

# Changing prehistoric environments on a Southwark island margin, at Butler's Wharf Estate

Victoria Ridgeway  
Frank Meddens

## Introduction

ARCHAEOLOGICAL investigations were carried out by Pre-Construct Archaeology in advance of development on four sites, between 1996 and 1998. The area of study (part of Butler's Wharf Estate) is defined by the Thames to the north and St. Saviour's Dock to the east, extending back c. 200m from the Thames frontage, and c. 160m west of St. Saviour's Dock (Fig. 1). The sites investigated were Spice Quay (SES96), West Courtyard (WCW96), Grinders and Operators (GFD97) and Cayenne Court (BTW98).

The archaeological investigations revealed remains of a prehistoric landscape, sealed by thick deposits of alluvial clays and peat, with subsequent post-medieval land drainage, reclamation and occupation. This article focuses on the information for the early landscape, environmental conditions and evidence of its prehistoric exploitation. The later sequence will be published separately<sup>1</sup>.

## Geology and topography

The underlying geology in the vicinity of the Butler's Wharf Estate is London Clay overlain by fluvial sands and gravels thought to have been deposited at the end of the last Ice Age (late Devensian)<sup>2</sup>. Since the end of the last glaciation, periods of transgression and regression of the Thames have resulted in the deposition of over 2m of sands, silts and clays, interleaved with localised

peat deposits<sup>3</sup>. In addition this area was also scoured and cut by many localised river channels, the most recently surviving example being the River Neckinger, which flowed into St. Saviour's Dock to the east of the Butler's Wharf Estate.

In the north Southwark area the landscape in the later prehistoric period would have been one of sand and gravel eyots (islands) surrounded by mud-flats, interspersed with braided river channels. It appears that the shape of these eyots remained broadly the same from their formation in the late glacial/early post-glacial to the Roman conquest<sup>4</sup>, though marine transgressions and regressions and the changing courses of the channels would presumably have resulted in variations in the area of land exposed<sup>5</sup>.

## Archaeological background

Previous investigations indicate that the Butler's Wharf Estate lies on, or just beyond, the northern flank of Horselydown Eyot, one of the islands in the southern reaches of the Thames<sup>6</sup>. Archaeological work in the north Southwark area has revealed a wealth of evidence for prehistoric exploitation of this stretch of the lower Thames floodplain, masked by substantial deposits of overlying alluvium, which have helped to preserve these remains<sup>7</sup>. Evidence for prehistoric activity on the sand and gravel islands has been found dating from the Mesolithic into the Iron Age, and evi-

1. K. Sabel and C. Jarrett forthcoming *The Post-Medieval Development of Four Sites at Butler's Wharf, Butler's Wharf Estate, London Borough of Southwark*.
2. P. L. Gibbard 1994 *Pleistocene History of the Lower Thames Valley*.
3. R. J. N. Devoy 1979 'Flandrian sea level changes and vegetational history of the Lower Thames estuary' *Phil Trans Royal Soc London B* 285, 355-407.
4. I. Tyers 1988 'The Prehistoric peat layers (Tilbury IV)' in P. Hinton (ed) *Excavations in Southwark 1973-76, Lambeth 1973-79* LAMAS and SAS Joint Pub 3.
5. The early topography of the north Southwark islands has been

discussed in detail elsewhere, e.g. J. Drummond-Murray, D. Saxby, and B. Watson 1995 'Recent Archaeological Work in the Bermondsey district of Southwark' *London Archaeol* 7, no. 10, 251-7; B. Yule 'Natural topography of north Southwark' in P. Hinton (ed) *Excavations in Southwark 1973-76, Lambeth 1973-79* LAMAS and SAS Joint Pub 3.

6. Drummond-Murray *et al.*, *op. cit.* fn. 5.
7. N. Merriman 1992 'Predicting the unexpected: prehistoric sites recently discovered under alluvium in central London' in S. Needham and M. G. Macklin (eds) *Alluvial Archaeology in Britain* Oxbow Monograph 27; F. M. Meddens 1996 'Sites from the Thames Estuary wetlands, England, and their Bronze Age use' *Antiquity* 70, 325-34.

