

Upper Thurne Integrated Drainage Project Horsey Pumping Station Replacement

Why are we replacing the Horsey pumping station?

The existing submersible electric pump sits in the foundations of the old engine house that once housed steam pumps as early as 1863. The steam pumps operated alongside the wind pumps until 1939 when they were replaced by diesel powered pumps and later by electric plant in 1957. These operated until the latest electric pumps were installed in 1998.

While ongoing repairs have sustained the pumping station operation for decades the existing pumping station is significantly beyond its design life and requires replacement.

Without it, 793 hectares of lowland would be subject to permanent flooding, impacting internationally designated habitats, protected species, local communities, farmland, infrastructure and tourism.

What work will we be carrying out and when?

The replacement of Horsey pumping station is part of the wider Upper Thurne Integrated Drainage Project seeking to replace eleven pumping stations in the River Thurne catchment.

Construction to replace the pumping stations at Horsey and St Benets began in Spring 2025 and will be completed in Spring 2026. The remaining stations in the broader project will be constructed between 2026 and 2029.

The new pumping station at Horsey will be constructed from steel sheet piles driven in to the local crag (hard geological layer beneath the softer peat / clay deposits). These piles form a "wet well" that houses two new Pentair VDX450 suspended bowl "fish friendly" pumps delivering up 375 litres per second each. The intake of the wet well will be fitted with a screen to protect the pumps from debris.

The pumps discharge through the existing flood bank via below ground pipework with precast concrete energy dissipation outfall structures, reducing the velocity of the water as it enters the staithe. Lightweight flap valves on the end of the discharge pipes prevent reverse flow from the river when the pumps stop.

A separate control building houses the operating and monitoring equipment allowing improved management of water levels, data analysis and fault finding. The new pumps operate on variable speed drives allowing them to deliver a wide range of flows in response to catchment conditions.

The new pumping station provides significant improvements in efficiency, reduced maintenance costs, increased resilience to climate change and adaptability to future land management needs whilst complying with the latest environmental legislation and best practise.

Spring 2025

Complete enabling works including vegetation and watervole mitigation, access improvements and service diversions

Summer 2025

Civil engineering construction works. Manufacture of pumps and mechanical / electrical equipment.

