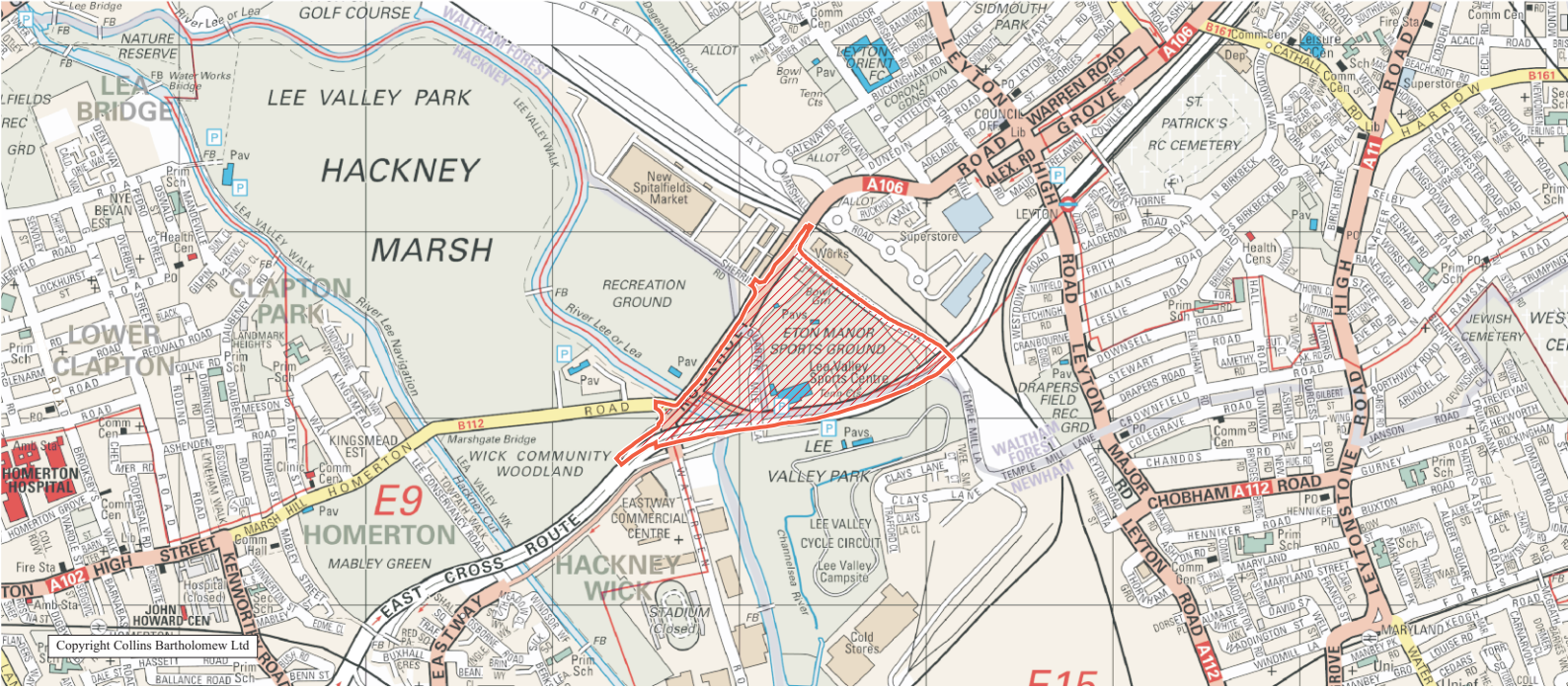

Land bounded to the north-east by Temple Mills Road; to the south by the A12; and to the north-west by Ruckholt Road Planning Delivery Zone 7

London Boroughs of Hackney and Waltham Forest

A report on the evaluation

April 2008

REGISTERED IFA ORGANISATION

MUSEUM OF LONDON Archaeology Service

PRE-CONSTRUCT ARCHAEOLOGY

Land bounded to the north-east by Temple Mills Road; to the south by the A12; and to the north-west by Ruckholt Road Planning Delivery Zone 7

London Boroughs of Hackney and Waltham Forest

A report on the evaluation

Site Code: OL-01607
National Grid Reference: 537670 185660

Project Manager	Kieron Tyler
Authors	Sarah Barrowman
	Jane Corcoran
Graphics	Carlos Lemos

Museum of London Archaeology Service

Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED
tel 020 7410 2200 fax 020 7410 2201
email molas@molas.org.uk
web www.molas.org.uk

PCA
Unit 54, Brockley Cross Business Centre, 96 Endwell Road, Brockley, London SE4 2PD
tel 020 7732 3925 fax 020 7732 7896

Summary (non-*technical)*

This report presents the results of an archaeological evaluation carried out by the Museum of London Archaeology Service and Pre-Construct Archaeology (MoLAS-PCA) on the former Eton Manor Sports Ground site within the Olympic, Paralympic and Legacy Transformations Planning Applications: Planning Delivery Zone 7, London Boroughs of Hackney and Waltham Forest, London E10 and E15. The report was commissioned from MoLAS-PCA by Capita Symonds Limited on behalf of the client the Olympic Delivery Authority (ODA).

Following the recommendations of the previous Detailed Desk-Based Assessment compiled for the Planning Delivery Zone, and subsequent consultation with the Greater London Archaeology Advisory Service (GLAAS), thirteen evaluation trenches were excavated on the site through made ground an alluvial deposits and into the top of the natural gravels.

The evaluation has shown that earlier deposits of archaeological interest survive intact beneath late 19th century made ground. In the north east part of the site these comprise fragments of a dry landsurface formed in Pleistocene brickearth and forming the ground surface from the Mesolithic till post medieval period. In this area, however, truncation by quarry pitting is widespread. In the south and west a mosaic of alluvial, wetland and fluvial deposits exists, which spans the Mesolithic to post medieval period and has very good potential for past landscape reconstruction. Such reconstruction would provide a context in which to place and better understand the archaeological evidence from the site itself and from further afield. Features of archaeological interest observed within or cutting these deposits included wooden stakes, concentrations of daub, a trackway, landsurfaces, laid surfaces, brickearth quarry pits, ditches and channels.

The deposits were recorded and sampled by a team of geoarchaeologists. Preliminary evaluation of the samples has indicated that a rich and diverse assemblage of environmental remains, including snails, ostracods and plant remains exists, with organic material suitable for radiocarbon dating and potential for the survival of microfossils, such as diatoms and pollen. The environmental evidence is not intrinsically dateable, however. Thus, as natural deposits contain few finds, radiocarbon dating is needed to obtain a more reliable understanding of the phasing and correlation of deposits within each trench and across the site as a whole. Dating is crucial to correlate sequences across the site and in consequence build up a picture of site-wide landscape change.

The results of the field evaluation have helped to refine the initial assessment of the archaeological potential of the site. The relatively low level of cultural remains suggests that the site has a low archaeological significance. However, a complex and extensive palaeoenvironmental sequence renders it important in understanding the natural formation and change of the lower Lea Valley. The samples obtained from the trench are of considerable environmental significance, as they are likely to provide evidence for changes in the prehistoric and later river regime and surrounding environment. Such evidence has potential to contribute to our understanding of the changing landscape of the lower Lea in which past human activity took place.

In the light of revised understanding of the archaeological potential of the site the report concludes that further archaeo-environmental work on the samples already taken from the site would provide adequate mitigation of the archaeological resource.

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1 Introduction

1.1 Site background

The site is located in the Temple Mills area, within the London Boroughs of Hackney and Waltham Forest, the boundary between each borough passing north–south across the west side of Planning Delivery Zone Seven (hereafter PDZ7) of the Olympic, Paralympic and Legacy Transformation Planning Applications (Fig 1). The south-western part of the zone falls within the London Borough of Newham, as does the majority of Temple Mills Lane along the south of the zone.

PDZ7 is bounded on the north-west by the north side of the Eastway road (A106) and part of New Spitalfields Market, on the north-east and east by an existing railway line and depot warehousing, on the south by Temple Mills Road and on the south-west by the River Lea; a short spur in the west of the site incorporates the junction of the A106 and Homerton Road, while a longer spur runs west from the junction along the Eastway. A north-eastern spur projects along the Eastway to the western end of the bridge over the adjacent railway sidings (see Fig 1).

The site is located between Ordnance Survey National Grid references 537645 185945 to the north, 537180 185385 to the south-west and 538075 185660 to the south-east. Within this report the area is known as 'the site'. In this report context numbers appear in square [] brackets, while environmental sample numbers appear in curly {} brackets.

Ground level within the site varies from 3.82m OD to 8.17m OD. Ground level immediately adjacent to the site lies at *c* 6.0m OD in Eastway to the north and in Temple Mills Lane to the south-east. The site code is OL-01607. The evaluation was undertaken between 5 May and 7 September 2007.

1.2 Planning and legislative framework

The legislative and planning framework in which the archaeological exercise took place was summarised in the *Desk Based Assessment* and *Method Statement* which formed the project design for the evaluation (MoLAS-PCA 2007a and 2007c respectively).

1.3 Planning background

In accordance with local and national policies, archaeological evaluation PDZ7 in advance of its redevelopment was required as part of the planning process. Evaluation is intended to define the archaeological potential and significance of any deposits present on the site, so that the Local Planning Authority can formulate responses appropriate to any identified archaeological resource.

The evaluation of the site was be undertaken in support of a condition required by English Heritage and attached to the consent granted by the Olympic Delivery Authority Planning Decisions Team with respect to Olympic, Paralympic and Legacy

Transformation Planning Application Reference 07/90010/OUMODA and Site Preparation Planning Application Reference 07/90011/FUMODA. Condition SP.0.38 of planning permission 07/90011/FUMODA states:

> *The site Preparation Development shall not be commenced until a Written Scheme of Investigation for Archaeological Works has been submitted to and approved by the Local Planning Authority. This shall be in accordance with the Generic Written Statement for Archaeology, the Written Scheme of Investigation for Archaeological Field Evaluation and the relevant Detailed Desk-Based Assessment. The archaeological work shall be undertaken in accordance with the approved Written Scheme of Investigation. If significant archaeological finds are encountered, further archaeological works or design measures may be required to mitigate the impact of development on those remains. This condition may be discharged on a Planning Delivery Zone Basis.*
>
> *Reason: To ensure that archaeological remains are properly investigated and recorded.*

1.4 Origin and scope of the report

This report was commissioned by Capita Symonds Ltd on behalf of the Olympic Delivery Authority and produced by the Museum of London Archaeology Service and Pre-Construct Archaeology Ltd (MoLAS-PCA). The report has been prepared within the terms of the relevant Standard specified by the Institute of Field Archaeologists (IFA, 2001).

Field evaluation, and the *Evaluation report* which comments on the results of that exercise, are defined in the most recent English Heritage guidelines (English Heritage, 1998) as intended to provide information about the archaeological resource in order to contribute to the:

- formulation of a strategy for the preservation or management of those remains; and/or
- formulation of an appropriate response or mitigation strategy to planning applications or other proposals which may adversely affect such archaeological remains, or enhance them; and/or
- formulation of a proposal for further archaeological investigations within a programme of research

1.5 Aims and objectives

The following research aims and objectives for PDZ7 were established in the Method Statement for the evaluation (MoLAS-PCA 2007b) and in the Desk Based Assessment for PDZ7 (MoLAS-PCA, 2007a) and are intended to address the research priorities established in the Museum of London's *A research framework for London Archaeology* (2002).

- Analysis of borehole data suggests that non-reworked gravel of the 'low terrace' has the potential to inform on the environment and Late Upper Palaeolithic, particularly at the east of the zone (Landscape Zone 1).

- The DBA also indicates that at Landscape Zone 2, in the southwest of PDZ7, an area of higher ground might exist and might have been exploited in the prehistoric era. Is it possible that other high gravel islands, which may have been exploited in the prehistoric or early historic eras, exist within the general area? It is noted however that recent geoarchaeological investigations at PDZ7 have altered this model and that much of the eastern part of the subject area may have been truncated to considerable depths.
- Do deposits pre-dating the Last Glacial Maximum, which might correspond with the Arctic Beds, exist within non-reworked gravels on the site? What is the potential for past environment reconstruction and/or Late Upper Palaeolithic activity from these deposits?
- Do Late Glacial deposits exist within re-worked gravels? What is the potential for past environment reconstruction and/or Late Upper Palaeolithic activity from these deposits?
- Does evidence for Mesolithic activity (similar to that in the Colne Valley) exist in the clayey gravels recorded above Pleistocene gravel on the site?
- What are the characteristics of the gravel surface and overlying alluvium in the central and southern parts of the site, for which no data currently exists?
- Did the Hackney Brook and/or River Lea cross the site in the Holocene and is there evidence for human activity from the Mesolithic onwards associated with these rivers?
- What environmental evidence suitable for past landscape reconstruction exists within wetland deposits associated with ancient channels of the River Lea and Hackney Brook?
- Can episodes of channel activity and abandonment be dated?
- Does evidence for prehistoric or historic exploitation of the islands of higher ground in the north-east corner and west of the site exist?
- Is there evidence for areas of mudflats that are suggested to have covered much of the area in the later prehistoric eras?
- Is there evidence for an agricultural landscape in the post-prehistoric eras, and if so, how does it present itself? Is it possible to determine field boundaries and if so can they be dated?
- Are there any in situ deposits of archaeological significance within the made ground or is it all of 19th/20th century dump and make-up deposits?
- Can any of the dumps be associated with the construction of the Hackney Cut, part of the Lea Navigation?
- Is there evidence of pre-20th century industrial features?

2 Topographical and historical background

The following summary of the geological and archaeological background to the site is based upon the desk-based assessment for PDZ7 (MoLAS-PCA 2007a).

2.1 Modern topography and drainage

The site is located on the eastern edge of the River Lea floodplain, just south of the confluence of the Lea Valley with the valley of the Leyton River, which formerly flowed north-east to south-west across the site from the valley side. No trace of the Leyton River remains above ground today, however its valley is reflected in the present topography, and a modern drainage channel beyond the northwest boundary of the site may reflect its course. This channel flows into the River Lea, which crosses the south-west corner of the site.

The modern topography and drainage of the site has undergone notable modification by man and bears little resemblance today to the landscape of the site in historic and prehistoric times. Modern ground raising has masked the natural land surface by several metres of made ground. Very little remains in the modern landscape of the natural course of the Lea, which now flows through a series of mostly man-made, canalised and culverted channels.

Modern ground level in the cricket ground area of Eton Manor Sports Ground lies at 6.0m OD, and to the south-east of the sports ground at 5.9m OD, sloping very slightly to 5.1m OD near the junction of Temple Mills Road and Quatermile Lane to the south-west.

2.2 Natural topography and past landscape setting

The British Geological Survey Sheet 256, North London, indicates that the site lies on alluvium, with the Taplow Gravels outcropping a short distance beyond its eastern boundary, where the ground rises up onto the river terrace. The alluvium represents a range of differing wetland and dryland environments existing on the valley floor/floodplain of the Lea from the Mesolithic period onwards.

The alluvium is underlain by the Lea Valley Gravels, deposited following the scouring-out of the valley floor during the Palaeolithic period (the Pleistocene). The gravels are the most recent in a series of Pleistocene river terrace deposits, which today form an irregular flight of steps in the valley side. The Kempton Park Gravels and older Taplow Gravels form the lowest of these river terraces at the edge of the valley.

Tertiary bedrock, which in this area is variably London Clay and Woolwich and Reading Beds, underlies the gravels. The bedrock pre-dates the period of human evolution and thus its surface acts as the bottom line for deposits of archaeological interest.

The landscape of the site today bears little resemblance to its topography and environment in prehistoric and historic times. The characteristics of this ancient landscape will have influenced its use by people in the past and, subsequently, the

preservation of archaeological remains. By reconstructing the past landscape that lies buried below made ground and alluvium, inferences can be made about the likelihood of finding archaeology on the site and the types of archaeological evidence that may exist.

A summary of the buried landscape characteristics of the site and the archaeological implications is given here:

- PDZ7 is located in the east and central parts of the valley floor, with the valley side immediately to the east. It is likely that several natural channels crossed the zone, notably the "Leyton River" tributary joining the Lea Valley. The top of in situ alluvium probably lies at c -1 to +4m OD.
- The extreme north–east of PDZ7 appears to have been higher ground which would have remained as dry ground, and thus suitable for settlement and cultivation, throughout these periods.
- The south western part of PDZ7 has the potential for possible islands of high ground within the wetland, and may contain further important evidence of human activity, as well as abandoned river channels, which have potential for preserving environmental remains suitable for past landscape reconstruction.

2.3 Prehistoric

A number of isolated finds of prehistoric date have been recorded both on and in the vicinity of PDZ7, although the majority of these are antiquarian observations and therefore not always securely located. Three Palaeolithic hand axes (found under alluvium and almost certainly redeposited) and three Neolithic polished axes are recorded as being found within the limits of PDZ7 in 1882–3.

Several excavations in the area to the north of the site, on the dry land beyond the edge of the Lea Valley, have revealed features and finds of prehistoric date. A ring-ditch; circular alignments of postholes, and various fence alignments of late Bronze Age date were found approximately 500m to the north in Oliver Road, Leyton. Further north still in Oliver Road a series of post-holes and pits was recorded, one of which produced sherds of Late Bronze Age plain ware; at Leyton Orient Football Ground, two residual worked flints of probable Bronze Age date, one a crude flake and the other a side scraper were the only evidence for Bronze Age activity in the general area of the site. A spear head with a circular socket of Iron Age date was found in the Hackney Marsh (GLSMR ref: LO6531) but is not well located.

2.4 Roman

2.4.1 Roman roads

A Roman road from Clapton to Great Dunmow (Essex) is thought to have crossed the Lea and the later line of the Lea's Hackney Cut near Pond Lane Bridge (Margary, 1955). The road in this area is largely inferred from local topography, the only evidence being an antiquarian observation reported in 1870, when a gravel surface

was noted 6 feet below ground level, 184 yards south-east of Pond Lane Bridge. This presumed north–easterly course would place the road some distance to the north of the site.

A Roman road is recorded on the GLSMR as being within the area of the site, although its alignment is not known and it is not clear how this would relate to the suggested route of the Clapton to Dunmow road described above. The evidence for its presence comes from an antiquarian observation in 1797, when a causeway was reportedly discovered along with Roman finds during works at Temple Mills. A further observation of a possible Roman road comes from the area to the north-west of the site. Writing in 1722, Daniel Defoe describes the discovery of a stone causeway near what is now Temple Mills Marshalling Yards

In conclusion, the evidence for the presence and alignment of a Roman road within the area of the site itself is rather uncertain.

2.4.2 The Roman crossing of the Lea

Numerous Roman monuments and artefacts have been recovered from the Temple Mills area from the late 18th century onwards. A burial vault containing several urns was found during the removal of old foundations at Temple Mills, one of which contained Roman coins dating from Caesar to Constantine the Great together with several medals. The vault was reportedly on the edge of the River Lea on the site occupied by the East London Waterworks Company. A possible Roman leat on the east side of Temple Mill Stream recorded in 1830 is of uncertain date and may in fact be much later. It is described as 'a trench running parallel with (the stream) and banked up on either side with Roman bricks.'

More reliable evidence comes from the north-east of the site: a pattern of Roman occupation has been identified from recent excavations in the Church Road/Grange Park area of Leyton. This concentrates along a north-east to south-west alignment, suggestive of activity along a road – perhaps a minor road or the southern continuation of the Dunmow to London Road (Moore and Sabel in prep), noted above. This alignment is also reflected in the axis of field patterns recorded at sites such as Livingstone College Towers, Leyton approximately 2.5km to the north of the site. The roadside activity is likely to have been in the form of farmsteads, field systems or small-scale ribbon settlement. A possible part of the road itself has recently been recorded at the Beaumont Road Estate site in Leyton approximately 1.6km to the north of the site. Here, a metalled surface approximately 6m wide, with a north–south ditch on each side was recorded, although there was no evidence for contemporary roadside activity.

Significantly, the zone of occupation associated with the road may be conjectured to the south-west, covering the west side of PDZ7. The potential for such activity would be influenced by how wet or dry the area was during the Roman period; the dryland nature of *Landscape Zone 1* for most of the prehistoric and historic period suggests that this area of the site would have been attractive for such settlement.

2.5 Saxon

Hackney derives from Saxon words, which refer to the well-watered meadows by the River Lea marshes; Clapton means the 'farm on the hill'; and Leyton also has its origins in Saxon text meaning 'settlement on the Lea'.

Little physical evidence has been found to substantiate the documentary evidence for settlement in the immediate vicinity of the site. However, evidence for Saxon settlement at Old Ford (1.5km to the south-west of the site), Saxon pottery at Stratford Market Depot (over 2km to the south-east) and a revetment at Gibbins Yard (1.5km to the south-east) suggest that this period saw use of both the area and the river. A log boat, dated by tree-ring analysis to AD950–1000 was found in 1987 at Springfield Park on the west bank of the Lea, approximately 3km to the north-west of the site. This was found some 6m below modern ground level. It is likely that any Roman crossing at Old Ford and the course of the Roman road/causeway across the marshes and valley remained in use during much of the Saxon period.

2.6 Medieval

Rocque's map of 1746 shows PDZ7 as mainly undeveloped, indicting that the zone is unlikely to have seen much medieval activity. It would at this time have been located on marginal land, susceptible to frequent flooding. As the site was marginal land, subject to inundation, ditches must have been excavated from the period when agricultural exploitation of this area began. Buried or backfilled ditches may survive, within which primary fills may be preserved, giving evidence for the date and nature of past landscape environments. Such evidence has been recovered archaeologically from other – formerly agriculturally exploited – areas of London that are now built-up and urbanised.

Documentary evidence reveals that the Knights Templar built a water mill at Temple Mills (from which the area derives it name) between 1185 and 1278 just to the south of the site. By 1308 this adjoined another mill in Hackney, described as under the same roof. The mills were used for various manufacturing processes. A bridge was also constructed near Temple Mills in the 14th Century by the Knights, possibly a precursor to that shown on Rocque's map of 1746. The line of Eastway (is also marked on Rocque's map and may have medieval origins.

The moated site of Ruckholt Manor lies approximately 300m to the north-east, which documentary evidence suggests was in existence by 1066. A later manor house was built on the same site in 1592. The only other evidence of medieval activity in the immediate vicinity is a possible tile kiln approximately 300m to the east in Leyton, though the location of this is disputed. It should be noted however that the NMR places Ruckholt Medieval Manor House within the south-east of the zone, additionally historic map regression also places part of Ruckholt farm – the post medieval successor to the manor – within the east of the zone (as depicted by Rocque)

2.7 Post-medieval

A gunpowder mill and a leather mill were added to the south of the development area in the 16th century; by the early 18th century a rape seed and smalt mill was in

existence. The site still lay on marginal land, and in 1768 the Hackney Cut Navigation was dug to its west.

The earliest map depicting the area is Rocque's map of 1746, which shows the site as open fields adjacent to Ruckholes House; an avenue of trees is shown across the northern part of the site, lining the route and vista from the house towards the Mill River to the west, a branch of the River Lea. the Great Eastern Railway (Cambridge Line) was constructed during the 1840s to the east of the site boundary by 1862. Contemporary mapping shows a branch (probably man made) of the River Lea, marked as Lead Mill Stream (on other maps as Waterworks River and on the 1746 Rocque map as The Mill River), crossing the site north–south along the route of modern Quartermile Lane. The Waterworks River was filled in and buried by time of the 1961 Ordnance Survey map.

Cartographic evidence indicates that between 1896 and 1913, Ruckholt Road was realigned on either side of the railway sidings to the east of the zone and extended westwards across the Waterworks River to meet the main channel of the River Lea, establishing the line of modern Ruckholt Road/Eastway.

The area of PDZ7 has seen relatively little development; it is interesting to note that the wall between the existing football ground and sports/cricket field more or less follows a boundary that can be traced back to the map of 1839. Early 20th century mapping shows a football ground along the southern boundary of the zone on Temple Mills Lane; also shown is the extent of a large gravel pit occupying part of the eastern extent of PDZ7.

The whole area to the east of Quartermile Lane continued developing as a sports ground throughout the 20th century, with a number of pavilions and other small buildings established around the perimeter of the various sports fields. When the Lee Valley park authority's Eastway sports centre was opened in 1980, on the site of Eton Manor sports ground; the former sports arena became a car park, and a larger sports building was constructed to the north.

The area of the site to the west of Quartermile Lane, marked on maps from the 1960s onwards as a recreation ground, has always remained undeveloped. The section of the Waterworks River adjacent to Quartermile Lane was infilled after 1951. By 1966 the south-eastern part of PDZ7 contained a works building and additional railway sidings associated with the marshalling yard. This had been demolished by 1995, and replaced by a further works building to the north, with the area to the south used as a bus depot.

3 The evaluation

3.1 Methodology

All archaeological excavation and monitoring during the evaluation was carried out by a joint MoLAS-PCA team in accordance with the preceding *Method Statement* (MoLAS-PCA 2007b) and the MoLAS *Archaeological Site Manual* (MoLAS, 1994).

A total of 13 evaluation trenches were excavated. Five evaluation trenches were excavated targeting the locations of the impacts from the proposed development (PDZ7.01 to 7.05). Each trench was excavated to the base of the alluvium (into the top of natural gravels), with machining of trenches done in stages in cases where archaeological features were encountered within the sequence. Eight additional evaluation trenches were relocated to PDZ7 from their planned original location in other zones within the Olympic development as a compensation measure – four trenches from PDZ5 to the south-west (indicated by the PDZ5 trench number prefix on Fig 2), and four from PDZ6 to the south (indicated by the PDZ6 trench number on Fig 2). These were excavated to the same standards established for the PDZ7 trenches. Furthermore, two of the trenches were later extended with the intention of eliciting further information by adding the extents of two further relocated compensation trenches (PDZ7.01/PDZ6.02(C) and PDZ7.02/PDZ6.03(C)). See Fig 2.

A mechanical excavator using a flat ditching bucket undertook the bulk excavation, monitored by an archaeologist, a banksman and a site foreman at all times. A MoLAS-PCA geoarchaeologist visited each trench during excavation and following cleaning in order to examine, interpret and sample the natural deposit sequence, discuss its relationship to any archaeology found and advise on its recording.

The trenches were located by the MoLAS-PCA surveyor using an EDM. This information was electronically collated and plotted onto the OS grid. Levels were calculated from benchmarks established by Morrison's engineers at either the junction of Eastway and Quatermile Line, or near the southern central edge of the site adjacent to the old tennis courts.

A written and drawn record of all archaeological deposits encountered was made in accordance with the principles set out in the MoLAS site recording manual (MoLAS, 1994). The site has produced: 11 trench plans at 1:20 scale; 311 context records; and 29 sections at a scale of 1:10. In addition, 51 bulk, 9 monolith sampled sequences (*c* 30 monolith and kubiena tins) and 12 organic grab samples for radiocarbon dating and species identification were collected, which have been partly processed in order to evaluate their potential. These samples will be retained in the on-site storage facility until a decision has been taken on their requirement for environmental assessment and analysis. The site records will be deposited under the site code OL-01607 in the LAARC.

NB: the phases noted below refer to the sequence as seen synthetically across the whole site area, rather than on a single, trench-by-trench basis.

3.2 Results of the evaluation

(See Fig 2 for trench locations).

3.2.1 Trench PDZ7.01/ PDZ6.02(C) (Fig 3–Fig 5)

Location	Proposed northern wingwall for bridge L01; adjacent to eastern side of the Eastway
Dimensions	13.6m x 3.20m at base; 3.85m
Modern ground level	*c.* 5.7m OD
Base of modern fill	3.66m OD
Depth of archaeological deposits seen (alluvium)	1.93m
Level of base of deposits observed and/or base of trench	1.86m OD
Natural gravels observed	2.2m OD

Table 1 Trench PDZ7.01/ PDZ6.02(C)deposit summary

The original trench was extended lengthways, as PDZ6.02(C), to obtain more information about the gravel topography and in particular to establish whether the gravels rose up onto higher ground to the east. Although illustrated in the trench plan (Fig 3) section 15 is not illustrated in this report.

3.2.1.1 Pleistocene deposits (Phase 1)

Natural mid-orangey/yellow sandy gravels [24], which may be of Pleistocene date, were present at the trench base, at a height of 2.07m to 2.21m OD in section.

3.2.1.2 Active channel deposits (Phase 3)

The earliest deposits examined in the trench represent episodes of flowing water interspersed with periods of tranquillity within and at the margins of a watercourse. During periods of high discharge sands and gravels were deposited, banked up upon each other and probably scouring earlier deposits and features. During periods of stability shrubs and trees colonised the channel bars and pools of water lay within the intervening hollows. As yet no dating evidence exists to gauge the timespan represented by these deposits, but organic remains within them suggests they accumulated in the Holocene and lack of brick, clay pipe and other finds might imply a prehistoric date. The organic remains they contain are suitable for radiocarbon dating.

Along the western edge of the trench the gravels [24] were cut by a sub-circular tree bowl [21], measuring 1.40m north–south by 1.24m east–west, from 1.99m OD to its base at 1.86m OD. The fill [20] comprised mid-grey silty-clay, containing occasional wood fragments and shell.

A layer of mid-orange loose sand, containing frequent shell, grit, small molluscs and pieces of wood, and also lenses of pea grit alternating with thin lenses of clay [114] overlay the natural sand and gravels [24] in the southern part of the trench. This deposit represents a channel bar and covered an area of 3.4m east–west by 2.7m

north–south, and measured 0.65m thick from a surface of 2.85m OD. Organic remains preserved in bulk {13} or the wood fragments collected in sample {15} both taken from this deposit should be suitable for radiocarbon dating. The overlying deposit [115] had similar bedded characteristics but these comprised mid-orange/yellow sandy-gravels and lenses of grey clay. It was seen across an area of 7.76m north-west to south-east by 3.2m north-east to south-west. The layer was 0.40m thick and its surface was roughly level, at *c* 2.45m OD, although it dipped to 2.13m OD in one area. The sequence of gravels, sand and clay within contexts [114] and [115] appear to represent episodic, perhaps seasonal depositional processes forming a natural bank associated with the stream channels that formerly flowed across the trench.

