

Natural environment and human exploitation on the southern shores of Horselydown

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Introduction

This article concerns the results of five archaeological interventions carried out by Pre-Construct Archaeology Ltd between June 1997 and October 2000. The sites are Brunswick Court (BNK97: Site 1), 49-51 Tanner Street (TAT99: Site 2), 167 Tower Bridge Road (TWD99: Site 3), 151 Tower Bridge Road (TBD99: Site 4) and 175 Bermondsey Street (BDK00: Site 5). Archaeological work was limited to evaluation at Site 1 and 4, while excavations were undertaken at Sites 2, 3 and 5. The sites cover an area measuring approximately 300m north-south by 200m east-west (Fig. 1).

The results from five other recent archaeological interventions falling within this area are also considered. These additional sites include a watching brief at Pope Street/Tanner Street (TNR98) and evaluation work at 169 Tower Bridge Road (TWG00), Vinegar Yard (VIY97) 36-40 Tanner Street/159-161 Tower Bridge Road (TWE98) and 168 Tower Bridge Road. Use was also made of engineers' borehole data provided by the British Geological Society (BH L, BH K105 & BH K10).

This article attempts to provide a topographic and environmental account of this area from later prehistoric exploitation of the landscape, through inundation of the area due to rising water levels, to renewed exploitation from the medieval period (when much of the study area fell within the precinct of Bermondsey Abbey) onwards into its post-medieval use for the tanning industry.

The early landscape

The buried topography of the Southwark Island complex has been the subject of much recent work and indeed is part of ongoing study. Generally the sequence of deposits reflects that encountered on other sites in Southwark, which has been interpreted and discussed elsewhere.¹ It

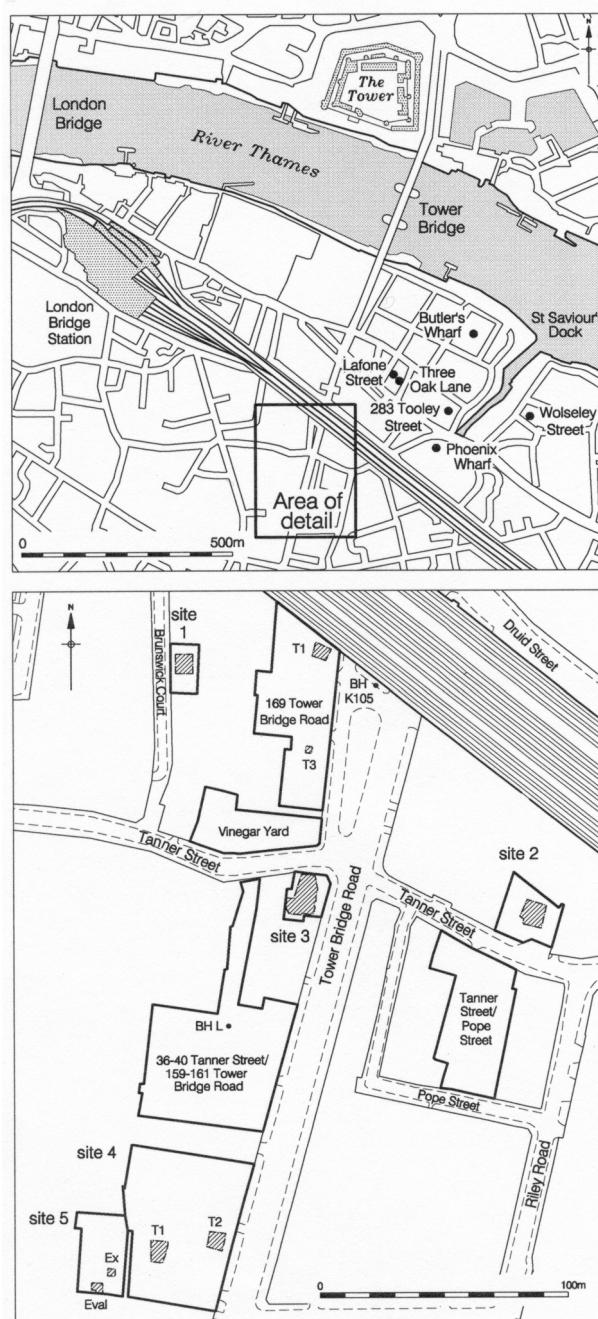


Fig. 1: location of sites

is not the intention of this article to repeat in detail what has already been written, but rather to add to this body of evidence by the detailed study of a small area of Southwark.

