



Emotionally
Intelligent
Communications

SOUTH EAST WATER

PR24 THINK TANK: SUSSEX RESILIENCE OPTIONS

31 JANUARY 2023



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INTRODUCTION

On 31 January 2023, South East Water (SEW) hosted an in-person think tank workshop in Uckfield to support the development of its business plan, known as PR24 (Price Review 24). The event was structured into three sessions, covering the following topics: PR24 update, responsible business aspirations and current resilience issues; Our options – initial views; and Option prioritisation.

Each of the sessions consisted of a short presentation given by a SEW representative, followed by facilitated roundtable discussion sessions. In addition, attendees were asked to vote in an online poll, using Slido, on a number of topics. The main focus of the workshop was to ask stakeholders to review and prioritise the 11 resilience options being considered by SEW in Sussex. Stakeholders were split into two groups to provide them with an opportunity to scrutinise and comment on the findings of their peers.

SESSION ONE:

Scene setting and an introduction to the 11 options being considered by the business.

SESSION TWO:

Stakeholders were asked to select their preferred options at face value. They were not given details of cost or the benefits they would deliver.

SESSION THREE:

This exercise in session two was repeated but with this additional information provided in order to see if stakeholder views changed.

SEW instructed EQ Communications, a specialist stakeholder engagement consultancy, to independently facilitate the workshop and to take notes of the comments made by stakeholders. Every effort has been made to faithfully record the feedback given. In order to encourage candour and open debate, comments have not been ascribed to individuals. Instead, notes have been made of the type of organisation represented by each stakeholder.

EXECUTIVE SUMMARY

PARTICIPANTS

- A total of 19 stakeholders participated in the workshop, representing 16 organisations.
- Stakeholders were from a wide range of different organisations, including local authorities, business retailers and environmental groups.

WORKSHOP 1: PR24 UPDATE, RESPONSIBLE BUSINESS ASPIRATIONS AND CURRENT RESILIENCE ISSUES

- During the Q&A session prior to the roundtable discussion, stakeholders were particularly interested in finding out more about the self-sufficiency of SEW's operations, its company vision, and its customer service during emergency supply outages.
- A number of stakeholders said they had experienced water resilience issues in the Sussex area, in the form of low-pressure incidents and total supply outages. With droughts becoming an increasingly regular occurrence, they wanted SEW to outline how it plans to address these issues. They were also keen to hear how the company intends to upgrade outlying sections of its system in the years ahead in order to prevent them from being hit particularly hard by these resilience risks.

WORKSHOP 2: OUR OPTIONS – INITIAL VIEWS

- The 'Barcombe Water Treatment Works (WTW) expansion' and the 'Shellbrook WTW expansion' schemes were particularly supported, based on the current resilience issues experienced in the Mid Sussex area that they serve. When focusing on each specific scheme, some favoured Shellbrook on the grounds of the more immediate benefits it was perceived to have, while others preferred Barcombe due to the larger number of customers supplied through it.
- Stakeholders almost unanimously supported prioritising one of the 'Smart water networks' schemes, and many saw them as the solution to the leaks experienced in their communities. Most stakeholders expressed a preference towards SEW adopting a 'full' system rather than a 'basic' one in order to detect and tackle as many of these leakages as possible.
- The 'Sussex trunk main grid system' scheme was well received by stakeholders, who thought that it would deliver improved resilience by providing a grid supply system, rather than a supply setup that relies on a single pipe.

WORKSHOP 3: OPTION PRIORITISATION

- During the table discussions, the 'Barcombe WTW expansion' scheme was prioritised over the 'Shellbrook WTW expansion' scheme by numerous stakeholders once they had received additional information, including the cost of these schemes. This view was driven by the larger number of

customers that it served and the more critical role it was perceived to play in the local water system (by contrast, many thought that Shellbrook would serve to reduce the load on Barcombe).

- Conversely, others felt that it would be better to leave aside the Barcombe scheme and focus on other, cheaper physical resilience schemes, including the Shellbrook scheme, in order to free up money for a greater number of projects. It was thought that this would still be a valuable approach, as expanding the Shellbrook WTW would no longer leave the area solely reliant on Barcombe for a resilient water supply.
- Attendees were still very keen to see smart water networks prioritised, but became somewhat split at a table level about whether the basic or full scheme was preferable as an immediate priority. The tables in favour of 'basic' wanted to focus on spreading the bill spend as widely as possible, whereas the tables supporting 'full' felt that it would be better to spend a larger amount upfront on a futureproofed system.
- During the table discussions, participants expressed a more explicit preference for the drinking water storage tank upgrade schemes than during the previous session. This feeling was based on their relatively inexpensive cost and the importance of a backup supply system should local electrical pumping systems fail. This need was viewed as being particularly acute against the backdrop of the current energy crisis.
- When stakeholders were invited to rank the 11 proposed resilience schemes in their personal order of priority on Slido, the top five were as follows: 'Shellbrook WTW expansion' (with an average score of 8.69/11), 'Sussex trunk main grid system' (8.44/11), 'Smart water networks: Full' (8.38/11), 'Barcombe WTW expansion' (7.62/11), and 'Horsted Keynes drinking water storage tank upgrade' (6.38/11).

WRITTEN FEEDBACK

After the workshop, stakeholders were asked to complete a short feedback form about the event. Some of the key findings are shown below:

- 54% of attendees reported that they found the workshop 'very interesting', and 38% thought that it was 'interesting'.
- 62% felt that the session was 'engaging', with 38% taking the view that it was 'very engaging'.
- 62% 'agreed' and 31% 'strongly agreed' that they had the opportunity to get involved in the discussions and make their points.
- 54% thought that EQ Communications' facilitation was 'good' and 38% deemed it to be 'very good'.
- 46% 'agreed' and 8% 'strongly agreed' that the level of information was tailored appropriately to match their levels of knowledge. However, 38% felt 'neutral' about this statement.
- 77% of respondents indicated that they would come to future think tank workshops.
- 100% stated that they had a better understanding of the issues SEW is facing in the near future surrounding resilience and ensuring that customers do not suffer supply interruptions.

SESSION 1: PR24 UPDATE, RESPONSIBLE BUSINESS ASPIRATIONS AND CURRENT RESILIENCE ISSUES

Richard Sands, PR24 Wholesale Lead, gave the opening presentation, which outlined the key themes of the event. He began by providing an update on SEW's business plan, with a particular focus on its Responsible Business Strategy, which has been shaped by customer and stakeholder feedback. Richard provided an overview of the four common themes emerging from SEW's customer and stakeholder research in this area and then introduced the Purpose Plan, with these responsible business commitments at its heart. He then presented SEW's intended next steps to transform it into a purpose-led organisation rather than a company with responsible business commitments.

Richard then moved on to discussing operational resilience. To begin, he stated that, under Ofwat operational resilience requirements, SEW must reduce the probability of water supply interruptions, mitigate the impact of any disruption, and ensure long-term supply resilience to external factors. After taking stakeholders through the four options for increasing resilience and the key characteristics of SEW's Sussex supply area, Richard outlined the region's specific supply issues and the company's planned mitigation measures. These resilience risks included extreme weather, changing water uses (particularly among major users) and low treated-water capacity. To finish, he noted that these risks are impacting SEW's performance measures, such as interruptions to customer supply, low water pressure and unplanned outages.

SUMMARY

Following Richard's initial presentation, stakeholders were given the opportunity to ask any general questions about SEW's business operations in Sussex. The questions posed covered a wide range of topics, such as the self-sufficiency of the company's operations, its corporate vision and its communications during emergency supply outages. After this Q&A, the first roundtable discussion session began.

All discussions began with introductions. The majority of the attendees were local authority officers, customers and business retailers. Overall, attendees expressed a particular interest in SEW's resilience plans and measures, as many had reported incidents recently and wanted to feel reassured that measures were being taken to overcome them. Others were interested in understanding SEW's planned measures to make its water supply system resilient to the effects of climate change, while others wanted to know how the company is engaging with local communities to inform its plans.

A number of stakeholders stated that they had experienced resilience issues, particularly around low water pressure and total supply interruptions. Therefore, there were calls for SEW to set out plans to overcome these issues and, in particular, outline an immediate action plan in response to extreme weather events. This action plan was seen as crucial, due to the increasing regularity of droughts in the Sussex area. Questions were also raised about SEW's approach to mains replacements. Some stakeholders thought that

not enough system assets were being replaced each year, and that asset replacement planning was being overly targeted on central parts of the system in urban areas. Therefore, they were concerned about how resilient supplies would be for outlying communities at the fringes of the system in the long run.

VERBATIM COMMENTS AND VOTING DATA

1. What is your role and your reason for attending today?

- “I represent an organic market garden and we use irrigation.” Major user
- “I’m from a Rivers Trust and we are involved in 12 catchment partnerships across the south east region, so I’m here to find out more.” Environmental group
- “We are representing the gas network. I work as a stakeholder and community manager, and prior to that I was working as an operational manager. My interest is to discuss your resilience plans and see whether there’s anything we can learn. We want to understand how you communicate to local areas about what you’re doing and why you’re doing it. Having a few roads shut can massively impact local communities, so how can we collaborate our replacement works with South East Water to reduce disruption?” Utility
- “I’m the resilience and emergency manager for a local council. I’m very interested in this event, as we had a significant outage in the local area in December. We’ve yet to have the resilience forum debrief on that so hopefully there’s going to be some answers coming out of that. It’s going to be really useful to listen to what resilience measures are being suggested.” Local authority officer
- “I own a business just outside the catchment area but I live in Sussex, and I’ve experienced a lot of incidents recently.” Major user
- “I am concerned about climate change, and I have concerns from an environmental point of view, but also as a domestic customer.” Major user
- “I get the opportunity to hear from the company about what they are planning and ask difficult questions, try and challenge them to do better, particularly with regards to price control and customer engagement, and really make sure the customer voice is heard.” Major user
- “In 2017 there was a programme which demonstrated that if you give customers personalised feedback on how efficient their water use is, and tailored advice on how to be more sustainable, you can sustain large water savings. That programme has never been scaled up and I don’t understand why not.” Major user
- “I’d like to understand engagement with the local authorities, as at the moment it’s not great.” Local authority officer
- “During the disruption in December, the voluntary sector was a massive support, so I’m keen to build a relationship there to better solve problems.” Local authority officer
- “I’m here from a business point of view. I’m interested in how water shortages can affect development in the area, but I’m also interested as a local resident. We all get frustrated when you see leaks, and then nothing happens to fix them. There have been night-time closures on the A27, so there are frustrations. There’s clearly a need for more water resources in the area. How do we

achieve this? I don't know. So it would be great to share any ideas we might have today." Major user

