



Emotionally  
Intelligent  
Communications

# SOUTH EAST WATER

## PR24 THINK TANK: KENT RESILIENCE OPTIONS

8 FEBRUARY 2023



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## INTRODUCTION

On 8 February 2023, South East Water (SEW) hosted an in-person think tank workshop in Maidstone to support the development of its business plan, known as PR24 (Price Review 24). The event was structured into three workshops, 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 10 resilience options being considered by SEW in Kent. Details of these schemes are provided in Appendix 3 of this report. 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.

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## EXECUTIVE SUMMARY

### PARTICIPANTS

- A total of 29 stakeholders participated in the workshop, representing 21 organisations.
- Stakeholders represented a wide range of organisation types, including utility/energy groups, parish/town councils, and local authorities. Environmental groups and consumer groups were the most represented organisations at the event, accounting for 35% and 20% of attendees, respectively.

### WORKSHOP 1: PR24 OVERVIEW, 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 SEW's water supply sources, its pipework replacement programme, and wider engagement and collaboration opportunities.
- SEW's responsible business aspirations were seen as being appropriate, and stakeholders endorsed the company's focus on resilience, particularly in light of the increasingly regular extreme weather events occurring in Kent.
- Attendees stated that they had experienced a number of resilience issues, including drinking water supply interruptions and low-pressure incidents, and had anecdotal experience of insufficient supply capacity to cover new housing developments.
- It was felt that SEW was not doing enough to explore and incentivise winter storage reservoirs for irrigation. Therefore, the company was encouraged to do more around these winter storage reservoirs in order to help increase local resilience, particularly for farmers.

### WORKSHOP 2: OUR OPTIONS – INITIAL VIEWS

- Stakeholders strongly endorsed the 'Smart Water Network: Full' scheme, and thought that it would help prevent supply outages and leaks. They also felt that the water savings made through this scheme would help the water system to support the expected future spike in demand in Kent. There was no appetite to see SEW to adopt the 'basic' scheme as an alternative during this session.
- The 'Kent trunk main grid system' was highly popular among attendees, who argued that it would increase resilience by creating an integrated system that would distribute water more equitably. In addition, they thought that creating a failsafe grid system for supplying water was a huge upgrade on the current single-pipeline network, as water could quickly be diverted to specific areas should a pipe break.
- Attendees tended to prefer the Water Treatment Works (WTW) upgrade schemes. The 'Tonbridge WTW upgrade' scheme was seemingly the more popular of the two WTW upgrade schemes, but some worried that its benefits would be targeted too specifically on a single geographical area. The

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‘Bewl WTW expansion’ scheme did have some supporters, but several stakeholders considered it not to be environmentally friendly and felt that it was not suited to Kent’s water system.

- Participants were in favour of the ‘Testing new technologies and products’ scheme, but thought that it should be incorporated as an overarching mindset that informs the other schemes, rather than being delivered as a specific scheme.

### **WORKSHOP 3: OPTION PRIORITISATION**

- Given the scheme costs and £2 bill cap, some attendees were now more inclined to prioritise the ‘Smart Water Network: Basic’ scheme over the ‘Smart Water Network: Full’ scheme. They argued that the ‘basic’ scheme would still deliver a significantly improved service, and would save money that could be spent on other schemes. However, others felt that a ‘full’ scheme was still preferable, based on how many customers would be covered compared to with other schemes, and the drop in the number of leakages detected between the ‘full’ and ‘basic’ suites.
- Overall, the ‘Kent trunk main grid system’ scheme continued to be strongly prioritised across the tables during discussions, based on the number of customers served and the increased reliability delivered by the grid supply network. However, not every table included it in their top five priorities.
- During discussions about the four potential different WTW schemes, the WTW upgrade projects were noticeably more popular than the WTW expansion projects. However, the tables were divided around whether to opt for the ‘Tonbridge WTW upgrade’ or the ‘Pembury WTW upgrade’ scheme, with two tables choosing Tonbridge and one selecting Pembury. While reviewing each other’s choices, one table decided to swap the Tonbridge scheme for the Pembury scheme.
- While almost all attendees were still in favour of investing in one of the ‘New drinking water storage tank’ schemes, once scheme costs were taken into account, some felt that spending should be pared back. Those now in favour of prioritising a ‘basic’ scheme took the view that it would still increase resilience in the Kent area and could be upgraded to a ‘full’ system at a later date. By contrast, others remained supportive of a ‘full’ system, arguing that it would be smoother for SEW customers if the water storage network was upgraded all in one go.
- Some participants questioned the use of the £2 cap for some schemes, such as the ‘Smart Water Network’ and ‘New drinking water storage tank’ schemes. There was a feeling that these two schemes would be highly beneficial for the local network, and would help to deliver significantly improved resilience in the Kent area. However, the ‘full’ versions of these two schemes are highly expensive, leaving little spend for other projects, with the ‘basic’ scheme delivering noticeably less benefit. Therefore, these attendees urged SEW to spend as much as is required upfront on the ‘full’ versions of the schemes in order to resolve the resilience issues facing Kent as quickly as possible.
- Following the roundtable session, and based on the reasons set out during the discussions, stakeholders were asked to rank the ten schemes on Slido, based on their own individual order of priority. The ‘Kent trunk main grid system’ scheme came out on top across the group, with an average score of 8.65 /10. This was followed by ‘Smart Water Network: Full’ (8 /10), ‘New drinking

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water storage: Full' (7 /10), 'Smart water networks: Basic' (6.15 /10) and 'Tonbridge WTW upgrade' (5.8 /10).

## 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:

- 80% of attendees reported that they found the workshop 'very interesting', and 13% thought that it was 'interesting'.
- 67% felt that the session was 'very engaging', with 27% taking the view that it was 'engaging'.
- 67% 'agreed' and 27% 'strongly agreed' that they had the opportunity to get involved in the discussions and make their points.
- 60% thought that EQ Communications' facilitation was 'very good', and 20% deemed it to be 'good'. However, 20% selected 'neutral'.
- 40% 'agreed' and 33% 'strongly agreed' that the level of information was tailored appropriately to match their level of knowledge. However, 20% felt 'neutral' about this statement.
- 93% of respondents indicated that they would come to future think tank workshops, whereas 7% were 'not sure'.
- 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.

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## **WORKSHOP 1: PR24 OVERVIEW, 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 overview of the company's business plan, with a particular focus on key development dates and the key themes. Richard then set out SEW's engagement approach as part of this development process, taking in a range of methods to inform and shape the business plan.

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 Kent supply area, Richard outlined the region's specific supply issues and the company's planned mitigation measures. These resilience risks included extreme weather, pressure on the supply network caused by local population growth, and a lack of headroom and capacity to address peak and exceptional demand. 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 Kent. The questions posed covered a range of topics, including SEW's water supply sources, its pipework replacement programme, and wider engagement programmes and collaboration opportunities. After this Q&A, the first roundtable discussion session began.

All discussions began with introductions. Environmental groups and consumer groups were the most represented organisations at the event, accounting for 35% and 20% of attendees, respectively. As a whole, attendees had a broad set of specific interests for the event, such as water quality, local environmental protection, abstraction, and emergency drought measures. Many worked in a resilience-related role and were keen to learn more about SEW's resilience plans and to understand how they could feed into the development process for any future resilience plans. As a result, they hoped that collectively, they could ensure that the network can withstand any resilience threats that arise, such as climate change and population growth.

Attendees felt that SEW's responsible business aspirations were sensible, and praised the company's particular focus on guaranteeing network resilience. They also expressed particular concern about the threat posed by increasingly regular extreme weather events, resulting in multi-day water and power outages. As a result, they thought that SEW's resilience-building measures are particularly appropriate.

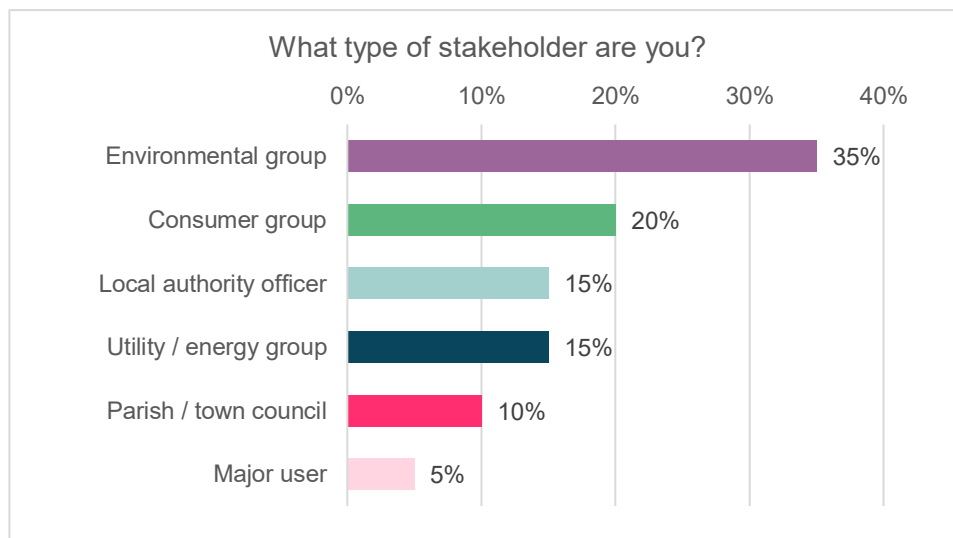
Participants stated that they had previously experienced a number of resilience issues. The most common problem raised related to drinking-water outages and low-pressure incidents. Stakeholders pointed to the

rural nature of Kent, and stated that its heavy farming industry contributes to further straining the limited water supplies in the area. As a result, water supplies can run out on hot days due to the sheer demand required. Another resilience issue put forward related to poor housing planning. The point was made that new developments are sometimes greenlit without the water supply capacity being in place, leading to supply outages in houses nearby. Therefore, there were calls for SEW to work more closely with housing developers to ensure that the required supply is available before any planning permissions are provided. The final other resilience issue suggested was a lack of drive to incentivise abstraction licence holders to build winter storage reservoirs for irrigation purposes. It was felt that this could be a useful avenue for SEW to explore, as it could reduce the pressure on the scant resources available in Kent, which are strained further by the large local agricultural sector.

It was also felt that some resilience issues had not been covered, so a number were put forward by stakeholders. These included a lack of alternative electricity supply to power pumps in the water distribution system and the overly heavy focus on reservoirs as a supply solution for the Kent area.

