

Section 1

Introduction and background





Table of contents

A.	Introduction to water resources planning	2
	What is a Water Resources Management Plan?	2
B.	Our water supply area	4
C.	Levels of service provided to our customers	6
D.	Planning framework	7
	Water resources long-term planning framework	7
	Water Resources Planning Guideline (WRPG)	9
	25-year Environment Plan	10
	National Infrastructure Commission – Preparing for a drier future	10
	Main priorities in developing our plan	13
	Public inquiry 2010	20
E.	The relationship between the WRMP and other plans	22
F.	Engagement with customers, regulators and stakeholders	24
	Customers	26
	Regulators	30
	Stakeholders	31
G.	Engagement with our Board	32
H.	Quality assurance	32
I.	Public consultation on our draft WRMP19	33
J.	Further public consultation on our revised draft WRMP19	35

Figures

Figure 1-1: The step-wise process to develop a WRMP	3
Figure 1-2: Thames Water supply area showing the WRZs	5
Figure 1-3: Drought resilience assessment for London	8
Figure 1-4: Maps of forecast regional deficits by 2040 under three future scenarios	9
Figure 1-5: National Infrastructure Commission summary of key findings	12
Figure 1-6: Overview of the customer research and engagement programme	26



Tables

Table 1-1: Our levels of service for water restrictions based on historic twentieth century droughts	7
Table 1-2: WRMP planning priorities	14
Table 1-3: Summary of instructions from the 2010 public inquiry	20
Table 1-4: Engagement framework	25
Table 1-5: Number of responses received to the public consultation and channel for response	34



Section 1.

Introduction and background

In this section we cover:

- The purpose of a Water Resources Management Plan (WRMP)
- An overview of our water supply area and the levels of service we provide to our customers
- An outline of the statutory and policy framework which shapes the preparation of the WRMP
- The relationship between the WRMP and other plans, such as the Business Plan
- Engagement with customers, regulators and stakeholders during the development of the WRMP
- Engagement with our Board and quality assurance
- Public consultations held on the draft WRMP and revised draft WRMP



A. Introduction to water resources planning

What is a Water Resources Management Plan?

- 1.1 A secure water supply is essential for public health, the environment and the economy. Water companies have a statutory duty to develop and maintain efficient and economical systems of water service provision which will provide security of supply for customers¹. Every five years water companies are required² to produce a WRMP. Government, and regulators, publish reference documents, namely, the Guiding Principles³ and Water Resource Planning Guideline (WRPG)⁴, which provide a framework for the development of WRMPs.
- 1.2 The WRMP is a strategic plan which sets out how the company plans to maintain the balance between supply and demand for water for a minimum planning period of 25 years, although companies with particularly complex planning problems are encouraged to take a longer term view⁴.
- 1.3 The main components of a WRMP, and the step-wise process to develop a WRMP, are shown in Figure 1-1.

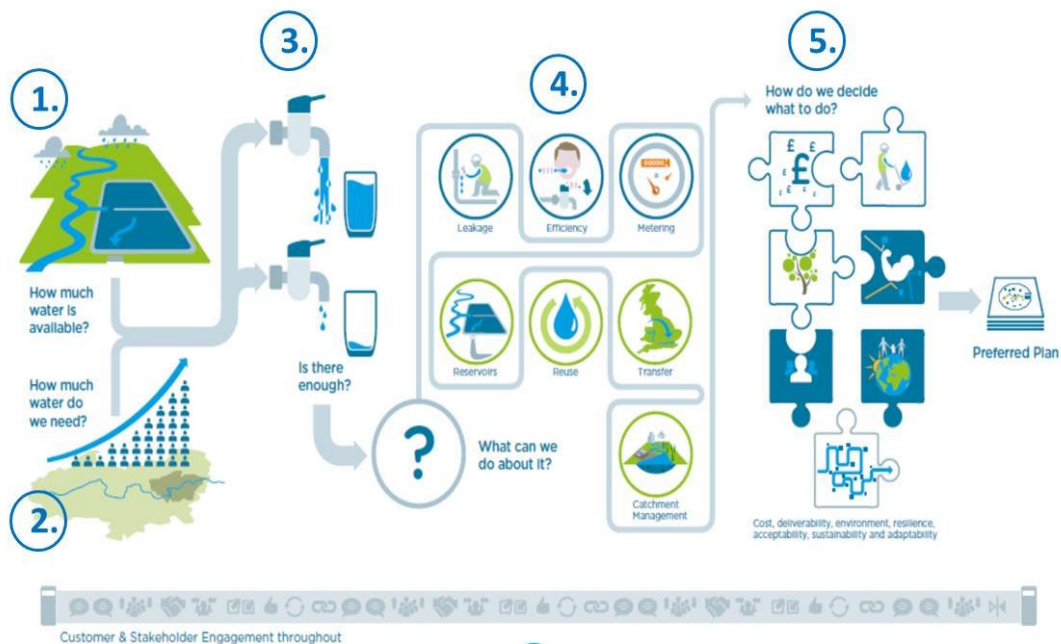
¹ Water Industry Act 1991, Section 37

² Water Industry Act 1991, Sections 37A to 37D (as amended by the Water Act 2003)

³ Defra, Guiding principles for water resources planning for water companies operating wholly or mainly in England, May 2016

⁴ Environment Agency and Natural Resources Wales, Final Water Resources Planning Guideline: July 2018.

Figure 1-1: The step-wise process to develop a WRMP



- 1) **How much water is available?** This is a forecast of the amount of water available for public water supply now and how this might change over the planning period.
- 2) **How much water do we need?** This is a forecast of demand for water setting out how much water customers need now and how this might change over the planning period.
- 3) **Is there enough?** This is the baseline supply demand balance. It is an estimate of the water resource position produced by comparing the demand forecast, including an allowance for uncertainty called headroom, and the supply forecast. This identifies if there is a surplus or deficit of water for each year of the planning period.
- 4) **What can we do about it?** Where a deficit is identified, a range of options to manage demand for water and provide additional water supply are assessed.
- 5) **How do we decide what to do?** Taking account of information including cost, environmental impact and customers' preferences we develop a programme of options to ensure a secure supply of water over the planning period.

Customer and stakeholder engagement: Throughout the process we have engaged with our customers and stakeholders to seek their input and challenge to inform the development of the WRMP19.



- 1.4 To ensure we can provide our customers with the best possible value over the long term we have developed our WRMP19 over an 80 year planning period and designed it to satisfy three main objectives:
- To provide a secure supply of water for our customers addressing the supply demand deficits that we forecast in our region
 - To improve resilience to a severe drought
 - To look beyond the needs and opportunities of our supply area alone and take into account the growing needs of the wider south east of England. In developing our plan, we have worked with neighbouring companies in the south east of England to ensure an effective and efficient outcome for customers across the region.
- 1.5 Our approach is explained in more detail in Section 10: Programme appraisal and scenario testing.

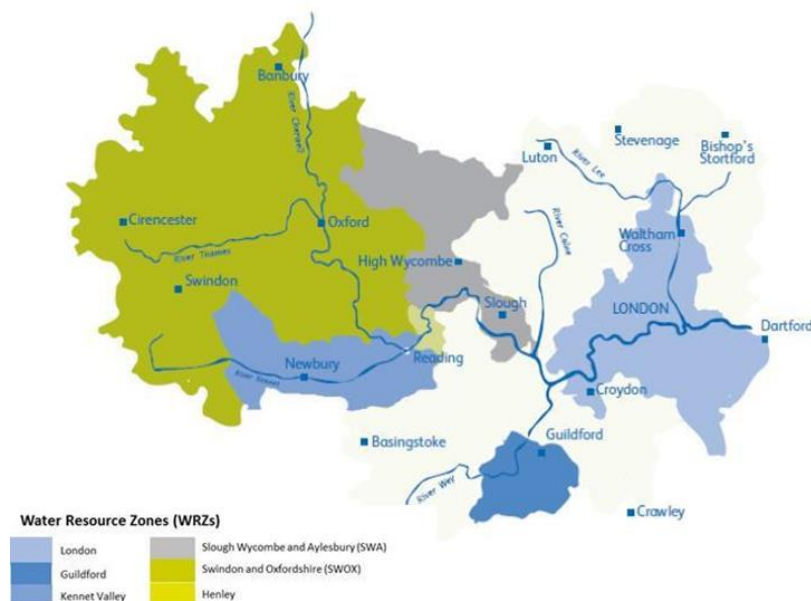
B. Our water supply area

- 1.6 Our water supply area extends from Cirencester in the west to Dartford in the east and from Banbury in the north to Guildford in the south and covers over 13,000 square km. Every day, we supply around 2,600 million litres of water to around 10 million people and 250,000 businesses⁵. Water supplies are derived from a mixture of surface water sources (mostly from large storage reservoirs supplied from the River Thames and River Lee) and groundwater sources. We also have a desalination water treatment works on the River Thames (Tideway) that can supplement water supplies at times of high demand and/or during drought conditions.
- 1.7 For planning purposes our supply area is divided into six water resource zones (WRZs) as presented in Figure 1-2. A WRZ describes an area within which the abstraction and distribution of water to meet demand is largely self-contained and all customers experience the same risk of supply failure and the same level of service. We have defined our WRZs using the Environment Agency's WRZ assessment methods⁶. We undertake the WRMP planning process for each WRZ to ensure we can provide a secure supply of water to our customers in that zone.

⁵ In April 2017 a competitive retail market for water services for business customers was introduced. This means that business customers can choose which retailer they buy their water and wastewater services from. The retailer provides billing, customer service and efficiency advice to the business customer, while Thames Water, as a wholesale water provider, still has an obligation to supply the water and sewerage services and manage the infrastructure.