Autumn 2025

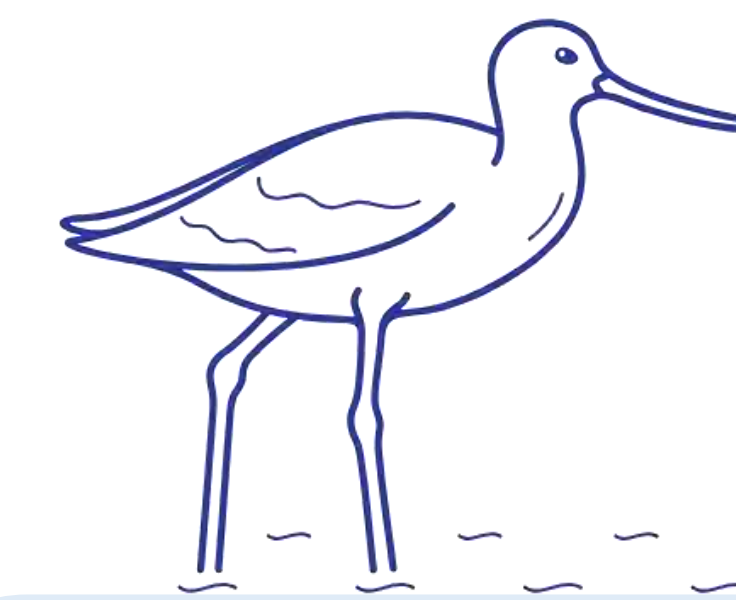
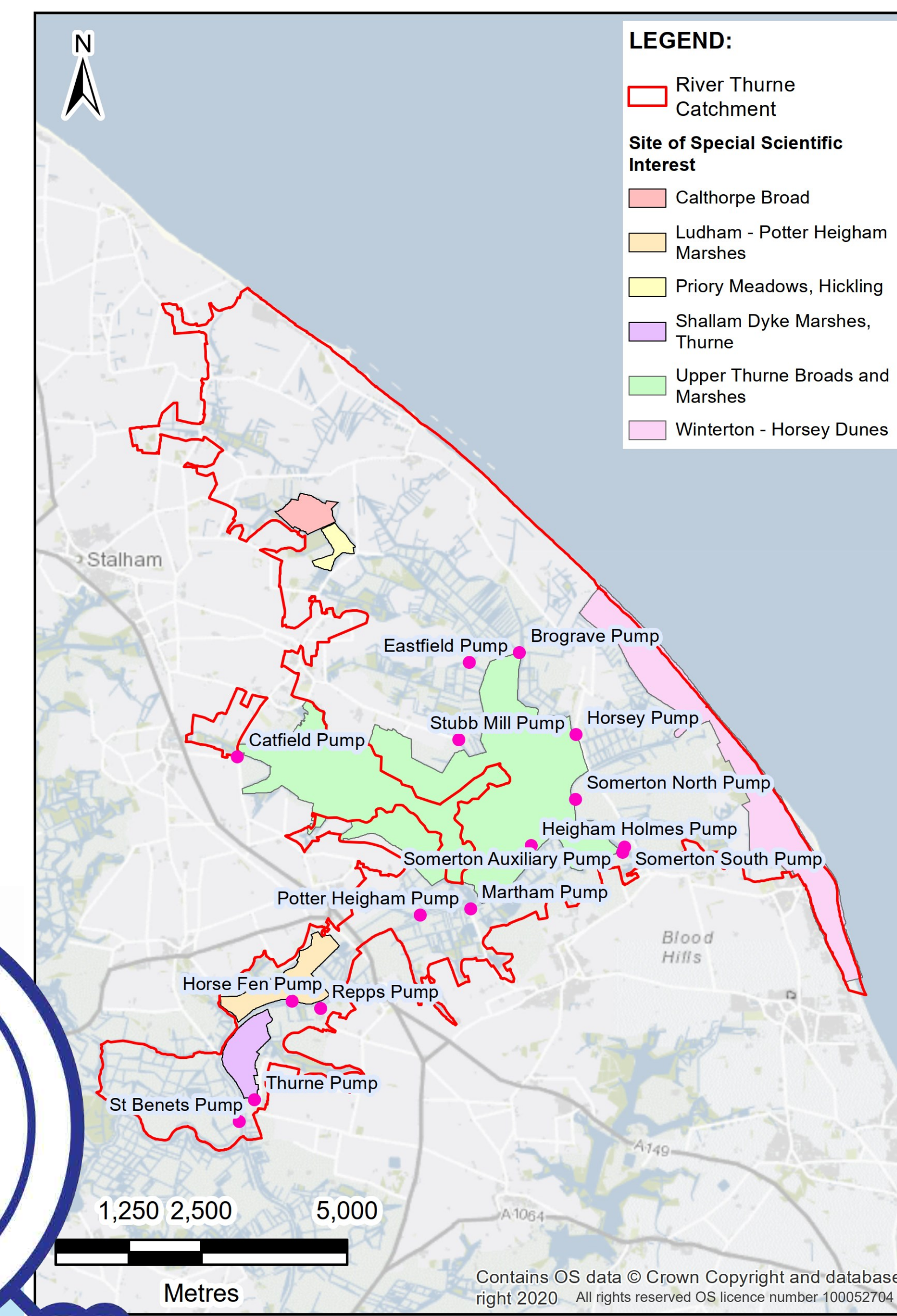
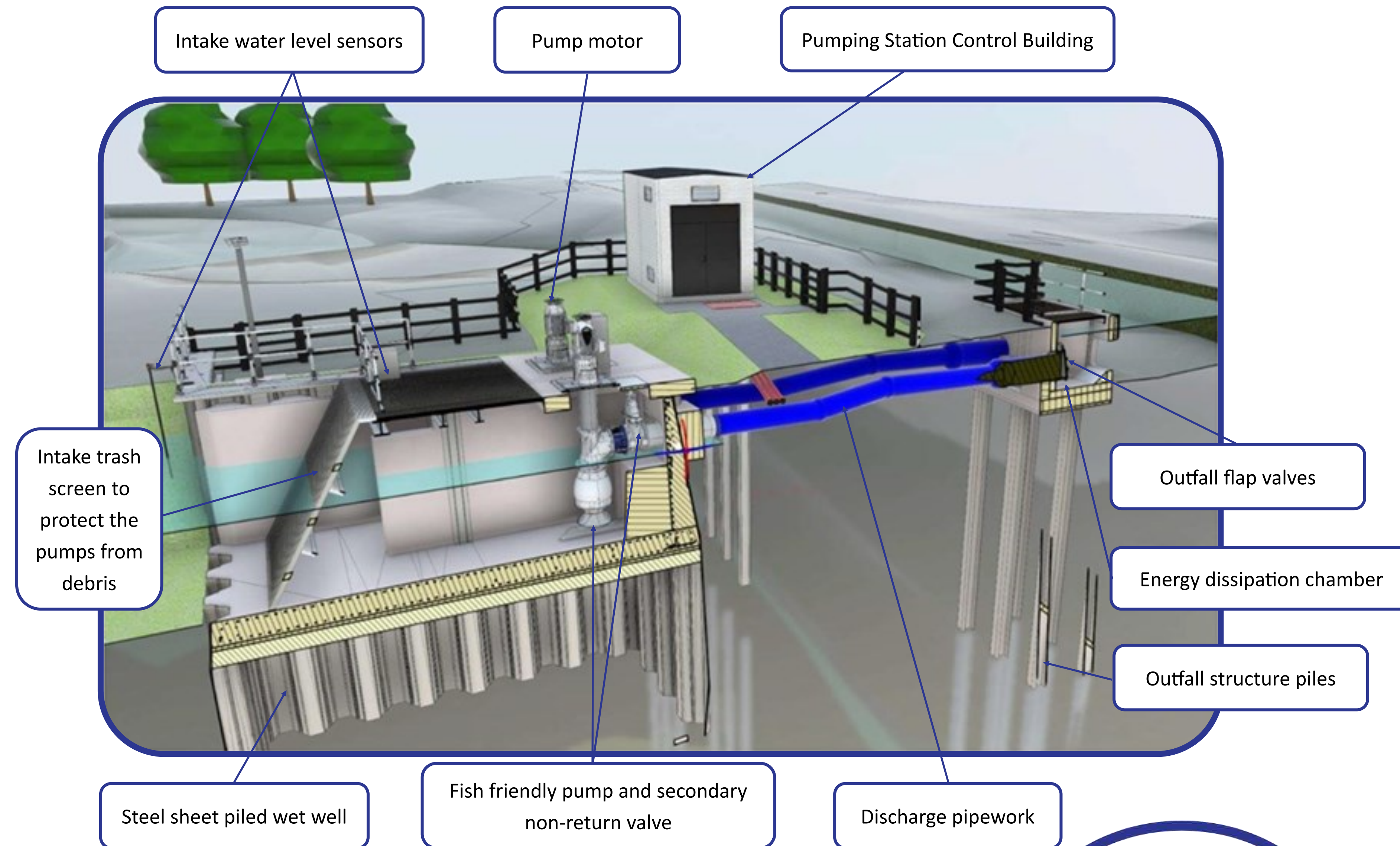
Installation of pumps, power and control systems, sensors and trash systems

