

Chapter 5: Woolwich Manor Way

Introduction (Figs 1.6, 5.1-5.4)

The early historical maps (for example Roque's map of 1754, Chapman and Andre's map of 1777 and Milne's 1800 map) show that the area around the A13 and Woolwich Manor Way junction comprised undeveloped marsh and low-lying marginal land. The marsh was known as the East Ham Level and lay between the River Thames and the higher ground occupied by settlements such as East Ham and West Ham (Fig. 1.6). The Level was crossed by numerous small streams and, subject to frequent flooding, remained unsuitable for settlement into the 19th century. The Northern Outfall Sewer was constructed across East Ham Manor Way in 1865 and remains beneath the present junction with its crown lying at +7.7m OD. The development of the marshes accelerated with the construction of the Royal Victoria Dock (opened 1855), followed by the

Royal Albert Dock (opened 1880) and the King George V Dock (opened 1921). A Tar and Liquor Works (opened 1879) was located 300m to the east, and Roman Road was built in 1897. The rest of the area remained agricultural land with fields and allotment gardens, although the land northwest of the junction was later developed into terraced housing. The most significant evidence for prehistoric activity in the immediate vicinity of Woolwich Manor Way are the Bronze Age timber structures and trackways at Beckton Nursery, Beckton 3-D (Meddens 1996) and the Golf Driving Range site (Carew *et al.* 2010). The latter site lies immediately to the south of the A13 sites. The alignment of East Ham High Street and Manor Way may also mark the line of a Roman road leading from the higher ground to the north, perhaps to a ferry crossing at North Woolwich, which is of at least medieval origin.

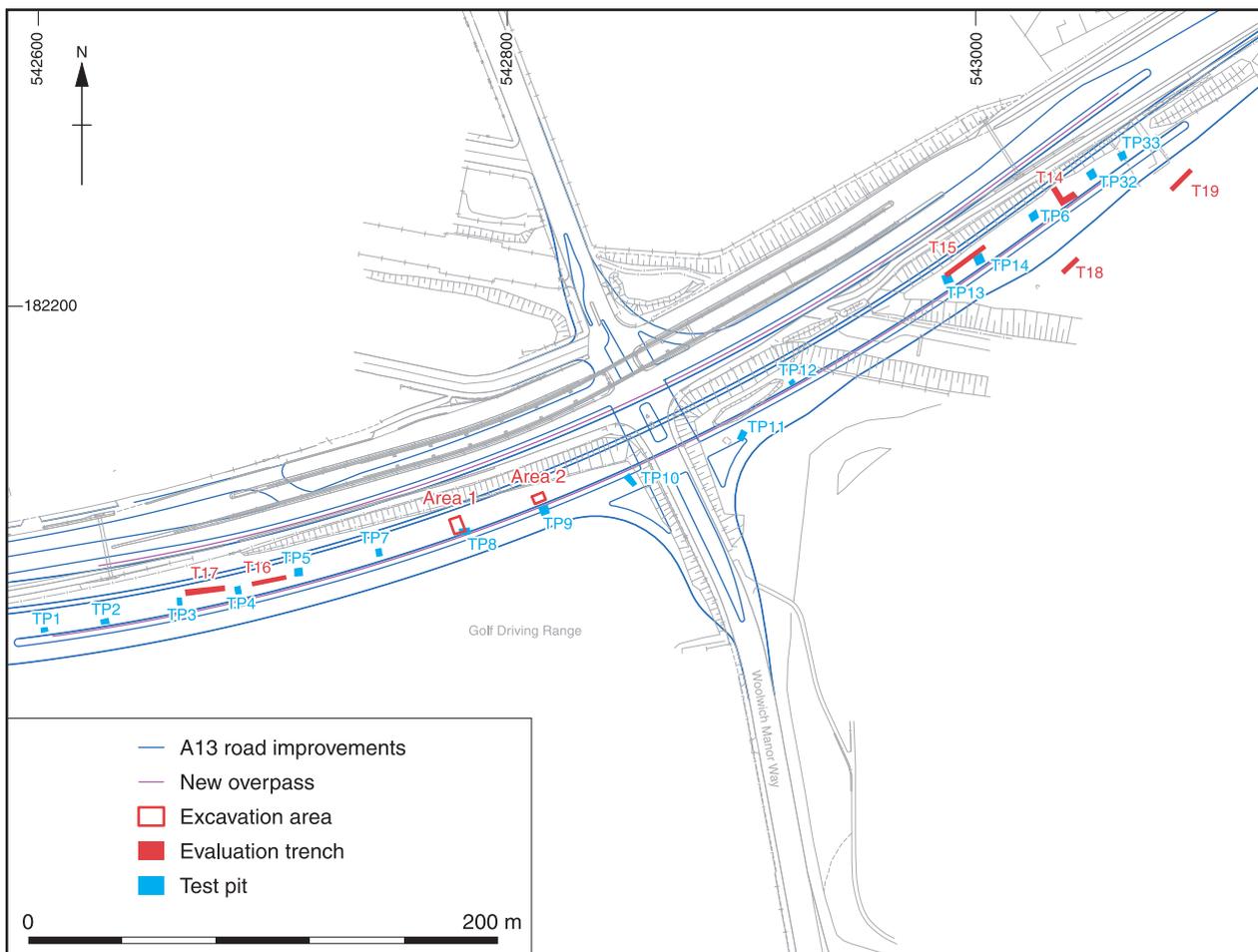


Fig. 5.1 Plan of archaeological interventions, Woolwich Manor Way

The Phase I evaluation at the Woolwich Manor Way site involved the excavation of 16 test pits (TPs 1-14, 32 and 33). This was followed by 6 evaluation trenches (T14-T19) as part of the Phase II works; four to the northeast of the Woolwich Manor Way junction and two to the southwest (Fig. 5.1) (Plate 7). Geoarchaeological modelling of the test pit data revealed that beneath the modern overburden the highest elevations in the surface of the Pleistocene sands and gravels occurred at the far eastern end of the site, dropping westwards. A deep alluvial sequence including a major peat bed was present in the west, thinning eastwards against the rise of the terrace (Fig. 5.2). Archaeological remains identified during the evaluation work were dated to the Neolithic, Bronze Age and Roman periods. One of the most significant discoveries was a scatter of early Neolithic worked flint (Bishop in Appendix 2),

pottery (Barclay and Rayner in Appendix 2) and charred cereal grain (Pelling in Appendix 3) in T15 in the eastern part of the site. These deposits were subsequently preserved *in situ*. To the west, preserved within the peat, were the remains of a series of Bronze Age timber structures (TP8 and TP9). A Roman pottery assemblage was also recovered from the upper alluvial sequence. Phase III investigations focused on the area to the west of the junction. The works comprised targeted excavation to mitigate the localised impact of flyover abutments on the timber structures. Two areas were excavated; Area 1 (5m x 7m) and Area 2 (7m x 3.5). In both trenches, near the top of the peat, were the well-defined remains of three relatively simple trackways. At the south end of Area 1, one of the trackways was cut away by a natural channel and another structure, perhaps a trackway or a platform, had been built over the fill.



Plate 7 Excavations at Woolwich Manor Way (WMA02, Area 2 in the foreground)

