

## **Early History**

The bridge at Watringbury is generally known as Bow Bridge. This is the name of the road coming down the hill in Watringbury to the bridge and also the name of the field on the opposite side of the river (Bow Meadow) and hill on the opposite side (Bow Hill). Some authorities have stated that the name Bow is derived from the Old English "boga". This word generally translates as "bow", as in a weapon for shooting arrows, but was also applied to describe anything arch shaped.

It could refer to the curve of the river. If we look at the OS map of the area, we can see the wide curve of the River Medway which is visible from the top of Bow Hill. Compare with the term "ox-bow lake" which refers to a bend in a river, cut-off from the main channel, which is shaped like the yoke used for harnessing oxen when ploughing.

Some authorities give a less certain alternative interpretation of the word "boga" to mean an "arched bridge" which would support the idea that there was a bridge nearby in this location from the earliest times.

## **A stone bridge**

The first written record we find of a bridge at Watringbury is for 1701 in an account in Latin in the Kent Court of Quarter Sessions. The bridge was described as 'pons lapidea', or stone bridge. It was stated that this was of an unknown age and had stood "*since time immemorial*", which would give an origin for that bridge back in the medieval period.

We have no images of the stone bridge, but it's not unreasonable to assume that it would have been similar to Teston Bridge, located a short way downstream with two or three rounded arches on pointed staddles to deflect the water flow around the piers. Further downstream we find Aylesford Bridge, whose narrower side arches date from the 14<sup>th</sup> century and also probably similar to the original stone bridge at Watringbury.

## **Liability for repair**

The reason for Bow Bridge being the subject of discussion in 1701 was that the Courts were trying to discover who was liable for its repair. It was stated that the bridge was in such poor condition, it "*could not be used without danger as it was in great decay to the harm of the king's subjects*". A jury of twelve found that the inhabitants of Watringbury were not liable for its repair but did not state who was.

Usually, responsibility for the maintenance of bridges was governed by the Statute of Bridges of 1530, passed during the reign of Henry VIII. This stated that where no-one was found liable for a bridge's repair, then the burden of maintenance should fall on the county or town within which the bridge lay. However, in the case of Bow Bridge, the county does not seem to have taken responsibility. It does not appear on a list of Kent county bridges published during the later 18<sup>th</sup> century. Because no evidence has been found of who was maintaining the bridge, it may just have been local landowners.

## **The building of the timber bridge**

Despite the dangerous state of the stone bridge in 1701, it was at least another 40 years before the records show that any decisive action was taken.

In 1740, an Act of Parliament set up the Upper Medway Navigation Company with the aim of making the Medway navigable from Maidstone to Forest Row in Sussex (although in practice they never got beyond Tonbridge).

The old stone bridge must have been an obstacle to navigation, and the Company soon took steps to demolishing and remove it.

According to the accounts of the company during the reign of George II, they first carried out works to construct or improve what was described as the "Ford at Watringbury Bow". This work cost £33 5s. 8d between July 1741 and June 1744, including payments for timber, drink for workmen, spikes and nails, stones, hewing posts, and carpenter's work.

The work to improve the ford was then followed by work to build a new timber bridge, described as the "Bridge at Watringbury Bow" between April 1747 and June 1748. The company spent £207 18s 11d, on stones, labourers, sawing, iron smiths and timber. The bridge is described in later documents as having a timber deck supported by eleven timber [piers] driven into the bed of the river with a brick abutment at the South end.

It seems likely that the ford was created or improved, so that it could be used while a new bridge was constructed. The Company would have had to maintain a route at all times because, unlike the county, it did not have the power to stop up a highway. The ford must have been a temporary measure since it would not have been compatible with the Company's main objective of making the Medway navigable as far as Tonbridge. The river beneath the new timber bridge must have been deepened for navigation.

The Upper Medway Navigation Company eventually built a number of wharves and fourteen locks, enabling barges to travel all the way up the Medway to Tonbridge. One major disadvantage of the Company's work was that they failed to build a towpath suitable for horses to pull the forty-ton barges; thus the work had to be done by teams of men, called 'hufflers' or 'halers' instead. The work must have been extremely hard, for it took ten to twelve hours to cover the distance between Tonbridge and Maidstone, negotiating bridges, hedges, and ditches. A writer in the 1770s declared 'most Medway bargemen are very skilful in [a] verbal mode of warfare, they use extraordinary terms and generally, very coarse and dirty ones'. The Company ordered in the 1740s that a fee of 2s 6d (12.5p) be imposed on bargemen for immodest, obscene, and lewd expressions!

