



Statement of Response

Revised Draft Water Resources Management Plan 2019 (rdWRMP19)

Affinity Water Limited

7 June 2019

Security Notice

This document has been written in compliance with our security policy so that no redaction is required for publication. Codes have been used to preserve the security of our production locations.

Table of Contents

1	Executive Summary	7
2	Consultation Process.....	12
2.1	Approach.....	12
2.2	Number and type of responses.....	13
2.3	Analysis of responses.....	14
3	Demand forecast	16
3.1	Summary of key representations.....	16
3.2	Our response.....	16
4	Supply forecast	16
4.1	Summary of key representations.....	16
4.2	Our response.....	16
5	Risk and uncertainty	17
5.1	Summary of key representations.....	17
5.2	Our response.....	17
6	Appraisal of future options.....	18
6.1	Summary of key representations.....	18
6.2	Our response.....	18
7	Formulating and Testing our Plan.....	19
7.1	Summary of key representations.....	19
7.2	Our response.....	19
8	Our demand management strategy.....	21
8.1	Summary of key representations.....	21
8.2	Our response.....	21
9	Our water supply strategy	22
9.1	Summary of key representations.....	22
9.2	Our response.....	22
10	Our adaptive strategy for the Central Region	23
10.1	Summary of key representations.....	23
10.2	Our response.....	23
11	Regional coordination and alignment of strategic options.....	25
11.1	Summary of key representations.....	25

11.2	Our response.....	25
12	Assessing the environmental impact of our fWRMP19	26
12.1	Summary of key representations.....	26
12.2	Our response.....	26
13	Response to Environment Agency’s Recommendation 5 - Compliance with WRMP Directions 2017	27
14	Next Steps.....	28

Appendices

- Appendix 1: Customer Challenge Group rdWRMP report
- Appendix 2: Further consultation questions
- Appendix 3: Stakeholder representations received
- Appendix 4: Further consultation online survey analysis
- Appendix 5: Ipsos Mori customer market research findings report.
- Appendix 6: Response to Angling Trust representation
- Appendix 7: Response to Ardington and Lockinge Parish Council representation
- Appendix 8: Response to Buckinghamshire County Council representation
- Appendix 9: Response to Campaign to Protect Rural England Buckinghamshire representation
- Appendix 10: Response to Campaign to Protect Rural England Hertfordshire representation
- Appendix 11: Response to Campaign to Protect Rural England Oxfordshire representation
- Appendix 12: Response to Canal and River Trust representation
- Appendix 13: Response to Central Hertfordshire Green Corridor Group representation
- Appendix 14: Response to Chesham Town Council representation
- Appendix 15: Response to Chilterns Conservation Board representation
- Appendix 16: Response to Colne Valley Fisheries and Colne Valley Regional Park representation
- Appendix 17: Response to Consumer Council for Water representation
- Appendix 18: Response to Dacorum Borough Council representation
- Appendix 19: Response to East Hanney Parish Council Water representation
- Appendix 20: Response to the Environment Agency representation
- Appendix 21: Response to Garford Parish meeting representation

Appendix 22:	Response to Group Against Reservoir Development representation
Appendix 23:	Response to Historic England representation
Appendix 24:	Response to Kent County Council representation
Appendix 25:	Response to Mayor of London representation
Appendix 26:	Response to Natural England representation
Appendix 27:	Response to Ofwat representation
Appendix 28:	Response to Oxfordshire County Council representation
Appendix 29:	Response to River Chess Association representation
Appendix 30:	Response to Steventon Parish Council representation
Appendix 31:	Response to Vale of White Horse District Council
Appendix 32:	Response to Ver Valley Society representation
Appendix 33:	Response to Wantage and Grove Campaign Group representation
Appendix 34:	Response to West Hanney Parish Council representation
Appendix 35:	Response to Wheathampstead Parish council representation
Appendix 36:	Response to Wycombe District Council representation
Appendix 37:	Oxfordshire area Individual stakeholder responses summary
Appendix 38:	River Ver Individual customer representations summary

Tables

Table 1:	Summary of Changes in fWRMP19
Table 2:	Summary of Explanations / Clarifications
Table 3:	Responses received to the rdWRMP19 further consultation
Table 4:	Representations by sector
Table 5:	Representative customer survey (Ipsos Mori) key findings
Table 6:	Further consultation online survey key findings
Table 7:	Delivery dates for strategic options for each of the four futures
Table 8:	Summary of our AMP7 enabling actions between 2020-2023

1 Executive Summary

- 1.1.1 Further to the consultation on our draft Water Resources Management Plan in spring 2018, we consulted on our revised draft Water Resources Management Plan (“rdWRMP”) from 1 March to 26 April 2019. This followed a period of pre-consultation consisting of eight pre-consultation customer focus groups and meetings with external stakeholders including the Environment Agency (“EA”), Ofwat, Natural England, local authorities, the Group Against Reservoir Development (“GARD”) and Canal & River Trust.
- 1.1.2 There was strong and consistent support from customers for the options proposed in our rdWRMP19. Our regulators were supportive of the work done on the rdWRMP. They asked us to provide further detail in our fWRMP19 in relation to some topics such as our demand management programme, which it was stressed must be ambitious and robust. They also emphasised the importance of on-going studies on strategic options in collaboration with other water companies.
- 1.1.3 Representations from stakeholders and individuals were wide ranging. Many stakeholders supported the development of new resources such as the South East Strategic Reservoir (“SESR”) and the Grand Union Canal Transfer (“GUC Transfer”) to bring water into the Central Region. GARD and individual representations from those living in the proposed geographic area of SESR emphasised the need to further consider alternatives, demonstrate the adaptive nature of our plan (i.e. that we consider alternative options to the SESR) and demonstrate the case of need further before proceeding with development of the reservoir.
- 1.1.4 Our final Water Resources Management Plan (“fWRMP”) builds on our rdWRMP19 taking into account further consultation responses. We have made some changes to our rdWRMP19 in response to comments received and as a result of further work that we have carried out between publication of our rdWRMP19 and our fWRMP19. These changes are summarised in the table below:

	rdWRMP19	fWRMP19	Reason for change
Greater London Authority (GLA) growth. (See para 3.2.2 below)	We addressed the GLA higher growth scenarios through sensitivity analysis. We stated that we would rely on drought orders and permits for a short period of time and would accelerate development of our first strategic option to 2035. We also said that we would require development of a third strategic supply option within the 2080 time horizon.	We have now included a “high growth” scenario in our sensitivity testing. The result of this is that we will rely on some of the less environmentally damaging drought permits and accelerate delivery of our first supply option to 2032. We identify the only option capable of being delivered by 2032 as the GUC transfer. We would need the second strategic option by 2042. A third option will still be required within the 2080 time horizon.	In response to representation from the EA and some local authorities.
Friars Wash reduction. (See para 4.2.1)	We included this in our Challenging future.	We have included this in all our futures.	In response to representation from the EA.

