

## **BRIDGES AND RIVER CROSSINGS**

The lower parts of the rivers Tyne and Wear have attracted settlement since the earliest times because of the safe harbours and defensible positions they provide, as well as transport links between the coast and interior. The Roman and Anglian settlements such as Newcastle, Tynemouth, Jarrow and Monkwearmouth were placed strategically at riverside locations rather than on the coast, and the industrialisation of the region is also due in large measure to the transport routes and safe harbours provided by the rivers. As well as providing transport links, the rivers have also at times been used as barriers. The Romans regarded the lower Tyne between Wallsend and the Coast as an effective barrier, and by the eve of the Norman conquest the Tyne was once again formed a boundary, between the incipient counties of Durham and Northumberland (the territory on the south side of the Tyne belonged to the estates of the Durham Bishopric while the north side formed part of the estates of the Earls of Northumberland). It is no exaggeration, therefore, to claim that the rivers Tyne and Wear have defined the character of the region, as well as briefly providing it (from 1974) with a modern administrative name. However, while the administrative boundary between Durham and Northumberland remained (until 1974), in the later medieval and modern periods the rivers were more significant as barriers to overland trade than as social or political boundaries.

In order to overcome the barriers presented by the Tyne and Wear, as well as tributary rivers such as the Derwent, Team, Ouseburn and Don, and smaller streams such as the Lort and Pandon burns in Newcastle, various solutions have been found, the majority of which can be described as fords, ferries, bridges and tunnels.

### **Fords**

Fords are places where the river can be crossed by foot, horse or using wheeled transport without the need of any structures on or over the riverbed. Some fords may only be crossed at low tide or during low water conditions, and some are artificially surfaced or provided with ramps at the waterside to make them more accessible. Fords probably provided the earliest means of crossing all the rivers of the region, including the largest which were still crossable near to their mouths in the mid-19th century before river improvements were made by dredging and, in places (such as between Newcastle and Gateshead) narrowing the rivers. It is thought possible that the position of Newcastle Roman fort, later the site of the Norman castle was chosen because the river at that point was fordable. Another possible Roman ford site is at Willington Quay however, the lowest recognised fordable points on the Tyne were in the Newburn area, where there were at least four main fords. These include the Kelso ford, on the course of a drove-road from Scotland, which the Romans are reputed to have paved in order to ease crossing, and the Cromwell (or Crummel) Ford, where Cromwell crossed in 1651.

### **Ferries**

The rivers would have been crossed by boat from the earliest times – several iron age dug-out canoes are known from both the Tyne and Wear – and there are records of passenger ferries from the medieval period. Ferry crossing points were chosen on the basis of river conditions (current and depth), accessibility to the bankside and local demand. Several existed on both the Tyne and Wear

## The Sunderland Ferries

The Sunderland Ferry (HER 76) which crossed from Bodlewell Lane Steps to Monkwearmouth was in service for over 250 years - the steps on the south side of the river led to a rowing boat which ferried passengers across to Monkwearmouth. This service was established by an Act of Parliament in 1710. Prior to this, however, a ferry had crossed the river, at or near to this point, from possibly the 7th century, following the foundation of St Peter's Monastery at Monkwearmouth in 674 AD. The Bishops of Durham controlled the crossing throughout the medieval period and leased it to different operators. There is documentary evidence for a Sunderland Ferry in possession of Bishop Pudsey in the 12th century, and 15th century references to payments by the monks of Wearmouth to the ferryman for passage from Sunderland. The Ettrick family leased the ferry from 1661 to 1796, and ownership passed to Sunderland Corporation in the mid 19th century. At this time, a number of steam powered vessels were tried on this route without a great deal of success. The crossing was, eventually, faithfully served by "Wear" which made the four minute journey regularly for many decades until the closure of the service in 1957. From at least the 18th century there was another ferry crossing in Sunderland, the Pann's Ferry (HER 4441). Further upstream there were ferry crossings at Hylton from at least the medieval period. The earliest reference to the Hylton Ferry (HER 446) seems to be 1322 when Baron Hylton granted to his chaplain "the Passage of Bovisferry" (or, the Ox ferry where heavy cattle could pass) The ferry ceased to be the responsibility of the Hylton family in the mid-18th century, and passed to the occupant of Wood House Farm. It finally closed in 1957. In the 19th century and perhaps earlier, a ferry also crossed at North Hylton (HER 1714) , where the existence of a stone quay has been recorded at the end of Ferry Boat Lane.

