

Fig. 1: map showing location of the site.

Excavations at 36-40 Tanner Street and 159-161 Tower Bridge Road, Bermondsey

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IN APRIL TO JUNE 1998 an archaeological evaluation, excavation, and later a watching brief were conducted by the Museum of London Archaeology Service (MoLAS) at 36-40 Tanner Street and 159-161 Tower Bridge Road, Southwark. This work was commissioned by the Whitbread Hotel Company in advance of redevelopment for an hotel. The site is located on the western side of Tower Bridge Road, to the south of Tanner Street, and is bounded by 19th-century buildings to the west, including the partial remains of the Bermondsey Workhouse (Fig. 1). The site (centred on NGR TQ 3338 7960) was recorded under site code TWE98.

The fieldwork took place under less than ideal conditions: the depth and limited area of the

trench hindered access, and it had to be stepped in to reach the base of the peat sequence, some 3.5m below ground level, which lay at c. 3.01m OD. At one point the evaluation trench had to be hastily abandoned when it was accidentally flooded by a high pressure water pipe which had burst during adjacent groundworks. Wet and muddy conditions generally prevailed, and I would like to thank my colleagues for their good humour under trying circumstances.

Background

The geological and topographical background to this area has already been described in detail¹. The site lies over a large post-glacial channel which ran east-west, between the higher ground of Bermond-

sey and Horselydown eyots. During the Holocene² this became a much smaller stream, the Neckinger, which until recent times ran along the northern side of what is now Tanner Street.

Many archaeological excavations have been conducted in Bermondsey over the past few decades. Most relevant is that at Vinegar Yard, some 90m to the north of the present site³. There the Pleistocene alluvium was cut by a prehistoric 'cooking pit', and by a peat-filled channel running north-south. It was C14-dated to the early to mid 1st millennium BC, i.e. the late Bronze Age to early Iron Age. The peat was sealed by further alluvium containing medieval pottery in its later stages.

Roman and middle Saxon occupation is known from the higher ground of Bermondsey eyot to the south. This continued through the medieval period, the site falling within the precinct of Bermondsey Abbey, founded in 1086. The tanning industry is attested in Bermondsey from the late medieval period, but expanded considerably in the 17th and 18th centuries. At Vinegar Yard there was evidence of tanning from the 16th century onwards. This activity continued well into the 20th century in Bermondsey, and the last firm on the site was processing the skins of reptiles and other exotic animals into the 1990s⁴.

Bronze Age and earlier

The earliest deposit observed during the field-work consisted of a clayey silty sand, interpreted as alluvium, whose surviving surface within the area of controlled excavation lay at *c.* -0.46m OD. The observations made during the watching brief suggest that this deposit extends across the whole area of the site. The location of the site between the Horselydown and Bermondsey eyots suggests that this alluvium was deposited within the Pleistocene⁵ channel between the two.

The surface of the silts was cut by a depression, perhaps a former stream channel, which was filled by a sequence of two peat deposits. They contained wood and root fragments, and were separated by a thin layer of fine silty clay, some 35mm deep. The peat deposits indicate that there were two periods when the area was damp but periodically inundated, interrupted by either a severe

1. J. Drummond-Murray, D. Saxby, B. Watson 'Recent archaeological work in the Bermondsey district of Southwark' *London Archaeol* 7, no. 10 (1994) 251, Fig. 1. The current site lies some 150m to the south-east of location 5 on that plan.

2. Approximately 10,000 BP to the present day.

3. K. Heard 'A post-medieval tawyer's yard in Bermondsey' *London Archaeol* 9, no. 5 (2000) 137-143.

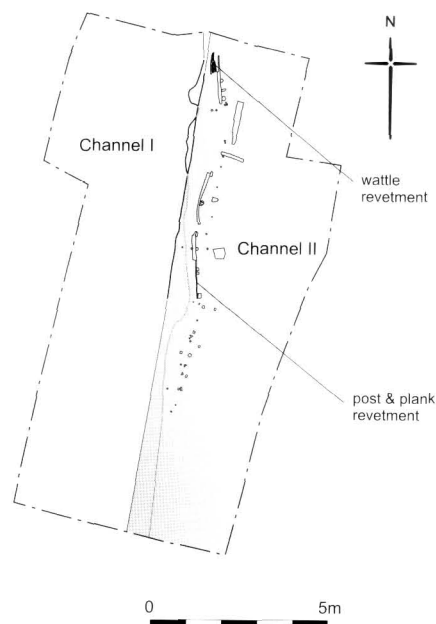


Fig. 2: plan of Channel I and Channel II.