### ***The railway portion of the bridge***

In 1844, the South Eastern Railway constructed the first stage of the Medway Valley Line from Maidstone to Paddock Wood. The line of the railway needed to cross the road leading to Bow Bridge. To enable the road to be raised to the correct height for the new level crossing, the vertical alignment of the bridge had to be altered. In order to obtain the consent of the Navigation Company, the Railway Company appears to have agreed that it would then maintain the northern 78 feet of the bridge. However, this maintenance agreement was not provided for by the Act of Parliament, and no written record of the transaction appears to have been made. The South Eastern Railway Company did carry out various works for a number of years; however, in 1868 they denied having any responsibility at all.

Once altered to accommodate the railway line, the finished bridge was 200 feet long, about 10 feet wide, and had many spans, of which the widest was about 20 feet.

### ***Tragic accident***

The timber bridge was evidently not well maintained. On 6th October 1857, the Kentish Gazette reported a fatal accident:

*"On Sunday week, as a little girl named Jessie Hudson [aged 8 years old] was playing with some children, on Bowbridge, she unconsciously stepped back so far as to pass under the side rail of the bridge in a part, where, about a month since, the lower rail was broken away. Before anyone could arrive to the rescue, the poor little girl fell backwards into the river and was drowned. An inquest was held [and] the jury found a verdict of "Accidental Death from Drowning," accompanied with censure upon the Medway Company for negligence allowing the bridge to remain deficient of a rail."*

### ***Discussions about replacement – 1860s***

In April 1868, serious discussions began about the possibility of replacing the timber bridge. It was reported as being "much out of repair".

At a meeting of the local Highways Board a motion was proposed by a Mr E. Tomkin: "That it is desirable that the wooden bridge called Wateringbury Bow be removed and a substantial bridge substituted at a point higher up the river in a straight line with the road from Bow Hill ... in a straight line over the proposed new bridge into the road leading from Wateringbury to Nettlestead".

A committee was set up by the Highways Board to work out how this project could be funded and built. Firstly, the Committee asked the Medway Navigation Company to help but received an offer of just £100 towards a new bridge. The South Eastern Railway Company was approached but responded *"the Company is not bound to maintain any portion of the bridge over the Medway at Wateringbury. You had better see the owners and give them notice of our intention to do no more repairs."*

The Committee then asked the County Council for help. In a report of the Kent General Sessions from Maidstone Telegraph of 27th June, 1868, it was reported that

*"A letter was read from the Malling Highway Board, asking the county contribute towards the erection of new bridge in place of the present wooden bridge called Wateringbury Bow Bridge. The Chairman remarked that the county could have nothing to do with it. It was a question for the South Eastern Railway and Medway Companies."*

Even though the bridge was in a very poor state in 1868, it would be another 33 years before decisive action was taken.

### ***The bridge becomes a Parish Bridge***

In 1901, the Clerk to the Rural District Council of Maidstone reported that the Upper Medway Navigation Company had: *"latterly became so negligent in the matter of repairs as to cause constant and very serious complaints from surrounding users of the bridge."*

The state of the bridge led to the Council making an application to the courts to transfer the liability for repairs to the Council, together with a sum for future repairs to be paid by the Upper Medway Navigation. The court order was granted, but the sum ordered by the magistrates to be paid into a fund for future repairs was just £270. Given the state of the bridge, this was wholly inadequate even at early 20<sup>th</sup> century prices. Interest on the capital raised only £12 a year.

In 1905, the Rochester Bridge Trust got drawn into the debate about the future of the bridge.

The Trust is an ancient charity, founded in 1399 by King Richard II, to provide and maintain a bridge across the River Medway at Rochester in perpetuity. Although the Trust had been well-endowed by 14<sup>th</sup> century benefactors with money and land for the maintenance of the medieval stone bridge, there was provision in various Rochester Bridge Acts for parishes across Kent, including Wateringbury and Nettlestead, to contribute to the cost of repairs to Rochester Bridge, if the Trust ever ran out of money.

