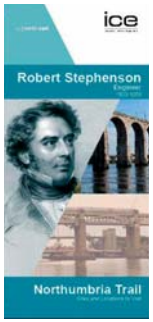
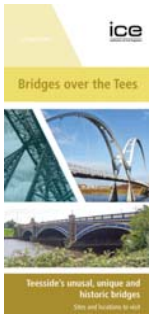
Bridges leaflets

ICE North East has produced a number of leaflets exemplifying the unique, historical and important bridges across the North East. Publications are held in Tourist Information Centres across the region and are available to download at **www.ice.org.uk/northeast**.



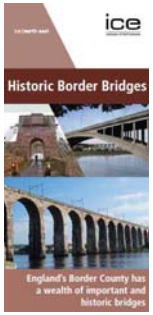
Robert Stephenson trail

This leaflet and the places you can visit will give an insight into the background of Robert Stephenson's upbringing, education, early career and creation of impressive engineering structures which remain in daily use as part of life in the North East.



Bridges over the Tees

This leaflet provides an insight into the unusual, impressive and noteworthy structures across the River Tees. Iconic structures such as the Grade II listed Transporter bridge and award winning Infinity bridge are highlighted in this publication.



Historic border bridges

This leaflet and the places you can visit will provide an insight into the historic significance of the magnificent Border Bridges. The list of bridges in this beautiful county of Northumberland is endless but the nine bridges included are particularly impressive structures worthy of note.

Civil engineers design, build, maintain and improve the modern world around us.

The Institution of Civil Engineers (ICE) is a global membership organisation that promotes and advances civil engineering around the world.

Our members help to create the structures and systems that sustain society. They are responsible for designing, building, maintaining and improving bridges, roads, canals, docks, office buildings, hospitals, schools, airports, power stations, railways, flood defences, water-treatment facilities... everywhere.

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With thanks to: This leaflet has been prepared by Durham University students from the School of Engineering and Computing Sciences with support from the North East Heritage Panel of the Institution of Civil Engineers, the Chartered Institution of Highways and Transportation, North Eastern branch, Arup and Durham County Council. Many thanks to everyone involved in the design and production of this leaflet.

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Bridges of the River Wear

Historic bridges across the Wear

Sites and locations to visit

Bridges of the River Wear

This leaflet provides an insight into the numerous iconic and noteworthy structures that traverse the River Wear.

Introduction

The River Wear rises in the East Pennines and flows approximately 100km eastwards through Weardale to the North Sea at Wearmouth in Sunderland.

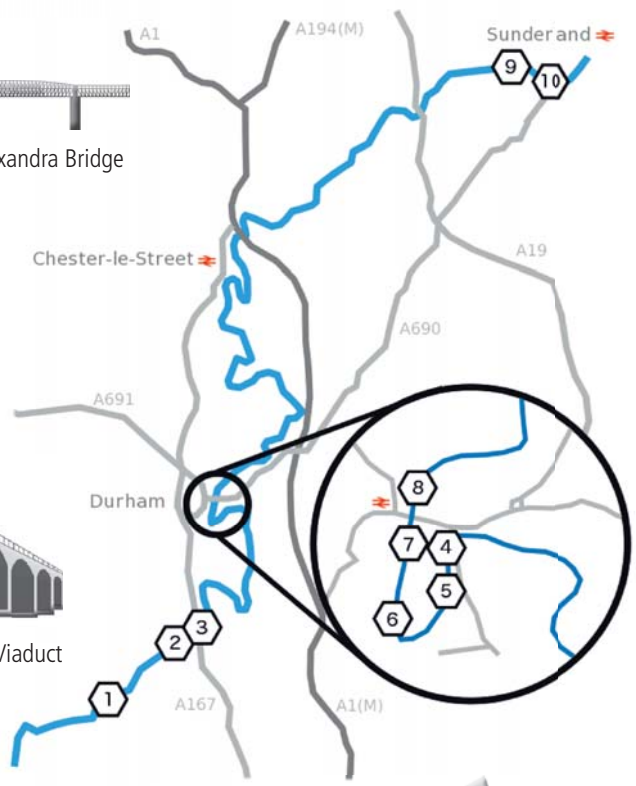
Today the moorland of Weardale is an area of outstanding natural beauty, dominated by agricultural industry, which has been greatly influenced by quarrying for limestone and mining for lead and coal.

The iconic Kingsgate Bridge in Durham, designed by Sir Ove Arup, reached its 50th anniversary in 2013.

9. Queen Alexandra Bridge

2. Croxdale Viaduct

5. Kingsgate Bridge



1. Page Bank Bridge
2. Croxdale Viaduct
3. Sunderland Bridge
4. Elvet Bridge
5. Kingsgate Bridge
6. Prebends Bridge
7. Framwellgate Bridge
8. Penny Ferry Bridge
9. Queen Alexandra Bridge
10. Wearmouth Bridge

1 Page Bank Bridge

The Page Bank Bridge was officially opened in 1996 by former Prime Minister Tony Blair. The 61m long roadbridge has a concrete deck supported by a steel beam with concrete abutments. It replaces an earlier railway bridge from 1853, which was converted to a road bridge in 1947, to serve the Page Bank colliery.

2 Croxdale Viaduct

Engineered by Thomas Harrison, Croxdale Viaduct was built by the North Eastern Railway in 1872 to transport the new passenger train line into Durham. The 23m high structure supported by stone piers has 11 brick arches each with a span of 18m, giving a total length of 210m. Today, the viaduct continues to carry part of the East Coast Main Line.