Layer [115] was cut by (or the irregular surface of [115] formed) a natural feature [19] in the north-east corner of the trench. Only part of [19] was exposed in the trench, forming a slope down to the north, measuring 1.20m in length from north-west to south-east, and 1.05m in width. It was c 0.18m deep from a height of 2.19m OD. This feature and the overlying alluvium were sampled, in the north west corner of the trench, with overlapping monoliths {6} and adjacent bulk samples. The feature contained three fills. Primary fill [31] (bulk sample {9}) comprised dark grey slightly sandy silty clay containing very frequent small shells, and was present from 2.16m OD. The secondary fill [18] (bulk sample {8}) was a dark, grey-brown humic clay, with moderate red (ferrous) flecking and occasional shells. The fill was an average 50mm thick from 2.19m OD. Fill [13] (bulk sample {7}) was a dark grey-blue silty-clay containing frequent organic material (including wood fragments, leaf matter and beetles), from 2.27m OD to 2.18m OD. Originally interpreted as a fragment of palaeochannel, later inspection by attending geoarchaeologists suggests the feature may represent part of a natural hollow or depression, a former pool within the irregular mosaic of gravely bars associated with the river bed and banks.

A layer of mid-yellow sand [23], containing gravel ranging in size from pea grit to small cobbles, sealed features [21] and [19]. This was seen in the northern end of the trench and in the western section, and was 0.21m thick from a height of 2.39m OD. It represents a temporary episode of more active stream flow.

A firm dark grey-blue clay deposit [113] overlay layer [115], containing occasional small shells towards the base of the deposit. It had a slight northward slope, with a surface height ranging from 2.59m OD and 2.40m OD, and a thickness of 0.35m. This clay, which was seen in the central area of the trench, abutting the bank formed by layer [114], probably represents a pool at the margins of the river. Directly above [113] was a deposit of mid red-orange sand [112]. This also abutted the banking of [114] and sloped to the north, from 2.73m OD to 2.49m OD across a length of 0.80m with a thickness of 0.13m and is likely to represent a further episode of flowing water across the former pool.

3.2.1.3 Abandoned channel deposits (Phase 4)

A layer of mid-dark blue-grey silty-clay [12] (bulk sample {11}) with manganese flecking sealed both [23] and [112] and covered the width of the trench, from the banking of [114] to the northern limit of excavation. The layer measured 8.00m north-west – southeast by 3.35m north-east – south-east, by 0.30m thick from a surface level of 2.67m OD to the south, dropping to 2.58m OD in the north. Overlying [12] and present across the entire trench was an alluvial layer of pale grey clay with areas

of manganese staining/leaching [11]. This survived to a maximum height of 2.90m OD and a thickness of 0.30m. These deposits may represent a boggy area with reedy vegetation growing out of pools of shallow stagnant water forming across the bed of the former channel.

3.2.1.4 Alluvial clay (Phase 5)

A relatively thick layer composed of mid grey-yellow silty-clay [10] lay above [11]. This was also seen across the entirety of the trench with a maximum height of 3.79m OD and a thickness of 0.80m. It is likely to represent seasonal flooding of meadow-like environment.

3.2.1.5 Man-made deposits (Phase 10)

Dark grey-purple silty-clay deposit with manganese staining [17] overlay [10]. This contained gravel, pea grit, 19th century pottery and CBM, and was the primary part of the sequence of Victorian to modern landfill dumping that covered the alluvium in the trench. It had a surface height of between 3.96m – 4.50m OD, and a thickness of 0.74m. This was overlain by a mid grey-yellow sandy-silt deposit [16] containing 19th century pottery, CBM, and small gravels, and with a thickness of 0.66m, and a surface height of 4.20m–5.16m OD. Above this was a deposit of dark grey-purple silty-sand [15] with inclusions of pottery and gravels. The surface height of this deposit was from 4.82m – 5.00m OD, with a thickness of 0.77m. The overlying deposit was mid yellow-grey silty-sand [14] with manganese flecking and inclusions of 19th century pottery; bone fragments and gravel. Its surface lay between 5.31m and 5.40m OD, with a thickness of 0.40m. Above this was a small deposit of mid brownish-yellow silty-sand [9] containing frequent pieces of CBM, with a surface height of *c* 5.4m OD, measuring 0.15m thick. All of these deposits represent separate tips of landfill seen within the south-east facing section of the trench. The artefacts recovered from the layers are of 19th century date.

In the south-west facing section deposit [111] overlay [10], and formed the primary deposit of Victorian-modern landfill; the layer comprised dark grey-brown silty-sand containing 19th century pottery and glass and measured 0.50m thick, with a surface ranging from 3.81m to 4.21m OD. A layer of mid grey-blue silty-sandy-gravel [110] overlay [111], containing occasional pottery and CBM from a surface height of 4.13m to 4.66m OD, measuring 0.45m thick. Above this was a relatively thin layer of dark grey-brown silty-sand [109] with inclusions of gravel, and fragments of 19th century pottery and glass. It measured 0.19m at its thickest part, and the surface lay at 4.30m – 4.39m OD. Deposit [101], although present further north, was of the same make up but lacked any pottery inclusions. The layer lay at a surface of 4.38m – 4.76m OD, and a varied in thickness from 0.06m to 0.30m. Both deposits [109] and [101] represent the same event.

Mid yellow-orange silty-sandy-gravel layer [100], containing occasional 19th century pottery and glass fragments lay above [101], from a surface of 4.92m – 5.44m OD and measured 0.29m – 1.12m in depth. Deposit [108] was present above [109] and shared the characteristics and composition of [100]. Both deposits [108] and [100] represent the same event.

Gravel layer [100] was overlain by two deposits: a dark grey-yellow silty-sandy-gravel [99] containing inclusions of bone from a surface height of 5.38m to 5.66m OD

measuring 0.50m thick in section, and a light yellow-grey (mainly) sandy deposit [103], from a height of 5.71m OD measuring 0.35m thick. A deposit of mid grey silty-sand and large pieces of CBM [102], with inclusions of gravel and 19th century pottery lay above layers [99] and [103]. This represented a dump of building rubble present to a height of 5.66m – 5.71m OD measuring 0.41m thick.

Modern landfill cut [107] truncated through layers [103] and [108]. This had steep sides with a gradual break of slope at the top at 5.70m OD; the base was not visible due to the stepping of the trench. The cut as seen measured of 3.62m in length and 1.60m in depth, to a base at 4.20m OD. The cut contained two fills: the primary being a light yellow-grey silty-sand [106] containing occasional CBM, pottery, plastic bags, and frequent mixed gravels, measuring 0.94m thick. The secondary fill was a mid grey sandy-silt [105], which had inclusions of occasional CBM, wood, plastic, cloth, concrete, and mixed gravels. This was overlain by a layer of light yellow-white silty-sand [104], containing occasional plastic, and occasional-frequent CBM and powdered concrete (towards to surface of the deposit), from a surface level of 5.73m – 5.84m OD.

A mid grey-brown layer of silty-sand [8], containing pottery, glass, metal, CBM, plastics, cloth, and carpet fragments capped the sequence. This represents modern topsoil with a surface level of 5.74m OD to 5.70m OD, measuring approximately 0.30m thick.

3.2.2 Trench PDZ7.02 / PDZ6.03(C) (Fig 6–Fig 12)

Location	Proposed site of southern wingwall for bridge L01, adjacent to eastern side of the Eastway
Dimensions	26.0m x 3.0m; additional 3.5m x 3.8m extension to the northeast; 3.8m deep
Modern ground level	5.94m OD
Base of modern fill	3.96m OD
Depth of archaeological deposits seen (alluvium)	2.33m
Level of base of deposits observed and/or base of trench	1.63m OD
Natural observed	2.37m OD

Table 2 Trench PDZ7.02/ PDZ6.03(C) deposit summary

The original trench exposed a large post medieval or later ditch feature. It was widened, to examine a spread of daub within the alluvium, and then extended lengthways, as PDZ6.03(C), to obtain more information about the gravels and the relationship between the active channel deposits and overlying daub spread in PDZ7.02 with the fluvial sands in PDZ6.05a(C), to the south-east. Note that although indicated in the trench plans (Fig 6; Fig 7 and Fig 8), Sections 13, 17 and 29 are not illustrated within this report.

3.2.2.1 Pleistocene channel deposits (Phase 1)

It is not certain whether the earliest gravels recorded in a slots dug through the base of the trench are of Late Pleistocene or Holocene date. The machine-dug slots revealed

interbedded sands and gravels that represent the bed of an active river channel. Loose, light orangey-brown sandy-gravels [274] extended from roughly 1.90m OD to below the base of the sondage (*c* 1.6m OD). They were overlain by a distinct layer of loose, mid orangey-brown sands [273], 0.10m thick from a surface at 2m OD and a layer of light grey-brown gravel [84], measuring an average of 0.20m in thickness, from a height of 2.27m to 2.37m OD, which formed the main evaluation trench base. The gravels [274] contained areas of root 'matting' ({74}) in their upper part, which may be contemporary with the deposition of the gravel or be a result of later rooting (see below).

3.2.2.2 Stabilisation, landsurface development and prehistoric activity (Phase 2)

The sands and gravels in the base of the trench were disturbed by evidence of shrub and tree growth and overlain by finer-grained sediments, accumulated during low-energy flooding of the former channel bed. Suggesting the trench no longer lay within the active part of the former river channel. This may have been a result of a decrease in water flow in general, the migration or switching of the course of the stream, or the stabilisation of the river banks, as a result of trees and vegetation growth (amongst other things). Human activity appears to have taken place within the area of the trench at this time of relative landscape stability. However, as yet, the date and timespan of the deposition of fine-grained alluvium, soil development, tree and shrub growth and human activity is uncertain.

Dateable evidence of tree growth was recorded in the woody roots extending through the sands and gravels in the sondage and these roots were sampled for radiocarbon dating and species identification ({74}). The sand bed [273] was also less distinct in places where it had been mixed into the gravels by later rooting. In addition, the gravels [84] formed a slight high in the south east of the trench, as well as at its northern end, where they appeared to have been pulled upwards as part of a tree-throw.

At least four tree throws were identified at the base of the trench, which stratigraphically appear to be of different date. Although the trees may have fallen at different times the period of tree growth was probably associated with the stable landsurface. The earliest tree throw [85] truncated the gravels and was an irregular shape, with moderately sloped concave sides and a concave-flat base. The feature measured 1.80m by 1.55m, surviving to 2.35m OD with the base at 2.19m OD. It contained three fills: a primary light grey clay-sand [90], with orange mottling and frequent evidence of root activity and inclusions of daub, at 2.21m to 2.35m OD. The secondary fills comprised mid grey sand-clay [89], with further root action and inclusions of daub and occasional gravels, at 2.3m OD overlain by dark grey-blue clay [88], also displaying root activity, with a surface level of 2.35m OD to 2.33m OD and thickness of *c* 40mm.

In the north west corner of the trench the gravels were overlain by pale yellow-grey sandy-clay [83] (Bulk sample {14}) with moderate oxidised root channels, occasional fragments of daub and flecks of charcoal, which had a maximum height of 2.57m OD and a thickness of 0.83m. Further examination of the site records is needed to clarify the relationship of this deposit to the fills of tree throw [85]. The sandy clay deposit [83] formed the subsoil for layer [82], mid reddish-grey clay with frequent inclusions of daub fragments and occasional charcoal flecks. Fragments of pottery were also

recovered from this deposit, although these are currently undated. The deposit was present from a height of 2.72m OD, and measured 0.15m thick and was sampled with bulk {3}. The abundance of daub fragments in this deposit and its colouring, in part derived from the daub, suggests that the artefacts made from the daub had been discarded at this location and are close to *in situ.* Subsequent trampling by people and animals, and other weathering processes would have broken up the burnt clay and soil forming processes such as rooting and burrowing would have worked fragments into the subsoil [83]. The same processes could have transported fragments of daub into nearby hollows, such as tree throws. Thus it is possible that tree throw [85] was already a hole or hollow at the time the daub was discarded.

Contexts [83] and [82] merged laterally into a single layer of mid greyish-green sandy-clay [133], which overlay the gravels [84] along the eastern side of the trench. The layer measured 6.0m south-west to north-east by 6.50m south-east to north-west, with a thickness of 0.22m, and a maximum surface level of 2.55m OD. This contained occasional–moderate inclusions of daub fragments and occasional gravel lenses.

3.2.2.3 Flood / scour event (Phase 3)

A sand bed [81] overlay, and probably truncated, layers [82] and [133]. It had visible dimensions of 5.56m south-east to north-west by 6.0m north-east to south-west, a maximum thickness of 0.08m, with a surface level of 2.69m – 2.90 OD. In places it comprises lenses of yellow sand and pale grey clay. It also contained moderate inclusions of heavily weathered daub fragments and flecks and was sampled with bulk {4}. There may have been a considerable hiatus in deposition between the discard of the daub in context [82] and the scour event, which deposited the sands of [81].

Flood deposit [81] appeared to be cut by a tree bole/tree throw [138] in the north of the trench. The southern edge of the feature was present at the trench edge and was recorded mainly in section. The cut was present from 2.58m OD and cut down to a base at 2.43m OD. The primary fill was a mid-dark purplish-brown silty-clay [137] and measured *c* 0.1m thick and contained very frequent inclusions of abraded wood fragments that may relate to the possible tree that formed the feature. The wood was sampled for radiocarbon dating and species identification. The secondary fill was a mid greyish-blue clay [136] measuring 0.07m thick that contained further fragments of abraded wood.

Tree throw [132] also truncated flood deposit [81]. This was sub-circular in plan with steep concave sides, an irregular base, with a sharp break of slope at the top and a gradual break at the base. It had dimensions of 2.00m by 1.20m, a depth of 0.45m, and a maximum level of 2.63m OD. The fill was a mid–dark purplish-brown silty-clay [131] containing occasional small sub-angular to sub-rounded gravels and frequent fragments of degraded wood, which should be suitable for radiocarbon dating and were sampled in bulk {44}. The fill was present from 2.47m OD with a maximum thickness of 0.10m.

It is likely that these trees were growing on the landsurface of former channel bars and were uprooted as a result of the flood event, or became waterlogged and decayed, as conditions became wetter (see below).

3.2.2.4 Wetland environments (lower part of alluvial clay) Phase 4

Although the sandy bed deposited by the flood event was not recorded in the southern part of the trench, possible evidence for trees that were probably associated with the buried landsurface and their demise, as conditions became wetter, was found here. Landsurface [82] was cut by what is interpreted as a tree throw, [308], in the southern part of the trench. The feature was irregularly shaped, with slightly sloped irregular sides, which extended beyond the limits of excavation, measuring 1.60m north – south, by 0.43m east – west and 1.00m deep. The top of the cut was at 3.04m OD and the base at 1.87m OD. Soft, dark bluish-grey clay [307] containing a moderate amount of rounded gravels, charcoal flecks and wood pieces filled the feature.

The tree throws, flood sands and buried landsurface in the lower part of the trench sequence were overlain by clayey deposits, characteristically soft dark blueish grey, though browner in the southern part of the trench. These clay deposits represent a change in the characteristics of the floodplain at this location, from relatively dry and wooded to much wetter. During the accumulation of the clays the trench location was possibly subject to prolonged flooding, with the development of reedy vegetation and semi permanent shallow standing water. A 0.85m thick alluvial layer of mid bluish-grey clay with manganese staining [22], present from a surface level of 3.52m OD, overlay both the tree hole features ([132] and [138]) in the northern part of the trench. Sample {5} taken from this deposit, as well as the monolith sequence {2}, taken through the subsoil [83], landsurface [82], flood horizon [81] and overlying clays [22] and [7], should be able to clarify the characteristics of the changing prehistoric and later environment, as experienced in the location of PDZ7.02.

A thin layer of soft, mid brown alluvial clay [304] overlay layer [82] in the southern part of the trench. The deposit was present from a surface of 2.92m – 2.98m OD, measuring 3.08m in length 0.10m in thickness. It was overlain in turn by a layer of soft mottled light grey and light brownish-orange alluvial clay [303]. This measured 5.70m in length and up to 0.37m thick, with a surface level of 3.13m –3.34m OD. Above this was another layer of alluvial clay [302], which was soft and mid greyish-brown, measuring c 5.0m in length and 0.20m in thickness from a surface level of 3.16m – 3.44m OD. The trench records suggest that [304] and [303] are cut by the track and ditch structures ({296], [306],[311]) and [302] overlies them.

The increase in wetness represented by the lower alluvial clays may be a result of rising river levels in general, or could be a more local phenomenon, resulting from the changing river regime. In addition, the clay deposition may reflect a change to more sediment-laden water, as a result of increased erosion upstream, perhaps derived from human activity such as forest clearance and agriculture. It may also or alternatively mark the ingress of tidal water into this area. The characteristics and cause of the changing environment represented by the deposit sequence has archaeological significance, as it will have influenced how contemporary people perceived and utilised the local landscape. Its origin and environment of deposition might be clarified by further work on the samples and records obtained from the trench.

3.2.2.5 Historic alluvium and undated landuse (Phase 5)

Undated human activity

A layer of soft dark blueish-grey clay [305] containing a single large fragment of chalk, occasional wood fragments and a moderate amount of rounded to sub-rounded

gravels, overlay the natural gravels [84] in the southern end of the trench. The layer measured 7.20m north–south by 3.35m east–west; was 0.20m thick, and survived to a level of 2.70m to 2.83 OD. The chalk could not have arrived at this location by natural processes but its function and the depositional environment of the clay it was found within remain unclear. Although a historic date for the deposition/discard of the Chalk seems likely, as outcrops of Chalk are not local and it was commonly used as a building material in the historic period, trench records suggest [305] was overlain by [82]. This would imply a prehistoric date for [305] given the likely prehistoric date of [82]. Further examination of the trench records and radiocarbon dating the associated wood ({77}) might help resolve the date of discard of the chalk and origin of [305].

Stakes

A series of stakes were inserted through layer [133] (Fig 8), which are thought to be of medieval or post medieval date (see Appendix 4). Stake [276], with associated cut [277], and stake [278], in cut [279], were both made of oak and were notably larger than the rest of the observed stakes. These are characteristically likely to have been of more recent date than the other observed stakes, and exhibited a fair degree of preservation. Stake [278] was set vertically, orientated south-west to north-east; box quartered, with a maximum diameter of 0.13m and was 0.50m in length. The top of the *in situ* stake was recorded at 2.47m OD. Stake [276] was tangentially faced in a diagonal north–south setting, with maximum dimensions of 20mm by 70mm in diameter by 0.14m in length, and survived to 2.46m OD.

Three softwood stakes are possibly associated with the above: stake [280] in cut [281]; stake [284] in cut [285] and stake [288] within cut [289]. All three were evenly spaced and had comparable forms. Stake [280] was box quartered, vertically set with a diameter of 30mm x 20mm, a length of 40mm, with the top at 2.38m OD. Stake [284] was whole, vertically set, had 60mmdiameter by a length of 0.10m, and survived to 2.34m OD. Stake [288] was vertically set, box quartered, varied between 10mm by 10mm to 70mm by 30mm in diameter, and measured 80mm long, surviving to a height of 2.32m OD. All the stakes were in poor condition.

Two further stakes, [290] in cut [291], and [292] in cut [293], are *possibly* associated. Stake [290] was vertically set, quartered in conversion, 0.18m in diameter, 60mm in length, with a maximum level of 2.33m OD at its top. Stake [292] was vertically set, possibly whole in conversion, measured20mm in diameter by 0.15m in length, from a height of 2.35m OD. Both were in poor condition.

It is unclear how the remaining three stakes relate to each other or those observed above. Stake [282] within cut [283], was in moderate condition, being vertically set, quartered in conversion, had a diameter of 50mm, and was present from 2.36m OD. Stake [286], within cut [287], was in moderate condition, vertically set, halved in conversion, measured 30mm in diameter by 70mm in length, and was present from 2.34m OD. Stake [294], with cut [295], was seen only in section and measured 60mm in diameter by 60mm in length. At present it is unclear as to what collective purpose these stakes served and to when they date. All of the stakes were truncated by ditch [135] (discussed below).

Historic trackway and associated ditches

Trackway [296] overlay tree throw [308]. The trackway consisted of compact, mid brownish-orange, rounded to sub-rounded gravels held together by a 10% sandy-clay

matrix that formed a distinct cambered surface in section (section 28, see Fig 12). This was orientated north-west to south-east, running obliquely across the trench, to a width of 6.03m. The trackway lay at a height of 2.99m–3.34m OD and measured maximum thickness of 0.62m.

Ditch [311] was associated with the northern edge of the trackway. The ditch had irregular concave sides breaking onto a flat base; was 2.78m wide north to south and 0.42m deep from a height of 3.22m OD, the base lay at 2.79m OD. The ditch was only present in the east facing trench section. The primary ditch fill comprised soft, mid grey clay with sand lenses [310], measuring 0.38m thick present to 3.23m OD. The secondary fill, which also extended over part of the trackway, was a friable mid greyish-brown sandy-clay [309], with frequent inclusions of rounded to sub-angular gravels and moderate inclusions of charcoal flecks. It was 0.18m thick from a surface level of 3.17m – 3.26m OD.

Ditch [306] was associated with the southern edge of the trackway, cutting though natural deposit [303] and fill [307] and observed in both the east and west facing sections (see Fig 12) This ditch had irregular, concave sides similar to ditch [311]. The ditch had a flat base with a gradual break of slope, measured 3.00m in width north to south and reached a depth of 0.30m, from a height of 3.14m OD. The primary fill was a naturally accumulated soft, mid grey clay [299], containing occasional lenses of sand, molluscs and charcoal flecks. It also contained a single fragment of CBM, which dated to the early post medieval period. Laminated lenses of mid grey clay and loose mid orangey-brown sands [298] overlay the ditch and acted as a secondary fill. The deposit had a width of 4.38m, clearly extending over the edges of the ditch [306], a maximum thickness of 0.57m, and a surface level ranging from 3.01m to 3.46m OD.

A layer of friable mid greyish-brown sandy-clay [297], measuring 6.0m in length north–south, overlay trackway [296], ditch fill [298] and alluvium [302]. This layer contained very frequent rounded and sub-rounded gravels and frequent charcoal flecks. It was seen in both the east and west sections of the trench and had a maximum thickness of 0.43m, and a surface level ranging from 3.58m to 3.32m OD. It could represent to use of the track

Surface/re-surface deposit [275] lay above layer [297] and ditch fill [309]. This was composed of orangey-red CBM fragments and sub-angular pebbles mixed with a mid greyish-brown clay. The surface extended beyond the adjacent trench limits, measuring of 14.49m north–south by 3.00m width. The maximum recorded thickness was 0.18m, and the surface level lay at 3.22m – 3.59m OD.

Upper part of alluvial clay

Alluvial layer [7] overlay the track re-surface [275] in the south of the trench and the dark blueish grey clay [22] in the north. It comprised mid greyish-yellow clay with manganese flecking, and frequent oxidised root channels and very occasional chalk flecks. The layer was present at 3.92m OD. It is likely to represent an episodically flooded meadowlike landsurface (an ‘accretionary soil’, slowly building up through additions of clay during seasonal flooding). The chalk flecks suggest it may have been used for agriculture. Pottery fragments recovered from the alluvium dated to 1580–1900, representing a broad post-medieval date although some of the fragments may either be residual or contaminants from overlying deposits. A remnant of the pre-groundraising landsurface [300], composed of friable dark brownish-black sandy-

clay, lay above the weathered clay, in the southern end of the trench, measuring 6.20m north to south; a maximum thickness of 0.24m, and a surface level of 3.78m to 3.96m OD. It is likely that the alluvial clay [7] represents a drier environment than that in which the trackway was built and utilised.

3.2.2.6 Victorian ditch (Phase 7)

A late 19th–early 20th century ditch [135] cut layer [7] (see Fig 7; Fig 9 and Fig 12). This had steep, slightly concave sides; a gradual break at the base of slope and a concave base. The ditch ran 9.80m north-east to south-west before turning at a broad 90° angle to run 13.0m north-west to south-east. The ditch measured a maximum 3.45m in width, surviving to 3.65m OD. The base of the ditch lay at 2.57m OD at its deepest point. The ditch contained several fills comprising distinct lenses seen only in section (see Fig 12). A loose mid yellowish-brown clayey-sand with small angular to sub-angular pebbles [272] was observed in the base of the ditch on the south-west side of the slot excavated in the southern extension of the trench. A localised deposit of friable mid greyish-brown silty-clay [271] sealed this deposit, containing moderate inclusions of sub-angular and angular pebbles. On the north-east side of the ditch was a third localised deposit: a friable mid greyish-brown silty-clay [270] containing a sub-angular to angular pebbles. All of these localised deposits appear to be the result of natural processes of erosion and deposition.

The main fill of the ditch was a soft mid greyish-brown clayey-silt [134] and overlay the deposits described above. The fill was seen in all sections, with a maximum thickness of 0.55m and a highest level of 3.65m OD. Inclusions were frequent manganese flecks, moderate fragments of CBM, and occasional pottery, glass, animal bone, metal wire, and coconuts. The ditch was subsequently re-cut [6], with straight sides and a slightly concave base. The recut measured a maximum 3.78m in width, and the maximum depth was 1.25m, from 4.07m OD; the deepest part of the recut lay at 2.82m OD. The recut contained four fills: .a localised deposit of loose greenish-orange clayey-sand mixed with dark brown sandy-clay [269] was observed as the primary fill in the southern extension only (see Fig 11). This contained a moderate amount of sub-angular pebbles and occasional CBM fragments, and measured 3.26m in width, 0.23m in thickness, and had a surface level of 3.64m OD. In the northern trench section the isolated primary fill was a firm mid grey alluvial clay with manganese flecking [5]. This contained very occasional pea grit and CBM fragments, measured 0.12m thick with a surface level of 3.02m – 4.07m OD. The secondary fill, seen across the trench, was a friable dark reddish-brown sandy-silt with patches of silty-clay [4], 0.50m thick. This fill contained pottery dating to 1850–1900, glass of similar date; metal, CBM, bone, leather, a late post medieval copper alloy coin, occasional small stones, and chalk and charcoal flecks. Fill [3], only observed in the northern section of the trench, was a mid brown sandy-silt with a surface level of 3.82m– 4.08m OD, measuring 0.18m thick. This had inclusions of CBM, coke, very occasional gravel, and chalk and charcoal flecks.

The ditch (both original and re-cut) may have originally served a drainage function, as the area is known to have been affected by periodic waterlogging/flooding and there is evidence of alluvial silting in primary fill [5] of the ditch re-cut [6]. However it appears that it later became increasingly associated with refuse tipping, perhaps as the need for drainage reduced. The return in orientation also indicates that it may have served an additional boundary function.

3.2.2.7 Ground-raising / made ground deposits (Phase 9)

Victorian–modern dump layer [2] was present across the full extent of the trench at a height of 4.53m – 5.55m OD, sealed the ditch and its recut. The layer was composed of homogenous loose, mid grey-brown mixed sandy-silt and clayey-silt, with occasional small–medium sub-rounded stones. Inclusions of pottery (dating to 1830–1900), glass dating to 1875 onwards; metal, CBM, animal bone, and chalk and charcoal flecks were also present. It is evident that the deposit had built up over time, the base of the deposit was somewhat darker and more compact than the upper material, perhaps due to decomposition processes.

The sequence was capped by a layer of friable mid brown-grey silty-clay topsoil [1], measuring 0.55m thick at a height of 5.94m OD. The topsoil contained pottery, glass, metal, CBM, animal bone, small rub-rounded stones, and charcoal and chalk flecks.

3.2.3 Trench PDZ7.03 (Fig 13–Fig 14)

Location	Proposed site of eastern wingwall for bridge L02, adjacent to eastern side of the Quatermile Lane
Dimensions	8.70m x 3.00m x 3.58m depth
Modern ground level	*c* 6.26m to 6.40m OD
Base of modern fill	4.57m OD
Depth of archaeological deposits seen (alluvium)	1.55m
Level of base of deposits observed and/or base of trench	3.2m OD
Natural observed	3.55m OD

Table 3 Trench PDZ7.03 deposit summary

It is possible that the sequence of deposits in PDZ7.03 relates to a historic watercourse and later drainage ditch, owing to the relatively high elevation of the active channel deposits recorded in this trench. However, this cannot be confirmed, as the deposits are as yet undated.

3.2.3.1 Historic watercourse Phase 6

Active channel deposits

Although it is not certain that the earliest gravels recorded in the base of the trench are not of Late Pleistocene or early Holocene date, it is most likely that they were deposited by a historic river channel. A layer of loose, yellowish-orange sand with rounded gravels [139] formed the earliest deposit. This layer was observed in the south-eastern end of the trench only and had a surface level of 2.98m – 3.20m OD (see section 16, Fig 14). Overlying this and forming the majority of trench base was a layer of loose, light greyish-brown sandy-gravel [129], with a surface level of 3.20m OD – 3.55m OD, measuring 0.47m in thickness.

If of Pleistocene or Early Holocene date, the relatively high elevation of these sand and gravel deposits suggests they formed an island of higher ground within the network of shifting channels that existed in the west and southern part of the site from the prehistoric period onwards. However, it is likely the sandy gravels represent much

later, even historic, river activity, perhaps associated with the Lead Mill Stream, which formerly crossed this part of the site. Further examination of the trench records is needed to confirm whether or not historic building material and other dateable finds were recovered from the gravel.