By the late 19<sup>th</sup> century, however, the Trust had replaced its expensive medieval stone bridge with a cast-iron structure and succeeded in building up its reserves. In 1888 it had obtained powers from the Charity Commission to contribute to other crossings of the River Medway. Since that time most of the road crossings from Tonbridge to Rochester have received substantial funds at one time or another.

On 13<sup>th</sup> Feb 1905, the Clerk to the Rural District of Maidstone wrote to the Bridge Clerk of Rochester Bridge advising of the Council's financial difficulties with respect to maintenance of the bridge. It was noted that the full maintenance amount of £270 had never even been paid and that the Upper Medway Navigation had gone into receivership. In spite of applying to the Court, a total of just £183 was eventually recovered.

The Clerk reported that *"the present state of Bow Bridge is such that it is closed against heavy traffic; to the extreme inconvenience of the District desiring access to Wateringbury Railway Station, and the rough estimate of repairs now necessary would far more than exhaust the balance of the capital."*

The Council asked the Rochester Bridge Trust to agree to undertake the repairs.

The Council had employed a Mr Maurice C. Warne of Barming, who described himself as a Surveyor and was described by the Clerk to the Council as "a competent engineer".

Mr Warne described the Council's portion of the bridge as standing on six trestles, four of which were very defective and another appeared to be sinking. The bridge deck was constructed of timber beams carrying wooden decking 3" thick. On top of the planks was placed 6" of "Tar Macadam". He recommended that the bridge be repaired by cutting off the ends of the Heads of the most defective trestles, driving new piles on either side, cutting out a piece 3 inches deep in the new and existing pile, driving a wedge into the space, and bolting both piles through. He thought *"this would last some time and cost about £100."* He also suggested leaving the ends of the piles in the bed of the river, cutting out the *"defective portion"*, and *"scarfing"* a new piece of pile into the old piece, strengthened and braced together with *"iron fish plates"* bolted through each portion.

The difficulty of the latter part of the repair was that "the water would have to run out of the river at the locks, and navigation would be idle for some time."

The Wardens of Rochester Bridge referred Mr Warne's proposals to their own engineer, Vitale de Michele, for a view. He said:

*"The half of Bow Bridge for which the Council is responsible is in an unsafe and exceedingly bad state, much of the timber being decayed right through. The methods suggested for its repair appear to be inadequate, as they would each leave the girders and supports of the larger spans too weak. The bridge should be reconstructed throughout from improved designs and when these have been submitted you might reasonably be asked to contribute towards the cost."*

*"In view of the great cost of maintaining timber bridges, you will no doubt consider whether you should encourage their construction. A permanent bridge costing double would probably be cheaper in the end. The proper position for a bridge would appear to be a little higher up the river where the formation of the ground would permit its being continued across the railway, thus avoiding the necessity for the present level crossing."*

So, independently, Vitale de Michele had come to the same recommendation which had been abandoned by the County Council in 1868.

The matter seemed to go quiet again until 1912 when the Council's clerk again made contact with the Trust to ask whether a financial contribution would be made for a "new and more commodious bridge" at the straight line position 300 yards higher up the river.

By this point, the Trust had itself begun the major reconstruction of Rochester Bridge to change it from its 1856 cast iron arch design into a bowstring truss. The Trust had also made a grant to the financially unstable Upper Medway Conservancy to make a whole range of improvements to the river. The Bridge Clerk doubted that the trustees would feel in a position to make any contribution to the rebuilding of Bow Bridge, but agreed to consider a plan and estimate before coming to any decision.

### **Rowland Hawke Halls**

The Medway Rural District Council had found itself a new engineer, Rowland Hawke Halls of Lewes in East Sussex. Mr Halls described himself as "civil engineer" on the plans he submitted, but it is interesting to note that in the local trade directories he is always listed as an architect and that his other extant work is a nice collection of houses in the arts and crafts style in various East Sussex villages.

