Draft Water Resources Management Plan: Statement of Response to Representations Received

Wessex Water

September 2018
<table>
<thead>
<tr>
<th>Prepared by</th>
<th>Chris Hutton, Aimee Shaw, Julie Morton</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checked by</td>
<td>Aimee Shaw</td>
</tr>
<tr>
<td>Approved by</td>
<td>Phil Wickens</td>
</tr>
</tbody>
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1. Overview

The draft Water Resources Management Plan for 2019 (dWRMP19) was submitted to Defra at the end of November 2017, and following permission, the draft plan was published on 9 March 2018 for public consultation. The consultation period ran for a period of 12 weeks, ending on 1 June.

The published plan consisted of:

- A non-technical summary designed to engage with a wide range of stakeholders and interested parties.
- A technical report that explained the planning work undertaken and methodologies followed.
- Planning tables for Dry Year and Critical Period planning scenarios
- Research outcomes from the customer research on leakage.

The plan was made available on our website (https://www.wessexwater.co.uk/waterplan/), and a wide range of stakeholders and consultees were notified of its publication by email and through our stakeholder panels. Paper copies of all documents were also available on request.

1.1 Stakeholder workshop: The Efficient Use of Water

On 18 May 2018, during the consultation period, we held a stakeholder workshop entitled: The Efficient Use of Water. A key aim of the workshop was to host discussion on the most efficient use of water in the region and explore through discussion potential trade-offs between trading, water efficiency and the environment, and how the currently plan addresses these broader issues.

The workshop was attended by representatives from the Environment Agency, Natural England, Consumer Council for Water, Wiltshire Wildlife Trust, National Farmers Union, Wessex Chalk Stream and Rivers Trust, Dorset Catchment Partnership, Wessex Water’s Catchment Panel, the Wessex Water Partnership and the University of Bath.

At the workshop we presented:

- the national context for water resources planning,
- a summary of the dWRMP19,
- an overview of the main building blocks of the plan.
- our strategies for reducing demand through leakage metering and water efficiency
- the national context for water trading, and the potential for new transfers.

Some key comments that were raised in the meeting were:

- Demand – Per capita consumption as a metric does not capture full picture of efficient water use, given personal water use occurs outside the home – e.g. showing at the gym/work. Are there better metrics to capture efficiency water use? Behavioural engagement is important, through citizenship work and education, and more partnership work.
• **Water abstraction** – overarching ethos should be to take less water from the environment.

• **Trading** – coupled with the view that we should drive to take less from the environment, any surplus should be referred to as surplus licence, not surplus water. However, it was also noted that surplus licence is an ‘asset’ providing abstraction levels are within Water Framework Directive compliance limits. Holistic thinking across company borders was noted as important, but so was the need to consider benefits to customer bills given the potential for reduced levels of resilience for customers, and net environmental impacts. At the UK level, it was noted that the supporting the economic prosperity of the south east is important for the whole of the UK. Counter to this, it was also argued that moving water to the south east might just perpetuate a regional growth imbalance and so perhaps we should seek to promote growth where there is surplus water instead.

### 1.2 Formal consultation responses

Overall, we received ten representations from the following organisations:

- Environment Agency
- Ofwat
- Natural England
- Canal and River Trust
- Wessex Chalk Stream & Rivers Trust
- Bristol Water
- South West Water/Bournemouth Water
- Somerset Wildlife Trust
- South Somerset District Council
- National Farmers Union

### 1.3 Structure of this document

In this document we have responded to all comments received. For each consultation response, representations are presented in boxed sections and responses made to the queries and comments raised are indicated by a specific response reference. Where changes have been made to our Water Resources Management Plan as a result of the representations, these are either:

- Set out in this document in **blue normal font** alongside the referenced response, with page references to the main technical report, or;
- Where these changes are more considerable or in multiple pages, the section reference of where the text has been edited to reflect the comment that has been made.

Section 12 provides details of other updates and changes to the plan that have been made since draft publication, to reflect for example new reports, or events that have occurred since draft publication.

A revised technical report has also been published alongside this statement of response, with all changes made since the draft submission highlighted in yellow. This document is
referred to as: Wessex Water Draft Final WRMP19 Highlighted Changes. Documents are available on our website at www.wessexwater/waterplan.
2 Environment Agency

2.1 Environment Agency Representation

2.1.1 Summary

1.2 Summary

Wessex Water supplies water to around 1.3 million people who live across a diverse company area. The company is in surplus throughout the planning period and is benefiting from its investment in a grid system over the past 10 years. The ability for the company to move water around its networks has helped the company cope with the recent freeze thaw incident, showing a level of resilience to non-drought hazards.

We recognise that since the publication of its draft WRMP, Wessex Water has signalled an intention to increase its leakage ambition to 15%. We look forward to seeing this in its final plan. In the past the company has had an ambitious leakage reduction strategy and we are very surprised and disappointed to see the low level of ambition for leakage reduction in the draft plan. We think the company should explore how it can use innovative approaches to achieve leakage reductions in line with leading companies and the findings of the recent NIC report on England’s Water Infrastructure Needs.

We have a good history of working together with the company to benefit the environment. We expect the company to continue this and ensure its abstractions are sustainable. We expect the company to plan for any changes that come through the Water Industry National Environment Programme within its plan.

The company must work with Bristol Water and Veolia Water Projects to ensure that the information provided about the bulk transfers between the companies is consistent. It’s disappointing that we are again raising this issue, which is simple to rectify. While the company’s plan states that it has discussed new transfers with its neighbours, the plan does not follow through on these which is disappointing. The company should show more ambition in sharing resources, where needed by neighbouring companies.

Overall the plan presents a positive picture, but we expect the company to do more on reducing leakage.

Response 1

We welcome the Environment Agency’s constructive responses to Wessex Water’s draft plan. Specific points raised in this representation summary have been addressed in more detail in the following sections and responses:

- Leakage reduction target: Response 5
- Recent freeze-thaw incident: Section 12.2 ‘Beast from the East’ freeze-thaw event
- Water Industry National Environment Programme: Response 27
- Existing Bulk Transfers: Response 6
- Future Transfer and Trading: Response 6
2.1.2 Compliance with relevant legislation

Response 2
In Section 3.3 of the plan, under section Levels of service statement we have inserted into Table 3-2 the likelihood of levels of service as percentages, and also inserted the following sentence to state how the annual risk will change over the planning period following the implementation of the measures (options) set out in the plan.

The implementation of demand reduction measures (preferred options; Section 9.9), will lead to an increased surplus across the region. However, we do not forecast a change in levels of service following the implementation of demand reduction levels.

Response 3
All of our options/measures identified are demand side measures. We have evaluated the impact of climate change on these measures and it is marginal. We have inserted the following text in the plan to explain this, in Section 5.5.6:

Section 9.10 describes that our preferred options for the final planning scenario include leakage reduction, increased optional metering, and water efficiency activities. The impact of climate change on the metering and water efficiency options are inherently accounted for in the percentage uplift that we apply to household demand. The uplift is applied to consumption in both the baseline and final scenarios. The climate change uplift difference in demand between baseline and final plan, once the options have been implemented is small at 0.2 Ml/d. We do not expect any implications of climate change on leakage reduction.
Response 4

We have added the text below to Section 9.7.2 of the plan:

**Total cost of the metering programme**

The total cost of the domestic metering programme between 2020 and 2045 is ~£76 million. Table 9-7 shows the capital and operational costs of the programme in 5-year periods. These costs take account of baseline optional and change of occupier metering, and enhanced metering programme included as an option in our final planning scenario.

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<thead>
<tr>
<th></th>
<th>2020-25</th>
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<td>4.1</td>
<td>3.0</td>
<td>2.3</td>
</tr>
<tr>
<td>Operating Cost (£m)</td>
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<td>9.4</td>
<td>10.2</td>
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<tr>
<td>Total Cost (£M)</td>
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<td>15.1</td>
<td>14.2</td>
<td>13.8</td>
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</tr>
</tbody>
</table>

### 2.1.3 Recommendations

**Recommendation 1 – Be more ambitious on leakage reduction**

We recognise that since the publication of its draft WRMP, Wessex Water has signalled an intention to increase its leakage ambition to 15%. We look forward to seeing this in its final plan. However, Wessex Water’s draft plan falls well short of meeting the challenge by Ofwat to reduce leakage by 15% by 2025, and which the government supported in the 25 year environment plan. The company is only planning to reduce leakage by 2% by 2025. We find this lack of ambition on leakage very disappointing and recommend the company sets a more ambitious leakage reduction programme for its final plan. It is particularly surprising given that in the last round of WRMP Wessex Water set out a strategic aspiration to reduce leakage by a large amount over the next 25 years.

*Wessex Water should also provide more information about the leakage methodology it has used. It should review the conclusions it has drawn from its leakage debrief report, especially concerning customer views on the benefit to the environment.*

As confirmed at our stakeholder consultation event on 18 May and in our subsequent letters to the Environment Agency, Defra and Ofwat since submitting our draft WRMP in November 2017, we have undertaken further research to explore customer attitudes and investment preferences surrounding leakage. Our revised WRMP (see Sections 5.7 and 9) now incorporates a 15% reduction in leakage by 2025. The business plan submitted to Ofwat in September 2018 also includes stretching performance commitments that reflect our commitment to reducing leakage by 15% by 2025 and further still that we will increase the number of customer reported leaks fixed within a day from 70% to 90% by 2025.

Sections 5.7 and 9 of our WRMP have been updated to account for this amendment to our strategy and the extract of text below that has been added to section 9.7.3 confirms our ambition:
Our final planning leakage strategy for the next 5 years will see us implement option ALY to deliver a 15% reduction in leakage by 2025.

This will require a step change in our activities, as well as innovation and continued customer support and engagement. The package of individual options we will deliver will include:

- reducing losses from our distribution network through additional active leakage control (options ALC1, ALC2a and ALC2b), improved data collection and analytics (ALC3), further sub-division of district meter areas (AM2), innovative pressure management (PM1)
- reducing losses from customers’ pipes through our enhanced metering programme as it is easier to identify leaks on properties that are metered (M1a)
- plus promoting ways in which customers can contact us to report a leak via our leak stoppers telephone hotline or our website.

Our longer term strategic vision is for continued leakage reduction beyond 2025 that is in line with the expectations of our customers and the Government’s 25-year environment strategy – our final planning scenario assumes that by 2045 leakage will be 27% lower than it is at the start of this plan.

Please see also Response 11 and Response 14.

Response 6

Recommendation 2 – Demonstrate greater collaboration to share resources with neighbouring companies and ensure existing transfers are accurate and consistent

Wessex Water should ensure they report consistent water transfers with Bristol Water’s and Veolia Water projects’ WRMP. The companies are reporting inconsistent figures in their plans. This is something that has been raised a number of times previously.

Wessex Water has a surplus and the company should work with neighbouring companies that have deficits such as Bristol Water, Thames Water and Southern Water on possible new transfers as a solution to address these deficits. The company could provide evidence in a separate report on discussions it has had with these companies and explain the potential blockages to possible trades.

We recommend the company:

- works with Bristol Water and Veolia Water to ensure the reported bulk supply figures are consistent and the final plan is consistent across all WRMPs
- provide information on whether its transfers are bi-directional
- confirm whether there are water quality issues from the transfers that could impact the environment

Since the submission of our draft Plans we have had further liaison with Bristol Water to agree consistent bulk supply figures. We have updated Section 4.6 with the following text:
Contractual terms are currently under discussion with Bristol Water regarding the import to Bath. For this plan we have included the existing contracted volume of 11.37 Ml/d up to 2024/25, and from 2025/26 report 4.4 Ml/d for both dry year annual average and dry year critical period scenarios.

We have also had discussions with Veolia Water Projects to ensure the information presented in our plans is consistent. And section 4.6 has been updated

See also Response 18, Response 19, and Response 21.

We are ambitious and keen to play our part in ensuring the appropriate sharing of water resources in our region and beyond. We have updated the executive summary and sections 4.6 and 12 to confirm our work to date and future approach

The following extracts of text have been added to the executive summary and section 12.1:

In 2017 we became a founding member of the West Country Water Resources Group that seeks to undertake regional water resource planning to identify optimum solutions for the region and, in particular, explore new trading opportunities.

We’ve already embraced an opportunity to enhance our resilience through a cross-border transfer arrangement in the south of our region near Poole. The arrangement provides resilience benefits to Wessex Water and South West Water (Bournemouth area) by maximising the use of existing assets.

Our work in the next period as part of the West Country Water Resources Group will see us continue the regional analysis of water resources planning and exploration of cross-sector solutions, including new trading opportunities, and region wide optimisation, to develop a regional plan, that will inform the development of our Water Resources Management Plan for 2024. This work will also include widening the group membership to non-water company sectors and helping the publication of information to promote future water markets.

Section 4.6 has been updated to include the following text:

Pre-consultation discussions with Southern Water identified they are expecting deficits to address as a result of changes to key abstraction licences in their Hampshire water resources zone. We indicated a potential surplus volume for trading of between 10 and 15 Ml/d from Poole region of our network. We have held further discussions with Southern Water and South West Water/Bournemouth Water following the publication of draft plans to better understand the details and costs involved relating to the transfer routes. We provided further details to Southern Water regarding potential volumes and costs for a scheme involving both South West Water and Wessex Water in the Poole-Bournemouth region to feed into their draft final plan. Further design work will be required to provide detailed cost and volume estimates, and additional modelling is required to provide an assessment of reliability under drought scenarios (see Section 12.1). We have also identified potential effluent re-use schemes in the Poole area, and will be undertaking further work to understand their feasibility in helping to offset potable water demand to support a transfer.
This work is being undertaken with the West Country Water Resources Group as we collectively seek to make the best use of water resources in our region and beyond.

Section 12.2 has been added to our plan to set out our ambition for the use of markets in providing greater water supply resilience including our innovative Open System Coordinator approach.

Section 12.3 has been added to our plan to set out our ambition for evolving our technical methods to support the assessment of new water trading opportunities. An extract of the text we have included in this section is presented below:

To robustly support decision making relating to a potential new transfer and adequately assess uncertainties relative to other factors affecting our supplies (e.g. potential WINEP driven licence reductions), we are keen to make some step-changes in methodology. We will progress with work on this in the Autumn of 2018, to feed into our ongoing work as part of the West Country Water Resources Group.

We will expand our conjunctive use system modelling and investigate methods for better incorporating uncertainties into our system modelling. This will allow us to:

- Explore alternative metrics of system performance relating to system resilience. Moving towards a system-simulation approach will allow us to generate multiple metrics of system performance, for example, to calculate ‘days of failure’ to feed into the work required for the Drought Vulnerability Framework.
- Better explore system performance under a range of potential future scenarios.
- Explore better how the integrated grid, which sits at the centre of the South West region, can be used to support regional planning solutions, by using the model to explore potential import and export volumes.
- Incorporate better spatial uncertainties in future population and property growth in the region.
- Provide the technical basis to move to system simulation based planning methods for WRMP24 (e.g. robust decision making, Info-gap analysis), as required by the outcomes of our system modelling, and the needs to identify regional solutions.
Response 7

**Recommendation 3 – Ensure the plan is legally compliant by adhering to the WRMP Directions**

**Direction 3(b) Describe the annual average risk of all restrictions as a percentage, and how they change through the planning period**

The company has not stated the average annual risk that it may need to impose temporary water use restrictions, ordinary drought orders and emergency drought orders as a percentage as required by Direction 3(b). The company has also not provided a description of how it expects the annual average risk of all restrictions to change through its planning period as a result of implementation of the options in its preferred plan.

