Draft Water Resources Management Plan 2024

Section 2 – Environment

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Background and Introduction

This section sets out our strategy for our draft WRMP24 in the context of the natural environment. It describes our environmental baseline and references relevant legislation and regulation, much of it new or newly updated; what is expected of us; and against this backdrop, what our goals and priorities are for the environment as part of our draft plan. A key part of this is our ongoing work to reduce abstractions from sensitive sources to help our environment to thrive, referred to as our Environmental Destination.

Our view of the environment and how best to use our plan to protect and enhance the environment has been closely developed with WRSE, and aligns with WRSE's approach.
Key links to the Water Resources South East (WRSE) regional plan for this section are as follows:

- WRSE draft regional plan non-technical summary
- WRSE draft regional plan Environmental Report
- WRSE Problem characterisation report v.2
- WRSE Method Statement: Environmental Ambition
- WRSE Environmental Ambition Technical Note

Changes since WRMP19:

- We have updated our environmental baseline
- We have had regard to updates to the relevant environmental legislation and regulation since WRMP19, most notably the introduction of Environmental Destination via the National Framework– further details on this can be found later in this section and in Section 9. Readers less familiar with environmental assessment terms will benefit from referring to Annex B in this Section for a useful explanation of the environmental laws and regulations (and therefore assessments) that we need to comply with as we prepare our plan.
- As part of these changes, our regulators have developed new or updated tools and data to assess the environmental impact of projects – these include Defra's Biodiversity Net Gain (BNG) Metric, the EA's Invasive Non-Native Species (INNS) risk assessment tool, and updated datasets describing ecosystem service provision rates for different habitat types and traded carbon values - further details on these can be found in Section 9 and Appendices B (SEA), C (HRA), D (WFD), AA (BNG and NC) and BB (INNS).

We are part of our environment

2.1 Doing the right thing for society and the environment is the responsibility of everyone at Thames Water, our partners and our wider supply chain. We rely on a healthy natural environment to provide our services, and everything we do supports our purpose - to deliver life's essential service, so our customers, communities and the environment can thrive.

2.2 What we do, and how we do it, can have a positive and lasting impact on society and the natural environment. Looking after, and enhancing, the environment is a crucial part of our long-term strategy, whether it's looking after water resources and increasing efficiency to make sure there's always enough to go around, or supporting natural habitats to thrive.

2.3 The COVID-19 pandemic has been accompanied by a surge in public interest in making use of outdoor spaces for recreation and wellbeing, including rivers and streams. This covers a wide range of activities, from simply going for a walk, through to water sports, fishing and wild swimming. Customers have increasingly expressed concern that water company activities are compromising river quality and jeopardising not just these activities but also the health of the river ecosystem itself.[1] Our customers expect us to protect the environment in the course of our day to day activities; this is something which we are fully committed to.[2]

2.4 We want to play a leading role in improving the region's water environments, helping our rivers become some of the healthiest in the U.K. and using our land to bring the right mix of investment, local jobs, thriving wildlife spaces and more opportunities to spend time in nature.[3] By considering our WRMP, DWMP and business plan together on a catchment scale we can open up opportunities to achieve this vision for the communities we serve.

2.5 We operate in catchments that are sensitive and very valuable both to the environment and society. We're also keenly aware that in partnership with our communities we have a lot of work to do both now and in the future to protect these precious resources for future generations. We see our flagship Smarter Water Water Catchments programmes as a fantastic template we want to refine and roll out to all the catchments in our area to transform the way we work together and enable community-led catchment management. In the course of providing clean water and treating wastewater we never set out to compromise the protection and recovery of the environment, and both now and in the future (across the course of our plan period) we will be continuing our work to understand where our activities are causing or exacerbating environmental harm and put a stop to it so that our local habitats can thrive and become more resilient to future pressures. This is described in more detail later in this Section.

2.6 Our environment is facing increasing pressure from the effects of climate change, but putting sustainability at the heart of our decision making isn't new to us. We started making our own renewable energy as far back as the 1930s to help reduce our use of fossil fuels, and from there, we've reached many milestones on our sustainability journey, with many more to come as we embrace new opportunities to decarbonise our activities and invest in solutions that generate wider benefits for the environment and society. We're aiming to achieve net zero carbon emissions across our business by 2050, achieving this for our operational emissions by 2030.[3]

[1] PR24-5 Deep Dive: Bathing Water, Thames Water, February 2022
[2] https://www.thameswater.co.uk/media-library/home/about-us/investors/our-results/previous-reports/2020-21/annual-performance-report.pdf
[3] Vision 2050, Thames Water, 2022

2.7 Consideration of the wellbeing of our environment is the 'green thread' that runs throughout our draft WRMP24. Below we've summarised where each aspect of this is considered as part of our plan:

- Section 2 (this section) - The current state of our environment and improvements we've made historically and in this regulatory period, as well as our shared vision for achieving environmental improvement
  - Our Environmental Baseline – where we are today and particular vulnerabilities
  - What our vision for the environment is and how our WRMP and the regional plan contributes to this
  - An introduction to our Environmental Destination
  - What our regulators and customers have asked us to focus on regarding the environment, and our resulting priorities
  - We discuss our journey to investigate the impacts of our abstraction activities on sensitive catchments and the action we've taken as a result to reduce our impact where it's causing harm. We also discuss our other flagship programmes to improve the environment
  - We then discuss how we've developed our future plans to protect sensitive waterbodies from damage caused by over-abstraction. This is also known as our Environmental Destination. We give our priorities for investigation and action in AMP8, and our customers' views on abstraction reduction to protect the environment
- Section 5 - Here we describe in greater detail the methods used to develop our future environmental improvements and scenarios developed as part of regional planning with WRSE and in discussion with environmental regulators and stakeholders.
- We describe further investigations we will be carrying out to better understand our impact in more catchments; based on the results of this work we will make reductions in our abstractions to reduce harm. We don't yet know how big these reductions will be, which is why we have developed different scenarios to understand how we might make up the potential gap in supply that these reductions would cause.
- Section 9 - The approach we have taken to assessing the impact of our supply and demand management options on the natural environment
- Section 10 - This describes how we have used the results of our environmental assessments to identify a plan that maximises benefit to the environment while solving our future supply-demand gap and delivering an affordable and resilient service for our customers
- Section 11 - The environmental improvements that can be achieved through our plan

The Thames Basin - Our Environmental Baseline

2.8 In preparing our plan we have established the environmental baseline for our supply area (see Appendix B), which has been used to understand the impact of our draft WRMP options and plan on the natural environment as mandated by law and by the Water Resources Planning Guideline

(WRPG). This baseline was developed at regional level as part of WRSE's Regional Best Value Plan[4] and has been supplemented with local information to form the baseline for our draft WRMP. A list of the local information considered is available in Appendix BB. Our baseline for the purposes of considering our Environmental Destination is not specifically prescribed, but we have considered the baseline to be indicated by current WFD status (in terms of flows/quantity) for the waterbodies in our supply area; this information is available in Section 5.

The Thames River Basin District

2.9 We operate within the Thames river basin district, or catchment. This river basin area covers over 16,200km^2. It encompasses all of Greater London and extends from north Oxfordshire southwards to Surrey and from Gloucester in the west to the Thames Estuary and parts of Kent in the east. In total over 15 million people live in the Thames district with many entering daily to work or visit. In addition to Greater London, other urban centres in the river basin district include Oxford, Luton, Reading and Guildford.[5]

2.10 The Thames river basin district has a rich diversity of wildlife and habitats, supporting many species of global and national importance, and containing many different types of water body, from chalk streams and rivers such as the River Kennet to the Thames Estuary and salt marshes. The management catchments that make up the river basin district include many interconnected rivers, lakes, groundwater, estuarine and coastal waters (Table 2 - 1). The river basin district is mostly rural to the west and very urban to the east where it is dominated by Greater London. Around 17% of the river basin district is urbanised and the rural land is mainly arable, grassland and woodland.[5]

Table 2 - 1: Overview of waterbodies in the Thames River Basin District

Water body categories	Natural	Artificial	Heavily modified	Total
Rivers, canals and surface water transfers	287	21	106	414
Lake	7	47	19	73
Coastal	0	0	1	1
Estuarine	1	4	5	10
Groundwater	47	0	0	47
Total	342	72	131	545

Source: WRSE draft Regional Plan SEA Environmental Report, 2022

[4] WRSE, Draft Regional Plan SEA Environmental Report, 2022
[5] WRSE, Draft Regional Plan Annex 1, 2022

Our supply area

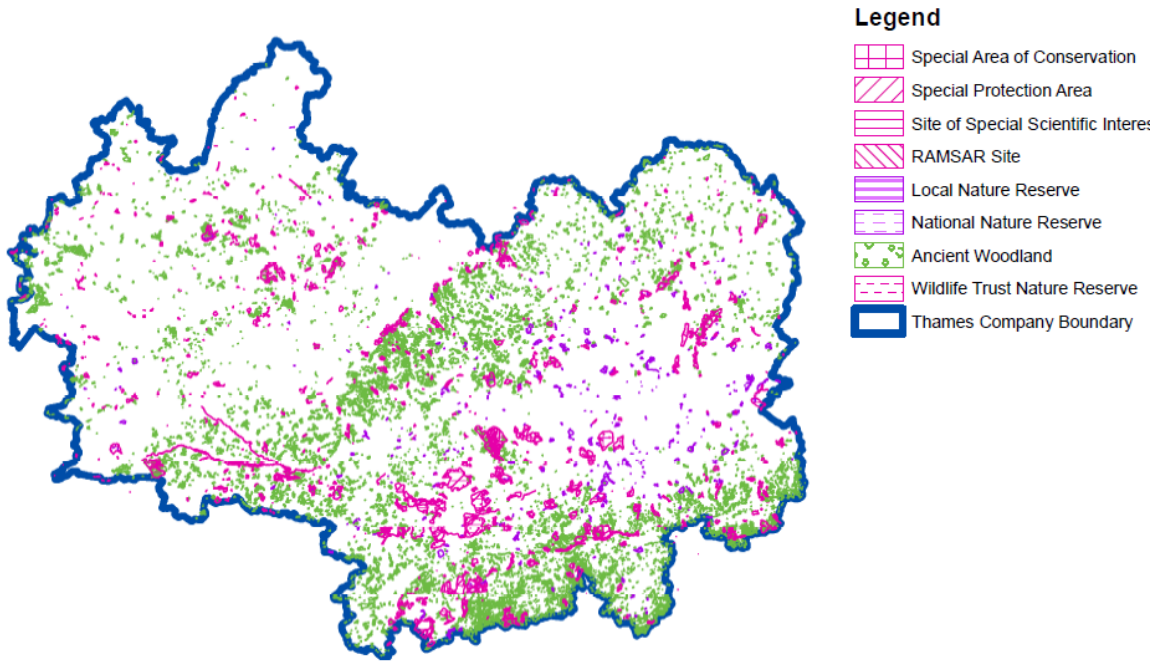

Figure 2 - 1: Map of designated sites within our supply area (Elliott, 2022)