flood or a period of continuous inundation. This could have been a result of a rise in river level relative to the land, which could not be outstripped by peat growth, or a nearby channel that was prone to overbank flooding. The variety of plant species within the peat are indicative of both wetland and grassland or disturbed ground, but suggest little significant change in the character of this environment during the formation of the peat.

A radiocarbon determination from the base of the peat at -0.70m OD dated to between 1780 and 1490 cal BC⁶. The surface of the peat which immediately preceded the possible 'flooding event' lay at *c.* -0.04m OD, and a radiocarbon date of 1430 to 1120 cal BC was obtained from this level⁷. A third determination was obtained from the peat immediately above the 'flooding event', at -0.01m OD, of 1400 to 1020 cal BC⁸. The truncated surface of the upper peat deposit lay between +0.17 and +0.31m OD.

It thus appears that deposition of the peat began in the first half of the 2nd millennium BC, during the early Bronze Age, and very probably continued into the 1st millennium BC, the late Bronze Age. The

4. For a more detailed description of the historical background to this area, see *op. cit.* fn 3.

5. Approximately 2,000,000 BP to 10,000 BP.

6. At 90% probability. Beta-120218; uncalibrated result 3360 ± 70 bp. These dates were calibrated with OxCal v3.5, Bronk Ramsey (2000), using Stuiver *et al* (1998) *Radiocarbon* 40 (3) 1041-1083.

7. Expressed to 95% probability. Beta-133412; uncalibrated result 3050 ± 50 bp.

'flooding event' probably took place between the 15th and 11th centuries BC, the middle Bronze Age.

Diatom analysis was conducted on samples from the silts of the 'flooding' layer, which proved to contain diverse and well preserved assemblages. These indicated that the silts were laid down in shallow water, in which the freshwater component was dominant, and greater than that from Roman or later periods. A small component of estuarine or marine diatoms indicated that this stretch of the river had, however, already become estuarine to some degree by this time.

Diatom-Total Phosphorus reconstruction from these samples showed high levels of nutrients in this water. At present there are few, if any, environmental archaeological studies with which to compare these results. When compared with studies of more recent deposits, however, these levels appear to be significantly greater than the values which might be expected for 'pristine' lowland waters, and suggest that the waters were enriched with nutrients derived from human activities in the surrounding area.

17th- and early-18th-century water channels *Channel I*

The earliest feature which produced evidence of human activity was either a stream or an artificial drainage channel, at least 2m wide and 0.7m deep, which truncated the earlier peat. Only the eastern side was seen within the excavated area (Fig. 2). It probably ran northwards into the Neckinger, or perhaps a roadside ditch along Five Foot Lane, now Tanner Street. It was possibly of medieval origin, but it is more likely that it is post-medieval. The ditch appears to have remained open after 1620, and perhaps as late as 1666.

Most of the animal bone from Channel I was sheep: a horncore and three metapodials. Although a small assemblage, it is perhaps significant that these skeletal parts could be interpreted as tanning waste, based on the likelihood that skins were generally sent to the skinner with horns and feet attached. These parts perhaps acted as convenient stretching points, whilst various oils would have been extracted from the feet for preparing the

8. Expressed to 95% probability. Beta-133411; uncalibrated result 2990 ± 60 bp.

9. D. Serjeantson 'Animal remains and the tanning trade' in D. Serjeantson and T. Waldron (eds) *Diet and Craft in Towns*. BAR Brit Ser 199 (1989) 129-146.

10. *Op. cit.* fn 3, 140.

11. C. Stace *New flora of the British Isles* (1991) 916.

12. T. T. Macan *A key to the British fresh- and brackish-water gastropods* (4th edn, 1999) 41; M. Kerney *Atlas of the Land and Freshwater Molluscs of Britain and Ireland* (1977) 29, 59.

skins⁹. The absence of other parts, as well as the large contemporary concentration of sheep metapodials at Vinegar Yard¹⁰, strongly suggests tanning activities taking place here during this early period. The very small size of the sheep represented on both sites is notable; one from this channel is estimated to be about 0.55m at the shoulder.