The company must provide its estimate of the planned annual risk for temporary water use restrictions, ordinary drought orders, and emergency drought orders and how this risk changes across its planning period to meet Direction 3(b).

**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**

The company has provided an estimation of the impacts of climate change on its future demand and supply forecasts. However, it has not described the impacts of climate change on each of its options in the final planning scenario. This is required by Direction 3(e)(i).

The company must include an assessment of the impacts of climate change on each of its measures in the final planning scenario to meet Direction 3(e)(i).

**Direction 3(f) Describe its metering programme, including costs, approach, implementation and timing of the programme**

The company has included change of occupier metering as part of its preferred programme. However, it has not fully described how it plans to implement this metering. The costs of installing and operating these meters has also not been provided. This is required by Direction 3(f).

The company must include further details of its chosen metering programme and describe how it will implement metering across its supply area, including the costs of installing and operating the meters in its metering programme to meet Direction 3(f).

Please see Response 2, Response 3, and Response 4
2.1.4 Improvements

Response 8

Improvement 1 – Ensure the deployable output modelling is robust and justified
The deployable output modelling method that Wessex Water has used may overestimate deployable output. It may not represent a true conjunctive use deployable output as the method does not appear to follow the guidance set out in WR27 Handbook of Source Yield Methodologies (UKWIR, 2014).

We suggest that the company:

- demonstrates that appropriate methods have been used to derive deployable output and explain why it has taken an alternative approach to the one recommended in the UKWIR guidance
- reviews its deployable output modelling method and provides evidence that the modelling errors are in normal ranges - it needs to provide assurance of its approach by validating the modelling approach used and consider altering the method if it is not suitable

We are always looking for continued improvement in the methods we apply for water resources planning, as demonstrated by the adoption of risk composition 2 for this plan. Since the start of the development of this plan when we adopted our planning methods, we have become a member the West Country Water Resources Group. Given the imminent timing of licence changes imposed on Southern Water, Wessex Water, in part as a member of The West Country Water Resources Group, is undertaking further work over the Autumn and into 2019, so we can robustly assess supply availability and potential additional investment options to support such a transfer, ahead of WRMP24.

To achieve this, we are moving beyond the technical (risk-based planning) methods required of us as a company with a low level of concern as part of the WRMP planning process, to develop our current conjunctive use modelling so we can apply this using scenario analysis methods. This will allow us to more fully evaluate the risks and uncertainties associated with transfer options, alongside other factors including potential future licence reductions, and additional supply options, in a manner more consistent with neighbouring companies. These changes will allow us to explore how our investment in the integrated grid, which sits at the centre of the Southwest region, can be best used to support supply resilience across the region.

For this plan, based on our problem characterisation assessment as a company with a low level of concern, we applied the same approach to Deployable Output modelling as applied in the WRMP14 plan, and did not change the approach as no issues were raised either during WRMP14, or when the method was presented to the Environment Agency during pre-consultation (WRMP section 22.2 Annex J).

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1 This will provide us with a technical modelling platform to adopt a range of decision making methods, as may potentially be required for WRMP24.
We consider that the method that has been applied to calculate Deployable Output (DO) is an acceptable approach given recent investments in our integrated grid, which was designed specifically to connect areas of surplus with areas of deficit, and eliminate stand-alone sources to ensure our surplus supplies can and are used effectively across our region. The issue raised regarding DO calculation seems primarily concerned with whether the post-conjunctive use model uplifts properly account for network constraints. The demand applied in the conjunctive use modelling, prior to source uplifts, is the highest demand forecast in the demand forecasting model through the planning period to 2045 – and so the modelling demonstrates that the network does not constrain demand that needs to be met. This has been further demonstrated in practice this year, during the “Beast from the East”, where we experienced a higher peak than our critical period demand, and in response to peak summer demands in 2018, where we experienced peak seven day demands that were in excess of 400ML/d².

As expanded upon in Annex A, the alternative method suggested by the Environment Agency to uplift demand until a point of failure to identify a true conjunctive use deployable output, whilst a good method in itself, produces a deployable output that is incompatible with the conventional aggregated supply-demand balance (SDB) calculation, as used in the WRMP planning tables, and in doing so will underestimate available supply. This is because the method essentially lumps components of the SDB that should be removed from DO at source (e.g. outage and supply-side headroom), onto demand, after DO has already been constrained by network constraints in the conjunctive use modelling. Yet, the water associated with these components would never actually be expected to flow through the network.

In Annex A, we expand upon this response regarding the method for deriving Deployable Output, and outline our work programme for autumn 2018, into summer 2019. We look forward to working closely with the Environment Agency, as well as our neighbouring water companies, to discuss the methodology and outcomes of this work, to help identify resilient regional solutions to water resources.

Response 9

Improvement 2 – Ensure the plan includes AMP6 progress and takes account of the Water Industry National Environment Programme (WINEP3)

We suggest that Wessex Water should undertake more sensitivity analysis, in discussion with Environment Agency Area staff, around potential sustainability changes that could be required in AMP7. Changes to abstraction licences could impact on the security of supply.

The company has assumed that licences currently under investigation in AMP6 will not be reduced. It should undertake sensitivity analysis to show what the potential impact would be if they were reduced.

The company should also take account of changes between Water Industry National Environment Programme 2 and Water Industry National Environment Programme 3, through sensitivity analysis.

²At the time of writing we are still experiencing the summer dry period of 2018; we will include a new analysis of peak demands reflecting this summer for WRMP24.
We have liaised with Environment Agency staff since the publication of the draft plan to ensure the plan is up to date with WINEP3. These changes have included confirmation of sustainability reductions at Dewlish, changes to those sources to be included in Sensitivity analysis, and confirmation of Stubhampton as an AIM site.

Please see Response 27, Response 28, and Response 29 regarding specific points raised relating to WINEP3.

2.2 Evidence Report

2.2.1 Major Issues

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<thead>
<tr>
<th>Table 1 Major issues identified for Wessex Water’s Water Resources Management Plan</th>
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<tr>
<td>Major issues are those that we consider highly significant to the draft plan that may result in an unnecessary risk to public water supplies and/or major risk to the environment. They also include issues with compliance with relevant legislation, such as Directions. These are reported as recommendations in our representation submission.</td>
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Response 10

<table>
<thead>
<tr>
<th>Area of Issue</th>
<th>Issue and evidence</th>
<th>Implications</th>
<th>Information or changes required</th>
</tr>
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<tbody>
<tr>
<td>R1.1</td>
<td>The plan currently suggests only a 2% reduction in leakage by 2024/25, thus not meeting the 15% reduction challenge by Ofwat that Defra supported in the 25 year environment plan.</td>
<td>The level of leakage proposed in the plan has not met the ambition statement sent out from Ofwat.</td>
<td>We recommend the company should reduce leakage further by 2025, and consider a more ambitious leakage reduction programme beyond 2025 for its final plan. We recognise that since the publication of its draft WRMP, Wessex Water has signalled an intention to increase its leakage ambition to 15%. We look forward to seeing this in its final plan.</td>
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See Response 5.

Response 11

| R1.2 Reassessment of leakage methodology | Applying the consistency method of estimating leakage has seen the company’s leakage increase from 68Mld to 78Mld. | The company should make sure that the leakage is clearly explained within the plan. The company should continue to improve data accuracy and confidence as planned. |

Like all water companies, applying a new method to estimate leakage has led to a change in the reported volume with no real change to actual leakage. We clearly explained the changes made in Annex A of our draft WRMP, and we have an ongoing work programme in place to have full compliance with the new Water UK consistency method by 2020.

We have inserted a new section into Annex A – 13.6 Data improvements, which describes the data improvements that were delivered over 2016/17, and the improvements planned for 2017/18, which include further increases to the sample size of the small area monitor, and a more detailed review of unmeasured non-household water use.
Response 12

We have added a new section to the plan (Section 5.7.1), which provides a historic and current comparison of leakage across companies in England and Wales, using historic data and discover water data for 2017/18, noting that these data are based on leakage levels for companies prior to the implementation of the leakage consistency methodology.

We could not provide a comparison in the draft plan of leakage targets, because these were not published until our own draft plan was published. We must also be mindful of the legal obligations when seeking to understand the future strategies of other water companies. We now have available information that has been published in the Water resources market information on leakage reduction targets across companies in England and Wales. However, for the following reasons the comparability of this information is highly uncertain, and so as not to provide confusing information that could potentially mislead our customers, we have decided not to include the comparison in our plan:

- Companies are at varying stages of becoming compliant with the leakage consistency methodology – it is not clear from the market information published alongside the draft plans, which companies have adopted the methodology in their plans, and which have not.
- Companies have potentially used different baselines figures from which to calculate their percentage leakage reductions targets.
- Since publication of the draft plans, like Wessex Water, companies may have changed their future reduction targets. This is especially the case considering that the revised WRMP guidelines published by the EA on 25th July 2018, 6 weeks before statement of response deadline, now expects companies to meet Ofwat’s 15% leakage reduction challenge by 2025, and not all companies were. This means that any comparison published in our plan will be instantly out of date once all other company plans are published.

Response 13

Under section 5.7.1 of the plan, we have included a section entitled Impact of our current leakage activities, which clarifies our current leakage activities, and that current mains replacement levels help to combat natural rate of rise in the long term.
Our mains replacement programme is primarily targeted to preventing future increases in NRR whereas our active leakage control and pressure management teams are employed to minimise current leakage. Our current level of mains replacement alone is not sufficient to reduce leakage in the short term.

Response 14

| R1.5 Leakage Debrief report | In the Leakage Debrief report it summarises that customers do not want to see a decrease in leakage if it means an increase in bills. The “environmental” argument is generally accepted by many customers. However the report also states that “saviert” customers are less convinced by the environmental argument put forward by the company. We also have concerns about the environment argument put forward by the company. We feel that by saying that “water that leaks from the system is not ‘lost,’ it goes back to the environment” is misleading, as where the water returns does not mitigate the environmental impact associated with where the water is abstracted. | Levels of leakage may not be set at the level that customer wish to see, if research is not robust. | The company should review the conclusions drawn from the report to ensure they are robust. |

This suggested improvement has been somewhat superseded by the further research that we’ve undertaken with customers that has led to us modify the scale of our proposed leakage reduction programme. Section 9.2.2 of the plan on customer preferences has been updated to include the following text:

After the completion of our June 2017 leakage research with customers, Government and regulators (Defra, Ofwat and the EA) set an expectation that companies will reduce leakage by 15% by 2025 and continue to reduce leakage thereafter. In 2018 we therefore undertook further research to gauge our customers’ priorities for our wider business plan submission. We found that, once leakage was set in the context of all the other service improvements we were proposing and the overall bill impact, customers accepted paying for further leakage reductions.

See also Response 5.

Response 15

| M.6 SELL | No specific information has been provided on the company’s plans for leakage planning ahead of WRMP24. | How the Sustainable Economic Level of Leaksage (SELL) will be used in the future is not clear. | The company should provide clarification on its plans for SELL beyond WRMP19. |

A new section has been included in Section 12 - Summary and vision for future plans, on our leakage planning ahead of WRMP24 (Section 12.1), which clarifies our plans for SELL beyond WRMP19.
Response 16

Our WRMP19 Sustainable Economic Level of Leakage (SELL) recalculation is robust and fit for purpose. We employed the external leakage economics consultant Tynemarch - Servelec Technologies to undertake this work. They initially completed a review of our previous WRMP14 2013 SELL analysis, identified the required actions to update the analysis in line with best practice for PR19, and produced a comprehensive report using the new consistent leakage reporting methodology. The level of cost granularity used is proportionate, and we do not believe that greater cost granularity would materially impact on the outcome given the level of uncertainty in many of the input parameters.

Response 17

Since the publication of the draft plan we have engaged further with Southern Water (and South West Water/Bournemouth Water) to understand the potential of a transfer to help support regional resilience in the region. As outlined in section 12 of the plan, we will be undertaking more technical work during the Autumn, both internally and as part of the West Country Water Resources Group, to better understand the specific volumes and arrangements in the Poole/Hampshire area. Additional details have been added to Section 4.6.2 of the plan.

Response 18

Since publication of the draft plan, we have worked with Veolia Water Projects to ensure consistency with the information presented in our respective plans. Reflecting this work, we have inserted the following text into the plan in Section 4.6.1
Veolia Water Projects (VWP) states that it can reduce the export below 3 Ml/d peak demand if the demand within Veolia Water Projects (VWP) service area exceeds 5.4 Ml/d, on a litre by litre basis. For the following reasons it is unlikely that such reductions will occur during a peak period for Wessex Water:

- Wessex Water’s critical period demand is forecast to occur during peak summer periods, as a dry weather related demand uplift. A significant proportion (50%) of VWP demand is from a military base, which does not have a typical domestic driven demand profile, and peak periods are unlikely to occur at the same time as peak demand from Wessex Water due to summer leave for military staff.
- VWP has internal reservoir storage in the system of 12ML, which relative to total demand provides resilience to meet additional peak period demand for several consecutive days.
- Additional borehole work to lift capacity from 9ML/d to 12ML/d would improve peak output capacity as well as improve resilience of supply during periods of future maintenance.

Response 19

We have stated in the paragraph introducing Table 4-8 and Table 4-9 (Section 4.6.1) that all transfers shown are uni-directional. A new sub-section has also been inserted into Section 4.6.1 that reviews existing inter-company transfers and their bi-directional potential:

Bi-directional transfer potential

As shown in Tables 4-7 and 4-8, all existing bulk transfers are uni-directional, occurring at our boundaries with other companies in rural areas where infrastructure connections are small and therefore the volumes of water transferred between companies are small.

Our import from Bristol Water into Bath, however, is of a more significant volume. The benefits of making this transfer bi-directional in the future to deliver resilience improvements will be considered during ongoing negotiations with Bristol Water and as part our regional modelling work, as part of the West Country Water Resources group.

Response 20

<table>
<thead>
<tr>
<th>R2.3 Bulk supply transfers</th>
<th>No information about uni-directionality of most bulk supply transfers is provided. Resilience issues with neighbouring water companies or potential future issues for the company could be prevented if this information is known and agreed between companies.</th>
<th>This poses a security of supply threat which could potentially otherwise be avoided if transfers can be reversed.</th>
<th>In order to investigate improved resilience options the company should review if existing inter-company transfers are or could be bi-directional.</th>
</tr>
</thead>
</table>

| R2.4 Bulk supply transfers | Bulk supply imports and exports in Section 4.6.1, Page 77, Tables 4-7 and 4-8, show mean and peak flows, but it is not clear what constrains these flows. | As limiting factors and constraints on transfers are unknown, this could pose a threat to maintaining consistent security of supply. | The company should provide information in the text about limiting factors and contracted volumes. |
The reported volumes have been agreed between companies, and as with our deployable output calculations, agreed based on licenced volumes and transfer capacities. We have added this to the text in the plan.

**Response 21**

Having further clarified this point with the Environment Agency, the concern here is about environmental risks related to raw water transfers. All of our bulk transfers shown in Section 4.6.1 are for treated water. To clarify this in the plan, the following has been inserted in Section 4.6.1:

All of the bulk supply imports and exports are for treated water, and so these transfers do not pose the same potential environmental risks associated with raw water transfers.

