

= River Witham =

The River Witham is a river almost entirely in the county of Lincolnshire in the east of England . It rises south of Grantham close to South Witham at SK8818 , passes Lincoln at SK9771 and at Boston , TF3244 , flows into The Haven , a tidal arm of The Wash , near RSPB Frampton Marsh . The name " Witham " seems to be extremely old and of unknown origin . Archaeological and documentary evidence shows the importance of the Witham as a navigation from the Iron Age onwards . From Roman times it was navigable to Lincoln , from where the Fossdyke was constructed to link it to the River Trent . The mouth of the river moved in 1014 following severe flooding , and Boston became important as a port .

From 1142 onwards , sluices were constructed to prevent flooding by the sea , and this culminated in the Great Sluice , which was constructed in 1766 . It maintained river levels above Boston , and helped to scour the channel below it . The land through which the lower river runs has been the subject of much land drainage , and many drains are connected to the Witham by flood doors , which block them off if river levels rise rapidly . The river is navigable from Brayford Pool in Lincoln to Boston , with Locks only in Lincoln , at Bardney and at the Grand Sluice . Passage through the Grand Sluice lock is restricted to short periods when the tidal levels are suitable . The river provides access for boaters to the Witham Navigable Drains , to the north of Boston , and to the South Forty @-@ Foot Drain to the south , which was reopened as part of the Fens Waterways Link , a project to link the river to the River Nene near Peterborough . From Brayford Pool , the Fossdyke Navigation still links to the Trent .

= = Route = =

The Witham 's course is one of the strangest of British rivers , the result of glaciation (and possibly isostatic rebound) redirecting older rivers . The source of the river is on high ground near South Witham , Lincolnshire , from whence it flows generally north , very close to and almost parallel with the Trent around the outskirts of Newark , before turning east towards Lincoln . The upper waters are important for agricultural water extraction , and also for coarse fish such as roach , common bream and pike ; small mammals like water voles , and native crayfish . A gap in the limestone near Ancaster is believed to represent an earlier , straighter course of the upper river towards Boston , leading towards what is now the Slea .

From near Claypole to Beckingham , a distance of about three miles , the river forms the boundary between Lincolnshire and Nottinghamshire . From North Witham to Long Bennington , the river largely follows the line of the A1 , which crosses the river just north of the B6403 junction near Easton .

In Lincoln , the river flows into Brayford Pool and exits along a narrow channel that passes under the mediaeval High Bridge . The bridge not only restricts navigation due to its small size , but the volume of water that can pass through the gap is limited in times of flood . This is alleviated by the Sincil Dyke , which leaves the main channel at Bargate Weir and runs for 1 @.@ 5 miles (2 @.@ 4 km) through the industrial areas to the south of the main city centre . It used to rejoin the main channel at Stamp End , but was re @-@ routed into the South Delph , a drainage ditch constructed by John Rennie in the early 19th century that joins the main channel below Bardney lock . The origins of the Sincil Dyke are unknown , but it is known to have been used as a drainage channel in the mid @-@ 13th century and is thought to be pre @-@ medieval or even Roman . Parts of it were culverted in 1847 to allow the construction of Lincoln Central railway station .

From Lincoln , the river again turns first east , then south , making a cut through an belt of upland known as the Lincoln Gap . This section is again believed to have been a lower course of the Trent during and before periods of glaciation .

From Dogdyke near Coningsby to Boston , the north bank of the river was used by a section of the Great Northern Railway from Lincoln to Boston . A long @-@ distance footpath , the Water Rail Way , follows the course of the river from Lincoln to Boston . The path uses sections of the river towpath and abandoned railway tracks , and has been opened in stages , with the final 2 miles (3 @.@ 2 km

) being completed in September 2008 . The path is now part of Route 1 of the National Cycle Network and features a number of sculptures along its length , each commissioned from local artists . They include Lincoln longwool sheep at Stixwold , Lincoln red cows at Washingborough , and Lincoln curly pigs , which became extinct in 1972 , at Southrey .

= = History = =

The name " Witham " seems to be extremely old , apparently predating Anglo @-@ Saxon , Roman , and even Celtic influence . The meaning is not known . Archaeological evidence points to river navigation as far back as the Iron Age . Artefacts such as the Witham Shield and Fiskerton Boat have been recovered and are on display at the British Museum in London or The Collection in Lincoln .

