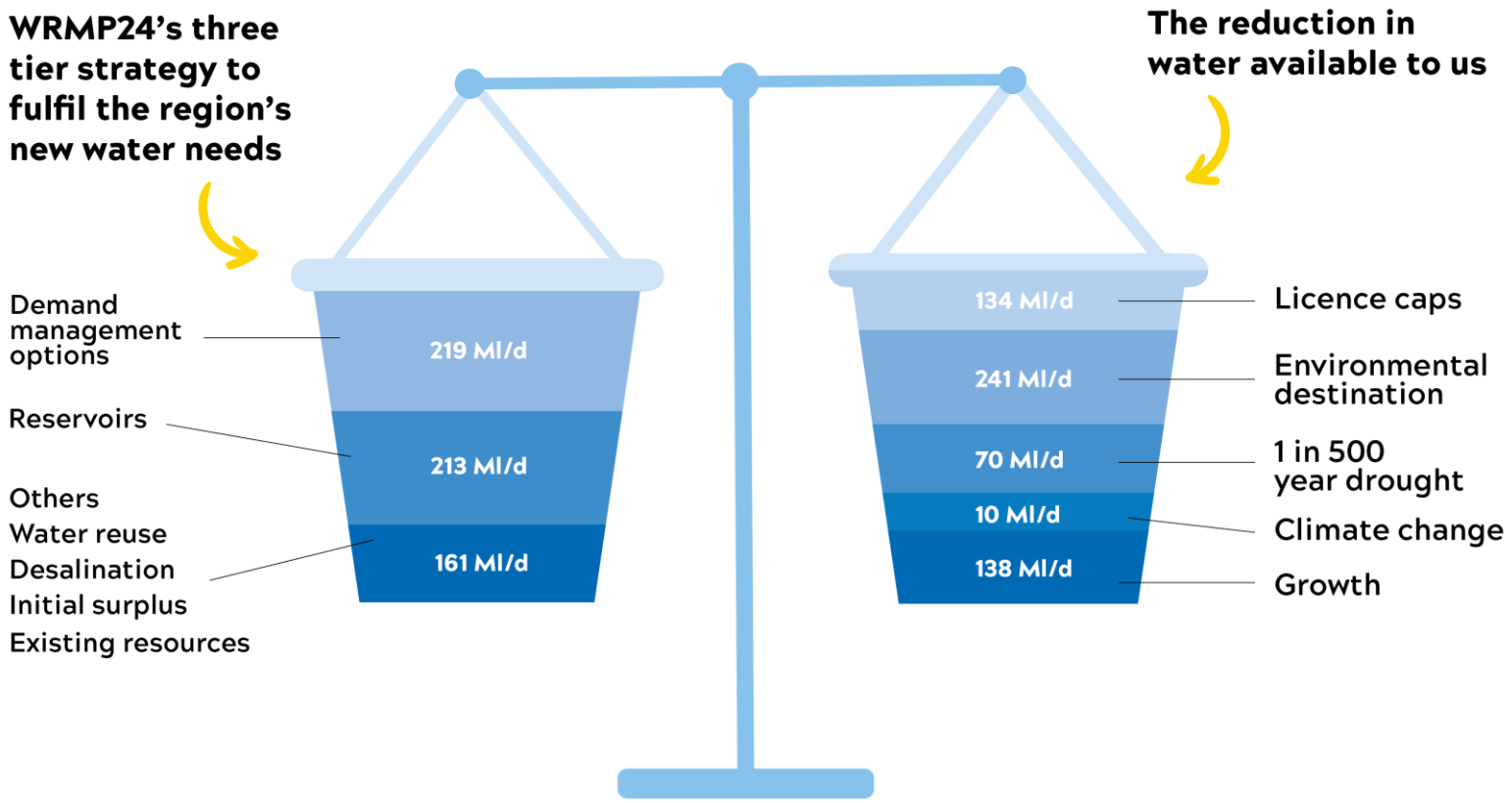
Our preferred plan selected as best value as,

- It offers the **best balance** of cost, resilience, adaptability and environmental improvements.
- Has been **shaped by our customer and stakeholder engagement.**
- **Reflects the regional plan**, aligning and supporting other neighbouring water company plans.

Three-tier strategy:

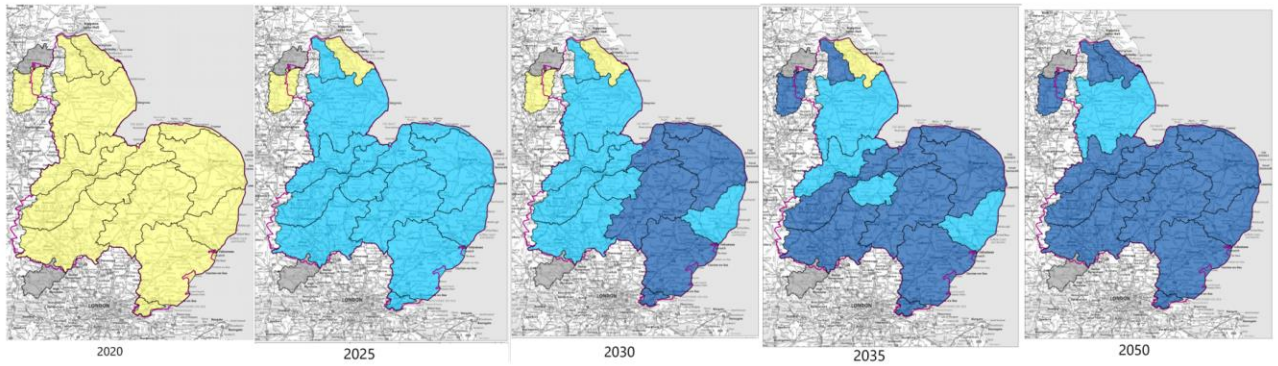
1. Making best use of existing resources including demand management
2. Strategic water resource options - development of two new reservoirs
3. Adaptive future resources

Revised draft WRMP24



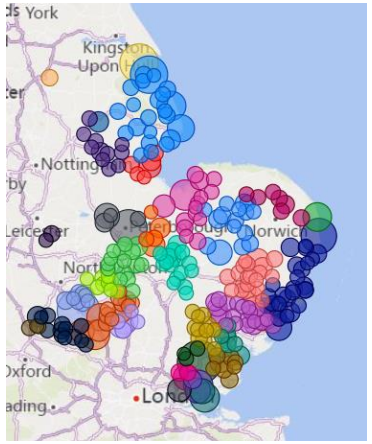
www.anglianwater.co.uk/about-us/our-strategies-and-plans/water-resources-management-plan

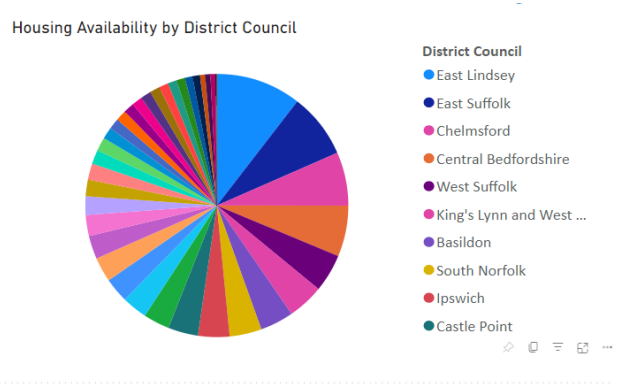
Flood Risk

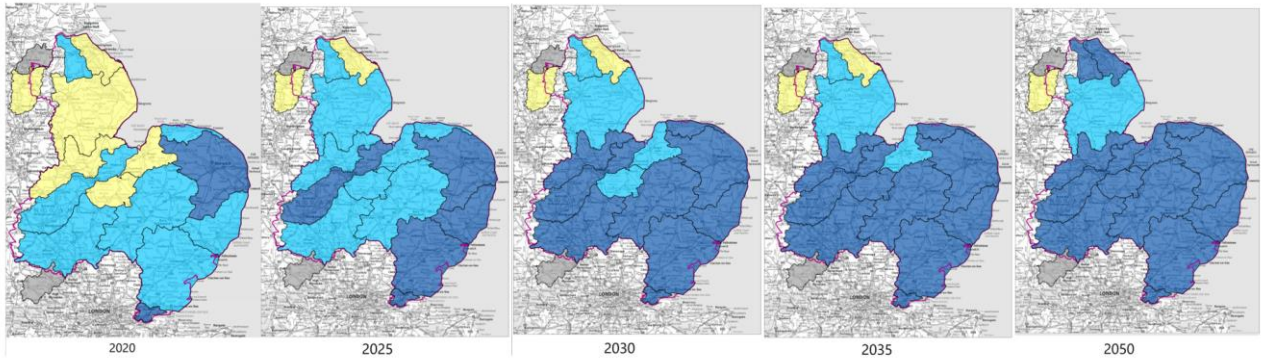


Increased risk of external flood risk from 2020-2050 if no action taken (DWMP24)

