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A riverside timber revetment at 130 Bridge Street, Peterborough

by

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with contributions by
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ABSTRACT

Archaeological evaluation in advance of development identified a line of upright oak timbers set along the edge of the River Nene and into palaeochannel infilling material containing thirteenth century material, west of the present Town Bridge. The timbers have been radiocarbon dated to the fifteenth century, and may have formed a structure to protect the bridgehead from the effects of tidal scouring or alternatively they could have formed a section of wharf. The occurrence of infilled river channel material to the rear of the revetment indicates a degree of land reclamation and perhaps channel straightening in the medieval period.

INTRODUCTION

Hearthstead Homes commissioned Northamptonshire Archaeology to carry out an archaeological evaluation of 130 Bridge Street (the medieval Hithegate), Peterborough in advance of the construction of a block of apartments (Fig 1; NGR TL 1924 9820). The proposed development lay on the north bank of the River Nene, to the north-west of the present town bridge, on land at about 4.0m above Ordnance Survey datum.

The work was carried out as a series of small archaeological interventions in December 2002, January and February 2003 and May 2006. This report presents the results of this work in a digested form, for the complete report readers are directed to the original client report (Meadows 2004) copies of which are lodged in the Peterborough Historic Environment Record (HER).

ACKNOWLEDGEMENTS

The excavation was directed by Ian Meadows assisted by Ed Taylor, Ailsa Westgarth and Adrian Burrows. Specialist advice was received from Maisie Taylor (wood), Tora Hylton (finds), Paul Blinkhorn (pottery), Ian Tyers (dendrochronology), Tom Higham (radiocarbon dating), Donald Mackreth (documentary history). Work was monitored by Ben Robinson for Peterborough City Council Archaeology Service (PCCAS).

HISTORICAL BACKGROUND

The site was adjacent to the site of previous historical bridges that were probably on the same or very nearly the same location as the first bridge erected in 1307 by Godfrey of Crowland (Mackreth 1994, 35).

Desk-based assessment showed the site's development from the seventeenth century, when Speed (1623) depicted the area as vacant, through a series of building phases, during some of which the river frontage remained clear. In the 1731 prospect of the city (Fig 2), by the Buck brothers, the area is shown edged by a series of closely set upright timbers behind which lay an open area of flood plain on which timbers appear to be present. A map of (1821) showed the simplified outline of the Squire Mansion (erected *c*1760) which occupied the site and was recorded by the artist Fielding in the background to a portrait painting (Fig 3). By the time of the 1884 Ordnance Survey the Squire mansion had gone, additional buildings were present and the site had become a timber yard. In the twentieth century the area continued to be occupied until it was cleared in the 1980s, remaining vacant subsequently.

Although several entries in the Peterborough (HER) record finds of medieval and earlier date for the area immediately around the development, none were known from the site.

EXCAVATED EVIDENCE

STRATEGY AND CONSTRAINTS

The initial strategy was to excavate two trial trenches, one parallel to the riverbank (Trench 1) and the other perpendicular to it (Trench 2) (Fig 4). The one parallel to the riverbank bisected multiple services including a large brick vaulted culvert and two cast iron pipe runs, and was abandoned owing to these constraints. The cast iron pipes may have been associated with the electricity power station that once lay to the north-west. The brick culvert ran north to south across the trench, it was free built in a 2.5m wide trench which was sealed by garden soils and make up layers associated with the later structures on the site. The culvert was built of unfrogged handmade bricks mortared together. The vault was about 1m wide and had an internal diameter of 0.8m high. It is unclear whether it was part of a larger drainage scheme associated with town improvements or simply associated with the Squire Mansion.