2.11 Figure 2 - 1 describes the designated sites for wildlife within our supply area, and Table 2 - 2 outlines the extent of our landholdings and habitat coverage. Our landholdings are dominated by by open water and grasslands which together cover over 64% of the assessed area. Other significant land-use types include miscellaneous (20%, dominated by developed land and cereal crops), woodland and scrub (10%) and tall herb and fen (6%).[6] These provide a wide range of ecosystem services and benefits, the most significant provision is water supply, sense of place, aesthetic value as well as significant biodiversity value.[7]

2.12 About 20% of our landholdings are designated a Site of Special Scientific Interest (SSSI). About 94% of the SSSI area is in favourable condition, which is above the UK average, with the remaining 6% designated as 'Unfavourable recovering'.[8] The majority of surface water bodies (80%) achieve moderate condition with 1% achieving good condition as per the Water Framework Directive. The status of groundwater bodies is good for 64% of groundwater bodies beneath our landholdings.[6] 21% of the UK's chalk streams can be found in our supply area[9]; more details on these important habitats are provided in Section 5. About half of the landholdings are within a Nitrate Vulnerability Zone which indicates they are vulnerable to nitrate pollution from intensified agriculture.[6]

2.13 Phosphate followed by physical modifications are the two most common pressures preventing the water bodies in the Thames river basin district from achieving 'Good' status. Pollution from wastewater followed by physical modifications and pollution from towns and cities are reported as the most common significant water management issues affecting the achievement of 'Good' status.[10] Understanding our environmental baseline and the features of the environment our plan

[6] Thames Water Natural Capital Assessment 2022
[7] https://www.thameswater.co.uk/media-library/home/about-us/investors/our-results/previous-reports/2020-21/annual-performance-report.pdf
[8] Thames Water, Shaping the future: Thames Water Sustainability Report 2021/22, 2022
[9] https://www.thameswater.co.uk/about-us/responsibility/biodiversity
[10] WRSE, Draft Regional Plan SEA Environmental Report, 2022

will be delivered within allows us to identify vulnerable 'hotspots' and sensitive sites we need to protect in the course of preparing our WRMP, as well as enabling us to identify the best opportunities to improve the quality or condition of the environment.

Table 2 - 2: Natural Capital Baseline for Thames Water landholdings (2021) Source: Thames Water Annual Performance Report (2020/21)

Natural Capital Baseline

Asset Attribute	Indicator	Hectares	Percent
Extent	Total assessment area (Assessment scope)	6,504	100%
Coverage	Habitat area	5,711	88%
	Non-habitat area	793	12%
	Unknown land-use (Data gap)	0	0%

Thames Water's vision for the Environment

2.14 Our Vision for 2050 has environmental protection and improvement at its heart as we strive to deliver a resilient service for a growing population. As our WRMP24 is a long term strategic plan, it has a key part to play in achieving this vision. The vision (as relevant to WRMP) is as follows:

- Making sure everyone always has access to top-quality drinking water; investing in our network to prevent leaks and keep water flowing
- Customers have a reliable supply of water
  - Investing in innovation to make sure no-one is let down by our water supply
- Our future-proofed water supply can meet the changing needs of our customers and the world around us
  - Securing enough water to meet future demand while protecting environmentally sensitive sources
- We help customers understand and manage their impact on our water systems and the environment
  - Motivating customers to make choices that save water
- Achieving net-zero carbon emissions across all parts of our business by 2050
- As committed to saving energy as we are to saving water, we make every watt count
  - Using data to help make our energy go further and sourcing more of our energy from renewables
- We use our assets creatively to boost green energy production
  - Using a range of technology to become a major producer of green energy
- Our leadership and collaboration improves the health of rivers in our region
  - Playing a leading role in improving the region's water environments, helping our rivers become some of the healthiest in the UK

Our policies and commitments

2.15 The protection and enhancement of our natural environment is a core part of the way our business operates. As such, our WRMP has been prepared in the context of our existing environmental policies, outlined in Figure 2 - 2:

- Our cross-business policies describing our commitments to the areas below can be found at https://www.thameswater.co.uk/about-us/governance/our-policies
- Our journey to net zero operational carbon and beyond can be found at https://www.thameswater.co.uk/media-library/home/about-us/responsibility/net-zero/our-journey-to-net-zero.pdf

2.16 For AMP7 we have a bespoke regulatory performance commitment to measure the natural capital stocks (that is, the extent and condition of our natural resources) across our landholdings, committing to measure 100% of our landholdings by the end of the AMP. We are using innovative methods such as drones to help us achieve this. As of 2021, we have measured 100% of our landholdings.[11] We also have a bespoke commitment to increase the total number of biodiversity units (a metric quantifying the extent, type and condition of habitat on a given site) on our 253 Sites of Biodiversity Interest and biodiversity offsetting sites by 2,455 units (5%), from a baseline of 49,110 at the end of AMP6 to 51,565 at the end of AMP7. The area of land to be improved by this five-year biodiversity programme is around 4,000 hectares. This area is about two and a half times the size of Heathrow Airport. We'll achieve this by improving the condition of existing habitats through changes in management regimes of grassland. We'll also create new habitats such as wetlands, woodlands and hedgerows and improve connectivity.[12] We enhanced 41 sites for biodiversity in 2020/21 and 44 sites in 2021/22. We have already reduced our net Greenhouse Gas (GHG) emissions by 68% compared to our 1990 baseline level, a 576 ktCO2e absolute reduction, and we're aiming to beat this with our commitment to generate even more renewable energy from our sites by 2025 and beyond.[11]

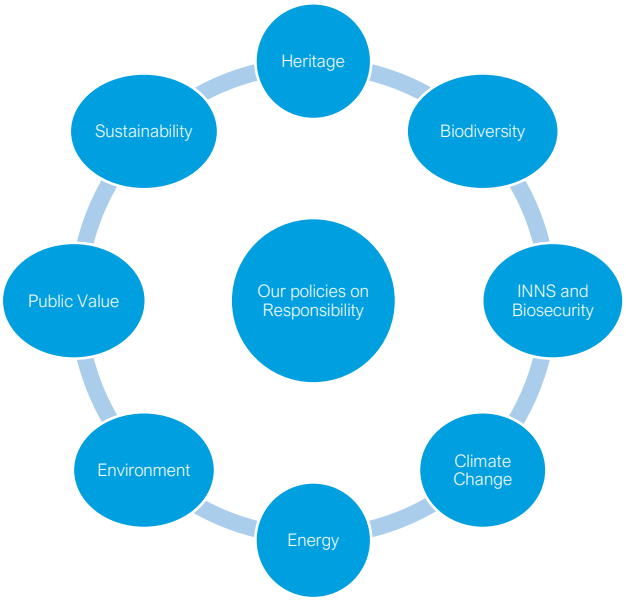

Figure 2 - 2: Overview of our policies on responsibility

[11] Thames Water, Shaping the future: Thames Water Sustainability Report 2021/22, 2022
[12] https://www.thameswater.co.uk/about-us/responsibility/biodiversity

How the Water Resources Management Plan forms part of our commitment to our natural environment

2.17 The WRMP plays a key part in achieving our vision for the natural environment both in the short and longer term. It does this by securing resilient demand management interventions and new supplies of water which meet the anticipated growth in demand for water in our supply area while delivering best value for people and the environment. We have used a data led approach and collaborative working with stakeholders across sectors to identify solutions for our region. Working with WRSE we have used a GIS database to collate data and allow us to understand the potential impacts of options but also the opportunity for options to benefit the local environment. This more efficient approach allows us to take a landscape scale view and better support approaches such as Nature Recovery Networks.

2.18 The contribution of initiatives driven through the WRMP will begin right away, with actions set out in the first five years of the WRMP24 forming part of our Price Review 2024 (PR24) business plan, while our strategic resource options have a key part to play in delivering our longer-term vision for the environment, offering macro-scale wider benefits to communities across the South East. This includes delivering against our long-term commitments to protect flows in chalk and other streams which we know to be vulnerable. In 2017 we announced we would seek to close all our abstractions from vulnerable chalk streams, where supported by our customers, and we are seeking to go further than this in partnership with our stakeholders – further information on the actions we are taking can be found at https://www.thameswater.co.uk/about-us/newsroom/latest-news/2020/oct/water-companies-pledge-to-protect-rare-chalk-streams. Thames Water are also a partner in CaBA (Catchment Based Approach)'s first Chalk Stream Strategy[13] – details of this can be found in Section 5.

Environmental protection and improvement at the heart of the regional best value planning process

2.19 As part of WRSE, we have developed innovative ways of achieving environmental improvement at a regional scale. We have made the most of the opportunities that working regionally brings, pulling data from all six WRSE water companies and other stakeholders together to understand our regional environmental baseline and map 'hotspots', identify opportunities for improvement and assess the impact of interventions; this has fed through into our dWRMP24. We have worked across the water sector to explore and develop options to achieve multiple benefits and drive consistency in approach in consultation with our regulators. With WRSE we have carried out a strategic environmental assessment (SEA) of the regional plan[14], consulting on the scope of this as early as possible with our regulators and using the feedback to develop our approach. We have used this scope for the SEA of our dWRMP24 – further details can be found in Section 9. WRSE's aims for using the regional plan process to benefit the environment at a regional level are described in Figure 2 - 3.

[13] CaBA, Chalk Stream Strategy, 2021. Available from: https://catchmentbasedapproach.org/learn/chalk-stream-strategy/
[14] WRSE, Draft Regional Plan SEA Environmental Report, 2022

Figure 2 - 3: Themes for assessment of the regional plan within the SEA.
Source: WRSE dRP Annex 1, 2022.

2.20 As a region we have used a data-driven, GIS based approach coupled with experienced environmental expertise to understand the environmental challenges our region faces across multiple dimensions (our baseline), and similarly, the relative environmental benefits and impacts of the solutions we are considering in order to solve our supply-demand deficit. We have complied with relevant legislation, guidance and best practice to create a consistent regional environmental appraisal process[15] which assesses the features of each option under consideration and uses these to generate metrics covering Habitats Regulation Assessment (HRA), Water Framework Directive (WFD), Strategic Environmental Assessment (SEA), Biodiversity Net Gain (BNG) and

[15] WRSE, Method Statement: Environmental Assessment, 2022.

Natural Capital (NC). These are further described in WRSE's Method Statement for Environmental Assessment and WRSE's draft regional plan SEA Environmental Report. The resulting environmental metrics for our options are available in a supplementary report to our draft plan.