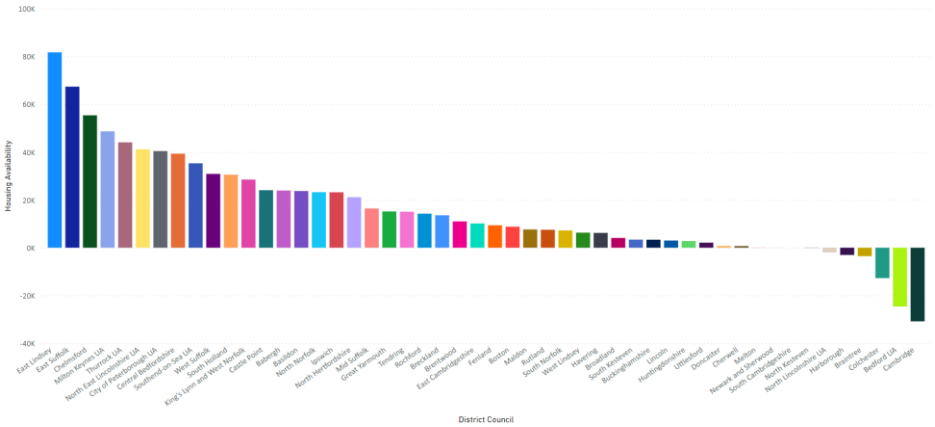
Drainage and Water Quality







Increased risk of pollutions from 2020 to 2050 if no action taken (DWMP24)



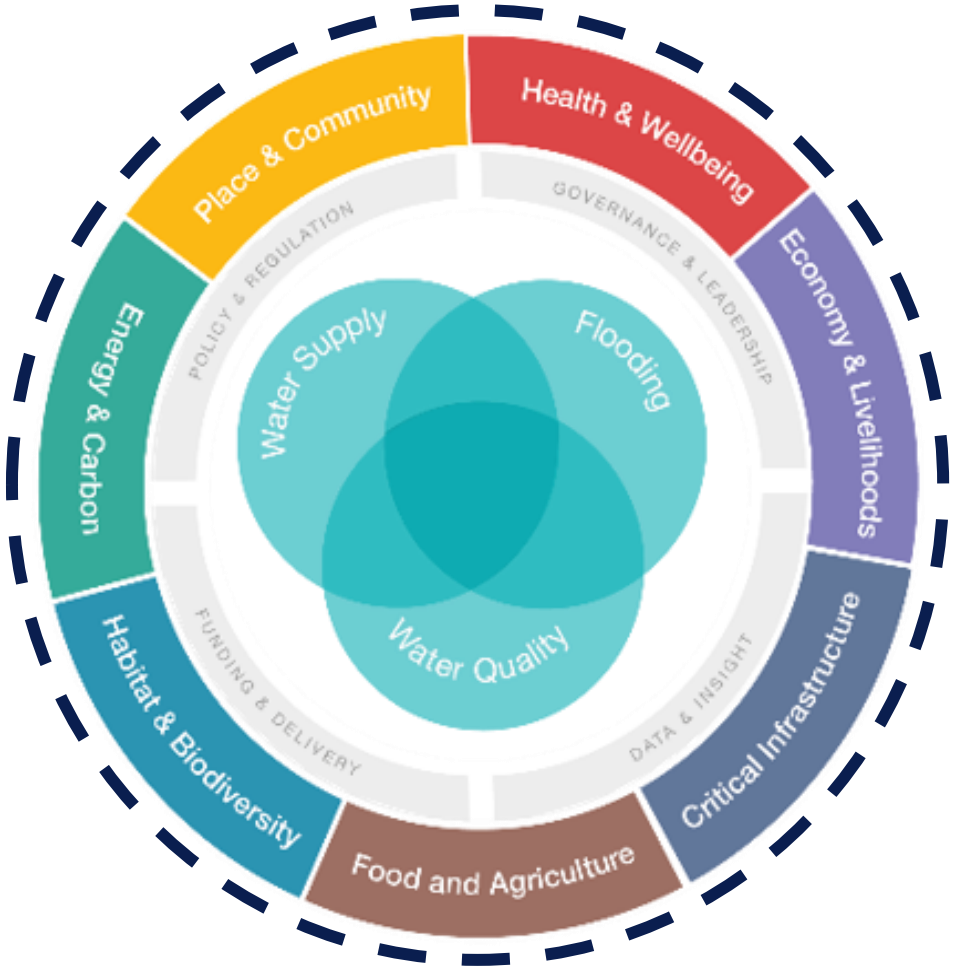
Water Recycling Centres Capacity Analysis PowerBI Tool

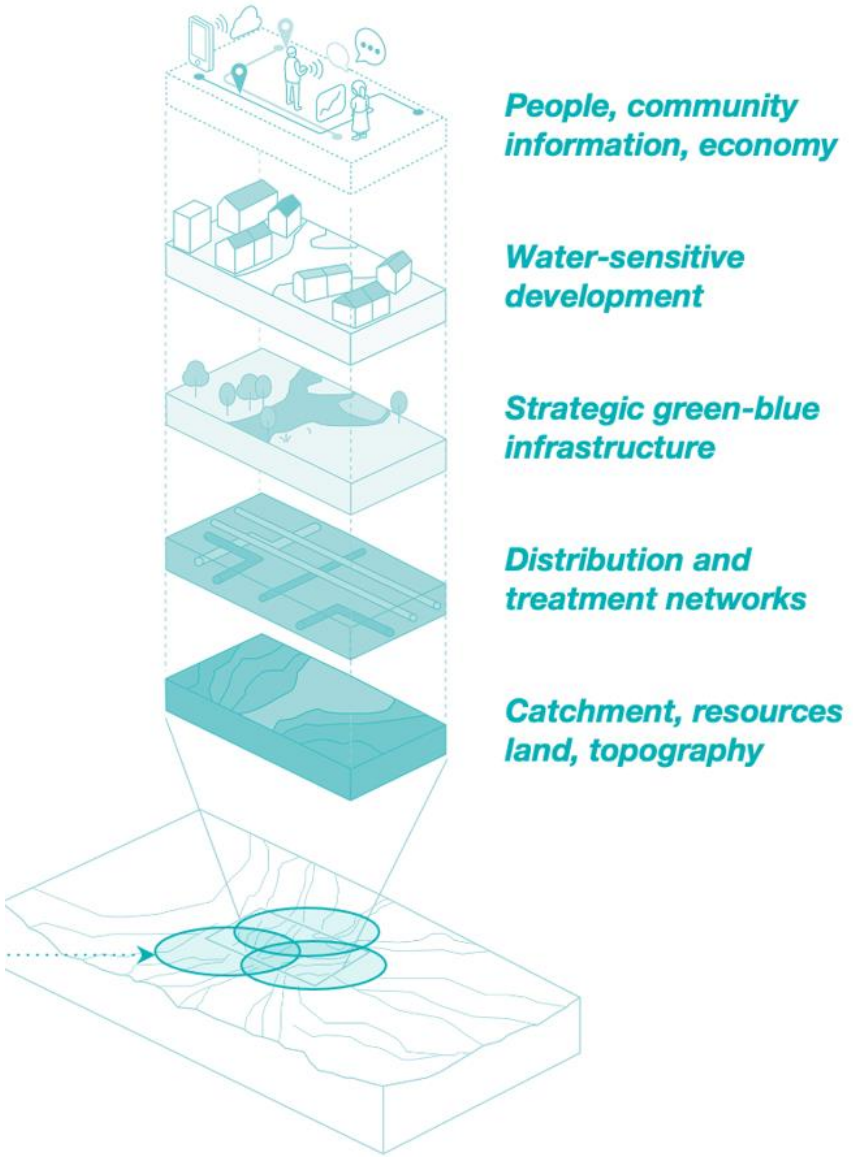
Water Recycling Centre upgrades

Constructed Wetlands

What is the solution?