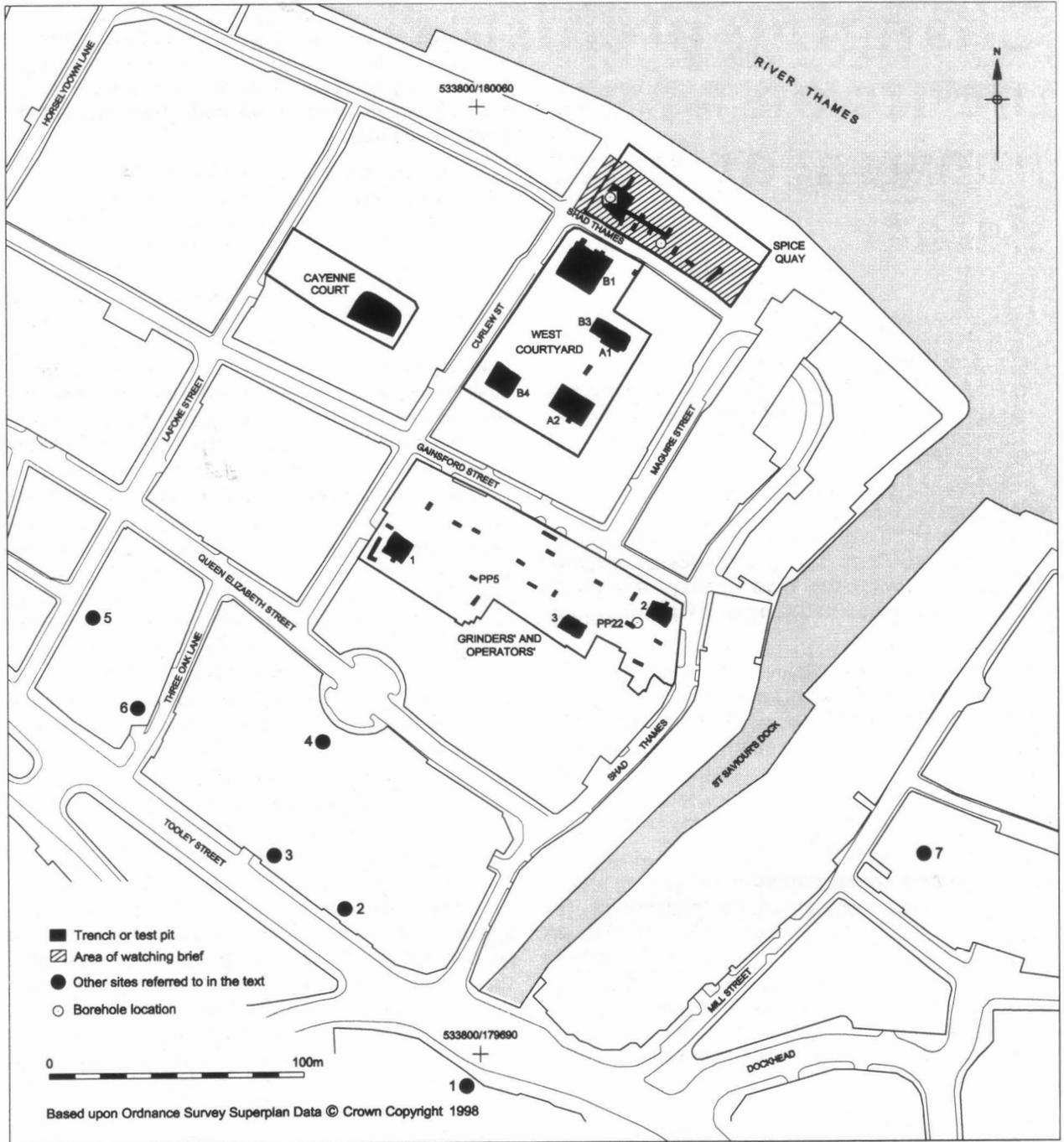


Fig. 1: site location showing other sites in the vicinity mentioned in the text: 1. Phoenix Wharf; 2. 283 Tooley Street; 3. 271-281 Tooley Street; 4. Queen Elizabeth Street; 5. Lafone Street; 6. Three Oak Lane; 7. Wolseley Street.

dence for late Bronze Age activity has been found within both alluvial deposits and peat layers.

On Horselydown, worked lithics identified as mesolithic in date were recovered from the basal silts of a prehistoric stream channel at 283 Tooley

Street<sup>8</sup> and from prehistoric deposits at Lafone Street<sup>9</sup> and Three Oak Lane<sup>10</sup> (Fig. 1; 2, 5, 6). Ard marks, suggesting early agriculture, have been found at many sites on the Southwark island complex, including Lafone Street and Phoenix Wharf<sup>11</sup> on Horselydown (Fig. 1; 5, 1) and further afield at

8. D. Saxby 1994 *283, Tooley Street, An Archaeological Excavation*. MoLAS unpublished report.

Wolseley Street<sup>12</sup> (Fig. 1; 7), Hunt's House<sup>13</sup> and Hopton Street<sup>14</sup>. At Phoenix Wharf the ard marks were associated with a ploughsoil containing pottery of primarily middle Bronze Age date and sealed a pit containing burnt flint<sup>15</sup>. Adjacent to Lafone Street, at 1-2 Three Oak Lane, the tip of a wooden ard share, provisionally dated to the early to mid Bronze Age, was found in a contemporary ditch backfill. Structural remains in the form of postholes and stakeholes were identified here and further west at Hopton Street. At Queen Elizabeth Street worked flints and pot sherds were recovered from three trenches south of The Circle (Fig. 1; 4), in weathered sands overlying the natural sands and gravels of Horselydown Eyot. Later occupation evidence, in the form of Iron Age ditches, post-pits, stakeholes and rubbish pits, has been found at 283 Tooley Street<sup>16</sup> and 271-281 Tooley Street<sup>17</sup> (Fig. 1; 2, 3).

### The gravels, sands and associated prehistoric activity

Natural gravels were observed at various locations during the archaeological works. Where seen in the north, in boreholes at Spice Quay, the upper surface of the gravels was observed at -4.45m OD and -4.95m OD. Comprising dark greyish brown coarse sandy flint gravel, they appeared to have been reworked<sup>18</sup>, and contained a fragment of 16th-century Raeren stoneware<sup>19</sup>. Further south in West