2.21 We have used these metrics (and the Level 1 assessments that have generated them) and the results of detailed/stage 2 assessments to inform option screening. Options which have failed the stage 2 assessments and for which negative environmental impacts cannot be adequately mitigated have been rejected. For other options, the assessments 1) have been used to inform option design to, where necessary, mitigate impacts on the environment, or 2) have identified where further work is required to identify appropriate mitigation; this work will be completed as we finalise our plan. Further details are presented in Section 9.

2.22 The assessments and metrics have been used to inform the multi-criteria optimisation of our plan, to achieve best value for people and the environment. We have used modelling under a range of scenarios to understand what a plan to achieve best value might look like, as well as understanding what a plan designed solely to benefit the environment and society might look like. Further details on this are available in Section 10.

2.23 Working as a region has allowed the water companies within the South East of England to develop a consistent position on how to tackle different environmental challenges, and consulting with regulators at an early stage has enabled us to be consistent in how we have considered our options in light of these positions.

Table 2 - 3: Our approach to respond to new legal and regulatory requirements

Update to guidance/ Subject	The approach we have taken	Further details can be found in this section of our plan
The introduction of Environmental Destination via the National Framework for Water Resources (2020)	We have worked with WRSE and with the EA to formulate a set of scenarios to achieve our Environmental Destination	Section 5 (Environmental Forecast)
Environment Act 2021	We have had regard to the requirements of the Act in preparing our plan, including seeking to support Nature Recovery Networks	Section 9 (Environmental Assessment) and appendices B (SEA), C (HRA) and AA (BNG/NC)
The Water Resources Planning Guideline (WRPG) specifies that drought options may be considered as WRMP options provided that they are minimally environmentally impactful	We have worked closely with the Environment Agency (EA) to agree which drought options have sufficiently minimal environmental impacts to be considered as WRMP options	Section 7 (Appraisal of Resource Options)
The EA have specified that companies should consider how options impact the achievement of 'Good' Status within WFD assessments rather than ensuring no deterioration.	We have followed this approach when assessing the impact of our options.	Section 9 (Environmental Assessment), Appendix D (WFD report)

Update to guidance/ Subject	The approach we have taken	Further details can be found in this section of our plan
The EA have advised that companies should consider capping their abstraction from each source currently in use to match recent levels of abstraction, based on conditions related to WFD status	We have reviewed the impact of this approach on the deployable output of our sources and have included this as an additional set of scenarios to our Environmental Destination scenarios.	Section 5 (Environmental Forecast)
The EA have advised that companies should review the feasibility of WRMP options related to sources impacted by Environmental Destination	We have reviewed our option list to understand if our Environmental Destination scenarios impact their feasibility, and have rejected these as appropriate.	Section 7 (Appraisal of Resource Options), Appendix Q (Rejection register)
Review the feasibility of transfers where water needs to be retained in environment to protect designated sites (Regional plans NE/NW Environmental legislation and policy note)	We have reviewed how this may impact our options, particularly strategic resource options which involve a transfer	SRO Gate 2 documents
For options requiring an HRA to be included in the plan, there must be an absence of effects beyond all scientific doubt (Regional plans NE/NW Environmental legislation and policy note)	We have consulted extensively with our regulators on this, and are continuing our approach from WRMP19 to allow inclusion of options where we cannot prove absence of effects beyond all scientific doubt but commit to establish this well in advance of commissioning.	Appendix C (HRA report)
(Thames Water specific) – Retaining flows in the Lower Lee	In consideration of concerns expressed in relation to the reduction in flows that Deephams Reuse would potentially cause, we have ensured that Deephams can only be built once schemes to provide compensatory flows are also available, also recognising that WFD compliance will need to be confirmed at this point before the option can proceed.	Deephams Reuse and Lower Lee DRA statement of common understanding
The EA have developed the SRO Aquatic Invasive Non Native Species (INNS) Risk Assessment Tool (SAI-RAT), with the expectation that this will be used to assess INNS risk for all WRMP options where high level assessment indicates that this is needed	As part of WRSE we have followed this approach, and have worked with the EA to develop an agreed methodology to allow companies to consistently use this tool to assess Non-Strategic Resource options, which tend to have less detailed information available.	Appendix BB (INNS report)

Update to guidance/ Subject	The approach we have taken	Further details can be found in this section of our plan
Defra and Natural England have developed a biodiversity metric to provide ecologists, developers, planners and other interested parties with a means of assessing changes in biodiversity value (losses or gains) brought about by development or changes in land management. Biodiversity metric 2.0 was released in 2019/2020, with subsequent versions released in July 2021 (3.0) and April 2022 (3.1). Version 4.0 is expected later in 2022.	As part of WRSE we have assessed the impact of all options put forward for investment modelling using Biodiversity Metric 2.0. We will be updating our assessments in line with the most recent guidance for our final WRMP24. This has been discussed with our regulators.	Appendix AA (NC and BNG report)
Defra's Enabling a Natural Capital Approach (ENCA) guidance was first published in January 2020, and subsequently updated (ENCA, August 2021).	As part of WRSE we have assessed the impact of all options put forward for investment modelling using ENCA (January 2020). We will be updating our assessments in line with the most recent guidance for our final WRMP24. This has been discussed with our regulators.	Appendix AA (NC and BNG report)
Catchment options inclusion in WRMP	Following extensive consultation with our regulators, our approach is that catchment options which provide a contribution to the supply demand balance are included with our WRMP. As part of WRSE, we are also considering inclusion of catchment options which could provide compensatory BNG for another option which causes a BNG loss. This is to achieve a minimum of 10% BNG as will be mandated for WRMP options requiring planning permission. Options which require further piloting to understand benefit, or which offer benefits not related to water resources or compensatory BNG, will be considered within our WINEP and wider PR24 programme.	Section 7 (Appraisal of Resource Options)
Using WRSE SEA scoping report for our WRMP24	Working in close consultation with our regulators, we have used the SEA scoping report	Appendix B (SEA report)

Update to guidance/ Subject	The approach we have taken	Further details can be found in this section of our plan
	developed by WRSE for our company WRMP24, supplemented with additional local datasets and plans and programmes to ensure that the assessment fully captures relevant information for our supply area.	
Plan period for in-combination and cumulative statutory assessments	In line with WRSE, we are assessing our plans up to 2050, and are carrying out a lighter touch assessment of the plans from 2050-2075.	Section 9 (Environmental Assessment), Appendix B (SEA), C (HRA), D (WFD)
Accounting for 10%+ BNG	We have ensured within our planning process that we have accounted for the costs of achieving a 10% net gain in biodiversity across our plan. We will undertake work ahead of the final WRMP24 to develop our understanding of costs and delivery of net gain opportunities further.	Section 7 (Appraisal of Resource Options), Appendix AA (NC and BNG report)

Our Environmental Destination

2.24 Whilst we have a strong record of delivering measures to improve the environment in relation to low river flows, we recognise that there is more to do. The concern amongst stakeholders and the public about the state of our sensitive streams, and in particular our valuable and internationally scarce chalk streams, has increased in recent years. Therefore, despite the record of reduction in abstraction to improve flows in Chalk and other streams there is a requirement to go further and be more ambitious so that we develop a sustainable abstraction base which has no significant adverse impact on our Chalk and other sensitive streams. We are therefore proposing an ambitious plan that will protect our Chalk streams, but which takes into account the need to ensure resilience of future supplies to more extreme droughts as well as accounting for the forecast growth in population and the impacts of climate change. In this way, we are recognising that achieving these improvements is key requirement of our WRMP24, as laid out in the National Framework for Water Resources Planning.

2.25 Later in this Section and Section 5 we set out our plan for making further reductions within the context of the regional planning we are undertaking with WRSE, and the specific plans we have to address the most pressing needs for abstraction reduction in the Thames catchment. We also set out the reasons why this is necessary and set out plans in the context of what has already been achieved. We have developed this plan in close consultation with the EA and other stakeholders and we recognise that the plan needs to be flexible so that we can make changes to the plan in future years if our investigations show that adaptation of the proposed sustainability reductions is necessary.

What our regulators have told us is important

Figure 2 - 4: Key environmental requirements from WRPG and WRPG Supplementary Guidance (Environment and Society in Decision Making). Requirements that we must action (as defined in the guidance) are in orange, those that we should action are in blue.

The environmental laws and guidance that our plan must comply with

2.26 The WRPG sets out the majority of legislation and regulation that we need to consider and comply with in preparing our plan. A summary of the other key requirements relevant to the preparation of our WRMP24 is available in Annex B.

What customers have told us is important

2.27 Below is a summary of key messages from our research with our customers relating to our WRMP and the environment. Customer research has informed our options appraisal process and the development of the WRSE customer preference metric we have used within our programme appraisal process to identify a best value regional plan.

2.28 Customers' overall view is that water companies should not plan to harm the environment. They deem it unacceptable that long term plans to secure water supplies and improve the resilience of the water system to drought and unexpected events would be at the expense of the environment.[16]

2.29 When considering new water resource options, customers tend to value those that use renewable energy more highly.[17] Wherever possible, the resource plans should adopt options that contribute to the recovery of nature (e.g. supporting Local Nature Recovery Strategies).[18]

2.30 Supply options that have a net positive environmental impact and deliver wider public value (e.g. recreation and amenity) will be preferred by customers.[9]

2.31 Use of chemicals, high energy use, and other unmitigated impacts are key reasons why some options are less favoured by customers.[9]

[16] PR19-61 CR69 Drought Resilience & Chalk Streams, BritainThinks, March 2019
[17] PR19-15 CR43a/b Stage 2 customer preferences research - water resources level of service and options, effect/ICS (May 2017)
[18] PR19-58 CR29a WRMP Stage 1, (BritainThinks, Oct 16)

Our Resulting Goals and Priorities

Protecting the condition of designated and functionally important habitats for nature

2.32 Throughout our planning process we have identified where there may be temporary and permanent impacts on important and sensitive habitats as a result of our options. We have used these assessments, as set out in Section 9, to minimise the impact of the plan, either by rejecting specific options in favour of others or by updating the design of options to avoid impacts or include further mitigation. In some cases, we will need to plan further studies and investigations to better understand potential impacts, so that we can either reject the option or include further mitigation as appropriate. This is discussed further in Section 9. We manage 12 Sites of Special Scientific Interest (SSSI) which are legally protected wildlife areas. With 47 of the UK's 224 chalk streams in our region[19] we're committed to protecting these rare and biodiverse sites. 94% of our SSSI land area is classified as 'favourable', with 6% classified as 'unfavourable recovering' by Natural England.[20] We're working with Natural England and other specialists to understand how to further improve the condition of 'unfavourable recovering' areas. These can be a result of wider population trends rather than specific conditions on site.

