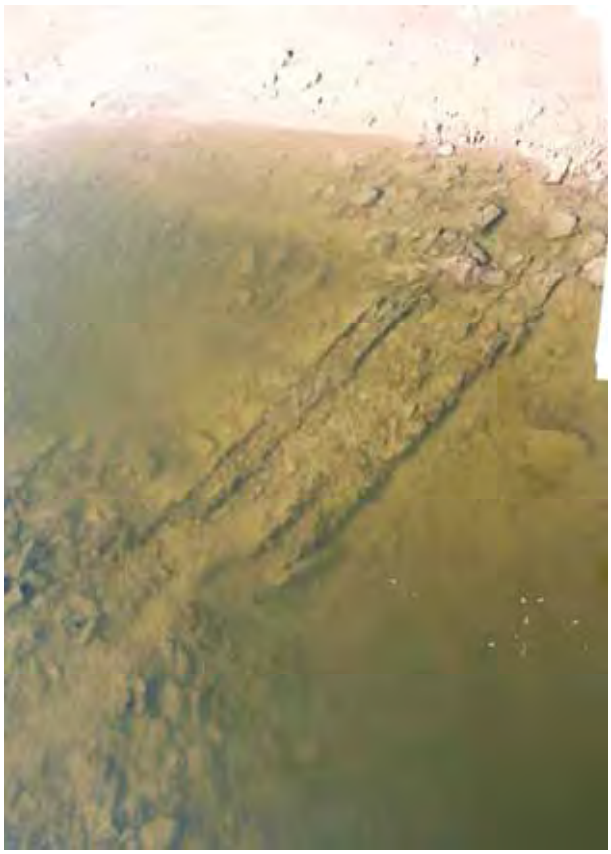

LANCASTER FORD, ST GEORGE'S QUAY, LANCASTER

Archaeological Survey

Oxford Archaeology North

October 2008

Lancashire County Archaeology Service

Issue Number: 2008-09/876
OA North Project No: L9715
NGR: SD 47556 62146

Document Title: **LANCASTER FORD, ST GEORGE'S QUAY, LANCASTER**

Document Type: **Archaeological Survey**

Client Name: **Lancashire County Archaeological Service**

Issue Number: **2008-09/876**
OA Job Number: **L9715**

National Grid Reference: SD 47556 62146

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CONTENTS

SUMMARY

The River Lune flows around, and defines, the northern edge of the historic core of the city of Lancaster, and has been intrinsically linked with its history and development since the Roman period. Despite the position of its southern bank being fixed by the construction of quays from the medieval period, its course, and the navigable channels within it, has shifted gradually over time. Following the opening of the Millennium Footbridge across the river in 2001, a new vantage-point to observe the river bed was created. The bridge was located in the approximate position of both a medieval bridge and a presumed fording point.

It was thus deemed of high potential significance when an apparent trackway, possibly in the position of the fording point, was observed within the river bed in 2006. Oxford Archaeology North (OA North) were commissioned by Lancashire County Archaeology Service (LCAS) to undertake an instrument survey of this feature in July 2006.

The survey revealed two tracks, delineated by rows of vertically-set timber posts, with infilling between, patches of which comprised a highly-indurated, concrete-like material. The survey also identified *in situ* remains of a cutwater, associated with a late-medieval bridge, the position of which had previously been somewhat conjectural, and is a discovery of significant local importance.

Following discussion with LCAS, timber samples from the trackway were taken, in January 2007, and subjected to both dendrochronological analysis and radiocarbon dating. The results of both analyses confirmed that the trackway was of post-medieval date. Given the constructional quality of the feature, and its position, it is conjectured that it related to the clearance of debris following the collapse of the late medieval bridge in the late eighteenth / early nineteenth centuries.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Peter Isles of Lancashire County Archaeology Service for commissioning and supporting the project. Further thanks are due to Ian Tyers, for his rapid, and most helpful dendrochronological assessment and advice, and the Scottish Universities Environmental Research Centre, for undertaking the radiocarbon dating.

Chris Wild and Peter Schofield carried out the survey, and the timber sampling. Elizabeth Huckerby co-ordinated the timber sampling. Chris Wild wrote the report and produced the illustrations. Jamie Quartermaine managed the project and also edited the report.

1. INTRODUCTION

1.1 PROJECT BACKGROUND

1.1.1 Oxford Archaeology North (OA North) was commissioned by Lancashire County Archaeology Service (LCAS) to undertake an instrument survey of a wooden structure, set into the bed of the River Lune at the eastern end of St George's Quay, Lancaster (NGR SD 47556 62146), in July 2006. The structure comprises two parallel lines of wooden uprights and a platform between, and it was provisionally interpreted as a ford.

1.1.2 The feature is within the tidal zone of the River Lune (Fig 1), and permanently below the water level, which typically rises by over 8m at spring tides. As a result, the feature is usually concealed, most commonly by the murky nature of the river, which carries large quantities of silts down the Lune Valley, from the high rainfall catchment of the western Yorkshire Dales and the northern Bowland Fells. Deposits of these silts within the river channel also regularly conceal the feature, even at the lowest tides.