⁶ Environment Agency, Water Resource Zone Integrity, 2016

Figure 1-2: Thames Water supply area showing the WRZs



- 1.8 London WRZ is the largest of the six zones and covers much of the Greater London area. The water resources for London are largely based on abstraction from the River Thames, which is stored in reservoirs, and the remainder from underground sources (aquifers) via boreholes.
- 1.9 The next largest zone is the Swindon and Oxfordshire (SWOX) WRZ. This zone is supplied mainly from groundwater (60%), supported by river abstraction and a reservoir, sited near Oxford.
- 1.10 The other zones to the west of London are Kennet Valley (includes Reading and Newbury); Henley; Slough, Wycombe and Aylesbury (SWA) and Guildford. These latter four zones are largely reliant on groundwater abstraction although there are abstractions directly from local rivers, notably the River Kennet in Reading and the River Wey near Guildford.
- 1.11 A more detailed map of each WRZ along with a high level description of each zone can be found in Appendix D: Water resource zone integrity.
- 1.12 As a part of the development of our draft WRMP19 we reviewed the WRZs with the Environment Agency and agreed that they were still the most appropriate planning units⁷.

⁷ Thames Water and Environment Agency Water resources update meeting, September 2017

C. Levels of service provided to our customers

- 1.13 In a succession of dry years, measures to reduce demand for water e.g. Temporary Use Bans (TUBs) and Non-essential Use Bans (NEUBs), and measures to allow increased abstraction, outside that permitted by an abstraction licence, may be required. Such measures are known as drought interventions. Drought interventions either have a direct effect on customers (e.g. TUBs) or the environment (e.g. drought permits for temporary changes to abstraction licences).
- 1.14 We set targets regarding the average frequency with which such interventions will be implemented. These are known as levels of service. The aim of the WRMP is to ensure that we can meet customer demands for water in a dry year without the need for drought interventions at a frequency that exceeds the stated level of service. Our levels of service are shown in Table 1-1.
- 1.15 We consulted household and non-household customers on levels of service for water use restrictions, specifically seeking their feedback on whether the levels of service should deteriorate, be maintained or improved⁸. The main findings are summarised as:
- Overall customers indicated that they did not want deterioration in the levels of service. This was particularly strong for the more severe restrictions such as rota cuts and drought permits
 - The current expected frequency of sprinkler bans, hosepipe bans, and NEUBs were not perceived to have significant impacts on customers' day-to-day activities and as such customers indicated that they were broadly satisfied with the current levels of service
 - Customers did show support for improved levels of service for the more severe restrictions. For rota-cuts (Level 4 restrictions), both household and non-household customers showed some support for an improvement to a 1 in 200 year level of service (from the current 1 in 100 year).
- 1.16 In line with customers' preferences for Level 4 restrictions, and guidelines published by the Environment Agency, our plan reduces the risk of these restrictions to a 1:200 year frequency over the next ten years. The lead time to enact this change will ensure it is deliverable and affordable for our customers.
- 1.17 Further information on the customer research is provided in Appendix T: Our customer priorities and preferences.
- 1.18 In early 2019 we held focus groups with customers to explore their appetite for investment to ensure resilience to a 1-500 year drought, referred to as an extreme drought. The findings showed that customers supported planning for enhanced resilience taking account of the low probability but high consequences of an extreme drought. Whilst the findings were clear, we recognise that the research was focused on this single topic hence there are methodological caveats, and as such we consider this as the first stage in discussions with customers on this topic. We plan to undertake further work ahead of WRMP24 to explore this topic further.
- 1.19 The NIC⁹ suggested that there is limited public appreciation of the consequences of drought and the public find it hard to understand the risk of low probability, high impact events. Therefore, based on its understanding of the challenges and risks, the NIC has stated its

⁸ Appendix T: Our customer priorities and preferences

⁹ National Infrastructure Commission, Preparing for a drier future, April 2018

support for planning for increased drought resilience for the long term by enhancing the capacity of the water supply system.

Table 1-1: Our levels of service for water restrictions based on historic twentieth century droughts

Restriction level	Frequency of occurrence	Water use restrictions
Level 1	1 year in 5 on average	Intensive media campaign
Level 2	1 year in 10 on average	Sprinkler/unattended hosepipe ban, enhanced media campaign
Level 3	1 year in 20 on average	TUB (formerly hosepipe ban), Drought Direction 2011 (formerly NEUBs) requiring the granting of an Ordinary Drought Order. Note these would be applied in a staged manner in line with our Drought Plan ¹⁰
Level 4	Never (In reality this equates to ~ 1 year in 100 years on average)	If extreme measures (such as standpipes and rota cuts) were necessary, their implementation would require an Emergency Drought Order

D. Planning framework

Water resources long-term planning framework

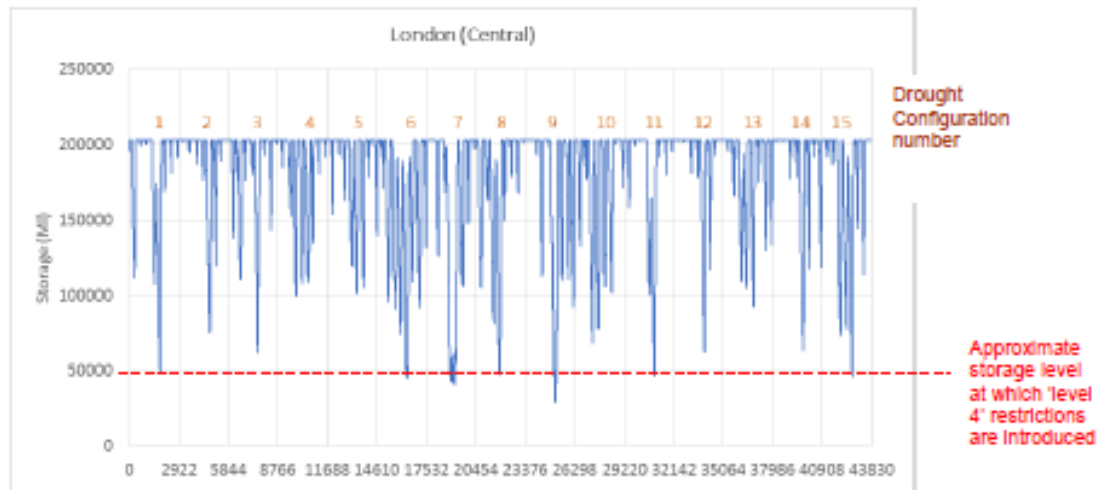
- 1.20 In 2015, following concern around the growing risk of drought in England and Wales, the Government asked the water industry to look at the future challenges and solutions in terms of resilience to the risk of drought. Water company's levels of resilience to drought are a matter of public interest and public policy. A study¹¹ was commissioned by WaterUK, the trade association for the UK Water Industry, together with water companies and regulators. The study considered the possible effects of climate change, population growth, environmental protection measures, and trends in water use to produce a wide range of potential future scenarios, looking 50 years ahead.
- 1.21 The results of the study showed that the problem is more pronounced than previously thought and if we carry on with "business as usual" droughts are likely to become more frequent and more geographically widespread than previously understood. Drier areas of the country, namely the south and the east of England, face a higher risk of more severe droughts than were experienced in the past. The modelling shows that measures to manage demand and enhance supplies of water are needed to contain the risk of drought.
- 1.22 The analysis assessed the resilience of water supplies to 15 drought scenarios (five historic and 10 modelled). Figure 1-3 presents the assessment of the resilience of water supplies in London to these drought scenarios. The graph shows that in many of the drought scenarios the levels of water storage fall to a level where the most severe water use restrictions,

¹⁰ Thames Water, draft Drought Plan, April 2017 (available on Thames Water's website)

¹¹ Water UK, Water resources long-term planning framework 2015-2065 , 2016

referred to as Level 4 restrictions, which includes rota cuts or standpipes, would be required. This is shown as the red dotted line in Figure 1-3.

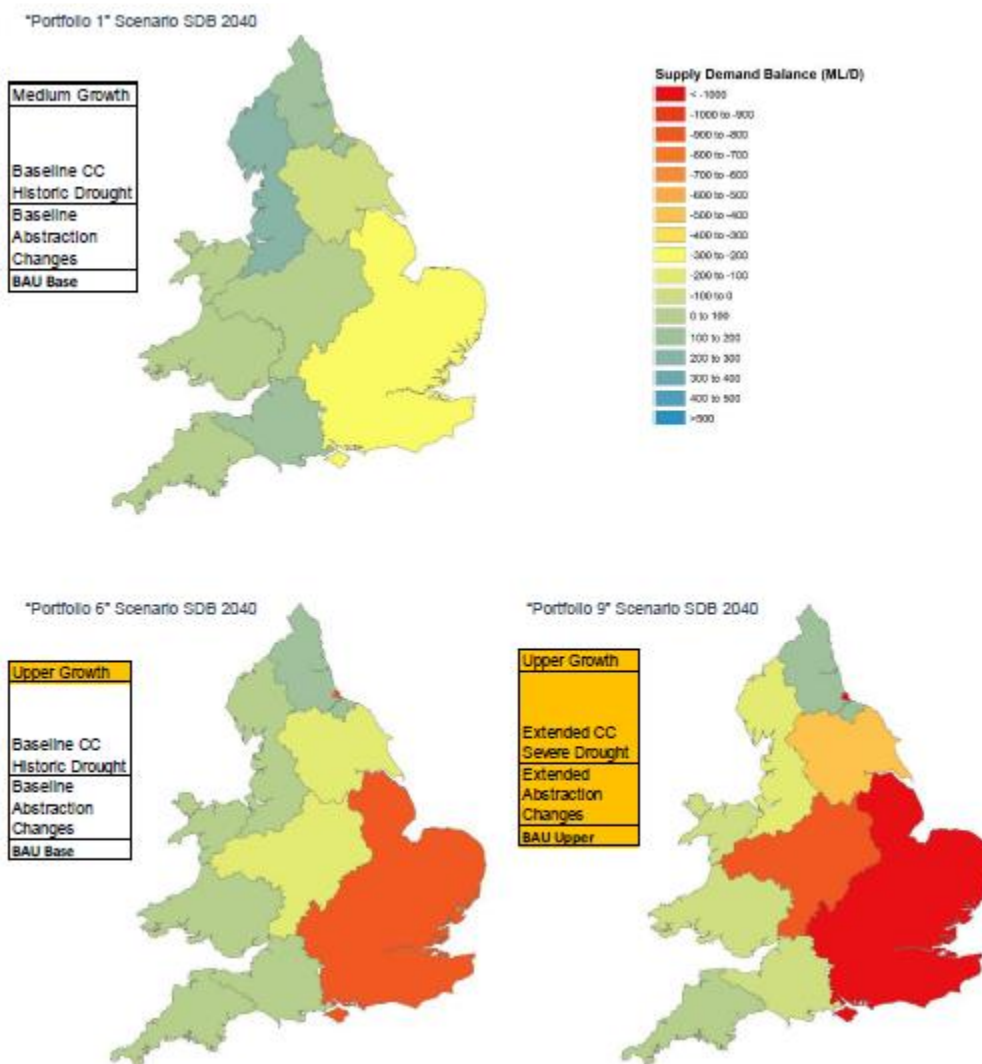
Figure 1-3: Drought resilience assessment for London