## VERBATIM COMMENTS AND VOTING

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



- “I’m a retired farmer and I used to be on the water and drainage NFU committee.” Major user
- “I’m here representing Faversham water quality group.” Major user
- “We’re a collection of volunteers and we are interested in the water quality of southeastern waters, and test the quality of water in Kent.” Major user
- “I’m primarily interested in the water quality of the rivers.” Major user
- “We’re both involved in a project for the testing of water quality in Kent.” Environmental group
- “I work for the South East Rivers Trust and I work with local groups to test water quality, and I am quite focused on protecting rivers and wider resilience.” Environmental group
- “I’m also interested in how you’re working with Southern Water on this flooding issue because Southern Water recently have had a problem with their sewage discharges.” Environmental group



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- “I am here because of the problems I have in my village on the far outskirts of Ashford borough, as there is an extremely poor social system.” Parish/town council
  - “I am chair of an independent group established to hold companies to account on their promises to customers. Our role is to assure the quality of engagement with customers and community groups and stakeholders.” Consumer group
  - “My background is in the water industry, predominantly network extension and the development side. I have been heavily involved in the development of infrastructure and new technologies, so I’m here to see how we can map out network planning in a way that addresses some of the issues that we’re starting to see emerge, especially in terms of climate change.” Consumer group
  - “I work with farmers across North Kent, and many in my organisation work across Kent and Sussex, so we cover most of the water services covered by South East Water. There is a working relationship between my company, Natural England, and South East Water, and we try to implement strategies regarding farmers’ use of water. I also look at water resilience from a landscape and ecological perspective.” Environmental group
  - “I’m from the county council’s resilience and emergency planning service. We have talked about population growth, which strains infrastructure, but we also need to remember that Kent is at the forefront of a changing climate and other political crises involving the Channel. I have for a long time focused on planning policy, and I also look after some large nature reserves which are at high risk at the moment due to drought.” Local authority officer
  - “I am here today representing the town of Faversham in my role on the environmental panel of the town society, hoping to ensure that resilience strategies impact sustainably on local environments.” Environmental group
  - “I work in the county council’s resilience team. Recently we have had several severe water disruptions, and as a county council we have identified a number of issues regarding the resilience options. Due to the responses that we have seen, we want to ensure that water resilience can be achieved, primarily in the context of care services.” Local authority officer
  - “I work in the resilience and emergency planning department, so I’m involved in water outages. South East Water was better in December than I have seen before, as they engaged before issues arose and came to more meetings. They did improve with their Tunbridge response, I do think they can get even better, but it was more positive than before, and better than other water companies.” Local authority officer
  - “There are efficiency problems with South East Water, we’ll report a leak and it takes two or three days to come out and assess it, and then sometime later there’s a contract put out for repair. The issue is we keep the gate locked, so they can’t access the land for the repairs, but they expect us to know where they are and when they are coming. It’s an inefficient response but also bad communication.” Parish/town council
  - “From a customer point of view, I’ve not experienced issues before. We did have the hosepipe ban in the summer, and a lot of emails before that, and my feeling was that the ban came too late. There’s a lack of enforcement from South East Water. I think that collaborative working with the

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Environment Agency would be good as we can show we support and enforce it.” Environmental group

- “I’m from UK Power Networks and look after the relationship with MPs and councillors, and support resilience planning. I’m interested in general resilience, and the impact of extreme weather on supplies and infrastructure.” Utility/energy group
- “I’m from the Kent Green Party and I’m here to get involved in the process, thinking about supply, affordability, and sustainability in particular.” Environmental group
- “I’m from the Environment Agency, and we’re the environmental regulator for the water industry. My specific job is to regulate the abstraction of water, whether that’s surface water, rivers or groundwater. We work closely with South East Water in regulating the licences that we issue to abstract water.” Environmental group
- “I represent largely uninformed customers who are concerned about the supply of water, as well as the environment and climate change. This is affecting us as consumers. What should we expect and how do we contribute?” Major user

## **2. Do you have any comments on our aspirations to be a responsible business?**

- “I think resilience is going to become more important in the years to come, with extreme events, chances of high winds, storms, bad weather, and power cuts, which impact water pumping stations etc. I think it makes sense to focus a lot on resilience. We saw in storms last year some places without power or water for five days. That’s supposed to happen once every 100 years, but we are now seeing them much more frequently.” Utility/energy group

## **3. Have you experienced any resilience issues in your area?**

- “The drinking water goes out on quite a regular basis.” Parish/town council
- “We get low pressure and it’s a huge rural area with lots of farming, so we find people are left with no water on hot days due to usage.” Parish/town council
- “There’s no liaison in terms of dropping off water, and people are left for three weeks with no water.” Parish/town council
- “The island of Sheppey being completely cut off from water.” Major user
- “We’re losing the capacity to take water out of the river during floods.” Major user
- “I would like to raise an issue related to planning. Recently a village was filled with very large homes with insufficient resilience contingencies, and the pipes simply stopped working in a number of the homes. This is clearly a planning issue, so we want to be sure that plans are developed in close coordination with South East Water to ensure that supply is adequate for large residential development plans.” Environmental group
- “There are some very practical resilience issues facing South East Water. For example, we had a freeze-thaw episode last winter, and you were relying on Water Direct for your supply of drinking water, but so were other water suppliers, and so there were severe shortages. This seems like a significant organisational problem.” Local authority officer

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- “I’m interested in the resilience piece. There are millions of cubes of water unused, but there is no groundwater network to get that where South East Water needs it. Kent’s getting drier, we still need to grow food. There is great competition from human beings needing it for blue water. I’m interested to see if there’s a way to join up local unused storage. I’m aware there are unused abstraction licences that people naturally retain. People don’t want to lose them. They can’t be taken away, but there is a lot of unused capacity, and there is a lot of encouragement to build winter storage reservoirs for irrigation. There must be an opportunity there for storage. It increases resilience. Do a deal with the company to reinforce the network when they need it. If I could sell it back to South East Water that would be an incentive for me to build a reservoir.” Major user

#### **4. Have we captured all of the resilience issues in Kent?**

- “I’ve had similar conversations with other groups, it does depend on where the water source is coming from, but I don’t see anything here about looking at alternative power supplies.” Utility/energy group
- “It’s all very well and good fixing the reservoir, but they run on gravity, as I understand it. Where are the alternative options?” Utility/energy group

## **Q&A**

### **“Is your main source from boreholes, surface water or rivers?”**

- “Lots of small ground sources from boreholes, particularly in Kent. A small number of critical works. We have Bewl, and are building currently a new reservoir in Aylesford. Particularly here we’ve got dotted around small ones on chalk sources producing groundwater.” South East Water

### **“What percentage of antiquated pipework are you regularly replacing per year?”**

- “What we do is we have a statutory piece of work that we do with Ofwat and the EA, which is the water resource management planning. We review the supply and demand balance. How much we produce versus how much we need. A long time ago, Broad Oak was identified as an opportunity to get a more resilient water supply into the Canterbury area. Over a period of time the plan hasn’t said we need an edit yet. In the latest one we’re publishing, we’re getting to the point where it’s a firm scheme. We need it in place by the mid-2030s. We’re already starting to do engineering on it now. The firm part of the PR24 plan is set to start in 2025. We need that water and it provides lots of secondary resilience, collecting all the rainfall in winter to use in summer. That’s the Broad Oak one. For the antiquated pipelines, Ofwat funds us a proportion of money every five years to do base maintenance, then that gets split up on treatment work maintenance and how much we spend on mains. Off the top of my head, we get £40 to £50 million to spend on mains, and I have an asset planning team that reviews that, and creates an annual programme of repairing pipes. We spend all the money Ofwat gives us on that activity. Somewhere between 20 and 50 km a year we replace.” South East Water

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**“As a percentage, the last figure I heard was less than 1% of old piping was being replaced per year? Could you comment on that please?”**

- “We do slightly better than that. I think that was against the first couple of years of this nationally, which Covid affected. We had external factors. We still have a problem, we do about 0.2-0.25%. We put our cases to Ofwat every five years to get additional funding on that, and are always trying to innovate to do more with less money. We’re trying to produce as much resilience as possible with the budget we have.” South East Water

**“One of your solutions was smart meters for water. Will you be bringing that up later, or what are smart water meters?”**

- “We are proposing smart water networks. Kate will take you through the individual schemes. It’s essentially us putting enough sensors in to know what’s going on.” Richard Sands, South East Water

**“Is there a publicly available map of networks, the grid? We have issues with our parish. It appears water is coming from all different directions, and a part of it stops. Other areas in our village still keep our water. For us to explain, to help people understand, us actually doing some of your communication work at a very local level. If you could offer us a map of the supply so we can educate and encourage people. We’ve been considering doing this with sewage to discourage people throwing wipes down the toilet. Is there a publicly available map of the network? Or can you let us have one?” Parish Councillor**

- “We can do that for you separately. We don’t publish our network because it’s nationally important infrastructure, it’s a security risk. But we can on an individual basis come and talk to you and your village.” South East Water

**“There are a number of questions begged by your presentation. As worthy as this forum is, the underpinning legislation and regulation that governs what you do militates towards silo working. Southern Water deals with wastewater. You don’t have influence over local planning authorities. But if you genuinely are going to tackle this, to not have highly polished water going down the drain, we need to bang heads together so that on new developments, greywater is used efficiently and farmers are not putting highly polished water on their land. That is impacting into other areas of legislation. That’s a critical point. The other point is you’re talking about your assets, but it’s a bigger interrelationship around having a resilient landscape and resilient communities. Otherwise it’ll be very difficult to deliver resilience. Currently Kent is drying out. If residential care homes don’t have injection points so your tankers can plug into them, you’re still not going to be able to do the hygiene work for those vulnerable people. So much enmeshed work needs to be done. Do you have the tools?”**

- “There are workstreams of engagement we’re doing. We have the water resource management plan, water resources stuff, that’s a big statutory legislative way of doing things that we do in collaboration with all the other water companies in the south east, to patch everything together. As part of that we do engage with all regulators to try and talk about what we need to make it work, including demand management, leakage, customer engagement.” South East Water

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**“With respect, these engagement channels don’t seem to be working. New houses aren’t sustainable or energy efficient. How are you going to resolve this?”**

- “There are discussions ongoing, and in our plans we have stated carefully and straight to Defra. We have talked about the need for government-led initiatives over the next 25 years to deliver some of that. This isn’t my area of expertise, but certainly via Water UK we are lobbying the government hard about these extra bits. We want green labelling for appliances, water efficiency and electricity efficiency, so that we can change the conversation. We are proposing partnerships with farmers, Natural England. We are working with all the abstractors and polluters, so we can have good quality water that is sustainable for us to provide a good service.”  
South East Water

**“How is the money approved for these schemes? Do you have problems with not enough money released for pipe networks?”**

- “Ofwat deals with slightly different types of investment. They give a certain amount of money for base maintenance and do econometric modelling. If you are of a certain size and you are efficient, you get X amount of money. For enhancement schemes, we say why we need to do them, and Ofwat will look at these on a case-by-case basis. Sometimes they don’t believe us, sometimes they give us full funding, sometimes they say we’re not efficient enough so they don’t give us full funding. We put these schemes to Ofwat and see what they agree to. Historically, maybe 50-60% of what we put in gets funded.” South East Water

**“Why this approach to the investment? Because the plan was bad in the first place or because it’s not technically viable?”**

- “That’s the million-dollar question. They will say the reasons why they disallow it. Broadly, sometimes they say the case isn’t compelling enough but won’t tell us what a compelling case would be.” South East Water

**“Presumably you have to show Ofwat different examples and why you’ve chosen them?”**

- “There are a whole set of hurdles we try to overcome religiously. We show them why the option we proposed is the best value for customers. They will look at it all and if they don’t agree with any step of that they will disallow it. We do get some very clever people. We’ve now got ex-Ofwat people that will challenge each scheme to make sure we can pass. At a certain point even if it’s a good case they may say no because of affordability.” South East Water

**“This is all very engineering project-led, whereas there are bigger-picture things, like reducing demand, such as lots of highly polished water being used where greywater would suffice, as well as huge wastages in the system. You also don’t talk about natural solutions either. What we need is vegetation and roots going down into the ground. They haven’t appeared on your schedule.”**

- “We are engaging separately on schemes of exactly that. Whole-engagement processes, environmental plans, looking at catchments to make them sustainable. We work with the Forestry Commission, which is perfect for carbon sink. Doing what you’re saying in terms of making sure the aquifer is filled, partnering up with other bodies.” South East Water

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## WORKSHOP 2: OUR OPTIONS – INITIAL VIEWS

Richard Sands introduced the second workshop, which covered SEW's proposed resilience schemes for Kent. To begin, he stressed that the schemes in this session focused on infrastructure resilience and supply-interruption prevention, and would not cover leakages, customer water use and environmental resilience.