**Response 22**

See Response 6.
Response 23

<table>
<thead>
<tr>
<th>Area of issue</th>
<th>Issue and evidence</th>
<th>Implications</th>
<th>Information or changes required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommendation 3: Ensure the plan is legally compliant by adhering to the WRMP Directions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R3.1 Direction 3(b) Annual average risk of all levels of service have not been presented as a percentage and how they change through the planning period</td>
<td>The company does not show, as a percentage, how the risk of temporary use restrictions, ordinary drought orders and emergency drought orders changes over the planning period as a result of implementation of the options in its preferred plan. If the risk will not change, then the company should state this. Only just failed on technicality - over 25 years rather than annually.</td>
<td>Linked to direction 3(b) ‘a water undertaker must include… how it expects the annual risk that it may need to impose prohibitions or restrictions on its customers under each of those provisions to change over the course of the planning period as a result of the measures which it has identified in accordance with section 37A(3)(b)’</td>
<td>The company must provide a planned annual risk as a percentage of the following for the first 25 years of its WRMP: s.76 - temporary water use restrictions (previously hosepipe bans) s.74(2)(b) - ordinary drought orders s.75 - emergency drought orders The company should also state how that annual risk will change over the planning period following the implementation of the measures (options) set out in its water resources management plan. If levels of service are expected to stay the same throughout the planning period this should be stated.</td>
</tr>
</tbody>
</table>

Please see Response 2

Response 24

<table>
<thead>
<tr>
<th>Area of issue</th>
<th>Issue and evidence</th>
<th>Implications</th>
<th>Information or changes required</th>
</tr>
</thead>
<tbody>
<tr>
<td>R3.2 Direction 3 (e)(i) Implications of climate change on supply and demand</td>
<td>The company has failed this direction as it has not demonstrated/quantified the impact of any of the supply or demand measures in the plan. If the company has determined there is no impact from these measures, then this should be quantified and stated in the plan.</td>
<td>Linked to direction 3(e) ‘a water undertaker must include… the assumptions it has made as part of the plan in respect of (i) the implications of climate change, including in relation to the impact on supply and demand of each measure which it has identified in accordance with section 37A(3)(b).’</td>
<td>To fulfil all the requirements of this direction the company should include figures on the potential impacts of climate change on each demand measure. If no impact is expected then this should be stated in the plan to comply with direction 3(e)(i).</td>
</tr>
</tbody>
</table>

Please Response 3

Response 25

<table>
<thead>
<tr>
<th>Area of issue</th>
<th>Issue and evidence</th>
<th>Implications</th>
<th>Information or changes required</th>
</tr>
</thead>
<tbody>
<tr>
<td>R3.3 Direction 3(f) its intended programme for the implementation of domestic metering and its estimate of the cost of that programme, including the costs of installation and operation of meters;</td>
<td>The plan and associated planning tables do not contain any information on the costs of the metering programme. Therefore the company has failed this Direction.</td>
<td>Linked to direction 3(f) ‘a water undertaker must include… its intended programme for the implementation of domestic metering and its estimate of the cost of that programme, including the costs of installation and operation of meters.’</td>
<td>The company need to present the total cost for the metering programme, including the costs of installation and operation of meters. This can be split into cost per year/AIMP or WRMP plan period. If the costs of the whole metering programme are covered within business as usual then these figures should be presented.</td>
</tr>
</tbody>
</table>

Please see Response 4
2.2.2 Moderate issues

**Moderate issues identified for Wessex Water’s Water Resources Management Plan**
Moderate issues are those that we consider significant to the draft plan and may reduce the effectiveness of the plan, stakeholder/customer understanding and/or present a moderate risk to the environment. These are reported as improvements in our representation submission.
Response 26

Please see Response 8.

Response 27

We have met with the Environment Agency on 21/06/2018 to discuss WINEP3, and have updated the WRMP to include the changes resulting from WINEP3. These changes include:

- A sustainability reduction at Dewlish of 3ML/d during peak periods, during time when stream support is active, with no change to the annual licence.
• At Stubhampton we have agreed to operate the site under an Abstraction Incentive Mechanism (AIM), with no sustainability reduction.
• We have changed the sources that need to be included in sensitivity analysis, with Dunkerton Springs and Holt now included, and Sutton Poyntz removed as the AMP6 investigation has not required a reduction. Dewlish is also removed, as the sustainability reduction has been confirmed. This information is presented in a revised Table 4-4.

Relevant changes to the planning tables have been made, and the sensitivity analysis section of the plan has also been updated to reflect the revised Table 4-4.

Response 28

<table>
<thead>
<tr>
<th>12.2</th>
<th>Water industry national environment programme (WINEP)</th>
<th>There have been significant changes between WINEP2 and WINEP 3, as stated in the text. Table 4-4, page 61 is out of date as there have been changes to WINEP2 including two AMP6 investigations that have not concluded. These need to be upgraded to implementation in Asset Management Programme 7 and should therefore be included in the plan.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Changes to reduce abstraction licences to protect the environment may impact security of supply if not planned for.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information about WINEP 3 schemes has recently been discussed with the company. The company need to incorporate sensitivity analysis on any further potential sustainability reductions in the final draft plan.</td>
<td></td>
</tr>
</tbody>
</table>

See Response 27

Response 29

<table>
<thead>
<tr>
<th>12.3</th>
<th>Potential WINEP 3 scheme</th>
<th>The abstraction licence for Ashford/Hawkridge is made up of three parts: abstraction to public water supply from Hawkridge, Ashford, and the transfer from the Currypool Stream. The Currypool Stream is currently unmonitored but will be in the future. It is therefore difficult to assess if the company are in breach of licence conditions, as one component is unknown. Currently this scheme is in AMP6 as investigation with a possibility of implementation into WINEP3 as a sustainability change.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Changes to reduce abstraction licences to protect the environment may impact security of supply if not planned for.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The company need to continue working with the Environment Agency on this issue and include any sensitivity analysis in the final draft plan if sustainability changes are required after WINEP 3 has been published.</td>
<td></td>
</tr>
</tbody>
</table>

We met with the Environment Agency on 21/06/2018 to discuss WINEP3, and specifically the issue of monitoring of the transfer Currypool Stream. The Environment Agency has clarified that it is not seeking a licence reduction at this site, but rather for the Currypool stream transfer to be gauged to gain greater understanding of the water balance in comparison to licence conditions. The licence is included within our system modelling of the transfer, and therefore our deployable output calculation for Ashford and Hawkridge is in compliance with the licence. Therefore, we have not included any sensitivity analysis of potential licence reductions, as no licence reduction is being sought by the agency.

2.2.3 Minor Issues

Minor Issues identified for Wessex Water’s Water Resources Management Plan

Minor issues are those that do not fall into the above categories, and do not pose a direct risk to the security of supplies or the environment. We consider that resolving these issues will improve the presentational quality, consistency and/or customer understanding of the draft plan.
Response 30

Following discussions with the Environment Agency during our pre-consultation, we did not include an unconstrained options list in the plan. For this revised draft plan, we have included an unconstrained options list, which can be found as an appendix to the plan. Please see Section 9 of the plan for Options and future investments, and in particular Section 9.4 that describes the unconstrained options list and screening criteria applied to derive the selected options for more detailed analysis, as presented in the plan.

The specific issue raised concerns leakage options, and transparency as to whether specific options have not been taken forwards that could be beneficial to the current leakage policy. Since the publication of the draft plan, the leakage policy has changed following further engagement with customers as part of the PR19 business plan process, and our revised WRMP (see Sections 5.7 and 9) now incorporates a 15% reduction in leakage by 2025. This will be achieved through a mixture of different strategies including infrastructure renewal, increased active leakage control, pressure management and improved data analysis and DMA improvements. Please see Section 9.7.3 of the plan, which leakage reductions options, including mains replacement.

Response 31

In Table 10, Section 10.5 WRMP deployable output overview, we clearly state that: “The estimate of drought severity is therefore conditional on the duration of the drought event, and is also calculated based on an aridity index that is calculated from the balance of rainfall and evapotranspiration during the given drought event period.”. This statement, coupled with the explanation provided in Section 10.1.1, provides a clear explanation to stakeholders that the
The determination of drought event return periods presented in Table 10 as indicative of drought severity, is dependent on the duration of the drought event. In section 10.1.3 of the plan, we also provide an explanation box titled "Key uncertainties in drought scenario assessment", which includes a description of why providing reliable estimates of drought return periods is difficult. This approach for defining drought severities therefore followed the approach and therefore precedent set in the Water UK Water resources long term planning framework project.

To make this clearer that this refers to return period, we have modified the above quoted sentence in Section 10.5 of Table 10 as follows:

The estimate of drought severity (and return period) is therefore conditional on the duration of the drought event, and is also calculated based on an aridity index that is calculated from the balance of rainfall and evapotranspiration during the given drought event period.

We have described in Section 12 an outline of the plan the work we intend to undertake in preparation for WRMP24, where an outcome of this work will be to explore defining return periods based on system response metrics, as opposed to weather based metrics.

Response 32

Please see Response 26.

Response 33

We acknowledge the point made by the EA, which appears to originate from the Atkins review report of the methodology (Review of WRMP19 Resilience Analysis), which states that, using the 7.5% and 12.5% reductions “...may represent a small under-estimation of risk for a 9-month event (aridity indices representative of the 10% and 15% reductions may have been more appropriate)."

The Atkins report goes onto state that “in general terms it is clear that the SPEIs for the Water UK 12 and 18-month events were close to, or slightly less severe than, those used by Wessex for the 9 and 17-month events respectively”, which provides support that they are sufficiently representative.

Further the Atkins report also states that: “As noted above, the percentage deficits in the aridity index selected for the 9-month event may not have been conservative enough, as they only fit against the Normal distribution. Statistical drought persistence anomalies that generate Weibull type curves are usually present in such shorter-term events, and it may be more appropriate to select aridity indices that are representative of the Weibull type curve fit.”
The 10% and 15% options were therefore tested by Wessex and found to have a negligible impact*.

As stated, we tested the effect of changing the aridity index to the 10% and 15% options, which made a negligible impact once propagated into derived rainfall and PET, and in turn, through our hydrological models to reservoir inflows and groundwater levels.

Response 34

There was no yield data available for Forston prior to 1981; the automated method for producing the plots for all sources, and the example provided (Figure 4-7), by default plotted no values as zeros. Figure 4-7 has been updated to remove no-data values, including for 1976.

It is not known that the relationship would continue to be linear if the groundwater levels fell below the lowest historic observations, as by definition, they would be below the lowest historic observations. Without further details, the assumption to continue the rate of decline in yield with depth, and therefore continue the trend that occurs within the observed range, is the most pragmatic approach, and is a preferable conservative option compared to assuming yield remains unchanged below the lowest observed point.
Response 35

In the figure caption the reservoirs that were included (all of them) are now listed. The method by which the historic flows were calculated is signposted in the text and the footnote as Section 4.2.4. The figure has been changed to cumulative flows, and the period of the plot extended back to October of the previous year – e.g. the start of the hydrological year, as this makes more sense hydrologically to show, given the most significant period of reservoir recharge.

Figure 2-1 Cumulative simulated inflows into all* impounding reservoirs for (1911-2016), with selected years highlighted

* reservoirs included: Ashford, Clatworthy, Durleigh, Fullwood, Hawkridge, Sutton Bingham, and Wimbleball.

Response 36

To provide further detail, we have included as an Appendix to the revised draft plan the historic outage record.

Response 37
The sustainability figures presented in Table 4-4 are potential sustainability reductions that are currently uncertain, as the investigations for these, which have recently come out of WINEP3, are to be undertaken in the 2020-25 period, hence Table 4-4 is titled: Sustainability reduction scenarios that could be implemented from 2025.

Table 4-17 and Table 4-18 show, respectively, summaries of the dry year annual average and critical period forecasts. The sustainability reduction figures included in these tables are sustainability reductions that have already been confirmed, that come into effect during the planning period.

Therefore, the figures between these table should not match up, as one table shows potential reductions, and the other confirmed reductions. As instructed by the EA planning guidelines, the impact of potential reductions shown in Table 4-4 is handled through sensitivity analysis in Section 10.2.1.

Response 38

<table>
<thead>
<tr>
<th>Issue 9</th>
<th>Demand management research</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The company appears to be reliant upon industry research to inform its future demand management option development, rather than proactively undertaking further trials. That said, the company did undertake a large trial of smart metering and tariffs in 2012, one of the few of its kind known to have been undertaken in the UK and the results of which it readily shared with the industry. However, the company could propose additional trials or monitoring to improve confidence in its water savings estimates.</td>
</tr>
</tbody>
</table>

Forecast savings for the Home Check programme are based on the savings outlined in the Ofwat June Return 2011 document and on the actual uptake rates of devices we have seen in the current programme. Savings assumed for the previous plan were taken from the 2012 Environment Agency review of the ‘Evidence Base for large scale water efficiency’ report written by Waterwise in 2011. The Waterwise report included a range of water company studies where average savings achieved ranged from 20.6 litres per property per day to 64.4 litres per property per day. Despite using different data bases, both approaches assess the savings as an average of 40 litres per property per day. We use the savings outlined in the Ofwat June Return 2011 document to claim savings for the current programme.

We plan to improve our calculation methods in the next planning period by collecting meter readings before, during and after the audit to assess the actual volume of water saved and enable us to refine our forecasting and in the future.

Response 39

<table>
<thead>
<tr>
<th>Issue 10</th>
<th>Links to the drought plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 10.1.2, page 216-217. The company has referred to the drought plan for an explanation of the derivation of demand side measures that would be imposed (other than NEU/Bs). Further detail should be added to the WRMP to explain the derivation of the benefits from demand side restrictions to prevent stakeholders from having to reference the drought plan.</td>
<td></td>
</tr>
</tbody>
</table>

We have added in some further detail about how the demand side savings have been estimated in a new table (10-4 in section 10.1.2), however we have still cross-referenced the drought plan. A key change in this WRMP guidance was to have greater links to the drought plan, which we welcome. Given this is a complementary document to the WRMP, we feel
that repeating some information is appropriate, to help the reader, where possible, but cross-
referencing is entirely appropriate also, for more detailed descriptions. We hope the changes
made have helped to strike the right balance.

Section 10.1.2 has been updated and an extract of the new text and the table are presented
below:

Our drought plan lists a number of actions we will take to reduce demand as a drought
progresses, and also contains five supply-side drought permit options. Table 10-2 lists the
drought actions, the calculated daily impact on supply or demand for each option, and the
bands in which the options would be implemented, which are shown in Table 10-3. We
operate on the basis of four drought bands, to reflect the continuum of actions and changes
we can make to our water supply system as a period of dry weather develops. Table 10-4
provides some further detail of the derivation of demand side savings, and more detail can
be found in the drought plan.

