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Secretary of State for Environment, Food & Rural Affairs
Water resources management plan consultation
Area 3D
Nobel House
17 Smith Square
London
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25 May 2018

Dear Secretary of State,

Southern Water – draft water resources management plan 2019

Southern Water published its draft water resources management plan 2019 on 5 March 2018 for consultation. This letter provides a summary of our assessment of the draft plan. It is our statutory consultation response, produced in accordance with our statutory duties and the Government’s strategic policies and objectives for Ofwat. These views are without prejudice to any subsequent decisions that we may make at the next price review (PR19) in connection with the business plan that the company is scheduled to provide to us in September. Our assessment has considered:

- how adequately the draft plan follows the requirements of the water resources planning guideline and Defra’s guiding principles for water resources planning; and
- how the draft plan helps achieve our vision of ensuring trust and confidence in the sector through the delivery of our key themes for PR19 of great customer service, affordable bills, resilience in the round and innovation.

Long term water resources planning is a key part of company business activities. We expect companies to integrate the development of their water resources management plans into their business plans which they submit to Ofwat. We also expect them to adopt the ‘twin track’ approach to improve water supply resilience through both increased supply and reduced demand. We will continue to work closely with Government and the other regulators in both England and Wales to ensure that a long term secure and sustainable supply of water is achieved.

Southern Water supplies water to a population of approximately 2.6 million people across the south and south east of England. Its water resources are planned on the basis of 14 water resources zones grouped into three supply areas: Western; Central; and Eastern.

Southern Water forecasts that the majority of its water resource zones will be in deficit in the future, without additional action to reduce demand or increase supplies. This means there would be insufficient water to maintain supply to customers in some severe drought conditions. Many of its zones are forecast to enter a deficit in the early 2020s primarily driven by abstraction licence reductions. The scale of the challenge and complexity of the issues means that effective action is required urgently to deliver for customers and the environment.

The Southern Water plan sets out a range of demand-side and supply-side options to meet future demands for water and ensure that customers receive a sustainable and resilient service. We welcome the development of a regional trading solution with Portsmouth Water and the focus on drought resilience, as well as the adoption of a 15% leakage reduction by 2025. However, we are concerned that the plan fails to deliver in the best interest of customers in a number of important areas. In particular:

- The Southern Water plan relies on an adaptive pathway with triggers that define the actions to be taken to mitigate the risks of unconfirmed abstraction licence reductions. However, from the draft plan, it is unclear if these have been identified appropriately and whether sufficient time is allowed to enable timely decisions on options to be made. The adaptive pathway approach was also taken in the previous plan in 2014, but it does not appear to have been followed appropriately and greater clarity needs to be provided that the company has learnt lessons from this.
- The plan does not provide sufficient evidence that the proposed supply-side options are appropriate:
 - There is a lack of clarity on the assumptions made in the development of the plan, such as potential risks in deliverability, environmental impacts and future uncertainties. This includes the short-term delivery of desalination projects on which the company is reliant on to reduce the supply-demand deficit.
 - Given the company is in the early stage of option analysis for major new supplies, we also expect active work to continue on regional transfer solutions which could potentially displace or delay other in-house supply-side options, reduce the environmental impacts of new supply and enhance resilience. There is the potential for these to be

delivered through the Water Resources South East (WRSE) regional group or through engagement with individual companies.

- We have concerns around the customer engagement process and the quality of customer participation in the development of the plan. There is limited evidence provided to give confidence that customers have been fully engaged on levels of service or on bill impacts. We expect Southern Water in its final plan to clarify how the level of resilience and its links to cost, deliverability, licence reductions and affordability were positioned for customers.
- Board assurance was part of Defra’s guiding principles for water resources planning. However, the draft plan does not provide any evidence of Board assurance and this raises concern about the robustness of plan development. This concern is compounded as there is limited description of the quality assurance of the plan and as there are internal inconsistencies within the draft plan, such as the presentation of the leakage reduction target of 15%. The plans are key publications provided to stakeholders and we would expect to meet the same high assurance standards of other information and evidence of this should be provided in the final plan.

Further details on these points are outlined in the annex to this letter alongside more detailed comments on different areas of the draft plan.

I look forward to seeing these points addressed in Southern Water’s statement of response and final plan.