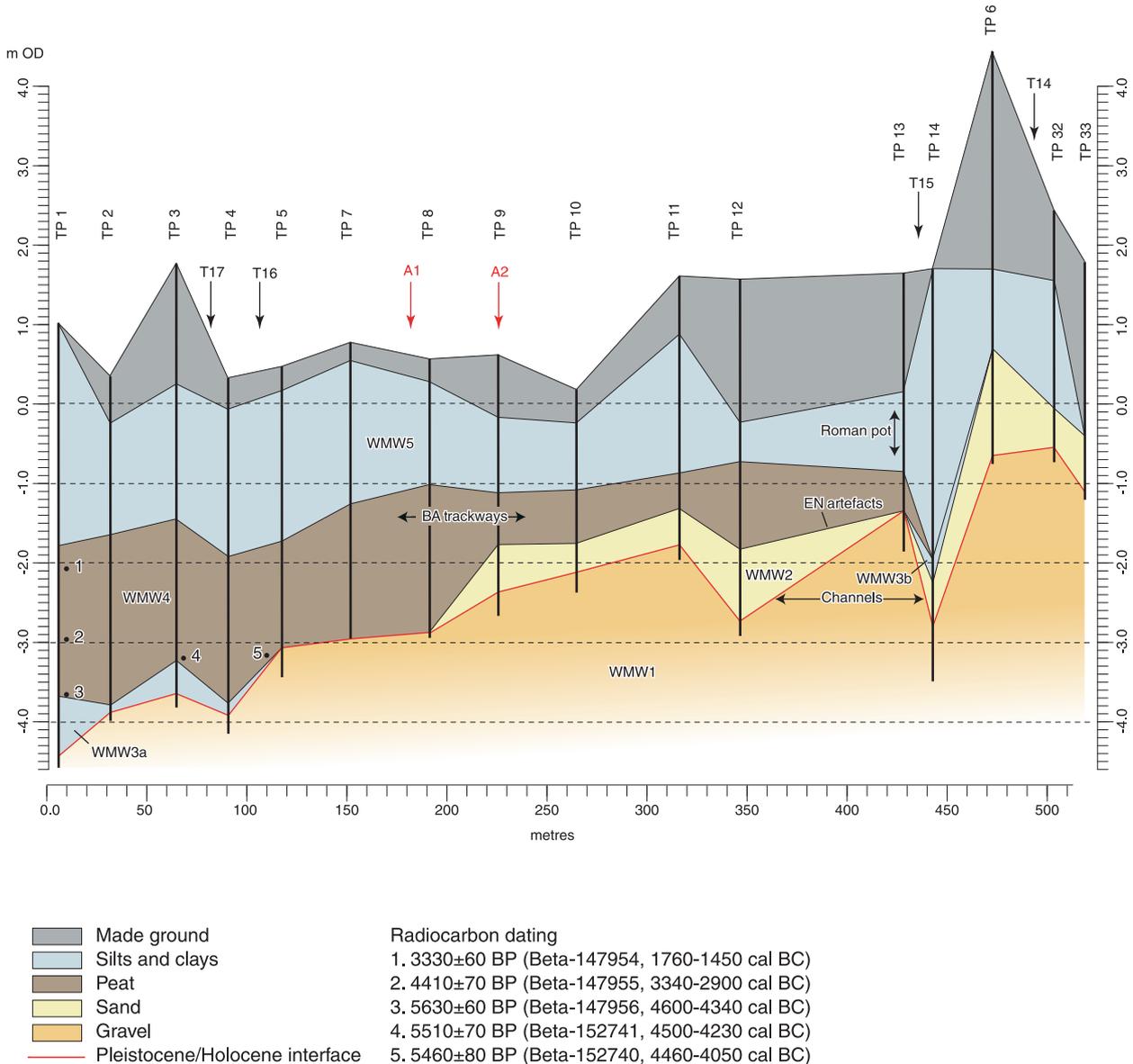


Fig. 5.2 Stratigraphical cross-section based on test pit data, Woolwich Manor Way

A small amount of waterlogged wood was excavated and lifted as part of the evaluation phase but the vast majority derives from the excavation of Areas 1 and 2. A total of 201 items were lifted for examination and recording as potentially worked material, although 168 were small bags of unworked material and bark chips and a small number of items were fragments of worked wood such as broken wood chips. This material was briefly listed and discarded. For the remainder of the material, following washing off-site, 39 timber sheets with sketches were completed. A total of 21 worked items were drawn to scale and a small proportion was also photographed in raking light to pick out tool marks. The total number of samples taken for dendrochronology was four, two of oak and two of yew; additionally 154 wood samples

were taken for species identification and age. Due to resource limitations and the condition of some samples the multiple samples from the same contexts were sub-sampled and a total of 92 were examined (Barnett in Appendix 3). This assemblage must be considered medium sized by national standards but is moderately large compared to assemblages from the small excavations typical in the London wetlands.

Palaeoenvironmental work during the evaluation stage focused on characterising the deep sediment sequence exposed in TP1. Further examination of biological remains from the sediments excavated during the Phase III investigations was carried out as part of the post-excavation assessment. Overall the assessment stage indicated that the preservation of ostracods and foraminifera was very poor and no

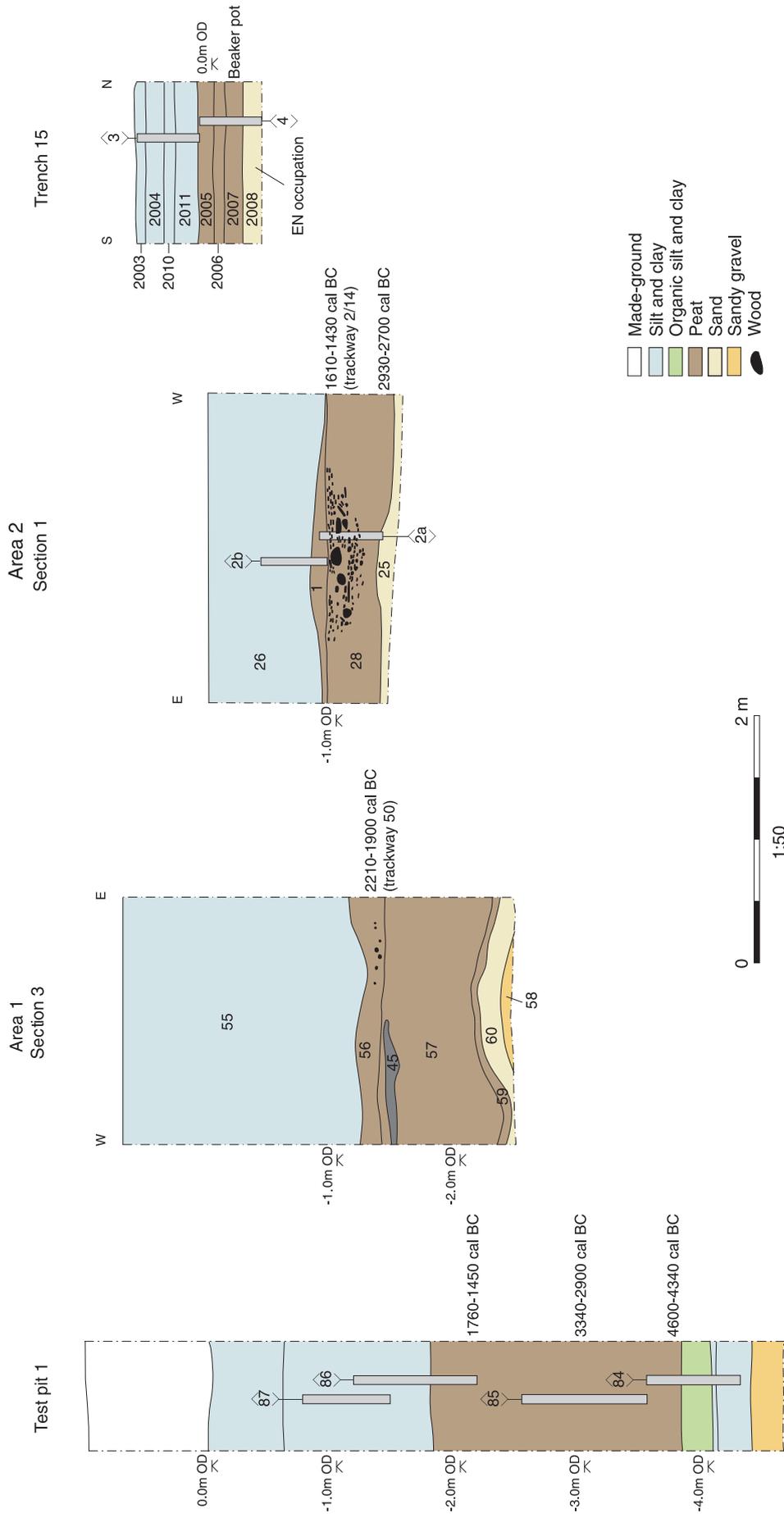


Fig. 5.3 Sample sections, Woolwich Manor Way

Atmospheric data from Reimer et al (2004);OxCal10 Bronk Ramsey (2005); cub r:5 sd:12 prob usp[chro v3.n]

