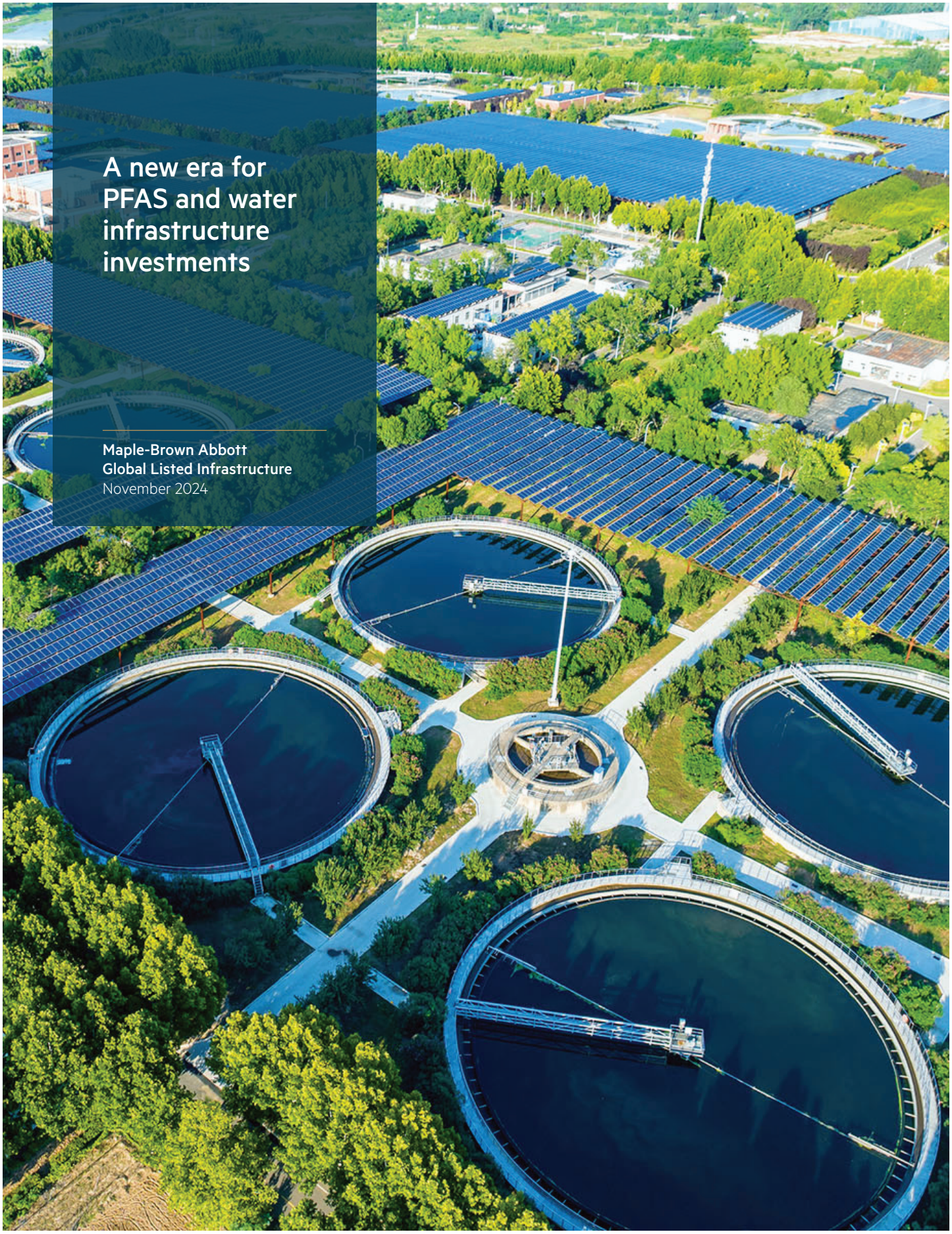
A new era for PFAS and water infrastructure investments



Maple-Brown Abbott Global Listed Infrastructure
November 2024

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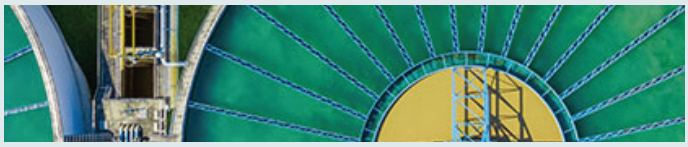
New regulatory developments in the US and UK have instigated a step change in water sector investment needs for PFAS monitoring and reduction technologies over the next 4–5 years. After decades of regulatory ambiguity, US and UK water utilities must now manage PFAS levels below certain thresholds, thereby requiring new capital investments and ongoing maintenance and operating costs. We believe these additional capital expenditures will modestly increase utilities' rate base on which they are able to earn a return "of and on".



What is PFAS?