Yours sincerely



David Black

Senior Director, PR19

Annex

In this annex we outline further details on the points raised in our main letter alongside more detailed comments on different areas of the draft plan. Our points reflect our assessment approach and cover:

- 1. Plan building blocks:** The overall approach to the development of the draft plan in line with the technical guidance and broader resilience issues.
- 2. Customer participation:** The type and quality of interaction with customers and the impact this has had on the draft plan formulation and proposals.
- 3. Demand forecast:** How the company has considered the impacts of population growth, leakage and water efficiency in its demand forecast.
- 4. Supply forecast:** How the company has considered climate change, abstraction licences changes and transfers in its supply forecast.
- 5. Forecast uncertainty:** The robustness of the draft plan in accommodating uncertainties in the demand and supply forecasts.
- 6. Supply-demand balance:** The robustness of the overall need for water, if any, and the scenario testing applied to this assessment.
- 7. Options:** The approach taken to identifying and screening options for both supply and demand, including identification of trades and third party options.
- 8. Decision making:** The decision making tools, preferred programme development process and accompanying assurance processes.
- 9. National and regional considerations:** The interaction and consistency with national studies and regional groups (where relevant).

1. Plan building blocks

Southern Water has used methods and data appropriate to the scale and complexity of the problem that it needs to address and adopted a 50 year planning horizon, rather than the 25 years adopted for the previous plan. However, there are significant changes from the approach used and the previous plan which are not fully articulated. We are also concerned about the approach to level of service and non-drought resilience. Further specific comments:

- There are significant differences in the data, methods and assumptions used for the draft plan compared with the previous plan published in 2014. As this is not fully articulated in the narrative it is hard to track the delivery of the previous plan and understand the extent of the changes. Further considerations:

- With the impact of licence reductions four additional water resources are being created. However, it is unclear how these updates have impacted the baseline supply forecasts and drought resilience. Also, as discussed in sections 3 and 4, there are significant changes to some components of the demand and supply forecasts. These issues need to be clarified in the final plan.
- The company adopted an adaptive pathway approach for the previous plan but the scale of the deficits early in the planning period suggest it did not update its programme based on this approach. Southern Water should clarify how its updated programme relates to the pathway identified in the previous plan.
- We welcome the consideration of aiming to achieve a 1-in-500 year level of drought resilience with respect to level 4 restrictions (such as standpipes). We note that in the previous plan this was reported as only in civil emergencies and that this plan provides more transparency on this frequency. However, there are elements of this approach that need further explanation:
 - Although the company plans high service levels for the most severe restrictions the less severe customer restrictions are planned to be imposed relatively frequently. This includes non-essential use bans expected at a 1-in-20 year frequency and we note that these can have a large impact on business customers. The final plan should further clarify the chosen range of resilience.
 - We expect the final plan to include quantification of the impact of the chosen level of service in terms of the supply-demand balance, the scheduling of options, additional costs and bill impact in comparison to adopting alternative levels of resilience.
- There is limited evidence of non-drought resilience to the full range of potential hazards and threats, like flood risk or freeze-thaw events, being assessed in the draft plan. Greater clarity on the approach to non-drought resilience should be presented in the final plan.

2. Customer participation

There is evidence of customer participation in the development of the plan through a range of approaches, including workshops, online surveys and interviews. However, insufficient evidence is presented to give confidence that customers have been fully engaged on levels of service or on bill impacts. This is a significant concern given the scale of the supply-demand balance challenge and we would expect to see further clarity on this in the final plan. Further specific comments:

- The draft plan is reasonably clear and accessible and includes a non-technical overview which is written in easily understandable language. However, further detail, particularly on decision making, is not easily accessible given the complex methods adopted and this reduces transparency.
- Limited evidence of engagement is provided on levels of service but Southern Water reports that its customers consider current levels are satisfactory. However, as the chosen level of service is a key plan driver, further evidence should be provided in the final plan on the extent of this engagement and on customer support for levels of service. Further considerations:
 - It is unclear if customers have been engaged on the impact of the high level of service planned for, in terms of the supply-demand balance, the scheduling of options or the bill impact. The plan is also unclear whether alternative levels of service were presented to customers.
 - It is also unclear whether comparative drought resilience levels, with other companies or at a regional level, were discussed with customers.
- Customers appear to have been consulted regarding the selection and identification of options and customer preference surveys tested options for maintaining a supply-demand balance, supported by scheme cost and environmental impact. However, it is unclear how the options were presented including if each of the elements, such as leakage reduction, were discussed independently, rather than as a package. This should be clarified in the final plan.
- Linked to the above point, there is no evidence of bill impacts being presented in the draft plan. This is a significant omission given the likely magnitude of these given the supply-demand balance challenge the company faces. Southern Water should provide details of its engagement with customers on bill impact in the final plan.
- Southern Water has engaged with its Customer Challenge Group (CCG) although it is not clear how this engagement has shaped the draft plan and this should be clarified in the final plan.