Integrated Water Management





Above: Outcomes framework and asset systems based on *Design with Water* framework (© Arup 2012, 2022).

love every drop anglianwater

ARUP

Enabling Water Smart Communities

Rebecca Radford & Vikki Williams

Ofwat Innovation Fund

Water Breakthrough Challenge

Who's Involved

Lead Delivery Partners

love every drop anglianwater

United Utilities Water for the North West

Thames Water

Southern Water

ARUP

CIWEM Chartered Institution of Water and Environmental Management

UEA University of East Anglia

MANCHESTER 1824 The University of Manchester

Funded Partners

COMMUNITY LAND TRUST NETWORK

KWR

00 Dm

CLES the national organisation for local economies

eftec economics for the environment

Supporting Partners

Royal Horticultural Society

waterwise

THAKEHAM HOMES

CLARION HOUSING GROUP

Urban&Civic

TOWER HAMLETS

Suffolk County Council

CAMBRIDGE WATER COMPANY

Dŵr Cymru Welsh Water

SEVERN TRENT

Independent Programme Board

Environment Agency

Homes England

defra

NATURAL ENGLAND

Cranfield University

Future Homes Hub

LPDF LAND PROMOTERS & DEVELOPERS FEDERATION

UKRHA

Catchment Based Approach

ARUP

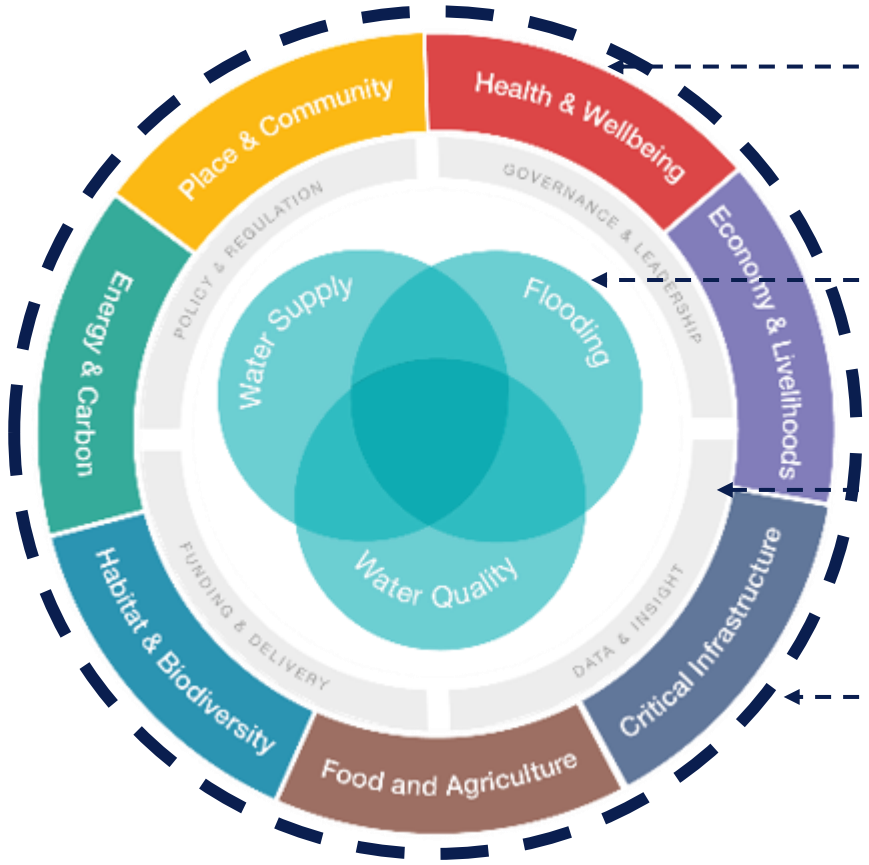
CIWEM

Taylor Wimpey

COMMUNITY LAND TRUST NETWORK

The Mission

How can we rethink **whole-life water stewardship** to accelerate the adoption of **integrated water management**, and support **communities and the environment** to thrive.



1 Rethinking Value
Unpacking shared values what value we can create through this project

2 Rethinking Assets
Exploring the water assets which can maximise impact through innovation

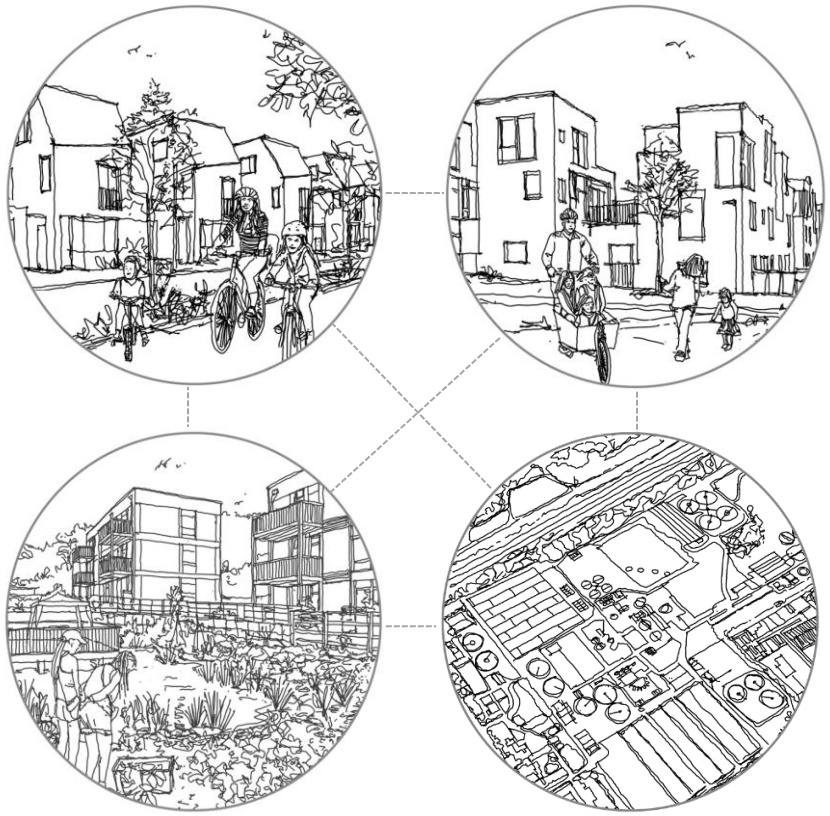
3 Rethinking Roles (Stewardship)
Identifying the key enablers that can unlock new stewardship models