PFAS chemicals are a group of virtually indestructible chemicals that are used in a range of manufacturing processes, beauty and homecare products and have entered most water systems around the world. PFAS chemicals are known to be dangerous to human and environmental health. Estimates suggest at least 45% of tap water in the US contains one or more types of PFAS, while 14.3% of European teenagers have PFAS in their blood at levels exceeding the health limits.[1] Drinking water is one of the main sources of PFAS contamination for humans. Further detail on PFAS is provided in the section 'PFAS: why do we care?'

Executive summary

PFAS investments on the horizon

This paper details why the new regulatory pivot to minimising PFAS is a net positive for the water sector, customers and investors alike. We find the pace and scale of recent regulatory action on PFAS varies; with the US Environmental Protection Agency's (EPA) stringent stance translating to more meaningful capital expenditure opportunities for listed water utilities, and the UK Drinking Water Inspectorate's (DWI) precautionary approach translating to more modest rate base growth for UK companies. Aside from capex needs, we believe recent PFAS developments could help trigger more consolidation and rationalisation in the US water sector as a step up in capital costs becomes difficult for smaller utilities to meet. Beyond the US and the UK, we are seeing similar regulatory developments playing out in other markets such as Europe, Canada, Australia and New Zealand.

Possibly more to come ...

While PFAS investments are a relatively small standalone spend today, we believe they signal a promising move towards tackling emerging contaminants and spell a new era for investment to help protect human and environmental health. Furthermore, it is possible further investment needs will be identified over the medium- to long-term owing to new and/or stricter PFAS regulations, thereby translating to further positive upside for the sector.

For instance, the scope of regulations could extend to an outright ban of certain PFAS chemicals and/or broaden to include levels in raw water, sewerage sludge/cake, water effluent flowing into water courses and/or groundwater. Stricter regulatory requirements and general investment needs will help bolster the water sector's capital deployment runway and therefore the opportunities for water utilities to create value.

Overcoming historical hurdles

Until recently, cross-sectoral fragmentation and a lack of regulatory clarity over the management of PFAS has stalled progress on managing and investing in this ubiquitous issue. PFAS monitoring and treatment solutions are also limited and costly. Technologies such as activated carbon to separate treated water from PFAS, and high temperature incinerators to break down the associated by-products, are some of the more common methods we typically see.

Up until this point, a lack of regulatory certainty and direction – along with a stringent focus on managing customer bill increases to a minimum – has weakened the extent to which water utilities could implement and justify these costly solutions in their regulatory filings.

The investment and sustainability case

While PFAS investments are currently only a modest incremental positive part of the investment case for the sector, they represent a welcome and much needed step change after decades of regulatory and multi-sectoral inaction. We now find the financial incentives and compliance imperatives are aligning with the sustainability case for PFAS management. We tend to find that true action on sustainability takes place when there is a strong business case, so these are positive developments that will hopefully spur greater action to tackle this ubiquitous problem.

The investment case

We see new PFAS regulatory developments as a net positive for the water sector in both the UK and the US. Like other investment programs for water infrastructure and the infrastructure sector more generally, solving the PFAS problem will require large investments and long timelines, which at this stage are not well defined. We believe traditional infrastructure replacement and water quality improvements are the dominant growth drivers for the water sector, thereby requiring frequent regulatory rate case filings and a possible step up in capital requirements for the foreseeable future.

In saying this, increased regulation also comes with potential downside risk. To the extent incremental regulations are enforced and water utilities are non-compliant, then penalties and/or disallowed operating and management costs could negatively impact earnings. Equally, operational failures to ensure safe drinking water and/or compliance with wastewater treatment PFAS standards could also lead to financial risks for companies.

More detailed commentary on the investment read through is provided further in this paper.

1 United States Geological Survey (USGS), 'Tap Water Study Detects PFAS 'Forever Chemicals' Across the US' (5 July 2023). European Environment Agency (EEA), 'Risks of PFAS for Human Health in Europe' (16 April 2024).

Examples of listed water utility PFAS investments

Country	Water utility	No. of customers	Anticipated capex investments	Anticipated operating and maintenance costs
US	American Water Company[2]	14 million	US$1 billion (2024–2028)	US$50 million
US	SJW Group[3]	1.5 million	US$230 million (California and Connecticut, 2025–30)	Not disclosed
US	Essential Utilities[4]	5 million	US$450 million (2024–2028)	US$22.5 million
UK	Severn Trent[5]	8 million	£56.2 million (2025–2030)	Not disclosed
UK	United Utilities[6]	7 million	£48–49 million (2025–2030)	£1–1.5 million (2030-)
UK	Pennon[7]	3.5 million	£61–76 million (2025–2030)	Not disclosed

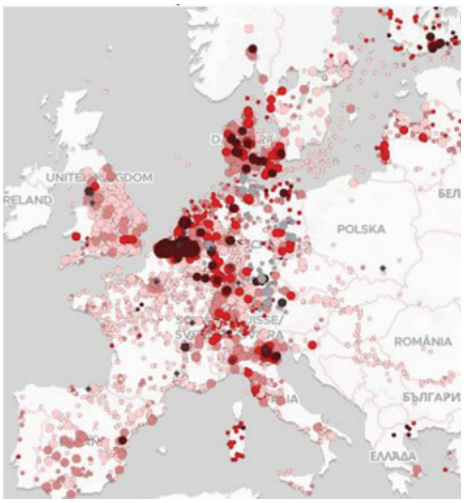
PFAS: why do we care?

