



 **WHITE PAPER**

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# **Solution to pollution:**

**A holistic catchment-wide  
strategy for the water industry**

# Confronting the pollution challenge in a changing landscape

The UK water industry is under increasing pressure to reduce pollution, improve environmental outcomes, and deliver long-term resilience. Climate change is driving more frequent and intense rainfall events, and urban expansion along with aging infrastructure lead to an increase in pollution incidents, particularly those linked to storm overflows and wastewater networks.

Regulators such as Ofwat and the Environment Agency are tightening expectations through Outcome Delivery Incentives (ODIs), Price Control Deliverables (PCDs), and the Storm Overflow Assessment Framework version 2. Meanwhile, public trust is eroding as headlines continue to highlight spills, flooding, and ecological damage.

The urgency for reform was underscored by the Independent Water Commission Review, the most comprehensive examination of the sector since privatisation. Chaired by Sir Jon Cunliffe, the Independent Water Commission's final report calls for a fundamental reset of the water system, one that restores public confidence, attracts long-term investment, and delivers environmental and economic resilience<sup>1</sup>. It advocates for a clear strategic direction, stronger regulation, and a system that is responsive, transparent, and accountable.

Our 'Solution to Pollution' campaign aligns directly with this vision. It presents a clear, actionable framework for water companies to meet today's challenges head-on. By combining three core capabilities - data, consultancy, and engineering, organisations can unlock hidden capacity, extend asset life, and reduce pollution risk, all while aligning with regulatory and environmental goals.

<sup>1</sup> [assets.publishing.service.gov.uk/media/687dfcc4312ee8a5f0806be6/Independent\\_Water\\_Commission\\_-\\_Final\\_Report\\_-\\_21\\_July.pdf](https://assets.publishing.service.gov.uk/media/687dfcc4312ee8a5f0806be6/Independent_Water_Commission_-_Final_Report_-_21_July.pdf)







## The evolving regulatory landscape: From compliance to transformation

The UK water sector is entering a period of unprecedented regulatory reform and investment scrutiny. Driven by the Independent Water Commission's (IWC) final report and reinforced by public and political pressure, the sector is shifting from reactive compliance to proactive, data-led environmental stewardship. This transformation is reshaping how pollution is monitored, managed, and mitigated.

### Storm Overflow Assessment Framework v2: A strategic response

The introduction of the Storm Overflow Assessment Framework (SOAF) Version 2<sup>2</sup>, developed by the Environment Agency, sets out a rigorous five-stage process for investigating and improving storm overflows, aligning with the Urban Waste Water Treatment Regulations (UWWTR) and the Storm Overflow Discharge Reduction Plan (SODRP). The message from regulators is clear: the current level of reliance on storm overflows is no longer acceptable, and water and sewerage companies (WaSCs) must act decisively.