## The Tyne Ferries

The Tyne has hosted a great number of ferries from Ryton near the western border of Tyne and Wear to Tynemouth at the rivermouth. Ryton ferry, the crossing closest to the tidal limit of the river, was probably present in the medieval period, and a ferryman's house was present on the north bank by 1771. On the east side of Newcastle, there were small ferries at Blaydon and Redheugh by the mid-19th century, and at Lemington and Elswick from the late 19th century. East of Newcastle there were several sculler-boat ferries, some of which may have had ancient origins, but most of which started in conjunction with the industrial developments on both banks of the river. The following crossings are documented:

- Newcastle Quayside-Gateshead Hillgate Ferry probably existed alongside the Tyne Bridge for many years, certainly by the early 19th century.
- Wincomblee Ferry, Walker-Hebburn, was probably in operation by c.1600 and continued until c.1945.
- St Anthony's Ferry (1831-1945).
- Wallsend/Walker-Hebburn Ferry started by Andrew Leslie c.1854, probably on an sculler- boat route.
- The Ouseburn Ferry (c.1850-1948).
- The Mushroom Ferry (c.1850-1900).
- Dent's Hole-Friar's Goose Ferry (c.1831-c.1900), later replaced by the St Peter's Ferry (c.1920-1940).
- Felling Shore Ferry (1858-1890).

- Heworth Shore Ferry (1858-1900).

Further downstream, the Jarrow-Willington Quay Ferry was in operation by 1806 and continued, through various changes of management, to 1967. Also using this route was the Jarrow-Willington Quay 'horse and cart' service, run from the 1850s until amalgamated with the other service in 1899. Towards the mouth of the river, a ferry was running between North and South shields by 1377, and in 1588 ferries were forbidden to land beggars. In the same year there is reference to a 'horse boat', although most of the early ferries were for passenger traffic. The Dean and Chapter of Durham claimed customary rights over the Shields ferries for many centuries, but in 1729 a rival ferry service started. Later in the 18th century, the lease was passed to Newcastle Corporation, but their monopoly was broken by South Shields first known shipbuilder, Robert Wallis, who operated a fleet of boats on the route. The North and South Shields Ferry Company was established in 1829 following the failure of a plan to build a bridge across the lower Tyne. This service started in 1830. Following several buy-outs and take-overs, a new North and South Shields Ferry Company was established by the Tyne Commissioners in 1863, running ferries at four locations, including Jarrow (see below). The service from the Market Place landing continues to the present day, carrying about 800,000 passengers annually.

## **Bridges**

Bridges form one of the more numerous classes of structures included on the Historic Environment Record (HER), with about 100 examples included (in 2004). While some of these bridges are modest affairs, many display the most technologically-advanced engineering principles of their day. Indeed, the history of bridge-building in Tyne and Wear closely mirrors the engineering history of the North-East and, over the last 200 years, reflects the industrialisation of the region.

## **Road bridges**

The earliest bridges of the region were probably formed by dropping wooden planks over narrow streams and ditches to form a routeway for pedestrians and stock. The earliest bridge of more substantial character for which we have good documentary evidence, however, is the Roman bridge at Newcastle, Pons Aelius (HER 450), built around 122 A.D., roughly on the line of the modern Swing Bridge. This was probably a wooden deck platform resting on stone piers which were built upon a foundation of oak piles. It seems likely that this bridge survived, probably with periodic rebuilding and repair, until well at least the Norman period and perhaps later. The medieval stone bridge was probably built by the late 12th century, but was rebuilt in the mid-13th century following a fire. This bridge (HER 310) spanned the river with 12 arches supported on bridge piers up to 7 metres thick. It served as a trading and residential area as well as a bridge, supported towers, shops, houses and a chapel, all built haphazardly upon it, overhanging the river and narrowing the roadway. Responsibility for maintenance and repairs, a frequent necessity, was shared between the Prince-Bishop of Durham and the town of Newcastle. However, despite repairs carried out in 1770, the bridge was destroyed by a flood on November 17th 1771. Its replacement, built on the same line and only slightly higher and wider than its predecessor, opened in 1781 but was, in turn, replaced within a century by the Swing Bridge (HER 1003).