	rdWRMP19	fWRMP19	Reason for change
<p>Strategic Supply Options.</p> <p>(See para 6.2.4)</p>	<p>We did not include a separate River Thames trading and transfer option.</p>	<p>We now specifically include a separate River Thames to Affinity treatment and transfer option, where the abstraction is supported by a trade with Thames Water, Severn Trent or United Utilities. This could be via the Severn Thames Transfer, or be enabled by effluent re-use development from Thames Water. This allows for increased flexibility and the possible use of trading to manage high growth/high sustainability reductions.</p> <p>This option has <u>not</u> been included in the decision-making process or modelling because it uses the same abstraction, transfer and treatment infrastructure as the SESR and Severn-Thames Transfer options, but would utilise bulk trading as a resource if this is found to represent better value than our preferred option following further investigations by those water companies.</p>	<p>In response to representation from EA and Ofwat.</p>
<p>Impacts of abstraction reductions and changes in demand on returns to the River Thames.</p> <p>(See para 6.2.8)</p>	<p>We did not consider these impacts.</p>	<p>We have included a qualitative assessment of these impacts in our fWRMP19 and identified a need for conjunctive use modelling as an enabling activity.</p>	<p>In response to representations from GARD.</p>
<p>Decision making including multi-criteria analysis ("MCA") (See para 7.2.1)</p>	<p>We used MCA to inform development of our four futures and our adaptive pathways.</p>	<p>We have added a clear MCA check to Step 3 in our decision-making process to confirm 'best value' rather than just least cost.</p>	<p>In response to representations from the EA and Oxfordshire County Council.</p>

	rdWRMP19	fWRMP19	Reason for change
<p>Dates for delivery of strategic supply options</p> <p>(See para 7.2.3)</p>	<p>The dates for delivery of the first and second strategic supply options:</p> <p>Challenging future: summer 2038 and 2061.</p> <p>Expected future: 2041 and 2065.</p> <p>Optimistic future: 2047/48 and 2070.</p> <p>Aspirational future: 2060 and after 2080.</p>	<p>The dates for delivery of the first and second strategic supply options:</p> <p>Challenging future: summer 2038 and 2063.</p> <p>Expected future: summer 2042 and 2066.</p> <p>Optimistic future: summer 2050 and 2073.</p> <p>Aspirational future: summer 2059 and after 2080.</p>	<p>We have corrected minor errors that we identified in our modelling and reviewed modelling assumptions associated with Friars Wash, plus handling of final plan Target Headroom (EA representation and as above).</p>
<p>Additional sustainability reductions beyond December 2024.</p> <p>(See para 7.2.6)</p>	<p>We included a possible need to further reduce abstraction from chalk catchments by 7 MI/d in our Challenging future.</p>	<p>We have also added a “further reductions in abstraction from the chalk” scenario to our sensitivity testing. This considers the position if we are required to deliver up to an additional 40 MI/day of abstraction reductions.</p>	<p>In response to representation from the EA.</p>
<p>Implications and adjustments following further sensitivity analysis.</p> <p>(See para 7.2.7)</p>	<p>We made no change as a result of the sensitivity analysis.</p>	<p>In light of further sensitivity analysis it has become clear that we should assess at the 2023 decision point whether the risk from high growth and/or additional sustainability reductions is such as to require acceleration of supply side development beyond our challenging future. We have generated a costed Plan to provide that adaptation if required.</p>	<p>In response to our sensitivity analysis.</p>
<p>Leakage</p> <p>(See para 8.2.4)</p>	<p>We committed to achieve 18.5% leakage reduction during AMP7 (2020 to 2025) and in the long-term to reach 50% leakage reduction from 2015 levels by 2045.</p>	<p>We committed to achieve 18.5% leakage reduction during AMP7 and in the long-term to reach 50% leakage reduction from 2015 levels by 2045.</p> <p>We have added a target to achieve 50% leakage reduction from 2020 levels by 2050 as part of the aspirational future. This equates to 57% leakage reduction from 2015 levels by 2050.</p>	<p>In response to representations from the EA and GARD.</p>

	rdWRMP19	fWRMP19	Reason for change
<p>Management and transfer of surplus water.</p> <p>(See para 9.2.2)</p>	<p>We used the surplus identified in the modelling to offset final plan Target Headroom.</p>	<p>We have now specifically modelled the second stage transfer pipeline from Egham to Iver plus the small water trading option on the Thames in the economic modelling, and included the two investments in the WRMP tables.</p>	<p>In response to requests for clarity from the EA and Ofwat regarding “Supply 2040”, and to address the representation from GARD that we are not using all surplus generated in Water Resource Zone (WRZ) 6.</p>
<p>Enabling actions for future strategic supply options.</p> <p>(See para 10.2.4)</p>	<p>We included enabling actions to develop our two preferred options SESR and the GUC Transfer. We committed to further discussion with Anglian Water to determine if there are options for reducing the overall cost of the South Lincolnshire scheme.</p>	<p>We have provided more detail on the enabling actions for the two preferred options, as this has been developed for the Business Plan gated stage process.</p> <p>We have included more detailed investigations on the South Lincolnshire reservoir in response to regulatory requests and to cater for our high-growth scenario, but have checked that this still represents value for money to customers in the adaptive pathways analysis.</p> <p>We maintain close liaison with the three-company group delivering the Severn Thames Transfer investigations, and will maintain ongoing discussions with Thames for an alternative trade (based on effluent re-use schemes).</p>	<p>In response to representation from the EA and from Ofwat.</p>
<p>Monitoring plan.</p> <p>(See para 10.2.5)</p>	<p>We included an outline monitoring plan and committed to engaging with stakeholders and customers.</p>	<p>We have included more detail regarding our Monitoring Plan and how we intend to engage with stakeholders and customers.</p>	<p>In response to representations from stakeholders.</p>

	rdWRMP19	fWRMP19	Reason for change
Costs	We included relevant information regarding costs.	We include relevant information regarding costs and this information has been updated. We have also included additional costs information in our fWRMP19 to improve transparency.	In response to better information becoming available between publication of our rdWRMP19 and fWRMP19 and to representations from EA, GARD and Canal & River Trust.
Strategic Environmental Assessment (SEA) (See para 12.2.2)	We did not include the second stage Egham to Iver transfer or small water trading option.	These options are now included in the SEA.	Included as a result to changes in the fWRMP19, as above.

Table 1: Summary of Changes in fWRMP19

1.1.5 We received a number of representations requesting clarification or further explanation of aspects of our rdWRMP. We have amended our fWRMP19 in response to these representations to include additional detail. Table 2 is not intended to be exhaustive but provides a summary of the main areas in respect of which further detail has been added:

	Change to fWRMP19 text	Reason for change
Climate Change (See para 5.2.1 below)	We have included a more detailed explanation of the vulnerability of the Clay Lane group of sources to climate change.	In response to representations from Ofwat and GARD.
Target headroom (See para 5.2.3 below)	We have explained in more detail the reasons for our Target Headroom profile and have provided a comparison of our Target Headroom with the headroom of other water companies.	In response to representations from Ofwat and GARD.
Outage options (See para 6.2.1 below)	We have explained in more detail our consideration of outage options.	In response to representation from Ofwat.
Metering and reducing PCC (See paras 8.2.1-8.2.2 below)	We have included a more detailed explanation of how we will meet our PCC target. We also explain the reasons for the slower rate of delivery of our water savings programme and explain our approach to smart metering in more detail.	In response to representations from EA, Ofwat and GARD.
Leakage (See para 8.2.4 below)	We have explained in more detail in the technical appendix how we will achieve leakage efficiencies.	In response to representations from EA.

