



Tadcaster Bridge, Tadcaster, North Yorkshire: Assessment of Significance

Marcus Jecock and Lucy Jessop

Discovery, Innovation and Science in the Historic Environment



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**TADCASTER BRIDGE
TADCASTER
NORTH YORKSHIRE**

Assessment of Significance

Marcus Jecock and Lucy Jessop

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SUMMARY

In early 2016, Investigators from Historic England's Research Group carried out an assessment of the significance of the Grade-II listed Tadcaster Bridge. This followed the collapse of part of the bridge's upstream side into the swollen River Wharfe on the night of 29 December 2015 following record rainfall amounts deposited across much of northern England by Storm Eva a few days previously. The assessment, which comprised a rapid visual inspection and targeted documentary research only, was conducted at the request of Historic England's Planning Group in order to inform decisions on the bridge's repair and possible widening. An initial, internal, report with limited circulation was issued on 25 February 2016. In June, both Peter Cross-Rudkin and John Firth brought new documentary information to the attention of the authors regarding the date of construction of the earliest part of the extant structure. The present report revises and replaces that initial report in light of the new information.

CONTRIBUTORS

Research and fieldwork was carried out by Dr Lucy Jessop and Marcus Jecock, respectively Senior Investigator and Investigator within Assessment Team North, assisted by Beki Burns, then Assessment Team Programme and Research Co-ordinator.

ACKNOWLEDGEMENTS

The authors would particularly like to thank Peter Cross-Rudkin and John Firth, both of whom have drawn the authors' attention to references in WYAS QD1/707 and Daniel Defoe to the construction of a new bridge at Tadcaster in 1698; John Firth also provided the reference to the 1611 plan of Tadcaster in the Petworth House Archives in West Sussex. Historic England is grateful to the West Yorkshire Archive Service, Wakefield, for permission to reproduce Figs 11-13.

ARCHIVE LOCATION

An archive – mostly comprising photographs taken at the time of the field assessment, some of which are reproduced in this report - will be deposited with the Historic England Archive, The Engine House, Fire Fly Avenue, Swindon, SN2 2EH.

DATE OF INVESTIGATION

Field assessment was carried out on 3 February 2016.

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Cover: Aerial view of Tadcaster Bridge looking towards the east, showing the collapsed section of the upstream face. The historic centre of Tadcaster lies to the right-hand side of this picture, the road to York on the left-hand side. Taken on 13 January 2016. AP 28846/028 © Historic England/ David MacLeod .

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1. INTRODUCTION

Tadcaster Bridge is an historic, nine-arch masonry road bridge, centred at SE 48746 43453, that carries the A659 (formerly the A64 main York to Leeds road) over the River Wharfe in the centre of Tadcaster. The A64 now bypasses Tadcaster to the south, but the old bridge is still an essential river-crossing for local inhabitants who otherwise have to make a journey of around 14km to travel by car between the two sides of the river. Tadcaster forms part of the modern administrative county of North Yorkshire, but until 1974 the town lay within the historic West Riding. The bridge is listed at Grade II (NHLE 1132471).

On the night of 29 December 2015, part of its upstream side collapsed into the river which was heavily swollen in consequence of record rainfall amounts deposited across much of northern England by Storm Eva a few days previously. Investigations have revealed a void of up to 6 metres under the historic bridge (*York Press* 2016a). A temporary bailey bridge downstream of the historic bridge opened to foot traffic on 12 February 2016 (*York Press* 2016b).

The purpose of the present report is to inform the necessary repair work by providing a more detailed understanding of the history and significance of the bridge structure and fabric than that provided by the existing listing description. The report has been researched and compiled by Historic England's Assessment Team North, based in York, at the request of Neil Redfern, Principal Inspector of Ancient Monuments within Historic England's Planning Group, Yorkshire. It has been informed by documentary research comprising a combination of Historic England's in-house and on-line resources and selected original records curated by the West Yorkshire Archive Service (WYAS) at Wakefield, the Borthwick Institute and City of York Archives (CYA), as well as a visit to inspect and investigate the bridge itself.

This version of the report is a revised document incorporating new documentary evidence brought to the authors' attention by Peter Cross Rudkin of the International Bridges Group and John Firth of the Tadcaster Historical Society in June 2016. It revises and replaces the original internal report issued in February 2016 which had limited circulation only.

2. DESCRIPTION

Tadcaster Bridge is oriented across the river north-east to south-west [Figure 1], but is described in this report as if aligned due east-west; this makes more visual sense than continuing with the north-south description in the earliest detailed account of it that dates from 1752 (WYAS QD1/461). For the purposes of this report the arches have also been numbered nos. 1-9 from east to west [Figure 2]. No access was possible to the deck of the bridge at time of investigation.

The bridge is essentially two structures of different date, built side by side. Contrary to the present list description (NHLE 1132471), it is the bridge on the downstream side that is earliest. Documentary evidence (section 3 below) suggests it was built in 1698-9 replacing an earlier bridge on the same site that had been recently swept away by flood. The deck of the 1698 bridge was then raised and its west end widened slightly (probably in 1736 and 1753 respectively), before a second bridge was built alongside it upstream in 1791-2, effectively doubling the width of the river crossing.