The second trench ran north from the river and in its

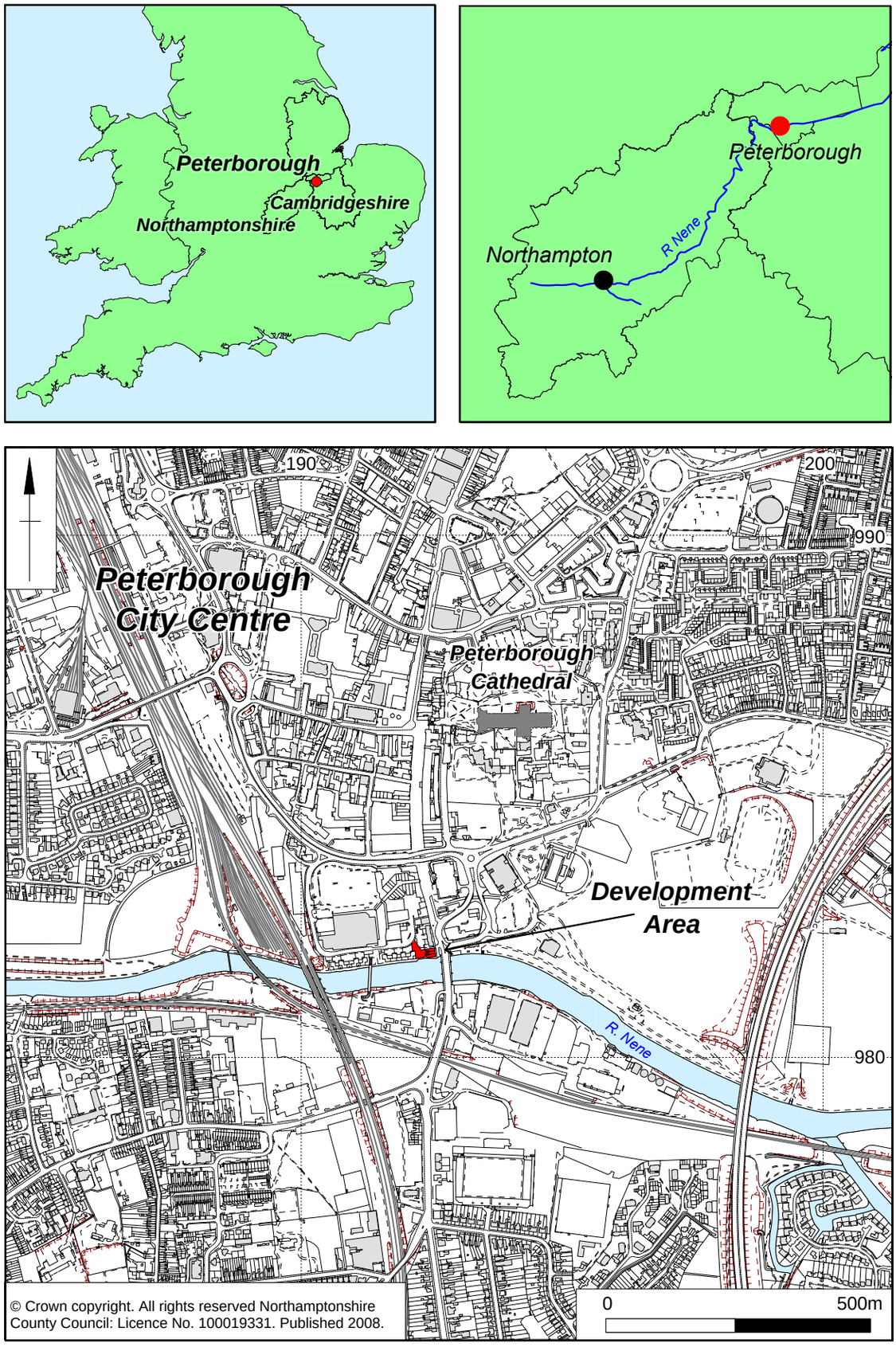

Fig 1 Site location

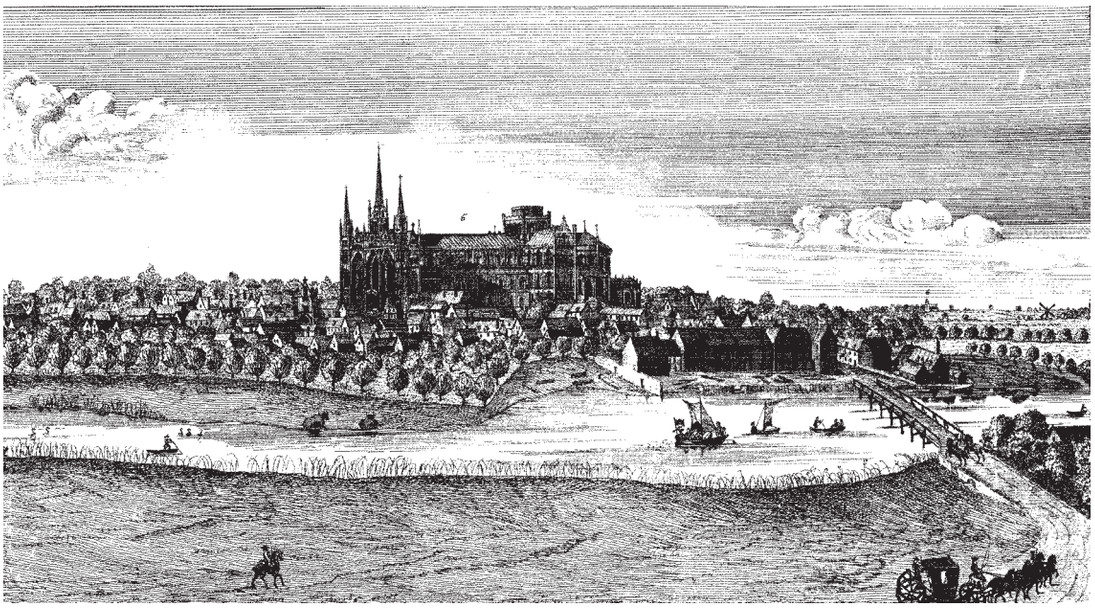

Fig 2 South West prospect of the city of Peterborough in 1731, by Samuel and Nathaniel Buck