Table 2-2: Demand side savings

<table>
<thead>
<tr>
<th>Band</th>
<th>Demand saving option</th>
<th>Demand saving</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increased leakage reduction – Phase 1</td>
<td>We estimate that demand savings of a maximum of 0.5 Ml/d could be achieved by increased staff overtime and night working and undertaking more work in the highway as same day emergency works under the Traffic Management Act 2004.</td>
</tr>
<tr>
<td>3</td>
<td>Water efficiency campaign - Domestic</td>
<td>The campaign would be focussed in the summer months and include both educational messages to promote behavioural change and the promotion of water efficient devices. Savings are estimated to amount to 0.4 Ml/d. While these savings may seem small they rely on engaging with between 46,000 and 70,000 customers in addition to the business as usual level of engagement.</td>
</tr>
<tr>
<td></td>
<td>Water efficiency campaign - Business</td>
<td>The campaign would be focused in the summer months and include both educational messages to promote behavioural change and the promotion of water efficient devices. Savings are estimated to amount to 0.005 Ml/d</td>
</tr>
<tr>
<td></td>
<td>Water efficiency campaign – Domestic and Business</td>
<td>The campaign would be focused in the summer months and include both educational messages to promote behavioural change and the promotion of water efficient devices. Savings are estimated at 0.83 Ml/d, which requires engaging with over 100,000 additional customers to business as usual activity.</td>
</tr>
<tr>
<td>4</td>
<td>Increased leakage reduction – Phase 2</td>
<td>We estimate that demand savings of a maximum of 1.0 Ml/d could be achieved by further active leakage control activities utilising additional external staff resources and more active pressure management, i.e. reducing pressures at night or in specific areas below company standards.</td>
</tr>
<tr>
<td></td>
<td>Temporary water use restrictions</td>
<td>Savings are difficult to quantify as we have no direct evidence of likely reductions for our own supply area as we have not imposed restrictions for over 40 years. We would estimate an annual average benefit of 8.5 Ml/d (17 Ml/d)</td>
</tr>
</tbody>
</table>
**Band** | **Demand saving option** | **Demand saving**
---|---|---
| | peak, based on 5% saving of distribution input following the UKWIR (2011) code of practice. | 
| | Non-essential use bans | Non-essential use bans have been estimated as 3% of our non-household demand. |

**Response 40**

In Section 10.1.2, further detail has been provided regarding what the drought bands are, including a new table (Table 10-3), describing each drought band:

Our drought plan lists a number of actions we will take to reduce demand as a drought progresses, and also contains five supply-side drought permit options. Table 10-2 lists the drought actions, the calculated daily impact on supply or demand for each option, and the bands in which the options would be implemented, which are shown in Table 10-3. We operate on the basis of four drought bands, to reflect the continuum of actions and changes we can make to our water supply system as a period of dry weather develops.

**Table 2-3: Drought management bands**

<table>
<thead>
<tr>
<th>Band</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Normal operation</td>
<td>Follow a cost optimal strategy for water abstraction and distribution, and undertake regular demand management activities such as water efficiency and metering campaigns, alongside leakage management</td>
</tr>
<tr>
<td>2 Initial dry weather actions</td>
<td>Proceed with a normal spring/summer water efficiency campaign and switch from a cost optimal strategy to a resource saving strategy</td>
</tr>
<tr>
<td>3 Further dry weather actions</td>
<td>Implement a higher profile water efficiency campaign, leakage reduction, and additional water transfers and resource saving</td>
</tr>
<tr>
<td>4 Drought actions</td>
<td>Launch an intensive media campaigns potentially progressing to temporary use restrictions ('hosepipe bans') and the possible use of drought permits to conserve and increase water availability</td>
</tr>
</tbody>
</table>

**Response 41**

There is no Figure 3.2.1, so assume this section is in relation to Section 3.2.1, which describes the water resources zone integrity assessment. We have inserted the following explanation of why we have three resource zones in Section 10.1.2, which covers drought scenario testing, and drought options, and this feels like the best place to explain this difference, in the context of the drought plan:
For the purposes of drought planning, we divide our single resource zone supply area into smaller units (drought management zones), which define the areas over which decisions will be made to manage resources. Within each zone the total amount of water available from reservoirs and for abstraction from key groundwater sources is used to define specific trigger levels. Once the amount of water available drops below a specific trigger level, certain actions are considered to either improve supply or reduce demand.

This approach provides a finer resolution of understanding of how resources within the system are evolving during an extended period of dry weather/drought, in comparison to calculating similar metrics at the resource zone level. This therefore provides more information on how the particular circumstances, and spatial variability of an individual drought situation are developing. Alongside the outputs of our system simulation model forecasts, this information allows us to trigger specific options within the system.

Response 42

Regarding nitrates, and nitrate blending schemes, we have including the following text in the plan, and an accompanying appendix:

For the other two sites, we included blending proposals in our PR19 water quality submission to the DWI in December 2017 for Fonthill Bishop and Deans Farm; we subsequently received two letters of support for the schemes from the DWI, and have included the proposals in our business plan1.

1 Further details about the proposed blending schemes and nitrate trends can be found in PR19 DWI water quality submission – Annex 1 and 2 Nitrate schemes.pdf, which is an annex for nitrates that accompanied our PR19 water quality submission to the DWI in December 2017.

Regarding pesticide trends, two Figures (4-13 and 4-14) have been inserted into the plan showing example pesticide trends at Ashford and Durleigh Reservoirs into section 4.5.3 on the plan.

Response 43

The method applied for forecasting non-household water use was a trend-based approach based on available historic data. We reviewed the first forecast provided by consultants Severlec, and made modifications to the forecast decline, as expanded, and modified in the plan in Section 5.6.2:
We reviewed the initial outputs from the models and made a modification to the agricultural sector model as we were concerned that the projection could be estimating too much of a future decline. Some elements of water use by the agricultural sector such as feeding livestock and perhaps watering crops will not benefit from significant efficiency reductions that have been experienced in the recent past. As a result, a base level consumption of 3000 Ml/a was excluded from the modelling to moderate the future projected demand reduction.

We have also accounted for uncertainty in our non-household forecast through our headroom analysis and believe that based on the evidence from of the first year of the business retail water market, that further savings in water efficiency will be delivered.

We have inserted the text below into section 5.6.2 of the plan.

We consulted with retailers on the validity of the non-household demand forecast particularly in the context of their future water efficiency programmes and received nothing to challenge the validity of the forecast.

As described above, we expect the effect of water efficiency initiatives undertaken by non-household retailers, and the businesses themselves, to continue to lead a decline in overall non-household water use. Ofwat published a review of the first year of the business retail water market, and:

- estimates that the customers who switched or renegotiated in the first year saved 270 to 540 million litres of water.
- found that some large customers bypassed retailers by choosing self-supply, which has delivered water efficiency savings. For example, Greene King became a self-supplier and reduced their consumption by around 140 Ml in the market’s first year through targeted water efficiency measures.

In June 2018, Business Stream announced its ambitions to help its customers reduce their water consumption by 20% by working with its customers to identify and deliver water efficiency solutions. Furthermore in June 2018 Waterwise launched the first Retailers Leadership Group for Water Efficiency to encourage greater efficiency measures in the sector.

In Section 12.2 of this plan we describe how we are adopting an open systems approach to the future delivery of our core business outcomes and this has been set out in our Business Plan submission to Ofwat in September 2018. Our Open System Coordinator (OSC) concept proposes that a distinct process within Wessex Water will be tasked with pro-actively identifying opportunities for third party delivery of services and for ensuring that the most efficient / effective services are procured. This is an approach that we have already taken with, for example, the creation of GENeco and EnTrade, but we see greater opportunities for other market solutions to be explored, with potential further engagement with the non-household sector to reduce demand from potable sources.
Response 44

As explained in Section 6.1 of the plan, we have already incorporated the uncertainty relating to the potential renewal of the Leckford Bridge transfer within our headroom, and therefore already made an allowance for this potential non-renewal within our supply-demand balance. We have not therefore undertaken sensitivity analysis as this would lead to double counting. No change has been made to the plan.

Response 45

The value included as a sustainability reduction at Codford for our draft plan was incorrect. The figure has been modified in the planning tables as a reduction of -2.46 Ml/d for the DYAA scenario.

Response 46

The derivation and presentation of the deployable output figures is done so as follows:

1. The methodology presented in Section 4, specifically 4.8.4, is used to determine the deployable output figures for all sources, including Codford, Brixton Deverill, Clarendon, Newton Toney and Fonthill Bishop. All of the new licences for these sources that come into effect in 2018/19 are included in Miser and accounted for in the post-miser modelling adjustments.

2. The sustainability reductions shown in Table 2 BL Supply, specifically 8.2BL, are then added to these figures to derive the baseline Deployable Output figures shown in Table 1 BL Licences – e.g. to derive the Deployable Output prior to licence changes. This step is done so that the sustainability reductions can then be removed from the baseline figures in Table 2 BL supply, at the appropriate point in time.

Response 47

The licence information presented in both planning tables, Table 1 BL Licences is the annual licence quantity (Ml/d). This has been updated to 2.50 Ml/d to reflect the current Compton
Durville licence. The figures for the new licence were included in the deployable output modelling work.

Response 48

<table>
<thead>
<tr>
<th>Issue</th>
<th>Abstraction licence</th>
<th>The baseline figures for the Malmesbury Avon licence are based on current scenario but new licences are about to be issued over the next 6 months.</th>
<th>The company need to provide clarification on how it will address these potential changes.</th>
</tr>
</thead>
</table>

The baseline figures are not based on the current scenario, but based on the new licence arrangement with an annual licence constraint of 12775 ML for Charlton, Rodbourne, Cowbridge and Milbourne, and limited to 39.1 ML/d as a daily limit. No changes made to the revised Plan.

Response 49

<table>
<thead>
<tr>
<th>Issue</th>
<th>Time limited licence</th>
<th>Section 5.1 on P68 the company expects renewal of extension of Wimbale licence time limited licence after discussions with the Environment Agency, as current extension to licence (2023) meets RBMP objectives, however non-renewal of extension included has been included in headroom analysis.</th>
<th>There has been further updated guidance issued to water companies on how to deal with time limited licences. Therefore this should be taken out of headroom analysis and put in 8.2 BL in the final plan.</th>
</tr>
</thead>
</table>

We have consulted further with our local Environment Agency lead to clarify the requirements from this comment. We have been informed that the wording of this minor issues is incorrect, as there has not been a change in guidance to water companies on Time Limited Licences (TLLs), and that uncertainty for non-renewal of TLLs can be included in headroom as stated in the Water Resource Plan guidance. We have therefore made no change to the plan in response to this comment.

Response 50

<table>
<thead>
<tr>
<th>Issue</th>
<th>Water framework directive driver - HMWB</th>
<th>Section 4.4.1 There is no reference to heavily modified water bodies (HMWB) in the list of AMP schemes on page 59, so it's not possible to assess whether any potential mitigation could impact the supply forecast.</th>
<th>The company should ensure heavily modified water bodies are referenced in the plan so any potential impacts can be assessed.</th>
</tr>
</thead>
</table>

In Table 4-2, those AMP schemes for which one or more of the water bodies within the investigation are classified as Heavily Modified Water Bodies (HMWB) under the Water Framework Directive have now been indicated.

Response 51

<table>
<thead>
<tr>
<th>Issue</th>
<th>Deployable output figures</th>
<th>The numbers presented in the document (table 4-11 page 87) are not consistent with the deployable output values presented in the Dry Year and Critical Period Table 10s (Cells G7 &amp; G10/Table 10).</th>
<th>The company need to provide clarification on the reason for the discrepancy.</th>
</tr>
</thead>
</table>

The numbers have been checked and revised, following re-basing and updating of our demand forecasting model to 2017/18, to ensure they are consistent between the planning tables, and Table 4-11.
Response 52

We sought further clarification on issue 23 raised by the EA, and it appears the wording raised in this point was incorrect; scaling factors are applied to Deployable Output, as per the EA supplementary guidance, and not to PET. Into the plan we have inserted the following sentence in Section 4.9.2 to reference the methodology used for obtaining PET:

Based on data provided in the SCPs, we applied the Hamon equation to derive PET.

Response 53

We are not sure where in the draft plan it states that the closest grid to the source was used. We do state that “For each groundwater model and catchment model, the appropriate time-series of factors for precipitation and PET for the relevant grid cell(s) were selected from the SCPs and used to perturb model inputs, which were then run to evaluate the impact of climate change on groundwater levels and catchment discharge.”

The UKCP09 SCP data comes on a 25km grid, which for each grid square is an area of 625km$^2$. Our average catchment size is 54km$^2$ and the largest is 186km$^2$, and so in most instances a single grid cell was used, and selected based on catchment coverage, as opposed to being closest to the source.

Response 54

We have consulted with retailers regarding the non-household forecasts, including on their water efficiency activities in the non-household retail sector, and provided clarification of this in the plan in section:

We consulted with retailers on the validity of the non-household demand forecast, and regarding their future water efficiency activities, and received nothing to challenge the validity of the forecast.

Response 55
As per the Servelec report, the historic data was reviewed and found no evidence of a causal link between the number of measured non-household properties and the total demand. We have undertaken a trend-based forecast on the basis of the historic data available, which inherently accounts for the demand from potential new customers switching from non-public water supplies, as balanced against other factors behind the overall trend of declining demand.

Response 56

The figures quoted in the text on page 9 have been double checked against the numbers in the planning tables to ensure they are consistent, following re-basing and updating of the planning tables between draft and final plan.

Response 57

Drinking Water Protected Areas are already mentioned in the plan where relevant, notably under Section 4.5.3 in reference to Nitrates: “Catchment management at these sites is supported by the Environment Agency through the Water Industry National Environment Programme (WINEP), under a drinking water protected area driver.”

Response 58

A new section has been inserted into the plan, Section 7.1 Changes between WRMP14 and WRMP19 baseline forecast, with the following text:

A comparison between the WRMP19 baseline forecast and the WRMP14 final plan forecast shows the following changes:

- **Household population is higher than planned** – Our household population forecast for WRMP19 is described in Section 5.4 this is based on the latest information available from local authorities and national datasets. It is accepted that there are uncertainties in any forecast of population growth and this is demonstrated in section 5.4.2 and in Figure 5.13. We use the best available information at the time of preparing our WRMPs every five years, but it is reasonable to expect a difference between WRMP14 and WRMP19 forecasts. In addition, and as described in Annex A, we have updated our understanding of household and non-household populations based on national statistics, customer
occupancy survey, and a study undertaken to understand hidden and clandestine population.

- **Metering penetration lower than planned** – the number of properties suitable for being metered under the change of occupier programme is lower than forecast at WRMP14. We have learned from this, and our ongoing experience of implementing the change of occupier programme, and updated our metering forecast for the draft WRMP19 plan accordingly (Section 5.5.4). This was also explained in our Annual Review of WRMP14 (submitted to the EA June 2018)

- **Distribution input is 5% higher than planned** – the distribution input is higher than forecast in 2014, despite achieving our leakage target during the 2015-2018 period, and water efficiency scheme delivery. It is difficult to explain this trend (Figure 5-2), which is partly explain by lower meter penetration than forecast in WRMP14. However, the trend also appears in our measured and unmeasured consumption monitor, and therefore appears to reflect increased customer consumption over the past few years.

**Response 59**

<table>
<thead>
<tr>
<th>Issue 30</th>
<th>USPL Table error</th>
</tr>
</thead>
<tbody>
<tr>
<td>There was an error in the version 14 Table Template that meant USPL options did not get incorporated into the final supply-demand balance. The company manually corrected this error by separating out the impact of M1a into a total water delivered component (consumption + USPL) and a separate USPL component in table 6, so that the correct figures were then carried through into Table 8.</td>
<td>The company should update the Table formula for the final plan so that USPL options are added to water delivered through the formula.</td>
</tr>
</tbody>
</table>

The error has been corrected in the planning tables, as per the update instructions received from the EA, dated 21st June 2018, and consistent with the new WRMP Tables (Version 15). However, as discussed with the EA, this change (Version 15) means that the Change volume delivered to (un)measured households in Table 6 then needs to be exclusive of USPL changes in order for the figures in Table 8 to be correct. Our original changes submitted with the draft plan ensured the correct figures are presented in the plan.

