Thames Water

Final Water Resources Management Plan 2019

Technical Appendices

Appendix T: Our customer priorities and preferences

Table of contents

Figures

Tables

Appendix T.

Our customer priorities and preferences

A. Introduction

T.1 Our plans must reflect the needs and expectations of our customers. We have engaged with our customers, using a range of approaches and techniques, to understand their priorities for water and wastewater services now and in the future. This understanding, combined with information obtained from day-to-day interactions with our customers, has been used to shape our Business Plan and our Water Resources Management Plan 2019 (WRMP19). In this appendix we set out:

- Regulatory requirements and expectations
- An overview of our customer research and engagement programme
- Detailed information on the engagement and research related to planning future water resources
- An explanation of how we have used this information in decision making and long-term planning of water resources.

T.2 We have proactively engaged with customers during the public consultation on our draft WRMP19; this has included roadshows, community meetings and drop in events, work with our online community and deliberative research with customers to consider our draft plan. The engagement and feedback from customers as part of the public consultation is written up in our Statement of Response published in September 2018; it has not been included in this Appendix.

T.3 We also proactively engaged with customers during the further consultation on our revised draft WRMP19 held in autumn 2018; this included work with our online community and deliberative research with customers to consider the changes made to our draft plan. The engagement and feedback from customers as part of the further consultation is written up in our Statement of Response No 2 published in April 2019; it has not been included in this Appendix.

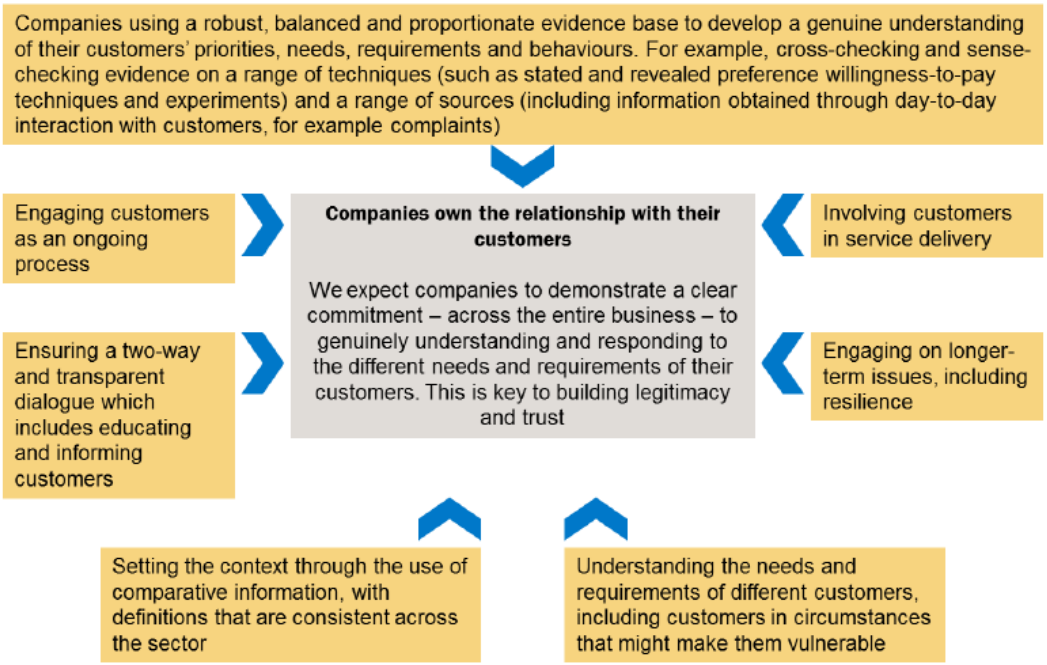
B. Regulatory requirements and expectations

T.4 UK government has set out the importance that it places on ensuring future water and wastewater services are planned to deliver the services that customers want now, and in the future[1].

[1] Guiding Principles, Defra, May 2016

T.5 Ofwat has also set out its expectations, promoting the need for water companies to engage directly with customers, using effective and innovative engagement strategies to build relationships and to use this information to drive decision making and provide excellent levels of service[2]. Ofwat's principles of good customer engagement are presented in Figure T-1.

Figure T-1: Principles of good customer engagement, Delivering Water 2020, Ofwat, 2017



T.6 Ofwat's focus on customers' priorities and preferences is reinforced in its approach to the 2020-2025 Price Review[3] which is shaped around four inter-linked themes:

- great customer service;
- affordable bills;
- resilience; and
- innovation.

T.7 The emphasis on delivering plans which meet customers' expectations is also clearly set out in the Water Resources Planning Guideline (WRPG)[4]. Aspects included in the WRPG on which companies need to engage with their customers are:

- the outcomes that customers want;
- the level of service provided to customers;
- the levels of resilience;
- the scale and pace of leakage reduction;

[2] Customer engagement and policy statement and expectations for PR19, Ofwat, May 2016
[3] Delivering Water 2020: Consulting on our methodology for the 2019 price review, Ofwat, July 2017
[4] Water Resources Planning Guideline, April 2017, Environment Agency & Natural Resources Wales, produced in collaboration with Defra, the Welsh Government, and Ofwat

- the benefits that leakage reduction will bring to your customers' willingness to participate in demand management; and
- preferences on options/solutions as part of decision making.

T.8 We fully support the increased focus on understanding, and meeting, the needs and expectations of our customers in developing our future plans. Over the past three years we have undertaken an extensive programme of research and engagement with our customers. This has involved the use of a range of techniques, and covered a wide range of topics, to ensure we have a good understanding of our customers' priorities and preferences. This information, alongside information from day-to-day engagement with our customers, has been used to inform our decision making and shape our future plans.

T.9 Our engagement with our customers does not end with the business planning process; customers are active participants in the services we provide, with a direct impact on how water is used and managed. We want to continue to build on our programme of engagement and have ongoing engagement with our customers through the delivery of our plans and services such as rolling out metering to household customers, and promoting the efficient use of water. Additional issues have also been highlighted through the public consultation that would be helpful to discuss with customers.

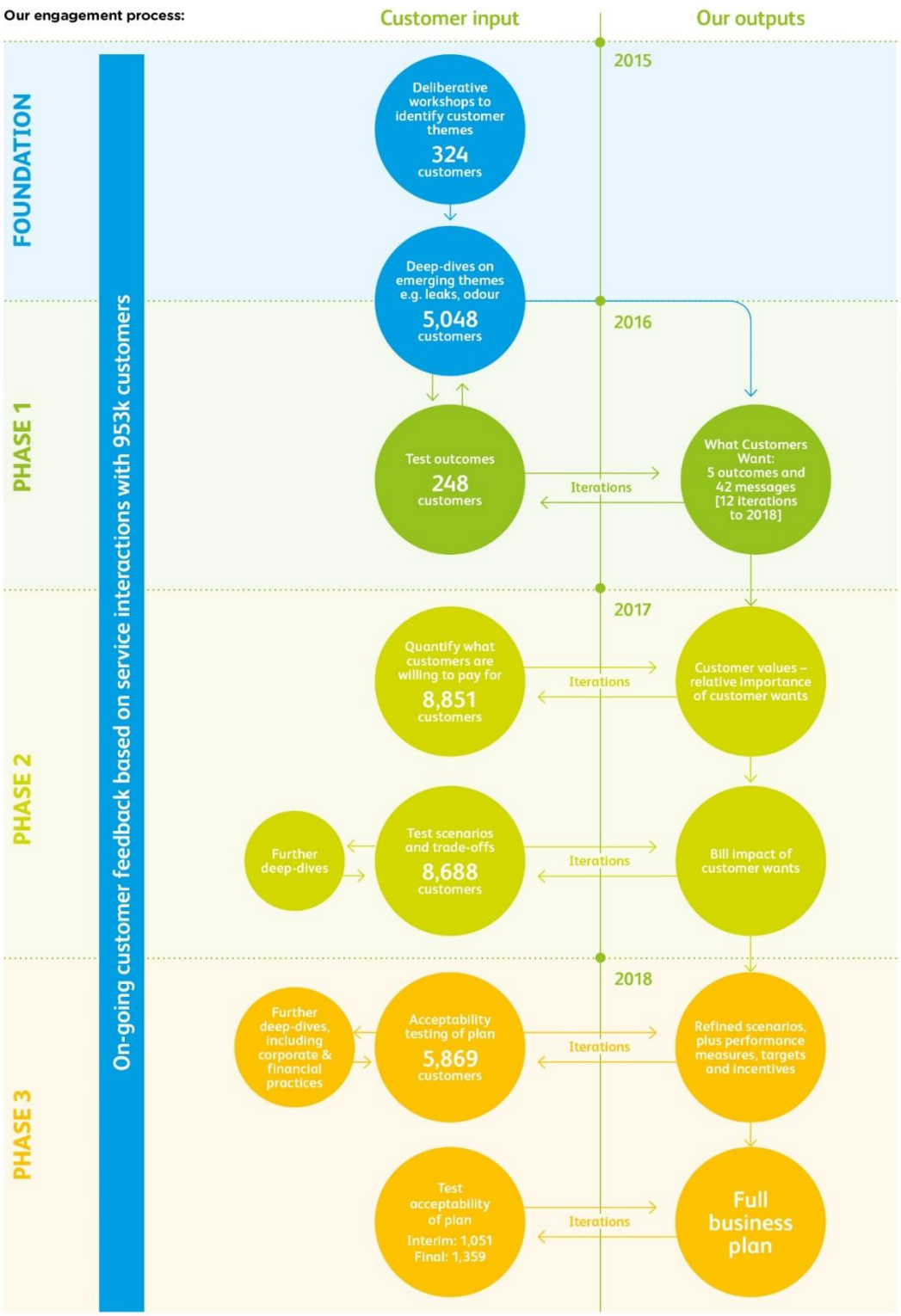
T.10 We have an independent customer challenge group (CCG) which has a responsibility for monitoring, challenging and providing input into our ongoing customer engagement programme. The CCG also has a role in providing independent assurance on how well we have engaged with our customers, and how this is reflected in our business plans. We work closely with our CCG, providing monthly progress updates on the engagement programme, seeking their comments in the design and delivery of the research and engagement programme, and explaining how the output information will be used to shape our long term plans.

C. Overview of the research and engagement programme

T.11 Over the past three years we have undertaken an extensive research and engagement programme. Our customer research programme has been iterative and designed to build a robust understanding of what our customers need and expect from us as a company. Figure T-2: Overview of the research and engagement process sets out at a high level the end-to-end process and core activities which informed each cycle. We initially started in 2015 by collecting our customers' views on their wider priorities, and since then we have collected 954,000 pieces of customer feedback[5], which have been explored in more depth via a series of deep dives, and tested though wider engagement activities. This process was repeated between 2015 and August 2018, continually gathering insights driven by what our customers had told us and then testing back with a wider audience of customers through our 'conversations'.

[5] Thames Water, CSD017-PR19-What customers want triangulation methodology, page 50

Figure T-2: Overview of the research and engagement process[6]



[6] Thames Water, Appendix 2 -PR19-Engaging and delivering for customers, page 19

T.12 **Foundation stage – understanding what customers want:** We started a conversation to understand customers' key priorities, using deliberative techniques to explore their perspectives on the services we provide and the language they use to describe them. We used this stage to define our 'outcomes' and provide a customer-centric framework for further insight gathering and triangulation.

T.13 **Phase 1 – testing and confirming 'What Customers Want':** We collated the ongoing insight received from customers through each cycle, from NPS surveys, 'rant and rave', complaints analysis and journey development, providing an up-to-date view of 'what customers want' from this rich data source. We used a mix of quantitative, qualitative and co-creation techniques in these areas, which included deep dives directly with our customers on specific topic areas. Dependent on the complexity of the topic, we also used more deliberative methods for areas such as intergenerational fairness and online panels for simple subjects such as lead piping.

T.14 **Phase 2 – testing and confirming Performance Commitments, ODIs, trade-offs:** This extensive work enabled us to understand the value customers place on our services, and involved revisiting previous materials to make them more appealing and relevant, starting afresh and testing different ways of survey presentation thorough cognitive, focus group and hall testing. It involved triangulating Willingness to Pay values against a variety of other techniques including revealed preference, market data and value transfer, and more innovative areas such as subjective wellbeing. Customer valuations were then rigorously tested against wider sources such as operational data and customer contacts.

T.15 **Phase 3 – acceptability testing and finalisation of plan:** At regular points across the programme, our integrated planning process used these customer wants to inform our planning prioritisation - sharing it with our customers, teams, our Board and our CCG so that it could be reviewed, challenged and built into our business plan. During customer testing we explored whether we had accurately reflected customer feedback in our planning outputs with our customers and stakeholders. This included three significant customer consultations as well as a number of testing phases. We replayed what we had heard so far and the decisions we had made as a result, enabling a transparent, two-way dialogue about our emerging plan.

Reporting

T.16 We consolidated the output from all the streams of engagement and research into a consolidated report called "What Customers Want"[7]. The report summarises what we know about customers' needs and expectations and provides a consistent and robust evidence base for decision making to shape both our WRMP19 and our Business Plan.

[7] Thames Water, CSD002-What customers want consolidated report

D. Customers' priorities and preferences on water resource matters

T.17 On water resources and planning future water supplies, we specifically sought feedback from our customers on the following topics:

- the water resources challenge and the planning process
- the levels of service we provide to customers in terms of the frequency of water use restrictions
- the options that can be used to provide a secure supply of water
- the level of leakage that customers consider to be acceptable

T.18 We undertook a suite of research studies as listed below. These studies were delivered by independent agencies who are experts in market research. We also took account of relevant external research[8] and local engagement in the communities that we serve.

- Deliberative research on WRMP, Britain Thinks, October 2016 and December 2016[9]
- Deliberative research on inter-generational fairness, Britain Thinks, October 2016[10]
- Deliberative research on resilience, Britain Thinks, February 2017[11]
- Deliberative research on leakage, Britain Thinks, April 2017[12]
- Being a good neighbour - deliberative research, Britain Thinks, March 2017[13]
- Customer preferences research Stage 1 Study, Eftec/ICS, April 2017[14]
- Customer preferences research Stage 2 Studies Water Resource options and levels of service, Eftec/ICS, May 2017[15]
- Collaborative research on water trading, Verve, May 2018[16]
- Resilience to extreme drought and protection of vulnerable chalk streams, Britain Thinks, February 2019

T.19 The headline messages for each topic are summarised in the following paragraphs and then followed by more detailed information from each of the individual research studies.

