Enhancing Resilience for London's Silvertown Tunnel, a major piece of transport infrastructure.

Xylem's Flygt pump technology delivers high-capacity pumping stations along the route of the 1.4km tunnel.

The project has been delivered by Riverlinx CJV, a contractual joint venture, undertaking the design, build, financing and maintenance of the tunnel on behalf of Transport for London (TfL). The tunnel is the first new crossing under the Thames in over 50 years and opened on 7 April 2025.

Silvertown tunnel opened on 7 April 2025, boosting cross-river public transport options.

End user
Transport for London (TfL)

Client
Riverlinx CJV

Xylem's role
Design, supply, install and commission six pumping stations.

The background

TfL's plans to construct a new tunnel under the Thames, from Greenwich to Newham, east London, were announced in 2012. The Silvertown Tunnel, which comprises two lanes in each direction and dedicated bus lanes, was built to provide a new link across the Thames, reduce traffic congestion around the Blackwall Tunnel, offer a new cross-river bus route and improve air quality. Around 25,000 vehicles per day are expected to use the tunnel, which took five years to construct.

After opening, London mayor Sadiq Khan said the tunnel was a "great piece of infrastructure" of which London should be "incredibly proud".

Effective surface water drainage and pumping systems are critical features of tunnel design. Without them, rainwater entering the tunnel would quickly build up at the lowest points, causing delays and posing a major safety risk to drivers and workers.

The solution

In May 2023, Xylem was selected to design, supply, install and commission six pumping stations, all related equipment and infrastructure - such as valves, sensors, panels and kiosks - and approximately 1km of 300mm wrapped ductile iron pipework. Xylem's scope also included rigorous pressure testing of the entire system.

Of the six pumping stations, four were constructed at strategic points within the tunnel. The two largest were located at its lowest point - the midpoint - serving the northbound and southbound carriageways respectively. The third and fourth were placed at each entrance ramp to the tunnel.

> “A great piece of infrastructure and London should be incredibly proud.”
>
> Sadiq Khan, London Mayor

A fifth pumping station was built outside the tunnel on the Greenwich side. The sixth asset provides drainage services to the tunnel’s fire pump room, in the main operations building, which houses equipment needed to supply high-pressure water in the event of a fire.

In total, 31 Flygt pumps were supplied – 24 in operation and seven spares. The pumps operate in a duty/duty assist configuration to ensure a continuous and reliable operation in varying weather conditions. Selected models all feature the Flygt’s self-cleaning N-impeller, which delivers high efficiency clog-free pumping, reducing unplanned maintenance and call outs.

The two mid-way stations, designated as the Low Point Sump – Northbound and Southbound (LPS-NB and LPS-SB) house three main pumps each. In addition, four small sump pumps were sited at each station to help drain the LPS pump rooms themselves. These small units are designed to pump any condensation or spillage back into the main drainage system.

In a similar way to highways drainage, rainwater enters the tunnel’s drainage system through culverts and gully grates in the road. From there, the new pipework directs the flow to one of the four main pumping stations, via large collection tanks - part of the LPS mid-point systems - and deep wet wells located at each end of the tunnel.

The pumps come into operation automatically when water levels in the collection tanks reach a certain point - and stop when levels return to the low point. This automation is directed by bespoke control systems which can be remotely monitored.

Once contained in the collection areas, the flows are tested for pollutants such as vehicle oil. If the water fails to meet strict quality parameters, it is diverted to storage tanks to be transported offsite for treatment. Flows that meet the required high standards are pumped safely into the River Thames after filtration.

The six pumping systems took Xylem approximately two years to construct. Combined, they can handle surface water flows of approximately 2290 m3/h – equivalent to emptying one Olympic-size pool in approximately 45 minutes.

Xylem employees present at the Silvertown tunnel.

Selected Flygt Pumps:

- Flygt NZ 3301 medium capacity dry well pumps – operating at up to 1320 m3/h flow rate with a combined 220 kW power consumption.
- Flygt NP 3127 small capacity submersible pumps - operating at up to 260 m3/h flow rate with 5 kW power consumption.
- Flygt NP 3171 medium capacity submersible pumps – operating at up to 710 m3/h flow rate with a combined 56kW power consumption.

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