PFAS, or "forever chemicals," are a group of 470 synthetic compounds with non-stick properties. They have entered most global water systems through industrial processes associated with manufacturing products such as non-stick cookware, industrial coatings, firefighting foams and household products.

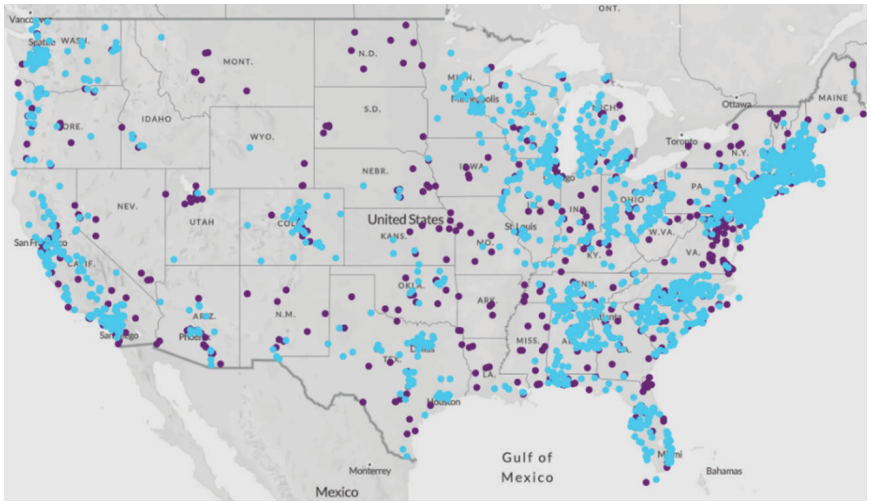
PFAS chemicals are virtually indestructible and accumulate in humans and the environment over time. High and repeated exposure to PFAS chemicals can lead to serious health risks, including liver damage and thyroid cancer. They are referred to as "forever chemicals" as the carbon fluorine bond in PFAS is one of the strongest bonds in organic chemistry, giving them an extremely long environmental half life.

The first form of PFAS was discovered in 1934, with major chemical companies like 3M and DuPont spearheading mainstream manufacturing for commercial purposes from the 1950s onwards. Despite growing concerns around their safety, PFAS chemicals were largely unregulated until the early 2000s.

Known contamination PFAS contamination sites across the UK and Europe[8]



Known PFAS contamination in the US[9]



2 American Water Works Company, Investor Presentations from June 2024 and September 2024. Number of customers relates to the regulated customer count.
3 SJW Group, 'Investor Presentation' (October 2024) and SJW Group, 'Q1 2024 Earnings Call' (26 April 2024).
4 Essential Utilities, 'Q2 2024 Financial Results and Investor Presentation' (Q3 2024). Essential Utilities estimates around $22.5 million of O&M costs annually, with guidance that annual O&M costs will increase by 5% of capital invested in PFAS.
5 Severn Trent, 'PR24 Draft Determination: Raw Water Deterioration' (August 2024). Subject to final decision from Ofwat.
6 United Utilities, 'PR24 Draft Determination: PFAS Enhancement Case' (August 2024). Subject to final decision from Ofwat.
7 Pennon Group, 'Enhancement Business Case: Water Quality Upgrades at our Water Treatment Works' (August 2024).
8 The Forever Pollution Project (2023).
9 Environmental Working Group, 'PFAS Contamination in the US' (August 2024).

Drinking water is one of the main sources of PFAS contamination for humans. PFAS molecules contaminate water through several channels: environmental releases from chemical plants and other manufacturing processes, landfills leaching PFAS, the spread of contaminated sludge and other agrochemicals to fields and the leaching of PFAS into water systems through day-to-day use of household and beauty products. Estimates suggest at least 45% of tap water in the US contains one or more types of PFAS, while 14.3% of European teenagers have PFAS in their blood at levels exceeding the health limits.[10] An overview of PFAS management solutions is provided in the section, 'An overview of PFAS solutions' on page 9.

Renewed regulatory focus

At a general level, differing scientific consensus on "safe" levels and fragmentation between the chemicals, water and environmental sectors have allowed for a lack of accountability and oversight of PFAS. In recent years, however, PFAS chemicals have caught the attention of regulatory agencies and the media worldwide because of their persistence, toxicity and widespread occurrence in the blood of humans and wildlife.