As a result of the above issue, we have submitted two versions of the tables; one version consistent with EA requirements and for the EA, and another version that is also available on our website, with the correct numbers in all tables.

**Response 60**

<table>
<thead>
<tr>
<th>Issue 31</th>
<th>Missing category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mott Macdonald Headroom Report Page 14 Minor point: The text refers to six categories for accuracy of supply side data but there are only five bullets.</td>
<td>Minor amendment required, unless one option has been missed in error.</td>
</tr>
</tbody>
</table>

The text in the Mott Macdonald Headroom Report has been corrected to refer only to 5 categories.

**Response 61**

<table>
<thead>
<tr>
<th>Issue 32</th>
<th>Incorrect section reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 3.1 Page 29 refers to section 0 - this should be 4.4</td>
<td>Amend the text to Section 4.4.</td>
</tr>
</tbody>
</table>

This issue has been corrected in the final draft plan.
Response 62

<table>
<thead>
<tr>
<th>Issue 33</th>
<th>Incorrect table reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 4.9.1 page 92 The text below table refers to Figure 4-19 but this should be 4-18.</td>
<td>Amend the text to Figure 4-18.</td>
</tr>
</tbody>
</table>

This issue has been corrected in the final draft plan.

Response 63

<table>
<thead>
<tr>
<th>Issue 34</th>
<th>Section 4.6 - Mislabelling of tables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 4-7 and 4-8 on page 77 Both tables are labelled as bulk export. Table 4-7 appears to be the bulk imports.</td>
<td>Amend the title of table 4-7 to Bulk supply imports.</td>
</tr>
</tbody>
</table>

This issue has been corrected in the final draft plan.

Response 64

<table>
<thead>
<tr>
<th>Issue 35</th>
<th>Number discrepancy between planning tables and WRMP document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 4.6.1 Page 77 Table 4-7 and Critical period Table 2 - Row 12. There is a minor discrepancy between the two documents for the Lyme Regis import. The table contains the average deployable output figure from the WRMP (0.04 Ml/d) rather than the peak figure (0.05 Ml/d).</td>
<td>Amend figures so they match in both planning table and WRMP.</td>
</tr>
</tbody>
</table>

The critical period planning table has been amended so that it contains the peak figure of 0.05 Ml/d, consistent with the information presented in Table 4-7.

Response 65

<table>
<thead>
<tr>
<th>Issue 36</th>
<th>Incorrect reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annex B page 247 and section 3.2.1 page 35 text incorrectly referenced as Annex C. It is included as Annex B</td>
<td>Amend text to Annex B.</td>
</tr>
</tbody>
</table>

This issue has been corrected in the final draft plan.

Response 66

<table>
<thead>
<tr>
<th>Issue 37</th>
<th>Incorrect reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section 10.1.1 Page 215, Para 2. Text has Annex I incorrectly referenced as Annex K</td>
<td>Amend text to Annex I.</td>
</tr>
</tbody>
</table>

This issue has been corrected in the final draft plan.

Response 67

<table>
<thead>
<tr>
<th>Issue 38</th>
<th>Type of option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Option has not been entered for few feasible options in Table 5. Not possible to compare those options costs with other company option costs by type of option</td>
<td>Add the missing Type of Options.</td>
</tr>
</tbody>
</table>

The missing type of option information has been added into Table 5.
3 Ofwat

3.1 Letter

The Wessex Water plan demonstrates good practice in terms of the scale and breadth of its customer participation activities, its approach to assessing non-drought resilience and the promotion of catchment management. While the majority of Wessex Water's plan is in line with our expectations and good practice, there are areas of the plan where insufficient evidence is provided to convince us that the plan delivers in the best interests of customers. In particular:

Response 68

- The short term leakage reduction set out in the draft plan is the lowest in the industry: 2% by 2025 and only rising to 15% by 2045. It does not appear that customer support has been demonstrated for this proposal or that it reflects the high importance that customers place upon leakage reduction. The leakage per property figures presented in the plan also indicate that there is scope for further reduction, which is reinforced through comparison with other companies. The level of leakage reduction needs to be considered further and justified in the final plan.

Since the submission of our draft WRMP we have updated and enhanced our leakage reduction strategy. Our updated plan sets out our ambition to reduce leakage by 15% by 2025 and this is consistent with our September 2018 business plan submission. See Response 5 for further details.

Response 69

- With a surplus Wessex Water also has the potential to export water to its neighbouring companies. No new water trades feature in the draft plan, though opportunities have been discussed with neighbouring companies. For the final plan we expect Wessex Water to continue to actively engage with others to support regional and national solutions, for example the potential for an export to Southern Water in the Poole/Hampshire region.

See Response 6.
3.2 Annex

3.2.1 Plan building blocks

Response 70

Wessex Water has adequately explained its approach to draft plan development and adopted methods and used data appropriate to its problem scale and complexity. A summary of the company’s approach to resilience, encompassing non-drought issues, has been included which is an example of good practice. However, greater clarity should be provided in the final plan on the updated levels of service reported and on plans for future resilience investment. In particular:

- The levels of service for the various restrictions on use are clearly stated in the draft plan and there is an improvement for the level of service for temporary use bans, both of which we welcome. However, we would expect Wessex Water to provide greater clarity on the calculation of levels of service given the changes from the previous plan.

As explained in section 10.1 of the draft plan, and also presented in Table 10 of the planning tables, we calculated a supply demand balance for the critical (design) event of 1975/76, but consistent with a resilience tested plan, also calculated the supply-demand balance for the worst drought events within the historical record (1933/34 and 1921), alongside severe and extreme versions of these events, consistent with the approach taken in the Water UK Water Resources Long Term Planning Framework Project. It was on the basis of the performance of the system under this range of events that we assessed the performance of the supply system and the likelihood of water use restrictions. We did not enter any deficits under any of the most severe events in the past 100 years, and it is on this basis that the likelihood of restrictions was set as presented in the plan.

Response 71

- We welcome that Wessex Water has provided a summary regarding the approach to non-drought resilience. The company has stated that there will need to be additional investment to manage the risks to customer service at an appropriate level, but do not consider any of these risks sufficient to be included in the draft plan. The company should clarify when it intends to promote this investment and provide further detail to support any identified resilience investments.

In section 8.15 of the plan – Resilience summary – we have provided details of resilience investments that will be made that are included as part of the business plan:
The threats to service and expectations with regard to quality of service are continually changing and we need to ensure that we plan and invest to meet the evolving hazards and threats. There is a need for additional investment beyond our continuing investment maintaining our existing assets to ensure we manage the risks to customer service at an appropriate level.

Our proposals for improving the resilience of our assets and systems include:

- Asset resilience improvements to our largest WTW to reduce the risk of failure by minimising the single points of failure estimated at £5.3M.
- Continuing to invest to improve cyber security.
- A programme of work to reduce supply interruptions to the industry upper quartile, alongside demand management proposals to ensure we meet the requirements of our Water Resources Management Plan.
- Continued partnership working to provide environmental resilience in the most sustainable way.

3.2.2 Customer participation

Response 72

Wessex Water presents a ‘summary for consultation’ as an introduction to the main plan document and an additional 8 page non-technical overview document which increase the accessibility of the plan. There is also good evidence of customer participation in the development of the plan through a wide range of approaches. However, there is insufficient evidence of customer support for the leakage levels that are significantly lower than those proposed by other companies. Further specific comments:

- The plan is generally well structured and easy to navigate with clear headings and sub-headings. The non-technical summary document provides an overview of the proposals for interested stakeholders and comments on the consultation are encouraged.

The response is noted. We have undertaken further customer research since submission of the draft Water Resources Management Plan, that has led to us modify the scale of our proposed leakage reduction programme. The leakage reduction strategy has been changed since the draft plan, and increased to meet the 15% leakage reduction target set by Ofwat. Section 9.2.2 of the plan on customer preferences and willingness to pay has been updated to reflect the additional customer research work undertaken since the draft plan was submitted.
Response 73

- We welcome that participation from a variety of customer groups was encouraged, including young people, vulnerable and 'seldom heard' customers. The Young people's panel is an example of good practice, engaging with future customers to understand their views and ideas.

Response is Noted.

Response 74

- The consultation indicates that customers appear satisfied with the current levels of service for drought restrictions. The company’s assessment concluded that it is resilient to a 1-in-200 year drought event and customers perceive potential restrictions as a low risk. However, it is unclear whether relative drought resilience levels with other companies was discussed.

During our resilience research with customers, we presented information on relative drought resilience levels across the companies in England and Wales.

Response 75

- A small scale detailed investigation of customer attitude to leakage is referenced involving 24 customers in the initial stages. However, further evidence of customer support for the proposed leakage levels and details of the wider testing of the outputs of the investigation is required. This is important in the context of the proposed leakage reduction levels being significantly lower than those of other companies.

We have undertaken further customer research since submission of the draft Water Resources Management Plan, that has led to us modify the scale of our proposed leakage reduction programme. The leakage reduction strategy has been changed since the draft plan, and increased to meet the 15% leakage reduction target. Section 9.2.2 of the plan on customer preferences and willingness to pay has been updated to reflect the additional customer research work undertaken since the draft plan was submitted.

Response 76

- We welcome that the company has included the outputs from its willingness to pay research within the draft plan. However, there is no indication that the bill impact of the options presented in the preferred plan has been discussed as part of customer engagement. This should be included in the final plan.

Section 9.10 of the plan on the preferred options has been updated to reflect the additional customer research work undertaken in the context of the wider business plan since the draft plan was submitted. The text below has been added:
The programme of options included in our final plan are consistent with the proposals included in our draft business plan that was tested with customers between January and June 2018.

The customer research was designed to test whether customers find the plan acceptable and affordable. The stimulus material covered our overall package of service improvements, statutory enhancements and bill impacts. We tested our plan with household customers, business customers, retailers, those in vulnerable circumstances and industry stakeholders. Results were triangulated across a variety of qualitative and quantitative methodologies to maximise the robustness of both the sample and conclusions.

Testing has shown that 96% of our customers find our business plan acceptable. Acceptability is above 90% across all demographic subgroups. Those in vulnerable circumstances were slightly less accepting of the plan than other groups, but still at a very high level.

A large majority of household customers (92%) consider our plans are affordable for them. Over 90% of businesses found the plan to be affordable. Vulnerable customers also found the plan acceptable and affordable, and were positive about the assistance that we provide to this group.

Response 77

- The company has referenced consultation with the Customer Challenge Group (CCG) during the development of the plan and their involvement in reviewing the material for customer engagement workshops.

Response is noted

3.2.3 Demand forecast

Response 78

The plan appears to have followed the relevant guidance and assessed demand through consideration of appropriate components. We have concerns about the adjustments to household and non-household population figures that significantly impact the forecast per capita consumption (PCC) trends. There also appears to have been limited engagement with non-household retailers. Further specific comments:

- The company has consulted local authority plans in developing its demand forecast. However, it has used a forecast trend that is lower than the local authority plan forecast in the short term. This does not appear to be a material issue as the company has demonstrated through scenario analysis that it is able to meet demand should the actual growth track the local authority plan figures.
As described in Section 10.2.2 of the plan, we can meet actual growth should it follow the track followed by local authority plans. We wish to plan on the basis of the best forecast possible, and as discussed in Section 5.3.3. of the plan. The combined Local authority housing trajectory forecasts a building rate significantly above recent achieved levels. Given a number of factors in the current economic situation are likely to moderate a significant increase in house building, we have planned on the basis of a forecast that we believe provides a more appropriate year-to-year uplift in building rates, yet still ensures that total housing delivery meets each local authorities’ objectively assessed need over their respective plan periods.

Response 79

- Wessex Water has significantly adjusted its PCC calculations and state a revised average PCC as 131 l/h/d and the dry year annual average PCC value forecast in the baseline plan for 2020 as 137 l/h/d. For reference the actual reported value for 2016-17 was 141 l/h/d. Additional justification is required in the final plan to support this change. Further considerations:

We provided further details that justify these changes in Annex A of the plan. We have also added further details to this section regarding the customer occupancy survey. See also Response 80.

Response 80

- The full outputs of the bespoke occupancy surveys and the range of values reported, including the quantification of any uncertainty, should be provided for clarity.

A more detailed section has been inserted into Section 13.5.1 of the plan, which provides more details about the customer occupancy survey. This section now includes a cross-company comparison of occupancy estimates for measured and unmeasured households using market information data published since the draft plans were published, that supports the changes made to household occupancy.

Response 81

- The reallocation of a significant proportion of non-household population, approximately 16,000, to household population has already been undertaken. However, the draft plan notes that further investigation into the non-household population is required and justification is not provided on why the adjustment was made prior to the investigation being completed.

We are continually working to improve our understanding of the water balance and how the population living in our region is split between households and non-households, and between measured and unmeasured properties. We did a significant amount of work on this
in preparation for WRMP19, as detailed in Annex A. The decision we took to move some population from non-household in to households is based on the findings from our customer occupancy survey and from comparisons of DCLG household population estimates to ONS resident population, and we are confident in the approach we have taken. Further work is planned this year to improve our understanding/confidence in unmeasured non-household demand to ensure we are fully compliant with the leakage consistency guidelines. We do not expect this will change our estimate of non-household population.

Response 82

- The company should confirm whether the adjustment is consistent with guidance and ensure that the process followed has been adequately assured.

In determining the population forecast, we followed the UKWIR WRMP19 Methods – population, household property and occupancy forecasting. The approach for determining per-capita consumption (and leakage), has been audited as part of the shadow reporting under the annual performance review.

Response 83

- Non-household demand is presented as a decreasing trend across the planning period and has been forecast by industry sector using regression models. However, the draft plan does not mention engagement with specific larger users or retailers to enhance and validate this forecast. Further engagement would support the forecasting of non-household demand.

We have consulted with retailers regarding the non-household forecasts, including on their water efficiency activities in the non-household retail sector.

3.2.4 Supply forecast

Response 84

The draft plan follows the relevant supply forecasting guidance and the outputs appear reasonable and aligned with historical trends. This includes the approach to supply reductions, water treatment process losses and outage.

The response is acknowledged.
3.2.5  
**Forecast uncertainty**

Response 85

Uncertainty is not a significant driver of the plan and the overall approach is in accordance with guidelines. Wessex Water intends to mitigate the risk of potential deterioration in water quality at a number of sources, through catchment management schemes. This is a positive approach and an example of good practice.

The response is acknowledged.

3.2.6  
**Supply-demand balance**

Response 86

We welcome that Wessex Water has adopted a more detailed method to assess resilience than required given its level of problem scale and complexity, with this approach exploring multiple scenarios. In particular:

- Wessex Water has adopted a ‘resilience tested’ approach to supply-demand balance determination and tested the plan with scenarios beyond the historical record in order to demonstrate resilience to a 1-in-200 year drought event.

- The company has also undertaken stress testing of its plan and scenario analysis to enhance its understanding of future supply risks. This is an example of good practice and included consideration of potential future sustainability reductions, alternative demand forecasts and potential new exports (including an additional 10-15 Ml/d to Southern Water from 2025).

The response is acknowledged.