9. J. Bates and J. Minkin 1999 'Lafone Street, Southwark -- prehistoric farming and a medieval bridge' *London Archaeol* 8, no. 12, 325-330.
10. J. Proctor and B. Bishop, forthcoming 'Prehistoric Occupation and Environmental Change at Three Oak Lane, Southwark' *Surrey Archaeol Collect*.
11. J. M. C. Bowsher 1991 'A burnt mound at Phoenix Wharf, South-East London: a preliminary report' in Hodder and Barfield (eds) *Burnt Mounds and Hot Stone Technology*, II-19.
12. Drummond Murray *et al.*, *op. cit.* fn. 5.
13. R. Taylor-Wilson, 1998 *An Assessment of Archaeological Excavations at Hunt's House, Guy's Hospital, London Borough of Southwark*, Pre-Construct Archaeology, unpublished.
14. V. Ridgeway and J. Butler 1999 'Prehistoric finds at Hopton Street in Southwark' *London Archaeol* 9, no. 3, 92-6.
15. *Op. cit.* fn. 11.
16. *Op. cit.* fn. 8.
17. B. Watson 1994, *271 Tooley Street, An Archaeological Evaluation* MoLAS.
18. V. D. Williamson, C. A. Pine, M. R. Bates 1996 *A Preliminary Report on the Geoarchaeological Potential of the Spice Quay site (SQ/96)*, Shad Thames, Southwark, London SE1.
19. F. M. Meddens 1996 *The Medieval and Post-Medieval pottery Spot Dating Report* Pre-Construct Archaeology, unpublished report.
20. C. P. Green, N. P. Branch, J. A. Lee, N. Page, A. P. Palmer, J.-L. Schwenninger and P. Toms 1999 *Butler's Wharf, London, Palaeoenvironmental Report* ArchaeoScene Consulting unpublished report.

Courtyard (Trench B4), gravel deposits at a maximum level of +0.04m OD comprised loose, greyish black, gravel and coarse sand with occasional large angular flint nodules. Further observations of the level of gravel were obtained from engineers' borehole records.

Greenish grey silty sand was observed at +0.31m OD at Cayenne Court, presumably overlying coarser gravel deposits. At the south-east corner of West Courtyard (Trench A2) light green-yellow sand with slightly silty and clayey patches was observed in an area 3.5m east-west by 2.8m north-south. The deposit was seen to be at least 0.30m thick, surviving to a maximum height of +0.31m OD, sloping down to the east to a level of +0.20m OD. A sample taken from this deposit produced an optically stimulated luminescence (OSL) date of over 18,510 BP suggesting a late Devensian Age and confirming that it forms part of the floodplain<sup>20</sup>. Similar deposits were not observed in a test pit 10m to the

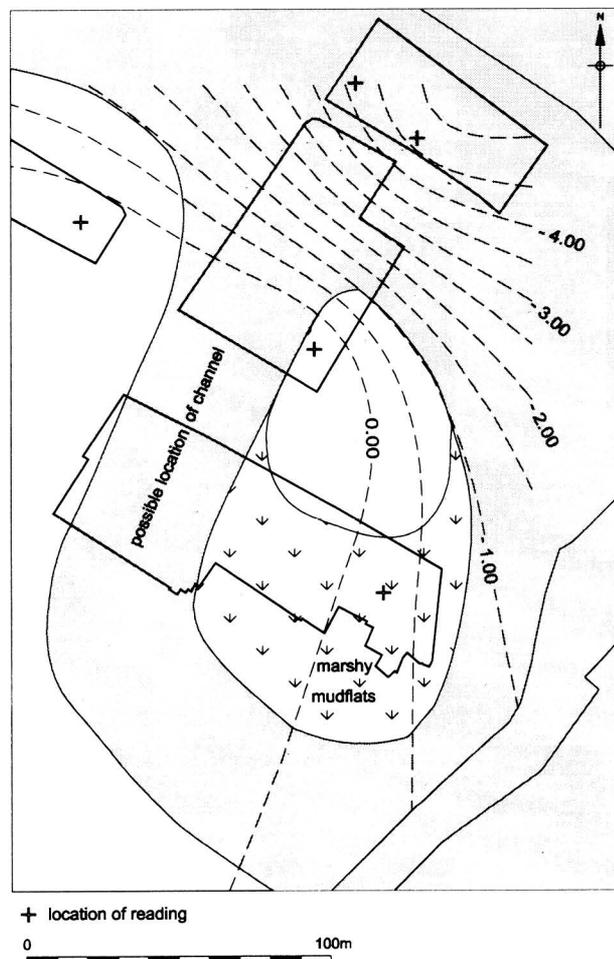


Fig. 2: suggested model of the prehistoric landscape.

north, suggesting that the upper surface of the sand sloped off in this direction, reflecting the profile of the underlying gravel.

This information has been used in an attempt to form a predictive model of the prehistoric landscape of this area (Fig. 2). Whilst such a method cannot be expected to recreate accurately the ancient topography, some broad general conclusions can be drawn. Indications are of an area of higher ground in the south-west, dropping off fairly sharply to the north and slightly more gently to the east, though the upper surface of these deposits in the far north, at Spice Quay, may have been subjected to scouring.

A borehole at Grinders and Operators extended to a depth of -1.39m and encountered no gravel. The basal deposits were predominantly sandy with increasingly common horizons of silty clay probably representing episodes of marine transgression, followed by low energy sedimentation, perhaps in an estuarine mud-flat environment. Overlying peat deposits have been radiocarbon dated and roughly equate with the late Bronze Age<sup>21</sup>. This may indicate that during the earlier Bronze Age periods this area was marshy, marginal land at the edge of an island. It has been suggested that the earliest deposits encountered probably accumulated no later than 3500 BP.

