



Wrangle Pumping Station

Client: Witham Fourth IDB

Location: Wrangle, Lincolnshire

Wrangle Pumping Station sits on the tidal foreshore of The Wash, approximately twelve miles north-east of Boston. Operated by Witham Fourth IDB, it protects 2,169 hectares of catchment, 117 homes, 26 businesses, and a significant area of Grade 1 agricultural land — some of the most productive farmland in England, much of it below sea level.

The original station, built in 1959, had reached the end of its serviceable life. Sheet piles were corroding beyond economic repair, and an accumulated mix of diesel and electric pump units had become chronically unreliable. Following investigation by consulting engineers Stantec, refurbishment was ruled out. Full replacement was the only viable route.

Stantec secured replacement funding through a DEFRA Flood and Coastal Erosion Risk Management Grant-in-Aid application. Jackson Civil Engineering was appointed for the civil contract; ACE was appointed as principal MEICA contractor.

ACE delivered the full MEICA package under a single contract — one scope, one point of accountability for the station's performance. This integrated approach meant every element was specified and programmed with knowledge of the whole system, not assembled from separately procured components.

At the heart of the new station are two enclosed composite Archimedean screw pumps from Fish Flow Innovations, supplied exclusively in the UK.

Each pump is 2 metres in diameter, set at 26 degrees, providing a combined design capacity of 1.32 m³/s. The enclosed composite construction offers an 80-year design life, far exceeding what a steel screw in a sealed, moisture-laden environment could realistically achieve. Sealed-for-life bearings were rejected in favour of proper lubrication lines: a lower-cost, longer-life solution across a 60–80 year asset.

Debris management was critical. Lincolnshire drains are heavily vegetated in late summer and autumn; weed screens can blind within the hour. ACE supplied the Landustrie R71 automated weed screen cleaner — hydraulically driven, capable of a 500kg debris payload, and sequenced directly with pump start and stop logic in the MCC. This is integrated automation, not a timer running independently of the system it serves.

Flow control is provided by AQUIKO penstocks with AUMA actuators and AQUIKO HDPE non-return valves, manufactured by ACE's sister company. HDPE valves are near-buoyancy-neutral in water, reducing hydraulic resistance — and therefore energy costs — over a 60-year operational life. AQUIKO stoplogs on the intake provide maintenance isolation without the need to dewater the station.



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Fish and eel welfare was central to the design brief. The enclosed composite screw eliminates the pinch point present in open-trough designs, and Fish Flow's patented leading edge is designed to pass fish without harm. The pumps are tested and certified to NEN 8775 — the Dutch standard recognised by the Environment Agency and Natural England.

ACE's scope covered the full electrical installation: mains incomer, power distribution, control systems, heating, lighting, and all cabling. The MCC gives operators a unified view of the whole station — pump status, screen condition, water levels, and penstock positions — in a single interface, not a collection of isolated readouts.

A rooftop photovoltaic installation offsets running costs. An EV charging point serves W4IDB operational vehicles. A backup generator ensures grid failure during a tidal window does not become a flood event. W4IDB received unified operation and maintenance documentation for the whole station — not a folder of separate product manuals.

Site acceptance testing completed in September 2024. Both pumps performed to specification. The weed screen cleaner operated as designed. The eel pass was confirmed functional. The station is designed for a 60–80 year operational life, replacing an asset that had been held together — in the words of the project team — by institutional memory and optimism.

For an IDB managing 40,000 hectares of Lincolnshire with the resources typical of a public drainage authority, the value of a single integrated MEICA contract — with unified documentation and a single accountable contractor — is not cosmetic. It is the difference between a system the operator understands and one they manage around.

80 years

Long life span due to composite construction eliminating corrosion risk.

500kg

Weed screen cleaner handles up to 500kg of debris continuously.

1,320l/s

Two enclosed Archimedean screw pumps deliver a combined design capacity of 1.32m³/s.

£5.2m

DEFRA funding resulted in a complete station replacement, protecting 117 homes, 26 businesses and grade 1 agricultural land.

100% fish/eel safe



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