

Chapter 5



Water resources east: An integrated water resource management exemplar

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ABSTRACT

Water Resources East (WRE) is a 180 strong and growing membership organisation established in 2014 to learn from international best practice on how to develop a more collaborative approach to water resource management planning to the 2050s and beyond. This is happening now in a unique region of England under significant pressure due to population growth, economic ambition, the need for enhanced environmental protection, and significant climate change impacts.

The lesson of this chapter is the power of multi-sector water resource planning through collaborative and adaptable mechanisms led by integrated water resource management (IWRM). Through using active project case studies to gain insight into how we work with our members: Future Fenland Adaptation; Regional Natural Capital Planning through Systematic Conservation Planning (Water Resources East is teaming up with Biodiversify and WWF-UK, with financial support from the Coca-Cola Foundation, to develop a natural capital plan for Eastern England through Systematic Conservation Planning); and exploration of multi-sector finance of nature-based solutions through the creation of Water Funds, we hope to provide a strong evidence base for our sustainable and resilient methodologies and approaches that can be used, or be an influence on, other water management systems globally.

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Lastly, the WRE team and longest standing contributors reflect on lessons and recommendations from the past seven years of work.

Keywords: water scarcity, stakeholder engagement, integrated water resources management, catchment-based approaches.

5.1 INTRODUCTION

Eastern England is unique and characterised by its low rainfall, internationally important habitats and diversity of water use. As such, the focus of Water Resources East (WRE) is on multi-sector water resource planning with a vision for the region to have sufficient water resources to support a flourishing economy, a thriving environment, and the needs of its population.

At the time of writing WRE has over 180 members including public water supply; energy; Internal Drainage Boards; landowners and farming representatives; regional governments; environmental & conservation groups; community and advocacy groups; university and education institutions; and private businesses.

It is crucial that all of these organisations are involved in a collaborative and integrated planning approach due to the diversity of water usage in the region and the risk factors attributing to uncertainty over future availability. In the UK Environment Agency's National Framework for Water Resources (2020) they state that 85% of water taken from the environment in Eastern England is used for public water supply, compared with around 98% in London and the South East of England. Of the remaining 15%, well over half is used to irrigate crops as our region contains some of the most productive agricultural land in the country. There is also significant, and growing water use by the energy and wider industrial sectors.

It is estimated that if no action is taken by 2050 the regional gap between supply and demand could be 570 Ml/day (megalitres per day) for public water supply and 444 Ml/day for agriculture, power, and industry (*ibid*).

Set against this backdrop is the crucial requirement for environmental restoration and enhancement in the region, with a clear recognition that ensuring a thriving water environment will be key to securing a thriving economy.

As an independent legal entity (a Company Limited by Guarantee) Water Resources East (WRE) Ltd. now operates as an inclusive, collaborative, exploratory and forward-thinking membership organisation, charged with the development of a long-term Regional Plan to ensure that the region can meet both its environmental and economic ambitions in the context of a changing climate.

5.2 OUR CONTEXT (PRICE & WRE, 2020)

In its 25-year Environment Plan (2018), the UK Government pledged that we would be the first generation to leave the environment in a better condition than we found it.

To help meet the pledge to improve resilience to drought and minimise interruption to water supplies, the Environment Agency, one of five government water sector regulators, has led the development of a National Framework for Water Resources in England which was published in March 2020.

The National Framework (*ibid.*) evidences the strategic long-term water needs of England, both nationally and within the boundaries of the regional water resources groups. It does this for all sectors that depend on a secure supply of water while also ensuring the environment is improved. The National Framework, while led by the Environment Agency, has been developed in collaboration with the other regulators – Ofwat and the Drinking Water Inspectorate (DWI), and the Department for the Environment, Food and Rural Affairs (Defra), as well as a wide range of stakeholders represented by a senior steering group made up of around 40 water industry representatives, other water users, environmental non-governmental organisations (NGOs), government and regulators from England and Wales.

The National Framework (*ibid.*) is part of the water resources planning cycle. Five regional groups now exist across England, and the National Framework sets the challenge for these regional groups to work collaboratively to develop ambitious regional water resources plans that provide resilient and efficient water supplies into the future and that have environmental enhancement at their core. Regional groups, of which WRE is one, are critical to the development of integrated plans that include the right strategic solutions for the challenges facing the nation, and each regional group has been tasked with pulling together a single multi-sector integrated water resource management plan.