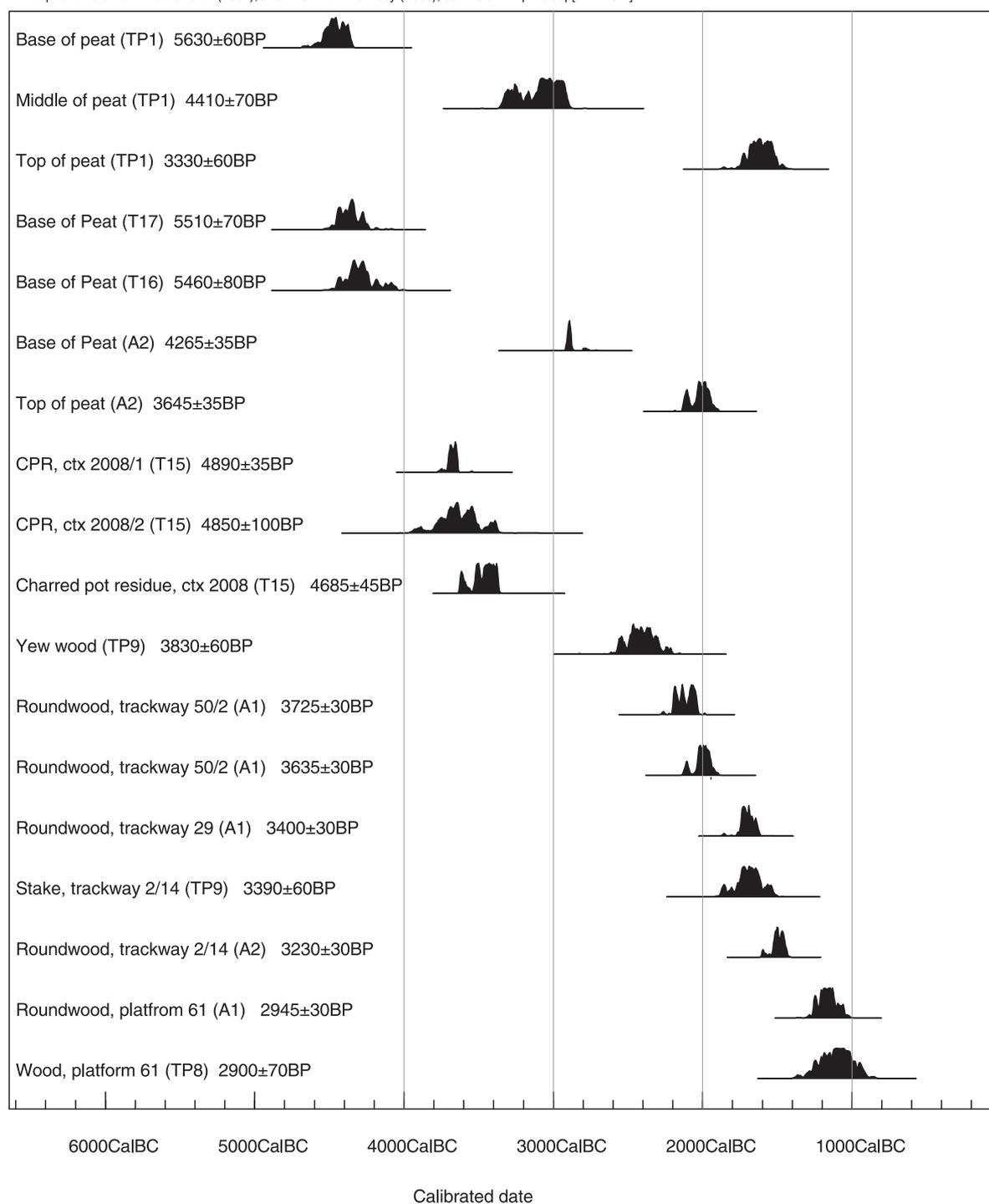


Fig. 5.4 Radiocarbon dates, Woolwich Manor Way

detailed analytical work has been carried out. The results of the assessment, however, do provide useful information in terms of characterising the environments of deposition associated with the sediments. Further detailed work on the pollen and diatoms has been carried out on the sequences from Area 2 and TP1 (Fig. 5.3) (Haggart in Appendix 3), and plant and insect remains from a representative

selection of the richest bulk samples were analysed (Smith in Appendix 3; Pelling in Appendix 3). Thin sections for micromorphology were processed from the early Neolithic landsurface in T15 and through the Bronze Age trackway levels in Area 2 (Macphail and Crowther in Appendix 3). A total of 18 samples from a range of deposits were submitted for radiocarbon dating (Fig. 5.4; Appendix 1).

Sedimentary architecture and environments of deposition

The pre-Holocene sediments and basement topography

Fluvial gravels (WMW1)

The basal part of the investigated sequence comprised poorly bedded coarse flint gravels and sands. These deposits were not examined in detail as the excavations were unstable and prone to rapid flooding. They were, however, recorded at the base of most of the test pits across the site and are typically associated with high-energy rapid sedimentation in braided channels during Pleistocene cold climate episodes.

The early Holocene topographic template

The early Holocene topographic template at Woolwich Manor Way is represented by the surface of the Pleistocene gravel. Examination of the shape of the template reveals the highest elevations, up to -0.5m OD, occur in the eastern part of the site in the vicinity of TP32. Elevations gradually reduce westwards over a distance of about 400m to c -4.4m OD in TP1. Localised dips in elevation in the vicinity of TP12 and TP14 may indicate the locations of early Holocene channel features.

The Holocene sediments

Freshwater sands (WMW2)

The earliest Holocene sediments were encountered in the central and eastern areas of the site. Here sand bodies exhibited a similar surface trend to that of the underlying gravel body. Differentiation between the sands and the underlying gravels was difficult where the sand contained gravel beds or lenses. Similar sandy facies have been identified elsewhere in the Thames system and are thought to have accumulated as sand bars within an early Holocene meandering channel system (Wilkinson *et al.* 2000).

The upper surface of the sands appeared weathered indicating that the sands were exposed as a land surface prior to inundation as a consequence of sea-level rise and flooding. This weathering occurs later than the original deposition of the sands and the archaeological evidence suggests the surface was accessible throughout the early and mid Holocene. A regionally significant sequence of charred plant remains consisting of several hundred charred cereal grains, chaff, weeds seeds and hazel nuts were recovered from T15 (Pelling in Appendix 3), along with concentrations of early Neolithic pottery and worked flint (Barclay and Rayner; Bishop in Appendix 2). Thin section analysis revealed a mature occupation soil, latterly modified by a brief episode of alluviation prior to peat formation (Macphail and Crowther in Appendix 3). The

soil showed no sign of phosphate enrichment but did contain much fine anthropogenic material (burnt flint and charcoal). The homogenous fabric and the presence of dusty clay void coatings may be ascribed to compaction by trampling and/or perhaps cultivation. Bronze Age ploughsoils of similar character are recorded from the fens and under Thames alluvium at Bermondsey (French 2003; Macphail *et al.* 1990; Merriman 1992; Sidell *et al.* 2000).

Estuarine silts and clays (WMW3)

In the lower-lying western part of the site grey or brown clay-silt units occurred above the gravel. These deposits became increasingly organic up-profile. In TP1 the clay-silts lay between c -4.4m and -3.7m OD but thin and wedge eastwards against the rising gravel surface. In TP14 a unit of thin dark grey organic clay lying within a possible channel above the early Holocene sands probably represents a lateral equivalent.

Overall these deposits appear to have accumulated under conditions arising from the initial submergence of these lower-lying areas as a consequence of rising sea-levels. Radiocarbon age estimates from the overlying peat suggest the deposits in TP1 accumulated during the Mesolithic period, prior to around 4600 cal BC. The lower part of the sequence in TP1 comprised dark greyish brown silty clay. Organic content was quite low with LOI values at c 9%. The pollen assemblages, although poorly preserved, suggest that while the eastern part of the site remained relatively dry ground, a wetland environment began to develop in the western part of the site during the late Mesolithic period. Sediment accumulation initially appears to have occurred under rather open conditions with the vegetation dominated by sedges and grasses, with some bracken and ferns. Pine was the dominant tree pollen, although this is often over-represented in estuarine clays (Godwin, 1975). The occurrence of pollen of goosefoot family together with dinoflagellate cysts, sponge spicule fragments and a single example of the brackish diatom *Cyclotella striata*, hint at the proximity of intertidal conditions. Towards the interface with the overlying peat the sediment became much more organic (28% loss on ignition value). Alder began to dominate the pollen assemblages with secondary willow and hazel, suggesting the development of a carr environment with perhaps oak growing at slightly higher elevations.

Freshwater peat and organic silts (WMW4)

Overlying the sands and clay silts at Woolwich Manor Way was a major peat unit. Sediments assigned to this unit varied considerably along the route corridor. The thickest sequences occurred in the west comprising a lower woody peat and an upper amorphous peat. This graded into more minerogenic sandy sediments as the peat thinned approaching the higher ground of the gravel terrace

to the east. Radiocarbon age estimates in TP1 indicate that peat formation at the lowest elevations to the west began during the late Mesolithic at 4600-4340 cal BC (Beta-147956: 5630±60 BP). Two further dates from the base of the peat in T17 and T16 produced similar results at 4500-4230 cal BC (Beta-152741: 5510±70 BP) and 4460-4050 cal BC (Beta-152740: 5460±80 BP) respectively. Here scatters of burnt flint indicate that late Mesolithic cultural activity within the floodplain corresponds with the early stages of peat development. The peat appears to have accumulated throughout the Neolithic and Bronze Age, gradually encroaching onto the higher ground to the east. In Area 2 accumulation began during the later Neolithic at 2930-2700 cal BC (SUERC-25563: 4265±35 BP) and in T15 further to the west Bronze Age Beaker pottery was recovered from the base of the peat that sealed the earlier Neolithic activity.

The sediments from the sequence recorded in TP1 comprised a very dark brown peat varying to silty peat that was moderately to well-humified with abundant wood and plant fragments in places. Occasional pockets of dark greyish-brown organic silt were also noted. The pollen assemblages suggest alder carr continued to develop in the western part of the site. There are some indications from the base of the peat of a period of quite dry or 'semi-terrestrial' conditions. Loss on ignition (LOI) measurements of organic matter increase to about 74% and of note was the presence of fungal spores indicative of mesotrophic conditions, perhaps with abundant dry leaf litter. Lime (*Tilia* sp.) pollen was very well represented but this could well be the result of destruction of less robust grains under oxidising conditions.

Further up the sequence alder pollen increases in abundance suggesting the alder carr became very dense, although oak and hazel were still present, probably growing on the slightly elevated drier areas. Overall the carr appears to have been quite species rich. Although lime occurred at much lower frequencies, willow, yew, buckthorn and viburnum were also present along with sedges and grasses. Cereal-type pollen was sporadically noted and may relate to cultivation on the higher ground of the terrace. Peat accumulation appears to have occurred in predominantly freshwater conditions and increases in algal spores hint at areas of shallow stagnant water. Episodic estuarine influxes, however, are also indicated by rare valves of the marine and brackish water diatoms (*Pseudostelligera westii*, *Cyclotella striata*, *Diploneis didyma* and *Actinopterychus senarius*) as well as sponge spicule fragments.

The pollen assemblages from the late Neolithic to early Bronze Age peat from the excavation areas further to the east produced similar results to TP1. In addition a diverse range of seeds of wetlands plants: sedges, crowfoots, water dropwort and water pepper/mite, were recovered from the lower part of the peat profile in both Area 1 and T15. Preservation of plant remains was generally poorer below the

Bronze Age trackway structures, although the assemblages included similar wetland species. Disturbed ground species were also present and included chickweeds, black nightshade and brambles. The insect assemblage included water beetles suggestive of slow flowing or stagnant waters (*Ochthebius* spp., *Cercyon sternalis*, *Laccobius* spp. and *Dryops* spp.), along with species associated with decaying wood (*Melasis buprestoides*, *Cerylon histeroideis* and *Grynobius planus*). A single wing case of an *Aphodius* 'dung beetle' was also recovered, although when present in small numbers these beetles may represent no more than a very routine part of the 'background fauna' found on most archaeological sites (Kenward 1975; 1978).