During 2023 and 2024, regulatory agencies such as the UK Drinking Water Inspectorate (DWI), US Environmental Protection Agency (EPA) and the European Environmental Agency issued new requirements on PFAS levels in wastewater treatment processes and drinking water. These developments have been met with a step up in capital investment needs for US and UK water utilities alongside higher operating and maintenance costs to allow for ongoing compliance with new PFAS rules.

Given the water sector is not responsible for the introduction of PFAS into water systems, many US water utilities are attempting to recoup costs from the upstream sector to help reduce the monitoring and remediation capex burden on companies and customer bills.

UK regulations: more "carrot", less "stick"

In July 2024, the UK DWI issued new precautionary guidance on PFAS levels for the water sector and instructed water utilities to develop PFAS management strategies as part of their 2025–2030 business plans. The new health-based guidance means that PFAS management is now implicit in water utilities' performance obligations and Outcome Delivery Incentive programme to deliver safe and wholesome water to customers.[11]

The new DWI guidance gives the UK water sector a clearer mandate to invest – at a larger scale – in solutions to tackle this ubiquitous issue while being financially incentivised to do so. The Outcome Delivery Incentive (ODI) programme, which is overseen by the regulator Ofwat, is designed to monitor and reward water utilities for performance against their service commitments. The regulatory framework offers a novel but clever way of encouraging good performance on PFAS through financial incentives (the "carrot"), rather than simply disincentivising poor performance with the threat of regulatory action (the "stick").

Currently, however, there are no specific standards listed in the UK water quality regulations for any PFAS compounds.[12] Comments made by various regulatory bodies and information contained within water utilities' 2025–2030 business plans suggest this may change in the coming years, with new legal and regulatory requirements on the horizon. To help develop the basis for further regulation, the UK Environment Agency (EA) is undertaking surveillance of PFAS as part of its groundwater quality network monitoring, while water utilities have been instructed to monitor for a range of PFAS substances in raw water.

It is also possible that the UK introduces restrictions on the manufacturing and import of PFAS into the UK through UK REACH regulations, with the new Labour government indicating a desire to better align with the EU more broadly. The timelines and scope of this type of regulation remains to be seen. While there are no concrete timelines, it is reasonable to infer more stringent requirements will require additional investments and therefore create an opportunity to earn a return on further PFAS measures in water systems in the future.

10 United States Geological Survey (USGS), 'Tap Water Study Detects PFAS 'Forever Chemicals' Across the US' (5 July 2023). European Environment Agency (EEA), 'Risks of PFAS for Human Health in Europe' (16 April 2024).

11 PFAS concentration levels relate to the wholesomeness and no deterioration standards contained within the *Water Industry Act* 1991 (as amended) s68(1)(a-b) and the *Water Supply (Water Quality) Regulations* 2016 (as amended) s4(2)(b).

12 Currently, there are just two UK restrictions on PFAS enforced within Britain: PFOA and its salts, subject to exemptions, and certain perfluorinated silane.

US regulations: activity across the PFAS lifecycle

Compared to the UK, the US EPA has taken a particularly stringent approach to managing PFAS through a series of measures contained within a newly created 'PFAS Strategic Roadmap'. The roadmap is anticipated to reduce exposure for approximately 100 million people across different parts of the PFAS value chain.[13] In April 2024, the EPA set new legally enforceable limits on six PFAS contaminants in drinking water, requiring water utilities to use the best available, cost-effective treatment technologies to keep levels within certain range, mixture and containment levels.

These new regulations direct water utilities to monitor for certain PFAS chemicals in their water through to 2027, and to remove those PFAS chemicals that exceed the EPA's set limits by 2029. States across the US are now developing their own equivalent (or more stringent) versions of the rule. The EPA estimates that around 6–10% of the 66,000 public drinking water systems in the US are currently affected, with this number estimated by Goldman Sachs to reach around 35% by 2030.[14]

Beyond the water utilities themselves, the EPA has also finalised a rule that designates certain PFAS substances as "hazardous" and issued an enforcement policy that will focus on parties who significantly contribute to the release of these PFAS chemicals into the environment. This could, for instance, include chemicals manufacturers and industrial manufacturers who may produce or use PFAS in their processes.

Regulatory focus in other markets

- In September 2024, the EU finalised a rule to restrict the sale and use of a subclass of PFAS chemicals across a range of industries, while PFAS limits for drinking water are expected to be formalised over 2025–26.
- In October 2024, Australia's National Health and Medical Research Council proposed new limits for drinking water, while various state-level and federal inquiries on PFAS levels are also underway.
- The New Zealand Environmental Protection Agency will ban the use of PFAS chemicals from December 2026 and has indicated new stricter limits for drinking water will be imposed over 2025–26.
- Over 2024, Canada issued a range of new PFAS requirements relating to manufacturing, imports and allowable levels in drinking water.