The water resources challenge and the planning process

T.20 Customers want a dependable service which they can rely on. Most customers are unaware of the challenges to our future water resources in terms of population growth, climate change and environmental protection. When prompted, customers understand that there is a need for investment to maintain a reliable water supply, they consider a secure water supply to be

[8] Water saving: Helping customers to see the bigger picture CCWater, October 2017

[9] Thames Water, TSD019-CR29a/b WRMP Stage 1 and 2
[10] Thames Water, TSD019-CR19 Intergenerational fairness
[11] Thames Water, TSD019-CR52 Resilience deep dive
[12] Thames Water, TSD019-CR29c Leakage Research
[13] Thames Water, TSD019-CR32 Being a good neighbour.
[14] Thames Water, TSD019-CR41 Stage 1 Customer Preference Research
[15] Thames Water, TSD019-CR43a/b Stage 2 Customer Preference Research
[16] Thames Water, TSD019-CR65 Water Trading

fundamental and they want reassurance that we are planning for the future. They expect this to happen and see it as a priority. An overview of attitudes of household customers towards planning is provided in Figure T-3 and non-household customers in Figure T-4.

T.21 The majority of customers support the need for us to plan for the future, that a planning horizon should be of at least the next 25 years (80% of household customers and 82% of non-household strongly agree or agree), and that future plans should be flexible to accommodate future changes (over 80% of household and non-household customers strongly agree or agree).

T.22 In both the qualitative and quantitative research customers indicated that while the bill is important, and must be affordable, a variety of factors need to be taken into account in addition to cost in determining the long term strategy. 44% of household customers and 31% of non-household customers stated that the increase in the bill was the only consideration, with 58% and 54% of household, and 59% and 52% of non-household, strongly agreeing or agreeing that they would be willing to pay more to protect the environment and to ensure a resilient water supply, respectively. In the qualitative research customers supported “best value planning” and of the suite of metrics presented, customer acceptability was not rated as highly as some of the other metrics as customers felt that any plan has to be credible. They recognise that we ought to select the best performing option(s) – not those which are most acceptable.

T.23 In respect of future increases in their bills, customers told us that they value consistency in bills, and would want any significant increase to bills to be clearly communicated. Most felt that an increase in the range of £2-£15 in a year would go unnoticed. Increases of £20-£30 would be noticed but were thought to be manageable. Increases of £40-£100 would need have a clear justification and with sufficient warning.

T.24 Furthermore customers believed that the costs for future investment should be shared across both current and future customers (over 70% of household customers agreed with this). Overall customers felt that everyone uses water and therefore everyone should be expected to contribute to the system. Customers showed a strong sense of responsibility towards future generations.

Figure T-3: Attitudes of household customers to planning[17]

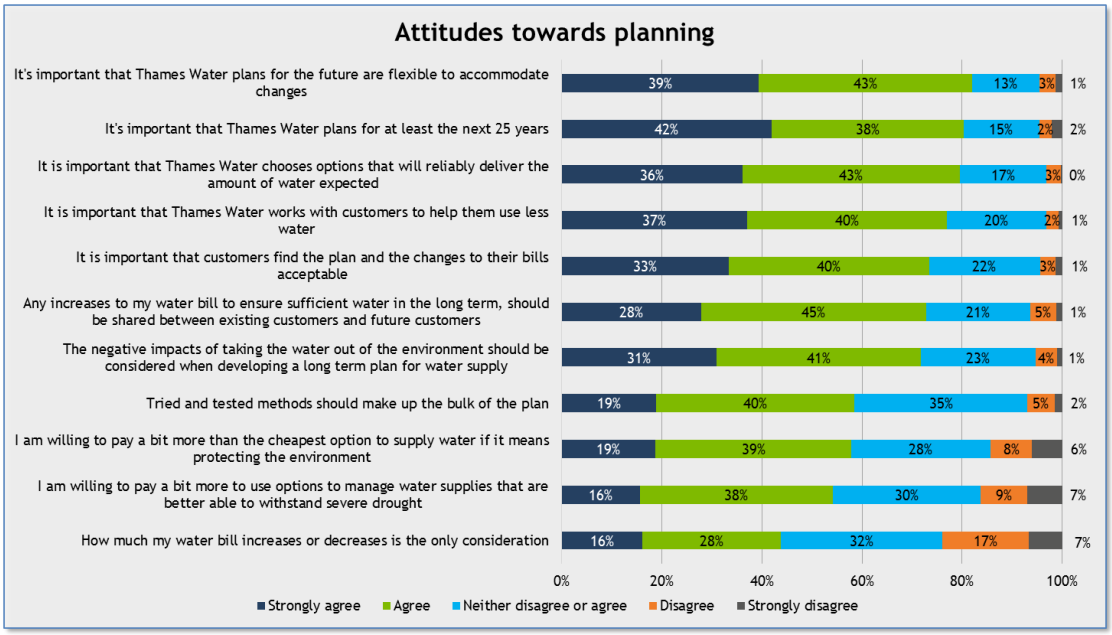
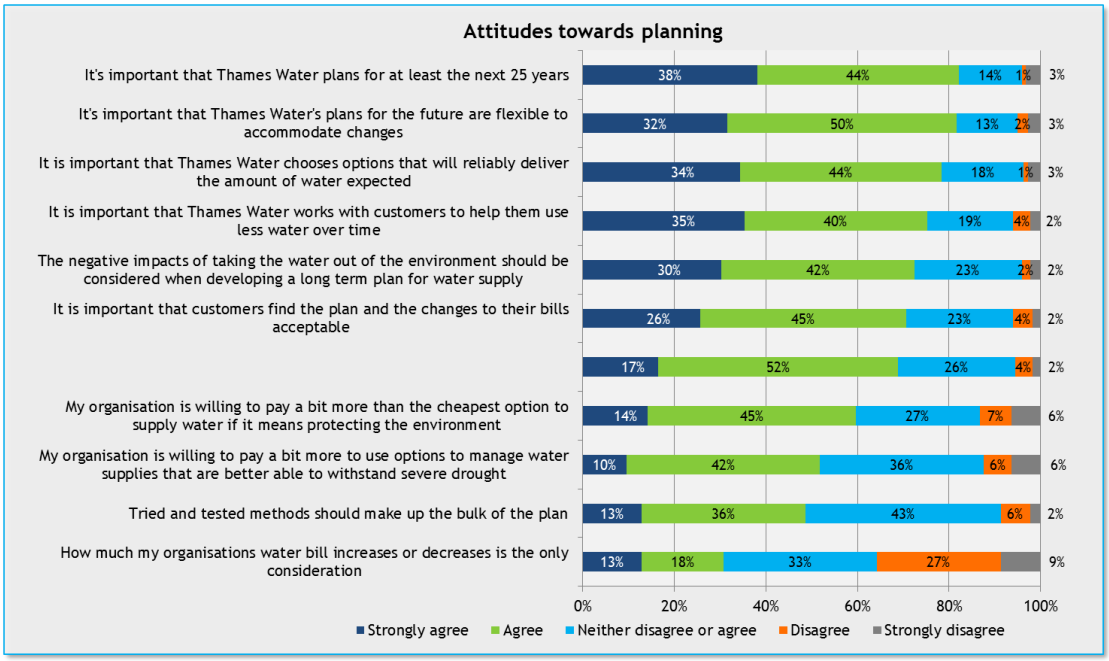


Figure T-4: Attitudes of non-household customers to planning[18]



[17] Eftec/ICS, CR43a/b Stage 2 Customer Preference Research.

[18] Eftec/ICS, CR43a/b Stage 2 Customer Preference Research.

Levels of service - water use restrictions

T.25 We asked our customers for their views on the levels of service we provide in terms of water use restrictions and whether the frequency of restrictions that we currently plan for is about right, not often enough, or too often.

T.26 Overall water use restrictions at their current expected frequency of implementation are not perceived to have significant impacts on customers' day-to-day activities. As such customers did not want deterioration in the levels of service and were broadly happy with current service levels however they did express some appetite for improved levels of service for the more severe restrictions.

T.27 Water rationing, referred to as a Level 4 restriction, is the restriction that is of most concern to customers. Over 60% of customers state that this will have the greatest impact on their daily activities (63% household customers and 68% non-household customers)[19]. Both household and non-household customers expressed a preference for enhanced service levels for Level 4 restrictions, moving from the current service levels of 1:100 year drought to a 1:200 year drought, this was caveated with a concern about the associated bill increase. Beyond this, household customers place very little weight on further improvements to 1 in 300 and 1 in 500 levels of service, although there is a greater level of support from non-household customers.

T.28 Since we published the draft plan we have completed further engagement with customers using the innovative Customer Engagement Tool, which included a specific question on drought resilience. The results from this research indicated that customers support planning for enhanced resilience and to achieve this within the next 10 years. This feedback was with knowledge of the potential impact on the customer's bill, and taking account of changes to service across all business services. This exercise indicated that our customers do support planning for greater resilience to a severe drought, which is a tenet of our plan.

T.29 It is also worth noting that Government, regulators and stakeholders have also clearly expressed their support for plans which make sure that we have resilient water supplies in the long term.[20,21]

[19] Combines customers that stated that the impact would be 1) a lot and 2) quite a lot.
[20] Building resilient water supplies - a joint letter, Defra, 9 August 2018
[21] Preparing for a drier future: England's water infrastructure needs, NIC, April 2018

Options

T.30 We sought customers' feedback on the options that we are considering to ensure a secure water supply. We presented 11 options in total covering demand management (three) and water resource options (eight).

- Overall there is a preference for using water supplies that we already have more efficiently and effectively before we look for new sources of supply. Customers indicated a strong preference for demand management options (leakage reduction and water efficiency) over new resource development. A key driver for this is avoidance of wastage.
- Tariffs were not as popular as other demand management measures; a key reason for this is that they are considered unfair to some customers.
- There was quite a spread of views on the individual resource options. The ranking from the valuation survey, using preliminary values, is shown in Table T-1.
- The option which was identified as one of the preferred options in all research studies was transferring water at Teddington, this was because it was perceived to have few negative impacts, provided a large volume of water and is simple. The views of the local community in close vicinity of this option were sought via research. Overall they felt that there would be few long term negative impacts for the community; they were reassured by the fact that Teddington transfer would be built upon existing infrastructure and construction would mostly be on existing Thames Water sites and therefore would not increase noise or harm the aesthetic of the area; and the nuisance was considered comparable to other building projects in the area.
- Reuse - In the qualitative research concerns were raised around the energy use and complexity of the treatment process, but reuse had greater support in the valuation research. There were some concerns raised around reuse and the safety of it, however once reassured of the need to meet drinking water quality requirements, there were fewer concerns raised from a public health viewpoint. Customers living close to the proposed reuse site were engaged via research and they advised that we would have to conduct an education campaign to ensure that local residents don't become misinformed about the process.[22]
- A storage reservoir was one of the next preferred resource options in both the qualitative research as well as the quantitative research. The main reasons cited for support were that it is simple, tried and tested technology and once built could provide wider benefits to the local community. In the research undertaken within the local community close to the proposed reservoir site (near Abingdon) the participants felt that the positives for the reservoir outweighed the negatives and that even though the disruption and the build time are a concern, they recognise that in the long run the reservoir would be beneficial for both the whole region and the local area. Customers did express concerns about people who would lose their homes. They feel that we would need to effectively communicate our plans for the reservoir, including: why the reservoir was needed; the benefits it will bring to the area once it is built; and what we would do to minimise disruption to the community.
- Water transfer was identified as one of the least preferred options in all the research studies. One of the main reasons for this was the lack of perceived control that we would

[22] Thames Water, TSD019-CR29a/b WRMP Stage 2 – among Coppermills Community

have over the option. Customers local to the proposed discharge point of the option raised concerns around increased risk of flooding in the area and impact on the natural beauty of the Cotswolds. Overall local customers concluded that this option is not right for the area.

- Energy was identified as a significant driver in making decisions, and customers have a strong preference for the use of renewable energy[23].
- Of the 3 attributes: bill impact, option type, and energy type, customers indicated that the bill impact was the most significant consideration in the selection of the options (57% household and 54% non-household). When asked to say what was the least important, almost half of customers said option type the least important (47% household and 46% non-household)

Table T-1: Customer weights per option type

Option type	Households	Non-households
Water efficiency campaigns	4.8	5.0
Reducing leakage	4.0	7.2
Teddington Direct River Abstraction	3.0	2.3
Managing land use (catchment management)	2.2	2.2
Introducing tariffs	1.8	1.4
Water reuse	1.8	1.3
Reservoir storage	1.4	1.6
Using groundwater	1.3	1.5
Desalination	1.3	1.0
Water transfer	1.3	1.2
Storing water underground	1.3	1.2
More water restrictions	1.0	1.0

Leakage

T.31 Fixing leaks was identified as a high priority for customers and is frequently identified as an important area for us to focus on in terms of planning future water supplies. It is seen as inefficient and wasteful (of both treated water and money) and morally wrong.

T.32 When considering how we plan for meeting future demand, customers say we should prioritise reducing leakage before finding new sources of supply. When considering a range of water resource options customers put leakage reduction second in their order of priority only behind water efficiency campaigns.

T.33 Current levels of leakage are felt to be too high. Customers are shocked when told that 25% of treated water is lost through leakage. This concern is based on the leaks that they see, so the situation is made worse when learning that a high proportion of leaks (70%) are in fact hidden. They do understand when it is explained to them that there is a point when it becomes too expensive to fix more leaks but they say cost is not the only consideration. They

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

call for a balance between reducing leakage and acceptable bill impacts and levels of disruption.

T.34 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'. This is seen as wasteful and short term thinking (as these leaks will need to be fixed in the long run when they get worse).

T.35 They call for a reduction from the current leakage level of around 25% to a level that is comparable to the rest of the industry and are prepared to accept some impacts on their bill and disruption from roadworks to achieve this. They expect future leakage levels to be around 14% or 15%.

T.36 The customer willingness to pay estimates used in our value for money assessments indicate that customers see a benefit in reducing leakage to 19%; this increases if leakage is reduced to 16% but goes down if the leakage level is reduced as far as 10%.

Resilience

T.37 Resilience has been a key theme throughout our engagement; it is a wide ranging topic and we have not only covered resilience to severe drought but also other aspects, such as the resilience of the network to flooding and cyber-terrorism. A detailed report[24] on all our work with customers has been provided to Ofwat as part of the company's Business Plan submission.