4 Rethinking Evidence
Using practice-based research and design to underpin the project

Through four development models

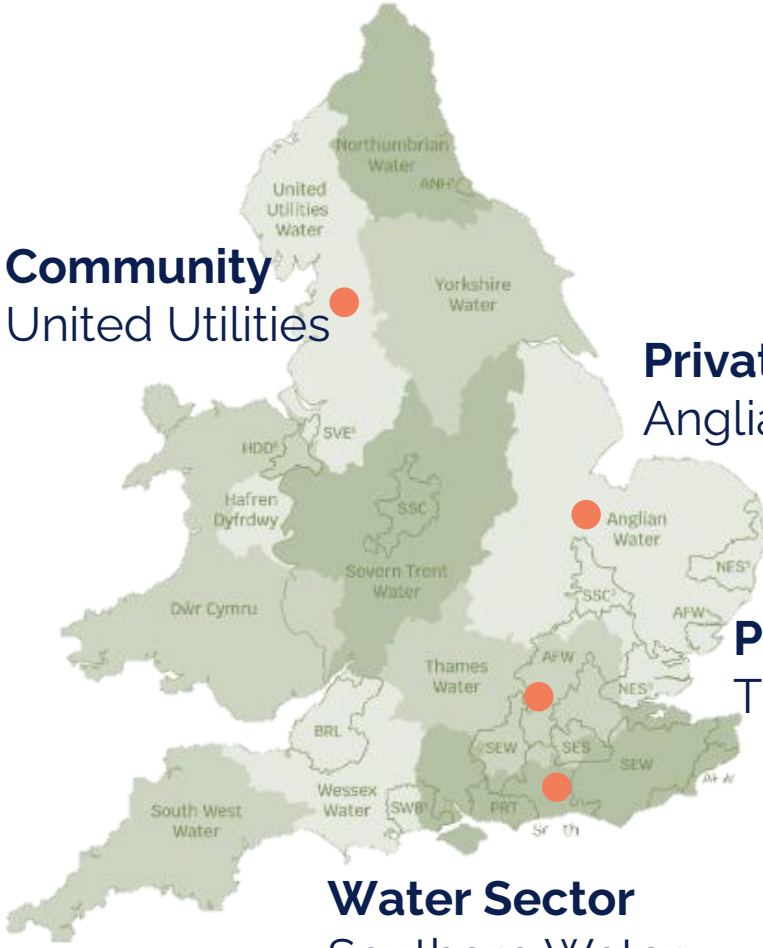
Private sector-led

Public sector-led



Community-led

Water sector-led



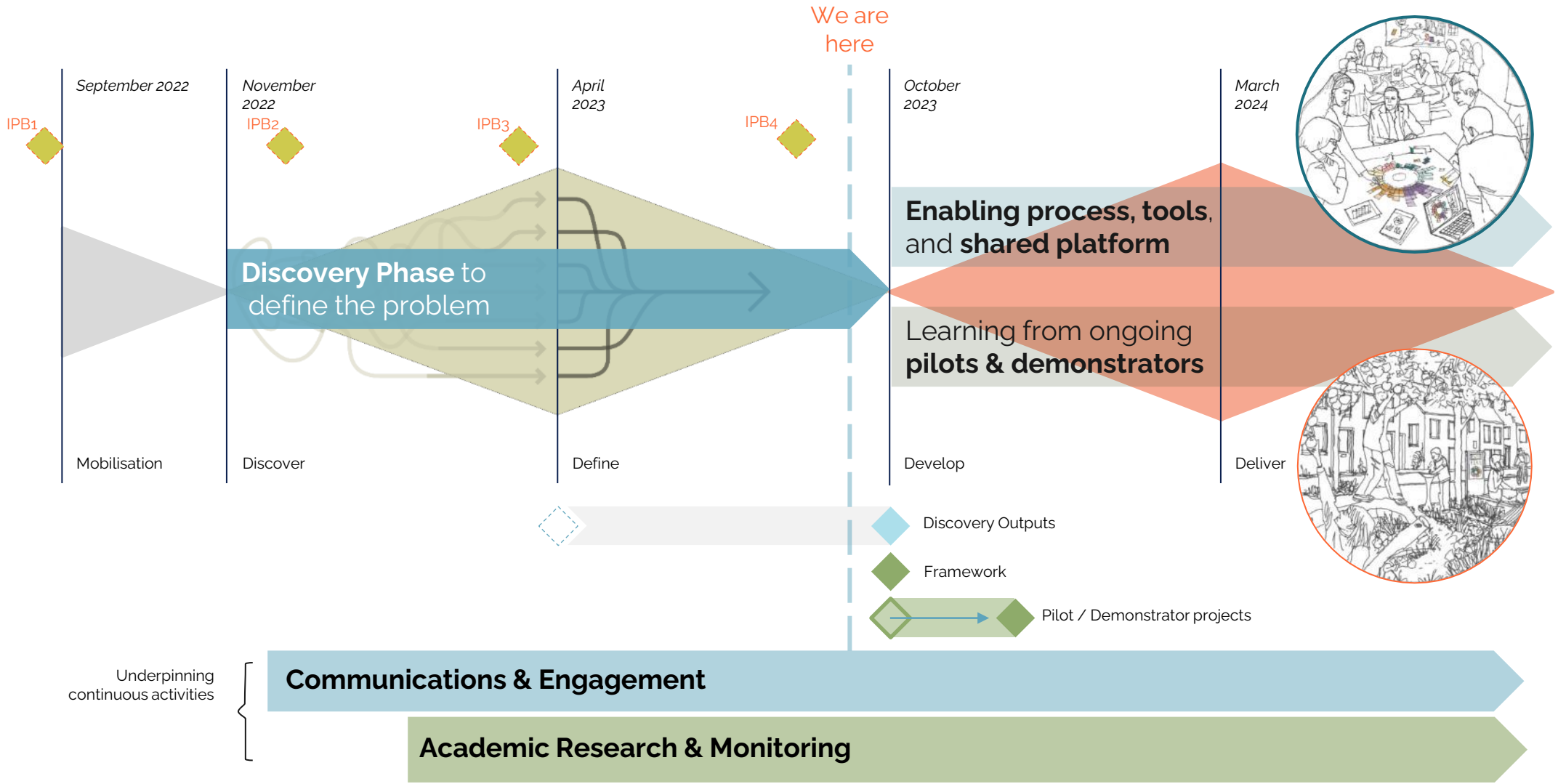
Community
United Utilities

Private Sector
Anglian Water

Public Sector
Thames Water

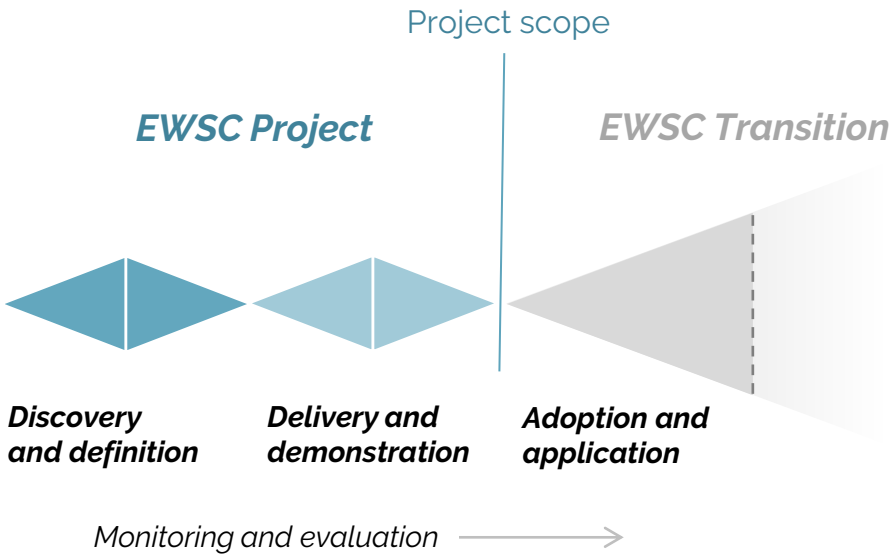
Water Sector
Southern Water

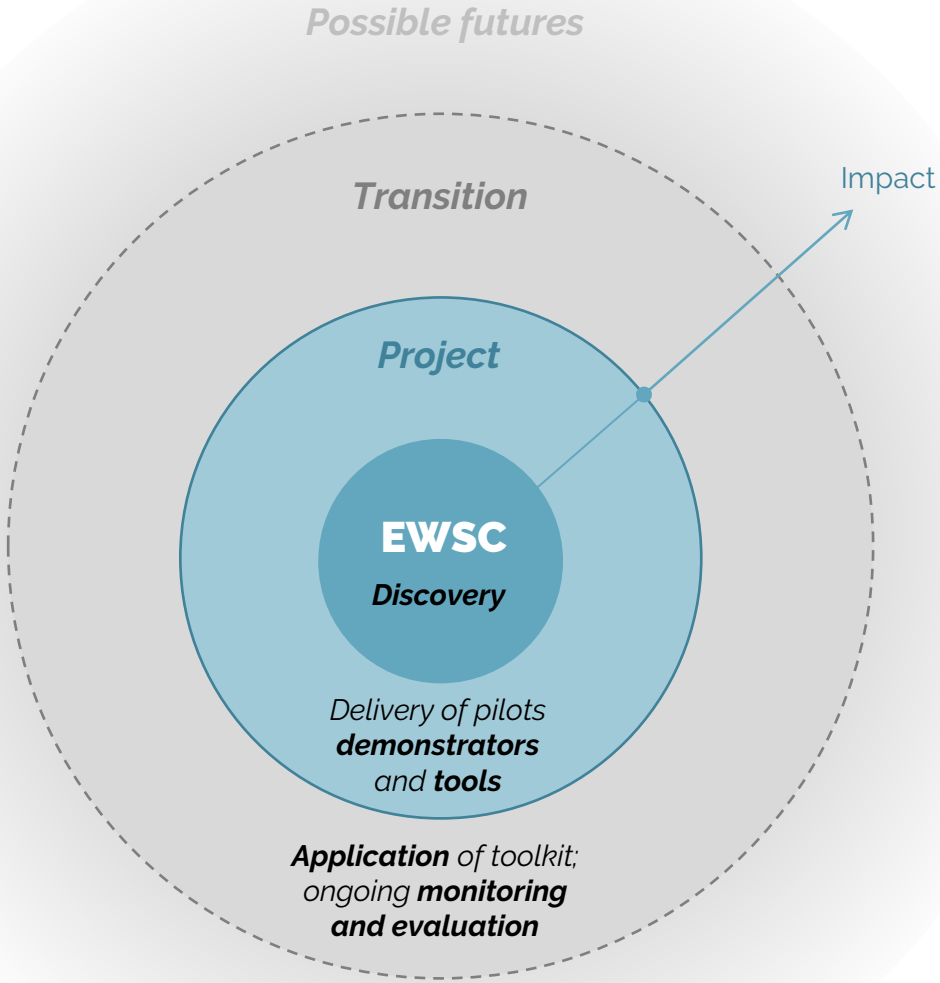
Programme


We are here
September 2022
November 2022
April 2023
October 2023
March 2024
IPB1
IPB2
IPB3
IPB4
Discovery Phase to define the problem
Enabling process, tools, and shared platform
Learning from ongoing pilots & demonstrators
Mobilisation
Discover
Define
Develop
Deliver
Discovery Outputs
Framework
Pilot / Demonstrator projects
Underpinning continuous activities
Communications & Engagement
Academic Research & Monitoring

Transitions towards EWSC...