Leaving more water in environments we know are abstraction sensitive

2.33 As detailed earlier in this Section, we have a long history of undertaking investigations across our supply area to understand the impact of our abstractions on sensitive habitats. These investigations are important because the way that waterbodies such as aquifers and rivers interact can be complex – reducing abstraction from one won't necessarily increase levels in the other even if they are linked. We have used the evidence base we have gathered to proactively identify reductions to our abstractions that will benefit the most vulnerable watercourses, and considered these as part of our WRMP24. Further information is available in Section 5.

Best practice Invasive Non Native Species management

2.34 Throughout our WRMP option identification process we have identified existing pathways for INNS and where we think options may potentially create new pathways for INNS to be transferred across waterbodies. We have used these assessments (described in Section 9 and in Appendix BB) to ensure that our plan protects our region from further INNS incursion and explores opportunities to reduce the impact of INNS on our native wildlife; this work will be completed as part of finalising our plan. Through our survey work for our strategic resource options we have identified two INNS species which have been sighted for the first time in the U.K., adding to the national knowledge base. We are also producing a company-wide plan for INNS management following close working with the EA on the sites and pathways where we have risks related to INNS. This plan is due for completion in November 2022.

Creating better connected and improved habitats for nature

2.35 As a business we are working hard to pioneer and champion the improvement of our local habitats, from leading the way in quantifying the biodiversity and natural capital of our landholdings to co-creating Tiny Forests at our water treatment works. Our developing strategy to achieve a net 10%+ biodiversity net gain across our WRSE regional plan and WRMP24 will help the Nature Recovery Networks in our region to thrive and will ensure that we comply with our future legal duties to provide at least 10% net gain for options requiring planning permission and nationally significant infrastructure projects.

[19] https://www.thameswater.co.uk/about-us/responsibility/biodiversity
[20] Thames Water, Shaping the future: Thames Water Sustainability Report 2021/22, 2022

Net zero operational carbon by 2030, going beyond this by 2040

2.36 We are committed to achieving net zero carbon across our operations, and this includes our future plans to build and operate new assets to supply water and reduce water demand. These new assets will take advantage of our work to drive energy efficiency across our operations (such as enhancing real-time control of our assets), with benefits across the six greenhouse gases. We have quantified the embodied and operational carbon emissions of our supply and demand options as part of our options development work; further details on this are available in Section 7 and Section 8. Further details on this for our Strategic Resource Options are available from the Gate 2 documents for each option.

2.37 Through our work to develop and deliver our strategic resource options in partnership with other water companies, we are thinking innovatively and working with our supply chain to accelerate the decarbonisation of our capital programmes. We are guided by the National Infrastructure Commission's Design Principles for National Infrastructure[21], and are working as part of the All Company Working Group and WRSE to develop a consistent ambition and approach in this area, including consideration of emissions of the six greenhouse gases from our activities. Examples of opportunities we are exploring through this work include the use of electric plant and reducing the carbon emissions from concrete production. Further details on our ambition and approach in this area can be found in WRSE's draft Regional Plan carbon report.

Co-creating and co-managing options to protect and enhance our natural environment

2.38 Working with the communities we serve to co-develop water management solutions unlocks multiple benefits for environment and society. As part of the regional planning process we have engaged with multi-sector partners and environmental stakeholders across our catchments to identify novel options to improve the connectivity and resilience of the region. Through our existing programmes to improve the environment and our WINEP and PR24 process we are working as a business to better understand the benefits of these options and support their development and delivery. Our existing programmes to support development and delivery of catchment options are described later in this document.

2.39 Working in partnership with The Rivers Trust and Thames Rivers Trust we plan to invest £5m into catchment partnerships over the next five years via our Catchment Partnership Support (CaPS) fund to build capacity and better support collaborative working. We plan to focus initially on three main themes in the first year, which will see The Rivers Trust lead on providing technical support regionally, the Thames Rivers Trust lead on capacity building locally through co-funding of a partnership officer, and increasing the amount of funding catchment partnership hosts are able to use for coordinating the partnership and its projects. Funding of £22k is available for each catchment partnership in our supply area; £10k to support hosting capacity and £12k for specific outputs like catchment plan development, comms and engagement. Improving the capacity within partner organisations and maturing our options appraisal process for catchment options are the key ways by which we can fully consider and realise the benefits of nature based solutions across our investment planning.

[21] NIC, Design Principles for National Infrastructure, 2020. Available from: https://nic.org.uk/studies-reports/design-principles-for-national-infrastructure/

Environment Programme to date

Environmental Baseline for Low Flows

2.40 As key custodians of our environment, we are very mindful of the pressures on our water environment. Our Environmental Destination is a key consideration and key driver of overall need for water within our WRMP. While it is the latest way in which we are working with our regulators to respond to the pressures of abstraction on our environment, we have been working proactively over many years to minimise the environmental impact of our abstractions. The requirement for further reductions in abstraction is set in the context of the previous and ongoing programme of sustainability reductions that dates back to the initial measures to address low flows resulting from abstraction in the 1980s. The earliest requirement was identified through the 'ALF' (Alleviation of Low Flows) programme which addressed the requirements of the top 20 low flow rivers across the country. This then developed into the Restoring Sustainable Abstraction programme (RSAP) that has run since and has resulted in numerous abstraction reductions over the last 40 years. The licence reductions that we have implemented are shown in Table 2 - 4 below.

Table 2 - 4: Previous Licence Reductions for Environmental Improvement

Source	River	Volume of Reduction (Ml/d)	Date
Brasted	Darent	4.56	May 1995
Sundridge	Darent	12.278	Jan 1997
Lullingstone	Darent	4.592	Jan 1997
Eynsford	Darent	18.182	Jan 2005
Horton Kirby	Darent	7.97	Jan 2005
Hampden	Misbourne	3.68	Jun 1998
Wendover	Misbourne		Jun 1998
Mill End	Wye	18.184	Jan 2011
New Ground	Bulbourne	7.97	Jan 2011
Compton	Pang	13.638	Feb 2007
Blewbury	Blewbury Pond	9.092	Feb 2007
Speen	Kennet & Lambourn	4	Mar 2015
Axford	Kennet	4	Mar 2017
Ogbourne	Og	8.096	Mar 2017
Childrey Warren	Letcombe Brook	4.546	Mar 2020
Pann Mill	Wye	13.23	Mar 2020
Total		132.9	

Implementation of Low Flow schemes in AMP7

2.41 We have two low flow schemes for delivery in AMP7/AMP8. These are closure of groundwater abstractions at Hawridge in the Chess catchment and North Orpington in the Cray catchment. Investigations were undertaken in AMP6 (2015-2020) into the impact of abstraction at Hawridge on the River Chess. This investigation was undertaken jointly with Affinity Water who also have abstraction in the Chess catchment. The investigation concluded that the abstractions have the potential to impact the River Chess and that an options appraisal should be undertaken. The options appraisal was also undertaken in AMP6 and concluded that the Hawridge source should be closed to ensure no potential for impact of abstraction in the Upper Chess catchment. The date for closure was provisionally set for March 2025. Work to enable this closure is being undertaken and design will be undertaken during AMP7 although the full closure of the source is likely to be delivered early in AMP8.

2.42 Investigations were undertaken into the impact of abstraction at North Orpington and Orpington on the Upper River Cray in AMP5 and into the impact of abstraction from Bexley on the Lower Cray in AMP6. The investigations at Orpington and North Orpington concluded that abstraction at North Orpington had a relatively direct impact on the River Cray but that abstraction at Orpington was from deeper in the Chalk aquifer and so had a much reduced and more indirect impact on the catchment and the river. The investigation into the impact of abstraction at Bexley concluded that the abstraction had the potential to impact the lower reaches of the river directly upstream of the point where it joins the tidal Thames. An options appraisal was undertaken to determine the options for delivering improvements to the River Cray and it was concluded that it was more beneficial to implement reductions at North Orpington than at Bexley because the reduction at North Orpington would have greater benefit over a much longer stretch of the river from its source to the lower reaches whereas any reduction at Bexley through not renewing the licence variation would have much more limited benefit. Therefore, we plan to close the North Orpington source. The date for closure was provisionally set for March 2025. Work to enable this closure is being carried out and design will be undertaken during AMP7 although the full closure of the source is likely to be delivered early in AMP8.

Low Flow Investigations in AMP7

2.43 We are undertaking a number of investigations in AMP7, these are a mix of investigations to determine the impact of our ongoing baseline abstraction at some sources and also some investigations required under the WFD to determine whether increasing abstraction to our full licence volume would result in deterioration of the impacted waterbody. We are undertaking three investigations into the impact of baseline groundwater abstraction; at Epsom on the River Hogsmill, Marlborough and Clatford on the River Kennet and the Northern New River Wells on the River Lee. We are also undertaking WFD investigations into the impact of potential increase in abstraction up to our full licensed volume at a number of sources. These investigations are to determine whether there is the potential that an increase in abstraction up to full licence could result in deterioration of the water body status as assigned under the WFD.

Table 2 - 5: Low Flow Investigations into baseline abstraction

Low Flow Investigation	Waterbody	Sources being investigated	Completion date
Upper Kennet	River Kennet	Marlborough Clatford	March 2023
Hogsmill	River Hogsmill	Epsom sources (Epsom East Street) (Railway borehole)	May 2023

Low Flow Investigation	Waterbody	Sources being investigated	Completion date
River Lee	Middle Lee	Amwell End Amwell Marsh Amwell Hill Broadmead Hoddesdon Rye Common	March 2025

Table 2 - 6: WFD No Deterioration investigations

No Deterioration Investigation	Waterbody	Sources being investigated	Completion date
Dikler	River Dikler	Upper Swell Lower Swell	September 2023
Chilterns Scarp	Multiple waterbodies – streams draining the scarp slope	Watlington Chinnor Lewknor Britwell Kingston Blount	September 2023
Tillingbourne	River Tillingbourne	Netley Mill	September 2023
Pangbourne and Thames at Reading	River Thames	Pangbourne	Completed Aug 2021
Pang and Berkshire Downs	River Pang	Pangbourne Bishops Green East Woodhay Ufton Nervet Bradfield	September 2023
Latton and Ashton Keynes	River Churn and associated waterbodies	Latton Ashton Keynes	September 2023

Our other programmes to conserve and champion the environment

2.44 We have several innovative business-wide programmes to improve our environment. These have a long history, and we look to build on the relationships we have formed to help us reach our strategic goals into the future. These programmes are:

Smarter Water Catchments

2.45 Our pioneering Smarter Water Catchments programme[22] aims to maximise the potential of the Catchment Based Approach, working in collaboration with local stakeholders to co-create and deliver a holistic, catchment-wide portfolio of improvements to benefit people and nature. We are continuing our work with our established partnerships in the catchments of the Chess, Evenlode and Crane (with a partnership in the Pang developing and the Upper Lea in consideration) into AMP7 and AMP8. Our focus to date has been on co-creating an open data baseline to inform interventions including further monitoring and public engagement. We have established robust governance processes and identified KPIs and R&D opportunities, to ensure that we get things right first time and maximise the effectiveness of our interventions.