The valley floor of the River Thames in its estuarine reach is underlain by sands and gravels which were probably largely deposited during the final stages of the last (Devensian) cold episode, when the Thames was a relatively fast-flowing series of braided stream channels. These sands and gravels appear originally to have formed a valley floor differentiated by upstanding bars and intervening channels. An optically stimulated luminescence (OSL) date of $18,510 \text{ BP} \pm 3,660$ was obtained from the upper part of this sand and gravel at Butlers Wharf on the north side of the Horselydown Eyot.² These sands and gravels are relatively close to today's ground surface where former bars or islands (eyots), such as Horselydown, are present but are found at greater depths where former channels are located.

Overall rises in mean water level, which began roughly 10,000 years ago at the end of the last Ice Age, resulted in the fluvial deposition of fine-grained sediments over the earlier topography.

These early Holocene fine-grained sand deposits appear to have been deposited during periods of relatively low energy water flow, indicating that the Thames was a slow meandering river following very much its present-day course, with a floodplain comprising low-lying areas of marshland between sand islands. Across modern Southwark evidence has been found for prehistoric exploitation of these upstanding sand bars or eyots, from the Mesolithic onwards.

Subsequent peat deposits appear to be a discontinuous horizon with peat either resting directly on the sand and gravel, or separated from it by estuarine sediments. The peat appears to have been formed at various times between the Neolithic and Iron Age, but predominantly during the Bronze Age. This later Bronze Age peat formation has commonly been equated with Devoy's Tilbury IV regression,³ although more recent work suggests that this is an oversimplistic explanation and that sediment sequences have developed in response to localised conditions.⁴ The above sequence is ubiquitously sealed by a deep deposit of estuarine silts and clays, which formed during the late

prehistoric and early historic periods. Gradual reclamation of the marshland occurred especially during the post-medieval period as Southwark became increasingly utilised for a variety of industries.

The topographic evidence

Using data obtained from the five subject sites, other sites in the vicinity and borehole logs, an attempt has been made to produce a topographic model of the area prior to peat formation (Fig. 2). A north-south section through all deposits, roughly following the line of Tower Bridge Road, has also been produced (Fig. 3).

There are several inherent problems with this type of exercise. Firstly, with trying to correlate data from different sources; archaeologists and engineers compiling borehole logs will tend to describe and interpret the same data set differently. Additionally the data gathered are not the results of a planned topographic or landscape study, but the fortuitous results of occasional interventions arising as a result of commercial redevelopment, hence the spacing and distribution of readings is variable. Furthermore,