	Change to fWRMP19 text	Reason for change
Supply 2040 (See paras 9.2.1-9.2.4 below)	We have included a more detailed description of the components of Supply 2040 and their timing. We have explained how Supply 2040 enables us to meet supply-demand deficits.	In response to representations from Ofwat and GARD.
Our Business Plan (See paras 10.2.2-10.2.4 below)	We have added text to explain the relationship between our WRMP and Business Plan, in particular Ofwat's Initial Assessment of Plans process.	We wish to affirm our commitment to Ofwat's IAP and ensure that customers and stakeholders understand the relationship between the statutory WRMP process and the regulatory price review process.

Table 2: Summary of Explanations / Clarifications

- 1.1.6 This report including supporting appendices is our formal response to the further consultation. It details the approach we took to the further consultation and provides a summary of the key issues raised (Section 2). The main topics about which representations were made and our responses to them are set out in Sections 3-12. Appendices 6 - 38 provide detailed responses to the representations received from stakeholders and individuals.
- 1.1.7 Our fWRMP19 was submitted to the Secretary of State, Defra on 7 June 2019. We expect to publish our final plan late 2019.

2 Consultation Process

2.1 Approach

- 2.1.1 From 19 March 2018 to 23 May 2018 we consulted on our draft Water Resources Management Plan. In light of the responses received to this consultation we made various changes to the draft plan. We then undertook a period of further consultation on our rdWRMP19 for eight weeks from 1 March to 26 April 2019. The purpose of the further consultation was to provide an opportunity for regulators, stakeholders and customers to comment on the revisions to the dWRMP19 and to seek endorsement of our proposals more generally.
- 2.1.2 We worked closely with our Customer Challenge Group (CCG) from the start of the rdWRMP19 further consultation process through the formation of a CCG sub-group. The CCG sub-group have reviewed the findings and feedback from our further consultation and engagement. It is provided in Appendix 1.
- 2.1.3 We wrote to stakeholders and published details about the further public consultation and how to participate on our website www.affinitywater.co.uk/haveyoursay. We published the following documents and made paper copies available to view by appointment, at our offices:
- a non-technical document – this provided a summary of our revised draft plan
 - our full revised draft plan
 - draft plan Statement of Response (SoR) and an addendum to our SoR
 - rdWRMP19 technical reports were made available upon request.

- 2.1.4 A comprehensive communications campaign was delivered through a wide variety of communication channels to ensure customers and stakeholders across our supply area and beyond were made aware of the further consultation. Consultees could make representations via an online survey, email or post and a paper feedback form included in our non-technical summary document.
- 2.1.5 The majority of the responses (85%) to the further consultation online survey were from customers. Feedback from customers relevant to the consultation was also received through research and engagement activities conducted during the consultation period. This included an online representative survey of 1,000 customers and individual written feedback from Affinity Water customers, which was analysed independently by Ipsos MORI.
- 2.1.6 We also held a Stakeholder Assembly. The purpose of the Assembly was to enable stakeholders to contribute to shaping our future strategies. We also held meetings with regulators and other water companies both individually and through Water Resources in the South East (WRSE) and Water Resources East (WRE) groups and met with several key stakeholders including local authorities, GARD and environmental groups to present and discuss the rdWRMP19.

2.2 Number and type of responses

2.2.1 A total of 827 further consultation responses were received. Table 3 provides a breakdown:

Channel	Number of responses
Regulators	4
Individual Stakeholders	152
Further consultation on line survey (customers and stakeholders)	662
Individual Affinity Water customers	9
Total	827

Table 3: Responses received to the rdWRMP19 further consultation

2.2.2 Table 4 shows the breakdown of stakeholder respondents by sector who submitted a response either by letter or email. Appendix 3 provides a list of these organisations.

Sector	Number of representations
Local Campaign Groups	4
Environmental Groups	5
Individuals (from Oxfordshire area, not Affinity Water customers)	125
Local Authorities	7
National bodies	3
Parish Councils	5
Regulators	4
River Groups	2
Town Council	1
Total representations	156

Table 4: Representations by sector

2.2.3 We received a small number of representations from our Southeast Region and East Region which were broadly supportive of our proposals. In response, we made one substantive clarification relating to bulk supplies, and we did not make any changes to the fWRMP19 as a

result. It should therefore be noted changes reflected in our fWRMP19 relate to our Central Region.

- 2.2.4 The further consultation online survey responses came from across, and outside of, our supply area. Appendix 4 gives a breakdown by postcode where this was provided by respondents.

2.3 Analysis of responses

- 2.3.1 As outlined above, we received feedback via a number of channels. We have undertaken an extensive triangulation¹ process led by Arup, an independent third party. This process was completed following the pre-consultation and further consultation of our rdWRMP19.

Representative customer survey (Ipsos Mori)

- 2.3.2 The survey found high levels of support among customers for supply and demand-side proposals. The key findings are presented in Table 5.

Topic Area	Response
Leakage reduction	70%, either <i>strongly</i> support or <i>tend to</i> support Affinity Water's plans to take action to reduce leakage, including reducing leakage to between 11% and 13% by 2045.
South East Strategic Reservoir (SESR)	67%, support Affinity Water's plans to take action to ensure there is enough water to supply to customers including building a new reservoir (the South East Strategic Reservoir) by the late 2030s.
PCC Ambition	65% support plans to take action to reduce customer water usage including reducing usage to between 110 and 120 litres per head per day (l/h/d) by 2045.
Drought resilience (moving to 1 in 200)	62% support plans to take action to reduce drought including proposed investment in ways to help reduce the chance of drought happening from around 60% to around 25% over a 60-year period. In each case, support exceeds opposition by margins of at least five to one. Opposition does not exceed 12% - one in eight are cool on plans to take action on drought resilience - but around a fifth or more answer don't know or say they have no views either way.
Canal & River Trust transfer option	59% of customers either strongly support or tend to support plans to transfer wastewater via canal from a wastewater treatment plant.
Acceptance of Plan	80% of customers either very accepting or fairly accepting of Affinity Water's Water Resource Management Plan as a whole and the cost.

Table 5: Representative customer survey (Ipsos Mori) key findings

¹ Triangulation is a technique that facilitates validation of data through cross verification from two or more sources. It refers to the application and combination of several research methods in the study of the same phenomenon.

Further consultation online survey findings

2.3.3 The majority of representations received via the further consultation online survey (open to customers and stakeholders) were supportive of the options presented. The key findings from this survey are presented in Table 6.

