Adler & Allan
ENVIRONMENTAL RISK REDUCTION

CASE STUDY

Sealing the flow:

a smart solution for groundwater ingress management

March 2025

Thames Water

CASE STUDY

The challenge

Thames Water identified significant groundwater ingress within a number of valve chambers on both clean water and wastewater sites, leading to operational inefficiencies and infrastructure damage. The ingress was causing persistent water accumulation, increasing regular maintenance costs and posing a risk to the long-term integrity of the chamber and the infrastructure within it.

We were approached to develop a cost-effective remediation approach using market leading coating capability to form a waterproof retrofit solution. This was focused on providing a lower cost alternative to the continuing reactive maintenance requirements or the additional cost of the potential replacement of the chambers.

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The solution

Following a detailed site inspection and a root cause assessment of the issues at the sites, we developed bespoke solutions to address the ingress issues. Chambers received either solely a polyurethane injection resin to prevent ingress, or an additional application of a polyurea coating to the internal walls of the chamber post resin injection, further extending the life of the asset with this additional protection.

1. **Polyurethane Injection Resin** – A high-performance polyurethane resin was injected into the affected areas. The resin reacts with the infiltrating water, forming a hydrophobic semi-flexible foam that expands, effectively sealing cracks, voids and joints where groundwater is entering. With rapid curing properties, the fast-setting resin is ideal for immediate control of water ingress, providing a durable and lasting solution. This ensured that water could no longer penetrate the chamber walls.

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2. **Polyurea Protective Coating** –
   After the ingress was controlled, a robust polyurea coating was applied to the internal surfaces of the chamber. This coating provides an additional layer of protection, preventing future deterioration caused by moisture exposure, chemical attack, and mechanical wear. The tough, elastic nature of polyurea makes it highly resistant to mechanical wear and allows it to bridge minor cracks that may develop over time, maintaining the integrity of the protective layer it is forming.

CASE STUDY

The results

The combination of polyurethane resin and polyurea coating successfully eliminated groundwater ingress, restoring the chamber's structural integrity and functionality. The projects resulted in:

- Reduction in water ingress, eliminating the need for regular, reactive maintenance and the associated costs.
- Enhanced durability and long-term protection of the chambers, reducing future repair costs and potential asset replacement costs.
- Improved operational efficiency and increased asset lifespan, delivering significant whole life cost improvements.

This innovative approach not only solved an immediate operational issue but also provided a sustainable and cost-effective solution for long term infrastructure management.


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0800 592 827
adlerandallan.co.uk