

# Yorkshire Water *Bio Block* Trials

## achieving a 90% reduction in FOG levels enhances wastewater management efficiency, reduces environmental risks, and improves network performance

by Cobra Hydro UK

York city centre, with its dense network of restaurants, takeaways, pubs, and other commercial establishments, has long faced significant challenges relating to fats, oils and grease (FOG). These businesses contribute substantial FOG loads to the sewage system, leading to issues such as blockages, odour problems, pollution incidents, and infrastructure strain. In 2023, Yorkshire Water (YW) embarked on a groundbreaking initiative to address these FOG challenges. The trial leveraged Cobra Hydro UK's innovative Cobra Bio Block technology, aiming to enhance wastewater management efficiency, reduce environmental risks, and improve overall network performance. This case study explores the objectives, deployment, technology, outcomes, and industry implications of the trial, showcasing a significant step forward for sustainable utility practices.



FOG build up before Bio Block dosing - Courtesy of Cobra Hydro UK



Sewer after Bio Block dosing - Courtesy of Cobra Hydro UK

### Background & objectives

Before the trial, Yorkshire Water regularly encountered FOG discharge into the nearby River Ouse; presenting environmental hazards and regulatory compliance concerns.

The primary objective of the Cobra Bio Block trial was to mitigate FOG accumulation in York's sewage network while exploring a cost-effective and environmentally friendly alternative to traditional FOG management methods. Specifically, the project sought to:

- Achieve a measurable reduction in FOG levels within the network.
- Eliminate pollution incidents caused by FOG discharge.
- Improve operational efficiency by minimising maintenance requirements and infrastructure stress.
- Assess the financial and environmental benefits of deploying Cobra Bio Block technology.

### Project implementation

The trial commenced in September 2023 with the installation of Cobra Bio Blocks in over 40 key manholes across York city centre.

The blocks were replaced every two months, ensuring consistent microbial and enzymatic activity. The final replacement occurred in August 2024, marking a full year of continuous operation.

YW provided a robust framework for monitoring the trial's impact, utilising video footage, photographic evidence, and data collection to assess pre and post implementation conditions. These observations formed the basis for evaluating the effectiveness of the Bio Blocks.

### Cobra Bio Block technology

The Cobra Bio Block represents a pioneering approach to wastewater management. Designed for durability and simplicity, the Bio Block is a semi-submersible solution engineered to reduce FOG and odours in wastewater systems. Its unique features and mechanisms include:

- **Innovative composition:** The Bio Block consists of a slowly dissolving matrix enclosed within a durable, porous mesh sleeve. This design ensures gradual erosion and consistent release of active agents over time.



Cobra Hydro UK is a leading supplier of Odour Control & Dust Suppression in the United Kingdom



## About Us

Cobra Hydro UK is a fast expanding company for the design, manufacture and installation of Odour Control systems, sludge dosing applications and dust suppression requirements across the UK and internationally.

Protecting the environment is always at the forefront of our mind. We therefore use environmentally friendly products such as Atom Neutraliser, which is used not only for odour control equipment, but also in the food industry. At Cobra Hydro UK, we are always striving for new innovative ways to protect the environment.

## Our Services



Design, manufacture, installation



FOG Management



Odour Control



Service & Maintenance



Dust Suppression



Alternative Emergency Supply



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- **Biological action:** The block contains a blend of naturally occurring microbes and enzymes. As it dissolves, these microbes colonise surfaces within the sewage network, breaking down organic contaminants such as fats, oils, and grease.
- **Ease of deployment:** Suspended below the waterline in locations such as wet wells, pumping stations, or sewer lines, the Bio Block operates autonomously, requiring no electrical power, additional equipment, or extensive maintenance.
- **Eco-friendly design:** The non-toxic, environmentally safe composition ensures that the Bio Block poses no risk to aquatic ecosystems or surrounding environments.

#### Benefits of the Cobra Bio Block

The Cobra Bio Block offers several advantages over traditional FOG management methods:

1. **Continuous action:** Unlike periodic dosing solutions, the Bio Block provides a steady release of microbes and enzymes, maintaining consistent effectiveness even during heavy rainfall or washout events.
2. **Odour and FOG reduction:** By breaking down organic matter, the Bio Block significantly reduces unpleasant odours and FOG accumulation.
3. **Low maintenance:** Operating 24/7 without the need for active intervention, the Bio Block minimises the operational burden on utility providers.
4. **Cost efficiency:** The elimination of dosing equipment and associated infrastructure reduces both capital and operational expenditures.
5. **Environmental safety:** The non-toxic formulation supports sustainable wastewater management practices, aligning with environmental regulations and corporate responsibility goals.