Fig 3 Nathan Fielding (1747-1814), Portrait of Thomas and Charlotte Squire *c*1795, and showing the Squire Mansion in the background (Reproduced courtesy of Peterborough Museum and Art Gallery)

lowest levels there was evidence for possible floodplain and palaeochannel deposits (Fig 5). A 0.4m thick dark organic soil [31], which was very peaty in character and contained only occasional gravel inclusions, sealed a thin mineral soil [32] that was black in colour. This was the limit of the initial exploration but a single deep sounding was mechanically opened through a further 2.5m of organic and clay rich palaeochannel infill deposits [100]. These deposits could not be safely examined but pottery dated to the thirteenth century was recovered from them, although it was unclear from what level. The natural was not reached when the sounding had to be halted.

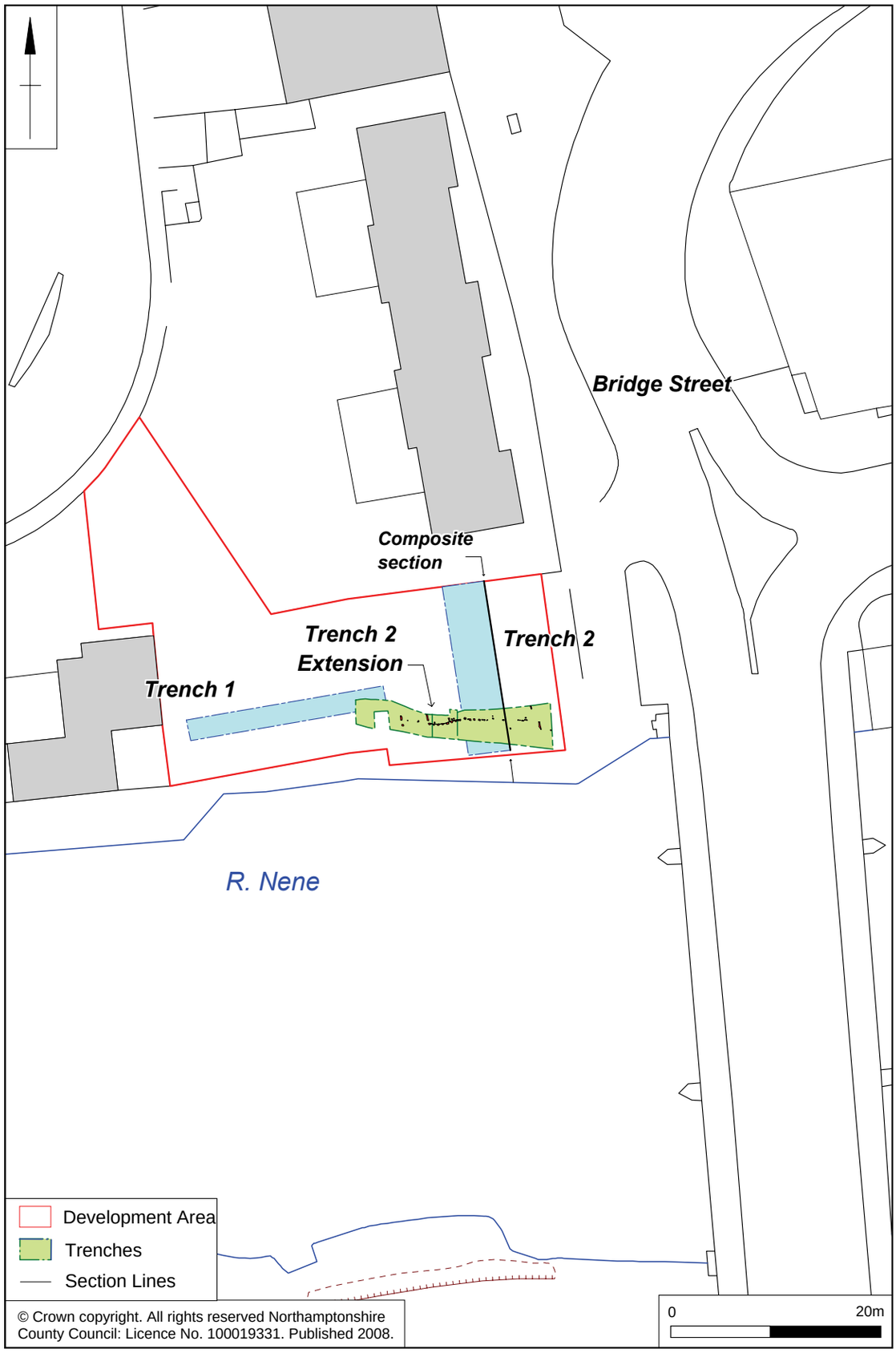

Fig 4 The trench arrangement to the west of the bridge

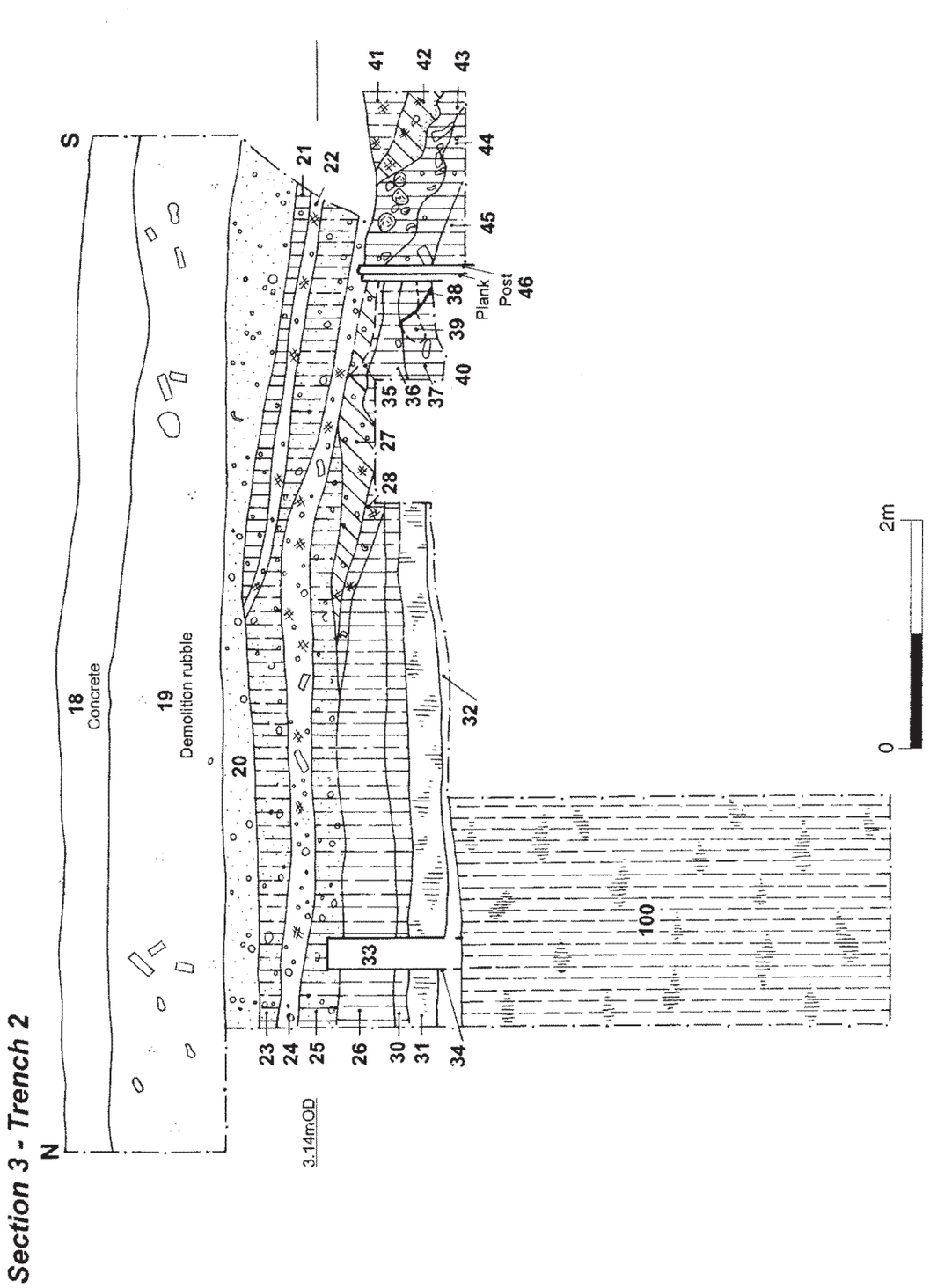

Fig 5 Composite section across the timber revetment and alluvial deposits

