

THE UK WATER REPORT

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Message in a bottle

CEO David Hinton takes accountability for South East Water outages, and launches a whole-company transformation programme to drive comprehensive change.

COMPETITION WATCH

- What is needed to advance non-potable water use in industry? The Water Report Expert Forum shares its views.
- CCW research finds smart meters need smarter communications.
- Water Efficiency Cambridgeshire fund.

INSIDE

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2025 EDM DATA | IWA CONGRESS TECHNICAL PROGRAMME

6 INDUSTRY COMMENT

PFAS PIONEER

Experience from India offers a scalable model for next-generation drinking water treatment in the UK.

The world is grappling with how to respond to PFAS contamination of drinking water. Enviro Control UK, wholly owned by Enviro Control India, has experience in India that it now intends to use to support the modernisation of the UK's ageing drinking water treatment plant infrastructure.

The company's experience spans large-scale upgrades using ceramic ultrafiltration (UF) membrane systems capable of treating high-turbidity, algae-rich river sources with high operational stability and low lifecycle cost. Its treatment plant configurations also integrate process trains for long-chain PFAS removal, reflecting the sector's growing focus on emerging contaminants and future regulatory expectations. By adapting these proven design frameworks to UK raw water characteristics, compliance requirements and asset-management priorities, Enviro Control UK offers a scalable, resilient, and regulation-ready model for delivering next-generation potable water treatment capacity.

To illustrate this capability, this article highlights the transformation of an existing 50 megalitre per day (MLD) conventional water treatment facility in India, into a 160MLD future-ready plant to remove long-chain PFAS – within the same land footprint. This is the world's largest ceramic UF membrane system installation, and the project

was executed under severe land constraints and urgent demand for safe drinking water (see box).

Innovative solution for Surat

The plant is owned by Surat Municipal Corporation, serving Gujarat State. Between September 2022 and March 2026, the existing 50MLD conventional sand filter plant was upgraded into a 160MLD advanced ceramic membrane facility. Phase 1 has been in operation since March 2025, delivering 60MLD average flow and was achieved without any disruption to supply. Phase 2, by March 2026, expanded capacity to the full 160MLD, ensuring safe, sustainable water supply for 1.2 million residents of Surat city.

Alongside overcoming challenging conditions, the work exhibits technical innovation. For instance, the team optimised the technology provider's suggested chemical utilisation for ceramic membranes, achieving cost reduction and process efficiency. It also repurposed the existing lamella clarifiers, eliminating demolition and associated debris generation, avoiding transportation of construction waste and reducing the landfill burden, thereby lowering emissions.

Moreover, at a time when PFAS regulatory norms are yet to be framed in India, Enviro Control demonstrated foresight by establishing a long-chain PFAS removal system

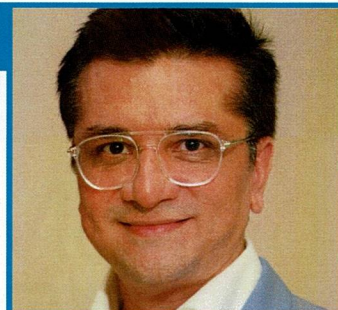
using an activated carbon adsorption technique – making this plant one of the first future-ready facilities in India. Beyond compliance, Enviro Control is actively advancing research into short-chain PFAS removal technologies – not only safeguarding communities today but also setting a benchmark for tomorrow's water safety standards.

The remodelled plant has also been transformed into a smart, remotely operable asset powered by a SCADA-enabled control system, laying the foundation for automation, predictive insights and next-generation data-driven optimisation.

Responsible stewardship

The project exemplified technical mastery, social responsibility, economic prudence, and environmental stewardship. The following sustainability criteria were achieved:

- **Social** – guaranteed safe drinking water for millions, addressing urgent public health needs.
- **Technical** – first-of-its-kind integration of ceramic UF membranes at this scale, setting a global benchmark.



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■ **Economic** – significant cost savings of approximately \$18m by upgrading existing infrastructure rather than building new facilities, and annual cost savings for the chemicals of approximately \$3m considering ten years of operating cycles.

■ **Environment** – minimum excavation and significantly reduced civil construction, lowering embodied carbon and overall project footprint. The use of CF membrane technology also eliminated dependence on riverbed sand for filtration, a resource that is rapidly depleting and disruptive to long-term ecological stability when extracted. **ENVR**

PROJECT CHALLENGES

- **Urban land constraints:** land availability for new infrastructure is nearly impossible in dense urban settings in the Rander area in Surat.
- **Legacy infrastructure limitations:** the existing 50MLD facility faced severe operational issues – colour, odour, frequent filter choking, turbidity, and reduced reliability during algal bloom seasons, specifically February to June every year – threatening the reliability of drinking water supply. Long term climate change risks with droughts and above average heavy rainfall exacerbated raw water supply quality issues beyond manageable limitations and the capabilities of the current technology.
- **Water security risk:** the existing works was unable to supply a consistent total of 250MLD at the desired water quality. Frequent supply inconsistencies and quality issues (colour / odour) reported from residents created an urgent need for a sustainable and technically robust solution to ensure reliable potable water supply.
- **Urgency:** water, a basic necessity, was at risk. Expansion was essential, but with limited footprint and using the same abnormal feed quality water source, innovation was the only path forward.
- **Zero disruptions:** Enviro Control had to ensure zero interruptions to operations of existing drinking water plant through the entire construction and execution phase.
- **Sand scarcity:** gravity sand filter beds traditionally rely on high-quality river sand, but with riverbed depletion and stricter environmental regulations, sourcing that sand has become increasingly difficult. This poses a critical challenge for conventional water treatment plants, where gravity sand filters depend on consistent sand quality to maintain performance and compliance.

RAW FEED WATER AND TREATED WATER QUALITY

PARAMETER	UNIT	FEED	FILTRATE
Turbidity	NTU	10 – 500	< 0.5
TSS	mg/L	10 – 100	< 0.5
Temperature	°C	24 – 32	24 – 32
COD	mg/L	< 25	< 5
DOC	mg/L	< 6	< 6
Fe	mg/L	< 0.5	< 0.03
Mn	mg/L	< 0.02	< 0.01