Channel II

After Channel I had silted up, its eastern edge was truncated by the western edge of an artificial drainage channel (Fig. 2). This later feature was more than 2.30m wide and 0.61m deep, and was designated 'Channel II'. It only partly truncated the former watercourse, and was not a simple recut of it. It is unclear whether the second channel represents a re-digging of the first in a slightly different location, or if they were unrelated.

Plant remains recovered from the fills of Channel II indicate that the ditch contained fresh or brackish water, notably water-pepper (*Polygonum hydropiper* L) and horned pondweed (*Zannichellia palustris* L)¹¹. This interpretation is supported by the presence of freshwater snails, in particular keeled ramshorn (*Planorbis carinatus* L), which prefers permanently well-vegetated ditches containing slow-flowing water¹².



Fig. 3: view of the revetment of the western edge of Channel II, from the north-east.

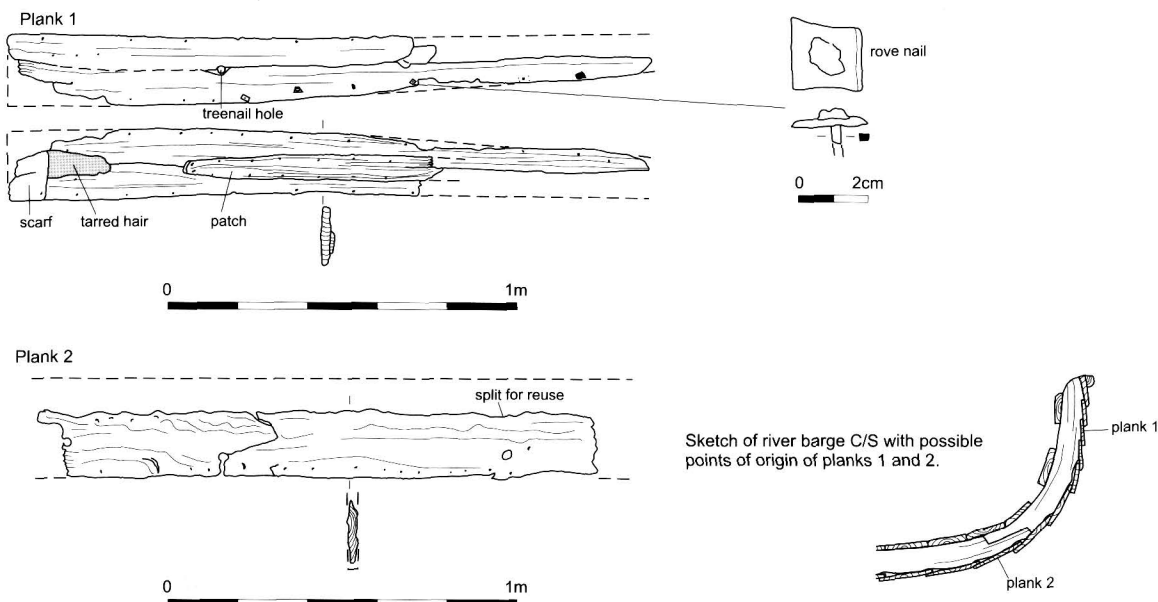


Fig. 4: timbers from clinker-built boats, re-used in the revetment of Channel II.

The new channel was originally revetted with wattle and stakes, perhaps on the western edge only (Fig. 2). This structure, similar to a robust wattle fence, is unlikely to have been over 1m high. It required only the simplest of woodworking skills to point the stakes and weave the thinner horizontal 'rods'. They were of a variety of non-oak deciduous species, probably mainly alder and willow, cut with axes or large billhooks.

The wattle was superseded by a more substantial pile and plank revetment (Figs. 2 and 3), cheaply and simply built of second-hand timber and poles. Again, only the most basic skills of hewing the small piles to points and driving them were required. As it was apparently unbraced, the channel lining probably stood not more than c. 1m high.