T.38 Most customers are unaware of the challenges to ensuring future water supplies. When informed about the problem of water scarcity, the vast majority of the general public are concerned and recognise it as a long term issue requiring immediate nationally co-ordinated action. People have an expectation that water companies, governments and others will do what is needed to solve the issue of future water shortages.

T.39 This aligns with a general mood of support for infrastructure development. At a national level people think we should be aspiring for world leading infrastructure or solid improvements where needed. They trust the water industry to make the right decisions, but want to understand what it is doing and why it is doing it. They want to discuss major infrastructure needs in their area, be involved in a two-way conversation and be helped to understand the benefits.

T.40 Customers expect a 24/7 resilient and reliable service and expect us to plan to mitigate and recover from hazards including weather related events, terrorism and cyber-crime and provide a resilient service into the future. They trust in our expertise and expect Thames Water to be able to deal with such hazards – they are more concerned with impacts on their water and wastewater service rather than the cause of the problem.

T.41 Customers of all ages show concern for the future of younger generations. They say we all use water, and benefit from past investment and so should expect to do the same for future generations.

[24] CSD002-What customers want consolidated report, Thames Water August 2018

Water resources – deliberative research (Britain Thinks, October 2016 and December 2016[25])

T.42 The overarching objective of the research was to understand the needs and priorities of our customers to inform the development of the WRMP. More specifically, the research focused on customers':

- expectations in light of current and future pressures on water resources
- perceptions around resilience to drought
- reactions to a range of demand management and water resource options
- views on the criteria used to judge the relative merits of different options and the principles that should be used to inform planning

T.43 The research was carried out in two phases:

- Phase 1 comprised three deliberative workshops with household customers and one with non-household customers. There were 16 participants at each workshop.
- Phase 2 sought the views of hard to reach customers, future customers and local communities who may be affected by our future plans.

T.44 The findings are summarised below.

Phase 1

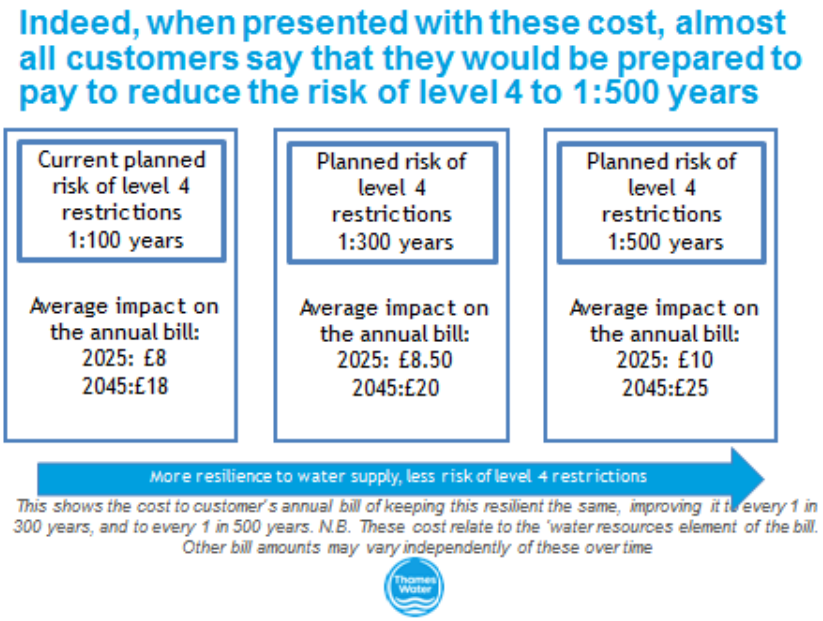
T.45 Few customers are aware of the challenges facing the region in terms of water resources. Once these are explained to customers they say that planning for the future is a priority and they want reassurance that we are doing this.

T.46 On levels of service, in terms of water use restrictions in a drought:

- Customers consider the impact of Levels 1 and 2 restrictions to be low and the risks acceptable
- Household customers were not overly concerned by Level 3 restrictions whereas non-household customers raised more concerns and were willing to pay more to reduce the risk of reaching Level 3.
- Following discussion, both household and non-household customers considered Level 4 restrictions to have a high social and economic impact, the risk level unacceptable, and indicated that they would be willing to pay more to reduce the risk of water rationing (Level 4 water use restrictions) as shown in Figure T-5[26]

[25]Thames Water, TSD019-CR29a/b WRMP Stage 1 and 2
[26] Note this research explored water resources only, other research was completed to understand customers willingness to pay for improvements in service levels taking account of the full range of services provided by Thames Water.

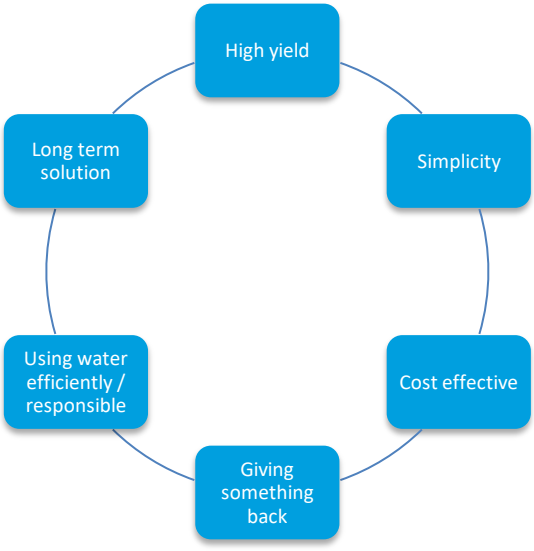
Figure T-5: Customer feedback on Level 4 restrictions



T.47 On future options, customers consistently expressed a preference for Teddington transfer, a reservoir, and leakage reduction amongst their most favoured options.

T.48 There were variations to customers' order of preference for options but common principles that underlay their preferences were: yield; simplicity; using water efficiently; a long term solution; cost effective with customers more willing to accept larger upfront costs if this means that the option is more cost effective in the long run; and providing environmental and social benefits. This is shown in Figure T-6.

Figure T-6: Common principles underlying customer preferences



T.49 The least preferred options were raw water transfer, water reuse and desalination. The reasons cited were around the reliance on external factors, complexity, energy use and cost.

T.50 Whilst both household and non-household customers supported water efficiency, non-household customers were more sceptical about the contribution that water efficiency can make to address the future challenges.

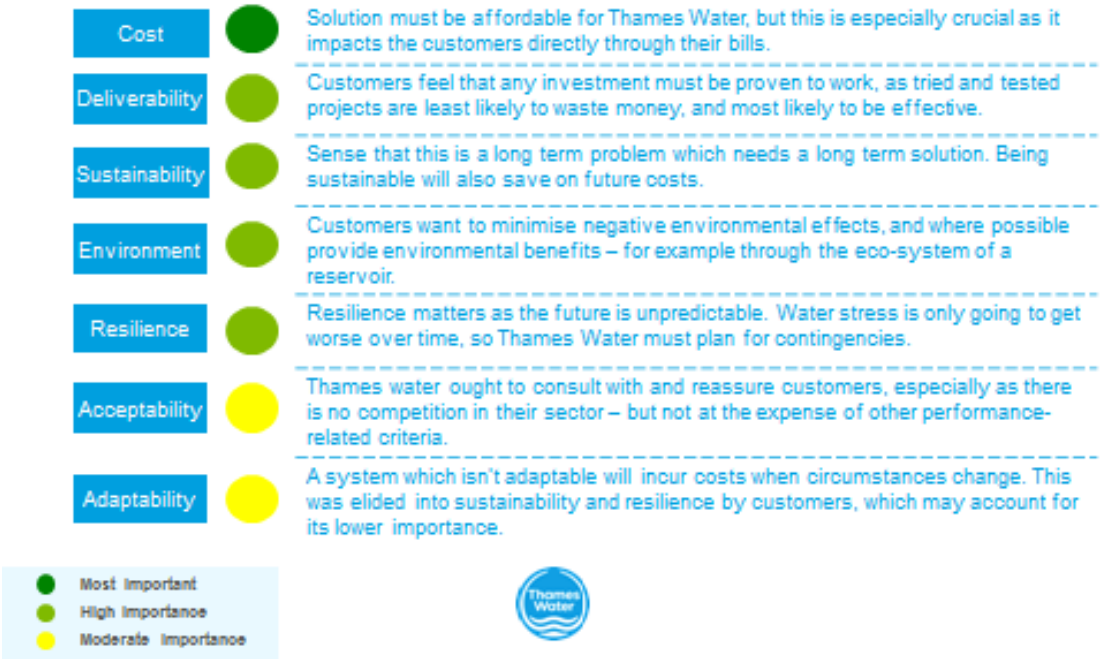
T.51 On tariffs, both household and non-household customers raised concerns around the fairness of tariffs.

T.52 A summary of performance of options against the common principles is presented in Figure T-7.

Figure T-7: Options against the common principles

T.53 In designing the preferred programme customers supported consideration of a range of criteria. Whilst cost was identified to be the most important criteria, as the future plan must be affordable for customers, most agreed that it was not the sole determiner. Deliverability and sustainability, defined as long term planning, were then considered to be the next most important criteria. Acceptability and adaptability were viewed as having lower importance. On acceptability, customers felt that we needed to consult customers on its proposals but not at the expense of other performance criteria.

Figure T-8: Summary: perceptions of the criteria for programme appraisal



Phase 2

T.54 Phase 2 focused on 10 additional audiences (harder to reach and future customers) and local communities who may be affected by future infrastructure investment namely:

- Transfer at Teddington Weir in Teddington
- Reservoir near Abingdon
- Water transfer in the locality of Lechlade (Cotswolds)
- Water reuse at Coppermills (London)

T.55 The approach included a series of workshops, focus groups and one-to-one in depth interviews as shown in Figure T-9.

Figure T-9: Phase 2 - Overview of the approach

In order to understand customers' views and experiences in detail, we conducted a series of workshops (each lasting 3 hours), focus groups (each lasting 90 minutes) and one-to-one depth interviews (each lasting 60 minutes) at a location of customers' choice. Fieldwork took place between October and December 2016.

Audience	Research	
Local communities	4 x 3 hour workshop	All participants invited to join Thames Water's standing online panel of 'customer ambassadors' to help refine Thames Water's planning activities on-going
Future customers	2 x 3 hour workshop	
Large businesses	12 x 60 min depth	
Faith/minority ethnic groups	4 x 90 min focus groups	
Customers with high water usage owing to a health condition, large family or large house/garden	9 x 60 min depth	
Customers on low incomes/receiving financial support	6 x 60 min depth	
Customers with a mental health condition	6 x 60 min depth	
Customers with learning difficulties	3 x 60 min depth	
Customers with a physical disability	3 x 60 min depth	
Socially isolated older customers	3 x 60 min depth	

T.56 Local communities: We conducted four, three-hour workshops with customers in the following local communities which may be affected by specific options.

Figure T-10: Local community workshops

Abingdon – possible location for a reservoir
- 2 x workshop with 8 participants
- All living in the Abingdon area that would be affected if a reservoir was built.
- Spread of gender, ages, ethnicity

Lechlade – possible location for water transfer
- 1 x workshop with 8 participants
- All living in the Lechlade area that would be affected if water transfer took place there
- Spread of gender, ages, ethnicity

Coppermills, London – possible location for water reuse
- 1 x workshop with 8 participants
- All living in the Coppermills area that would be affected if water reuse took place there
- Spread of gender, ages, ethnicity

Teddington – possible transfer at Teddington Weir
- 1 x workshop with 8 participants
- All living in the Teddington area that would be affected if transfer took place at Teddington Weir
- Spread of gender, ages, ethnicity

T.57 Generally the findings from the research with the local communities are in line with the main findings from Phase 1:

- Customers tended to agree that we should be investing to meet the challenges of the future
- Customers tended to say that they would be prepared to pay more to reduce the likelihood of reaching Level 4 restrictions, given what is perceived to be a relatively small cost spread across the year
- Customers' overall perception of the options, prior to learning that they may have one in the area, are in line with wider customer research. In that customers tended to prefer the

reservoir, Teddington transfer and reducing leaks, favouring options perceived to be simpler, higher yield, cheaper and less environmentally damaging.

- Customers' views on having a water resource in their area changed depending on the resource and the community. The findings from the individual local communities are presented in Figure T-11 to Figure T-14. However, across all the workshops, customers stressed the importance of us educating people in the local community about the water resources challenges faced by the region and the impacts of the options on the local community in the short and long term.

T.58 A summary of the results from each workshop are presented in Figure T-11 to Figure T-14.

Figure T-11: Water transfer, Teddington: summary of findings

	Summary
Spontaneous perspective of Teddington transfer	• Teddington transfer is not initially considered as a serious option by most customers in Teddington, as they assume that it would not be a high yield option
Informed perspective of Teddington transfer	• Upon becoming more informed, most customers in Teddington say that it is among the best options • It is seen as providing a lot of water with few negative impacts (e.g. it has a relatively short lead time, is relatively cheap and has few negative environmental impacts)
Local community perspective of Teddington transfer	• While customers in Teddington tend acknowledge that there is likely to be some negative impact on the local community in the short term, they feel that there seems to be few long term negative impacts for the community • Moreover, customers are reassured that much of the work will be building upon existing Thames Water infrastructure on existing Thames Water sites • As such, most customers in Teddington say that they would have little opposition to Teddington Transfer – providing there is a full consultation with the community on its potential impacts and education around the need for which it is being built

Figure T-12: Reservoir, Abingdon: summary of findings

	Summary
Spontaneous perspective of the reservoir	• Some customers in Abingdon are aware of previous attempts to build a reservoir in the area • Customers in Abingdon tend to be drawn to the reservoir as a potentially good option in the first instance, with many feeling that it can provide a lot of storage and also a social benefit for the local community
Informed perspective of the reservoir	• Customers remain in favour of the reservoir following a more in-depth briefing • In addition to having a high yield and a good resource for a local community, customers now also say that it is comparatively cheap and simple compared to other options (e.g. desalination) • Though some customers also tend to note the long lead time and impact on the local community as a potential drawback
Local community perspective of the reservoir	• Most customers tend to be very concerned about the impact the reservoir would have on those who would lose their homes and on congestion in the local area during the long build time (which is already seen as struggling) • Ultimately, most customers feel that the benefits to the community outweigh the negatives of the local disruption – as long as Thames Water is seen to be doing everything it can to minimise this disruption

Figure T-13: Water transfer, Lechlade: summary of findings

	Summary

Spontaneous perspective on water transfer	• Initial reactions to water transfer among customers in Lechlade tend to be mixed
	  • On the one hand, some customers say that it provides a simple intuitive way of addressing the deficit
	  • While others worry about the negative environmental impacts

Informed perspective on water transfer	• Upon receiving further information, customers in Lechlade remain split
	  • Some feel that water transfer provides a relatively simple and comparatively cheap option
	  • While others continue to worry about the impact on the environment

Local community perspective on water transfer	• Upon learning that it may be in the area, most customers in Lechlade withdraw their support for the option
	  • There are concerns that it may worsen flooding in the area
	  • And that it could harm the aesthetic of the area (which customers value highly in itself and also for its importance to tourism in the area)
	  • Finally customer say they are concerned about the noise and disruption both while it is built and during its operation

Figure T-14: Water reuse, Coppermills: summary of findings

	Summary

Spontaneous perspective on water reuse	• Initial reactions to water reuse among customers in Coppermills tend to be mixed
	  • Many customers like the idea, saying that it sounds sustainable and associating it with ideas of recycling
	  • However, some are concerned about the more intensive treatment process

Informed perspective on water reuse	• Upon receiving further information, most customers in Coppermills tend to become less favourable towards water reuse as an option
	  • Customers tend to feel that it does not perform well on cost compared to other options
	  • Furthermore, there are concerns among many about this option's relatively low resilience to other hazards

Local community perspective on water reuse	• Learning that it may be built in the area has little impact on most customers' views
	  • Most feel that they would not notice the disruption associated with the build process as the Thames Water site is 'out of the way'
	  • A small proportion of customers say that they would not be happy drinking the water, however, most say that they would feel comfortable with Thames Water's assurance that it is safe to drink

T.59 We held a three-hour workshop with future customers. The workshop involved 16 future customers, aged between 16 and 24, none of whom were water bill payers themselves. The results are presented in Figure T-15.

