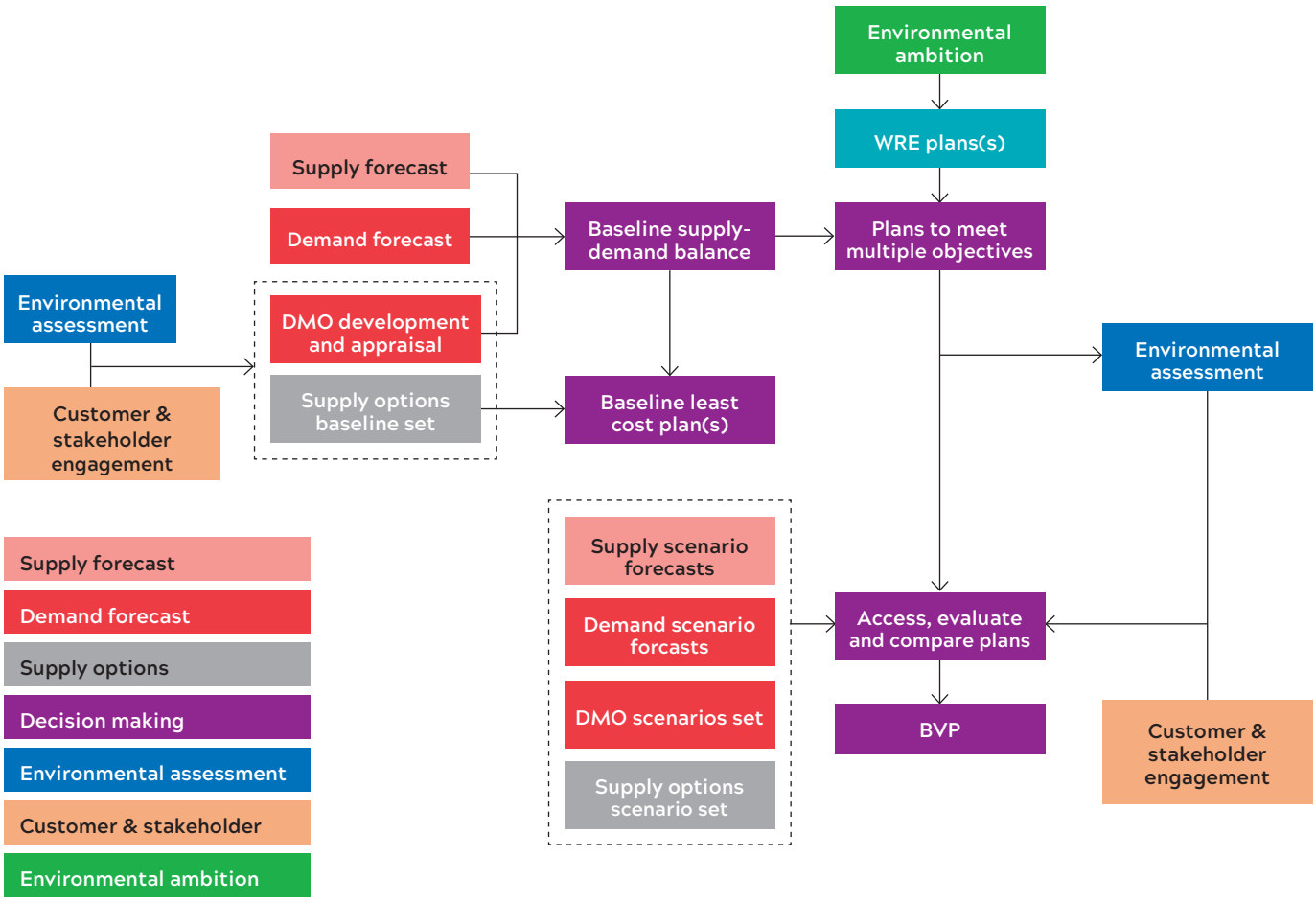
WRMP24 and a Best Value plan

The objective of our WRMP is to present a Best Value Plan that ensures a secure supply of water for our customers and protects and enhances the environment.

A Best Value Plan doesn't just consider economic cost. It looks to provide benefit to customers, society and the environment, yet remains affordable and efficient to deliver. Our Best Value Plan objectives (and alignment to our customer outcomes) are shown to the left.