3 Sunderland Bridge

The present Sunderland Bridge was thought to have been built in the 16th century and replaces earlier bridges at the site, the first possibly dating back to the 14th century. The bridge is made of dressed sandstone.

Over the last few centuries, the Grade I listed bridge used to carry the Great North Road, which became the A1 and later the A167.

Despite being widened to 5m in 1822, the bridge was no longer able to carry traffic from the A167 and is now used only for local traffic. The steel beam Croxdale Bridge (below) was built slightly downstream in 1924 in order to carry the A167 and can be seen from Sunderland Bridge.

4 Elvet Bridge

Old Elvet Bridge is a masonry arch bridge with a total of fourteen arches, although only ten of these are visible. Since its construction in 1160 during the time of Bishop Hugh de Puiset, the bridge has undergone significant reconstruction and maintenance.

The great flood of 1771 completely destroyed three of the arches and by 1805 Old Elvet Bridge had been repaired and its width had been almost doubled at the upstream side, from 5m to 9.5m. Since 1952, it has been recognised as a Grade I listed structure.

Interesting fact: Only one of the original arches built in the late 12th century still stands and forms part of Old Elvet Bridge. The other arches date from the early 13th century when considerable reconstruction work was carried out.

In 1975 a concrete cantilever bridge (below) was constructed upstream of Old Elvet Bridge and named 'New Elvet Bridge'. It was constructed to form part of a traffic relief scheme that was put in place after the pedestrianisation of Old Elvet Bridge.

5 Kingsgate Bridge

Kingsgate Bridge was designed by Sir Ove Arup in 1963 to link the Cathedral and University Colleges on the peninsula to New Elvet. Arup designed every detail himself and considered the project to be his finest piece of work as well as being his last.

This 17m high reinforced concrete bridge spans 106.7m. The two halves of the bridge were built on scaffolding on the river bank parallel with the river and then rotated through 90 degrees to meet in the middle to complete the bridge. It was an extremely skilled piece of engineering which eliminated the need for working over water. At the point where these two halves meet is a unique bronze expansion joint that allows the bridge to lengthen/contract during warm and cold weather.

In 1965, the bridge was the winner of the Civic Trust Award and in 1993 was awarded the Concrete Society's Certificate of Outstanding Performance (Mature Structures Category). The bridge is a Grade I Listed structure.

Sir Ove Arup's involvement in the design of the bridge is commemorated by a bust at the eastern end of the bridge. The bust of Sir Ove was erected on 16 April 2003, on the 108th anniversary of his birth.

Kingsgate Bridge stands as a striking example of Ove Arup's vision for 'total design' – the seamless integration of engineering and architecture.

Photograph of Kingsgate Bridge above: Giles Rocholl Photography.

6 Prebends Bridge

Prebends Bridge is situated in part of the Durham Cathedral Estate, and is located at the end of the South Bailey.

Designed by Engineer George Nicholson, its construction finished in 1778 and is a Grade I listed structure. Prebends Bridge has three stone arches and although it is wide enough to carry vehicles, it is mainly used as a footbridge and connects to riverside paths.

The bridge has a plaque on it with a quote from Sir Walter Scott about Durham:

"Grey towers of Durham
Yet well I love thy mixed and massive piles
Half church of God, half castle 'gainst the Scot
And long to roam these venerable aisles
With records stored of deeds long since forgot"

Interesting fact: It replaced a stone footbridge, built in 1696, that was swept away during a flood in 1771.

A ford and ferry existed at this site before a wooden footbridge on stone piers was built in 1574, later to be replaced in 1696 by a stone footbridge.

Prebends bridge has long been used by artists and photographers as it offers spectacular views of Durham Castle and Cathedral.

7 Framwellgate Bridge

Durham's oldest bridge was commissioned by Bishop Flambard in 1127 and was once a main strategic entry point which was defended with a hefty gatehouse. A number of shops existed on the bridge, but were removed in the 18th century to improve access to the peninsula. Today this arched masonry bridge provides pedestrian access from the west side of Durham City.

Interesting fact: Framwellgate Bridge was the scene of Bishop Fitzmarmaduke's murder by his cousin in the 14th century.

8 Penny Ferry Bridge

The Penny Ferry Bridge is a steel cable stayed bridge and was opened in 2002 by local MP Gerry Steinberg.

This foot-bridge was originally named the 'Millennium Bridge,' but was renamed the Penny Ferry Bridge after a ferry crossing nearby that cost one penny to cross.

9 Queen Alexandra Bridge

The Queen Alexandra Bridge is a 91m two-deck road-rail bridge comprised of four steel spans. The bridge was built in 1907-1909 and was designed by engineer Charles A. Harrison. The crossing connected the coalfields of Washington and Annfield Plain with the South Dock at Sunderland, allowing up to six million tonnes of coal to be transported across the bridge each year. As the coal industry declined during the late 1910s, the rail deck became redundant.

Interesting fact: The bridge was constructed using a temporary cantilever, a unique technique at the time.

10 Wearmouth Bridge

The first Wearmouth Bridge in Sunderland opened in 1796 and, with a length of 72m, was the largest single-span bridge in the world. Following damage in 1853, the bridge was rebuilt in 1858/59 to Robert Stephenson's design. The current bridge, completed in 1929, is a three-pin steel arch bridge that is 114m long and 15m wide. It was formerly used by trams until 1954.