Figure T-15: Future customers: summary of findings

	Summary
Where this audience is starting from	• **Your future customers very rarely think about their water service** • **As a result, they tend to find it slightly harder than other groups to engage with the scale of the challenge of supplying water going forward** • **The future customers we spoke to tended to be more environmentally conscious than other customers**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers
Attitudes towards resilience and levels of service	• Level 3 is not seen as having a significant impact on customers' lives • Level 4 restrictions are seen as having a significant impact on their lives • They are open to paying more to reduce the risk of reaching level 4 • **Though they find it more difficult to engage with these bill impacts**
Preferred and least preferred options	• Future customers prioritise options which would provide large amounts of water and offer a long term solution e.g. reservoir • **And options which reduce wastage and have little environmental impact e.g. reducing leakage**

T.60 We conducted in-depth interviews with eight hard to reach groups as noted in Figure T-16 and information on the survey sample for each group is given in Figure T-17.

T.61 The findings from these hard-to-reach groups are presented in Figure T-18 to Figure T-25.

Figure T-16: Hard-to-reach groups

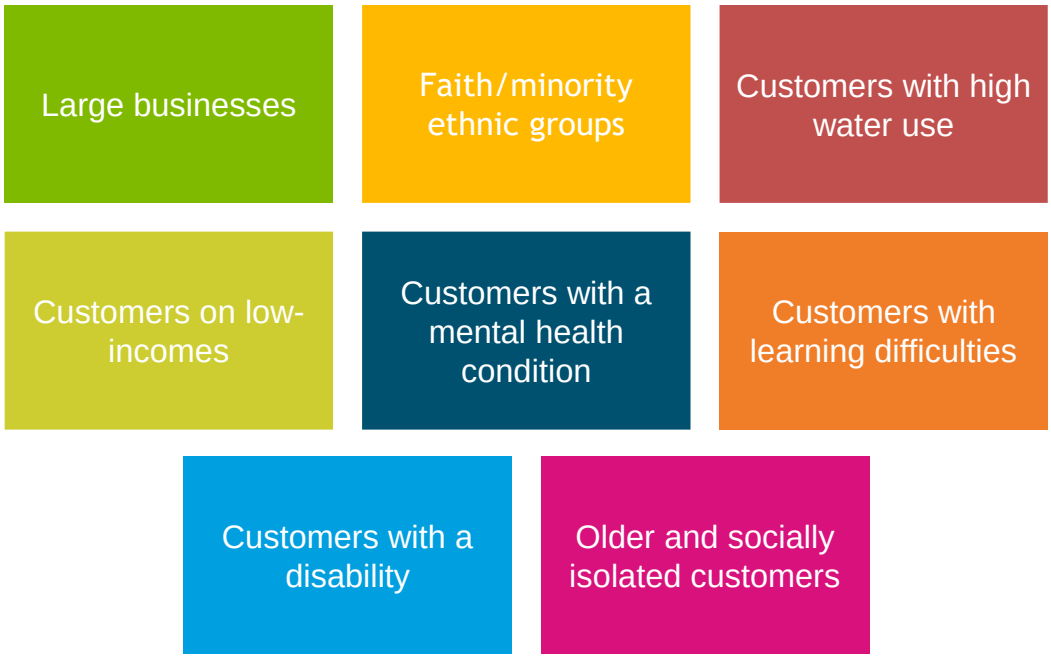


Figure T-17: Hard-to-reach groups – survey design

Figure T-18: Large businesses: summary of findings

	Summary
Where this audience is starting from	• **Large businesses have more knowledge about the water supply than other customers** • **Some have plans in place for an interruption to supply** • **Large businesses give a lot of consideration to their water supply**
Attitudes towards planning for the future	• **Awareness of the risk of water scarcity in the Thames Water region is high with this audience** • Customers **already** focus on planning for the future before being presented with information
Attitudes towards resilience and levels of service	• **The impact of level 3 would depend on what is classified as 'non-essential use' and the duration** • **Level 4 would have a significant impact on business operations** • **Having a resilient and reliable water supply is worth paying for and they would pay to improve resilience and reduce the risk of a level 3 or 4**
Preferred and least preferred options	• Large businesses prioritise options which would provide large amounts of water, offer a long term solution and are not energy intensive

Figure T-19: Faith/minority ethnic groups: summary of findings

	Summary
Where this audience is starting from	• **Greater awareness of the impacts of water scarcity, often from visiting relatives who live abroad** • **Make frequent comparisons with water in other countries**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low - they do not expect water shortages in the UK • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers

Attitudes towards resilience and levels of service	• Level 4 restrictions are seen as having a significant impact on their lives (e.g. impact on work and family)
	  • **These more 'everyday' considerations tend to be a greater concern than water needed for ablutions, which is a relatively small amount**
	• Open to paying more to reduce the risk of reaching level 4
	  • But would like reassurance of where this money is going

Preferred and least preferred options	• A reservoir tends to be preferred, with it being seen as long term, natural, simple and providing a social benefit • Demand management options are less preferred as customers feel that they could not reduce their usage by much

Figure T-20: Customers with high water use: summary

	Summary
Where this audience is starting from	• **Customers who use water to manage a health condition say this is an essential part of their daily health care routine** • **Having a large garden does not necessarily mean a customer reports using a lot of water** • **Customers with large families feel they need to use a lot of water and do not waste water**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low. • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers
Attitudes towards resilience and levels of service	• Level 3 is not seen as having a significant impact on customers' lives • Level 4 restrictions are seen as having a significant impact on their lives (e.g. impact on health care and family) and so they are open to paying more to reduce the risk of reaching level 4
Preferred and least preferred options	• A reservoir tends to be preferred, with it being seen as long term, natural, simple and providing a social benefit

Figure T-21: Customers on low incomes: summary of findings

	Summary
Where this audience is starting from	• **More cost aware than most other customer groups** • **More like to work part-time, be unemployed**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low - they do not expect water shortages in the UK • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers
Attitudes towards resilience and levels of service	• Level 3 is not seen as having a significant impact on customers' lives • Level 4 restrictions are seen as having a significant impact on their lives (e.g. impact on work and family) • Open to paying more to reduce the risk of reaching level 4 • **But would like reassurance of where this money is going**
Preferred and least preferred options	• Customers tend to prefer simple, natural options • **Cost is important, but through the lens of 'value for money' with customers tending to prefer options that are seen as cost effective in the long term** • **Tariffs are seen as penalising customers and therefore disliked**

Figure T-22: Customers with a mental health condition: summary of findings

	Summary
Where this audience is starting from	• **Customers' experiences vary greatly depending on their mental health condition and the severity of their condition** • **Many adopt different ways of keeping calm/reducing anxiety, for some this includes water**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers
Attitudes towards resilience and levels of service	• Level 3 is not seen as having a significant impact on customers' lives • Level 4 restrictions are seen as having a significant impact on their lives (e.g. impact on work and family) **and also may significantly impact their mental wellbeing** • Open to paying more to reduce the risk of reaching level 4
Preferred and least preferred options	• A reservoir tends to be preferred, with it being seen as long term, natural, simple and providing a social benefit

Figure T-23: Customers with learning difficulties: summary of findings

	Summary
Where this audience is starting from	• **Customers' experiences vary greatly depending on their learning difficulty and the severity of this difficulty** • **Many of these customers with more severe learning difficulties frequently rely on having a strict routine**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers
Attitudes towards resilience and levels of service	• Level 3 is not seen as having a significant impact on customers' lives • Level 4 restrictions are seen as having a significant impact on their lives (e.g. impact on work and family) • Open to paying more to reduce the risk of reaching level 4
Preferred and least preferred options	• A reservoir and water transfer tend to be preferred, with desalination and water reuse seen as more costly

Figure T-24: Customers with a disability: summary of findings

	Summary
Where this audience is starting from	• **Find it more difficult to adapt in the event of a water shortage** • **Want Thames Water to prioritise them in an emergency**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers
Attitudes towards resilience and levels of service	• Level 3 is not seen as having a significant impact on customers' lives • **Level 4 is seen as threatening their independence** • Open to paying more to reduce the risk of reaching level 4
Preferred and least preferred options	• Similar preferences to other groups in the research, choosing simple and natural options over chemically intensive ones

Figure T-25: Socially isolated older customers: summary of findings

	Summary
Where this audience is starting from	• **Customers in this audience have very loose support networks and may not have anyone that they can count on to help them in an emergency** • **More frail customers in this group would find it difficult to cope themselves in an emergency**
Attitudes towards planning for the future	• Awareness of the risk of water scarcity in the Thames Water region is low • Customers tend not to initially prioritise 'planning for the future', however, once briefed on the future challenges facing the region this become a top priority for customers
Attitudes towards resilience and levels of service	• Level 3 is not seen as having a significant impact on customers' lives • **Level 4 is also seen as something they can cope with, however, it is important to note that these customers tend to be reluctant to admit they require support** • Open to paying more to reduce the risk of reaching level 4
Preferred and least preferred options	• Similar preferences to other groups in the research, choosing simple and natural options over chemically intensive ones

Leakage – deliberative research (Britain Thinks, April 2017[27])

T.62 Leakage is an important issue for customers. In response to this we undertook detailed "deep dive" qualitative research with household and non-household customers across London, Slough and Oxford to explore this topic in more detail and gauge what customers consider to be an acceptable level of leakage. We held eight focus groups which were attended by 64 customers. The methodology and sample is summarised in Figure T-26.

Figure T-26: Leakage – Survey design

6 x groups with household customers

- 8 participants per group
- 2 hour sessions
- Household customers represented a range of:
  - Locations: London, Slough and Oxford
  - Demographics: Age, gender, SEG, life stage, ethnicity, tenure-type (i.e. private and social renters, homeowners)
  - Financial arrangements: Payment types, billing methods (i.e. directly or via landlord), some with meters and others not

2 x groups with non-household customers

- 8 participants per group
- 2 hour sessions
- Non household customers represented a range of:
  - Business size (number of employees) and number of sites
  - Sectors
  - Amount spend on water
  - Business who say they are dependent on water for their business and those who are not dependent on water

T.63 We adopted a deliberative approach, whereby customers were taken on a 'journey' to explore the things that matter most to them and to understand whether their priorities changed once they received more information about leakage. Throughout the research we asked customers to provide specific percentages of total water in supply lost to leakage which they felt were acceptable and their reasons. The purpose was not to reach a specific percentage that customers feel is acceptable, as customers did not have enough information to give precise figures on what is a complex topic, but to track the extent to which, if at all, customers' views on leakage changed as additional information was provided.

T.64 The findings of the research are summarised in the following paragraphs.

T.65 Customers tend to start from a position where they feel they know about leakage, suspect that more could be done by us to address it and say that it should be a priority going forward with us fixing the leaks as far as is possible. Water lost through leakage is primarily seen in the context of waste, with practical issues often secondary to a broader moral concern. While the issue of fixing leaks tends to be front-of-mind, the impact of increasing the amount of leaks fixed (bill increases and disruption) are rarely mentioned spontaneously.

T.66 Customers tend to be shocked by the current level of leakage (25% leakage). Whilst customers understand that we are in a difficult position (large network, Victorian infrastructure etc) they expect leakage to be significantly lower and the fact that it is not raises concerns that

[27] Thames Water, TSD019-CR29c Leakage Research

we do not consider this a priority. Their main reason for feeling it is unacceptable is that wasting that much water feels morally wrong.

T.67 Customers tend to understand the principle of the 'Sustainable Economic Level of Leakage', but do not agree that these economic considerations should be the main guide to the leakage policy.

T.68 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. This is seen as wasteful and short term thinking. Customers think we should be prioritising fixing the leaks above finding new sources, but agree that the two should go hand in hand.