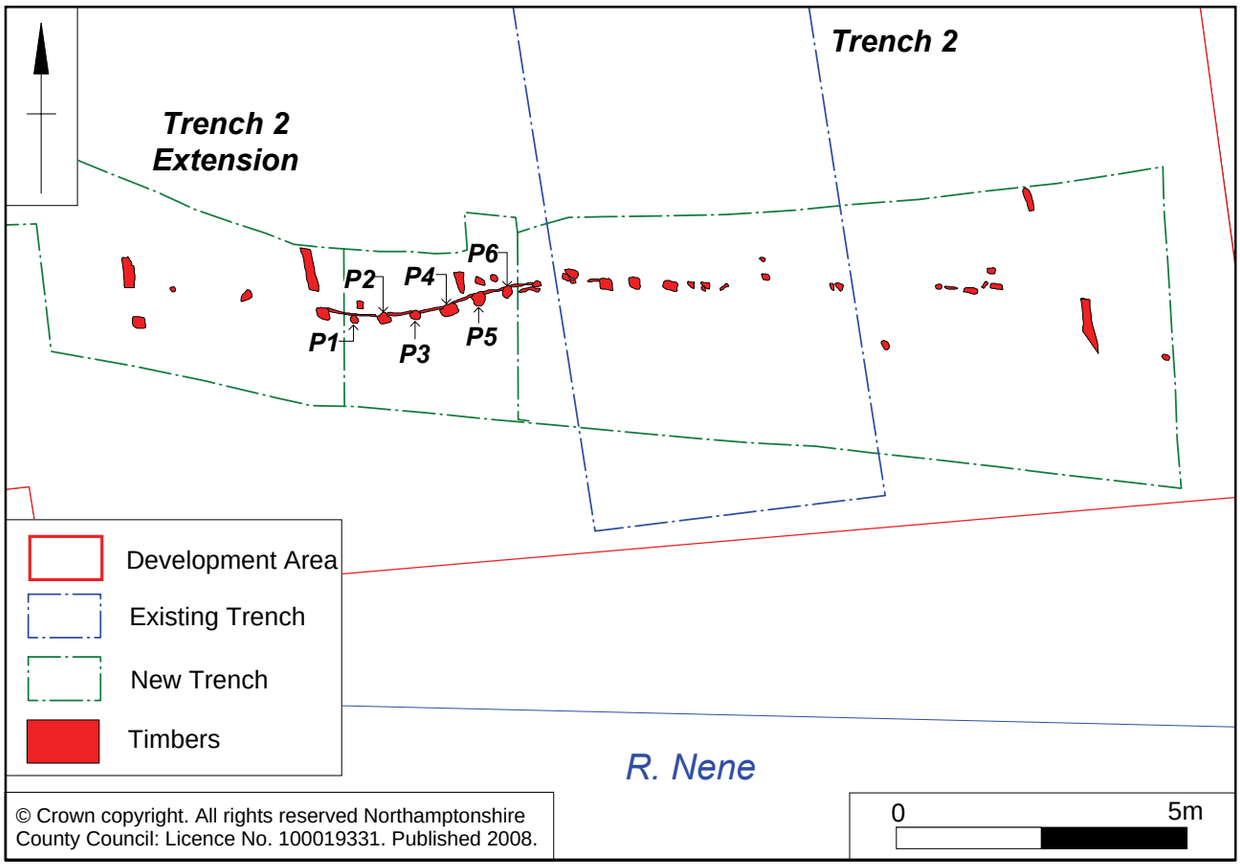

Fig 6 The exposed line of timber posts

While the deep pit was open, discussion took place on site concerning the date and nature of the deep organic fills. Examination of the borehole logs available for the site suggested the presence of a former wide sweeping river meander extending across the site. A relic of this meander may be the inlet portrayed in the 1731 prospect of Peterborough (Fig 2).

At the southern end of the trench the top of a line of timbers was exposed only allowing the partial examination of their northern face. The timbers had to their rear a series of horizontally bedded, often organic deposits, interbedded with clay of distinctly alluvial type [30-32], but at this stage the precise relationship could not be determined.

Due to the limitations of the initial evaluation trench a second stage of work was requested by PCCAS involving the extension of Trench 2 to expose the length of the timberline and allow the examination of both its inner and outer faces. After a number of abortive starts when the water level prohibited safe working, a trench about 20m long and between 7-10m wide was opened. The top of the upright timbers was clearly traced forming a slightly sinuous line from the eastern limit of excavation and stopping after about 12m (Figs 6 & 7). In order to be certain that the end was not just an artefact of shorter timbers a test trench was hand excavated 5m to the west across the line of any potential continuation. This trench was dug to a depth of 0.5m and no upright timbers were observed.

Fig 7 Trench extension, looking east, showing the exposed tops of the posts and the deeper intervention (foreground)

Fig 8 The exposed face of the timber and plank revetment

THE TIMBERS

The timbers comprised roughly squared posts 0.2m x 0.16m, the upper portions of which had been rounded on their riverward face, presumably by erosion and weathering (Fig 8). The rear face of the post was cut with a *c* 45mm square rebate on each edge in which rested a plank 0.03m thick and 0.27m wide (Fig 9).