- "I'm an Emergency Planner at East Sussex County Council. I'm interested in thinking about how to mitigate the impact of weather events, like the intense heatwaves we've had recently. What measures can we put in place to ensure that communities are protected?" Local authority officer
- "I'm from a small country estate and we have a huge range of things going on, including sheep farming, so obviously we don't want to lose access to water supply. I live in Newick, and I know he said we don't have a problem with pressure. I've never had a problem with pressure, but I've had evenings when I turn the tap on and nothing comes out at all. This can happen all year round, but yes, it's worse in the summer. So this makes me wonder, when you say there's problems with low pressure, how do you know, if no one's reporting it?" Major user
- "I am an agronomist, here with an agricultural group covering Kent and East Sussex, and have been involved with various issues involving nitrates and other contaminants in the water supply, managing issues related to water supply and the costs involved in addressing these concerns, especially from an agricultural perspective. Farmers get a bad rap, and this isn't always fair when you look at the products often sold in gardening centres, so I'm keen to encourage us to work together to address concerns regarding pollution and contamination in the water network." Major user
- "I run a farm locally, and I am here to try to get South East Water to understand the level of problems that exist for people with livestock when there is an outage, either due to a storm or a pipe burst, because the service has been awful." Major user
- "I am here with the emergency services, I do a lot of work with water companies to ensure a sufficient water supply for the fire service. The biggest concern is flow rate, which tends to be too low for safe standards. We need 16-20 litres/second to do our job properly, and at the moment we often don't get that. South East Water is working with us to help update the computerised system, which currently doesn't allow us to properly manage the flow rate across our target areas. Another one of my main frustrations is that when new developments are planned, we are not informed when residents have moved in. This could be very dangerous, as it can lead to a lack of water supply for the fire service in areas where people have recently started living." Emergency service
- "My current role is drafting policies for new local planning. My group is responsible for the new housing developments planned in Uckfield, and I am here to help ensure that plans for these developments mean that infrastructure will be in the right place at the right time. Also, I am among those whose local pump loses pressure whenever the fire service needs water, so I am also keen to see these issues addressed for personal reasons." Local authority officer

2. Have you experienced any resilience issues in your area?

- "In terms of how we deal with water pressure issues, we're at the end of a line, and it's just one of those things. Sometimes you just have to wait until your neighbour has finished his shower after work and you'll hopefully get some water back later on. But sometimes we get nothing, literally nothing coming out the tap." Major user

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- “I have experienced a frequent loss of water, and we get messages saying it’s ‘due to 3rd party services’ but this happens for hours at a time.” Major user
 - “I’m interested in why there are so many frequent losses and what you’re doing to plan for it. Looking at the bigger picture there will be more weather events, and we get messages saying ‘sorry, we are working on it’, but I want to know how.” Major user
 - “I’d like to understand, given that the majority of water is from the river, and last year we had a long period of drought, we have climate change coming into play on top of massive developments popping up, is there anything immediate in plans to improve water storage?” Local authority officer
 - “We are 100% likely to experience a drought this year, is there immediate action in place in response to these issues?” Local authority officer
 - “It’s concerning that South East Water replaces only 20 or 30 km of water mains per year. When you look at the area, I’d like to know how many kilometres of water main there are in that patch, as 20 or 30 seems very small to me. For those of us who live in the country, we’re connected to a ring main very often. And when xxxx says she’s at the end of the line, she’s certainly not on a ring main.” Major user
 - “There is not a rolling programme of pipeline replacement. You need to be proactive not reactive.” Major user

Q&A

“I’m looking at one of the vulnerabilities of relying on power. What steps are being taken to become self-sufficient, particularly in relation to using renewables?” Emergency service

- “We have a programme of works that we are doing currently, which is to put solar panels on a number of our critical works across all three regions. We are working with energy specialists to build them. We’re not an energy company and there are some nuances in terms of specific assets to be maintained, so we are doing that in partnership rather than building and running them ourselves. However, we are reliant on energy for boosters and for instrumentation around in the network. We are improving things in terms of generation to a certain extent, but it won’t 100% solve the problem. We are then looking at generators and batteries, and that may be discussed today as we are interested in getting your views. Where we suffer from things like power blips where the energy will go down for half an hour, the average customer in their home will be able to cope with that, but a half-hour power blip can screw up our technical equipment and computer programs, and knock out our treatment works for five, six, seven hours. We are looking at generators and battery storage at our sites to try and avoid that.” Richard Sands, South East Water

“Can you give us a reminder of your vision as a company?” Major user

- “It’s imprinted on my heart. To be the water company that everyone wants to be supplied by, and to work for. That’s our company vision.” Jo Shippey, South East Water

“I have a question regarding communication with your customer base, particularly when it comes to a foreseen weather event, such as Storm Eunice. You have emergency telephone lines. By how much do you increase your manning on these when there’s a predicted weather event, and do you think it’s reasonable to take more than 30 minutes to answer your emergency phone line?” Major user

- “As and when we are aware that an event is likely to occur, we actually have a contract with the Met Office and they provide us details about extreme events. We will actually spin up an incident team in advance and they will look at preparation and try and put everything in place to get us ready for that extreme weather. Operationally, we have extra technicians, and we hire extra generators, and so everything we believe we can foresee. We do work with call centre staff and put significant numbers of people on the phones. In a couple of the extreme weather events we just had, the nature and breadth of the incident was more significant than we planned for. Storm Eunice, the regional nature of that and the ongoing impact that had was more than we planned for and therefore the number of customers contacting us was more than we expected. I know it’s not acceptable to have that amount of wait. And we do have lessons learned after those situations and will feed that into future extreme weather planning.” Richard Sands, South East Water

“You were talking about all the water coming from the River Ouse, and yet we’ve got all this development going on. Along the road here we’ve got 1000 houses going in. Will there ever be a day when South East Water says ‘no, we can’t supply these new houses’?” Major user

- “We don’t have the statutory or legal ability to block development, but we do provide feedback and guidance to local authorities around the water supply we have and our ability to supply. But we can’t actually say ‘no more’. We are very water-constrained in this area. Our ability to get water where it’s needed does have to flow through a regulatory mechanism, price review with Ofwat, so I guess we do the best we can in terms of providing neutral feedback of what we can do. Other authorities then decide whether they’ll allow development to occur.” Richard Sands, South East Water
- “We do get asked this question a lot, and it is very difficult for us. We don’t have the right to say no. I know a lot of people would like that but the planning rules are that we are obliged to provide a service. It’s not possible for us to say it’s impossible, because it’s not; we can always build infrastructure. The substantial development you’re talking about does create huge problems for us around resilience, and the regulatory regime doesn’t properly fund us to build the infrastructure we need, and that makes our network more vulnerable over time. The process has been going on for 30 years or so, it’s a real problem for us. The system’s not great but we have to remain neutral in the system.” South East Water

“Is it your pipes that are the problem or your pumping station? We are 23 years into a 30-year programme to replace our metallic mains, and we found that in our pipes there is a lot of PVC, which is very brittle. Have you got a replacement programme along the lines of the gas distribution networks, and what are the materials you use to replace new pipes?” Business retailer

- “We had a base maintenance replacement programme which looks to review and replace our pipelines, and obviously our treatment works as well. We replace 20 to 30 km of mains on an annual basis, obviously targeting the mains in the worst condition and balancing the cost versus the benefit to make sure we help keep the network resilient as much as possible. Again, going back to regulatory funding, we would say we get less than we need for making sure we replace the pipes at the frequency we need, but what we do get we do on an annual basis and replace the mains. We have a mix of pipe materials. Generally the pipes we put in the ground will last 100 years. Obviously that means we’ve got a legacy of what all water companies have done in the last 100 years, cast iron, plastic pipes etc, and we have different engineering standards based on the soil type, size of it, etc, which will determine what material we use.” Richard Sands, South East Water

SESSION 2: OUR OPTIONS – INITIAL VIEWS

Richard Sands introduced the second session of the morning, focusing on SEW's proposed resilience schemes for Sussex. He took stakeholders through 11 different schemes, including smart water networks, additional drinking water storage tanks, and expansions to a number of water treatment works (WTW). For each of these schemes, Richard set out the problems that it intends to address and the proposed solution involved, such as creating a water grid system, technological innovation and new pipelines connecting WTW to drinking-water storage tanks.

Attendees were then invited to provide feedback on these schemes during the roundtable discussion sessions. In particular, they were asked to select the schemes they felt should be delivered in order to resolve the resilience issues experienced in the Sussex area, and then rank them in order of priority. It should be noted that cost information for these schemes was not provided for this discussion session.

SUMMARY

Based on the specific resilience issues experienced in the Mid Sussex area that they serve, attendees were particularly keen to see SEW prioritise expanding both the Barcombe and Shellbrook water treatment works (WTW). Stakeholders also noted that the rural nature of this area and its largely elderly population made this scheme even more crucial. The point was made that, should supplies to this area fail, it would be trickier to distribute bottled drinking water to residents in this area, therefore posing a far greater challenge in assisting them through this type of situation. As a result, there were some calls for SEW to consider the population density of elderly or vulnerable customers in the areas covered by these schemes when considering which to prioritise.

The 'Shellbrook WTW expansion' scheme was strongly endorsed by large numbers of attendees. It was viewed as a sound priority, as many attendees thought that it would tackle supply problems in the area that it supplies and would reduce the pressure on the Barcombe WTW. As Barcombe is the sole facility supplying around 90% of the local region's clean water, creating strong backup systems through increasing the capacity of the Shellbrook WTW was viewed as an eminently sensible option. At the same time, others favoured expanding Shellbrook, as they felt that it would deliver improved resilience more quickly than other schemes.

Even though many stakeholders were specifically in favour of prioritising the Shellbrook scheme over the 'Barcombe WTW expansion' scheme, lots of stakeholders also felt that Barcombe WTW should be expanded. They argued that Barcombe's critical role in the water supply system for Sussex, and the large number of customers that it serves, meant that much of the local population could be without drinking water if it went down. On this basis, and due to Barcombe's rural location and the demographics of its residents, these participants stressed that this scheme should be prioritised above all others.

There was general support for the 'Smart water networks: Full' scheme among stakeholders as a whole. A number of them explained that water leaks were a major issue in their local communities, and were of the

view that smart water networks were the most suitable way to overcome this problem. Overall, it was felt that SEW should go as far as reasonably possible in order to implement this kind of system, and should not opt for the basic option. By opting for a full system instead, it was hoped that SEW would be able to address leakages as effectively as possible. However, it should be noted that there was some scepticism among the group regarding smart technology, which made these individuals less eager to see either the ‘Smart water networks: Full’ or the ‘Smart water networks: Basic’ schemes adopted.

There was also a degree of support for the two schemes covering Horsted Keynes (the ‘Horsted Keynes resilience pipeline’ and the ‘Horsted Keynes drinking water storage tank upgrade’). However, it was simultaneously acknowledged that although these would be preferable to local residents, they may not deliver quite as much value to the wider Sussex area as other schemes.