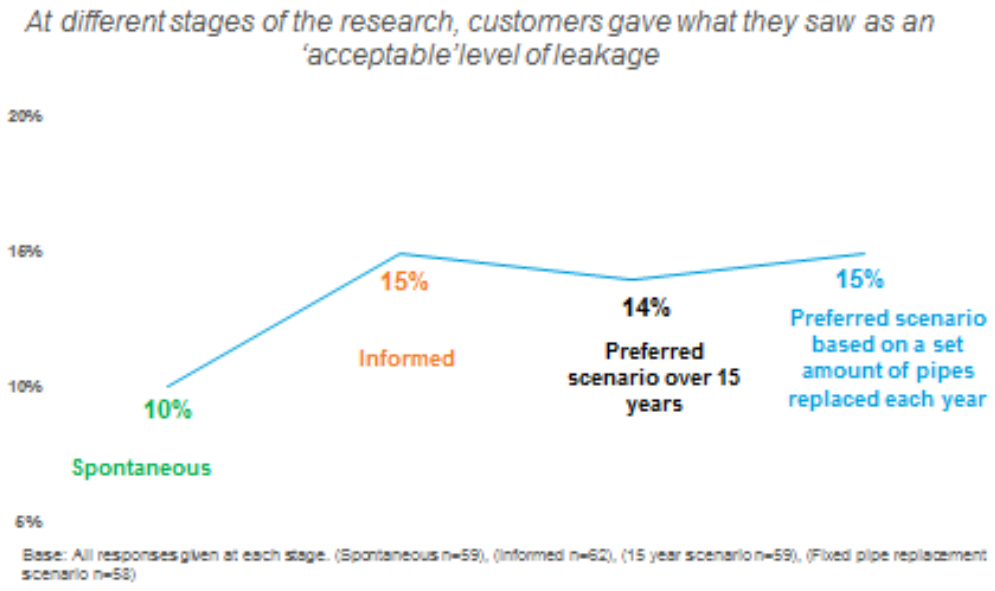
T.69 Customers who are informed of the implications of fixing further leaks (i.e. bill impacts, disruption) want to see a step-change from us in our leakage programme, though they acknowledge that there may be limitations on what should be aimed for in the short term.

T.70 Customers would like to see us coming into line with others in the sector. However whilst customers do want us to be ambitious, they recognise the implications of fixing more leaks. As such, they feel fixing leaks should be done at a pace that does not involve extreme levels of disruption or large cost implications for customers' bills.

T.71 The scenarios that were most indicated by customers were 14-16% leakage. 10% was considered to be too ambitious/unachievable and expensive, and 19% too high as it is morally wrong to waste such a large amount of water. They felt the scenarios of around 14-16% leakage are in line with other companies, and have acceptable bill impacts and disruption. Figure T-27 shows customers' preferences for an 'acceptable' level of leakage at different stages of the research.

T.72 This research does not provide the preferred percentage leakage as customers do not have enough awareness or understanding of leakage reduction to do this in an informed way, but provides an indication of customers' priorities and principles.

Figure T-27: Customer indications of acceptable level of leakage



Resilience - deliberative research (Britain Thinks, February 2017[28])

T.73 A key priority for customers is a commitment to planning for the future and ensuring a resilient water supply. Further research was undertaken to explore customers' attitudes towards resilience in more depth, not just resilience for water supply but the wider context of resilience. Resilience was defined as plans to maintain services able to cope with, and recover from, increasingly likely and more severe hazards, now and in the future. The research was undertaken as eight deliberative workshops, five with household customers and three with non-household customers as shown in Table T-2.

Table T-2: Resilience research – survey design

Household / non-household	Audience	Location
Household	9 x current customers, not experienced service failures	Ealing
Household	10 x current customers, not experienced service failures	Swindon
Household	10 x current customers, experienced service failures ('no water' events)	Dulwich and Twickenham
Household	10 x future customers (16-24 yrs old)	South London
Household	10 future customers (16-24 yrs old)	Reading
Non-household	7 x medium-sized companies, high water expenditure	North London
Non-household	7 x medium-sized companies, low water expenditure	Reading
Non-household	5 x small and micro-sized companies, low water expenditure	Oxford

T.74 The main findings of the research, as relevant to water resource planning, are summarised in the following paragraphs.

T.75 The term "resilience" itself did not resonate with customers, and planning for future services was not top of mind for customers.

T.76 Customers tend to struggle to distinguish between asset health and resilience and, indeed, many do not want to because ongoing asset health is considered intrinsic to future planning. In customers' minds an inability to effectively carry out current maintenance would undermine trust in our ability to plan for the long term.

T.77 Of the range of hazards all were perceived to be severe and important to plan for. Customers did agree a relative hierarchy for hazards with flooding consistently at the top of people's priorities, as it is seen as having the worst impacts on affected customers, followed by sustained cold and then droughts.

T.78 Customers considered that droughts could be predicted and planned for to a greater extent than more sudden weather related hazards, like heavy rain or storms, but they did recognise that the impact could be severe if the region ran out of water.

[28] Thames Water, TSD019-CR52 Resilience deep dive

T.79 If resilience expenditure will lead to a bill impact most people say that they would like further information regarding where their money is going.

T.80 There is also a lack of altruism regarding these future investments. Many customers say that they would be unwilling to pay to protect against flooding in another area, for example.

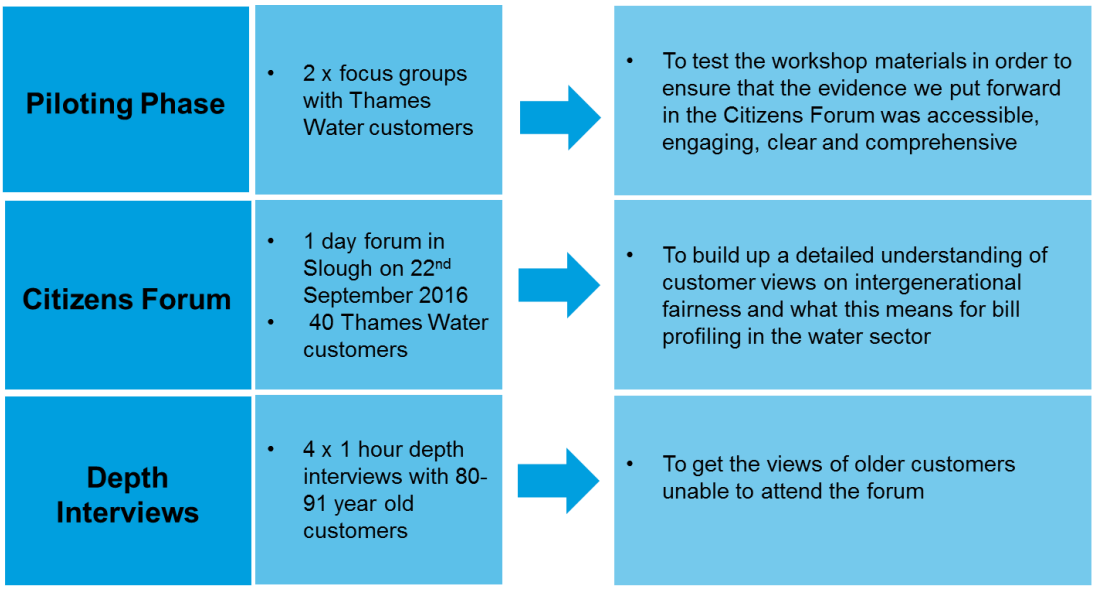
T.81 Overall customers thought that we had an important role in planning for the future of water and wastewater services and trusted us to know what to do.

Intergenerational fairness - deliberative research (Britain Thinks, October 2016[29])

T.82 Under the current regulatory regime we have broad autonomy over the projects in which we invest, the levels of service we provide and the timing over which our customers pay (previously investments were typically paid for over the lifetime of an asset). As a result of these changes, as well as the increasing need to renew and expand ageing infrastructure, we are reviewing how we use financial mechanisms to pull forward and/or push back investment. Customers ultimately pay for our infrastructure investments through their bills, and often over very long periods of time, and we know that how we spread the costs over time can affect different generations in different ways. We commissioned research to hear what customers, both current and future, thought was the fairest way of doing this.

T.83 The methodological approach used in this research is shown in Figure T-28. The research engaged five generations of customers aged 16 to 80.

Figure T-28: Intergenerational research – methodological approach



T.84 The findings of the research relevant to developing our long term plans on water resources are noted in the following paragraphs.

[29] Thames Water, TSD019-CR19 Intergenerational Fairness

T.85 Customers consider that the current system delivers a high quality service, and support measures which will ensure that the system continues to deliver a high quality service recognising that investment is vital to securing this.

T.86 Overall customers felt that we all use water and therefore all should be expected to contribute to the system. Customers showed a strong sense of responsibility towards future generations. Water is seen as a social good that we all have a responsibility to maintain for future generations.

T.87 Most customers think that costs for investment should be shared throughout the region although some suggest that London benefits disproportionately.

T.88 Customers value consistency in bills; frequent bill changes are hard for customers to keep track of and undermine trust.

T.89 Customers want any significant increases to bills to be clearly communicated. Most felt that an increase in the range of £2-£15 in a year would go unnoticed. Increases of £20-£30 would be noticed but were thought to be manageable. Increases of £40-£100 would need to come with a very clear justification and with good warning.

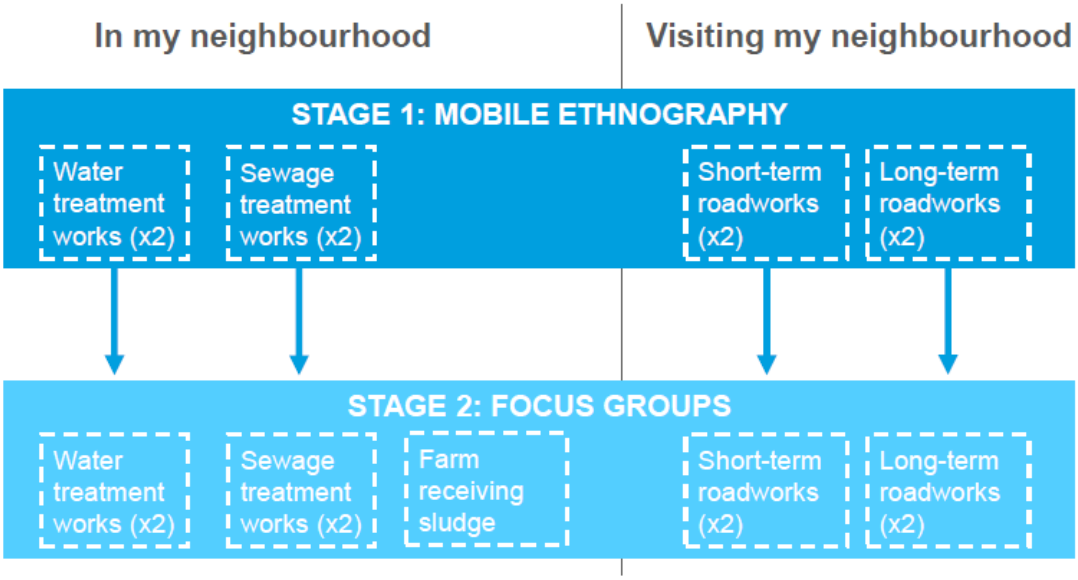
Being a good neighbour - deliberative research (Britain Thinks, March 2017[30])

T.90 One of our five long-term priorities is to 'Be a responsible company' and one of the elements to this is 'being a good neighbour'. The purpose of this research was to explore the concept of what being a good neighbour means to our customers. The research considered issues such as: reducing the noise and traffic disruption of our street works; reducing odour from our works; protecting wildlife; providing safe access for recreational activities such as fishing, sailing, birdwatching and walking; and helping and advising our customers to use water efficiently and to prevent blockages in our sewers.

T.91 The research was organised to understand views where we operate in the local community on a permanent basis, such as a water or sewage treatment works, and on a temporary basis, such as visiting the neighbourhood through street works. The methodology is presented in Figure T-29.

[30] Thames Water, TSD019-CR32 Being a good neighbour.

Figure T-29: Being a good neighbour – survey design



T.92 The main findings from the research are that companies are not generally perceived as neighbours and our image is fairly neutral. Even customers living near our sites have few top of mind associations beyond the core service provided.

T.93 From a water resources perspective, the research provided insight into customers' views on roadworks, which are seen as an inconvenience and disruptive to customers' daily lives, but are recognised as essential to maintain and upgrade infrastructure. Where street works occur, customers want: planning to ensure that the works are completed as quickly as possible with as little nuisance as possible, advance warning, coordination with other utilities and working at times which minimise inconvenience, speedy completion and information about what roadworks are for and how long they will last.

Water resources – customer preference levels of service (ICS/Eftec, April 2017[31])

T.94 This study examined household and non-household customer preferences for different types of water use restriction during a period of very low rainfall. It covers 'levels of service' in terms of the severity of water use restrictions and the frequency with which they are expected to be applied. Table T-3 shows the current levels of service and the range of service levels tested in the research.

[31]Thames Water, TSD019-CR43a Stage 2 Customer Preference Research – water resources level of service

Table T-3: Water use restrictions - current levels of service and the possible future levels of service

Water use restriction level	Current level of service (expected frequency)	Range of deterioration/improvement
Sprinkler and unattended hosepipe ban	1 in 10 years on average	1 in 2 years – 1 in 30 years
Temporary use ban (full hosepipe ban)	1 in 20 years on average	1 in 2 years – 1 in 40 years
Non-essential use ban (restrictions on non-household uses of water)	1 in 20 years on average	1 in 5 years – 1 in 40 years
Drought permits (increased abstraction from rivers)	1 in 20 years on average	1 in 5 years – 1 in 40 years
Rota cuts (water rationing)	*Never - in effect*: 1 in 100 years on average	1 in 50 years – 1 in 500 years

T.95 The study provides evidence on:

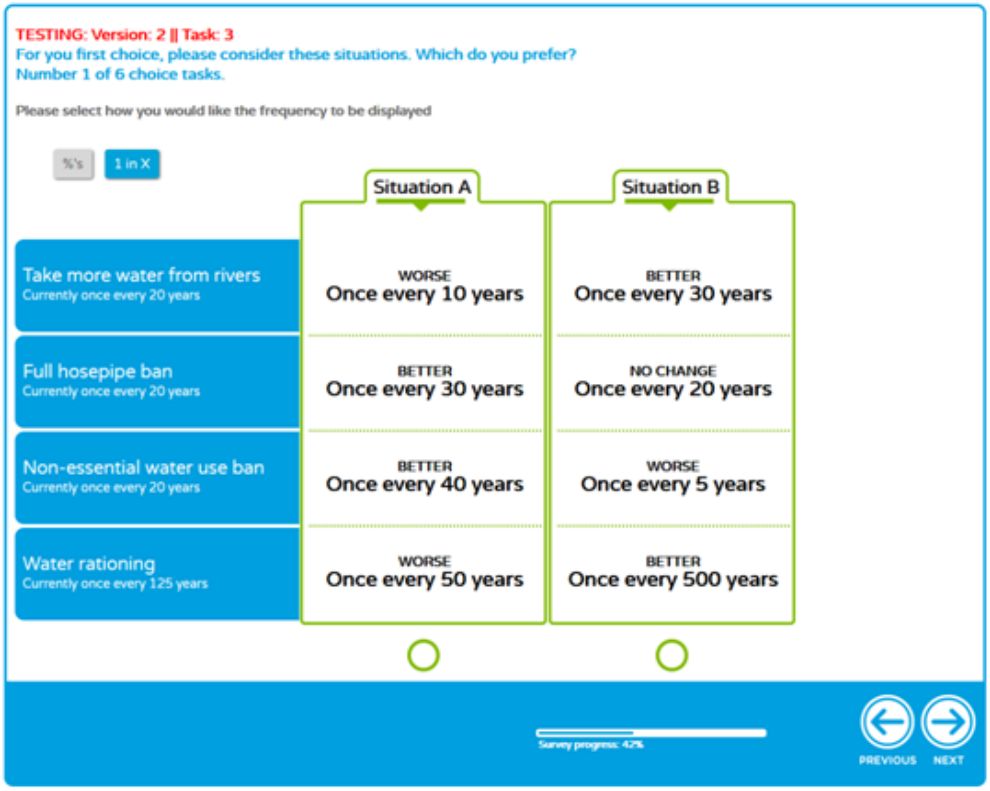
- customer priorities for water use restriction levels of service
- customer values for estimating the benefit of investments that maintain or improve service levels as part of the value for money assessments

T.96 The research used a stated preference approach, which is a survey-based method for eliciting customer priorities and preferences for changes in service levels. A total of 653 household customers and 211 non-household (business) customers were interviewed. A combination of in-person and online interviews were conducted with household customers, and online interviews with non-household customers. The two samples are representative of their respective customer bases[32], with a varied geographic distribution within Inner London, Outer London and the wider Thames Water region.