WRE is currently developing a regional integrated Water Resources Management Plan (the Regional Plan) covering catchment areas across the East of England and part of the East Midlands (herein after referred to as ‘Eastern England’). As a group we aim to co-create and build a long-term, multi-sector adaptive plan that reflects the needs and characteristics of our diverse region.

For the WRE region, this plan will:

- Seek to increase the level of resilience for water resources for all sectors.
- Identify opportunities to deliver wider benefits in terms of flood risk and water quality.
- Identify ways to ensure that water (either too much or not enough) is not a barrier to economic development in the region.
- Seek to enhance the environment, in line with the 25 Year Environment Plan.
- Explore innovative funding and delivery models for water management solutions.
- Promote schemes which represent the best value for the region, seeking through collaboration to deliver more efficient solutions.
- Co-deliver the water-related elements of other key regional strategies and plans.

- Focus on delivery of water-related climate change mitigation and adaptation strategies including net zero carbon ambition.
- Provide academically rigorous evidence to policy makers.

A first draft of the regional plan will be published in early 2022. To get to this point, 2021 will consist of planning conferences to co-create more focused portfolio options ready for consultation and detailed national alignment work. The second, more advanced draft of the Regional Plan will be published in August 2022 at the same time as the first draft of Water Resource Management Plans that are required from all public water supply companies. The final draft will be published in September 2023. The Regional Plan will cover a time period from now until the 2050s.

5.3 OUR REGION

Eastern England is a unique and diverse part of the UK. The Norfolk Broads and wetlands of the East Coast are internationally recognised and have more than a quarter of Britain's rarest wildlife with 125 miles of waterways. Three of the UK's five fastest growing cities, Cambridge, Norwich and Peterborough are home to 10.5 million people and growing, all with additional housing needs. The region's far reaching, fertile agricultural lands provide 40% of England's vegetables worth £2.8 billion a year, yet 30% of the land mass is below sea level.

Eastern England is the driest region in the UK and is susceptible to prolonged, unpredictable, droughts, such as that in 2018 ([The National Farmers' Union, 2018](#)). It is also susceptible to flooding events with flood management organisations known as Internal Drainage Boards having to pump millions of litres of water out to sea from the region's long coastline each year. The irony being that this is water which could be harnessed to use in times of need.

With the increasing risk of drought and the rise in demand for food, energy and services that is likely in the future, there is a very real risk that a lack of collaborative water management could limit growth and development in our region. The WRE region is predicted to face a significant gap between supply and demand if the region carries on managing water resources the same way as it does now ([Figure 5.1](#)).

Given the unique circumstances in Eastern England, WRE had a rare opportunity to help lead, shape and inform thinking in the UK and further afield. This is particularly true when considering the present and future pressures on water resources, and how best to manage demands from intensive agricultural production and food processing sectors and rising a population, together with the potential additional water needs associated with alternative energy sources – such as hydrogen.

In parts of the region, there is evidence that current water abstraction regimes are causing damage to the environment, and work is needed to restore more natural



Figure 5.1 Water resources east. *Source:* Price & WRE (2020).

flows in rivers. There is also an assumption that the current pattern of abstraction does not provide an acceptable starting point for planning to meet future needs. Therefore, changes to the current abstraction pattern are needed.

On an average day, in a dry year, 2311 million litres (megalitres) per day are abstracted from the environment and used in Eastern England. Most of this water (85%) is used for public water supply (PWS). Most of the rest is used for spray irrigation (8%), power generation (3%) and in the manufacturing, food and drink sectors (2%).

Abstraction for spray irrigation occurs across the WRE region but is concentrated (71% in terms of licensed volume) to the East of the region. Spray irrigation is strongly seasonal and in a dry year it peaks in July at levels around 600 MI/d. This is equivalent to approximately 30% of the average daily demand for public water supply.

Abstraction for power generation occurs in the WRE region from the freshwater non-tidal sections of the River Trent and the River Ouse towards the North of the region, from several coastal and estuarine locations, and from a number of the fenland rivers triangulating Peterborough, Ely, and Cambridge. The water is used for cooling and steam generation at coal and gas power stations.

It is correct to note that much of this water is returned to the environment, often at a different location to where it was abstracted, and is subsequently used again. Nevertheless, ‘losses’ from the system include evaporation, irrigation and water which flows or is pumped into the sea. Therefore, building resilience for improved water resource management for all water users is integral over the next 50 years – with work needing to start now.

As well as recognising that our region is very diverse in terms of water management issues, WRE understands the importance of ensuring that planning is done along political–economic boundaries as well as hydrological ones. The very fact that water does not stop at county borders, agricultural fields, or regulated distribution areas is the very reason why political, economic, environmental, and social aspects need to be considered co-dependently.