1.1.3 Whilst there is some suggestion that the feature had been observed prior to the construction of the Lune Millennium Bridge between 1999 and 2001, it became clearly visible from the deck of the new structure, which was opened in February 2001. It is somewhat remarkable that the feature survived this construction, as a temporary trestle inserted to support the deck of the northern end of the bridge lies only a few metres away from the most visible part of the feature, and machinery associated with both erection of this trestle and the bridge itself at times sat directly on the feature. Groundworks associated with the bridge led to the deposition of large quantities of material on the river bed in this area, and it appears that the feature only began to become visible from this new vantage point in 2006.

1.1.4 Following the survey, OA North was given a verbal brief to obtain samples of a timber forming part of the trackway feature. This was undertaken in January 2007, with two samples obtained from one timber; one was assessed for dendrochronological potential, the other for radiocarbon dating.

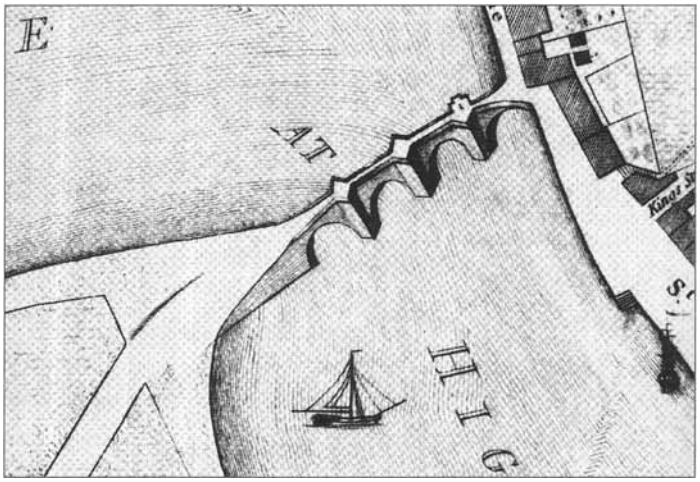
2. BACKGROUND

2.1 HISTORICAL BACKGROUND

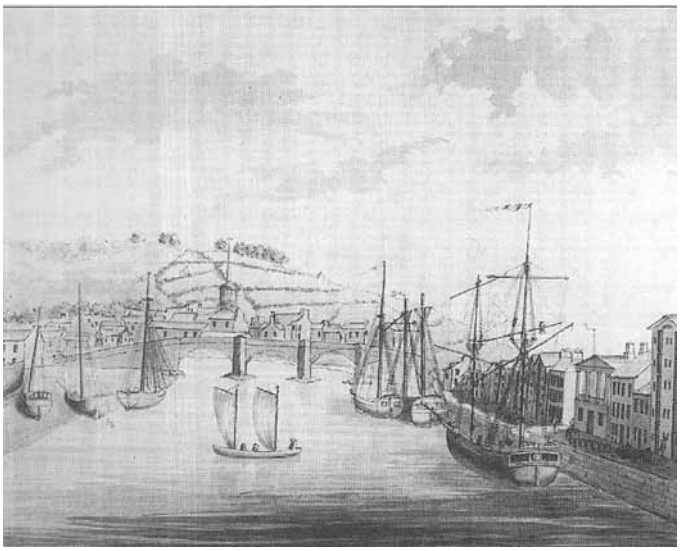
2.1.1 There is no direct evidence for either a bridge or ford associated with any of the roman forts at Lancaster, all located to the south-west of the river feature. The river was certainly used at this time, with possibly even an associated deity '*Jalonus*' (Shotter 2001, 17), and thus a crossing is almost inevitable. Certainly the latest fort (fourth century AD) had a marked change of orientation, by comparison with the earlier forts, that placed it parallel to the original line of the river, and would reinforce the relationship between fort and river. The Lune is traversable during many low tides, at almost any point, certainly even as low as between Sunderland Point and Glasson, although Lancaster remains the lowest bridging point. The position of the feature possibly coincides with a natural crossing point, on a bend, where the northern bank extends as a spur into the river channel. Its position would have been ideally suited for access from a possible northern gate to the fort, located on the western side of Vicarage Lane (Jones and Shotter 1988), and would have been one of the closest points of the river to the eastern gate.

2.1.2 The first reference to a crossing of the river in Lancaster was in 1215, when it was referred to in passing (Jervoise 1931), demonstrating that it was already in use by that time. The document itself refers to a fishery belonging to the monks of Furness Abbey 'at the bridge of Lancaster'. A crossing at Lancaster provided an obvious route to both the thriving market town of Kendal and the important monastic lands to the north and west. Although easily fordable at many low tides, the large tidal reach of the Lune, typically between 4m and 7m, made this impractical for the majority of the time, and for periods of several days. This first medieval bridge was almost certainly a timber construction, as grants for timber for the bridge were recorded in 1251-2 (Docton 1971); however, these may have been used for piles or starlings (White 2001, 48). Many pontage records follow in the late thirteenth and fourteenth centuries, but the most notable record of the bridge fabric from this period, refers to the supply of 'six score oaks' in 1373 (*ibid*). White suggests that the late-medieval stone bridge, which was positioned in the immediate vicinity of the feature recorded, may have dated from a visit to view 'the bridge' by the Duke of Suffolk and the Chancellor of the Duchy of Lancaster in the mid-fifteenth century (Somerville 1953, 193); at this time, the bridge was beginning to carry much regional traffic, reflecting that the road was the principal west-coast link with Carlisle and the borders (White 2001, 49). Speed's plan of Lancaster of 1610 would appear to show a sketch of a stone bridge in this position, but the most detailed illustration of this structure is on Mackreth's map of Lancaster, dated 1778, which shows the structure from an isometric viewpoint to the north. It depicts a four-arched stone structure with three angled cutwaters, the south-western part of which, appears to have a cruciform shape on the southern side. A drawing of St George's Quay by Gideon Yates *c* 1790 shows pronounced starlings at the base of each pier, but shows less other structural detail. It does, however, highlight the barrier to shipping navigation that the bridge presented. By the mid-eighteenth century, Lancaster had become a busy centre of maritime commerce, with 118 ships paying tonnage duties at Lancaster