Stabilisation and landsurface development

Tree bowl [87] truncated the gravel [129] at the north-eastern end of the trench. This was irregular in shape, measuring 1.20m east – west by 0.66m north – south, with gradually sloping sides and an irregular base, the surface of the cut was present at 3.09m OD and the base at 2.82m OD. The tree bowl contained a fill of loose, mid bluey-brown sandy gravel [86], with frequent tree roots.

?Surface wash / flowing water

A strongly cemented layer of mid yellow silty-sand overlay the tree bowl. The layer was bifurcated by cut [140] into deposits [127] to the north and [128] to the south. The surface of the layer varied from 3.57m OD to 3.72m OD, and measured 0.3m 0.30m thick. A 0.50m thick layer of firm, dark bluish-grey sandy-clay alluvium [141] overlay [128] from a surface level of 4.00m – 4.10m OD.

These deposits indicate an episode of active channel activity following the demise of the tree and the subsequent development of a more sluggish backwater area. The elevation of these deposits suggest a historic date and it is likely that the deposits relate to one of the watercourses mapped in the vicinity of PDZ7.03 on historic maps.

3.2.3.2 Drainage ditch or watercourse (Phase 7)

An east – west channel [140] truncated layers [141] and [127] / [128]. The cut had moderate slightly concave sides and a flat base with a very slight slope to the south. Although this channel may be a natural watercourse, its profile suggests it is possibly a man-made feature, such as a drainage ditch. Its primary fill was a firm, dark greyish-black clay [126], 0.15m thick and containing woody organic material. A bulk sample {42} taken from this fill, preserved abundant seeds and wood fragments, which will be suitable for radiocarbon dating and past landscape reconstruction. Alluvial layer [125] measuring 0.75m thick subsequently filled and sealed the channel. The alluvial layer was composed of firm dark greyish-black clay and had a surface level of 4.00m – 4.37m OD. The orientation and elevation of feature [140] suggest it may represent a drainage ditch, running into the post medieval / Victorian Lead Mill Stream, which followed the line of Quartermile Lane. A series of parallel ditches, probably osier beds, are illustrated slightly to the north of PDZ7.03 on Rocque's map of 1746. It is possible that they extended into the area of the trench and examination of sample {42} may shed more light on this.

Relict historic soil or redeposited alluvium

A layer of yellowish-brown silty-clay [124] overlay layer [125]. This layer was seen across the trench, measuring 0.75m in depth, from a maximum height of 5.04m OD. Although this layer may be an *in situ* alluvial deposit subject to post-depositional soil forming processes, it is relatively high and is probably more likely to represent redeposited alluvium.

3.2.3.3 Made Ground (Phase 9)

The earliest of the modern made ground deposits above the subsoil [124] was composed of loose mid brown silty-clay [122], containing occasional fragments of post medieval glass and 19th century CBM, measured *c* 0.20m thick, from a maximum height of 5.19m OD. Above this layer was a deposit of loose dark greyish-black silty-clay [121] with inclusions of occasional shell, CBM, wood, and mortar at a surface level of 5.09m OD. Overlying this was a layer of loose dark brown silty-clay [123], measuring 0.23m thick, containing CBM, an isolated fragment of post medieval (1580–1900) pottery and mortar inclusions.

A layer of loose light brownish-yellow silty-sand [120], containing CBM and concrete pieces overlay clay layer [123] across the majority of the trench. This layer was 0.55m thick from a surface level of 5.22m – 5.59m OD. At the southern end of the trench the layer was overlain by a deposit of loose light brownish-grey sandy-gravel [119] that contained very frequent CBM and concrete fragments, with a recorded surface level of 5.46m OD – 5.62m OD, and measured a maximum 0.43m in thickness. At the northern end of the trench firm, mid greyish-black silty-clay [130] with a surface level of 5.51m – 5.64m OD and a thickness of 0.21m overlay layer [120]. Deposit [119] and layer [130] were overlain in turn by a layer of loose, mid brownish-grey, angular sandy-gravels [118]. This layer was observed across the entirety of the trench, had a surface level of 5.76m – 6.51m OD, a thickness of 0.88m, and contained very frequent brick, concrete, and tarmac fragments.

A compacted layer of sandy-gravels, building rubble, and tarmac hardcore [117] lay above layer [118]. This formed the latest layer in the northern end of the trench, and had a surface level of 6.22m – 6.55m OD with a thickness of 0.67m. Overlying this and sealing the southern end of the trench was a loose layer of hardcore composed of sandy-gravels and building rubble [116], with a surface level of 6.26m – 6.40m OD measuring 0.38m thick.

3.2.4 Trench PDZ7.04 (Fig 15–Fig 16)

Location	Eton Manor northern playing field, south-east corner
Dimensions	2.80m x 4.20m at base, extended to 1.70m x 5.60m at base; 2.3m deep
Modern ground level	4.44m to 5.15m OD
Base of modern fill	3.47m OD
Depth of archaeological deposits seen (alluvium)	0.92m
Level of base of deposits observed and/or base of trench	2.82m OD
Natural observed	3.15m OD

Table 4 Trench PDZ7.04 deposit summary

The trench was moved from its original location in the area of the proposed wind turbine due to the roadway at that location still being in use. The trench was excavated to a depth *c* 2.3m below the present ground level, exposing an area *c* 2.80m north–south by 4.20m east–west. The trench was subsequently extended at its north

end to cover an area measuring *c* 6.5m north–south by *c* 5.5m east–west in order to investigate the concrete structure exposed (see Fig 15).

3.2.4.1 Pleistocene deposits (Phase 1)

All the natural deposits recorded in PDZ7.04 are likely to have been deposited during the Late Pleistocene. They comprised a sequence of fluvial gravels overlain by a brickearth-like sandy clay, in which soil development had taken place, as the surface of the brickearth had formed the landsurface at this location throughout the Holocene.

Gravels

Mid orangey-yellow sandy-gravels [91] were present in the base of the southern part of the trench below 3.15m OD. The gravels were sub-angular to sub-rounded and ranged from pea grit to small pebbles in size. Although the gravel was not exposed in the north, a sondage showed it lay a short distance below the base of the trench (2.29m OD) suggesting the gravel surface dipped towards the north.

Brickearth

The brickearth-like deposits that overlay the gravel may have originally accumulated as alluvium during the Late Pleistocene. However, soil development during the Holocene had overprinted any depositional characteristics they might formerly have possessed and the layering recorded in the brickearth is likely to reflect the weathering and translocation of iron, clay and organic compounds through the deposit resulting from soil formation. In the southern part of the trench the brickearth profile comprised a layer of firm, light yellowish-brown clay [35], which overlay the gravel from a surface level of 3.44m – 3.97m OD. The deposit became darker in hue towards the surface and made a gradual transition into the overlying layer [36], mid brown-yellow sandy-clay, with a surface level of 3.71m – 4.21m OD, and 0.42m thick (see Fig 16). It is likely that the surface of this deposit has been very little truncated and roughly equates with the prehistoric to post medieval landsurface.

The weathered brickearth sequence in the northern part of the trench comprised mid yellow-orange clay/silt [68] at the base of the trench, at 2.29m OD. This was overlain in part by dark grey silty-clay [69] from a height of 3.66m – 3.74m OD and also by a 0.13m thick layer of mid orange clay [63] with a surface level of 3.75m – 3.88m OD. Layer [63] was in turn overlain by light-mid yellow-orange clay [62] from a height of 3.88m – 4.27m OD.

3.2.4.2 Landsurface development (Phase 2 and later)

Although much truncated by gravel and brickearth pits, the surviving pinnacles of brickearth within the trench, with their evidence for soil formation, reveal roughly the level of the prehistoric to post medieval landsurface. The characteristics of the uppermost surviving brickearth deposits suggest they lay very close to the landsurface from which pitting took place. In the south of the trench this landsurface would have approximated to the top of layer [36], about 4.2m OD and in the north with the surface of layer [63], at about 4.3m OD. Thus a prehistoric to post medieval landsurface at a little below 4.5m OD in the vicinity of PDZ7.4 might be inferred.

3.2.4.3 Quarry pitting (Phase 8)

Layers [62] and [69] to the north were cut by probable quarry pit [66] from a height of 4.27m OD. This had irregular slightly concave sides, while the base appeared to lie beyond the northern face of the trench. The pit was backfilled with a friable dark grey silty-sand [61] containing small to fine sub-angular gravels; Victorian pottery; leather; glass; metal; CBM fragments; animal bone, and a late post medieval coin.

Layer [36] was cut by a probable quarry pit [38]. This cut had irregular sides breaking gradually to a relatively flat base. The top of the quarry pit was present at 4.19m OD, and the base lay at 3.71m OD

3.2.4.4 Victorian/modern made ground (Phase 9)

Structure and dumps

A curved construction cut [67], 1.07m wide with steep vertical sides and a base filled with concrete, ran across the full width of the trench, truncating layer [36] to the south and layer [62] to the north. The cut was present from 4.30m OD to a base 3.75m OD. The construction cut contained a curved, reinforced concrete feature [39]. The original purpose and form of this feature remains unknown, with map regression failing to reveal any such structures. The construction cut was filled along its northern edge by a dump of mid orange-grey silty-clay [64] containing sub-angular to sub-rounded small to very small gravels and CBM fragments. Dumps of dark grey silty-clay [65], containing small to fine sub-angular – sub-rounded gravels and CBM fragments, backfilled the southern part of the construction cut.

A Victorian–modern dump layer of dark black-brown sandy-silt [34], with reddish patches of iron staining, and frequent inclusions of glass, pottery, CBM, animal bone, and shell sealed the sequence across the trench, backfilling probable quarry pit [38], to a height of 4.58m OD. The artefacts collected from the layer indicated deposition took place in the last quarter of the 19th century.

3.2.4.5 Modern topsoil and subsoil

The dump layer was overlain from a height of 4.65m OD by a soft, mid orange-brown sandy-clayey-silt subsoil [33] that contained occasional CBM fragments and chalk flecks. Modern topsoil [32] measuring 0.65m thick and composed of mid grey-brown clayey-silt capped the sequence at 5.15m OD.

3.2.5 Trench PDZ7.05 (Fig 17–Fig 18)

Location	Site of proposed substation, south-east corner of the Eton Manor northern playing field, south of trench PDZ7.04.
Dimensions	5.00m x 3.00m at base; 2.0m deep, machine trial slot to 4.0m depth
Modern ground level	4.75m OD
Base of modern fill	3.50m OD
Depth of archaeological deposits seen (alluvium)	2.7m
Level of base of deposits observed and/or base of trench	0.72m OD (base of machine trial slot)

Natural observed	3.4m OD

Table 5 Trench PDZ7.05 deposit summary

3.2.5.1 Pleistocene gravel deposits (Phase 1)

The sequence of gravel deposits was examined in a machine-dug sondage about 2m deep to 0.72m OD, in order to determine whether evidence for the arctic beds, which had been recorded during the early twentieth century in the Temple Mills area, existed. Although these cold climate organic remains were not observed within the gravels, the gravel characteristics within the sondage (relatively flat, extensive, beds of well sorted gravels and sands) are suggestive of a braided arctic river, swollen with meltwater, as would be expected within the valley of the Lea in the Late Pleistocene. Above the gravels exposed in the sondage, a 0.67m thick layer of mid-orange sandy gravels [30], existed below 3.26m OD, within the base of the trench itself.

3.2.5.2 Holocene alluvium or quarry pit fill (Phase 5)

The gravels were overlain by a 0.15m thick layer of light orange-grey gravely sand [37], sealed by a 0.25m thick layer of mid grey-blue clay [29], with a surface level of 3.54m OD. The origin of these deposits is uncertain, but they are likely to represent initial water ingress, followed by a period of standing water infilling a former brickearth quarry pit. If so, the different characteristics and lack of finds within the primary fills might suggest an earlier date than the pits seen in PDZ7.04.

3.2.5.3 Victorian dumps (Phase 9)

Victorian–modern landfill dump layer [28] overlay layer [29] and was present across the trench. It comprised dark greyish-purple silty-sand exhibiting manganese staining, and contained late 19th century pottery, glass, and pea grit. The deposit surface lay at 4.01m OD and measured 0.49m thick. In the northwest corner of the trench a concrete encased ceramic drainage pipe [27], measuring 1.80m east–west cut across layer [28] from a height of 4.19m OD. A 0.3m thick subsoil layer [26] overlay the pipe and the remainder of the trench, composed of dark grey-blue silty-clay containing occasional pottery and CBM fragments. Playing field topsoil [25], composed of mid brown-grey silty-clay, containing occasional small gravels and sub-angular flint, capped the sequence to a height of 4.75m OD.

3.2.6 Trench PDZ5.01(C) (Fig 19–Fig 21)

Location	Triangular piece of land on the west bank of the River Lea, bordered by the River Lea, Ruckholt Road, and the A12
Dimensions	10.00m by 2.60m at base; 5.30m deep
Modern ground level	8.05m – 8.17 OD
Base of modern fill	4.11m OD
Depth of archaeological deposits seen (alluvium)	*c*. 1.4m
Level of base of deposits observed and/or base of trench	2.87m OD

Table 6 Trench PDZ5.01(C) deposit summary

The characteristics of the deposits excavated in PDZ5.01(C) suggest that the trench was excavated through a fairly major river channel and the relatively high elevation of the active channel deposits recorded suggest the channel was probably of post medieval date. It is suggested the deposits accumulated within a meander of a channel of the Lea, which became disused as a result of river straightening in the post medieval period and subsequently silted up as a marshy hollow during the Victorian era. Tight meanders are shown on Rocque's map of 1746, along the course of the River Lea as it flowed down the western side of PDZ15 to the immediate north and similar meanders could have existed further south, in the vicinity of PDZ7 and PDZ6, at an earlier date. The straightening and manipulation of the river in this area could well have been associated with the historic industrial activity at Temple Mills.

3.2.6.1 Historic channel deposits (Phase 6)

Active, migrating river channel

The gravel and sand deposits recorded in the base of the trench are likely to have been deposited by a fairly major historic river channel, probably a channel of the Lea itself. Dipping beds of sand and intervening clay-filled swales accumulated as a point or channel bar built up in a south-westerly direction, though the main direction of the flowing water was probably from west to east. Monolith samples {62} (4 tins) were taken through successive clay-filled swales and up through the deepest part of the sequence in order to obtain as long a profile as possible through the active and abandoned channel deposits and they were accompanied by adjacent bulk samples.

An area of bedded sands and gravels, which may have formed channel bars accumulated on the bed of the active river were recorded at the base of the sequence and were highest in the eastern part of the trench. Their surface dipped towards the west from about 3.85m to 2.92m OD. The gravels were overlain by a series of dipping sandy deposits, interspersed with clay. The irregular surface of these deposits lay at between 3.5m and 3.7m OD, dipping slightly from east to west. Each bed was allocated a different context number and within some beds the deposit characteristics changed laterally. These contexts will not be discussed individually here but they included [258] to [263], [265] and [268]. The bulk samples taken from this part of the sequence ({64} to {66}, {68} and {69}) showed very good survival of plant remains and snails, which should have good potential for radiocarbon dating and past environment reconstruction.

Levee / overbank deposits

In the western part of the trench the interbedded sands, gravels and clays were overlain by a layer of compact mid greenish-brown sandy-clay [267] with a surface at roughly 3.7m OD, but which dipped slightly from west to east. This deposit may represent overbank flooding coming from the active river channel, which was by now flowing beyond the western limit of excavation. A large assemblage of snails was also recovered from bulk sample {70} taken from this deposit and there is good potential to reconstruct the changing river characteristics.

3.2.6.2 Abandoned channel (Phase 7)

The trench was probably excavated through a section of the river that had been abandoned, either as a result of later episodes of the natural channel migration described above or as a result of straightening out meanders or other diversion. The clayey alluvium [257] that overlies the active channel deposits represents a marshy hollow. The heavily iron-stained and weathered clay deposit [257] was thickest in the eastern part of the trench, where it directly overlay the interbedded migrating channel deposits. It is likely that the eastern part of the trench formed a boggy hollow behind the developing levee. This wet environment may have expanded over the levee as the direct influence of the river declined. Three fragments of glass recovered from [257] were dated to 1800–1900 and it seems probable that this broad date corresponds with the diversion or straightening of the river.

3.2.6.3 Victorian and modern made ground

Made ground [256] layer, composed of compact dark bluish-grey sandy-clay containing occasional small sub-angular flints and CBM fragments sealed the alluvial sequence to depth of *c* 0.2m, from a surface of 4.28m – 4.44m OD. This layer was overlain in turn by a friable mid greenish-yellow sandy-silt deposit [255] containing frequent fragments of 19th century glass, moderate CBM fragments and small sub-angular pebbles, and occasional chalk fragments. The deposit was present at 4.74m OD. Made ground layer [254] succeeded [255] from a surface height of 4.71m – 4.93m OD. This was composed of loose, dark blue-grey clay-silt, containing frequent CBM, chalk, and sub-angular flints and lay across the trench to a depth of 0.45m. Above this was a layer of loose dark orangey-brown clayey-silt [253], containing small sub-angular flint pebbles, occasional fragments of pottery dating to 1765–1830, and a moderate amount of metal from a surface level of 5.05m – 5.14m OD.

Firm dark brownish-grey silty-sand [252] overlay the made ground [253]. It contained very frequent small rounded pebbles, moderate CBM fragments, and occasional slag and wood fragments. The layer was 0.47m thick from a surface level of 5.41m – 5.53m OD. This layer was overlain in turn by loose dark greyish-brown silty-sand [251] containing very frequent small rounded/sub-rounded pebbles, frequent CBM fragments, and occasional pottery and glass fragments. This layer measured 0.77m thick and was present from a height of 5.90m – 6.18m OD. Loose, mid grey sandy-silt [250], 1.16m thick, overlay made ground [251] and contained CBM and gravel. Overlying [250] was a deposit of loose light whitish-grey sandy-silt [249], sealed in turn by a 1.32m deep dump of friable mid grey sandy-silt [248] containing grit, pebbles, large cobbles and occasional CBM fragments and 19th century pottery. Above this layer was a deposit of friable, mid orange-brown silty-clay [247] with occasional inclusions of CBM, and moderate-frequent sub-angular flint stones. Layer [247] was overlain by loose, mid yellowish-brown silty-sand [246] measuring 0.31m thick, containing very frequent rounded to sub-rounded pebbles, from 7.58m OD. This layer was overlain by a layer of soft mid yellowish-light grey silty-sand [245] containing very frequent small rounded and sub-rounded pebbles, and frequent fragments of CBM. Modern topsoil [244] measuring 0.22m thick sealed the previous deposits. This was friable and was composed of dark brown sandy-silt with very frequent inclusions of small rounded pebbles, frequent small flint fragments and occasional fragments of glass; pottery and CBM. The latest deposit was a 0.13m thick concrete slab [243] at 8.05m to 8.17m OD.

3.2.7 Trench PDZ5.02 (C) (Fig 22)

Location	North-west corner of Eton Manor southern playing field (see Fig 2 for section location)
Dimensions	28.40m x 3.80m (base); 1.37m deep
Modern ground level	4.02m – 4.14m OD
Base of modern fill	3.66m OD
Depth of archaeological deposits seen (alluvium)	*c*. 1.0m
Level of base of deposits observed and/or base of trench	2.77m OD

Table 7 Trench PDZ5.02(C) deposit summary

3.2.7.1 Pleistocene deposits (Phase 1)

The trench was excavated into the Pleistocene gravels [200], which were recorded in section below about 3.55m – 3.70m OD. The gravels were loose, light brownish-grey, medium–large in clast size, but poorly sorted and mixed with orange sand and occasional pea grit.

A 0.35m thick layer of friable light-mid brownish orange brickearth-like sandy clay [199], containing occasional gravels, sealed the gravels to a height of 3.66m – 3.80m OD. This is likely to be the fine-grained Pleistocene deposit recorded elsewhere in PDZ7 and on the low terrace, the origin of which has still to be investigated.

3.2.7.2 Landsurface development (Phase 2)

Soil development in the upper part of the brickearth-like deposit had formed a 0.35m thick layer of friable light-mid greyish brown sandy-silt soil/subsoil [196], containing occasional small gravels and flecks of charcoal. Occasional pottery and glass fragments present in the deposit indicate a late 19th to early 20th century date and suggest that the landsurface developed in the brickearth had existed throughout the Holocene from prehistoric times until burial by Victorian and modern landscaping.

3.2.7.3 Quarrying (Phase 8)

Quarry pit [198] cut through the subsoil layer [196] in the eastern end of the trench. The pit measured 3.30m east – west, and had straight, gradually sloping sides from a surface at 3.81m OD, breaking gradually to a flat base at 3.62m OD. Loose, dark greyish-brown sandy-silt [197], containing moderate shards of pottery (dating to 1800–190), fragments of CBM and glass, and occasional animal bone, and charcoal flecks filled the quarry pit.

3.2.7.4 Modern levelling and landscaping (Phase 9)

The pit was sealed by topsoil [195] from a height of *c* 4.1m OD, composed of friable mid–dark greyish-brown sandy-silt, containing a moderate amount of charcoal flecks, CBM, and occasional Victorian pottery fragments and is probably the result of Victorian and modern levelling and landscaping.

3.2.8 Trench PDZ5.04(C) (Fig 23)

Location	South-east corner of Eton Manor southern playing field (see Fig 2 for section location)
Dimensions	29.50m x 3.90m (base); 2.45m deep
Modern ground level	4.24m – 4.43 OD
Base of modern fill	3.58m OD
Depth of archaeological deposits seen (alluvium)	*c* 1.7m
Level of base of deposits observed and/or base of trench	1.98m OD

Table 8 Trench PDZ5.04(C) deposit summary

A very similar deposit sequence, in terms of deposit characteristics and levels was recorded in Trench PDZ5.04(C) to that seen in PDZ5.04(C). However no past quarrying had taken place in PDZ5.04(C).

3.2.8.1 Pleistocene deposits (Phase 1)

The trench was excavated into Pleistocene gravels, which comprised compact, mid orange-grey gravels, interbedded with occasional mottled lenses of mid orange-brown sands and lenses of dark grey clay [204]. A depth of roughly 1.35m of these deposits was seen in section from a surface of c 3.00m – 3.35m OD.

Overlying the gravels in the eastern end of the trench was a layer of soft, mid orangey-grey sand [203] measuring 0.09m thick, containing occasional–frequent gravels of variable size. The layer covered an area c 3.8m north–south by 3.0m east – west with a surface 3.20m OD. The sand was overlain by a brickearth-like deposit, 0.95m thick [202], composed of soft, mid orangey-brown sand with occasional pea grit from a surface height of 3.58m – 3.72m OD.

3.2.8.2 Landsurface development (Phase 2)

Soil development in the upper part of the brickearth-like deposit had formed a 0.47m thick layer of loose, mid brownish-yellow silty-sand soil/subsoil [209], containing occasional-frequent pea grit. This was present across the whole trench with a surface at 3.85m – 4.09m OD.

3.2.8.3 Modern levelling and landscaping (Phase 9)

Modern topsoil, associated with the playing field [201] capped the sequence to a depth of 0.5m from a height of 4.43m. This was composed of friable dark greyish-brown clayey-silt, contained occasional glass, CBM, pottery and pea grit.

3.2.9 Trench PDZ5.06(C) (Fig 24–Fig 25)

Location	Lea Valley Sports Centre, north of the A12 road
Dimensions	23.9m x 3.50m (base); 3.00m deep
Modern ground level	5.17m –5 .36m OD

Base of modern fill	3.75m OD
Depth of archaeological deposits seen (alluvium)	*c* 1.6m
Level of base of deposits observed and/or base of trench	2.35m OD

Table 9 Trench PDZ5.06(C) deposit summary

3.2.9.1 Pleistocene deposits (Phase 1)

The bedded gravels and sands observed at the base of the sequence with an irregular surface undulating roughly between 2.45m–2.80m OD might be of Late Pleistocene or Holocene date. The gravels [227] contained areas of root 'matting' ({55}) in their upper part, which may be contemporary with the deposition of the gravel or be a result of later rooting (see below).

Gravels were not recorded in the north of the trench, where excavation was shallower. However, gravel appears to have been observed at the base of a shallow sondage in this area, at about 3m OD, suggesting the gravel surface slopes upwards towards the north at this location. Historic activity in the northern part of the trench involving the construction of a track and the excavation of ditches has obscured the natural stratigraphy. However, the trench location is likely to mark the interface between the low terrace to the north, where Pleistocene gravels are overlain by brickearth-like deposits, and the Holocene channel to the south, where Pleistocene gravels are at a slightly lower elevation and sealed by a sequence of Holocene fluvial deposits and alluvium. The location of the west-east track and ditches might have been constructed to exploit this natural landscape characteristic and mark the interface between the wetland to the south and dryland to the north (at least in historic time).

Hollows in the surface of the gravel appear to have formed pools, following the demise or migration of the Pleistocene or Holocene watercourse. A localised 50mm thick layer of soft, mid greyish-blue clay [220] with a surface level of 2.59m OD is likely to represent such a pool.

3.2.9.2 Stabilisation, landsurface development and prehistoric activity (Phase 2)

The Pleistocene/Holocene gravels [227] were overlain by a clayey sand deposit (the lowest 0.20m of [219]), which contained frequent woody roots and gravel clasts. This deposit may relate to the sand that overlay Pleistocene gravels in PDZ6.04(C) and/or to the overlying bedded sands and clay ([175]) recorded in that trench. However, dating would be needed to establish the relationship of these deposits. The woody roots did not appear to extend into the overlying deposits and it is possible that this lowest part of [219] represents a period of landscape stabilisation and shrubby tree growth across the former riverbed. This possible landsurface lay at *c* 2.8m OD. Wood from the bulk sample {54} taken from this deposit should be able to provide a radiocarbon date for the shrubby tree growth and woodland development and species identification may also be possible.

3.2.9.3 Wetland deposits (Phase 4)

The upper part of [219] was greenish grey sandy clay with frequent reedy stems or roots. It may correspond in terms of environment represented (but not necessarily in

terms of date) with the similar deposit in PDZ6.04(C), which is likely to represent reed beds growing at the margins of a river. It is likely that extensive reed beds / wetland existed in this peripheral area between the dry land of the low terrace and the active river channels to the south / south west. Radiocarbon dating of organic remains from the samples collected from these channel marginal deposits would be needed, however, to examine their past extent.

3.2.9.4 Alluvial clay and undated human activity (Phase 5)

Alluvial deposits

A gradual drying out of the wetland environment was indicated by layer [234], which overlay [219] and extended over an area 13.7m north–south by 5.0m east–west, to a thickness of 0.15m from a height of *c* 3.3m–3.5m OD. It was only tentatively identified in section, however, and more detailed examination of the monolith samples {48} taken through the trench sequence would be needed to support this observation. However, the presence of an east–west ditch [224], which cut though layer [219] from [234] would seem to support the evidence for drying out (see below).

The main part of the alluvial clay [238] was *c* 0.5m thick and comprised mid brownish-orange sandy silty clay. The layer was present to a height of 3.82m to 3.93m OD. It is likely to represent episodes of prolonged flooding, but is significantly shallower that that recorded in wetter environments of the trenches further west, suggesting the location of trench PDZ5.06(C) was les susceptible to flooding.

Human activity within the alluvial clay sequence

The section drawing Fig 25 suggests that ditches [224], [216] and [218] were sealed by [234], which is unlikely, although ditch [224] is almost certainly the earliest of these ditches and is likely to have been cut from the landsurface possibly represented by [234]. Weathering and soil formation has impacted on the upper part of the alluvial landsurface from which ditch [224] was cut and although it was only visible from the base of [234], it had been cut from higher than this. The ditch was recorded in both sections of the trench and had steep, concave sides and a gradual break of slope to a concave base. The ditch measured 1.20m, in width and could be seen below a level of 3.33m OD. The base of the ditch lay at 2.71m OD. The primary ditch fill was a soft, mid-dark reddish-brown clay [223] with frequent root activity and decayed reedy stems indicating that the ditch was probably water filled and colonised by reedy vegetation. A sample from this context was taken for radiocarbon dating {62}. The secondary fill was a soft, mid orangey-brown clay [222]. This also showed a moderate amount of root activity and contained very occasional angular flint pebbles. Its fills were sampled with monolith {57} and bulks {60} and {61}, but preservation was poor apart from wood and rootlets.

Ditch [218] also cut through both layer [219] and layer [234] (assuming this latter can be distinguished from the alluvium [238]). It had been cut from somewhere within the alluvial clay [238]. The ditch was oriented east–west and extended beyond the trench limits, measuring 3.60m in width. Its base lay at 2.73m OD. The cut had concave sides gradually breaking to a flat base. Soft, mid-dark bluish-grey clay [217], with occasional–moderate inclusions of fine angular gravels formed the fill. It is likely that this functioned as a boundary/drainage feature. The ditch was re-cut [216], again from somewhere within the alluvial clay [238], though with a narrower width of 1.80m. The re-cut had steeply sloping concave sides and a slightly rounded base at 2.82m

OD. The recut contained three fills. The primary fill was a soft, mid-dark reddish-brown organic-rich clay [215] containing frequent charcoal flecks and fragments, moderate lenses of gravel and oxidised root stems, and occasional sandy patches. The latter fills comprised a loose mid brownish-grey gravely-silt [214] that abutted the northern side of the cut and a soft-firm, mid-dark greyish-brown, slightly silty clay [213] containing moderate inclusions of fine assorted flint pebbles, moderate-frequent manganese staining, occasional snail shells, root fragments, and a singular fragment of unfrogged brick. Its lower fills, together with the fill of cut [218] were sampled with monolith {56}. Bulks {58} and {59} were taken from [213] and [215] respectively. Preservation in {58} was poor apart from snails. However, a very good plant remain assemblage was recovered from the humic context [215], which would also be suitable for radiocarbon dating (it is probably of medieval or post medieval date).