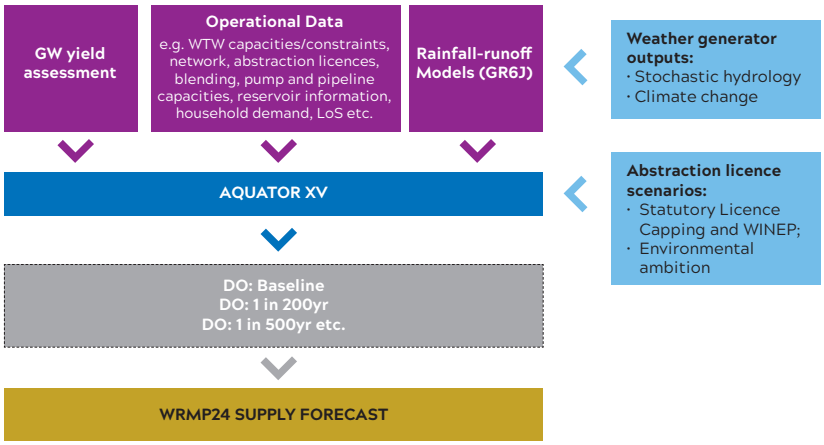
To achieve our Best Value Plan, we complete rigorous modelling and options identification to aid our decision-making processes. A summary of our processes is shown in the diagram below.



This fact sheet will provide a brief summary of these processes and methodologies.
For further information please visit our website where you will find the technical summaries from our last plan.

Supply forecasting

Our water supplies come from either surface water sources (i.e. rivers) or groundwater sources (i.e. aquifers). An abstraction licence issued by the Environment Agency governs how much water can be taken from these sources. However, this is not the only factor that influences the deployable output (DO) for a given water resources system or water resource zone (WRZ).

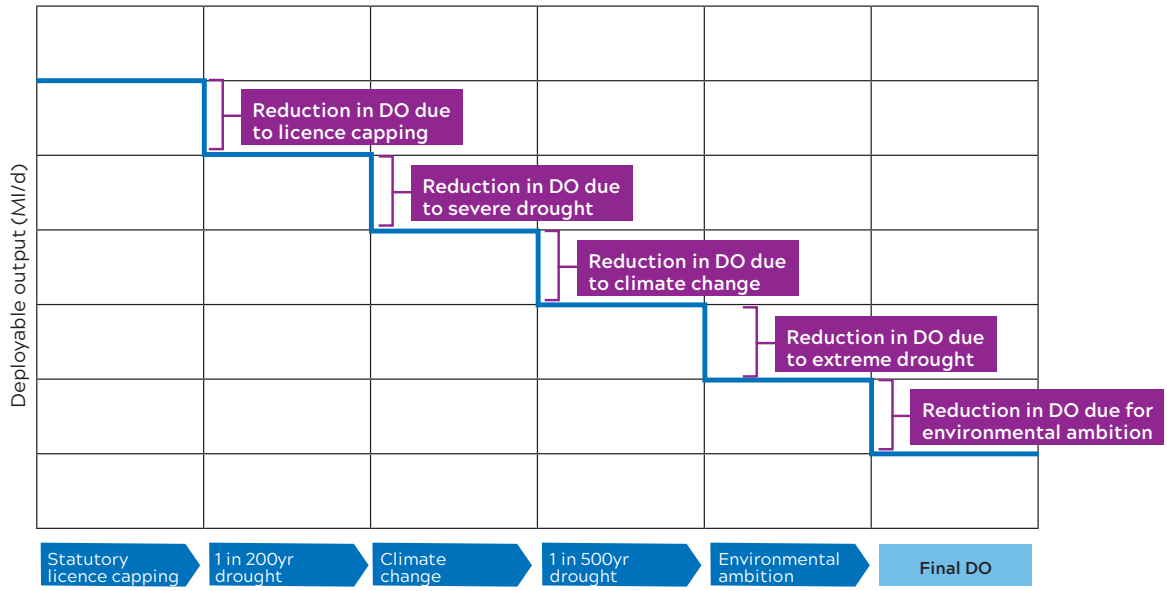


We capture these additional factors in our supply forecasting process (shown above). We start with using rainfall-runoff models to generate river flows, for a variety of hydrological scenarios. Groundwater yields are also assessed in a similar way.