With the exception of a single burnt flint fragment recovered from the surface of the sand at Cayenne Court, the only prehistoric evidence from the Butler's Wharf Estate was from West Courtyard Trench A2, where two distinct phases of activity were identified, overlying the natural sand [95]. The upper surface of the sand was uneven and irregular, probably due to erosion by natural agencies. Overlying this, and filling the irregular hollows, was a layer of grey sand and gravel 10mm to 50mm thick, approximately 30% of which was composed of fragments of burnt flint. The excavator noted that the deposit had been influenced by water action and that it could represent a deliberately constructed surface affected by post-depositional processes<sup>22</sup>. This was sealed by a light green sandy clay recorded at a maximum level of 0.48m OD and interpreted as naturally deposited alluvium [94], its upper surface mottled with a dark silty deposit indicative of biological reworking.

21. Samples submitted to Beta Analytic Inc, Florida, see below in text for absolute dating.

22. D. Divers 1996 *A Summary of the archaeological Evaluation at West Courtyard, Butler's Wharf Estate, London* see PCA unpublished report.

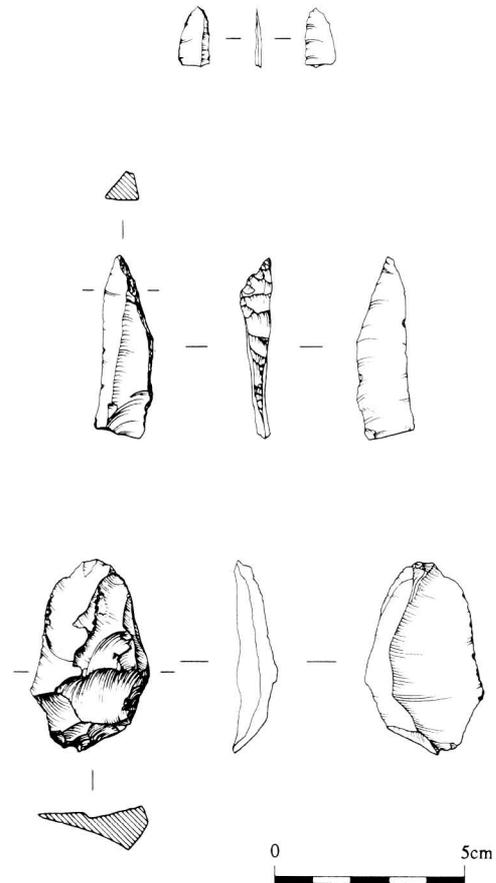


Fig. 3: mesolithic flint.

A second phase of prehistoric activity was indicated by the presence of a 50mm to 150mm thick deposit of dark blackish grey sandy silty clay with a high organic content [93], at a level of 0.55m OD, over the light green sandy clay. This too contained much burnt flint with occasional struck flint and two small fragments of abraded daub. The artefactual material and high organic content indicate a soil horizon or occupation surface, confirmed by sedimentary analysis and the pollen record. Thermoluminescence (TL) dating of a sample of burnt flint from this deposit produced a date of 3,620 BP  $\pm$  580<sup>24</sup>. The deposit was cut by a depression, probably a natural water-worn hollow, measuring at least 1.70m east-west by 0.68m north-south and 0.50m deep, with steep sides and irregular base, filled with sandy clay containing some burnt flints.

To the west, the eastern edge of a channel [98] was observed, at least 1.5m wide and 0.5m deep, filled

23. *Op. cit.* fn. 20.

24. *Op. cit.* fn. 20.

25. N. Ashton 1988 'Tranchet Axe Manufacture from Cliffe, Kent' *Proc Prehistoric Soc* 54, 315-320.

with a mixed light green sandy clay and light brown sand, with fine-medium gravel, c. 70% of which was burnt flint, frequent sandy lenses and fibrous organics, worked flint and heavily abraded daub. It truncated the adjacent prehistoric deposits and apparently represents part of a channel running between the areas of sand observed here and at Cayenne Court. Gravels observed at 0.04m OD in a sondage at the base of West Courtyard Trench B4, overlain by 0.60m of mid green clay, if part of the same feature, suggest that it was wide, if relatively shallow, indicative of a typical mudflat/creek environment. Its location was possibly reflected by a much later large channel [54], which cut overlying alluvial deposits.

A total of 656 pieces of extensively burnt, but otherwise unmodified, flint weighing 5749 g were recovered from the above deposits, suggesting that much more than accidental burning or occasional hearth construction was occurring nearby. Seven humanly modified pieces of lithic material were recovered, including a microlith, a piercer or point and a possible tranchet axe sharpening flake (Fig. 3) all characteristic of Mesolithic industries and all recovered from the channel. Tranchet axes are commonly found in and around the Thames, and manufacturing sites have been found at Cliffe<sup>25</sup> and Erith<sup>26</sup>. The high number of blades and general technological competence of the remaining assemblage was consistent with a date no later than the Neolithic.

### The peat deposits

Peat has been identified from several sites in the Southwark area and has generally been equated with Devoy's<sup>28</sup> Tilbury IV regression (around 1500-

1000 BC)<sup>29</sup>, though earlier peat deposits have also been recorded; for example in excavations at Rotherhithe where peat was equated to Devoy's Tilbury III<sup>30</sup>. A more complex sequence of events than that proposed in Devoy's model, developing in response to local conditions, has been suggested in recent work by Bridgeland and others<sup>31</sup>. Peat deposits within this range have been identified close to the site at Three Oak Lane at a level of +0.33m OD<sup>32</sup>, Lafone Street at 0.82m OD<sup>33</sup> and to the east of St. Saviour's Dock at George Row, at +0.48m OD<sup>34</sup>.