A mound of redeposited alluvium [237], possibly the upcast from ditch cut or recut [218] or [216] and at most 0.5m thick was laid on the alluvial surface, immediately north of these ditches, roughly at the point where the natural gravel rose close to 3m OD and was sealed by only a thin layer of alluvium (recorded as [234]). The upcast deposit was sealed by a 0.25m thick layer of loose, mid orangey-brown gravel [239]. The resulting feature had a width of 4.80m and a surface level of 3.35m–3.82m OD and appeared to form a track or surface of uncertain date. The track [239] was overlain by the feather edge of alluvial clay [238]. Although the trench is probably too far south there is a chance that this track represents the driveway leading to Ruckholes Manor identified on Rocque's map. Alternatively it might represent a track following a field boundary.

3.2.9.5 Post medieval landscape management and landsurfaces (Phase 7)

Layer [235] lay across the base of the northern part of the trench and was cut by an undated small channel or ditch [242], possibly for drainage. This had concave sides, which sloped gently, gradually breaking to a flat base at 3.13m OD. The ditch extended beyond the western limit of excavation, measured 4.65m in length by 0.60m width at a height of 3.29m OD. The ditch contained two fills, with the primary fill being a friable, mid bluish-grey silty-sandy-clay [241], containing occasional sub-angular small-medium flint gravels. The secondary fill was a friable, mid greenish-brownish-grey silty clay with black flecks [240].

East–west ditch [226] truncated the historic alluvium [238] at the southern end of the trench. The ditch was cut from a height of 3.92m OD, had shallow convex sides and a slightly rounded base at 3.12m OD. The ditch measured 2.35m in width north to south while its length extended beyond the trench limits. The primary fill was a moderately compact mid grey slightly silty-clay [225], containing occasional CBM flecks and oxidised root channels. The secondary fill was a soft mid-dark greyish-brown silty-clay [232], which contained frequent cork pieces, and rounded flint gravels, moderate amounts of CBM fragments, and glass fragments, and occasional pottery, wood fragments, and clay pipe fragments. Both fills dated to the 19th century.

A turfline and topsoil layer [236] lay above alluvium [238]. The deposit comprised moderately compacted, dark greyish-brown silty-clay, containing occasional fine flint gravels, and very occasional CBM fragments and coal flecks. This layer was probably originally flat, but an area of slumping was identified where it overlay [242]. The

feature therefore had a surface level that varied between 4.11m to 3.52m OD, with a thickness of maximum 0.26m.

3.2.9.6 Modern made ground (Phase 9)

A layer of loose to moderately compacted, dark brown to blackish-grey organic matter, wood fragments, coke fragments and coal fragments [228] lay above turf line [236] and ditch fill [232]. It also contained occasional pottery, glass, iron and CBM fragments. This had a surface level of 4.15m to 3.80m OD, with a thickness of 0.20m maximum. Cutting through this layer was an east–west linear feature [231]. This appears to respect the line of the linear cut [242] and is likely to have been created utilising the underlying depression caused by the feature. The linear feature had gently sloping slightly concave sides, and a slightly rounded base, with a width of 1.65m. The linear cut had survived to a height of 3.97m OD, while its base lay at 3.52m OD. The feature contained two fills. The primary fill was a loose, dark brown to dark reddish-brown small wood chip mulch [230]. This had occasional CBM and pottery fragments, with the lack of any silt material suggesting that it was covered by the secondary fill a relatively short time after deposition. The secondary fill was a loose, mid–dark orangey-greyish-brown silty-clay [229], containing frequent assorted gravels and occasional fragments of CBM, concrete, glass, 19th century pottery, and slate.

A layer of made ground [212] sealed linear feature [231] and was present across the trench limits. The layer consisted of loose, dark greyish-brown sandy-silt with gravels, and contained very frequent CBM fragments, and very occasional clay tobacco pipe, pottery, and slate all indicative of late 19th century activity. The layer measured 1.12m thick from a surface level 4.69m–4.89m OD. A crushed brick layer [211] overlay the dumped material to a level 5.16m OD. This formed the hardcore mat for the overlying concrete slab that sealed the trench [210] at of 5.17m–5.36m OD.

3.2.10 Trench PDZ6.04(C) (Fig 26 – Fig 28)

Location	Lea Valley Sports Centre, north of the A12 road
Dimensions	17.60m x 6.40m (base); 3.80m deep
Modern ground level	5.10m –5.60m OD
Base of modern fill	3.82m OD
Depth of archaeological deposits seen (alluvium)	*c* 1.6m
Level of base of deposits observed and/or base of trench	1.80m OD

Table 10 Trench PDZ6.04(C) deposit summary

3.2.10.1 Pleistocene deposits (Phase 1)

Gravel observed at the base of the trench sequence might be of Pleistocene origin. Its surface undulated between about 1.9m and 2.2m OD. It comprised loose, mid yellowish-grey sandy-gravels [181] at the western end of the trench, where its surface was slightly lower and loose dark brownish-grey sandy-gravels [182] in the central

area. Both gravel contexts were overlain by a 0.15m thick deposit of loose, light yellowish-grey sand [192]. If of Pleistocene date these gravels are likely to represent river flow at the very end of the last cold stage, immediately prior to the Holocene (as, they are lower than the Pleistocene gravels to the north, and they are not overlain by brickearth-like deposits).

3.2.10.2 Active channel deposits (Phase 3)

Interbedded gravels and sands with organic inclusions ([177]-[180]) above the Pleistocene gravels at the western end of the trench are likely to be channel bar deposits of late Pleistocene or Holocene date. The surface of the gravel bar was recorded at 2.14m OD and it is are likely to represent the earliest and most active phase of Holocene channel flow across the trench. The uppermost gravel bed [177] was organic rich and sample {21} taken from it preserved abundant fine roots, charcoal and wood. It is possible that plants colonised the surface of the channel bar as it became isolated from the river.

Subsequently and laterally the bedded sands and gravels of the channel bar pass into interbedded sands and clay [176] with a surface at *c* 2.5m OD and sandy clay with intermittent sand lenses [175] with a surface at *c* 2.75m OD. This suggests a diminishing of stream flow activity in the area of the trench through time and from west to east. Implying that the river that formerly crossed the trench lay beyond the western limit of excavation and was migrating away from the trench (or decreasing in energy) through time. It is likely these deposits represent the fringes of a river channel, with generally still or sluggish water, but with sand lenses deposited in times of higher discharge.

Reedy and woody roots were observed growing through [175] and [176] and both may derive from vegetation growing from the immediately overlying deposits (Phase 4, see below). As yet the date of the active channel deposits remains uncertain, but bulk samples ({18], {19}, {21}-{23}) from these deposits recovered organic remains suitable for radiocarbon dating, which should help to provide a date (or at least a *taq)* for their accumulation. Samples for OSL dating were not taken. Apart from wood and roots the bulk samples preserved few environmental remains.

3.2.10.3 Abandoned channels and wetland expansion (Phase 4)

The overlying deposits appear to form a conformable sequence of evolving environment from those representing active channel margins below. Lack of bedding within the laterally equivalent sandy clay deposits [174] and [173]/[172] (surface at roughly 3.20m OD) and oxidation of the reedy roots/stems within these contexts suggests the reeds may have colonised the channel marginal mudflats from this level and that the water level might have fallen/receded. Occasional seeds in bulk sample {24} from [173] also suggest proximity to the surface and not merely rooting through an earlier deposit.

The existence of pools, creeks or wet hollows within this wetland area, peripheral to the river, is indicated by the humic/organic clay fills [193] and [170] of 'cut' [171] (referred to as a channel on Fig 26, Fig 27). This curvilinear feature appeared to truncate layers [172] and [174] from a height of 3.25m OD. It measured 2.0m wide by a visible length of 11.0m and had gradually sloping sides and a slightly undulating base at *c* 2.50m OD. The primary fill comprised soft, dark bluish-grey humic clay

[193], 0.2m thick with inclusions of wood fragments. The secondary fill was a firm, dark blue-grey clay [170], with inclusions of rounded flint stones and wood fragments. Whether these fills and the clear outline of the cut, as recorded in section are 'real' or caused by a pool developing as the adjacent deposits [173]/[174] built up, which subsequently formed a marshy hollow needs further clarification. Further examination of monoliths (note the eastern monolith on the bottom step was actually taken though feature [171], about 2m further east than depicted), photos and bulk samples might be able to clarify whether this feature is a later channel, creek (or man-made feature), scoured (or dug) through the wetland area; or whether it represents a pool that lay within the accumulating mudflats and reed beds, as inferred from the sediment characteristics by the geoarchaeologist on site. Abundant seeds, snails and insects were recovered from bulk samples {20}, {25}, {43} taken from the fills of [171] (in contrast to those from the mudflat deposits). These remains should have good potential for environmental reconstruction and dating.

3.2.10.4 Alluvial clay (Phase 5)

A sequence of heavily iron-stained alluvial clay deposits [168] and [169] 0.80m thick with a surface at *c* 4m OD sealed the wetland deposits. As in other trenches, the clay may represent episodes of prolonged (perhaps seasonal) flooding and drying out. Environmental remains were poorly preserved in bulk sample {26} taken from the alluvial clay.

3.2.10.5 Buried landsurface (Phase 7)

The post medieval/Victorian buried landsurface [167], which comprised greyish brown, organic, gritty silty clay, was recorded at the top of the alluvial sequence, buried by made ground. Its surface lay at *c* 4.05m OD. Bulk sample {27} showed that it contained seeds, insects and snails, capable of reconstructing the contemporary environment and clay pipe confirms its post medieval or later date.

3.2.10.6 Made ground (Phase 9)

A sequence of 19th–20th century made ground sealed layer [167]. In the western end of the trench this comprised firm mid-yellowish-brown sandy-silty-clay [163] containing rounded gravel inclusions, 0.20m thick, overlain by 0.20m depth of soft, dark greyish-black silty-clay [162], containing CBM, slate, and metal. This deposit was in turn overlain by a 0.20m thick deposit of firm, mid orangey-brownish-yellow sand [161].

In the central area of the trench a deposit of hard, mid brownish-yellow silty-clay [166] with inclusions of CBM and flint and a surface level of 4.05m – 4.16m OD overlay layer [167]. A 0.10m thick deposit of loose, dark greyish-brown silty-clay [165], containing CBM and assorted gravels, overlay [166] for a length of 1.80m. This deposit was overlain in turn by a 0.15m thick deposit of hard, light yellowish-brown-orange silty-clay [164]. This had inclusions of gravel, CBM, and Victorian glass fragments, measured 3.80m long at a height of 4.13m – 4.46m OD.

A layer of loose mid greyish-black silty-clay [160] overlay layers [161] and [164] across the trench. The deposit contained inclusions of 19th century pottery, glass, CBM and clay tobacco pipe; coke, slate, and rounded gravel. This had a surface level

of 4.62m–4.76m OD, a length of 10.40m east to west, and a thickness of 0.60m. This layer was overlain in turn by a 0.05m thick deposit of soft dark greyish-black silty-clay [158], with inclusions of CBM and gravel. Layer [159] also overlay [160]; this comprised loose, dark greyish-brown silty-clay with inclusions of CBM, slate, and rounded gravel. A layer of loose, light yellowish-grey silty-clay [157] containing inclusions of CBM, mortar, iron, clay tobacco pipe, and rounded gravel succeeded layers [158] and [159]. Above this layer was a 0.40m thick deposit of loose, mid greyish-brown clayey-silt [156] with inclusions of rounded gravel, present to a height of 4.84m–5.10m OD.

Construction cut [207], containing 20th century manhole [152], truncated layer [156] in the north-west of the trench. Loose, mid yellowish-brown clayey-silt [155] containing inclusions of CBM and rounded gravel, overlay layer [156] at a surface level of 4.98m–5.09m OD, an east to west length of 1.00m, and a thickness of 0.25m. The brick manhole [152] and dump layer [155] were sealed by a series of modern dump deposits capped by a firm hardcore layer of light greyish-yellow silty-clay and building debris [153] from 5.10m–5.46m OD.

3.2.11 Trench PDZ6.05a(C) (Fig 29–Fig 31)

Location	Field to the west of Quartermile Lane, eastern area
Dimensions	24.55m x 4.10 m at base; 3.66m deep
Modern ground level	5.42m–5.53m OD
Base of modern fill	4.12m OD
Depth of archaeological deposits seen (alluvium)	*c* 2.25m
Level of base of deposits observed and/or base of trench	1.87m OD

Table 11 Trench PDZ6.05a(C) deposit summary

A representative sequence of deposits in this trench was sampled with four overlapping monoliths ({28}) hammered into the west-facing section and a sequence of adjacent bulk slabs ({33}-{40}). Although discussed as Phases 3 and 4, the fluvial and wetland deposits recorded in this trench are likely to be later than those in trenches PDZ7.01 and PDZ7.02 and are probably of historic date and more akin to Phase 6. Radiocarbon dating would help to confirm this.

3.2.11.1 Active channel deposits and human activity (Phase 3)

Bedded gravels

Pleistocene gravels were not recorded at the base of this trench. A sequence of Holocene gravels interbedded with clay, silts, organics and sand was recorded, however, containing natural and cultural remains indicative of a wide range of dates from the Mesolithic to medieval period. These deposits accumulated as bars on the river bed and it is likely that active stream channels crossed the area of the trench for much of the Holocene, although by the time of surviving historic maps no watercourses are shown here. It is probable, however, that the river that later followed the line of Quartermile Lane had its origins in the natural watercourse that had previously meandered across the vicinity of PDZ6.05a(C).

A small sondage adjacent to the west facing section revealed a sequence of gravels [187] with large pebbles and frequent inclusions of tufa between 1.87m–2.07m OD. It is likely that the tufa had been eroded from a nearby spring line and if the tufa is of typical 'climatic optimum' date (late Mesolithic to early Neolithic) it would suggest the stream that deposited the gravels flowed at some time after this. Similar bedded gravels, but recorded as [151] were seen elsewhere across the trench base with an uppermost surface at *c* 2.7m OD (although the gravel surface undulated). These comprised light-mid orangey-brown flint clasts with many large pebbles, occasional lenses of sand and clay and inclusions of animal bone (including a sheep/goat skull) and wood. An unabraded microlith, found in a slot excavated through the gravels in the base of the trench, is likely to have been discarded close to its place of recovery, as it was unabraded, which suggests prehistoric activity in the stream channel. Also recovered from the bedded gravels, however, was a single sherd of medieval pottery (dating to 1170–1350). It seems likely that the gravels formed a riverbed from prehistory until at least the medieval period.

Human activity

Stakehole [296] cut through the gravel layer [151] and contained timber stake [205]. The stake was circular, measured 0.08m in diameter by 0.62m in length and survived to a height 2.59m OD. The stake was vertically inserted, leaning slightly to the north-west. It could be radiocarbon dated but would have too few rings for dendrochronology.

Ephemeral streams flowing across a wetland area

A change in the river regime at this location, perhaps to shallower water and/or more confined channels, or more intermittent flow through a generally marshy, boggy area, is suggested by the overlying deposits. Soft, interdigitating lenses of mid yellowish-orange fine sand and dark grey clay [150] were thickest in the northeast part of the trench where they measured about 0.70m thick from a surface at roughly 2.75m OD. The sand lenses are reminiscent of the sandy fills of the ditches bordering the gravel track ([296], [275]) in PDZ7.02. (Using PDZ6.05a(C) as a guide, the lack of ditch cuts for these PDZ7.02 features suggests that the ditches might not be man made cut features at all but could represent natural run-off exploiting the line of the track). The interdigitating sand and organic clay [150] contained frequent mollusc shells and occasional wood fragments, charcoal flecks and small fragments of burnt wood. The bulk samples taken from this deposit ({36}, {37}, {40}) suggest good preservation of a wide range of environmental remains and very good potential for past environment reconstruction and radiocarbon dating. Sand sized grains of CBM and mortar fragments also suggest a historic date and imply human activity upstream. These deposits grouped together as [150] were created by shifting and ephemeral water channels and an area of disturbance in the north-eastern end of the trench, which has been interpreted as potential trampling suggests human or animal activity was associated with the stream channels (a watering hole for animals, perhaps).

Later human activity

Stakehole [184] cut through layer [150]. The hole was circular in plan with a diameter of 0.08m a maximum surface level of 2.53m OD and sloped towards the west. Stake [183] remained *in situ*, measuring 0.63m in length.

A cut feature with steep concave sides and concave base [186] truncated layer [150] in the northern part of the trench, although this only revealed in section (Fig 31) measuring 0.70m in width by 0.32m depth from 2.59m OD. Friable, dark purplish-brown silty-clay [190] filled the feature. The function of this feature is unknown, but it may have been for drainage. It was only seen in the west facing section and may have drained into the ephemeral streams of [150].

3.2.11.2 Wetland development (Phase 4)

A layer of humic clay [194]/[149], measuring 0.25m thick, overlaid feature [186] and stake [183] and the sands and humic clays [150]. The deposit is likely to represent the development of a marshy environment across the former stream channels and hence suggests their abandonment or migration.

A layer of soft, smooth mid grey clay pitted with root holes [148] overlay layers [149] / [194] across the trench, measuring 4.55m north–south by 4.00m east–west, at a surface level of 3.13m to 3.27m OD. This layer probably represents prolonged standing or pooling of sediment-laden water. It could have accumulated within a backwater area or on tidal mudflats, for example, but assessment of diatoms and ostracods both sensitive to salinity, from the bulk and monolith samples taken through it, would be needed to confirm its environment of deposition.

3.2.11.3 Seasonal flooding and associated landuse (Phase 5)

About 0.80m of weathered alluvial clay, extremely iron-stained in its upper part overlay the possible pooling / mudflat clay. The alluvial clay [146] included [191] (which lay below a short length of gravelled track seen in the southern part of the trench). The clay, as inferred in other trenches, is likely to represent prolonged flooding of wet meadowland and is probably an accretionary soil. The surface of the alluvial clay lay at about 3.75m-4m OD.

Within the alluvial clay a thin lense of gravel [147] was observed in the east facing section of the trench at *c* 3.5m OD. It dipped down towards the north. The gravel may represent a surface laid to facilitate access across the wet hollow that infilled the former stream channels in this area. A similar bed of gravel, but dipping to the south was observed in the northern part of the west facing section at a similar level within the alluvium (*c* 3.5m OD). It is likely these segments of ephemeral gravel surface were part of the same track or path across the wet or marshy meadow

3.2.11.4 Post medieval landscape management (Phase 8)

What has been interpreted as ditch [189] truncated alluvial layer [146] at the northern end of the trench. This ditch had steep straight sides gradually breaking to a concave base from a height of 3.95m OD. The ditch was filled by firm, pale greenish-brown sandy clay [188], with very frequent orange oxidised root channels, very occasional inclusions of post medieval pottery. The ditch was likely cut to drain the marshy environment.

A layer of friable mid greyish-brown sandy-silt [145], containing occasional flecks of CBM, charcoal, 19th century pottery fragments, and frequent twigs and roots, was present across the trench, sealing ditch [189]. The layer was 0.25m thick from a

surface level of between 4.12m–4.27m OD and is likely to represent the former landsurface, sealed by modern groundraising.

3.2.11.5 Made ground (Phase 9)

The alluvial deposits were overlain by a 19th century dump layer of friable, mid purplish-brown sandy-silt [144] at 4.12m–4.33m OD, and contained frequent metal fragments; moderate slag fragments and occasional fragments of CBM and late 19th century pottery. This layer differed from deposit [143], with the inclusions akin to metal/industrial refuse, rather than domestic character seen in other deposit.

Made ground layer [143] sealed deposit [144] and was present across the trench extent. The layer comprised mid greyish-brown sandy-silt, with frequent inclusions of late 19th-early 20th century pottery (1890 onwards), glass, CBM; moderate amounts of animal bone and metal wire, and occasional charcoal flecks and fragments of fabric. This had a surface level of 5.18m to 5.17m OD and a thickness of 1.00m. Modern topsoil [142], 0.30m thick, was present across the top of the trench and capped the sequence at a surface level of 5.42m–5.53m OD.

3.2.12 Trench PDZ6.05b(C) (Fig 32–Fig 36)

Location	Central area of northern playing field
Dimensions	30.10m x 3.10m at base; 1.38m deep
Modern ground level	3.82m – 4.64m OD
Base of modern fill	3.35m OD
Depth of archaeological deposits seen (alluvium)	*c* 0.3m
Level of base of deposits observed and/or base of trench	3.26m OD

Table 12 Trench PDZ6.05b(C) deposit summary

3.2.12.1 Pleistocene deposits (Phase 1)

Natural soft, pale yellowish-orange fine sand [80] was present at the base of the sequence at a height of 3.39m in an isolated area against the eastern edge of the trench. The deposit measured 1.00m north-east to south-west and 2.30m north-west to south-east, by 0.07m thick. Four possibly contaminant fragments of Late Bronze Age–Mid Iron Age pottery (LBA–MIA) were recovered from the sand. Loose, pale orangey-brown sandy-gravels [79] sealed the sand across the trench extent at a height of 3.33m–3.50m OD. This was overlain in turn by a 0.15m thick layer of soft, mid orange clayey-sand [78] of brick-earth like appearance. The small surviving extent of these deposits prevented their interpretation.

3.2.12.2 Quarry pitting (Phase 8)

A probable brickearth quarry pit [77] truncated the brickearth [78]. Only the northern edge was visible within the trench. This was near vertical gradually breaking onto a flat base at 3.35m OD. The pit measured 3.00m north-east–south-west by 19.3m north-west–south-east, from a height of 3.74m OD. The pit was filled by firm, pale–mid, greenish-orangey-grey silty-sandy-clay [76], containing occasional–moderate

CBM fragments, and occasional charcoal flecks and sub-rounded gravel. This fill had a surface level of 4.22m to 3.64m OD and a thickness of 0.82m.

A second brickearth quarry pit [75] truncated pit fill [76] from a height of 3.94m OD. This pit also extended beyond the trench limits, and measured 13.00m north-east–south-west by 3.00m south-east–north-west within the trench and a basal level of 3.36m OD. The cut had straight, near vertical sides, with a small step visible in the south-west section (Fig 34), then breaking sharply to a flat base. Firm, mid reddish-orange sandy-clay [74], with inclusions of occasional CBM fragments, charcoal flecks, and rounded pebbles, and very occasional pea grit filled the pit.

3.2.12.3 Modern deposits (Phase 9)

Modern cut [73] also truncated pit fill [76] at a height of 4.22m OD. Its shape in plan was unclear, as was observed in section. The sides varied; the north-west edge had a gradual surface break, with vertical side to halfway down then sloped gradually, with a gradual break of slope at the base. The north-east side had an imperceptible break at the surface, a very gradually sloped side, and a near imperceptible break at base. The base was relatively flat at 3.45m OD. Deposit [72] filled the cut.

Modern made ground [71] measuring 0.8m thick lay across the trench extent, sealing pit fills [72] and [74]. This had a surface height of 3.85m–4.42m OD. Modern topsoil [70] capped the sequence from a height of 4.64m OD.

3.2.13 Trench PDZ6.06 (C) (Fig 37–Fig 38)

Location	Northern end of northern playing field
Dimensions	29.8m x 3.0m at base; 1.37m deep
Modern ground level	4.26m – 4.52m OD
Base of modern fill	3.15m OD
Depth of archaeological deposits seen (alluvium)	*c* 1.0m
Level of base of deposits observed and/or base of trench	3.15 OD

Table 13 Trench PDZ6.06(C) deposit summary

3.2.13.1 Pleistocene deposits (Phase 1)

A firm, mid yellowish-orange silty-sand layer [60] was encountered at 3.72m OD which in turn was overlain by a layer of friable, mid orangey-yellow sandy-gravel [48]/[52] which varied in thickness between 0.09m and 0.60m and was encountered at heights between 3.61m OD and 4.10m OD. This was partially overlain by a firm, mid-dark brown clay layer [47] encountered at 3.68m OD.

3.2.13.2 Quarry pitting (Phase 8)

The earlier horizon was truncated by a 0.54m deep quarry pit [97], which had steep sides, a flat base and was encountered at 4.11m OD. A firm dark grey and mid orange, clayey-sand [51], containing gravel, 19th century pottery, glass, clay tobacco pipe, and a copper alloy object, filled the pit (Appendices 4, 5 & 6).

A second quarry pit [98], which had steep sides and a flat base, also truncated the earlier horizon. The pit measured 9.15m e/w by 2.40m n/s by 0.55m depth and was encountered at 4.11m OD. The pit was filled by a 0.34m thick primary fill [50] comprised of firm, dark grey clay containing CBM, pottery, glass, and clay tobacco pipe (Appendices 4, 5 & 6). This was overlain by a secondary fill [49] comprised of friable dark greyish-brown silty-clay.

3.2.13.3 Post medieval to modern activity (Phase 9)

A 0.34m thick layer of friable dark greyish-yellow sandy-silty-clay [46] containing pottery and gravel inclusions and encountered at 4.14m OD, sealed the latter of the two quarry pits. This was overlain by a 0.47m thick, friable, mid orangey-yellow sandy-silt layer [45] encountered at 4.44m OD. This was overlain in the northern end of the trench by layer [43], which comprised loose, mid-dark brownish-grey silty-sand, containing inclusions of CBM, pottery, and glass and encountered at 4.33m OD

A group of cut features, horizontally truncated by a later ditch yet containing fills datable to the 19th century, truncated the natural gravel in the southeast of the trench. The features comprised: a circular posthole [57] with concave sides and base, measuring 0.36m e/w by 0.30m n/s by 0.13m depth, encountered at 3.48m OD and containing a friable, light grey-brown silty-sand fill [56]; a rectangular pit [59] with steep sides and flat base, measuring 1.17m s/e-n/w by 0.75m n/e-s/w by 0.30m depth, encountered at 3.53m OD and containing a friable, mid greyish-orange sandy-clay fill [58] within which were fragments of 19th century pottery and glass (Appendices 4 & 6); a second rectangular pit [41] with near vertical sides and flat base, measuring 1.50m e/w by 1.10m n/s by 0.33m depth, encountered at 3.48m OD and containing a soft, mid orangey-brown sandy-silt fill [40] within which were fragments of 19th century pottery (Appendix 4); and an e/w aligned ditch [55], with concave sides and base, measuring 0.30m in width, and containing a primary fill [54] composed of a friable mid brown clayey-silty-sand and a secondary fill [53] composed of a friable dark greyish-blue silty-sand.

All of these cut features, in addition to the silty clay horizon discussed above, had been truncated by probable ditch [95]. The ditch had concave sides and base and was present at 4.33m OD. The ditch measured 0.95m in depth and contained a 0.15m thick, soft, mid brownish-orange sandy-silty-gravel primary fill [94]. In addition it is probable that a fragmentary spread of friable, light whitish-cream chalk [96], recorded in plan in the southeast of the trench, may also represent a “primary” fill of this feature. The secondary fill [93] was comprised of dumps of loose, mid reddish-brown silty-sand, within which were metal sheets, 19th century pottery, bone, and glass (Appendices 4 & 6). The tertiary fill [92] was composed of friable, mid brownish-grey silty-sand which was in turn sealed by a fourth fill [44] composed of friable, dark grey and mid brown silty-sand [44].

Topsoil [42] comprised the remainder of the trench and was encountered at a height of 4.78m OD, representative of the height of the ground surface in the vicinity of the trench at the time of evaluation.

3.3 Stratigraphic interpretation of the site

3.3.1 Overview of natural topography and stratigraphy

Natural deposits differ from standard archaeology in several ways and this has a bearing on the site stratigraphy and how it is presented in this evaluation report. As environmental remains are not intrinsically dateable and natural deposits contain few finds, radiocarbon dating is needed to obtain a more reliable understanding of the phasing and correlation of deposits within a trench and across the site as a whole. In addition, natural deposits, unlike most urban stratigraphy (which is essentially the product of past human activity) are diachronous (time transgressive, see below). They also tend to be internally variable, and have subtly different characteristics depending on where they accumulate laterally across a landscape. Natural deposits represent an evolution of environments both laterally and through time, as opposed to the discrete events or activities, which tend to be recorded in archaeological stratigraphy.

Reconstructing the changing past landscape hinges on understanding these subtle variations in natural deposits and until the date and environment represented by the deposits on the site are better understood it is considered inappropriate to construct a site matrix or any more detailed phasing than that discussed below.