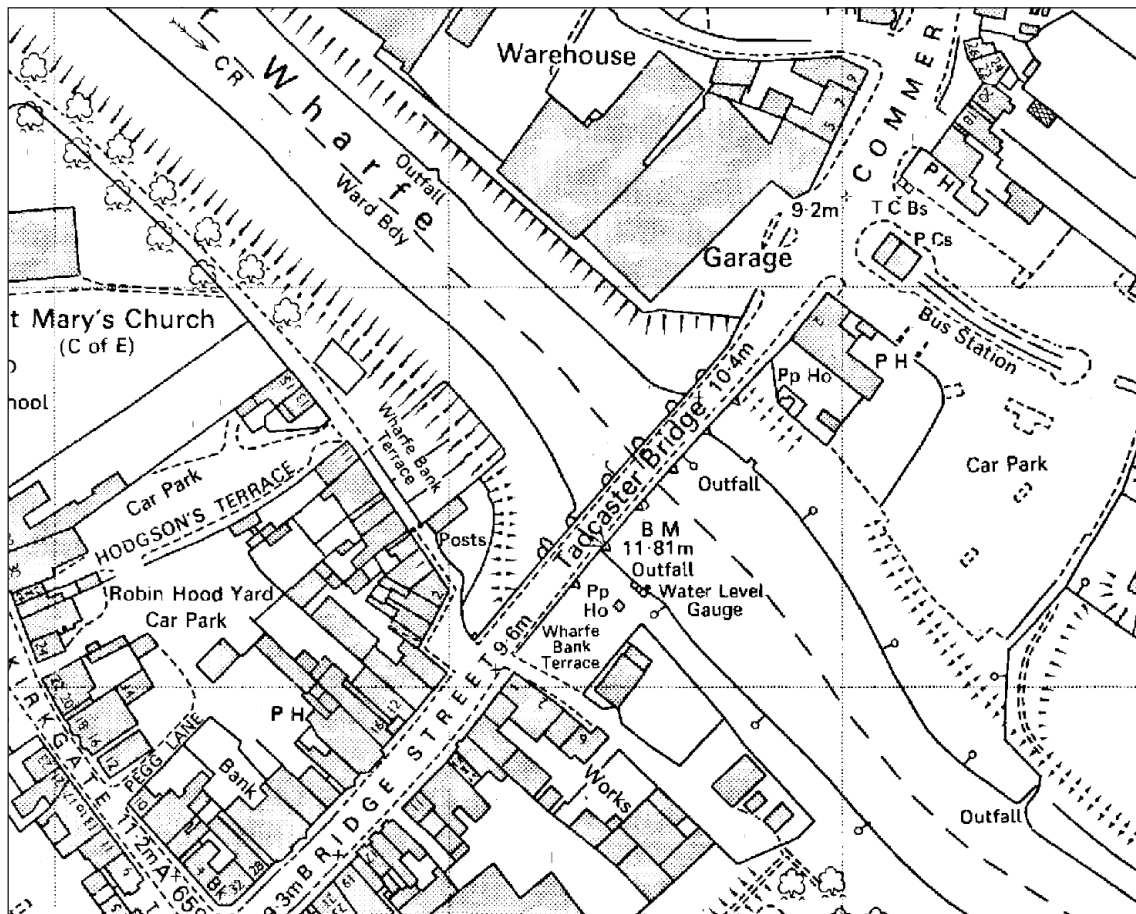


Figure 1. Extract from the 1985 Ordnance Survey 1:2500 map, showing the location and orientation of the bridge from north-east to south-west. The river Wharfe flows from north-west to south-east; the historic centre of Tadcaster lies on the south-western bank and the road to York on the north-eastern bank. (© Crown Copyright and database rights 2016. OS 100024900).

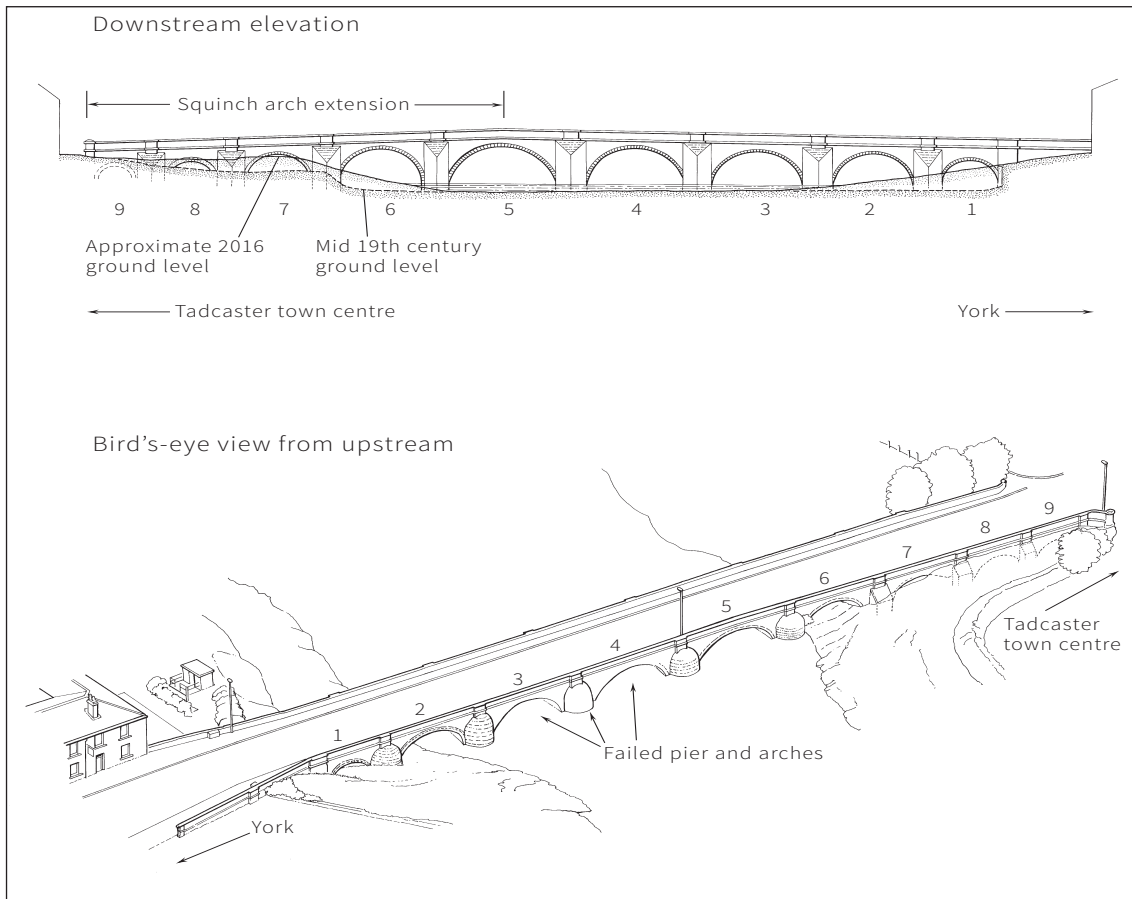


Figure 2: Schematic drawings of the downstream and upstream elevations of Tadcaster Bridge, showing the numbering of the arches as used in this report. For ease of discussion, the Tadcaster side of the Wharfe is referred to here as the 'western' bank and the York side as the 'eastern bank', with the later (1791) upstream elevation of the bridge becoming the 'northern' side and the earlier (1698) downstream elevation the 'southern' side. (D0039810 © Historic England/Allan T. Adams).

The 1698 bridge

The 1698 bridge [Figure 3] consists of nine segmental arches, approached at either end by short causeways. Before the recent collapse, only the downstream elevation of this bridge was visible because of the later widening built directly against its upstream side. It appears to be constructed entirely in finely tooled ashlar quarried from the local Magnesian limestone which is distinctively fine-grained and creamy in colour. The blocks are well-laid, extremely finely jointed, exhibit minimal weathering and apart from root damage on the cutwaters show almost no movement or subsidence.

Numbered from east to west, then, only arches 3, 4 and 5 now span the river when in normal flow, the remainder being mostly (arches 1, 2, 6 and 7) or wholly (arches 8 and 9) choked by silt or buried in the river banks [Figures 2 and 3]. The bridge has angled cutwaters with sloping tops that are bonded into, and integral with, the downstream face of each of the eight intervening piers. This suggests that when the bridge was first built the active river channel was wider and water flowed beneath

all nine arches – at least in times of flood. The spans of the arches could not be reliably measured when visited because of the level of water and silt, but appear to vary across the structure; this observation is confirmed by the span dimensions recorded on a plan of 1752 (WYAS QD1/461). The width of the bridge also seems to vary slightly, but centres around 5.25m (17 feet 4 inches) between the arch rings. The same 1752 plan describes the bridge that then existed as measuring 18 feet across.

The voussoirs in each arch ring have a small chamfer to their lower edge and are surmounted by an archivolt (an ornamental moulding or band that follows the curve on the underside of an arch). The archivolt splays outwards and upwards, echoing and emphasising the chamfer in the arch rings [Figures 4 and 5]. The spandrels are laid flush with the upper edge of the archivolt and are filled by blocks of stone laid in courses. Original arch rings and spandrels are now only visible in arches 1 to 4 and the eastern half of arch 5; the remaining arches are obscured by a squinch arch that springs from the crown of arch 5 and marks the start of a narrow downstream extension or widening of the western end of the bridge only. This is described in more detail below. Finely carved corbels comprising a roll moulding above a shield-like device, which survive immediately above the archivolt in the crown of arches 1 and 3, must be decorative only and are presumably in lieu of keystones [Figure 4]. Arch 2 has – slightly off-centre – a stone of the correct dimensions which appears to have been hacked back, but this could be a coincidence; much of the stonework in this area has been disturbed. Similar examples may once have existed above every arch and presumably on both elevations but been lost to later remodelling; they may originally have been painted with heraldic devices.