[22] https://www.thameswater.co.uk/about-us/responsibility/smarter-water-catchments

Catchment Fund

2.46 We have engaged farmers within our area to help improve the quality of raw water within our sensitive catchments for many years. We offer farmers funding of up to £10k per farm for measures to reduce pesticides and nitrates in our target catchments across surface water and groundwater source areas[23]. Interventions can include infrastructure, land management or equipment changes, with innovative proposals encouraged. We are partnered with the Farming and Wildlife Advisory Group (FWAG) and Promar for delivery of this programme.

Surface Water Management Programme

2.47 Through our new fund for AMP7[24], stakeholders apply to have a proposal funded or co-funded for projects that disconnect or attenuate surface water flows from Thames Water sewers, to reduce flood risk and protect our precious environment. Options can be in any of our catchments to support developing as many option types as possible. Our first call for projects (Aug '21) resulted in £1.7m awarded to 20 projects, with a second call funding up to a total of £1.5m. Examples of projects with funding awarded include constructed wetlands and projects to implement SuDS (Sustainable Urban Drainage Systems) in schools, highways and housing developments.

Community Investment Programme

2.48 At the end of our last funding cycle, we committed to investing £8.5 million in community-based initiatives within our region over five years. This was funded by our shareholders in agreement with Ofwat and formed the basis of our AMP6 community investment programme. We provided £2 million for our Thames Water Trust Fund - a registered charity that provides critical assistance for our most vulnerable customers. We allocated £6.5 million to fund 60 community projects as well as our popular education centres.[25] These projects focused on engagement, learning and environmental enhancement, fostering connections between our local communities and the nature on their doorstep. Many of the community investment projects we've helped to fund have gone on to win industry awards; examples include opening Walthamstow Wetlands, Europe's largest urban wetlands nature reserve, and bringing the Woodstock Water Meadows into better management in collaboration with the Wychwood Project in Oxfordshire.[26]

2.49 We've continued this work into AMP7; last year we contributed charitable funding to 97 projects with a variety of organisations including nature reserves and community foundations, and we supported 68 community projects. We reached over 62,000 young people as part of our schools programme to promote a love of water and STEM skills, and supported over 4,200 hours of volunteering in our local communities and on our nature reserves. We also launched our Backyard Nature campaign to help encourage children living in poverty to enjoy and protect nature; we're aiming to reach 100,000 children through this campaign by 2023.[25]

Grow Back Greener

2.50 The 2021 Grow Back Greener Fund, co-funded by the Mayor of London and Thames Water (£500k) awarded £1.4m to 45 community projects to create and enhance green spaces and increase climate resilience. The fund prioritised projects in areas of deprivation, high climate

[23] https://www.thameswater.co.uk/about-us/responsibility/smarter-water-catchments
[24] https://www.thameswater.co.uk/about-us/responsibility/surface-water-management-programme
[25] Thames Water, Shaping the future: Thames Water Sustainability Report 2021/22, 2022
[26] Investing in our communities: Community Investment Programme Summary 2014-2020, Thames Water, 2020

risk and poor access to green space. This year's fund had two themed strands: access to green space, and climate change adaptation and water.[27] [28]

2.51 Projects include community gardens, river restoration, new wetlands, greener school playgrounds and housing estates. By November 2022 these projects will have improved over 18 hectares of green space, included turning almost one hectare of grey to green, and involved over 5,000 Londoners as volunteers and trainees.[27] [28]

[27] https://www.london.gov.uk/what-we-do/environment/parks-green-spaces-and-biodiversity/green-space-funding/grow-back-greener-fund-2021
[28] https://www.thameswater.co.uk/about-us/newsroom/latest-news/2021/jun/grow-back-greener

Our Environmental Ambition

Our Long Term Aspiration

2.52 Our long-term aspiration is to cease all abstraction that adversely affects sensitive streams, where supported by our customers. Chalk streams are of national importance and all Chalk streams are classed as priority habitat under the Natural Environment and Rural Communities Act 2006. Chalk streams are a special type of spring-fed river unique to England and northern France. Like other spring-fed streams, chalk streams derive most of their flow from underground aquifers, but the chalk aquifer and the chalk landscape are distinctive and give these rivers a special quality which marks them out historically, aesthetically and ecologically. Chalk streams have been shaped extensively by man over the centuries, but they possess a rich ecology and biodiversity because of their chemistry, minerality and their cool, stable and gentle flows. It is for this reason that they must be protected and therefore ensuring no adverse impact from abstraction is very important. But protection from over-abstraction is only one measure to safeguard them and improving their morphology, ensuring the channels are natural rather than artificially straightened or concrete lined, is also important, as is protecting them from poor water quality through discharges and agricultural and road run-off.

2.53 We have been strong supporters of the national chalk stream strategy since work on it began. Restoring England's internationally rare Chalk streams is now a government priority and water companies have been urged by the Government to work with other stakeholders to restore Chalk streams where they are affected by adverse pressures including abstraction.

2.54 This represents a major challenge and is likely to take a considerable time to implement in full. We have made significant strides and have addressed the most clear-cut low flow problems, for example those seen on the River Darent in Kent in the late 1980s. However more measures are needed to ensure that these, and other streams, are resilient to abstraction impact. Furthermore, Chalk streams are part of a natural system and, therefore there will be occurrences of low flows in these streams in the future due to seasonal droughts. In some cases, they will dry up in their upper reaches, a natural feature in parts of these rivers know as 'bournes'. Our challenge is to devise and implement a plan to ensure that abstraction is not a cause of any unnatural drying of any of our Chalk rivers or other sensitive streams.

2.55 This record of abstraction reduction forms a foundation on which our future plans are building. Previous reductions were determined through a process of investigation, options appraisal and scheme delivery with the focus being on the requirements identified by the EA. The requirement for future reductions will be based on the requirement to meet a minimum environmental flow which is broadly set through the CAMS[29] process. This sets out the EFI (Environmental Flow Indicator) which is used to determine how much flow is required in a watercourse to meet its environmental needs taking into account the sensitivity of the watercourse and the extent to which it has been subject to artificial modifications. The EFI is a relatively high-level calculation of the environmental flow requirements in a watercourse and was devised to provide an indication of where there was evidence of flow stress. Its aim was to identify where further detailed investigation would be needed which would then provide information on which to base decisions relating to the need for abstraction reduction. It is our view that the EFI should still be used as an indicator of

[29] Abstraction licensing strategies (CAMS process). Available from: https://www.gov.uk/government/collections/water-abstraction-licensing-strategies-cams-process

where further assessment is needed rather than be used for making detailed investment decisions.

Water Resources in the South East (WRSE) - Environment

2.56 We are undertaking our planning on a regional basis with other water companies (See Annex 1 and 2 of WRSE's draft Regional Plan). For the development of the regional plan all companies have provided information to WRSE on potential future reductions in abstraction to improve the environment through scenarios developed together with the EA.

Environment Agency Guidance

2.57 The EA has set out guidance for the development of an environmental destination to reduce public water supply abstraction licences, with the expectation of reducing impact on water-dependent habitats and improving their health. The EA target is to achieve these abstraction licence reductions by 2050. As a result, there is a need to include the consequences of future potential abstraction licence reductions in developing the regional WRMP with WRSE, which covers the period 2025 to 2075. The consideration of licence reductions that may be required in the long term is a key change in the Water Resources Planning Guideline between WRMP19 and WRMP24.

The National Framework for Water Resources[30] introduced the concept of developing an 'Environmental Destination' and set out the requirement for Regional Groups to investigate and develop long-term Environmental Destinations. Alongside this, the EA developed scenarios[31], using consistent methods across England to determine flow changes that would be necessary to meet EFIs (Environmental Flow Indicators) across all catchments. The different scenarios represent different ways that a 'climate perturbed' EFI could be calculated, and some scenarios involve assigning different 'abstraction sensitivity bands' to some catchments; the abstraction sensitivity band determines what proportion of 'natural' flow should be left for the environment in calculation of an EFI.

WRSE Environmental Improvement Scenarios

2.58 In setting out its view of what an environmental destination looks like, the EA developed a number of scenarios that evolved progressively into some of the scenarios that we have included in our WRMP. In parallel, we defined alternative scenarios for future abstraction licence reductions, which have also evolved. We describe in Section 5 the methods used to reach the scenarios that we have provided to WRSE to help develop the regional plan and our resulting WRMP24. Our response to this has been co-ordinated with WRSE and is also discussed in Section 5.

[30] Environment Agency, 2020, Meeting our Future Water Needs: A National Framework for Water Resources, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872759/National_Framework_for_water_resources_main_report.pdf

[31] Environment Agency, 2020, Meeting our Future Water Needs: A National Framework for Water Resource – Appendix 4: Longer Term Environmental Water Needs, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/872344/Appendix_4_Longer_term_environmental_water_needs.pdf

Our Customers' View of the Requirement for Sustainability Reductions

2.59 We have undertaken customer research to determine what our customers see as the priority areas for investment.

2.60 Some of the key findings from the research on our customers views were[32]:

- Customers broadly support our proposals to improve the environmental impact of water abstraction beyond current statutory requirements. However some customers are concerned about costs
- When customers are informed about abstraction, they support the work that we have already done to reduce abstraction from vulnerable waterways. They also appreciate the difficulty and cost of further reducing abstraction from vulnerable waterways
- Customers want us to have a high degree of certainty regarding the environmental benefits of reducing abstraction before investing in alternative abstraction resources
- Though customers feel that sustainable abstraction was important, when presented with a range of our priorities they prioritise core delivery issues such as replacing aging mains and pipes and upgrading the sewer network over sustainable abstraction. Sustainable abstraction was ranked second last by customers, below replacing trunk mains, increasing sewer capacity, replacing distribution mains, reducing river spills, replacing lead pipes, and achieving net zero operational carbon
- 90% of customers agree with our plan of areas to reduce abstraction in, with half preferring for this to be completed 2025-2030 and a third by 2030-2035
- There is some concern at the costs for this though, because of rising bills elsewhere. But largely customers see this as a necessary action at a manageable cost (regardless of which duration they selected), as they feel the benefits to making this progress (both environmental and to secure a stable water supply) are clear
- For longer term (2030-2060) abstraction reduction many prefer a 'medium' plan, seeing this as providing meaningful environmental improvements over time with a reasonable end cost to the customer. It is worth noting that, while our customers may have views on what licence reductions we should make, ultimately it will come down to legislation that is imposed and the interpretation of that legislation into government policy

2.61 Therefore, we feel that our customers generally support further investment to address the need to work towards our long-term aspiration 'to cease all abstraction that adversely affects sensitive streams, where supported by our customers'. However, there is concern amongst our customers over the cost that this will entail. They are also concerned about a number of other issues which they consider to be a greater priority, e.g. to ensure a safe and secure water supply and to address polluting discharges to rivers. In view of these customers' concerns we feel it is important to strike the right balance in pursuing the need to reduce adverse abstraction impact through doing so at a pace that is affordable and enables us to ensure the measures we take result in real and demonstrable benefits to the environment. This is important in determining which of the low, medium or high scenarios we follow, and this is set out in Section 10.