The evaluation supports the results of the previous desk-based assessment and subsequent SI modelling, which showed that a lobe of higher gravels, overlain by Pleistocene fine-grained deposits (e.g. brickearth) exists in the north eastern part of the site. With a landsurface at around 4.5m OD, this area is likely to have remained as dry ground above the lower-lying parts of the valley floor from the Mesolithic to post medieval periods. Where Pleistocene deposits survive in the north eastern part of the site (trenches PDZ7.04, PDZ7.05, PDZ6.06(C), PDZ6.05b(C)) they appear to show similar characteristics to those seen all down the eastern side of the valley bottom, in the Leyton to Stratford area. These characteristics comprise a weathered landsurface formed in brickearth-like fine-grained Pleistocene deposits and, depending on elevation and distance from the river, sealed by a thin layer of Holocene alluvial clay, which is probably the result of gradual accumulation during seasonal flooding. This area forms part of the 'low terrace' discussed in the previous desk-based assessment. Further south, evidence for past human activity is regularly found on the low terrace, especially at its boundary with the active stream channels. The lack of such evidence in PDZ7 is likely to be the result of numerous historic pits and quarries excavated in this area. Fragments of Bronze Age pottery were recovered from PDZ6.06(C), however. Although their context is not yet understood they suggest prehistoric activity may have taken place on the higher drier ground in the north of the site

The evaluation also confirms the identification of gravels that are slightly lower and overlain by alluvium in the south and south-west. This was an area of active stream channels in prehistory and although wetlands developed across the abandoned stream beds (trenches PDZ7.01, PDZ7.02, PDZ6.04(C), PDZ5.06(C)), natural stream channels still flowed across some parts of this area into historic time (for example trenches PDZ7.03, PDZ5.01(C) and PDZ6.05a(C)). The timespan represented by the active stream channels at any location is as yet uncertain, although samples suitable for radiocarbon dating have been collected. The results of dating undertaken during

the previous SI work (OL-00706) suggest lateral channel movement, erosion and silting may be recorded creating a mosaic of deposits of different date, but found at roughly similar elevations, spanning the Mesolithic to Iron Age and later. Evidence for activity within the sequence of active channel deposits, such as the daub recorded in PDZ7.02 and unabraded flint within the gravels in PDZ6.05a(C), suggests prehistoric and later activity may have focussed on the streams and their associated environments.

Apart from an examination of their biological inclusions to reconstruct the past environment, two crucial and related aspects of the natural deposits recorded have not been addressed as part of the evaluation, but have a bearing on the stratigraphic sequence of the site. The first is their date (at any given location) and the second is that most natural deposits are 'time-transgressive', meaning that although a deposit may appear to form a single context across a site or a trench it is likely to have formed in one part of the context at a (considerably) different time to when it accumulated elsewhere.

Thus, although the stratigraphic sequence may record active channel deposits, overlain by wetland deposits overlain by drier ground subject to seasonal flooding in a number of different locations, it is likely that the active channel deposits in one place will be contemporary with the wetland deposits in another and the seasonal flooding of otherwise dry ground elsewhere. This is likely to have an impact on the phasing of the site and emphasises that a programme of radiocarbon dating is needed to obtain a more accurate understanding of the landscape evolution of the site and its associated evidence for past human activity.

3.3.2 Phase 1: Pleistocene deposits (gravels and brickearth)

The natural gravel observed at the base of every trench was not deposited at a similar date or in a similar environment. However, gravels that are likely to be of Pleistocene age were examined or at least reached at the base of most trenches and certainly those in the north east part of the site, where the gravel surface lay at over 3m OD and the gravels were overlain by a brickearth-like fine-grained Pleistocene deposit, of as yet uncertain origin are almost certainly Pleistocene (trenches PDZ7.05, PDZ7.04, PDZ6.05b(C), PDZ6.06(C), PDZ5.02(C), PDZ5.04(C)). However, the gravels examined at the base of trenches PDZ7.01, PDZ7.02, PDZ5.06(C), PDZ6.04(C) and PDZ6.05a(C) could be Pleistocene or Holocene. In most of these latter trenches, gravels thought to be Pleistocene were overlain by gravels interbedded with sands, organics and silt, which probably represent reworking by Holocene rivers of the upper surface of the Pleistocene gravel. At around 2m OD, the surface of likely Pleistocene gravel in these trenches is slightly lower than those in the north east of the site. Suggesting that these Pleistocene gravels are likely to represent a later episode of gravel aggradation than the gravels further north and east. This will be difficult to test, however, as no samples for dating (radiocarbon or optically stimulated luminescence) were taken, although the lack of the overlying brickearth-like deposit may be relevant here.

The gravels recorded at the base of PDZ6.05a(C) are almost certainly of Holocene date and possibly even historic. Although a sondage was excavated through them it was not possible to confirm that Pleistocene gravels were present below those of certain Holocene date, which were observed for about 1m depth below *c* 2.7m OD.

These gravels are discussed further in 3.3.4. The gravels at the base of PDZ7.03 and PDZ5.01(C) are likely to be of historic date, on the basis of their high elevation for this part of the site, their characteristics and those of the overlying deposits. They probably relate to former meanders of the Lea and to the watercourse that formerly flowed along the line of Quartermile Lane, documented on historic maps. They are discussed further in 3.3.7. Further assessment of the site records and radiocarbon dating, where such samples are available, is required to place the gravels at the base of each trench into the correct phase of the site sequence.

A sondage was excavated in PDZ7.05, with the intention of looking for the survival of arctic beds, previously recorded in the Temple Mills area, perhaps during the excavation of the quarry pits to the east of the site (Warren 1915). Although these cold climate organic remains were not observed within the gravels, the gravel characteristics (relatively flat, extensive, beds of well sorted gravels and sands) are suggestive of a braided arctic river, swollen with meltwater, as would be expected within the valley of the Lea in the Late Pleistocene.

The non-truncated surface levels of the low terrace gravels (that is, those in the north east of the site) suggests a dip down to the north, south, west and possibly also east, from a high in the vicinity of PDZ5.02(C) and PDZ5.04(C). Trench PDZ5.06(C) appears to cross the interface between these earlier and slightly higher 'low terrace' gravels and the later phase of Pleistocene gravels, overlain by Holocene fluvial deposits to the south. In this trench the gravel surface dipped from *c* 3m OD in the north to *c* 2.5m OD in the south. Historic activity in the northern part of the trench involving the construction of a track and the excavation of ditches has obscured the natural stratigraphy. However, it is conceivable that these historic features were constructed to exploit the change in level of the underlying topography and associated differences in succeeding environments, which would have led to an interface at this location between the wetland to the south and dryland to the north.

The gravel and 'pre-Holocene topography' needs to be further investigated by adding the trench data to the geoarchaeological deposit models for the Lower Lea (as part of the environmental mitigation).

Where not truncated, the Pleistocene gravels in the north east of the site were overlain by sandy clay or clayey sand brickearth-like deposits (for example, in PDZ7.04, PDZ7.05, PDZ5.02(C) and PDZ5.04(C)), which are considered to be Pleistocene alluvium, but may have colluvial and aeolian input. The origin of the Pleistocene fine-grained deposits, which occur above the 'low terrace' all down the eastern side of the floodplain between Temple Mills and Stratford High Street (and beyond) is as yet poorly understood, and requires further investigation. Dry landsurfaces developed in these fine-grained Pleistocene deposits during the Holocene (see section 3.3.3). The depositional characteristics of these deposits have been largely overprinted by later soil forming processes, as the brickearth lay exposed on the landsurface throughout the Holocene. Further work is needed to elucidate the depositional environment of this Pleistocene alluvium and to compare it with the Holocene alluvial clay (3.3.6).

3.3.3 Phase 2: Prehistoric and later landsurface and associated activity

Throughout the prehistoric period the brickearth-like fine grained Pleistocene alluvial, colluvial or aeolian deposits of Phase 1 in the north east part of the site (for example, in PDZ7.04, PDZ7.05, PDZ5.02(C) and PDZ5.04(C)) would have formed a

landsurface at around 4m to 4.5m OD. This landsurface lay several metres above the lower parts of PDZ7, where active stream channels and wetland environments existed in this period. Soils developed in the brickearth and occasional pottery and glass fragments within these soils (for example in [196] in PDZ5.02(C)) indicate that the landsurface continued to exist until the post medieval and Victorian era. As a result, any evidence for earlier episodes of activity is likely to have been obliterated by the impact of later activities. In trenches PDZ7.04, PDZ7.05, PDZ6.05b(C) and PDZ6.06(C) much of the brickearth and the soils developed in it was found to be truncated by quarrying. However, survival was good in PDZ5.02(C) and PDZ5.04(C)) but no evidence for prehistoric or later activity was found.

A (prehistoric) landsurface [82], also developed in what may be earlier Holocene or Pleistocene sandy clay alluvium in the western part of the site, in PDZ7.02 at about 2.7m OD. The landsurface was associated with abundant daub fragments. Although the stratigraphic relationships need more detailed examination, tree throws [85], [132], [138] and [308] and woody rooting {14}, disturbing the underlying sands and gravels in PDZ7.02, suggest the landsurface, which had developed across a former stream bed, was wooded. It is likely it was contemporary with and lay just beyond the more active channel marginal deposits recorded at the base of PDZ7.01 (Phase 3, see below). However, radiocarbon dating is required to correlate the trench sequences and to place the landsurface and associated daub into its wider context.

Similar concentrations of daub were found in what also appeared to be a possible landsurface at the base of PDZ15.01, around 75m to the north, across the Eastway (MoLAS-PCA, 2008). Here too it appeared that the activity had taken place at the margins of a stream channel. In both cases, trampling, bioturbation and weathering had comminuted what may originally have been artefacts made of burnt clay and transported fragments of them down the soil profile and into adjacent features, suggesting a period of exposure on the landsurface following discard. Apart from this decomposition and decay, there is no reason to suppose the daub was not in its place of discard, although its place and nature of use (as containers, loom weights etc) is less certain.

Evidence for a wooded or shrubby landsurface formed in earlier fluvial sands and gravels was also found at *c* 2.8m OD in the south-eastern part of the site, in PDZ5.06(C). It may be possible to date the woody roots associated with this landsurface, which appears to have developed at the interface of the higher drier ground of the low terrace and an area of mudflats or shallows at the margins of a river. Which river and when, however, are not yet known.

3.3.4 Phase 3: prehistoric (and later) stream channels and associated activity

Deposits representing episodes of flowing water or/and interspersed with episodes of relative tranquillity within and at the margins of a watercourse were recorded at the base of most trenches in the south and south west of the site. The date of these deposits and the environments they represent are likely to vary between trenches, however.

In PDZ7.01 and PDZ7.02 the prehistoric channel deposits, which lay roughly between 2m and 3m OD suggest that during periods of stability shrubs and trees colonised the channel bars and pools of water lay within the intervening hollows. There is evidence from PDZ7.02 that prehistoric activity took place in these periods on low islands of

drier, though not necessarily higher, ground that appear to have lain within a swathe of shifting stream channels (see Phase 2 above). During periods of high discharge (following heavy rainfall, for example) sands and gravels were deposited, banked up upon each other and these flood events probably scoured earlier deposits and features and uprooted trees and shrubs, as was suggested in PDZ7.01. Although PDZ7.02 appears to have lain further from the influence of active stream channels than PDZ7.01, at least in the earliest part of the sequence, the landsurface associated with a concentration of daub was scoured by a flood event, which deposited a bed of sand at just below 3m OD and may have been responsible for the demise of trees [138], [132] growing in the location of the trench. This flood event seems to mark, in this location, a transition from drier to more permanently waterlogged conditions. A general characteristic of these possibly earlier prehistoric stream channels, appears to be a general lack of fine-grained (clay and silt in particular) sediment deposition. Suggesting the water was relatively clear and free of sediment load.

In contrast to the streambed deposits of PDZ7.01, PDZ7.02 and PDZ6.05a(C), a location peripheral to the active stream channels was suggested for the Phase 3 deposits in PDZ6.04(C) and PDZ5.06(C). It seems likely that the contemporary channel had formerly crossed the western part of PDZ6.04(C), as indicated by the channel bar deposits ([177]-[180]) in PDZ6.04(C), which had a surface at *c* 2.14m OD. However, the channel essentially lay beyond the south west limit of excavation of that trench and subsequently migrated still further south or west. The area in which both PDZ6.04(C) and PDZ5.06(C) lay would have been mudflats or shallows at the margins of the river, as indicated by the interbedded sand and clay deposits in PDZ6.04(C) and the sandy clay with frequent reed stems in PDZ5.06(C), which lay slightly further from the active part of the river and closer to dry land. Whether these environments relate to an early Holocene (Mesolithic) or historic river, however, has still to be determined through radiocarbon dating. Such dating should help to correlate the disparate channel and channel marginal deposits across the site and suggest the extent of the prehistoric and historic rivers.

Slightly different stream channel characteristics were found in PDZ6.05a(C), where interbedded sand and gravel with organic and artefactual inclusions was recorded. The pattern of these deposits across the base of the trench suggests they formed bars (riffles) on the bed of a prehistoric and later river channel. Although not yet dated, the greater frequency of artefactual remains and other inclusions (such as animal bone) in these gravels, including a sherd of medieval pottery, and the lack of tree boles/throws suggest the active channel deposits in PDZ6.05a(C) might relate to a different or possibly later watercourse than those in PDZ7.01 and PDZ7.02. A decayed *in situ* stake had been driven through the gravel river bed in PDZ6.05a(C), which could be of prehistoric or historic date.

The fluvial sands overlying the gravels associated with the PDZ6.05a watercourse resemble the sandy fills of the trackside ditches observed in PDZ7.02 and further investigation is needed (in terms of examining samples for dating and environmental evidence) to establish the relationship of these watercourses, as the sands might suggest a similar source, period or environment.

As yet no dating evidence exists to gauge the timespan represented by any of the PDZ7 channel deposits, but organic remains within them suggests they accumulated in the Holocene and lack of brick, clay pipe and other finds in PDZ7.01, PDZ7.02, PDZ6.04(C) and PDZ5.06(C) might imply a prehistoric date. The organic remains

they contain are suitable for radiocarbon dating. Radiocarbon dating of samples taken from these deposits during the watching brief on SI work (OL-00706) suggest the active stream channel environments are likely to date from the Mesolithic to Iron Age and probably later. Further dating and deposit modelling is needed to reconstruct the evolving stream pattern across the site and to relate it to what is known of the historically documented rivers crossing PDZ7.

3.3.5 Phase 4: abandoned channels and wetland expansion

Humic clays, humic silts and other clayey and organic deposits were recorded between the active channel deposits (3.3.4) and the alluvial clays (3.3.6) in the trenches in the south and south west part of the site. These deposits are likely to be the result of two opposing processes that were operating at different scales: increased wetness in general, as river levels rose; and, locally, an increasingly dry (terrestrial) location, as stream channels became constrained, diverted or otherwise abandoned.

For example, blueish black, manganese stained clay [12], representing shallow vegetated pools, infills hollows in the surface of the active channel deposits in PDZ7.01. These clays may have accumulated following the abandonment of the stream channel in this location. The overlying pale grey clay [11] may represent a more extensive expanse of standing water within the abandoned channel, perhaps indicating a rise of river levels in general. A similar manganese stained clay deposit to [12] was recorded in the nearby PDZ7.02 ([22] and its lateral equivalents) and is also likely to represent a marshy environment. However, it does not infill an abandoned channel, but extends across the trench and is likely to represent prolonged flooding of the former landsurface in this area. It is at a slightly higher elevation than [12] in PDZ7.01 and is more likely to be contemporary with the accumulation of the lowest alluvial clay deposits in that trench. However, until radiocarbon dating has been undertaken it is not possible to correlate the deposits or infer whether the deposits in the two trenches are contemporary or time-transgressive (see section 3.3.1). Further examination of environmental inclusions, as well as modelling of the deposits across the site, is needed to establish whether they accumulated in abandoned channels or as a result of impeded drainage and rising river levels.

In general, however, as the active channels (phase 3, 3.3.4) became abandoned, probably at different times, as a result of both natural and human agency, it is likely that the former streambeds subsequently formed boggy areas with reedy vegetation growing out of pools of shallow stagnant water. This local landscape change was superimposed on the effect of rising river levels, which caused drainage to become impeded and wetland areas to develop more extensively, upstream of the encroaching tidal head and estuarine environment. Further work on the samples taken from the trenches is needed to shed light onto the interplay of local and wider-scale landscape processes and assess their influence on (and the impact on them of) local human activity.

Without dating it is not possible to tell whether the silting up of former riverbeds and the development of extensive fringing reed beds seen, for example, in PDZ6.04(C) and PDZ5.06(C) took place in the prehistoric or historic period. This will of course have great implications for understanding the known archaeology from this area and dating plus microfossil evidence on samples from these deposits [173], [174],[219]

should help in clarifying the influence of estuarine encroachment on the changing environment.

3.3.6 ***Phase 5: seasonal flooding and associated (undated) land use***

3.3.6.1 Alluvial clay

Alluvial clay / silty clay formed the upper part of the natural deposit sequence in all the trenches in the south west and south of the site. It is likely to represent seasonal flooding of a meadow-like environment. It would be expected that such a deposit would have different characteristics with distance from the contemporary river and it is likely to represent a range of different environments depending on its distance from the river, especially prior to embanking and the construction of river walls. For example, in PDZ7.03 sandy clay [141] is likely to be a lateral equivalent to the weathered clay [7] of PDZ7.02, but accumulated closer to the active watercourse.

The alluvial clay is about 1m thick and lies between about 3m OD and 4m OD in trenches PDZ7.01 and PDZ7.02. In PDZ7.01 it is grey with iron-stained root channels ([10]) and also in PDZ7.02. Here, however, its upper 0.5m is heavily iron-stained ([7]), but its lower 0.5m is heavily manganese stained ([22]) and has been ascribed to Phase 4. The environments represented by the upper and lower alluvial clay in PDZ.02 and its relationship to the alluvial clay in PDZ.01 have yet to be examined. Such differences may prove to be significant in reconstructing the evolving historic environment, or may be found to be of little importance. Further work on the samples and site records is needed to clarify this.

In other trenches the alluvial clay is less thick, which might suggest greater distance from the contemporary river. For example, in PDZ5.06(C), at the south eastern side of the site and close to the low terrace it is only 0.5m thick and becomes still thinner in the northern part of the trench where the underlying gravel surface rises to around 3m OD. In PDZ6.04(C), closer to the rivers and further from the higher ground it is 0.80m thick and heavily iron stained. No alluvial clay was recorded in the trenches in the north east part of the site (PDZ7.04, PDZ7.05, PDZ6.06(C), PDZ6.05b(C), PDZ5.02(C) and PDZ5.04(C)) suggesting that this area lay sufficiently far from the rivers or at a sufficiently high elevation to prevent prolonged flooding from taking place.

Environmental remains are typically poorly preserved in the alluvial clay, where it accumulated slowly and at distance from the river and represents episodically flooded meadowland (see section 3.4). Environmental evidence may be better preserved where the deposit built up more rapidly and in more waterlogged environments and it is likely that in places the alluvial clay represents more permanently waterlogged environments, such as levees, saltmarsh and mudflats. It is likely that the presence and absence of environmental remains, together with the characteristics of the surviving assemblages will be needed to clarify contrasting environments of deposition and this will contribute to our understanding of the evolving (historic) environment. The dating of the alluvial clay, especially where it accumulated slowly and was subject to severe weathering may be more difficult to gauge, as organic remains suitable for radiocarbon dating are unlikely to survive. However, where dateable features are found within it, it may be possible to examine the changing environment it represents through time more precisely.

In some trenches (for example PDZ7.02, PDZ5.06(C) and PDZ6.05a(C)) historic structures such as ditches, track and gravel surfaces within the alluvial clay enable, or require, it to be subdivided into several phases. Where such structures do not exist it is likely that the alluvial clay spans all these phases. As there is as yet no means of correlating the different episodes of alluvial clay deposition and human activity between trenches, for the purpose of this evaluation report, the alluvial deposits and the archaeology contained within them are all discussed as Phase 5.

3.3.6.2 Undated land use within the alluvial clay

In PDZ7.02 a gravel trackway [296] with ditches either side lay within the alluvial clay. Weathered alluvial clay [7] overlay the trackway and the structure overlay, or lay within, the lower part of the alluvial clay in this trench. It was probably constructed in the period that this lower part of the alluvial clay accumulated. A deliberately laid CBM surface [275] was found within the upper layers of the sequence. The nascent trackway, composed of clay and rammed gravels, was recorded at *c* 3.3m OD extending north-west–south-east over earlier alluvial deposits. This was accompanied by two ditches, which possibly kept the track drained. The track appears to have existed within a wet episode of landscape evolution, as the sandy ditch fills would have been fairly active streams and both the ditches and the track bed were overlain by a potential flood deposit [302] prior to a period of re-surfacing with CBM fragments at 3.6m OD, which may have been supported by sand and gravel make up. This was also subsumed beneath further alluvial deposits.

The relatively large number of features found in PDZ5.06(C) reflects its location, at the interface between the drier ground of the former low terrace to the north and the lower-lying wetland to the south. Such a location probably led to greater use of this area in the period the alluvial clay accumulated. Several west to east ditches were cut through the alluvium (probably for drainage and one (and its recut) lay adjacent to a gravel track laid at the interface of the higher drier ground and the wetland. Organic remains preserved in the samples taken from the ditches should have good potential for dating and past environment reconstruction. Such evidence will prove extremely useful as apart from features such as these found within the alluvial clay it is typically difficult to date and has very poor potential for preserving environmental evidence, as its pattern of accumulation meant it regularly dried out, causing environmental remains within it to be destroyed.

3.3.7 Phase 6: historic watercourses

Evidence for historic river courses was found in PDZ7.03 and PDZ5.01(C). It is also possible that the channel deposits in PDZ6.05a also represent a historic as opposed to prehistoric watercourse.

The relatively high elevation (up to about 3.5m OD) of the gravel and sand deposits ([139], [129]) in PDZ.03, suggests deposition in a historic watercourse. The gravels were cut by a tree bole, perhaps growing close to the river bank, which was in turn sealed by fluvial sands [127]/[128] and sandy clay [141], likely to be channel marginal and overbank/levee deposits (at about 3.5 to 4m OD). Although the date of the deposits cannot yet be confirmed, they may belong to the river referred to as the Mill River on Rocque's map (1746), Lead Mill Stream on Stanford's map (1862) and the Waterworks River on Ordnance Survey maps from 1896 until the river was

infilled in the late 1950s or early 1960s. It may be possible to radiocarbon date the woody roots associated with the tree growth that was truncated by the sands, which might clarify the date of this sequence.

The characteristics of the deposits excavated in PDZ5.01(C) suggest that this trench was also excavated through a fairly major river channel. Similar to PDZ7.03, the relatively high elevation of the active channel deposits recorded (surface between c 3.5m and 3.85m OD) suggests the channel was probably of post medieval date. As was recorded in PDZ7.03, sandy clay levee or overbank deposits [267] were also recorded over those of active, migrating stream channels. It is possible that the PDZ5.01(C) deposits accumulated within a meander of a channel of the Lea, which became disused as a result of river straightening in the post medieval period and subsequently silted up as a marshy hollow during the Victorian era. Tight meanders are shown on Rocque's map of 1746, along the course of the River Lea as it flowed down the western side of PDZ15 and similar meanders could have existed further south, in the vicinity of PDZ7 and PDZ6, at an earlier date. The straightening and manipulation of the river in this area could well have been associated with the historic industrial activity at Temple Mills. Samples from the channel sequence should be suitable for reconstructing the date and environment of the river.

The trench was probably excavated through a section of the river that had been abandoned, either as a result of later episodes of the natural channel migration described above or as a result of straightening out meanders or other diversion. The clayey alluvium [257] that overlies the active channel deposits represents a marshy hollow. The heavily iron-stained and weathered clay deposit [257] was thickest in the eastern part of the trench, where it directly overlay the interbedded migrating channel deposits. It is likely that the eastern part of the trench formed a boggy hollow behind the developing levee. This wet environment may have expanded over the levee as the direct influence of the river declined. Three fragments of glass recovered from [257] were dated to 1800–1900 and it seems probable that this broad date corresponds with the diversion or straightening of the river.

3.3.8 Phase 7: post medieval land surfaces and landscape management

Evidence for historic management of the lower lying parts of PDZ7, in particular, drainage ditches, possible osier beds and tracks, was identified in a number of trenches. In addition a thick layer of what may be redeposited alluvium [124] was recorded across PDZ7.03, between about 4m and 5m OD.

Post medieval (1600–1800) subsoils and turf lines, buried or truncated by 19th century and later activity were seen in a number of trenches. The deposits can only presently be dated on stratigraphic grounds, but indicate the height of the pre modern land surface appears to lie at *c* 3.8–4.2m OD across the site. The accumulation of alluvial deposits during the Holocene, particularly in the lower-lying parts of the site led to the levelling-up of the landscape and, as a result, the higher ground that had existed in the north east area in prehistory became only very slightly higher than the rest of PDZ7 prior to Victorian and modern groundraising. The characteristics of the historic soils and environment may have continued to differ across the site, however, as on the eighteenth and nineteenth century historic maps the land to the west of Quartermile Lane is generally depicted as rough ground, in contrast to the enclosed fields to the east. Soil quality and characteristics will have also been influenced by the

differing substrate. In the areas of higher gravel (such as in PDZ7.4, PDZ7.5) the soil had existed throughout the Holocene and was formed in brickearth (e.g.: [62], [36]) and may have been relatively light and easy to work. In contrast, in the former lower-lying areas to the west the historic soil (such as [300] in PDZ7.2) had developed in alluvium, perhaps following river embankment and land drainage schemes, and was probably heavier.

The ditches seen in PDZ7.02, PDZ7.03, and PDZ5.06(C) provide evidence for these drainage schemes. Within Trench PDZ7.02 a major drainage ditch [135] was cut following a prolonged period of alluvial deposition. The scale and orientation of the ditch also indicate a boundary function. The fills of the ditch appeared to date to the nineteenth century although the ditch itself may be earlier. A later recut of the ditch indicates either continued use or reuse after a short lapse. The ditch did not survive the Victorian period when it was used as a waste tip. An east-west channel feature in PDZ7.03 may also be a historic drainage ditch. If so, it would have drained towards the watercourse that formerly ran along the line of Quartermile Lane and may have been associated with a field boundary or the parallel ditch features seen on Rocque's map of 1746 slightly to the north, which may be osier beds. A sample was taken from the primary fills of the ditch, which might clarify its function and the nature of the surrounding contemporary environment, as well as its date (by radiocarbon dating). Three possible drainage ditches were present in PDZ5.06 C truncating earlier alluvium. It is possible these ditches were also part of the system of osier beds mapped in this area. However, here one ditch and its recut appears to be associated with a rough gravel track [239] surviving to *c* 3.7m OD.

3.3.9 Phase 8: Quarry pitting

A period of intense quarrying was observed in plan and section across the northern part of the site, in Trenches PDZ7.04; PDZ5.02(C); PDZ6.05b(C) and PDZ6.06(C). In the majority of cases the quarry pits were sub-rectangular with sharp profiles, over a localised region of brickearth, possibly slightly elevated above the adjacent Lea valley floor. Dating evidence recovered from the fills of the various pits indicate a mid to late 19th century date for material within the backfilling. It should also be noted that Trench PDZ7.05 was probably located squarely within such a quarry pit. The observations match the second edition OS map (1893) of the vicinity, which indicates extensive truncation by a brick field quarry in the north and west of PDZ7 (see MoLAS-PCA 2007c, 5.1.3 and Fig 17).

3.3.10 Phase 9: Late 19th–20th century made Ground

With the exception of trench PDZ5.04(C), deposits of made ground or landfill dating to the latter half of the 19th century to early 20th century covered the site. This varied in thickness across the site.

The latest made ground layers (of late 19th to 20th century date) were often covered with a layer of turf that relate to the most recent use of the site as a sports ground, playing field and open land. The only feature of note within these deposits was a structure of reinforced concrete [39] seen within PDZ7.04. No function has been attributed to the feature, and available mapping does not appear to be of sufficient detail to support interpretation.

3.4 Evaluation of environmental evidence

3.4.1 Introduction

Several visits were made by a MoLAS-PCA geoarchaeologist to examine, record and sample the natural sequence exposed within the evaluation trenches. The geoarchaeologist's description and interpretation of the deposits form part of the trench results and stratigraphic interpretation in sections 3.2 and 3.3 above.

The stratigraphy recorded in a representative profile of the trench sequence, as drawn and described by the geoarchaeologist, will be entered into the MoLAS-PCA geoarchaeological stratigraphic database of the Lower Lea as part of the assessment. This database will be used in post excavation stages of the project, to reconstruct the evolving past environment of the Olympics site and to target samples and locations for analysis.

3.4.2 Sediment characteristics

Monolith samples were taken through the natural deposit sequence, as exposed in trenches PDZ7.01, PDZ7.02, PDZ5.01(C), PDZ6.05a(C), PDZ6.04(C) and PDZ5.06(C). These samples provide undisturbed columns of sediment, as revealed in the trench sections, for off-site examination. Representative profiles were selected for sampling, intended to gain a better understanding of the changing environments represented by the Holocene deposits across the site as a whole.

The samples will be suitable for sedimentary techniques such as loss on ignition, magnetic susceptibility and soil micromorphology, as well as microfossil examination. The monoliths will be retained until environmental assessment is undertaken, when sub-samples for pollen and diatoms will be examined to determine their potential for past environment reconstruction (see below). Further retention until the analysis stage of the project is likely to subsequently be required, as this is when more detailed sedimentary techniques will be carried out.

3.4.3 Microfossils

The fills of the tree throw hollows, stream bed pools, ditches, abandoned channel fills and alluvial clay may preserve microfossils, in particular pollen and diatoms, but also cladocera, chironomids and other remains. Such evidence can provide valuable information about the evolving past environment (for example, vegetation, water characteristics, and indirect evidence for human activity, in particular landscape clearance, cultivation and other disturbance), which is likely to be complimentary to the macro-remains from bulk samples.

Preservation in the alluvial clay may be poor, as a result of oxidation and weathering, however. The survival and potential of microfossils in the deposits needs to be assessed as a further stage of work.

3.4.4 Bulk sample processing

During the evaluation environmental bulk soil samples were collected for the potential recovery of macro-biological remains, for information on the character of the local environment and possible evidence of human activities in the area. Any such

information could compliment the potential ecological data from micro-biological material contained within monoliths sampled through sedimentary sequences at the site and establish possible spatial and temporal changes in environment on both a local and regional scale. The aim of the evaluation was simply to establish the presence and/or absence of biological remains and whether a full assessment of any materials within the samples should be carried out.

