

A large circular graphic composed of various white line-art icons on a teal background. The icons include a person with a headset, a cloud with circuit lines, a "net zero" circle with a leaf, a checkmark in a circle, a target, a microscope, a person at a presentation board, a hand holding a water drop, a globe with a thermometer, a hand with a downward arrow, a group of people with an upward arrow, a leaf, a person silhouette, a water drop with a scale, and a glass of water. The central text is overlaid on a white circle within this graphic.

Appendix
SES032
**DWI SUBMISSION -
LONG-TERM
PLANNING FOR THE
QUALITY OF
DRINKING
WATER**



LONG TERM PLANNING FOR THE QUALITY OF DRINKING WATER

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Document Control

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1. Executive Summary Statement

This document outlines SES Water's planned approach to the long term planning for the quality of drinking water. Key aspects are summarised here:

- 1.1 The delivery of 'high quality water, all day every day' is a key commitment to our customers, supporting our Company vision 'to be an outstanding water company that delivers service excellence'
- 1.2 Drinking Water Safety Plans are integral to the management of water quality risks at SES Water, 'source to tap' and to secure compliance with all relevant guidance and legislation
- 1.3 We will continue to adopt an extensive operational monitoring programme to ensure the ongoing assessment and verification of risk in raw waters, through treatment process units and across the network, enabling recommendations for improvements in operations as required. This will directly assist with the identification of any future impacts due to climate change, as well as point source and diffuse risks
- 1.4 Catchment management will be adopted for both the proactive prevention of, and the mitigation of, raw water quality challenges and will be a 'business as usual' activity alongside the specific delivery of investigations and schemes agreed with the EA under WINEP. Enhancements to the on-going initiatives planned to address identified catchment nitrate, solvent and pesticide concerns will be programmed for AMP8 and beyond
- 1.5 Engagement with all relevant stakeholders, and the establishment of partnerships, will be a key element of an ongoing catchment strategy to ensure the optimum cost beneficial solution is adopted to secure improved raw water quality and wider environmental benefits
- 1.6 We will ensure we have considered the latest research outputs regarding emerging contaminants (such as PFAS, EDCs and microplastics) and appropriately assessed and verified the risks
- 1.7 Treatment is tailored to the raw water risks and designed to deliver water that is aesthetically acceptable to our consumers through the adoption of chloramination throughout our area of supply
- 1.8 We have identified the need to specifically address the potential risk of Cryptosporidium at two treatment works in AMP8 and are assessing the need for additional treatment solutions for solvents in the sources at Dorking
- 1.9 SES Water has a Company specific legal requirement to partially soften all hard waters and we will operate the additional treatment processes efficiently and effectively to ensure no detriment to treated water quality and delivery at minimum cost to customers and minimum impact to the environment
- 1.10 We will prioritise the maintenance and renewal of our treatment and network assets in accordance with the outputs of appropriate models, but are looking to adopt more innovative solutions that appear to more accurately determine where our activity should be focused
- 1.11 The operation of our distribution network is strictly managed to ensure known risks are controlled and to maintain our excellent performance record in respect of taste, odour and discolouration contact rates from customers
- 1.12 Resilience in our ability to deliver is being developed through the planned uprating and upgrading of treatment works and the installation of new trunk mains to the extent that all customers will be capable of being served by more than one treatment works by the end of AMP7