Exploring the boundary of the EWSC project, how we might support future transitions and longer-term system change...





What is a Water Smart Community?

"**An informed collective** that proactively manage water usage through realizing possible efficiencies and applying innovative thinking"

"**A place** where people are enabled to come together to use water wisely and well"

"**A development** created for communities of the future…"

"A **water system** that maximises benefit for people in place"

"A community **both physically designed and with a shared ethos** to minimise the environmental impact of water usage and contribute to specific water challenges in their surrounding environment"

"**A group** that considers water as an integral part of its community, implementing ways to use water sustainably and efficiently"

A **WSC** is a group of interested parties that unite around shared values to deliver and steward water cycle assets in a way that supports outcomes for people and the planet.

WORKING DEFINITION

Our project is focusing on how we *enable*

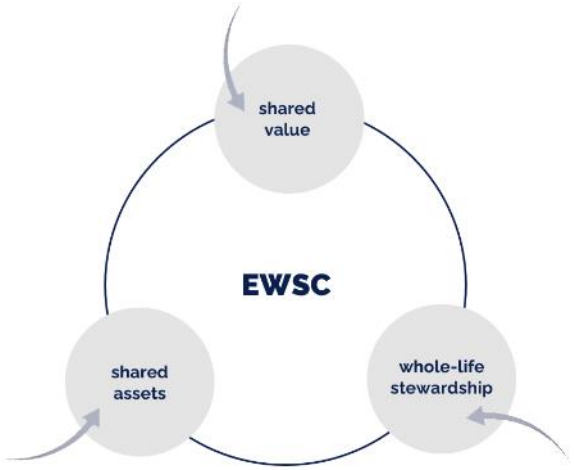
Enabling

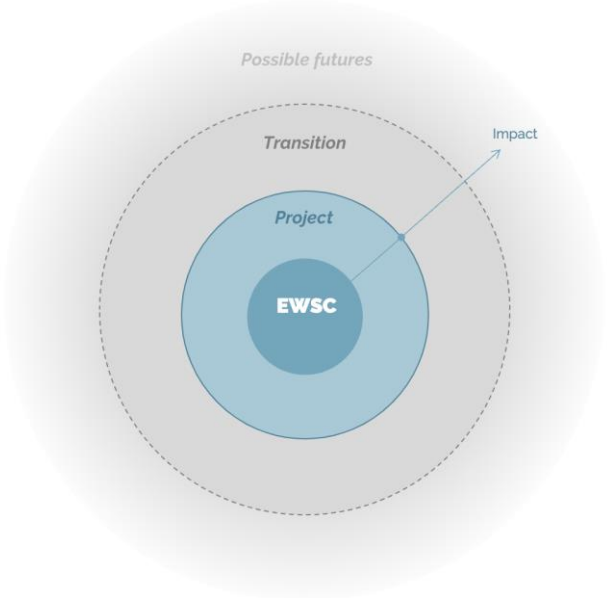
Creating the **conditions** and environment for action to occur

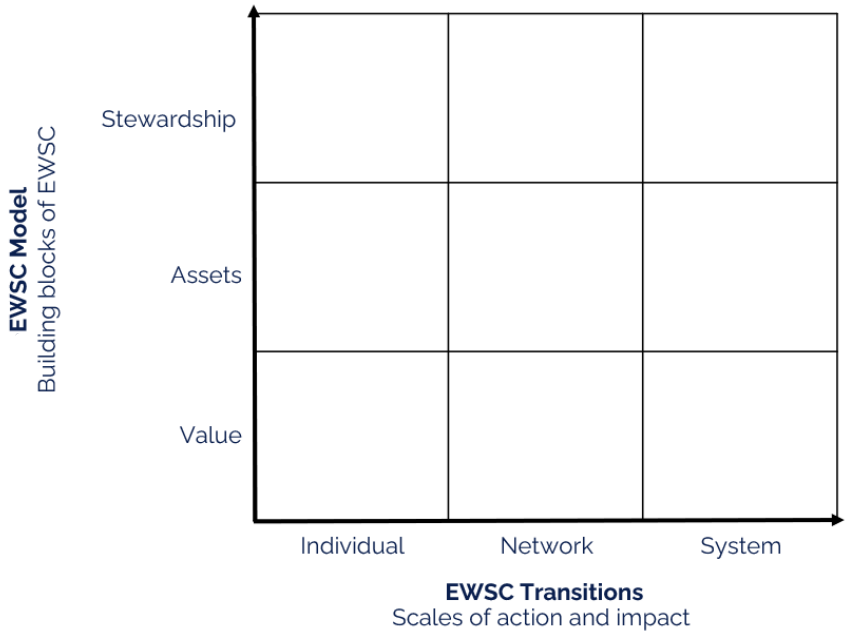
Empowering, incentivising, supporting, removing barriers

EWSC Framework

Developing the model and creating an actionable framework.







EWSC Model
Building blocks of EWSC

×

EWSC Transitions
Areas of action and impact

»

EWSC Framework
Actions and transition pathways

Draft framework
currently being tested

EWSC Framework

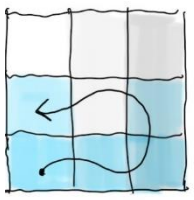
Framework axes and action areas

The draft framework is currently being iteratively developed and tested through ongoing research.

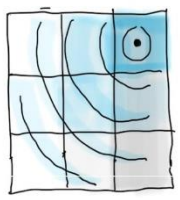
Within each research area (value, assets, stewardship) different scales of action and system complexity are considered.

Positive action can be taken from multiple starting points across this framework.

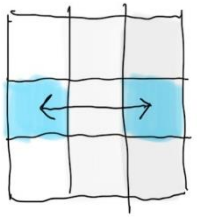
It is currently being shaped into a 'canvas' to structure the programme, by assisting to prioritise future action areas and identify potential transition pathways.



Pathways



Ripple effects



Linked actions

DRAFT : TEXT BEING REFINED

EWSC Model
Essential building blocks of EWSC

resilient **STEWARDSHIP**	***ACCOUNTABILTY AND LOCK-IN OVER TIME***	***WHOLE LIFE CYCLE ROLES*** Focusing on building resilient whole-life model with each actor's stewardship responsibilities aligned to their duties, values, capacity and capability.	***COLLECTIVE STEWARDSHIP MODELS*** Multiple actors aligning to form new entities with new forms of agreement for sharing ownership/management linked to shared risks and value	***SYSTEM-LEVEL AGREEMENTS*** Enabling whole-life stewardship through funding, finance, changes to policy/ legislation/ regulation empowering stewardship organisations to from and act
integrated **ASSETS**	***DESIGN AND DELIVERY***	***SINGULAR ASSET / SITE*** Actions towards delivery of water smart assets that can be shaped directly through the site or community scale development.	***MULTIPLE ASSETS / NETWORKED*** Considering dependency with asset networks beyond the site. Considering partnership action to increase integration across water smart systems	***WHOLE SYSTEM*** Regional/national actions: the role of regulation, governance, design standards, and asset management approaches to support water smart innovation
outcomes-led **VALUE (S)**	***DRIVERS AND OUTCOMES***	***INDIVIDUAL ACTORS*** Considering Core duties (Must Do, Should Do, Could Do, Can't Do etc) Personal or organisational value case made and value captured.	***ALIGNING A NETWORK OF ACTORS*** Values shared between individuals/ organisations. Wider benefits beyond core duties captured. Organisations align around shared values.	***ENABLING THE SHARED VALUE CASE*** Systems and processes for capturing, pooling and distributing shared outcomes and value arising from individual or collective action across multiple systems

INDIVIDUAL

Adapting thought and action within an existing delivery environment via **individual** action, asset or function

NETWORK

Creating new categories and models to think within a wider infrastructural and societal **networks**

SYSTEM

Enabling actions and new models at **system level** (eg. cities, cultures, financing, regulation, policy)