Above the downstream elevation of the three easternmost arches are the intermittent traces of a narrow string course. This is traceable rising at a shallow angle from arch 1 towards the crown of arch 5 at the centre of the bridge. A single course of Magnesian ashlar that survives above the string course over arch 1 presumably represents the start of the original parapet, but this is now truncated by a second string course, laid closer to the horizontal and consisting of more massive limestone blocks of a different colour and texture; this progressively cuts into the earlier string course with the result that the latter has been completely removed above arches 4 and 5. This shows that the original bridge deck was considerably more ramped than at present, and at some time has been levelled out by raising the height of the approach causeways and lowering the height of the deck over the central arches [Figure 5]. Documentary evidence indicating that this raising and levelling dates to 1736 is presented in section 3 below. It is conceivable that, from casual inspection, the existence of this early string course could be mistaken as evidence of lateral movement in the stonework, possibly consequent on the recent flood, but considered analysis makes it clear that it is a deliberate constructional device and an integral part of the design of the 1698 bridge [Figure 6]. The fact that the sloping tops of the cutwaters appear to be aligned to the height of this early string course is additional evidence in support of the latter as an *in-situ* feature. The existing parapets are a later feature described in more detail as part of the discussion of the 1791 widening below.



Figure 3: The downstream arches 2 to 5 (from right to left) of the 1698 bridge, showing the problems of silting in arch 2. (AF00398015 © Historic England/Lucy Jessop).



Figure 4: Detail of the downstream arch ring and archivolt of arch 1, showing also the corbel over the crown and the early string course rising at an angle above it. (AF00398021 © Historic England/Lucy Jessop).



Figure 5: The downstream elevation of arch 1, showing the string course and lowest course of the parapet as built in 1698 surviving below the present heightened deck level. (AF00398011 © Historic England/Lucy Jessop).



Figure 6: View westwards along the downstream elevation of arch 2. The oversailing course of ashlar immediately above the archivolt is not displaced or bulging stonework, but the remains of the original string course superseded by a new, higher, string course when the deck was raised and flattened out. (AF00398024 © Historic England/Lucy Jessop).



Figure 7: View of the squinch arch springing from the crown of arch 5 on the downstream side of the bridge. Note the difference in the form of the arch rings: the extension associated with the squinch arch has effectively refaced the western spandrel of arch 5 and all subsequent arches in the western half of the bridge. Note also the difference in the colour of the parapet's stonework. (AF00398018 © Historic England/Lucy Jessop).

A squinch arch [Figure 7] springs from the crown of arch 5 in the centre of the bridge, and marks the start of a narrow downstream widening or extension of the western end of the bridge only. This extension appears to increase progressively in width towards the west: from nothing at the crown of arch 5 to 1.15m wide in the western intrados of arch 6 [Figure 8]. Silting prevented measurements being taken in arches 7, 8 and 9. The likelihood is that the extension represents an attempt to ease exit off the bridge in relation to the south-eastern street frontage in Bridge Street which leads away from the western end of the bridge. The extension is clearly built around and encapsulates the cutwater that stands against pier 5, which appears 'narrower' than the others in consequence. The dating of the extension is uncertain from field evidence. The style and lithology of the stone used to construct it appears very similar to, if not exactly the same as, that used for the 1791 widening upstream. Against the idea of the two widening events being contemporary, however, is the evidence of masons' marks: the only marks noted on the masonry of the squinch arch and associated downstream extension are an arrow (->) and vertically conjoined V and W, whereas those on the upstream widening comprise VIIIIX and a capital I with serifs and additional horizontal bar mid-stroke.

The original triangular cutwaters remain, with the possible exception of that between arches 6 and 7 which appears to have been removed and then rebuilt in a slightly different fashion when the extension was carried out.

The 1791 bridge

The upstream widening of 1791 mirrors the general plan of the 1698 bridge; in other words, it has nine segmental arches [Figure 9]. Decorative treatment and stone type, however, differ markedly from the earlier structure. The build quality of the 1791 bridge is also not as good, being typically much less finely jointed with wide mortar beds between individual stones. The span of each arch is identical to its downstream counterpart, although where close inspection was possible – of arches 1, 2, 6 and 7 – the crown appears slightly higher, indicating perhaps that the arches are more truly segmental. The voussoirs are plain rectangular blocks without chamfers and there is no archivolt above them. In addition, the visible cutwaters are rounded in a heavy, bull-nosed fashion with the exception of that against pier 6, which although partly buried in silt, appears more rectangular and to have an angled top akin to those in the original structure [Figure 9]. If cutwaters exist against piers 7 and 8 they are now completely obscured and their form is unknown. The apparent absence or difference in the form of the cutwaters at the western end of the bridge may be an indication that arches 6, 7, 8 and 9 were already heavily silted when the new bridge was built and that functioning cutwaters against these piers were unnecessary.

It was pier 3 of the 1791 bridge and its associated cutwater that collapsed in the recent floods, bringing down the adjacent arches 3 and 4 [Figure 10]. No close inspection of the flood-damaged section of the bridge was possible, but from a distance it appears that it is only the 1791 widening that has been affected: no



Figure 8: The intrados of arch 6, showing the 1698 bridge (centre) flanked by the new arches for (right) the downstream extension and (left) the 1791 upstream widening. (AF00398057 © Historic England/Lucy Jessop).



Figure 9: The 1791 upstream widening, with its vast, cylindrical, bull-nosed cutwaters. Note the different form of the cutwater against pier 6 (right of frame). (AF00398046 © Historic England/Lucy Jessop).



Figure 10: View of the collapsed (upstream) pier 3 of the 1791 bridge. Note the arch ring, archivolt, spandrel-facing and exposed scar of the removed cutwater of the exposed 1698 bridge behind, with arches 3 and 4 all apparently undamaged. (AF00398043 © Historic England/Lucy Jessop).

cracks or subsidence are readily apparent in the arch rings, archivolt, or spandrel facing-stones of the upstream elevation of the 1698 bridge now exposed behind the collapse. The scar of the original upstream cutwater (removed when the bridge was widened so as to be able to build the new bridge directly against the old) is also visible, and likewise exhibits no obvious signs of bulging or collapse. Close inspection by qualified structural surveyors is needed to confirm or refute this suggestion, however.

From deck level upwards, both elevations of the bridge appear identical, suggesting that the parapets are coeval with each other and probably contemporaneous with the 1791 widening (although they could be later). A near-horizontal string course divides the spandrels from the parapet which consists of three courses of ashlar blocks surmounted by ridged coping, all in the same, yellow, shelly limestone. Shallow pilaster strips rise from the tops of the cutwaters and continue up through the parapet, surmounted by caps rising slightly above the level of the adjoining coping stones and distinguished from them by the addition of an external rectangular moulding. At the western end of the bridge both parapets curve out as short wing walls and end in drum piers with domed caps rising in two stages. Historic map evidence shows that as late as the mid-19th century a drum pier also existed at the end of the northern wing wall on the York side of the river, but this is now missing - probably removed to improve access to what is now a garage forecourt (WYAS QD3/23). The same map shows the southern wing wall on the York side terminating, as it does today, against the corner of a building (now the Britannia Inn).