- 1.13 We have a lead strategy that we will continue to deliver whilst lead remains a risk in our distribution network. We will manage plumbosolvency through the optimised dosing of orthophosphoric acid and look to eliminate Company owned lead communication pipes, promoting the removal of customer owned lead supply pipework. In AMP8 we will continue our AMP7 strategy that will see all lead communication pipes replaced where there is evidence that the lead is present in drinking water at any concentration more than half the current lead standard. We will continue to offer to replace the customer owned supply pipe where the lead detected in any sample is greater than the regulatory standard. Recognising that the risk from lead ingestion is greatest to children, there was a major initiative to replace lead communication pipes supplying establishments where they are educated or cared for during AMP5. As an enhancement for AMP8, we are revisiting the risk from lead ingestion being greatest to children. We plan to review, investigate and sample the drinking water supply for the highest risk group of consumers at schools, nurseries and childminders and will provide a lead-free drinking water supply, to the point of compliance
- 1.14 We are supporting the development of innovative solutions such as ‘Smart networks’ to better understand the nature of our network and how it may be best operated. SES Water has become the first UK water company to roll out intelligent technology across its entire water distribution network, with ‘iDMA’. The self-learning network highlights issues in near real-time so action can be taken more quickly to make sure customers continue to receive an uninterrupted supply of safe, high quality drinking water, and paves the way for the Company to more than halve its leakage by 2045
- 1.15 We recognise that our customers have an important role to play in influencing the final quality of the water they consume. We are therefore investing in the provision of improved information and advice, ensuring that customers can access the information they need, whenever they want it and in any format they choose
- 1.16 We will continue to contribute to all relevant industry forums and research activities and we have a dedicated Innovation Manager to ensure that we adopt the most appropriate and beneficial improvements at the time of asset renewal, or when planning investment in new technologies
- 1.17 We acknowledge that our people are a key resource and will invest in their training and development to ensure the effective operation of our treatment and network assets and suitable response to unexpected events.

2. Introduction

2.1. Company Purpose and Vision

SES Water's Purpose is 'to harness the potential of water to enhance nature and improve lives'. We do that by supplying high-quality water to 745,000 people in the areas from Sutton to Gatwick Airport; Edenbridge to Cobham and everywhere in between, and by being a responsible and proactive guardian of our local environment.

Our Company Vision remains 'to be an outstanding water company that delivers service excellence'.

Our business plan for 2020-2025 is focused on delivering five key pledges to our customers, supported by targets that were identified as those most important to the customers we serve. Our performance in the delivery of our pledge to 'provide high quality water all day, every day' is measured and reported annually to the Drinking Water Inspectorate (DWI) and judged against the performance commitments we agreed with our financial regulator, Ofwat. The delivery of high-quality drinking water is specifically assessed by our performance in the Compliance Risk Index (CRI) and in the number of customers that contact us due to dissatisfaction with the taste, odour or appearance of their water supply. SES Water is also committed to ensuring that high quality water is consistently delivered by ensuring that we maintain and invest in our assets and our employees to reduce the likelihood of failure, as measured by our performance in respect of unplanned outage (treatment works) and supply interruptions (network).

As we plan for service delivery 2025-2030, and outline our ambition for 2050, we are building on our current commitments and have identified four key priorities:

1. to provide customers with high-quality water from sustainable sources
2. to deliver a resilient water supply from source to tap and minimise wastage
3. to help customers reduce their water footprint and charge a fair, affordable price for what they use, and
4. to improve the environment and have a positive impact on our local area.

In particular, long term water quality priorities focus on:

- only taking water from the environment when doing so doesn't impact on the health of our local rivers and streams
- improving the quality of the water in the environment so we avoid the need for additional treatment to remove algae, chemicals, and pollutants, and
- eliminating all the lead pipes in our supply network and our customers' homes as quickly as possible.

We recognise that we will have to plan for the likely impacts of climate change and population growth, and contribute to improving the water environment, potentially having to adapt to new and varying quality of raw water sources.

Full details of the Company's initial Long Term Delivery Strategy proposals for 2025-50 are provided in Appendix 1.

2.2. Regulatory Requirements

SES Water aims to meet all statutory obligations in respect of drinking water quality, ensuring we protect the health of our customers and maintain consumer confidence in the water supply at all times. We are mindful of the potential cost impact of any

additional measures that may be required in response to any deterioration of raw water quality, or to ensure treated or distributed water quality continues to meet any new or heightened quality standards. We will look to innovate to ensure we continue to meet all obligations at least cost to our customers.