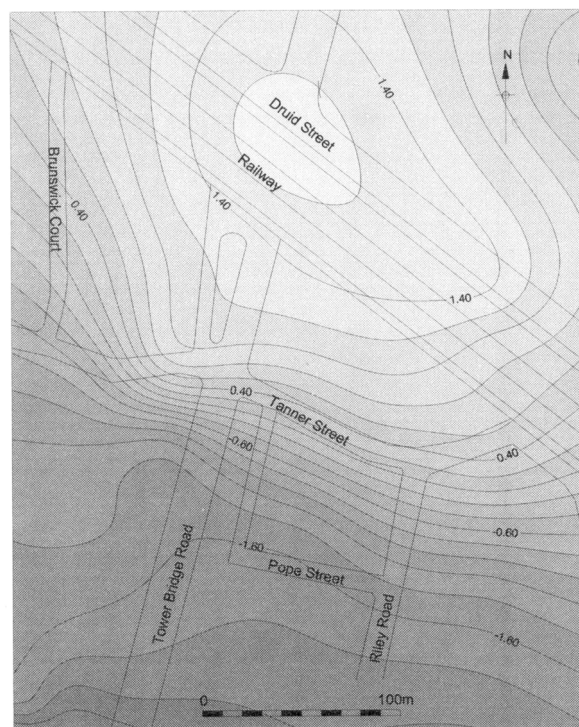


Fig. 2: contour map showing the buried topography of Horselydown eyot

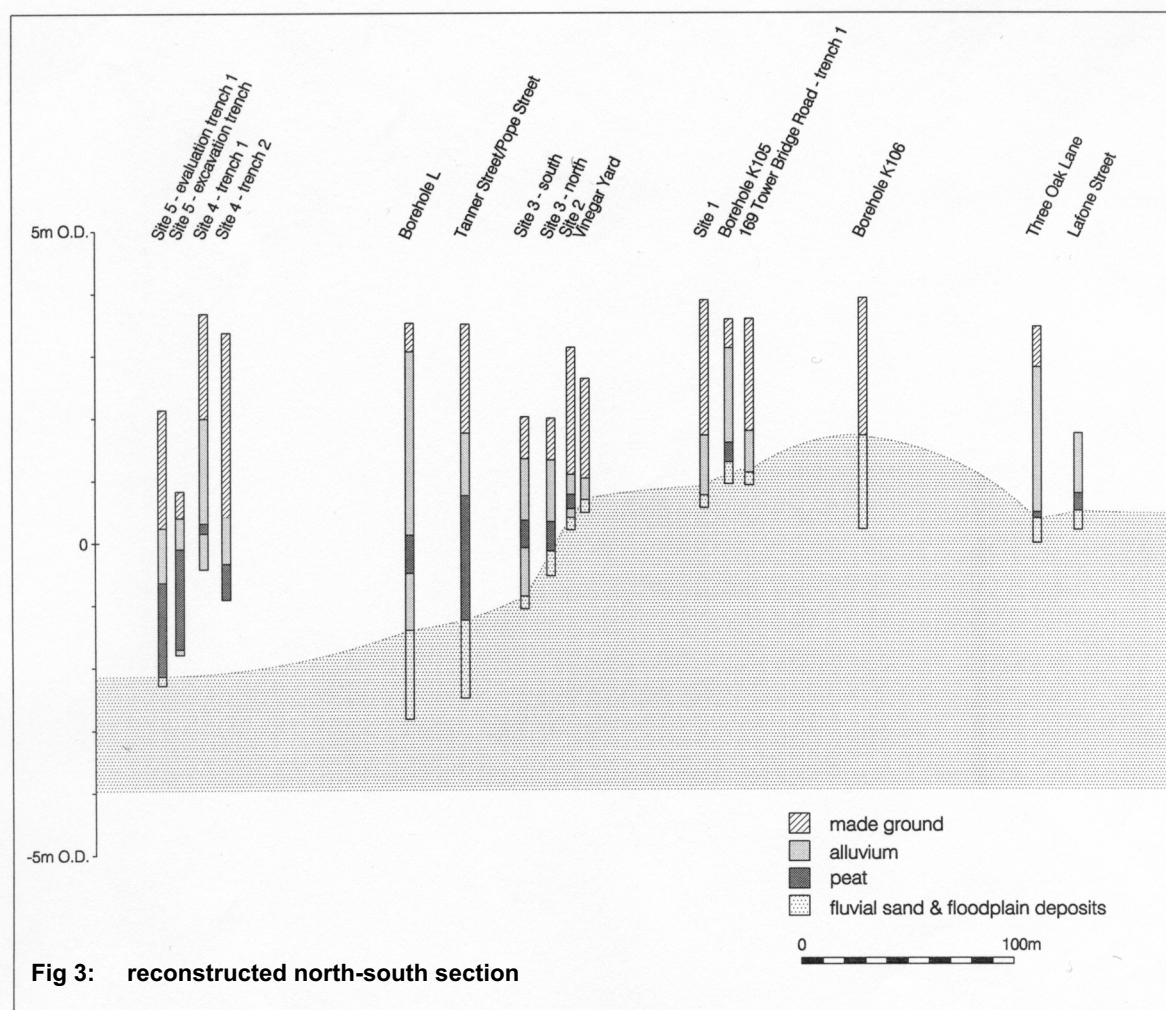


Fig 3: reconstructed north-south section

there are problems with fixing a point in time at which to suggest a landscape model. The movement of water, seasonally and over long periods, is a complex process and produces erosional as well as depositional effects.