Winter 2025

Commissioning the new pumping station and decommission existing stations (site specific timings)

Spring 2026

Completion of works, landscaping and demobilisation



"Did you know" - the existing pumping station pumps around 330 litres of water per second. That's around 2 bath tubs of water every second! The new pumping station will have double this capacity!

A history of pumps at the Horsey site

Horsey's water management has evolved significantly over the centuries. The first drainage mill on the site, known as the "Great Mill," was built in 1816 to manage water levels and prevent flooding. Prior to this, wind-powered mills such as the smaller smock mill, built around 1812, and older mills like the Waxham Drain Mill, were in use. By the mid-1800s, steam-powered pumps supplemented the wind pumps, with a steam engine installed at Mere Farm in 1863.

In 1900, a Garrett twin-cylinder portable steam engine was added beside the Horsey Windpump which was later replaced with a 55hp Crossley diesel engine pump in 1939. The diesel engine powering the pump was replaced by electric plant in 1957, with the Smithdale turbine pump being retained. This pump lasted for four decades, until it needed to be replaced in 1998.

Left: The Upper Thurne Integrated Drainage Project area of 6300 hectares of lowlands would, without pumping stations and drainage network, be subject to permanent flooding, causing the loss of important designated habitat, arable land, and woodland as well as impacting homes, local communities, tourism and infrastructure.

Pumping History Timeline



1830 engraving of a small smock mill at Horsey based on drawing by architectural draughtsman J. P. Neale (1780 to 1847). Included in a 'Polite Guide to Martham'.



Postcard from circa 1925 showing Horsey Windpump and, to the left, the steam engine building with the steam chimney clearly visible.



Horsey Windpump surrounded by floodwaters in 1938 (Mills Archive Trust).



The National Trust and the Society for the Protection of Ancient Buildings led the fundraising campaign to restore Horsey Windpump. (Associated Press)



Horsey Windpump with 1950's pumping station to the right. ©National Trust Images/Rob Coleman



Work will begin in Spring 2025 to put in place a new electric pumping station at Horsey.

First mill built on the Horsey site in 1816

The first steam-powered pump was installed next to Horsey Windpump in 1900

In 1926 the portable steam engine was replaced by a large tandem engine

In 1939 problems with both windpump & steam engine were attributed to their heavy use in the 1938 floods.

The National Trust acquired the Horsey estate, including the deteriorating windpump, in 1948

The diesel engine powering the pump was replaced by electric plant in 1957, which was replaced in 1998, after many years service

"Did you know" - the new pumping station could fill an Olympic size swimming pool containing 2500 tonnes of water in under an hour!

"Did you know" - from April 2023 to March 2024 Horsey pumping station pumped around 3.8 million tonnes of water. Without the pumping station the 793 hectare Horsey catchment could be under 1m of water within 12 months!



Water Vole © KreyenPhotography

Marsh Harrier © nieudaczka

Water Vole © KreyenPhotography

Water Vole © KreyenPhotography

The pumping station protects internationally designated habitat that is home to many protected species including watervole, bittern, marsh harrier, eurasian otter, little ram's-horn whirlpool snail & desmoulin's whorl snail.

FIND OUT MORE:

For the latest project updates visit the Water Management Alliance's (WMA) 'News' webpage or follow 'the WMA' on our social media channels



OUR PROJECT PARTNERS:

Turner & Townsend

Jacobs bam

National Trust

www.nationaltrust.org.uk/visit/norfolk/horsey-windpump/a-new-pumping-station-for-horsey

Water Management Alliance

www.wma.org.uk/news