2.3. Management of Water Quality Risk

SES Water is committed to the use of Drinking Water Safety Plans (DWSPs) in the adoption of a 'source to tap' approach to managing our drinking water supplies and ensuring the delivery of a continuous supply of wholesome and high-quality water to our customers. DWSPs have been developed in accordance with available guidance and are kept under review and updated as necessary in response to the identification of new catchment risks, treatment process or network changes, the results of regulatory and operational water quality monitoring, the root cause analysis of events and reviews of customer contacts.

DWSP risks are fed into the regular reviews of our Corporate Risk Register.

2.4. ISO accreditation

SES Water holds accreditation to ISO9001 (Quality) and ISO14001 (Environment). The policies and procedures adopted to ensure compliance with these standards assist in the delivery of activities that support the management of water quality risks and delivery of a compliant product.

SES Water's in-house Laboratory holds accreditation to ISO17025. Accreditation plays an important role in supporting the provision of accurate and reliable results from sampling and laboratory testing.

3. Raw Water

3.1. Operation and monitoring

Our existing raw water sources have all been risk assessed and tested to establish the required level of treatment to ensure the delivery of compliant treated water and any new sources developed would be rigorously assessed and tested prior to first use, in accordance with the requirements of the Water Supply (Water Quality) Regulations. Sources in use are regularly rotated (in the case of boreholes) and tested in accordance with a source specific monitoring programme to provide on-going verification of risk and to inform any necessary modifications to treatment.

3.2. Current Raw Water Risk Management

Existing raw groundwater mitigation measures include the protection of headworks from surface water ingress and deliberate contamination. There is a thorough understanding of the potential point and diffuse sources of pollution in the catchments and a rapid response to investigate any changes in water quality detected through operational monitoring.

The risk of deterioration in the quality of our single raw surface water source is mitigated through daily testing of the river during active abstraction, aeration of the reservoir to ensure mixing, protection from animal grazing and managed access. Where resource availability allows and suitable testing regimes exist, we will consider actively managing the abstraction of water from the River Eden to minimise the resultant pesticide challenge in Bough Beech Reservoir. Other catchment management activities also have a significant benefit, as described below.

Current managed source specific risks would include naturally occurring high concentrations of substances such as iron and manganese and anthropogenic contaminants such as pesticides, nitrate and solvents. The treatment applied, whether through blending or specific treatment processes, is further explored in section 4 below.

We have specific engagement with the Environment Agency (EA) to agree and deliver investigations and schemes in respect of raw water quality under the Water Industry National Environment Programme (WINEP). In the current five-year period, 2020-2025, that has included investigations into potential raw water quality deterioration for ammonia, nitrate and microbiological quality at three separate groundwater source groups, and the delivery of actions in respect of solvents and nitrates across a further seven groundwater source groups. At our surface water site, investigations and scheme delivery have been for phosphorus and a range of pesticides.

The outputs of the investigations range from no confirmed raw water deterioration to a risk that can be addressed through future catchment management activity planned for AMP8. In the case of a specific increased risk and challenge at our Dorking Treatment Works in respect of solvents we are working with the EA and other stakeholders to try and determine the likely source of contamination, to prevent any further contamination and to manage the sources so that we can continue to deliver a compliant treated water at Elmer Treatment Works. Additional treatment solutions may be required in 2025-2030.

3.3. Catchment Management

SES Water will adopt a catchment management approach to address the risks posed by diffuse and point source pollution where this will be cost beneficial in reducing the

need for additional treatment or in reducing the complexity of existing treatment. We will remain mindful, however, of the need to upgrade or install treatment where this is needed to address an immediate water quality concern that may impact the health of consumers or otherwise result in resource limitations. In particular we will continue to engage with all relevant stakeholders in order to reduce the impact of pesticides and nutrients on our one reservoir stored surface water source at Bough Beech, and on nitrate and solvent challenges at some of our groundwater sources.