Richard took stakeholders through ten different schemes for the Kent area, 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 problem being targeted 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 about 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 Kent area and then rank them in order of priority. It should be noted that no wider information, including the costs of these schemes, was provided for this discussion session.

### SUMMARY

As a group, stakeholders strongly endorsed the 'Smart Water Network: Full' scheme, and saw it as a pragmatic technological solution for proactively detecting leakages in specific areas and preventing supply outages. This would in theory reduce water wastage, leaving a larger supply available to cope with the expected large spike in demand in Kent in future. More broadly, others argued that adopting this kind of scheme and the benefits derived from it were essential for ensuring that SEW operates a sustainable water system, and therefore supported the scheme on this basis. There was no appetite among attendees for SEW to deliver the 'Smart Water Network: Basic' scheme at this point, due to the drop in monitoring and detection capacity compared to a full system.

The 'Kent trunk main grid system' scheme was also highly popular among participants, and many were of the opinion that it should be prioritised. It was generally thought that it would play a valuable role in increasing resilience in the Kent area by distributing water more equitably and not leaving the system vulnerable to supply outages as a result of relying on single distribution pipes. At the same time, residents of rural villages felt that it would help to resolve the supply outages that they have been experiencing, as it would create a grid setup which can more easily and readily divert water to areas that need it in the event of a pipe failure.

There was support for the four WTW schemes, but no consensus emerged around which was the most appropriate to adopt. Many stakeholders expressed concerns about over-abstraction in water-scarce Kent, and stressed that it would be better to make use of water that had already been abstracted, rather than

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taking more out of the ground and rivers. As a result, the ‘Tonbridge WTW upgrade’ and ‘Pembury WTW upgrade’ schemes emerged as the most popular options overall. The Tonbridge scheme in particular was also identified as a potential avenue for solving flood issues in the local area, delivering a twofold benefit. However, others were less convinced about Tonbridge’s benefits, as they thought that these were too localised, and took the view that it would be better to prioritise schemes that covered a wider area.

Out of the two WTW expansion schemes presented, the Bewl option was seemingly the more popular during the table discussions, but did divide the groups. Those in favour of expanding Bewl WTW were of the opinion that WTW would play an important role in delivering a resilient supply of clean drinking water to Kent. Based on Bewl’s operational approach of plugging into groundwater with greensand, attendees thought that this WTW expansion scheme was the most environmentally friendly of those available. Going further, others noted that Bewl was designed for three-year droughts, and was therefore well placed to cope with the extreme weather conditions that they expected Kent to experience more regularly in future. At the same time, others stressed that it could be vital to increasing local resilience through its large distribution area and its reliable supply from a number of reservoirs. These potential benefits made it a natural priority for many attendees, but a number were unsure about the scheme, or even outright dismissed it. There was a feeling among some that the Bewl scheme was not well suited to the changing water landscape in Kent, in particular due to the falling river levels there as a result of climate change. These stakeholders argued that SEW’s resilience plan must reflect the changing river environment, and that prioritising Bewl would be at odds with this plan.

The ‘New drinking water storage tanks: Full’ scheme was also endorsed by a good number of stakeholders, who felt that it was important to have more storage capacity in the network for treated water. These participants took the view that increased storage capacity would only help to make the water network more resilient. Nevertheless, despite praising the 24 hours of resilience delivered by these tanks, some did not feel that this would be enough, and urged SEW to find ways to bulk up these systems sufficiently to deliver 48-72 hours of resilience. By contrast, others were against adopting this scheme, arguing that the issues outlined in the presentation were not due to water shortages, and that they had not experienced supply outages in their specific part of Kent. As a result, they felt that this scheme should be dismissed.

Finally, there was some appetite to see ‘Testing new technologies and products’ adopted. However, there was a general feeling that it should be adopted as an approach underpinning the other schemes, rather than a separate scheme in its own right. Therefore, stakeholders wanted SEW to incorporate an innovation mindset as part of business as usual, in order to develop and implement the right technologies to create a resilient futureproofed water network.

## VERBATIM QUOTES AND VOTING

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

#### Table 1

- Smart Water Network: Full: “That would work for me, and the idea of smart networks makes sense as Sheppey was off water for days.” Major user



- Kent trunk main grid system: “This is the other one I would choose.” Parish/town council
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “Number 2 also seems to be a no-brainer.” Major user
- Bewl Water Treatment Works (WTW) expansion: “I’m not sure about ‘Bewl Water Treatment Works (WTW) expansion’, as I have concerns on the environmental impact, as it should be considered being that you’re taking water out of the environment, and we don’t know what the impact of that would be.” Environmental group
- Smart Water Network: Full, New drinking water storage tanks: Full: “I would favour approaches considering connectivity and storage tanks and I am very supportive of smart water networks.” Environmental group
- Testing new technologies and products: “Testing new technologies and products seems like a good idea, but it is something that should come along with the rest.” Parish/town council

## Table 2

- Bewl Water Treatment Works (WTW) expansion: “There’s no doubt that Bewl WTW has enhanced the total catchment of the local sources due to its reservoirs, and so it stores very well in the winter and releases very well in the summer. Also, the treatment works still has the ability to distribute that water to a very wide catchment.” Environmental group
- Bewl Water Treatment Works (WTW) expansion: “The release from Bewl WTW to enable abstraction means that the water is flowing all the way down the catchment river, so this option is the least environmentally damaging of the potential options.” Environmental group
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “This is a different proposition, since we would be protecting an existing asset while upgrading at the same time, which I think would be a good resilience option for us.” Consumer group
- Bewl Water Treatment Works (WTW) expansion: “Bewl WTW is designed for a three-year drought, so it is designed to be able to cope with below-average levels but still supply in the future. It is very well designed for the predicted weather changes in the future.” Environmental group
- Smart Water Network: Full: “We think ‘Smart Water Network: Full’ will provide much greater resilience, since we are concerned with the type of water usage, and we think that ‘Smart Water Network: Full’ will enable us to minimise water waste in anticipation of a massive increase in demand in the immediate future.” Environmental group

## Table 3

- Kent trunk main grid system: “Having a much more integrated grid seems like a good idea to me.” Major user
- Kent trunk main grid system: “For me, it’s about a broader range, and not putting all your eggs in one basket.” Environmental group
- New drinking water storage tanks: Full: “You will need bigger storage within the systems once the water is treated.” Environmental group
- Kent trunk main grid system: “If you can divert water fairly quickly, then surely problems go down.” Parish/town council



- “Bowl Water Treatment Works (WTW) expansion’, ‘New drinking water storage tanks: Full’, ‘Smart Water Network: Full’, ‘Kent trunk main grid system’ and ‘Testing new technologies and products’ are our choices.” Major user
- Hockers Lane Water Treatment Works (WTW) expansion, Pembury Water Treatment Works (WTW) upgrade, Kent, Tonbridge Water Treatment Works (WTW) upgrade, Kent: “These are important, but you still have to get the water to where you need it, which is the ‘Kent trunk main grid system’.” Environmental group
- Testing new technologies and products: “This is long term, so if we don’t do it now, it will be even longer.” Environmental group

#### Table 4

- Hockers Lane Water Treatment Works (WTW) expansion, Tonbridge Water Treatment Works (WTW) upgrade, Kent: “I’m very concerned about over-abstraction. Hockers Lane requires additional abstraction but the Tonbridge Works looks like it just needs engineering solutions to stop it flooding, so you might prefer the Tonbridge one to the other one that requires a lot more boreholes.” Major user
- Smart Water Network: Basic, Smart Water Network: Full: “When you’ve got ‘Smart Water Network Basic’ and ‘Full’, it seems a no-brainer to have the full one. I do farming, but in the past I’ve done project management where you’re looking at putting in new commercial facilities. If something is going to use a lot of water, if you’re complying with sustainability there’s a big section on leak monitoring, detection, minimising use at source, and talking about houses having rain-heads and stuff. If you look in building regulations, they are clamping down very heavily on the size of heads etc. Knowledge is power. 90% of wasted time and effort is because they don’t know where the leak is.” Major user
- Smart Water Network: Full: “I feel very strongly that we need it. Everywhere I drive I see a leak I report online but that’s what you’re relying on. This is preventative and more efficient. It’s twice the impact.” Local authority officer
- Kent trunk main grid system: “I live in a rural village, and this would really help our area. It isn’t fair that part of our village is always losing water. I haven’t lost mine at all but parts do. We want a working grid for water.” Local authority officer
- Smart Water Network: Full, Kent trunk main grid system: “A Smart Water Network would negate the need for the trunk main grid system.” Environmental group
- New drinking water storage tanks: Full: “It provides resilience. A storage tank now gives 24 hours’ resilience. Obviously it’s not enough, so you need either more or to make them bigger to extend that resilience to 48 hours or 72 hours. You’re not necessarily abstracting more water but storing it when it’s not being physically drawn on at night.” Environmental group
- Testing new technologies and products: “I’d invest in innovation projects. You’ve got to look at new technology.” Major user

- Testing new technologies and products: “You need to get the Prince of Wales on the case. We need a design innovation competition using micro-companies and universities to look at those problems, then reward people for coming up with those solutions.” Major user
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “You need to upgrade and not expand. Water is a finite resource, you’ve got to make the most of what you’ve got.” Environmental group
- Pembury Water Treatment Works (WTW) upgrade, Kent, Kent trunk main grid system: “I personally would see Pembury as more important than the trunk system. The other fixes should mean that the trunk system is less necessary.” Environmental group
- Kent trunk main grid system: “That grid needs to be there. I’m not speaking just for my parish. Tulloch had no water, other places in Sussex didn’t have it.” Local authority officer
- Testing new technologies and products: “My feeling is innovation should be business as usual.” Utility/energy group

## 2. Why have you not chosen some?

### Table 1

- Smart Water Network: Basic: “We can knock out ‘Smart Water Network: Basic’ because it’s just the basic, so we have the full smart water network instead.” Major user

### Table 2

- Bewl Water Treatment Works (WTW) expansion: “A number of times in recent years abstraction has had to be stopped, since the rivers are all flowing so low at the moment. And in fact the idea that we have wet winters and dry summers is less true than it used to be due to climate change, so it is completely essential that our resilience plan reflects that, and the reality is that Bewl WTW is not well suited to the changing water landscape.” Local authority officer