Results of the topographic study

The presence of two major eyots in the vicinity, Horselydown to the north and Bermondsey to the south, is already well established. The results of the present study appear to indicate that the southern edge of Horselydown eyot runs roughly along the line of Tanner Street (see Fig. 2) at this point. Beyond this line to the north at 169 Tower Bridge Road, the level of the island's surface was recorded at +0.45m OD (Trench 3). It rose from here, initially quite gently and then steeply, to a level of 1.1m OD less than 50m further north on the same site (Trench 1).⁵ This sand was also

observed at up to +0.75m OD at the adjacent Site 1, whilst excavations at Vinegar Yard revealed comparable sand surviving to a height of +0.66m OD.⁶ Slightly to the east, at Site 2, the surface of the sand was encountered at +0.43m OD. Further north, beyond the Victorian railway viaduct, the island's surface drops away to +0.39m OD at Lafone Street (LAF96)⁷ and +0.18m OD at Three Oak Lane (TKL99).⁸

To the south of Tanner Street, excavations at Site 3 revealed natural soft yellow orange sand at -0.33m OD, although only 10m further south in the same trench, this had dropped to -0.88m OD. Further south still at 36-40 Tanner Street/159-161 Tower Bridge Road, fluvially deposited sand encountered at -0.46m OD⁹ may indicate localised stream channels at Site 3. Further south the contemporary ground level continued to drop. Although excavation at Site 4 only reached a

depth of -0.42m OD with no fluvial sands being encountered, naturally deposited sands were recorded on Site 5 at -2.11m OD, indicating a deep channel at this point. A watching brief at Tanner Street/Pope Street revealed similar natural deposits at c. -1.25m OD, again indicating the presence of a channel.

The simplified section (Fig. 3) indicates the profile of the island and channel. No evidence of Bermondsey eyot to the south was encountered and it is therefore suggested that the deposits recorded at Sites 4 and 5 indicate a major channel between Bermondsey and Horselydown eyots.

Prehistoric exploitation of Horselydown eyot

Recent archaeological work has demonstrated that wherever sufficiently high and dry, even if only seasonally, the sand islands of north Southwark began to be exploited by prehistoric peoples from the Mesolithic onwards. The nature of exploitation is likely to have varied through time and according to local conditions, from sporadic visits to more settled occupation and farming. Mesolithic bone and flint tools found from other areas of the Thames demonstrate that fish and birds formed an important part of the subsistence economy and the eyots would have been ideal locations for temporary camps whilst fishing and bird hunting.¹⁰ Evidence for Mesolithic exploitation of Horselydown, in the form of worked lithics, has been discovered at 283 Tooley Street¹¹ and Butlers Wharf.¹²

There is extensive evidence for later prehistoric activity on Horselydown, including possible Bronze Age cooking pits at Phoenix Wharf,¹³ and Vinegar Yard¹⁴ and suggestions of early agricultural activity at Wolseley Street, Phoenix Wharf¹⁵ and Lafone Street.¹⁶

Evidence for the settlement associated with such activities has, until recently, remained elusive. However, recent excavations at Three Oak Lane revealed a series of ditches and postholes probably dating from the Late Neolithic to Early Bronze Age, along with quantities of daub, suggesting a possible focus of occupation. The tip of an oak ard share was also recovered from the site.¹⁷

Evidence for prehistoric exploitation has also been found on Bermondsey eyot to the south. Neolithic and Bronze age flints have been found during excavations, including those on the site of Bermondsey Abbey, while elsewhere on this eyot Late Bronze Age and Iron age pottery has been recovered from cut features.¹⁸

The topographical evidence outlined above has already demonstrated that the study area would have been marginal and perhaps only seasonally exploited. However even such marginal zones have yielded prehistoric exploitation as established at Vinegar Yard where a cooking pit was sited next to a small channel. At Site 1 small quantities of burnt and struck flint were recovered from a possible soil horizon of charcoal-flecked clayey sand, approximately 0.50m thick. The excavations produced three burnt flints and an undiagnostic struck flake, its metrical attributes very tentatively suggesting a Mesolithic or Neolithic date.

The fluvial sand at Site 2 was cut by a single small feature interpreted as a posthole, which was overlain by a 0.15m thick deposit of dark grey sandy silt, containing occasional charcoal flecking, burnt and struck flint and a possible hammerstone. A well-defined sharp-sided feature, interpreted as a deliberately dug boundary ditch, cut the upper surface of the soil horizon and occasional charcoal flecking, burnt flint, struck flint and a few cattle bone fragments were included within the fill.

The struck flint assemblage from Site 2 was in a good or only slightly chipped condition, suggesting little or no taphonomic movement, implying that the material recovered was more or less *in situ*. The few flakes and blades present indicate reasonably confident flaking but based on a rather casual approach to core shaping and platform creation and maintenance. There was no evidence for the more systematic approaches to reduction as characterised by industries pre-dating the Later Neolithic, so the assemblage is deemed most characteristic of Later Neolithic or Early Bronze Age flint-working traditions.