Finally, the ‘Sussex trunk main grid system’ scheme also proved popular during discussions. There was a feeling that it should be prioritised, as a grid system would improve resilience by providing multiple channels for distributing water around the local area, rather than relying on a single pipe.

It should be noted that Tables 1 and 2 scrutinised each other’s choices, as did Tables 3 and 4.

VERBATIM QUOTES

1. Which five schemes would you like to see SEW deliver?

Table 1

- Shellbrook WTW expansion: “Wouldn’t it make more sense to go for something over Shellbrook way, if you have issues round there?” Business retailer
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “Barcombe services 90,000 properties, and Shellbrook 15,000. It’s also linked to the demographics and geographies of those locations. Mid Sussex is very rural, and the biggest problem with providing emergency bottled water is that not everyone has transport to get it. We are looking at the community resilience level, to make them more resilient and responsible for themselves. We have to look at the demographics of the areas we are discussing. Do they have a high proportion of elderly or vulnerable customers?” Local authority officer
- Shellbrook WTW expansion: “Would Shellbrook then supply more properties if you expanded it, reducing pressure on Barcombe?” Business retailer

Table 2

- Additional drinking water storage tanks: “On the basis of population growth, and in relation to that, additional drinking water storage tanks are important.” Major user
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “Looking at the cards, what immediately jumps out is that ‘Shellbrook WTW expansion’ services 15,000, whereas ‘Barcombe Water Treatment Works (WTW) expansion’ is 90,000.” Emergency service

- Shellbrook WTW expansion: “I would lean towards ‘Shellbrook WTW expansion’.” Local authority officer
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “The worry is that there is no support system if anything happens to ‘Barcombe Water Treatment Works (WTW) expansion’, so if we are looking at resilience I would suggest ‘Shellbrook WTW expansion’.” Local authority officer
- Shellbrook WTW expansion: “I agree ‘Shellbrook WTW expansion’ will improve resilience and give that early resolution to improve service.” Emergency service
- Smart water networks: Full: “‘Smart water networks: Full’ seems like a no-brainer then.” Major user
- Smart water networks: Full: “If money is no object then we should be going for the gold standard.” Emergency service

Table 3

- Barcombe Water Treatment Works (WTW) expansion: “It’s a no-brainer, because if Barcombe is supplying 90% of the clean water, then if that breaks down, the whole local region will be without water. So that has to be the critical one. The others are on the periphery, in comparison.” Major user
- Horsted Keynes resilience pipeline, Horsted Keynes water storage tank upgrade: “I think that the ‘Horsted Keynes resilience pipeline’ and ‘Horsted Keynes drinking water storage tank upgrade’ would be very important if you live in Horsted Keynes. But I think we need to look through the whole 11 before we choose.” Major user
- Smart water networks: Basic, Smart water networks: Full: “I’m a bit of a cynic about this smart technology stuff. There’s all these sensors in the ground, electronics, things going through SIM cards, mobile phone technology, and the signal coverage is notoriously bad in this area. So bring back the man with the wooden stick, I say; fix the pipes, then you won’t need all this technology.” Major user
- Sussex trunk main grid system: “Being on a grid rather than a single pipe is important, yes.” Major user

Table 4

- Shellbrook WTW expansion: “‘Shellbrook WTW expansion’ should be improved, because overall the priority is to supply enough pressure at the top end, so that one seems to be the best choice.” Major user
- Smart water networks: Full: “Since you said we must choose between the basic or full smart service, I think we should go with ‘Smart water networks: Full’ so that we make sure we are doing it right. If we take the less expensive option, I am concerned that it will be more expensive in the long run.” Major user
- “My preference is likely to be: ‘Sussex trunk main grid system’, ‘Crowhurst Bridge WTW upgrade’, ‘Additional drinking water storage tanks’, ‘Smart water networks: Full’.” Major user

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- Smart water networks: Full, Shellbrook WTW expansion, Sussex trunk main grid system, Crowhurst Bridge WTW upgrade, Additional drinking water storage tanks: “My priorities would be ‘Smart water networks: Full’, ‘Shellbrook WTW expansion’, ‘Sussex trunk main grid system’, ‘Crowhurst Bridge WTW upgrade’, ‘Additional drinking water storage tanks’.” Emergency service
 - Shellbrook WTW expansion, Smart water networks: Full, Sussex trunk main grid system, Additional drinking water storage tanks, Horsted Keynes resilience pipeline: “My preferred order will be ‘Shellbrook WTW expansion’, ‘Smart water networks: Full’, ‘Sussex trunk main grid system’, ‘Additional drinking water storage tanks’, ‘Horsted Keynes resilience pipeline’.” Major user
 - Smart water networks: Full, Shellbrook WTW expansion, Horsted Keynes resilience pipeline, Crowhurst Bridge WTW upgrade, Sussex trunk main grid system: “‘Smart water networks: Full’ is my priority, because leaks are the biggest issue for us, and the feedback we get from local residents reflects that, so we are keen to see a full smart network upgrade to address that problem. After that my choices are ‘Shellbrook WTW expansion’, ‘Horsted Keynes resilience pipeline’, ‘Crowhurst Bridge WTW upgrade’, ‘Sussex trunk main grid system’.” Local authority officer

SESSION 3: OPTION PRIORITISATION

Richard Sands provided a brief introduction to the final session. In this session, stakeholders were given additional details about the schemes, including the bill impact and the number of people who would benefit. Richard explained that customer money would be spent to implement these schemes, meaning that costs would need to be factored into decision-making around which to prioritise. As part of the discussion session, Richard invited stakeholders to review the scores for each of the projects, based on the score out of 10 and the approach taken to increasing resilience. Richard then explained how resilience is evaluated, based on the ‘Four Rs.’

The four Rs

Resistance – reflecting the ‘strength’ of the asset or the configuration e.g. a flood wall.

Reliability – reduce how likely something is to fail

Redundancy – spare capacity/back-up/alternative/interconnectivity

Response/recovery – the ability to respond operationally and recover or react to mitigate the effects of an adverse event.

Card scoring

- | | |
|-----------|--|
| 10 | Completely solves the issue |
| 8 | The vast majority of the issue is solved |
| 6 | A reasonable amount of the issue is solved |
| 4 | Some of the issue is solved |
| 2 | Little of the issue is solved |
| 0 | None of the issue is solved |

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Based on the information provided, Richard asked each table to come to a consensus on which schemes they would choose if constrained to a £4 impact on customer bills, considering the issues that SEW is trying to resolve. Once they had reached a decision, they were asked to explain why they picked a specific set of schemes, rank them from highest to lowest priority and then place their choices on a map provided on the table. After 25 minutes, the event facilitators swapped tables, giving the different tables the opportunity to scrutinise each other’s decisions and establish whether any changes should be made. For this exercise, Table 1 scrutinised Table 2’s priorities (and vice versa), while Table 3 reviewed Table 4’s choices (and vice versa).

SUMMARY

Having been given the contextual information about each of the schemes, stakeholders as a wider group did not seem to significantly change how they prioritised the schemes compared to the previous session on the whole.

However, during the table discussions, the 'Barcombe Water Treatment Works (WTW) expansion' scheme seemingly rose in priority from the previous session, now equalling the 'Shellbrook WTW expansion scheme'. Those in favour of prioritising Barcombe acknowledged the larger bill cost of this scheme, but thought that it was a sensible investment option, based on the larger number of customers benefitting from it compared to Shellbrook. Building on this idea, due to the large number of customers served and the resulting problems should Barcombe WTW go down, many felt that expanding it was a no-brainer. Nevertheless, others were still sceptical about allocating such a large proportion of the proposed customer bill spend on Barcombe. Instead, they felt that it would be better to spend a smaller proportion on it, making more money available for investing in other physical resilience schemes.

This stance of allocating a smaller proportion of the spend on WTW expansion schemes in order to be able to spread investment was evident among a number of stakeholders. These stakeholders were in favour of deprioritising Barcombe, the most expensive of the proposed WTW expansion schemes, and putting the money towards the cheaper 'Shellbrook WTW expansion' scheme instead. They argued that this would be a more suitable approach to increasing resilience in Sussex, as it would expand one WTW plant but still leave money available for investing in other types of schemes. In addition, these participants also favoured Shellbrook in particular on the grounds that it would deliver a better return on investment, thanks to its shorter delivery time.

Spending considerations did not dent the very strong support for adopting smart water networks among stakeholders, but it did somewhat affect attitudes around whether a 'full' system should be prioritised over a 'basic' system. During this session, some attendees now felt that it would be better to adopt a basic setup, as it would still deliver value to a large proportion of Sussex's population and could be scaled up to a full suite at a later date. As a result, it was felt that money could be freed up to invest in other schemes. However, despite only choosing the 'basic' option, many of these stakeholders urged SEW to go back to Ofwat and discuss how further funding could be unlocked to deliver a 'full' system as quickly as possible.

Nevertheless, it should be noted that many participants were still in favour of prioritising adopting a 'full' system, despite the additional costs involved. They were of the view that it was a vital scheme, as it would benefit a huge number of people, would prevent major leakage incidents, would cost a relatively insubstantial amount of money, and could be delivered sooner than other schemes. They took the position that it would be better to put it in place now than to go for the 'basic' system, as this would avoid the long-term additional expenses of upgrading it, and would help SEW monitor assets more proactively and effectively.

The 'Sussex trunk main grid system' scheme also continued to be strongly prioritised among some stakeholders, who saw it as a must-have. Despite acknowledging the major expenses involved, these attendees felt that it had a vital role to play in ensuring a resilient supply of water to the Sussex area, as part of a futureproofed setup.

With the wider cost information to hand, the two schemes covering upgrades to drinking water storage rose in priority among stakeholders as a whole compared to the previous session. In justifying this new stance, supporters of these schemes argued that they would create a cost-effective backup system for supplying drinking water to local areas should pumping stations or WTW break down. In addition, some feared that the current energy crisis and the war in Ukraine had exacerbated the fault risk on these electrified water-supply assets, meaning that more storage tanks are needed as a failsafe to give SEW time to restore supply. The ‘Horsted Keynes drinking water storage tank upgrade’ scheme was specifically identified as an appropriate option, due to its potential big impact for a relatively low cost.

REVIEWING THE OPTIONS

There were some noticeable differences between the tables when reviewing each other’s prioritisation maps.

The individual tables made a binary choice between expanding the Shellbrook WTW or expanding the Barcombe WTW as a priority for the current business plan period. The tables in favour of Barcombe (Tables 1 and 3) cited the geographical distribution of Sussex’s population and the projected population growth as the factors driving their decisions. In addition, these tables also viewed Barcombe as a vital scheme for ensuring a resilient water supply to the local area, whereas Shellbrook was seen as an important project for spreading the load away from Barcombe. Nevertheless, the table in favour of prioritising Shellbrook (Table 2) argued that this current reliance on Barcombe made it all the more necessary to target Shellbrook, and expressed shock that Barcombe is such a lynchpin in SEW’s Sussex supply operations. However, it should be noted that some attendees on tables prioritising Barcombe over Shellbrook were also of the view that the Shellbrook scheme should not be disregarded entirely, and should instead be delivered within the next 10 to 15 years.