A total of 40 bulk soil samples were processed for the evaluation. These were collected from a range of natural deposits from sandy silty gravels through to peats. The majority (31) of the samples were 20 litres in size with ten litre sub-samples from each deposit being processed for the purpose of the evaluation. Eight litres was floated onto a 0.25mm sieve with the residue from this fraction wet-sieved through a 0.5mm mesh for the potential recovery of plant and insect remains, while another two litres from each sample was separately wet-sieved through a 0.25mm mesh for the possible retrieval of molluscs and ostracods. All fractions, however, could contain all these and other biological remains. For the smaller ten litre samples (of which there were nine), three litres was floated and two litres wet-sieved with the other five litres being retained. The flots were stored wet to prevent possible deterioration of any fragile organic material while the wet-sieved fractions were dried but not sorted.

A visual examination of part of the flots and residues was then carried out to establish the potential for the survival of different forms of biological evidence. Small fractions of the wet flots were rapidly scanned using a binocular microscope although it was not a detailed assessment and thus only general comments can be made on item frequency and species diversity. Several of the samples produced other finds, with occasional fragments of CBM, clay pipe and hammer-scale in [167] sample {27}, and small fragments of pot, glass and brick in [236] sample {49}. A summary of the results is presented in Table 1. This information has been used to determine the most appropriate strategy for assessment (see below).

3.4.5 Radiocarbon dating

Although some idea of the date of the deposits excavated has been inferred from their characteristics and level and very occasional dateable finds, no reliable date has yet been obtained for the sequence. Environmental evidence, unlike artefacts, is not intrinsically dateable and the information about the past landscape preserved in the deposit sequence means little unless it is tied in to an archaeological timeframe.

In general, few artefacts suitable for spot dating were recovered from the alluvial sequence (excepting the uppermost part of the alluvial clay). However, the deposits excavated contained twigs and other plant remains, from which radiocarbon dates might be obtained. Some samples specifically for radiocarbon dating were taken. In addition, the sequence of bulk samples (and the monoliths if necessary) should provide sufficient material for the extraction of single entity organic remains suitable for radiocarbon dating by AMS (Accelerator Mass Spectrometry).

3.4.6 Molluscs and ostracods

Molluscan remains were present in 16 samples with large numbers in 11 samples from [150] samples {36}, {37}, {40}, [258] sample {66}, [261] sample {65}, [265] sample {64}, [267] sample {70}, PDZ7.01 samples {7} and {9}, and [268] samples {68} and {69}. There were moderate amounts in two samples from [148] and [167]

and occasional snails in three samples from [126], [236] and [238]. The molluscs included freshwater species and in some cases large numbers of operculae.

3.4.7 Plant remains

Thirty six samples (wet flots and dry unsorted residues) produced organic plant remains although most of this material consisted of varying amounts of fragmented wood including twig, branch, thorn and bark material. There were occasional flecks and very small fragments of charcoal in 11 of the flots while occasional charred grain was noted in one sample from PDZ701, sample {8}. The sample from [215] sample {59}, also contained bud fragments and leaf abscission pads.

Identifiable fruits and seeds were present in 19 samples with large seed numbers in 12 samples from [126] sample {42}, [150] samples {36}, {37} and {40}, [195] sample {25}, [215] sample {59}, [261] sample {65}, [170] sample {43}, PDZ701 samples {7}, {8}, {9}, and [268] sample {69}, and moderate quantities in [265] sample {64}, and [268] sample {68}. There were occasional seeds in the other four samples from contexts [148], [167], [173], [213]and [223]. Wetland species were noted including aquatics such as pondweed (*Potamogeton* spp.), water plantain (*Alisma* spp.) and bankside/marshland species, e.g. bogbean (*Menayanthes trifoliata*), branched bur-reed (*Sparganium erectum*), sedges (*Carex* spp.), crowfoots (*Ranunculus Batrachium*), spike-rushes (*Eleocharis* spp.), and water dropworts (*Oenanthe* spp.). There were also records of disturbed/waste ground plants, eg. docks (*Rumex* spp.), *Polygonum* species, oraches (*Atriplex* spp.), thistles (*Carduus/Cirsium* spp.), *Sonchus* spp., stinging nettle (*Urtica dioica*), buttercups (*Ranunculus* spp.), and woodland/hedgerow/scrub plants, eg. elder (*Sambucus nigra*), brambles (*Rubus* spp.), and sloe/blackthorn (*Prunus spinosa*); the latter three are all potential food plants.

3.4.8 Insect remains

Twelve samples produced insect (beetle) remains with large amounts in two contexts, [195] sample {25}, and [150] sample {40}, moderate amounts in another seven samples [148] sample {34}, [149] sample {35}, [150] sample {37}, [170] sample {43}, PDZ701 samples {7} and {8}, and [167] sample {27}, and occasional remains in three contexts [236] sample {49}, [265] sample {64}, and [268] sample {68}.

Context	sample	soil processed (l)	soil retained (l)	Vol residue (l)	Vol washed material (ml)	Sample type	wood	Seeds/fruits	insects	molluscs	comments	Potential
82	3	5	5	0.5	20	Wet-sieved dry residue; no flot					Fine silty sandy gravels;	poor
81	4	10	20	1.8	30	Wet-sieved dry residue; no flot					Fine silty sandy gravels	poor
22	5	5	5	0.05	30	Wet-sieved dry residue; no flot					gravels	Sterile - poor
PDZ701	7	10	10		550	Wet-sieved dry residue	Wood fragments++	++		+++	gravels	Good for molluscs (operculae); some plants
PDZ701	7				200	Wet flot	>fragmentary wood	+++	++	+++		Good for plant & molluscs; possibly insects
PDZ701	8	10	10		50	Wet-sieved dry residue;	V fragmented wood+++ Small charcoal fgs++	+++		+++	Charred grain+	Good for plant & molluscs (operculae)
PDZ701	8				750	Wet flot	V fragmentary wood+++; stems	+++	++			Good for plants; possibly insects
PDZ701	9	10	10		100	Wet-sieved dry residue;	V fragmentary wood+++; Small charcoal frags+	+++		+++	gravel	Good for plant & molluscs (operculae)
88	12	5	5	0.5	50	Wet-sieved dry residue; no flot	V fragmentary wood+++				Fine silty sandy gravels	poor
83	14	5	5	0.5	100	Wet-sieved dry residue; no flot	Occ flecks wood				gravels	poor
177	21	5	5	1	60	Wet flot	Wl wood/rootlets+++ Charcoal+					Poor – no visible identifiable remains
177	21				1000	Wet-sieved dry residue					Coarse gravels	Poor
176	22	10	10	2	200	Wet flot	wood+++				Mainly wood	Poor (but v

											& rootlets; iron panning	large flot)
176	22				750	Wet-sieved dry residue	V frag wood++				Fine silty sandy gravels; iron padding++	Poor
175	23	10	10	0.05	50	Wet flot	Wl wood/rootlets+++					Poor
175	23				200	Wet-sieved dry residue	Occ rootlets				Fine gravels	Poor
173	24	10	10	0.1	50	Wet flot	Rootlets+++	+				Poor
173	24				50	Wet-sieved dry residue	Rootlets+++				gravels	Poor
195	25	10	10	2	180	Wet flot	+++ >wl wood/rootlets	++	+++			?good for plants and insects
195	25				250	Wet-sieved dry residue	Wl wood flecks/fragments+++	+++				Good plants
169	26	10	10	0.5	20	Wet-sieved dry residue					gravel	Poor
169	26					Sorted flora/fauna	Wood+++					
167	27	10	10	0.5	60	Wet flot	Wl wood/rootlets++ Charcoal +	+	+(+)	+(+)		?insects & molluscs
167	27				300	Wet-sieved dry residue				+	Gravel;CBM flecks+ Clay pipe+ H'scale	V muddy – not poss to comment
148	34	10	10	0.1	10	Wet flot	Rootlets+++	+	++	+		?insects
148	34				10	Wet-sieved dry residue				++		Operculae
149	35	10	10	0.1	40	Wet flot	Wl wood/rootlets+++		++			Insects
149	35				50	Wet-sieved dry residue	Rootlets					Poor
150	36	5	5	5	300	Wet-sieved dry residue	Wood flecks/fragments+++	+++		++(+)		Good – molluscs & Plants
150	37	10	10	2	200	Wet flot	Rootlets+++	+++	++			Good – botany ?insects
150	37				1000	Wet-sieved dry residue	V fragmented wood+++	+		+++	Fine silty sandy gravels	Molluscs
150	40	10	10	1	200	Wet flot	Wl wood/rootlets+++	+++	++	++		Good for plants; possibly insects
150	40				1500 (SS)	Wet-sieved dry residue	Fragmented wood+++	+	+++	+++	Fine sandy silty gravels	Good – molluscs –

												operculea
126	42	5	5	0.5	150	Wet-sieved dry residue	Wl v fragmented wood+++	+++		+		V good for plants
170	43	10	10		180	Wet-sieved dry residue	Wl v fragmented wood+++; thorns++	++		+	gravel	Good for plants
170	43				180	Wet flot	Wl v fragmented wood+++; Small charcoal frags+	++	++			Good for plants & insects
131	44	5	5	0.5	100	Wet-sieved dry residue	Wl v frg wood+++ & rootlets				Fine sandy gravels	Poor
236	49	10	10	1	60	Wet flot	Rootlets+++		+			Poor
236	49				350	Wet-sieved dry residue	Rootlets+++ Wood+			+	Sample not broken down – mud; v small frags glass,pot,brick	Not possible to comment
238	50	10	10	0.6	20	Wet flot	Rootlets+			+		Poor – possibly molluscs
238	50				50	Wet-sieved dry residue					V fine silty sandy gravels	Poor
238	51	10	10	0.5	10	Wet flot	Rootlets++ Wood++					V poor
238	51				200	Wet-sieved dry residue	Wood flecks Charcoal flecks				fine silty sandy gravels	Poor
234	52	10	10	0.2	2	Wet flot	Rootlets+					Poor
234	52				300	Wet-sieved dry residue					Fine sandy silty gravels	Poor
219	54	10	10	0.5	650	Wet flot	wood+++				Virtually all fragmented wood	Poor (but v large flot)
219	54				1700 (several bags)	Wet-sieved dry residue	Wl wood+++				Coarse gravels	Poor
272	55	10	10	2	375	Wet flot	+++ >wl wood/rootlets					Poor (but v large flot)
227	55				1000	Wet-sieved dry residue	Small woody frags/flecks+++				Coarse silty sandy gravels	Poor
213	58	10	10		300	Wet-sieved dry residue	Flecks, small frags wood+	+		+	gravel	Virtually nothing
215	59	10	10	0.5	400	Wet flot	>wood (including twigs); buds; leaf abscission pads	+++				Good - plants
215	59				20	Wet-sieved dry residue	Flecks, v small wood frags++				gravels	Poor

223	60	10	10	0.8	30	Wet flot	Wood/rootlets+++	+				Poor
223	60				150	Wet-sieved dry residue					gravels	Poor
222	61	10	10	0.5	10	Wet flot	wl wood/rootlets++ Charcoal flecks+					Poor
222	61				20	Wet-sieved dry residue					gravels	Poor
265	64	10	10	2	50	Wet flot	Rootlets++	++	+	++		Good – plants & molluscs
265	64				600 (20% ss)	Wet-sieved dry residue	Occ flecks & v small wood frags+++			+++	Fine sandy silty gravels	>molluscs
261	65	10	10	0.5	250	Wet flot	+++ wl wood/rootlets Charcoal+	++		++		Good – plants & molluscs
261	65				150	Wet-sieved dry residue	Wl wood fragments Charcoal+	+++		+++	Fine sandy silty gravels	Good – plants & molluscs
258	66	5	5	2	1000	Wet-sieved dry residue	Charcoal flecks/sm fgs+			+++	Fine sandy silty gravels	V good for molluscs (fw) & operculae
268	68	10	10	2	100	Wet flot	Rootlets+++ Wood+++	++	+			Good – plants
268	68				1100	Wet-sieved dry residue (several bags)	Wl wood+++	+		+++	Fine silty sandy gravels	Good-molluscs (fw)
268	69	10	10	0.5	70	Wet flot	+++ >wl wood/rootlets Occ charcoal fgs	++		++		Good – plants & molluscs
268	69				300	Wet-sieved dry residue	Wood flecks/frags+++ Sm fgs charcoal++	+++		+++	Fine silty sandy gravels	V Good-molluscs Good plants
267	70	10	10		300	Wet-sieved dry residue	Small frags charcoal+			+++		Good for molluscs (& operculae)
274	74	10	10		200	Wet flot	>fragmentary wood					No other visible remains

Table 14 Evaluation of environmental evidence from bulk samples

3.5 Assessment of the evaluation

GLAAS guidelines (English Heritage, 1998) require an assessment of the success of the evaluation 'in order to illustrate what level of confidence can be placed on the information which will provide the basis of the mitigation strategy'.

In the case of this site, the evaluation trenching excavated made ground and alluvial deposits down to the top of natural gravels. The deposits were examined by a team of archaeologists and geoarchaeologists and the interpretations of the deposit sequence, as presented in this report, are considered to be a fair representation of the archaeological resource existing on the site, above the natural gravels. Samples were taken from significant deposits, with the bulk samples processed and examined by an environmentalist (John Giorgi), who has identified their potential for the survival of environmental evidence. No dating for the stratigraphic sequence has yet been obtained, however, and dating currently relies on spot dates from a small number of finds. Most of the deposits encountered contained no finds are currently undated. Radiocarbon dating would be needed to provide a more robust chronological framework and to more reliably correlate and phase the stratigraphy across the site.

No detailed examination of the gravels was made, although it was possible to differentiate between Pleistocene gravels in the north east part of the site and what are likely to be Holocene gravels in the south and south west. In the north of the site, river gravels of late Pleistocene date were overlain (where not truncated) by dry landsurfaces developed in brickearth. In the south and south west, Holocene river gravels were overlain by prehistoric/historic alluvial sequences. The lowest part of the alluvium represents active stream channels, and subsequently wetland areas, as the channels became abandoned by the river. Some of this fluvial activity in the southern part of the site is the result of historic watercourses. The alluvium and brickearth deposits were sealed by relatively shallow depths of made ground.

An undated, possibly prehistoric timber structure survived within the lower part of the alluvium in the west of the site. Other features at the base of the alluvial sequence include an *in situ* stake and a shallow pit. Flecks and fragments of daub were also encountered within the lower portions of the alluvial sequence, further indicating possible prehistoric activity and exploitation taking place adjacent to the river channels that crossed the site. Man-made features are also preserved and sealed within the alluvial clay forming the upper part of the alluvial sequence within PDZ7. These mainly comprise drainage ditches, possible consolidation surfaces, historic tracks and 'anthropogenic' soil horizons.

The trenches satisfy the original requirements of the evaluation as stated in the Written Scheme of Investigation (MoLAS-PCA 2007b).

4 Archaeological potential

4.1 Realisation of original research aims

The extent to which the evaluation has been able to address the individual research objectives established in the Method Statement for the evaluation is discussed below:

Analysis of borehole data suggests that non-reworked gravel of the 'low terrace' has the potential to inform on the environment and Late Upper Palaeolithic, particularly at the east of the zone (Landscape Zone 1). The DDBA also indicated that at Landscape Zone 2, in the southwest of PDZ7, an area of higher ground might exist and might have been exploited in the prehistoric era. Is it possible that other high gravel islands which may have been exploited in the prehistoric or early historic eras exist within the general area? It is noted however that recent geoarchaeological investigations at PDZ7 have altered this model and that much of the eastern part of the subject area may have been truncated to considerable depths

Whilst there is some evidence of cultural activity at the base and in the lower part of the alluvial sequence in the south-west of the site, it does not appear to correspond with any distinct high gravel islands. In the area of higher ground seen in the east of the site there was a lack of archaeological evidence pre-dating the 19th century, however the extensive truncation by late post medieval quarry pits would have destroyed the majority of any such earlier deposits or features. The higher gravel notes in the boreholes might, in some cases, relate to the historic river channels as identified, for example, PDZ5.01(C) and PDZ7.03.

Do deposits pre-dating the Last Glacial Maximum, which might correspond with the Arctic Beds, exist within non-reworked gravels in the northern and eastern parts of the site? What is the potential for past environment reconstruction and/or Late Upper Palaeolithic activity in these deposits?

See below

Do Late Glacial deposits exist within re-worked gravels in the central part of the site? What is the potential for past environment reconstruction and/or Late Upper Palaeolithic activity in these deposits?

See below

Do Kempton Park Gravels exist in the south-east corner of the site? What is the potential for past environment reconstruction and/or Late Upper Palaeolithic activity in these deposits?

Although its upper part was examined in several sondages, the gravels were not generally studied as part of the evaluation.

Do slope deposits of Pleistocene and/or Holocene origin overlie Pleistocene gravel in the eastern part of the site? What evidence of past human activity associated with dry land surfaces exists within this area?

No evidence for slope deposits was observed. Evidence for past human activity associated with dry land surfaces in the eastern part of the site involved a number of

brickearth quarry pits across the area which were later reused for landfill, there were also several features in the form of small rectangular pits and a small ditch cut into the gravel, but all of the observed evidence dates to the late post-medieval to modern period.

Did the Leyton River cross the site in the Pleistocene or Holocene and is there evidence for human activity associated with the river?
Deposit modelling and examination of the samples taken from the site might be able to address this research aim.

Did the River Lea cross the western part of the site in the Holocene and is there evidence for human activity associated with the river?
In trench PDZ5.01(C), to the west of the present line of the River Lea, there was evidence of migrating river channels and a meander of the Lea probably formerly crossed this trench. The earlier episodes of river activity observed in PDZ7.01 and PDZ7.02 might also have been associated with a precursor of the Lea. Deposit modelling and examination of the samples taken from the site might be able to address this research aim. Apart from the daub found at the base of PDZ7.02, which is likely to represent prehistoric riverside activity, no human activity directly associated with the River Lea was found.

What environmental evidence suitable for past landscape reconstruction exists within deposits associated with ancient channels of the River Lea and Leyton River?
Bulk samples taken from former river channels were recovered from trenches PDZ7.01, PDZ7.02, PDZ5.01(C), PDZ6.05a(C), PDZ6.04(C) and PDZ5.06(C). Preliminary evaluation of the bulk samples has shown generally good preservation of a wide range of environmental remains, such as seeds and other plant remains, insects and snails. Pollen, diatom and other microfossils are also likely to be preserved in the sediments and monoliths (undisturbed blocks of sediment) have been taken for this purpose, as well as for sedimentary techniques such as magnetic susceptibility and loss on ignition, which might help identify episodes of landscape stability and sol formation.

Can episodes of channel activity and abandonment and wetland expansion across previously dry land surfaces on the site be dated?
As yet no dating evidence has been obtained. Samples suitable for radiocarbon dating have been taken from key deposits in each trench and a programme of radiocarbon dating is needed in order to correlate the deposits across the site, relate to other archaeological evidence, create a site wide stratigraphic sequence and provide a chronological framework for the environmental evidence.

A number of isolated finds of various prehistoric eras have been recorded from across the zone although few provide the definition necessary to characterise the landscape or areas of occupation. Can it be further demonstrated that the west of the construction zone has potential for prehistoric occupation? What evidence is there for a crannog-like structure in the vicinity of Temple Mills?
A single possibly worked flint was found within the reworked gravels in the base of PDZ6.05a(C). Trench PDZ7.02 contained a significant number of weathered daub pieces associated with a landsurface at the base of the alluvial sequence. Fragments of Late Bronze Age –Mid Iron Age pottery were recovered from Trench PDZ6.5b(C). Although their context is not yet understood, it suggests there is potential for prehistoric occupation within the vicinity of this trench. Radiocarbon dating and

environmental assessment of the samples taken from the site, as well as adding this information to the site wide geoarchaeological deposit model, is needed to obtain a better idea of how the archaeological evidence relates to the past landscape and the potential of this past landscape for archaeology.

What evidence is there for the Roman road thought to exist between Clapton and Great Dunmow, (Essex)? Are there any other roads of Roman date that cross in to the subject area as suggested by the finding of a 'causeway' in 1797 close to Temple Mills or the literary reference by Daniel Defoe for one close to the Temple Mills Marshalling Yards?
No evidence for any Roman road was observed. However, undated fragments of gravel tracks did survive within the alluvium within the west of the site: within PDZ7.02 at *c* 3.3m to 3.7m OD, in PDZ6.05a(C) at 3.5m OD and within PDZ5.06(C) at *c* 3.7m OD.

Is there any evidence of Roman occupation activity within the area of the site? If so, how does it relate to what is known of the settlement pattern further north in the Leyton area during the Roman period?
There was no observed evidence for Roman activity or occupation within the area of the site.

What evidence is there for Saxon or Medieval exploitation of the area, in particular is there evidence for water inundation and water management? If so how are these activities characterised? Are there any features or structures, particularly in the south west of the area, which may be associated with the Knights Templar's water mill, or its successors?
There was no direct evidence for either Saxon or Medieval exploitation of the area. There was nothing in any of the trenches to suggest an association with the Knights Templar's water mill or any successors to it. It is likely that during this period the western and southern areas of the site were subject to waterlogging or inundation from the surrounding waterways. In the north-eastern and central area, which appears to have been drier, there was either only negative evidence or it had been subject to severe truncation.

Are there any in situ deposits of archaeological significance within the made ground or is it all of 19th/20th century dump and make-up deposits?
There was modern reinforced concrete structure within the dump deposit in PDZ7.04. There was also a layer of laid turves within the sequence in PDZ5.06(C) suggesting a historical landsurface. Generally the made ground comprised 19th–20th century dump and make up deposits, although the made ground formed the backfill of the brickearth quarry pits in the eastern area of the site, as well as the backfill of the re-cut ditch seen in PDZ7.02.

How extensive is modern truncation across the site? Do made ground deposits bury or truncate the post-medieval/modern land surface?
The level of modern truncation varied across the site. In the north-eastern area the observed brickearth quarry pits with their 19th-20th century backfill were seen to truncate the archaeological sequence to the level of the natural gravels, with only isolated areas of the archaeological horizons surviving. The two trenches in the central area of the site were not impacted upon by modern truncation and the full depositional sequence was preserved. Across the remainder of the trenches the made

ground deposits tended to bury the historic land surface, with only isolated areas of truncation.

Is there evidence of pre-20th century industrial features?
There was no evidence of pre-20th century industrial features.

What is the date and significance of the redeposited alluvium?
Whilst the alluvial deposits did show areas of weathering, there were no observed incidences of redeposition dating to any period.

4.2 General discussion of potential

The evaluation has shown that earlier deposits of archaeological interest survive intact beneath late 19th century made ground. In the north east part of the site these comprise fragments of a dry landsurface formed in Pleistocene brickearth and forming the ground surface from the Mesolithic till post medieval period. In this area, however, truncation by quarry pitting is widespread. In the south and west a mosaic of alluvial, wetland and fluvial deposits exists, which spans the Mesolithic to post medieval period and has very good potential for past landscape reconstruction. Such reconstruction would provide a context in which to place and better understand the archaeological evidence from the site itself and from further afield.

The environmental evidence is not intrinsically dateable, however. Thus, as natural deposits contain few finds, radiocarbon dating is needed to obtain a more reliable understanding of the phasing and correlation of deposits within each trench and across the site as a whole. Dating is crucial to correlate sequences across the site and in consequence build up a picture of site-wide landscape change. Without a programme of dating we will not be able to tease out a story of landscape evolution for the site.

There was no evidence of Roman, Saxon, or medieval activity, apart from drainage ditches and tracks across the wet meadowland. It is possible that much of the site was too waterlogged during these periods for occupation or to be effectively utilised in an archaeological visibly manner. Any exploitation of drier areas may have been truncated by brickearth quarry pits.

The archaeological potential of the site is varied. The north east part of the site was higher drier ground suitable for occupation throughout the prehistoric and historic period, but little evidence for such activity has been found and much may have been removed by past quarrying. The western area of the site formed an area of shifting stream channels between a network of low islands, colonised by trees and shrubs in prehistory. It subsequently became a wetland area and finally wet meadowland. Dating is needed to correlate this sequence with the evidence for gravel bars and extensive areas of channel marginal shallows and reed beds recorded in the south east part of the site, which may be of prehistoric or historic date. Evidence for historic watercourses in the south west and south central part of the site has obliterated much of the prehistoric evidence that may formerly have existed here. No evidence for exploitation of these watercourses was found, although channel manipulation and straightening may have led to their abandonment and the subsequent development of boggy hollows within the former channels. Within the alluvial clay that accumulated in wet meadowland in historic time across all but the north east part of the site, evidence for tracks and drainage ditches has been found demonstrating a very low level of historic activity. The drainage ditches, however, together with the abandoned

river channels, provide a valuable source of information about the historic environment, as their fills will preserve environmental remains, which rarely survive in the weathered alluvial clay.

4.3 Significance

The geoarchaeological evidence from the site, if supported by dating and environmental evidence, has good potential to provide a significant amount of information that will contribute to our understanding of the evolving environment of the Lea Valley. This information will relate to reconstructions of the past environment of the site and it surrounds. The development of such models is certainly of local and when combined with other Olympic sites, of regional, significance.

The evaluation of PDZ7 has provided evidence indicative of prehistoric exploitation of the river, by the notable quantities of daub observed in PDZ7.02. The context of the daub suggests artefacts of fired clay were discarded on the low islands adjacent to the river and it is possible the artefacts were used on the site itself and that their use may have been associated with the stream channels that crossed the site. Daub was also found in one of the evaluation trenches in PDZ15, immediately across the Eastway, in a similar context (MoLAS-PCA, 2008). This evidence is likely to be of local significance.

The evaluation has also had additional local significance in that it has provided previously unknown information regarding areas in which the archaeological resources has undergone extensive truncation as a result of late post medieval activity, in the form of brickearth quarrying.

Whilst the archaeo-environmental remains and evidence preserved on the site are undoubtedly of local to regional significance there is nothing to suggest that they are of national importance.

5 Assessment by EH criteria

The recommendations of the GLAAS 1998 guidelines on *Evaluation reports* suggest that:

'Assessment of results against original expectations (using criteria for assessing national importance of period, relative completeness, condition, rarity and group value) .....' (Guidance Paper V, 4 7)
A set of guide lines was published by the Department of the Environment with criteria by which to measure the importance of individual monuments for possible Scheduling. These criteria are as follows: *Period*; *Rarity*; *Documentation*; *Survival/Condition*; *Fragility/Vulnerability*; *Diversity*; and *Potential*. The guide lines stresses that 'these criteria should not...be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case' (Annex 4, DOE, Planning and Policy Guidance 16, 1990). For detailed definition of the criteria see that document. Reference has also been made to Darvill, Saunders & Startin, (1987); and McGill, (1995)

In the following passages the potential archaeological survival described in the initial Assessment document and Section 3.2 above will be assessed against these criteria.

Criterion 1: period
The Evaluation indicates a multi period site. Taken as a whole, archaeology of the site is characteristic of the prehistoric and post-medieval periods.

Criterion 2: rarity
There is nothing to suggest that any of the likely archaeological deposits are rare either in a national or regional context.

Criterion 3: documentation
There may be considerable contemporary documentation for the post-medieval period of the site and there may be some possibility that some of this could be specific enough to relate to individual features.

Criterion 4: group value
The prehistoric landscape features relate to and are part of the wider pattern seen within the Olympic Park and elsewhere in the Lea Valley (for contextualisation see MoLAS-PCA, 2008). Full interpretation is only possible in that overall context. The location of this site has a bearing on the understanding of the past environment of The Lea Valley and the areas flanking it. The post-medieval survival is remnants of part of the spread eastwards from the City of London and the urbanisation of the surrounding area, combined with the linking of the former villages of Hackney Wick, Homerton and Leyton, and Stratford and Mile End.

Criterion 5: survival/condition
The evaluation results have demonstrated that prehistoric/geoarchaeological remains were preserved beneath several metres of modern made ground.

Criterion 6: fragility
Experience from other sites has shown that isolated and exposed blocks of stratigraphy can be vulnerable to damage during construction work.

Criterion 7: diversity
Clearly, taken as a whole, the deposits at the site do not represent a diverse and heterogeneous group of archaeological remains of all types and periods. However, this diversity is in itself the product of a random process of vertical and horizontal truncation and separation. There is no reason to suggest that the diversity per se has any particular value which ought to be protected.

Criterion 8: potential
(the term Potential in this context appears to mean that though the nature of the site, usually below-ground resources, cannot be specified precisely, it is possible to document reasons predicting its existence and importance)

The evaluation has shown that deposits of alluvium overlying early Holocene gravels are likely to exist elsewhere in the local vicinity. Timber structures and other features of possible prehistoric date were present within the lowest parts of the alluvial sequence, and together with cultural deposits including animal bone, daub and burnt debris, indicate a more intensive occupation/exploitation of the vicinity in this period.

However, preliminary interpretation of the retained stakes indicates a medieval–post-medieval date for the timber structure with the stake tips intrusive within the lower alluvial sediments. Gravel track ways and consolidation from this period had also been constructed in later alluvial deposits across the site and may reflect part of a wider pattern of marshland/floodplain management in the historic period.

Further examination of samples already taken from the alluvial deposits on the site hold the potential to enhance current understanding of the natural and manmade environment of this part of the Lea Valley from the early prehistoric to modern periods.

6 Proposed development impact and recommendations

It is proposed to construct a wind turbine with associated substation, and two bridges L01 and L02 as part of the development of the site. The construction methods for these works will disturb and destroy all archaeological deposits within their footprints. Other construction works are planned, though these have been assessed as not impacting upon the archaeological resource (MoLAS-PCA, 2007b).