Source: Water UK, *Water resources long term planning framework, 2016, Figure 6-5*

- 1.23 The study also presented a summary of the forecast deficits by region for different scenarios for population growth, climate change, environmental protection requirements, and drought. This is presented in Figure 1-4 which shows that the biggest percentage water resource deficits are forecast across London and the south east.

Figure 1-4: Maps of forecast regional deficits by 2040 under three future scenarios



Source: WaterUK, *Water resources long term planning framework*, 2016, Figure 6.27

1.24 The findings of the study were provided to Government, for consideration in the development of government policy. We have also taken account of this work, in planning future water resources and developing our WRMP19; for example, we plan for the long-term, looking over 80 years for some areas, as the decisions and investments we make today will determine the levels of service we can provide to our customers in the future.

Water Resources Planning Guideline (WRPG)

1.25 The Guiding Principles and WRPG, produced by Government and its regulatory agencies respectively, provide a framework to guide the preparation of WRMPs. These documents set out good practice, the various technical approaches to follow, and the information that a plan should contain. They also give guidance on compliance with statutory requirements and government policy objectives. These documents were reviewed and revised for this round of

water resource planning and included a number of significant changes to secure the long-term resilience of the water sector. We have referred to the Guiding Principles and WRPG in preparing our WRMP19.

- 1.26 Ofwat has also published a number of technical papers and other documents¹² which reinforce the priorities set out in the Guiding Principles and WRPG. Ofwat has placed specific focus on four key themes: resilience; affordability; innovation; and great customer service and has proposed a suite of performance measures¹³ which reflect these key areas. The measures directly relevant to the WRMP are the Security of Supply Index, per capita consumption (PCC) and leakage. In addition, there are performance measures covering the environment and resilience to severe droughts. We support these measures which reflect key areas of water resource planning focus, and which help to ensure high levels of customer service into the longer term.

25-year Environment Plan

- 1.27 In January 2018 the Department for Environment, Food and Rural Affairs (Defra) published their 25-year Environment Plan¹⁴ which sets out the Government's goals for protecting and enhancing the environment for the next generation. The plan provides important context to planning future water supplies and includes targets relevant to our operations and long term plans, these include :
- reducing damaging abstraction of water from rivers and groundwater to achieve the objectives set out in the River Basin Management Plans (RBMP) and to support Ofwat's ambitions on leakage; and
 - minimising the amount of water lost through leakage year on year, with an expectation that water companies will reduce leakage by at least an average of 15% by 2025.
- 1.28 The plan also has several targets focused on restoring, protecting and enhancing natural habitats and species, and on mitigating the effects of and adapting to climate change.

National Infrastructure Commission – Preparing for a drier future

- 1.29 The NIC published a report¹⁵ in April 2018 which set out their recommendations on how to address England's water supply challenges and deliver the appropriate level of resilience for the long term. The Chairman of the NIC, Sir John Armitt, said "*We take for granted that we will always have a reliable water supply, but despite our reputation for rain, the country risks water shortages. Climate change, an increasing population – particularly in the drier south and east of England – and the need to protect the environment bring further challenges...If we are to avoid our taps running dry, in times of extreme drought, we need the Government to act on our recommendations without delay.*"

¹² Ofwat, Delivering more of water matters in PR19, July 2017

¹³ Ofwat, Delivering Water 2020, Ofwat consultation document, July 2017

¹⁴ Defra, A Green Future: Our 25 year plan to improve the environment, January 2018

¹⁵ National Infrastructure Commission, Preparing for a drier future: England's water infrastructure needs, April 2018

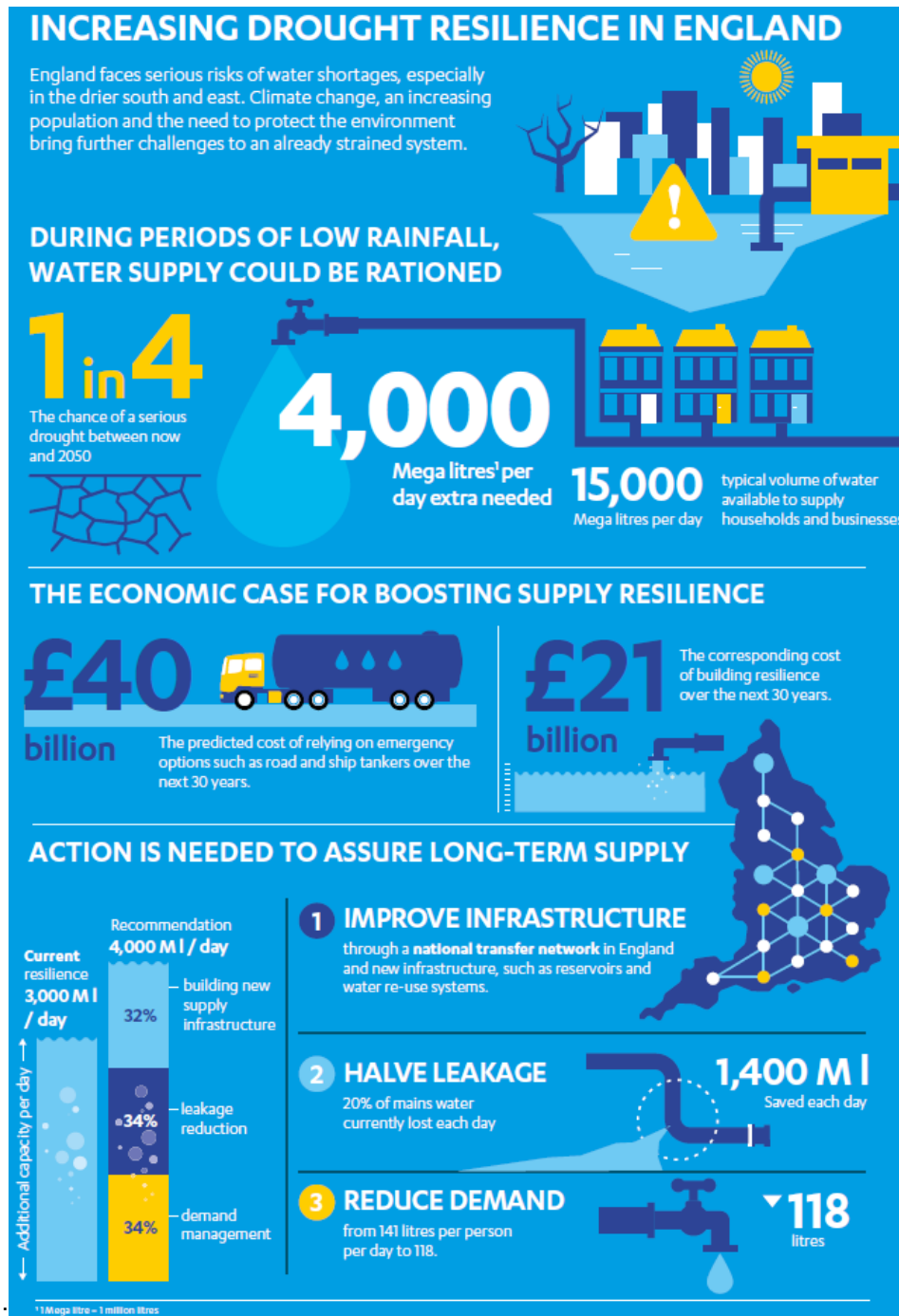


1.30 The report sets out a number of measures which the NIC believes Government, water companies and regulators should take to increase investment in supply infrastructure and encourage more efficient use of water. The analysis also shows that the cost of responding to a severe drought in the UK would be very costly, tens of billions of pounds and, as such, the case for improving drought resilience is therefore compelling. The NIC published the report in April 2018 to allow water companies and the regulators to consider the recommendations as part of planning future water resources.