3. DOCUMENTARY AND HISTORICAL EVIDENCE

Tadcaster Bridge is an historic crossing point of the Wharfe. There is likely to have been a bridge at Tadcaster in the Roman period, although the alignment of presumed Roman roads in the area points to a crossing located circa 200m north of the present bridge in the area of Tadcaster Castle. The castle mound lies to the north of St Mary's church on the south-western bank of the river.

There were also one or more medieval bridges on or near the present site at or soon after the time when Tadcaster Castle was built in the late 11th century. Jervoise (1973, 99) states that five grants of pontage (a toll for the building or repair of bridges) were issued between 1346 and 1400, and that several 16th-century wills left money to maintain Tadcaster Bridge. John Leland recorded in about 1538 that 'Tadcaster standith on the hither Ripe [bank] of Warfe Ryver. And is a good thorough fare', while the 'Bridge at Tadcaster over Warfe hath 8. faire Arches of Stone' (Hearne 1745, 44). This shows that the bridge in the 1530s was already substantial, constructed of stone and probably of comparable scale to the extant 1698 structure.

The bridge at Tadcaster was always of strategic importance. It was reportedly the goal of Lancastrian soldiers fleeing from the nearby battle of Towton in 1461 (Sheahan and Whellan 1857, 161). In July 1508, Princess Margaret, daughter of Henry VII, was met at Tadcaster Bridge on her way into York, a stop on her journey to Scotland to marry its king, James IV (*ibid*, 178-9). Her descendant James VI of Scotland and I of England is recorded as having crossed Tadcaster Bridge in 1603 on his journey from Edinburgh to London via York to take up the English crown; he did the same on his progress to Scotland in 1617 (*ibid*, 215-16). His son, Charles I, was also met on Tadcaster Bridge for his visit to Scotland via York in 1633, and again in 1639 (*ibid*, 222-4). In all of these royal visits, Tadcaster Bridge was the ceremonial meeting place between the royal party and the Sheriffs of the City of York, as the middle of the bridge marked the boundary of the Ainsty (a rural area, originally a separate wapentake of the West Riding, but between 1449 and 1836 under the control of the City Corporation) and thus the start of the Sheriffs' jurisdiction.

At the end of the sixteenth century Camden (1587, 468) wrote that:

*Tertium Tadcaster est, quod vetustum nomen, vetusti castris aream,
& recentem pontem tantummodo iacet, quem cum Wharfus subierit,
iam sedatior Ousae suas aquas placide confundit.*

This translates as:

Tadcaster is the third [town, after Otley and Wetherby, discussed by Camden previously], which is an old name for the area of the ancient castle, and only recently a bridge has been thrown across; once the Wharfe flows under it, it now becomes more gentle and mixes its placid waters with the Ouse. ¹

This suggests that the bridge that Camden saw was considered to be recent in 1587. It is therefore unlikely to be the same as that witnessed by Leland some half-century earlier. In the 1607 (Latin) edition of *Britannia* and the first English translation of that edition in 1610 by Philemon Holland, Camden continued to state that the bridge was recently built, but added that it was constructed out of the remains of the castle (Camden 1607, 569; www.visionofbritain.org.uk/travellers/Camden/25):

...& vetusti castris area supersunt, è cuius reliquiis non ante multos annos pons erat constructus, quem cum Wherfus subierit, iam sedatior aquas suas Ousae confundit.

...the plot also where an old castle stood yet remaining, out of the reliques whereof not many yeeres agoe was a bridge built, which when Wherfe is once passed under, he becometh more still, and so gently intermingleth his water with Ouse...

The differences in the summer and winter height of the Wharfe at Tadcaster were also noted in the 1607 edition of *Britannia*, which quoted two couplets from 'Itinerarium T. Edes'. The first (Camden 1607, 564) reads :

*Nil Tadcaster habet Musis vel carmine dignum,
Prater magnificè structum sine flumine pontem*

Which translates as (Combe 1785, 86):

The Muse in Tadcaster can find no Theme
But a most noble Bridge without a Stream.

The author of the couplet was probably Dr Richard Eades, Eedes or Edes, Dean of Worcester (1555-1604). When Edes returned in winter, he wrote (Camden 1607, 564):

*Quae Tadcaster erat sine flumine plena,
Nunc habet immensum fluvium, et pro pulvere lutum*

The translation of which is (Combe 1785, 86):

The Verse before on Tadcaster was just,
But now great Floods we see, and Dirt for Dust.

It is no surprise, then, to find the Wharfe at Tadcaster today to be dry and silted in the summer and in vast spate in the winter. The design of the extant bridge with its multiple arches and flood arches attests to this.

The late sixteenth-century bridge recorded by Camden is presumably that depicted on an early large-scale map of Tadcaster produced for the Earl of Northumberland in 1611 (WSRO PHA 3422). The map portrays houses and bridge in perspective view, as is normal for the period, but since the drawn elevations of the bridge show it having three arches only they are perhaps best regarded as schematic. Camden's bridge would also seem to be the same as that for which repairs were authorised at intervals through the seventeenth century by the West Riding's Justices of the Peace, sitting at Quarter Sessions.

In the West Riding, the Quarter Session rolls survive from the 1630s onwards. Research for the present report has not examined all the rolls themselves in detail, instead concentrating on lists derived from them which summarise the Justices' adjudications in relation to the county's bridges, compiled at various times in the nineteenth century. In two such lists (WYAS QD1/706 and 707), the earliest reference to Tadcaster Bridge comes in April 1642 when 'Tadcastle Bridge' is said to be in 'greate ruine and decay'; expenditure of £120 was authorised to repair it (WYAS QS10/1). The state of the bridge at the time of the Battle of Tadcaster (sometimes known as Tadcaster Bridge) on 7 December 1642 is unknown, an event at which Royalist forces captured both castle and town, but the West Riding Justices authorised a further £35 for repairs in 1684/5 (WYAS QS10/8, f115v and f164r). Neither entry makes any mention of what materials were required to effect the repairs, but expenditure of this magnitude is in concordance with Camden's reference to the bridge being constructed 'out of the reliques' of the castle – that is, of stone, not timber.

The late sixteenth-century stone bridge endured for over a century. It was replaced, however, in its entirety in the late 1690s having been 'lately driven downe & ruined by a flood' (CYA Y/ORD/5/2/1). In the April Quarter Sessions of 1698, held at Pontefract, the West Riding Justices estreated £1000 'for rebuilding', with a further £144 granted to finish the work a year later at the April 1699 Sessions (WYAS QD1/707, 400). However, the West Riding was only responsible for the western half of the bridge. The eastern half was the responsibility of the Ainsty Justices, and the Court Books of the City of York's Quarter Sessions duly record that in the course of 1698 and 1699 sums totalling £1,630 were ordered for rebuilding Tadcaster Bridge, making a combined spend of £2774 on the part of both authorities.²

That this was a complete rebuilding rather than substantial repairs is confirmed by Daniel Defoe (<http://www.visionofbritain.org.uk/travellers/Defoe/33>), who claimed that he would be the last author to see Tadcaster without a bridge:

...here was no bridge at all; but perhaps no writer after me will ever be able to say the like; for the case was this, the antient famous bridge, which, I suppose, had stood several hundred years, being defective, was just pull'd down, and the foundation of a new bridge, was laid, or rather begun to be laid, or was laying; and we were obliged to go over the river in a ferry boat; but coming that way since, I saw the new bridge finished, and very magnificent indeed it is.