Mr Halls reported that the bridge was "*past effectual repair*". It was in a "*weakened condition from decay and totally inadequate to carry any of the heavy traffic of the neighbourhood...The carriageway is in a very bad condition and the fences also are rotten...It is highly necessary in the interests of the safety of the general public that a bridge of substantial strength and durability should take the place of the present flimsy and dangerous structure.*"

### **1912 proposal for a New Bridge on a better route**

The Council proposed that a new bridge should be constructed of 428 feet, in 8 spans with the river and railway each being cleared by single spans. The design assumed a total width between parapets of 21 feet (6.4 metres) and a design loading on two axles of 30 tons.

The topography would have caused considerable problems with this design. There is a steep downhill gradient from the top of Bow Hill, and from the bottom of the natural hill there would then be a considerable uphill gradient needed to gain enough clearance over the river and the railway line.

The Council also considered it would be necessary for a light iron footbridge of single span to be built across the river at the site of the old timber bridge, bringing the total cost, including purchase of land and engineering fees, to between £7,000 and £7,500.

Despite its other commitments, the Rochester Bridge Trust agreed to make a grant of £4,000 towards the cost of the works.

### **More delays**

However, things did not proceed according to plan. The Clerk to Council wrote: "*some difficulties have arisen in our preparations. One relates to the South Eastern Rail Co. liability to repair half of the present bridge, another to acquiring a strip of land in Nettlestead and another to West Farleigh Parish Council who have not yet consented to the necessary road diversion.*" Eventually the plans to relocate the bridge were abandoned and, instead, a more modest scheme was conceived on the line of the old bridge.

News of the change to the plans reached the Rochester Bridge Trust via the Chairman of the Upper Medway Conservancy Board. It is recorded in the Trust's minutes that he had stated "unofficially" that the scheme for rebuilding Bow Bridge had been considerably modified and would probably now not cost more than £1,000.

The Bridge Clerk was instructed to write to the Council and inform it that the Trust "*would be glad to hear that this is correct*", as it would then enable the Trust to give a greater sum to the Upper Medway Conservancy for work it wished to carry out to the river. The Clerk to the Council does not appear to have protested at this blatant conflict of interest but did write back to say that a smaller bridge on the present site would not cost just £1,000 but probably £3-£4,000. Nonetheless, the Wardens decided to reduce their offer to a grant of £1,000.

### **Seeking match funding**

Having secured an offer for a good proportion of the cost, Maidstone Rural District Council set about trying to borrow the balance of the funds. All the private banks they approached turned them down, and so they turned to the Local Government Board, which had the powers to grant the necessary funding.

The enquiry took place in 1914 and was conducted by Mr. A. W. Brightmore, Associate Member of the Institution of Civil Engineers and author of *The Principles of Waterworks Engineering*. He had been admitted to the ICE in 1889.

The case for borrowing £3,000 was made by the Chairman of the Council, the Reverend John Rowland Leigh, a Welsh native who was the vicar of Yalding Church, the richest living in the Diocese of Rochester.

The bridge proposed by R.H. Halls was of "ferro-concrete construction" using the "Hennebique System". The enquiry gives us some insight into why this method of construction was chosen. Halls stated that ferro-concrete had been "*adopted on account of its strength and cheapness, and also on account of the saving on subsequent up-keep, no painting or repairing being necessary, as the material hardens and strengthens with age*".

Now Halls was identified as a Mouchel-Hennebique agent, although his name does not seem to have been associated with any other projects constructed using the system. Whether the Council had decided that reinforced concrete was its preference and selected him for this reason, or whether they had selected him for another reason and then he recommended the system, we do not know. It is certain that the Rochester Bridge Trust had nothing to do with the decision, since, when they were consulted on their preferred form of bridge, they replied that this was a matter for the Council, but that the Wardens should prefer stone to timber.

The Inspector enquired whether a temporary bridge was to be erected during the construction of the new one but was told that the Council would, instead, organise a ferry, for which the ferryman was paid 35s per week.

### ***Tenders for the work***

Ten tenders had been received for the construction of the bridge. The Council had accepted the lowest, that of the Yorkshire Hennibique Contracting Company, for £3,397 1s. 3d. There was just £578 (17%) between the lowest and the highest tender with six of the tenders being within £300 (9%) of the winning price.