Although burnt and struck flints and a single fragment of domestic ox bone were recovered from later peat deposits at Site 3, no evidence of prehistoric activity was recovered from the surface of the sand, presumably because it was

too low-lying for significant exploitation, being prone to inundation. Unsurprisingly there was no direct evidence of prehistoric activity further south at Sites 4 and 5, where it is considered the channel would have been deeper. The only culturally introduced material on these two sites was a large flint nodule recovered from the lower silty clays at Site 4 near the base of the channel. The nodule had been struck several times but no diagnostic working was apparent. However, the flint was of good quality with chalky cortex indicative of an origin at, or close to, the parent chalk, suggesting that it had been deliberately imported. There are no obvious reasons for its discard and it may simply have been irretrievably lost in the channel.

It is not clear how long the period of occupation on the eyot continued but there are some indications that it continued beyond the prehistoric periods. A possible boundary ditch recorded at Site 1 produced two fragments of highly abraded Roman pottery in its upper fill, suggesting the possibility that, if this was a Roman feature, the ground here remained drier much longer before being buried beneath alluvium.

Environment and sediment deposition

Column samples, taken through the alluvial sequences at Sites 2, 3, 4 and 5, were examined to establish sedimentary and environmental conditions on these sites.

Lower alluvium deposited prior to peat formation

The earliest alluvial deposits to be examined at Site 2 were interleaving layers of sands and silts which formed the upper fills of a ditch, suggesting successive flood events, while the overlying silty clay represents the alluvial deposition of sediment in suspension from low energy floodwater. Pollen preservation at the base of this sequence was poor although the succeeding alluvium contained polypody and bracken spores with hazel, grass and sedge pollen grains indicating open vegetation cover that included damp woodland, shrubland, dry grassland and possible sedge/grass-swamp. Similar alluvial deposits indicative of an estuarine salt marsh were recorded at Site 3 overlying the Devensian sands and gravels, but pollen

preservation was poor, probably due to physical destruction or abrasion of pollen grains and spores during sediment transportation and deposition.

At Site 4 the earliest observed sedimentary environment was characterised by vegetation common to open water habitats, such as the edge of rivers, and areas subjected to periodic flooding indicated by pollen of *Oenanthe* type (e.g. river water-dropwort) and *Sparganium* type (e.g. branched bur-reed). The presence of *Chenopodium* type and *Armeria* (e.g. sea pink) in the pollen assemblage may indicate marine or brackish water environments, again suggesting salt marsh. A subsequent increase in percentage values of *Typha latifolia* (reedmace) and *Equisetum* (horsetail) indicates the formation of reed-swamp suggesting decreased periodic flooding, lower water levels and increasing terrestrialisation of the landscape. Silts recorded at Site 5 indicate deposition in standing or very slowly moving water, again with no indicators of human activity.

Peat formation

Peat deposits along the edge of the eyot were recorded at Sites 2 and 3. The peat at Site 2 was approximately 0.30m thick with its upper surface being recorded at +0.82m OD. A radiocarbon date from the base of this peat indicates that it started to form between 1890-1435 cal BC. At Site 3 the peat was 0.40m thick with its upper surface at +0.36m OD: it started to form between 1670-1430 cal BC and finished just after approximately 795-410 cal BC.²⁰

Further south into the channel at Site 4, peat deposits were also observed surviving to a height of +0.34m OD in Trench 1 and -0.30m OD in Trench 2 where it was at least 0.60m.

Immediately to the west on Site 5, the peat was 1.74m thick, its top being recorded at -0.10m OD. Although the Site 4 peat was not dated, the base of the Site 5 formation dated from 3000-2980 cal BC or 2940-2580 cal BC and the top from 1450-1030 cal BC²¹ and its proximity to Site 4 suggests these deposits are broadly contemporary.