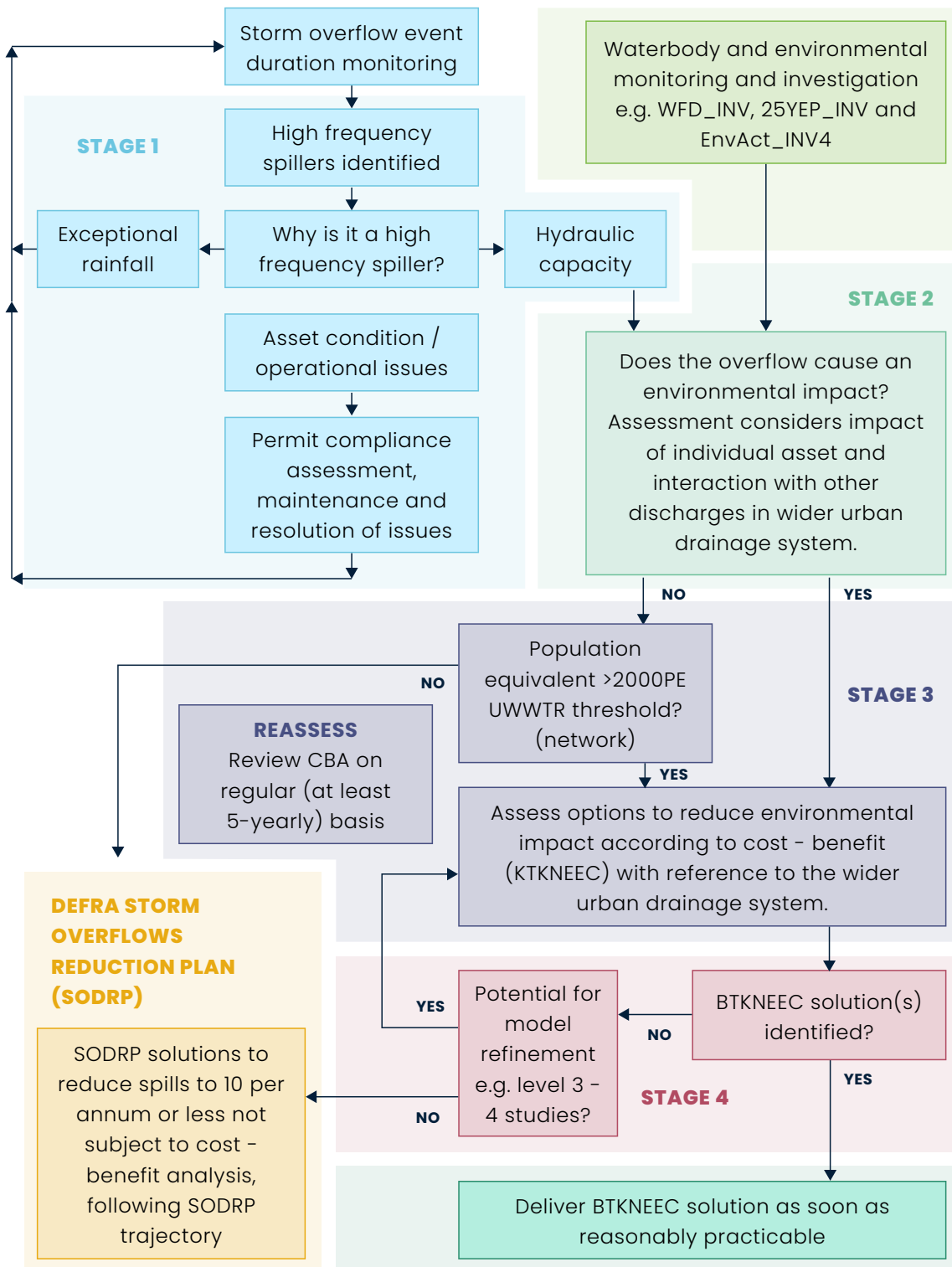
SOAF v2 introduces tighter spill frequency triggers, enhanced environmental impact assessments, and a structured cost-benefit analysis to ensure that any interventions meet the "best technical knowledge not entailing excessive costs" (BTKNEEC) standard. This shift places significant pressure on the sector, not only to comply, but to do so efficiently, transparently, and with robust evidence.

<sup>2</sup> [gov.uk/government/publications/storm-overflow-assessment-framework-2025/storm-overflow-assessment-framework-2025](https://www.gov.uk/government/publications/storm-overflow-assessment-framework-2025/storm-overflow-assessment-framework-2025)

SOAF V2 and the IWC report will define the future of the water sector through:

- Monitoring and reporting
- Third-party assurance and engineering evidence
- Asset resilience and optimisation as strategic imperatives

## Overview of storm overflows assessment framework stages



# Rising expectations for monitoring and reporting

Sections 81 and 82 of the Environment Act are already reshaping expectations around pollution monitoring. Section 81 mandates enhanced Event Duration Monitoring (EDM) with MCERTS-certified devices, while Section 82 introduces continuous water quality monitoring at high-risk outfalls. These requirements are pushing the sector toward real-time, high-resolution data collection and transparent reporting. The IWC further recommends integrating AI and machine learning to improve pollution source tracking and environmental impact assessment.