Prior to the EPA's federal regulations, several US states had already implemented their own regulations and guidance on PFAS levels in drinking water – the strictest of which include states such as New Jersey, New York, California and Michigan. A number of states are now either updating their allowable limits or implementing new PFAS thresholds in response to new federal rules, which are broadly more stringent than state-level ones.[15]

Beyond rules and regulations, the EPA has also made $1 billion in funding available through the Infrastructure Investment and Jobs Act (IIJA) to help states and territories implement PFAS testing and treatment at public water systems.[16] This is part of a $18 billion investment in drinking water improvements and helping communities impacted by PFAS and other emerging contaminants – the largest-ever investment in tackling PFAS pollution.[17] US water utilities are expected to benefit from these funding programs.

Litigation: questions of costs & causation

Given the water sector is not responsible for the introduction of PFAS into water systems, many US water utilities are attempting to recoup costs from the upstream sector to help reduce the monitoring and remediation capex burden on companies and customer bills.

Notably, in April 2024, chemical manufacturer 3M settled a US$10–12.5 billion lawsuit with a group of US public water utility companies to compensate them for PFAS contamination and clean-up costs. DuPont and related companies also negotiated a separate US$1.2 billion settlement for compensation. These settlements exclude personal injury claims against chemical manufactures associated with alleged exposure to PFAS, as well as claims by state attorneys general on the PFAS contamination of natural resources.

> **US water utilities take aim at chemical manufacturers**
>
> … we are advocating for funds to help mitigate compliance costs from both those who created the problem through participation in multi-district litigation and government funding.
>
> *Susan Hardwick, President and CEO*
> *American Water Works Company.*

> … we are committed to holding the manufacturers of PFAS and polluters ultimately responsible for the cost to treat these contaminants.
>
> *Eric Thornburg, Chairman, President and CEO*
> *SJW Group*

13 United States Environmental Protection Agency (EPA), 'Biden-Harris Administration Finalizes First-Ever National Drinking Water Standard to Protect 100M People from PFAS Pollution', (10 April 2024).
14 Goldman Sachs Research (31 July 2024).
15 The EPA has set a national maximum contaminant limit target of 4 parts per trillion for PFOA and PFOS, which is below most states' current limits.
16 US Environmental Protection Agency (EPA), 'Emerging Contaminants (EC) in Small or Disadvantaged Communities Grant (SDC)', (July 2024).
17 US Environmental Protection Agency (EPA), 'Biden-Harris Administration Finalizes First Ever National Drinking Water Standard to Protect 100m People from PFAS Pollution', April 2024.

Various state-level and community-led lawsuits against 3M on PFAS are also underway. In Europe, a recent claim against 3M in Belgium resulted in a €571 million settlement after it was found the manufacturer had contaminated surrounding land, resulting in high levels of PFAS in the bloodstreams of local residents.[18] 3M has committed to discontinuing all PFAS manufacturing by the end of 2025.

There is some litigation risk for the US water utilities themselves. For instance, Connecticut Water Company (a subsidiary of SJW Group) and Aquarion Water Company (a subsidiary of Eversource) are facing class actions from two groups of water customers who argue the companies knowingly supplied water that exceeded Connecticut's recommended PFAS limits dating back to 2019. Conversely, Connecticut Water Company sued a group of manufacturers in 2021 to recover costs associated with addressing PFAS contamination.

Many US water utilities are actively lobbying for protection from litigation as passive receivers of PFAS.[19] Even if they are unsuccessful on the legislative side, and provided the companies acted in accordance with any relevant state-level requirements at the time (in the absence of enforceable federal rules), then we would expect that any successful litigation would likely be *de minimus* and/or at the customer's expense.

At the crux of this issue is the key question of causation, as the water utilities themselves are fundamentally not responsible for contamination at source.

The UK has not seen any PFAS-related litigation thus far, but this may change if certain PFAS levels in drinking water become a standalone statutory requirement. A different legal framework, litigation process and backdrop of factual claims makes it difficult to see how the growing focus on PFAS could translate to material liabilities for UK water utilities. There is, however, a potentially higher litigation risk for the chemical manufacturers themselves, as seen in the US and parts of Europe.

Global Listed Infrastructure strategy positioning

The UK

The UK sector is initiating a more modest, targeted programme in response to new precautionary guidance from the Drinking Water Inspectorate ("DWI"), with no PFAS-related litigation currently underway. While the UK is showing slower regulatory progress on PFAS, it is quite likely UK water utilities will face increased regulatory scrutiny on PFAS management at the next periodic review in 2030. By this stage, we expect regulatory bodies to have progressed with catchment investigations, PFAS modelling and developed their sampling and analytical capabilities.

