

Securing resilient water resources for South East England – our response to feedback on our resilience framework



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Water Resources South East



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Section 1: Introduction

Water resources are coming under increasing pressure as we strive to meet the needs of a growing population, adapt to climate change, reduce abstractions to protect and enhance our environment, and increase our resilience to droughts.

Water Resources South East (WRSE) is developing a multi-sector, resilience plan for the South East of England to ensure our water supply is sustainable and resilient in the future. We are taking a long-term view, looking ahead to 2100, and are considering the water needs for public water supply, the environment and that required by all other major users in the region – this is primarily agriculture, electricity generators, industry (paper mills) and golf courses.

The water sector has developed water resources plans for several decades, focusing on securing public water services and managing the risk of droughts. However, the future is going to be different and more uncertain and we believe we need to take a wider perspective, planning for other events which could impact the resilience of water supply, such as floods which could affect water supply as well as other systems which we rely on to produce water.

To make sure our plan is resilient to future shocks and stresses, both the ones we can forecast and those we can't, we're planning to develop and test our plan using a new resilience framework.

This approach will allow us to measure resilience to a wide range of events by assessing reliability, adaptability and evolvability. It will assess the resilience of the options identified and the resilience benefits the plan could deliver across the main water systems – other major users, the environment and the wider south east, in terms of the economy and society.

We published our draft resilience framework in June 2020 and asked for your thoughts. Thank you to everyone who read the document and provided feedback.

This report summarises the engagement we undertook to share and explain the resilience framework (Section 2), the feedback we received and our consideration of the main points (Section 3) and details the next steps (Section 4).

Section 2: Engagement on our resilience framework

On 5 June 2020 we published our resilience framework on our engagement website (<https://wrse.uk.engagementhq.com/resilience/>) and asked for feedback to help us develop the approach.

We prepared a portfolio of information to help to explain the framework, ranging from a short film to introduce the concept to a detailed technical report. Our engagement activities comprised:

- publication of a blog and film with Trevor Bishop, Organisational Director at WRSE, which introduced the framework.
- publication of a summary report, a presentation slide deck and a technical report to allow stakeholders to dip into as much, or as little, detail as they wanted to.
- an introductory presentation at the Water Resources Forum hosted by Thames Water and Affinity Water on 15 June 2020.
- promotion of the framework, and consultation on it, by member water companies through their individual social media channels and stakeholder networks.
- a webinar on 18 June 2020 to present the framework in more detail and provide the opportunity for wider discussion. Over 45 individuals joined the webinar and a recording was published on our website for others to view at their convenience.
- an online survey to send feedback, alternatively feedback could be sent via email.
- discussions with regulators and other regional planning groups.

Figure 1: Illustration of some of the engagement activities to share the resilience framework



We received 16 responses, 12 from organisations and 4 from individuals. The organisations who responded are listed in Table 1.

Table 1: Organisations who provided feedback on the resilience framework

Blueprint for Water
Cotswold Canal Trust (CCT)
CPRE Oxfordshire
Group Against Reservoir Development (GARD)
Kent County Council (KCC)
Natural England (NE)
Ofwat
Regional Rivers Trust (RRT) on behalf of the South East Rivers Trust, Action for the River Kennet, Wessex Rivers Trust, Thames21 and Ouse & Adur Rivers Trust
RWE Generation UK plc (RWE)
SES Water CCG – Chair
Sussex Wildlife Trust (SWT)
Upper and Lower Medway IDB (Medway IDB)

Section 3: Summary of feedback and our consideration

In this section we present a summary of the feedback we received on the resilience framework and our consideration and response to the points raised. We asked five questions on the framework and have presented the feedback on a question by question basis, summarising the main issues followed by our consideration and response.

Overall the feedback on the framework was positive, with the majority of respondents supporting the development of the regional framework using systems thinking to inform long-term planning and achieve greater resilience in the south east region.

The organisations and individuals who responded provided constructive feedback which we'll consider in detail and take into account in the refinement of the framework and its practical application.

Question 1: Are the four systems we've suggested the right core systems for a regional multi-sector resilience plan? If not, which systems should we consider?

The majority of respondents supported the system perspective and the four-system model.

Ofwat noted it would be helpful to clearly define the boundaries of the systems and the framework as a whole, as well as providing clear definitions of the systems to also outline how they have been developed as well as their interactions and interdependencies with each other. KCC also raised the importance of considering interdependencies.

RWE flagged the need to recognise the differences in the characteristics of the four systems and suggested the South East system might be better represented as an over-arching system to reflect how it includes the customers, stakeholders and consumers of the services provided by the other three systems.