3.2.7  
**Options**

Response 87

Wessex Water has identified a number of feasible supply and demand-side options despite the company identifying a surplus in the baseline planning forecast. Demand management options are the focus of the preferred plan, with catchment management schemes identified to maintain resilience. We have concerns on the justification of water efficiency savings, the meter installation programme and the clarification of the differences between the feasible leakage options identified. Further specific comments:

Responses 88 to 99 address the specific comments raised.
Response 88

- It is unclear in the draft plan whether screening criteria were applied to the unconstrained option lists to develop the feasible options, as all unconstrained options appear as feasible.

Please see Response 30. Section 9.4 of the plan explains the screening criteria applied to the unconstrained options list to develop the list of feasible options.

Response 89

- The draft plan does not include any third party provision of options. No information is provided on the approach to third party engagement and the company should provide clarity on its approach and consider what it could do in order to promote these options.

The EA WRMP planning guidelines encouraged us to engage with third parties during the development of the plan. We have not included any third-party provision of options in the plan. Our approach to third party engagement has, however, developed as we seek to embrace markets to help deliver future water resilience in the region, through the adoption of an open systems approach to future delivery of core business outcomes, which has been set out in our Business Plan submission to Ofwat in September 2018, and is consistent with our Bid Assessment Framework. Section 12.2 of the plan - Embracing markets for Water Resources - provides some further detail, including how possible market engagement for new housing developments may help to deliver water resilience.

Response 90

- New water trades do not currently feature in the plan, though Wessex Water has discussed export opportunities with neighbouring companies. We expect Wessex Water to continue to actively engage with others to support regional solutions. The company should further engage with Southern Water to understand the potential for an export in the Poole/Hampshire region.

Since the publication of the draft plan we have engaged further with Southern Water (and South West Water/Bournemouth Water) to understand the potential of a transfer to help support regional resilience in the region. As outlined in section 12 of the plan, we will be undertaking more technical work during the Autumn, both internally and as part of the West Country Water Resources Group, to better understand the specific volumes and arrangements in the Poole/Hampshire area.

See also Response 6.
Response 91

- The company has selected a significantly lower level of leakage reduction than other companies; 2% by 2025 rising to 15% by 2045. Further considerations:

As per Response 5, we have revised our level of leakage reduction to meet the 15% leakage reduction target by 2025.

Response 92

- Further justification for this target is required. The company’s leakage per property figure at the start of the planning period of 119 l/prop/d is higher than the industry average and potentially an indicator of scope for further leakage reduction.

See Response 5

Response 93

- Wessex Water should clarify the difference between its feasible leakage options, how the approach to innovation varies in each and whether the ‘spend to save’ criteria limits the opportunity to adopt innovative approaches.

Our revised WRMP (see Sections 5.7 and 9) now incorporates a 15% reduction in leakage by 2025. As described in the plan, this option (ALY) includes a mixture of different strategies, based on other leakage options, including infrastructure renewal, increased active leakage control and improved data analysis. Further information about how this is to be achieved is presented in Section 9, and specifically Section 9.7.3, where we describe the innovative approaches we are applying and to achieve leakage reductions.

Response 94

- The company needs to provide further explanation of the status of the leakage option ALZ (15% reduction by 2045) in the preferred plan. Further information regarding the scope, benefits and costs associated with this option should be provided.

ALZ is no longer one of the preferred options in the plan. Option ALY is now selected in the draft final plan, to deliver a 15% leakage reduction by 2025.
Response 95

- The preferred plan includes an enhanced metering option to install an additional 10,000 meters above baseline activity. The company should provide further explanation of how the 10,000 meters figure was determined and whether options for variable scales of meter installation were considered.

The additional 10,000 meters represents a ~50% uplift on the baseline meters we expect to be installed under optional metering in the 2020-25 period. The figure is based on consideration of what a realistic and achievable uplift would be based on existing optional metering rates achieved through additional promotion of optional metering in general, our money back guarantee, and linking the money back guarantee scheme with our water efficiency Home Check service. This uplift was made considering:

- recent experience of the effectiveness of additional promotion from targeted mail shots;
- that we are currently 63% metered, and so the number of households from which customer are opting is decreasing, which explains a declining forecast of baseline optant metering (Figure 5-24 of the plan);
- that the number of unmeasured households is also decreasing as a result of the change of occupier programme.

Response 96

- The company has forecast a reduction in its average dry year PCC across the planning period. However, in comparison with other companies its relative performance appears to be deteriorating, suggesting that there is scope for greater ambition.

Our current base-year PCC is lower than the national average. We have forecast a decline in demand across the planning period, in part through our increased metering and water efficiency activities. We recognise that this forecast decline in per capita consumption is smaller compared to that forecast by other companies in their draft plans. We have observed in recent years an upward trend in demand in the region (Figure 5.2), and believe our forecast is an accurate projection of future demand under business as usual, given our relative ability to influence consumer demand in our region. As described in Section 10.2.6 and Section 12 of the plan, and also in our business plan, we are ambitious to explore how greater use of markets, through an open systems approach to future delivery of our core business outcomes, can be used for reducing demand in our region. Section 10.2.6 of the plan is a new section, evaluating potential improvements in our surplus under deeper reductions in household water demand.
Response 97

- We welcome that an extension of the 'Home Check' programme to enhance water efficiency is planned, however, limited evidence has been provided to support the levels of water saving stated and the variance in benefits from the previous plan and how savings are incorporated in the baseline consumption trends. It should be clarified how the benefits from water efficiency activities are reflected in the PCC figures for the dry year scenario.

Forecast savings for the Home Check programme are based on the savings outlined in the Ofwat June Return 2011 document and on the actual uptake rates of devices we have seen in the current programme. Savings assumed for the previous plan were taken from the 2012 Environment Agency review of the 'Evidence Base for large scale water efficiency' report written by Waterwise in 2011. The Waterwise report included a range of water company studies where average savings achieved ranged from 20.6 litres per property per day to 64.4 litres per property per day. Despite using different data bases, both approaches assess the savings as an average of 40 litres per property per day. We use the savings outlined in the Ofwat June Return 2011 document to claim savings for the current programme.

We plan to improve our calculation methods in the next planning period by collecting meter readings before, during and after the audit to assess the actual volume of water saved and enable us to refine our future forecasting.

Response 98

- Wessex Water has demonstrated a positive focus on catchment management, including partnership working options that protect water quality and maintain resilience. Examples include collaboration with farmers through agricultural advisors to reduce fertiliser application and use of a market based tool to incentivise changes in farming practice.

The response is acknowledged.

Response 99

- Across all options it is unclear how values for social and environmental benefits are derived to support option assessment. The company should provide further explanation of its option assessment process, referencing where the key benefits such as social, environmental and willingness to pay originate.

A new Section (9.6.1) has been inserted to the plan explaining how values for social and environmental benefits have been derived.
3.2.8  **Decision Making**  

Response 100  

The decision making approach adopted to produce the preferred plan was a conventional economics of balancing supply and demand (EBSD) approach which is aligned with the problem characterisation. The Wessex Water Board has approved the submission of the plan and provided assurance that it is in line with their approach to delivering resilient water services in the long term.

The response is acknowledged.

3.2.9  **National and Regional Considerations**  

Response 101  

We welcome that Wessex Water are participating in the recently formed West Country Water Resources Group which will help shape future water resources management plans. Wessex Water has also referenced the outputs of the Water UK national project as part of the draft plan problem characterisation. Given its available surplus the company should seek further opportunities to contribute to the development of regional solutions.

Please see Response 6
4 Canal And River Trust

Response 102
We welcome the commitment Wessex Water have made regarding the improvement of the flow gauge data currently available from the Bridgwater and Taunton Canal and will continue to work with them to develop robust solutions.

We welcome your support regarding the flow data for the Bridgwater and Taunton Canal and its use in our environmental monitoring programmes, and look forward to continuing our work with you alongside the Environment Agency to progress our shared understanding of the system.

Response 103
It is the Trust’s opinion that Wessex Water have produced a draft plan that is focussed on reducing the amount of water that is taken from the environment and improves the levels of resilience offered to their customers.

The response is noted.

Response 104
The Trust will continue to work with Wessex Water to help develop robust options to ensure accurate flow data is provided from the Bridgwater and Taunton Canal to support their continued environmental monitoring programmes.

We welcome your support regarding the flow data for the Bridgwater and Taunton Canal and its use in our environmental monitoring programmes, and look forward to continuing our work with you alongside the Environment Agency to progress our shared understanding of the system.
5  Natural England

5.1  Summary of Natural England’s comments

Response 105

- Natural England recognises that the Wessex Water dWRMP final planning scenario is focused on new measures to increase water efficiency and to reduce leakage, with no new developments or water abstractions proposed. Whilst these measures are clearly beneficial to the environment, and to be welcomed, we are concerned that the overall supply-demand balance estimate (and the amount of ‘surplus’ that can be traded with other companies) may not adequately take into account future water resource needs to protect the environment in the Wessex service area in the long term (eg. such as those potentially arising from PR19 investigations). We concur with the Environment Agency’s recommendation that further sensitivity analysis is required to address this point.

Please see Response 9

Response 106

- We support the company’s continued commitment to catchment schemes to help manage risks of deteriorating raw water quality, and consider that these offer significant opportunities for biodiversity enhancement in line with Government’s 25 year plan.

We are grateful for Natural England’s support for the company’s continued commitment to catchment management schemes, and agree that these offer opportunities for biodiversity enhancement in line with the Government’s 25 year plan.

Response 107

- We question whether the rate of the company’s proposed reductions on leakage is sufficiently ambitious.

See Response 5.

5.2  Annex 1: Comments

Response 108

Natural England recognises that the Wessex Water dWRMP final planning scenario is focused on new measures to increase water efficiency and to reduce leakage, with no new developments or water abstractions proposed. Whilst these new proposals are clearly beneficial to the environment, and to be welcomed, we are unclear how the overall supply-demand balance estimate has taken into account possible future environmental requirements, such as those potentially arising from investigations in the PR19 WINEP; for example, consideration of revised Common Standards Monitoring Guidelines for flow on the River Avon SAC, together with other SSSI rivers. In addition,

The process for inclusion of WINEP outcomes in the supply-demand balance is described in Section 4.4.2 of the plan, where following EA guidelines, confirmed sustainability reductions are included in our supply-demand balance, and unconfirmed reductions requiring investigations are accounted for in sensitivity analysis, which is described in more detail in Section 10 of the plan.
Response 109

Monitoring Guidelines for flow on the River Avon SAC, together with other SSSI rivers. In addition, the process that the EA is currently going through to bring currently exempt abstractions into the licensing regime, in particular the licensing of water transfers on the Somerset Levels and Moors SPA/Ramsar, may require that additional water is required in the environment to protect N2K/Ramsar sites whilst also meeting the needs of WFD Water Bodies.

We are aware of the process that the EA is going through to bring currently exempt abstraction into the licensing regime. We will continue to work with the EA, Natural England, and the Canal and River Trust, particularly in the context of the River Tone/Parrett catchment and associated Somerset Levels and Moors SPA/Ramsar sites to understand the impact of current licenced, and newly licenced volumes.

Response 110

We also note that the Environment Agency has identified that the volumes of water transferred between companies is not reported consistently between the dWRMPs of Wessex Water, Bristol Water and Veolia and the need to address this. The dWRMP also highlights Wessex Water’s involvement in the West Country Water Resources Group, to explore opportunities to ensure the best use of resources both within our region and out of region by transfer to other companies.

Please see Response 6

Response 111

We are aware that the EA has questioned the appropriateness of the modelling undertaken to estimate the deployable output and have requested that sensitivity analysis is conducted to ensure that the potential needs arising from PR19 investigations are taken into account. We defer to the EA’s technical advice on this, and in light of the issues raised above, we support the need for adequate sensitivity analysis to take account of potential reductions in deployable output in the future alongside the need for adequate water supplies to protect nature conservation resources across the Wessex Water service area.

Please see Response 26

Response 112

Whilst recognising that the preferred options put forward by Wessex Water in their dWRMP final planning scenario are likely to be beneficial or neutral in terms of their effect on SSSIs, the uncertainties raised above in Section 1 also apply to SSSIs.

The relevance of the preferred options on SSSIs is noted. Please see responses above in this section (4.2).

Response 113

The issues raised above in Sections 1 and 2.1 are also relevant to long term resilience in terms of wider biodiversity, and we advise that this issue is considered alongside the EA’s comments about the process for modelling deployable output and the need for sensitivity analysis in terms of reasonably foreseeable future reductions in available water.

Please see Response 26, and Response 9
Response 114

We note and support the company’s ongoing commitment to catchment management to protect raw water sources. In line with this, the associated schemes in the PR19 WINEP offer significant opportunities for the company to help deliver the above objectives around biodiversity enhancement.

The response is noted.

Response 115

We recognise that Per capita consumption (PCC) across Wessex Water customers is below the national average of around 147 litres per day, and support the company’s proposals to reduce current PCC to 128 by 2025 and then by a further 3 litres by 2045, though this appears to fall short of government’s long term targets for water efficiency. Whilst measures to reduce PCC are thoroughly considered in the dWRMP we are interested to know more about the measures being proposed to reduce the usage by commercial customers.

In Section 5.6.2 of the plan, we describe the non-household forecast of water use by commercial customers. In April 2017, when the non-household market opened, the retailer became responsible for providing water efficiency advice. We expect the effect of water efficiency activities undertaken by Wessex water previously to be continued by non-household retailers.

Response 116

The company’s performance on leakage reduction has been relatively flat since 2004 and whilst there is a commitment to reduce current levels of leakage by 15% by 2045, we are aware that the Environment Agency considers that the proposed rate of improvement is not sufficiently ambitious. We note that company has not proposed a faster rate of leakage reduction on the basis that it was unsupported by the customer research undertaken. Natural England considers that leakage reduction may also help to address the problem of environmental phosphate pollution in some catchments, because of the process of phosphate dosing drinking water to address plumbosolvency issues. The contribution from this source to environmental phosphate budgets may be significant in certain locations, especially when compared to the challenging nature of reducing diffuse agricultural and urban phosphate pollution. We are interested to know the extent to which this issue was explored in the company’s customer engagement research on leakage management.

See Response 5.
6 South Somerset District Council

Response 117

I note the proposals to introduce sediment to drive ecological improvements and for trials in AMP6 involving variations in compensation flows, introduction of spate flows, and river restoration measures at Sutton Bingham reservoir. These proposals are encouraged.

The response is noted.

Response 118

Table 4-9 states that the source at Milborne Wick will be decommissioned due to its lack of use. Conversely, Table 4-3 states that there is intention to undertake an investigation and options appraisal for the Milborne Wick source. If the source is to be decommissioned, why is there an intention to undertake further investigations? Generally, further explanation of Table 4-3 would be appreciated, as it is unclear what is proposed, for what purpose, and where.

Milborne Wick source has been decommissioned, and the licence has been revoked. Table 4-3 has been updated accordingly.

Response 119

If the source at Milborne Wick is to be decommissioned and the pumping station will have no future use, I trust that Wessex Water will engage with South Somerset District Council at the earliest possible stage to discuss the best alternative use of the land.

The response is noted.

Response 120

May I also raise a final minor point, the misspelling of Milborne Wick as ‘Milbourne’ on pages 80-81.

The spelling errors have been corrected on both page 80 and 81. Thank you for highlighting these.
7 Somerset Wildlife Trust

Response 121

Thank you for the opportunity to respond to the Wessex Water draft Water Resources Management Plan. Apologies for this briefest of responses, it is not from lack of interest but due to the flurry of consultations at the moment and tight resources.