3. Demand forecast

The demand forecast is well documented, reference to the industry guidance has been made and it appears to have been followed. This includes the use of local authority plan-based projections. However, we have concerns on the clarity of the approach to both household and non-household forecasts. In particular:

- For household demand forecasting Southern Water has segmented its customers into three property types, rather than by the usual measured and

unmeasured classification. However, it is unclear if this approach is comparable with the previous plan and with other companies, and how customers who are still not metered are included. These points require further explanation in the final plan.

- Non-household demand increases over the planning period in both the baseline and final plan scenarios, driven by the growth of the financial and business services sectors. It is a key plan driver in the short term and greater clarity is required for the forecasts. Further points:
 - The large increase in baseline non-household demand of 14% by 2045 is unusually high compared to forecasts of other companies in the south east and this should be further justified in the final plan.
 - The draft plan notes that engagement with specific larger users or retailers to enhance and validate this forecast has not yet taken place. Southern Water should consider the steps it could take to achieve this, and reflect the outcome of such consideration in its final plan.

4. Supply forecast

Licence changes to supply are one of the key drivers of the company's planning problem. Southern Water has calculated available supply in line with guidance and statistical approaches have been used to help determine low frequency drought yields with higher levels of confidence which is an example of good practice. However, greater clarity is required on the approach taken to forecast licence reduction impacts, climate change, water quality, operational losses and outage. In particular:

- Abstraction licence changes for sustainability reductions are a significant driver of the draft plan and could result in a loss of 105 MI/d (16%) of available supply by 2020, although we note these are of a similar scale as was presented in the previous plan (94 MI/d). Further considerations:
 - To address the uncertainties of the licence reductions the draft plan included four strategies for the Western area. However, there is limited detail provided as to what is driving these reductions, how frequently they would impact water availability from the sources affected, and consideration of any alternative mitigations to overcome the losses. Greater clarity on these points is required in the final plan.
 - We understand that agreement on the reductions was reached with the Environment Agency. The final plan should set out clearly the results of this agreement and their consequences for short and long term planning. This should include the forecast frequency and impact on the future implementation of drought permits.

- Southern Water’s approach to statistical supply forecasting is not currently compatible with the industry standard methods used to account for climate change within the supply-demand balance. This is acknowledged and the company is working to expand its approach for the next round of plans. However, climate change could be materially important to the supply-demand balance and therefore we expect to see greater clarity on how it is being taken into account in the final plan.
- Water quality impacts significantly affect the supply forecast accounting for a loss of around 80 MI/d by 2020 due to revised modelling. This is a significant change since the previous plan. There is also uncertainty around future water quality reductions as these are combined with unknown abstraction licence changes in the planning tables. In the final plan Southern Water should provide greater clarity on both short and long term water quality losses to ensure there is improved transparency.
- Operational losses (including treatment process losses) at 21 MI/d (3% of supply) are much higher than in the previous plan (6 MI/d) and approximately double the national average (1.6%). There is a lack of clarity on the drivers behind these changes and whether Southern Water has investigated ways of reducing losses. This should be clarified in the final plan.
- Outage has increased from around 5% in the previous plan to 8%, and is now higher than the industry average. The plan does explain that this results from more recent data and is linked to increased raw water quality deterioration. However, while options are proposed, such as treatment upgrades and connectivity improvements, outage is unchanged between baseline and final preferred planning tables. These points should be clarified in the final plan.

5. Forecast uncertainty

Uncertainty in Southern Water’s plan is not incorporated through the target headroom approach, but instead as an output of the Scenario Generator Model. While we recognise this approach is innovative we have concerns around its transparency. In particular:

- The target headroom values presented in the planning tables range from 0.5% in 2025 to 15% by 2045. The large range raises concerns about the application of individual uncertainty components in the Scenario Generator Model and the transparency around this. For example, no other company has such a wide range of headroom, and the company should further justify the range and trend over the planning period in the final plan.
- The modelling assigns a weighting of 50% to the upper sustainability reduction scenario for Central and Eastern areas for the preferred planning

scenario. This results in significant deficits beyond 2027 relating to unconfirmed sustainability reductions. It is unclear whether this is in line with planning guidance and further justification for this assumption is needed in the final plan.