In T15 the weathered sand surface was overlain by a thin layer of sandy peat that graded upwards into a black woody peat. Thin section analysis revealed a possible brief period of alluviation, evidenced by clay inwash, prior to the main period of peat formation. There was also evidence of fluctuating water tables leading to peat decay (ripening) and associated insect burrowing, as evidenced by organic excrement-replacement of the original peat sediment. The pollen from this sequence was not examined in detail; however, bulk samples from the base of the profile produced diverse wetland plant assemblages similar to those in Area 1.

Towards the top of the peat profiles examined in TP1 and Area 2 increases in pollen of plantains (including sea plantain) and pondweeds suggest a gradually rising water table around the middle of the 2nd millennium BC, probably triggered by rising sea-levels. In TP1 this occurs around 1760-1450 cal BC (Beta 147954: 3330±60) and is accompanied by a substantial drop in organic content with LOI values at around 54%. Diatom assemblages were better preserved in these levels and were dominated by estuarine species common in tidal channels (such as *Cyclotella striata*) and upper saltmarsh environments (for example *Diploneis interrupta*). In Area 2 the increased surface wetness appears to be associated with the construction of the brushwood trackway in this trench (Str. 2/14), dated to 1610-1430 cal BC (SUERC-24292: 3230±30 BP). A range of fruits and seeds of wet ground species were recovered from the peat at this level, particularly water pepper/mite, but also clustered dock, gypsywort, spikerush, branch bur-reed and water plantain. Diatoms were poorly preserved but there were a few examples of estuarine forms (*Cyclotella striata* and *Navicula navicularis*). A minor phase of brackish water incursion within the upper part of the peat is also represented by channel 53 recorded in Area 1. A mixture of brackish and freshwater diatoms was recovered from the fill of this channel indicating the presence of a former small saltmarsh creek perhaps extending into the freshwater wetland. The fill of this channel is overlain by a timber 'platform' (Str. 61) dated to 1270-1040 cal BC (SUERC-24504: 2945±30 BP), implying this

marine incursion in Area 1 occurred sometime during the middle Bronze Age.

This period is also characterised by a gradual decline in arboreal pollen, most notably alder and oak, and in Area 2 there is an increase in pollen of grasses and goosefoots as well as seeds of meadow buttercup and rushes, suggesting more open areas of damp grassland. The changing hydrological conditions at the site would undoubtedly have affected vegetation, while further possible evidence of cereal cultivation in the pollen spectra along with an increase of microscopic charcoal and seeds of disturbed ground species, such as nettle and bramble, may also indicate clearance and cultivation, perhaps on the higher terraces.

Estuarine silts and clays (WMW5)

A thick sequence of clay silts sealed the peat across the whole site area. Radiocarbon age estimates from the top of the underlying peat suggests the change to minerogenic sedimentation occurred during the mid to late 2nd millennium BC. Accumulation appears to have continued throughout the later prehistoric and into the historic period with evidence of Roman occupation occurring within the alluvium in T15 and TP13 in the east of the site. The environmental evidence indicates that these deposits formed high in the tidal frame of a predominantly open estuarine environment of tidal creeks and saltmarsh, with freshwater environments co-existing close-by.

In TP1, at -1.78m OD, a dense dark greyish-brown silt to clay-silt which was slightly organic in places, overlay the peat. This graded upwards into a blocky yellowish brown clay-silt. Compared to the underlying peat, the organic content of the clay-silt unsurprisingly dropped markedly with LOI values at approximately 13-15%. Pollen was not preserved in these sediments. The diatom assemblages, however, were generally indicative of tidal mudflats and saltmarsh. Once again the estuarine form *Cyclotella striata* was most frequent, although subtle changes in the proportions of species that prefer freshwater conditions (*Navicula menisculus*, *Cocconeis disculus*, *C. placentula* and *Staurosirella pinnata*) suggest brief periods when freshwater input increased, probably from streams issuing from the gravel terrace. Foraminifera and ostracods recovered from the clay-silt tend to support this. The ostracods were typical of both freshwater (*Candona neglecta*, *Candona* sp, *Darwinula stevenson* and *Limnocythere inopinata*.) and brackish environments (*Cyprideis torosa*, *Cytherura gibba* and *Leptocythere porcellanea*) suggesting deposition in creeks towards the limits of tidal reach. Similar deposits examined in Area 2, at -0.70m OD, consisted of very dark grey silty clay grading upwards into orangey brown and grey mottled silty clay with iron mineralization in root channels. Diatoms were less well preserved, but both brackish (*Cyclotella striata*) and fully marine forms (*Triceratum favus*) were noted. The pollen assemblages in Area 2 were very similar to the underlying peat. Grasses

and sedges were the most abundant plants and alder continued to decline, suggesting quite an open environment. Towards the top of the sampled sequence the percentages of goosefoots and bracken increased markedly.

The cultural evidence

Early Neolithic (Figs 5.1 and 5.3)

Neolithic activity was identified in T15 in the eastern part of the site on the surface of a 'dirty' layer of weathered sand (context 2008, unit WMW2) (Figs 5.1 and 5.3). The sand was 0.10 to 0.15m thick, lying at -0.73m to -0.45m OD, and was sealed by a sequence of peat deposits. Thin section analysis has confirmed that the sand probably represents an occupation soil that may have been subject to trampling and/or cultivation. The cultural material recovered from this surface was densest in the north-eastern part of the trench and included a concentration of early Neolithic pottery, struck flint, burnt flint and a spread of charred plant remains and charcoal. The condition of the struck flint and conjoined pottery supports the interpretation of a relatively in situ assemblage. The occurrence of a single sherd of Beaker pottery, however, suggests that the surface was subsequently exposed for a considerable period of time. Cut into this horizon were three small circular or sub-circular features. They contained no finds, were too shallow to hold timbers, and probably represent natural rootholes.

The lithics consisted of 102 struck pieces, including blades, flakes, utilised flakes, cores, two scrapers, two serrated blades and six utilised flakes, probably of early Neolithic date (Bishop, Appendix 2). The pottery assemblage comprised 85 sherds that collectively could be accommodated within the Mildenhall style of the decorated bowl tradition of the mid 4th millennium BC. Three sherds had been either overfired or refired. One thickened semi-rolled rim was decorated with rows of 'horseshoe'-shaped motifs, probably made with the articular surface of a bird or small mammal bone to give oval-shaped impressions (Fig. A2.1.2). Other sherds belong to a fine black burnished shouldered bowl with thickened surface broken just below the rim (Fig. A2.1.1). This sherd had sooty and charred residue below the rim and had therefore probably been used as a cooking pot; the residue produced a radiocarbon date of 3630-3360 cal BC (SUERC-24830: 4685±45 BP) (Barclay and Rayner, Appendix 2).

Significant numbers of charred plant remains were recovered from bulk samples from layer 2008. This included charred grains of emmer wheat (*Triticum dicoccum*) and associated spikelet forks and glumes, as well as occasional weeds and hazel nut shells. Preservation of the material was exceptionally good for a deposit of this antiquity and in total 470 grains were counted. A small number of grains showed characteristics of einkorn (*Triticum monococcum*), but may simply derive from single

seeded emmer wheat. The limited weed flora included typical ruderal species, mostly spring germinating, which tend to be found associated with early prehistoric cereal remains such as fat hen (*Chenopodium album*), black bindweed (*Fallopia convolvulus*), small seeded medick/trefoil/clover type (*Medicago/Trifolium/Lotus* sp.) and grasses (Pelling, Appendix 3). An initial radiocarbon date on the grain from the assessment stage provided a date of 3950-3350 cal BC (Beta-153983: 4850 ±100 BP). A second, AMS, date obtained during the analysis produced a more precise date of 3770-3630 cal BC (SUERC-24597: 4890±35 BP).

Analogous sand and sandy gravel deposits in TP13 (context 1517) and T16 (context 2080) produced a small number of artefacts including burnt flint, occasional animal bone, a single sherd of flint-tempered pottery and a flint scraper. In T17 a similar 'dirty' gravel layer (context 2073) produced a considerable concentration of burnt flint.

Early to middle Bronze Age (Figs 5.5-5.9)

The early to middle Bronze Age period at Woolwich Manor Way is largely represented by a series of simple roundwood trackways recorded within the peat (unit WMW4) in excavation Areas 1 and 2. The earliest of these was located in Area 1 and dates to the late 3rd millennium BC (Str. 50) with other structures dating up until the mid 2nd millennium BC

(Str. 29 and 2/14). The structures occur in close proximity and on similar north-south alignments to the trackway (Str. 107) recorded immediately to the south at the Golf Driving Range (Fig. 5.5) (Carew *et al.*, 2010).