Looking to hydrology first, how is WRE’s technical approach to integrated water management different, and how does it work in practice as a resilience strategy?

5.4 DECISION MAKING UNDER UNCERTAINTY (MONCASTER & WRE, 2020)

Until recently, water resource planning in England and Wales was dominated by deterministic forecasts of the balance between supply and demand of megalitres per day (Ml/d) and least-cost optimisation. Used almost exclusively by water companies and the regulators, this approach identifies the most cost-effective way to maintain levels of service in a single planning scenario that combines environmental need with best estimates of the future impact of drought, climate change, and population growth. Within this planning framework, risk and uncertainty are accounted for using a planning allowance known as ‘Target Headroom’.

Target headroom is an allowance to take into account any uncertainty in the supply demand balance. The basis of the methodology is to apportion the target headroom to two main areas: supply-side and demand-side. An inherent assumption within the methodology is that each component is independent of one another, and where this is not the case risk modelling is used to allow for overlapping, correlated and dependent relationships to be included in the headroom calculation.

While this approach performs well for single sector planning where the supply–demand investment drivers are well understood, and for regions where the predominant use of water is for public water supply, it is less suitable for multi-sector planning or for planning where there is significant uncertainty about investment drivers and the related risks over the long term.

And, as we’ve seen, Eastern England is different in terms of the amount of water which is used for other purposes, particularly irrigation and power, and in the level of uncertainty into the 2050s.

Therefore, WRE uses integrated water resource management (IWRM) planning that takes account of the uncertainties and risks from many factors including climate change and growth and many sectors. As part of this, WRE has developed a methodology in collaboration with Manchester University that uses a combination of decision making under uncertainty (DMUU) methods, including, multi-objective evolutionary optimisation (MOEO) and robust decision making (RDM).

The MOEO-RDM approach (MO-RDM) allows the vulnerability of water resource systems to be quantified in terms of the impact of growth, climate change, and drought on abstractors from different sectors and the environment. The analysis is simulator based, with uncertainty accounted for by using a wide range of plausible future scenarios, and vulnerability defined in terms of metrics and thresholds which are specified by each sector. Subsequently, MO-RDM identifies 'pareto-optimal' portfolios of schemes that are capable of meeting minimum performance thresholds over a wide range of plausible future scenarios.

In these, performance in respect of one metric cannot be improved unless at the expense of another, therefore trade-offs between the portfolios must be used to select the one which best meets the overall needs of the planners. In this way, WRE can produce strategies and plans which simultaneously meet the needs of the public water supply, environment, energy, and agri-food sectors.

In the last step of the MO-RDM process, the selected portfolio is rigorously stress tested and the vulnerability analysis updated. It is an adaptive process, however, and where additional improvements are needed alternative portfolios can be selected and tested and, if necessary, the process can be re-run based on new information that becomes available.

5.5 STRATEGIC CONTEXT AND IMPLICATIONS

The strategic context for WRE's first regional water resource management plan includes the following:

- Expected but uncertain impacts from climate change on drought and flood risk. Arising from a combination of warmer wetter winters and hotter drier summers, these are likely to be significant and to include the threat of coastal inundation in large parts of the WRE region as a consequence of sea-level rise.
- The commitment to achieve net zero carbon by 2050, and the need to increase levels of economic growth following our departure from the European Union. This includes delivering on the clean growth agenda which is set out in the Governments Industrial Strategy (2017) and 'levelling-up' of disadvantaged communities and areas.

Within the WRE region, more effective integrated water management is absolutely pivotal to meeting these challenges. Securing economic growth and the related benefits for our communities and the environment means that we will have to meet growth in demand and increase resilience to flood, coastal inundation and drought. Achieving net zero carbon will require more efficient use of our available resources and may require us to provide a large volume of additional supply to the energy industry for carbon capture use and storage (CCUS) and the hydrogen economy. With the potential for large investment needs in each sector, cost will become a key driver for decision-makers.

To maintain levels of affordability, measures to further strengthen cross-sector collaboration are necessary, specifically in relation to the development and funding of new infrastructure. Some of this will be relevant for regional strategic issues; others for more local sub-regional or catchment-based issues. Developing single sector (or single company) solutions for meeting future water-related needs in the WRE region, as well as managing the related uncertainties and risks, is unlikely to be cost-effective. A more integrated, holistic, approach is needed.