We fully support and encourage any investment into habitat recovery and improvement in Somerset but would especially focus on the following 8 target areas;

- **More, bigger and better natural habitats**
  - It is not enough to just protect natural habitats they need to be restored and expanded
- **Thriving wildlife everywhere**
  - Wildlife needs to be thriving everywhere, not just nature reserves and connected through habitat networks
- **Abundant pollinators**
  - These need to be expanding year on year to make up for the collapse in numbers in the past six decades
- **Healthy soils**
  - These are essential for insect life and natural fertility enabling food production to continue
- **Clean water**
  - Reductions in sediment, chemicals and nutrients are critical
- **Clean air and climate change mitigation**
  - Increased use of renewable energy to reduce greenhouse gas emissions
- **Flood Risk Management**
  - Especially focusing on natural flood management
- **Healthy people**
  - Improving access to the countryside so more people can benefit from nature

Thank you for the opportunity to feed into this consultation process and we look forward to working further with Wessex Water as a key component of restoring nature and preserving the Natural Capital in our county.

Thank you for response to our plan, and for highlighting specific target areas. Wessex Water is committed to working to improve the natural environment.

Wessex Water was the first water company to produce a Biodiversity Action Plan in 1995. One strand of this is the Partners Programme, where we work with partners over a five-year period to improve the biodiversity within our region. These projects tend to have a water theme and be relevant to our business activities. Outcomes from these projects have included large scale river restoration work, e.g. with Wessex Chalk Streams Project, and enhancement of both protected and unprotected habitats.

Wessex Water has a performance commitment running from 2015 to 2020 to assess 100% of our landholding for biodiversity. This includes all sites, over a specific size threshold, the majority of which are not nature reserves. This assessment will help us understand the condition of wildlife across our area, to understand the importance of our sites in the regional context and to inform how this should be managed to enable wildlife to thrive.
We recognise the huge ecological and economic importance of pollinators nationally and internationally. The performance commitment described above will identify opportunities to manage our sites in a way which will promote pollinators.

Wessex Water was one of the first companies to pioneer catchment management as a way to provide source control to reduce the level of contamination in raw water sources, requiring less energy and chemically intensive treatment plants, at a lower cost to customers.

Our catchment management work is primarily focussed on reducing nitrate and pesticide contamination of raw water sources and offsetting phosphorus from waste water assets. These activities have much wider benefits promoting biodiversity and reducing soil erosion, in a cost effective manner for farmers to implement.

All water companies have worked together for the last ten years to better understand the impacts from a range of chemicals on our sewage treatment assets and ultimately the river environment. The Chemical Investigations Programme started in 2005 and will continue to 2025. The aim is to understand the sources of chemicals and emerging substances within the wastewater system, in order to establish the most appropriate reduction strategies through source control, treatment and/or substitution.

One of our long-term sustainability goals is to be carbon neutral in our operations. While electricity use increased between 1990 and 2010 we have now halted this trend, largely through concerted energy efficiency work. We are also generating more renewable electricity and gas from digested sewage and food waste and have increased solar and hydro electricity generation.

In 2017-18, our net greenhouse gas emissions fell to 122 kilotonnes carbon dioxide equivalent. This was our lowest since 1999-2000 and meant we met our performance commitment for the year. As in previous years it was achieved through a combination of energy efficiency improvements, renewable energy generation and the falling carbon dioxide intensity of UK grid electricity.

Flood risk management is a key element of our drainage duties. We work closely with Lead Local Flood Authorities to better understand the causes of flooding and identify partnership projects to provide alleviation or improved resilience. We are developing Drainage and Wastewater Management Plans to assist in providing information on flooding at a local level, this includes identifying opportunities for Sustainable Drainage Systems (SUDs) and natural flood management.

We work closely with the Catchment Partnerships to identify and support numerous projects to improve the water environment. A number of these projects have focussed on natural flood management, for example at Hold Heath (Dorset) and Bydemill Brook (Bristol Avon).
8 South West Water/ Bournemouth Water

Response 122

South West Water and Wessex Water also share the strategic resource of Wimbleball reservoir and we thank Wessex for the continued close cooperation of how we collectively manage this resource for all our customers.

Thank you for the response. Please see response 124.

Response 123

We do however think the work Wessex has done to date on supporting intercompany trades in the plan is worthy of particular praise. We are pleased to be working with them, Bristol Water and Southern Water through the West Country Water Resources Group, to understand the opportunities for further transfers. We are also mindful of the need for both our organisations fully understand the possible resilience implications of a transfer across our existing supply networks, and Wessex’s support in this is greatly appreciated.

We are grateful for the productive relationship we have developed in supporting intercompany resilience for the benefit of our own customers, and the environment, and look forward to progressing our technical work over the next year following final plan submission to better understand how we can improve supply resilience for the region.

Response 124

Finally, whilst it is not explicit in the Wessex Water draft WRMP, we would like to take this opportunity to thank Wessex Water for the work with ourselves on the plan for the replacement of the Exebridge pumping station. This is used to refill Wimbleball reservoir when winter storage levels are low. Their support on developing the plan for this site is a crucial part of delivering resilience against future droughts in our respective operating areas.

The Exebridge pumping station provides a key resilience benefit for both companies by being able to pump store into Wimbleball during the winter period, particularly when storage levels are low. We will continue working with South West Water to develop and implement the plans for this site to ensure we maintain the ongoing drought resilience benefit this asset provides.
9 Wessex Chalk Stream & Rivers Trust

Response 125

We feel however, that the overall level of ambition in the Draft WRMP 2025-2040 is lower than in the recent past: -- only at a very late stage (following the publication of DEFRA’s 25 Year Environment Plan) the leak reduction target was increased from 3 to 15% (by 2045), whereas the national average target of 15% reduction in leakage should already be met by 2025. It does not bode well that Wessex Water relies on competitors to achieve these key environmental goals.

Wessex Water is committed to reducing demand for water, has halved leakage since 1995, and has a higher level of metering than the national average, despite not being in a region of water stress. Since the publication of the draft plan, we have consulted further with customers and stakeholders, and have committed to reduce leakage by a further 15%, thereby playing our part in meeting the national average target. See also Response 5.

Response 126

The WRMP target for water use reduction (PCC down to 124 l/d by 2045) from 131 l/d at present) is also modest compared to targets from neighbouring water companies. The fact that there is sufficient head room in the Wessex Area should not lead to complacency, especially as water use reduction will also help bring bills down for customers and saved water could be used to help other parts of the country where the water resource situation is less positive.

Please see Response 96.

Response 127

We urge that any economic gain from trading so-called ‘surplus’ water with neighbouring water companies in the future is re-invested in water resources to enhance the resilience of our rivers and the fragile habitats and chalk ecosystem that rely on them. The pressures on our rivers are relentless, and will only further increase in the future. ‘Just’ achieving Good Ecological Status – which is only the case for 30% of the water bodies in the catchment – is not enough to safeguard our precious chalk streams on the long run!

As presented in our plan, we are progressing with work to support a transfer to Southern Water to help play our part in protecting the chalk streams of the Test and Itchen, and are committed to help in reducing our impact on these fragile habitats, as was achieved through the construction of our integrated grid to reduce impact of abstraction on the upper Hampshire Avon. We will ensure we make appropriate investments in our water supply system to ensure we can support such a transfer without any detrimental impacts on the River Stour and Hampshire Avon, on look forward to working with you to help achieve this.

Response 128

WCSRT is well known for it’s engagement and education work in the area, as well as delivery of habitat restoration projects and works to improve surface (and ground) water quality by reducing nutrient and sediment inputs. We would welcome discussions with Wessex Water and partner organisations to investigate opportunities for our organisations to work together to enhance water use efficiency, and further reduce the negative impact of abstraction and water quality issues on the chalk streams in the area.
We acknowledge the engagement and educational work undertaken by the WCSRT is the area, and welcome discussions on how we could work together to enhance water use efficiency in the region. This could be taken forwards through the catchment panel.
10 Bristol Water

Response 129

As detailed in both of our plans, Bristol Water and Wessex Water are currently in discussion regarding the future of the bulk transfer from Bristol Water to Wessex Water at Bath. We will continue to hold discussions with Wessex Water regarding the volume and timing of any changes and until these changes are agreed we consider that it will be appropriate for the transfer to be accounted by Bristol Water in its WRMP (at least during AMP7) as the existing contracted volume as other figures would be based on the outcome of changes to this commercial agreement.

We have agreed with Bristol Water on the contracted volumes to be reported in our respective Water Resources Management Plans. See Response 6.

Response 130

Bristol Water and Wessex Water have worked together within the Water Resources South West (WRSW) group which was formed in June 2017 to support a co-ordinated approach to water resources planning in the south west of England and neighbouring water company areas. We look forward to working together over the next few years towards the WRMP24 submissions. Bristol Water is also setting up the West of England resource efficiency partnership to provide further focus on the promotion of water efficiency. We would be happy to share any relevant findings with Wessex Water in supporting the industry’s continuing activities to reduce water consumption.

We look forward to progressing our regional water resources work as part of the West Country Water Resources group with Bristol Water. We were also pleased to attend the kick-off meeting of the West of England resource efficiency partnership to provide further focus on the promotion of water efficiency, and hope to engage with the partnership further as a means to explore novel approaches to achieving the industry's targets for reducing water consumption.
11 National Farmers’ Union

Response 131

The farming industry is currently working on a variety of partnership initiatives across Wessex such as with the AHDB, catchment partnerships, government schemes, voluntary initiatives and partnerships with Wessex Water. However, we believe that there are further opportunities to work with the water industry in order to safeguard supplies and improve water quality.

Wessex Water was one of the first companies to pioneer catchment management as a way to provide source control to reduce the level of contamination in raw water sources, requiring less energy and chemically intensive treatment plants, at a lower cost to customers.

Our catchment management work is primarily focussed on reducing nitrate and pesticide contamination of raw water sources and offsetting phosphorus from waste water assets. These activities have much wider benefits promoting biodiversity and reducing soil erosion, in a cost-effective manner for farmers to implement.

In 2017, we were a founding member of the West Country Water Resources Group that seeks to undertake regional water resource planning to identify optimum solutions for the region. Our work in the next period as part of the West Country Water Resources Group will include widening the group membership to non-water company sectors.

Response 132

Further research may be needed to better understand how to reduce the uncertainty in water resources planning for the benefit of farmers. Furthermore the NFU itself is promoting a number of steps that we believe are needed to build water resilience in agriculture. These include improved water security, greater flexibility in the abstraction licensing regime and collaboration in the food and farming sector. But we are also aware that farming’s relationship with the water sector is critical to building our water resilience.

We agree that going forwards we need to consider how we build wider system resilience in water supply. We welcome Defra’s call for greater use of markets and competition in the sector to deliver resilient water supplies, and in addition to the work we will be undertaking through the West Country Water Resources Group, we are adopting an open systems approach to future delivery of our core business outcomes and this has been set out in our Business Plan submission to Ofwat in September 2018.
Response 133

While water companies have an absolute duty to supply domestic customers with water, we recognise that this absolute duty does not extend to commercial customers. However we would like to see Wessex Water outline the steps that they are taking to safeguard levels of service in water supply to rural businesses. Water supply will be critical for securing growth in the rural economy and we would like to see a focus on rural resilience in Wessex Water long term plans, particularly where they are working with the farming community on wider objectives.

This is a particularly important point for livestock businesses who can be at the end of long supply pipes and where low water pressure has sometimes been an issue. When water pipe connections are broken, livestock farms will require quick action from water companies – livestock die quickly of thirst. We were surprised that this had not been considered as an issue at a recent consultation event and fed back accordingly.

In the Wessex area we have a thriving horticulture sector that is quickly affected by reduced water availability in summer months. Soft fruit crops in particular would die in a matter of hours without access to water. And therefore any proposals to alter river flow or that would impact upon summer abstractors would have a direct impact on these businesses.

We recognise the points made regarding livestock and horticulture, which have also come to the fore during the dry and hot period of the summer 2018. As stated above, we are keen to work more with the NFU and farmers in the region to improve cross-section resilience in the water sector, including on the points made here regarding the potential impacts of sudden losses of supplies.

Response 134

The recent opening of the retail market for business customers has made the situation more complex for agricultural and rural businesses. With Wessex Water now operating as a wholesaler and several water retailers operating in the market there is a risk that farming customers will face additional barrier when trying to communicate about supply and water resource issues. The recent supply outages during the severe weather of Spring 2018 were concerning for our industry as it demonstrated that the retailer and the wholesaler were not joined up and that the retailers did not appreciate the importance of continued supply for animal welfare reasons and did not appear to have contingencies in place. We are very concerned about this situation and are working hard to build new relationships with the new retailers.

We strongly believe that Wessex Water monitor this aspect, particularly where the farmers they are seeking to influence via catchment management initiatives are now (often without any choice) customers of a third party organisation.

Customers can contact Wessex Water, the wholesaler, directly in the case of no supply or water quality issues. As stated in the responses above, we hope to work more on cross-sector issues facing water security and resilience in the region, which and believe that this work will help us ensure communication on resource issues.

Response 135

We continue to believe that there could be significant opportunities to develop water storage features by working with farmers. We would like to see Wessex Water outline any steps that they are taking to work with farmers to identify opportunities for the construction of multi-use storage reservoirs or on rainwater harvesting projects. There may be opportunities to work together on these projects, particularly in locations where summer supplies and availability may be an issue.
As described in Section 12.2 of our draft final plan, we are adopting an open systems approach to future delivery of our core business outcomes and this has been set out in our Business Plan submission to Ofwat in September 2018. Our Open System Coordinator (OSC) concept proposes that a distinct process within Wessex Water will be tasked with pro-actively identifying opportunities for third party delivery of services, and ensuring that the most efficient / effective services are procured.

An example of where this might work has been presented in our plan in the context of rainwater harvesting, and potential for local greywater and rainwater re-use at local levels. There may be further opportunities to work with farmers on water storage to improve drought resilience in the region.

We have published a Bid Assessment Framework as part of our business plan that is consistent with our wider open systems strategy. The purpose of the framework is to support the bidding market for water resources, demand management and leakage services, to help third parties to submit bids to water companies to provide solutions to help meet future water resource needs.

Response 136

> In our view it should be of the highest priority for Wessex Water to meet its responsibilities under Water Framework Directive. We would like to see continued activity on protecting the water environment. Our members are very aware of the impacts of the water industries activities on the water environment. Farmers are continually asked to improve and change practices in order to improve their environmental performance and reduce water impacts. Wessex Water have recently targeted investment at significant sewerage treatment works and infrastructure and will be delivering reductions in nutrient and sediments in watercourses. However, smaller rural systems must not be forgotten and we must all continue to work together at the catchment level to deliver continual improvements together. It is also important that these joint improvements are communicated to local communities.

This issue is covered by our Business Plan that will be submitted to Ofwat in September 2018. No changes made to revised WRMP.

Response 137

> The opening up of water supply from small-scale water suppliers under the Water Act 2014 creates a real opportunity for new markets and sustainable supply chains for both Wessex Water and farmers and landowners. We would like to explore these opportunities with a view to a more dynamic and profitable network in the medium to long term.

See Response 135
Response 138

Disadvantages the farmer for not paying the true cost of the activity. Wessex Water should look to work with a wider grouping to create a more “systems operator” approach shared by a group of key partners. This goes beyond Catchment Partnerships but builds on parts of that model. The NFU would be keen to explore this with Wessex Water and other parties.