The Witham , which was originally tidal up to Lincoln , was an important navigation in Roman times . Lincoln (Lindum) ? the meeting point of Ermine Street , joining London to York , and Fosse Way , leading to Leicester and Bath ? was an important Roman fort that became one of only four colonia in Britain . Most important Roman cities were situated near navigable water , which enabled goods to be transported in bulk , but Lincoln did not possess this advantage , and so the Romans constructed the Fosdyke from Lincoln to Torksey on the River Trent , improved the River Witham from Lincoln to The Wash , and built the Car Dyke from Lincoln to the River Cam near Cambridge . The Witham thus gave Lincoln access to the east coast , while the Fosdyke gave access to the Trent and further on to the Humber .

Trading continued throughout the medieval period evidenced by the importance of Torksey , which was then a flourishing town , now only a small village . However , the Fosdyke needed much maintenance to keep it clear of silt . Henry I had overseen the scouring of its channel , and there were inquiries in 1335 , 1365 and 1518 to consider the state of the Fosdyke and to compel the inhabitants of the region to maintain it . Lincoln was a centre for the collection of business taxes , but this came at the cost of maintaining the waterways , and having finally decided it was too large a cost , James I presented the Fosdyke to the City of Lincoln .

The Witham originally flowed into The Wash at Bicker Haven , where the port of Drayton was established in the Welland estuary , and it was only as a result of massive flooding in 1014 that it diverted itself to flow into The Haven at Boston . This gave rise to the growth of Boston as a port in the 12th and 13th centuries , exporting wool and salt to the Hanseatic League , though Boston only received its charter in 1545 .

The river was affected by silting which restricted trade despite the construction of various sluices and barriers from 1142 onwards , when the first sluice was built below Boston . Other sluices were erected at Boston in 1500 and at Langrick in 1543 , but navigation was again difficult on both the river and the Fosdyke by 1660 . In 1671 an Act of Parliament was obtained for the improvement of the Navigation . In 1743 , John Grundy , Sr. and his son John Grundy , Jr. were commissioned to produce a detailed survey of the river . They produced an engraved map in 1743 and a printed report , running to 48 pages , in the following year . The main recommendation was a 7 @-@ mile (11 km) new cut to eliminate the " prodigious meandering course " of the channel above Boston . Although the estimated cost of £ 16 @,@ 200 dissuaded the landowners from taking action at the time , the report formed the basis for improvements in the 1760s .

= = Canalisation = =

Following meetings of Landowners held in 1752 and 1753 , they asked John Grundy Jr , as his father had died in 1748 , to re @-@ evaluate his plans from 1744 and consider a plan for a " Grand Sluice " that had been produced by Daniel Coppin in 1745 . Grundy suggested that the 1744 cut should be extended by a further 2 miles (3 @.@ 2 km) into Boston , and that the sluice could then be built on the extension . The landowners moved the location of the sluice nearer to Boston , but otherwise approved his report , although no action was taken . John Grundy was again consulted in 1757 , and Langley Edwards of King 's Lynn was asked to review the positioning of the sluice in

1760 . The landowners then asked John Smeaton to liaise with Grundy and Edwards , and the three engineers produced a joint report in 1761 , with estimates of £ 38 @, @ 000 for drainage works and £ 7 @, @ 400 for improvements to navigation . The report was approved , although a meeting held in January 1762 decided that the new cut should revert to the alignment suggested by Grundy in 1753 . The location of the Grand Sluice would be as suggested by Edwards in 1760 . Grundy produced another engraved map , and parliamentary approval for the works were obtained in June 1762 .

Once the Act of Parliament was obtained , Edwards became the engineer for the project , and drew up the detailed plans , which Grundy and Smeaton checked and altered slightly , after which they had no further involvement with the scheme . Construction was started in April 1763 , and the drainage element of the project , which included the sluice , was finished in 1768 , having cost £ 42 @, @ 000 . Work on three locks and other work connected with navigation cost £ 6 @, @ 000 and continued until 1771 . The locks were located at Stamp End , Kirkstead and Barlings . The Grand Sluice was a major construction which maintained the height of water above Boston to near normal high tide level and had massive flood gates to cope with any tides above this . It was completed in 1766 and was effective in scouring the Haven below it , but actually encouraged further silting of the river above it .

The 1762 act created the Witham Navigation Commissioners and the Witham Drainage General Commissioners , who continued to promote drainage schemes actively , creating a drainage network known as the Witham Navigable Drains that transformed much of northern Lincolnshire from fen to farming land . Today many of these channels are managed by the Witham First , Third and Fourth District Internal Drainage Boards and Upper Witham Internal Drainage Board . These four internal drainage boards reduce the flood risk to the surrounding properties , land and environment .

