Case Study
Engineering Site Solutions

Glenfield Invicta
Delivering Project Solutions

Wick Lane Penstock and Clough

Stainless Steel Dam Boards and Penstock Actuator Installation

Glenfield Invicta was approached by Thames Water in October 2021 to undertake a complex project at Wick Lane. The primary goal was the supply and installation of key components for the facility's water management system, including new stainless steel dam boards with CATIII certification, storage racks, a lifting system, and penstock actuators. This project presented significant challenges, particularly in terms of access, infrastructure deterioration, and coordination across multiple stages.

Scan to read other case studies featuring the project solutions we've helped customers with.

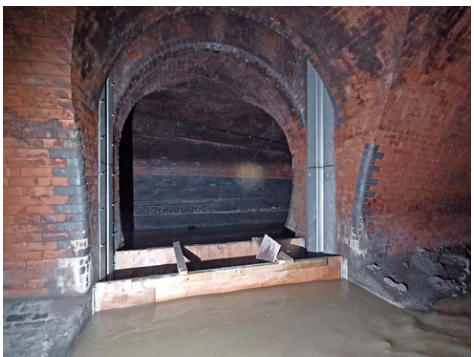
Heavy-duty wooden matting created for access

Wick Lane

Wick Lane has long been a pivotal location in Thames Water's infrastructure, serving as a key node in managing London's extensive water and wastewater networks. Historically, the area has been instrumental in handling the flow and distribution of water, supporting a growing population and urban expansion since the Victorian era.

Its penstocks and clough gates, integral to water flow regulation and flood prevention, have stood the test of time but now face challenges due to age, wear, and increased demand on the infrastructure.

The site has evolved through successive upgrades and interventions, adapting to advancements in engineering and changing regulatory standards. This rich history underscores the significance of modernising and maintaining the assets at Wick Lane to ensure reliability and resilience for future generations.


Sewer area during preparation

Case Study
Engineering Site Solutions

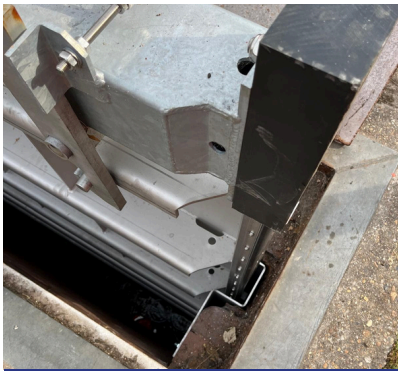
Glenfield Invicta
Delivering Project Solutions

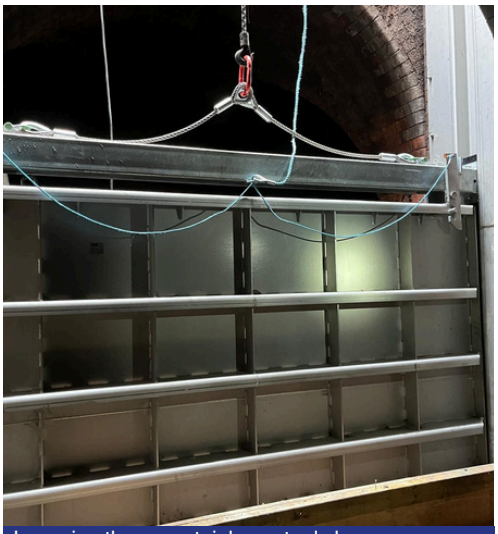

Lowering the new stainless-steel chases

Project Scope

The scope of work was extensive and included several critical components to ensure the success and safety of the project. It involved the supply of four stainless steel Dam boards with CATIII certification, specifically designed to safeguard human life in high-risk applications. To support the proper handling and storage of these Dam boards, custom-designed storage racks were provided. Additionally, the project featured the provision of a lifting beam and an 'A' frame to facilitate the safe and efficient lowering of the boards into place.

Another key element was the supply and installation of actuators for the existing cast iron penstocks, which included the completion of all necessary electrical works to integrate the actuators seamlessly into the system. Beyond installation, comprehensive servicing, cleaning, and commissioning of the penstocks and actuators were undertaken to optimise functionality and reliability.


Lowering the new stainless-steel chases


Lowering the new stainless-steel chases

Minor infrastructure repairs were also carried out as part of the scope, with particular attention given to improving the condition of existing chases, which had deteriorated over time. These targeted improvements were essential to ensuring the long-term performance and resilience of the infrastructure.

The Challenges

This project encountered several key challenges that required close collaboration between Glenfield Invicta and Thames Water to ensure success. To enable access and ensure safe working conditions, Thames Water diverted 70% of North London's sewer flows—a mammoth undertaking for their operations team. This involved coordinating over a dozen network assets and took more than four days to achieve a positive isolation. This intricate process was critical for facilitating Glenfield Invicta's work and demanded precise timing and teamwork.

The site was surrounded by a fenced-off area that required lifting the dam boards into place using a crane. Thames Water's calculations revealed that the crane's weight distribution posed a risk to the sewer barrels underneath, necessitating the use of heavy-duty wooden matting across the car park. Glenfield Invicta worked with Ainscough, the crane hire specialists, to create a custom floor plan and install the matting, allowing for safe access and material transport. With Thames Water involved in numerous ongoing projects, the work had to be staggered and delayed several times

Glenfield Invicta remained flexible, adjusting timelines and schedules accordingly. Each delay required re-coordination of crane logistics and subcontractor availability, which created ongoing operational complexity.