These potential overlapping benefits between the different schemes influenced stakeholder decision-making towards other schemes too. For example, Table 2 felt that the ‘Barcombe WTW expansion’ scheme and the ‘Horsted Keynes resilience pipeline’ scheme went hand in hand. As they thought that the Shellbrook scheme was more important than the Barcombe one, they did not feel that it was appropriate to prioritise the Horsted Keynes resilience pipeline either. Likewise, Table 3 dismissed the ‘Horsted Keynes drinking water storage tank upgrade’ scheme on the basis that they had already selected the ‘Shellbrook WTW expansion’ scheme within their priorities. They argued that Shellbrook would already help to improve resilience in the Horsted Keynes area, making it unnecessary to double up investment in a single area. This particular focus on potential overlaps in scheme benefits shows that the stakeholders as a wider group were looking to spread resilience as widely as possible and not concentrate investment in a single geographical area.

The other major difference between the tables related to whether to prioritise investing in the ‘Smart water networks: Basic’ scheme or the ‘Smart water networks: Full’ schemes. Tables 2 and 4 thought that a full system had to be adopted due to the detection limitations of the basic system, arguing that the increased

bill cost is justifiable based on how many more leaks would be detected and the resulting long-term customer savings. By contrast, Tables 1 and 3 were in favour of adopting a basic system now and upgrading it in future, and instead preferred to free up funding for a wider range of investments. As half of the tables wanted a full system implemented immediately, this showed a fairly strong desire among the wider group for upfront investment in a futureproofed system that would not require further expense on subsequent upgrades.

Following the roundtable session and based on the reasons set out during the discussions, stakeholders were asked to rank the 11 schemes based on their own individual order of priority on Slido. The 'Shellbrook WTW expansion' scheme came out on top across the group, with an average score of 8.69/11. This was followed by 'Sussex trunk main grid system' (8.44/11), 'Smart water networks: Full' (8.38/11), 'Barcombe WTW expansion' (7.62/11), and 'Horsted Keynes drinking water storage tank upgrade' (6.38/11).

These individual voting figures provide an interesting contrast to the priority rankings established on each of the tables. In particular, it is worth noting that, although two tables prioritised the 'Smart water networks: Basic' scheme over 'Smart water networks: Full', the former came last in the voting, with an average score of 2.31/11. At the same time, two tables leaned towards prioritising the 'Barcombe WTW expansion' scheme over the 'Shellbrook WTW expansion' scheme, but, during the individual Slido voting, Shellbrook was fairly comfortably preferred. However, as both of these WTW expansion schemes appeared in the top five voting priorities on Slido, they were both clearly valued by individual stakeholders.

VERBATIM QUOTES AND VOTING

1. Now that you have all of the information, which options would you like us to consider?

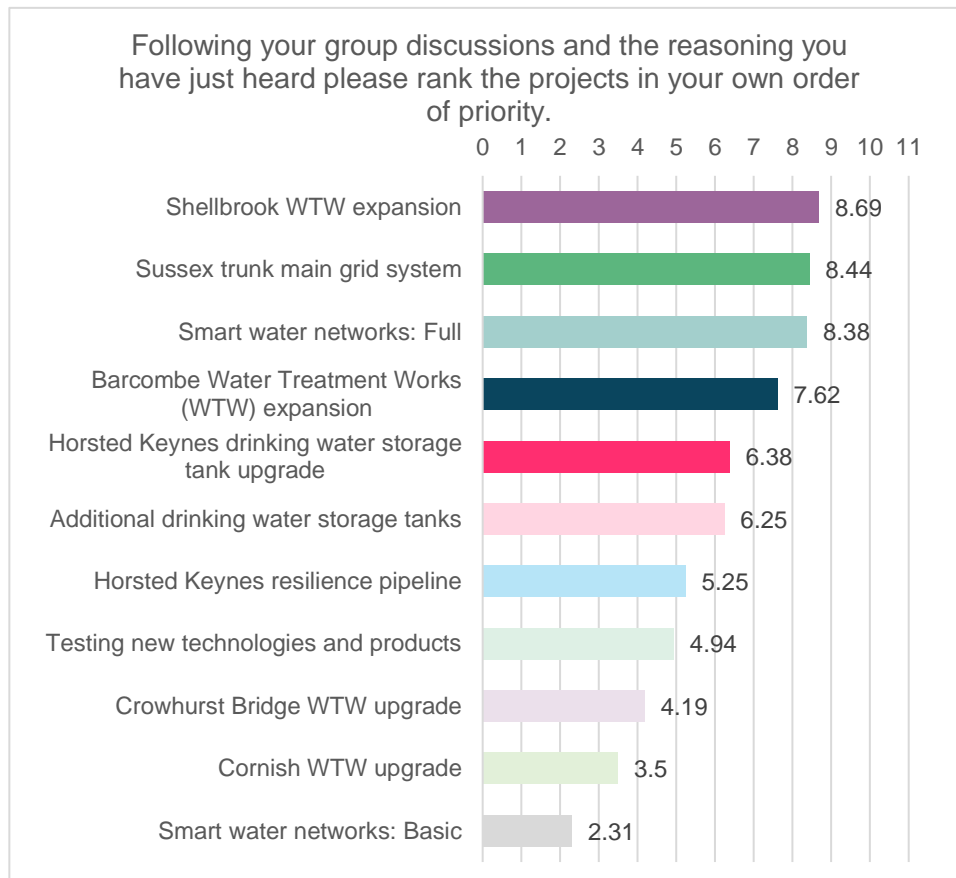


Table 1

- Sussex trunk main grid system: “For me the grid system is a need-to-have. Having a grid system means you’ve got that capacity to have a backup.” Business retailer
- Barcombe Water Treatment Works (WTW) expansion: “Because it affects my area the most, I feel it needs serious consideration. It’s a big spend but the benefit is 216,000 people.” Local authority officer
- Horsted Keynes drinking water storage tank upgrade, Additional drinking water storage tanks: “An increase in water storage capacity would be a good thing if one of your water treatment works does go down and you can’t pump. It would give you another 24-hour period.” Local authority officer
- Smart water networks: Basic: “I would add this: anything you do with innovation helps you identify where to look to the future. It’s only 18p, so you can afford it.” Business retailer
- Testing new technologies and products: “I think for 7p we can probably do this.” Local authority officer
- Smart water networks: Full: “Can we go back and ask for more funding? If you can get more funding then go for full smart water networks.” Business retailer
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “We were briefly thinking, do we swap Shellbrook for Barcombe and spend a bit more money? My thought was Shellbrook would spread the load.” Business retailer

- Cornish WTW upgrade: “You could do Cornish for 27p and get it in place for 2028, but it’s half the people that would be benefitted.” Business retailer

Table 2

- Smart water networks: Full: “This benefits the most people, avoids the most incidents, is medium for cost, and is operational sooner.” Emergency service
- Additional drinking water storage tanks: “With the energy crisis and war in the Ukraine, we are suddenly faced with supply shortage. What do we do to mitigate the crisis? The answer is storage, we need storage. The big problems are unplanned weather and emergency situations, and how do we plan for those? So storage is a real no-brainer, I think.” Major user
- Horsted Keynes drinking water storage tank upgrade: “I think we should also consider ‘Horsted Keynes drinking water storage tank upgrade’ though, it’s low cost with high population impacts.” Major user
- Horsted Keynes drinking water storage tank upgrade, Sussex trunk main grid system: “I think comparing ‘Sussex trunk main grid system’ and ‘Horsted Keynes drinking water storage tank upgrade’, ‘Sussex trunk main grid system’ is a good score.” Emergency service
- Crowhurst Bridge WTW upgrade: “Think about the reputational impact as well; okay this option impacts fewer people in practice, but think about how many customers will see the positive story on the news.” Emergency service
- Testing new technologies and products: “It’s so cheap, I think we should look at it.” Major user
- Horsted Keynes drinking water storage tank upgrade: “We need this, I think, and especially for the cost, it’s important.” Major user
- Testing new technologies and products: “This is the future.” Emergency service
- Sussex trunk main grid system: “This option is expensive, but we have to consider futureproofing.” Major user

Table 3

- Smart water networks: Full: “Having looked at the numbers on there, I’m thinking we don’t know enough about how it’s going to work, but here is a sensor system that’s going to give some information. Yes, you need to use technology, but my sense is that it’s not going to solve problems further down the line. You could spend money getting pipes fixed, etc, which may be more effective.” Major user
- Additional drinking water storage tanks: “I think that ‘Additional drinking water storage tanks’ should be included. You’ve got to bulk up your 24-hour resilience, that is a must.” Major user
- Smart water networks: Full: “I think the ‘Smart water networks: Full’, because it scores an 8/11 and affects the whole area, it’s pan-area.” Local authority officer
- Sussex trunk main grid system: “Don’t you think that having the ‘Sussex trunk main grid system’ would be more beneficial to the whole area?” Major user

- Smart water networks: Full: “It’s all very well saying that the population benefits from the smart technology stuff, but it will only benefit them if something kicks in *after* they’ve got the information.” Major user
- Sussex trunk main grid system: “I think number 9, the ‘Sussex trunk main grid system’, is important.” Major user
- Additional drinking water storage tanks, Sussex trunk main grid system, Testing new technologies and products: “‘Additional drinking water storage tanks’, number 5, because of resilience. I thought that ‘Testing new technologies and products’ was relatively modest, so I thought that was worth a punt. The ‘Sussex trunk main grid system’ too.” Major user
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “I’m for the ‘Shellbrook Water Treatment Works expansion’ rather than the ‘Barcombe Water Treatment Works (WTW) expansion’, because it takes a load off Barcombe, makes you less reliant on Barcombe.” Major user
- Barcombe Water Treatment Works (WTW) expansion: “If you’ve got Barcombe so that it can never go out, because you’ve virtually got a double supply, that would be good.” Major user
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “The population benefitted is massively more with the ‘Barcombe Water Treatment Works (WTW) expansion’.” Major user
- Barcombe Water Treatment Works (WTW) expansion, Horsted Keynes resilience pipeline: “I agree with increasing resilience. The ‘Horsted Keynes resilience pipeline’ was to increase the capacity there, so how much should that be included with the ‘Barcombe Water Treatment Works (WTW) expansion’?” Major user
- Horsted Keynes resilience pipeline: “Whilst I don’t live round here, for the people who do, it does seem very critical.” Major user

Table 4

- Smart water networks: Full, Sussex trunk main grid system: “I would like to point out that ‘Smart water networks: Full’ and the ‘Sussex trunk main grid system’ affect more people than the other projects.” Major user
- Shellbrook WTW expansion: “We get a better return on the money with this option over the others.” Major user