### Table 3

- New drinking water storage tanks: Full: “None of the issues the company faces are because we ran out of water.” Utility/energy group
- New drinking water storage tanks: Full: “We got down to 27% but never ran out, no.” Major user

## 3. Can you prioritise the five you have selected in order of importance?

### Table 1

- Smart Water Network: Full: “We need interconnectivity of pipes to supply water to all people who need it.” Major user

### Table 2

- Smart Water Network: Full, New drinking water storage tanks: Full, Bewl Water Treatment Works (WTW) expansion, Testing new technologies and products, Kent trunk main grid system: “We have focused on pragmatic technical fixes for resilience. A critical one was ‘Smart Water Network: Full’, so that we can determine where the leaks are, and which regions of the network are losing supply under changing conditions. We also selected ‘New drinking water storage tanks: Full’ and ‘Bewl Water Treatment Works (WTW) expansion’, both with a view to increasing capacity within the

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system. Regarding 'Bewl Water Treatment Works (WTW) expansion', that would be plugging into groundwater within the greensand, which was seen as the most environmental solution in a water-short county. We also wanted to see 'Testing new technologies and products', with a view to implementing the latest technological innovations in the network resilience plan. Finally, in terms of using water more smartly, we selected 'Kent trunk main grid system', so that we can look to distributing water more equitably, which should have a better environmental impact." Local authority officer

**Table 3**

- Tonbridge Water Treatment Works (WTW) upgrade, Kent: "There's no point putting something in for one little village, you need to benefit the largest population." Major user
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: "It's all about the population benefitted for me." Utility/energy group

**4. Which one (or two) do you, as a group, consider to be essential?**

**Table 1**

- New drinking water storage tanks: Full, Smart Water Network: Full, Testing new technologies and products: "So we're in favour of storage and smart water networks and testing technology." Environmental group
- New drinking water storage tanks: Full and Smart Water Network: Full: "We were more in favour of measures that increased capacity in the system, such as storage, and more connectivity in the system." Environmental group

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## WORKSHOP 3: OPTION PRIORITISATION

Richard Sands provided a brief introduction to the final session. Stakeholders were invited to reveal the bill impacts of each of the ten schemes discussed in the previous workshop on the scheme cards placed on their tables. He 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 for each of 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 £2 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, explain the rationale behind their own choices, and make any changes to their counterpart table’s decisions for a further 15 minutes. 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 discovered the bill impacts of each of the schemes, stakeholder priorities towards them altered slightly overall.

While there was still widespread support for adopting one of Smart Water Network schemes, the ‘basic’ option was viewed as more of a suitable priority among many stakeholders compared to the previous

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workshop. They argued that the 'basic' package delivered sufficient solutions to resolve many of the resilience issues raised, and could be potentially upgraded in a future investment round to deliver a 'full' system if needed. It was thought that this basic system would still deliver a faster response to leakage incidents, and would also still prevent supply outages, making it a preferable option for some participants. At the same time, others were of the view that a 'basic' Smart Water Network would suffice if SEW made a concerted effort to maximise the efficiency of the technology already in place in its system. Therefore, there was a strong feeling that potentially less of the £2 spend could be allocated towards investing in a Smart Water Network scheme, and instead freed up to be assigned to some of the other resilience schemes presented. However, it should also be noted that many others still supported adopting a 'full' system, despite the large costs, based on the large number of customers who would enjoy an improved response as a result.

Stakeholders as a whole were also slightly less sure about prioritising the 'Kent trunk main grid system' scheme after viewing the cost implications. Many in the groups still strongly supported it and thought it presented good value for money, on the basis of the costs involved, the resulting decrease in the number of interruptions, and the general increased levels of local reliability delivered. Others continued to endorse the scheme based on its equitable approach to delivering water supplies to everyone, and thought that the number of Kent residents served by it made it an appropriate investment. These more resilient water supplies were also seen as beneficial from a PR perspective, as it would demonstrate to the public that the company is trying to improve its service, and thereby gain customer buy-in for the scheme. However, in light of the bill impacts, other attendees were willing to deprioritise the scheme due to the sheer costs involved, while others raised concerns about the overall appropriateness of the scheme from an environmental standpoint.

Having been given the costs for the two proposed WTW expansion schemes and the two proposed WTW upgrade schemes, the 'Tonbridge WTW upgrade' scheme was comfortably the most popular among attendees during discussions. They endorsed this scheme in particular on the basis of the twofold increase in the supply output delivered by the upgrade, and noted that the scheme had the best score out of these four WTW schemes in the 'four Rs' scoring system. This upgrade scheme was viewed as preferable to the 'Bewl WTW expansion' scheme, which was a source of concern among some delegates, due to the environmental impact of the increased borehole drilling from expanding these WTW. However, at the same time, it is worth noting that Bewl did have some support across the wider group. Some took the position that it was a sensible scheme to adopt, based on the potential number of resilience incidents prevented, its delivery time, its cost, and the general customer benefit. Finally, other stakeholders favoured the 'Pembury WTW upgrade', as they argued that it would supply a larger number of customers than the Tonbridge scheme, and would deliver more treated water to local residents. They also argued that it was a very appropriate option for tackling the water shortage problems experienced in the dry Kent area, based on its high reliability score.

Even though there was still a consensus that new storage water tanks needed to be included among SEW's priority options, once costs were taken into consideration, some delegates wanted to deprioritise the scale

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of the adopted scheme. While some were still completely in favour of implementing the 'New drinking water storage tanks: Full' scheme, on the grounds that an increased spend would deliver better results, others now preferred the 'New drinking water storage tanks: Basic' scheme. These attendees argued that a 'basic' scheme would be a better option for the PR24 business plan, as it would still deliver resilience solutions for the Kent area, but would do so at a fraction of the cost of the 'full' scheme. As a result, there would be more money available to spend on other schemes in the near future.

Finally, attendees were divided around whether 'Testing new technologies and products' should be prioritised among the options available. Some thought that it was worth doing so, as this would cost relatively little customer money, but would deliver big results. However, others were of the view that it should not need to be a 'scheme' in the first place, and that an innovative approach should inform everything that SEW does, and should not need to be incorporated as a specific scheme for improving resilience.

## REVIEWING THE OPTIONS

While reviewing each other's choices, some differences around which schemes to prioritise emerged between the tables, particularly in relation to the most suitable WTW scheme to adopt and the scope of the Smart Water Network and drinking water storage tank schemes.

During discussions, Tables 2 and 4 prioritised the 'Tonbridge WTW upgrade' scheme over the other WTW options available. It was felt that the Tonbridge scheme was the most appropriate out of those set out, as it would provide a short-term resolution to the area's water shortage crisis, but would also provide scope for building even greater long-term resilience. Despite acknowledging that it would not cover as many customers as the 'Pembury WTW upgrade', these tables still preferred it, as they also thought that it provided better value for money. This stance was in contrast to that of Table 1, who wanted to see SEW adopt the Pembury scheme over the Tonbridge scheme on the grounds that it would supply treated water to 75,000 customers, compared to the Tonbridge scheme's 50,000.

There were also splits between the tables on whether it was better to have the 'Smart Water Network: Full' or the 'Smart Water Network: Basic' scheme. Irrespective of which option they favoured, all of the tables noted that the major expense involved in adopting a 'full' system made the decision a tricky one. Even though the 'full' scheme took up a huge proportion of their £2 budget, Tables 2 and 3 still wanted SEW to implement it. They were of the view that the difference in impact between the 'basic' and 'full' schemes made the 'full' scheme an essential investment, with Table 3 suggesting that other schemes should be removed from Table 4's list of priority options in order to pay for it.

By contrast, Tables 1 and 4 were comfortable putting a 'basic' system in place instead. Attendees on these tables raised concerns that the 'full' scheme was simply too expensive, and took the view that the 'basic' scheme could still deliver increased resilience in the Kent area, with the option to scale up to a 'full' scheme in the future. Table 4 was also worried about the wider financial strain on SEW's budgets brought about by increased leakage detection. They argued that the 'basic' system would detect fewer leaks, meaning that fewer engineers would need to be hired to fix them, resulting in fewer repairs and maintenance costs being

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added to customers' bills. Unless SEW was willing to increase its repairs and maintenance budgets to align with the level of leak detection delivered by a 'full' scheme, these attendees were happy with a 'basic' scheme instead. Table 1 also opted to change Table 2's choice of 'Smart Water Network: Full' to 'Smart Water Network: Basic'.

The tables were also split on whether to continue prioritising the 'Kent trunk main grid system' scheme. Tables 1 and 4 noted that the expenses involved were a serious consideration for them, but felt that this scheme should still be selected based on its key role in building future resilience in the water system in Kent by moving water around more equitably using the grid system. They also thought that this was one of the key benefits of the scheme, as it would cover one of the largest areas out of all ten put forward, and would therefore benefit the largest group possible. When comparing each other's priorities, Table 1 noted that Table 2 had not selected this scheme, and felt that it was a key omission.

Attendees were also divided around whether SEW should opt for the 'New drinking water storage: Basic' or 'New drinking water storage: Full' scheme, particularly with the £2 spending cap in mind. Tables 1 and 4 were happy with the 'basic' scheme, due to its quick lead-time, the large expense involved in the 'full' system, and the significant improvements delivered by the 'basic' system overall. By contrast, Table 3 preferred the 'full' scheme, but this was by no means a unanimous view. Some on the table thought that the 'basic' scheme was appropriate, as it was in keeping with SEW's commitment to increase supply resilience, and would provide a platform to scale up to a 'full' system in future. At the same time, they recognised that customers were facing steep increases in their utility bills, and noted that every penny of investment by SEW must count. With all this in mind, they questioned whether a 'full' system was necessary at the present time, and argued that a 'basic' scheme should be adopted to free up investment for the 'Kent trunk main grid system', 'Smart Water Network: Full' and 'Testing new technologies and products' schemes. However, despite understanding why others were choosing 'basic', those in favour of the 'full' system argued that the £2 limit should be raised in order to accommodate this scheme. They generally took the view that it was better to spend as much as needed now in order to invest in schemes that will deliver the types of benefits provided by the 'New drinking water storage: Full' scheme. This was seen as a particularly acute need in a dry area like Kent, which is grappling with water shortage problems on a regular basis.

Finally, 'Testing new technologies and products' was very popular on Table 2, who felt that it should be added to Table 1's list of priorities when comparing it with its own. Table 2 saw it as particularly important in pushing forward water efficiency in domestic developments, and stressed that no progress will be made in this area without incentives to come up with the latest solutions unpinning future planning. At the same time, attendees on this table noted that this scheme must involve community outreach in order to roll out any trials in coordination with local stakeholders and gather relevant feedback to shape further developments.