1.31 The main points of the NIC report are summarised below and illustrated in Figure 1-5.

- The water network is already under strain and Government should ensure increased drought resilience by enhancing the capacity of the water supply system. This will require a twin track approach combining demand management with long term investment in supply. The NIC recommend that Government should ensure plans are in place to deliver additional supply and demand reduction of at least 4,000 MI/d.
- The report acknowledges that whilst leakage can never be fully eliminated, Defra should set an objective for the water industry to halve the amount of water lost through leaks by 2050.
- The need for a new national water network to transfer water from areas of surplus to where it is needed was proposed. This was in addition to the need to develop further infrastructure including new reservoirs and desalination plants.

Figure 1-5: National Infrastructure Commission summary of key findings



Source: NIC report, April 2018, page 4.

Main priorities in developing our plan

1.32 The main priorities presented in these documents, which have shaped our approach, are noted below.

- Understanding and delivering the outcomes that our customers want
- Involvement of interested parties in the development of future plans
- A planning period that reflects the water resources challenge faced
- A strategic approach that represents best value for our customers over the long term
- Assessment of the vulnerability of water resources to future pressures such as climate change and ensure the plan provides enhanced resilience to drought
- Flexibility to accommodate reasonably predictable changes
- Ensure a reduction in the amount of water lost through leakage
- Promotion of metering and water efficiency helping to reduce overall demand for water
- Consideration of every option to meet future public water supply needs including those outside company boundaries, plus collaboration with neighbouring water companies and other sectors
- Evaluation of resource options within a regional supply context
- Protection and enhancement of the environment

1.33 These priorities are set out in Table 1-2 alongside our response to them and reference to the relevant section of this document in which greater detail is provided.



Table 1-2: WRMP planning priorities

Priorities and policy objectives	Our response	Section of the plan
The plan must focus on delivering the outcomes that our customers want	We have undertaken a detailed programme of customer research and engagement to understand the priorities and preferences of our customers. We have worked with our Customer Challenge Group (CCG) to design and implement the programme. The output of this research and engagement has informed the development of our WRMP19 and our Business Plan.	10 and Appendix T
Involved customers, interested parties, statutory and non-statutory consultees and taken into account their views	We recognise that there is wide interest in the sustainable management of water resources and over the past three years have engaged with customers, stakeholders and regulators to share the work we have undertaken to inform our WRMP19, and provided the opportunity for their input into plan development. We received over 700 responses from customers and stakeholders to our public consultation on our draft WRMP19 and took their comments into consideration in revising our plan. We made a number of changes to our draft plan in response to feedback from the consultation and new information. In view of the changes made to our draft plan we decided to provide an opportunity for comment on the changes and held a further phase of public consultation for 8 weeks from 3 October 2018 until 28 November 2018.	Appendix S, Statement of Response No 1 and Statement of Response No 2



Priorities and policy objectives	Our response	Section of the plan
A planning period that reflects the challenges	<p>The statutory minimum planning horizon for water resources is 25 years. In recognition of the longer term pressures, and the time it takes to develop necessary infrastructure, Government has encouraged water companies to adopt a longer planning horizon where this is considered to be appropriate. We support this.</p> <p>We worked with independent consultants, NERA¹⁶, to consider the planning horizon for WRMP19 and completed problem characterisation for each WRZ. The conclusions of this work are:</p> <p>London and SWOX WRZs have significant and complex water resource challenges. SWA WRZ has moderate challenges. The solutions required in these WRZs will be high cost, with long lifespans. As such, we have developed plans over an 80 year time horizon and have used advanced decision support tools for thorough analysis of the planning problem and to develop multiple feasible programmes of investment.</p> <p>The remaining three WRZs (Kennet Valley, Guildford and Henley) have simpler planning problems. Lower cost options are available and can be implemented relatively quickly. As such, we have developed plans over a 25 year time horizon and used less complex decision support tools.</p>	10

¹⁶ NERA, How Should the Appropriate Horizon for Integrated Water Resource Planning be Ascertained? September 2016



Priorities and policy objectives	Our response	Section of the plan
Strategic approach that represents best value for our customers over the long term	<p>For many years cost has been the primary factor in devising the WRMPs, and a least cost decision support tool, called Economics of Balancing Supply and Demand (EBS), has been used to support the development of plans. However, a least cost plan is not necessarily a resilient or robust plan and there is now support from regulators¹⁷, stakeholders¹⁸ and our customers¹⁹, to develop best value plans which take account of a wider range of factors including the environment, resilience, and customer preferences.</p> <p>We have developed a suite of modelling and decision support tools²⁰ to aid the formulation of, and decision making on, the best value programme for WRMP19. We have shared the approach and decision support tools with stakeholders to build an understanding of the process and overall stakeholders were supportive of the approach.</p> <p>To improve transparency and confidence in the decision making process we have set up an Expert Panel to work alongside us providing advice and challenge throughout the programme development and helping to inform the preferred programme to be promoted. The Expert Panel has written a report on their involvement in this work.</p> <p>We have also explored innovative water resource options including considering opportunities in growth areas for non-potable reuse of water in new buildings, planned wastewater re-use which is not widely practised in the UK, large inter-company water trades and innovative tariffs.</p>	10

¹⁷ Water Resources Planning Guideline, July 2018

¹⁸ Technical Stakeholder Meetings, March 2016 and November 2016

¹⁹ Customer research, Water resources deliberative research, February 2017

²⁰ UK Water Industry Research (UKWIR) WRMP 2019 Methods – Decision Making Process: Guidance Report Ref. No. 16/WR/02/10



Priorities and policy objectives	Our response	Section of the plan
<p>Assessment of the vulnerability of water resources to future pressures such as climate change and ensure the plan provides enhanced resilience to drought</p>	<p>We have assessed the severity and complexity of the water resource planning problem in each WRZ in accordance with industry guidance²¹; this is referred to as problem characterisation. The assessment helps us to decide on the appropriate planning horizon, and the approach and decision support tools, to be used to develop the best value programme.</p> <p>Specifically, on climate change, historically WRMPs have been prepared to survive a repeat of the worst drought in the 90 year historical record, at the lowest economic cost. Climate change is likely to bring different conditions such as multi-year droughts, and evidence from our own studies, the WaterUK study⁶, and other companies studies show that the historical record is not an appropriate basis on which to plan. We have completed work to develop stochastic forecasting approaches for our area and generated artificial drought sequences which have been used to test the resilience of the existing system and new supply options to droughts worse than in the historical record.</p> <p>Our plan proposes the development of new supply infrastructure to ensure we can provide enhanced resilience to severe droughts by 2030. The need for investment in supply was supported by the analysis of the NIC.</p>	<p>4 and 10</p>
<p>Flexibility to accommodate reasonably predictable changes to regulation such as abstraction reform</p>	<p>Uncertainty is inherent in all forecasts. We have assessed our WRMP19 against a range of plausible future scenarios, and also used an adaptive pathways approach, to ensure it can respond flexibly to future risks, and ensure a “no regrets” approach. In response to comments received as part of the further consultation we completed more work on our adaptive plan, this sets out our preferred plan and alternative pathways, and dates that key decisions are required.</p> <p>As part of the statutory process we undertake an annual performance review of our plan and a five-yearly review and can therefore make adjustments to our long-term strategy as needed.</p>	<p>5 and 10</p>

²¹ UKWIR, WRMP 2019 Methods – Decision Making Process: Guidance Report Ref. No. 16/WR/02/10



Priorities and policy objectives	Our response	Section of the plan
Ensure a reduction in the amount of water lost through leakage	There is wide support from Government, stakeholders and our customers to reduce the amount of water lost through leaks in the water network. Ofwat and Defra proposed targets to reduce leakage by 15% by 2025 and the NIC proposed to Defra that they should set an objective to halve leakage by 2050. We have listened to the feedback and proposed a reduction in leakage of 15% by 2025 and to halve leakage by 2050, in line with Government's and the NIC's recommendations. These targets are ambitious and will require considerable focus and innovation to achieve them.	8 and 10
Promotion of metering and water efficiency helping to reduce overall demand for water	There is wide support from customers and stakeholders for demand management activity. Regulators have also set out their expectation to see on-going reductions in household PCC. We support measures to manage water resources efficiently and effectively. In developing our WRMP19 we have explored a wide range of demand management options, we have provided more information on the options as requested by stakeholders, and demand management is the foundation of our future plan.	8 and 10
Consideration of every option to meet future public water supply needs including those outside company boundaries, plus collaboration with neighbouring water companies and other sectors	In developing our WRMP19 we have considered a wide range of options to both manage demand and to develop new water resources. We have engaged with stakeholders to identify and develop these options including exploration of options with other water companies and third parties. Since January 2015 we have held regular meetings, Water Resources Forums and technical stakeholder meetings, as well as individual discussions to enable stakeholder input into water resource planning. This work is continuing, and we have provided updated information on the on-going technical work. Ofwat provided feedback in its Initial Assessment of Plans (January 2019) of the need for strategic supply solutions in the South East, and it proposed funding to Thames Water and other companies to work together to explore strategic water resources in more depth. We propose to develop the options in a staged or 'gated' way in collaboration with other companies and regulators. Information on the further studies and the gated process is provided in the updated Section 11 and Appendix XX.	7, 8, 11 and Appendix S and XX