Trackway 50 (Area 1)

The earliest trackway in excavation Area 1 was Structure 50 located in the northwest corner of the trench (Fig. 5.6). Radiocarbon dating of roundwood produced two dates of 2210-2030 cal BC (SUERC-24292: 3725±30 BP) and 2130-1900 cal BC (SUERC-27350: 3635±30 BP). The structure was aligned north-south and was visible for just over 2m within the trench. It was fairly narrow at 0.60m wide and comprised small rods and branch wood laid side by side (context 49). The species were a mix of oak, alder, ash, and elm with diameters ranging between approximately 30mm to 50mm. The material was very compressed and weathered and too small to preserve clear axe-marks. Several cut ends were, however, recorded *in situ*. The rods and branches were mainly broken into rather short lengths of under 0.6m, which may have happened as a result of compaction as the wood began to decay after a couple of years and became brittle. A large oak axe cut chip was also found lying on the trackway surface that must have derived from hewing a knotty oak log at least 150mm in diameter. The structure was quite slight in construction being only one

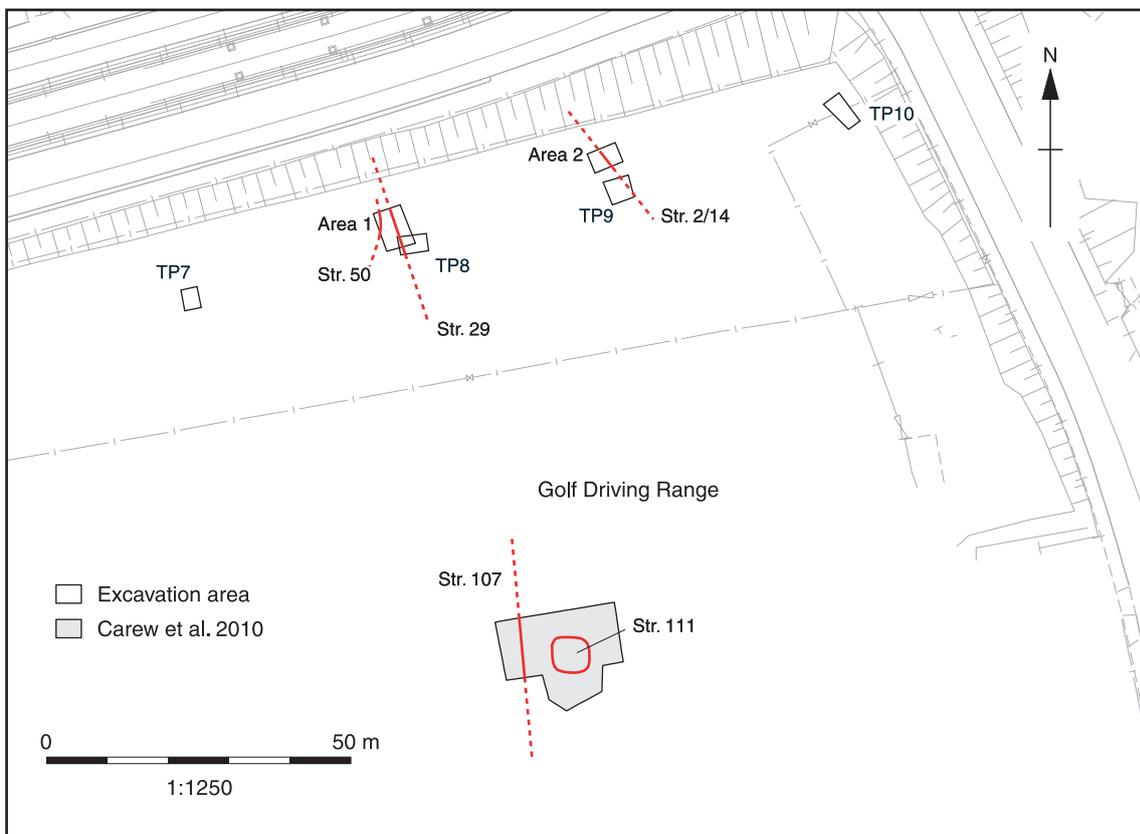


Fig. 5.5 Plan of Bronze Age trackways excavated at Woolwich Manor Way and the Golf Driving Range

or two rods thick and was most likely used for human foot passage and possibly light livestock. No stakes were found associated with the structure. This may suggest that the builders did not expect high water levels to disturb it. The tight outline of the trackway edges also suggests that it was little affected by water erosion before it was buried by the peat growth. It seems unlikely, however, that such a trackway could have survived much use, and it may have been intended as a temporary measure only. It is not quite parallel to the later Trackway 29 in the same trench and appears to have curved off to the

west at its southern extent within the limit of excavation, although this may be an artificial impression given by some horizontal truncation at its southern end. A physical relationship between the two trackways in Area 1 could not be determined.

A thin (roughly 5mm) layer of orange burnt sand with frequent charcoal inclusions (layer 45) was found in a 1m² area in the north-west corner of Area 1, extending beyond the limit of excavation. This has been phased with the trackway on the basis of parity within the peat sequence. It would seem unlikely that the sand could have been deposited

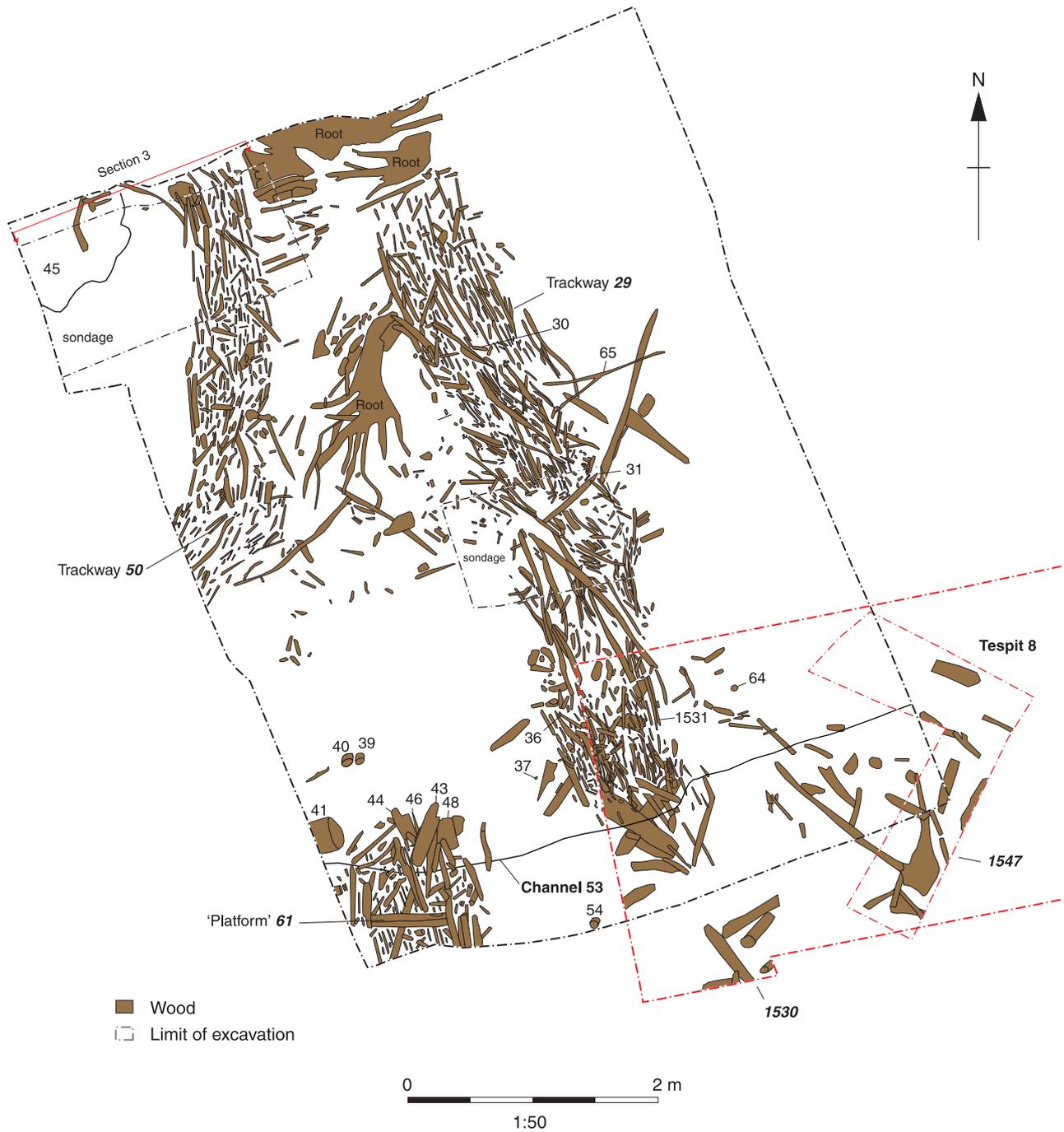


Fig. 5.6 Area 1 plan, Woolwich Manor Way

there naturally, as the layer was many times too thick for a minerogenic lens within the peat. In addition, it was only found in a discrete area and did not appear to contain significant organic material. As wood seems to have been the favoured material for consolidation of the soft, wet peaty ground surface, the introduction of this sand may have been associated with the formation of a hearth or cooking surface, or that the deposit represents casual or ritual disposal of rake-out from nearby domestic activity on the terrace edge. If the deposit were burnt *in situ*, it would appear to represent the first direct evidence of such domestic use of the marshland fringe on the north Thames marshes. Such domestic activity is more normally found on dry terrace edge locations.