in 1760 (Schofield 1946, 31f), the majority of which were involved with trade from either Ireland or the West Indies (Dalziel 2001).



Detail from Mackreth's map of 1778



Yates' drawing of St George's Quay, c 1790

2.1.3 Shipbuilding was also becoming an increasingly important trade in Lancaster, with Brockbank's shipyards at Green Ayre and near the Pot House, below the bridge, which alone was building 134 ships between 1760 and 1820 (*ibid*). In 1791, presumably shortly after Yates' drawing of the new quay, James Smith established a further shipyard immediately to the west of the bridge, on the northern bank; it was later taken over by Worthington and Ashburner in 1802 (*ibid*).

2.1.4 The growth of the port of Lancaster led to the construction of the stone-built St George's Quay, downstream of the bridge, and sold in parcels of about 20' (6.1m) width in the 1750s. At its centre was the new Customs House (completed in 1764), and both features clearly were shown in Yates' drawing (above). Still larger, and more significantly deeper-draughted, ships were accommodated

shortly afterwards, with the creation of the New Quay in 1768, which was located further downstream, near the Pot House.

2.1.5 The mid- and late- eighteenth century saw a major episode of improvements to access into and within Lancaster (*ibid*). New roads were constructed and existing roads were widened, including St George's Quay, where the steps of the new Custom House were removed to facilitate road widening in 1774 (Hughes 1935). The bridge, however, was a major impediment to this improved access, causing a major bottleneck (*ibid*). This led to the construction of a new bridge, approximately 500m upstream, which was constructed by Thomas Harrison in 1788. Both bridges appear to have operated concurrently into the beginning of the nineteenth century, when the earlier structure was abandoned in *c* 1802 (Dalziel 2001) and was progressively demolished. Despite the location of large maritime concerns upstream of the old bridge, most notably Brockbank's shipyard at Green Ayre, it does not appear to have been demolished at this time. Yates' watercolour of 1811 clearly depicts the collapsing remains of the majority of the structure, suggesting that the large tidal reach of the Lune was more of an issue for access upstream than the height restrictions of the old bridge. The painting interestingly does not show any evidence of Worthington and Ashburner's shipyard, on the northern bank, immediately to the west of the bridge, suggesting that it was disused by this date.

Painting of the partly collapsed bridge by G Yates (1812)

3. METHODOLOGY

3.1 TOPOGRAPHIC SURVEY

3.1.1 The detailed survey of the timber structure was undertaken by means of a total station and was accurate to 20mm. The survey control was established by closed traverse using a Leica TC407 total station. The main horizontal control network was co-ordinated to an OS grid by a graphical method. Survey control markers were established over the core survey area to enable the future enhancement of the survey maps.

3.1.2 The structure and riverbank was surveyed with as much detail as possible, depending upon access and health and safety concerns. The detail survey was created by EDM tacheometry using a total station linked to a pen computer running TheoLT software. A small detail pole was used to define individual timbers, and had to be undertaken at times of limited river flow, so that there was clear visibility of the structure through the water surface. The survey recorded all principal features and main timbers, and was undertaken to a high level of accuracy. The results were superimposed over the current OS mapping in AutoCAD. Additional detail was obtained by using the survey control to rectify digitally a photograph, taken of the structure from the Millennium Bridge, using Photoplan software, which was then superimposed as a raster image into AutoCAD.

3.2 SAMPLING

3.2.1 The top of a timber upright was cut off with a saw, and the wood sample was used to establish dating evidence for the structure. Part of the sample was submitted for dendrochronological dating, but a brief assessment revealed it to be an unidentified softwood, most probably pine (Ian Tyers *pers comm*), comprising only 69 rings, and was unsuitable for dendrochronological dating. The remaining part of the sample was submitted for radiocarbon dating to the Scottish Universities Environmental Research Centre in March 2007, and the results are presented in *Section 4.2.2*.

4. RESULTS

4.1 SURVEY RESULTS

4.1.1 The survey revealed that the feature has several elements, and survives over a large section of the river bed, generally in a good state of preservation. Whilst initial observations of the feature from the footbridge revealed two probable 'tracks' within the river, more detailed examination not only confirmed their presence, but also revealed areas of associated stonework, possible metalling, and the footings of a further stone structure, most probably associated with the late-medieval bridge.