2. Which options would you like us to dismiss?

Table 2

- Smart water networks: Basic: “We could switch from ‘Smart water networks: Full’ to ‘Smart water networks: Basic’ in order to afford ‘Barcombe Water Treatment Works (WTW) expansion’, but is it worth it?” Major user

Table 3

- Barcombe Water Treatment Works (WTW) expansion: “To invest more in Barcombe still remains highly critical. But also to put a bit of resilience elsewhere. To actually put the resilience physically in a different location, to my mind, is a better investment, at least initially.” Major user

3. Why do you favour ‘Shellbrook WTW expansion’ over ‘Barcombe Water Treatment Works (WTW) expansion’?

Table 2

- Shellbrook WTW expansion: “With the other options we have chosen, we can only afford this with the budget we have left, but I don’t think that’s an issue.” Major user
- Shellbrook WTW expansion: “When there is a £4 limit, then the cheaper options surely allow for more.” Emergency service
- Shellbrook WTW expansion: “Response times though, I think, have to be considered.” Local authority officer
- Shellbrook WTW expansion: “I think ‘Shellbrook WTW expansion’ over ‘Barcombe Water Treatment Works (WTW) expansion’.” Emergency service

4. Why do you favour ‘Smart Water Networks: Full’ over ‘Smart Meter Networks: Basic’?

Table 2

- Smart water networks: Full: “Much better monitoring, with loggers that are more sensitive to flag up issues without relying on a phone call from a customer, that’s much better.” Major user
- Smart water networks: Full: “This will increase the speed of response and minimise the cost of finding the fault as well.” Local authority officer

Table 4

- Smart water networks: Full: “It is really a question of cost over everything else, and with the full upgrade we will avoid further expense in the long run.” Major user
- Smart water networks: Full: “This was my first, because I think that water leaks are absolutely critical, so a smart water network is essential.” Local authority officer
- Smart water networks: Full: “We felt it was the best ratio of money spent to people benefitting. The full smart network doesn’t come with a huge bill and it benefits a massive population.” Major user

5. Why do you favour ‘Smart Water Networks: Basic’ over ‘Smart Meter Networks: Full’?

Table 2

- Smart water networks: Basic: “This would allow us to focus on areas with most need.” Major user
- Smart water networks: Basic: “This benefits the same population, but incident prevention is lower, but so is the cost so it does free up other things.” Major user

REVIEWING THE OPTIONS

6. What are the differences between the options that you chose and the options that the other table chose?

Table 1

- Sussex trunk main grid system: “I pushed the grid system because of my pipe network background. That’s my area of knowledge. The pipe network makes sense because you are backing up what you’ve got. The timescale was 2035 so it’s a long timescale, but you don’t want to get too bogged down in them because you are investing for the future.” Business retailer
- Smart water networks: Basic, Smart water networks: Full: “We went for the basic smart network, because we thought spreading the benefits across a wider range of options was sensible. My suggestion was to go back and ask for more money to get the full one.” Business retailer
- All: “I still think you should go for all of them and you need a serious talk with your shareholders. Please can you bring that to your people because seriously, they need to all be done, it’s serious. There are going to be so many immigrants coming to our country. If you don’t have water, you die. It’s not a matter of options, we have to go for saving lives and it’s going to be happening and happening soon so let’s just get the whole system going.” Major user
- Cornish WTW upgrade, Crowhurst Bridge WTW upgrade: “We did want both of the things but we couldn’t afford Cornish. The population was over double for Crowhurst compared to Cornish so that’s why we went for it.” Business retailer
- Testing new technologies and products: “You’ve got to keep up with technology and innovation because all these are innovative ideas. For 7p it’s a no-brainer.” Local authority officer
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “It was a money issue. Spreading resources but also with a view to the extremities of that area coming up as red. If you were to increase capacity over that side you may take some load off of Barcombe and it could help Barcombe. Overall resilience would be better.” Business retailer

Table 2

- Additional drinking water storage tanks, Smart water networks: Basic: “‘Additional drinking water storage tanks’ and ‘Smart water networks: Basic’ were the only differences.” Emergency service
- Smart water networks: Full: “The number of incidents avoided was a big deciding factor.” Emergency service
- Smart water networks: Full: “The limitations of detection with ‘Smart water networks: Basic’ was also important.” Major user
- Smart water networks: Full: “We also considered futureproofing, we don’t see the point of spending money now to come back in the future and upgrade again.” Emergency service
- Smart water networks: Full: “I would say the timeframe of all of these was the least important to us.” Emergency service
- Shellbrook WTW expansion: “The impact of climate change going forwards was important too.” Local authority officer

- Horsted Keynes resilience pipeline: “‘Horsted Keynes resilience pipeline’ was just too expensive for what was really an average score of 26, compared to other work options on the table.” Emergency service
- Horsted Keynes resilience pipeline: “‘Horsted Keynes resilience pipeline’ also pairs with ‘Barcombe Water Treatment Works (WTW) expansion’, but we didn’t pick that, so it didn’t make much sense to then choose ‘Horsted Keynes resilience pipeline’.” Local authority officer
- Shellbrook WTW expansion: “We wanted to look at spreading resilience further afield.” Emergency service
- Cornish WTW: “Only a small number of people benefit from this.” Major user
- Additional drinking water storage tanks: “Water storage is a very small benefit, with the works meaning we only just hit 24 hours.” Major user
- Shellbrook WTW expansion: “We did consider geography as we were aware of the red zone on the map.” Emergency service
- Shellbrook WTW expansion: “We looked at future population growth as well.” Major user
- Crowhurst Bridge WTW upgrade: “We talked briefly about the media as well. It’s not a category on the cards but we did look at news stories and how they would go down as well.” Emergency service

Table 3

- Barcombe Water Treatment Works (WTW) expansion, Shellbrook Water Treatment Works expansion: “We went for the ‘Barcombe Water Treatment Works (WTW) expansion’ rather than the ‘Shellbrook Water Treatment Works expansion’. And that was because it served more people.” Major user
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook Water Treatment Works expansion: “Because if Barcombe shut down, everyone would have problems. Barcombe affects a huge amount of people. Even if you take pressure off by improving Shellbrook, you cannot afford for Barcombe to go down.” Major user
- Smart water networks: Basic, Smart water networks: Full, Sussex trunk main grid system: “We would’ve done the ‘Smart water networks: Full’ if we had enough money left at the end. We went for the ‘Smart water networks: Basic’ with a view that it could be expanded in the future. We went for the ‘Sussex trunk main grid system’ with the view that that was more vital, because everyone will benefit from a grid system update.” Major user
- Horsted Keynes drinking water storage tank upgrade: “We felt that if Horsted Keynes is the main thing and you can increase that, then it would hold more to help the whole system.” Major user

Table 4

- Smart water networks: Full: “We agreed that it was a waste of time to go for a less effective system and then spend more money later down the line to fully upgrade.” Major user

-
- Smart water networks: Full: “I think the 87/600 megalitres daily leakage statistic is a very high figure, which surely is costing everyone a lot of money. It seems that the best route to fixing this problem is the full smart upgrade.” Major user

7. Why do you think the other group has dismissed a specific option when your group included it?

Table 3

- Horsted Keynes drinking water storage tank upgrade, Shellbrook WTW expansion: “For Horsted Keynes, we dismissed it because it serves such a huge area. So if you can store more water there, the people who would benefit from Shellbrook would also benefit from the Horsted Keynes one.” Major user
- Barcombe Water Treatment Works (WTW) expansion, Horsted Keynes drinking water storage tank upgrade: “At least with Horsted Keynes, you’ve got more capacity if something were to happen at Barcombe. You’d have more resilience, you’d have a buffer.” Major user
- Barcombe Water Treatment Works (WTW) expansion: “If there is a problem like an oil spill on the River Ouse that would contaminate the water going to Barcombe, I’m not sure what you would do. Frankly, I am shocked that Barcombe is so important within this region.” Major user
- Barcombe Water Treatment Works (WTW) expansion, Shellbrook WTW expansion: “What is the timescale, is it for the next 5 or 10 years? Oh, 10-15 years, okay. Because I’m thinking could we do, say, Barcombe today, and then Shellbrook later in the future?” Major user

APPENDIX 1: WORKSHOP ATTENDEES

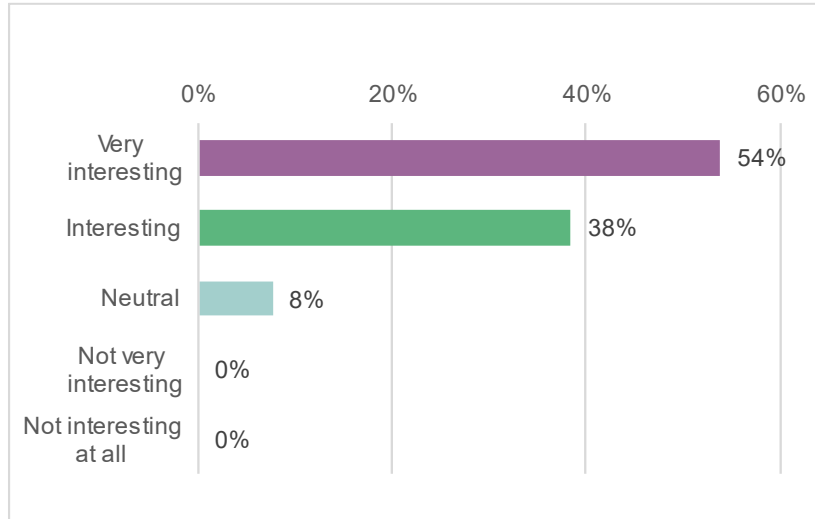
The following organisations were represented at the think tank:

Advizzo
Bartholomews Agri Food Ltd
C Brewer & Sons Ltd
Downgate Farm LLP
East Sussex County Council
East Sussex Fire & Rescue
Hérons Folly
Holly Farm Buxted Ltd
Mason Estate
Mid Sussex District Council
Nicholas Williams
SGN
South East Rivers Trust
Sussex Police
Wealden District Council
Well Place Day Nursery Ltd

