ACE
Aquatic Control Engineering



Major upgrade to pump and valves in Goole

Client: Ouse & Humber Drainage Board
Location: Laxton & Blacktoft, Goole

Laxton and Blacktoft are two villages set on the banks of the River Ouse, which flows into the Humber estuary near Goole. During the floods of 2007, both villages and the surrounding arable land were badly affected, prompting the Ouse and Humber Drainage Board (OHDB) to begin plans and raise funds for permanent flood protection.

Following detailed local assessments, it was determined to construct two new land drainage pumping stations — one in Laxton and one in Blacktoft. To extend their reach, the upstream drains were widened and linked, enabling each station to serve a significantly larger combined catchment. Old heavy wooden pointing doors were replaced with lightweight HDPE

water upstream, improving the catchment's overall resilience.

ACE was appointed to supply the full mechanical package for both stations. Rather than treating flood defence and environmental stewardship as competing priorities, ACE delivered a solution that addressed both simultaneously — protecting properties, arable land and infrastructure without compromising the ecology of the waterway.

At the heart of the solution are ACE's fish-friendly axial flow pumps, designed to handle eels and other migratory species without harm. The pumps discharge directly into the Humber estuary, a designated Special Protection Area, making ecological compliance non-negotiable.

To further support fish passage, AQUIKO HDPE flap valves were fitted with ACE's unique re-set fish passage system — providing flood defence without impeding movement through the structure.

The fish-friendly axial flow pumps achieve over 80% hydraulic efficiency, significantly reducing both operating costs and energy consumption across the asset's lifetime. HDPE construction throughout - for both the flap valves and ancillary components - delivers a substantially lower embodied carbon footprint compared to traditional cast iron or steel alternatives, while also improving drainage performance through the material's near-neutral buoyancy in water.





ACE
Aquatic Control Engineering

Acclaim Accreditation · Achilles UVDB AUDITED · Constructionline Gold Member

Get in Touch

T: 01777 249080
E: info@aquaticcontrol.co.uk
W: aquaticcontrol.co.uk

Summary

ACE supplied the full mechanical package across two new pumping stations at Laxton and Blacktoft, delivering four Nijhuis VPFM1-500.130 vertical submersible pumps with a combined design capacity of 2,400 l/s. Each pump is driven by an integrated permanent magnet motor achieving 95% efficiency, operating across a variable speed range via Danfoss VSDs to match changing catchment conditions without energy waste. The fish-friendly impeller design — factory tested to ISO 9906 gr2 — allows up to 97% of fish and 100% of eels to pass through the station unharmed, ensuring full compliance with the Eel Regulations 2009.

Flow control is provided by AQUIKO HDPE flap valves fitted with ACE's unique ReSet fish passage system, replacing the original heavy wooden pointing doors and improving both drainage performance and ecological outcomes in a single intervention. All pumps were acceptance tested against design curves prior to delivery, giving the OHDB confidence in performance from day one.

ISO 9906

Factory acceptance test standard

97%/100%

Fish & Eel pass rate

600l/s

Four Nijhuis VPFM1-500.130 pumps deliver combined 2,400l/s

95%

Permanent magnet motor efficiency



ACE
Aquatic Control Engineering

Acclaim Accreditation · Achilles UVDB AUDITED · ISO 14001 · ISO 9001 · ISO 45001 · UKAS · Constructionline Gold Member

Get in Touch

T: 01777 249080
E: info@aquaticcontrol.co.uk
W: aquaticcontrol.co.uk