Group company Detectronic and academic partnerships, are at the forefront of addressing the technological limitations of Section 82. Our Knowledge Transfer Partnership with City University London and the University of Sheffield is one of the most significant ever awarded by Innovate UK, aiming to develop scalable, accurate water quality monitoring solutions that meet the demands of future regulation.

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## Leveraging data and analysis to deliver actionable insight

Despite the rollout of Event Duration Monitoring (EDM) across the UK, 75% of the wastewater network remains unmonitored. This lack of visibility makes it difficult to assess asset performance, identify root causes of pollution, and plan effective interventions.

Our approach begins with data, leveraging network intelligence, pollution response records, and asset condition reports to build a clear picture of system behaviour.

### **Transformational technology**

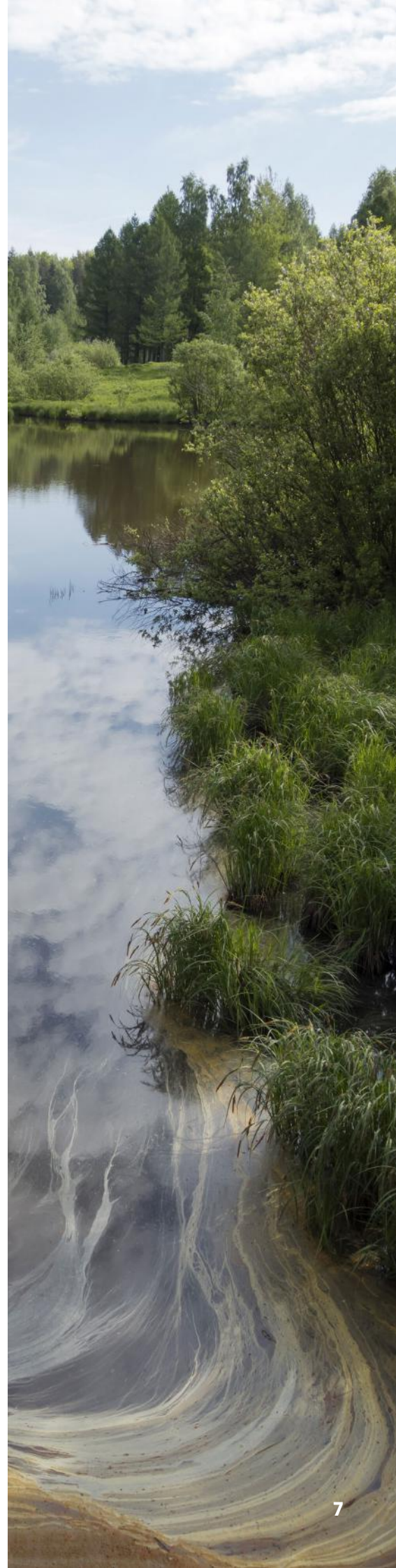
Advancements in sensor technology, AI, and IoT are revolutionising wastewater management. High-sensitivity sensors now detect millimetric changes in flow, while machine learning algorithms analyse vast datasets to predict overflow events. Smart water grids and IoT-enabled monitors provide real-time insights, enabling remote management and predictive maintenance.

From April 2025, all new or replacement EDM monitors must be MCERTS-certified, ensuring consistent, high-quality data. This regulatory shift will drive improvements in data accuracy, operational efficiency, and environmental compliance.



### **Strategic data planning**

Rather than digitising indiscriminately, we advocate for outcome-focused data strategies. This means prioritising high-impact data sources, mapping interdependencies, and aligning data collection with business objectives. Expert consultants help streamline processes, bridge departmental gaps, and ensure data is used effectively across the organisation.





## Targeted data capture

Water companies must ask:

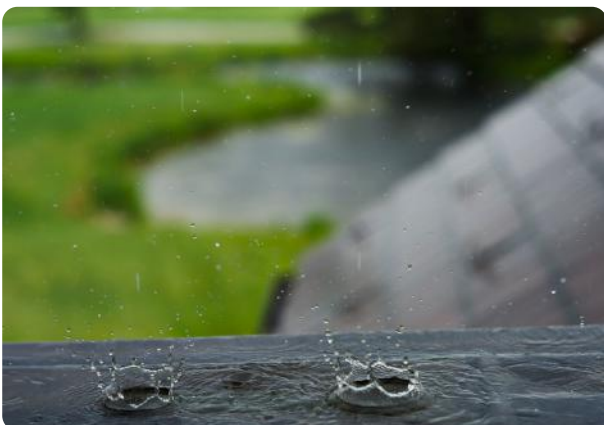
- What wisdom flows from this data?
- Is the cost of collection sustainable?
- Does the data quality pose risks?