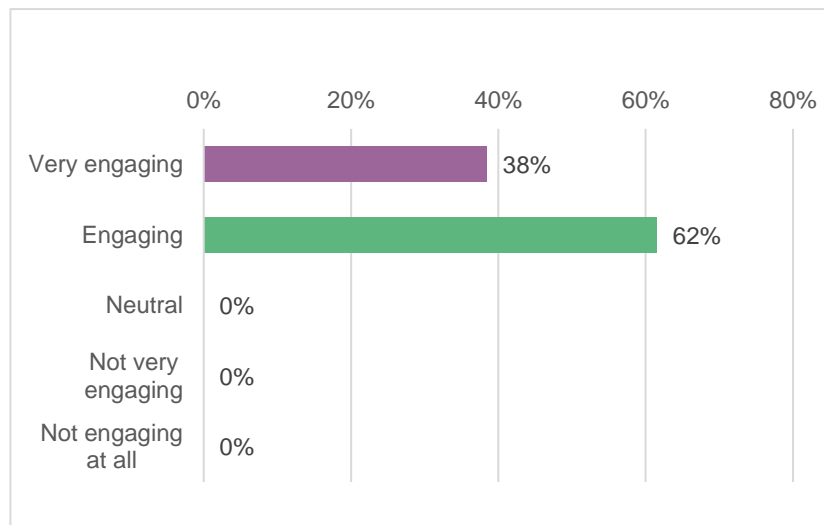
APPENDIX 2: WORKSHOP FEEDBACK

After the workshop, stakeholders were asked to complete a short feedback form. The feedback was as follows:

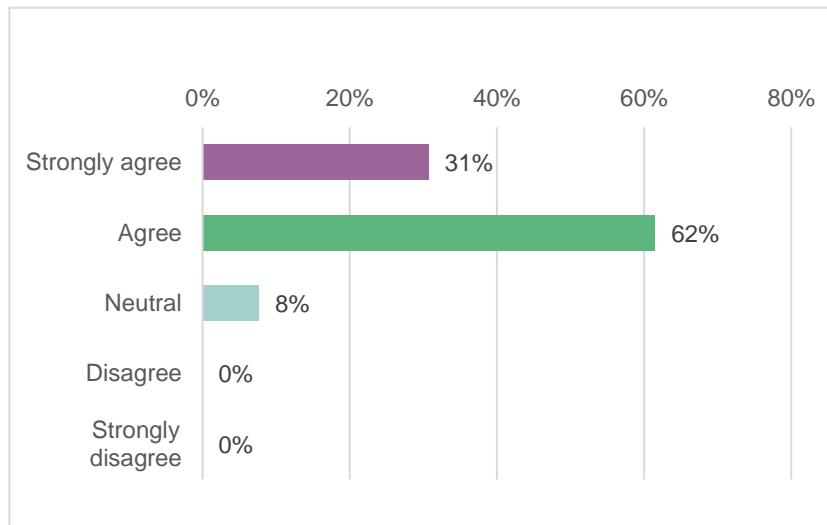
1. Overall, did you find this think tank workshop to be:



2. How engaging did you find the session?



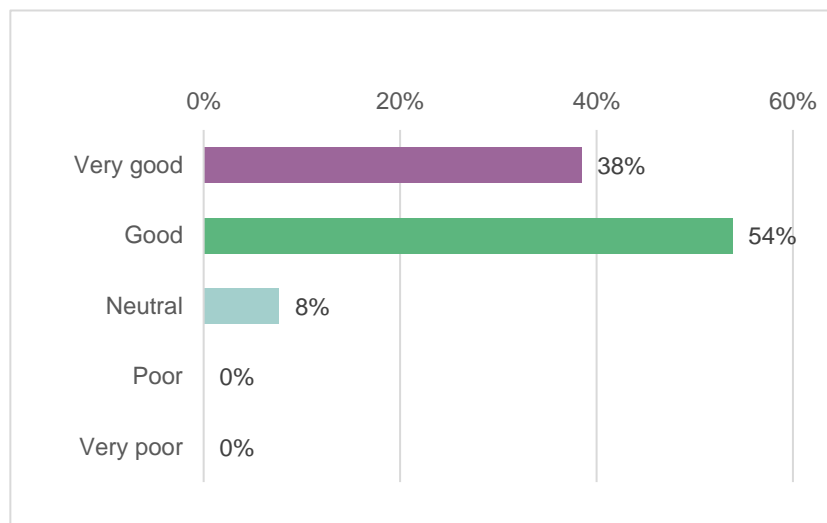
3. Did you feel that you had the opportunity to get involved in the discussions and make your points known?



Comments:

- “I would have liked a longer session to allow more participation for the introverts.”
- “Yes, the facilitators were good at involving everyone.”

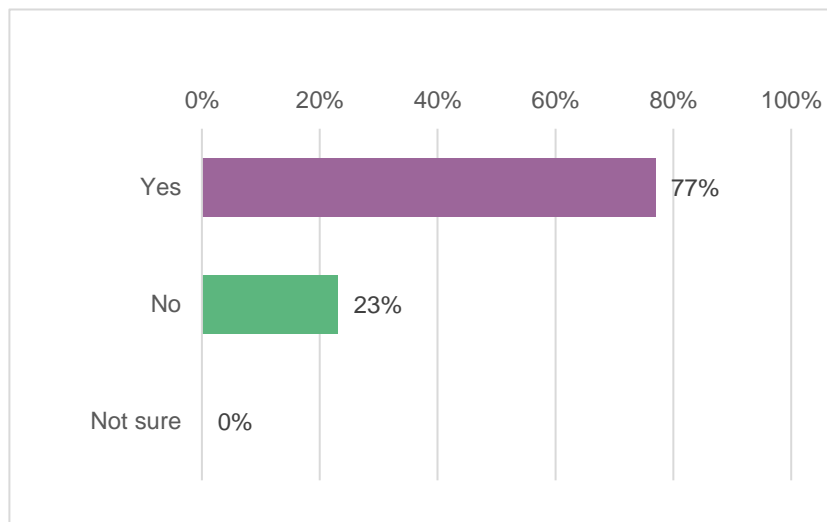
4. What did you think of the way the workshop was chaired by your facilitator?



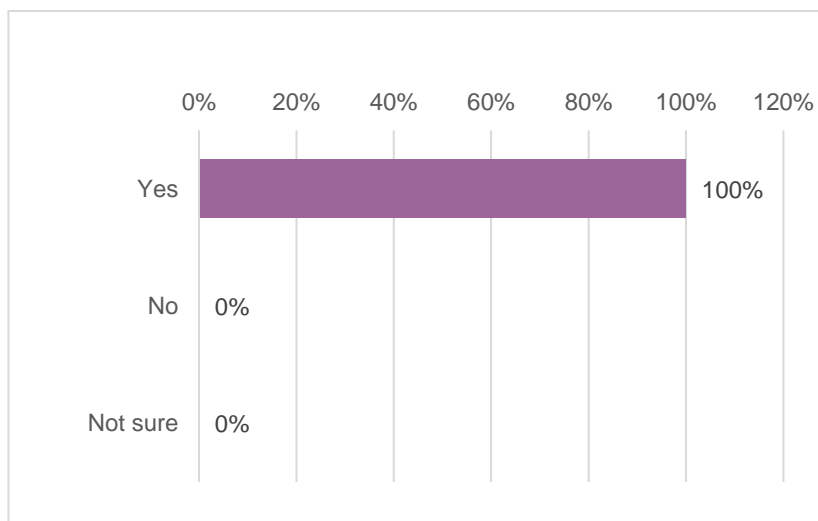
Comment:

- “Very engaging, especially with some difficult off-tangent questions.”

5. Did you feel you had sufficient information/were able to give an informed view?



6. Following the session, do you feel you have a better understanding of the issues South East Water is facing in the near future surrounding resilience and ensuring customers do not suffer supply interruptions?



Comments:

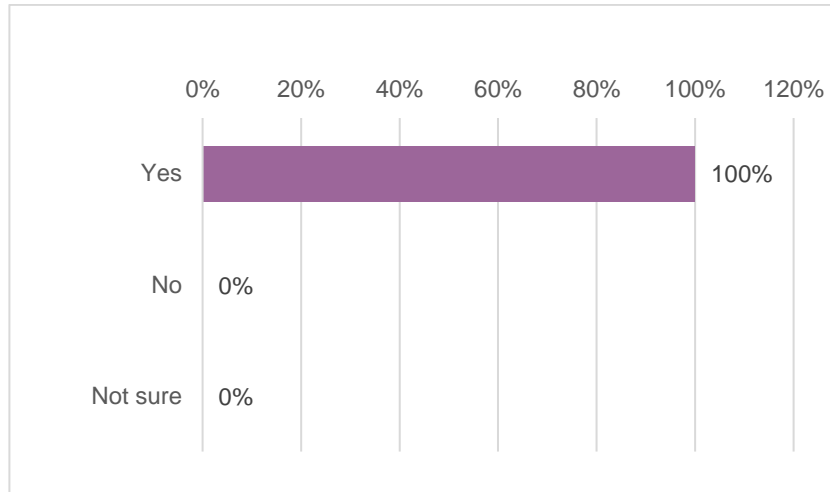
- “I would have liked to compare with alternatives to each major infrastructure.”
- “It would have been great to have an afternoon session.”
- “More information would have been helpful.”
- “There was too much to consider and not enough time or detail.”

7. Which do you feel are the biggest resilience issues South East Water will face in the next five years?

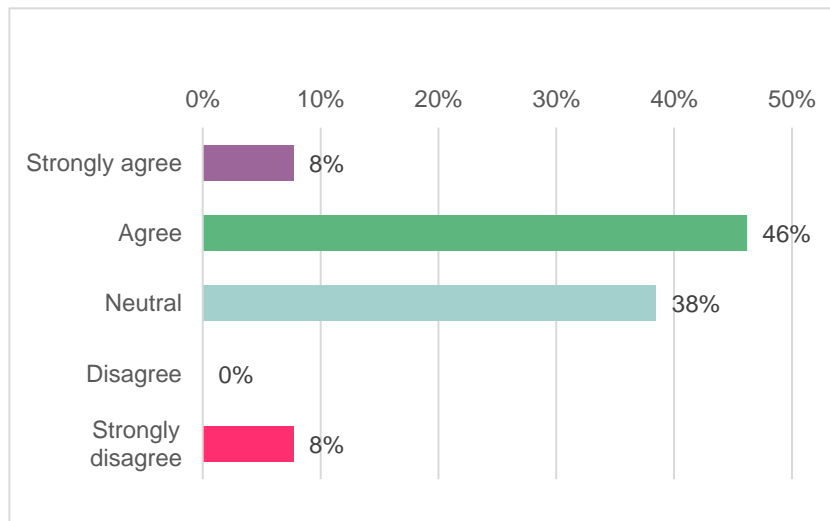
- “Improving the technology for finding and fixing leaks.”
- “Leakages and water-supply restrictions caused by extreme weather events.”
- “Network upgrades, customer perception, and recruiting and retaining a skilled workforce.”
- “Being able to maintain supply in an unpredictable environment.”

- “Not enough water treatment plants: too much reliance on Barcombe.”
- “Climate change and increased housing/demand.”
- “Developers.”
- “An ageing network with insufficient storage.”