At Grinders and Operators, a peat deposit 0.45m thick was observed in Trench I, overlying alluvial clay, at a level of 0.35m OD. Peat was observed at levels of 0.00m OD and -0.10m OD in two prospecting pits (5 and 22), as well as in the archaeological borehole, at +0.22m OD. It was assumed that this sequence would have been repeated across most of the site had excavations been sufficiently deep. The peat deposit identified in the borehole was 0.14m thick, its upper surface apparently disturbed by erosional activity, possible indicating a rapid rise in the water table following peat formation. Samples taken from the top and base of the deposit were dated to 1430-1045 BC<sup>35</sup> and 1405-1030 BC<sup>36</sup> respectively.

26. H. Taylor 1997, 'Lithic Report for Erith' in *Bronze Age Way: Archaeological Excavations*. Unpublished RPS Clouston Archive Document. Bexley Council.
27. B. J. Bishop 1999, *Excavations at West Courtyard, Butler's Wharf, London Borough of Southwark. Site code wcv96. Lithic Assessment*. Pre-Construct Archaeology, unpublished report.
28. *Op. cit.* fn. 3.
29. *Op. cit.* fn. 4.
30. J. Sidell, R. Scaife, S. Tucker and K. Wilkinson 1995 'Palaeo-environmental investigations at Bryan Road, Rotherhithe' *London Archaeol* 7, no. 11, 279-285.
31. D. R. Bridgeland, P. Allen, and B. A. Haggart 1995 *The Quaternary of the lower Reaches of the Thames, Field Guide*, Quaternary Research Association Cambridge.
32. *Op. cit.* fn. 10.
33. *Op. cit.* fn. 9.
34. D. Divers, 1997 *An Assessment of the Archaeological Excavations at Adlards Wharf, Bermondsey Wall West, London Borough of Southwark*.
35. Beta -- 108653 calibrated 2 sigma.
36. Beta -- 108654 calibrated 2 sigma.



Fig. 4: excavation of West Courtyard, Trench A2.

Boreholes showed potentially comparable peat deposits at +0.14m OD towards the west of site, and +0.42m OD *c.* 20m south of West Courtyard Trench 2, although no peat deposits were encountered at West Courtyard. Peat was observed in boreholes<sup>37</sup> to the north-west, with surface levels of -0.87m to -1.02m OD. This may be a contemporaneous deposit, or an earlier phase of peat formation.

A deposit of peat was observed at Spice Quay, at a level of -2.30m OD, in pile probe 180, although it seems unlikely that peat at such a depth equates with deposits observed elsewhere in the Butler's Wharf Estate. The recovery of an unabraded fragment of German stoneware, dated to the 16th century, from the upper surface of the underlying gravel suggests reworking, and this information can only be used with confidence to indicate the level of the late and post-medieval foreshore.

### The alluvial clays

A relatively clean and homogenous deposit of blue-grey and orange-brown waterlain silt-clays sealed peats and gravels in all observed locations (Fig. 4). The thickness of this deposit varied from *c.* 2.0m in the south to 3.6m thick in the north.

The upper surface of the clay, as predicted from excavations and engineers' borehole readings, in-

dicates an area of higher ground, its top above 2.50m OD, extending from the south-west to the north-east (Fig. 5). The surface of the alluvium appears to drop away sharply to the north and east, sloping down to 1.50m OD at the northern end of West Courtyard, dropping to around -1.30m at Spice Quay, with an isolated reading as low as -3.32m OD, possibly reflecting truncation. The continuing influences of the precursors to the modern Thames and Neckinger can still be seen to the north and east.

At Grinders and Operators, the borehole revealed that the upper surface of the peat had been eroded and was overlain by sandy sediment, indicative of a marine or fluvial flooding episode<sup>38</sup>. Overlying clays were indicative of low energy fluvial conditions remote from current activity. Similarly at West Courtyard the lower 0.5m of alluvial deposits contained some fine sand whilst the later horizons were generally much less sandy. An indication of changed depositional conditions occurs at around 1.30m OD, possibly reflecting a reduced rate of sedimentation<sup>39</sup>. Mollusca from the uppermost parts of both sequences include the freshwater snail *Bithynia tentaculata*, a species found both in standing and running water, but most common on stones near the banks of rivers, suggesting that at the time of deposition the site was close to freshwater habitats<sup>40</sup>.

These conditions apparently prevailed until the late medieval period, and it is therefore assumed that the area would have been marginal ground, unsuitable for occupation, throughout this period, prior to draining and reclamation.

### The palaeoenvironment of Butler's Wharf

Two detailed palaeoenvironmental sequences were studied for the Butler's Wharf sites. The first was carried out on the borehole immediately north of Prospection Pit 22 at Grinders and Operators; the second was completed on a column sample taken from West Courtyard Trench 2. Both of these sequences were near the west bank of the former Neckinger river, which was a tributary to the river Thames, and they were situated *c.* 75m apart. The borehole sample indicated that this part of the site had been lower-lying relative to the area where the column sample was taken. The borehole sequence reflected a succession of four flooding events,