4.1.2 ***Trackway:*** the main, and most striking feature within the site, comprises four rows of vertically set timbers, aligned on an approximately north-east/south-west alignment (Plate 1), leading from the northern bank towards the centre of the channel (Figs 2 and 3). Each row was constructed of vertically-set, rectangular-section timbers, typically 150mm x 60mm in size, positioned parallel to the direction of the feature, generally butting each other, but occasionally with small gaps between (Plate 2). Each appears to extend significantly below the exposed height, which was between 0.05 and 0.2m. During the sampling of a timber in January 2007, they were observed to be completely earthfast, displaying no movement during the process of cutting, suggesting that at least 0.5m survives below the surface of the river bed. Each row extends for over 7m, and the western row extending for a maximum continuous length of 8.7m (Fig 3). Further individual upright timbers were also observed up to 17.5m from the exposed northern end of the feature. The rows are positioned in pairs, 0.6m apart, forming two distinct 'tracks' (Plate 1). The 1.3m space between the two pairs is infilled with water-worn cobbles, of varying size, forming a compacted layer typically 0.1m below the upper edge of the timbers. Towards the northern bank, in the area of best preservation, the area between the two pairs of rows had been infilled with a similar material. Within this packing material, approximately 5.2m from the exposed northern end of the feature, two transverse timbers were observed. Each measured *c* 45mm wide and spanned the space between the two pairs of 'tracks', set 0.45m apart, and appeared to serve as bracing between the two 'tracks' (Plate 3).

4.1.3 The southern end of the well-preserved section of trackway feature was obscured by what appears to be later rubble (Plate 4). The majority of this comprises rough sandstone rubble, but both dressed pieces of sandstone and late twentieth/early-twenty-first debris was also present. However, the central part of the trackway, between the line of the two pairs of timber rows, was devoid of large rubble elements for a distance of about 6m, and appeared to be a continuous, compacted 'surface' (Plate 4). This was most noticeable immediately to the south of the extant timber rows, where the south-eastern edge of it appeared to be have been broken away, leaving an obvious continuous edge. The volume of rubble appeared to increase for a further *c* 5m towards the centre of the river bed, before diminishing again. At this point the apparent central compacted area re-appeared, leading to an area of laid surface. This was raised *c* 0.1m above the height of the compacted layer, and was formed of distinct blocks of what is either very worn stone or a concrete-like substance (Plate 5). The area of this layer measured approximately 2.3m² and comprised four rows of four blocks, with an additional block extending

beyond the north-west corner. Each was roughly about 0.3 x 0.3m, with the upper surfaces having water-worn, rounded edges. It appears from the bases of the exposed blocks that they butted together to form a good, although slightly irregular surface.

4.1.4 ***Medieval bridge:*** beyond the exposed sections of trackway, within a second bank of rubble, similar to that described above, two lengths of dressed stones were observed, flush with the surface of the rubble, and on the alignment of the trackway to the north. The south-western of the two was by far the better preserved, comprising a length of *c* 7m of *c* 20 dressed sandstone blocks, forming a face on their southern sides. At approximately half way along its length, the angle of the face changes from perpendicular to the direction of the river to an angle of approximately 30° to the north (Plate 6). This shape is similar to that of the cutwaters of the medieval bridge, and it is highly likely that the wall represents the southern edge of one of the cutwaters shown in Yates' late-eighteenth century drawing. A second, less well-defined, row of similar stones was observed to the east, and appears to represent the upstream cutwater of the bridge pier.

4.2 RESULTS OF THE TIMBER ANALYSIS

4.2.1 ***Dendrochronology:*** one of the two samples of timber (Plate 7) recovered from the trackway in January 2007 was sent to a dendrochronological expert for assessment as to its suitability for such dating techniques. A brief assessment revealed it to be an unidentified softwood, most probably pine (Ian Tyers *pers comm*), having 69 rings, and was therefore unsuitable for dendrochronological dating. Tyers further considered it to be unlikely of Roman, or even medieval origin, and most probably dated from the seventeenth to twentieth centuries.

4.2.2 ***Radiocarbon dating:*** the remaining sample was sent to the Scottish Universities Environmental Research Centre in March 2007. The sample was dated to AD 1680-1939 cal BC (105+/-35BP, SUERC-16085 (GU-15930)).

5. DISCUSSION

5.1 INTRODUCTION

5.1.1 The projects has generated a survey record and analysis of the structure which was revealed within the River Lune at low tide, during periods of clear flow of the river. Whilst incomplete, this has provided a basic record of its form, and does allow some postulation about its function and origin.

5.2 THE TRACKWAY AND BRIDGE

5.2.1 The feature exposed within the northern part of the river bed would appear to be some kind of trackway. It comprises two 'tracks', each 0.6m wide, bounded by vertical timber posts and infilled with stone, presumably to create a solid bed. The central section, between the two tracks, also appears to be metalled, presumably to allow a firm footing for whatever was pulling the vehicles along the track, but also allowing for pedestrian usage. The feature is well-preserved at its northern end, and does appear to underlie at least the northernmost of two banks of rubble. It also appears likely that the timbers defining the edges of the tracks were driven to a substantial depth. Elements of metalling have also been observed in the less well-preserved areas, comprising both what appeared to be a concrete-like substance and an area of surfacing formed of blocks of either a similar material, or a very water-worn sandstone. The presence of concrete-like materials would point to a date of either from the Roman period or from the late-nineteenth century. However, the material has not been formally identified, and may represent a heavily compacted gravel layer with large quantities of hard mortar, which would not discount a medieval date for the feature. If the blocks forming the surfaced area are of sandstone, then the level of wear, compared to the sharp well-defined edges of dressed sandstone rubble observed elsewhere within the river bed, would suggest either extremely heavy usage, or that they were of a significant antiquity. However, the timber analysis, which included radiocarbon dating of a representative timber, almost certainly determines the feature to be of post-medieval date, the presence of the roughly metalled element thus suggesting a late nineteenth or early twentieth century date.

