

HORSEY WINDPUMP:

Standing still and silent for over 75 years this iconic Norfolk Broads building was brought back to life through expert craftsmanship. Architect and SPAB Scholar, Philip Orchard writes.



HORSEY WINDPUMP

Left Horsey Windpump after repair.



Above Horsey Windpump is now working for the first time since 1943.

Photo Philip Orchard

LITTLE IS KNOWN ABOUT THE site at Horsey Mere before the building of the windpump. There has been a windpump on the site since the 18th century, raising water from the ditches at low level into the dyke above and then by natural falls through Horsey Mere, the rivers Thurne and Bure to the North Sea through Great Yarmouth. It looks very much like a windmill but its purpose is not to grind cereals for flour, but to pump water, hence the name 'windpump'.

Its exposed location has meant that the building has both harnessed the power and suffered from the weather. The cap on the earlier mill was blown off in a gale in 1895 and the top was repaired with a new cap in 1897. By 1912, it was in a dangerous condition and was dismantled almost to ground level. The current brick tower was then constructed off the surviving base, four storeys tall with a timber cap, sails and fly stage set on rollers on a cast iron track on top of the tower. The machinery drove a turbine pump set in the ground west of the tower.

A stationary steam engine was installed next to the tower at some time after the First World War to drive the turbine when wind was not reliable enough. The steam engine was superseded by a diesel engine in 1939. The sails were put out of action by a lightning strike in 1943 and the diesel engine took over all the pumping from that date until 1957 when it was replaced by an electric pump. Drainage continues to be carried out by electric pump in the same location.

The National Trust obtained the Horsey estate from Major Anthony Buxton of Horsey Hall in 1948. The damaged sails were removed in 1956 but the Trust had no funds available for the repair of the windpump and so the then-called SPAB Windmill Section (now the Mills Section) launched an appeal for £2,750 in 1957. The cap and fan stage repairs were complete by 1959, but the new sails and fan tail were not fitted until 1962. The next major work on the windpump took place in the 1970s when the cap was made static and 'dummy' sails were installed, presumably

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Photo Philip Orchard

due to lack of funds to keep the cap and sails in a working condition. A bridge was laid over the dyke north of the tower and handrails and walkways constructed around the west side. The site became increasingly popular for sailing and walking, with a tearoom and car parking. Later, WCs and showers were constructed at a respectful distance from the windpump. At some stage during the mid to late-20th century the turbine pump was removed and unfortunately has disappeared from the site.

By 2010, it was becoming clear that major repairs were needed to prevent the sails falling off and to keep the cap watertight. Luke Bonwick of Bonwick Milling Heritage Consultancy was appointed by the National Trust to advise and, together with the late Vincent Pargeter, a scheme of repairs was identified that would see the cap, sails and fan stage all working once more, with a view to eventually driving a new water turbine. The Whitworth Co-Partnership was appointed as architects in 2013 with CDM Contract Services as consultants. The site was surveyed for bats and other sensitive fauna by Kewick Ecological

Above The National Trust has adopted an approach of ‘conservative repair’ that has retained as many of the windpump’s components as possible.

Services and provision made for them in the scheme. The Morton Partnership as structural engineers monitored the tower for movement before, during and after completion to establish whether the renewed live loads would cause any fresh settlement or tilting of the tower: it has remained stable.

HORSEY’S HISTORY

The history of the windpump was researched in 2013 by Luke Bonwick, subsequently updated by mill historian Alison Yardy. This, with its supplementary condition report, was a key document in identifying the building’s most significant components and the changes that have taken place, particularly the addition of the static cap and the fixed dummy sails. The research provided enough information to draw on for the new sails and the repair of the cap, the fan and the associated gear. Tim Whiting of TWCM

Woodworking was appointed millwright and principal contractor for the project in 2015 following competitive tendering. The cap was removed in March 2016 and the work was complete by May 2019.

The project involved a very high degree of specialist craft skill. The assessment of the structure and the various parts did not present substantial challenges but the actual assembly – the physical processes of lifting for dismantling and reinstatement of the cap and sails – created significant difficulties, together with the adjustment of the working parts. These were overcome by Tim Whiting’s skill, his experience and by painstaking adjustment and alteration to achieve the required performance.

A significant achievement of the project is how it has fostered the education of young craftspeople. Tim took on additional craftspeople for the project and gave them the opportunity to learn more about millwrighting from a conservation perspective. He received support from other millwrights who visited and provided encouragement and advice.

Public education was also an important ➤

Right Horsey Windpump.

part of the project. A large amount of work was carried out on site and made visible to visitors so that they could see the craftspeople in action.

The National Trust's long-term ambition was to have a fully functioning drainage windpump. The expectation has been that every part of the windpump, working or static, should be retained where it was still fit for its purpose and that no parts should be rejected purely based on age or appearance. The approach was to carry out 'conservative repair' as far as a working machine will allow.

A WORKING WINDPUMP

The main tower brickwork and floors remain, with some renewal of individual floorboards. The drive gear from third floor level downwards is all original. The most important parts are the cap, eight-bladed fantail or 'fly' and four shuttered sails. Here the original foundation beams (the 'sheers'), brake wheel and all the metal gearing inside the cap have been retained, repaired and recommissioned. Past repairs and joints show that parts of the cap foundation structure predate the 1912 reconstruction, although it has not been possible to identify if these elements came from the earlier building or an entirely different one.

The brick tower repairs used traditional techniques of individual brick renewal where excessively decayed or cracked, and pointing in lime mortars. The cap and sails employed traditional carpentry skills throughout, informed by specialist millwright experience. Unusable and missing cast iron components required the making of patterns and specialist casting in sand moulds. This was particularly important in the setting and adjustment of the cap, fan, sails and machinery so that they work together and perform in all weathers. Intervention has respected the significance of the building, replicating authentic components missing and keeping replacement to a minimum.

The character has been retained but enhanced – upgraded from static object to one that moves as the wind changes direction. The project enables the Trust to demonstrate to the public the value these buildings had in forging

Photo Philip Orchard



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the Norfolk landscape. Once more, the windpump has become an alive and dynamic part of the landscape and the public can visit and understand how such a machine works and responds to wind. Volunteers and visitors have been enthusiastic about the work at Horsey windpump. It's a prominent, well-loved feature in the landscape and has also become a rare educational facility.

The windpump itself makes no energy demands and is entirely driven by wind: only the interior lighting and fire protection rely on electricity. There are no requirements for other services and visitor needs are catered for in separate buildings. The sails and fantail will

require specialist rope access or access equipment in the future, as has always been the case with the windpump: details of this have been set out in a 15-year maintenance plan. Day to day maintenance will be carried out by National Trust volunteers and staff, who are being trained as part of the project handover, with periodic inspection and servicing remaining the responsibility of the millwright.

The cap and sails can now respond to the wind and preserve themselves against storms. The National Trust has put in place volunteer and professional labour and systems to ensure that the building is cared for and kept working in the future.

Windpumps in working order are a rarity, even in East Anglia, and the repair and reinstatement of this pump represents a major achievement. It demonstrates exceptional millwright skills and painstaking labour. The National Trust has saved the building, brought it to life and enabled it to stand proud once more in the Norfolk landscape.