The boat timbers

Four sections of old worn boat planking were re-used as sheathing for the revetment (Fig. 4). They all had typical characteristics of historic vessel planking, such as iron nail shanks along each surviving edge, traces of tarred hair waterproofing, and a cream deposit that was probably white lead paint¹³. The nail holes along the edges once held

small iron rivets or rove nails, that fastened the partially overlapping boards of clinker-built vessels. The proportions of this planking suggest an origin in medium-sized vessels such as the river barges or small coasters shown in Thames panoramas from the 16th century onwards.

The planking was a mix of oak (possibly split out) and clearly sawn elm, and dated finds from other recent excavations in Southwark suggest that it was probably of 16th- to mid-17th-century date¹⁴.

The wear and patching on one plank (Fig. 4, Plank 1) show that this material was probably over ten years old before the vessels were broken up. Recycling such materials, as well as timber from larger vessels, was a major Southwark industry. Very similar re-used boat planks were found close by at Vinegar Yard¹⁵ and 12-26 Magdalen Street¹⁶. At Morgan's Lane¹⁷, oak boards were found still fastened to wider sawn elm planks. It appears that the wider sawn elm planks were used below the waterline where they would not decay, whilst the more rot-resistant oak was used higher up in the vessel (Fig. 4). Thus, all four clinker vessel planks may have derived from the same craft, probably a barge. The framing of the barge was fastened by 'tree-

14. *Ibid.*

15. *Op. cit.* fn 3, 141.

16. S. Chew *An interim statement for an archaeological evaluation and excavation at 26 Magdalen Street, London SE1* (MOLAS 1996) 2.

17. Marsden, *op. cit.* fn 13, 136-144 and 168.

13. D. M. Goodburn 'New light on early ship and boat building in the London area' in G. Good (ed.) *Waterfront Archaeology: Proceedings of the Third International Conference on waterfront Archaeology*, Bristol 1988 CBA Res Rep 74 (1991) 112-5; P. Marsden *Ships of the Port of London: 12th to 17th centuries* (1996).



Fig. 5: detail of a joint of the late-18th-century elm drain, from the north-west. The light-coloured clay which sealed the joint has been partially removed. (photo M. Cox)

nails' of oak, 30mm in diameter, which must have been set at around 0.5m centres.

Several of the piles of the revetment were clearly re-used from building carpentry, or possibly large crudely-made furniture, as some were squared and pierced by peg holes and relict joints. A number of smooth, debarked and debranched softwood poles were also used as piles. Such material had to be imported at this time, probably from Norway or the Baltic area. Similar material was also found re-used at Vinegar Yard. They were most likely re-used scaffold poles or 'spars'.

Channel II appears to have originated in the 17th century, and to have silted up after 1740. The silting included a relatively large assemblage of domestic pottery, and fragments from five saggars (used to facilitate stacking within, and diffuse heat around, a kiln). It also produced fragments of wine glass and clay tobacco pipe, and a nearly complete 17th- or 18th-century adult's shoe. Whilst it is most likely that the saggars derive from the pottery at Horselydown, they might have come from another of the numerous potteries producing tin-glazed wares along the south bank of the Thames, such as Pickleherring or Still Stairs.

Horse and other animal bone

A concentration of horse bones, entirely composed of skull, vertebrae, ribs and pelves, came from the later fills of Channel II, representing at least five individuals. Several bones showed cut marks, clearly suggesting that each of these carcasses had been skinned, sub-divided and at least partially defleshed before deposition. A few gnawed and eroded/weathered bones show that burial was not immediate, which could explain the absence of certain skeletal parts, which may have been carried off by scavengers.

A large proportion of the horse bones show cut marks, particularly to the skull, which clearly show that each of these individuals had been skinned and their carcasses sub-divided before deposition in the channel. Carcass sub-division cuts can be seen on each of the major areas of the skeletons, including decapitation, as well as various divisions of the vertebral column. Decapitation cuts were seen on each of the skulls with skinning marks. Other common butchery cuts would have sectioned the carcass, especially transverse cuts through the ilial blade of the pelvis and through various cervical, thoracic and especially lumbar vertebrae.