Priorities and policy objectives	Our response	Section of the plan
Evaluation of resource options within a regional supply context	<p>We have worked closely with the other water companies in the Water Resources in the South East Group (WRSE), engaged with Water Resources East (WRE), and other water companies and potential suppliers more widely to identify new opportunities for water supply and sharing/trading arrangements.</p> <p>The work of WaterUK and the WRSE has shown the significant water resource challenge facing the south east. Other water companies in the south east have indicated that they will require new water sources and we have committed to work collaboratively to provide the best solutions for our customers, and the wider south east. We have tested the implications of changes to these requirements in scenario testing.</p>	7 and 10
Protection and enhancement of the environment.	<p>There is wide recognition of the need to balance the needs of society and the economy with the environment. Defra's 25 year Environment Plan set out clear targets to restore, protect and enhance the environment, and an aspiration to put the environment first.</p> <p>We have assessed environmental and social impacts and benefits at all stages of the development of the WRMP including coarse screening of options, fine screening of feasible options, the assessment of the constrained options, and development of the best value programme. This ensures end-to-end consistency of approach in the appraisal process.</p> <p>Strategic Environmental Assessment (SEA) is the core of the environmental assessment approach of the WRMP and is supported by the statutory assessment processes relating to the Habitats Directive (Habitats Regulations Assessment (HRA) process) and Water Framework Directive (WFD)). We consulted stakeholders throughout the process, including on the scope of the SEA, methodological approaches and outputs. We received a number of comments on the environmental assessments and have worked with the Environment Agency, Natural England and Historic England to address these comments to ensure we have completed robust assessments and that our plans support the protection, and provide benefit, to the environment where possible.</p> <p>We have also undertaken work to explore the use of natural capital accounting to aid understanding about how to manage our environment. This concluded that the approach was not sufficiently mature at present to apply to water resource planning. Industry wide work will be completed in the next five years to develop this approach for future plans.</p>	9, 10, Appendices B, C and BB

Public inquiry 2010

1.34 In 2010 a public inquiry was held to examine our proposed WRMP at that time (draft WRMP09). In May 2011 Defra issued instructions²² on the amendments needed to be made to the plan (draft WRMP09) taking account of the Planning Inspector's recommendations²³. The instructions also identified which of the Inspector's recommendations needed to be addressed as part of WRMP14 and future plans. These instructions have been addressed; those that are relevant to the WRMP19 are summarised in Table 1-3 with an update on progress.

Table 1-3: Summary of instructions from the 2010 public inquiry

Instruction	Progress update
Options appraisal	
Technical analysis to confirm feasibility and uncertainty of Severn-Thames transfer options.	We have undertaken work to examine options to transfer water from the River Severn to the River Thames. This is presented in the Raw Water Transfer Feasibility Option Report and summarised in Section 7: Appraisal of resource options.
Investigations of alternative sites for a 50 million cubic metres (Mm ³) reservoir.	We have undertaken work to investigate and assess a range of reservoir options. This is presented in the Reservoir Feasibility Option Report and summarised in Section 7: Appraisal of resource options.
Investigations into a greater range of effluent reuse schemes and alternatives to reverse osmosis technology.	We have undertaken work to investigate and assess a range of reuse options. This included consideration of potential sites and relevant technology. This is presented in the Reuse Feasibility Option Report and summarised in Section 7: Appraisal of resource options and Appendix L: Water reuse. We have engaged with the former Chief Inspector of the Drinking Water Inspectorate (DWI) as we have undertaken this work.
Update on public perception investigations and wastewater reuse trial at Deephams wastewater treatment works.	We have completed further research with customers to understand their preferences and concerns for a range of options, including wastewater reuse. This is presented in Appendix T: Our customer priorities and preferences. We have also funded an engineering doctorate to explore stakeholders' expectations for reducing risk and promoting safety linked to water reuse. This research is summarised in Appendix L: Water reuse.
Further breakdown of costs for all options and to support WRSE modelling work.	We have worked collaboratively with WRSE and provided detailed information on options for WRSE assessment. This work is discussed further in Section 7: Appraisal of resource options.

²² <http://archive.defra.gov.uk/environment/quality/water/resources/documents/thames-inquiry-decision-letter.pdf>

²³ The Planning Inspectorate (December 2010) Water Resources Management Plan Regulations 2007, Inquiry into the Thames Water Revised Draft Water Resources Management Plan 2010-2035, September 2009



Instruction	Progress update
<p>Consideration of how a greater range of feasible options could be provided.</p>	<p>We have developed and considered a wide range of resource options. We screened options to refine the options under consideration to produce a feasible option list. We have completed more detailed assessment of the feasible options. We have engaged with stakeholders throughout the option appraisal process providing opportunity for input and comment. This work is presented in Section 7: Appraisal of resource options.</p>
<p>Further investigate and review some of the more uncertain contingency options such as aquifer storage and recovery (ASR).</p>	<p>ASR is an innovative groundwater option whereby water is pumped into, and stored within, an aquifer when water is plentiful and then recovered in times of need. To investigate its potential and enable delivery of an ASR water supply scheme, we have targeted the Lower Greensand aquifer in and around Horton Kirby in the Darent Valley, in the London WRZ. We have drilled a new ASR borehole, two new observation boreholes, and constructed new pipeline connections to recharge the aquifer with potable water. During operational scale cycle testing, which is ongoing, we are recharging the aquifer to increase storage then re-abstracting the stored water, while monitoring groundwater levels and water quality to confirm its viability. This work is leading to delivery of the ASR Darent Valley (Horton Kirby) scheme, where work is in progress and currently remains on track to increase the London WRZ DO by 5 MI/d in 2019/20. As a result of this work, a number of schemes have been included in our list of potential future resource development options.</p>
Programme appraisal	
<p>Apply new methodology to programme appraisal to identify our preferred strategic programme.</p>	<p>We worked across the industry, and with regulators, to develop new guidance to support programme appraisal, and followed this in developing our draft WRMP19. We have developed a suite of modelling and decision support tools to aid the formulation of, and decision making on, the best value programme. This involves consideration of a range of parameters including cost, environmental performance, customer preference, deliverability, inter-generational equity, resilience and adaptability. Best value planning is supported by our customers²⁴.</p> <p>To improve transparency and confidence in the decision making process we have established an Expert Panel comprising Professor McDonald (University of Leeds), Professor Harou (University of Manchester), Dr Bill Sheate (University of London, Imperial College) and Dr Fenn, to work alongside us providing advice and challenge through the programme development.</p>
<p>Consideration of programme sensitivity to cost certainty.</p>	<p>We have refined our approach to estimating uncertainty in costing through the use of an established process, termed optimism bias. This is presented in Section 7: Appraisal of resource options and Section 10: Programme appraisal and scenario testing.</p>

²⁴ Britain Thinks, Deliberative research, September 2016

Instruction	Progress update
Consideration of programme sensitivity to different potential sustainability reduction scenarios.	Programme sensitivity to different potential sustainability reduction scenarios has been considered and is presented in Section 10: Programme appraisal and scenario testing.
Consideration of programme sensitivity to actual utilisation of schemes and to Net Present Value calculation over 80 years.	The Guiding Principles set out the need to develop plans over a longer time horizon where the planning problem is significant and complex. We have adopted an 80-year planning period, for some of our WRZs, in developing our draft WRMP19. This time horizon is agreed as suitable given the significance and complexity of the planning problem.
Need to explicitly quantify the probability of the main sources of scheme timing and yield uncertainty and to include in target headroom.	Target headroom includes the main sources of uncertainty associated with schemes. We have followed industry best practice in assessing target headroom.

E. The relationship between the WRMP and other plans

- 1.35 Our WRMP has links with other plans. The main plans are listed below with an explanation of the relationship between the plans.

River basin management plans (RBMP)

- 1.36 RBMPs set out how organisations, stakeholders and communities will work together to improve the water environment. This is important context to the development of the WRMP. The SEA references the RBMPs in setting the key policy messages and establishing the environmental baseline. In addition, a specific objective is included in the water topic of the SEA to support achievement of the RBMP objectives. Furthermore, many of the sustainability reductions that we are required to make are to achieve the requirements of the WFD and are set out in the RBMP.

Business Plan

- 1.37 We produce a Business Plan every five years which sets out the services that we plan to provide to our customers. Funding for the Business Plan is secured through Ofwat's Price Review process. The investment required in the first five years of the WRMP is included in the Business Plan. The WRMP and Business Plan, whilst separate entities, are integrated plans. We have engaged with customers and stakeholders throughout the development of the Business Plan in co-ordination with the WRMP, where this has been appropriate, to ensure a clear and transparent approach for our customers. The Business Plan was submitted to Ofwat on 3 September 2018 and we received feedback from Ofwat as part of their Initial Assessment of Plans in January 2019, which we have taken into account in updating our WRMP19.



Drought Plan

- 1.38 The Drought Plan sets out the short-term operational steps implemented as a drought progresses to enhance available supplies, manage customer demand and minimise environmental impacts. We updated our Drought Plan in 2016 in accordance with the Drought Plan Guideline²⁵ and consulted on it. It covers a five year period from 2017 to 2022. There is a very close link between the Drought Plan and WRMP where we are required to demonstrate how supply will be maintained during severe drought events.
- 1.39 Our 2016 Drought Plan shows that, during the five year planning period, we can meet our planned levels of service for a range of severe drought scenarios, although with less resilience. However the plan does not take account of the forecast increase in population in our supply area and the associated increased demand for water, the future impacts of climate change on water available for supply, or potential future reductions in abstractions in order to provide greater protection for the environment, all of which are forecast to have a significant effect on water supply in the Thames catchment. Furthermore whilst the plan shows that we can maintain supply, it also shows that our current assets will be placed under great strain, impacting the robustness of the water system and potentially having a significant detrimental effect on the environment and ecology; and businesses which rely on water would be subject to more frequent NEUBs and TUBs.
- 1.40 The associated increasing demand and reduced water availability have the potential to significantly affect the underlying supply demand balance and therefore the extent to which the Drought Plan could be relied upon to robustly protect customers from Level 4 water use restrictions in future periods. These aspects are covered in Section 4: Current and future water supply.