Trackway 29 (Area 1)

Trackway 29 was much more substantial, running NNW-SSE the length of the trench for about 6m. It was truncated at the south end by later channel 53 (Fig. 5.6; Plate 8). A piece of roundwood from this trackway produced a date of 1770-1610 cal BC (SUERC-24297: 3400±30 BP). A small area of the southern end of trackway 29 was found in TP8 during the Phase I work (recorded as Str. 1531). The

structure was approximately 0.9m to 1.0m wide and made from relatively uniform small roundwood rods (context 62) which had been laid side by side to a depth of over 100mm in the centre. The rods varied from about 24mm diameter to small 'poles' at about 60mm diameter and there were a very small number of larger elements. The uniformity, small size, and straightness of the rods suggests that they were largely sourced from coppiced or pollarded trees. The ends of the rods were cut with small, rounded metal axe blades into wedge shapes, but the ancient weathering prevented the survival of very clear axe marks including signature scratches created by small nicks in the blades of the axes used. Three rod ends were lifted for more detailed examination (rods 30, 31 and 36). The first two were wedge pointed and of alder (Fig. 5.7a), and the third was of willow or poplar and was pencil form. A small group of rotten yew stem fragments may also have been casually reused as 'makeup' material beneath the freshly cut material.

The pattern of stakes possibly associated with the trackway is not clear. Up to three stakes (stakes 33, 37 and 64, see Fig. 5.7b) identified as ash and alder, could have been part of the structure, although stakes 64 and 37 were offset to the side. It is possible



Plate 8 Trackway 29, Woolwich Manor Way (Area 1)

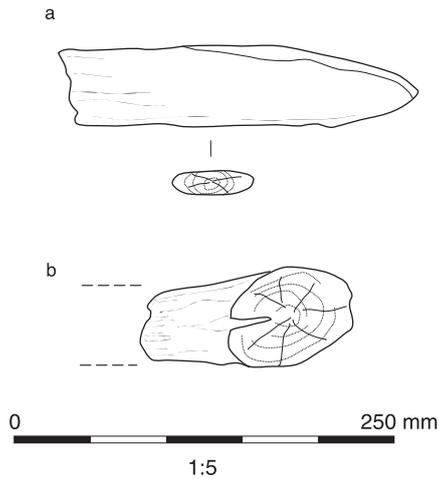


Fig. 5.7 Worked wood from trackway 29, Woolwich Manor Way. a) cut rod end (30), b) stake (33)

that they were marker stakes showing the edge of the trackway at times of high water level. The lack of variation in the material in the trackway suggests that if it was repaired it was with similar material throughout its life and the weathering suggests it was probably in use for at least a couple of years. A small number of worked wood items appeared to have been dropped on the surface on the track. The most well-preserved was a 'Y' shaped branch

section of yew (timber 65, Fig. 5.6). The shape was probably arbitrary but the resemblance to a modern water divining stick is clear.

Trackway 2/14 (Area 2)

The trackway structure in Area 2 was the most substantial of the three trackways excavated at Woolwich Manor Way (Fig. 5.8; Plates 9 and 10). Two radiocarbon dates were obtained, the first from evaluation TP9 at 1880-1520 cal BC (Beta-153984: 3390±60 BP) and the second from Area 2 at 1610-1430 cal BC (SUERC-24292: 3230±30 BP). The structure ran NW-SE across the trench and was about 1.20m in width. It was of the same general form as the other two trackways described above, but was much more substantial. It was mostly made of roundwood rods and branches of about 15-50mm in diameter (context 21), the majority of coppiced alder. However, the trackway also contained a high proportion of heterogeneous material from a variety of species which is unusual compared to other simple 'brushwood' type trackways known from the London region. This included sections of poles, cleft timbers, small logs and worked old timbers. This material was generally in the upper part of the make-up of the trackway. The mix of materials and the variable condition of the wood suggests that the trackway was probably open for some time and repaired *ad hoc* with whatever was to hand. It would appear that when in use the middle of the trackway

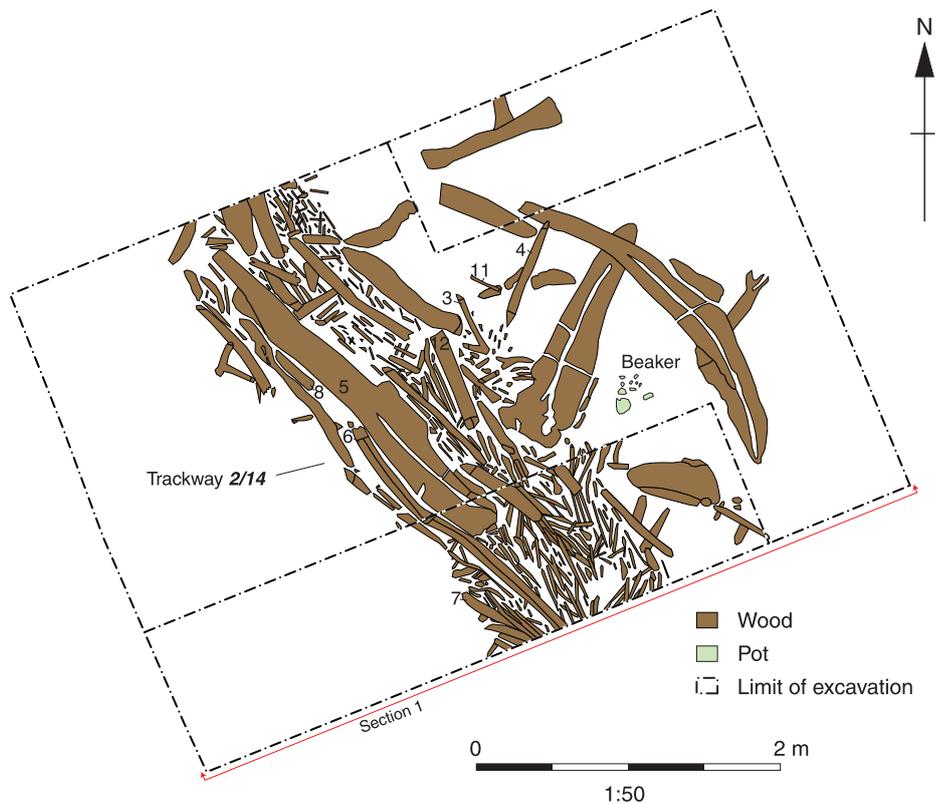


Fig. 5.8 Area 2 plan, Woolwich Manor Way



Plate 9 Trackway 2/14, Woolwich Manor Way (Area 2)



Plate 10 Section through trackway 2/14, Woolwich Manor Way (Area 2)

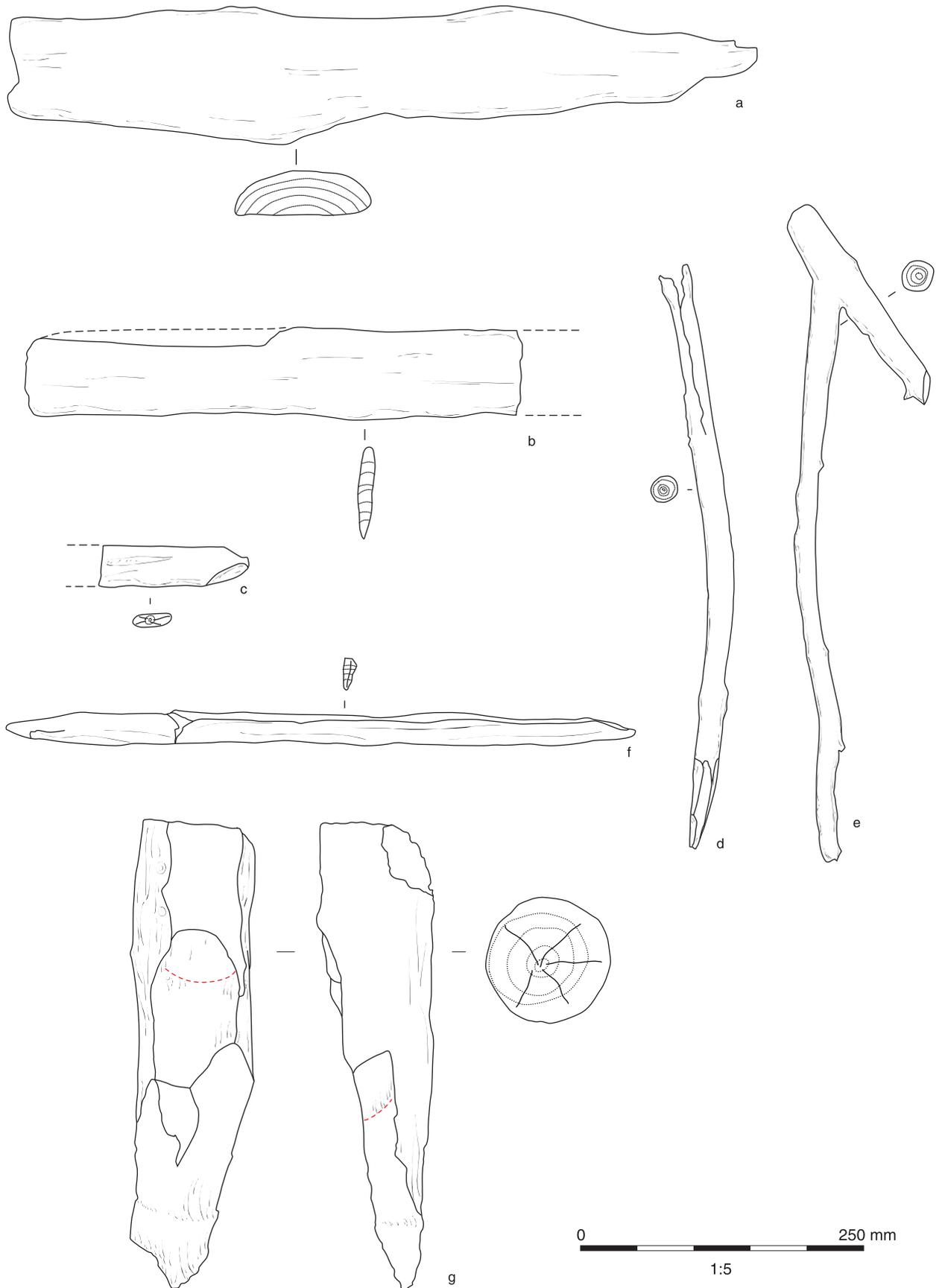


Fig. 5.9 Worked wood from trackway 2/14, Woolwich Manor Way. a) weathered half ash log (12), b) reused radially cleft oak pale (7), c) cut rod end (13), d) pointed yew stick (11), e) hooked yew peg (3), f) radially cleft timber pointed at both ends (4), g) hazel roundwood stake from TP9