A sample length of 2.5m of the timber line was examined to expose both the face and the rear supports of the timber works, they were found to survive in good condition. The face was exposed to a depth of 0.9m.

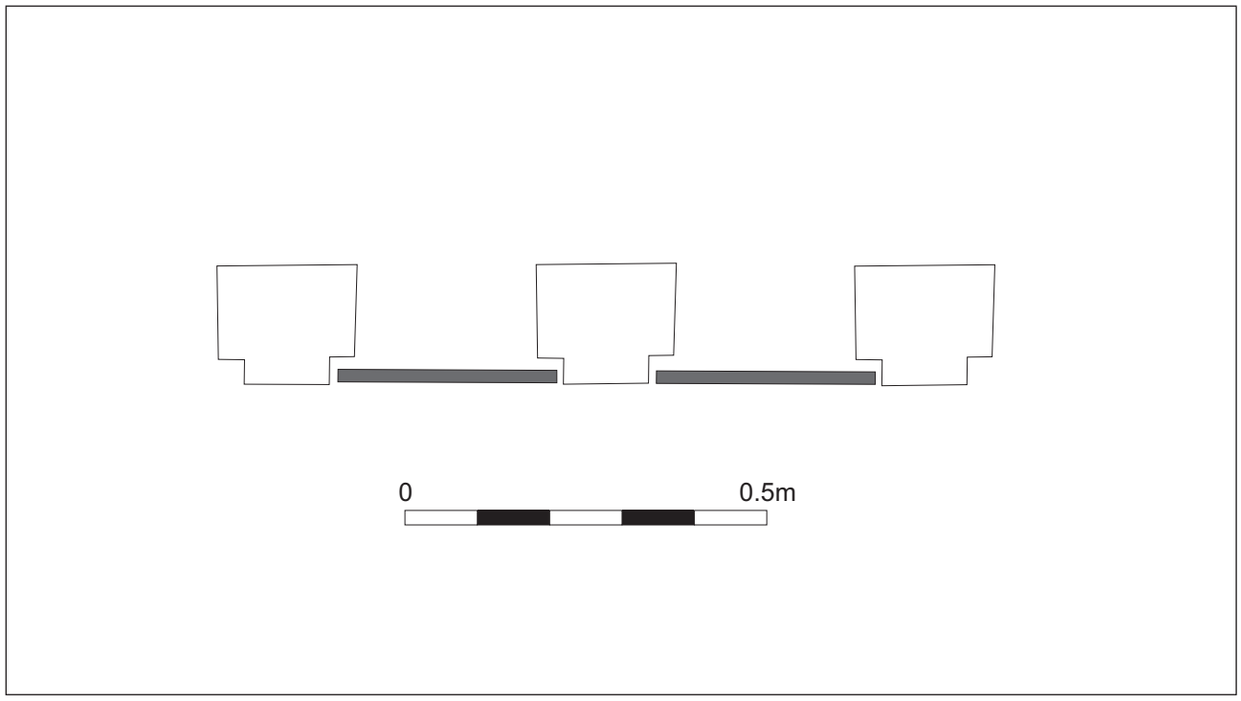

Fig 9 Schematic plan of revetment construction to show rebates with inset planks

ACCUMULATED SILTS

At the limit of excavation to the south of the timbers a firm dark grey silty clay (Fig 5, 45) containing frequent charcoal flecking and isolated small stones was present; its relationship to the timberwork was equivocal, but it dipped south away from the alignment. It was overlain by dark brown silt, a typical riverine deposit, [44] which contained abundant organic material along with occasional small stones and red brick type fragments. This deposit abutted the timbers. Both [44] and [45] contained mid fifteenth-century pottery. These deposits were sealed beneath a deliberate dump of material [43], which contained a substantial amount of waterlogged wood and building material especially limestone roofing slates and pieces of red brick, along with mid-fifteenth-century pottery. At its northern limit this deposit abutted the timber posts [46]. This deposit was perhaps, at least in part, derived from a demolished structure.

A series of further dumps of material were recorded. The earliest was grey clay with frequent charcoal flecks and occasional small stones [42], which was sealed beneath mid brown clay with occasional charcoal flecks and isolated pieces of red brick [41]. These clays both shallowed to the north, they had a maximum combined thickness of 0.7m.

The rear of the timbers was exposed to a depth of about 0.7m. The limit of excavation was into near black silt [37] with an organic content and occasional stones. This was cut by a slot [38], 0.4m wide at the top tapering to 0.1m at the limit of exposure at the base, which contained yellow grey mottled clay with no stone inclusions [39]. It is possible the slot represents a foundation cut for the timberline. These levels were sealed by a firm mid grey silty, possibly alluvial, clay with occasional stone inclusions [36], which also abutted the timbers. This deposit might represent the continuation of the alluvial clays identified to the north [26 & 30]. The uppermost fill that abutted the wood contained mid-fifteenth-century pottery, it was a dark brown clay silt [35] with a high organic content and occasional stone inclusions.