The small pieces of land on either side of the river, which were needed to construct the bridge, were donated free of charge by local landowners, Mr. Roger Leigh and Mr. Augustus Leney (whose family developed the Phoenix Brewery).

Work started in the late summer of 1914, and within two months the First World War broke out. Interestingly, no mention of the conflict is made in any of the correspondence or other records.

### ***Badgering for payment***

Almost immediately the Council started badgering the Trust to be paid the promised grant. However, it was pointed out that the condition of the grant had been that the Trust's bridge engineer, John Robson, should be allowed to see the plans, and that payment would be made once construction was complete.

Robson eventually received the plans on 4 December 1914. Unfortunately, they seem to have been sent directly to his office, for the Rochester Bridge Trust does not have copies in its archives. He made suggestions for various improvements, such as the addition of fenders to protect the piers from collision by barges and solid parapets rather than open railings. He also stated: "*I would mention that a single-arch bridge would have been a*

*more suitable design for the navigable river instead of a trestle bridge with narrow openings. The matter has now gone too far for such an alteration to be made".*

The Council maintained that the trestle design had been £800 cheaper than an arch and that the navigable span was 28'8" which would *"give an ample margin and is considerably greater than before"*. They had a point, as the Upper Medway Conservancy required a clearance of just 20'6".

### **Construction process**

The work to install the piles for the bridge was described in some detail in an account within the Trust's archives. Ten pairs of reinforced concrete piles, each 16 inches square, were cast on the river banks. When the piles were six to eight weeks old, they *"were slung up into position"* and *"driven by a pile driver with a 30 cwt. monkey"* driven down through the bed of the river until firm clay was reached.

The piles were driven *"until the monkey failed to move them more than half an inch with ten blows"* and this drove the piles on average about 26 feet into the river bed. It was reported that no pile was destroyed or damaged by this heavy driving.

After the piles were driven into position, the braces and decking were built on top of them. The parapets were also of reinforced concrete over the river, with iron railings over the land portions.

The bridge was tested by driving two large steam rollers abreast over the bridge. The deflection over each 30ft span was measured as a fraction over 1-16th of an inch, and this was declared *"very satisfactory"*.

Throughout the construction period the Council continued to pester for payment, despite being told repeatedly that funds would be released only when a certificate was received from the Council's engineer *"that the whole work has been satisfactorily completed"*.

Clearly in some financial difficulty, the Council even managed to sell the timber of the old bridge for £10.

### **The Opening Ceremony**

The new Bow Bridge was opened on 22nd July 1915. Rain fell in torrents at the time of the opening ceremony, but there was a large attendance in spite of the inclement weather.

Formal opening was carried out by Mr. George Marsham, an old Etonian from an old Kentish family, who was serving his fourth term as Senior Warden of the Rochester Bridge Trust. George Marsham was a first class cricketer and at one point President of the County Club. In his speech he said the new bridge was by *"no means unpleasing to the eye or disfiguring to one of the pretty reaches of their dear old river Medway"*.

The Reverend Leigh as Chairman of the Maidstone Rural Council, gave a speech in which he said how great was *"the improvement upon the old rickety wooden bridge...all who have been accustomed to using the fearsome old wooden structure will look with gratitude upon its successor"*.



Another speaker said: *"We have waited for this bridge long and wearily, but at last we rejoice that once more the Men of Kent and Kentish Men can join hands, instead of having to shout at each other across the Medway"... "It lived unloved and died unregretted. Now, however, we give a cordial welcome to this new bridge, which will be a boon to generations yet unborn"*.

At the close of the ceremony, the Watlington Boy Scouts, led by Mr. E. A. Smith, gave hearty cheers for the new bridge and sang "God save the King" and the Russian national anthem.

The engineer for the bridge, Rowland Hawke Halls, at the age of just 39 came to a tragic end in a fatal accident on 25 March 1919, when his motorcycle collided with an army steam engine. The inquest into his death reported that he died of shock following fracture of both his legs and other severe injuries.

As for Bow Bridge itself, there were problems with concrete spalling from the very start. Major concrete repairs had to be carried out in 1937, 1950, and 1981, and in the end the concrete parapets were removed and replaced by semi-ornate steel parapets.