CCT stressed the need for a balanced approach, not disproportionately focusing on one aspect over another, while GARD stated that, in their view, priority of reliable public water supplies should have paramount importance for water resource resilience plans.

The importance of the resilience of the environment was noted in several responses:

- Blueprint for Water welcomed the recognition of the natural environment as a core system which underpins business resilience.
- Blueprint for Water suggested that, in considering the resilience of the environment, there is a need to account for all uses of water, ensuring sufficient supplies to maintain watercourses, wetlands and protected sites, and not just the communities, industry, agriculture and power generation that require a water supply.
- NE argued that the environment is the limiting factor in the provision of water resources, especially when moving towards a less predictable future climate, and that it is the

foundation that underpins the other three systems. This was supported by Sussex Wildlife Trust who said the environment is integral and should “envelope” the public and private supply systems.

- NE proposed evolving the ‘environment system’ using an ecosystem services approach to assess how the environment can be made more resilient to underpin greater resilience in the other three systems.
- CPRE highlighted the long-term risks to resilience, such as the gradual degradation of the health of the water system due to, for example, the continued discharge of microplastics, pharmaceuticals and agricultural chemicals. As these may well impact on the resilience of the rivers and water supply, CPRE said the framework also needs to target the improvement of the health of the water ecology in ‘normal’ operation and the long-term impacts of the management of water resources.

Respondents also highlighted gaps in the framework:

- KCC and the RRT highlighted the omission of wastewater management.
- RWE raised the need to consider interdependencies with other regions and beyond and that these may be different for different sectors.
- CPRE proposed that protection of the water system should include all the water system – flood plains, wetlands, estuary etc and detail where users of the water system fit in – bathing, boating, nature appreciation etc.

RWE stated the importance of flexibility, noting that the values placed by the wider South East system on elements of the other three systems may well change over time, as circumstances, perceptions and priorities evolve. It also highlighted changes in the regulatory status quo which may be required to stimulate action.

GARD stated that the planning ‘buffers’ already included in the development of WRMPs are substantial and asked that WRSE investigates the probability of whether supply cuts are actually needed, considering all the “hidden” safety factors that are already included in the WRMP supply/demand balances.

WRSE’s consideration and response:

The assessment of systems and their resilience is an important shift in the way we plan. We welcome the support for the approach and the clearly articulated challenges which we will consider as we refine the framework.

This is a new approach for the water sector and there is more work to do to develop the methodology so we will continue to work with our advisory group, other stakeholders and regulators to develop and improve how we incorporate a system-based ‘resilience shift’ for the regional multi-sector resilience plan. Based on the feedback we will:

- define the systems more clearly, including showing how they have been developed and their boundaries.

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- assess the relationships between the systems, their interdependences and interactions and any relative priorities across and between the different systems – including looking beyond the boundaries of the South East region.
 - work to ensure the resilience plan is aligned with, but does not duplicate, other formal planning regimes such as flood risk, River Basin Management Plans etc. We also note the request to ensure wastewater and drainage/flood risk are incorporated more clearly and will engage with partners on this.
 - consider the comments on the role and nature of the environment. The framework does already recognise the underpinning role of the environment, but we note the comments and advice in the responses and will consider how to improve the representation of the environment. We'll include a summary reference to those aspects of the environment we've included under the separate environmental framework to provide full visibility of the scope of our assessment. We'll ensure a clear link between environmental resilience and the work on defining environmental ambition by working with our environmental stakeholder group.

Planning the long-term sustainable use of water for multiple sectors is complex and likely to become more complex with future uncertainties and competition for natural resources. We therefore recognise that the framework, particularly how it works for systems, is also complex and can be difficult to follow.

We note the comments about clarity and transparency and will endeavour to clearly explain the framework, its development and how it will be applied, to ensure it is easier to understand for non-technical stakeholders.

We cannot, however, get around the complexity of the systems we operate within, and how we represent and assess them, without oversimplifying the issues and potentially compromising the rigour of the assessment.

We intend to develop a robust assurance process to review the detailed technical work, with input from recognised experts, and we hope with the input of regulators. This way all customers and stakeholders can have confidence in the robustness of the approach and the outputs which will inform the regional plan.

Question 2: Do the three core characteristics of our framework – Reliability, Adaptability and Evolvability – cover the key elements of resilience? If not, what other characteristics should we consider?

Overall respondents agreed with the core characteristics of the resilience framework, while highlighting a number of specific areas:

- Ofwat advised that the framework should link to those developed for national resilience assessments. Another respondent referenced the UKWIR 2017 report, although they noted the WRSE assessment has a broader scope to encompass non-public water supplies.
- Ofwat also observed the attributes of recoverability, response and, to a lesser extent, the concept of redundancy seemed to be omitted and suggested that evolvability is relatively

similar to adaptability. CCT also mentioned redundancy and suggested water resources planning seems to adopt a de-minimus approach which doesn't marry with the ambition of resilience.