The assessment above (Section 5) does not suggest that preservation *in situ* would be an appropriate mitigation strategy. MoLAS-PCA considers that earlier deposits survive beneath 19th- and 20th-century made ground deposits, which are of little importance for archaeological finds and features but have good palaeoenvironmental potential. The presence of (possible medieval–post medieval) wooden stakes, the early to mid post-medieval trackway and the CBM surface in Trench PDZ7.02 may warrant further attention if specific impacts are identified.

With the exception of Trench PDZ7.02 (if impacts are identified), no further excavation is needed to realise the potential of these deposits; it is recommended that further analytical work be undertaken on the samples already taken from the sequence to gain a better understanding of the local river regime and evolving past landscape, no further excavation is anticipated to realise the potential of these deposits. Further work should be undertaken on the samples already taken from six of the evaluation trenches (PDZ7.01, PDZ7.02, PDZ5.01(C), PDZ6.05a(C), PDZ6.04(C) and PDZ5.06(C)), to gain a better understanding of the local river regime and evolving past landscape.

In order to clarify the potential of the samples taken and to refine the research aims they might be able to address, it is recommended that:

- A programme of radiocarbon dating is undertaken on key deposits in order to correlate the stratigraphy across the site, clarify the site sequence and relate it to an archaeological framework. It is suggested that a total of 25-30 radiocarbon dates taken from the sampled sequences in trenches PDZ7.01, PDZ7.02, PDZ5.01(C), PDZ6.05a(C), PDZ6.04(C) and PDZ5.06(C) will provide an adequate dating framework for the site stratigraphy. The radiocarbon dates should be obtained by AMS on identified twigs, seeds or other plant material likely to have received its carbon from atmospheric sources;
- The bulk samples (51 samples) are processed for the assessment of plant remain, snail, ostracod and insect assemblages;
- The nine monolith sampled profiles (c 30 tins) are sub-sampled and assessed for microfossils (pollen, diatoms). It is likely that *c* 8 sub-samples for assessment of pollen and diatoms are required from each sequence, in total assessment of 64–72 sub-samples for each pollen and diatoms is likely to be needed;
- The stratigraphic, dating and sample assessment data is entered into the MoLAS-PCA geoarchaeological stratigraphic database and used to update the current GIS themes;
- Research aims that might realistically be addressed by the samples are identified.

It is also recommended that these results are assimilated into a site-wide assessment of all OLY archaeological interventions to assign contextual significance and further

refine the importance of the archaeological survival, and thereafter assimilated into any publication discussing/disseminating the results.

The decision on the appropriate archaeological response to the deposits existing on the site rests with the Local Planning Authority and their designated archaeological advisor.

7 Acknowledgements

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9 Appendix 1: NMR OASIS archaeological report form

OASIS ID: preconst1-33080

Project details	
Project name	Olympics PDZ7
Short description of the project	An archaeological evaluation of the proposed construction impacts of the part of the London 2012 Olympics Site designated Planning Delivery Zone 7.
Project dates	Start: 08-05-2007 End: 07-09-2007
Previous/future work	No / No
Type of project	Field evaluation
Current Land use	Community Service 2 - Leisure and recreational buildings
Monument type	GRAVEL TRACK Post Medieval
Monument type	DRAINAGE DITCHES Modern
Monument type	BRICKEARTH QUARRY PITS Post Medieval
Monument type	CBM SURFACE Post Medieval
Monument type	WOOD STAKES Uncertain
Monument type	LANDSURFACE WITH DAUB Uncertain
Monument type	CONCRETE STRUCTURE Modern
Monument type	DRAINAGE DITCHES Post Medieval
Significant Finds	WOODEN STAKES Uncertain
Significant Finds	POTTERY Modern
Significant Finds	GLASSWARE Modern
Project location	
Country	England
Site location	GREATER LONDON HACKNEY HACKNEY Olympics PDZ7
Postcode	E10 5
Study area	146623.00 Square metres
Site coordinates	TQ 37670 85740 51.5532306695 -0.01405055271150 51 33 11 N 000 00 50 W Point
Height OD	Min: 3.54m Max: 4.37m
Project creators	
Name of Organisation	Pre-Construct Archaeology Ltd
Project brief originator	Pre-Construct Archaeology Ltd
Project design originator	Gary Brown
Project director/manager	Gary Brown

Project supervisor	Sarah Barrowman
Type of sponsor/funding body	Olympic Delivery Authority

Project archives

Physical Contents	'Animal Bones',' Ceramics', 'Environmental', 'Glass', 'Metal', 'Wood',' Worked stone/lithics'

Entered by	Sarah Barrowman (shoad@pre-construct.com)
Entered on	23 October 2007

10 Appendix 2: Glossary

Alluvium. Sediment laid down by a river, and usually well-sorted. Can range from sands and gravels deposited by fast flowing water and clays that settle out of suspension during overbank flooding. Other deposits found on a valley floor are usually included in the term alluvium. Peat develops when there is little mineral sediment deposition and impeded drainage, which limits biological decay; and tufa accumulates when springs rich in calcium carbonate discharge in damp well-vegetated situations.

Arctic Beds. Cold climate deposits, pre-dating the Last Glacial Maximum and sometimes found within the gravels of the Lower Lea. They may survive within parts of the floodplain not reworked by the river during the Late Glacial.

Ecotone. A zone that lies between areas of contrasting environment, such as on the wetland/dryland margins.

Holocene. The most recent epoch (part) of the Quaternary, covering the past 10,000 years during which time a warm interglacial climate has existed. Also referred to as the 'Postglacial' and (in Britain) as the 'Flandrian'.

Knickpoint. A fall in base level (such as the low sea level at the end of the Pleistocene) gives rise to a discontinuity in the longitudinal profile of a river i.e.: steepening of the downstream channel gradient. The river tends to adjust to such a change by increased flow, which leads to increased erosion in the steepened section of the river and this results in the steepened section (knickpoint) cutting back in an upstream direction.

Last Glacial Maximum. The height of the glaciation that took place at the end of the last cold stage, around 18,000 years ago.

Late Glacial. The period following the Last Glacial Maximum and lasting until the climatic warming at the start of the Holocene. In Britain this period is subdivided into a warm 'interstadial' episode the Windermere Interstadial, followed by a renewed cold ('stadial') episode, in which local ice advances occurred (the Loch Lomond Stadial).

Pleistocene. Used in this report to refer to the earliest part of the Quaternary, the period of time until the start of the Holocene, about 10,000 years ago. However, since the present Holocene epoch is almost certainly only a warm interglacial episode within the oscillating climate of the Quaternary, it is often seen as being part of the Pleistocene epoch, in which case the terms Pleistocene and Quaternary are interchangeable. As it is necessary, in this report, to differentiate between the events that took place at various times during the last cold stage and earlier in the Quaternary and those that took place during the Holocene, the Pleistocene is used to refer to the parts of the Quaternary pre-dating the climatic amelioration that took place at the start of the Holocene.

Quaternary. The most recent major sub-division (period) of the geological record, extending from around 2 million years ago to the present day and characterised by climatic oscillations from full glacial to warm episodes, when the temperate was as warm as if not warmer than today. To a large extent human evolution has taken place within the Quaternary period.

11 Appendix 3: Context index

Context No.	Plan	Section / Elevation	Type	Description	Date	Phase
1	-	S2 S12	Layer	Topsoil	Modern	13
2	PDZ7.02	S2 S12	Layer	Dump Material/Landfill	Modern	11
3	-	S1 S12	Fill	Tertiary Fill of [6]	Victorian - Modern	8
4	PDZ7.02	S1 S12	Fill	Secondary Fill of [6]	Victorian - Modern	8
5	-	S1 S12	Fill	Primary Fill of [6]	Victorian - Modern	8
6	PDZ7.02	S1 S12	Cut	Re-Cut of Ditch [135]	Victorian - Modern	8
7	PDZ7.02	S2 S12	Layer	Alluvium	?	7
8	-	S3	Layer	Topsoil	Modern	13
9	-	S3	Layer	Landfill	Victorian - Modern	11
10	-	S3 S4	Layer	Alluvium	?	3
11	-	S4	Layer	Alluvium	?	3
12	-	S4	Layer	Alluvium	?	3
13	-	S4	Deposit	Tertiary Fill of [19]	?	3
14	-	S3	Layer	Landfill	Victorian - Modern	11
15	-	S3	Layer	Landfill	Victorian - Modern	11
16	-	S3	Layer	Landfill	Victorian - Modern	11
17	-	S3	Layer	Landfill	Victorian - Modern	11
18	-	S4	Deposit	Secondary Fill of [19]	?	3
19	PDZ7.01	S4	Cut	Palaeo-channel/Depression	?	3
20	-	-	Deposit	Singular Fill of [21]	?	3
21	PDZ7.01	-	Cut	Tree Bowl	?	3
22	PDZ7.02	S1 S12 S13 S17	Layer	Alluvium	?	3
23	-	S4	Layer	Sandy Gravel	?	3
24	PDZ7.01	S4	Layer	Gravel	?	3
25	-	S5	Layer	Topsoil	Modern	13
26	-	S5	Layer	Subsoil	Modern	12
27	PDZ7.05	S5	Structure	Concrete with Water Pipe	Modern	11
28	PDZ7.05	S5	Layer	Landfill	Victorian	11
29	-	S5	Natural	Clay	?	3
30	PDZ7.05	S5	Natural	Sandy Gravel	?	3
31	-	S4	Fill	Primary Fill of [19]	?	3
32	-	S6	Layer	Topsoil	Modern	13
33	-	S6	Layer	Subsoil	Modern	12
34	PDZ7.04	S6	Layer	Silty Layer	Modern	11
35	PDZ7.04	S6	Natural	Clay	?	3
36	-	S6	Natural	Sandy Clay	?	9
37	-	S5	Natural	Sandy Gravel	?	3
38	-	S6	Cut	Quarry Pit	Victorian - Modern	10
39	PDZ7.04	S6	Structure	Concrete Structure	Modern	11
40	PDZ6.06	-	Fill	Fill of [41]	Post-Med	11
41	PDZ6.05	-	Cut	Rectangular Cut	Post-Med	11

42	-	S7	Layer	Topsoil	Modern	13
43	-	S7	Layer	Made Ground	Victorian - Modern	11
44	-	S7	Layer	Gravel Dump	Victorian - Modern	11
45	-	S7	Deposit	Sandy Gravel	Victorian - Modern	11
46	-	S7	Deposit	Made Ground	Victorian - Modern	11
47	-	S7	Natural	Clay	?	3
48	-	S7	Natural	Sandy Gravel Clay	?	3
49	PDZ6.06	S7	Deposit	Dark Grey Brown Deposit	Victorian - Modern	11
50	-	-	Deposit	Dark Grey Clay	Victorian - Modern	11
51	PDZ6.06	S7	Deposit	Dark Grey Clay Sand	Victorian - Modern	11
52	PDZ6.06	S7	Natural	Sandy Dump	?	3
53	PDZ6.06	-	Fill	Secondary Fill of [55]	Post-Med	11
54	PDZ6.06	-	Fill	Primary Fill of [55]	Post-Med	11
55	PDZ6.06	-	Cut	Gulley	Post-Med	11
56	PDZ6.06	-	Fill	Fill of [57]	Post-Med	11
57	PDZ6.06	-	Cut	Posthole	Post-Med	11
58	PDZ6.06	-	Fill	Fill of [59]	Victorian - Modern	11
59	PDZ6.06	-	Cut	Rectangular Pit	Victorian - Modern	11
60	PDZ6.06	S7	Natural	Sand with Gravels	?	3
61	PDZ7.04	S6	Layer	Dump Material	Victorian - Modern	11
62	-	S6	Natural	Brickearth	?	3
63	PDZ7.04	S6	Natural	Brickearth	?	3
64	-	S6	Deposit	Dump Material in [67]	Modern	11
65	-	S6	Deposit	Dump Material in [67]	Modern	11
66	PDZ7.04	S6	Cut	Quarry Pit	Victorian - Modern	10
67	-	S6	Cut	Construction Cut for (39)	Modern	11
68	PDZ7.04	-	Natural	Brickearth	?	3
69	PDZ7.04	-	Natural	Brickearth	?	3
70	-	S8 S9 S10 S11	Layer	Topsoil	Modern	13
71	-	S8 S9 S10 S11	Layer	Made Ground	Modern	11
72	-	S10 S11	Fill	Fill of [73]	Modern	11
73	-	S10 S11	Cut	Modern Truncation	Modern	11
74	-	S8 S9	Fill	Fill of [75]	Victorian - Modern	10
75	-	S8 S9	Cut	Quarry Pit	Victorian - Modern	10
76	-	S8 S9 S10 S11	Fill	Fill of [77]	Victorian - Modern	10
77	PDZ6.05b	S8 S9 S10 S11	Cut	Quarry Pit	Victorian - Modern	10
78	-	S8 S9 S10 S11	Natural	Natural Sand	?	3
79	PDZ6.05b	S8 S9 S10 S11	Natural	Natural Gravel	?	3
80	PDZ6.05b	S8	Natural	Natural Sand	?	3
81	-	S12 S13	Layer	Possible Cultural Horizon	?	2

		S17				
82	-	S12	Layer	Alluvium	?	1
83	-	S13 S12	Layer	Alluvium	?	1
84	PDZ7.02	S13 S12	Layer	Natural Sandy Gravel	?	1
85	PDZ7.02	S13	Cut	Tree Bowl	?	1
86	-	-	Fill	Fill of [87]	?	3
87	PDZ7.03	-	Cut	Tree Bowl	?	3
88	PDZ7.02	S13	Fill	Tertiary Fill of [85]	?	1
89	PDZ7.02	S13	Fill	Secondary Fill of [85]	?	1
90	PDZ7.02	S13	Fill	Primary Fill of [85]	?	1
91	PDZ7.04	S6	Natural	Gravel	?	3
92	-	S7	Layer	Made Ground	Victorian - Modern	11
93	PDZ6.06	S7	Fill	Fill of [95]	Victorian - Modern	11
94	-	S7	Fill	Fill of [95]	Victorian - Modern	11
95	PDZ6.06	S7	Cut	Ditch	Victorian - Modern	11
96	PDZ6.06	-	Deposit	White Deposit	?	11
97	PDZ6.06	S7	Cut	Quarry Pit	Victorian - Modern	10
98	PDZ6.06	S7	Cut	Quarry Pit	Victorian - Modern	10
99	-	S14	Layer	Landfill	Victorian - Modern	11
100	-	S14	Layer	Gravel Dump	Victorian - Modern	11
101	-	S14	Layer	Landfill	Victorian - Modern	11
102	-	S14	Deposit	Building Material/Rubble	Victorian - Modern	11
103	-	S14	Deposit	Sandy Dump	Victorian - Modern	11
104	-	S14	Layer	Made Ground	Modern	11
105	-	S14	Deposit	Dump Material/Landfill	Modern	11
106	-	S14	Deposit	Dump Material/Landfill	Modern	11
107	-	S14	Cut	Landfill Hole	Modern	11
108	-	S14	Layer	Dump Material/Landfill	Victorian - Modern	11
109	-	S14	Layer	Dump Material	Victorian - Modern	11
110	-	S14	Layer	Dump Material/Landfill	Victorian - Modern	11
111	-	S14	Layer	Dump Material/Landfill	Victorian - Modern	11
112	-	S14	Deposit	Natural Sand	?	3
113	-	S14	Deposit	Alluvium	?	3
114	PDZ7.01	S14	Deposit	Natural Sand	?	3
115	-	S15 S14	Layer	Natural Gravel/Clay	?	3
116	-	S16	Deposit	Rubble/Tarmac/Hardcore	Modern	14
117	-	S16	Deposit	Tarmac/Hardcore	Modern	14
118	-	S16	Deposit	Building Material/Rubble	Modern	11
119	-	S16	Deposit	Made Ground	Modern	11
120	-	S16	Deposit	Made Ground	Modern	11
121	-	S16	Layer	Silty Clay	Victorian - Modern	11
122	-	S16	Layer	Silty Clay	Victorian - Modern	11
123	-	S16	Layer	Silty Clay	Victorian - Modern	11
124	-	S16	Natural	Silty Clay	?	9
125	-	S16	Natural	Clay	?	3
126	-	S16	Fill	Primary Fill of [140]	?	3
127	-	S16	Natural	Silty Sand	?	3
128	-	S16	Natural	Silty Sand	?	3
129	-	S16	Natural	Sandy Gravel	?	3
130	-	S16	Layer	Silty Clay	Victorian - Modern	11
131	-	S17	Fill	Primary Fill of [132]	?	3
132	PDZ7.02	S17	Cut	Tree Throw	?	3
133	PDZ7.02	S12	Layer	Natural Sandy Clay	?	1

		S17				
134	-	S12	Fill	Singular Fill of [135]	Victorian - Modern	8
135	-	S12	Cut	Ditch	Victorian - Modern	8
136	-	S12	Fill	Secondary Fill of [138]	?	3
137	-	S12	Fill	Primary Fill of [138]	?	3
138	-	S12	Cut	Tree Throw	?	3
139	-	S16	Natural	Sandy	?	3
140	-	S16	Cut	Palaeo-Channel	?	3
141	-	S16	Natural	Sandy Clay	?	3
142	-	S18 S19	Layer	Topsoil	Modern	13
143	-	S18 S19	Layer	Made Ground	Victorian - Modern	11
144	-	S18	Layer	Made Ground	Victorian - Modern	11
145	-	S18	Natural	Relict Ground Surface	?	11
146	-	S18 S19	Natural	Topsoil Episodic Flooding	?	9
147	-	S18	Layer	Dumped Gravels	?	8
148	-	S18 S19	Natural	Alluvium - Mudflats?	?	3
149	-	S19	Natural	Organic, Interface Between (150) & (148)	?	3
150	PDZ6.05a	S18 S19	Layer	Interbedded Sand & Clay	?	2
151	PDZ6.05a	S18	Natural	Re-Worked Gravels	Early Holocene	1
152	-	S20	Masonary	Brick Manhole	Modern	11
153	-	S20	Layer	Demolition	Modern	14
154	-	S20	Layer	Levelling Deposit	Modern	11
155	-	S20	Layer	Made Ground	Modern	11
156	-	S20	Layer	Made Ground	Modern	11
157	-	S20	Layer	Made Ground	Modern	11
158	-	S20	Layer	Dumped Soil	Modern	11
159	-	S20	Layer	Made Ground	Modern	11
160	-	S20	Layer	Made Ground	Modern	11
161	-	S20	Layer	Sand Deposit	Modern	11
162	-	S20	Layer	Made Ground	Modern	11
163	PDZ6.04	S20	Layer	Made Ground	Modern	11
164	-	S20	Layer	Made Ground	Modern	11
165	-	S20	Layer	Made Ground	Modern	11
166	-	S20	Layer	Made Ground	Modern	11
167	PDZ6.04	S20	Layer	Relict Surface	?	9
168	PDZ6.04	S20	Layer	Subsoil	?	9
169	PDZ6.04	S20	Natural	Natural Esturine Sandy Clays	?	3
170	PDZ6.04	S20 S21	Fill	Fill of [171]	?	3
171	PZ6.04	S20 S21	Cut	Natural Channel	?	3
172	PDZ6.04	S20 S21	Natural	Natural Esturine Sandy Clays	?	3
173	-	S20	Natural	Natural Clay	?	3
174	-	S20	Natural	Natural Clay	?	3
175	-	S20	Natural	Natural Sandy Clays	?	3
176	-	S20	Natural	Natural Bedded Clay/Sand	?	3
177	-	S20	Natural	Natural Organic Layer	?	3
178	-	S20	Natural	Natural Sand	?	3
179	-	S20	Natural	Natural	?	3
180	-	S20	Natural	Natural Silty Sand	?	3
181	PDZ6.04	S20	Natural	Natural Sandy Gravel	?	3

182	PDZ6.04	S20	Natural	Natural Gravel	?	3
183	PDZ6.05a	-	Timber	Stake in [184]	?	2
184	PDZ6.05a	-	Cut	Stakehole	?	2
185	-	S20	Layer	Demolition	Modern	14
186	-	S19	Cut	Small Pit?	?	2
187	PDZ6.05a	S19	Natural	Re-Worked Gravels	Early Holocene	1
188	-	S18 S19	Fill	Fill of [189]	Post-Med	11
189	-	S18 S19	Cut	Drainage Ditch	Post-Med	11
190	-	S19	Fill	Fill of [186]	?	2
191	-	S18	Natural	Alluvium	?	3
192	PDZ6.04	S20	Natural	Natural Sand	?	3
193	-	S20 S21	Fill	Primary Fill of [171]	?	3
194	-	S18 S19	Natural	Silty Clay	?	3
195	-	S22	Layer	Topsoil	Modern	13
196	-	S22	Layer	Subsoil	Late 19th-early 20th century	9
197	-	S22	Fill	Fill of [198]	Post-Med	11
198	-	S22	Cut	Pit	Post-Med	10
199	-	S22	Natural	Brickearth	Late Pleistocene?	3
200	PDZ5.02	S22	Natural	Natural Gravel	Pleistocene?	3
201	-	S23	Layer	Topsoil	Modern	13
202	-	S23	Natural	Brickearth	?	3
203	-	S23	Natural	Brickearth with Gravels	?	3
204	PDZ5.04	S23	Natural	Gravels with Sand & Clay Lenses	?	3
205	PDZ6.05a	-	Timber	Stake in [206]	?	2
206	PDZ6.05a	-	Cut	Stakehole	?	2
207	-	S20	Cut	Construction Cut for (152)	Modern	11
208	-	S20	Deposit	Backfill of [152]	Modern	11
209	-	S23	Layer	Subsoil	?	12
210	-	S24	Layer	Concrete Slab	Modern	14
211	-	S24	Layer	Crush - Bedding for (210)	Modern	14
212	-	S24	Layer	Made Ground	Modern	11
213	-	S24	Fill	Tertiary Fill of [216]	?	8
214	-	S24	Fill	Secondary Fill of [216]	?	8
215	-	S24	Fill	Primary Fill of [215]	?	8
216	-	S24	Cut	Re-Cut of [218]	?	8
217	-	S24	Fill	Singular Fill of [218]	?	8
218	PDZ5.06	S24	Cut	Ditch	?	8
219	-	S24	Layer	Natural Sandy Clay	Holocene?	3
220	-	S24	Layer	Natural Clay	Holocene?	3
221	-	-	Void	-	-	-
222	-	S24	Fill	Secondary Fill of [224]	?	8
223	-	S24	Fill	Primary Fill of [224]	?	8
224	-	S24	Cut	Ditch	?	8
225	-	S24	Fill	Primary Fill of [226]	19th Century	11
226	-	S24	Cut	Ditch	19th Century	11
227	PDZ5.06	S24	Natural	Fluvial Gravels	Early Holocene	3
228	-	S24	Layer	Dump Layer	Modern	11
229	-	S24	Fill	Secondary Fill of [231]	Modern	11
230	-	S24	Fill	Primary Fill of [231]	Modern	11
231	-	S24	Cut	Linear Feature	Modern	11
232	-	S24	Fill	Secondary Dill of [226]	Modern	11

233	-	S24	Deposit	Possible Bedding Deposit	?	8
234	PDZ5.06	S24	Layer	Relict Inundated Land Surface	?	8
235	-	S24	Layer	Soil	?	8
236	-	S24	Layer	Possible Laid Turf	?	11
237	PDZ5.06	S24	Layer	Dumped Subsoil	?	9
238	-	S24	Natural	Historic Alluvium	?	9
239	-	S24	Deposit	Dumped Gravel - Surfacing?	?	8
240	PDZ5.06	-	Fill	Secondary Fill of [242]	?	8
241	-	-	Fill	Primary Fill of [241]	?	8
242	PDZ5.06	-	Cut	Ditch/Channel	?	8
243	-	S25	Layer	Concrete	Modern	14
244	-	S25	Layer	Topsoil	Modern	13
245	-	S25	Layer	Made Ground	Modern	11
246	-	S25	Layer	Made Ground	Modern	11
247	-	S25	Layer	Made Ground	Modern	11
248	-	S25	Layer	Made Ground	Modern	11
249	-	S25	Layer	Made Ground	Modern	11
250	-	S25	Layer	Made Ground	Modern	11
251	-	S25	Layer	Made Ground	Modern	11
252	-	S25	Layer	Made Ground	Modern	11
253	-	S25	Layer	Made Ground	Modern	11
254	-	S25	Layer	Made Ground	Modern	11
255	-	S25 S26	Layer	Made Ground	Modern	11
256	-	S25 S26	Layer	Made Ground	Modern	11
257	-	S25 S26	Natural	Alluvium	?	3
258	-	S25 S26	Natural	Sandy Alluvium	?	2
259	-	S25 S26	Natural	Alluvium	?	3
260	-	S25 S26	Natural	Sand	?	3
261	-	S25 S26	Natural	Alluvium	?	3
262	-	S25	Natural	Sand	?	3
263	-	S25 S26	Natural	Sandy Gravel	?	3
264	PDZ5.01	S25 S26	Natural	Gravel	?	3
265	PDZ5.01	S25 S26	Natural	Sand	?	3
266	PDZ5.01	S25 S26	Natural	Gravel	?	3
267	-	S25 S26	Natural	Alluvium	?	3
268	-	S25 S26	Natural	Alluvium	?	3
269	-	S27	Fill	Fill of [6]	Post-Med	8
270	-	S27	Fill	Fill of [135]	Post-Med	8
271	-	S27	Fill	Fill of [135]	Post-Med	8
272	-	S27	Fill	Fill of [135]	Post-Med	8
273	-	-	Natural	Sand	?	1
274	-	-	Natural	Gravels with Root Mat	?	1
275	-	S29	Surface	Surface of CBM fragments	Mid Post-Med	6
276	PDZ7.02	-	Timber	Stake	?	2
277	PDZ7.02	-	Cut	Cut of [276]	?	2
278	PDZ7.02	-	Timber	Stake	?	2
279	PDZ7.02	-	Cut	Cut of [278]	?	2

280	PDZ7.02	-	Timber	Stake	?	2
281	PDZ7.02	-	Cut	Cut for [280]	?	2
282	PDZ7.02	-	Timber	Stake	?	2
283	PDZ7.02	-	Cut	Cut for [281]	?	2
284	PDZ7.02	-	Timber	Stake	?	2
285	PDZ7.02	-	Cut	Cut for [284]	?	2
286	PDZ7.02	-	Timber	Stake	?	2
287	PDZ7.02	-	Cut	Cut for [286]	?	2
288	PDZ7.02	-	Timber	Stake	?	2
289	PDZ7.02	-	Cut	Cut for [288]	?	2
290	PDZ7.02	-	Timber	Stake	?	2
291	PDZ7.02	-	Cut	Cut for [290]	?	2
292	PDZ7.02	-	Timber	Stake	?	2
293	PDZ7.02	-	Cut	Cut for [292]	?	2
294	-	-	Timber	Stake	?	2
295	-	-	Cut	Cut for [294]	?	2
296		S28 S29	Surface	Trackway	Early-Mid Post Med	4
297	-	S28 S29	Natural	Alluvium	?	5
298	-	S28 S29	Fill	Fill of [306]	Early-Mid Post Med	5
299	-	S28 S29	Fill	Fill of [306]	Early-Mid Post Med	5
300	-	S29	Natural	Weathered Alluvium	?	7
301	-	-	-	Void	-	-
302	-	S29	Natural	Alluvium	?	5
303	-	S29	Natural	Alluvium	?	3
304	-	S29	Natural	Alluvium	?	3
305	-	S28 S29	Natural	Alluvium	?	1
306	-	S28 S29	Cut	Ditch beside [296]	Early-Mid Post Med	4
307	PDZ7.02	S29	Fill	Fill of [308]	?	3
308	PDZ7.02	S29	Cut	Tree Throw	?	3
309	-	S29	Fill	Fill of [311]	Early-Mid Post Med	5
310	-	S29	Fill	Fill of [311]	Early-Mid Post Med	5
311	-	S29	Cut	Ditch beside [296]	Early-Mid Post Med	4

12 Appendix 4: Finds assessment

12.1 The pottery

Chris Jarrett

12.1.1 Introduction

There are a total of 228 sherds of pottery (and none are unstratified) recorded from site OL-01607 dating to the late Bronze Age/Early Iron Age, medieval and late post-medieval/industrial periods. The pottery is generally in a good condition and indicates it was mostly deposited soon after breakage, while the late post-medieval period ceramics include intact items, probably representing local authority rubbish dumping. The pottery occurs in 48 contexts (Table 15). Standard Museum of London pottery codes were used to classify the pottery and the assemblage was recorded in an Access database.

Context	No. Of sherds	Spot date	Context	No. Of sherds	Spot date
2	34	1830-1900	120	1	1845-1900
4	19	1850-1900	123	1	1580-1900
7	5	1580-1900	134	1	1800-1900
14	2	1810-1900	143	5	1890+
15	1	1800-1900	144	5	1800-1900
16	2	1780-1900	145	2	1800-1900
17	3	1845-1900	151	1	1170-1350
28	3	1862-1900	160	3	1780-1900
34	48	1873-1900	188	1	1580-1900
40	2	1780-1900	195	1	1800-1900
50	6	1780-1900	196	2	1830-1900
51	2	1800-1900	197	7	1800-1900
58	2	1780-1900	201	3	1800-1900
61	17	1850-1900	212	5	1830-1900
71	3	1850-1900	229	1	1830-1900
80	4	LBA-MIA	230	1	1580-1900
82	2	Undated	232	1	1800-1900
93	6	1830-1900	244	3	1800-1900
100	1	1780-1900	248	1	1800-1900
102	3	1830-1900	249	1	1580-1900
105	4	1862-1900	251	1	1580-1900
108	3	1810-1900	253	1	1765-1830
109	1	1780-1900			
111	3	1830-1900			
118	1	1580-1900			
119	3	1770-1830			

Table 15 OL-01607 Pottery spot dating index

12.1.2 Significance, potential and recommendations for further work

The significance of the pottery is at a local level and demonstrates the archaeological periods represented on the excavation and what types of activity was happening. The ceramic profile of the site largely follows that for what would be expected locally and other excavations in North East London have comparable ceramic assemblages. The industrial period ceramics are probably mostly derived from a source off of the site and their presence is largely the result of refuse dumping. The main potential of the assemblage is that the pottery can date the contexts it occurs in and a number of vessels merit illustration or photographing. The industrial period ceramics contain a small number of items for being of interest in their own right, such as a Doulton, green-glazed stoneware public house display item, a piece of English porcelain kiln furniture, possibly from the local mid 18th-century Canton factory or it is just an anomaly, besides electrical items in various pottery types. The industrial period ceramic containers and other items also give an insight into what produce was being marketed to the area.