There are a number of other documentary references to medieval road bridges in Tyne and Wear. In Newcastle itself, Barras Bridge (HER 300) carried the Great North Road across the Pandon Burn just north

of the junction of Northumberland Street and Percy Street. Remains of the bridge arch, including at least two of the medieval ribs, and part of a later widening, survive in the Pandon sewer. The bridge is just south of the pedestrian crossing south of Claremont Road, about 10 feet below the existing road surface. It probably disappeared in 1835 when the dene was filled up. The remains of a small stone-arched bridge (HER 1501) over the Lort Burn survive in a sewer below High Bridge Street in central Newcastle. The earliest known documentary reference is 1334; by 1567 it had been re-named "Over Deene Brigge", from which "High Bridge" derives.

A number of medieval bridges are known over the Ouseburn, north of the Tyne: there is a 14th century reference to a bridge at Brunton, another from 1613 to a bridge, probably medieval in origin, at Woosington - "the stone bridge called Yewsebridge in the way leading from Pontisland to Newcastle..." (HER 1311), and another in 1628 to a bridge at Benton (HER 1408). Salter's Bridge (HER 313) is a narrow (c. 7 ft before later widening) twin-arched medieval bridge across the Ouse Burn. Its name, together with nearby Salter's Road suggest that this was the route taken by pack horses as they plied their trade from the salt pans on the coast.

Elsewhere, on the river Team there is a record of repairs to "Lamesley-brig" (HER 669) as early as 1428. At Tynemouth there is a 13th century reference to a precursor of the modern Spital dene bridge (HER 734) which was still present in the 18th century and lay (lies) under the road along the south side of Tynemouth Golf Course. Boldon Bridge is also of likely medieval origins - in 1609 Richard Fawcett, parson of Boldon, left in his will 20s for the mending of this bridge (HER 959), which is presumably the bridge that until recent times carried the Newcastle to Sunderland road across the River Don west of West Boldon.

A large number of bridges, some of which are recognised as structures of importance, were constructed on the routes of turnpike roads from the 18th century. These tend to be of small size and unspectacular design, such as the 18th century Derwent Bridge associated with an adjacent toll house at Swalwell (HER 3630), and 19th century bridges at Heworth (HER 3807) on the Gateshead to Monkwearmouth Road, and Walbottle Dene (HER 3986).

The Tyne Bridge (HER 1581) is the outstanding road bridge of the post-medieval era and has become an iconic symbol of Newcastle. It was opened on 10th October 1928 by H.M. King George V, providing a substantial increase in the river crossing capacity between Newcastle and Gateshead. The bridge is a two hinged arch type – the arch being a 2-hinge lattice structure of riveted steel - built upon massive concrete abutments which are sunk into solid rock. The towers were faced with Cornish granite brought by sea from Looe. Another outstanding example of engineering in the industrial period is the Swing Bridge (HER 1003), built on the line of the Roman Pons Aelius and the medieval Tyne Bridge (see above), which opened up the river to larger vessels in 1875, thereby facilitating the shipment of coal from up-river. The Swing Bridge is an hydraulic swing bridge - the main structure, complete with its hydraulic equipment, is by Sir W.G. Armstrong & Co. of Elswick [another local example of a swing bridge is the Hudson Dock Swing bridge of 1880 (HER 4804)] The Elswick works also supplied the hydraulic machinery for London's Tower Bridge.

Other great road bridges include the High Level Bridge (HER 4132), built between 1845 and 1849 by Robert Stephenson and Thomas E. Harrison to link the Darlington to Gateshead Railway with Newcastle and Berwick Railway. It is a combined Railway and Road bridge, 1400 feet (425.6 metres) long, with a clearance at low tide of 120 feet (36.5 metres). Two arcaded stone abutments and five monumental stone

piers support six segmental iron arches between the upper railway and lower roadway. The lowest beam supporting the roadway. The bridge is in continuing use for road and rail traffic, and is widely acknowledged as one of the finest pieces of architectural iron work in the world.