The robustness of this information is increased using stochastic hydrology, a synthetic river flows series encompassing numerous hydrological sequences. This ensures an adequate representation of a 1 in 200 or 1 in 500-year drought. Climate change scenarios are also used to simulate future climate projections.

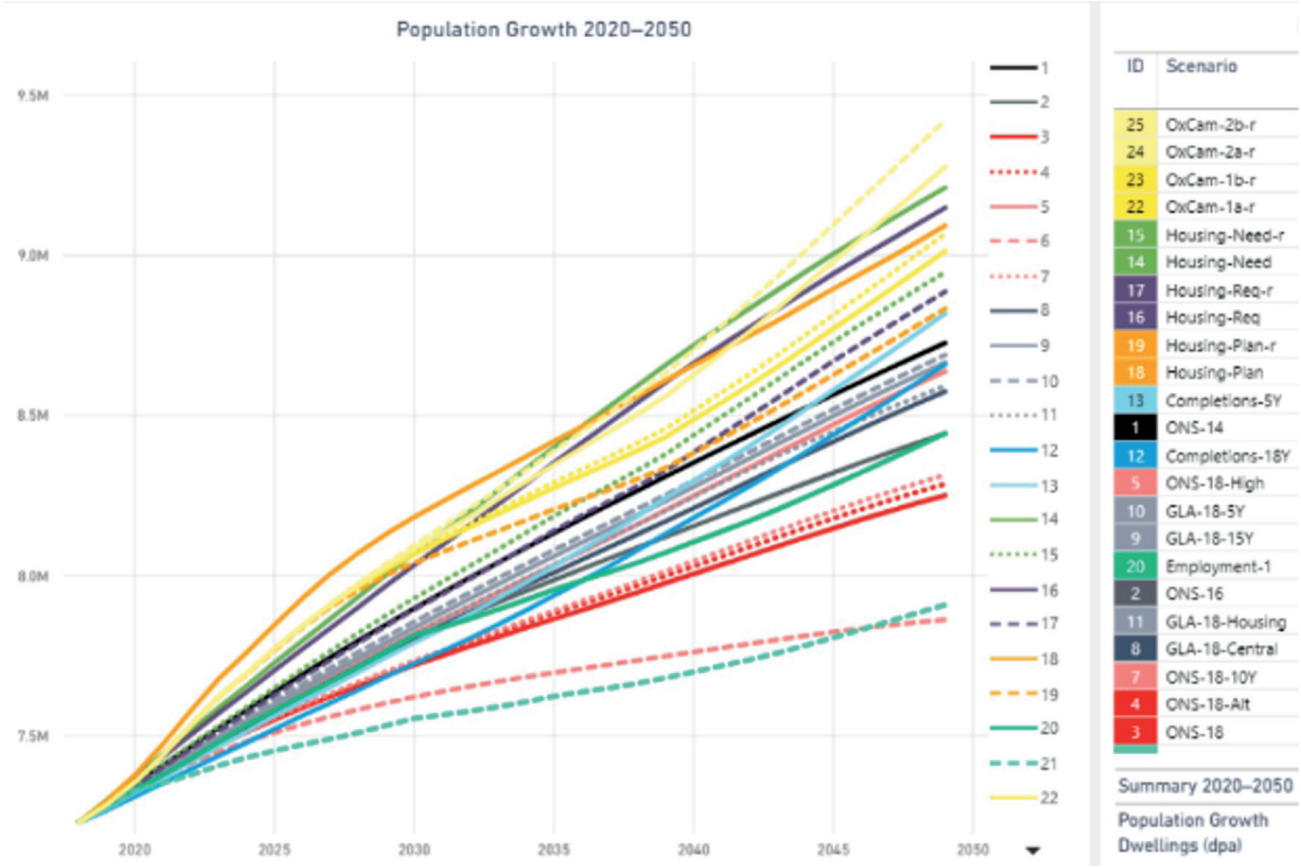
We then use water resource simulation modelling to determine the Deployable Output (DO). We combine the flow data with operational data, such as known water treatment works and pipeline capacities. This allows an accurate representation of the constraints in the water resource zone. Further constraints are then added to represent statutory licence capping and the level of environmental destination set by Water Resources East (WRE).

All these factors are then modelled to provide a set of scenarios based on Water Resource Planning guidance/Ofwat scenarios. This example shows how they are applied, in order to achieve the final Deployable Output (DO).