We currently have an agreed Undertaking with the DWI to mitigate the risk from metaldehyde at Bough Beech, and a WINEP scheme agreed with the EA to address the perceived risks from metaldehyde, carbetamide, mecoprop, propyzamide and phosphate. Changes in legislation have assisted with reducing the risk from metaldehyde and we will be looking to agree the closure of our Undertaking in 2023. The use of carbetamide has also now been restricted, and with the risk from this and mecoprop reduced, our current focus is on managing propyzamide and engaging with the company that manages the sewage discharges upstream of our river intake.

Our operational monitoring for pesticides has identified a heightened risk from flufenacet across our Bough Beech catchment, and a recent challenge from quinmerac that is still under investigation. We are seeking EA support for our proposed WINEP scheme to manage raw water concentrations of flufenacet in 2025-2030 (there being no perceived threat in our ability to meet the drinking water standard in treated water).

Our catchment management activities include forming partnerships with other stakeholders working in the catchments and we have recently signed a Partnership Working Agreement with Natural England with shared strategic objectives for the reduction in diffuse pollution and collaborative working with Catchment Sensitive Farming. We will continue to engage those with specialist knowledge of the farming community, such as South East Rivers Trust (SERT) and Farming and Wildlife Advisory Group (FWAG) to assist with delivery of our planned activities.

We are already actively engaged with neighbouring water companies, some of whom will directly benefit from catchment management we deliver, since our river source feeds their abstractions further downstream. We envisage that the sharing of data and resources for certain planned events/training etc. will increase, alongside wider partnership working. Our contribution to the research projects that run across the industry will also continue.

Catchment management has become a 'business as usual' activity for the maintenance and improvement of raw water quality.

3.4. Future Raw Water Risk Mitigation Measures

Over the course of the next 25 years, we anticipate that there is likely to be additional drinking water quality challenges from either the tightening of existing drinking water standards, the implementation of new standards and/or the identification of new substances of concern that may find their way into the raw water environment, such as the release of new pesticide formulations or the identification of persistent chemicals such as Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS). We will ensure our catchment risk assessments appropriately consider the potential impact of any emerging risks such as endocrine disrupting chemicals and microplastics.

Whilst we do not currently detect significant changes in water quality as a consequence of rainfall and other seasonal weather events, we are anticipating that changing weather and demand patterns due to climate change will result in new raw water quality challenges in the future. Our operational monitoring programmes are designed to ensure we detect any significant changes that require specific mitigation measures.

We are somewhat reliant on other stakeholders in our catchment to maintain their assets such that the contamination risk is not increased, e.g. sewers need to be maintained to reduce the risk of faecal contamination, and petrol station tanks need to be regularly inspected and replaced at end of life. Where concerns with these are identified through monitoring we will engage with the relevant asset owner to remove the source of pollution.

The development of oil and gas exploration is a specific activity that has increased in our area over the last few years and has the potential to impact water quality if not carefully controlled. We will ensure that we are an active participant in any such planning approval process and will adjust our operational monitoring programmes as appropriate in response to approved activity.

Catchment management is likely to become a more significant activity in order to improve raw water quality and drive efficiencies in water treatment, but we may also be reliant on the support of our regulators and government to ensure that the optimum solution is sought to address any new water quality concerns, balancing the health of water consumers, the cost of treatment and the wider benefits that any new substance of concern may have. The efforts to manage metaldehyde are a good example of where catchment management and voluntary measures were proven to be increasingly successful but could not guarantee continuous compliance. The final solution balanced the additional costs for farmers of an alternative product with the costs to water companies of failure to comply and/or the cost to treat.

We will document a 'Catchment Strategy' that will look to identify how we can develop catchment management further, whilst also supporting our additional aim to 'support a thriving environment we can all rely on'.

SES Water will continue to invest appropriately in monitoring, people resource and the initiatives that help to deliver improvements in water quality through engagement and support of all relevant stakeholders.