- SWT observed that the differences between adaptability and evolvability were quite subtle.
- Other respondents noted the importance of flexibility and supported the need for a system which could adapt and evolve – with particular reference to customer and stakeholder views.
- KCC noted that it is virtually impossible to identify every risk to any complex system and therefore the ability to recover quickly after failure is important in defining resilience.
- Medway IDB suggested adding sustainability.
- RWE said the resilience of non-public water supplies needed to be more fully reflected alongside public water supplies, noting that this would help take advantage of the properties of non-public water supply sectors, for example, the power sector's existing and evolving response to market demands and positions.
- Ofwat suggested it would be helpful to map where innovation sits within the framework's characteristics. Innovation was also raised by RWE in respect of dynamic water allocation and markets which could potentially contribute to resilience across multiple sectors.
- The RRT raised learning and participation and the need to take account of different types and sources of knowledge such as local data, participatory mapping and modelling and understanding of historic baselines.
- GARD, while supportive of the three core characteristics, criticised the use of an example of a reservoir used in the report to illustrate the reliability aspect and stated that this implied a bias towards a reservoir.

There were several comments around the application of the framework. NE stated that it is unclear how these characteristics will be assessed and suggested that it would be helpful to consider extrapolating these core characteristics into a road map, listing sources of empirical data that will be used to populate characteristics and formalising how they will act to drive resilience work forward in practice.

In a similar vein, the RRT noted that it will be important to understand how the performance of the different systems are evaluated against these characteristics, taking into account their inherent differences and not limiting the assessment to past experiences and traditional options.

Blueprint for Water emphasised that the environment is an essential cog in these three characteristics, particularly regarding adaptability and evolvability. It stated that environmentally-focussed delivery, such as green infrastructure, is more likely to stand the test of time. For example, treatment wetlands can enable whole networks to function better, improving quality and also potentially resource management.

WRSE's consideration and response:

Noting the comments received we intend to retain the three key characteristics of resilience, adapted from Boltz and Brown, as the basis of our framework.

We will, however, develop these further with improved descriptions, provide worked examples and illustrate the links across to government and regulatory best practice.

We'll work with our advisory group to ensure recoverability and the concept of redundancy are clear. In addition, we'll work with stakeholders to understand how we can incorporate innovation within the process to ensure it remains forward looking.

The suggestion of a 'road map' to show how the data and analysis feeds into the process and through to resilience outcomes is a helpful suggestion and we'll develop this to help explain the practical implementation of the framework.

Q3. Do you think looking at testing the resilience of options and systems in this way will help deliver a more comprehensive plan?

The majority of respondents agreed that considering the resilience of options and systems has the potential to provide a more comprehensive and societally relevant plan. One respondent also highlighted that it provides a systematic and transparent filtering tool to reduce the number of options and portfolios under consideration. Specific points raised were:

- RWE noted that the current focus is on public water supply and recommended the need for a wider lens to ensure non-public water sectors are considered on a par with public water supply and the environment.
- The RRT highlighted the need, especially with regard to the environmental system, to take account of the natural baseline, as this is unlikely to be reflected in the available empirical evidence. Also in the testing, to consider the environment as a system that is currently not performing at its full potential.
- CCT emphasised the need for robust data and assumptions to underpin the assessments and highlighted the need for a flexible approach to create opportunities to modify options which could potentially improve resilience. CCT specifically referenced a proposal to use the Cotswold Canals to support a water transfer from the Severn catchment to the Thames catchment and the opportunities it could provide.
- RWE requested further information to understand how the resilience appraisal fits into the overall planning process. Ofwat also referred to best-value planning and requested further information on the rationale for adopting a two-stage assessment process in respect of option level and system resilience testing, as well as further information on how cost and affordability considerations are incorporated.
- Blueprint for Water emphasised that resilience should not just be considered in the reactive sense; i.e. a good response/recovery, but in mitigating the risk (e.g. by using nature-based solutions). They referenced the Naturally Resilient project to show that building resilience into the water environment will help the water industry become more resilient to shocks and consequently benefit the environment.
- RWE raised concerns around how 'environmental ambition' will be incorporated into this assessment given that 'environmental ambition', as distinct from environmental resilience, may mean opportunities for alternative approaches are lost.