Demand forecast

The term demand describes the water that we supply through our network to households and non-households (educational facilities, places of work, industry etc.) It also includes water that is lost through the network, as well as water that is taken illegally.



We develop demand forecasts to estimate the future demand for water and water recycling services. To do this, we identify each demand segment such as household, non-household, measured (metered, including smart meter) and unmeasured usage, as well as leakage. These forecasts include assessments for each of these segments. These assessments include population changes, water use, changes in behaviour (and the impact of Covid-19) and metering penetration. It also accounts for changing design standards for water efficiency devices, improved technology and practices for leakage detection and climate change.

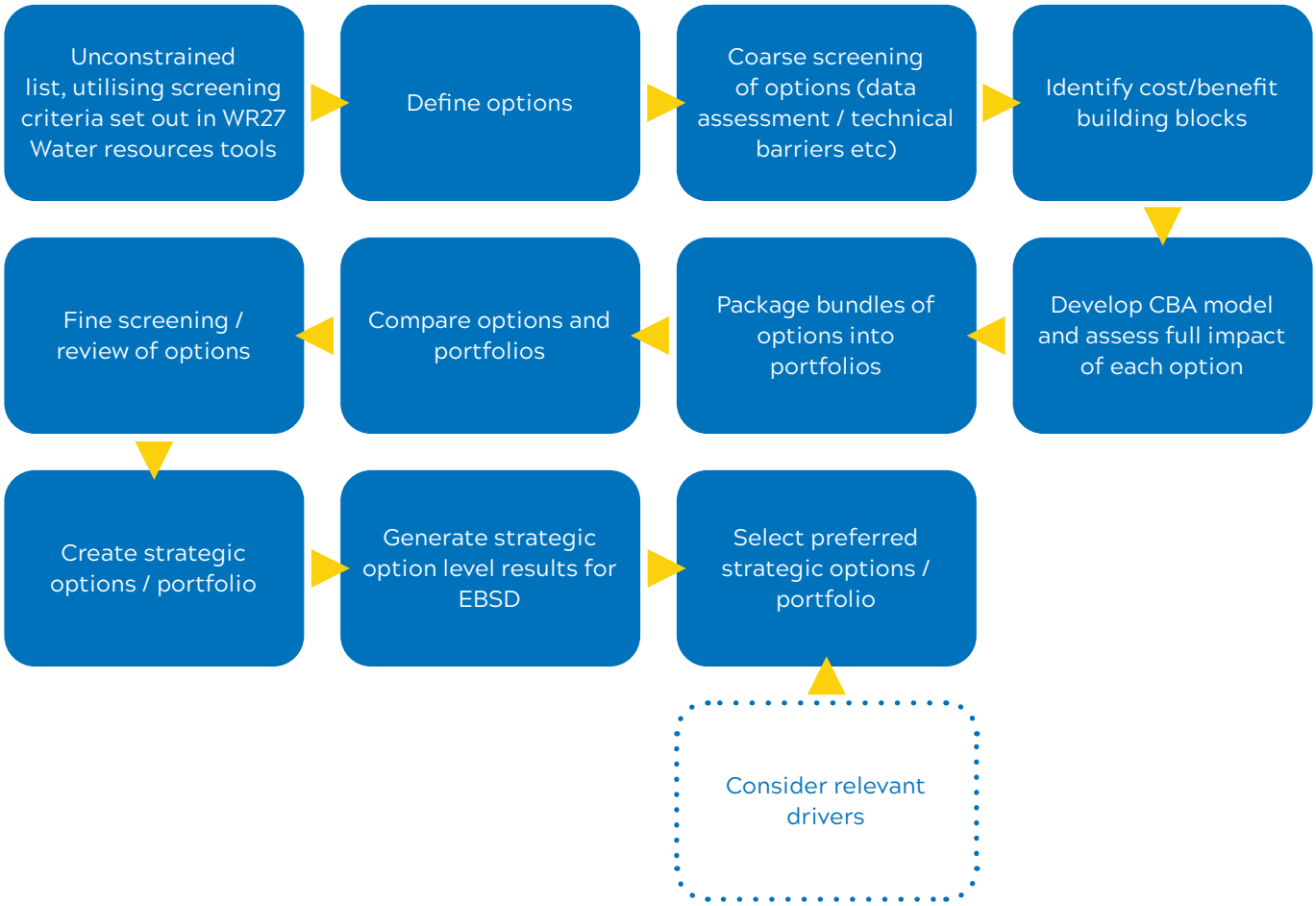
The information for these assessments comes from a variety of sources, such as ONS/Local Authority data, analysis of historical domestic connection data and billing data. Future leakage projections, projected meter penetration and per capita consumption is gathered from Anglian Water's teams.