T.97 Broadly the same questionnaire was used for both household and non-household respondents. The main component of the questionnaire was a sequence of choice tasks that asked respondents to select their preferred scenario from two alternatives that specified varying levels of service (frequency) for a hosepipe ban, non-essential use ban, drought permits, and rota cuts. An example of the choice task is provided in Figure T-30. In the choice tasks, respondents' trade-off different levels of service for each restriction type when they select one scenario over the other. Their choices provide the basis for understanding priorities for maintaining or improving service levels.

[32] Sample representativeness is judged by how the sample aligns to the target quotas. These were set for respondent age, gender, socio-economic group, ethnicity and disability for household customers, and economic sector and organisation size (number of employees) for non-household customers. Sample weights are applied in the analysis to account for any under- or over-sampling against the sampling quotas.

Figure T-30: Example choice task – water use restrictions levels of service



T.98 The main choice task was supplemented by a follow-up that required respondents to trade-off different levels of service for sprinkler bans and hosepipe bans (households) or non-essential use ban (non-households).

T.99 The questionnaire wording and choice tasks were designed through a comprehensive phase of design and testing that sought to ensure respondent understanding of the survey. Throughout the design and testing phase, the developing questionnaire was shared for review and comment with our CCG. It was also presented to stakeholders involved in the draft WRMP19 pre-consultation engagement process.

T.100 The key findings from the study present a consistent view of customers' perceptions and priorities in relation to water use restrictions.

T.101 The majority of respondents considered their households or organisations to be 'water conscious', either stating that they are actively doing as much as they can to conserve water, or recognising that they could do and would like to do more. These results indicate that customers could be encouraged to go further if provided with advice or more explicit incentives and align with respondents' views on media campaigns, where many customers thought this would be effective in encouraging them to voluntarily use less water during a period of drought.

T.102 Customers indicated that water rationing (rota cuts) is perceived to have the greatest impact on day-to-day lives. For households, three in four respondents (76%) rating this as either 'a

lot' or 'quite a lot', and 68% of business customers stating that water rationing (rota cuts) would have the greatest impact on their organisation's daily activities.

T.103 Sprinkler and unattended hosepipe ban is judged to have the least impact, with around three-quarters of household respondents (72%) stating 'not much' or 'not at all'. This was similar for business customers.

T.104 In relation to a full hosepipe ban, non-essential use ban, and drought permits (taking more water from rivers) around 1 in 3 of household respondents (30% – 33%) stating that these would likely have some impact (as either 'a lot' or 'quite a lot'). As would be expected, a larger proportion of business respondents rated the impact of non-essential use bans (restrictions on non-domestic uses of water, 35%) greater than restrictions on households (full hosepipe ban, 31%) and impacts on the environment (drought permits) (31%).

T.105 Overall customers felt that service levels are 'about right' and, for the most part, water use restrictions, at their current expected frequency of implementation, are not perceived to have significant impacts on customers' day-to-day activities. There is a distinct pattern observed between the severity of restrictions and reaction of respondents. As restrictions become more severe, a higher percentage of respondents think that the restriction should never happen. This is observed for drought permits (taking water out of rivers) (17%) and rota cuts (20%), compared to the other restriction types. For water rationing (rota cuts) 48% of business respondents stated either 'should never happen', 'too much' or 'slightly too much'.

Figure T-31: Views on the current levels of service – households

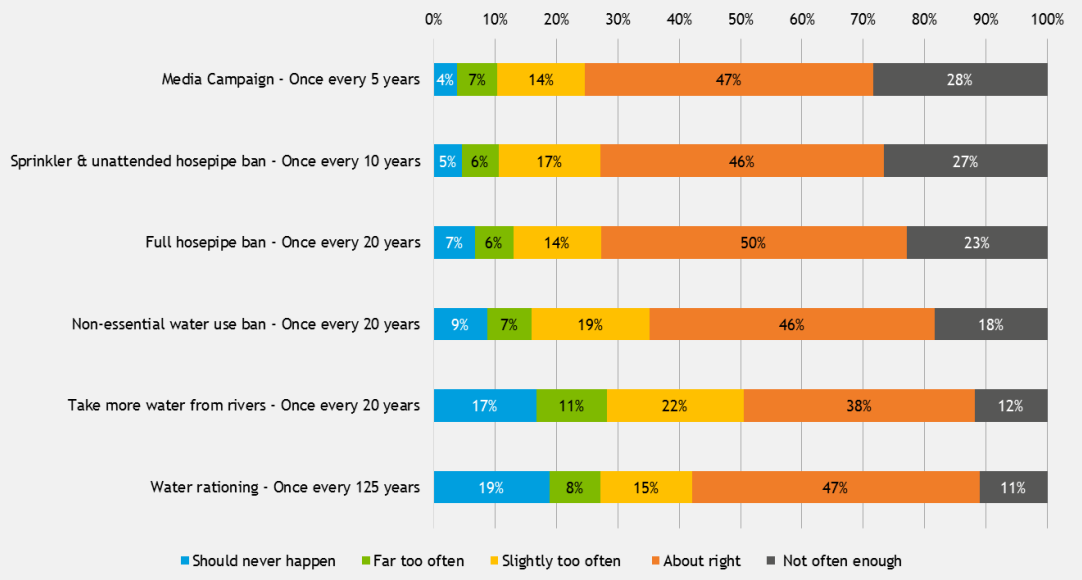
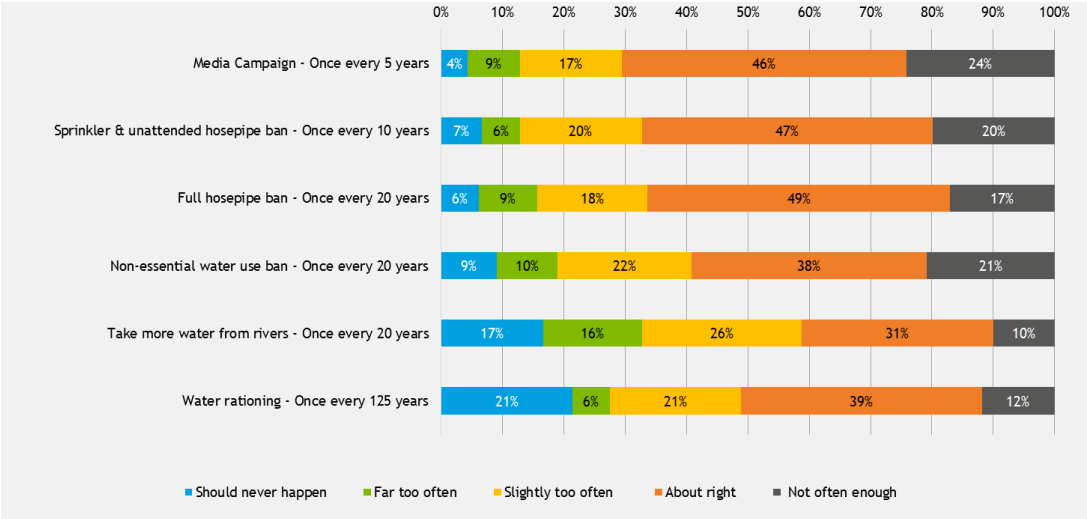


Figure T-32: Views on the current levels of service – Non-households



T.106 Customers have a strong preference for avoiding deteriorated levels of service. The greatest level of sensitivity is for avoiding the most extreme cases - 1 in 5 years for drought permits, hosepipe ban, and non-essential ban, and 1 in 50 years for rota cuts. Within this, customers prioritise avoiding deteriorated levels of service for rota cuts and drought permits. The top priority accorded to these two restriction levels is consistent with the severity of impacts that would be experienced across the entire customer base and the damage to the environment. In contrast, hosepipe bans and non-essential use bans are a lower priority, in line with their lower level of inconvenience and the fact that not all customers would be impacted.

T.107 The customer appetite for improved levels of service is more modest. For rota-cuts, there is support for an improvement to a 1 in 200 years level of service (from the current 1 in 100 years). Beyond this household customers place very little weight on further improvements to 1 in 300 and 1 in 500 levels of service, although there is a greater level of support from non-household customers. For other restrictions, the pattern is similar. Further improvements to the 1 in 40 years level of service are preferred less than the initial shift from 1 in 20 years to 1 in 30 years.

Figure T-33: Customer preference ordering for water use restrictions

Restriction level	Frequency	Households	Non-households
Rota cuts	1 in 50	9.2	8.0
Drought permits	1 in 5	4.8	8.9
Hosepipe ban	1 in 5	2.8	5.8
Non-essential use ban	1 in 5	2.6	6.9
Rota cuts	1 in 125	2.2	2.4
Non-essential use ban	1 in 10	1.8	1.9
Drought permits	1 in 10	1.7	2.1
Hosepipe ban	1 in 10	1.5	1.8
Rota cuts	1 in 200	1.2	1.8
Rota cuts	1 in 300	1.2	1.5
Rota cuts	1 in 500	1.2	1.3
Drought permits	1 in 20	1.0	1.0
Hosepipe ban	1 in 20	1.0	1.0
Non-essential use ban	1 in 20	1.0	1.0
Hosepipe ban	1 in 30	0.7	0.8
Non-essential use ban	1 in 30	0.6	0.8
Hosepipe ban	1 in 40	0.5	0.7
Drought permits	1 in 30	0.5	0.8
Non-essential use ban	1 in 40	0.4	0.7
Drought permits	1 in 40	0.4	0.7

Note: The results are presented as customer preference weights that quantify the inconvenience or 'disutility' associated with different levels of service (combinations of water use restriction and frequency). The larger the value, the greater the level of inconvenience and impact on customers, and therefore the greater weight associated with avoiding that level of service.

Customer preference weights are interpreted relative to a 'reference case' which is reported with a weight = 1.0 (shown in grey). For household customers this is the current level of service for a full hosepipe ban (1 in 20 years); for non-household customers it is the current level of service for non-essential use ban (1 in 20 years). Weights greater than 1 show levels of service that are worse than the reference case. Weights less than 1 show levels of service that are better than the reference case.

Water resources – customer preference options (ICS/Eftec, April 2017[33])

T.108 The 2017 Water Resources Stage 2 Study: Water Resource Planning Options examines customer preferences for different water resource and demand management options. This includes:

- Demand management options: water efficiency campaigns, leakage reduction, tariffs
- Water resource options: water reuse, water transfer, treated wastewater transfer, desalination, reservoir storage, groundwater, groundwater recharge and storage, catchment management

T.109 The results and key findings from the study are inputs to both the WRMP19 and 2019 Price Review (PR19) business planning processes.

T.110 The purpose is to provide evidence on:

- Customers attitudes to water resource planning approaches
- Customer priorities for the implementation of these options, which will be weighed against other criteria and objectives that are being considered in the water resource planning process
- Customer valuations for water provided/saved from each option type for use in the value for money assessments that underpin our strategic planning approaches.

T.111 The research uses a stated preference approach, which is a survey-based method for eliciting customer priorities and preferences for changes in service levels. A total of 650 household customers and 218 non-household (business) customers were interviewed. A combination of in-person and online interviews were conducted with household customers, and online interviews with non-household customers. The two samples are representative of their respective customer bases[34], with a varied geographic distribution within Inner London, Outer London and the wider Thames Water region. Broadly the same questionnaire was used for both household and non-household respondents.

T.112 The main component of the questionnaire was a choice task that asked respondents to select their preferred water resource planning option from two alternatives (for example introducing tariffs vs. water transfer, or reducing leakage vs. water reuse). Figure T-34 and Figure T-35 provide examples of the choice task. Respondents were presented with eight of these 'paired comparisons' in total. Each option was described in terms of the option type, its energy use ('standard' vs. renewable) and the customer bill impact. This ensured that respondents were presented with a range of trade-offs from which their preference (priority) ordering for water resource options could be estimated.

[33] Thames Water, TSD019-CR43b Stage 2 Customer Preference Research – water resources options
[34] Sample representativeness is judged by how the sample aligns to the target quotas. These were set for respondent age, gender, socio-economic group, ethnicity and disability for household customers, and economic sector and organisation size (number of employees) for non-household customers. Sample weights are applied in the analysis to account for any under- or over-sampling against the sampling quotas.