With this realisation, WRE is developing a number of projects which apply this new approach and blend hydrological, technical, political, economic, environmental, and social aspects. The next section details three such projects: A Fenland Adaptation Strategy; the development of a Regional Natural Capital Plan through Systematic Conservation Planning (SCP); and the implementation of innovative funding models for nature-based solutions through the creation of a Water Fund.

PROJECT CASE STUDY 1: THE FUTURE FENLAND ADAPTATION STRATEGY

An example of where WRE strengthens collaboration between sectors is the Future Fenland Adaptation Strategy. This initiative, which is based on the principles of IWRM, and is applying the MO-RDM methodology, seeks to deliver a long-term solution to the drought, coastal inundation and flooding-related risks which are posed in our Fenland areas by climate change. By coordinating activity and funding in programmes which are traditionally considered to be separate, the overall level of investment which is required can be reduced, and delivery can be made more efficient and the benefits spread more widely. An illustration of the concept is given below.

The Future Fenland adaptation strategy is combining six projects that are existing or planned involving 14 WRE members (public water supply companies, environmental NGOs, Internal Drainage Boards (IDBs), local government, and agriculture).

Sitting at the heart of this overall strategy are two new reservoir systems, one in the south of Lincolnshire and the other somewhere on the Cambridgeshire/Norfolk border (see [Figure 5.1](#) for geography), linked into the network of IDB assets and main rivers and using high and excess flows as potential sources of water for the reservoirs. Combined with potential new barrages on the large river systems surrounding the area (see [Figure 5.2](#)), this overall vision has the potential to drive enormous economic, environmental and social benefits which will be felt right across the WRE region.

Key elements of the Future Fenland Adaptation Strategy include:

- New multi-sector reservoirs providing additional water supply resilience for water companies, farmers and the food industry.
- Downstream flood barriers or barrages to protect growth areas in the Fens, enabling key local infrastructure projects such as a rail connection from Wisbech to Cambridge and the dualling of a motorway to move forward.
- Open water channels to provide water storage, biodiversity, navigation and tourism, and further flood risk management benefits.
- The opportunity to collaborate to manage land and water across the Fens in a new and integrated way, seeking to secure the future of the peat landscape given its crucial role in carbon sequestration.

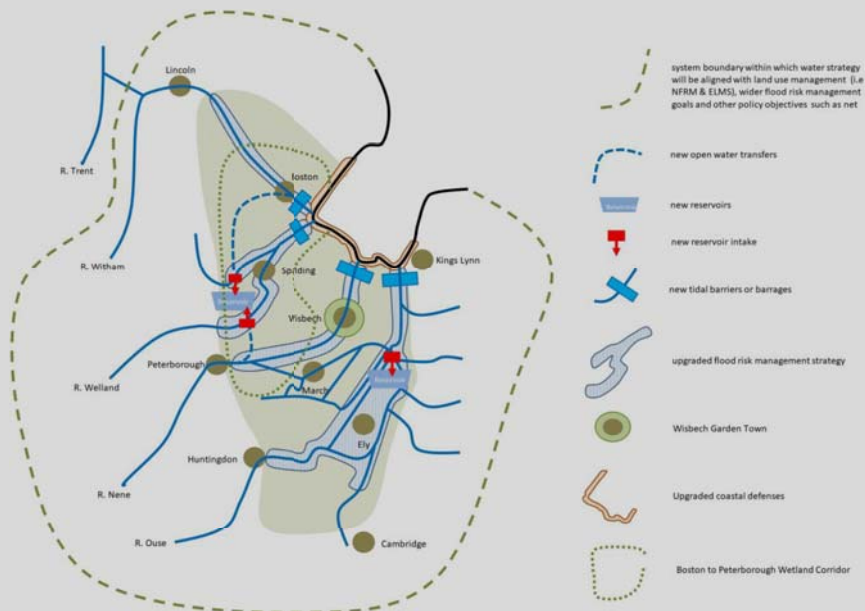


Figure 5.2 Water resources east. Source: Price & WRE (2020).

PROJECT CASE STUDY 2: NATURAL CAPITAL PLANNING USING SYSTEMATIC CONSERVATION PLANNING

Developing a Regional Natural Capital Plan Using Systematic Conservation Planning

There is a recognition that WRE needs to find ways to improve and enhance the environment by developing a deep understanding of natural capital in the region to maximise the ecosystem services being delivered. This is being achieved through SCP (see Figure 5.3). WRE is teaming up with Biodiversify and WWF-UK, with financial support from the Coca-Cola Foundation, to develop a natural capital plan for Eastern England. This is the first time the SCP process has been applied in the UK and the first time it has been applied on this scale in the world. The first iteration of the Natural Capital Plan for Eastern England was released in June 2021.