This information is used in a fully integrated multiple scenario model. The resulting scenarios reflect differing growth projections, demand options and assumptions, helping us understand uncertainty further. An example of the different scenarios is shown below.

Core and Ofwat scenarios are reflective of Water Resource Planning guidance/Ofwat scenarios.

Demand management options

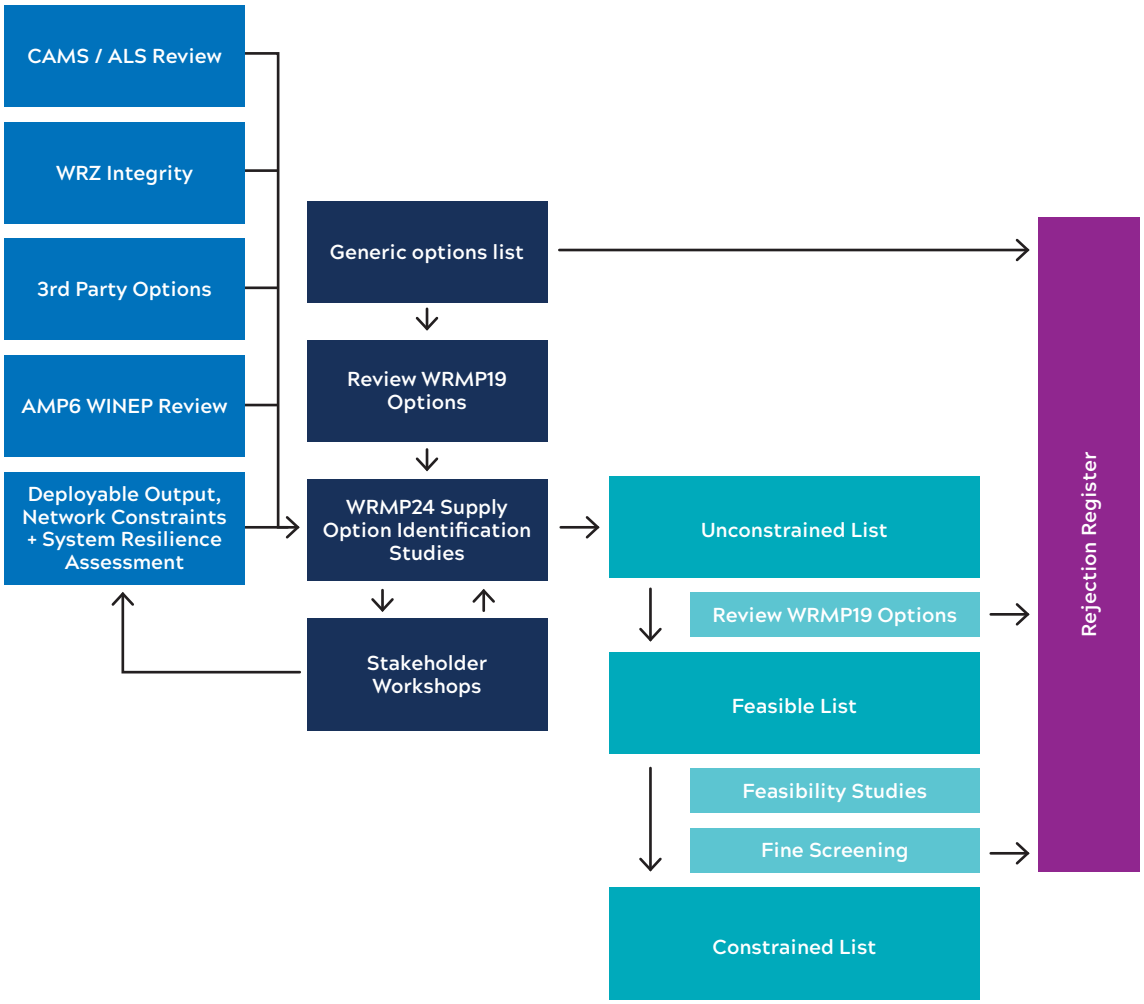
An unconstrained list of demand management options is developed by looking at industry norms, practices in other sectors and countries and opportunities provided by technology. These options are then subjected to feasibility screening, ensuring deliverable options are taken forward in the process.