We believe the UK water sector remains attractive as it enters a multi-decade investment phase to overhaul ageing water infrastructure and tackle issues such as lead pipes and emerging contaminants like PFAS. The investments required will need to be managed both from a physical and financial resourcing and customer affordability point of view, especially where there are more developed investment programs such as fixing the UK's combined sewerage infrastructure issues.

On the whole, we have found the UK listed water utilities tend to perform more favourably compared to their unlisted counterparts on their respective Environmental Agency ratings, while demonstrating stronger regulatory relations in the draft determination process.[20] We believe these factors positively position these listed water utilities to deliver on their environmental and water quality obligations, while proactively anticipating future investment needs. Between January and September 2024, the Global Listed Infrastructure (GLI) team met with Severn Trent and United Utilities three times for dedicated engagements on environmental performance and customer affordability.

United Utilities

United Utilities, a water utility with 7 million customers across the north-west of England, estimates that minimising PFAS levels in line the new DWI thresholds will cost an additional £48–49 million between 2025–30, requiring ongoing operating and maintenance costs of £1–1.5 million p.a. from 2030. This forms part of the company's proposed totex (capital and operating expenditures) plan of £13.7 billion over the same period.[21]

The company plans to implement activated carbon technologies at two treatment plants, providing substantial improvements in service and operational efficiency.

United Utilities currently manages PFAS contamination by blending contaminated raw water with cleaner supplies, a temporary solution that restricts resource availability. The company has identified these new PFAS investments as critical for the 2025–2030 period because drinking water supplies in the affected areas are being put at increasing risk through the need to reduce output to mitigate against the presence of PFAS in raw water sources.

18 Insurance Journal, '3M Belgian Settlement Signals Increased Risk of 'Toxic Torts' in Europe', (September 2022).
19 For instance, see US Senate Bill 1430 (2023) and H.R. 7944 (2024).
20 For instance, Severn Trent and United Utilities were awarded a four star rating (the highest possible category) by the Environmental Agency in their Environmental Performance Assessment for CY2023; Severn Trent was awarded "outstanding" status and United Utilities categorised "good" in the PR24 Draft Determination process.
21 United Utilities, 'PR24 Draft Determination: PFAS Enhancement Case' (August 2024).

Severn Trent

Severn Trent, which serves around 8 million customers in the UK, anticipates £56.2 million in capex investments will be needed over the 2025–2030 period to monitor and treat PFAS levels at two sites.[22] The company is undertaking further investigations and trials to reduce future treatment costs.

In 2024, Severn Trent and Cranfield University were awarded £1.98 million by the Ofwat Innovation Fund in the Water Breakthrough Challenge Round 4 to investigate the destruction of concentrated PFAS waste streams. The trial considers the treatment of surface, groundwater and wastewater final effluent. The trial screens available destruction technologies and selects up to six technologies for lab scale trials. Two of the chosen technologies will be used in a pilot demonstration for primary removal processes and selected waste treatment technologies.

Severn Trent is also using a portion of funds from its Green Recovery programme to build a treatment works on the River Trent to reduce PFAS concentrations at-source. The company is trialling activated carbon and ion exchange resins in pre-treatment processes and using oxidation technologies to destroy the by-products in waste streams.[23]

The US

Compared to the UK, the US water sector is set to embark on a larger capex investment programme to comply with new stringent Environmental Protection Agency ("EPA") requirements. For instance, US water utility, American Water Works Company, anticipates US$1 billion of capex investments will be needed over the 2024–2028 period to monitor and reduce PFAS levels in line with new EPA rules.[24] A number of public US water utilities are also party to high profile class settlements with major chemical manufacturers such as 3M to recoup costs associated with PFAS contamination in water systems, thereby helping to limit the financial burden for companies and customer bills.

It is possible that cost-prohibitive PFAS mitigation factors could act as possible catalysts for further merger and acquisition activity in the space, especially for municipalities and cooperatives. We believe any potential rationalisation and consolidation of the water sector could benefit certain listed water utilities such as American Water Works Company and SJW Group. Further detail on water sector consolidation is provided on page 9.

Like the UK, the US water infrastructure landscape is in the early stages of a multi-decade investment cycle to replace and update an ageing, and often underinvested pipeline system. To put this into perspective, the EPA estimates $1.2 trillion of water infrastructure investments will be needed over the next 20 years meet the goals of the Clean Water Act and better withstand the impacts of climate change.[25] These estimates do not include the implications of new regulatory requirements for PFAS. These developments increase the prospects for fair market value (FMV) mergers and acquisition activities and growing capital requirements.