Following the roundtable session, and based on the reasons set out during the discussions, stakeholders were asked to rank the ten schemes on Slido, based on their own individual order of priority. The 'Kent trunk main grid system' scheme came out on top across the group, with an average score of 8.65 /10. This was



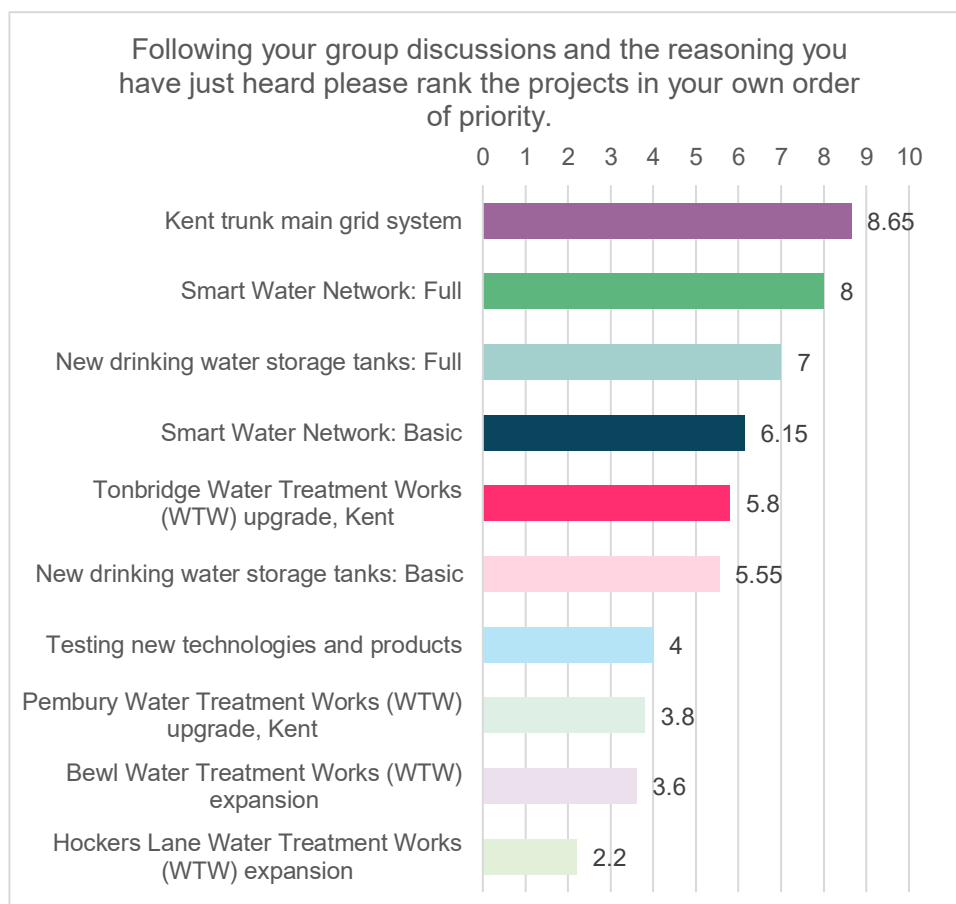
followed by ‘Smart Water Network: Full’ (8 /10), ‘New drinking water storage: Full’ (7 /10), ‘Smart water networks: Basic’ (6.15 /10) and ‘Tonbridge WTW upgrade’ (5.8 /10).

These individual voting figures provide an interesting contrast to the priorities established at a table level during discussions. In particular, it is worth noting that despite two of the tables opting for the ‘New drinking water storage tank: Basic’ scheme over the ‘New drinking water storage tank: Full’ scheme, the latter was comfortably more highly prioritised among individual stakeholders during voting (with a score of 7 /10 compared to 5.55 /10 for ‘New drinking water storage tank: Basic’). At the same time, despite Table 1 taking the position that the ‘Pembury WTW works expansion’ scheme should be adopted over the ‘Tonbridge WTW expansion’, the former returned a much lower score during the Slido voting (3.8 /10 compared to 5.8 /10). Finally, the appearance of both Smart Water Network schemes in the individual stakeholder rankings reflected the divide among the wider group around whether a ‘basic’ or a ‘full’ scheme was preferable.

## VERBATIM QUOTES AND VOTING

### OPTION PRIORITISATION

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



**Table 1**

- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “It can almost double output from two to four million.” Major user



- Smart Water Network: Full: “There’s a huge difference between reliability and resistance.” Parish/town council
- Testing new technologies and products: “Resistance and reliability is poor. It’s one of the poorest scores.” Major user
- Hockers Lane Water Treatment Works (WTW) expansion: “I believe it is good value.” Environmental group
- New drinking water storage tanks: Full: “The population benefit from the full version is 128,000, but the price impact is huge compared as ‘basic’ is 51p and ‘full’ is £1.17.” Parish/town council

#### Table 2

- Testing new technologies and products: “I think this option is a no-brainer. It is essential for us to be futureproofing the network in view of the emerging challenges of climate change, and the only way we can do that is by applying the latest innovations. It is also extremely cheap, so the return on investment is likely to be very high.” Environmental group

#### Table 3

- Testing new technologies and products: “For 7p we should keep that.” Environmental group
- Kent trunk main grid system: “This benefits almost everyone, for 89p, and that was one of our top choices, so that still seems to be one to keep.” Major user
- Bewl Water Treatment Works (WTW) expansion: “Looking at the incidents avoided, operational time, cost, and customer benefit, it makes the most sense, just on the figures.” Environmental group
- Kent trunk main grid system: “Coming at it from a different position, this avoids 10,820,000 customer interruptions.” Utility/energy group
- Smart Water Network: Full: “This improves response for 21,000 customers.” Utility/energy group
- New drinking water storage tanks: Full: “This is a benefit for just over two million customers.” Utility/energy group
- Hockers Lane Water Treatment Works (WTW) expansion, Pembury Water Treatment Works (WTW) upgrade, Kent and Tonbridge Water Treatment Works (WTW) upgrade, Kent: “These options are cheaper, but we’re talking numbers only in the thousands for improvements here.” Utility/energy group
- Testing new technologies and products: “I think you’d be mad not to add this in, it costs so little.” Major user
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “I think considering farms and agriculture, and their benefits, they would be included with this option.” Environmental group

#### Table 4

- Smart Water Network: Basic, Smart Water Network: Full: “There is a phenomenal difference in cost. If you put the basic one in, is it iterative? Can you then beef it up to ‘full’ in another round of investment?” Major user
- Smart Water Network: Basic: “There may be other spinoff technology that comes off the basic one.” Major user

- Kent trunk main grid system: “It’s a huge population that it will serve, and I would imagine it will cover a lot of green areas you have in your map area.” Local authority officer
- Kent trunk main grid system: “If you look at the scores on the grid system, it’s a reliability of 10. So much about this is about consumer confidence in South East Water, and getting people to buy into it.” Major user
- Kent trunk main grid system: “I’m concerned about the grid system. There will be an environmental impact. Will there be 15-20 years of public inquiry for this?” Major user
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “Tonbridge is scheduled for a lot more additional development.” Major user
- Hockers Lane Water Treatment Works (WTW) expansion: “If we’ve only got 11p left, we should spend 9p of it on Hockers Lane.” Environmental group
- Smart Water Network: Basic: “It’s about prevention. There will be a faster response to incidents.” Local authority officer
- Smart Water Network: Basic: “There are environmental benefits as well.” Utility/energy group
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “This is the most impactful upgrade based on scoring.” Utility/energy group
- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “Using the existing water supply makes it more resilient. We don’t want an additional borehole.” Local authority officer
- Kent trunk main grid system: “It improves reliability, serves everyone, is resilient, and can move water to everyone. Everyone will get reduced pressure. Everyone gets a similar level of service.” Local authority officer

## 2. Which options would you like us to dismiss?

### Table 1

- New drinking water storage tanks: Full: “It will take us over £2 so unfortunately we might have to dismiss it.” Major user
- Kent trunk main grid system: “Ideally you would have a less expensive version of 8 [Kent trunk main grid system].” Environmental group
- Testing new technologies and products: “Number 9 [testing new technologies and products] should be something that is expected and not an option that we need to choose.” Environmental group

### Table 2

- Kent trunk main grid system: “I am not sure that this should be the priority, since this option would make it harder to justify ‘Smart Water Network: Full’ within the budget, and between the two, our priority would certainly be the full smart network upgrade.” Environmental group
- Smart Water Network: Full: “I think the basic option provides a lot of the solutions which people have been prioritising in their choice of the full upgrade, but it is a lot more cost effective and leaves room for other important developments.” Major user

### Table 3

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- Bewl Water Treatment Works (WTW) expansion: “Do we really want more boreholes, especially with how dry the country is becoming?” Environmental group

#### Table 4

- Smart Water Network: Full: “We couldn’t afford ‘full’.” Major user

### 3. Why do you favour ‘Pembury Water Treatment Works (WTW) upgrade’ over ‘Tonbridge WTW upgrade’?

#### Table 1

- Pembury Water Treatment Works (WTW) upgrade, Kent: “But ‘Pembury Water Treatment Works (WTW) upgrade, Kent’ benefits 75,000, compared to 50,000 from ‘Tonbridge Water Treatment Works (WTW) upgrade, Kent’.” Parish/town council
- Pembury Water Treatment Works (WTW) upgrade, Kent: “It has better reliability due to having planned response and recovery.” Parish/town council
- Pembury Water Treatment Works (WTW) upgrade, Kent: “It also provides more water, with five million compared to two million.” Major user

### 4. Why do you favour ‘Smart Water Network: Basic’ over ‘Smart Water Network: Full’?

#### Table 1

- Smart Water Network: Basic: “You would have to hope that the ‘basic’ would target the areas most in need.” Major user
- Smart Water Network: Basic: “We think the basic upgrade would be sufficient if South East Water made a concerted effort to maximise the efficiency of the technology which is already implemented in the system, which we believe is currently underused. Going for the full upgrade immediately seems like overkill, when a targeted basic upgrade would address the same key concerns.” Consumer group

### 5. Why do you favour ‘Tonbridge Water Treatment Works (WTW) upgrade, Kent’ over ‘Bewl Water Treatment Works (WTW) expansion’?