4. Water Treatment

4.1. Operation and monitoring

Our treatment works have all been designed to deliver compliant drinking water that is safe to drink, addressing known raw water challenges and delivering a partially softened water supply where this is required for us to meet our additional Company-specific statutory requirements. Individual treatment process units, including their condition and method of operation and control, have all been reviewed and considered in the detailed treatment risk assessment.

Treatment performance is continually verified through on-line monitoring and regular laboratory testing. An operational sampling programme supports the regulatory programme to provide detailed information on process unit performance.

4.2. Current Water Treatment Risk Management

Existing treatment mitigation measures include the uniform requirement to disinfect all water that is to be supplied, either by chlorination or a combination of UV and chlorination, and the maintenance of all relevant monitoring and control processes that ensure the continuous delivery of this process to the correct standard, including the achievement of the turbidity standard. All water produced by SES Water is also chloraminated prior to supply. Whilst this is not required to make the treated water wholesome, it assists with the management of THMs at our surface water treatment site, ensures longevity of residual disinfectant across the Company area of supply and reduces the otherwise chlorinous taste and odour of the water at all sites for the benefit of our customers.

Where possible, the need for treatment is eliminated through source blending. This is applied to ensure compliance for nitrate at our groundwater site at Cheam and has been used to manage pesticide compliance at other sites.

Other process units are installed to address specific raw water challenges, such as high concentrations of iron and manganese in groundwaters, and Cryptosporidium risk at our surface water and surface influenced groundwater site. The majority of additional treatment process complexity, however, is due to units specifically required for the delivery of softening.

Automatic control systems at critical points ensure that the treatment works alarm and then shut down in the event that parameters are outside of prescribed operational limits.

Where new processes or control systems are added or upgraded, or there are planned outages for essential maintenance activities, there is a full operational risk assessment prior to implementation, involving cross-departmental working groups.

Routine asset maintenance is planned through an on-line management system and required asset interventions are recorded in the same system.

Asset renewals are planned for each AMP based on modelling work that considers expected lifespan, intervention maintenance activity, quality concerns, etc. Optioneering is used to determine the most appropriate replacement treatment units, considering research outputs, innovative solutions, and whole-life costs, at that time.

4.3. Softening

The legal requirement to partially soften all naturally hard raw water sources is unique to SES Water. Softening is achieved at five sites through three different processes, all

of which add complexity and cost to treatment, but deliver savings and other benefits to consumers.

SES Water is committed to continuing to deliver a softened water supply through careful operation and maintenance of relevant plant. We will aim to continuously optimise what we deliver, carefully balancing the customer benefit, the costs of treatment and the environmental impact.

We will continue to monitor customer satisfaction with the hardness of the water supplied and aim to better educate our customers and relevant stakeholders as to the costs, benefits and impacts of softening.

We have a Regulatory Performance Commitment for the delivery of softened water. *“This performance commitment improves the quality of treated water and results in reduced costs for customers through using less detergents, decreased replacement rates of household appliances, and reduced maintenance of boiler systems and pipework.”*

We will be proposing a variation to the way in which the Performance Commitment is currently measured so as to better evaluate the true impact to consumers in AMP8.

4.4. Plumbosolvency

As part of our strategy to manage lead concentrations in the network, all treated waters are dosed with orthophosphoric acid to reduce plumbosolvency. Additional benefits are also likely in the management of nickel concentrations, where the nickel is introduced due to imperfections in customers' taps.

Orthophosphate dosing has been optimised and will continue to be used to manage plumbosolvency as long as lead remains a risk in the distribution network.

4.5. Future Treatment Risk Mitigation Measures

A review of our raw water microbiological monitoring programmes, Disinfection Policy and DWSP has identified a potential risk of Cryptosporidium in raw water sources at Kenley and Cheam WTWs (evidenced by detection of faecal indicators; no detection of Crypto in continuous monitoring on raw water). We therefore plan to install UV treatment (or equivalent technology) to mitigate the potential risk of Cryptosporidium at these two sites during AMP8.