In 1791 , as part of the campaign to promote the construction of the Horncastle Canal , the Commissioners of the River Witham asked the engineer William Jessop to assess the state of the Fosdyke Navigation and the Witham , with particular reference to the problems of navigating through Lincoln , where the channel was restricted by a medieval bridge . He proposed two solutions ; the first avoided the route through the city entirely , by utilising the course of the Sincil Dyke to the south , while the second involved lowering the bottom of the channel through the Glory Hole bridge , which was only 18 inches (46 cm) deep at normal water levels . The Commissioners had imposed a toll on all traffic passing under the bridge , but decided that a channel bypassing the city would have grave financial consequences . They opted for improving the existing channel and the work to remove the wooden floor , to lower the river bed under the bridge and to underpin its foundations was completed in 1795 . The Commissioners dropped the collection of tolls at the bridge , but the amount they received from traffic passing through the locks increased as the volume of traffic grew in response to the easier passage through the bridge .

= = = The Grand Sluice = = =

When completed in 1766 , Edwards ' Grand Sluice consisted of three channels each 17 feet (5 @. @ 2 m) wide , fitted with pointed gates on both sides , and a lock adjacent to the north bank , which could be used as an additional flood relief channel if required . The lock was originally very small , but was lengthened to its current 41 by 12 feet (12 @. @ 5 by 3 @. @ 7 m) in 1881 . The pointed doors on the non @-@ tidal side of the sluice were replaced by steel guillotine gates between 1979 and 1982 .

= = = Improvements = = =

The state of the Witham had deteriorated by 1802 , and the Commissioners asked John Rennie for advice . He stated that the Kirkstead lock was badly placed , and the associated staunch was in danger of collapse . He recommended that it be demolished and rebuilt elsewhere , and also suggested that access to Boston should be through the Witham Navigable Drains , rather than the Grand Sluice , or that a new cut should be built to the south of the sluice , to rejoin the river at

Boston Harbour . In 1803 , he suggested that High Bridge at Lincoln should be demolished and rebuilt . Four years later , he suggested that the locks at Kirkstead and Barlings should be removed , and replaced by one near Washingborough church . The Commissioners petitioned parliament in 1808 , and a new Act of Parliament authorised the work , to be carried out by a company of proprietors . They could borrow £ 30 @, @ 000 for the drainage element of the scheme and £ 70 @, @ 000 for the navigation element . Two new locks were built , one at Stamp End and the other at Bardney , which replaced the original locks . A new channel was cut near Fiskerton , upstream of Bardney , and the plan for a lock at Washingborough was dropped . While Stamp End lock was being rebuilt , an alternative route was provided , utilising the Sincil Dyke and the South Delph . Rennie recorded that Branston Delph , Carlton Dike , Nocton Delph and Timberland Dike were navigable at the time . The proprietors obtained three more Acts of Parliament , in 1812 , 1826 and 1829 , all with the main aim of allowing more capital to be raised .

Tolls on the Witham had gradually risen as improvements had been made . £ 263 was raised in 1763 @- @ 4 , and had reached £ 898 by 1790 . In 1819 , income exceeded £ 4 @, @ 100 for the six months from March to September , and a five per cent dividend was paid in the following year . By 1826 , over £ ! 80 @, @ 000 had been spent on improvements , and another £ 40 @, @ 000 was needed . However , the proprietors were still optimistic , and commissioned Sir John Rennie to investigate an extension to link the Witham to the River Ancholme , but although he made two proposals , neither was implemented . Most traffic was carried by sailing vessels of in barges hauled by horses , but in March 1816 , the first steam packet boat arrived on the river . It was named Witham and had been built by Shuttleworth and Robinson , whose yard was on Sincil Dyke . Despite a boiler explosion in March 1817 , fortunately without causing injury to any of the crew or the 30 passengers , a second steam packet was operating by July 1817 , and they soon displaced the sailing packet boats . During a flood in 1828 , one of them lost power when a floating hedge became jammed in the paddle wheels . In the following year , a Lincoln man , William Pool invented a new type of paddlewheel , which resulted in the boats travelling faster , and in 1836 , wooden vessels were superseded by iron packet boats .

Railways reached Lincoln in August 1848 , 15 years after the first proposal . The Wakefield , Lincoln and Boston Railway hoped to build railways in the area , and negotiated with the proprietors and those of the Fosdyke . Under the arrangement , they would take over both navigations , and guarantee a fixed income for the proprietors . They would then merge with the London and York Railway . Both proposals had been absorbed into the Great Northern Railway (GNR) by the time an Act of Parliament was obtained , but the original agreement was retained , and the GNR leased the Witham for 999 years for a payment of £ 10 @, @ 545 per year to the proprietors . This figure represented the average profits for the previous three years , plus five per cent . The railway company also agreed to pay the interest on mortgages amounting to £ 24 @, @ 692 which the proprietors held , but had redeemed them by 1857 . The railway from Lincoln to Boston ran along the eastern bank of the river , and opened on 17 October 1848 .