These options may include smart or compulsory metering, leakage reduction measures, behavioural change options, tariffs and water reuse. These options are then defined to develop the detail of each option, understand dependencies and exclusivities, and to create options that are specific to Water Resource Zones. This allows a cost benefit analysis to be conducted so the full impact of each option can be assessed and compared.

The options are then fed into a set of high, medium and low demand management option packages that are designed to achieve ambitious demand reduction. These are assessed against customer and stakeholder feedback, compared to policy goals and Best Value Plan criteria. From this, a preferred WRMP24 demand management option package is selected.

An effective demand management package can reduce, defer or even eliminate the need for supply-side investment. They also have the potential to reduce operating costs and provide environmental benefits.



Supply-side options

Supply-side options such as raw water reservoirs, desalination and aquifer storage recharge can provide additional deployable output to water resource zones.

The options appraisal process starts with an unconstrained list. This is informed by looking at water availability in watercourses, exploring 3rd third party opportunities (such as trading abstraction licences) and any known constraints in existing infrastructure which could reduce deployable output.

Information is also gathered by referring to an industry standard generic options list, reviewing our previous options and stakeholder workshops. We also look to other countries and new technologies to determine whether there are new opportunities to provide additional water.

A coarse screening process is applied to the unconstrained list, comprising of high-level checks to ensure water is available and no significant environmental impacts. The options that pass this are subject to feasibility studies which comply with Water Resource Planning guidelines. Stakeholder and customer feedback are also incorporated, as well as any additional studies such as desalination intake and outfall modelling.

The results of these feasibility studies are progressed through a fine screening process, with the remaining options forming the constrained list which are costed in our investment management system before proceeding into our decision-making processes. Any options screened out are recorded on a rejection register.

Environmental assessments

We conduct Environmental Assessments to support our WRMP. These are delivered in an integrated fashion using a proportionate approach across both statutory and non-statutory assessments, as shown below.

Assessment	Legislation
Strategic Environmental Assessment (SEA)	The Environmental Assessment of Plans and Programmes Regulations 2004[3]
Water Framework Directive (WFD)	Water Environment (Water Framework Directive) (England and Wales) Regulations 2017[4]
Habitats Regulations Assessment (HRA)	Conservation of Habitats and Species Regulations 2017[5]
Invasive Non-Native Species (INNS)	The Infrastructure Act 2015[6]
Natural Capital Assessment (NCA)	N/A
Biodiversity Net Gain (BNG)	Environment Bill 2020[7]
Carbon	N/A

The purpose of the SEA is to provide high-level protection for the environment and to consider likely significant effects across a series of environmental and social topics/objectives. SEA is the only assessment that considers the impact of the plan as a whole (with other key assessments feeding into SEA topics / objectives) and has the aim of influencing key decisions on option selection across a variety of proposed plans for WRMP, whilst aiming to avoid or reduce the impact of negative effects and enhance positive effects.

Water Industry National Environment Programme

We also consider the water industry national environment programme (WINEP), a programme of work that water companies in England must do to fulfil their obligations arising from environmental legislation and UK government policy. It sets out the water industry's contribution to delivering the wider national objectives for the natural environment as set out in the River Basin Management Plans (RBMPs) and other statutory plans.

These improvements typically include investigations to confirm the impact of water company activities and the most appropriate solution. Solutions have included mitigation measures (such has habitat restoration, river support and channel restoration), changes to licensed abstractions, or in many cases a combination of both, supporting progress on RBMP objectives. In the past, this has resulted in reductions to our abstraction licences.

Between 2020 and 2025, we are implemented a series of 'no-deterioration' caps, aiming to reduce the impact of abstraction activities, as well as mitigating any environmental risk in the future. We are expecting further reductions between 2025 and 2030.