The first edition of Defoe's description appeared in Letter IX in the third volume of his *Tour* published in 1727 but it is widely accepted that, although the journeys were purported to have been undertaken in 1720, Defoe frequently included descriptions from earlier travels. One commentator (Bastian 1981, 214) mentions that Defoe had been in Edinburgh in the summer of 1698, and goes on to presume that Defoe saw the rebuilding of Tadcaster Bridge as he journeyed back to London.

The building of a new bridge in the 1690s is also confirmed by a later witness, Francis Drake (Drake 1736, 389), who wrote that the

‘present noble bridge, one of the best in a county remarkable for stone bridges, was built about forty years ago, by a general tax on 3 d per pound, laid by act of parliament on all lands, &c. in the city, Ainsty, and county at large’.

Drake’s testimony sits well with Defoe’s recollections, although no appropriate Act of Parliament has yet been identified.

1736 is also the year in which the summary lists of adjudications on Tadcaster Bridge by the West Riding Justices include an entry authorising ‘the west side [of the new bridge] to be raised’ (WYAS QD1/707, f401). Although no comparable entry has been located in the York Quarter Sessions, this would seem to be the context for the raising work identified in the fabric of the 1698 bridge, albeit now only directly visible in the downstream elevation of the eastern end because of the later squinch arch and extension that obscures the western end.

In 1752 John Watson and Robert Carr were employed to draw plans and elevations of all bridges whose upkeep was the responsibility of the West Riding, and the resultant ‘Bridges Book’ duly contains drawings of Tadcaster Bridge. The accompanying index describes the bridge as ‘a good hewn Stone Bridge, paved, consisting of seven whole and two half Arches, and the Piers of it framed, as in the annexed Plan... and in Breadth 18 Feet’ (WYAS QD1/461). The reference to seven and two half arches is obscure, though ‘half arches’ probably means arches 8 and 9 which the elevation shows as standing out of the bed of the river; presumably they were designed to function as flood arches only. Together, the elevation and plan [Figure 11] clearly depict a somewhat humpbacked bridge of nine arches of varying heights and spans approached by causeways and with timber setting (that is, timber frameworks retaining piled stone, intended to protect against scour of the river bed and undermining of the bridge foundations) around the base of the western abutment and piers 5 to 8. The elevation depicts the upstream side of the bridge (now obscured by the 1791 widening), and clearly shows angled cutwaters with sloping tops, a low parapet and moulding over each of the arches. These features are identical to those still visible on the eastern half of the extant downstream elevation (that is, those unencumbered by the squinch arch and associated extension) confirming that what survives today is the 1698 bridge. It is strange, however, that the documented raising of the western end of the bridge appears not to be depicted. It is possible that Watson and Carr copied a pre-1736 elevation of the bridge into their book, rather than drawing it as it was in 1752.

On 1 May 1753 the West Riding Justices granted permission to one Robert Fretwell of Potterton

‘to alter the Road on the south side of the West end of Tadcaster Bridge so as to make the Slope or Descent of the same more easily passable for carriages in such or the like manner as he hath already altered the Road on the north side of the said west end of the said Bridge’ (WYAS QS10/21).

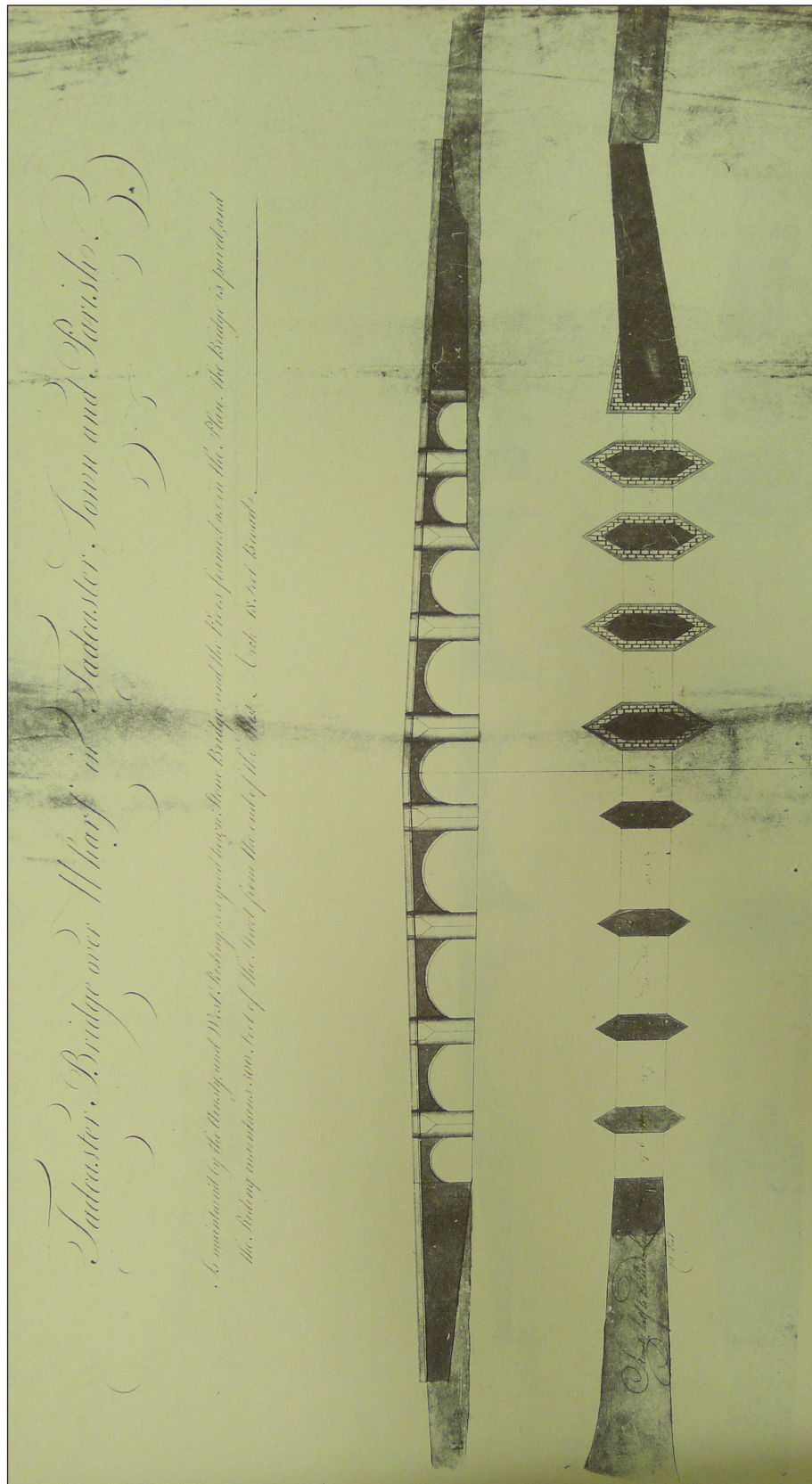


Figure 11: Plan and upstream elevation of Tadcaster Bridge as depicted in the 1752 West Riding Bridges Book. Arch 1 is to the left. (WYAS QD1/461. Reproduced by permission of West Yorkshire Archive Service, Wakefield, copyright reserved).

Although what exactly the Justices were authorising here is opaque, it does seem to be the most likely context for the partial widening still apparent today in the west end of the downstream elevation of the 1698 bridge. It seems that similar work had already taken place on the north side, but if so this will have been removed - or is masked - by the 1791 widening.