Local plans produced by local authorities

- 1.41 In line with the WRRPG we have based our forecasts for population and property growth on Local Plans published by the local council or unitary authority. We contacted the 95 Local Authorities across our area to obtain data to produce population and property forecasts to 2045. The Environment Agency advised that, since submission of the draft WRMP to Defra, the Greater London Authority published its draft London Plan. In this, the property figures have been revised upwards and could result in an additional 204,000 properties by 2029/30 which is significant. The Environment Agency is clear that they do not want water provision to constrain growth. We agreed with the Environment Agency that, since the data is draft²⁶, we would test these revisions as a scenario. We also agreed to monitor other updates to Local Authority plan figures and consider the implications for our population and demand forecasts.

Vale of White Horse District Council – Local Plan 2031

- 1.42 The Vale of White Horse District Council published its adopted Local Plan 2031 Part 1: Strategic Sites and Policies in December 2016. It includes Core Policy 14: Strategic Water Storage Reservoirs which safeguards land for the provision of a reservoir between the settlements of East Hanney, Drayton and Steventon. In October 2017 the Council published

²⁵ Environment Agency, Drought Plan Guideline, 2016

²⁶ TW EA Update Meeting, June 2018



the Local Plan 2031 Part 2 Publication Version which widened the reservoir safeguarded to include ancillary works and mitigation areas required to construct the reservoir. In July 2018 a public examination was held on Local Plan 2031 Part 2. At the examination Thames Water attended to support the amended safeguarded area (Core Policy 14a). This is currently being considered and the Inspector's Report is awaited. The Council has published Draft Main Modifications for consultation until 1st April 2019 which do not amend the safeguarded area. The Local Plan policy will be used to assess and determine planning applications. We note the criteria of the policy and can confirm that these will be complied with at the master planning/planning application stage in accordance with Core Policy 14.

F. Engagement with customers, regulators and stakeholders

- 1.43 We recognise that there is wide interest in the sustainable management of water resources and over the past three years have engaged with customers, regulators and stakeholders, sharing work to inform our draft WRMP19 as it is undertaken and to provide the opportunity for input and feedback.
- 1.44 In November 2014 we published a statement of Water Resources Stakeholder Engagement. This document set out how we planned to engage during the preparation of our draft WRMP19. The engagement framework is provided in Table 1-4. We have updated and republished the statement on a quarterly basis up to the submission of the draft WRMP19 in December 2017.
- 1.45 Alongside the statement of Water Resources Stakeholder Engagement we published our water resources work programme and an accompanying report explaining the main areas of work and progress update for each of the workstreams. This was to ensure that stakeholders understood the work that was being undertaken and the timing of outputs, and provide the opportunity to input and contribute in a timely manner. This approach allowed us to understand issues and concerns and address these, as far as possible, in the development of our draft WRMP19.



Table 1-4: Engagement framework

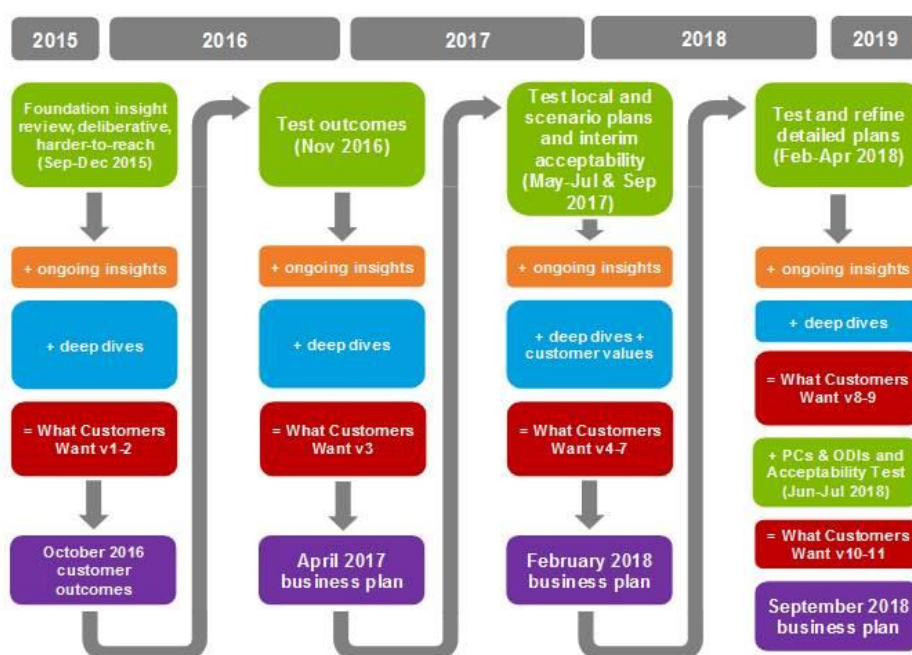
Customers	We engage with customers to understand their views on a range of water resource matters and ensure these are taken into account in developing our plan. This is aligned with engagement activity to inform the Business Plan.
Customers - CCG	The CCG was set up to test the quality of our engagement with customers and how we responded to their priorities in developing our Business Plan 2015-2020 and WRMP14. We are continuing to work with the CCG as we progress work to inform our next Business Plan and WRMP19.
Regulators - Environment Agency	We hold regular meetings with the Environment Agency to discuss water resources matters. The purpose of these meetings is to discuss technical work and to ensure the Environment Agency has the opportunity to raise concerns, contribute to the work, and to agree approaches and technical methods where required. Each quarter we provide a progress report on the water resources work programme to the Thames Water and Environment Agency Directors' meetings. The purpose of the report is to highlight any risks or issues on water resources that require discussion.
Regulators - All	We hold meetings with other regulators (Ofwat, Consumer Council for Water (CCWater), Natural England, Historic England and Natural Resources Wales (NRW) on specific topics as appropriate to ensure they are updated on technical work and to give them the opportunity to raise concerns and contribute to the work.
Regulators - All	We are involved in a number of research, technical and strategic projects such as the WRSE Group, UKWIR research, Environment Agency technical projects and the industry wide Strategic Water Resources Liaison Group. Regulators and other organisations are involved in the majority of these groups.
Stakeholders	We continue to hold forums on a regular basis to which all interested organisations are invited. The purpose of the forums is to update stakeholders on our work and to give them the opportunity to discuss and challenge our approach and to highlight issues and concerns. The agenda for these forums are aligned with the work programme and also in response to feedback from stakeholders. We regularly review the approach to engagement and seek feedback at the forum to ensure the approach is meeting the needs of stakeholders. Further information is provided in Appendix S: stakeholder engagement.
Stakeholders	We continue to convene technical meetings on specific topics that stakeholders are interested in. These meetings give stakeholders the opportunity for greater discussion and scrutiny on specific technical matters. We also hold individual meetings as needed.
Water companies and commercial organisations	We continue dialogue with water companies and external organisations to identify opportunities for collaboration and partnerships including identification of opportunities for sharing and trading resources to ensure the most effective use of available resources.

1.46 The following sections provide further information on the engagement approach with customers, regulators and stakeholders, and key issues.

Customers

1.47 Our plans and strategies are developed to reflect our customers' preferences. We have undertaken an extensive research and engagement programme to understand customers' views and expectations on all aspects of our business, and the services that we provide, as summarised in Figure 1-6. We have worked with our CCG in the design and delivery of the research and engagement programme, and how the information has been used to shape our long term plans.

Figure 1-6: Overview of the customer research and engagement programme



1.48 On water resources, we have specifically sought feedback from our customers on the following:

- the planning process and how we develop the plan
- the levels of service we provide in terms of the frequency of water use restrictions that we plan for
- the options that can be used to provide a secure supply of water, including the level of leakage that is considered acceptable.

1.49 A summary of the views and priorities of our customers on these points is provided below with more detailed information provided in Appendix T: Our customer priorities and preferences.

Feedback on the planning process

1.50 Most customers are unaware of the challenges to our future water resources in terms of population growth, climate change and environmental protection. When they understand they want plans to ensure sufficient supply to meet future demand. They consider a secure water



supply to be fundamental and they expect us to plan for this service to be resilient in the long-term.

- 1.51 The majority of customers support the need for us to plan for the future, considering a planning horizon of at least the next 25 years, building in flexibility to accommodate future changes.
- 1.52 Customers indicated that while the bill is important, and must be affordable, they support best value planning taking account of a range of factors such as the environment, deliverability and flexibility in determining the long term strategy.
- 1.53 Customers believed that the costs for future investment should be shared across current and future customers showing a strong sense of responsibility towards future generations.

Feedback on Levels of service - Water use restrictions

- 1.54 Customers indicated a preference to avoid deterioration in the levels of service.
- 1.55 The current expected frequency of sprinkler bans, hosepipe bans, and NEUBs were not perceived to have significant impacts on customers' day-to-day activities and as such customers indicated that they were broadly satisfied with the current levels of service.
- 1.56 As the severity of the water use restrictions increase, customers' views that the level of service should either be maintained or enhanced are stronger.
- 1.57 Water rationing, referred to as a Level 4 restriction, is the restriction that is of most concern to customers. Household and non-household customers expressed some appetite for improved levels of service, for the more severe restrictions such as rota-cuts where there is some support for an improvement to a 1 in 200 year level of service.
- 1.58 Views on the long-term supply of water are largely shaped by lived experience. Although aware of issues such as climate change and population growth, they do not link them to water supply. When made aware, they say planning to ensure there is enough water in the future is important. People have an expectation that water companies, Government and others will do what is needed to solve the issue of future water shortages.
- 1.59 We included a question on resilience to drought in the interactive customer engagement tool used during the consultation period to understand customer preferences on a range of services. We explained that our proposed plan was designed to maintain all customers' water supply, with no need for rationing during a severe drought and asked for views on how quickly we should achieve this. 55% chose a service level within a year of our proposal.