6. Supply-demand balance

The supply-demand balance profile presented is in line with the assumptions of the individual components of supply and demand, although we have noted concerns about some of these components above, which need further clarification. In the short term the key drivers of supply-demand balance are reductions in abstraction licences and losses due to water quality deterioration. In the longer term, population and non-household demand growth also play a role.

7. Options

Reflecting the scale of the challenge, Southern Water has considered an extensive range of supply and demand options and has included a 15% leakage reduction by 2025. However, further work is required around a number of elements, such as the range of supply-side options and costing assumptions. There also appears to be a lack of clarity on the long-term ambition in demand management, for example around leakage reduction. Further specific comments:

- Southern Water has used what appears to be appropriate screening criteria and processes for developing lists of options. However, there is a lack of clarity on the process adopted, which appears to be largely subjective, and further evidence should be presented in the final plan to demonstrate that the criteria have been applied consistently.
- Southern Water used several methods, including making use of an Official Journal or OJEU and a statement of need on the company website, in order to generate third party interest. This resulted in six third party supply options on the unconstrained list but only one being considered feasible. Further considerations:
 - The third party option, a licence trade, is selected late in the planning process after 2050 with its timing requiring further explanation. Given the focus on supply options the company should also consider what it could do in order to promote further third party demand options.
 - We expect Southern Water to demonstrate equal vigour in gathering data on third party options as with in-house options and to ensure equal treatment and consideration of these options. It should be careful to ensure that its in-house options are not unfairly or unduly favoured

and that the [principles for company bid assessment frameworks](#) are followed.

- We welcome that Southern Water has included water trading options in its preferred plan and used the WRSE regional group scenarios to identify opportunities for regional transfers, however, there is the question of whether more can be done in the short term. We expect further discussions with all parties involved on trading options to progress prior to the final plan publication. Further specific comments:
 - While we welcome the trade with Portsmouth Water, it is not consistently presented in both company plans. Each company makes different assumptions as to the timing, volume and type of water. This needs to be addressed and further clarified in the final plan.
 - A possible import from South West Water's Bournemouth zone is preferred under certain scenarios, but potentially has environmental risks of delivery. We expect that the mitigations are further investigated for this option and it is continued to be actively developed with further details provided in the final plan.
- We welcome that the draft plan narrative states an ambition to reduce leakage by 15% by 2025 and we note the starting leakage position in 2020 at 76 l/prop/d compares favourably with other companies. However, the company needs to provide further detail regarding the development and justification of its preferred leakage reduction strategy in the final plan. Further considerations:
 - The 15% target by 2025 does not match the information presented in the majority of the draft plan, for example a reduction of 10% is incorporated into the planning tables.
 - This discrepancy means there is an incomplete representation of the leakage target in the draft plan, for example, how it will be achieved, the cost, the impact it has on the supply-demand balance and the potential impact on the phasing of other options.
 - The change in leakage target means there is a lack of clarity on long term leakage ambition. For example, the planning tables suggest that the 15% target would originally have been met later in the planning period by 2045. The narrative does not suggest what the leakage targets will be after 2025 just that further reductions are planned.
- Southern Water has high metering penetration as a result of compulsory metering programme over previous periods. No further metering programmes are proposed beyond those for new builds and a small amount of optants. The level of metering penetration rises from 85% in 2025 to 90% by 2045.

- Southern Water has forecast a baseline average per capita consumption (PCC) of 137 l/h/d by 2020, slightly higher than the industry average of 136 l/h/d. Further specific considerations:
 - The long term target for average PCC at 121 l/h/d by 2045 is in line with the average for other companies nationally (122 l/h/d). Given the proposed metering levels and Southern Water's needs, it may be appropriate for the company to consider an even more ambitious target for reducing PCC.
 - Linked to the above point, Southern Water's 'Target 100' (l/h/d) vision is welcome, but its preferred plan does not achieve this. No scenario to achieve this is presented in the plan and greater clarity on how the 'Target 100' vision has influenced the water efficiency programme should be presented in the final plan.
- A large number of supply-side options are presented in the preferred plan, however, the plan does not provide sufficient evidence that the proposed supply-side options are appropriate. Further considerations:
 - It is unclear from the draft plan if deliverability of the individual options and combined programme has been fully considered. The final plan should include greater detail on the potential risks in deliverability and uncertainty in timing for the preferred programme.
 - Two desalination plants feature in Southern Water's preferred plan in the short term. This raises concerns over the deliverability and wider environmental impacts of these schemes and whether they represent best value for the region as a whole. The final plan needs to present much more explanation on how these concerns will be mitigated.
 - We welcome that Southern Water has discussed joint development of effluent reuse schemes with South East Water and it should continue to explore such options. The companies should ensure these schemes are represented consistently within the plans and that the delivery timescales accurately reflect the constraints of both parties.
 - A number of the options within the preferred plan require detailed further investigation to justify the benefits and determine their viability. For example a scheme to reline 40 km of sewer and provide 13 Ml/d of additional supply is selected in the Central area, but it is unclear from the information provided how this will provide a supply-demand balance benefit.
- General statements are provided on the cost estimating methodologies used but it has not been possible to assess the robustness of the cost estimates from the information contained in the draft plan. Further considerations:

- Southern Water should provide further explanation of its option costing process, including cost assumptions and their application to different scheme types and how methods will be consistently applied to PR19 business planning.
- The costs in the planning tables were originally presented incorrectly as flat profiles of annualised costs without further breakdown. Improved cost profiles were only made available in April 2018 and this limited our scope to review the options.

8. Decision making

Southern Water has adopted an enhanced Real Options approach to develop its preferred programme consistent with its problem characterisation. However, we have concerns around the transparency of the decision making approach, the drivers behind the preferred programme and assurance. Further specific comments:

- The draft plan appears to be reliant on supply-side options despite the company stating that it has adopted a twin track approach. The final plan should clarify why this mix of options represents the best outcome for customers and how the decision making process led to this result.
- The Southern Water plan relies on an adaptive pathway to mitigate the risks of unconfirmed abstraction licence reductions impacting the supply-demand balance. However, it is unclear if the trigger points for decision making have been identified appropriately. Further specific considerations:
 - As noted in section 1 this approach was also taken for the previous plan but the triggers identified appear to have either been inappropriately defined or insufficiently acted upon to explain the scale of the immediate deficits the company now reports. Greater clarity needs to be provided that the company has learnt the lessons from its previous plan.
 - While the scenarios, pathway branches and sensitivity testing are comprehensive, it is unclear if the uncertainty around licence reductions will be addressed in the preferred strategy. This is because there may not be sufficient time allowed in the plan prior to the triggers to complete the required investigations and enable timely decisions on options to be made.
 - Linked to this point is it is unclear how the scenarios tested have influenced the preferred plan. This includes whether the options selected are the low regret options and if the trigger points on the adaptive pathway have been appropriately defined. This should be clarified in the final plan.

- It is not clear how deliverability has been considered in the decision making process and this needs to be clarified in the final plan. For example we would expect to see more detail on the proposed delivery paths for each preferred option alongside trigger points and investigation timelines, to enable more confidence to be placed in the preferred strategy.
- While there is a large amount of material provided on the decision support tools it is unclear how the final preferred portfolio was selected. In the final plan, for clarity, we would expect to see a clear summary that concisely explains how and by whom the preferred portfolio was decided on.
- Board assurance was part of Defra's guiding principles for water resources planning. However, the draft plan does not provide any evidence of Board assurance and this raises concern about the robustness of plan development. This concern is compounded as there is limited description of the quality assurance of the plan and as there are internal inconsistencies within the draft plan, such as the presentation of the leakage reduction target of 15%. For the final plan we expect to see assurance that the company Board are satisfied the plan represents the most cost effective and sustainable long term solution.

9. National and regional considerations

Southern Water presents evidence that it has worked closely with the WRSE regional group. However, there is significant uncertainty around the assessment of regional options and resulting reliance on in-house solutions, and whether more can be done in the short term. Further specific comments:

- The plan makes reference to the Water UK national project and includes the consideration of the transfer from South West Water's Bournemouth zone which was identified in this study. As noted in section 7 above we expect the companies involved to continue to actively engage on this trade.
- The draft plan references WRSE outputs and appears to be consistent with its findings. The company specifies where differences may occur and explains the reasons for this. Further considerations:
 - We welcome the trade with Portsmouth Water, supported by the construction of Havant Thicket reservoir, in line with most WRSE scenarios. It has been identified as the best value option to solve a regional problem and this has been reflected in the draft plan.
 - However, the plan is still highly dependent on supply options developed by Southern Water. Further transfers have the potential to impact upon the delivery of major supply options within Southern Water's plan. Therefore, the company should actively pursue alternative trading opportunities with other companies.