		All Responses			
		No		Yes	
Plan allows us to adapt to these uncertainties and deliver solutions	Stakeholder	0.60%	4	3.17%	21
	Affinity Water Customer	15.11%	100	69.34%	459
	Other	5.59%	37	3.02%	20
	Not Answered	1.21%	8	1.51%	10
	Business Customer	0.15%	1	0.30%	2
	Total	23%	150	77%	512
<hr/>					
Reduce Leakage between 11 to 13% by 2045		No		Yes	
	Stakeholder	0.45%	3	3.32%	22
	Affinity Water Customer	14.50%	96	69.94%	463
	Other	3.93%	26	4.68%	31
	Not Answered	0.76%	5	1.96%	13
	Business Customer	0.15%	1	0.30%	2
Total	20%	131	80%	531	
<hr/>					
Construct a new reservoir in Oxfordshire		No		Yes	
	Stakeholder	0.91%	6	2.87%	19
	Affinity Water Customer	14.80%	98	69.64%	461
	Other	5.74%	38	2.87%	19
	Not Answered	1.06%	7	1.66%	11
	Business Customer	0.00%	0	0.45%	3
Total	23%	149	77%	513	
<hr/>					
Continue to investigate transfer treated waste water via the Grand Union Canal		No		Yes	
	Stakeholder	1.36%	9	2.42%	16
	Affinity Water Customer	14.80%	98	69.64%	461
	Other	1.51%	10	7.10%	47
	Not Answered	0.76%	5	1.96%	13
	Business Customer	0.00%	0	0.45%	3
Total	18%	122	82%	540	
<hr/>					
Reduce the amount of water consumed by an average household from 152 to 129 litres by 2025		No		Yes	
	Stakeholder	0.30%	2	3.47%	23
	Affinity Water Customer	20.24%	134	64.35%	426
	Other	2.11%	14	6.34%	42
	Not Answered	1.06%	7	1.66%	11
	Business Customer	0.15%	1	0.30%	2
Total	24%	158	76%	504	
<hr/>					
Rise in customer bills from £171.70 to £193.70 in 2080		No		Yes	
	Stakeholder	1.21%	8	2.57%	17
	Affinity Water Customer	24.17%	160	60.27%	399
	Other	3.63%	24	4.98%	33
	Not Answered	0.91%	6	1.81%	12
	Business Customer	0.30%	2	0.15%	1
Total	30%	200	70%	462	

Table 6: Further consultation online survey key findings

3 Demand forecast

3.1 Summary of key representations

- 3.1.1 Some stakeholders felt we should plan for higher population growth, in particular taking into account the potential for high growth rates associated with the Cambridge - Milton Keynes - Oxford (CaMkOx) development corridor and the potential for high growth rates in London as contained in the draft Greater London Authority (GLA) development plans.
- 3.1.2 Others felt that the predicted growth was too high, particularly considering historic growth figures, and requested clarification of our assumptions.

3.2 Our response

- 3.2.1 We have followed best practice and guidance by planning for growth as per local authority plans. Where we have made adjustments due to differences between these forecasts and our baseline population and properties and the treatment of blocks of flats in the forecast, we have clarified this in our plan and technical reports.

GLA growth

- 3.2.2 High population growth (beyond that which we have planned for) is only in the draft GLA plan (not the plans of other authorities). As a result, it is not included in the forecast of baseline demand. However, in light of the representations made we have altered the fWRMP19, so that it addresses GLA growth through inclusion of a “high-growth” scenario in our sensitivity testing. In the event of a “high-growth” scenario being realised we will rely on some of the less environmentally-damaging drought permits and will accelerate delivery of our first supply option to 2032. We would need a second strategic option by 2042 and a third strategic option within the 2080 time horizon.

CaMkOx development

- 3.2.3 Additional growth from the CaMkOx development corridor has not been expressly included as no planning figures are available at the moment. However, we will continue to review our forecasts as new information becomes available (as per our adaptive plan). We do not therefore consider that any change to the plan is required.

4 Supply forecast

4.1 Summary of key representations

- 4.1.1 Key representations in respect of our supply forecast included:
- A representation from the Environment Agency that we should plan for cessation of our Friars Wash source in all circumstances and not only as part of our Challenging future.
 - A suggestion from Ofwat that we consider the continued use of drought orders and permits after 2024.

4.2 Our response

Friars Wash

- 4.2.1 We have amended the plan so that the fWRMP19 provides for the reduction of Friar’s Wash in all futures under the plan.

Drought permits and orders

- 4.2.2 A key feature of our rdWRMP was meeting a 1 in 200-year drought without the use of drought permits and orders from 2024 onwards and to aim to increase resilience beyond a 1 in 200-year drought. Our fWRMP will be unchanged in this respect; it provides that we will only use drought permits or orders for a limited time in the event of a high-growth scenario and/or in the event of further reductions in abstraction from the Chalk above the 7Ml/d allowed for in our Challenging future in the Central Region. We do not have raw water storage in our system, so we have to apply for Orders and Permits during the summer and autumn when drought stress on the environment is at its most significant. We cannot rely on the winter based measures that are available to other water companies. The decision to minimise the use of drought permits and orders after 2024 is supported by the Environment Agency.

5 Risk and uncertainty

5.1 Summary of key representations

- 5.1.1 We have received comments from stakeholders requesting clarification and justification for the assumptions regarding climate change in the Central Region and a request for us to explain our relatively large Target Headroom.

5.2 Our response

Climate Change

- 5.2.1 We have not changed our approach to assessment of climate change risks in our rdWRMP. However, we have further clarified in our fWRMP19 that our Clay Lane group of sources is considered the most drought vulnerable group, because most of the boreholes within the group licence are vulnerable to a loss of pumping capability once groundwater reaches a certain level (usually the top of the horizontal tunnel deviating from the vertical borehole).

Target Headroom

- 5.2.2 We acknowledge that it is unusual that Target Headroom is higher at the start of the planning period than the end. This is because we have included the risk associated with the water saving programme (WSP) and the associated delivery risk within our baseline demand forecast, rather than as an option for development in our decision-making process. In line with the guidance we have adopted a high risk percentile (95%) in the near term, which ensures that we are investing in sufficient demand management to balance supply and demand even if the WSP programme does not deliver the expected 18% demand savings. In the medium term our average Target Headroom reduces, which reflects the fact that we will have time to adjust our programme to address emerging risks.
- 5.2.3 The comparison between our Target Headroom and other water companies that was provided by one stakeholder was inappropriate as it was based on Final Plan demand, so generated values that appear to be high as a result of our very high levels of demand management that we have included in the early years of our Plan. We have therefore compared our Target Headroom on a like for like basis using baseline Distribution Input (total demand) with the Target Headroom of other companies. This shows that by the earliest date for delivery of a strategic supply-scheme (2038) our overall Target Headroom is similar to Southern Water's and is below South East Water's and Severn Trent Water's. Our fWRMP19 includes this further analysis to explain more robustly why our relatively large Target Headroom is appropriate.