5.2.2 It is unclear whether the large bank of rubble, which partially overlies the southern end of the exposed trackway, comprises mainly demolition/collapse material from the old bridge, mixed with obviously much later material, or whether it is formed of a random conglomeration of rubble, entirely of later origin. The cursory inspection undertaken at the time of the survey and, subsequently, from the bridge above, suggests the bank is formed of large quantities of worked stone, and that it overlies the southern end of the trackway, the metalled centre, the blockwork surface, and a few timber posts observed to the south of the rubble bank. The area of rubble further to the south, around the cutwater for the medieval bridge pier, is aligned with the trackway, but currently has no unequivocal stratigraphic relationship with it, even though there is a single upright post observed to the south of the main part of the track. The rubble is similar to that to the north, but comprises generally smaller blocks, lying flatter in the water, and with less modern material interspersed. It would appear that the

large mound of rubble has accrued around, and over, the trackway as a result of tidal and fluvial activity. The large dressed stones, which presumably originate from the medieval bridge that had been demolished from the early nineteenth century (*Section 2.1.4*), had seemingly accumulated on this man-made bank within the river channel.

5.3 CONCLUSION

5.3.1 The project has identified and recorded in outline, a trackway extending from the northern bank of the River Lune, which is in the apparent location of the late medieval stone bridge. It is bounded by four rows of vertically driven timbers, which upon a rapid initial inspection by an experienced dendrochronologist have been assessed as being unsuitable for dating by this method, and are of a softwood species, most probably of post-medieval date (I Tyers pers comm). A subsequent radiocarbon date of AD 1680-1939 cal BC (105+/-35BP SUERC-16085 (GU-15930) confirms this opinion. The material reminiscent of concrete, observed within the fabric of the feature suggests a later post-medieval date, although, it appears to lie beneath fabric of the early-nineteenth century collapse of the late-medieval bridge, and is a phenomenon most probably caused by the subsequent re-deposition of material from the bridge by tidal activity.

5.3.2 The position and alignment of the trackway strongly suggest that it does not relate to the late-eighteenth century Smith's shipyard (later Worthingon and Ashburner's shipyard), potentially as a slipway, as it runs directly into the probable position of a bridge pier (possibly still *in situ*, concealed beneath rubble), and is at a depth and inclination completely unsuitable for the launching of craft at any state of the tide.

5.3.3 As it appears to lie directly below the bridge it is possible that the trackway related to the bridge potentially allowing clearance of the rubble fabric following its collapse. If the concrete-like material is actually a hard lime mortar conglomerate, then the feature could be of earlier post-medieval origin, and this would not be precluded by the radiocarbon date, which has a standard deviation that includes eighteenth, or even seventeenth century dates. There exists the possibility that the trackway represented an access route during the clearance of the bridge and its stone piers within the river channel. This would have been necessary to keep the channel open for navigation at a period when the port of Lancaster was extremely active. The River Lune has large and deep silt deposits extending from both banks at this location, making access by foot difficult and access with loads almost impossible. The depth of the timber piling and its stone infilling and metalled construction suggest the trackway was built to withstand not only tide and current, but also to transport heavy loads by wagon or cart.

5.3.4 One of the significant aspects of the work is that has positively identified elements of the late-medieval stone bridge, the position of which had previously been purely conjectural. This feature is an important local archaeological find, representing one of only a few surviving features of medieval Lancaster. The bridge and its position are only known from documentary sources, mainly artistic representations, and is currently dated purely by the architectural stylistic evidence depicted within such prints.

5.4 RECOMMENDATIONS

5.4.1 Whilst the impetus for the project was to identify and record the trackway feature which had become visible at low tide within the River Lune, the survey also revealed evidence for the late-medieval stone bridge which crossed the river in this position. This feature is of important local significance, and it is therefore recommended that it is recorded in a more detail. Thus far, only a very cursory glance at the potential documentary sources has been undertaken, in order to set this aspect of the project within its historical context. However, significant documentary, cartographic and artistic information is most probably held within local resources, and should be investigated more thoroughly.

5.4.2 Given the local importance of the medieval bridge, the results of this work, when combined with the recommendations above, should be disseminated to the wider public. This may warrant publication within an academic journal but also the record of the structural remains could be incorporated into displays within the nearby Maritime museum.