became depressed into the soft peat and that area was then built up again. This resulted in a lentoid cross section up to near 400mm thick in the middle (Section 1, Fig. 5.3). It appears no retaining stakes were used. To the east of the trackway lay several naturally fallen, decayed alder logs which may have provided a slight rise in the peaty deposits that was used to advantage by the trackway builders.

The vast majority of the wooden elements were laid parallel with the long axis of the structure but a few were laid cross wise and a small number were rather crooked small branches. Five small roundwood worked ends (35-37mm diameter) were lifted and found to have weathered chisel or wedge form ends (Fig. 5.9). The majority of the roundwood items submitted for identification comprised alder and ash with larger pole sized sections of the same species. A small number of items were identified as willow/poplar, elm and holly, the last of which is very rare in prehistoric assemblages from the London region. The more curved of the larger material (approximately 80mm diameter) was clearly of branch origin and species included alder, elm and yew. Larger material in the form of small whole or cleft half logs were also used. The largest was timber 5 (about 2.6m long by 300mm wide) which, although heavily eroded, was probably a cleft half log of alder. Timber 12 (0.65m long by 120mm wide and *c* 40mm thick) was another cleft half log, this time of ash (Fig. 5.9a). Such a short cleft log was probably an off cut from the production of long timbers for use elsewhere. Several other items had been more elaborately worked and included two smoothed cleft oak pales (about 85mm wide and 15mm thick, Fig. 5.9b). It is likely that these were reused items but their original function is uncertain. Several worked wood objects were also found dropped or placed on the top, or just to the east, of the trackway surface. These included a neatly axe cut section of a crooked yew branch (timber 3, 0.585m x 38mm) with one metal axe faceted pointed end and one abraded end (Fig. 5.9e). Such small hooked pegs are still occasionally used in the English countryside today and used for many purposes: holding down snares and nets, layering coppice stems and holding woodland craft equipment temporarily in place. These uses would not have been out of place at the time the trackway was in use. A peg of yew would have been the equivalent of one of metal today as, along with holly, it is the hardest and strongest of the wood species that would have been available. Another small pointed yew peg (item 11, Fig. 5.9d) had a truncated top so it was not possible to determine whether it had had a hooked terminal or not. A radially cleft log (timber 4, Fig. 5.9f) derived from a straight slow grown log (0.56m x 37mm x 10mm), pointed at both ends, which appears to have been a similar object to SF71 from Freemasons Road.

In addition to the items of worked wood, a number of Beaker sherds were recovered next to trackway 2/14 (Fig. 5.8). It was possible to refit the

majority of the sherds and it appears they derive from a single East Anglian style or globular shaped vessel with zonal decoration (Fig. A2.1, 17; Plate 26). The pot lay in an inverted position in the peat, although the base had been broken off sometime in antiquity. The Beaker was located within 0.40m of the eastern edge of the trackway, and was found at the same level (-1.05m OD) while the peat was being peeled away to reveal its timbers. It may represent a placed deposit rather than a casual disposal. There is some overlap between the date ranges of the Beaker (2500-1600 BC) and the initial radiocarbon date for trackway 2/14. An overlap of the dates for the Beaker and trackway is not an essential condition for an association, as the Beaker may have been curated before deposition. The position of the trackway and Beaker may be coincidental and it is equally possible that it relates to the earlier activity recorded in Area 1.

Middle to late Bronze Age (Figs 5.6, 5.10)

'Platform' structure 61 (Area 1)

In the southern part of Area 1 the peat and trackway 29 was truncated by east-west linear feature 53, probably a natural channel (Fig. 5.6). The profile of the channel was only partially exposed as it extended beyond the edges of the excavation. It was recorded to a depth of at least 0.40m and filled with a dark brown silty clay with frequent small wood inclusions (fill 52). The channel fill was overlain by Structure 61 which was partially exposed over an area of 1m x 1m in the south-western corner of Area 1 (Plate 11). This may represent a later phase of trackway building, consolidation deposits over the soft channel fills or perhaps part of a 'platform' structure. The latter is the preferred interpretation due to the varied assortment of woody material incorporated into this structure as well as what appears to be a discrete 'corner' identified in plan. It is likely that the uppermost layers of the platform that were presumably occupied had decayed or been eroded being at a higher level than the foundation level recorded in the trench. A piece of hazel roundwood from the structure produced a middle to late Bronze Age radiocarbon date of 1270-1040 cal BC (SUERC-24504: 2945±30 BP).

The 'make-up' material consisted of a remarkable heterogeneous mix of woody material including cut roundwood, small logs and fragments of re-used cleft and hewn timbers (Fig. 5.10). The roundwood elements (context 63) included oblique cut ends, mostly under 50mm in diameter, from a wide range of species such as elm, willow, alder and ash. The short lengths and form of the wood suggests that all or much of the material was of branch origin. Many of the larger elements, mostly on the upper surface of the structure, were a mix of oak, elm and ash. The largest single element, partially exposed at the edge of the excavation, was a log of slow grown elm (timber 41) about 280mm in diameter which

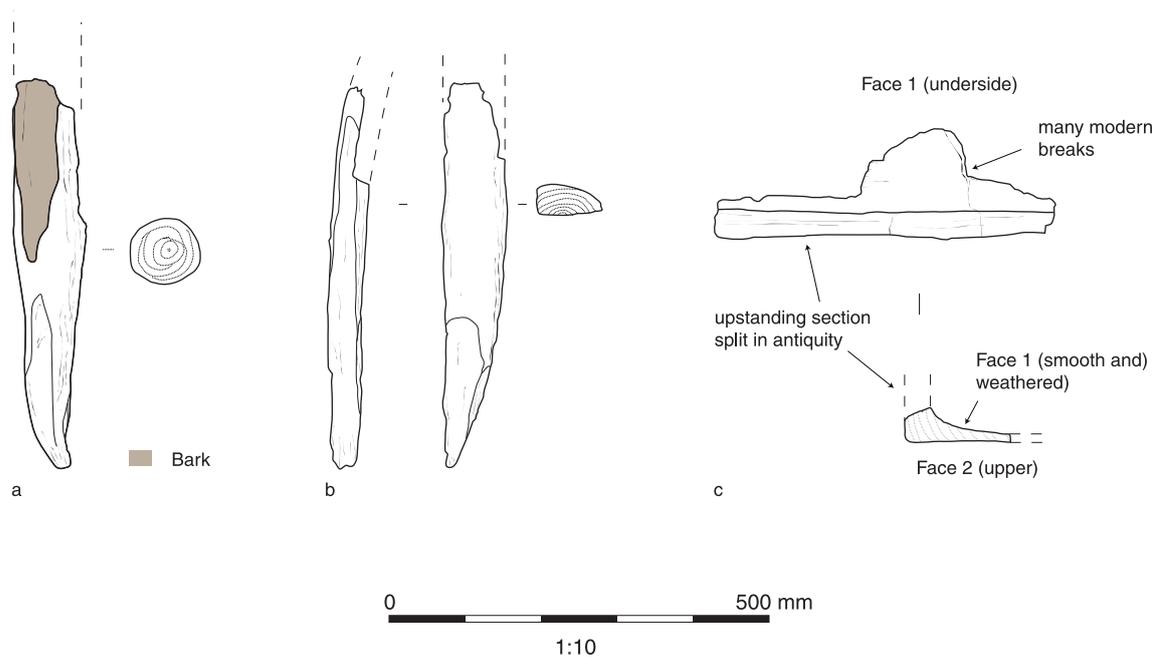


Fig. 5.10 Worked wood from platform structure 61, Woolwich Manor Way, a) alder round wood stake with pencil end (43), b) half log ash stake (1535), c) re-used oak planking fragment (44)



Plate 11 'Platform' Structure 61, Woolwich Manor Way (Area 1)

perhaps formed a 'kerb'-like edge to the northern limit of the structure. Most of the other larger elements were of cleft half logs or poles, or more carefully trimmed plank-like sections of oak or alder. The planks occurred in rather short lengths and may have been left-over off-cuts from other operations or perhaps reused timbers. The cleft alder logs were not very elaborately worked, however the reused cleft oak timbers (timbers 43, 44 and 46) were all tangentially faced, worn, and may have come from the same object. The most interesting was timber 44 (440mm x 140mm) which although slightly damaged by machine excavation, appeared to have been hewn into an 'L'-shaped cross section which tapered to a thickness of approximately 25mm (Fig. 5.10c). The simplest explanation of the shape is that it derives from a large broken up dugout trough or possibly a dugout boat. Unfortunately no clear axe 'stop marks' survived on the woodwork of this assemblage, just very worn rounded facets. If the radiocarbon date range is accurate the structure may have overlapped with the changeover from broader palstaves to the narrower socketed axes.