6 Appraisal of future options

6.1 Summary of key representations

- 6.1.1 Ofwat commented that our rdWRMP did not appear to consider sufficiently fully the feasible options to reduce outage and that we have rejected unconstrained options to reduce outage without providing sufficient justification.
- 6.1.2 Ofwat and the EA observed that in the future a River Thames trading and transfer option could be supported by source water other than SESR, from Thames Water, Severn Trent Water or United Utilities. Further, it was said that the options appraisal process should provide more clarity and justification as to why certain options such as the River Severn to River Thames transfer had been excluded.
- 6.1.3 GARD's response identified that our choice of demand management and supply options is likely to affect flows in the River Thames and therefore could impact on Thames Water's water resources management plan.

6.2 Our response

Outage

- 6.2.1 In response to the concerns raised about outage, we have included provision of bank-side storage and/or emergency supply routes in our design of our strategic options. For other outage types, we have carried out a review of sites and options, which is referenced in our unconstrained options report (Technical Report 4.1). This concluded that there were only a small number of options and that the savings achieved were minimal (<0.5MI/d). It follows that we do not propose any substantive change to the plan in this regard. However, we have included further detail as set out in this paragraph.
- 6.2.2 We propose to continue with and increase our catchment management programme during AMP7, which is intended to offset the risk of increasing outage due to catchment issues such as rising nitrates. These have significant benefits, but we have elected to exclude both the risks and the benefits from the fWRMP19 as they are complex and uncertain. We also have proposals relating to intake protection in our Business Plan to allow us to shut down our surface sites to when raw water quality is poor. However, these by their very nature result in outages at the works, so they do provide benefit to the supply/demand balance.
- 6.2.3 We also considered options to provide additional resilience to our operations and networks. Within our unconstrained options review these types of options are often to replace or twin an existing asset, e.g. a new treatment works, or a new mains connection. These options do not increase the water supplied but they ensure that we can make best use of the water we have available and increase resilience of our networks.

Strategic Supply Options

- 6.2.4 In response to the representations on the question of a River Thames trading and transfer option, in the fWRMP19, we have created a new 'stand-alone' option based on the treatment and transfer (from the River Thames) elements of the SESR and Severn Thames Transfer (STT) schemes, but with an option that the source water may be provided by a trade or transfer. As Table 16 of the fWRMP19 explains: "This is an option for trading and transfer on the River Thames using source water from a new transfer through the Severn-Thames scheme, or a licence trade with Thames Water on the River Thames. The abstraction and transfer from the River Thames would be the same as described for the STT and SESR options".
- 6.2.5 All strategic supply options other than the Thames-Affinity trading option were included within the economics of balancing supply and demand (EBSA) modelling; we did not exclude "screen out" any strategic supply option prior to formal economic analysis. The reason that the Thames-Affinity trading option was not included as its own option was because the abstraction and

transfer from the River Thames would be the same as for the Seven Thames transfer and SESR.

- 6.2.6 In response to representations we have also clarified our position in relation to the Severn Thames Transfer. This is not selected as a preferred option within our economic and 'best value' analysis due to the high operational costs that result from our lack of raw water storage and our need to rely on Thames Water's storage to facilitate the scheme. However, that analysis is based on our independent development of the scheme. If the scheme is developed by the three-company group (Thames Water, United Utilities and Severn Trent Water) that has been set up to investigate and potentially promote the option in AMP7, it may be possible for one of the three-company group to offer us a cost effective trade. We are committed to liaising closely with this group during AMP7.
- 6.2.7 In respect of the option of the South Lincolnshire reservoir, our analysis of the 'high growth' and extended sustainability reduction scenarios has confirmed that we should include appropriate investigations in AMP7 in parallel with the SESR and GUC transfer to enable us to adapt to such a scenario.

Impacts of abstraction reductions and changes in demand on returns to the River Thames

- 6.2.8 The rdWRMP did not consider the impacts of abstraction reductions and changes in demand on returns to the River Thames. We have therefore included two actions within our fWRMP19. First, we have identified the need for conjunctive use modelling (system simulation modelling and hydrological analysis required to quantify the impact of our investment programme on downstream flows). However, no such system currently exists and so we have committed to supporting the Water Resources in the South East (WRSE) group to develop the relevant analysis in AMP7. Secondly, we have carried out a qualitative analysis of the impacts of our investment programme on downstream flows in the River Thames. In the short to medium term (pre 2038) the impact will depend on the balance between reducing demand (and hence effluent returns), versus the reduction in abstraction and the Grafham imports. There is a risk that flows may tend to reduce if the former exceeds the latter. In the longer term the introduction of strategic supply schemes will have a beneficial effect on flows, but this will need to be set against licences and quality implications. The potential additional benefits from these increased flows will need to be considered against water quality implications and licences arrangements, which will need to be accounted for in the regional economic analysis during AMP7.

7 Formulating and Testing our Plan

7.1 Summary of key representations

- 7.1.1 A number of stakeholders commented on our decision-making process and how we developed our plan. Key points made were:
- A request for greater clarity on how non-monetary issues and impacts were considered in the decision-making process.
 - The delivery dates for SESR (or our other first strategic supply option) is not clear.
 - Our Plan should consider the need for additional sustainability reductions beyond December 2024.

7.2 Our response

Decision-making (including MCA)

- 7.2.1 In response to concerns about the way in which non-monetary impacts were analysed, we have included further explanation on the way in which a multi-criteria analysis check was applied at

Step 3 of our decision-making process to ensure that our plan is “best value” (as opposed to being simply the lowest cost plan).

- 7.2.2 We have also added greater clarity and explanation to the Technical Report 4.9: Economics of Balancing Supply and Demand Modelling and Decision-Making Process.

Dates for delivery of Strategic Supply Options

- 7.2.3 In response to representation we have updated the dates for delivery of strategic supply options in our fWRMP. This has enabled us to correct various minor errors that we identified in our modelling and review of our modelling assumptions associated with the management of Final Plan Target Headroom.

- 7.2.4 Our delivery dates refer to the date by which a strategic option must be operating such that we are able to use this option for supply of water to customers. As with the rdWRMP, our delivery dates are different for each future. The updated delivery dates are shown in Table 7 below:

Future	Date for delivery of first strategic option	Date for delivery of second strategic option
Challenging	Summer 2038	2063
Expected	Summer 2042	2066
Optimistic	Summer 2050	2073
Aspirational	Summer 2059	Post 2080

Table 7: Delivery dates for strategic options for each of the four futures

Additional sustainability reductions beyond December 2024

- 7.2.5 Some consultees considered we should plan for additional sustainability reductions after December 2024.

- 7.2.6 In the rdWRMP19 we included a possible need to further reduce abstraction from chalk catchments by 7 MI/d in our Challenging future. However, in light of the representations made we have, in addition to our previous approach, added a “further reductions in abstraction from chalk” scenario to our sensitivity testing. This considers the position if we are required to make a further 40 MI/day of abstraction reductions. Within this scenario we will need to continue limited reliance on Drought Orders and Permits until our first strategic resource can be developed. We would therefore need to consider developing either the GUC transfer, or a water trading option with Thames Water as these have shorter lead times than the other strategic options.