Over the course of the next 25 years, we anticipate that there is likely to be additional drinking water quality challenges from tighter drinking water standards but also from the introduction of new substances that may find their way in to the raw water environment, such as new pesticides. It may also be the case that changing weather and demand patterns in the future will result in new raw water quality changes that require changes to treatment. Our operational monitoring programmes are designed to ensure we detect any significant changes that require specific mitigation measures.

As described above, we would ensure that we adopt catchment management measures to eliminate the need for additional treatment wherever possible. We would also be aiming to continually review and optimise treatment, reducing the consumption of power and chemicals wherever possible, without decreasing the level of compliance with regulatory standards or increasing the risk to the health of consumers.

We are committed to ensuring we are an active participant in all relevant industry forums and research groups, ensuring that we can be responsive to any new treatment challenges, adopting innovative solutions where required.

As treatment works are upgraded, we are ensuring that recirculation and/or run-to-waste facilities are installed to prevent the supply of inadequately treated water to consumers. Other resilience activity to ensure improved connectivity across our network will also benefit the rare occasions when this occurs, ensuring that consumers can be supplied from more than one treatment works.

Wherever possible we will adopt developments in on-line monitoring to better automatically control our processes and add protection to ensuring the quality of the water entering supply.

We were early adopters of the industry-wide competent operator scheme and are aware that the scheme has been reviewed and updated. We will continue to ensure we meet all requirements, and aim to support on-going operator learning and development through direct interaction and training from the Water Quality team.

5. Network Storage – Service Reservoirs and Water Towers

5.1. Operation and Monitoring

Our service reservoirs and water towers have been designed to ensure we have added resilience in our ability to deliver supplies to customers at all times through the provision of strategic treated water storage. They are operated to ensure an adequate turnover of water, in order to maintain the quality of the water being supplied, and this is verified through both regulatory and operational sampling and testing.

5.2. Current Network Storage Risk Management

Existing measures that ensure that the quality of the water stored in service reservoirs and water towers is not compromised include physical security (through alarmed access hatches and doors) to prevent deliberate contamination and planned inspection, flood testing and cleaning programmes.

Water quality monitoring results confirm the excellent condition and operation of our service reservoirs and water towers.

Our current DWI Notice (SES-2022-00001), Tank Inspection Contamination Risk, will be completed by the end of AMP7. This notice was served in relation to our resilience programme and the ability to clean and inspect tanks, and then not returning them to service until a satisfactory sample result has been received. As part of this notice, to ensure enhanced resilience in our ability to maintain supplies we are reviewing all necessary improvements to the supporting mains network such that service reservoir assets can be readily isolated from the distribution system if required without interruptions to supplies.

5.3. Future Network Storage Risk Mitigation Measures

Over the course of the next 25 years, we will continue to invest in appropriate asset maintenance and renewals, ensuring the on-going integrity of holding structures and their associated security systems.

6. Distribution Network

6.1. Operation and Monitoring

We aim to operate our distribution network such that compliant and safe drinking water is delivered to all properties that we serve, with an appearance, taste and odour that is acceptable to our customers. There should be no deterioration in the quality of the treated water due to passage through the network, and no interruption to supply.

Essential interventions in the network are managed to minimise impacts to customers by adopting innovative techniques that reduce the need to isolate customers from supply and by ensuring strict adherence to documented procedures by trained employees, including operational risk assessments.

Network management performance is measured and monitored through the regulatory sampling programme conducted at customers' taps, operational monitoring programmes and the regular assessment of water quality customer contacts.

6.2. Current Distribution Network Risk Mitigation

Existing distribution network risk mitigation measures include the adoption of strict procedures to ensure all planned network intervention activities are risk assessed prior to implementation.