The presence of a channel is not only reflected by the thickness of the peat, but also in the levels recorded on its upper surface within the channel, which were generally lower than the base of the

peat on the eyot to the north. Elsewhere in Southwark, peat that has been found at similar levels and of this thickness have also been attributed to deposition within minor channels.²²

The dates show that the peat deposits found within the channel at Sites 4 and 5 began to form significantly earlier than the peats on the eyot at Site 2 and 3. The formation of peat on the eyot continued well after the peat in the channel area had stopped forming. It appears that the localised conditions in the channel were favourable to the formation of peat by *c.* 2600 BC while the higher areas on the eyots were relatively dry and potentially available to human exploitation. However, peat had also started forming on the lower parts of the eyot by *c.* 1400 BC, indicating that these areas had become inhospitable to human occupation by this time. On the higher ground of the eyot, in the vicinity of Site 1, there appears to have been no peat formation and the presence of Roman pottery may possibly indicate the potential for exploitation in this later period.

Peat was not observed to the north at Site 1, nor at 169 Tower Bridge Road, presumably due to the relatively high level of these sites, but beyond this apparent crest of high ground to the north, peat has been recorded at Lafone Street, Three Oak Lane and Butlers Wharf.

The pollen assemblage, associated with the formation of peat at sites 2, 3 and 4, was dominated by *Alnus* (alder) indicating the local development of alder carr woodland with areas of reed-swamp indicated by the presence of *Typha latifolia* (reedmace), *Oenanthe* and *Sparganium* type. Oak and pine were also present at Site 3 within the carr woodland or on nearby dry-land alongside elm and lime in a woodland that was probably open in structure.

The upper surface of the peat at Site 3, produced flint granules, sharp flint flakes, a chip of bone, and calcium carbonate worm granules suggesting a dry-land occupation surface with evidence of soil development and human activity. During this phase the pollen-stratigraphic record indicates burning of the vegetation cover associated with an increase in the diversity of herbaceous plants and improved pollen preservation.

Two episodes of cereal cultivation (*Triticum* / *Hordeum* type pollen – wheat and barley) were

noted at Site 4, each corresponding to a marked increase in non-arboreal pollen percentages. The earlier of these episodes coincides with the onset of peat formation, when it appears that much of the natural woodland cover was removed, leaving only remnants of the former vegetation. The area was then gradually re-colonised as a response to changing sedimentary conditions, natural vegetation succession and periods of lower human impact.

Very few pollen grains and spores were recovered from Site 5. However, the presence of tree roots *in situ* in the peat indicates the growth of trees, and therefore terrestrial conditions, while the chaotic disposition of wood debris in the peat and the sparse peaty matrix may suggest that much of the peat accumulated in a damp depression. Only in the uppermost 130mm is a more stable depositional environment indicated by laminations in the peat. This sequence may represent the drying out of a floodplain depression leading to the establishment of marshy woodland. This southern part of the study area is likely to have remained marshy throughout the prehistoric period and correspondingly unattractive to human occupation.

Subsequent inundation

The peat was found to be buried beneath fine-grained sediments representing a renewal of alluvial sedimentation and rising water levels. A widespread body of alluvium, typically over a metre thick, was deposited on the Thames floodplain in the late prehistoric and early historic periods in the form of structureless silt indicative of deposition from suspension in standing water. This was found to have culminated with the formation of a stable ground surface at Site 2 where there are indications that the dry-land vegetation cover was dominated by hazel shrubland while the presence of cereal pollen within the alluvium at Site 4 may indicate nearby human activity.

The medieval period and the precinct of Bermondsey Abbey

Following inundation of the area there was very little evidence for any activity until the post-medieval period. During the medieval period, the area was probably low-lying and still prone to

intermittent flooding, which was documented in Bermondsey in AD 1416, 1448, and 1463-64, and a number of legal cases were brought for the lack of maintenance of river defences.²³

The economic growth of the Bermondsey area is linked with the establishment of the Cluniac Priory (and later Benedictine Abbey) of St. Saviour in *c.* AD 1089. Following its dissolution in AD 1542 it was acquired by Sir Thomas Pope, who built a mansion on the site. The precinct of Bermondsey Abbey extended some distance north



Fig 4: Newcourt map of 1658

of the Abbey itself and, according to Grimes,²⁴ the study area, with the exception of Site 2, falls within its precinct.

