

Canal Walk : Pontcysyllte Aqueduct

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World Heritage status

UNESCO made the eleven miles of canal from Chirk Bank to Horseshoe Falls a World Heritage Site in July 2009. The citation states: '... The Pontcysyllte Aqueduct is a pioneering masterpiece of engineering and monumental architecture ... The Pontcysyllte Aqueduct and Canal are early and outstanding examples of the innovations brought about by the Industrial Revolution in Britain, where they made decisive development in transport capacities possible. They bear witness to very substantial international interchanges and influences in the fields of inland waterways, civil engineering, land-use planning, and the application of iron in structural design.'

The Ellesmere Canal

The Ellesmere Canal's Act of 1793 was for a canal to link the Severn at Shrewsbury with the Dee at Chester and the Mersey at what was to become Ellesmere Port. Its main purposes were to provide lime for improving the farm lands of north Shropshire, to serve the industries of Wrexham and Ruabon, and to provide a trunk route between the rivers. However, its money was virtually exhausted by 1798. Construction stopped 11 miles short of Shrewsbury, and it was also decided to replace the Trevor to Chester section with a tram road (of which only the first few miles were made). By 1805 the Whitchurch branch had been extended to meet the Chester Canal north of Nantwich. These changes meant that the canal lost its intended water supply, so a navigable feeder was built to the Dee past Llangollen; this opened in 1808.

The Ellesmere Canal's principal engineer was William Jessop. Thomas Telford was General Agent of the Canal Company, equivalent to Chief Executive today. Thus although Telford probably did most of the design work, especially on the aqueducts, it was Jessop who advised and who approved the proposals.

Pontcysyllte Aqueduct

Pontcysyllte Aqueduct, a 19 span cast-iron aqueduct on tapering masonry piers, is 1,007ft long with a maximum height of 126ft above the Dee. The trough is formed from plates one inch thick, the joints made watertight with a mixture of flannel, white lead and iron borings. Supporting each 44ft span are four ribs, cast in three sections, bolted together with connecting plates, the outermost ribs being infilled to give the impression of a solid span. The water goes under the towpath, easing the passage of laden boats. Above the river is the valve for emptying the water from the aqueduct.

Construction started in 1795 but halted in 1798. One suggestion was to use the part-built aqueduct for the tram road, but eventually it was decided to revert to the original idea of an aqueduct. Construction resumed in 1801 and the works were completed for a grand opening in November 1805.

The stonework was erected by John Simpson and James Varley at a cost of £20,968. The ironwork, which cost £17,285, was provided by William Hazledine, most of it being cast at his nearby Plas Kynaston Foundry.

Remarkably little maintenance has had to be done in its 200 year life. The towpath has been replaced, as have the towpath railings. In the 1960s it was found that some of the ribs of the southernmost arch had fractured because of a slight movement of the abutment; the replacement ribs were made of steel.

The name Pontcysyllte, literally 'the bridge which joins', was taken from the late C17 three-arched road bridge visible upstream.

Trevor Basin

Trevor Basin, the terminus of the main line of the Ellesmere Canal, is partly on an artificial terrace retained by a stone wall at the south-east. The twin dry docks (one roofed) were built within a few years of the opening of the canal. Behind the former store (now the visitor centre) are double wrought-iron basins on a masonry hearth to boil pitch. The house by the dry docks has been used as accommodation for canal-related workers and later as a public house. The corrugated iron stores are 20th century.

On the opposite side of the canal, navigable feeder from Llangollen enters under Rhos-y-coed Bridge (31), a road bridge with cast-iron ribs. Just beyond the bridge, on the left, was the platform levelled to make the aqueduct's construction yard, later occupied by Exuperius Pickering's forge and coking kilns — presumably the explanation why the towpath changes side to avoid this site.

The Anglo-Welsh office & shop was an early warehouse for the general trade of the canal. The narrow gauge railway track here is not original but a modern inaccurate interpretation. The tram road was almost certainly a plateway (that is, with flanged rails rather than flanged wheels on the wagons) and its gauge was probably 4ft 2in. The Telford Inn was called 'Scotch Hall' in the C19; it is thought to have been the house of the aqueduct's resident engineer, Matthew Davidson. The single storey building on the south-west side of the bridge was probably the accounts house and coach house during the construction of the aqueduct.

Scotch Hall Bridge (29) also has iron ribs. The two side arches are later insertions for tram-roads. At the end of the basin were the interchange facilities where coal, iron, bricks etc were transferred from the tram road's wagons to boats. The masonry pier had three lines of tracks and there were further tracks on the western side. On that side too is Rose Cottage, the former wharfinger's house. On the eastern side there was a roofed single boat transfer dock.

The tram road, referred to in the canal company's minutes as the Ruabon Brook Railway, opened in 1805, with a gently rising route round the valley to Cefn Mawr ('big ridge'), where it had a hairpin bend and continued rising to Acrefair. It was extended to Ruabon Brook in 1808, with further extensions and branches being built in later years. In 1830-2 a more steeply graded and heavily engineered main line was constructed direct to Acrefair, cutting off the loop which remained open to Cefn Mawr. (Many present-day roads in the Cefn Mawr area are on the line of former tram roads.) In 1861-7 the main line was rebuilt as a conventional standard gauge locomotive-hauled railway, and in 1895 it was sold to the Great Western Railway.

The bricked-up bridge led to the Plas Kynaston Canal, the first section of which was built between 1820 and 1825 to serve Exuperius Pickering's limekilns. It was extended by Thomas Ward about 1830 to the total length of five-eighths of a mile; from its end a tram road went through a short tunnel and round the hill to Ward's Plas Kynaston Colliery. The canal also served Hazledine's Plas Kynaston Foundry and the village of Cefn Mawr. Over the years various other industries grew up canalside, the most important being Robert Graesser's phenol plant which in the 1920s became the Monsanto chemical works, at its peak employing over 2,000 people. Its successor company, Flexsys, ceased production in 2011. Many of the buildings have been demolished and the huge site is now north-east Wales' biggest development site — and a particularly sensitive one as it lies within the 'buffer zone' of the World Heritage Site. The canal was used to provide cooling water until 1945, and has since been filled in. One option is to reopen it as a central feature of the redevelopment.

Froncysyllte

The embankment, 670yds long and up to 75ft high is an under-appreciated civil engineering triumph. At the time of its construction it was probably the biggest earthwork in Britain since Silbury Hill (near Avebury) was built in prehistoric times. The material came from the construction of Whitehouses Tunnel and the tunnel and long cutting at Chirk.

The canal cottage is late C19, as is the mess building for canal maintenance workers and a former workers' institute which provided education for boat children.

Fron Lift Bridge (28) is modern but with a traditional appearance. The lifting mechanism is hydraulic; the original lift bridge here would have been raised by pulling on a chain. The footbridge is modern.