Figure T-34: Example choice task – water resource planning options

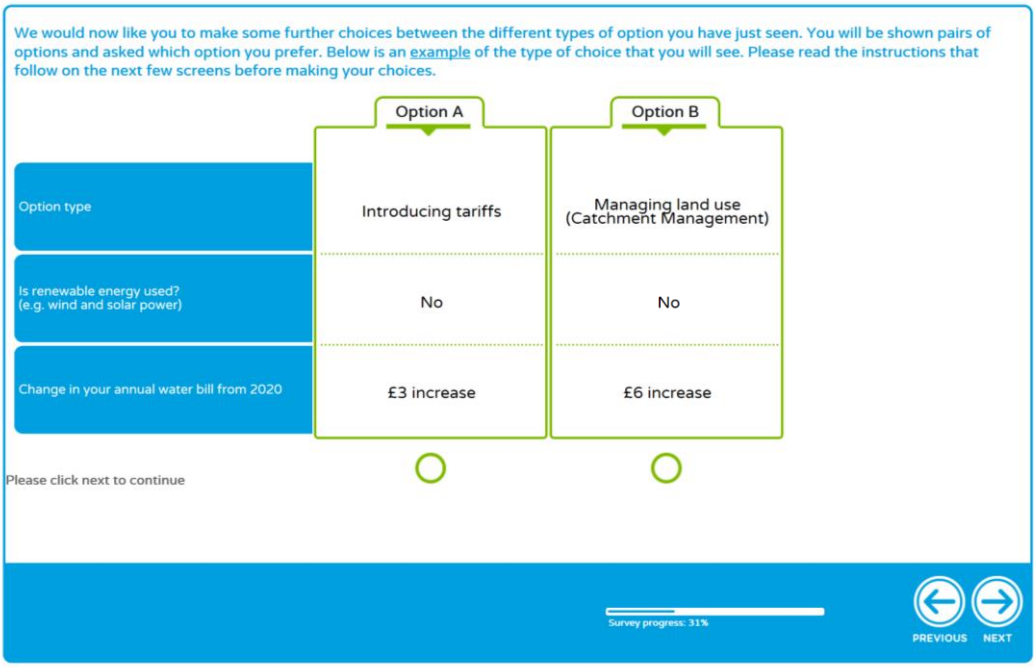
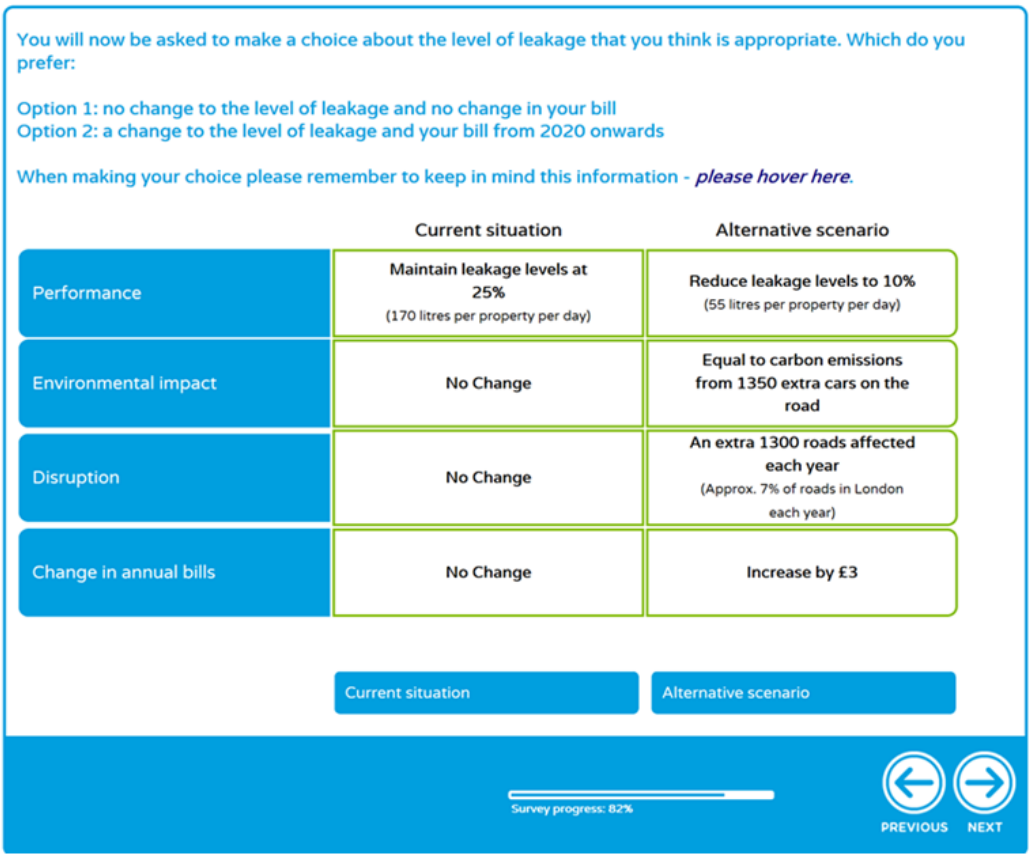


Figure T-35: Example choice task – leakage reduction scenario



T.113 The water resource planning options choice task was supplemented by a second choice task that assessed customer preferences for alternative leakage reduction scenarios:

- Current situation: maintain leakage at 25% (170 litres/property/day)
- Improvement scenario 1 (industry average): reduce leakage to 19% (120 litres/property/day)
- Improvement scenario 2 (industry upper quartile): reduce leakage to 16% (100 litres/property/day)
- Improvement scenario 3 (industry leader): reduce leakage to 10% (55 litres per property per day)

T.114 In the leakage reduction scenario choice task, respondents were asked to choose between: (a) the current situation (maintain current leakage level and no change in bill); and (b) one of the three improvement scenarios (a reduced level of leakage and an associated increase in bill). The current situation and improvement scenarios were defined in terms of level of performance (leakage), the environmental and disruption impact associated with works that would be undertaken to reduce leakage, and the customer bill impact for this investment. This choice task provides the basis for estimating the value that customers place on varying scopes of performance with respect to leakage levels.

T.115 The questionnaire wording and choice tasks were designed through a comprehensive phase of design and testing that sought to ensure respondent understanding of the survey. Throughout the design and testing phase the developing questionnaire was shared for review and comment with our CCG. It was also presented to stakeholders involved in the draft WRMP19 pre-consultation engagement process.

T.116 The design and testing process resulted in amendments to the survey structure and significant improvements in the explanatory material, including the descriptions of water resource planning options and respondent instructions for the choice tasks. Overall, the findings from the testing process were encouraging, with respondent debriefs indicating that the survey was interesting and it was clear how the results would be informative for us. This provided assurance that the customers would be engaged by the survey and provide considered responses to the choice tasks.

T.117 Customers' views on principles for planning are summarised in Figure T-36 and Figure T-37. Overall household customers showed support (>70 % of respondents stated 'strongly agree' or 'agree') for plan adaptability, planning, reliability/deliverability, customer demand management, customer acceptability, equitable treatment across generations, and considering negative impacts. Customers expressed more moderate support for innovation, protecting the environment, and resilience. Similar to households, business customers recognise the importance of planning and that plans need to be adaptable, with agreement to most statements

T.118 Both household and non-household customers also indicated that the bill impact of the water resource management plan is not the only (and not the most important) consideration in plan making and indicates that there is support for moving away from the least cost plan. Indeed a sizeable minority of respondents (24%) explicitly disagreed with the statement and 1 in 3 were neutral (32% 'neither agree nor disagree').

Figure T-36: Attitudes towards water resource planning – households customers

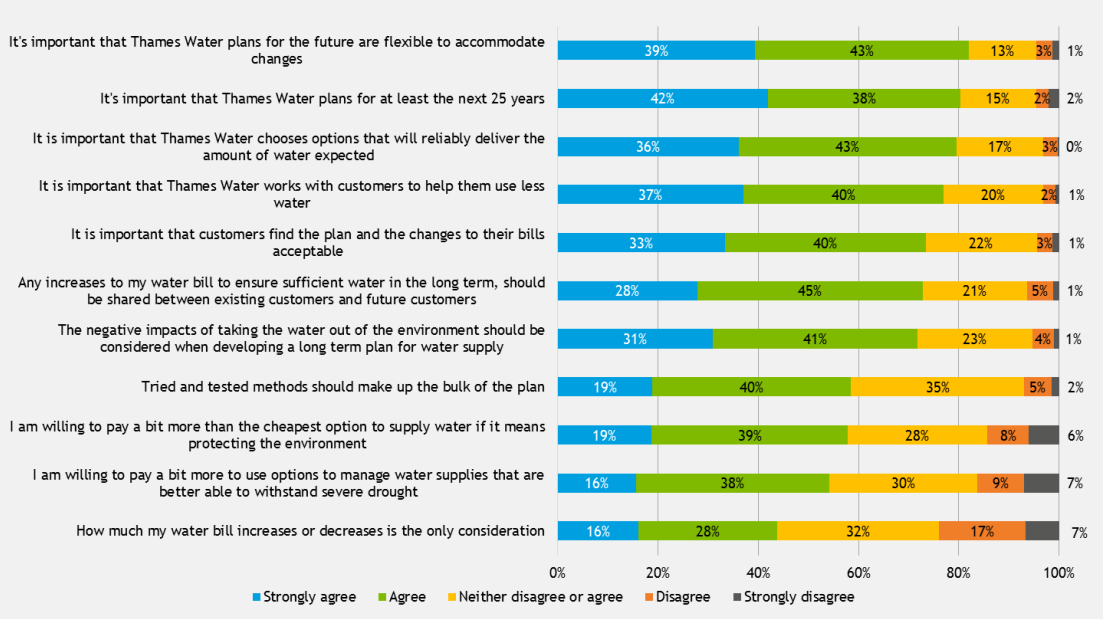
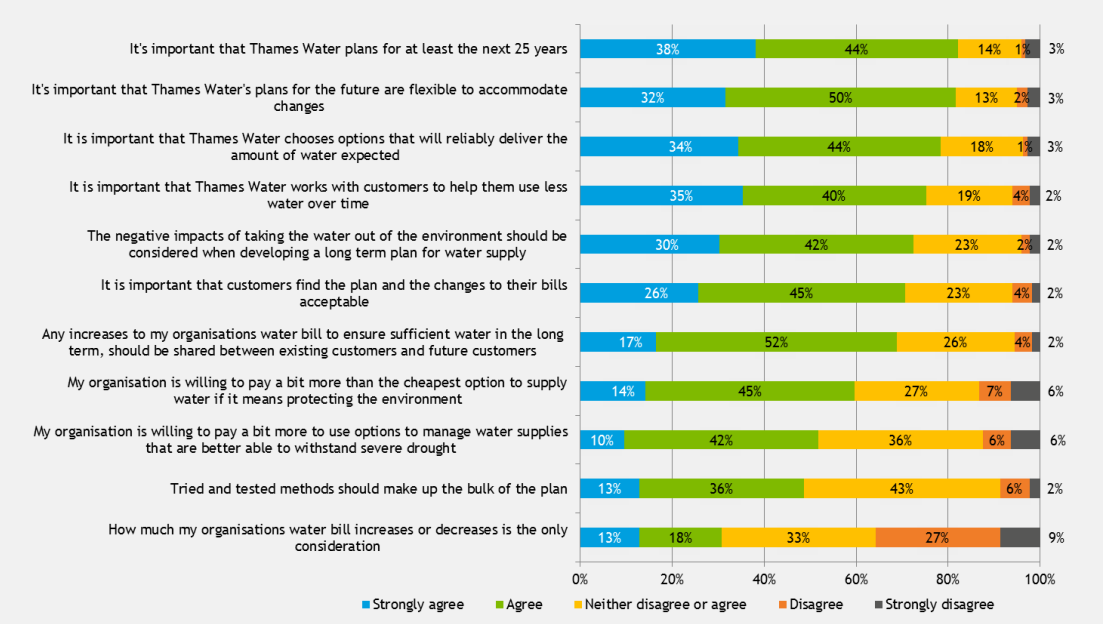


Figure T-37: Attitudes towards water resource planning – Non-households customers



T.119 The key findings from the study present a consistent view of customers' priorities in relation to water resource planning options:

- The priority water resource planning options for customers are leakage reduction and water efficiency campaigns. This view is consistent across household and non-household customers and these demand management measures are strongly preferred over all other options. This preference stems from the view that it is important not to waste water and to make the most of the water available
- The most preferred resource development options are transferring treated wastewater at Teddington and managing land use (catchment management)

T.120 Figure T-38 summarises the customer preference ordering for water resource planning options. The results are presented as preference weights that quantify the priority ordering for customers.

Figure T-38: Customer preference weights for water resource planning options

Option type	Households	Non-households
Water efficiency campaigns	4.8	5.0
Reducing leakage	4.0	7.2
Teddington Direct River Abstraction	3.0	2.3
Managing land use (catchment management)	2.2	2.2
Introducing tariffs	1.8	1.4
Water reuse	1.8	1.3
Reservoir storage	1.4	1.6
Using groundwater	1.3	1.5
Desalination	1.3	1.0
Water transfer	1.3	1.2
Storing water underground	1.3	1.2
More water restrictions	1.0	1.0

Note: customer preference weights are interpreted relative to a 'reference case' (more water restrictions) which is reported with a weight = 1.0 and shown in dark grey. Weights greater than 1 show options that are preferred to the reference case. Weights shaded in light grey indicate that preference for them is not statistically different to the preference for the reference case.

The study also showed that customers place significant emphasis on options that incorporate renewable energy, and so this is an aspect for consideration if options are taken forwards.

T.121 In terms of leakage reduction scenarios, the strongest level of customer support is for us to target the industry upper quartile level (16% leakage). The value that customers place on this improvement in service is approximately equivalent to 5% of the current average annual bill for household customers (6% for non-households). This is approximately £19 per household per year. The benefits to customers associated with improvements beyond this are outweighed by the increase disruption associated with the works that would be undertaken to reduce leakage. The results also show, however, that the majority of the customer value (around 80%) is placed on the initial improvements in performance, and meeting the industry average (19%). For household customers this value is approximately £16 per household per year. Therefore it is evident that incremental value for customers associated with increasing levels of performance for leakage reduces quite substantially.

T.122 The study findings also showed that the bill impact associated with individual water resource planning options and the overall water resource management plan is a key consideration for customers. Results from the study's choice tasks suggest that affordability was the principle concern for roughly half of the respondents. This does not imply that customers would only support the lowest cost plan, however. Rather it means that in order for an alternative plan to be supported over the lowest cost plan, it will need to generate value for money for customers that reflects the priorities that they have expressed in this study, i.e. an emphasis on demand management and reductions in leakage, and resource options that make the most of current water availability.

Water trading – collaborative research (Verve, May 2018[35])

T.123 This research was conducted to evaluate customer views on water transfer solutions in comparison with water supply and demand management alternatives, to ensure that any solutions developed took customer interests into account. The research was commissioned jointly by Thames Water, Severn Trent Water and United Utilities. Welsh Water was invited to participate in the research but declined. Customers were consulted from the operating areas of Thames Water, United Utilities, Severn Trent England and across Wales.