Tadcaster Bridge was widened in the late 18th century, as stated in a list laid before the West Riding Quarter Sessions in 1797 of all bridges rebuilt or widened in the county over the preceding 40 years. This includes Tadcaster Bridge which is stated as having been 'widened' at a cost of £1430 (WYAS QD3/7). In fact, the widening of the bridge was carried out in 1791-2: in April 1790 it was recorded in the Quarter Sessions records that the West Riding's part was to be widened to 30 feet and the Ainsty was to be asked to do the same to their half, both sharing the cost (WYAS QD1/707, f401). The first mention of the widening in the records of the City of York Quarter Sessions came in January 1791, when it was stated that

...it would be of great Public Utility to have the Bridge over the River Wharf at Tadcaster widened and made more safe and commodious for Carriages and Passengers... (CYA Y/ORD/5/2/1)

At the time, John Carr of York was Surveyor of Bridges to the North Riding, with John Gott his equivalent in the West Riding. Both Pevsner and Cross-Rudkin (Leach & Pevsner 2009, 731; Skempton *et al* 2002, 118) credit the design of the upstream widening to Carr, probably based on Wragg's (2000, 209) interpretation of newspaper advertisements letting the construction of the widening of the bridge (discussed below). Colvin (2008, 221-9), however, does not ascribe Tadcaster Bridge to Carr.

A Leeds newspaper advertisement dated 13 September 1791 states that potential contractors for the widening of Tadcaster Bridge could see the design at Mr Backhouse's at the White Horse in Tadcaster, and then should submit their estimates for the Ainsty part to Carr in York and for the West Riding part to Gott in Leeds by 12 October 1791 (*Leeds Intelligencer* 1791). A similar advertisement dated 20 September 1791 was placed in a York newspaper (and repeated in the same paper on 27 September and 4 October), the only difference being that it stated that 'Plans of the Addition to the said Bridge may in the meantime be seen by applying at Mr. Carr's Office in York, or to Mr. Backhouse in Tadcaster' (*York Courant* 1791). Further evidence of Carr's involvement comes from an order by the City of York in May 1791 (CYA Y/ORD/5/2/1, f244r) that 'John Carr Esquire shall be employed and paid as Architect to prepare Plans and Directions for and superintend the alterations of the said Bridge'. This is not, however, strong enough evidence to claim the design of the widening for Carr: as each authority contracted, paid for and supervised the construction of their own half of the bridge, a set of drawings would also be prepared by each surveyor even though only one design concept could be used for the elevation. It remains unclear from the documentary evidence which of the two was responsible for the actual design.

Certainly, the upstream widening of 1791-2 does not have the finesse or sophistication of design or stonework that is found in many of Carr's bridges, notably his tour-de-force at Ferrybridge (designed 1797 and completed in 1804). Peter Cross-Rudkin (*in litt*) considers the widening's closest comparator to be Bubwith Bridge over the River Derwent in the East Riding of Yorkshire; certainly, both bridges share the semi-cylindrical bull-nosed cutwaters and the large mortar joints in the stonework. A newspaper advertisement for builders to undertake the new stone bridge at Bubwith in June 1793 stated that

'A Plan and Dimensions of the intended Bridge to be seen in the mean Time by applying to Mr. Langstaff, in Bubwith aforesaid, of Mr. William Gott, Engineer, at Burley, near Leeds' (*Leeds Intelligencer* 1793a).

This strongly suggests that William Gott, nephew of John Gott - and his successor as Surveyor of Bridges for the West Riding in August of that year (*Leeds Intelligencer* 1793b) - was the designer of Bubwith. Whether William Gott was also responsible for the design of the widening to Tadcaster Bridge is hard to tell: it was his uncle who at the time was in charge of all work on West Riding bridges, so it is not impossible that at Bubwith William was reusing a design by his uncle.

Further periodic maintenance work on Tadcaster Bridge was carried out in the first half of the 19th century. £133 16s 6d was spent on 'Repairing & drains &c' in 1809; £113 14s 9d on 'Repairing pillars & building wings' in 1842; and two sums of £82 6s 10d and £268 15s on 'Rampart Walls' (or parapets, as we would now call them) in 1843 (WYAS QD3/10 and 11).

From at least the middle of the 19th century, silting was an increasing problem. The earliest Ordnance Survey (OS) 6-inch mapping of Tadcaster depicts an island in the middle of the river immediately downstream of the bridge (Ordnance Survey 1849). A plan and elevation of Tadcaster Bridge [Figure 12], undated but calendared at Wakefield as mid-19th century (WYAS QD3/23), similarly portrays a couple of small islets on the downstream side of the bridge mid-channel (the drawn flow arrows point in the wrong direction). It also shows the river flowing under arches 1-6 only, arches 7-9 at the south end of the bridge being half- or completely silted. Arch 9 is totally blocked and apparently not portrayed on the elevation, although close inspection shows that someone later pencilled in the approximate position of the arch ring.

A presumably broadly contemporary plan, dated 1862 [Figure 13], produced in conjunction with an application to the Justices to pile and so exclude the river from a section of the western foreshore downstream of the blocked arches 7-9, is further evidence of the silted state of the river at this time. Bernard Hartley III, the then West Riding Surveyor of Bridges, seems to have accepted the plaintiff's conjecture that the taking in of the foreshore would present no obstruction to the flow of the river at time of flood, on account of the already choked nature of the westernmost arches (WYAS QD3/330). The intention seems to have been to enclose and build up the foreshore, possibly to form an extension to the adjacent New Crane Wharf. The first edition OS 25-inch map shows the intake developed by 1893, together with the