Implications and adjustments as a result of sensitivity analysis

- 7.2.7 As a result of our updated sensitivity analysis (which has included the “high growth” scenario and further sustainability reductions), our fWRMP19 now provides for us to assess at the 2023 decision point whether the risk from high-growth and/or additional sustainability reductions is such as to require acceleration of supply-side development beyond our Challenging future. This has been included as an additional adaptive pathway in our strategy. Under this scenario we will need to continue to rely on some Drought Orders and Permits (in the order of 6 to 12MI/d) until a strategic scheme is developed. We may therefore need to develop options with shorter lead-in times such as the GUC transfer; this will enable us to reduce the period over which we have to continue to rely on drought orders and permits. If reliance on schemes with shorter lead-in times has significant cost implications (once AMP7 investigations have confirmed scope and cost of schemes), then we will need to consult with customers to determine their views on incurring this additional cost.

8 Our demand management strategy

8.1 Summary of key representations

- 8.1.1 There was widespread stakeholder support for our commitment to demand management to reduce consumption as part of the preferred programme. However, some consultees felt that we fell short compared to the ambitions of other water companies with regards to our efforts to bring per capita consumption (PCC) rates down through the introduction of water metering, particularly using smart meters.
- 8.1.2 Stakeholders requested greater clarity on how demand management benefits and PCC ambition will be achieved to ensure existing and planned water saving and metering programmes are delivered.
- 8.1.3 Some stakeholders questioned why the company has decreased its metering ambition from 90% by 2025 in both its 2014 plan and in the original draft 2019 plan, to 79% in the revised draft plan.
- 8.1.4 Stakeholders largely supported our proposals to reduce leakage by 18.5% from 2020 to 2025 but some stakeholders felt that plans to tackle leakage in the long term were below the target set by the water regulator and that Affinity Water should bring leakage down to the industry average by 2050. They suggested that Affinity Water should achieve 50% reduction from 2020 (not from 2015 baseline) and provide further clarity on how it will achieve its leakage ambition.

8.2 Our response

Metering and reducing Per Capita Consumption (PCC)

- 8.2.1 We will seek to reduce PCC to 129 litres per head per day (l/h/d) by 2025 through the continuation of our existing Water Saving Programme and employing new demand management options (this is the largest PCC reduction in the industry for this period). Significant additional explanation and quantification has been added to Chapter 6 of the fWRMP19 to demonstrate how we will meet the 129 l/h/d AMP7 target and the strategy beyond that.
- 8.2.2 We anticipate 80%-meter penetration by 2025 and 90% meter penetration by 2045. We recognise this represents a lower target than at the dWRMP19. This is largely as a result of the higher than anticipated need to install internal rather than external meters, and taking on board experience to date around the practicalities of installing meters internally as well as wider industry learning. An explanation of the reasons for, and very limited implications of, the slower rate of metering as part of the Water Saving Programme is included, along with justification of the approach to smart metering rollout in Chapter 6.2 Our demand management strategy in the fWRMP19.

Leakage

- 8.2.3 We fully support stakeholders' ambitions to substantially reduce leakage by 2050. Our initial aim is to achieve a 50% reduction in leakage between 2015 to 2045. This 30-year programme to reduce leakage by 50% is planned to deliver five years earlier than most other water companies because we started the process in 2015, and will already have delivered a 14% reduction by 2020, followed by a further 18.5% reduction have committed to deliver between 2020 and 2025. We will then aspire to achieve a higher level of reduction, to 57% from the 2015 position, which will allow us to reduce leakage by 50% from our 2020 position.
- 8.2.4 We have clarified how we have handled mains renewals for leakage and trunk mains schemes. Explanation of how we will achieve leakage efficiencies and details of our leakage reduction strategy are provided in Technical Report 4.8: Leakage Strategy Report and referenced in chapter 6.2 Our demand management strategy in the fWRMP19.

9 Our water supply strategy

9.1 Summary of key representations

- 9.1.1 Stakeholders have asked us to confirm the timings and costs of schemes associated with our “Supply 2040” strategy including an explanation of which schemes within this strategy are for non-drought resilience and which scheme are to meet our supply-demand deficit. GARD was of the view that we are not using all surplus generated in our WRZ6 prior to use of the SESR.
- 9.1.2 We also received a number of representations highlighting that the demand from High Speed 2 (HS2) is not included in the plan.

9.2 Our response

Management and transfer of surplus and Supply 2040

- 9.2.1 We have now included further details of the timing and inclusion of schemes from our “Supply 2040” strategy in the fWRMP19, and shown how it affects individual WRZ supply-demand balances under all of our modelled futures within our Technical Report 4.9: Economics of Balancing Supply and Demand Modelling and Decision Making Process.
- 9.2.2 In summary, all of the proposed AMP7 developments, which are detailed in our Business Plan, are required to support the transfer of 17Ml/d out of WRZ6 into WRZ4, or to enable the Grafham transfer enhancement. AMP8 (2025 to 2030) then contains our second stage transfer from Egham to Iver (WRZ6 to WRZ4), supported by a small licence trade, and finally we have a scheme to transfer water from WRZ1 to WRZ3 in the longer term. This is now more fully described in the main Plan document.
- 9.2.3 Our Plan incorporates the individual elements of “Supply 2040” as early as they are needed to ensure that surpluses within individual WRZs are usefully transferred into other WRZs in the Central Region. The fWRMP19 supports the requirement to distribute water to areas of need, avoiding strategic deficits and surpluses. We will continue to plan investment as quickly as is necessary to achieve this.
- 9.2.4 We have updated Technical Report 4.9: Economics of Balancing Supply and Demand Modelling and Decision-Making Process to include the most up to date assessment of our supply demand balance for each future which supports the timing of the requirement for the transfers. The individual balances within each WRZ for each future are provided as graphs within the technical report.
- 9.2.5 We have modelled the implications of our extended sustainability reduction scenario and presented the implications and costs in the fWRMP19 in Chapter 5. Potential adaptations to accommodate this are reflected in our revised adaptive strategy.

HS2

- 9.2.6 The water demand for High Speed 2 (HS2) is considered temporary in nature (i.e. within AMP7), and hence is dealt with outside of the WRMP and will be developed separately by HS2. Measures will be in place to ensure that our assets are protected from HS2 works during construction and are designed to cover peak demand periods. Moreover, a long-term monitoring plan will be in place to measure any deviation from the current baseline in terms of both source yield and water quality. Any additional infrastructure required to enhance resilience during the HS2 works, will be funded by HS2 directly.

10 Our adaptive strategy for the Central Region

10.1 Summary of key representations

- 10.1.1 Stakeholders have stated that we should set out enabling actions on strategic schemes in line with the Ofwat Initial Assessment of Plans (IAP) process and ensure there is alignment with other company plans, particularly that of Thames Water.
- 10.1.2 Stakeholders have also asked us to provide more detail regarding our outline monitoring plan and how we will engage with them on the results of our monitoring.