See Response 135
12  Additional changes to the draft Plan

This section briefly describes and references sections of the plan that have been updated since draft publication in November 2017. All sections and text that has been updated is highlighted in the changes highlighted version of the plan.

12.1 Re-basing the plan forecast

The plan forecast has been re-based so that the base year for the plan is now 2017/18, to reflect the most recent outturn data for the year. These changes appear throughout the technical document, and in the supporting planning tables, but most materially affect the plan demand forecast, which is in Section 5. The principle driver for re-basing the plan was the changes to the leakage forecast owing to changes resulting from the leakage consistency methodology. Re-basing to 2017/18 means we are also forecasting from the most up-to-date data available.

12.2 ‘Beast from the East’ freeze-thaw event

Since publication of the draft plan, a significant freeze-thaw event occurred in March 2018, following the so-called Beast From The East weather event. Section 8.10 Freeze-thaw resilience has been updated in the plan to reflect the most recent experience of freeze-thaw conditions in the region and reflects upon the reasons for our resilient response to the event.

12.3 Thames Water Transfer

A transfer from Wessex Water to Thames water identified for 2071 is no longer part of Thames Water’s preferred plan. Our plan has been updated accordingly.

12.4 PCC reduction sensitivity analysis

We have included an additional sensitivity analysis scenario in Section 10.2.6 that considered the findings of Artesia’s recent report for Ofwat on the long-term potential for deep reductions in household water use.
13  Annex A Deployable Output Modelling

13.1  Justification for Deployable Output calculation method

The EA have stated that the method used to derive Deployable Output does not appear to follow the guidance set out in Section 8 of ‘The Handbook of Source Yield Methodologies’ WR27 (UKWIR, 2014). Section 8 of The Handbook of Source Yield Methodologies, as referred to in the EA response to the draft plan, is entitled “Source constraints”. The section states that: “Constraints on a water resource system are the limits that restrict the amount of water that is available for supply. Understanding and correctly applying these limits is an important part of a source yield or DO assessment”. The following constraints are then considered:

1. Licence constraints - abstraction licences constrain the volume of abstracted water, for the following reasons:
   o Volumetric constraints – annual licence and daily licence volumes limited.
   o Flow of level constraints – hands off flows.
   o Statutory releases – compensation releases from reservoirs
2. Operating rules – how sources are operated in the system.
3. Infrastructure constraints – infrastructure as a combination of pipes, pumping stations, reservoirs and treatment works
   o Physical limits – pipe size of treatment works capacity (e.g. design capacity).
   o Hydraulic constraints – limit water flow in certain parts of the system.
4. Water quality constraints - constrain source yields – e.g. high nitrates, turbidity, where some can be included in outage calculation.

In section 8, of the handbook of source yield methodologies, it is stated that: “The section does not offer details of how these should be included as this is determined by the specific characteristics of the constraints and the water resources modelling approach and software used by the water company.” As a result, the guidance is not prescriptive as to a specific method applied for Deployable Output assessment.

As stated in the methodology in the draft WRMP, all of our constraints associated with abstraction licences, treatment works capacity, and environmental constraints (in particular for hydrologically constrained sources), are accounted for in both the conjunctive use system modelling, and also in the post-Miser modelling uplifts. In addition, water quality constraints are accounted for either in outage analysis, or at sources where there are known and recurrent seasonal issues. The main issue raised by the Environment Agency seems to be based on whether the post-Miser modelling uplifts to each source can be truly put into supply to meet demand, bearing in mind network constraints (e.g. “the method appears to assume a 1:1 supply benefit).

As stated in the plan, the modelled demand used in the conjunctive use model runs, prior to source yield uplift, was a dry year demand profile using an annual average distribution input of 346Ml/d and a critical period (peak week) of 415Ml/d - which was set based on the highest demand forecast in the demand forecasting model through the planning period. This
was then used to uplift demand profiles regionally in each demand node, to respect sub-regional spatial and seasonal variations in demand. Therefore, the model runs have demonstrated that the system model, and network constraints, can meet the demands in the plan.

The reason the approach taken for applying post-Miser uplifts to source output is deemed appropriate is a result of the integrated supply grid, which is now fully operational as of 2018 (Figure 1). The grid consists of over 200km of new pipes, 24 major new or refurbished pumping stations, and 12 new storage tanks ranging in capacity from two to eight million litres. The very basis on which the grid is designed is to move water from areas and sources with surplus to help meet demand in areas of deficit, whilst minimising abstraction impact on the environment. Whilst the new grid connections consist primarily of a new 74km bi-directional trunk main, a significant number of the connections were constructed to eliminate stand-alone sources. These constructions have reduced the number of properties in the supply region supplied by a single source down by ~100,000. The new connections not only provide additional outage resilience, but also provide flexibility in supply distribution around the network.

Figure 1. Wessex Water integrated supply grid

The ability of the integrated grid to move supplies around the system to meet demand has been demonstrated in earnest during 2018, in response to two weather events. In response to the beast from the east, which led to a peak daily demand of 431Ml/d on March 4th 2018, the integrated grid allowed us to move water to areas that were most affected by adverse
weather conditions. Despite the red weather warning in the region, and more than 200,000 customers without water for more than four hours in other parts of the UK\(^3\), we managed the event without any material disruption to our services and with no customer experiencing any supply interruption that lasted longer than three hours. We have also experienced peak summer demands during 2018, where we experienced peak seven day demands that were in excess of 400Ml/d\(^4\).

The EA have also stated that in their response to the plan that: “the model is only run for the selected critical event (1975-1976) at a fixed demand profile. If the model was run for the whole historical period at stepped demands then the conjunctive deployable output, based on level of service failures, or other failures, could be lower than stated in the plan”.

As explained in section 10.1 of the draft plan, and also presented in Table 10 of the planning tables, we did not only calculate a supply demand balance for the critical (design) event of 1975/76, but consistent with a resilience tested plan, also calculated the supply-demand balance for the worst drought events within the historical record (1933/34 and 1921), alongside severe and extreme versions of these events, consistent with the approach taken in the Water UK Water Resources Long Term Planning Framework Project. It was on the basis of the performance of the system under this range of events that we assessed the performance of the supply system and the likelihood of water use restrictions. We did not enter any deficits under any of the most severe events in the past 100 years, and it is on this basis that the likelihood of restrictions was set as presented in the plan.

### 13.2 EA suggested deployable output approach

The EA have suggested an approach to assessing deployable output where demands are progressively increased until a point of failure. Upon reaching this point of failure, run the model with adjusted deployable output as an input, to provide evidence that it is feasible within the constraints of the conjunctive use system. Whilst this method may be appropriate in itself for assessment of deployable output from a conjunctive use model, it is incompatible when then feeding into an aggregated supply-demand balance calculation, as applied in our draft plan, and in the WRMP planning tables.

To illustrate the problem, Equation 1 shows the Supply-Demand Balance (SDB) calculation, as specified in the water resources planning tables:

\[
SDB = TWAFU - DI - headroom
\]

\(^3\) Ofwat (2018) Out In The Cold: Water companies’ response to the ‘Best from the East’.

\(^4\) At the time of writing we are still experiencing the summer dry period of 2018; we will include a new analysis of peak demands reflecting this summer for WRMP24. We will undertake a detailed analysis of our consumption monitor data obtained since 2014, and capturing the summer 2018 period, to better understand water use during the peak period for measured and unmeasured customers, and compare this to our existing peak demand assumptions.
where $TWAFU = \text{Total Water Available For Use}$. Expanding on $TWAFU$, and for simplicity assuming no imports or exports, as we are considering a deployable output issue, we derive the following equation:

$$SDB = DO - DI + \text{Headroom} + \text{CCDO} + \text{Outage} + \text{TWOU}$$  \hspace{1cm} (2)

where DO = Deployable Output, Headroom = Target headroom, CCDO = climate change reductions on DO and TWOU = Treatment works operational use.

The problem with substituting a conjunctive use model derived DO, based on a demand uplift to failure method, into the supply-demand balance equation, is that all of the other factors in the equation (outage, headroom, TWOU and CCDO) are accounted for in the mass balance after the network constraint has already been used to constrain the DO as part of the conjunctive use model. They are effectively then treated as additional demand. In reality, when water moves through the system, from the source, via the treatment works, into and through the network, and then into the demand centre, the outage, TWOU, CCDO and the component of headroom associated with supply-side factors, constrains DO before the network constraint is an issue. Failing to constrain DO in the right order, means the system is expected to be able to meet an unrealistically high demand that is equal to demand + headroom + TWOU + Outage + CCDO, when the water allowance associated with these latter components would never be expected to actually flow through the network. It should therefore not be constrained by network constraints. It is therefore inappropriate to apply the demand uplift to failure method for modelling a conjunctive use system when deriving a DO that is then substituted into an aggregated supply-demand balance calculation.

In June 2018, Atkins produced a summary report for the Environment Agency, entitled “Preparing for WRMP24”, that provides a collation and review of the opinions and views of practitioners, regulators, and stakeholders regarding the current WRMP process and sets out potential changes to be considered for WRMP24 (and beyond). A review of the supply-demand balance concept was a key identified need. Whilst there was no consensus on whether the basis of planning should change, there was consensus on the need for refinement and additional research/guidance on adaptive planning, and for developing a new method for calculating outage and uncertainty.

The points raised above regarding the problems with using a conjunctive use deployable output based on uplift to failure method to then feed into the aggregated supply-demand balance are fundamentally about how risk, uncertainty and outage is currently handled within the supply-demand balance concept, and how new methods are required to overcome these problems. We therefore fully support development of new methods for calculating outage and uncertainty (potentially as part of UKWIR programme by the end of 2018), and a review of the basis for planning.

\[5\] Although the issues highlighted can also apply to headroom and outage associated with import/export issues.
13.3 **Ongoing work and planning approach development to meet regional challenges**

As per the Environment Agency WRMP planning guidelines, the problem characterisation step of the UKWIR decision making process guidance should be used to identify the scale and complexity of the planning problem, allowing the development of a proportional response, in terms of the effort and cost devoted to adopting the selected decision-making approach. Taking a proportionate approach is also the over-riding concept of the UKWIR risk-based planning methods regarding how uncertainty should be dealt with in the plan, and also how components methods for the supply-demand balance should be developed\(^6\).

Given the problem characterisation identified a low level of concern (Section 3.2.3 of draft WRMP), we adopted proportional methods to this in our planning problem. The exception to this was the adoption of our risk composition (Section 3.2.4). Our long-term vision for developing our water resources planning is of incremental adoption of more advanced and robust methods, to help avoid step-changes in required methodology, and to help ensure a firm evidence base to underpin subsequent planning decisions. Adopting risk composition 2 therefore represented a proportional step forwards in our planning process in the draft plan.

During and since the development of the draft plan and the determination of our planning methods however, there has been growing expectation on water trading with neighbouring companies to increase regional and national scale drought resilience\(^7\), which has now been reflected in comments received on the draft plan. For example, the EA have stated that there is a lack of evidence that new transfers of water are likely, especially with companies such as Southern Water who have a significant need for more water, and that the company (Wessex Water) need to show more ambition within its plan that it will share resources.

As we have stated in the plan, we are keen to work with our neighbouring companies and play our part at the regional and national scale to help improve national resilience. The expectation for us to now do this, however, is perhaps greater than was expected at the start of the planning process, when we undertook our problem characterisation assessment to choose modelling and component methods that were proportional to the complexity of our planning problem. Based on the planning guidance, a company in surplus is not expected to adopt as complex methods as a company who is not in surplus. However, if the current expectation, consistent with the comments received on the plan, is for two neighbouring companies to trade, then both companies will move closer to the position where their respective supplies will equal their demands. It is counter-intuitive that the company approaching from a position of surplus should adopt simpler methods\(^8\) than the company approaching from a position of deficit, simply because they are approaching a closer supply-demand balance from a positive position, given they will be sharing water, reducing their

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\(^6\) The component methods being Supply, Demand, Outage and Options. For example, WRMP19 methods for population, household property and occupancy forecasting (2015/16) describes proportional approaches to population and property forecasting based on the problem characterisation.

\(^7\) The National Infrastructure Commission report: Preparing for a drier future: England’s water infrastructure needs, recommends that Ofwat should launch a competitive process to deliver additional supplies through a national water network.

\(^8\) To reiterate, this is not about whether one company or the other has applied a decision-making tool or not; it is about whether they have adopted similarly robust component methods for their supply demand balance, and have taken an appropriate and consistent approach to handling uncertainties.
surplus, and in doing so placing greater risk on the levels of service provided to their customers.

Any trading option will come with significant expense, and therefore needs to be underpinned by a robust foundation of analysis, and ideally joint behavioural modelling to understand explicitly under a range of scenarios, accounting for a range of factors and uncertainties, the viability and operating arrangements of possible transfers to ensure mutual resilience. Our intention is to make iterative changes as we build towards WRMP24 through the development of our panning methods, both as a company, but also as part of the West Country Water Resources Group. However, the more immediate imposition of reductions in Southern Water’s abstraction licences and supplies, relative to the scale of the 5-year WRMP planning process, means the issue for Southern Water is more pressing. To robustly support a transfer, we are keen to make a step-change in methodology to provide a sound evidence base for the transfer.

Also of importance to our ability to establish a new transfer with Southern Water, are the WINEP driven potential sustainability reductions, linked to investigations for the 2020-25 period, which potentially put our surplus at risk in the future. We have followed the guidance from the Environment Agency to handle these in sensitivity testing, and not include them in the final supply-demand balance, but that does not mean at the same time we can declare that this surplus is available to be traded. It would be prudent planning to await the outcome of these investigations, and incorporate this understanding, as it becomes available, into our trading decision making.

Furthermore, we have also identified potential other sources of water, beyond our surplus (i.e. effluent reuse), that could be used to support a transfer to Southern Water. This requires us to adopt some decision-making methods to understand the viability of these options, both in terms of how they could work for our supply area, and also as part of a regional solution.

13.3.1 Wessex Water system modelling

We propose stepping up our methods to support more complex planning approaches that are better able to deal with uncertainties. We will progress work on this in the Autumn of 2018, to feed into our ongoing work as part of the West Country Water Resources Group, and related to this, inform the transfer of potential supplies to Southern Water.

The key area of work we will progress is to expand our conjunctive use system modelling work we already currently undertake in Miser, and investigate methods for better incorporating uncertainties in supply and outage “at source” to overcome problems of lumping these uncertainties onto demand. This work will allow us to:

- Explore alternative metrics of system performance regarding system resilience. Moving towards a system-simulation approach will allow us to generate multiple metrics of system performance, for example, to calculate days of failure to feed into the work required for the Drought Vulnerability Framework.
- Better explore system performance under a range of potential future scenarios.

9 and incorporate outcomes from industry research on this issue into our planning.
• Explore better how the integrated grid (Figure 1), which sits at the centre of the South West region, can be used to support regional planning solutions, by using the model to explore potential imports and exports volumes\textsuperscript{10} into and from our existing network.

• Incorporate better spatial uncertainties in future population and property growth in the region.

• Provides the technical basis to move to system simulation based planning methods for WRMP24 (e.g. robust decision making, Infogap analysis), as required by the outcomes of our system modelling, and the needs to identify regional solutions.

\textsuperscript{10} A range of potential import export volumes can be assumed at our existing boundary transfer points (e.g. Bristol and Bournemouth) to simulate impact of potential schemes.