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ILLUSTRATIONS

FIGURES

PLATES

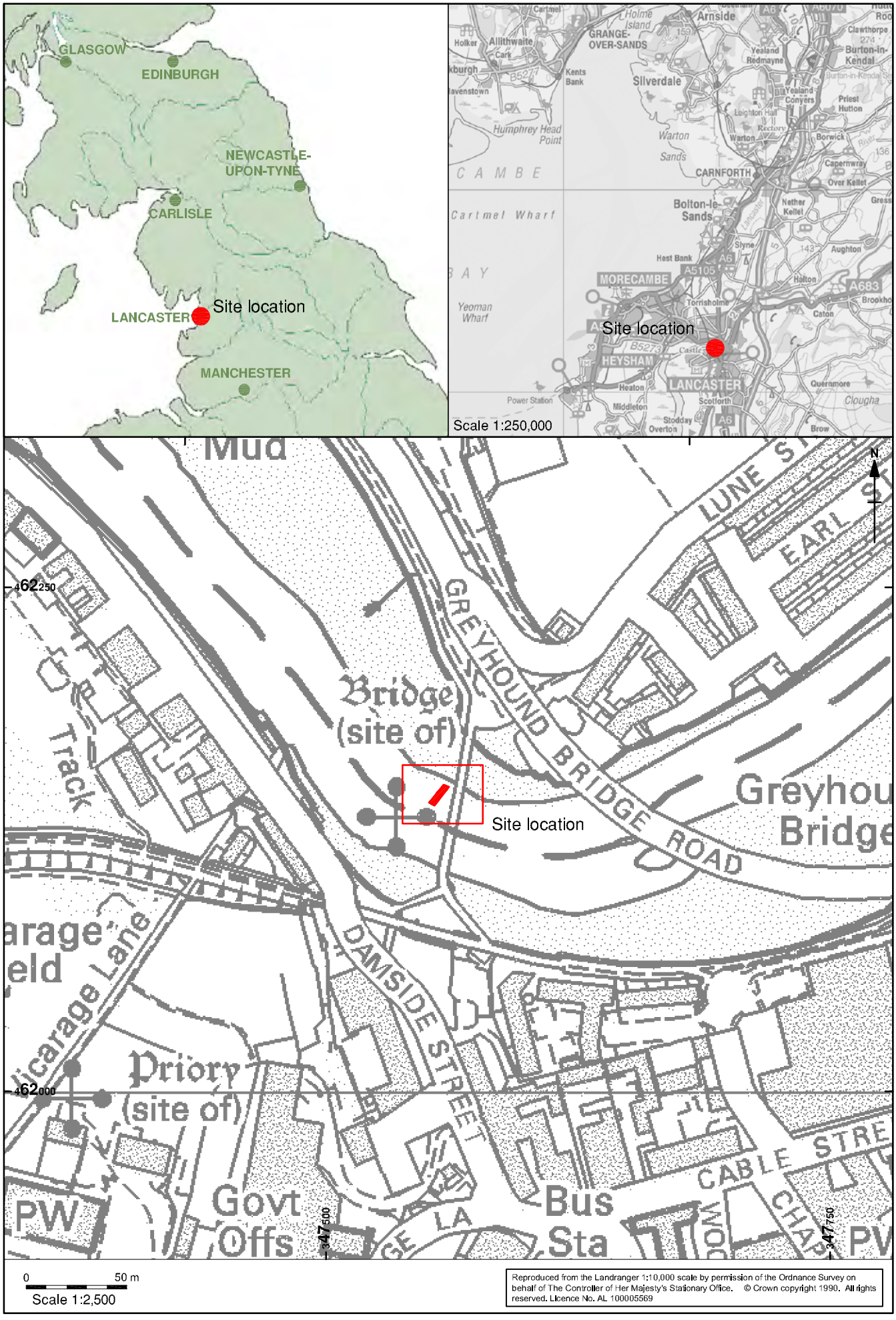

Figure 1: Site Location

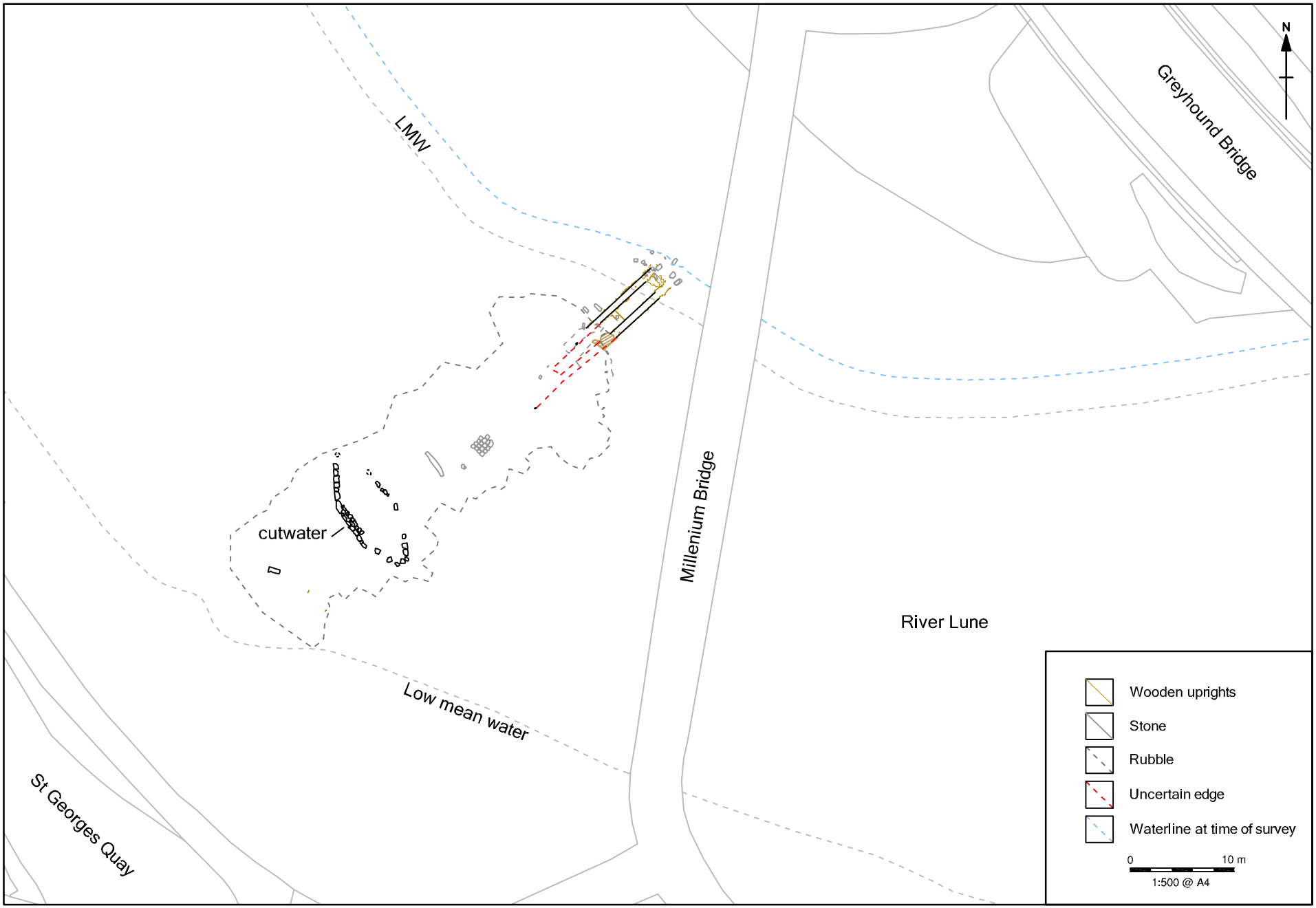

Fig 2: Extent of Observed Remains of the Putative Ford