SYSTEM TRANSITION

Action and impact towards EWSC

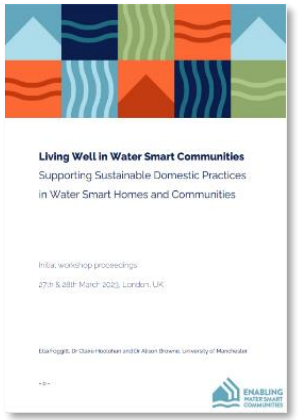
scales of action

Emerging Discovery Insights

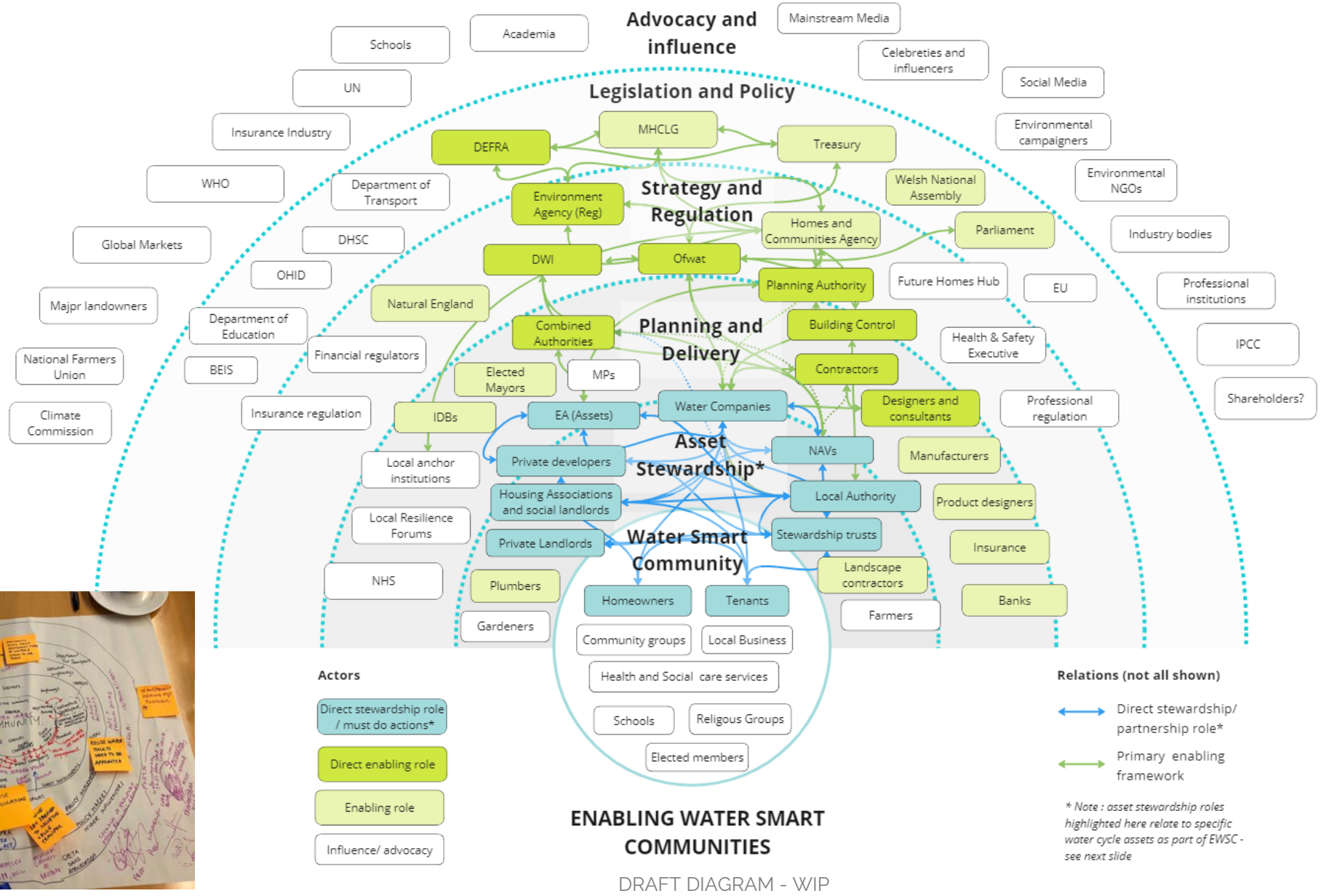
The ecosystem of actors...

A cross-sector '*Change Points*' workshop facilitated by our academic partners asked '**What actors do water smart communities bring together?**'

Further analysis is exploring key roles, and relationships, beginning to map actors by proximity to the EWSC challenge.



Change Points Workshop and Write-up

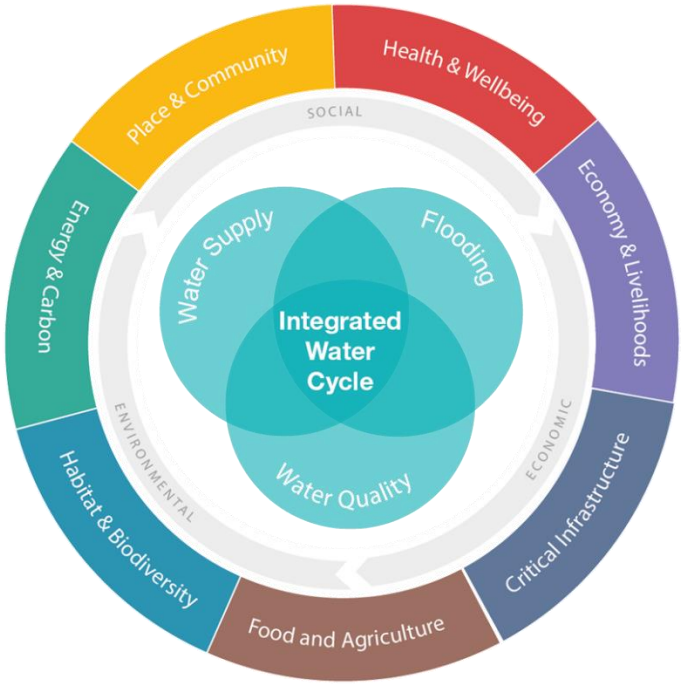


Emerging Discovery Insights

Value(s)

Exploring roles, value(s) and motivations

The project is exploring the different drivers, motivations and frameworks for the delivery of wider outcomes alongside a review of core, '*must do*', integrated management actions.



Example of a framework for delivering multiple wider outcomes through Integrated Water Management (IWM)

Key actors with 'must do' asset stewardship roles linked to IWM	Water resources, treatment and supply	Sewerage, wastewater treatment, water quality	Surface water drainage flood risk management
Water Companies	•	•	•
Local Authorities		●	•
Private housing developers	•	•	•
Housing Associations and Social Landlords	•	•	•
Private Landlords	•	•	•
Homeowners	•	•	●
Tenants	●		
Stewardship Trusts		●	•
NAVs	•	•	•
Environment Agency			•

Indicative table for discussion – WIP. Wheel diagram based on Arup's *Design with Water* Framework v2.0, 2022

Emerging Discovery Insights

Assets

Towards integrated water management

A focus on water smart communities can accelerate trends towards integrated planning and design.

PAST

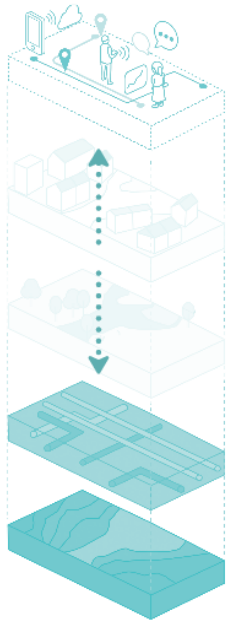
ISOLATED SYSTEMS

Trends: increasing awareness and focus on dependencies across different water systems