#### Table 2

- Tonbridge Water Treatment Works (WTW) upgrade, Kent: “This option achieves two targets, but the alternative only addresses one issue.” Consumer group

### 6. Why do you favour ‘Kent trunk main grid system’ over ‘New drinking water storage tanks: Full’?

#### Table 2

- Kent trunk main grid system: “If the risks involved in a lack of new storage infrastructure are mitigated by the increased delivery capacity provided by ‘Kent trunk main grid system’, then we

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would prioritise spending on other areas than storage once ‘Kent trunk main grid system’ has been confirmed.” Environmental group

## REVIEWING THE OPTIONS

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

**Table 1**

- Pembury Water Treatment Works (WTW) upgrade, Kent: “So we went for that option. [Pembury because it benefits a bigger population.” Environmental group
- New drinking water storage tanks: Basic: “And this option but placed in an area that needs it most.” Major user
- Kent trunk main grid system: “If we’re building the ‘Kent trunk main grid system’ we can spread the water around more.” Environmental group
- Smart Water Network: Basic: “The ‘Smart Water Network: Full’ was too expensive, and we felt that the ‘basic’ was something that could be improved on as time goes on.” Environmental group
- Kent trunk main grid system: “We struggled with this as it was so expensive and we did feel it was important, as without the system then you can’t move the water around, so ideally there would be a less expensive version of this option.” Environmental group
- New drinking water storage tanks: Basic: “The ‘basic’; it is readily available and it can be built in the area that it is needed in.” Major user

**Table 2**

- Pembury Water Treatment Works (WTW) upgrade, Kent over Tonbridge Water Treatment Works (WTW) upgrade, Kent: “The cost-benefit analysis came out in favour of ‘Tonbridge Water Treatment Works (WTW) upgrade, Kent’. Also, we have had issues recently with the existing asset at Tonbridge WTW, which means the money is being spent in a way which builds resilience in the short-term future, as well as establishing long-term solutions.” Local authority officer
- Smart Water Network: Basic over Smart Water Network: Full: “This gives us to the opportunity to target future upgrades very precisely, at a fraction of the cost of the immediate full upgrade.” Environmental group

**Table 3**

- Smart Water Network: Basic: “I understand having this, for the impact and value for money, as we chose ‘Smart Water Network: Full’ but went over budget.” Environmental group
- Testing new technologies and products: “I understand that we have to innovate, but if you haven’t got the money to do it, then where is the incentive?” Utility/energy group

**Table 4**

- Tonbridge Water Treatment Works (WTW) upgrade, Kent, Smart Water Network: Basic, Kent trunk main grid system: “We went for the smart network system, which concerns the whole customer base, and also the trunk system, which covers a huge area. They are the biggest and there are

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more customers affected. We have added Tonbridge because it affects a lot of customers and it's good value." Local authority officer

- Smart Water Network: Basic, Smart Water Network: Full: "With the smart water network, there's the cost of putting the technology in, but also the knock-on operational costs. When you know where all your leaks are you've got to hire people to go and fix them, because people expect you to when you know about them. The impact from the 'basic' option won't cause such a massive impact on bills because you won't know as many leaks, so it might not knock on to bills in the same way as the 'full'." Utility/energy group
- Smart Water Network: Basic, Smart Water Network: Full: "The smart water network would reduce operational costs because it would reduce wastage in trying to locate the leak in the first place. It would save money." Major user

## 7. Why do you think the other group hasn't chosen a specific option when the other group included it?

**Table 3**

- Hockers Lane Water Treatment Works (WTW) expansion: "The whole-area approach makes sense, if you think about farms and stuff as well, and take them into consideration." Environmental group
- New drinking water storage tanks: Basic, New drinking water storage tanks: Full, Smart Water Network: Basic, Smart Water Network: Full: "If you really can't ignore the £2 limit, then instead of 'full', go with the 'basic' versions." Utility/energy group

## 8. Are there changes that you would make to their decisions, within the bounds of the £2 limit?

**Table 1**

- Tonbridge Water Treatment Works (WTW) upgrade, Kent, Pembury Water Treatment Works (WTW) upgrade, Kent: "We went from 'Tonbridge Water Treatment Works (WTW) upgrade, Kent' to 'Pembury Water Treatment Works (WTW) upgrade, Kent', as it helped 75,000 people compared to 50,000, and supplied a lot more water." Major user
- Smart Water Network: Full, Smart Water Network: Basic: "We also changed from the 'Smart Water Network: Full' to the 'Smart Water Network: Basic', and that is where we will spend the 5p underspend, as we think technology will keep rolling out." Major user

**Table 2**

- Testing new technologies and products: "As we have increasing demands for residential development, we really need to be ensuring that the water usage is as efficient as possible, and the only way we can do that is by making sure that we implement the latest solutions in future planning." Environmental group
- Testing new technologies and products: "We think there is an important outreach element here, since trialling involves direct communication with public and local groups who are likely to be

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affected by a given proposal, so this option will be good for gaining feedback and allowing closer coordination between South East Water and stakeholders.” Consumer group

### Table 3

- New drinking water storage tanks: Basic, Smart Water Network: Basic: “You do get what you pay for but times are difficult for a lot of people.” Environmental group
- New drinking water storage tanks: Full, Smart Water Network: Full: “It does nullify the exercise somewhat if you can only get to £2, whether you think they’re the best options or not.” Utility/energy group
- Smart Water Network: Basic: “If basic is a lot less of an impact, it’s probably worth picking something completely different in favour of keeping ‘Smart Water Network: Full’.” Local authority officer
- New drinking water storage tanks: Basic, Smart Water Network: Basic: “The ‘basic’ versions make sense, you’re keeping the same principles and if you could stage it that would be good, to work up to ‘full’.” Major user
- New drinking water storage tanks: Full, Smart Water Network: Full: “Thinking long term and saving money in the long term as a benefit of these works, it’s so important, so do you really want to fit these things then go back in a couple of years and do it again?” Environmental group
- Kent trunk main grid system, Smart Water Network: Full, Testing new technologies and products: “If I was being absolutely ruthless, I’d drop ‘New drinking water storage tanks: Full’ to have these three.” Environmental group

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## APPENDIX 1: WORKSHOP ATTENDEES

The following organisations were represented at the think tank:

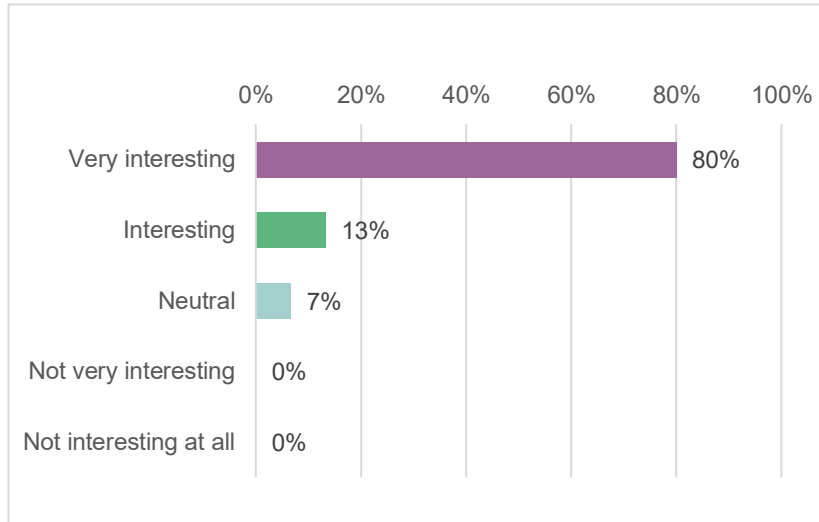
AN Waters Ltd
Aylesford Parish Council
Biddenden Parish Council
Boughton Place
CPRE Kent
Customer Challenge Group for South East Water
Environment Agency
Faversham and Villages Water Quality Testing
Friends of the Westbrook and Stonebridge Pond, Faversham
HW Richards
Kent County Council
Kent Green Party
Match Frame
Ontap
Pierce Farms Ltd
Retired farmer
South East Rivers Trust
Swale Borough Council
The Faversham Society
UK Power Networks
University of Kent

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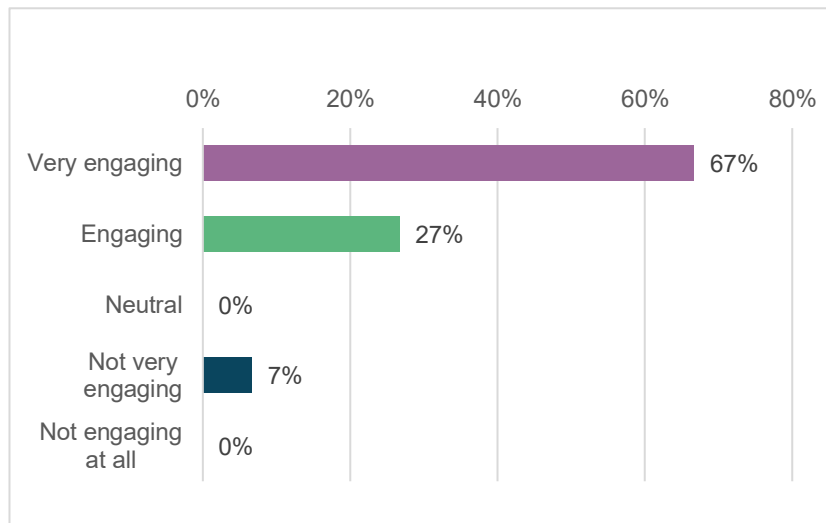
## APPENDIX 2: WORKSHOP FEEDBACK

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:



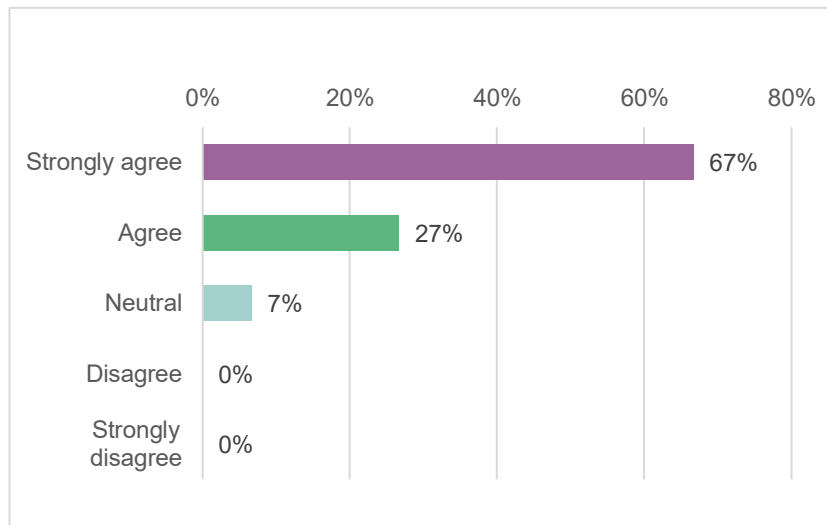
### 2. How engaging did you find the session?





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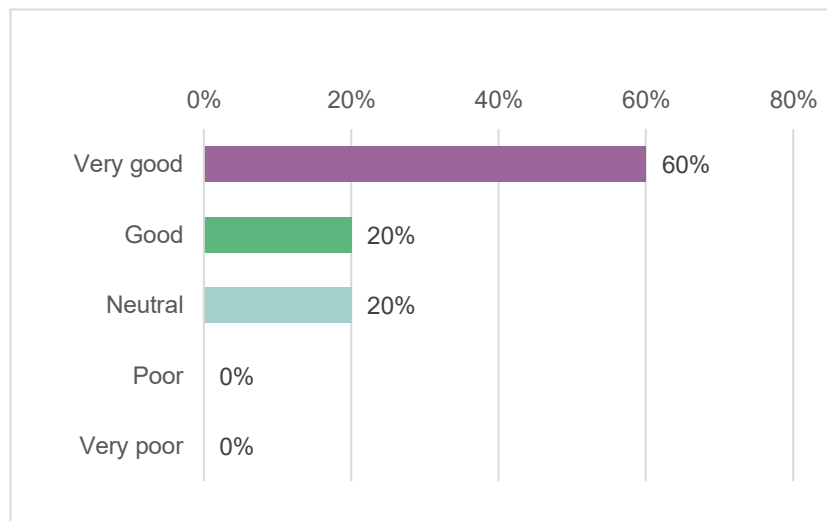
### 3. Did you feel that you had the opportunity to get involved in the discussions and make your points known?