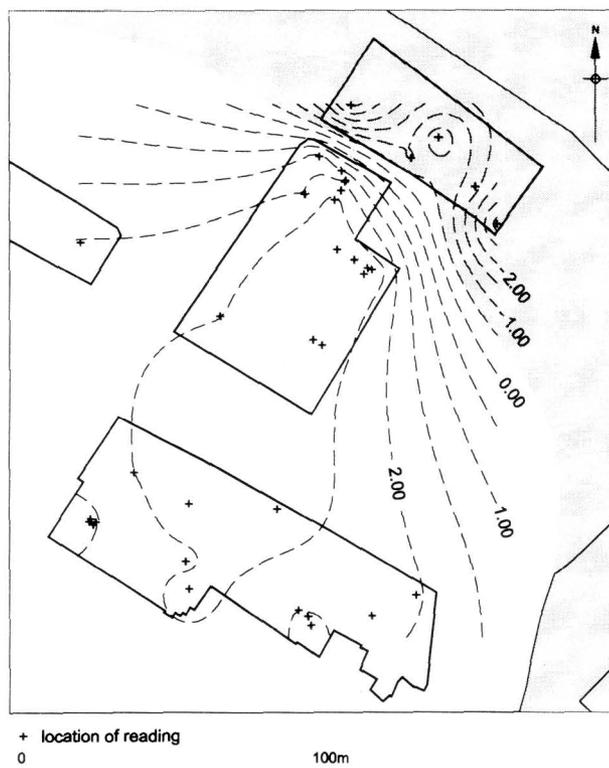


Fig. 5: suggested model of the surface of alluvial deposits.

37. Hawkins op. cit. fig. 3

38. N. P. Branch and C. P. Green 1997, *Butler's Wharf, (Southwark, London) Palaeoenvironmental Assessment Report* ArchaeoScape Consulting unpublished report.

39. Op. cit. fn. 20.

40. Op. cit. fns 20, 38.

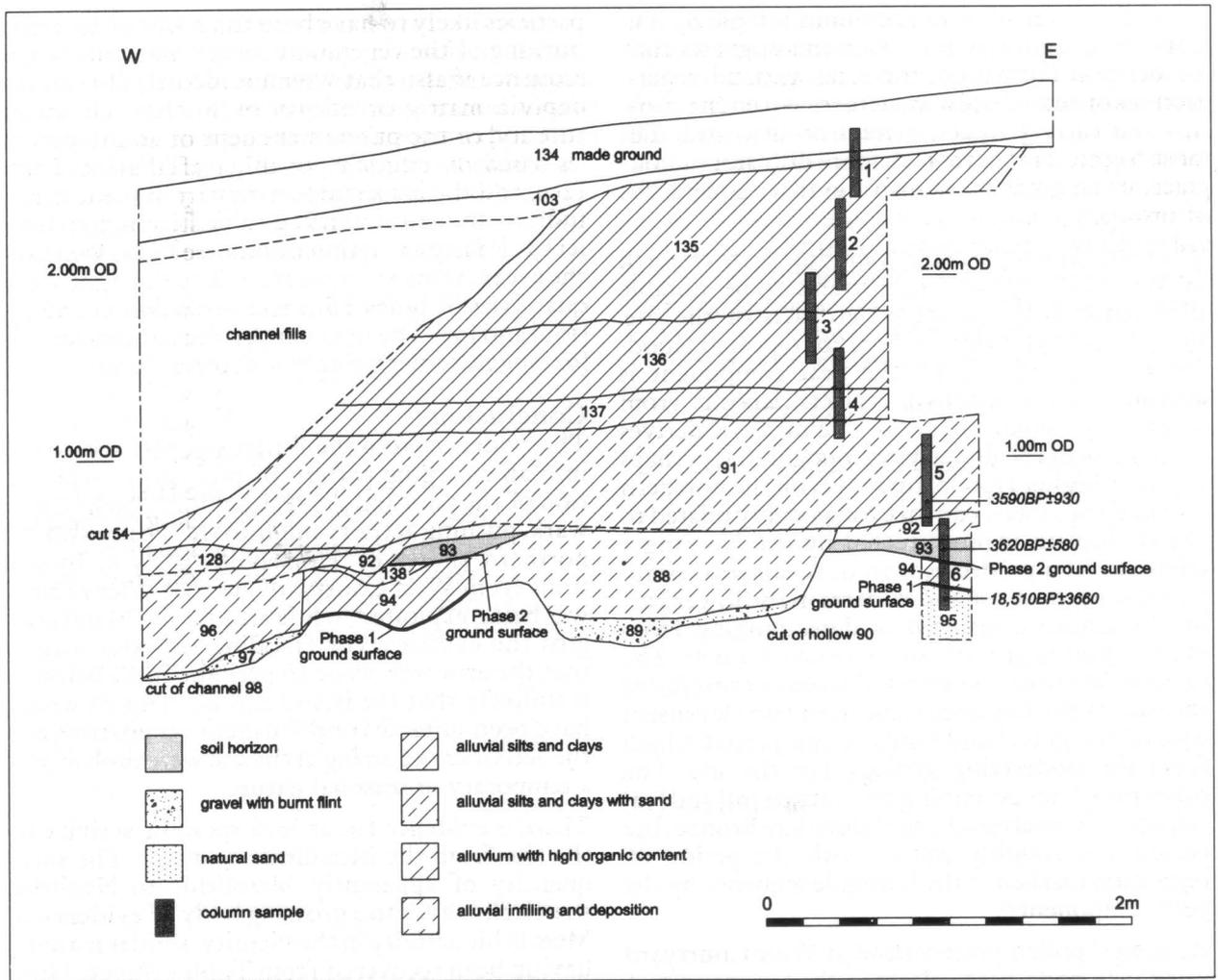


Fig. 6: south-facing section, West Courtyard, Trench A2, showing locations of column samples and absolute dates.