T.124 The research was carried about by market research company Verve from March to May 2018. The insight gathered is based on an informed customer view - throughout the research process, participants were provided with information on the issue of future water scarcity in the UK, possible solutions and considerations.

T.125 The approach involved a qualitative 'deep dive' with 49 non-household depth interviews and an online community with 173 household participants over 5 days. Results were quantified with an online survey of 1,505 household participants. The sample was designed to be representative of key demographics within each water company area.

T.126 The key findings are summarised below:

Customers have limited knowledge about the water scarcity issue, but quickly recognise the need for long term sustainable solutions

Informed reaction to water scarcity

T.127 7 in 10 are concerned about water scarcity, particularly those in the Thames Water catchment area. Customers recognise that water scarcity is a long term issue requiring immediate nationally co-ordinated action.

T.128 Customers call for widespread education on the issue. They assume that fixing leaks will be the major priority for water companies – the preferred demand management solution for all customers irrespective of region.

[35] Thames Water, TSD019-CR65 Water Trading

Preference for supply solutions

T.129 Water reuse is the most preferred supply solution across all water company regions, closely followed by building new reservoirs. Whilst regional transfer is the least preferred of the three solutions, 62% rank it as their first or second choice.

T.130 Customers see sustainability (ability to provide water for the long term), environmental impact and the volume of water produced as the key evaluation criteria when choosing solutions to put in place.

Water trading, delivered cost effectively with assurances, works for customers

Level of support for water trading

T.131 Customers raise multiple concerns about water trading - the security of supply, environmental and financial impacts. Potential 'donor' customers are concerned as to the impact on their own supply, whilst Thames Water customers ask whether water will be available when needed.

T.132 Despite concerns, 74% of all customers agree[36] that they support water trading as part of the solution – based on the principle that it's logical to share. Support declines for a proportion of Thames Water customers (from 80% to 70%) on being told the cost will be paid back through the bill over a long period of time – they are unable to assess fully without a figure. In donor regions, 40p is seen as better reinvested into future water resource management.

Key assurances required

T.133 Eight assurance statements have been developed to help mitigate core areas of concern with water trading:

1) Companies selling the water only do so if they can ensure they have a reliable source in the future
2) Water will only be taken when it is needed by Thames Water and the wider South-East region
3) There are plans in place to maintain new pipework
4) The 40p per donor customer is used for the improvement and upgrade of water services, with no impact on bills
5) Impact on bills for recipient regions will be kept to a minimum by spreading the cost over a long period
6) The regulator ensures water is traded at a fair price, and any cost to customers fairly reflects the level of investment made
7) External bodies will be involved in monitoring processes which could pose a risk to the environment
8) Water companies will be regulated on environmental impacts and must conduct due diligence checks

[36] agree is a total of those who agree strongly or slightly with the statement "I support water trading as part of the solution to the water scarcity in the UK"

T.134 Assurances are also required about the continued improvement of demand management.

The Welsh perspective

T.135 Customers in Wales, whilst still concerned, have lower levels of support for water trading than observed in other potential donor regions.

- Their preference for demand and supply solutions is consistent with other water company regions – reducing leakage, water reuse and building new reservoirs are most preferred
- Wariness remains about supply side solutions given the history of issues such as the Tryweryn Reservoir
- They are the most concerned to know that there is enough water left within 'donor' region post transfer (61% raise this as a concern compared with 54% of all customers)
- Whilst 65% support water trading as part of the solution, those in Wales have the lowest levels of support (65% *agree they support water trading compared with 73% for Severn Trent England and United Utilities).

T.136 The output from this work will be taken into account in scoping further work on transfers over the next 5 year period as set out in the Plan.

Resilience to extreme drought and protection of vulnerable chalk streams (Britain Thinks, February 2019)

T.137 Since the publication of the revised draft plan we have undertaken customer research to explore 2 specific topics:

- Investment to ensure resilience to extreme drought
- Investment to protect vulnerable chalk streams

T.138 The research was in response to on-going discussions on both these topics. On resilience to extreme drought – there is on-going dialogue with Government and stakeholders about the need for a higher level of protection to extreme drought, particularly for London. It is important to understand our customers' views on this topic. On protection of vulnerable chalk streams - our CCG flagged that whilst our long term commitment to cease abstraction from vulnerable chalks streams and watercourses is laudable, we need to understand our customers views' in relation to this commitment and associated future investment.

T.139 The research was undertaken by Britain Thinks. Each topic was discussed as a separate focus group. The field work was completed in February 2019.

T.140 Overall customers supported both propositions: to increase resilience to cope with extreme drought and to invest to protect vulnerable chalk streams. A summary of the findings for each of the topics is presented below with the full report available. 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, this was still discussed in isolation.

T.141 We plan to undertake further research on both these topics in the future to strengthen the 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.**

E. Consideration of customer priorities

T.142 The programme of engagement and research has provided a robust understanding of customers' priorities and preferences for long-term planning of water resources. In this section we set out how we have used this to inform the WRMP19.

T.143 Overall the output of the engagement and research programme feeds into the development of the WRMP19 at a number of levels and stages of plan development from planning principles through to programme selection. The priorities and preferences of our customers, our response and action taken to address them in the formulation of our WRMP19 is summarised in Table T-4.

Table T-4: Customer priorities and preferences on planning future water supply

	Customers priorities and preferences	TW response
1	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	The WRPG (April 2017) sets out that in preparing WRMPs water companies must take a long term view, setting a planning period that is appropriate to the risks of the company, but which covers at least the statutory minimum period of 25 years. We are adopting a 25 year planning period for those Water Resource Zones (WRZs) which have a relatively simple planning problem and are adopting a longer time horizon, of 80 years, for the WRZs identified to have a complex and challenging problem. This approach was also supported by stakeholders.
2	Build in flexibility to accommodate future changes	We recognise that there are uncertainties in planning over a long time period such as 80 years. That said it is not feasible to wait until all uncertainties are resolved, as investment in new water infrastructure has a long lead time and there comes a point when decisions need to be taken. To mitigate risks of future changes we are undertaking scenario analysis to consider key uncertainties, such as climate change, population growth, and reductions in water abstractions to help to decide the most appropriate programme. In addition we review progress against the WRMP annually, and undertake a full review of the WRMP and business plan every five years, as such we can make adjustments to the strategy as needed.
3	The plan must be affordable to customers	We have taken account of customers' priorities and preferences in developing our WRMP in respect of the approach to planning, the levels of service provided to customers and preferences for types of options to be taken forward. Customers have also indicated that the impact on the bill is a factor in deciding on the levels of service provided and the pace with which we plan for greater resilience, deliver programmes of work such as leakage reduction. We have completed assessment of the impact on customers bill as part of the 5-year business planning process, as part of which we consider the full range of services provided to customers by the business and the impact on customers' bills, with the intention to keep bill increases affordable. This work is presented in the Business Plan submitted to Ofwat on 3 September 2018.
4	Costs for future investment should be shared across current and future customers	In developing our preferred programme we have considered a range of factors, through the use of performance metrics. These have been used to assess the strengths and weaknesses of different programmes against the factors

	Customers priorities and preferences	TW response
		considered. One of the performance metrics used is inter-generational equity and this considers how the cost of investment is shared between current and future generations. The composition of the metric and its influence on the selection of the preferred programme is explained in Section 10: Programme appraisal and scenario testing.
5	A variety of factors need to be taken into account in addition to cost in determining the long term strategy.	For many years cost has been the primary factor in devising the WRMPs, and a least cost decision support tool was been used to support the development of these plans. There is now wide support from regulators[37], stakeholders[38] and our customers[39], to develop best value plans which take account of a wider range of factors in addition to cost. We have developed an approach to determine the best value plan for WRMP19. This involves taking into account a range of factors in addition to financial cost. We have developed a suite of metrics (eight) which represent the different factors, these are used in programme development to compare and select between different potential investment programmes. Further information is provided in Section 10. We consulted stakeholders on the metrics adopted and worked with an appointed external Expert Panel to review the alternative programmes.
6	Levels of service – water use restrictions: Customers do not want levels of service to deteriorate. They also expressed a preference for improvement in levels of service for more severe water use restrictions such as rota cuts (level 4), and to a lesser extent drought permits (level 3)	Customers' preferences for improved levels of service for Level 4 restrictions (rota cuts), from the current levels 1:100 years to plans which provide a higher level of resilience, of a 1:200 year drought event is included in the customer preference performance metric and as such is taken into account in the review and development of alternative programmes of options. The resilience of water supply is a priority identified by Government[40]. We are required to consider how we will ensure that our current and future system will be resilient to a range of droughts. We develop our plan on the basis of the worst drought in the historic record and will test our plan against more severe droughts through scenario testing to understand the nature of the programme to achieve greater supply resilience.
7	Managing demand for water - customers indicated a strong preference for demand management options (leakage reduction and water efficiency) over new resource development. This preference stems from the views that it is important not to waste water and to make the most of the water available.	We have considered a wide range of feasible demand management options. We engaged with stakeholders as we developed these options. We have assessed demand management programmes alongside new resource options to define our long term programme. In line with customers' preferences, the foundation of our preferred programme is demand management; the continued roll out of progressive metering, support and promotion of water efficiency and reduction in leakage from water pipes. This focus will help to reduce Per Capita Consumption. The preferred programme is presented in Section 11: Preferred programme.
8	Options – Leakage – Customers consider that we should be prioritising leakage reduction over finding new sources of water. Customers	We recognise the priority customers place on leakage reduction, and in formulating our preferred programme we have reviewed a range of leakage reduction scenarios. We have completed analysis of the Sustainable Economic Level of Demand Management to determine the extent and pace of the

[37] Water Resources Planning Guideline, May 2016
[38] Technical Stakeholder Meetings, March 2016 & November 2016
[39] Thames Water, TSD019-CR29a WRMP Stage 1
[40] Letter from Defra, Ofwat, EA and DWI stating the importance of a resilient water supply, August 2018

	Customers priorities and preferences	TW response
	understand that it is not cost effective to fix some leaks but would like to see us go beyond what it is currently doing. Customers view that we should be on a par with the leaders in the industry aiming for 16% leakage however, that majority of the customer value (around 80%) is placed on the initial improvements in performance, and meeting the industry average (19%)	leakage reduction and wider demand management programme. This is presented in Section 10: Programme appraisal and scenario testing. Overall we have proposed a substantial leakage reduction programme which is ambitious and deliverable.
9	Options – Water efficiency – The majority of customers support more education and promotion of water efficiency. Some customers recognise that whilst this is important it will make a small contribution to the future resource challenge and is not an option which is under our control	Measures to manage the demand for water are the foundation of our plan. We have developed a range of activities to promote water efficiency to our customers; these activities are included in the demand management programmes. (Section 8) While we are committed to managing demand for water, there is a threshold to the amount of demand management we can deliver in terms of capability, and cost. We have completed analysis of the Sustainable Economic Level of Demand Management to help determine the scale and pace of activity. Furthermore we cannot be fully confident that demand management will deliver the estimated savings and as such there is a risk to security of supply if there is over-reliance on demand management measures.
10	Options - Tariffs – Customers recognise that tariffs could be an effective option to help manage demand for water, but are not as popular as other demand management measures, a key reason for this is that they are considered unfair to some customers.	We committed to undertake a trial of innovative tariffs in AMP6 (2015-2020) to inform its future strategy. Work to date on this has involved desk based studies to understand tariffs applied in the UK and internationally to understand the options, risks and benefits. The views of customers have also been sought. Feedback from customers was clear that tariffs were considered to be punitive and meter penetration should be sufficiently high prior to introduction of tariffs for them to be perceived to be fair. In response to this feedback, we have developed a positive reward based incentive scheme to raise awareness of water conservation and to encourage reduction in water use, which could be implemented alongside metering to enhance the benefits. We will continue to pilot the reward scheme, and re-evaluate tariffs as meter penetration increases.
11	Options – supply side	The research did not rule out any options but provided a ranked preference. This ranked preference has been used in the customer preference metric which is used as one of the suite of metrics used in the programme appraisal modelling. The preferred programme in the revised draft plan broadly reflects the preference order provided by customers, with a focus on demand management followed by water reuse and then a reservoir. Note catchment management was one of the options preferred by customers. Catchment management solutions have not been included in the draft WRMP19 as they provide a very small volume of water and have a long lead time. However catchment management pilots have been promoted in the business plan.
12	Energy was identified as a significant driver in making decisions, and customers have a strong preference for options	Customers have provided a strong steer on the use of renewable energy. We will consider the use of renewable energy in the design and operation of the supply options being taken forwards.

Customers priorities and preferences	TW response
that use renewable energy[41].	

T.144 The information presented in this section focuses on customer priorities and preferences for water resources. In developing our future plans we need to consider the full range of services that are provided by the business to customers to ensure we propose a forward plan which is efficient, sustainable and affordable. Ofwat, in its representation to the draft WRMP19, highlighted the need to understand the acceptability of the wider programme of measures, rather than focusing on one aspect – water resources on its own.

T.145 We can confirm that to inform the development of the WRMP19 and Business Plan we undertook quantitative Customer Preference research on the range of services provided to customers. We collated the WTP values and used them as an input to plan balancing value for money (VfM) assessments; they were not used to measure the acceptability of bill changes. The approach ensured that we considered the whole suite of services provided to customers in an integrated way, and we did not focus on one aspect on its own. The approach was supported by our CCG. The detail of this work is presented in the Business Plan.

T.146 We also used an innovative engagement tool to present information to customers on the services provided and the options for deterioration, retention, or improvement in the levels of service provided, with associated impact on their bills, thereby presenting the options as a whole package rather than as independent services. Over 4,000 customers provided feedback via the tool. This included feedback on the levels of leakage reduction and on planning for severe drought and frequency of water restrictions. The output from this research was fed into our overall VfM assessment.

T.147 We also completed acceptability testing with customers, presenting them with several hypothetical service and bill packages. Different levels of service were presented for water rationing, leakage and five other service areas as an interim stage in Interim Acceptability Testing (Sept 2017[42]). We then tested the service and bill package during our Final Acceptability Testing (July 2018[43]). The final acceptability testing also included information about the levels of service we plan to provide for leakage and metering (as well as many other service areas) for the corresponding bill by 2025. This information is included in the "What customers want" report[44].

[41] Note the use of renewable energy is only reported for options where it is considered to be feasible
[42] Thames Water, TSD019-CR49 Interim Acceptability testing
[43] Thames Water, TSD009-CR50a/b – Final Acceptability Test
[44] Thames Water, CSD002 What Customers Want consolidated report