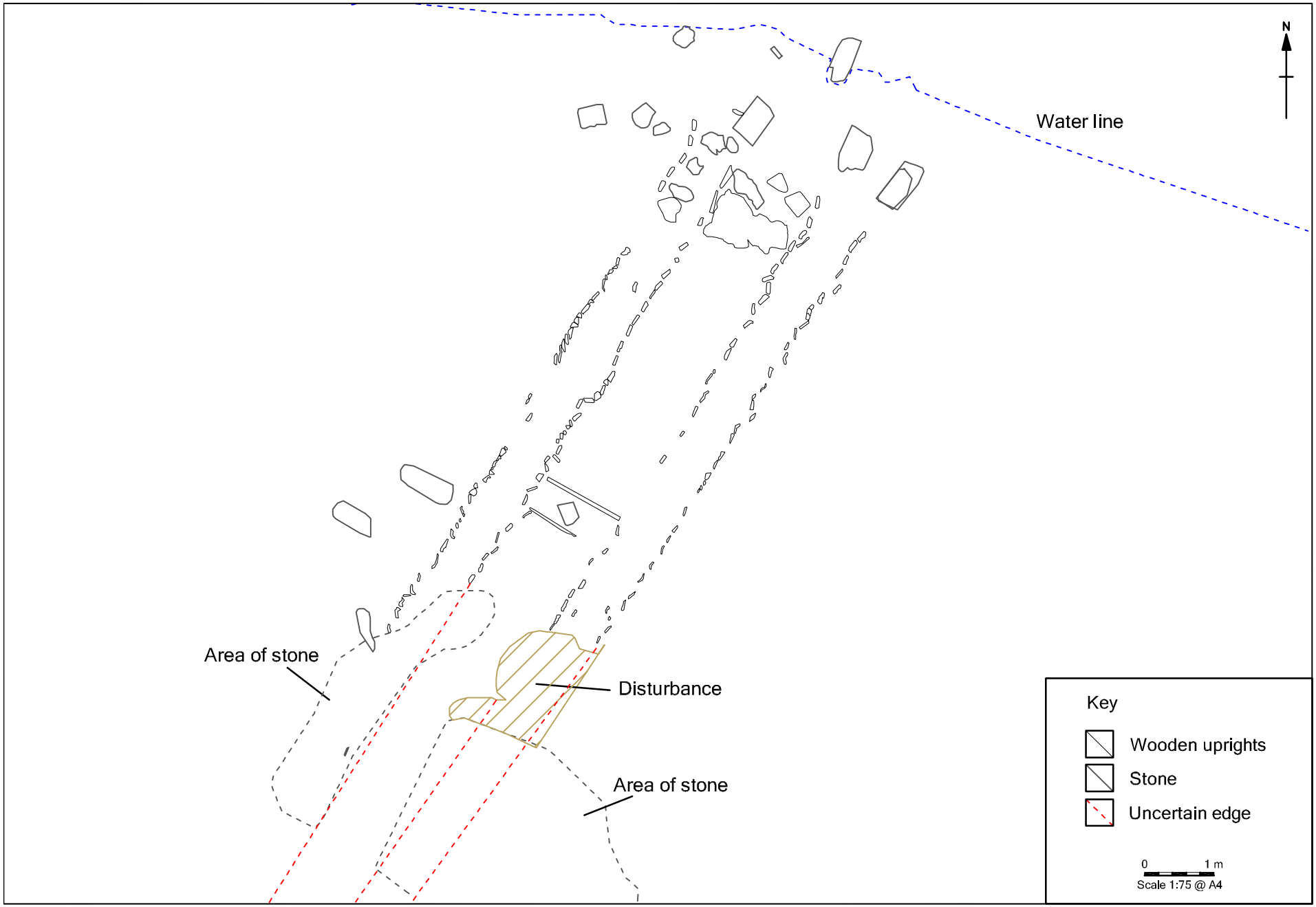

Fig 3: Northern Detail of the Putative Ford

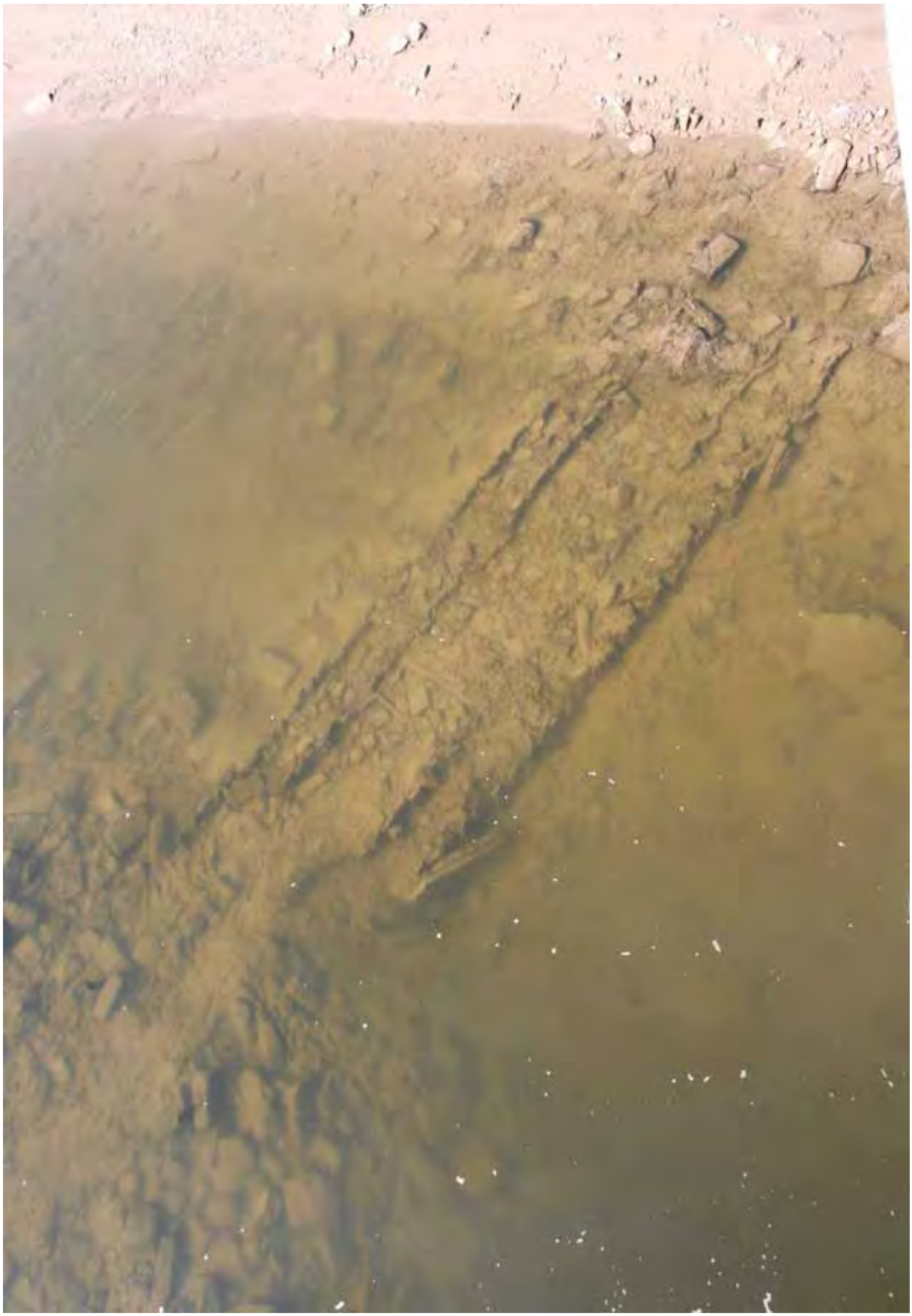

Plate 1: View of the trackway from above

Plate 2: Detail of timber post arrangement

Plate 3: Transverse timbers between tracks

Plate 4: Rubble bank to the south of the exposed trackway

Plate 5: Blockwork surface within the centre of the river channel

Plate 6: Exposed remnant of cutwater from the late-medieval bridge

Plate 7: Sample of timber from a vertical post