#### Comments:

- “Good discussions. It was very interesting and good to learn more about the pressures affecting SEW.”
- “Small groups facilitated this well.”
- “There was not adequate time for everybody to contribute, therefore certain points of view were lost.”
- “It was very well planned and there was a good mix on tables.”

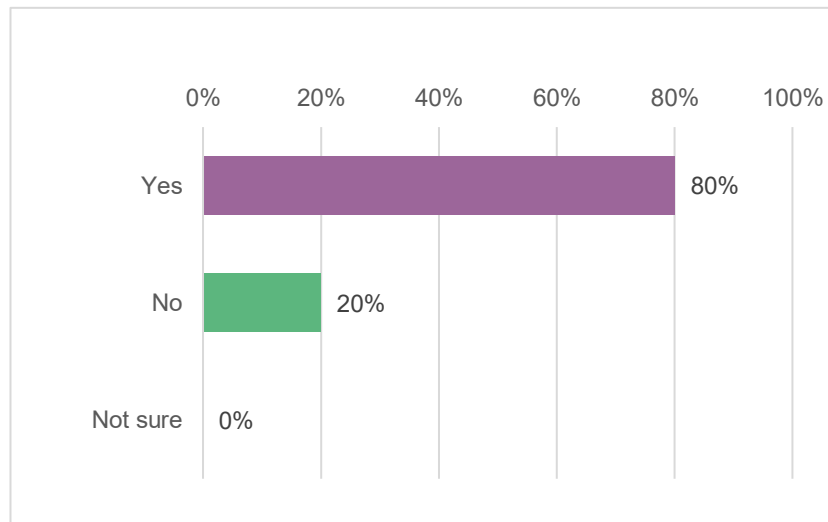
### 4. What did you think of the way the workshop was chaired by your facilitator?



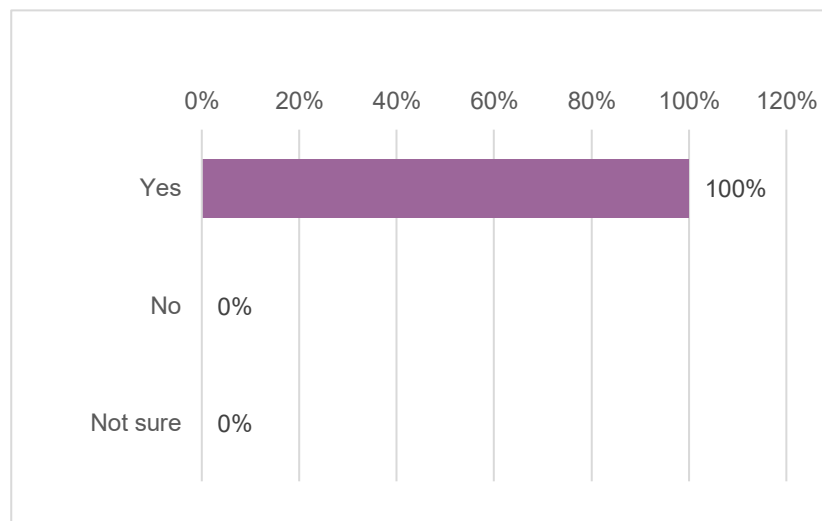
#### Comments:

- “Good. It involved everyone and contributors were allowed all the time they needed to speak.”
- “It could have been more neutral at times. Sometimes it seemed a little leading and rushed (but overall very good).”
- “It seemed to be trying to influence the outcome.”

**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:**

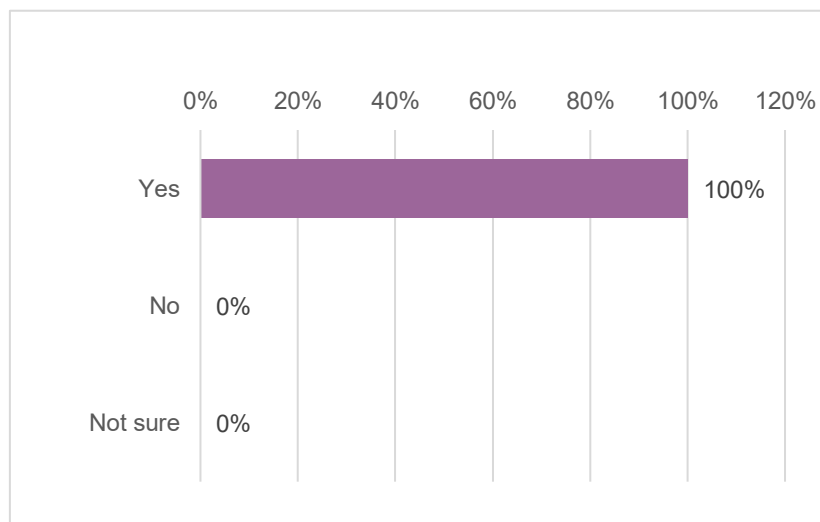
- “There are so many other factors affecting water supply resilience, such as environment, population growth, improvement to planning regs to reduce potable water use, cost of water, pumping costs, as well as loads more to consider. Nonetheless, it was a useful exercise.”
- “Given the time restrictions, yes.”
- “Completely insufficient information and the data weren’t robust. Many resilience options weren’t even included, so not sure how we could make an informed decision. It felt like we were being shoehorned into supporting ‘certain’ projects.”
- “The lack of detail about environmental implications made decision-making awkward. I found it surprising that both this event and the environmental event were not combined as there is a lot of overlap.”

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

- “Old, poorly maintained infrastructure, population growth and demand growth, all exacerbated by the impact of climate change. And no government will take the draconian measures needed to address climate change, so we’re all, including SEW, on a knife-edge with water resources resilience.”
- “Decreasing rainfall and increasing demand pressure.”
- “Leakage, short-term storage and increasing future demand.”
- “Cost of living, climate change and food reliability.”
- “Rapid freeze-thaw, bloated development, and, as a result, huge demand increases.”
- “Hot, dry summers, freeze-thaws causing pipe leak, and higher temps resulting in dwindling water supplies.”
- “Asset failure.”
- “Reliability of service and minimisation of waste.”

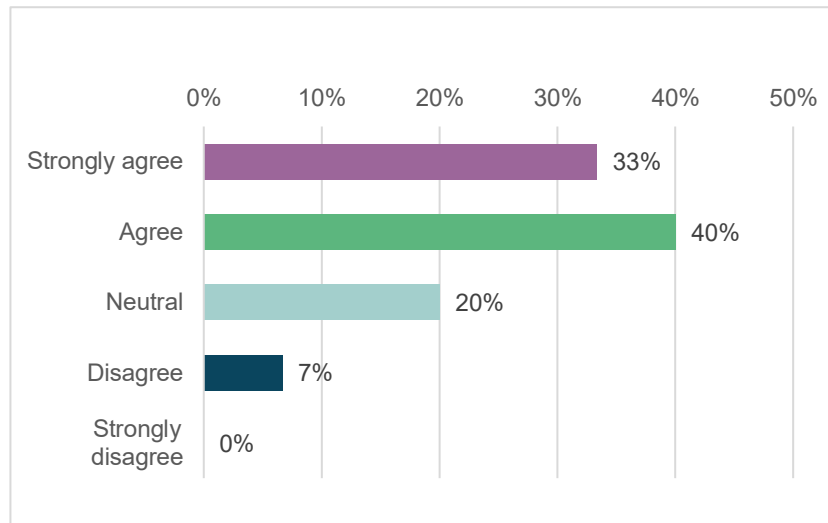
**8. Following the session, do you have a greater understanding of the trade-offs South East Water has to make when deciding which schemes should be progressed and when?**



Comments:

- “There has been some good learning for me here. However, SEW needs to raise the importance of environmental regs within its culture.”
- “There wasn’t time to fully understand the funding model.”

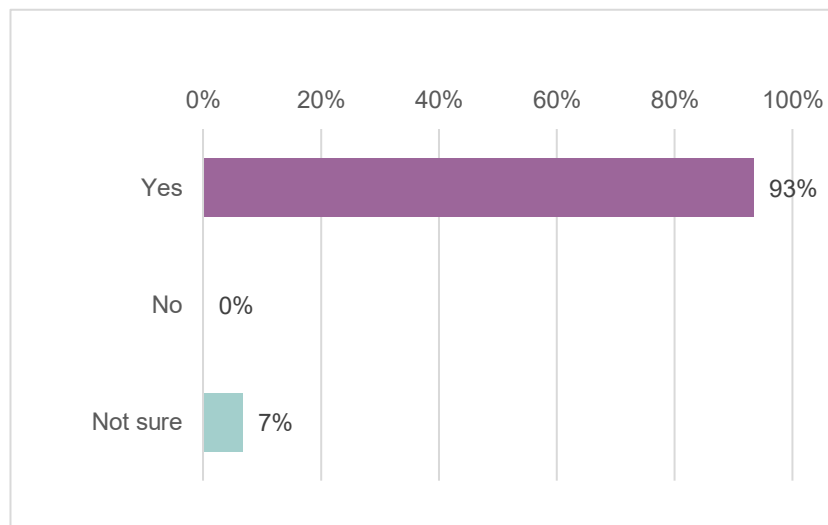
**9. How do you feel about the following statement? “The level of information was tailored appropriately to match my levels of knowledge.”**



Comments:

- “A large representation of professionals helped understanding.”


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



# APPENDIX 3: SCHEMES

## SCHEME 1

**Hockers Lane Water Treatment Works (WTW) expansion**



1

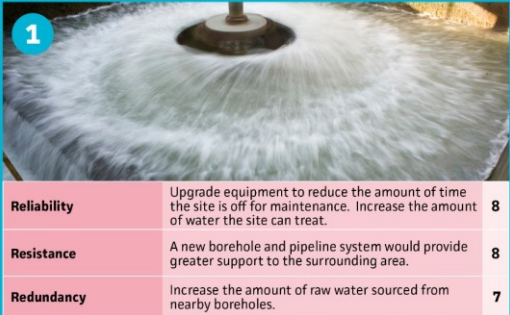
One of our 87 Water Treatment Works

**Background**  
 Located in north Kent, Hockers Lane WTW is a key supplier of drinking water to Maidstone, the largest town in the county. The site treats ground water pumped from a number of boreholes nearby and is considered a critical part of the water infrastructure in this part of Kent. Given the growing population in Maidstone and the potential additional sources of ground water in the locality, the amount of water which needs to be treated at Hockers Lane WTW needs to be increased.

**The proposal**  
 To dig a new borehole nearby to create a higher and more reliable flow of raw water into Hockers Lane WTW. Upgrade elements of the treatment process to improve resilience. Increase the amount of water the site can treat to 11 million litres of water every day.

south east water

**Hockers Lane Water Treatment Works (WTW) expansion**



1

<b>Reliability</b>	Upgrade equipment to reduce the amount of time the site is off for maintenance. Increase the amount of water the site can treat.	8
<b>Resistance</b>	A new borehole and pipeline system would provide greater support to the surrounding area.	8
<b>Redundancy</b>	Increase the amount of raw water sourced from nearby boreholes.	7
<b>Response and recovery</b>	Able to increase the amount of water extracted from the borehole if needed, enabling greater flexibility.	7
<b>Total score</b>		<b>30</b>


<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>1</b>
<b>Bill impact</b>	(per year)	<b>£0.09</b>
<b>Population benefitted</b>		<b>70,000</b>
<b>Operational by</b>		<b>2030</b>

**Additional information:**  
 The new borehole will be close to two existing boreholes so no land purchase will be necessary. This option will enable Hockers WTW to provide support to the new Butler WTW which will soon be built on the former Aylesford Newsprint site near Maidstone.