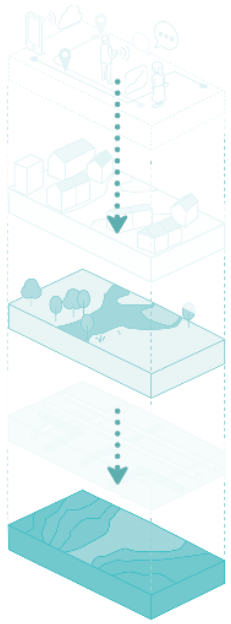
FUTURE

INTEGRATED SYSTEMS

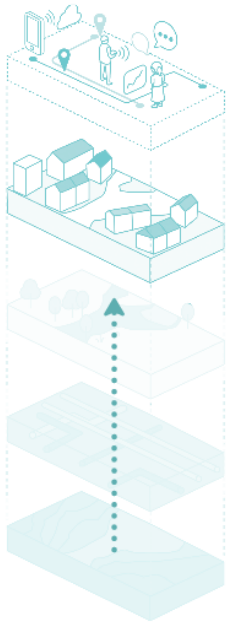
Draft diagrams - WIP



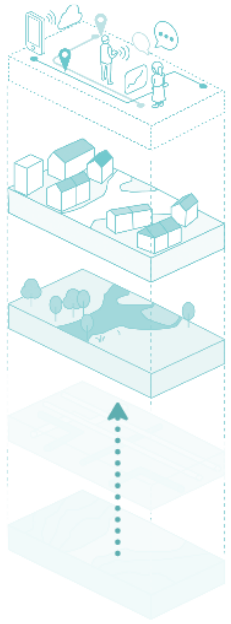
Water utilities



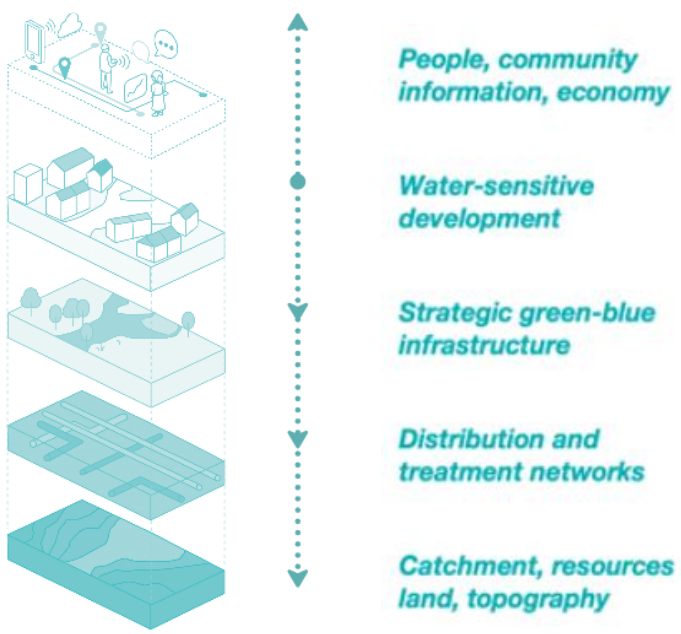
Water/env sector



Housing sector



Local government



Water Smart Delivery

Emerging Discovery Insights

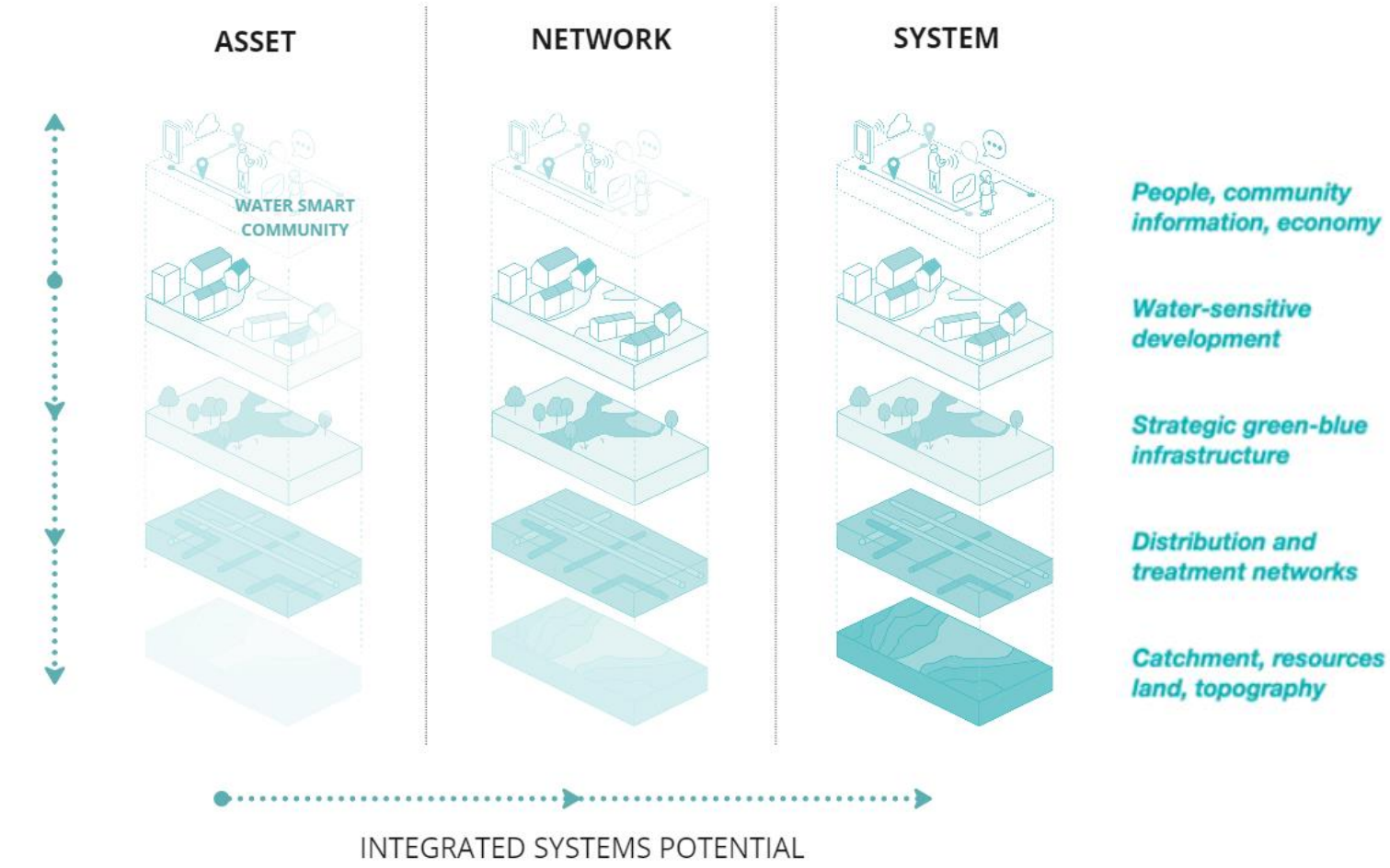
Assets

Integrated systems | whole systems

Maximising the potential of water smart communities requires consideration of integrated water systems at every opportunity – whatever the entry point.

Individual homes, sites or communities may have limited agency and capacity to fully integrate across all water systems. Achieving fully integrated water management for communities requires enabling actions at multiple scales, from individual asset design through networks of assets to system-wide interventions.

Potential water smart asset database/ inventory (WIP)



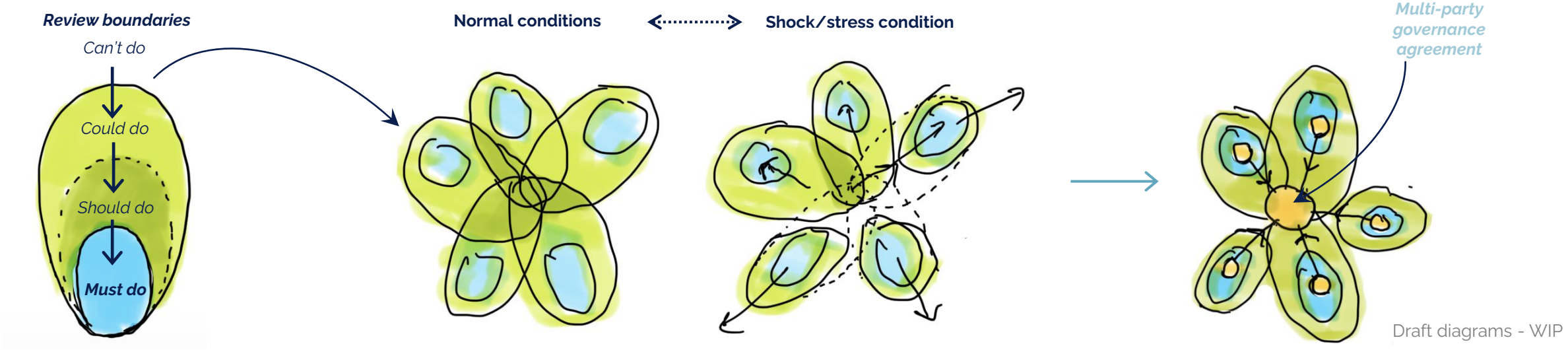
Draft diagrams for discussion – WIP.
Layers based on Arup's *Design with Water* Framework v2.0, 2022

Emerging Discovery Insights

Stewardship

Towards resilient whole-life stewardship

Exploring models for individual and collective action



Individual roles

Individual obligations and value(s) drive delivery of stewardship actions. Boundaries between categories have a major impact on stewardship roles.