What is Systematic Conservation Planning? by Dr Sam Sinclair, Biodiversify, 2020

Systematic Conservation Planning or SCP is a combination of two things, a social process and a prioritisation analysis. The spatial prioritisation analysis identifies how and where to act to improve natural capital in the most cost-effective manner. This analysis is embedded within a social process which uses an inclusive dialogue to give stakeholders ownership over the plans.

The approach also seeks to manage nature in a holistic way and develop a plan which considers many different elements of natural capital at the same time, rather than separately in a piecemeal approach.

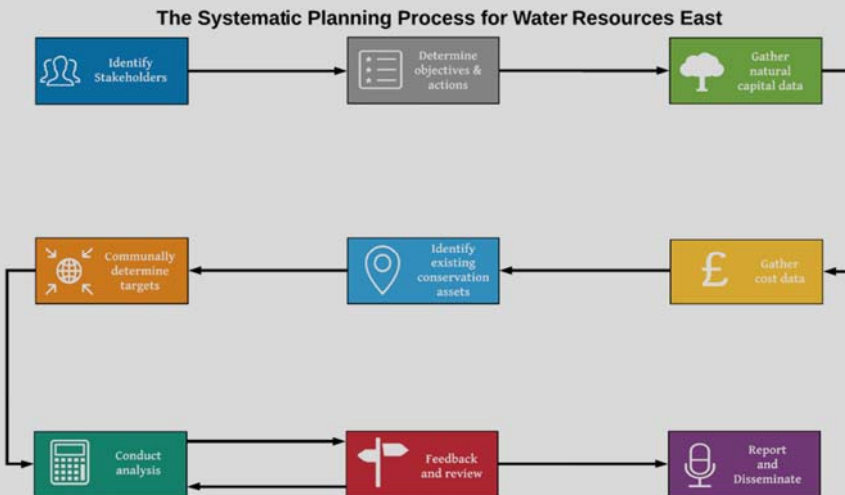


Figure 5.3 Biodiversify. Source: Sinclair (2020).

By looking at the bigger picture in this way, the spatial prioritisation analysis looks for synergies; where can you act so that you achieve multiple benefits simultaneously and give the best outcomes for people and nature with the resources available? Because the objectives, actions, and targets are set by the stakeholders the plans also represent the best outcome for everyone; the plans show how people can coordinate across a landscape to achieve common goals as well as having their own needs met.

The purpose of the plan: The main aim of the plan is to develop a shared vision for the restoration of nature across the WRE region. This plan will identify priority areas for different types of natural capital actions across the region. These are not intended to dictate anything or force anyone to do anything they do not want to, instead they just indicate where actions should take place in order to deliver natural capital outcomes as effectively as possible. This is partially about being as effective as possible but also about coordinating action across the area so that everyone is pushing in the same direction.

Stakeholder ownership: We want this plan to be owned by the stakeholders of Eastern England. A plan like this will only be valuable if the people and organisations who live and work across this landscape feel that this reflects their wishes.

We believe that the only way to achieve this is for stakeholders to play a leading role in the development and creation of the plan. To achieve this we will be facilitating a transparent process designed to put stakeholders in the driving seat and give them the power to collectively develop a shared vision for Eastern England.

PROJECT CASE STUDY 3: FINANCING ADAPTIVE, COLLABORATIVE WATER MANGEMENT

What is a Water Fund?

Water Funds are governance and financing mechanisms allowing public and private sectors to work collectively to secure water for their communities (see [Figure 5.4](#)). They are used successfully around the world to leverage blended finance streams to ensure coordinated delivery, funding and monitoring of nature-based solutions (NBS) for water security. In 40 locations, across North America, Latin America, Asia and Africa, The Nature Conservancy (TNC) collaborates with partners to set up Water Funds based on science-based plans and innovative tools for representing water management challenges, strong monitoring and mobilisation of diverse funding streams. TNC wish to develop two pilots in Europe; one of these will be in Spain (Murcia) and the other will be Norfolk, England. Being part of the global Water Fund network will provide access to collective experience, accelerating the project, and enable Norfolk to be featured as a global exemplar for water resource management, thereby facilitating access to further financial and human resources ([Tremolet & The Nature Conservancy, 2020](#)).