10.2 Our response

Enabling actions for future strategic supply options

- 10.2.1 Significant coordination has been undertaken between ourselves and other water companies when producing our respective WRMPs. This included coordination between the companies on approaches to adaptive planning, checking volumes of existing and proposed transfers and shared options to address deficits in supply-demand balance.
- 10.2.2 As part of both the Business Plan and WRMP updates we have directly coordinated with Thames, Anglian, Southern, United Utilities and Severn Trent Water to ensure our proposals for AMP7 (2020 to 2025) strategic scheme investigations are fully aligned. The dates presented for our adaptive strategy and monitoring plan reflect that process. As the SESR is identified as the preferred option through the ‘best value’ analysis carried out for this WRMP, we have specifically referred to Thames Water’s adaptive plan in our WRMP, and highlighted the alignment in investigations, development and adaptation between our two plans.
- 10.2.3 The enabling actions that we identify for AMP7 in our fWRMP19 have been developed for the strategic schemes alongside the Business Plan process, and in particular our response to Ofwat’s Initial Assessment of Plans (IAP), which requires such investigations as part of our AMP7 Business Plan.
- 10.2.4 A core part of this process relates to the setting up of a ‘gated’ process, whereby the strategic scheme investigations are carried out jointly by the water companies involved, and the scope of works and decision whether or not to proceed to the next gate is scrutinised by the economic (Ofwat) and environmental (EA) regulators. This gated process will apply to all of the strategic investigations, and covers the enabling actions associated with the SESR, the River Thames to Affinity Transfer, the GUC transfer and the South Lincolnshire reservoir scheme. Our enabling actions are summarised in the Table below.

AMP7 enabling action	Activities and timing
SESR pre-development	Investigations to model conjunctive capability of water resource needs, confirm reservoir sizing and flood risk and develop operational management. Confirm scope and costing of scheme to a consistent level with other options.
GUC technical investigations	Two years of monitoring and investigation into water quality, hydraulics and hydrology carried out in partnership with CRT to determine the scope of the best value option. Confirm scope and costing of scheme to a consistent level with other options.
GUC environmental feasibility investigations	Ecological studies carried out in parallel with the above, plus associated detailed liaison with the EA and Natural England to review the options for abstraction on the River Tame, and/or pre-treatment requirements at Minworth. Explore both the Berkhamstead and extended Iver transfer options

River Thames transfer investigations	Investigations to confirm transfer and treatment needs for both a staged (50MI/d plus 50MI/d) and single (100MI/d) transfer option to take raw water from the River Thames (surplus generated either by SESR or an alternative raw water source via trading arrangements).
South Lincolnshire reservoir and Anglian Water transfer investigations	Ongoing liaison with Anglian Water plus further investigations into the yield, design and cost of the 100MI/d (Trent-Witham transfer version of the option). Confirm scope and costing of scheme to a consistent level with other options.
Additional water trading capability.	Review and development of water trading options. Particularly relates to discussions and modelling associated with the Severn Thames Transfer, but also to determine if other trading options with Thames Water are viable.
Regional modelling and testing of options	Co-development of regional economic and resilience modelling as part of the Water Resources in the South East group, plus associated testing of regional options.
Monitoring framework activities	Monitoring to confirm the 'case of need' for new strategic options at the summer 2023 decision point. See below for the details Monitoring Plan framework, which includes activities needed to support the 2023 decision point.

Table 8: Summary of our AMP7 enabling actions between 2020-2023

Monitoring Plan

10.2.5 In light of the representations received we have also incorporated further clarity and detail on the AMP7 Monitoring Plan in Chapter 6.4 of our fWRMP19. As well as the metrics that will be monitored, we have included proposals for customer and stakeholder engagement and information sharing. These are based around four key 'themes':

- Theme 1: Small scheme investigations – this will involve working with the EA, Natural England (NE) and the Canal & River Trust to confirm the viability of smaller schemes such as the Brent Reservoir and the Lower Greensand schemes.
- Theme 2: Reductions in Abstraction - we propose to re-start the Chalk Rivers Partnership that was trialled in AMP6 and incorporate Catchment Partnerships into our review process, with a view to determining the probable level of future sustainability reductions in time for the 2023 decision point.
- Theme 3: Managing Growth and Demand - we propose to form a Partnership for Managing Growth and Demand, who we will consult with on updates to growth forecasts and the data and findings from our demand management and leakage programmes. We will also consult on a regular basis with Thames Water, to share progress on demand management and considerations of delivery risk.
- Theme 4: Strategic Option Investigations - this will primarily be managed through the gated development process described above; the individual schemes will require stakeholder engagement plans to be developed as part of the investigations.

11 Regional coordination and alignment of strategic options

11.1 Summary of key representations

11.1.1 Although stakeholders generally support our work on strategic regional options, they stated that:

- Inconsistencies remained, in timing and magnitude, between Affinity Water's transfer options and those of its neighbours. This has the potential to significantly impact selection of the optimal regional solution and other company plans.
- We need to examine the feasibility of all the available options and explore alternatives, particularly trading with Thames Water and consider whether these can be implemented before the current long-term strategic options. The company should continue work on these before its decision point in 2022/23. Decisions on which schemes are selected or rejected should be made jointly with other companies involved.
- We should ensure that costs and benefits of regional solutions are presented consistently and transparently in future documentation.

11.2 Our response

Alignment with our Business Plan and other Water Companies

11.2.1 Although we were generally aligned at the rdWRMP19 stage, our final WRMP will be fully consistent with neighbouring company WRMPs in respect of shared option timing and volume of water supplied to Affinity Water.

11.2.2 Since the rdWRMP19 we have continued to work with our strategic regional option partners. Our WRMP19 provides a summary of that work to provide further transparency to stakeholders and customers. As noted above, we have specifically referred to Thames Water's adaptive plan in our WRMP, and highlighted the alignment in investigations, development and adaptation between our two plans. We are fully aligned around the 2023 decision point, with early review in 2022 based on the 'Gate 1' stage of the Business Plan proposal. In terms of the costs and magnitude of benefits, we have explained the derivation of our 50MI/d plus 50MI/d two stage approach to SESR, and confirmed that this has been modelled by Thames Water in their updated revised submission. We have also modelled a single 100MI/d version and confirmed that this is still selected as the preferred option in our 'best value' analysis. We have therefore confirmed the need for 100MI/d from SESR, as modelled by Thames in its analysis. We have also confirmed the sharing of costs and yield with Thames on the STT and with Anglian Water on the South Lincolnshire reservoir.

11.2.3 Our Business Plan submission on the 1st April 2019 also provides additional information relating to our proposals for joint working and collaboration with partners for all our strategic regional options. These proposals include the shared understanding of the scheme descriptions, our approach to joint working methods and activities, scheme costs and programmes, and gated deliverables linked to an Outcome Delivery Incentive type mechanism.

11.2.4 We have provided further explanation of how we intend to continue the work on alternatives to preferred strategic regional options in our plan e.g. liaison for the STT and water trading options with Thames Water.