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- RWE also suggested that non-public water supply ‘yield’ should perhaps include consideration of the timing of water supply relative to market demand rather than simply a volume.
 - GARD considered that the approach puts too much emphasis on metrics, with insufficient attention to the understanding and explaining of how each resource option performs in relation to these metrics.

WRSE’s consideration and response:

As outlined in our response to Question 1, we’ll continue to work on the development of the framework, with an emphasis on the systems analysis and how this is translated into a resilience shift. This will need to include further work on the balance of empirical evidence and objective and subjective metrics.

We’ve also committed to establishing an expert panel (see response to Question 1) to help ensure decisions, particularly those reliant upon incomplete data sets, are as robust as possible and the process for decision making is evidence-based and transparent.

We’ve reviewed the content of the Naturally Resilient report put forward by Blueprint for Water and will include its findings and recommendations where appropriate.

We’ll also ensure we clearly explain the link with best-value decision making and how the resilience framework supports the inputs to best-value planning.

Q4. Are the sub-metrics we’ve chosen appropriate and, if not, which others should we consider? Do you think we should include metrics which can’t be fully objective?

Several respondents agreed the sub-metrics were appropriate, while others didn’t think there was sufficient detail to be able to identify whether the sub-metrics are appropriate or even sufficient.

Ofwat said the rationale for the selection of the metrics needs to be clear, they should be set in the context of the key risks, at company and regional level, and linked to wider company resilience plans and/or their risk registers. Furthermore, it needs to be clear what risks the framework helps to mitigate and those that it does not. A number of respondents suggested it would be helpful to explain which sub-metrics are common across the core metrics.

Specific points raised in relation to the sub-metrics:

- Ofwat highlighted the need for transparency, with the quantification of metric scores needing to be well evidenced and the sensitivity of the optimised plan to individual metric scoring assessed and presented.
- GARD stated that while they considered the resilience characteristics covered by the 20 sub-metrics to be appropriate, it will be difficult or impossible to score them objectively and

therefore they are challengeable. GARD suggested the scoring of the sub-metrics needs to be backed up by detailed and transparent technical evidence.

- There was some support for the inclusion of qualitative and non-SMART metrics in the framework. RWE supported the encouragement of innovation and stated that in their view the traditional appraisal methodologies did not help to promote innovative options, such as insurance products aimed at low probability, low utilisation needs.
- RRT called for flexibility and local knowledge to be applied to any assessment. It referenced the value of citizen science, community-based modelling and mapping as sources of reliable data and cited the CAMELLIA project as an example for incorporating this type of data into decision making for urban water management.
- SWT queried if subjective metrics were being used because objective metrics don't exist yet or because they never will. It said if there is a possibility of an objective metric being developed then this should be worked towards.
- Blueprint for Water asked several questions on the mechanics of using metrics, namely around weighting – how will 'known' versus 'potential' impacts be considered; how will the scoring balance negative and positive impacts; take account of mitigation; how will metrics relating to different parameters or sectors be measured to ensure comparability?
- Some respondents considered the metrics are too focused on water resources, with similar metrics for public and non-public water supply.
- Some respondents asked for a review of the environmental metrics – asking if they are included in 'resilience of supporting services'; suggesting the need for them to be expanded and made more explicit and asking how resilience will be considered in terms of the environment/biodiversity. The need for a sub-metric to reflect ecosystem services and natural capital was also raised.
- River flows were considered to be too restrictive, noting that a large amount of water in the South East is abstracted from groundwater. NE stated they would expect additional water dependent habitats that rely on groundwater or other hydrological regimes (such as wetlands), to also be acknowledged.
- Dealing with potential trade-offs was raised, for example between industry/agriculture versus environmental resilience.
- There was support to include water quality. CPRE stated a need to preserve and protect water quality should be a central part of the public and non-public water systems. One respondent asked where the potential contamination of aquifers is considered.
- CPRE noted that raw water quality risks are included as a 'sub-metric' but queried why these should require 'subjective' assessment. The group also questioned how this was framed in the context of transient water quality events, seemingly ignoring long-term impacts on the water ecology of, for example, over-abstraction, poor land and river management and inappropriate development on flood plains. CPRE also stated that 'interventions', such as water diversions, changes in storage and sewerage reuse, may have long-term impacts (positive and negative) on the water system and its ecology, which will profoundly affect the resilience of the water supply, other uses (such as bathing) and the ecology.
- KCC highlighted that recovery appears to be omitted in the sub-metrics.
- Evaluation of drought order and permits as trades was mentioned, noting that the scenario in which they are applied may be different to the current scenario.