#### Key findings from the trial

Yorkshire Water reported compelling results from the Cobra Bio Block trial, highlighting its effectiveness and transformative potential:

1. **FOG reduction:** The trial achieved a 90% reduction in FOG levels within the sewage network. This dramatic improvement alleviated blockages, enhanced flow capacity, and reduced infrastructure strain.
2. **Elimination of pollution incidents:** Prior to the trial, six FOG-related pollution incidents were recorded between 2019 and 2023. During the trial period, no major pollution incidents were reported, marking a significant milestone in environmental protection.
3. **Improved network resilience:** The absence of FOG-related flooding issues demonstrated the Bio Block's role in enhancing system reliability and performance.
4. **Financial impacts:** Although detailed cost analyses were not provided, YW acknowledged the potential for substantial savings through reduced maintenance requirements, lower risk of fines, and improved regulatory compliance.
5. **Stakeholder satisfaction:** YW praised Cobra Hydro UK's professionalism and the seamless execution of the trial, emphasising the collaborative effort's success.

#### Additional observations

The trial also uncovered secondary benefits that reinforced its value. Beyond the reduction of FOG and operational challenges, Yorkshire Water noted improvements in system cleanliness.

The microbial action facilitated by the Bio Blocks not only addresses fat and grease but also mitigated other organic contaminants. This broader impact on sewer line hygiene contributed to an



overall reduction in maintenance costs and extended the lifecycle of infrastructure components. Additionally, the Bio Blocks' low maintenance design allowed YW personnel to allocate resources more efficiently, focusing on proactive network management instead of reactive problem-solving.

The public's perception of YW also benefited from the trial. By deploying environmentally friendly technology, the company demonstrated its commitment to sustainability and community well-being. This enhanced reputation is expected to yield long-term advantages in stakeholder trust and regulatory goodwill.

#### Implications for the utility industry

The success of the Cobra Bio Block trial offers valuable insights and opportunities for the utility sector:

1. **Scalability:** The simplicity and versatility of the Bio Block make it suitable for deployment across diverse wastewater systems, from urban centres to rural networks.
2. **Sustainability:** By prioritising eco-friendly technology, utility providers can align their operations with global sustainability goals, reducing environmental footprints and fostering community trust.
3. **Cost management:** The financial benefits of reduced maintenance, enhanced network performance, and regulatory compliance create a compelling case for wider adoption of Bio Block technology.
4. **Collaborative innovation:** The partnership between YW and Cobra Hydro UK underscores the importance of collaboration in driving industry advancements and solving complex challenges.

#### Testimonials

Kelly Burke, Network Protection Officer at Yorkshire Water, shared her perspective on the trial's success:

*"The trial of the dosing blocks in York has been very successful. The blocks have helped reduce incidents of fats, oils and grease causing blockages in the network and clogging up the pipes under the city to zero. In the last 12 months, we've had no pollution incidents linked to fats, oils and grease and no sewage escapes due to fat blockages."*

On 11 December 2024, the groundbreaking success of the product was featured on BBC Morning Live. During the segment, James Harrison, Head of Wastewater Asset Management at Yorkshire Water, highlighted its transformative impact on the utility's sewer network:

*"The thing that's great about this product is that they're easy to install, easy to replace. And they don't just break down fat that is there, they can also prevent it's built up as well, so it's a really cost effective, practical, sustainable solution. The difference is incredibly noticeable if you look at the CCTV footage of the cameras down the sewer network, historically you would come back here to do an inspection and you'd see a coating round the pipe and it really starting to layer up, and the difference it has made is phenomenal."*

Clint Jackson, Business Development Director at Cobra Hydro UK, echoed these sentiments:

*"Since we began this project in 2023, we have provided a cost-effective solution to reduce the fat, oil, and grease build-up within the sewers under the centre of York. We're extremely pleased that our enzyme Bio Blocks have achieved the desired results."*

#### Conclusion

The Cobra Bio Block trial in York city centre represents a significant advancement in wastewater management. By addressing longstanding FOG challenges with an innovative, environmentally friendly solution, Yorkshire Water and Cobra Hydro UK demonstrated the power of technology and collaboration to achieve measurable improvements.

This case study serves as a model for the utility industry, illustrating how innovative solutions can enhance operational efficiency, protect the environment, and deliver tangible benefits to stakeholders. As the sector continues to navigate evolving challenges, the success of the Cobra Bio Block offers a roadmap for sustainable, effective wastewater management practices.

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Cobra Hydro Bio Block - Courtesy of Cobra Hydro UK Ltd