By prioritising data reservoirs, mapping digitisation strategies, and measuring progress, companies can harness the power of existing data. This enables smarter investment planning, proactive maintenance, and improved regulatory alignment.



## Rainwater management and impermeable area studies

Rainwater mismanagement is a major contributor to CSO spills. Impermeable area studies identify where rainwater enters foul sewers, enabling targeted interventions. By rerouting surface water and correcting misconnections, companies can reduce treatment costs, improve network efficiency, and prevent pollution.



## Misconnection surveys

Misconnections can be difficult to detect as they often occur within private properties or go unnoticed in older drainage systems.

It can also happen in new developments; despite Section 42 legislation being in place as a safeguard, misconnection events still occur. Left unresolved, they can significantly impact network performance and compliance with environmental regulations.

There are three main types of misconnections:

- Foul water misconnections: Foul connections entering storm drains at any point in the network
- Storm water misconnections (permitted): Storm connections entering a combined sewer system
- Storm water misconnections (not permitted): Foul water sewer networks with storm connections made later, where surface water systems are not available

This often results in rainwater and surface water entering foul sewers, overloading the system, increasing treatment costs, and contributing to unnecessary spills during heavy rainfall.

Identifying and correcting misconnections is a targeted, cost-effective way to stop pollution at its source.



## Predictive Insight into Infiltration

Groundwater infiltration into sewer networks is a persistent and often underestimated issue for water utilities. It silently erodes network efficiency by reducing hydraulic capacity, increasing treatment costs, and masking other operational problems such as blockages or misconnections.



Traditionally, infiltration management has relied on reactive, asset-by-asset investigations, offering only snapshot data with limited predictive capability. Valuable legacy data from past surveys and installations is frequently underutilised, leading to repeated investigations and missed opportunities for proactive intervention.

Furthermore, detection and resolution activities often operate in silos and flow monitoring, modelling, and rehabilitation rarely integrate seamlessly, delaying effective action and inflating costs.

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A modern approach demands a shift from fragmented responses to holistic, data-driven strategies. Advanced techniques such as Urban Drainage Modelling (UDM), Integrated Catchment Modelling (ICM), and remote sensing enable predictive insight. By combining real-time monitoring with historical trend analysis, utilities can pinpoint high-risk areas and prioritise interventions with confidence.





## Third-party assurance and engineering evidence

The move away from operator self-monitoring toward independent assurance is another major shift. Water companies will need to provide robust, third-party validated evidence to support business plans and regulatory submissions. Engineering-led evidence, including hydraulic modelling, root cause analysis, and cost-benefit assessments, will carry greater weight than econometric models alone. This aligns with our integrated approach, combining data, diagnostics, and delivery with independent assurance to support confident, compliant investment decisions.

## Consultancy: Planning for performance and resilience

Pollution reduction is not just a technical challenge, it's a strategic imperative. Our consultancy services help water companies navigate complex regulatory, financial, and operational landscapes to deliver value-driven outcomes.

### **Optimising commercial and sustainable value**

In AMP8, Ofwat's emphasis on affordability and performance demands that water companies deliver more for less. Optimising commercial value means ensuring every pound invested generates maximum benefit, balancing short-term efficiency with long-term outcomes.



Key levers include:

- Asset utilisation: Maximise existing infrastructure before investing in new assets.
- Asset flexibility: Design for future adaptability to reduce long-term costs.
- Circular economy principles: Use recyclable materials and modular components to enhance end-of-life value.
- Procurement strategy: Engage the market early to secure cost-effective delivery.
- Cost benchmarking: Compare contractor prices across regions and scopes to ensure value.
- Skills alignment: Match workforce capabilities to project needs for optimal delivery.
- Hydraulic modelling: hydraulic modelling and asset insights for targeted mapping campaigns.