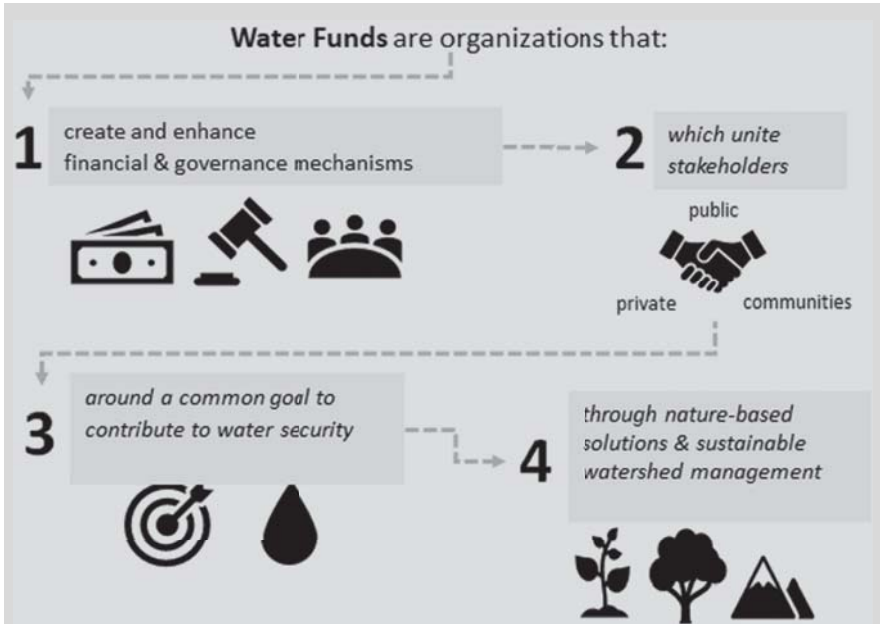


Figure 5.4. The nature conservancy. *Source:* Tremolet S. (2020).

Water Funds and Blended Financing in the County of Norfolk

Our Regional Plan intends to seek out innovative financing options which drive the ability for adaptation, and green returns, and ensure longevity of all projects.

One such financing method utilises the so-called ‘blended financing’ through the development of a Water Fund. This is a completely new finance approach in Europe, which is being trialed in WRE’s North Eastern county of Norfolk.

Norfolk is impacted by a range of water-related issues. These include falling ground water levels, rising abstraction rates, increased housing and business development, and increased flooding events. There is currently no overarching strategy in place to address these issues. This project will develop short-term COVID-19 interventions, and a detailed water management strategy and plan, and establish a partnership structure known as a ‘Water Fund’ to facilitate delivery in the medium and long term. This project is being delivered by a partnership of Norfolk County Council, Anglian Water, WRE and the international environmental charity, TNC.

The project will create a new multi-stakeholder governance structure which will include representatives from local government, water companies, environmental organisations and the agri-food and energy sectors. This governance structure will be set up in two stages:

- (1) A Water Management Board to generate consensus across all local actors for the preparation of a prioritised plan.

- (2) A more permanent structure (a Water Fund) to: supervise and coordinate implementation of the plan, monitor results, and enable mobilisation of funding and repayable financing from public and private sources.

Initial work will be detailed analysis of water opportunities and challenges through to the 2050s and beyond (in line with WRE's planning timeline). It will provide a clear understanding of environmental improvements that must be delivered and quantify the impact of current growth predictions and climate change on water availability, water usage and quality. It will be an opportunity to address barriers to COVID-19 recovery and test more ambitious scenarios for future resilience. We will build on existing planning by public water supply company Anglian Water, and WRE, and local plans and economic strategies to focus on Norfolk's specific situation and identify challenges at a more disaggregated geographical scale.

With a detailed understanding of the problem, the project will focus on options to meet the predicted large supply/demand deficit and associated challenges including flood risk, water quality issues and impacts on biodiversity.

Potential options for the plan can be summarised in three main categories:

- (1) **Maximising water savings through systematic implementation of demand management measures.** These will include water efficiency measures for new construction and retro-fits to existing buildings, increased efficiency for irrigation through innovation, efficiency measures for other water-using sectors, and working with water companies to ensure effective deployment of smart metering programmes and leakage management. We will identify how new builds could meet ambitious and nationally leading water efficiency targets, and we will continue to go further and faster with regard to water efficiency for all water users, including agriculture.
- (2) **Identifying opportunities to maximise the use of nature-based solutions (NBS) to deliver increased water availability and resilience for all sectors and the environment.** NBS are defined by the International Union for Conservation of Nature (IUCN) as actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits. We will identify opportunities to invest in NBS that can address water security challenges, protect and restore biodiversity, generate carbon benefits (via carbon sequestration or reduced carbon use impacts) and create sustainable green jobs in a wide range of sectors, including construction, agri-food and the visitor economy.
- (3) **Identifying the needs for residual grey infrastructure investments.** Grey infrastructure investments such as new multi-sector reservoirs, pipelines and desalination plants are likely to still be needed to address challenges. Considering their development as part of broader, more holistic plans, will potentially reduce their scale, improve integration into the landscape and reduce or eliminate negative impacts.