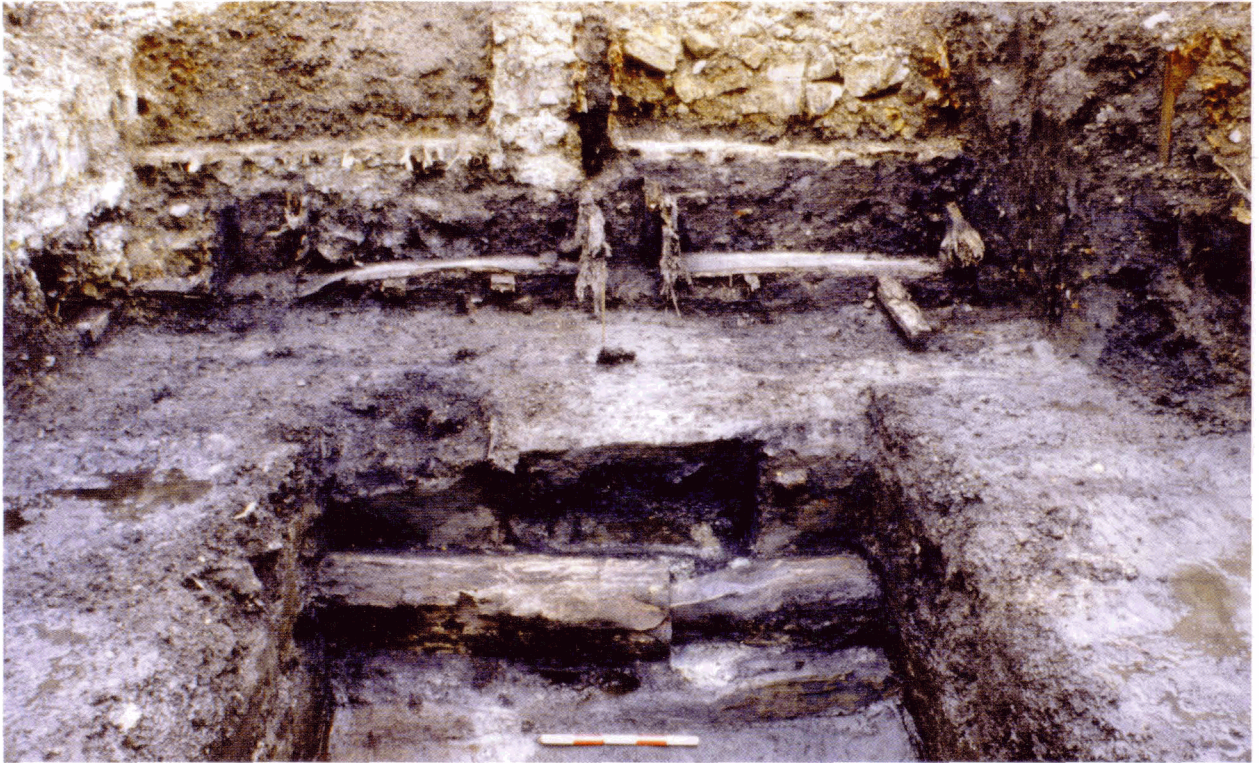


Fig. 6: view of the two phases of tanning pits, from the north. Those of the late 19th century lie above the partially dismantled late-18th-century pits and the underlying elm drain. 5 x 100mm scale. (photo M. Cox)

The next step would have been to either remove the flesh or to further reduce the size of these relatively large joints of meat. Both types of butchery were observed, the former on a single thoracic vertebra, and the latter by a series of knife marks to four pelves.

From the characteristics of the pelvis and the presence of upper canines, it appears that four or five of the individuals represented are female and one or two are male. All five individuals are clearly adult, with ages ranging from about 4 to 8 years, and it is estimated that they had shoulder heights of between 14.3 and 14.9 hands. A characteristic tooth-wear pattern suggests that at least one of these animals may have been a mule.

Some of these animals may have been culled, or possibly died, due to illness or infirmity. One of the mandibles displayed extensive periostitis, which may have been caused by traumatic injury. There were two potentially more serious infections, including the temporo-mandibular joint of one skull and the associated mandible, which had suffered from a septic arthropathy. The other example, a rib, showed a very large callus around a fracture,

the break undoubtedly occurring due to the weakening of the bone at this point by an internal infection. There is a strong possibility that these infections had been blood-borne, and that these two apparently different cases could represent the same diseased animal. Also, there are pathologies which seem to be consistent with the working of horses: osteophytic lipping and fused vertebrae.