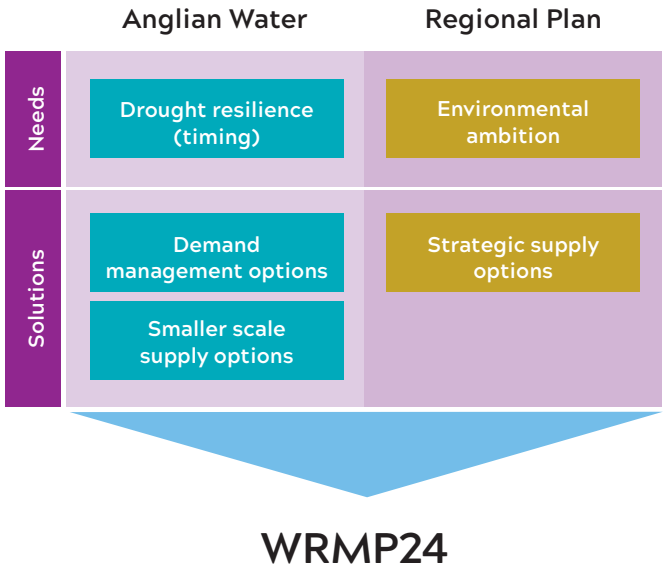
Environmental destination

Since the development of WRMP19 there has been a step-change in national ambition with regards the environment, as illustrated by the 25-Year Environment Plan and the government commitment to be the first generation to leave the environment in a better state than we found it. More specifically to delivering sustainable abstraction and the environmental destination, there is an emphasis on defining and agreeing a long-term approach with sufficient short, medium and long-term priorities. Environmental destination scenarios are being assessed by WRE and it is expected that a series of investigations will be undertaken in AMP8 before further changes to abstraction licences are established. As such, environmental destination scenarios (including Ofwat scenarios) will be considered as part of the adaptive planning in the WRMP.

Decision-making

We complete a Problem Characterisation based on our Water Resource Zones to select our WRMP24 modelling approach. This focusses on the strategic need (the size of the problem) and complexity factors (how difficult the problem is to solve).

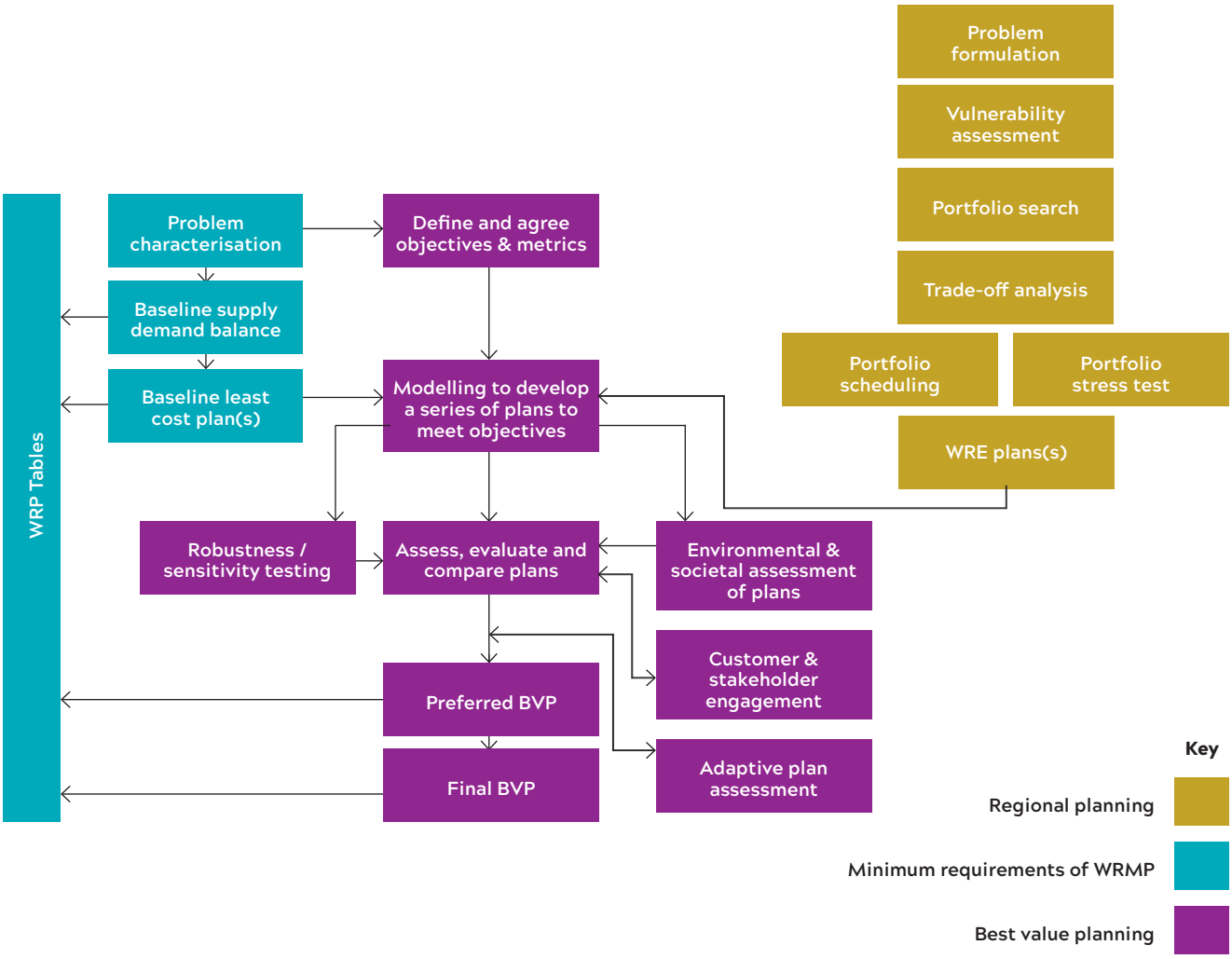
We are working closely with Water Resources East as they develop the strategic supply options for the region. This will be undertaken through multi-objective robust decision making (MORDM) process with stakeholder trade-off workshops. These decisions will feed directly into our WRMP24.