[32] PR24-7 Deep Dive: Sustainable Abstraction, February 2022

Priority for implementation in AMP8

2.62 Using the guidance and the prioritisation approach described above and in Section 5 we plan the following sites to be addressed in AMP8 (2025-2030):

- Epsom (River Hogsmill)
- Bradfield (River Pang)
- Netley Mill (River Tillingbourne)
- New Gauge (River Lee)

Epsom

2.63 The Epsom source closure is driven by the pressures on the headwaters of the River Hogsmill which has resulted in the requirement for the AMP7 investigations. The Hogsmill River is an important chalk fed river in South London and is fed by spring flows at the complex of ponds in Epsom. The river is vulnerable to discharges of storm runoff when high rainfall occurs during periods of low groundwater levels. The ponds are augmented by Sutton and East Surrey Water who also have abstractions for public supply in the area of the headwaters. The abstractions by Thames Water are likely to deplete spring flow through suppression of groundwater levels in the Chalk aquifer from which the springs arise.

2.64 Therefore, we have proposed a reduction in abstraction at Epsom of 14.2 Ml/d from 19.2 Ml/d to 5 Ml/d. It is proposed that this option will be delivered over two AMP periods with full reduction in 2035, it cannot be fully delivered by 2030 because of the strategic nature of the network solution required to enable the reduction. However, we will seek to reduce abstraction as much as possible during AMP8 in line with planned delivery for 2035. We are uncertain as to whether delivery by 2035 will be acceptable to the EA and so, in our draft WRMP24, have conservatively assumed that we will make this licence reduction by 2030, so that, at the WRZ level, our investment plans would allow us to make this reduction imminently. The strategic network solution that would be needed is at the sub-WRZ level and would ensure WRZ integrity and the maintenance of supplies to customers who currently rely on the Epsom sources.

2.65 Further reductions in SE London are not possible at the same time as this reduction because of the impact that making further reductions would have on the resilience to forecast growth in SE London. Therefore, reductions in the Darent sources at Horton Kirby, Eynsford and Lullingstone are included in our plan for 2035.

Bradfield

2.66 The Bradfield source closure is driven by the need to address all adverse abstraction impact on the River Pang. The Pang catchment was one of the originally identified chalk streams requiring a solution to low flows in the early 1980s under the ALF (Alleviation of Low Flows) programme. Also, as is mentioned above, the Pang catchment has been selected as one of our 'Flagship catchments' and so is the focus of a programme to improve the catchment so that it is not adversely affected by water resources or water quality pressures. A major scheme to improve the river in its upper reaches was implemented with the closure of the Compton source in 2007 which reduced licensed abstraction by 16.3 Ml/d. Investigations into the impact of the Pangbourne abstraction on the River Pang were undertaken in AMP5 and it was concluded that the River Pang is 'perched' (i.e. there is no connectivity between the base of the river and groundwater) in its lower reaches and so is not affected by groundwater abstraction at Pangbourne. However, there is the potential for the Pangbourne abstraction to affect the Sulham Brook, which is not 'perched'

in the same way as the River Pang and so we have allowed for an abstraction reduction of 5 Ml/d at Pangbourne by 2035.

2.67 That leaves the only remaining abstraction in the Pang catchment at Bradfield. Therefore, we propose to close the Bradfield source in 2030 with a reduction of 1.64 Ml/d in DO.

Netley Mill

2.68 The Netley Mill source reduction is driven by the sensitivity of the upper River Tillingbourne and the WFD no deterioration requirement which is the subject of investigation in AMP7.

2.69 We propose to reduce our abstraction at Netley Mill to no more than recent actual levels of abstraction to ensure WFD compliance. This will be a reduction of 1.2 Ml/d to be implemented by 2030 although we will seek to reduce levels of abstraction to recent actual between now and 2030.

New Gauge

2.70 We propose a reduction in the abstraction at our New Gauge source of 60 Ml/d from 101 Ml/d to 41 Ml/d to be delivered by 2035 with best endeavours to reduce this abstraction by as much as we can towards this target by 2030. The New Gauge reduction can be delivered on a resource neutral basis by leaving the water in the river and abstracting it at our intakes lower down the River Lee so that the reduction will be resource neutral for water supply, however there are potentially significant implications for water quality that will need to be investigated before the scheme can go ahead.

2.71 The reduction at New Gauge will have a direct beneficial impact on flows in the River Lee because it is a surface water abstraction and so all water that is not abstracted will remain in the river. This reduction will enable increased flows in the Amwell Magna Loop which is an old reach of the River Lee with high ecological value and is fed by an offtake from the River Lee Navigation a short distance downstream of New Gauge. Flows into the Amwell Magna Loop are controlled by a weir at Tumbling Bay downstream of Ware and with increased flows in the river Lee the weir settings at Tumbling Bay can be used to maximise the flow into the Loop whilst maintaining sufficient flow for navigation.

2.72 The reduction at New Gauge will need significant investigation into the implications for the water supply system in this part of north London which has been in existence for hundreds of years since the New River was first built in the early 1600s. The New Gauge abstraction provides a vital source of good quality water to the New River which contributes to the filling of the reservoirs in the Lee valley. The New Gauge abstraction is critical to providing water that can dilute the groundwater that is also abstracted into the New River, but which has varying levels of groundwater contamination from bromate resulting from an industrial pollution incident some years ago. Under the current operation of the New River the bromate can be diluted so that the water is able to be used for public supply. The scheme is proposed on a resource neutral basis through the option to take the water at our intakes lower in the River Lee, but this will mean a higher proportion of abstraction downstream of the outfall from Rye Meads STW and so the implications for water quality in the overall supply to the Lee Valley reservoir chain will need investigation. Therefore, this scheme is proposed for delivery over two AMP periods to ensure that the implications can be fully understood in AMP8, and any necessary investment put in place for implementation in AMP9.

Annex A: The requirements and guidance we have had regard to in developing our plan

2.73 Please note that this list does not exhaustively cover the plans, programmes data and tools used in the assessment of environmental impact of our WRMP24. Details of these are available in the relevant technical report for the assessment in question.

- The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019
- Countryside and Rights of Way Act 2000
- Defra Biodiversity Metric 2.0
- Defra Government expectations for water resources planning 2022
- Defra's Enabling a Natural Capital Approach (ENCA) (August 2021)
- Draft Water Resources National Policy Statement
- Eels (England and Wales) Regulations 2009
- Environment (Wales) Act 2016
- Environment Act 1995
- Environmental Assessment of Plans and Programmes Regulations 2004
- Government's 25 Year Environment Plan
- HM Treasury's The Green Book (2020)
- Information Letter EA112021: Addressing deterioration risk from existing abstractions
- Invasive Alien Species (Enforcement and Permitting) Order 2019
- Local Nature Recovery Strategies
- Marine and Coastal Access Act (2009)
- National Planning Policy Framework (July 2021)
- Natural Environment and Rural Communities Act 2006
- Office of the Deputy Prime Minister (2005) A Practical Guide to the Strategic Environmental Assessment Directive
- Raw water transfers - INNS Position Statement - Final April 2022
- Regional Plans NE_NRW Environmental legislation and policy note (Jan 2022)River Basin Management Plans (2015), with updated Catchment Explorer data referred to additionally
- The EA National Framework for Water Resources
- The EA SAI-RAT tool
- The Environment Act 2021 and accompanying targets

- The Water Resources Management Plan (England) Direction 2022
- UKWIR (2020) Deriving a best value water resources management plan
- UKWIR SEA Handbook 2021
- Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
- Water Industry Act 1991
- Water Resources Act 1991
- Water Resources Management Plan Regulations 2007 (2007 regulations)
- Water resources planning guideline (WRPG)
- Water Supply (Water Quality) Regulations 2018
- Well-being and Future Generations (Wales) Act 2015
- Wildlife and Countryside Act 1981
- WRPG Supplementary Guidance 'Environment and Society in decision-making'
- WRPG Supplementary Guidance 'Preventing deterioration'

Annex B: Summary of key requirements from the environmental law and guidance governing our plan

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

2.74 Habitats sites, formerly known as European sites, are protected by the The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (also known as the Habitats Regulations).

2.75 As a competent authority, under these regulations we must carry out a habitats regulations assessment (HRA), to test if a plan or project proposal could significantly harm the designated features of a Habitats site. Habitats sites are:

- Special Areas of Conservation (SACs)
- Special Protection Areas (SPAs)

2.76 Any proposals affecting the following sites would also require an HRA because these are protected by government policy:

- Proposed SACs
- Potential SPAs
- Ramsar sites - wetlands of international importance (both listed and proposed)
- Areas secured as sites compensating for damage to a European site

2.77 In addition to the designated sites themselves, HRA will need to identify any significant habitat outside of the designated site that also supports the qualifying species populations that use the Habitats Site in question. This off-site 'functionally linked land' is particularly relevant to mobile qualifying species (e.g. birds, bats, invertebrates, fish, otters).

Defra Biodiversity Metric

2.78 Defra and Natural England have developed a biodiversity metric to provide a means of assessing changes in biodiversity value (losses or gains) brought about by development or changes in land management.

2.79 Biodiversity metric 2.0 was released in 2019/2020, with subsequent versions released in July 2021 (3.0) and April 2022 (3.1). In early August 2022 The Secretary of State launched an 8-week consultation on the Biodiversity Metric to be used for the purpose of calculating biodiversity net gain as required under the 2021 Environment Act.

2.80 The version of the metric developed as a result of the consultation (v4.0) will need to be used when calculating and mitigating for BNG becomes mandatory for Town and Country Planning Act developments in November 2023. The same requirement will come into force for developments under the 2008 Planning Act by the end of 2025. For options in our plan requiring planning permission or which could be considered nationally significant infrastructure projects, we will need to comply with these regulations by calculating the BNG impact of these options using version 4.0 of the metric and mitigating up to at least the level prescribed by these regulations.