The GLI strategy currently does not have any exposure to the US water utilities primarily on valuation grounds, as the sector trades at a 20+% premium to other US regulated electric and gas utilities.[26] Historically the premium was somewhat justified in the utilities space as water utilities had higher growth opportunities, however with the recent surge in electricity demand we see the electric utilities as having equivalent, if not better, growth opportunities at a much more attractive valuation.[27] Should valuations of US water utilities return to justified levels they could present an investment opportunity for the Maple-Brown Abbott GLI strategy.

22 Severn Trent, 'PR24 Draft Determination: Raw Water Deterioration' (August 2024).
23 Severn Trent, 'Raw Water Deterioration: Enhancement Case (August 2024) and Water Projects', 'Green Recovery: Decarbonising Water Resources' (2023).
24 American Water Works, Investor Presentation (September 2024).
25 Figures include wastewater, stormwater and drinking water systems. Environmental Protection Agency (EPA), 'Drinking Water Infrastructure Needs Survey and Assessment' (September 2023). EPA, '2022 Clean Watersheds Needs Survey' (April 2024).
26 As at 21 October 2024.
27 As at 21 October 2024.

American Water Works Company (AWK)

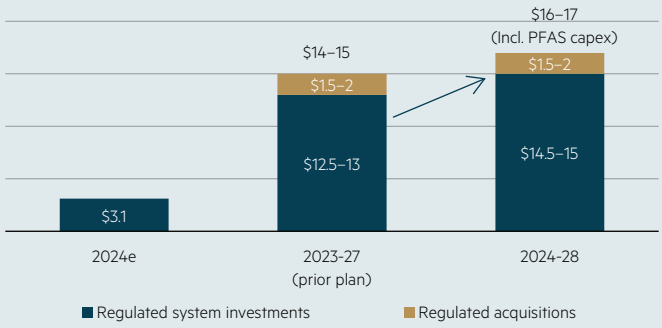
AWK anticipates US$1 billion of capex investments will be needed over the 2024–2028 period to monitor and reduce PFAS levels in line with new EPA rules. In addition to this, the company estimates that around US$50 million p.a. in operating and management costs will be needed for ongoing compliance.[28]

As the chart below illustrates, AWK's initial capital plan estimated US$14–15 billion of investments over the 2023–2027 period, but the company recently revised estimates to US$16–17 billion for the 2024–2028 period in response to the additional US$1 billion requirements to comply with new PFAS rules. AWK's revised capital plan drives a 8–9% rate base compounded annual growth rate (CAGR) through to 2033.[29]

The company believes it is well placed to comply with the new federal rules owing to previous monitoring and reduction activities across its subsidiaries. For instance, through recent investments such as a new three million gallon per day ion exchange system to remove PFAS at one of New Jersey American Water's well stations, and Pennsylvania American Water's recently installed granular activated carbon treatment system at one of its treatment plants.

While water quality investments (inclusive of projected PFAS investment needed to comply with regulations) represent just 7% of total spending for the 2024–2028 forecast period, it is possible these estimates could move higher with the development of emerging contaminant rules.

American Water Works Company (AWK) Capital Plan (US$ billions)



Source: American Water Works Company, Investor Presentation (June 2024).

SJW Group

SJW Group, a US listed water utility with around 1 million customers, estimates approximately US$230 million in additional capital investments will be needed to comply with new PFAS maximum contaminant thresholds for its operations in California and Connecticut over the next five years. These investments represent 14% of the company's total US$1.62 billion of planned investments for the 2025–2030 period.[30]

SJW's Connecticut operations will likely need the most PFAS remediation work given the elevated level of PFAS in its water systems compared to states such as California, which has contaminant limits that pre-date the new EPA rules. SJW could also benefit from constructive regulatory mechanisms such as the Water Infrastructure and Conservation Adjustment mechanism in Connecticut, which may help the company deploy capital outside of general rate cases. There are ongoing legislative efforts to further improve these types of regulatory tools in Connecticut. The state currently represents around 33% of SJW's rate base.[31]

Caution needed: affordability and regulatory relations

The enormity of the water sector's investment needs means the pace of rate increases must be managed carefully. AWK's 2024 rate case decision in Pennsylvania illustrates increasing regulatory consternation towards the cadence and magnitude of rate increases. While the Pennsylvania rate decision was functionally in line with estimates, the regulatory tone was far less constructive than in the past. In the final order, Commissioner Kathryn Zerfuss commented on the frequency and size of AWK's recent rate cases and associated revenue requests, imploring management to "be extremely strategic and judicious in deciding when they make their next rate filing with the commission."[32]

28 American Water Works Company, Investor Presentation (June 2024).
29 American Water Works Company, Investor Presentation (September 2024).
30 SJW Group, Investor Presentation (September 2024).
31 As at August 2024.
32 Pennsylvania Public Utility Commission (July 2024).