For our company modelling we will use a ‘hybrid’ approach with our Economics of Balancing Supply and Demand (EBSD) model.

We start from the baseline supply demand balance and produce a series of least cost plans, which form a benchmark for all other plans to be compared against and form the starting point for the development of our Best Value Plan. We take the Best Value Plan objectives and metrics and use them to develop alternative plans to take through to assessment stages.

We will also conduct stress and sensitivity testing to ensure robustness, and to validate the Regional Plan.



We also consider different scenarios when we are assessing our plans. Examples of this include testing achieving 1 in 500-year drought resilience at a series of dates, and variations of climate change and sustainability reductions. We also test different population growth scenarios and differing effectiveness of Demand Management Options. Longer term planning (i.e., 80 years) is also modelled along with any risk and uncertainty.

Once we have completed this modelling and evaluation of outputs, we consider other factors that cannot be quantified in the Best Value Metrics, such as qualitative information from environmental assessment and customer engagement research. We also consider strategic issues such as the overall deliverability, operability and affordability.

These alternative Plans are discussed with our customers and stakeholders to further understand preferences and priorities. We would like to understand differences in preferences and priorities across our customers and stakeholders, as this may help us to identify ‘compromise’ or ‘win-win’ solutions.

Customers and stakeholders

We have been engaging with stakeholders through specific WRMP activities, as part of WRE and in the Partnerships that have formed to progress our Strategic Regional Options. This engagement has helped guide our Best Value Plan objectives, our demand and supply forecasting approach and our modelling processes.

We have also included stakeholders in our engagement research, focussing on areas such as drought resilience, demand management and supply-side options and our environmental ambitions. We have discussed trade-offs to inform the complex decisions that have to be made, e.g. do we aim for 1 in 500-year drought resilience earlier than 2039, even if this may mean typically higher carbon options such as desalination?

We have engaged with our customers as part of Water Resources North (WReN) and WRE. Both collaborative projects have shown a regional view on key topics such as 1 in 500-year drought resilience, demand management and supply-side options and our environmental ambitions. The WRE engagement also explored the same trade-offs as the stakeholders, building a picture of what our customers feel is important. We will be quantifying these key findings with 1,000 customers.

Our customers, through our Online Community, also helped to build our Best Value Plan objectives which were then tested during our collaborative WRE engagement. These will be further explored when we present our preferred Best Value Plan, and alternatives, to our customers for their review, challenge and feedback. We will also ask stakeholders for their feedback.

Collaborative research is also being undertaken with other WRE companies to understand how non-household companies could reduce their water usage and how we could gain a better understanding for growth in their areas.

We are also working with other companies that are developing Strategic Regional Options, focussing on how customers feel about water trading and the acceptability of their water. We will also focus on what public benefits our customers would like to see as part of a new reservoir system.

For further information please visit www.anglianwater.co.uk/about-us/our-strategies-and-plans/water-resources-management-plan/ where you will find the technical summaries from our last plan.