Feedback on options

- 1.60 Overall there is a preference for using what we already have more efficiently and effectively before we look for new sources. Customers indicated a strong preference for demand management options (leakage reduction and water efficiency) over supply options (for example new resource development). A key driver for this is avoidance of waste.
- 1.61 Many customers consider that the current levels of leakage are unacceptable. They understand that it is not cost effective to fix some leaks but would like to see us go beyond what we are currently doing. They call for a reduction from the current leakage level of 25% to

a level that compares well with the rest of the industry and are prepared to accept some impacts on their bill and disruption from roadworks to achieve this. Customers are uncomfortable with the idea that, instead of fixing more leaks, we would seek to replace the water lost by introducing more water into the same 'broken system'.

- 1.62 Customers call for help to be more water efficient. They are supportive of education through schools and information, advice, advertising and 'freebies' to help customers understand the need and reduce their consumption. They also see metering as a fair way of paying for water; reducing consumption and helping customers manage their usage.
- 1.63 Tariffs were not as popular as other demand management measures, mainly because customers considered they were unfair to some customers.
- 1.64 There was a range of views on the individual resource options:
- The preferred option was transferring water at Teddington. This was understood to provide a large volume of water and to be relatively simple. However, with an understanding of environmental concerns, a number of customers wanted reassurance that these issues would be addressed before this scheme was progressed.
 - Reuse and reservoir were the next preferred large options
 - Water transfer was identified as one of the least preferred options in all the research studies. One of the main reasons for this is customers thought that the company should be self-sufficient rather than relying on another water company for water supplies. Further research has been undertaken on transfers in collaboration with United Utilities and Severn Trent Water to explore customers concerns in more detail. This is included in Appendix T and the output will inform on-going technical work on transfers.
 - The choice of energy sources was identified as a significant driver in making decisions, and customers have a strong preference²⁷ for options that use renewable energy
- 1.65 Customer research²⁸ completed as part of the public consultation indicated that customers were most positive about the reservoir. They saw it as an investment for the future, securing the water supply and also providing recreational and leisure activities for the local community, although they wanted reassurance that those currently living there would be treated fairly and the construction to be considerate of the local community. They were also broadly positive about Teddington abstraction as they saw it as making the most of existing resources, although there were concerns about the environmental impact. Most participants were not keen on the idea of water reuse although they became more positive as their understanding of how it would work developed. Views about water transfer were mixed, with many feeling it was a sensible solution if other regions have an excess of water, and they instinctively liked the idea of greater co-operation and partnership between companies. Some, however, raised concerns around what would happen in a drought.
- 1.66 Since the publication of the revised draft plan, and in response to feedback from our CCG and wider discussions with Government and stakeholders, we undertook customer research to explore 2 specific topics:
- Investment to ensure resilience to extreme drought

²⁷ Note the use of renewable energy is only reported for options where it is considered to be feasible

²⁸ Deliberative research – Community Research April 2018

- Investment to protect vulnerable chalk streams.

The research was completed by an independent market research company, Britain Thinks. It was undertaken as discrete focus groups, and completed in February 2019.

A summary of the findings is presented below. Overall customers supported both propositions: to increase resilience to cope with extreme drought and investment to protect vulnerable chalk streams, It must be noted that this research is the first discussion with customers on these topics and there are 3 methodological considerations that need to be taken into account when considering the feedback, namely, 1) social desirability bias as a result of group discussion, 2) focused discussion on a single topic can influence the level of importance ascribed to a topic and 3) the impact on the bill, whilst referenced in the context of the wider bill were still discussed in isolation. We plan to undertake further research on both these topics in the future to substantiate a business case for investment.

Drought resilience: key findings.

- 1 Customers have low knowledge, and understanding, of drought and do not see it as a concern.**
 - Customers believe that the chances of an extreme drought happening in the UK are very low.
- 2 However, when informed about 'extreme' drought, participants were concerned about the potential consequences.**
 - Customers see a clear role for Thames Water in planning to mitigate these consequences.
- 3 All participants supported Thames Water's plans to increase their current planned level of drought resilience from a 1-in-200 year drought to a 1-in-500 year drought.**
 - A few would support a higher level of resilience.
- 4 Customers are broadly happy to pay an additional £5 on their annual bill from 2050 to achieve this.**

Chalk streams: key findings.

- 1** **Prompted discussion drives enthusiastic support for protecting the environment.**
 - But there is a sense that customers do not feel that protecting the environment is their highest priority when considering other issues in their life.
- 2** **Almost all customers were unaware of chalk streams and their importance as a rare habitat.**
 - But when asked to think about environments worthy of protection, many referenced bodies of water (rivers, lakes, the sea).
- 3** **Based on the information shared in the focus groups, customers considered that chalk streams and vulnerable watercourses should be protected.**
 - However, there are some concerns over how this might impact customers' bills.
- 4** **Customers see the potential bill increase to fund Thames Water's commitment as very small and therefore unanimously support it.**

- 1.67 We have provided further detail on how we have used the customer research to inform the selection of our preferred plan in Section 10: Programme Appraisal and scenario testing.
- 1.68 Our independent CCG has a mandate to monitor our performance and whether we are meeting our commitments, reporting properly on progress, and are considering customers in our future plans. The CCG writes formally to Ofwat in response to the consultation and to questions, and also comments on our future plans. We hold regular meetings with the CCG and provided progress updates during the development of the WRMP19 and the consultations. Minutes from all our meetings with the CCG are published on our website. The CCG have also regularly attended our stakeholder meetings to ensure these are operated in a fair and transparent way, to hear from other stakeholders and to contribute to the discussions.

Regulators

- 1.69 We have invited Government and regulators to attend the stakeholder meetings.
- 1.70 We have held regular meetings with the Environment Agency throughout the development of the WRMP19. The purpose of these meetings has been to ensure that the Environment Agency is up to speed with the work being undertaken and to provide opportunities for comment, input, challenge and feedback. Overall the discussions have been helpful, although noting that all the comments provided by the Environment Agency to date are without prejudice, as the Environment Agency would not formally sign off or agree methods and approaches in advance of submission of the WRMP19.
- 1.71 We held meetings with Ofwat to update them on our progress in developing our draft WRMP19 and to seek their feedback and comment. In addition, we have engaged with Ofwat



through the development of the framework for PR19, definition of performance measures and technical issues such as direct procurement of strategic infrastructure.

- 1.72 In the preparation of the SEA, HRA and WFD assessment we have worked with statutory regulators Environment Agency, Natural England, Historic England and NRW) and wider stakeholders. We have completed consultation on the scope and approach of the SEA, the methodology for the HRA and WFD assessments, and the output of the assessment of options.
- 1.73 The primary role of the Drinking Water Inspectorate (DWI) is to ensure the safety and quality of drinking water. We have invited the DWI to join our stakeholder meetings and shared information with them on resource options under consideration. Options we consider will be of particular concern to the DWI are catchment based schemes, and options which involve the reuse of water. We commissioned the former Chief Inspector of the DWI to provide advice and feedback in respect of wastewater reuse. This is presented in Appendix L: Water reuse.
- 1.74 The main role of the CCWater is to ensure consumers are at the heart of the water industry in terms of the nature and quality of the service provided. CCWater has an active voice through our CCG, we regularly meet CCWater on a wide range of business issues, and we also invite CCWater to participate in stakeholder discussions and meetings to ensure we understand their views and concerns. We share with them the work that we do to engage with our customers, both day to day and also to inform future planning.
- 1.75 We have briefed the Welsh Government and NRW during the development of the draft WRMP19, specifically focusing on aspects which could affect Welsh resources and the people of Wales.

Stakeholders

- 1.76 There is wide interest in water resources from a diverse range of stakeholders, from those organisations who have interest in a specific geographical area, watercourse or single option to organisations who have a broad interest in the sustainable management of resources for the long term.
- 1.77 Since January 2015 we have held ten Water Resources Forums and 15 technical water resources stakeholder meetings, to update stakeholders on progress with our draft WRMP19 and to give them the opportunity to discuss and challenge our approach and to highlight issues and concerns. To ensure transparency we have published papers, presentations and minutes from these meetings on our website. These meetings have provided valuable information and input to our draft WRMP19 and have also provided a good forum for stakeholder organisations to not only hear from us, but also to hear others' viewpoints and comments. We have regularly sought feedback from stakeholders to ensure our approach is meeting their needs, which has been broadly positive.
- 1.78 We have also published method statements, technical reports and documents and have provided the opportunity for stakeholders to comment on these. Where comments have been received, we have ensured we have provided feedback and an opportunity for further discussion.



- 1.79 Further information on our engagement with stakeholders is provided in Appendix S: Stakeholder engagement. Section I on how we promoted the public consultation.

G. Engagement with our Board

- 1.80 The Board is accountable to shareholders, customers and other stakeholders for the performance of the company and in promoting its long-term success. As such, the Board is responsible for setting the company's strategy and for leading the development of its quinquennial business plan and the WRMP, including assuring the quality and completeness of these regulatory submissions.
- 1.81 The Board has provided strategic leadership throughout the business planning process by setting the governance and assurance requirements; making key strategic decisions that shape the overall direction of the longer-term strategy; monitoring the progress of preparations; and reviewing and challenging the executive team's preparations at key stages. Prior to the approval of the WRMP, the Board assessed the overall quality of the plan based on the findings of the agreed assurance activity and stakeholder feedback.
- 1.82 Our executive management team has engaged the Board at key stages in the development of the WRMP19 and the Board approved the draft WRMP19 in November 2017 prior to submission to the Secretary of State for Food, Environment and Rural Affairs. We have continued engagement with the Board since this time, providing updates on the feedback from the consultation, and advising of changes to the WRMP19 as a result of comments and new information. Members of the Board have spent time reviewing the WRMP in further detail as part of a deep dive into aspects of the plan.