Three major food animals are present: cattle, sheep/goat and pig. There is a clear mix of skeletal parts, with, perhaps significantly, a bias towards horncores and metapodials within the cattle and sheep assemblages. It is conceivable that these head and feet elements, like those from Channel I, may represent waste from a local tannery.

Of some interest here is the size and type of animals suggested by these head and feet parts. The three cattle horncores are clearly from unimproved longhorns, each measuring at least 350mm in length, while the metatarsus is from a particularly large animal, with a shoulder height of *c.* 1.39m¹⁸. Each of the three sheep metatarsals are also from relatively large animals, with a shoulder height of between 0.76 and 0.78m¹⁹. By comparison with similar-sized

vor- und früh-geschichtlicher tierknochen' *Saugetierkundliche Mitteilungen* 22 (1974) 325-348.

sheep from late-17th-century deposits at Aldgate²⁰, these may perhaps be Lincolnshire long-wools.

The single cat skull present shows distinct skinning marks; it can be supposed that the local tannery also included a furrier.

No ground surfaces contemporary with these channels lay within the area of excavation, but the highest surviving level from Channel II indicates that it would have been above 0.94m OD.

Late-18th-century tannery

The silted-up channels were sealed by a series of land-raising dumps, which brought the ground level up to at least 1.67m OD. This probably occurred after 1740, in preparation for a tannery.

Timber drains, bored-out lengths of elm tree trunk (Figs. 5, 6, 7), were cut into the dumps. They were aligned roughly east-west, and the top of the pipes lay between 0.30 and 0.44m OD, some 0.6m below the bases of the tanning pits. The bores were about 130mm in diameter. Cartographic evidence shows that pump and wooden water-pipe making was something of a local industry just to the north of the site in the Hays Wharf area. The various elm logs had been shaped in different ways, involving combinations of fairly crude axe hewing, pit-sawing or only branch removal leaving the bark intact. Traces of the felling cuts were also found. Some ends were hewn and shaved to a long taper, to fit a similar female socket, others were carved to a square shape to fit into tanning pits. Traces of iron collars, and a large round-section wrought iron staple or 'dog', were found at the joints, and one seen in the evaluation trench was sealed with clay (Fig. 5).

A number of tanning pits (Figs. 6, 7) were constructed by excavating an area large enough to hold several of the wooden tanks, and constructing them *in situ*. They were rectangular boxes of sawn softwood planking, tarred, 30 to 50mm thick. Slightly more robust 'joists' or cross battens were used under the basal planks to keep them aligned. The edges of the planks were simply butted, but had been planed with a long jointing plane to ensure a tight fit, and to prevent tanning liquor leaking out. The sides were made of planks on edge, held in place with plank-like upright stakes during construction. The spaces between the tanks were subsequently backfilled to support them. The boxes were originally about 1.3m east-west, and more than 1.08m deep.

19. *Ibid.*

20. P. L. Armitage 'The faunal remains' in A. Thompson, F. Grew and J. Schofield 'Excavations at Aldgate, 1974' *Post-medieval Archaeol* 18 (1984) 131-144.

Late-19th-century tannery

The first phase of tanning pits went out of use at an unknown date, and the structures were partly dismantled, down to c. 1.30m OD. The timber from the side of one tank, however, was left standing up to 2.00m OD, and further land-raising material was dumped around it and over the remains of the other tanks. This increased the ground level to at least 2.11m OD, in preparation for a second phase of tanning pits (Fig. 6), represented by four example recorded during excavation, and a large number which were observed over the majority of the site during the watching brief. The raw materials were very similar to the earlier tanning-pit linings, but instead of being earth-fast they had been made as prefabricated boxes and then set below ground. One lining was supplied with neatly fitted triangular-section battens in the corners to reinforce them during handling. The use of slightly more elaborate joined box linings was also recorded for the later phases of tanning pits at Vinegar Yard.

Subsequently, these tanks were themselves partly dismantled, to c. 2.0m OD, and further land raising took place, bringing the ground level up to its 1998 level of c. 3.01m OD. Dating evidence from one of the tanks indicates that it probably went out of use in the second half of the 19th century.