comprising sandy silt and clay deposits, followed by a period of regression characterised by peat growth. The sand, silt and clay layers were indicative of active flow flooding events followed by much more low energy fluvial environments such as estuarine mudflats. The fourth flooding event developed into much more terrestrial conditions than the preceding ones, ultimately demarcated by a peat horizon lacking in mineral sediments altogether<sup>41</sup>. The peat deposit has been C14 dated as stated above, with one date being obtained from the base of the layer and a second from the top, dating to 1430-1045 cal BC<sup>42</sup> and 1405-1030 cal BC<sup>43</sup> respectively, placing it within the middle to late Bronze Age<sup>44</sup>. This particular sequence of peat overlying an alluvial sequence overlying the

Devensian sands and gravels is common on sites around the Horselydown eyot and is reflected at sites at Three Oak Lane and Tower Bridge Road among others<sup>45</sup>.

The peat deposit in the pollen record reflects the development of an alder and willow carr woodland. This woodland environment appears widespread in the Lower Thames region during this period, with evidence for it elsewhere in Southwark as well as on sites in north-east London at Beckton, Dagenham and Rainham and in south-east London, such as at Erith<sup>46</sup>.

Pollen-stratigraphic analysis was conducted on samples obtained from the borehole<sup>47</sup> at Grinders and Operators and the lowest 0.5m of the sequence at

*cal Assessment of Excavations at 167 Tower Bridge Road, London Borough of Southwark.* Pre-Construct Archaeology unpublished report.

41. *Op. cit.* fn. 38.

42. See fn. 35.

43. See fn. 36.

44. *Op. cit.* fn. 38.

45. *Op. cit.* fn. 10; J. Proctor and M. Parsons 2000 *An Archaeologi-*

46. Rackham; Meddens; Sidell.

47. *Op. cit.* fn. 38.

West Courtyard<sup>48</sup> (Fig. 6, column sample 6). The data from Grinders and Operators suggests that, before peat formation, the local wetland vegetation consisted of open woodland, with lime probably colonising adjacent areas of dry land. The pollen record from this sequence does not include obvious pointers to human modification of the landscape.

The column sample taken some 75m further north at West Courtyard demonstrates some notable differences between these two parts of the site. First, there is no evidence here for repeated flooding events, and second, the peat component is absent. The column here reflects deposits from levels of +0.16 to +2.67m OD. The material derives from a rise in the underlying topography, perhaps a spur of higher floodplain gravel on the northern flank of the Horselydown eyot, possibly related to the floodplain regime created by the Neckinger tributary or a predecessor to it. As already established, a series of OSL and TL dates in the lower part of the sequence resulted in dates ranging from 18,570 ± 3660 BP, 3620 ± 580 BP to 3590 ± 930 BP. The earliest date taken on material from context [95] at the base of the sequence indicates a late Devensian date of the gravel and sands of this period which form the underlying geology for the site. The other two dates pertaining to contexts [93] and [92] respectively relate to the middle to late Bronze Age period and roughly equate with the period of regression marked in the borehole sequence by the peat component<sup>49</sup>.

Although pollen preservation at West Courtyard was fairly poor, particularly in the lowest part of the sequence (contexts [95] and [94]), this may relate to this material being coarser sands and gravels deposited in a cooler more active fluvial environment. Better preservation in the Bronze Age part of the sequence (contexts [93] and [92]) not only mirrors a change in sedimentation processes, but also a different environment. The earlier part of this depositional element (context [93]) indicates grassland and open woodland with possibly hazel, oak and birch on the higher part of the spur, fringed by alder and wet grassland identical to that reflected in the peat section of the borehole sequence to the south.

There are indirect indications of human impact on this part of the landscape in the form of weeds associated with ground disturbance characteristic of arable agriculture and pastoralism, as well as the presence of a component of microscopic charred

48. *Op. cit.* fn. 20.

49. *Op. cit.* fn. 20.

particles likely to have been the result of localised burning of the vegetation cover<sup>50</sup>. This part of the sequence is also that which is identified with the deposition of quantities of burnt flint. The structure and composition of the deposits in this part of the column suggest a possible buried ground surface, and the associated charcoal and plant debris indicate human activity sustained enough to have left a clear signal in the column sample as well as in the excavations as demonstrated by the significant quantities of burnt flint recovered from contexts [100] and [93]. The next part of the column sample [92] suggests increasingly wet conditions<sup>51</sup>.

## Conclusions

The evidence from the Butler's Wharf Estate fits into an emerging pattern of prehistoric exploitation of the sand and gravel islands in north Southwark, pushing activity out into the Thames on the northern shores of Horselydown Eyot. Indications from West Courtyard are that drier ground was being exploited, while around the island margins the evidence for flooding episodes suggest that the area was prone to periodic inundation. It is unlikely that the island and its margins would have been suitable for permanent occupation, and the activities occurring at the site were probably of a temporary or seasonal nature.

There is evidence for at least sporadic activity on the site from the Mesolithic onwards. The small quantity of apparently Mesolithic to Neolithic struck flint adds to a growing body of evidence of Mesolithic activity in the vicinity, similar material having been recovered from Tooley Street, Three Oak Lane and Lafone Street and further west at Hunt's House and Hopton Street.