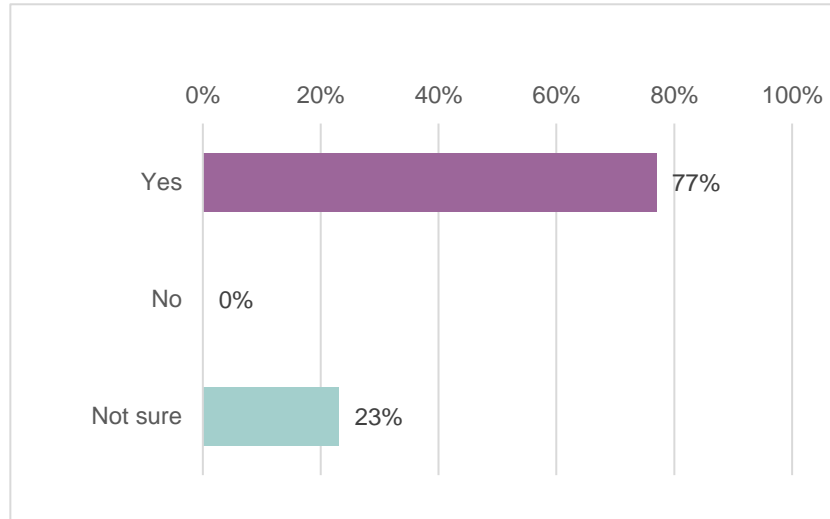
8. Following the session, do you have a greater understanding of the trade-offs South East Water has to make when deciding which schemes should be progressed and when?



9. How do you feel about the following statement? “The level of information was tailored appropriately to match my levels of knowledge.”




10. Would you come to a future think tank session?



APPENDIX 3: SCHEMES

SCHEME 1

Barcombe Water Treatment Works (WTW) expansion



1


Reliability	Reduce reliance on the current two water treatment works and provide greater system flexibility.	8
Resistance	Improve how we manage raw water quality and reduce the risk of poor river quality during heavy rain and low flows. Improved alternative power arrangements would be included to reduce the risk of power cuts.	8
Redundancy	Additional capacity would make it easier to undertake maintenance across the whole site.	8
Response and recovery	Greater flexibility to cope with operational issues, reducing impact and duration.	6
Total score		30

Incidents avoided	(Potential number of times customers go without water per year related to this issue)	6
Bill impact	(per year)	£1.81
Population benefitted		216,000
Operational by		2030

Additional information:
Costs include purchasing land next to the existing WTW to enable future expansion. This option would mean Sussex is more reliant on this one site; however, the solution would significantly improve the performance of the water treatment works.

Constraint:
Only this card or the 'Shellbrook Water Treatment Works expansion' card can be chosen.

Barcombe Water Treatment Works (WTW) expansion



1

Inside a water treatment works


Background
The WTW at Barcombe was built in the early 1970s and treats 60 percent of the drinking water we supply in Sussex. It takes water from the River Ouse and treats it before it is pumped to approximately 90,000 properties. The site currently holds two water treatment works and a raw water holding reservoir. The reservoir at the site provides flexibility, as we're able to use it when the water in the River Ouse is of too poor quality to abstract. Due to how important this site is for the Sussex supply, it's difficult to switch off the works for routine maintenance. Similarly, if there's a problem, the risk of customers going without supply is greatly increased.

The proposal
To upgrade the site by building a third water treatment works. This would provide more reliability, redundancy and flexibility. The raw-water-holding reservoir would also be upgraded.

south east water

SCHEME 2

Shellbrook Water Treatment Works (WTW) expansion



2


Reliability	Reduce the reliance on Barcombe WTW, allow greater system strength and flexibility, and would be located closer to areas previously affected by extreme weather events.	8
Resistance	Designed with sufficient capacity and redundancy to allow both site and network flexibility, greatly reducing the impact of weather and supply interruptions. Improved alternative power arrangements would be included to reduce the risk of power cuts.	8
Redundancy	Use existing infrastructure, with some opportunity to further improve system interconnectivity with additional equipment such as pumps and small pipeline-laying projects.	8
Response and recovery	Greater monitoring and flexibility to cope with operational issues, reducing impact and duration.	8
Total score		32

Incidents avoided	(Potential number of times customers go without water per year related to this issue)	6
Bill impact	(per year)	£1.32
Population benefitted		72,000
Operational by		2035

Additional information:
This option would result in Sussex being more robust, and reduce the reliance on Barcombe WTW. However, environmental considerations and the operation of Ardingly Reservoir would need to be thoroughly reviewed. Once completed, we would also alter the area's water supply network to enable the site to supply around 30,000 more properties than it does currently.

Constraint:
Only this card or the 'Barcombe Water Treatment Works expansion' card can be chosen.

Shellbrook Water Treatment Works (WTW) expansion



2

Part of the water treatment process


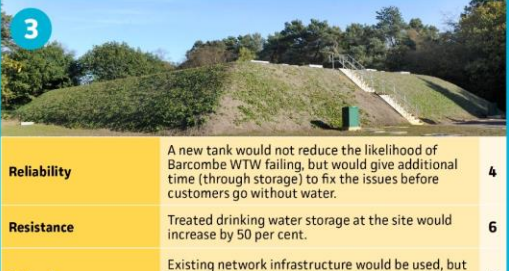
Background
The WTW at Shellbrook was built in the early 1980s and is located near Haywards Heath. The site takes raw water from Ardingly Reservoir before treating it and pumping it to approximately 15,000 properties. Due to the comparatively small amount of water it currently treats, the Sussex water supply network is very reliant on Barcombe WTW.

The proposal
Build a second water treatment works at the site, enabling a greater volume of water to be treated. This would provide greater system flexibility and reliability, as well as introduce a major source of treated drinking water closer to those areas adversely affected by the previous extreme weather events.

south east water

SCHEME 3

Horsted Keynes drinking water storage tank upgrade

Reliability	A new tank would not reduce the likelihood of Barcombe WTW failing, but would give additional time (through storage) to fix the issues before customers go without water.	4
Resistance	Treated drinking water storage at the site would increase by 50 per cent.	6
Redundancy	Existing network infrastructure would be used, but the solution would create spare capacity within the system.	6
Response and recovery	The site is closer to areas previously affected by interruptions, and therefore would improve the system's recovery time if there are issues. The site would have greater monitoring and flexibility to cope with operational issues, reducing impact and duration.	6
Total score		22
Incidents avoided	(Potential number of times customers go without water per year related to this issue)	3
Bill impact	(per year)	£0.29
Population benefitted		140,000
Operational by		2028

Additional information:
Land next to the existing drinking water storage tank would need to be purchased. West Sussex would still be heavily reliant on Barcombe WTW, which is a considerable distance away from areas which have been affected by the previous five extreme weather events.

Constraint:
N/A

Horsted Keynes drinking water storage tank upgrade




Outside a drinking water storage tank

Background
Horsted Keynes drinking water storage tank is a strategic site in West Sussex storing 24 hours' worth of water. This is because the site supplies 65,000 customers and receives most of Barcombe WTW's treated water before it flows to other storage tanks in the area or to customers' taps. Industry best practice is to have 24 hours' worth of treated water stored in these tanks. However, as this site acts as a critical 'buffer' in maintaining supplies to customers either when there are issues at Barcombe WTW or during extreme weather events, we would like to increase its storage capacity further.

The proposal
Build an additional storage tank on the site, increasing capacity and the 'buffer' between incidents and loss of customers' water supply. Customers in this area have experienced significant supply interruptions following extreme weather. Therefore, this additional storage would add further protection to customers' drinking water supplies, while also improving overall system performance and flexibility.

south east water

SCHEME 4

Horsted Keynes resilience pipeline






Reliability	The new pipeline would be able to fully support Horsted Keynes drinking water storage tank should the existing trunk main fail.	8
Resistance	The network configuration would be improved, allowing for greater protection should there be issues with the current trunk main.	6
Redundancy	The new pipeline would connect with existing infrastructure, allowing greater system flexibility.	6
Response and recovery	The pipeline would include the latest technologies and sensors aligned with our Smart Water Network Strategy. These sensors include technology that can give early insight and direct warnings before events occur so that action and mitigation can be taken immediately.	6
Total score		26
Incidents avoided	(Potential number of times customers would go without water per year)	3
Bill impact	(per year)	£1.81
Population benefitted		140,000
Operational by		2030

Additional information:
Although the cost of this option is comparatively high in relation to other schemes, it would allow for greater system flexibility and significantly reinforce our trunk main network. It would also ensure a continuity of supply to those areas that were affected by the previous five extreme weather events.
There would be some environmental impact surrounding the pipe's installation, and it would cause some localised disruption in the short term.

Constraint:
N/A

Horsted Keynes resilience pipeline

Mainlaying projects


Background
Horsted Keynes drinking water storage tank is a key strategic site in West Sussex. The tank is supplied by a single trunk main (laid in 1970) from Barcombe WTW, and carries enough water to supply around 65,000 properties in the area. When there are issues at Barcombe WTW, the pipeline supplying Horsted Keynes drinking water storage tank can depressurise, leading to issues including burst mains. If this main were to catastrophically fail, it's likely it would lead to a significant supply interruption event, as there is no alternative supply.

The proposal
Lay an additional 14 kilometre trunk main from Barcombe WTW to Horsted Keynes drinking water storage tank, which would in places connect into the existing trunk main. This would enable greater system flexibility and reduce the risk of customers going without water if the current pipeline fails.

south east water

SCHEME 5

Additional drinking water storage tanks




5

Reliability	The additional storage allows more time to fix network issues; e.g. significant burst mains. The sites would also include state-of-the-art technology and alternative power options.	6
Resistance	The new storage tanks would provide more time for repairs to be undertaken before customers lose supply.	6
Redundancy	We would use existing infrastructure where possible; however, we may also need to lay new pipelines.	4
Response and recovery	To maintain supplies during a power cut, alternative power supplies and enhanced monitoring systems would be installed. The sites are all located in areas that have experienced previous issues.	8
Total score		24
Incidents avoided	(Potential number of times customers go without water per year related to this issue)	12
Bill impact	(per year)	£0.91
Population benefitted		50,000
Operational by		2035

Additional information:
The solution would not eradicate network issues, but would provide greater protection in terms of resistance, response and recovery time. It is likely that land next to existing drinking water storage tank sites would need to be purchased.

Constraint:
N/A

Additional drinking water storage tanks



5

Inside a drinking water storage tank


Background
Industry best practice is to ensure there are 24 hours' worth of treated drinking water storage in the system. This increases flexibility by providing a buffer between network events, such as a burst pipe, weather issues or site failure, and customer impact. It provides operational teams with time to locate and resolve the problem before the water network is severely affected or all the water in storage is used by customers.