The project will bring these together in an integrated way to maximise the synergistic benefits and will identify ways of funding the programme in the long term. Opportunities include private sector funding (e.g. from water companies, power companies, developers, the agri-food sector and biodiversity Net Gains credits), public funding (e.g. through flood management schemes, and the new UK Environmental Land Management (ELM) scheme for agriculture), and philanthropic funding.

The success of the above projects and others within the WRE approach rely on having strong collaboration at their core. Without it, trade-offs will not be equitable, consensus and buy-in on projects will not reflect reality, and the future consequences for any water managed could be detrimental.

Already, at the time of writing, WRE operates with members from over 180 organisations and is growing all the time. The next section discusses the power of collaboration for WRE's overall success, how this is applied in practice, and reflects on lessons learnt and recommendations for self-reflection and to pass on to others.

5.6 THE POWER OF COLLABORATION

At the core of WRE's IWRM planning is an active collaboration between all water use sectors. Without the involvement of all, decisions, trade-offs, and future planning are bound to be inequitable.

Natural capital planning through SCP and the development of innovative finance models for nature-based solutions through 'Water Funds' are two ways that our collaborative approaches are being put into action. However, our thinking goes wider than that and involves establishing and nurturing long-term relationships with all water users across multiple levels.

WRE's shared vision is that by working together regionally and nationally across all sectors, we will have a joined-up view of the actions that are needed now, for a sustainable future. Working collaboratively, we will seek to increase the resilience of water supplies, ensure clarity of roles and responsibilities, protect and improve the environment and drive efficiency, providing value for our region.

To put this into a specific context, we are channelling collaborative work in forming the Regional Plan. The overall 'ethos' of WRE's Regional Plan Development will be one of co-creation and engagement, rather than creation and consultation. We are coordinating the outputs of our entire process and the associated working groups via a series of planning conferences for stakeholders in each water use area.

How this works in practice is with WRE and Manchester University teaching and training all members in the process of MO-RDM, how the simulators involved work, what data are used to run the simulators, and creating an understanding of what factors (be that rainfall, population growth, climate change) affect what

elements (e.g. water availability for public water supply, resilience to drought and flood events) and therefore determining which water management solutions are best.

It sounds simple, but it comes down to getting everyone together in the same room, learning, having open discussions, and making combined cross-sector decisions about how best to manage water in the future to the benefit of everyone.

This will enable the discussion of a range of proposed solutions for each group, in order to understand challenges and opportunities and to seek common consensus and agreement on the portfolio of options.

The regional training and planning conferences are taking place throughout 2021 and will culminate in a region-wide planning conference where selected options and results will be presented and discussed to go towards the formation of the final Regional Plan due in 2023.

We also hold quarterly meetings with our entire membership and stakeholder base (our strategic advisory group) together with our consultation group (which includes regulators and other government agencies). The purpose of these meetings is to engage our membership in the emerging plan, to identify any concerns or opportunities as early as possible, and to gather feedback and suggestions throughout the process.

In-between planning conferences and strategic advisory group and consultation group meetings, we continue to engage and support on an individual basis with organisations and regularly attend our members' working groups, steering groups and meetings when needed. This creates a 'two-way street' forum to WRE's approach and ensures we're not only 'broadcasting' activities and developments but crucially taking members and stakeholders with us as we co-create the regional plan.

5.7 LESSONS LEARNED

WRE's small core team has seen the programme grow from an Anglian Water idea in 2012, to a project in 2014, and now to a fully independent organisation with, at the time of writing, over 180 members from all water use sectors. The opportunities that we have recognised and the lessons that we have learned have been vast – there have of course been obstacles and difficult moments – but these have all helped to make WRE more resilient, improve our experiences, and share our successes as well as learn from our mistakes.

Our core team and some of WRE's longest standing contributors reflect on some of those lessons as well as recommendations to others who may want to apply aspects of our approach to integrated water management and planning.

Dr Geoff Darch, Water Resource Strategy Manager, Anglian Water

'Water resources have never been so important. We provide more than a billion litres of clean, wholesome water a day to our customers in the driest part of the UK. We are already seeing water resources under increasing pressure and with future climate

change balancing supply and demand will become an even greater challenge. We believe the best outcomes will be facilitated by working with all stakeholders on multi-sector solutions that can deliver a balanced outcome for the environment, society and the economy.'