Most of the stations were located near to the landing stages which the steam packets used , and the railway did all it could to draw passengers away from the river . This included the provision of fourth @- @ class carriages , with fares set at a halfpenny per mile , in 1850 , and by 1863 , the steam packet boats had ceased operation . Freight traffic also declined , with coal passing through the Grand Sluice dropping from 19 @, @ 535 tons in 1847 to 3 @, @ 780 tons in 1857 . Nevertheless , the railway company had to maintain the river , and in 1871 , spent £ 5 @, @ 000 on making Bardney lock deeper by 5 feet (1 @. @ 5 m) at the request of the drainage commissioners . The GNR leased the navigation to the Great Northern and Great Eastern Joint Committee in 1882 , and in 1897 , by which time the Manchester , Sheffield and Lincolnshire Railway had become the Great Central Railway , they built a large warehouse beside Brayford Pool , with a transhipment dock next to it . Total traffic on the river had fallen to 18 @, @ 548 tons in 1905 , and averaged 5 @, @ 870 tons during the years of the First World War , mainly general merchandise and agricultural produce . With the nationalisation of the waterways following the Second World War , the navigation eventually became the responsibility of British Waterways as a result of the Transport Act 1962 , and since 2 July 2012 has been managed by the Canal & River Trust .

= = Current navigation = =

Today , commercial traffic , apart from tour boats , has ceased above the port of Boston (The Haven) and only pleasure craft carry on through the lock at the Grand Sluice into the Witham . Although the lock is only 41 feet (12 m) long , it is possible for longer boats to pass through it at certain states of the tide . Unlike many such sea locks , the reverse @-@ facing gates close on every tide , as the normal high tide water level is higher than the level of the river , while at low tides there is insufficient water in the Haven to allow exit from the lock . Passage is therefore restricted to a brief period approximately two hours before or after high water . It is still possible to navigate many of the drains in small vessels , and a new lock , completed in December 2008 , provides entry to the South Forty @-@ Foot Drain from below the Grand Sluice so that vessels will be able to reach the Fens without venturing out to the Wash as part of the Fens Waterways Link .

The Witham is navigable from Brayford Wharf in Lincoln to Boston . There are two locks between Boston and Lincoln ? one at Bardney and the other in Lincoln itself , the Stamp End Lock which is unusually a guillotine lock . The main obstruction to navigation is the High Bridge or Glory Hole in Lincoln , a medieval structure which is only about 15 feet (4 @.@ 6 m) wide and 2 @.@ 6 metres (8 @.@ 5 ft) high at normal river levels . In times of flood it is unnavigable . The bridge spans the river for 87 feet (27 m) , and consists of an arch built in c1160 , with extensions added in 1235 , 1540 to 1550 and 1762 / 3 . It is the only British bridge which still has secular medieval buildings standing on it , and is believed to be the second oldest masonry arch bridge in the country . It is currently a Scheduled Ancient Monument and a Grade I Listed Building .

There are traffic lights on the short section between Brayford Pool and Stamp End Lock , which are used to indicate the state of the river in times of flood . Green indicates that flows are low or normal , and boats can proceed along this stretch . Red indicates that flows are high and that great care is required . Flashing red indicates that flows are very high and boats must not use the section .

= = = Connecting waterways = = =

There are a number of drains that connect to the River Witham and that are protected by flood doors . These consist of a single pair of mitre gates that are designed to close if the level in the river rises above the level in the drain . Several of these are navigable to the more adventurous boater . The river is also joined by the Kyme Eau , which connects to the Sleaford Navigation on which navigation will eventually be restored to Sleaford . At Antons Gowt , a lock drops down into the Witham Navigable Drains , a system of drainage ditches which are used to prevent flooding of the fens to the north of Boston . Since November 2008 there has been an active campaign by the Billingham Skirth Regeneration Society to restore navigation on the River Skirth , and the project has won the support of Billingham and other parish councils , the Inland Waterways Association , the Environment Agency , Lincolnshire County Council and the Lincolnshire Waterways Partnership .

= = Points of interest = =

= = Tributaries = =

Foston Beck

River Brant

Fosdyke Navigation , a canalisation of the lower River Till

Barlings Eau

River Bain

Kyme Eau , the fenland part of the River Slea

The following flow into The Haven :

South Forty @-@ Foot Drain

Maud Foster Drain
Hobhole Drain

= = = Historical descriptions = = =