Accessing the sewer to complete the installation of the actuators and penstock repairs proved challenging. This required a diversion of the sewer system, which Thames Water completed in August 2024. Even with the diversion, the area remained waterlogged, making the installation of the new dam boards difficult. Cofferdams were constructed around the chases to keep the area sufficiently dry for engineers to continue their work.

When access to the sewer was finally granted, a critical issue was discovered: the existing chases were significantly degraded and no longer fit for purpose. This unexpected challenge required immediate discussions with Thames Water representatives, including Orges Mena, to determine whether new stainless-steel chases could be manufactured and installed before the sewer isolation window closed.

The Solution

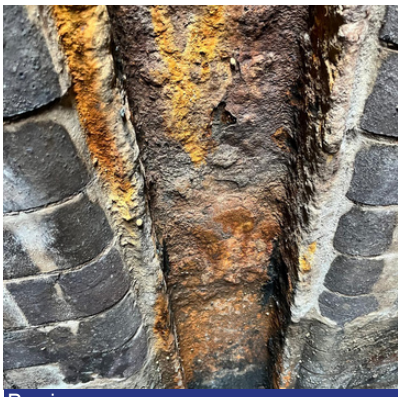
Glenfield Invicta's engineering team swiftly designed and fabricated new stainless-steel chases in collaboration with a local engineering service. These were delivered to the site within a week. This quick turnaround left just four days for Glenfield Invicta engineers to complete the installation before Thames Water had to remove the sewer isolations.

Initial phases included cleaning, minor repairs, and commissioning of four new actuators. Electrical connections were also completed, ensuring seamless integration with the existing penstocks.


Stainless-steel dam boards

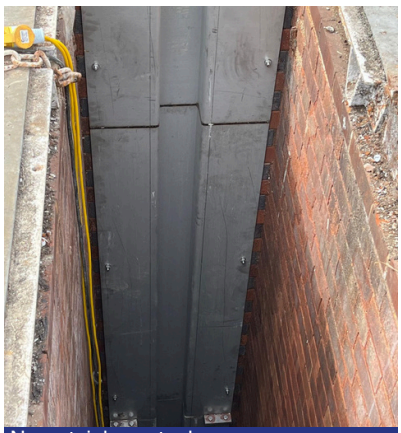
Case Study
Engineering Site Solutions

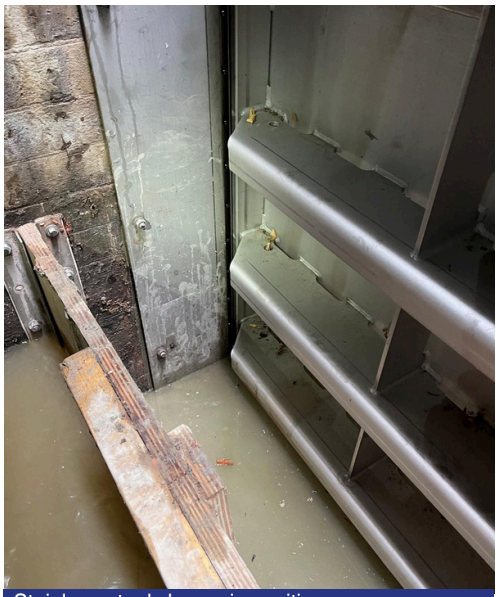
Glenfield Invicta
Delivering Project Solutions


Previous recesses

Engineers carefully lowered the new stainless-steel chases into the existing recesses, where they fit perfectly. The chases were drilled, sealed, and secured. Additionally, the floor rebates were filled with concrete to prevent the accumulation of debris and grit, safeguarding the long-term integrity of the system.

On Friday, 16th August 2024, the new dam boards were successfully installed, commissioned, and approved by Thames Water officials. This completion allowed for the timely removal of sewer isolations, ensuring minimal disruption to Thames Water's operations.


New stainless-steel recesses


Stainless-steel chases in position

Outcome

The project was successfully completed on time, despite significant challenges related to access, delays, and unexpected infrastructure deterioration. Glenfield Invicta's ability to adapt rapidly to changing circumstances and coordinate closely with Thames Water resulted in the successful installation of critical water management components.

Glenfield Invicta showcased exceptional collaboration and flexibility by working closely with Thames Water to accommodate multiple delays and site challenges, ensuring timelines were adjusted without compromising safety or quality. Their engineering expertise was evident in the rapid design and manufacture of stainless-steel chases, enabling swift adaptation to unexpected infrastructure issues and keeping the project on schedule. Additionally, their problem-solving capabilities were highlighted during the final week, as they successfully installed and commissioned the dam boards just before the sewer isolations were lifted, demonstrating their ability to execute effectively under pressure.

Orges Mena, the Project Lead for Thames Water commented:

"I wanted to take the time to showcase the excellent work recently achieved by Jason and the team at one of our sites.
It's taken some time however the recent challenges faced at Wick Lane during commissioning stages have proven Glenfield's Invicta (AVK group) dedication to Thames Water.

Following a few issues, Jason and the team was able to quickly review the necessary steps required to successfully ensure the new assets were commissioned on time. This was an important challenge to overcome on time as it involved network isolation and flow volume serving a quarter of London's population. The team was brilliant from their attention to detail, keeping their commitments, working safely within hazardous environment and ensuring that the new assets fitted perfectly well on site.

The dedication and commitment made on site, our customers and our network shall see the benefit for many decades to come. This shall be one of the many Glenfield Invicta legacies to benefit the next generation."

JASON DUNK
AREA MANAGER - SOUTH ENGLAND
ENGINEERING SITE SOLUTIONS
M: 07899 876915
E: jason.dunk@glenfieldinvicta.co.uk

Scan to read other case studies featuring the project solutions we've helped customers with.