Henry Cator, Independent Chairman, Water Resources East

'As with any new strategy you need to bring people together to make decisions which they can believe in. In order to achieve that cohesive partnership one needs to build trust and mutual respect between all concerned. It is amazing what will be achieved if folk work together using positivity to overcome any hurdles. Communication is key at every level and each stage.'

Martin Collison, Engagement and Policy Advisor, Water Resources East

'The challenges on water management have built up over many years and so it will take commitment and investment over many years to deliver the long-term water security we need.

We should not expect the responsibility for addressing water management challenges to always fall to others, be it water companies, drainage boards or the Environment Agency, every household, business and community has a key role to play. Everyone can help through the actions we take to conserve water or to manage our impact on flooding through using sustainable drainage systems or managing our land or gardens, so they reduce runoff.'

Nancy Smith & Rachel Dyson, Communications and Engagement, Water Resources East

Nancy Smith: 'Building long lasting, trusting relationships has no deadline and your strongest stakeholders are often your loudest critics.

If you can, have a social media presence for your organisation or project. A pleasure as much as it is a pain, it extends reach, spreads news and research, and could lead you to all sorts of people!'

Rachel Dyson: 'Collaborative, cross-sector, integrated water management, while a seemingly obvious way to manage water, is a radically different approach to how water has historically been managed, particularly in the UK. Therefore, it should never be underestimated the amount of time and effort required to understand your stakeholders' views and to build their understanding of the various compromises and trade-offs required so that ultimately all water users' needs and those of the environment are balanced fairly.'

Dr Robin Price, Managing Director, Water Resources East

'WRE operates in a part of the UK with very high economic and environmental ambition. Stakeholders such as those planning for additional housing or business development or looking to boost agriculture and food production have often sat on opposite sides of the table from those who wish to restore and enhance the

environment. We have found that our structure, approach and unique set of tools have helped to start to bring people together to plan for the future – recognising that actually, everyone wants the place that they live to thrive economically, but that this can't be achieved fully unless the environment thrives. Integrated, holistic water management is a wonderful golden thread which runs through this conversation.'

Dr Steve Moncaster, Technical Director, Water Resources East

'Main lesson I've learned from the WRE process is that effective collaboration takes a lot of time & resources and that the key to success is openness & transparency. When we talk to people in the States with experience of this kind of stuff they same the same. According to them, you need to build allies & alliances and once you've done this you need to make sure that these are maintained – potentially over very long time periods (20-years + needed to deliver the really big schemes).

In short WRE is as much a social enterprise as it is a technical one and we're here for the long-haul!

Peter Simpson, Chief Executive Officer, Anglian Water

'For me 'WRE' started when we (Anglian Water) realised that our approach to water planning needed to change in response to the challenges of a growing population and the impact of climate change. In short it needed to move from a fixed, single sector, view of the future to a multisector scenarios based one. And to an approach where all of the users of water have a stake with damaging the environment in a drought no longer seen as a fall-back option.

What have I learnt:

- As always, the power of a clearly communicated vision.
- The benefits of co-creating the organisation, governance and consultation.
- Not leaving 'strategy' to someone outside the room but focusing instead on ways of building ownership of it – ultimately if you were involved in building and it doesn't work then guess what you'll sort it.
- Picking the team carefully and having passionate enthusiasts up front as you must win hearts as well as minds.
- Work with the grain – where there are projects which you can align with, do, as not everything has to come from you.
- Don't forget the basics – there has to be a Water Resource Management Plan in the end!

Jean Spencer, Chair of the National Planning Framework

'WRE is a model in developing a multi-sector collaboration for water resources and the environment. It has taken many years to reach the position where all sectors have an equal voice in developing the plans for the region. The next step will be to the development of mechanisms for all sectors to play their part in taking actions, as well as funding investment, to improve the environment for all.'

5.8 CONCLUSION

WRE as an organisation is still in its infancy but we believe we are well positioned through our approach, our inclusive governance structure and our technical toolkit to truly implement a new and much more joined up way of working on how water resources are planned and managed in Eastern England and beyond, given the threats to water supply. WRE hopes to demonstrate leadership, provide a clear and strong evidence base and become an international exemplar.

This comes too with the understanding that all water realities are contextual; with no one approach acting as a panacea for any one challenge. Nevertheless, we hope this chapter has shown how the methodologies and approaches of WRE are working to ensure the sustainability and reliability of water in our corner of the world.

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