Defra Government expectations for water resources planning 2022

Within these expectations, Defra expects us to include:

- A step change in rectifying overreliance on unsustainable water sources

- The actions we will take to deliver a healthy and resilient water environment
- Appropriate catchment solutions and green infrastructure, based on strong stakeholder engagement and evidence, to maximise wider environmental benefits
- How we contribute to the water sector's net zero carbon target by 2030, and how this will be maintained beyond 2030
- How we contribute to the government's net zero carbon targets and commitments
- How low carbon solutions will be used in developing new water resources schemes and their operation
- Enable the sector to contribute towards achieving the goals set by the 25 Year Environment Plan, including implementing the National Adaptation Programme and contributing towards the target to restore nature

Defra's Enabling a Natural Capital Approach (ENCA) (August 2021)

2.81 While there is currently no legislative requirement for Natural Capital Accounting (NCA) and Ecosystem Services assessment (ESS), the WRPG states that companies in England and Wales should use natural capital assessment (referred to as natural resources accounting in Wales) in their decision-making. The EA and NRW have published separate supplementary guidance on Environment and Society in decision-making which provides more detail about the expectation for natural capital assessment. This guidance states that we should undertake a natural capital assessment on the options in our feasible list, taking a proportionate approach and considering the following five ecosystem services as a minimum:

- Biodiversity and habitat
- Climate regulation
- Natural hazard regulation
- Water purification
- Water regulation

Draft Water Resources National Policy Statement

2.82 The draft NPS identifies the importance of biodiversity and nature conservation through reference to policy and regulatory requirements. It also clearly states the responsibilities on the Secretary of State and developers with regard to international sites (i.e. project compliance with the Habitats Regulations). The draft NPS also sets out a range of mitigation and conservation measures that we should consider for WRMP options that could be considered as developments.

Eels (England and Wales) Regulations 2009

2.83 These regulations establish measures for the recovery of the stock of European eel. As part of the design of our options, we must consider:

- The requirement to notify the EA of the construction, alteration or maintenance of any structure likely to affect the passage of eels
- Where any such structure exists, the requirement to construct and operate an eel pass to allow the free passage of eels
- The removal of any obstruction, if deemed necessary

- The use of eel screens to exclude eels from water abstraction and discharge points
- If necessary, the use of a by-wash to return excluded eels to the waters they came from

Environmental Assessment of Plans and Programmes Regulations 2004

2.84 This transposes the SEA Directive into law. Article 1 of the Directive states that its objective is "to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development"

2.85 WRMPs are a statutory requirement and therefore the English SEA Regulations apply. Companies in England therefore need to consider whether SEA of their WRMP is required through the SEA screening process. The English and Welsh WRPG issued by EA, NRW and Ofwat (in conjunction with Defra and Welsh Government) for WRMP24 requires companies to 'screen for a Strategic Environment Assessment (SEA) and carry out a 'full' SEA if required'.

2.86 In the context of WRMP, the WRPG (E&S in decision making) mirrors the regulations in stating that the aim should be to evaluate the effects of the plan and reasonable alternatives taking into account the objectives and the geographical scope of the plan.

Government's 25 Year Environment Plan

2.87 The 25 Year Environment Plan was published in January 2018. It sets out the government's ten goals for improving the environment within a generation and leaving it in a better state than we found it. The 25 YEP became the first Environmental Improvement Plan under the Environment Act 2021, with subsequently updated plans to be released every five years. The aims of the plan include:

- Reducing the damaging abstraction of water from rivers and groundwater, ensuring that by 2021 the proportion of water bodies with enough water to support environmental standards increases from 82% to 90% for surface water bodies and from 72% to 77% for groundwater bodies
- Reaching or exceeding objectives for rivers, lakes, coastal and ground waters that are specially protected, whether for biodiversity or drinking water as per our River Basin Management Plans
- Restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term
- Creating or restoring 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits
- Safeguarding and enhancing the beauty of our natural scenery and improving its environmental value while being sensitive to considerations of its heritage
- Making sure that there are high quality, accessible, natural spaces close to where people live and work, particularly in urban areas, and encouraging more people to spend time in them to benefit their health and wellbeing
- Continuing to cut greenhouse gas emissions including from land use, land use change, the agriculture and waste sectors and the use of fluorinated gases

- Making sure that all policies, programmes and investment decisions take into account the possible extent of climate change this century
- Managing and reducing the impact of existing plant and animal diseases; lowering the risk of new ones and tackling invasive non-native species

Information Letter EA112021: Addressing deterioration risk from existing abstractions and Information Letter EA112022: Addressing deterioration risk from existing abstractions

2.88 The EA's letters have described the need to take action to prevent deterioration occurring. For water resources, the agency has communicated that this will typically mean reducing the quantities on abstraction licences to better reflect current usage. The approach that the agency is implementing to change abstraction licences to prevent deterioration is outline below:

Environmental scenario	Licence change
flows in a water body do not support good ecological status (GES); or • • a groundwater body is at poor quantitative status; and • • there is evidence that the ecology is damaged by abstraction; and • • there is planned growth	Cap licences at recent actual average abstraction rates
flows in a water body do not support good ecological status; or • • a groundwater body is at poor quantitative status; but • • there is no planned growth	Cap licences at maximum peak abstraction rates
flows in a water body support good ecological status; or • • a groundwater body is at good quantitative status; and • • planned growth is likely to cause deterioration to poor status	Cap licences at maximum peak abstraction rates

2.89 The capping of licences at maximum peak is aimed to provide us with flexibility to meet peaks in demand. We must not plan to use this water to service future growth as the agency's approach to managing deterioration risks assumes that patterns of abstraction will largely remain the same. We should not retain unused licences or unused parts of licences which pose a risk of causing deterioration. If we have any licences that fall in this category, we should plan to give them up. Nature-based solutions, hydro-morphological rehabilitation and the Catchment Based Approach may also have a role to play in mitigating potential deterioration in advance of making changes to licences.

2.90 The agency are expecting us to use ‘recent actual average’ abstraction to plan water availability in our water resources management plans unless they have specifically agreed an alternative with us. In some cases, the extent of licence caps may allow operational flexibility depending on the risk of deterioration. Where this is the case, ‘recent actual average’ should still be used for planning unless the agency have confirmed that some sustainable growth can be accommodated without causing deterioration.

Invasive Alien Species (Enforcement and Permitting) Order 2019

2.91 An enforcement regime is introduced, including criminal offences, licencing, and permitting provisions for Regulation (EU) No. 1143/2014 on the prevention and management of the introduction and spread of invasive alien species ("The IAS Regulation"). The IAS Regulation lists species of concern which cannot be imported, kept, bred / grown, transported, sold, used, allowed to reproduce, or released into the environment. There are currently 49 species listed, which can be found in the Annex of Regulation (EU) No. 2016/1141 adopting a list of invasive alien species of Union concern pursuant to Regulation (EU) No 1143/2014.

2.92 The regulator is Natural England for England, offshore marine areas, and in relation to imports and exports. In Wales, in it is Natural Resources Body for Wales (NRA).

2.93 Our plans must comply with these requirements. In considering and designing our WRMP options, we must effectively avoid and manage risk of INNS transfer along existing or new pathways.

Local Nature Recovery Strategies

2.94 Local nature recovery strategies (LNRSs) are to be created for areas in England. The location of these LNRSs is to be determined, but together they must cover all of England.

2.95 LNRSs must be made and published by the responsible authority; this may be the local authority, the Mayor of London, the combined authority mayor, a National Park Authority, the Broads Authority, or Natural England. The LNRS must include:

- A statement of biodiversity priorities for the strategy area; and
- A local habitat map for the area

2.96 The WRPG SG (E&S in Decision Making) encourages water companies (as best practice) to investigate what a local Nature Recovery Strategy could look like for our zone of influence and whether the Local Planning Authorities which overlap with our plan are developing such strategies.

National Planning Policy Framework (July 2021)

2.97 Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

a) An economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure

b) A social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed, beautiful and safe places, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being

c) An environmental objective – to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy

Natural Environment and Rural Communities Act 2006

2.98 This legislation covers a broad national remit, and states that we must, in exercising our functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.

Raw water transfers - INNS Position Statement - Final April 2022

2.99 This position statement states that:

- Linking isolated catchments: New schemes that create a hydrological connection between locations not already connected will be required to have mitigation measures in place to ensure;
  - INNS cannot be spread by any new transfers
  - The environmental objectives in river basin management plans (RBMPs) are met
  - All other legislative requirements are met
- Already connected catchments: Where new schemes create a hydrological connection between locations that have an existing hydrological link, the EA will require proponents to undertake an assessment of the increased risk that their scheme poses (i.e. considering existing pathways and potential for spread via these). The EA will decide whether mitigation will be necessary for those schemes on a case-by-case basis to ensure they do not increase the risk or speed of INNS transfers, to ensure RBMP objectives and other legislative requirements are met.

2.100 Where water transfer into another watercourse still remains the preferred solution, mitigation will need to be fail safe, resilient and completely effective for all life stages (large fragments/animals/microscopic organisms and larval stages). We will need to propose with evidence this level of assurance for any such schemes before any licence can be granted.

River Basin Management Plans (2015)

2.101 The RBMPs describe the current state of the water environment for each RBD, the pressures affecting the water environment, the objectives for protecting and improving it, and the programme of measures needed to achieve the statutory environmental objectives of the WFD. RBMPs are subject to a six year planning cycle and are to be routinely reviewed and updated to ensure compliance with the overall WFD objectives. RBMPs were first published in 2009, and were subsequently updated in 2015, with draft RBMPs published for consultation in October 2021.

Regional plans NE NRW Environmental legislation policy note (Jan 2022)

2.102 Natural England sees the following as the key interactions between Regional Water Resource Planning (including setting a long-term environmental destination) and nature conservation legislation/policy:

- As the EA's National Framework for Water acknowledges, the process of Regional Water Resource Planning must comply with Habitats Regulations Assessment (HRA) legislation. As such, the water companies forming Regional Groups (jointly and severally the 'competent authority' for the purposes of HRA) must:
  - Carry out an HRA of the implications for European site(s) of each individual water transfer project as this comes forward during the RAPID process.

  - Carry out an HRA of the implications for European site(s) of each regional plan (including any planned water transfers integrated into such plans); and

- HRA is a two-stage process that considers: (i) the likely significant effects (LSE) of plans or projects (either alone or in combination with other plans or projects) for European site(s); and (ii) if LSE cannot be excluded, any adverse effects from the plan or project (either alone or in combination with other plans or projects) on the integrity (AEOI) of European site(s). Plans or projects may not be permitted unless AEOI can be ruled out with certainty (beyond reasonable scientific doubt) – unless there are imperative reasons of overriding public interest (IROPI) and the legal tests in HRA legislation for an IROPI derogation are satisfied.