H. Quality assurance

- 1.83 We have established a three tiered risk management and control framework to support the development of the Business Plan and the WRMP19. The framework is designed to clearly define roles and responsibilities, improve communication and coordination, and provide assurance for compliance with legal and regulatory requirements as well as efficiency and effectiveness of operations, safeguarding of assets, and reliability and integrity of reporting. Independent auditors are involved in the process to provide the Board with assurance based on independence and objectivity.
- 1.84 For the WRMP19 methodology statements were prepared which set out methodological approaches followed in the preparation of aspects of the draft WRMP19. To provide confidence that we complied with regulatory requirements we contracted KPMG to undertake an independent review of the data collection, calculation and controls process, and their compliance with the WRMP table instructions. KPMG undertook their review between August and October 2017. The scope of the review included reviewing the approach and processes, and testing the draft data tables for the Guildford Water Resources Zone (WRZ) as a case study. The review was subsequently undertaken for all six WRZs to ensure assurance of data quality and reporting. Feedback was provided to the Environment Agency on issues and errors identified with the data tables the 2017 assurance review.

- 1.85 We undertook a similar assurance activity for the revised draft WRMP19, again engaging KPMG to undertake a review of the preparation and population of the data tables for all six WRZs.

I. Public consultation on our draft WRMP19

- 1.86 We undertook a public consultation on our draft WRMP19 starting in February 2018 and ending in April 2018.
- 1.87 We produced a suite of documents, as noted below, to ensure information was accessible to all interested individuals and organisations:
- An overview document – a high level summary setting out the challenges, the approach we followed in developing the plan and the preferred programme, and the reasons for this
 - A technical executive summary – a detailed summary of the plan with signposts to relevant sections of the detailed technical documentation
 - The full technical report which comprised 11 sections and 26 appendices
- 1.88 We published the draft WRMP19 on our website www.thameswater.co.uk/haveyoursay and we made a paper copy available to view throughout the consultation period, by appointment, at our offices in Reading. We also made available copies of supporting technical documents that we could not publish on our website due to security restrictions. Mr John Lawson and Professor Chris Binnie, consultants working for the Group Against Reservoir Development (GARD), visited our offices to view these documents.
- 1.89 Consultees could submit responses through a range of channels including emailing or writing a freeform response, responding to an online survey or completing a hard copy feedback form.
- 1.90 We promoted the consultation through a variety of ways, and engaged on the draft WRMP19 in co-ordination with the Business Plan to ensure clear communications for customers and stakeholders.
- 1.91 We sent an email to all statutory consultees, stakeholder organisations who had participated in our water resources stakeholder forums, stakeholders who participated in the public consultation on our previous plan (WRMP14) and stakeholders and individuals who had expressed interest in the WRMP. We provided a link to the draft WRMP19 and details of how to participate in the public consultation.
- 1.92 We held a launch meeting on 5 February 2018 to raise awareness of the draft WRMP19 and the opportunity to review and provide comment on it and promoted it in the press, via media channels, community networks and stakeholder events to raise awareness and give as many people and organisations as possible the opportunity to comment on the draft WRMP19.
- 1.93 During the consultation period we held eight Local Engagement Forums in areas where specific issues had been identified: Abingdon, Beckton, Beddington, Bicester, Bracknell, Cirencester, Richmond and Stevenage. The forums were evening events which gave local communities and customers an opportunity to hear about our future plans and raise points that they wanted taken into consideration.

- 1.94 At the request of Councillors and members of the local communities we held drop in events at Oxford and Steventon. We also attended a number of Parish Council meetings in Oxfordshire and presented at the Abingdon Town Council meeting.
- 1.95 We hosted a stakeholder meeting in March 2018 to provide an opportunity for stakeholders to ask us questions and seek clarification and further information before submitting their final responses on our draft WRMP19.
- 1.96 We engaged with our customers through roadshow events at shopping centres, our online community and four deliberative research events.
- 1.97 We asked for feedback from customers, using our innovative interactive engagement tool, on aspects of our WRMP, namely planning for a resilient water supply and leakage.
- 1.98 Table 1-5 presents the number of responses received by each channel.

Table 1-5: Number of responses received to the public consultation and channel for response

Channel	Number of responses
Email or post	440 (82 written and 358 email)
Online	93
Feedback form	8
Customer research	75 deliberative workshop participants 174 online community responses 2,652 responses to the “Shape Your Water Future” engagement tool

- 1.99 We have reviewed all the feedback received from stakeholders and customers and prepared a document called the Statement of Response, which sets out our consideration and response to the comments received. We will publish this in September 2018. We had originally intended to publish the document on 10 August, within 26 weeks of the start of the consultation. However, in view of the number and detail of the responses received to the consultation, and the importance in co-ordinating with the other water companies in the south east and nationally to ensure alignment, we agreed a later publication date with Defra²⁹.
- 1.100 The Statement of Response No 1:
- presents the comments received during the public consultation and our consideration of the comments
 - sets out changes made to the draft WRMP19 as a result of comments
 - where changes have not been made as a result of comments, we have explained why not
 - describes other relevant changes that have occurred during the consultation period and how these have affected parts or the whole of the plan
- 1.101 We worked with Community Research, an independent research and consultation specialist agency, to ensure the approach we adopted, the materials published, and the analysis

²⁹ Letter from Defra to TW, 31 July 2018

undertaken were robust and fair. Community Research has prepared a separate report³⁰ on the consultation and the main issues arising to give confidence to all stakeholders that the process followed was fair and transparent. This report has been published alongside our Statement of Response.

J. Further public consultation on our revised draft WRMP19

1.102 As explained above we considered the feedback from the public consultation, and new information, and made a number of changes to our draft plan as summarised below.

- A revised forecast of population growth from 2045. The forecast population has been lowered from 15.4 million to 13.9 million people in 2100.
- The introduction of targets to reduce leakage by 15 per cent by 2025 and to halve leakage by 2050.
- The removal of the Teddington Direct River Abstraction scheme. To compensate for this we have proposed additional activity to manage demand and to develop new water resources including innovative groundwater development in London, a new reuse plant in north London and earlier delivery of the water transfer from the Canal and River Trust via Oxford Canal.
- The reservoir in Oxfordshire has been brought forward from 2043 to 2037 to address, amongst other things, an earlier requirement for water from Affinity Water. The scheme will be jointly promoted by both companies and will improve resilience of the water supply system in the South East.
- Including allowances for reductions in existing water abstractions which are perceived to have a negative environmental impact on vulnerable chalk streams and watercourses.
- The development of a Severn Thames Transfer in the 2080s, with further studies over the next five years to examine regulatory, operational and environmental issues.

Note: The proposed operational date for the reservoir in 2037/38, which is in line with Affinity Water's Final WRMP19.

1.103 On 3 October 2018 we published our Statement of Response No 1 and revised draft plan. In recognition of the changes that were made to the draft plan we undertook a period of further public consultation for 8 weeks from 3 October to 28 November 2018. The purpose of the further consultation was to provide an opportunity for stakeholders to comment on the revisions that we had made to our draft plan. We worked with Community Research to ensure the approach we adopted, the materials published, and the analysis undertaken were robust and fair.

1.104 We produced a suite of documents, as noted below, to ensure information was accessible to all interested individuals and organisations:

- Overview – this provided a summary of the feedback received to the public consultation and the main changes to our draft plan.
- The revised draft plan including a technical executive summary, technical report which comprised 11 sections and appendices.

³⁰ Community Research, Consultation on draft WRMP19, August 2018

- 1.105 We published the revised documentation on our website www.thameswater.co.uk/wrmp and we made a paper copy of the documents available to view throughout the consultation period, by appointment, at our offices in Reading. We also made available copies of supporting technical documents that we could not publish on our website due to security restrictions.
- 1.106 We publicised the further consultation through a number of channels and sought feedback in writing (email, letter or feedback form) or via an online survey.
- 1.107 Overall, we received 751 responses, around half of the responses were written responses and half were via the online survey. In addition, we undertook research with our customers to seek the views of our representative customer base.
- 1.108 During the consultation period we worked with the EA to review all the issues raised in their representation. We have continued to work closely with Affinity Water, the WRSE Group and other water companies in regional planning groups, to ensure effective collaboration and alignment between company's plans. We have also met a number of other organisations to discuss issues of concern. We have continued to engage with our Customer Challenge Group and have completed further research with customers to explore planning for enhanced resilience to drought and protection of vulnerable chalk streams. We also held a Drop-in event at Steventon Village Hall to give local communities and customers an opportunity to hear about our future plans and raise points.
- 1.109 The table below presents the number of responses received by each channel.

Channel	Number of responses
Email or post	367 (85 written and 282 email responses)
Online	384
Online customer community	195 responses
Customer workshops (4)	69 participants

- 1.110 We have reviewed all the feedback received from stakeholders and customers and prepared a document called the Statement of Response No 2, which sets out our consideration and response to the comments received. We published this in April 2019 and sent a summary document and link to everyone who participated in the further consultation. We also published updated sections of our revised draft plan on our website www.thameswater.co.uk. We also sent it to the Secretary of State for consideration of the next steps.
- 1.111 On 10 October 2019 Defra requested further information in relation to our plan. On 6 December 2020 Thames Water responded to the request. The letter is published on our website www.thameswater.co.uk/wrmp to provide full transparency on the information requested by Defra, and provided by Thames Water. The updates set out in the letter have been incorporated into the final WRMP19, this document.