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- A sub-metric on ‘headroom’ was proposed, to be applied to specific measures as well as portfolios of options and meaningful for public and non-public water supplies, as well as environmental measures.
 - It was also stated that monitoring timescales need to be relevant for the action which could reasonably be taken. For example, with a supportive regulatory framework, water sharing could be enacted dynamically, whereas constructing new infrastructure has a long lead time.

WRSE’s consideration and response:

- There were a number of constructive comments raised and we’ll take account of this feedback and review the choices and nature of the sub-metrics.
- We held a meeting of our multi-sector sub-group in June at which we reviewed the sub-metrics in more detail. We’ll take account of the feedback from this group, in combination with the consultation responses, to refine the sub-metrics. We plan to continue to use the sub-group and our advisory panel to help develop the metrics and sub-metrics further and address the issues raised above.
- Our expert panel will help guide our approach to ensure objectivity, particularly for those sub-metrics which will inevitably involve some degree of judgment and subjective assessment.
- We’ll share tables to demonstrate the rationale for the inclusion of each metric and how it maps to the Government’s 4Rs – Resistance, Reliability, Redundancy and Response and Recovery.
- The potential availability and use of new data sets, particularly from eNGOs, is really helpful and these are likely to contribute to several of the sub-metrics.

Q5. Do you believe changing our planning approach to a regional multi-sector resilience plan will help us plan better for future shocks and stresses?

There was support for our integrated approach, taking account of the needs and inter-connections between sectors, albeit with caveats around the practical application.

CPRE considered the emphasis is too much on drought and it highlighted the need to incorporate other shocks, such as floods, power outages, IT failures etc. It also highlighted the need to recognise the threats from slow changes and persistent failures or shortcomings, such as persistent over abstraction of groundwater, which would make rivers less resilient to drought and pollution events, and the inappropriate use of river flood plains, which makes the system less resilient to floods and droughts. Equally ‘natural’ interventions on the flood plains and stream headwaters should increase resilience.

NE reiterated that it believes the approach to achieve environmental resilience is insufficient. NE also suggested it would be helpful to involve more partners, including local planning authorities (LPAs) and local wildlife trusts (LWTs) who will be developing nature recovery networks (NRNs) and facilitating net-gain delivery. It states these concepts offer the potential to fundamentally change and improve local landscapes and as such are an important metric to include in our framework.

RWE referenced the use of mechanisms, such as market signals in the power sector, to induce the development of new assets and closure of existing assets while providing a resilient power infrastructure.

GARD agreed the approach will give a good coverage of the matters that affect the resilience of water supplies but consider there is too much emphasis on metric scoring and not enough on the provision of transparent, technical evidence. GARD also raised concerns around the subjectivity of the weighting and suggests the use of the metrics should include sensitivity testing to find out how outcomes would change with different weightings.

WRSE's consideration and response:

We agree more work is required on the wider shocks and stresses beyond drought for both the supply/demand options and the four systems. This will include improving the links between the framework and wider resilience work (operational, corporate, financial) of the WRSE companies.

In addition, we'll look to better represent the interface between the framework and resilience related activities in the other systems (non-public water supply, environment and wider South East economic/social).

6. Other points

Ofwat suggested more information should be set out on how regional plans are translated into individual water company plans (WRMPs and business plans).

Ofwat noted that levels of service are referenced in the framework, but it is unclear how these targets are set, how the framework considers value for money and affordability and how this fits into the optimisation of the resilience plan.

WRSE's consideration and response:

We note Ofwat's comment regarding transparency between the regional and company plans and we'll map how the framework and constituent metrics we use to inform the regional plan will be translated to the company WRMP24s and business plans.

We agree levels of service are a critical point. These will be an objective of the resilience assessment and input to the regional plan. We'll engage with stakeholders and customers on levels of service as part of our consultation on the WRSE policy document, planned for August 2020.

We also have research planned which will help to define the outcome level of service the resilience assessment will aim to deliver.

Section 4: Next steps

This is a new approach for Water Resources South East and the wider water sector, so we'll continue to engage as we refine and apply our resilience framework and develop our plan. This consultation was one part of our wider engagement programme with customers and stakeholders as we develop our plan.

The next steps on the development and application of the resilience framework are to:

- revise our framework, taking into account the feedback we've received through this consultation from individuals and organisations; from our stakeholder sub-groups and our ongoing conversations with water companies, regulators, customers and stakeholders. This work will continue through to the end of 2020 and we'll share updates at various points throughout the process.
- undertake a baseline resilience assessment of systems in the South East (current) - October 2020.
- evaluate the resilience of water systems up to 2100 - November 2020 onwards.

Thank you again for taking the time to read and contribute to the development of our resilience framework and the development of a multi-sector, resilience plan for the South East.