## Regulatory risk and reward

PCDs increase risk exposure by up to £528 million, while outperforming commitments can unlock £352 million in rewards. Strategic consultancy helps companies mitigate risks and maximise opportunities through robust planning, optioneering, and business case development.



## Storm overflow action plan

Water companies have committed to reducing storm overflow spills by 77% by 2050, at an estimated cost of £22 billion. Meeting this challenge requires integrated planning, data-led decision-making, and targeted investment.

The Cunliffe Review reinforces this need for strategic clarity and long-term planning, calling for a National Water Strategy with statutory backing and measurable milestones. Our consultancy model supports this ambition by aligning operational decisions with national goals and regulatory expectations.



# Asset resilience and optimisation as strategic imperatives

The regulatory focus is also shifting toward asset health and resilience. New national standards for asset mapping, condition assessment, and optimisation are expected to be embedded across AMP9 and AMP10. This will drive increased investment in sewer rehabilitation, flow monitoring, and data-led asset optimisation, all critical to reducing pollution at source. The emphasis is on 'optimise before build,' with companies expected to demonstrate that every pound spent delivers measurable environmental and customer outcomes.

## Specialist engineering: Delivering sustainable solutions

Specialist engineering is where strategy meets execution. Our engineering teams deliver targeted interventions that improve hydraulic capacity, extend asset lifespan, and reduce pollution incidents.



## Optimise before build

Rather than defaulting to building large, costly storage tanks, we promote outcome-focused engineering. This means sizing storage based on inflow and return capacity, and investing in catchment solutions that reduce the need for pumping and treatment.

Key engineering services include:

- Syphon cleaning and maintenance: Unlocking up to 50% additional capacity and reducing CSO discharges.
- Pipe lining and remediation: Extending asset life by up to 20 years and preventing infiltration.
- Trunk sewer cleaning and jetting: Maintaining critical infrastructure and preventing blockages.
- Minor civils and misconnections rectification: Addressing rainwater misdirection and improving network efficiency.



## Syphons: The hidden opportunity

Syphons are historic assets often overlooked in modern maintenance strategies. With over 2,250 syphons in the UK, many are poorly understood or maintained. Proactive inspection and cleaning can deliver significant hydraulic gains and pollution reduction.

Case studies show immediate improvements in CSO performance following targeted syphon interventions. Maintenance programmes can prevent failure, reduce fines, and extend asset life, delivering long-term value and regulatory compliance.





## Conclusion: Why a holistic catchment-wide approach is essential

The challenges facing the UK water industry are complex, interconnected, and urgent. Pollution reduction cannot be achieved through isolated fixes or short-term thinking. It requires a holistic, catchment-wide strategy that integrates data, consultancy, and engineering to deliver sustainable, measurable outcomes.

The introduction of the SOAF v2 further reinforces the need for a holistic catchment-wide approach. By mandating rigorous environmental assessments, high-quality data, and structured cost-benefit analysis, SOAF v2 aligns with the strategic goals outlined in this white paper. It transforms compliance into an opportunity for innovation, encouraging water companies to adopt integrated, forward-thinking solutions that deliver long-term environmental and operational benefits.

Our 'Solution to Pollution' framework offers a proven path forward. By combining insight-led planning, strategic consultancy, and targeted engineering, water companies can:

- Reduce flooding and pollution risk
- Increase asset performance and lifespan
- Achieve ODIs and regulatory compliance
- Build public trust and environmental resilience

While AMP8 (2025–30) is largely fixed, AMP9 and AMP10 will see a significant uplift in investment focused on pollution reduction, asset resilience, and monitoring.

The Cunliffe Review sets a clear direction for the sector: one that is strategic, transparent, and accountable. Our approach supports this vision, helping water companies move from reactive response to proactive leadership, turning environmental challenges into opportunities for transformation.



 **Adler & Allan**  
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**0800 592 827**

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