- When developing Regional Plans and deciding on water transfers, the water companies forming Regional Groups (jointly and severally the 'competent authority' for the purposes of the Habitats Regulations) should also consider their wider duties under Regulations 9(1) and 9(3) of the Habitats Regulations.

The EA's National Framework for Water Resources Planning

2.103 These documents set the strategic direction for long term regional water resources planning. The framework is built on a shared vision to, among other things, leave the environment in a better state than we found it. The national framework marks a step change in water resources planning; the five regional water resources groups will produce a set of co-ordinated, cross-sector plans.

2.104 The National Water Resources Planning Framework states that Regional Plans must comply with SEA and HRA legislation. They must include enhanced environmental improvements and follow a catchment based approach. It must also understand and address the needs of the environment in a collaborative way to deliver long-term improvements

2.105 It will set out the preferred plan for the region – delivered through a set of options that present the best value to customers, society and the environment, rather than simply least cost.

2.106 Regional plans should seek to pro-actively enhance the environment and increase ambition in this area. This includes:

- Meeting the water requirements of sites specially protected for nature conservation
- Restoring sustainable levels of abstraction to freshwater and wetland habitats of principal importance listed under Section 41 of the Natural Environment and Rural Communities Act (2006), particularly chalk rivers and other sites identified as priority habitats for restoration
- Restoring river flows to support the recovery of salmonid fish populations
- Embedding the principle that new development should result in net environmental gain - the aim is for every plan to have a net positive impact on the local and national environment

2.107 Regional groups should work closely with the EA, Natural England and environmental groups as they are preparing their plans to agree a clear picture of future environmental water needs and a plan, including timescales, to meet those needs. This long term view should be used to inform investment plans and make sure they are making sensible changes that contribute to the longer term goal. This is important to take us beyond the current iterative approach to environmental improvement in public water supply which sees changes made in a five year cycle. Regional

groups should also make sure that plans are in line with the commitments of their members to reduce greenhouse gas emissions and that the greenhouse gas emissions of different options should be assessed and fed into their options appraisal. To take this work forward regional groups should use the information in the national scenarios as a starting point for discussions with stakeholders and regulators. These will focus on environmental priorities to develop an agreed long term environmental destination and a plan to achieve it including short, medium and longer term actions.

The EA's SAI-RAT tool

2.108 We must as part our plan, use the EA's SAI-RAT tool to assess the INNS risk posed by our options and to inform option screening and a mitigation strategy as needed

The Environment Act 2021 and accompanying targets

2.109 The Act introduces several legal requirements on entities such as water companies, described below, and requires that Government proposes further targets in specific areas related to the environment. These are available in Annex C, and have been consulted on and it is expected that they will be laid before Parliament by 31st October 2022 to put them into law.

- Resource management: Water undertakers in England and Wales may be required to prepare and publish joint proposals to identify measures they can take jointly to improve water resource management and development. The content the proposals must cover can be specified by Ministers. The Secretary of State and the Welsh Ministers are also given power to make regulations for the preparation and publication of water resource management plans and drought plans
- Drainage and sewerage: Sewerage undertakers are required to prepare, publish and maintain a drainage and sewerage management plan under the Water Industry Act 1991
- Water quality: Regulations may be made about the substances that should be taken into account when assessing the chemical status of surface or groundwater. Standards may also be specified for water quality
- Nature and biodiversity: A new general condition is added to the Town and Country Planning Act 1990 so that planning permission granted in England requires a biodiversity gain plan (to achieve a minimum of 10% net gain) to be submitted and approved. Nationally Significant Infrastructure Projects must also improve the natural local environment through a new biodiversity net gain requirement. This is implemented through changes to the Planning Act 2008. For NSIPs, the government is currently proposing a core 'biodiversity gain statement', which is essentially a freestanding version of the part of an NPS that would require BNG and which will ensure that all types of development subject to the Planning Act 2008 system will be required to demonstrate BNG. The new statement(s) will initially set out the biodiversity gain requirement for all types of NSIP, the date from which the objective must be achieved and the stage of project design that the commencement threshold applies to

The Water Resources Management Plan (England) Direction 2022

2.110 As part of our plan, we need to describe:

- How the GHG emissions of our plan contribute to company GHG emissions

- How we will manage the GHG emissions of our options and how these steps to manage them will contribute to the company's and (water sector's) and government's ambitions on net zero
- How low carbon solutions will be used in developing new water resources schemes and their operation

Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

2.111 The WFD established a legislative framework for the protection of surface waters (including rivers, lakes, transitional waters, estuarine waters and coastal waters) and groundwater throughout the EU. The WFD is transposed into English and Welsh law by the 2017 Regulations.

2.112 In preparing and publishing a plan there is a requirement to take account of the WFD. WRMPs/DPs are a statutory requirement and therefore the England & Wales WFD Regulations apply. Companies in England are therefore required to demonstrate that their plan has fulfilled WFD obligations by ensuring that their plan supports the environmental objectives in the river basin management plans, including preventing deterioration, achieving protected area objectives and achieving water body status objectives.

2.113 The overall aims and objectives of the WFD are to:

- Enhance the status and prevent further deterioration of surface water bodies, groundwater bodies and their ecosystems
- Ensure progressive reduction of groundwater pollution
- Reduce pollution of water, especially by Priority Substances and Certain Other Pollutants (Annex II, Environmental Quality Standards (EQS) Directive (2008/105/EC) as amended)
- Contribute to mitigating the effects of floods and droughts
- Achieve at least good surface water status for all surface water bodies and good chemical status in groundwater bodies by 2015 (Article 4, Water Framework Directive (WFD) (2000/60/EC)) (or good ecological potential in the case of artificial or heavily modified water bodies)
- Promote sustainable water use

Water Supply (Water Quality) Regulations 2018

2.114 Every water undertaker or supplementary licensee must carry out a risk assessment of each of its treatment works and connected supply system in order to establish whether there is a significant risk of supplying water from those works or supply system that would constitute a potential danger to human health or is likely to be unwholesome. This includes any such options we deliver as part of our WRMP.

Wildlife and Countryside Act 1981

2.115 This legislation covers wildlife crime, and also requires us to have regard to any potential impacts our options might have on SSSIs.

WRPG Supplementary Guidance 'Preventing deterioration'

2.116 This guidance relates to how the actions detailed in the EA's letters on avoiding deterioration should be presented in terms of our plan - more details of the requirements and how we have actioned this are available in Sections 4 and 5.

Annex C: Government's proposed Environmental Targets, the setting of which is mandated under the Environment Act (2021)

2.117 Below is a summary of the targets proposed by Government; as such, 'We' in this instance refers to Government.

Biodiversity on land	The Environment Act provides for a nearer-term target to halt the decline in species abundance by 2030, a world-leading commitment. We also propose targets to: • increase species abundance by at least 10% by 2042, compared to 2030 levels. • improve the England-level GB Red List Index for species extinction risk by 2042, compared to 2022 levels. • create or restore in excess of 500,000 hectares of a range of wildlife-rich habitats outside protected sites by 2042, compared to 2022 levels. Nature has been in decline for decades and halting the decline of species in the timeframe of the 2030 species abundance target will be a substantial challenge. Through this target we are committing ourselves to an ambitious objective and leading the way internationally. For the long-term targets, we have proposed end dates of 2042 in order to align with our 25 Year Environment Plan goals.
Biodiversity in the sea	70% of the designated features in the MPA network to be in favourable condition by 2042, with the remainder in recovering condition, and additional reporting on changes in individual feature condition. The MPA network included in this target will cover English inshore and offshore Marine Conservation Zones, Special Areas of Conservation and Special Protection Areas, so far as they are below mean high water.
Improve water quality and availability	In the 25 Year Environment Plan we committed to restoring three quarters of our water bodies to be close to their natural state as soon as is practicable. We also committed to increasing water supply and incentivising greater water efficiency and reduced personal use. We propose setting long term targets to reduce specific pressures and tackle some of the serious challenges that remain in achieving our ambition in the 25 Year Environment Plan of clean and plentiful water. These will complement existing commitments under the Water Environment Regulations.
Improve water quality and availability	Abandoned metal mines target: Reduce the length of rivers and estuaries polluted by target substances from abandoned mines by 50% by 2037 against a baseline of around 1,500km. Nutrient targets: to address the two principal sources of nutrient pollution by 2037:

	• - Reduce nitrogen, phosphorus and sediment pollution from agriculture to the water environment by at least 40% by 2037 against a 2018 baseline. • - Reduce phosphorus loadings from treated wastewater by 80% by 2037 against a 2020 baseline. Water demand: Reduce the use of public water supply in England per head of population by 20% by 2037 against a 2019/20 baseline. We propose setting these targets for 2037, a shorter timeframe than several other target areas. Action taken now to achieve improvements in the water environment will support the delivery of the wider suite of proposed targets, including species abundance. We will also shortly outline our ambitions to reduce the harm caused by storm overflows in the Storm Overflows Plan. The evidence report[14] sets out further details of the development of these target areas. During the period of 2020-2027, water companies will undertake projects to deliver a phosphorus reduction of around 50% against a 2020 baseline. We want to see a higher level of ambition and propose setting a longer-term target to build upon this progress.
Woodland cover	Increase tree canopy and woodland cover from 14.5% to 17.5% of total land area in England by 2050.
Resource efficiency and waste reduction	Reduce residual waste (excluding major mineral wastes) kg per capita by 50% by 2042 from 2019 levels. It is proposed that this will be measured as a reduction from the 2019 level, which is estimated to be approximately 560 kg per capita[24]. In the Resources and Waste Strategy (RWS)27, we set a strategic ambition to at least double resource productivity by 2050. Resource productivity measures the economic value per unit of raw material use. Given the complexity of the resource productivity target, more time is needed to develop the evidence base and assess policies. We seek views now to inform future work on developing this target.
Air quality	Annual Mean Concentration Target ('concentration target') – a target of 10 micrograms per cubic metre (µg m-3) to be met across England by 2040. Population Exposure Reduction Target ('exposure reduction target') – a 35% reduction in population exposure by 2040 (compared to a base year of 2018). These targets focus on reducing concentrations of fine particulate matter (PM2.5) as evidence shows that this is the pollutant of greatest harm to human health. Particulate matter (PM) is anything in the air which is not a gas. It can come from natural sources or human-made sources and be formed through chemical reactions between other pollutants in the atmosphere. PM2.5 is particulate matter with a diameter of 2.5 microns or less, which is one 400th of a millimetre. Further information on PM2.5 can be found in the evidence report.

	Whilst it is likely that some components of PM2.5 may be more harmful than others, evidence is not sufficiently developed to be able to focus on specific components for the purposes of target setting. Therefore, current evidence supports a focus on PM2.5 total mass. However, as the evidence develops, there may be scope to develop more specific targets that are able to align more closely with the most harmful components of PM2.5.


Thames
Water