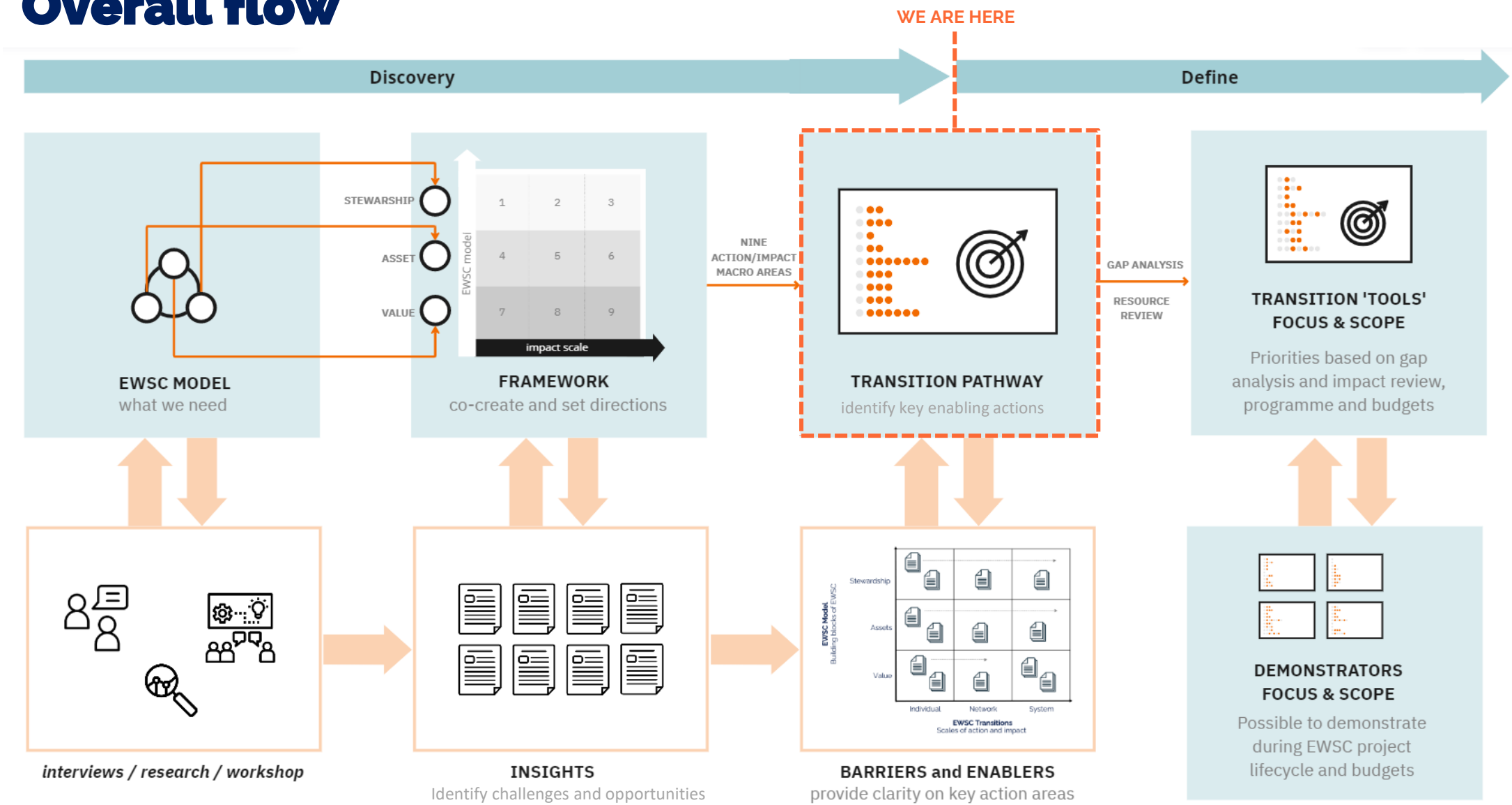
Value(s) based partnerships

Collaboration based on value(s) and 'should do' actions can deliver multiple benefits. Under pressure actors often prioritise 'must do' actions impacting stewardship capacity and resilience

Resilient place-based stewardship

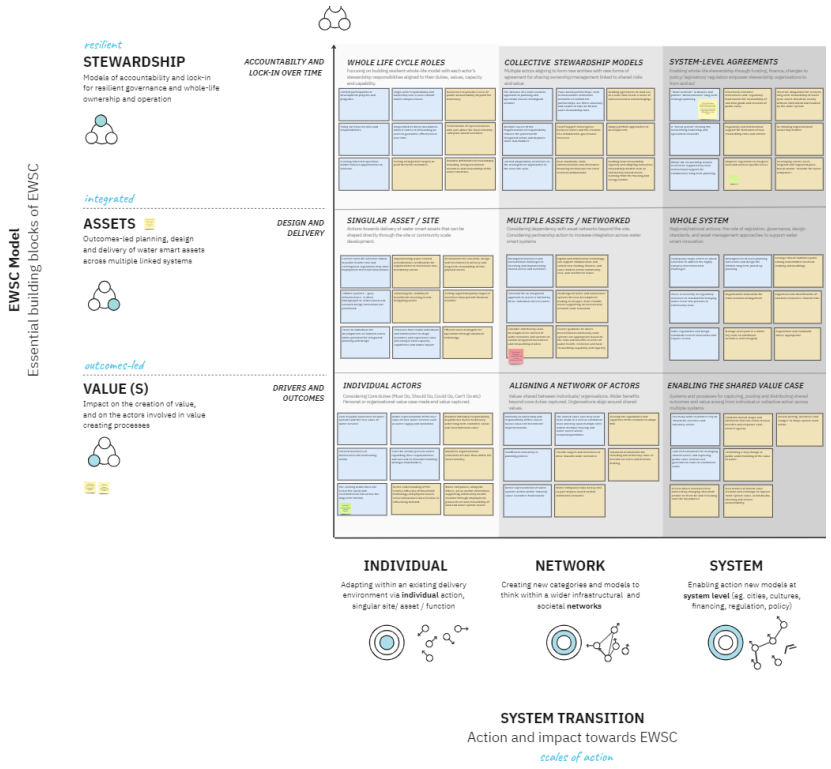
New financial and legal instruments underpin resilient long-term partnerships, recognising individual roles whilst enabling and protecting innovative multi-party stewardship actions

Overall flow



Enabling Action Areas

65 Enabling action areas were identified across the framework from the discovery research that are needed to enable water smart communities.



The action areas below have been prioritised for the initial project focus in the next phase

Stewardship

Funding and finance to underpin long-term resilient partnerships for the common good

Assets

Creation of clear guidance on where decentralised community scale systems are appropriate

Value

Maximise organisational utilisation of opportunities for local value creation /engagement in local economy.

Engagement Opportunities

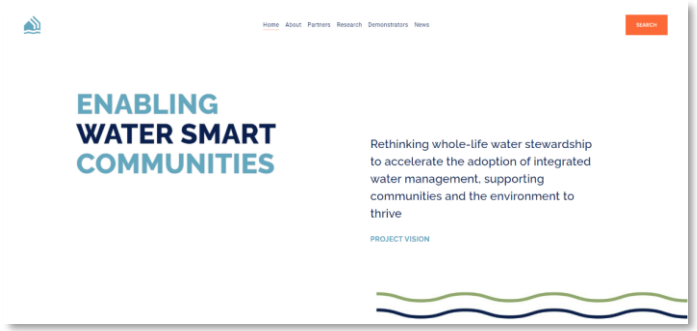
If you would like to keep up to date with project news and events or get involved in the project, please get in touch:

Email
ewsc@anglianwater.co.uk

Project Website
ewsc.org.uk

Linkedin
https://www.linkedin.com/company/enabling-water-smart-communities/

Twitter
@WaterSmart_EWSC



Ask of you all

What would be the best way to engage with you on this work to ensure it continues to be of value to you?

- Future Homes Hub
- Home Builders Federation
- Professional Institutes (CIWEM / CIBSE / ICE / RICS / RTPI / RIBA / etc.)
- Individually
- Other

In your view, if this project could help address ONE thing related to sustainable water management in new housing what would it be?

FREE TEXT

Are there any developments relevant to this project that you think we should be made aware of, both existing and proposed?

FREE TEXT

Link to Q&A