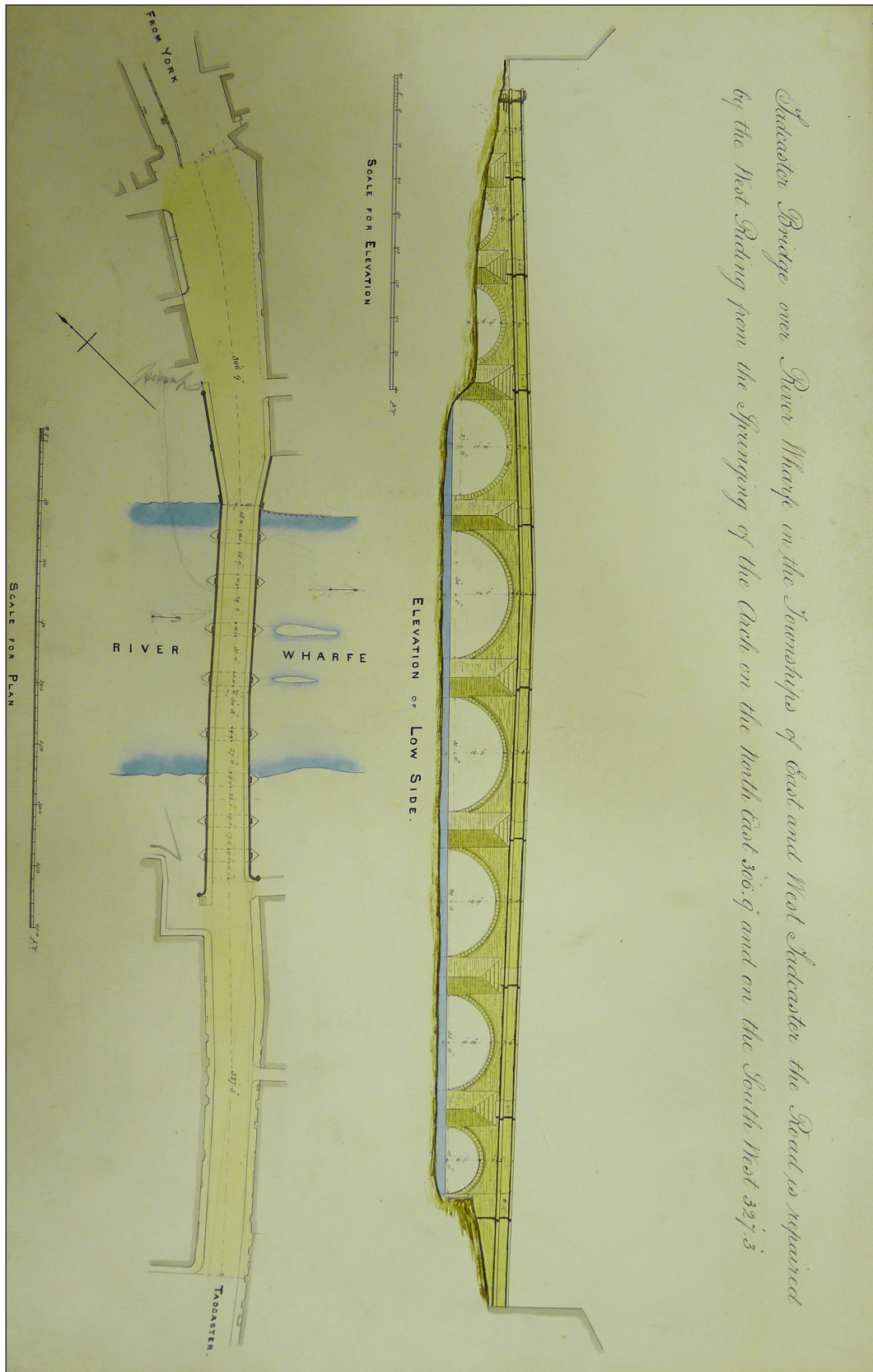


Figure 12: Plan and downstream elevation of Tadcaster Bridge as depicted in the undated but circa mid-19th century Bridges Book number 4. Arch 1 is to the right on the elevation and to the left on the plan. (WYAS QD3/23. Reproduced by permission of West Yorkshire Archive Service, Wakefield, copyright reserved).

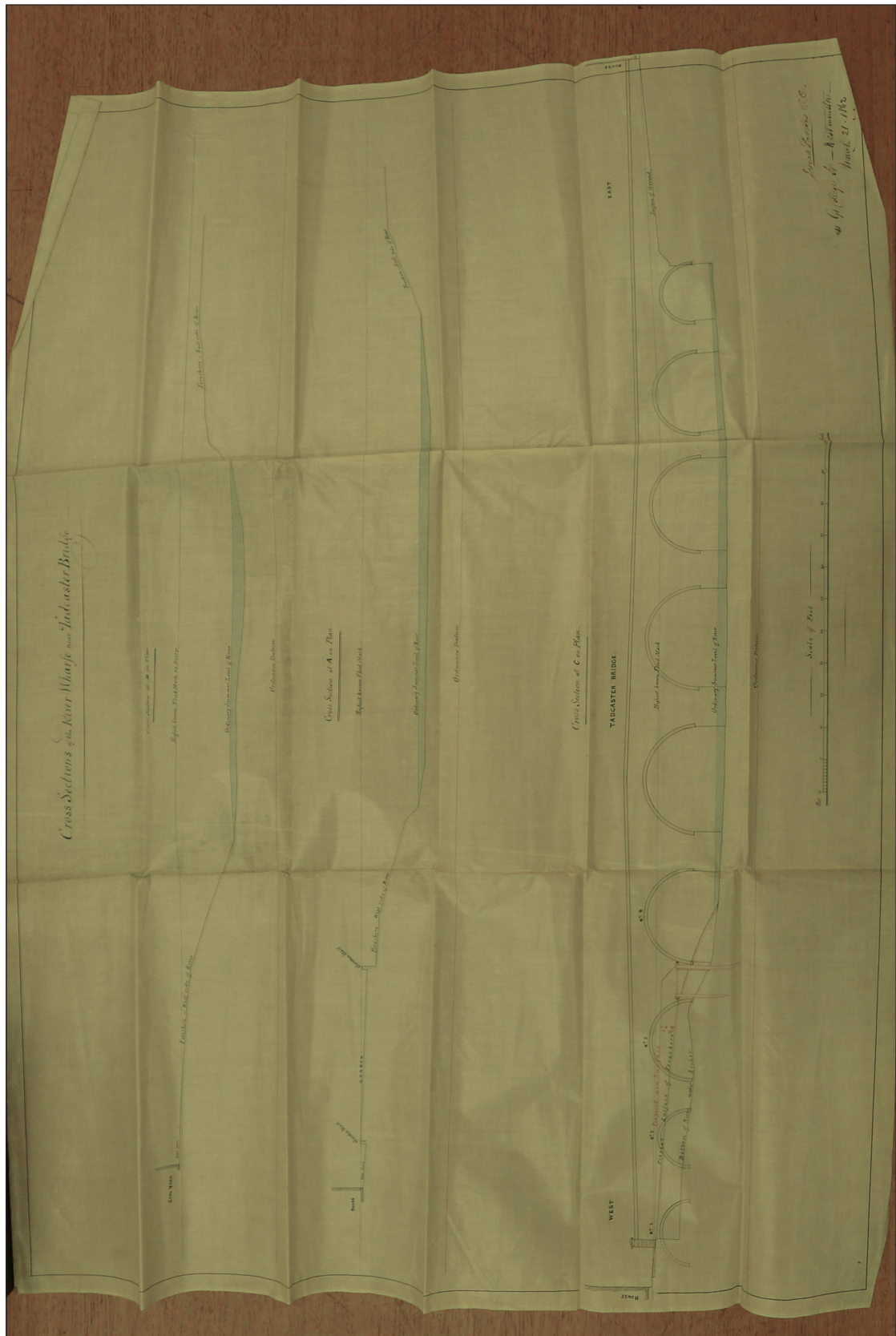


Figure 13: Sections and downstream elevation of the bridge as depicted in 1862. Arch 1 is to the right. (WYAS QD3/330. Reproduced by permission of West Yorkshire Archive Service, Wakefield, copyright reserved).

normal flow of the river confined primarily to arches 2-5, arches 1 and 6 both being half-silted (Ordnance Survey 1893).

An Inspection Report on Tadcaster Bridge was produced in 1898 in response to a letter from the West Riding Solicitor's Office flagging up the silted state of the bridge. It states that the downstream islands were increasing in size, and that while the easternmost flood arch (arch 1) was fairly free of silt, of the western four 'flood arches' (arches 6-9) only one was capable of carrying water (WYAS WRD8/4/2/66). The second edition 25-inch map presents a very similar picture a decade later (Ordnance Survey 1909). This is very much the situation at the present day, with the exception that water now flows under arch 1 only at times of extreme flood.

4. SIGNIFICANCE

A key question to come out of the evidence rehearsed above is the date of the extant structure. The current NHLE list description – which states that the bridge is ‘early 18th-century, widened in the 19th century on the downstream side’ (NHLE 1132471) - is clearly inaccurate on all counts and in need of revision. The documentary evidence reviewed here makes it clear that the upstream widening occurred in 1791-2 to a bridge built in 1698. The large sum of money granted to Tadcaster Bridge in 1698-9 points to a complete rebuilding of the bridge at this date. Allied with Defoe’s description, it is clear that little or none of the preceding late 16th-century bridge recorded by Camden can survive, except perhaps in the foundations or reuse of some of the stone.