The proposal
To build six new drinking water storage tanks to mitigate against the reduction of current capacity following housing and development growth. This solution also ensures we are resilient against future challenges.

south east water

SCHEME 6

Crowhurst Bridge Water Treatment Works (WTW) upgrade




6

Reliability	New processes would increase protection of the site, as key maintenance activities could be increased to remove all of the necessary iron concentrations from the raw water supply.	8
Resistance	Enable maintenance flexibility without impacting customer supply.	8
Redundancy	Make use of existing infrastructure, but also build spare capacity.	6
Response and recovery	Enhanced on-site monitoring, providing early insight and warning if raw water parameters are not satisfactory, allowing for swift investigation and repair.	4
Total score		26
Incidents avoided	Significant reduction in customer contacts	
Bill impact	(per year)	£0.47
Population benefitted		27,000
Operational by		2032

Additional information:
This solution is seen as solving the problem at source; however, after many years of higher-than-desired iron concentration being supplied from these raw water sources, a localised water mains replacement programme may also be required to remove iron deposits from the pipeline network.

Constraint:
N/A

Crowhurst Bridge Water Treatment Works (WTW) upgrade



6

One of our 87 water treatment works

Background
Crowhurst Bridge WTW is near the village of Burwash. This site hasn't been suffering from supply interruptions, but isn't performing as expected due to high iron content in the raw water supply. If iron isn't removed it can build up in the pipes, impacting on the appearance and taste of the water that comes out of customers' taps. Currently, due to an increase in demand caused by growth and development, Crowhurst Bridge WTW doesn't have the capability to undertake the necessary maintenance on our filters to effectively remove the high concentrations of iron from the raw water.

The proposal
Introduce an additional filtration system at the site which would remove the iron. This would enable greater site flexibility and redundancy, as other filters can be 'rested' while maintenance takes place. This would also reintroduce the resilience the site experienced prior to the increase in demand.

south east water

SCHEME 7

Cornish Water Treatment Works (WTW) upgrade



7


Reliability	The additional treatment at the alternative drinking water storage tank should reduce the likelihood of there being raw water issues on this supply.	8
Resistance	The proposed works would not only remove the raw water issues but also mean Paradise drinking water storage tank would no longer risk being a single point of failure.	6
Redundancy	Small mains-laying schemes and an additional booster pumping station would be required.	4
Response and recovery	The work and system would allow greater flexibility of supply for Paradise drinking water storage tank, as it could be supplied by either Cornish WTW or the alternative nearby tank, or a combination of both.	4
Total score		22

Incidents avoided	Reduced customer contacts and raw water issues	
Bill impact	(per year)	£0.27
Population benefitted		11,800
Operational by		2028

Additional information:
This solution would require some network automation and configuration, but this would be aligned to the Smart Water Network Strategy, ensuring there would be real-time network data to allow it to be operated effectively.

Constraint:
N/A

Cornish Water Treatment Works (WTW) upgrade



7

One of our 97 water treatment works

Background
Cornish Water Treatment Works is located near the Meads area of Eastbourne and is a single source of supply. It's the only water treatment works that supplies a nearby drinking water storage tank known as Paradise. There are concerns about a lack of resilience at Cornish WTW, and raw water issues which need addressing.

The proposal
Pump treated drinking water to another nearby drinking water storage tank which has the ability to better connect to the existing network and provide additional treatment, before being sent to Paradise drinking water storage tank. This solution would require a new pipeline to be laid and a new pumping station to be built. This would also give the system flexibility, and allow (if needed) Paradise drinking water storage tank to be supplied by more than one source should there be operational issues or concerns.

south east water

SCHEME 8

Testing new technologies and products



8


Reliability	New technologies and products would be tested that specifically monitor and reduce the likelihood of assets failing, or provide sufficient warning so proactive steps can be taken.	4
Resistance	Test new technologies and products that would strengthen our current equipment, or purchase new assets (identified through trials), to strengthen our systems or configurations.	4
Redundancy	Test new technologies and products to either introduce additional redundancy to our network or give insight into how improvements in system or network interconnectivity can be achieved.	4
Response and recovery	Test new technologies and products that give real-time data and insight to support our recovery efforts across a range of potential issues.	6
Total score		18

Incidents avoided	Significant reduction in customer contacts	
Bill impact	(per year)	£0.07
Population benefitted		N/A
Operational by		2028

Additional information:
This solution also aligns with our Smart Water Network Strategy and roadmap.

Constraint:
N/A

Testing new technologies and products



8

Trialling the latest technology


Background
To drive ourselves and the industry forward, we are keen for Sussex to become a hotspot for innovation in the water sector. By working with suppliers, developers, academics and customers, we're keen to trial and test new innovative water network technology, enabling us to test different solutions and technologies against each other.

The proposal
To create an agile system where new products and ways of working are tested quickly. We see this approach as supporting fast, focused and inexpensive testing at small scale, ahead of any larger investment if the technology is proven successful.

south east water

SCHEME 9

Sussex trunk main grid system



9


Reliability	The grid system would strengthen our ability to continuously supply our customers, by providing alternative methods of water distribution.	10
Resistance	While the grid system would not inherently improve resistance to individual issues; e.g. burst mains, it would strengthen our ability to reconfigure our networks, ensuring we still provide a satisfactory supply to customers who may have otherwise lost it.	6
Redundancy	Considerably large mains-laying schemes and equipment would need to be installed to sufficiently supply the required areas.	8
Response and recovery	The new pipelines would also include the latest technologies and sensors that are aligned with our Smart Water Network Strategy.	8
Total score		32

Incidents avoided	(Potential number of times customers go without water per year related to this issue)	20 <small>Across the whole supply area</small>
Bill impact	(per year)	£0.67
Population benefitted		211,000
Customer benefit from		2035

Additional information:
The cost of this option would be high and it would take some years to deliver. Localised areas would benefit as pipes are laid, but only upon completion would it significantly strengthen and reinforce our network, allowing for much greater system flexibility. There would be an environmental impact while the pipelines are laid.

Constraint:
N/A

Sussex trunk main grid system



9

One of our pipelaying projects


Background
Currently some areas of Sussex are fed by one single water source. In these areas, if that water main bursts we're unable to keep customers in supply while repairs are made. When there is a burst or issue in those areas which are part of a larger, interconnected pipeline network, we have the flexibility to change the way water flows through the pipes, keeping customers in supply while repairs are made.

The proposal
By introducing a grid system of trunk mains throughout Sussex, we could eradicate all single points of failure within the region's water pipe network. This would increase flexibility by enabling our customers and drinking water storage tanks to be supplied by more than one source of treated water, ensuring the vast majority of our customers remain in supply.

south east water

SCHEME 10

Smart Water Network: Full



10


Reliability	Strengthen our ability to continuously supply our customers by highlighting alternative methods of water distribution, thereby allowing safe and effective repairs and maintenance without compromising network performance.	8
Resistance	Provide early insight into network issues before they impact customers. Enhanced monitoring would also identify opportunities for network optimisation and interconnectivity improvements; e.g. identify areas where we can lower pressure.	8
Redundancy	Sensors would be installed on existing infrastructure, and when combined with our other data sources, would provide insight and flexibility to maintain supplies; e.g. by recommending alternative routes of water supply.	8
Response and recovery	Enhanced monitoring would provide live network updates, highlighting immediately when there are major issues or problems beginning to emerge before, in the vast majority of cases, customers become aware of them. This would vastly speed up our response and recovery times.	8
Total score		32

Incidents avoided	(Potential number of times customers go without water per year related to this issue)	25 <small>Across the whole supply area</small>
Bill impact	(per year)	£0.91
Population benefitted		612,000
Operational by		2028

Additional information:
We are keen to greatly improve our supply interruption performance for the benefit of our customers. The Smart Water Networks package aligns with our ambition to improve our network capability and drive the improvements in this area.

Constraint:
Only this card or the 'Smart Water Network: Basic' card can be chosen.

Smart Water Network: Full



10

Using the latest sensors and loggers to detect hidden issues


Background
Whether it's day-to-day maintenance or serious operational incidents, it takes time for our technicians to pinpoint the exact location of an issue and undertake repairs. While these investigations take place, treated drinking water is escaping from our pipelines, draining the network and our drinking water storage tanks. Not only is this wasting treated water, but it can also extend the amount of time our customers are without a supply.

The proposal
Following a trial in 2019/20, we propose installing a full suite of new state-of-the-art sensors, loggers and meters throughout our network in Sussex to create what is known as a 'Smart Water Network'. This system would constantly monitor the flow of water through the pipes, providing real-time data, water quality, visibility and early warnings of issues or network deterioration. This solution would allow greater visibility and flexibility as to where, when and how water can be diverted to avoid or reduce supply interruptions and pinpoint the location of bursts and leaks. All this would significantly improve operational response and recovery times.

SCHEME 11

Smart Water Network: Basic

11



Reliability	Strengthen our ability to continuously supply our customers by highlighting alternative methods of water distribution, thereby allowing safe and effective repairs and maintenance without compromising network performance.	6
Resistance	Provide early insight into network issues before they impact customers. Enhanced monitoring would also identify opportunities for network optimisation and interconnectivity improvements; e.g. identify areas where we can lower pressure.	6
Redundancy	Sensors would be installed on existing infrastructure, and when combined with our other data sources would provide insight and flexibility to maintain supplies; e.g. by recommending alternative routes of water supply.	4
Response and recovery	Enhanced monitoring would provide live network updates, highlighting immediately when there are major issues or problems beginning to emerge before, in the vast majority of cases, customers become aware. This would vastly increase our response and recovery times.	6
Total score		22
Incidents avoided	(Potential number of times customers go without water per year related to this issue)	10 <small>Across the whole supply area</small>
Bill impact	(per year)	£0.18
Population benefitted		612,000
Operational by	Year that customers will witness benefit of the scheme	2027
Additional information: We are keen to greatly improve our supply interruption performance for the benefit of our customers. The Smart Water Networks package aligns with our ambition to improve our network capability and drive the improvements in this area. This option would be a stepping stone to introducing a full Smart Water Network.		
Constraint: Only this card or the 'Smart Water Network: Full' card can be chosen.		

Smart Water Network: Basic

11



Using sensors and loggers to detect hidden issues

Background
Whether it's day-to-day maintenance or serious operational incidents, it takes time for our technicians to pinpoint the exact location of an issue and undertake repairs. While these investigations take place, treated drinking water is escaping from our pipelines, draining the network and our drinking water storage tanks. Not only is this wasting treated water, but it can also extend the amount of time our customers are without a supply.

The proposal
Installing a basic suite of state-of-the-art pressure sensors and loggers throughout our network in Sussex would begin the journey to a 'Smart Water Network', but not complete it. We believe installing this equipment would provide 50 per cent of the benefit that the full Smart Water Network roll-out would bring. This system would constantly monitor water pressure within the pipes, providing real-time data, visibility and early warnings of issues or network deterioration. This solution would allow visibility and flexibility as to where, when and how water can be diverted to reduce supply interruption timeframes, but may not be able to pinpoint the location of bursts and leaks, which may still prolong supply interruption events. This system would improve our operational response and recovery times, but not to the same extent as the full roll-out would.

south east water