Our proactive maintenance programme is currently based on network modelling that considers material, age, burst frequency and water quality contact information. The output of this review identifies those mains that should be prioritised for replacement in the forthcoming AMPs.

Mains flushing is only carried out reactively in response to specific contacts or specific (isolated) water quality concerns. SES Water has an excellent compliance record for distribution parameters and one of the lowest rates of contact for discolouration and taste and odour in the industry, and we believe this is attributable to effective water treatment, good network design and operational management. This is particularly evident in the areas of our network where we have known deposits of chalk carried over from historic softening processes. Effective network management has ensured that we have successfully managed network turbidity and white water contacts despite the high level of uncontrolled risk, thereby saving millions of pounds in renovation costs, and preventing the extensive disruption to customers that would otherwise have ensued.

We are also active in addressing the illegal activities of those that have the potential to disrupt our network.

We therefore generally believe that a planned flushing regime would be of little benefit, and in fact would more likely result in poorer water quality for our customers. Flushing is contrary to our advice to customers to save water, and is likely to only be a short term fix. We do not therefore generally see planned flushing as a cost effective risk reduction measure, except in particular circumstances.

SES Water has become the first UK water company to roll out intelligent technology across its entire water distribution network, with 'iDMA', helping to cut its leakage by 15 per cent during the next three years. The self-learning network highlights issues in near real-time so action can be taken more quickly to make sure customers continue to receive an uninterrupted supply of safe, high quality drinking water, and paves the way for the Company to more than halve its leakage by 2045. Data received from sensors in the network every minute directly informs SES Water's operational teams and speeds up their response time to reduce leaks and bursts and reduce the numbers of

supply interruptions for its customers. The combination of ground-breaking technologies is also better for the environment, with fewer risks of pollution incidents, less unnecessary site visits and lower carbon emissions by targeting where field teams look for leaks.

Our DMA Asset Health project will be completed during AM7. The project has helped us plan infrastructure renewals which better identifies those mains that require replacement through a more thorough analysis of the overall health of a District Metered Area. Whilst similar input data (water quality, burst frequency, leakage jobs, etc.) is used to determine the areas where mains interventions may be beneficial, there is a greater focus on identifying the likely cause, such as pressure transients, that result in a wider variety of solutions, rather than, necessarily, mains replacement. In the longer term this has the potential to reduce interruptions to customers through wider identification of operational changes and to better prioritise those mains where replacement would be beneficial.

6.3. Lead

The Company has a lead strategy that outlines how we aim to achieve compliance with the lead standard, and how we will address detected exceedances of the standard. The lead strategy ensures that a number of the activities delivered as part of the lead Undertaking completed in 2015 and continued as 'business as usual' through AMP7 are maintained, with other specific activities to address the highest areas of risk.

The longer term aim of the strategy is to ensure the removal of Company owned lead pipework and the promotion of the removal of customer owned lead pipework and solder.

SES Water are actively involved in the Water UK Industry Lead Steering Group helping to guide and inform the Water UK Lead Strategy Board and improve knowledge sharing across the industry.

Lead concentrations in drinking water are largely controlled through the management of the plumbosolvency of the water, through the dosing of orthophosphoric acid to achieve a defined orthophosphate residual across our area of supply. Verification of the control measures is measured through the monitoring of orthophosphate concentrations at WTW and in distribution, and the success of mitigation through the compliance and enhanced operational sampling programme. Unusual results are investigated and actioned appropriately and the number of lead communication pipes replaced is reviewed annually.