Stylistically, the 1698 bridge appears rather old-fashioned: segmental arches with chamfering on the edge of the voussoirs and the archivolt above them - as well as the presence of triangular cutwaters with sloping tops – all suggest an earlier date. These features appear (alongside ribs in the intrados of the arches) on medieval bridges at Rothbury, Northumberland, Otley, West Yorkshire, and Felton, over the river Coquet. Close visual comparisons can be drawn between Tadcaster Bridge and Kexby Bridge over the Derwent to the east of York. Listed at Grade II*, Kexby has three segmental arches – each with a smooth intrados without ribs – and three levels of chamfered arch mouldings, as well as triangular cutwaters which do not reach the parapet. The NHLE, following an inscription on the parapet, states that this was built in 1650 for Sir Roger Tresner (NHLE 1309914), although Jervoise (1973, 71) considered that this was already a late date for such features, chamfered arch rings being ‘a very attractive feature seldom seen in bridges built after the sixteenth century. Nearby is Elvington Bridge, with two arch chamfers to each segmental arch, which Jervoise (1973, 72) dates to ‘about 50 years after Kexby Bridge’, making it a close – but rare - comparison to Tadcaster in both date and style. Triangular cutwaters and ribless arches with a pair of arch mouldings – the outer one chamfered – are also found on Ulshaw Bridge over the River Ure in North Yorkshire. Ulshaw Bridge is dated 1674 on a sundial, although considerable money was spent on it throughout the 17th century - £350 in 1623, £120 in 1627, £800 in 1673 and £200 in 1674 (Jervoise 1973, 77-8) - and the main build could be earlier. In conclusion, then, the defining features of the present Tadcaster Bridge’s earliest phase – smooth intrados, triangular cutwaters, segmental arches and chamfered arch mouldings – can be found on many bridges of the north of England built during the 16th and 17th centuries, but most pre-date 1650.

As such, the early downstream part of Tadcaster Bridge is an important addition to the corpus of bridges of the North of England that can be said with reasonable confidence to date to before 1700, and has the potential to help us comprehend better the evolution and currency of certain design elements that are presently poorly understood. It is also both aesthetically pleasing and retains high evidential value: the Magnesian limestone stonework of the bridge is particularly fine, with extremely narrow mortar beds and large blocks of ashlar facing; two (and possibly part of a third) of the original decorative carved stone corbels at the crown of the arches are still present on the downstream elevation, as is the narrow string course which

demonstrates the original gradient of the bridge deck; most of the original triangular cutwaters also remain in place downstream, with the probable exception of one on the west bank; and the arches are decoratively treated with two levels of chamfers. The bridge is also well-documented, mentioned many times in the records of the West Riding of Yorkshire.

The present report has demonstrated that the bridge was widened in 1791, effectively doubling its width. This widening is not of such high quality as the 1698 bridge: there is no moulding or chamfering to the arches and no corbels; the stonework is also laid with much heavier beds of mortar. It is part of this upstream widening that failed during the recent floods. Although the widening has been claimed as the work of the architect John Carr, the present report considers it more likely to be by the hand of either John or William Gott; its lower quality of both design and construction does not fit well with Carr's *oeuvre*.

The present report has also demonstrated that the existence of a bridge at Tadcaster has been key to the existence and history of the town. The Roman settlement and later medieval castle were both situated here due to the ability to cross the river Wharfe at this point, a key route into York. Although the existence of a Roman bridge (on a different site north of the extant bridge) is inferred, that of a bridge in the medieval period is known from documentary sources. Historically, the bridge's position on the border between the West Riding and the Ainsty of York from the late medieval period until the mid-19th century made it a place of ceremonial entry, with monarchs including James I and Charles I greeted there and escorted thence into York. The historical and strategic significance of the bridge is also confirmed by the Civil War battle (probably more of a skirmish) which occurred at its eastern end in December 1642.

5. RECOMMENDATIONS

Despite over three centuries of flood events since it was built, and having been widened in 1791, the 1698 bridge structure (now the downstream portion of the present bridge) survives surprisingly well. In part, this may be because the 1791 upstream widening has served to help protect it from scour of the river bed and undermining of its piers. But the upstream widening has itself withstood scour for over 200 years. Why, then, did scour happen in late 2015, causing the collapse of one pier and two arches of the upstream widening? It is beyond the scope of this report to offer definite reasons for this, but a recent study of the flood threat to historic bridges on the River Aire in Yorkshire (Jecock in prep) is pointing up a number of steps that may be appropriate to reduce the risk of damage to, and in extreme circumstances the complete loss of, bridge structures, without undue compromise to their historical integrity.

The five principal threats to bridges from rivers in spate are scour of the river bed, debris in the water, water velocity, afflux and buoyancy. The first of these has already been described, while debris and water velocity are self-explanatory. Afflux is the technical term for the potential damming effect a bridge may have to the passage of water, causing upstream river levels to rise higher than downstream levels and/or water velocity to increase through it. Buoyancy refers to the uplifting effect high water levels can have on the crown of an arch structure, weakening the ability of that structure to withstand lateral forces.

Of the five, scour of the river bed undermining bridge foundations is undoubtedly the biggest single cause of failure of bridges across water in the United Kingdom. The present report has shown that the river channel at Tadcaster has narrowed markedly since the 1698 bridge and its 1791 widening were constructed, through a combination of natural silting and deliberate land reclamation. Whereas originally the river could flow through nine arches when in spate, for at least the last century and a half, three if not more arches have been allowed progressively to silt up. The re-opening of these blocked arches would allow more water to pass under the bridge, help slow the rate of flow and turbidity of the river around the bridge piers, and thereby presumably reduce the risk of scour.

However, scour may also be caused by obstructions in the river, such as debris caught against bridges or vegetation rooted in the banks nearby. It is therefore important that water channels and banks be kept clear as much as possible of fallen trees and other material that might be incorporated into rivers whether in flood or not, and that when such material gathers against bridges it is cleared as soon as possible.

It is also important that bridges are kept in a good state of general repair. A frequent observation along the Aire has been the presence of small weed trees established in bridge masonry, which raises a question about the frequency of maintenance. At Tadcaster such trees are visibly rooted in the cutwaters of both elevations. It may be apposite here to note, too, that the precursor to the extant 1698 bridge was also destroyed by flood, although there is no specific evidence for whether it was due to the state of repair of the bridge at the time more than the severity of the flood event.

Otherwise, the single biggest step that could be taken to protect Tadcaster Bridge - and other bridges - going forward is the reduction of peak river flows. The most obvious way of doing this is to introduce measures to hold rainfall on the land for longer in the upper river catchment, and so slow the rate of run-off into the river. Whilst this would prolong the duration of any future flood event, it would reduce peak flow levels downstream. Such a step would have the added benefit of also helping to prevent or reduce the flood risk to other structures and properties located in the flood plain.

Finally, given that Tadcaster Bridge is named as being an important element within the Tadcaster Conservation Area (Selby District Council 2005, 124), repair of the bridge, together with any scheme to widen it further, should respect its historic fabric as well as make a positive contribution to the Conservation Area in general.

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7. ENDNOTES

¹ Translation by Lucy Jessop

² CYA Y/ORD/5/2/1, Volume 10: 1689-1702: payments were authorised for Tadcaster Bridge of £300 on 14 January 1698 (f37r); £300 on 24 May 1698 (f40r); £150 on 30 June 1698 (f42r); £300 on 18 August 1698 (f43r); and £580 on 14 February 1699 (f51v).



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