PFAS and US water sector consolidation

The US water system is highly fragmented, with more than 60,000 water utility systems across the country. Municipally owned systems account for approximately 85% of the industry, while the remaining 15% are investor-owned or held privately.[33] Financially, municipal systems are constrained by limited government funding, competing for resources against other municipal services and the general unwillingness of elected officials to raise taxes. Operationally, smaller systems lack the expertise to meet increasingly stringent water quality and environmental standards, such as new PFAS rules. With significant capital spending projects now in the pipeline – such as PFAS investments – along with insufficient federal funding, municipal owners are seemingly more agreeable to divesting their water and wastewater systems.

As such, the water sector has experienced an expansion in the geographic footprint of transactions and diversity in the acquirers of water and wastewater systems across the US over the past few years. Fair Market Value (FMV) legislation, which enables the acquisition of municipal systems, has provided the necessary catalyst to consolidate this fragmented sector and inject needed private capital into the country's deteriorating water infrastructure.

Given sector demographics, most of water utility acquisition activity is occurring with the financially challenged, small, private systems and municipal utility systems by the largest investor-owned utilities.

While we have seen larger transactions take longer to receive necessary regulatory approval and overcome legal hurdles, investor-owned water utilities across the sector continue to grow through smaller transactions. These synergistic acquisitions increase potential accretion and economies of scale for privately-owned US water utilities, but they are not the dominant growth driver when compared to water infrastructure and water quality investments.

An overview of PFAS solutions

Utility-scale PFAS treatment solutions are currently limited and costly to implement. Regulatory bodies such as the UK DWI and the US EPA have taken a relatively technology-agnostic approach to give utilities the scope to determine the best available and cost effectives solution for their specific needs.

Activated carbon is broadly accepted to be the most mature technology to treat PFAS. Activated carbon can be utilised in two forms: (1) powder activated carbon, which is added directly to the water or (2) granular activated carbon, which involves passing the water through pressure vessels known as contactors. The "activation" process makes the carbons more porous and therefore able to absorb a wide range of harmful compounds from air, gas and liquids.

Granular activated carbon

We have observed that granular activated carbon is typically the preferred option for water utilities because it does not have an adverse impact on the downstream process or result in reductions in plant throughput, thereby maintaining the resiliency of the supply system. Activated carbon needs to be routinely replaced with virgin carbon, therefore leading to ongoing operating and maintenance costs for wastewater treatment plants, which are then factored into regulatory filings.

It is not clear if granular activated carbon can be regenerated without the risk of releasing the PFAS by-products into the water again. Some wastewater treatment plants remove the by-products by exposing them to extremely high temperatures in an incinerator, however this process is extremely energy intensive and can still release harmful chemicals into the air. Other less utilised solutions include ion exchange, ceramic membrane and reverse osmosis – all of which are relatively cost prohibitive and result in PFAS waste by-products that are hard to dispose of safely and cost effectively.

PFAS management in the water treatment process

33 S&P Market Intelligence, 'Small Transactions Maintain Flow of Water M&A in 2023' (January 2024).

Natural capital solutions

Catchment management and landowner engagement can help prevent new point-sources of PFAS being introduced to water sources, however, this does not solve the legacy issues of historic discharges from industrial or commercial activities. Moreover, the ubiquitous nature of PFAS makes it extremely hard – if not sometimes impossible – to pinpoint the specific sources. Many household and beauty products contain PFAS chemicals, which means they can enter the water system through day-to-day activities such as showering, cleaning dishes or washing clothes.

The chemical properties of PFAS mean that is it not possible to employ catchment solutions (in other words, nature-based solutions) to remove the chemical compounds from raw water sources once they are introduced. There are currently no known solutions to eliminate PFAS from the raw water at the source rather than the water treatment stages. Severn Trent, a UK water utility, is currently trialling the use of UV light on raw water to assess its ability to break down PFAS prior to the treatment process.

Regardless of the selected option for PFAS removal, water utilities need to avoid putting PFAS back into the water cycle and the wider environment. This means either separating the PFAS from the waste stream by concentrating it into a solid form or chemically separating it.

Grey areas remain

While water utilities are crucial in managing PFAS levels, broader government and regulatory efforts are essential to control PFAS at the source and prevent environmental discharges. In the UK, for instance, Severn Trent and United Utilities are collaborating through the UK Water Industry Chemical Investigations Programme (CIP), which focuses on researching water contaminants including PFAS.

The US has taken a much clearer route – from a regulatory and litigation perspective – on tackling the full PFAS value chain by attempting to curb pollutants at source, impose enforceable limits on certain PFAS chemicals and hold major chemical manufacturers accountable for the associated clean-up costs.

Beyond drinking water, important questions remain around PFAS levels in sewerage sludge (which is typically re-purposed as farming compost); acceptable safe levels in surface and groundwater; and the biodiversity impact of PFAS on flora, fauna, wildlife and ecosystems. Investments in research and development into PFAS technologies will hopefully bring more cost-effective solutions to market that can be re-deployed across different parts of the value chain.

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