The surviving Queen Alexandra Bridge (HER 1712) at Sunderland was also built as a combined rail-road bridge, but only lower road deck is now used. An agreement to build the bridge was reached in 1899, and the approaches were completed by 1907, by Mitchell Brothers of Glasgow, the subcontractors. By 1909 the Bridge was complete and was ceremoniously opened by the Earl of Durham. Structurally the Queen Alexandra Bridge has a centre span three times heavier than that of the Forth Rail Bridge. The 330 feet centre span stands some 85 feet above high water level. During the peak years some six million tonnes of coal passed over the rail deck yearly, however passenger traffic on this route never materialised and the upper deck closed to regular rail traffic in 1921.

Wearmouth Bridge (HER 4978) was an iron bridge built across the Wear in 1796, at which time it was the largest iron bridge in the world. It was vastly modified by Robert Stephenson in 1858 and finally demolished in 1929. With the removal of the old cast iron bridge, Wearside lost not only one of its most majestic structures but also a monument to engineering ingenuity.

## **Rail bridges**

Many of the bridges built in Tyne and Wear since 1800 have been waggonway or railway bridges, built to take passenger or freight lines over roads and rivers. Two of the main railway bridges over the rivers Tyne and Wear were the above-mentioned High Level Bridge at Newcastle and the Queen Alexandra Bridge at Sunderland. The present Scotswood Railway bridge (HER 1009), disused since 1982, was another. This bridge is the third on the site. The first, a timber truss bridge with eleven spans was built in 1839 as part of the Newcastle to Carlisle Railway by John Blackmore, but burned down in 1860 during a Board of Trade inspection. It was the only railway link across the river until the opening of the High level Bridge in 1849. A temporary bridge replaced it and lasted until 1871 when the present bridge, with wrought iron hog-back girders each of 127 feet (38.6 metres) on cast iron cylinder piers, was opened. The main line is presently carried by the early 20th century King Edward VII Railway Bridge at Gateshead (HER 1010), a structure of non-spectacular design. The Victoria Bridge at Usworth (HER 2877) carried the North Eastern Railway over the Wear and is arguably the finest of the surviving railway bridges over the Wear. It was completed on Queen Victoria's Coronation day in 1838 by the engineer T. E. Harrison. The viaduct was based on the Roman Alcantara Bridge in Spain, and at the time of construction it had the largest span in Europe - the total length is 820 feet, with the largest of its 4 arches spanning 160 feet, 120 feet above the river. By contrast, Wearmouth Railway Bridge (HER 4979), built in 1879 for the North Eastern Railway, is of rather dull design. When built it was the largest hog-back iron girder bridge in the world - the single span of 300 feet (91.4 metres) is 86 feet (26.2 metres) above high water.

A large number of smaller railway bridges were also built, of which many survive, including the Wylam Waggonway bridge over the New Burn (HER 1033), built in the mid- to late-18th century, which survives alongside the later Scotswood Newburn and Wylam Railway bridge. Lemington was particularly well-provided with railway bridges (HER 1621-3 and 4698), most of simple iron construction. In the south of the county, Black Boy Bridge (HER 3179) is an iron road bridge over the North Eastern Railway at Houghton-le-

Spring. The Hendon railway bridge (HER 4700) which once carried the Londonderry, Seaham and Sunderland Railway is a relatively unusual survival of a stone-built structure.

## **Tunnels**

While a number of tunnel projects have been proposed at various points on the Tyne, notably in 1902 for a 4 metre diameter tunnel between North and South Shields, and in 1930 for a tunnel just east of Newcastle, only three tunnels have ever been built under the rivers of Tyne and Wear. In 1951 the interconnecting Pedestrian and Cycle tunnels (HER 1799), built at a depth of 15.2 metres on a line west of the later Road Tunnel, were opened between Howdon and Jarrow. The Tyne road Tunnel (HER 1798), 1,677.5 metres long with an internal diameter of 9.5 metres, was completed in 1966. [Not included in this brief summary are the considerable number of artificial tunnels constructed in Tyne and Wear for the passage of railways to riverside staiths (e.g. HER 1708, 3072, 4091, 4935 and 5032)].