The quantities of burnt flint recovered from the West Courtyard excavations obviously attest to significant activity in the area in the prehistoric period. Burnt flint is commonly found in association with prehistoric deposits but the quantities recovered here suggest that more than accidental burning or small-scale hearth construction was occurring.

Though no exact parallels for this material have been found in the vicinity, less than 300m to the south at Phoenix Wharf (Fig. 1; 1) much burnt flint dated to the middle Bronze Age was recovered from a large pit, sealed beneath deposits associated with early cultivation, subsequently overlain by peat. In addition to burnt flint, the pit also contained charcoal, cinders, and a charred bovine ra-

50. *Op. cit.* fn. 20.

51. *Op. cit.* fn. 20.

dius. These remains were interpreted as the residues from large-scale cooking operations. The excavator suggests that a 'burnt mound' may have covered the pit, but that this had subsequently been ploughed out.

Mounds of burnt stone and charred remains, often associated with large pits, and generally dating from the Bronze Age into the Iron Age, are a well known archaeological phenomenon, and have been recognised since the 19th century. Such sites have been found throughout Britain, though with apparent concentrations in southern England, the Midlands, Wales and northern Scotland<sup>52</sup>. Traditionally it was thought that hot stones were added to water in large pits in order to boil food, though more recently other interpretations have been suggested, such as that food was baked or steamed<sup>53</sup>. An argument has also been made in favour of use of such sites as saunas, especially when located near a water source and where few or no charred animal remains have been found<sup>54</sup>. Various other explanations for the use of burnt stone in archaeological contexts have been offered, including boat-building, butter production, brine evaporation, brewing, leather-working, metallurgy and deliberate burning of flint for use as temper in pottery<sup>55</sup>.

The quantities of burnt flint recovered from West Courtyard may suggest similar activity to that at Phoenix Wharf was taking place close by. However, interpretation of the West Courtyard evidence is somewhat problematical; in the first phase of activity there was no evidence for burning of the flint *in situ*, in the form of areas of scorched ground or charred remains, although surface burning does not necessarily leave evidence in the form

52. T. Darvill 1987, *Prehistoric Britain*.

53. J. Hedges 1974 'Excavation of Two Orcadian burnt mounds at Liddle and Beaquoy' *Proc Soc Antiq Scotland* 106, 38-97.

54. L. Barfield and M. Hodder 1987 'Burnt Mounds as Saunas, and the Prehistory of Bathing' *Antiquity* 61, 370-9.

55. *Ibid.*, F. Meddens, *op. cit.* fn. 7.

of soil discoloration<sup>56</sup>. Whilst it is possible that the flints were alluvially displaced from elsewhere, examination of the material showed little abrasion indicating minor movement after burning<sup>57</sup>, indeed the deposits themselves are unlikely to have originated as a result of overbank flooding<sup>58</sup>. The early deposit did however seem to have been subject to some post-depositional erosion and possible deflation, and thus traces of burning or charcoal may have been washed away. The use of burnt flint for the construction of causeways or road surfaces in wetland environments has been recorded from Bronze Age sites on the north bank of the Thames<sup>59</sup>, and it may be that the material recovered had been redeposited deliberately to consolidate the surface of the island. The quantities of burnt flint from the second phase of activity were recovered in conjunction with charcoal and may indicate reworking.

### Acknowledgements

The authors are grateful to Duncan Hawkins of CgMs Consulting for his input in the project, to Galliard Homes and Fairview New Homes plc for generously funding the excavations and BUU Architects for their assistance and support.

Thanks are also due to the project manager Peter Moore, to Josephine Brown for the drawings, to all at Archaeoscape Consulting, at Royal Holloway and the Geoarchaeological Service Facility at UCL for their work on the early environment and to Barry Bishop for lithics analysis. Thanks are also due to the supervisors of the various sites Mark Bagwell, David Divers, David Dobson, Shahina Farid, Ann George, Kevin Wooldridge and, of course, to all those who worked on site.

56. M. Canti, *pers. comm.*

57. D. Divers 1997, *Burnt Flint: Valueless Find or Interpretational Tool when applied to an archaeological site in Southwark*. Unpublished undergraduate dissertation.

58. *Op. cit.* fn. 20.

59. F. Meddens *op. cit.* fn. 7.

## Letter

### An earlier Cripplegate fort?

IN JON BUTLER'S article on City defences (*LA* 9, no. 9, 237) is a reference to a U-shaped ditch in the south-east corner of the Pre-Construct Archaeology site, approximately adjacent to the south-west corner of the known Cripplegate fort. This ditch respected and was extraneous to the south-west corner of the fort, but its purpose could not be ascertained. No datable finds were retrieved, but the ditch preceded the building of *Londinium* city wall, *circa* AD 200.

Just to the east of Cripplegate fort, was built an amphitheatre of earth and timber, and this was replaced or refurbished at later date with stone construction. Roman cohorts that built

Cripplegate fort with stone, would be capable of building the amphitheatre with stone. Roman cohorts that built the amphitheatre with earth and timber could have built Cripplegate fort with an earth rampart and timber palisade. An earth rampart has a broader base than a stone wall, the outer ditch would be further from the middle, and the ditch noted by Butler would be related to an earlier earthen rampart and wooden palisade.

Either or both forts would offer a safer haven in times of trouble for the Roman Procurator and his retinue, possibly the first was built just after the Iceni uprising, simply as a panic measure. We can conclude that the stone-built Cripplegate fort was preceded by a fort with earth rampart and timber palisade.

Bill Sole  
2A Griffiths Road  
Wimbledon  
SW19 1ST