Costs

11.2.5 We have provided additional cost transparency where it is possible to do so in Technical Report 4.4 LRMC cost model update, and have agreed the approach to the representation of financing and repayment costs for large capital schemes in Table 5 of the WRMP. We have updated the costs included in our fWRMP19 in response to better information becoming available between publication of our rdWRMP and our fWRMP19.

12 Assessing the environmental impact of our fWRMP19

12.1 Summary of key representations

- 12.1.1 Concerns were raised by some stakeholders regarding the SESR. Their view was that there was insufficient understanding of the environmental effects, particularly the problems with building on a floodplain and SESR's potential lack of resilience to drought.
- 12.1.2 Several other representations flagged the need for further clarity around mitigation, how conclusions have been reached with regards to Likely Significant Effects (LSE) on European sites and that the opportunities for enhancement to biodiversity and net gain should be considered at the relevant stage.

12.2 Our response

Flood Risk of SESR

- 12.2.1 A number of comprehensive flood risk studies regarding the SESR are available. A review of flood risk and the provisions made to mitigate the identified effects on flood risk due to the SESR has been undertaken, available in Thames Water's Statement of Response No.2 Technical Appendix K. We have carefully reviewed this and concur with the recommendations for further work. It follows that at present there is no evidence that any flood risk could not be mitigated. Further, we note, a Flood Risk Assessment for the SESR will be required to support the Development Consent Order (DCO).

SEA and HRA

- 12.2.2 We have addressed the points raised across the various representations which relate to the Strategic Environmental Assessment ("SEA") and Habitats Regulations Assessment ("HRA") within the SoR appendices in further detail, as well as revising the fWRMP19 SEA/HRA documents where appropriate. This includes adding to the final SEA the second stage Egham to Iwer transfer and the small trading option on the River Thames.
- 12.2.3 We recognise there are many stakeholders with a keen interest in some of the strategic options proposed in our plan which are covered under the SEA process, and we would like to continue engaging with the relevant parties and stakeholders.

Environmental Effects and Mitigation for SESR

- 12.2.4 In order to generate the SEA and HRA we engaged separate consultants to Thames Water, who reviewed the information provided about environmental impacts, mitigation and amenity potential for the SESR option as part of their analysis. Their analysis, as described within the SEA report, generally concurred with Thames Water, and outlines the construction mitigation required for the scheme in a way that is also compatible with our other options. The SEA also confirmed the potential for amenity improvements as part of the scheme assessment, along with the need to design these improvements as part of the planning application process.

Resilience to Drought of the SESR

- 12.2.5 We have carefully reviewed the technical reports relating to the drought and climate resilience of the SESR provided to us by Thames Water, which were peer reviewed through their technical stakeholder working groups, and consider that these clearly demonstrate that the SESR can provide the quoted yield reliably across a wide range of drought severities. We note that drought severity within those documents is as measured for the Thames Water supply system. We have therefore also carried out an initial review of the yield that we can expect from 50 Mm³ of storage (one third of the reservoir capacity) under our drought design condition and confirmed that this should provide us with the expected 100MI/d benefit. However, more detailed modelling, which will need to account for the 'secondary benefit' provided by increased effluent returns to Thames Water's intakes (see response 6.2.8), plus the differences in timing and duration between our critical drought events and Thames Water's critical drought events, is required before we can confirm the benefits from the scheme. This modelling is included within our AMP7 joint working investigations and is due to report before the crucial 2023 decision point.

13 Response to Environment Agency's Recommendation 5 - Compliance with WRMP Directions 2017

13.1.1 This section contains our responses to Environment Agency's Recommendation 5 to demonstrate our plan complies with all WRMP Directions and provides reference to where in our fWRMP19 recommendations have been addressed.

<p>Direction 3(d) - Describe the emission of greenhouse gases likely to arise as a result of each measure in its plan</p>	
<p>The company has presented greenhouse gas emissions associated with its best value plan as a total, however it has not provided greenhouse gas emissions associated with each preferred plan option individually, or for its baseline operations.</p> <p>The company must state in its final WRMP its numerical estimate of greenhouse gas emissions associated with each preferred (best value plan) option individually, as well as emissions associated with its baseline operations (this can be as a total), to meet Direction 3(d).</p>	
<p>Our response (with reference to fWRMP19)</p>	<p>We have included a table in Technical report 4.9 Economics of Balancing Supply and Demand Modelling and Decision Making Process, Appendix 3 to show total greenhouse gas emissions associated with each preferred plan option individually.</p>
<p>Direction 3(e)(i) - Describe the assumptions made regarding the implications of climate change, including in relation to the impact on each of its supply and demand measures</p>	
<p>The company has presented the impact of climate change on its supply demand balance as a total, however it is unclear how climate change will impact each of its preferred (best value plan) options individually. The company must clearly state in its final WRMP the impact of climate change on each preferred (best value plan) supply and demand option individually for the duration of its plan, including the assumptions made in the assessment, to meet Direction 3(e).</p> <p>If the impact on an option is too small to be quantified, the company must clearly state it assumes there will be no climate change impact.</p>	
<p>Our response (with reference to fWRMP19)</p>	<p>A further explanation to describe the impact of climate change on each preferred supply and demand option is included in Technical report 4.5 Supply Side and Constrained Options Report Vol 1, Appendix E.</p>
<p>Direction 3(f) - Describe its metering programme, including costs, approach, implementation and timing of the programme</p>	
<p>It is not clear how the company intends to implement its preferred or baseline metering programmes. The implementation and operational costs associated with the metering element of its baseline water saving programme (WSP) are also not clear.</p> <p>The company must describe in its final WRMP its approach to implementing its preferred and baseline metering programmes (for example, which areas will be prioritised for meter installation and why). It must also outline installation (CAPEX) and operational (OPEX) costs for the metering element of its WSP, to meet Direction 3(f).</p>	
<p>Our response (with reference to rdWRMP19)</p>	<p>The cost of our metering programmes as CAPEX and OPEX is presented in fWRMP19, Chapter 6.8 'Cost of our Plan', Table 26.</p> <p>The implementation of our baseline metering programme as part of WSP and preferred metering programme (smart metering) approach and timing is further described in fWRMP19 in Section 6.2 Our demand management strategy under Water Saving Programme and new demand management options.</p>

Direction 3(h) – Describe its assessment of the cost-effectiveness of domestic metering types

The company has provided a cost-assessment of the different types of meter (AMI, AMR and dumb), but not for the methods of metering available to it.

The company must provide in its final WRMP an assessment of the cost-effectiveness for the following methods of metering available to it to meet Direction 3(h):

- Selective
- Change of occupancy
- Compulsory
- Optant

An assessment of cost-effectiveness should include an estimate of the costs for the above types of metering together with the associated reductions in demand, to enable comparison between options.

Our response
(with reference to rdWRMP19)

We have updated our assessment to further include the cost-effectiveness of the different methods of metering in **Technical Report 2.6 Metering Cost Benefit Analysis (CBA), Section 3.4.**

14 Next Steps

- 15.1 Our final plan was submitted to the Secretary of State, Defra on 7 June 2019. We expect to publish our final plan late 2019.