The presence of the Abbey led to the formation of a network of roads in the vicinity. Bermondsey Street, known as 'the causeway leading to Bermondsey', had been established by the late 12th or early 13th century running from Tooley Street to the precinct of the priory.²⁵ By the late 14th century the area had become more developed and the name 'Bermondsey Street' was in use. Tanner Street, originally known as Five Foot Lane, was in existence by 1514 when it is mentioned in relation to the common of Horselydown, though this possibly only refers to the eastern part of the road beyond Tower Bridge Road. The Neckinger Stream flowed eastwards alongside Five Foot Lane and is shown on the Newcourt map of 1658 (Fig. 4). Part of the northern bank of this stream was found in excavations at Vinegar Yard, revetted with closely spaced elm piles and associated with medieval ditches and a pond.²⁶

Archaeological features dating from the medieval period were only recorded on Site 5, where leather waste, shoe fragments and a possible piece of jerkin were recovered. From some of the shoe fragments it was possible to reconstruct most of a side-laced boot, with its reinforcement piece to strengthen the lace-holes. It is probably 15th-century in date, although side-laced boots are known from the early- to mid-14th century. Two other boots were represented by their quarters; they were also of side-laced type, although their reinforcements were missing.

Into the post-medieval period: the growth of the tanning industry

From the end of the medieval period, an increasingly concerted attempt was made to reclaim large areas of Southwark and Bermondsey for industrial purposes by the dumping of mixed refuse deposits on the land. The industrialisation of Bermondsey had commenced by the late 14th century and tanning was the primary industry. It seems probable that the waste leather retrieved from a medieval pit at site 5 represents the waste products of this early industry. There were various advantages to this

location: the land was on the periphery of the city and could be purchased cheaply, it was close to cattle markets and also to sources of oak bark, an essential ingredient in the tanning process, and there was a plentiful water supply. It would have also been advantageous to keep this rather pungent industry away from the centre of population.

Archaeological, historical and cartographic references to this industry are plentiful; evidence of tanning has been found at numerous sites in the vicinity and the industry is obviously reflected in the place names of the area. Recent excavations at Vinegar Yard have revealed remains of the related industry of tawing (principally the preparation of skins of animals such as sheep, goats, calves and pigs, rather than heavier cattle hides).²⁷

Some evidence of the tanning industry was identified at all five of the study sites, with tanning pits being found on Sites 2, 4 and 5. Seventeenth-century timber-lined tanning pits, revealed at Site 2, were found to have been replaced by brick pits in the early 20th century. Rocque's map of AD 1745 shows properties fronting onto Five Foot Lane (Tanner Street) and Horwood's map of AD 1792-99 indicates that at least part of Site 2 was adjacent to, or partly occupied by, a glue maker, an allied trade of the tanning industry. Eighteenth-century timber-lined tanning pits were also recorded at Site 5, and a vast complex of timber and brick-lined tanning pits had been built on Site 4 by the 19th century.

Waste products from this post-medieval industry, in the form of sheep metapodials and phalanges, were recovered from 18th-century ground-raising deposits at Site 3, along with the remains of 18th- and 19th-century buildings. An extensive deposit composed of crushed tree bark and acorns was observed at Site 4 overlying the alluvium at 2.0m OD. This was almost certainly residual material derived from tanning activities. The main element of the tanning process involves prolonged soaking of animal hides and skins in a solution containing tannin, a vegetable material occurring naturally in several species of tree, the best source being oak, with the tannin coming from the bark of the tree. To improve the strength of the tannin, ground-up unripe acorn cups from the Valonian

oak were often added, as this was a particularly rich source of tannin.

More waste, in the form of animal bones and horn cores, was recovered from various elements of a ditch recorded at Sites 3 and 4 and also at 36-40 Tanner Street/159-161 Tower Bridge Road. These 17th-18th century features appeared to form elements of a large drainage ditch running roughly parallel to the modern line of Tower Bridge Road, which may be visible on Rocque's map of 1747. The feature was infilled prior to the deposition of reclamation dumps across the area. It is of interest that this feature follows the line of modern day Tower Bridge Road, which was not established until the early 20th century, and it may have influenced, or reflected, property boundaries, which remained until the instigation of the modern road system.

Conclusions

Examination of the evidence from the five study sites, in conjunction with other excavated evidence, has helped to define part of the southern shores of Horselydown eyot during later prehistory, and to locate part of the channel between Horselydown and Bermondsey eyot to the south. All five sites were marginal land or under water during this period, although occasional post-holes, ditches and fragments of worked flint testify to some sporadic visiting of the water margins. The area appears to have remained quite inhospitable until the 17th century at the earliest, when land was reclaimed and the area began to be used by tanners and tawyers.

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