**Constraint:**  
 N/A

## SCHEME 2

**Tonbridge Water Treatment Works (WTW) upgrade, Kent**



2

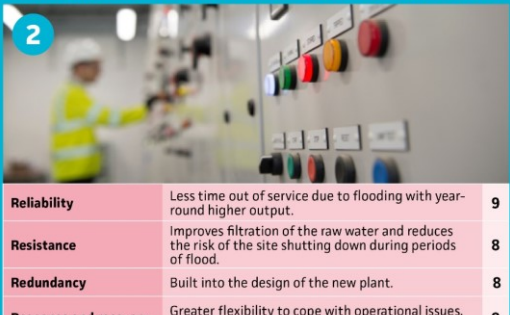
One of our 87 Water Treatment Works

**Background**  
 Tonbridge WTW supplies 25,000 properties in the Tonbridge area. The site sources its raw water from boreholes both on the water treatment works site and from wells within playing fields next door. The WTW is capable of treating and supplying 4.5 million litres of water a day, but currently achieves two million litres a day. This is because the site is highly susceptible to flooding which impacts water quality and site access.

**The proposal**  
 To upgrade the site with new filtration equipment which will be fully protected from flooding allowing the treatment works to continue running year-round. This will increase the amount of water treated and improve the site's reliability.

south east water

**Tonbridge Water Treatment Works (WTW) upgrade, Kent**



2

<b>Reliability</b>	Less time out of service due to flooding with year-round higher output.	9
<b>Resistance</b>	Improves filtration of the raw water and reduces the risk of the site shutting down during periods of flood.	8
<b>Redundancy</b>	Built into the design of the new plant.	8
<b>Response and recovery</b>	Greater flexibility to cope with operational issues, reducing impact and duration.	8
<b>Total score</b>		<b>33</b>

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>2</b>
<b>Bill impact</b>	(per year)	<b>£0.24</b>
<b>Population benefitted</b>		<b>50,000</b>
<b>Operational by</b>		<b>2035</b>

**Additional information:**  
 This option will enable Tonbridge WTW to support the wider Tunbridge Wells water network.

**Constraint:**  
 N/A



### SCHEME 3

**Pembury Water Treatment Works (WTW) upgrade, Kent**




<b>Reliability</b>	New water treatment equipment installed.	<b>9</b>
<b>Resistance</b>	Robust treatment processes to secure the supply.	<b>8</b>
<b>Redundancy</b>	Built into the design of the new plant.	<b>8</b>
<b>Response and recovery</b>	Greater flexibility to cope with operational issues, reducing impact and duration.	<b>7</b>
<b>Total score</b>		<b>32</b>

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>2</b>
<b>Bill impact</b>	(per year)	<b>£0.37</b>
<b>Population benefitted</b>		<b>75,000</b>
<b>Operational by</b>		<b>2035</b>

**Additional information:**  
This option will enable the site to receive a greater volume of natural spring water from the surrounding woodland which is a low carbon, environmentally friendly source of raw water.

**Constraint:**  
N/A

**Pembury Water Treatment Works (WTW) upgrade, Kent**



One of our 87 Water Treatment Works

**Background**  
Pembury WTW supplies nine million litres of water a day to 50,000 properties in the Tonbridge and Tunbridge Wells area.  
The site sources its raw water from boreholes both on the water treatment works site and nearby.  
The growing population of Tunbridge Wells would benefit from more water being treated at Pembury WTW and pumped into the local area.  
This upgrade would also support areas further afield in Kent and Sussex, providing wider resilience to the region.

**The proposal**  
To upgrade the site's water treatment processes to enable it to treat up to 14 million litres of water a day.

south east water

### SCHEME 4

**Bewl Water Treatment Works (WTW) expansion**




<b>Reliability</b>	Upgrade equipment to reduce the amount of time the site is off for maintenance. Increase the amount of water the site can treat.	<b>8</b>
<b>Resistance</b>	A new borehole and pipeline system would provide greater support to the surrounding area.	<b>8</b>
<b>Redundancy</b>	Additional capacity making it easier to undertake maintenance across the whole site.	<b>9</b>
<b>Response and recovery</b>	Greater flexibility to cope with operational issues, reducing impact and duration.	<b>7</b>
<b>Total score</b>		<b>32</b>

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>4</b>
<b>Bill impact</b>	(per year)	<b>£0.25</b>
<b>Population benefitted</b>		<b>100,000</b>
<b>Operational by</b>		<b>2030</b>

**Additional information:**  
Costs include purchasing land next to the existing WTW to enable further boreholes to be installed.  
This option will vastly improve the wider drinking water network by providing a back-up supply of water to many nearby drinking water storage tanks.

**Constraint:**  
N/A

**Bewl Water Treatment Works (WTW) expansion**



Bewl Water Treatment Works

**Background**  
Bewl WTW is one of the largest treatment works in Kent.  
It supplies up to 20 million litres of water a day to Cranbrook, Goudhurst, Wadhurst, Crowborough, Tunbridge Wells and surrounding areas.  
The site takes its raw water from Bewl Reservoir and local boreholes.  
With the population of Kent and Sussex growing additional water needs to be sourced and treated to meet the area's growing needs.  
Additionally, due to how important this site is for Kent, it's difficult to switch off the treatment works for routine maintenance.  
Similarly, if there's a problem such as site failure, the risk of customers going without supply is greatly increased.

**The proposal**  
Install additional boreholes along the north shore of Bewl Water to source additional raw water.  
To upgrade the site's processes to increase water treatment to 30 million litres a day.  
This will provide a more reliable and secure source of drinking water for the region.

south east water

## SCHEME 5

### New drinking water storage tanks: Full



<b>5</b>		
<b>Reliability</b>	Additional storage allows more time to fix network issues e.g. significant burst mains. The sites will also include state-of-the-art technology and alternative power options.	7
<b>Resistance</b>	New storage tanks will provide more time for repairs to be undertaken before customers lose supply.	9
<b>Redundancy</b>	Each new reservoir will include two cells so one can be taken out of service while the other remains operational	10
<b>Response and recovery</b>	24 hour storage will provide a water supply while issues in the network are addressed.	8
<b>Total score</b>		<b>34</b>

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>16</b>
<b>Bill impact</b>	(per year)	<b>£1.17</b>
<b>Population benefitted</b>		<b>128,000</b>
<b>Operational by</b>		<b>2035</b>

**Additional information:**  
The solution will not eradicate network issues but will provide greater protection in terms of resistance, response and recovery time.  
It is likely that land next to existing drinking water storage tank sites will need to be purchased.  
**Constraint:**  
Only this card or the 'New drinking water storage tanks: Basic' card can be chosen.

### New drinking water storage tanks: Full



**5**

**Background**  
Industry best practice is to ensure there's 24 hours' 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 the tanks is used by customers.  
Kent is experiencing increases in population and therefore further storage is needed.

**The proposal**  
To build six new drinking water storage tanks to increase the amount of treated water stored before it is pumped to taps following housing and development growth.  
This solution also ensures we are resilient against future challenges mentioned above.

south east water

## SCHEME 6

### Smart Water Network: Basic



<b>6</b>		
<b>Reliability</b>	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
<b>Resistance</b>	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
<b>Redundancy</b>	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
<b>Response and recovery</b>	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
<b>Total score</b>		<b>22</b>

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>10</b> <small>Across the whole supply area</small>
<b>Bill impact</b>	(per year)	<b>£0.18</b>
<b>Population benefitted</b>		<b>850,000</b>
<b>Operational by</b>	Year that customers will witness benefit of the scheme	<b>2027</b>

**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



**6**

**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 Kent 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



## SCHEME 7

### Smart Water Network: Full



**7**


<b>Reliability</b>	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
<b>Resistance</b>	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
<b>Redundancy</b>	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
<b>Response and recovery</b>	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
<b>Total score</b>		<b>32</b>

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>25</b> Across the whole supply area
<b>Bill impact</b>	(per year)	<b>£0.91</b>
<b>Population benefitted</b>		<b>850,000</b>
<b>Operational by</b>		<b>2028</b>

**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



**7**

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 Kent 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 8

### Kent trunk main grid system



**8**

Mainlaying projects

**Background**  
Some areas of Kent are currently fed by one single water source. If the water main which supplies those areas 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 Kent we can eradicate all single points of failure within the region's water pipe network.  
This will 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 if there is an issue.

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

**Constraint:**  
N/A

south east water

### Kent trunk main grid system



**8**

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

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>20</b> Across the whole supply area
<b>Bill impact</b>	(per year)	<b>£0.89</b>
<b>Population benefitted</b>		<b>541,000</b>
<b>Operational by</b>		<b>2025 - 2035</b>

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

**Constraint:**  
N/A



## SCHEME 9

### Testing new technologies and products



<b>Reliability</b>	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
<b>Resistance</b>	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
<b>Redundancy</b>	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
<b>Response and recovery</b>	Test new technologies and products that give real-time data and insight to support our recovery efforts across a range of potential issues.	6
<b>Total score</b>		<b>18</b>

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

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

**Constraint:**  
N/A

### Testing new technologies and products



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 10

### New drinking water storage tanks: Basic



A drinking water storage tank

**Background**  
Industry best practice is to ensure there's 24 hours' 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 the tanks is used by customers.

Kent is experiencing increases in population and therefore further storage is needed.

**The proposal**  
To build three new drinking water storage tanks to increase the amount of treated water stored before it is pumped to taps following housing and development growth.

This solution also ensures we are resilient against future challenges mentioned above.

south east water

### New drinking water storage tanks: Basic



<b>Reliability</b>	Additional storage allows more time to fix network issues e.g. significant burst mains. The sites will also include state-of-the-art technology and alternative power options.	7
<b>Resistance</b>	New storage tanks will provide more time for repairs to be undertaken before customers lose supply.	8
<b>Redundancy</b>	Each new reservoir will include two cells so one can be taken out of service while the other remains operational	10
<b>Response and recovery</b>	24 hour storage will provide a water supply while issues in the network are addressed.	7
<b>Total score</b>		<b>32</b>

<b>Incidents avoided</b>	(Potential number of times customers go without water per year related to this issue)	<b>16</b>
<b>Bill impact</b>	(per year)	<b>£0.51</b>
<b>Population benefitted</b>		<b>78,000</b>
<b>Operational by</b>		<b>2035</b>

**Additional information:**  
The solution will not eradicate network issues but will provide greater protection in terms of resistance, response and recovery time.

It is likely that land next to existing drinking water storage tank sites will need to be purchased.

**Constraint:**  
Only this card or the 'New drinking water storage tanks: Full' card can be chosen.