There were two alluvial clays, which possibly represented a continuation of the alluvial deposit identified above [36]. The lowest a homogeneous alluvial clay of mottled blue grey colouration [30], 0.26m thick, containing no inclusions, was overlain by a homogeneous, dark grey clay [26] with no inclusions, 0.47m thick. This deposit was fairly consistent in its thickness except at the southern end where it tapered off or had been scoured off. The colour variation between the two clays may be a reflection of the local soil oxygen conditions rather than actual differences. These deposits were clearly flood derived deposits as a result of overbank flood episodes.

The alluvial level was sealed by a series of more mixed deposits and dumps. The lowest was a silty clay with gravel inclusions [25], which was sealed by a mixed deposit of clay gravel and brick [24], which was overlain by a silty clay [23] containing some gravel. Each of these deposits was horizontally bedded, between 0.2-0.35m thick, except at their southern end where they dipped down as if towards a river channel.

At the southern end of the above levels two deposits [27, 28] were dipping down to the river. The lower, a dark silty deposit, 0.1m thick, which contained moderate amounts of charcoal and both whole and fragmentary pieces of shell, was sealed by a 0.3m thick deposit of mid brown clay [27] with gravel and moderate amounts of charcoal. These deposits may represent encroachment and dumping onto the rivers edge

These mixed deposits were sealed beneath an orange sandy gravel [20] containing frequent small stones. This material was clean and was probably an imported gravel to create a clean flat surface, possibly the court in front of the Squire mansion shown in Fielding's painting. Towards the south this gravel layer sealed two dumps of dirty gravel [21, 22] which contained in the lower layer charcoal and in the upper mortar. These deposits may have been to level the area prior to the deposition of the main gravel horizon [20].

This gravel horizon was sealed by the nineteenth- and twentieth-century deposits comprising a layer [19] of brick and other recent material in turn overlain by a substantial, 0.45m thick, concrete floor raft [18]. This floor was stepped in shallow increments down towards the river suggesting that the ground at the time of development had also possibly sloped towards the river. The stubs of walls were present from the final structure on the site, they incorporated bricks from the Hicks and Gardiner works at Fletton. This was the Temperance Hotel and large timber piles within concreted blocks formed part of its foundations, some of these pile casings were 2m square at the surface and extended 2m down encasing timbers 0.3m across. These timber uprights could be the foundations for the balcony type structure shown in a photograph of the building.

DISCUSSION OF THE TIMBER STRUCTURE

Maisie Taylor

The wooden structure appears to be a stave built revetment. With the exception of a short section, which was exposed to a depth of up to about 1m, only the top of the structure was revealed. The structure has two vertical components: The 'staves' and square framing timbers (Figs 8 & 9). Stave building was a popular method of constructing waterfront revetments in the fifteenth century in London (Period V, in Milne 1982, 29) but there is little comparative material from inland ports.

The staves at Rivergate were sawn planks or boards taken tangentially from the outside of trees. These might have been the by-product from a timber yard that was squaring oak trunks for some other construction work which required large oak timbers. The quality of the timber from which the boards are derived appears to have been first rate. The framing timbers are not such good quality and are of rough squared oak; they may have been reused timbers. There is one framing timber set between every two staves. The square timbers are rebated to receive the boards. This is a profligate use of timber compared with most of the stave-built structures illustrated from London. The oak boards are, however, fairly thin for their width and probably needed the extra support. If the boards were a by-product of oak timber production for some major building project in the city,

however, they may have been plentiful and need not have been expensive. As the staves are heavily braced by the square verticals there might not have been a sole plate and the timber could all be earth- fast, alternatively the staves may have been pile driven.

DATING THE TIMBER STRUCTURE

Tom Higham

Lengths of three timbers were removed for dendrochronological analysis. The samples were submitted to Ian Tyers at Sheffield University but were found to have only a maximum of 38 rings, which is below the 50 ring minimum requirement for dendrochronological dating. Instead, samples were submitted for radiocarbon 'wiggle matching', whereby adjoining decadal groups of tree rings are sampled and then dated. A number of lengths of timber from the large squared uprights were taken to the Oxford Radiocarbon Accelerator Unit where two were selected as being potentially suitable by Dr Tom Higham of the Research Laboratory for Archaeology and the History of Art. The results of an initial sample OxA-16871 (617+/-26BP), from what was identified as the exterior of the tree produced a date that was subsequently to prove unlikely.