The pattern of stakes possibly associated with Structure 61 is not entirely clear. Two small stake tips along the eastern edge of the platform may have acted as retainers, and about 0.6m to the north and east a scatter of stakes (stakes 40, 39, 37, 1534, 1535 and 54) of various sizes and forms may be the remains of an outer hurdle fence or dead hedge. Identified species included alder, ash and elm. Stake 40 (510mm x 95mm) was quite typical and was made from alder roundwood with an irregular pencil point created by repeated shallow axe blows working around most of the outside of the pole (Fig. 5.10a). Stake 1535 (510mm x 85mm x 45mm) was more unusual in that it was from a very slow grown ash pole, cleft in half and hewn along one edge, perhaps suggesting it was cut from a second-hand timber (Fig. 5.10b). The stakes were in quite a poor condition and although no complete stop marks survived the facets appeared to be relatively small and rounded. The narrow, concave facets recorded

on stake 39, up to 45mm wide, are typical of late Bronze Age socketed axe marks found in the south-eastern region (Goodburn 2003a, 104)

Less well-defined groups of timbers were recorded in the south-east corner of Area 1 and across TP8 (Str. 1530 and 1547) although the density was insufficient to have supported any significant weight on such soft ground. It is most likely that these were discarded pieces, although some may have been redeposited from Structure 29. A radiocarbon date from a plank fragment from Structure 1530 produced a date of 1310-900 cal BC (Beta-152738: 2900±70 BP) which is consistent with the date for Structure 61.

Artefacts from the peat above the timber structures (Areas 1 and 2)

Above the timber structures, in both Areas 1 and 2, peat continued to form, but only as a thin layer prior to the deposition of the minerogenic clay silts (layers 1 and 56). Two struck flints and occasional pieces of burnt flint provide some evidence for low-level activity in the area following the abandonment of the timber structures.

Roman (Figs 1.5, 5.1, 5.2, 5.11)

Evidence of Roman activity at Woolwich Manor Way was restricted to the evaluation phases of work; in T15 and TP13 in the east of the site (Figs 5.1, 5.3 and 5.11). Here, significant quantities of pottery were found in association with a possible consolidation surface within the upper minerogenic alluvium (Biddulph in Appendix 2). This indication of a domestic presence is relevant to other sites in the vicinity (outlined in Chapter 1, Fig. 1.5), and a postulated Roman road that may have followed the line of East Ham High Street and Manor Way, linking the Thames at North Woolwich to the London to Colchester road to the north (Hanson 1996, Watson 1988).

In T15 occasional pottery sherds were recovered from a disturbed amorphous dark brown peat with frequent wood fragments (layer 2005), 0.05 to

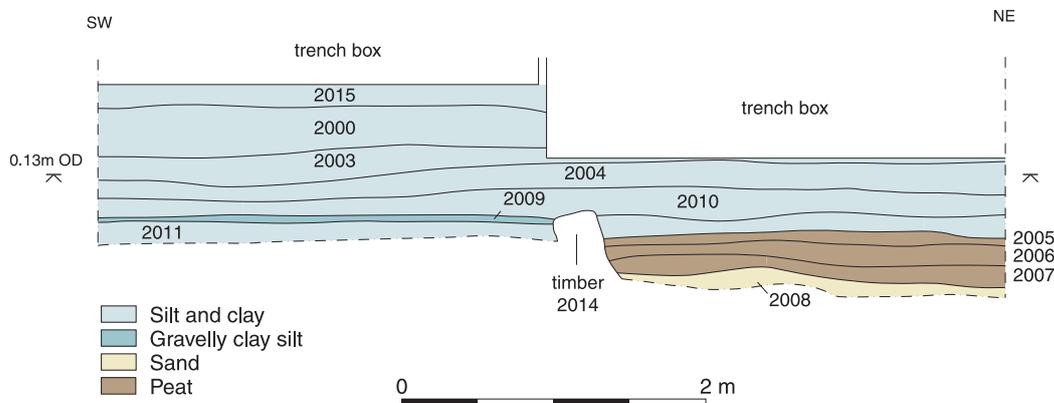


Fig. 5.11 Section through alluvial sequence, T15 (western), Woolwich Manor Way

0.10m thick, with an upper surface lying at -0.40m to -0.11m OD. A number of struck and burnt flints recovered from this deposit are likely to represent residual material. Sealing the peat layer was a 0.10m to 0.30m thick layer of silty clay alluvium (layer 2011) which also contained pottery sherds. Layer 2011 was thinnest at the north-western end of the trench (Fig. 5.11) and appeared disturbed, probably by activity associated with the deposition of the overlying gravelly layer. Layer 2009 appeared to butt up against an unworked tree trunk (timber 2014) and consisted of a gravelly clay silt, up to 0.05m thick, which produced a much larger quantity of pottery (179 sherds). Jars dominated the group, but dishes made an important contribution and deposition from the mid-3rd century is likely. The latest piece was an incipient bead-and-flanged dish (Going B5) in black burnished ware dating from about AD 240 to 300/330. An East Gaulish ware dish was probably deposited after the currency of the form (up to AD 240) but it need not have been out of use for very long. The deposit may represent the casual disposal of domestic waste, but it could also be an intentional spread of aggregate material over the alluvium to consolidate it. This would not have been sufficient to make the surface stable for protracted or heavy use, but may have been sufficient for some lighter or temporary purpose.

The overlying alluvial deposits (layers 2010 and 2004) also contained Roman material, including a 1st century coin from layer 2010. Layer 2003 comprised a grey compact, slightly sandy, clay silt with frequent flint fragments and pebbles. Along with a small quantity of residual worked flint, the deposit produced 21 sherds of Roman pottery as well as six highly abraded small sherds of medieval to post medieval date. Given the quantity of Roman finds, both from this sequence and from TP13 (see below) and the quality of the later material, it is possible these finds are intrusive, either as a result of trample or from the installation of the trench boxes.

In TP13 two layers of silt clay alluvium were recorded. The lowest of these (layer 1514) was a dark greyish brown clay silt, 0.25m deep, overlain by a layer of mid greyish brown silty clay (layer 1515) 0.63m deep. These two layers broadly equate to layers 2003, 2004 and 2010 in T15, where hand excavation was able to define the sequence more thoroughly. A total of 257 Roman pottery sherds were recovered from layer 1514 along with a small quantity of probably residual burnt flint and a single highly abraded sherd of medieval pottery (AD 1080-1200). In view of the size of the Roman assemblage and the retrieval method (hand sorting of the spoil heap) the latter may reasonably be considered intrusive. The pottery assemblage may represent a midden spread and contained a wider

range of material than context 2009 in T15. Jars similarly dominated the group, but dishes were restricted to a single bead-and-flanged vessel. Bowls were marginally better represented than dishes, although vessels present were residual. The dish and bowl-jar (cf. Going 1987, 21-2), supported by Much Hadham ware and Nene Valley colour-coated ware, date deposition to after AD 250 and up to the mid 4th century, but it is possible that groups 1514 and 2009 were contemporaneous.

Layer 1513 was cut by two features, also containing a small quantity of Roman pottery. The first of these was a small ovoid pit (1507) measuring 0.73m x 0.65m and 0.22m deep. This was filled with grey fine silt (fill 1505) and mid brown silty sand (fill 1506). The second cut was curvilinear ditch (1508) measuring 2.10m x 0.80m and 0.25m deep and running east to west across the trench. This was filled with a mid bluish grey clay silt (fill 1509), a mid grey coarse sandy gravel (fill 1510) and a mid blue grey clay silt (fill 1511).

In general, the presence of South and Central Gaulish samian, Verulamium-region white ware, and South Essex shelly ware amongst the pottery assemblage from T15 and TP13 indicates later 1st and 2nd-century occupation in the vicinity of the Woolwich Manor Way site. However, no context group is certain to date earlier than the mid-3rd century, confining deposition at site to the late Roman period.

The dominance of jars suggests that the vessel class served multiple functions, including storage, cooking and dining, and points to low-level adoption of forms, such as dishes and mortaria, that typify continental-style dining practices. However, the presence of a possible Much Hadham ware flagon (represented by body sherds from layer 2004, T15) and decorated samian Drag. 37 bowl and dishes in various fabrics, suggests that the inhabitants were familiar with certain continental practices and had access to appropriate material.

Post Roman

More recent cultural activity in the vicinity of Woolwich Manor Way appears to have been largely absent until the construction of drainage ditches associated with floodplain management, which probably begins with a post medieval ditch discovered in T19. Ditch 2025 was orientated north-south measured 2.10m wide and 0.95m deep and was filled with a lower peaty deposit (fill 2024) and upper silty clay alluvium (layer 2023). A single sherd of pottery was recovered from fill 2023 dated to AD 1270-1500. Extensive deposits of modern made-ground occurred to the east of Woolwich Manor Way and are associated with 19th century urban expansion.