The current lead strategy includes the following routine activities:

- Maintain an enhanced monitoring strategy
- Maintain the offering of free lead checks
- Maintain analysis of 'hot spots' and take action in areas identified through monitoring
- Maintain review of treatment effectiveness
- Continue the reactive replacement of all lead communication pipes where lead is detected in any sample which is greater than 5 µg/l, which is half of the regulatory Standard
- Where the lead detected in any sample is greater than 10 µg/l, which is the regulatory Standard, we will offer to replace the customer owned supply pipe
- Continue to replace all lead communication pipes during mains replacements

- Continue to replace lead communication pipes when customers replace their part of the lead service pipe
- Continue to replace all lead communication pipes when repairing leakage
- Continue to replace all lead communication pipes when a replacement is required due to a level of service failure such as flow and pressure
- Continue with investigations on the most pragmatic and efficient way to replace the service pipework on shared common services which are lead, replacing both the communication pipe and supply pipe for up to 100 properties per annum
- Continue to provide customer education and information on the risks of lead in drinking water, available through the website and in correspondence with customers

In addition to the above actions, for AMP8 there will be a further enhancement of:

- Investigate and sample the drinking water supply for the highest risk group of consumers at schools, nurseries, and childminders. Provide a lead-free drinking water supply, to the point of compliance, where lead is detected in any sample which is greater than 5 µg/l, half of the regulatory Standard.

6.4. Future Network Distribution Risk Mitigation Measures

We will continue to develop our 'iDMA' Smart Network, recognising that the collection of data across a wider area, and at a higher frequency will widen our ability to interpret how our networks are operating, reacting faster to issues that arise. For the data collected to be usable it is reliant on suitable and adequate communication mechanisms and developed processing.

We would not anticipate developing an in-line water quality monitoring programme, with the exception of specific projects as and when the need arises, until Smart Networks are better developed.

6.5. Network Resilience

By the end of AMP 7, our resilience activity will be completed to ensure that 100% of our customers can be served by more than one treatment works.

Activity completed during AMP7 to secure resilience in supply has included:

- Increasing the treatment capacity of our surface water fed works
- Completing the installation of over 10km of strategic, large diameter trunk mains to facilitate the required transfer of water
- Increasing pumping capacity at key pump stations to be able to transfer the required volumes of water to where it is needed.
- Addressing connectivity at a zonal level to improve resilience.

We will ensure that appropriate risk assessments are completed, and consumer advice issued as needed in instances where water movements and rezoning is necessary to manage resources and maintain supplies.

7. Consumers

7.1. Operation and Monitoring

Customer owned supply pipework is an extension of our distribution network. Whilst we have little control over the condition and maintenance of this pipework and the associated internal plumbing and fittings used, we aim to influence property owners and occupiers in our area of supply through the provision of clear information and advice. We also have an active Water Fittings and Regulations team that carry out both planned and reactive inspections, enforcing improvements to ensure compliance with the Water Supply (water Fittings) Regulations as appropriate.

The impact that customers have on the quality of water consumed is demonstrated through our compliance monitoring programme, and supplemented at times with operational check monitoring in response to events. Whilst compliance sampling aims to verify the quality of the water supplied by the Company, it is inevitably impacted by the condition of the customer-owned pipework and fittings too. Where testing indicates that the water being consumed is not wholesome due to the customer-owned assets, appropriate advice is given, or where applicable enforced, to improve the water quality.

7.2. Current Consumer Risk Mitigation

As described above, key components of the control mechanisms for Customer influence on water quality are education and inspection. We have water quality factsheets covering the most frequently asked questions on our website, and a clear link to the WaterUK/WRAS leaflet “Looking after water in your home”. We encourage customers to use plumbers on the WaterSafe or Water Industry Approved Plumbers Scheme listings for all domestic plumbing work.

As we improve our website and customer access to mobile and social media, we have introduced MyAccount, providing customers with interactive communications and self-help opportunities for all types of water related queries including billing, water efficiency and water quality.

7.3. Future Consumer Risk Mitigation

In preparation for PR24 we have maintained wide stakeholder participation, both in terms of the types and numbers of opportunities available for customers to be involved in commenting on our future plans and our current delivery.

Customers, and stakeholders, were asked to comment and provide feedback on our initial Long-Term Delivery Strategy proposals (provided in Appendix 1).

Appendix 1: SES Water initial long-term delivery strategy proposals