The other three dates were taken by Dan Miles, the dendrochronologist, they were in the form of a wedge-shaped cut of wood, taken from a single timber, which was mounted and carefully sampled into a section of wood which was polished and which consisted of three blocks of ten tree rings each.

Table 1: Radiocarbon dating results

Laboratory number	Rings	Coventional Age BP
OxA-17656	11-20	543 +/-22
OxA-17657	21-30	535 +/-24
OxA-17658	31-40	593 +/-22

The radiocarbon dated sequence was good but it did present a problem, the sequence did not fit because the date of OxA-16871 (the most recent wood, supposedly) produced an earlier date than other samples. The considered opinion was that OxA-16871 is aberrant. It comes from a different part of the tree wood, was sampled separately, and may date to an older period. For this reason the results were modelled including only the three-date section of the wood, with an additional 15-year gap at the end to account for the gap left by the problematic radiocarbon date, and the estimated sapwood boundary. The felling date for this tree, accounting for these caveats described above, is 1423-1437 Cal AD (68.2% confidence).

DISCUSSION

This excavation identified a previously unsuspected and unique feature in Peterborough, a stave-built timber-faced river frontage. It remains unclear whether the oak timbers formed part of an extra long spillway associated with the bridgehead, if they ever formed part of a wharf arrangement or if they were part of a reclamation scheme. The first suggestion seems more likely since the timberline is only 12m long and that would seem rather short for a wharf. The known wharves all lie downstream of the bridge, which would itself offer an obstruction to most navigation. If the timbers were related to the bridgehead their location would protect it from the effects of tidal scouring which might have weakened the crossing. This would be particularly so as the soils to the north of the bridgehead were soft medieval channel fills which would be easily eroded.

Few medieval or early post-medieval bridgeheads have been examined. Where they have been, the bridgehead was generally replaced in stone before the date of this feature. The bridges recovered from Hemmington across the Trent were of timber from the eleventh to twelfth centuries but from about 1240 onwards the bridgehead was stone rubble with retaining timbers (Johnson pers comm).

The structure cuts channel fills dated to the thirteenth century and the timbers date from the early fifteenth century. It is unclear whether the timbers were erected as a freestanding structure, which then became sealed by dumped material containing fifteenth-century material, or whether the timbers formed a line of driven planks and posts. The former suggestion is perhaps the more likely because of the possible presence of raking timbers however as no timber joints were observed the evidence for the relationship of those pieces to the post and plank line remains equivocal.

It is equally equivocal whether the timbers were new when they were used to create this structure and the squared framing timbers; they could be re-used. The reuse of timber is well attested locally with several references, for example, by William Morton to old timber in the fifteenth century. In one instance a Tom Cooper was paid with old timber (Mellows *et al* 1954, 132).

Examination of other towns where river front structures have been identified does not reveal any that are directly comparable. The examples at Trig Lane, London, were far longer and more extensive in each phase and were undoubtedly a riverfront revetment (Milne 1982). At Hull part of the riverfront was examined at Chapel Lane Staith (Ayers 1979), in a 4m wide trench, and dated to about the second quarter of the fourteenth century. Here it was suggested that for a period of time the revetment was left open to its rear and that some of the sediments present represented settlement from the tidal waters trapped behind the timbers. This is important as it shows that the construction of riverfront structures was not always a rapid sequence of events. At Reading the riverfront revetments were seen to lie in front of deliberate reclamation layers, most of which was probably material derived from dredging of the river as it contained little domestic refuse (Hawkes *et al* 1997). In each of these examples the upright revetments were braced by raking timbers that extended sometimes to the front but always to the rear for up to 3m before being fixed to the ground. The uprights themselves were often also fixed at the base to a horizontal sole plate joined by a top plate at the top.

The structure at Peterborough is perhaps a part of a wider engineering solution to the problems of the tidal flow of the Nene and the need to protect a bridge

from erosion on a meander. Monastic alterations to watercourses for drainage, navigation or other reasons can be seen elsewhere and it is possible this may have been a similarly monastically lead exercise. At Ely works included the reclamation of part of a meander of the Ouse and the erection of wharves and warehouses. The excavation evidence coupled with the previous borehole logs both for the Rivergate complex and for developments to the east, indicate that originally the Nene was not as straight as the present course in this area. Slightly beyond the present railway bridge, upstream, the river has a sinuous form that continues westwards. The possible reasons for straightening the channel might be related to the original construction of the bridge over the river in 1307. A meandering course has one edge of active erosion and the other bank is actively depositing. If the meander pattern originally continued through to the present study area then the erosion would have been active on the north bank where the bridgehead lay. By straightening the course the scour effect of the current on the side of the channel would be concentrated into the channel itself.

The stratigraphic position of this structure coupled with the potential for re-use of the timbers still does not rule out the possibility that this structure could be the enigmatic one depicted on the 1731 prospect of Peterborough.

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