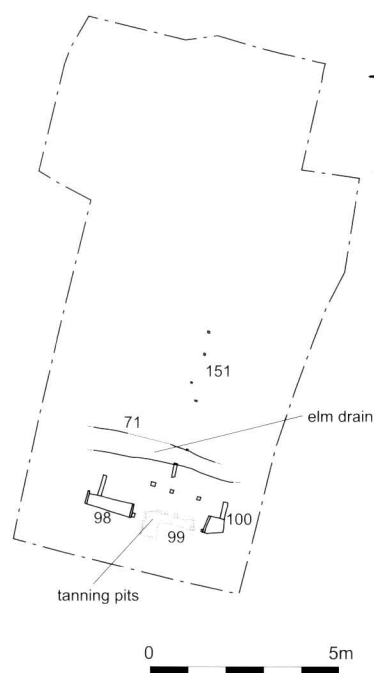


Fig. 7: plan of the late-18th-century tanning pits and elm drain.

The OS map of 1870 labels the area of the site as a tannery, and depicts a dense concentration of tanning pits. One can only pity the inmates of the neighbouring St. Olave's Union Workhouse (later Bermondsey Workhouse), whose misfortunes must have been increased by the vile odours emanating from the tannery. By 1914 only a few pits are shown in the northern part of the site, suggesting that the other pits had gone out of use, and that the land may have been open awaiting new construction at the time of the survey. The site remained in use as a tannery after these pits went out of use, with the construction of buildings on the western and southern edges of the site.

Conclusions

The site appears to lie within the area of a peat-filled channel, similar to, but possibly different from, that seen at Vinegar Yard. As there, the peats were separated into two phases by the silts of a possible flooding event. The presence of the peat deposits suggest marshy/boggy conditions within parts of the channel between the two eyots during the Bronze Age, at least.

Radiocarbon dates from the latter site indicate that the peat sequence, truncated here, continued into the early Iron Age. However, the discrepancy of 500 years or more between the dates for the earlier phase of the peat must call into question whether we are looking at different parts of a watercourse with multiple meandering channels. If so, then what appears to be 'flooding events' might represent a rise in water level within a floodplain lake, formed in a channel cut off by the meandering watercourse.

From the radiocarbon dating at Vinegar Yard, it was thought that the peat post-dated Devoy's Tilbury IV marine transgression of the late 2nd millennium BC²¹. Whilst the later phase of peat on the current site is of that date, the earlier phase was deposited in the first half of the 2nd millennium BC. Diatom analysis suggests that during the 'flooding event' the water contained a small estuarine component, possibly suggesting the onset of marine transgression, around 1440 to 1050 cal BC. This 'flooding event' might have been a localised phenomenon, perhaps caused by nearby agriculture, or alternatively may have been part of a more widespread event caused, for instance, by changes in sea level. More data are needed to understand this sequence, and also with which to compare the

enriched level of nutrients during the middle Bronze Age, which presumably derive from the Bronze Age agriculture and occupation which has been seen on other sites in Southwark, such as Phoenix Wharf on Horselydown eyot²².

Although there is no structural evidence for the tanning or tawing industry on the site until the 18th century, the bones from Channel I and II suggest that it was taking place nearby, and parallels the more extensive evidence from the 16th century onwards at Vinegar Yard. The post and plank revetment of Channel II was very similar to one at Vinegar Yard, that was in use from the 17th to 18th century, and which lined the stream on the north side of the road. The correspondence of date and construction suggest that these were part of a single phase of revetment construction in this area.

The appearance of tanning pits in the late 18th century is yet again paralleled by the expansion of tawing activity at Vinegar Yard, but unlike that site it continues into the 19th century, until it moved into the adjacent building around the end of that century.

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21. *Op. cit.* fn 3, 138; cf. I. Tyers 'The prehistoric peat layers (Tilbury IV) in Southwark' in P. Hinton (ed.) *Excavations in Southwark 1973-76 and Lambeth 1973-79* London Middlesex Archaeol Soc and Surrey Archaeol Soc joint pub no 3 (1988) 5-12.

22. J. M. C. Bowsher 'A burnt mound at Phoenix Wharf, south-east London: a preliminary report' in Hodder and Barfield (eds) *Burnt mounds and hot stone technology* (1991) 11-19.