Recommendations for further work should include that an appropriate specialist further researches the prehistoric pottery and a publication report is produced on this material. There is little merit in the medieval and particularly the late post-medieval/industrial pottery, but information on the types of pottery, photographs of the more unusual items and the reasons for their presence on the site may be useful for the final publication

12.2 The clay tobacco pipe

Chris Jarrett

12.2.1 Introduction

A small assemblage of clay tobacco pipes (29 fragments and none are unstratified) were recovered from the site OL-01607 (Table 16). All the clay tobacco pipes are in a good condition and were probably deposited soon after their final use. Clay tobacco pipe fragments occur in thirteen contexts. The eleven bowls present date to between 1820-1910 and were classified according to Atkinson and Oswald (1969) and the information entered onto an Access database.

Context	No. of fragments	Spot date
28	2	1840-1880
34	11	1850-1880
50	2	1570-1910
51	1	1570-1910
61	1	1850-1910
100	1	1570-1910
120	4	1570-1910
122	1	1570-1910
159	1	1570-1910
160	2	1850-1910
197	1	1850-1910
212	1	1570-1910
232	1	1570-1910

Table 16 OL-01607 Clay tobacco pipe spot dating index

(a date of 1570-1910 indicates that only broadly dated stems are recorded for that context).

12.2.2 Significance, potential and recommendations for further work

The assemblage of the clay tobacco pipes has some significance at a local level and demonstrates the 19th-century local clay pipe making industry or what was being marketed to the area. The types of clay tobacco pipe bowls present are consistent with what would be expected in London during the 19th-century. The source of the clay tobacco pipes may be from off site activity as the assemblage may be derived from refuse tipping activity. Other assemblages from the Stratford area are comparable. The potential of the clay tobacco pipes is to date the contexts they were found in and a number of pipes may require illustration or photographing. A number of the pipe bowls demonstrate what was being made in the local industry or what was being marketed to the area. Such bowls include a spurred AO28 bowl marked 'ROACH LONDON', heeled AO29 bowls, one stamped 'BALME MILE END' and another is a Royal Antediluvian Order of the Buffaloes example, besides decorative AO30 and Irish type AO33 examples. Recommendations for further work should be that a publication report of all the assemblages of clay tobacco pipes from the Olympic site excavations should be compiled in order to have a better understanding of the local clay tobacco pipe industry.

12.3 The glass

Chris Jarrett

12.3.1 Introduction

A medium sized assemblage of glass (119 fragments and two were unstratified) was recovered from the excavation. The assemblage contains fragmentary (but not abraded) and intact items therefore the material was probably discarded soon after breakage or disuse. A large part of the assemblage is probably derived from dumping of refuse on the site, probably by organisation of a local civil authority. The glass forms (bottles, figurines, lids, wine glasses and window glass) could be recognised and dates from the late 18th century onwards. The information was entered on to an Access database.

Table 17 shows the contexts the glass was found in, the number of fragments and a spot date for the deposit.

Context	No. of fragments	Spot date
1	1	1850+
2	15	1875/90-1930
4	10	1830+
14	1	1850+
16	1	1800+
28	4	1870-1930
34	23	1888+
50	4	1850+
51	1	1800-1900
58	1	Post-medieval
61	2	1830+
71	7	1875-1930
93	4	1800+
105	1	1830+
108	1	1800+
109	1	1800+
111	1	1800+
118	2	1800+
119	1	1800+
122	1	Post-medieval
134	1	1780-1900+
143	2	1840-1900+
144	3	1840+
160	4	1800+
164	3	1830+
197	2	1830+
201	2	1850+
211	1	1888+
232	2	1830+
233	2	1800+
244	4	1830-1900+
251	3	1800+
252	1	1850+
255	2	1850+
257	3	1800-1900

Table 17 OL-01607. Glass spot dating index

12.3.2 Significance, potential and recommendations for further work

The glass has some significance at a local level and represents household items, the containers for products of local businesses and a reflection of 19th-century consumerism. However, the source for the majority of the glass was probably derived from off site activity. The main potential of the glass is to date the contexts it was found in. Some items may require photographing. Recommendations for further work should be that a publication of all the glass assemblages from the different Olympic excavations be compiled and this should be supplemented with photographs of interesting, complete examples.

12.4 The worked wood

Damian Goodburn

12.4.1 Methodology

Waterlogged wood from trench PDZ6.04i was examined with additional recording and assessment. The 20 items were all small fragments contained within 9 bags in one standard white sample tub. The material was rapidly cleaned and scanned on the 8 February 2008.

12.4.2 Summary list of the material

Seven bags were labelled PDZ6.04 [193], these contained:

- 3 small root frags;
- 1 possible broken small plank or large wood chip frag;
- 1 piece of shattered large mammal bone (labelled 'wood');
- 5 small twig frags;
- 1 frag of bark; one very decayed oak frag;
- 2 small frags of slightly trimmed roundwood
- 2 small frags of split roundwood.

One finds bag labelled [170] contained 3 small branch or small stem frags.

One finds bag labelled [114]; <15> contained 1 fragment of mineralized cleft wood; possibly a very eroded stake tip????? No clear cut marks.

Additionally, the author viewed Trench PDZ7.02 on a 5 September 2007. A small (8+) group of stake tips was partly machined away. The stakes ran into the section at 1 machine step up from the trench bottom. Several phases of different species and sizes were present, including cleft oak. The actual height of driving must have been over 2.5m OD which suggests, at this part of the historically tidal Lea valley, that they were probably very late medieval or more likely post-medieval in date.

12.4.3 Conclusion

Due to the fragmentary nature of the material and general lack of clear working evidence no further archaeological work is recommended except, possibly, the species ID of the multi-stemmed twig sections that might be post-medieval horticultural remains. Even in the latter case the size of the sample probably rules out getting really useful results.

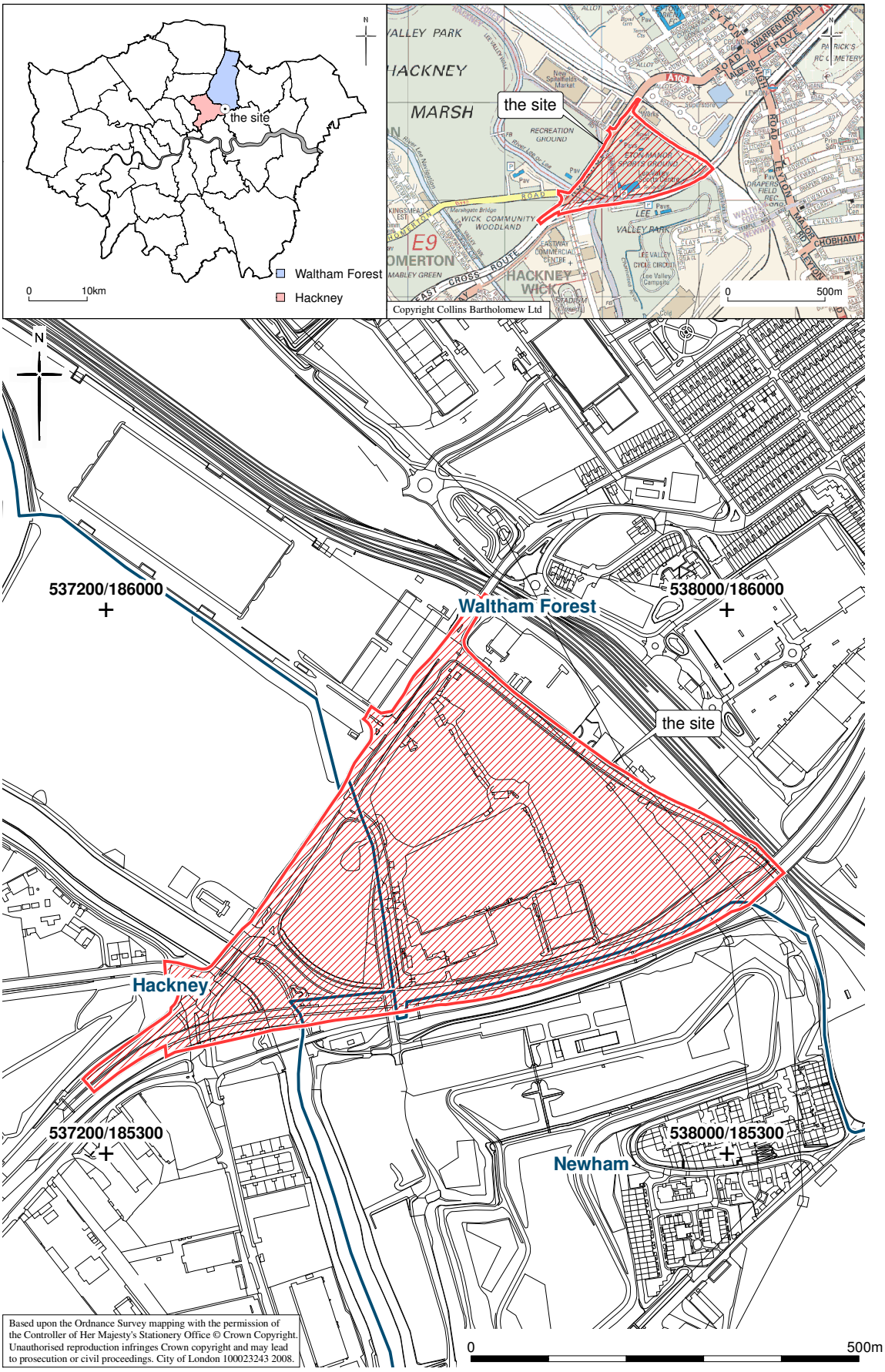


Fig 1 Location map

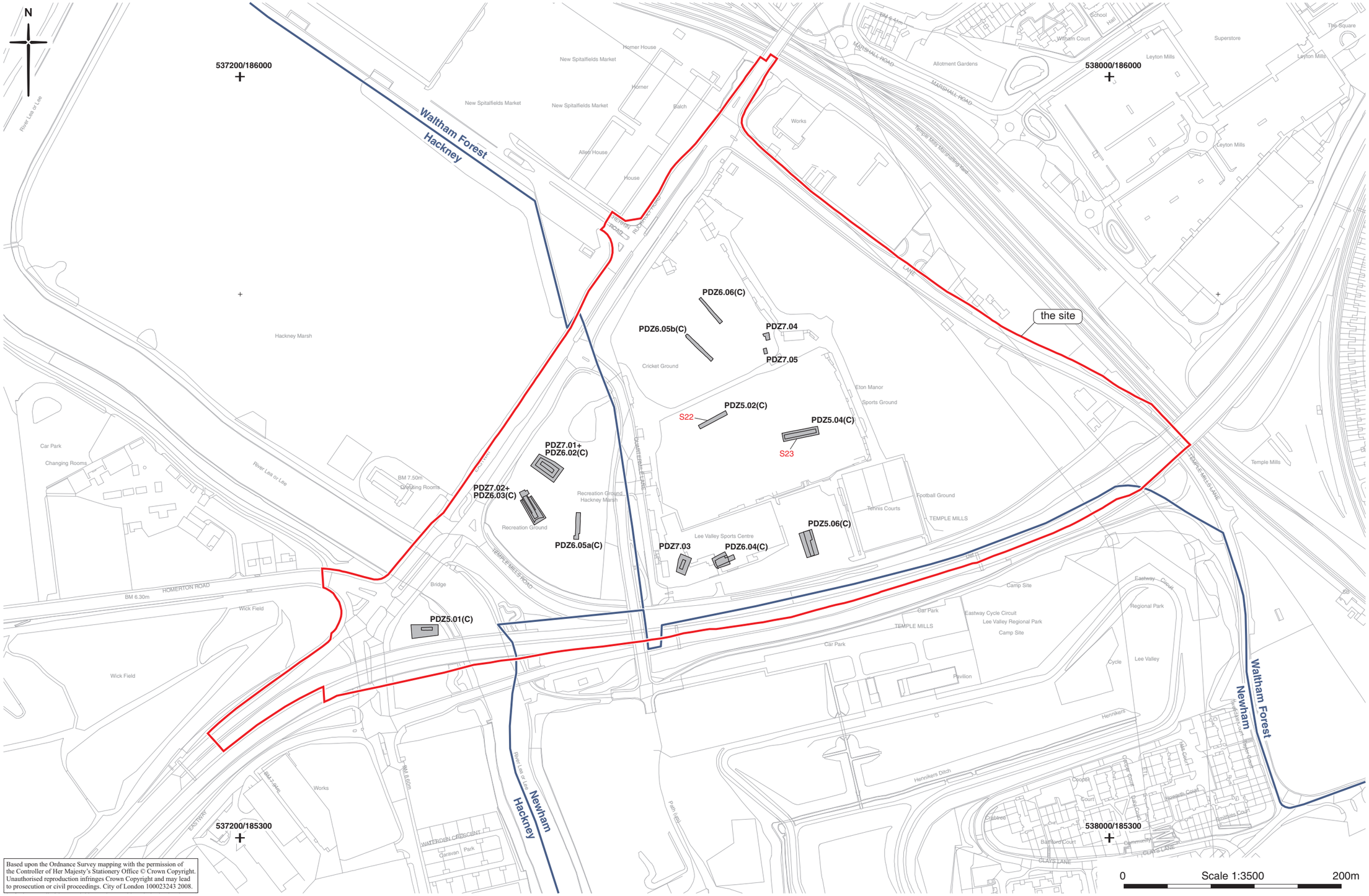


Fig 2 Trench locations

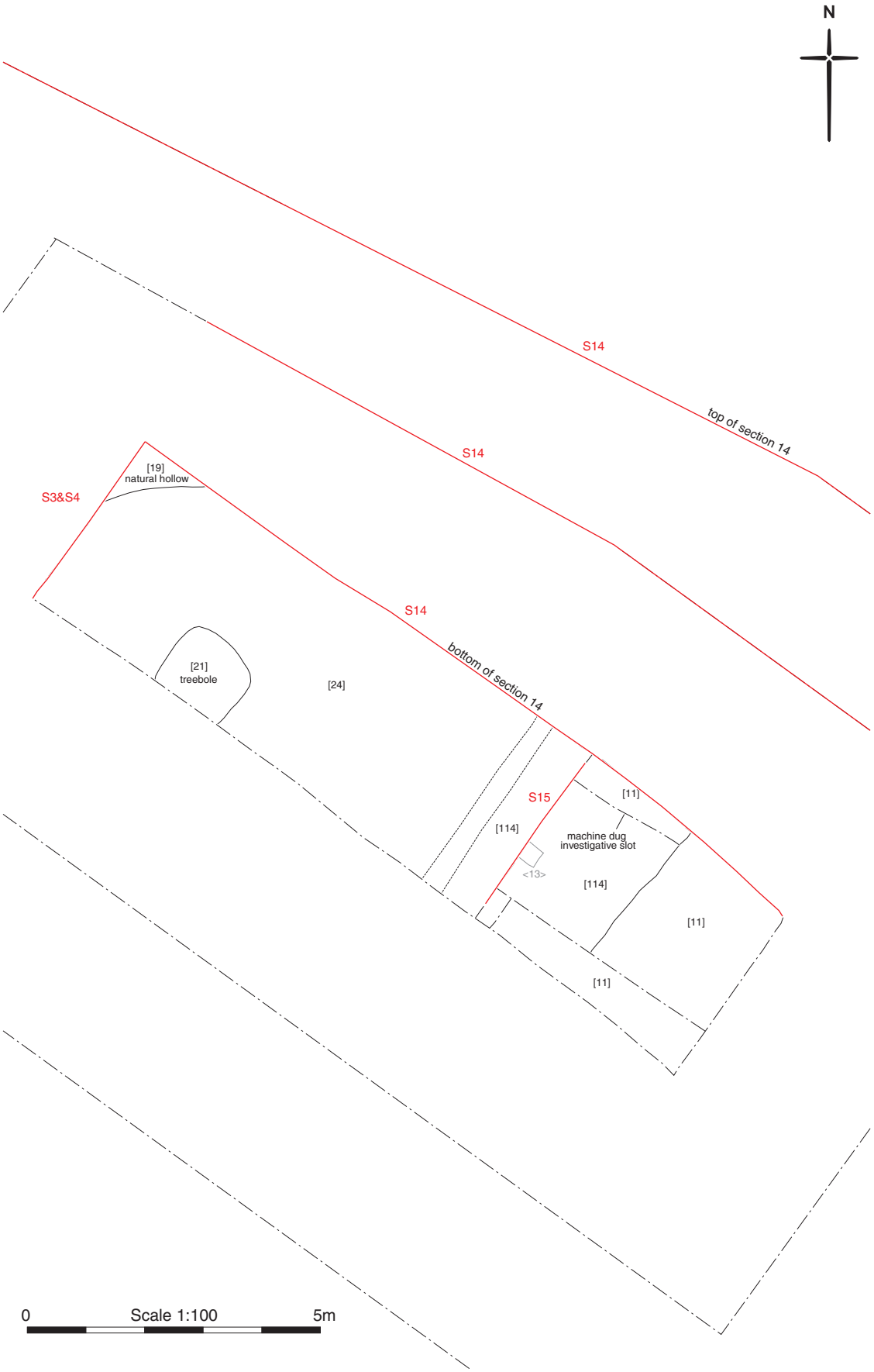


Fig 3 Plan of Trench PDZ7.01

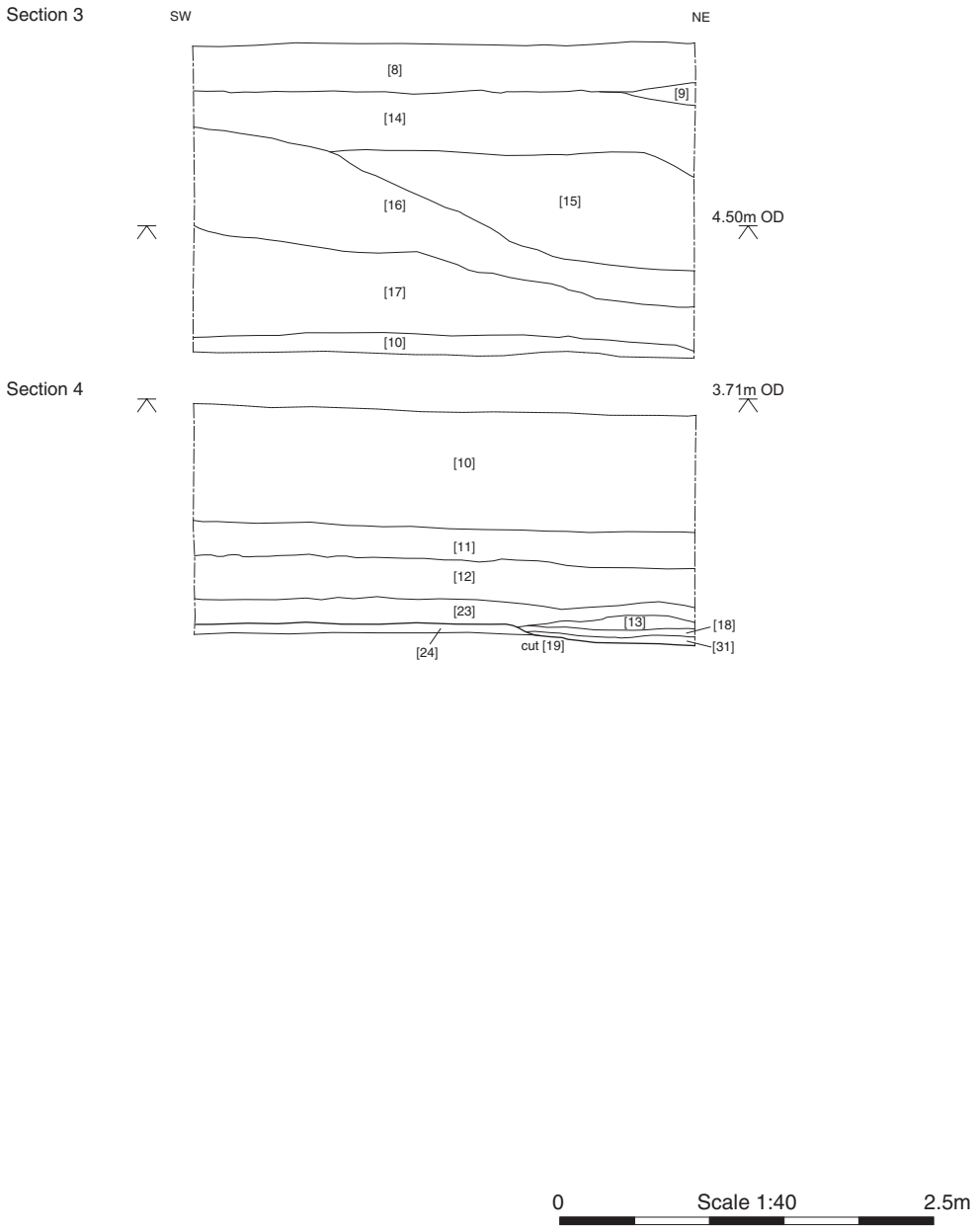


Fig 4 South-east facing sections 3 and 4 of Trench PDZ7.01

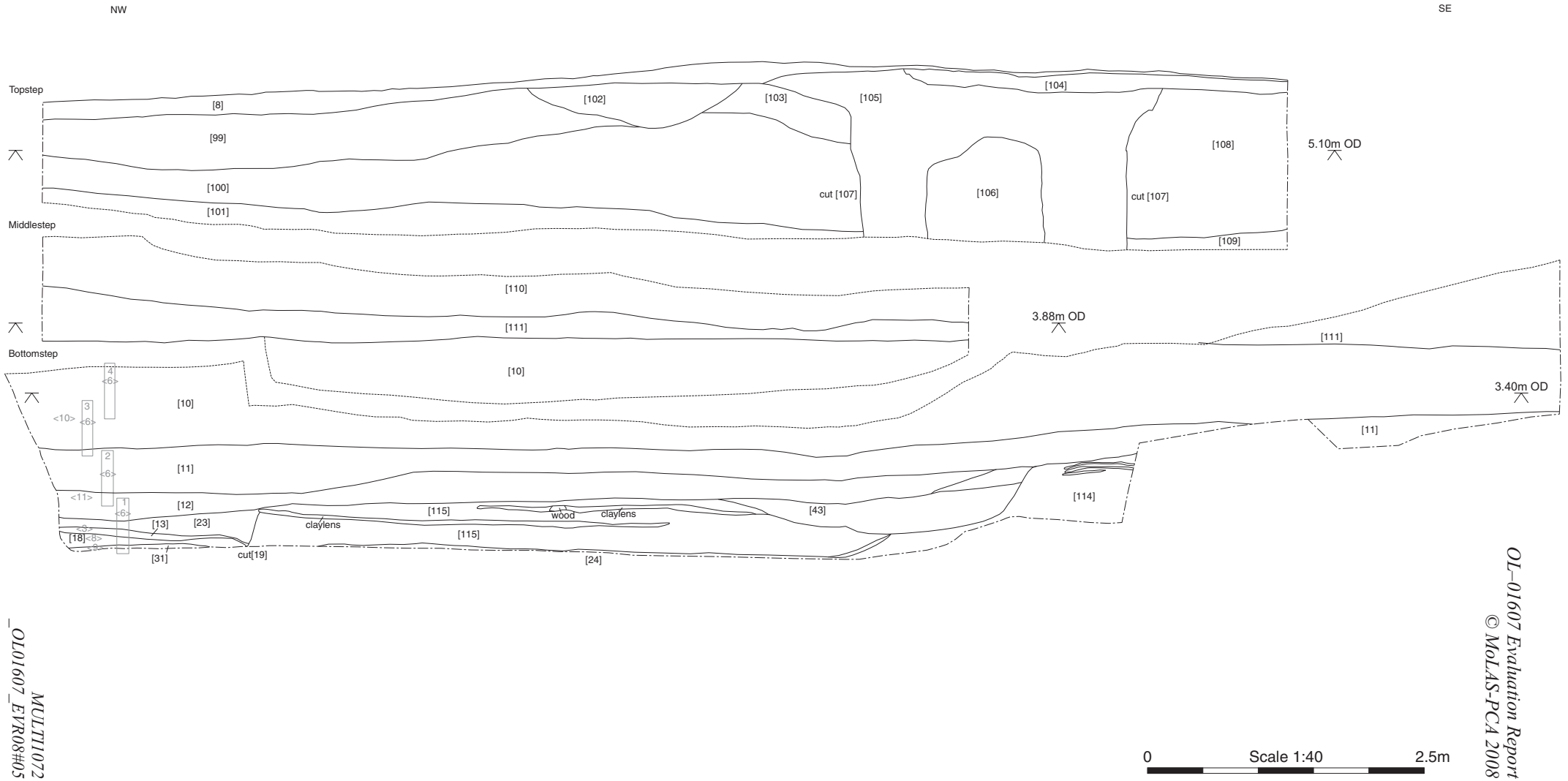


Fig 5 South-west facing section 14 of Trench PDZ7.01

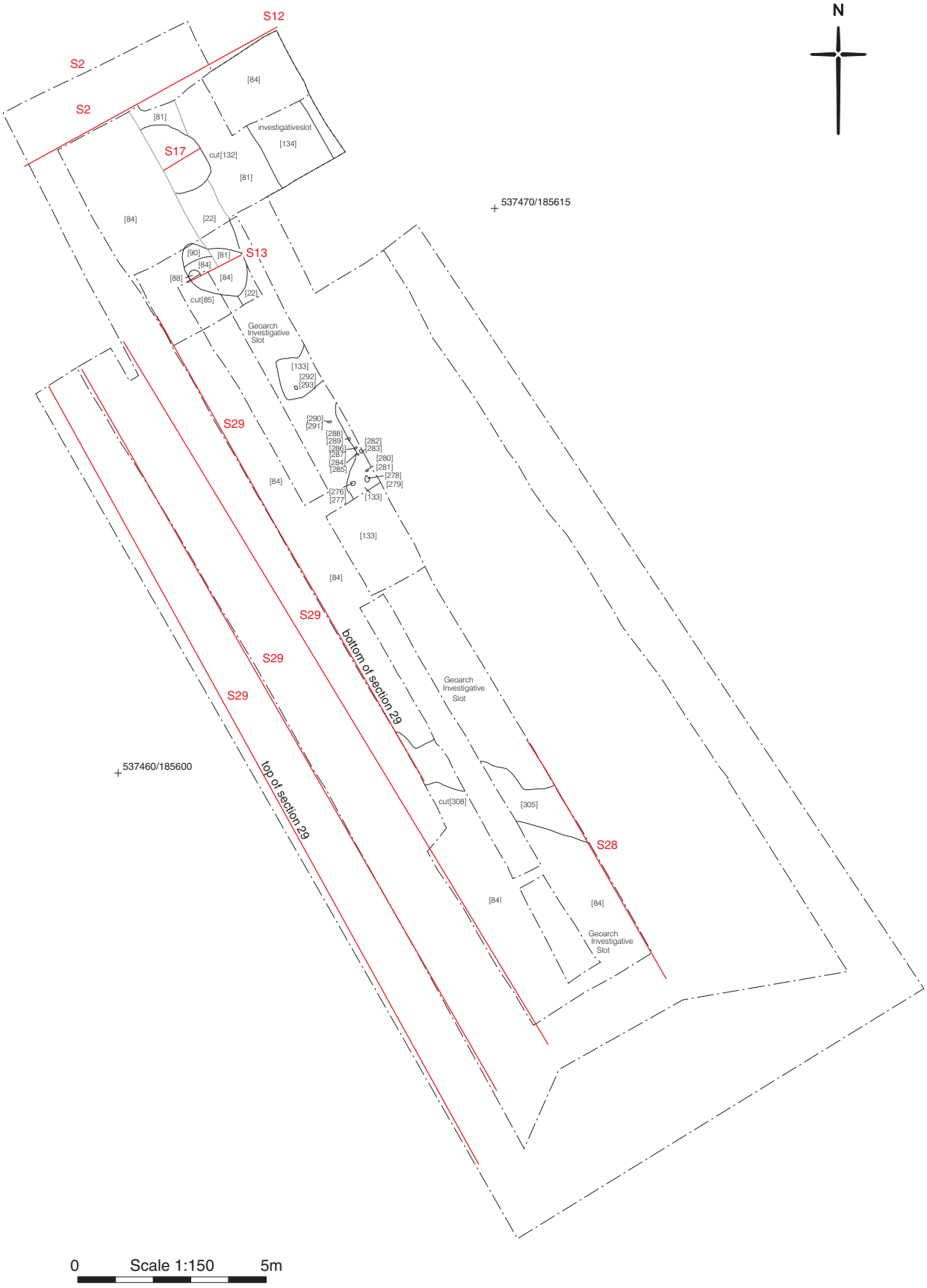


Fig 6 Plan of Trench PDZ7.02

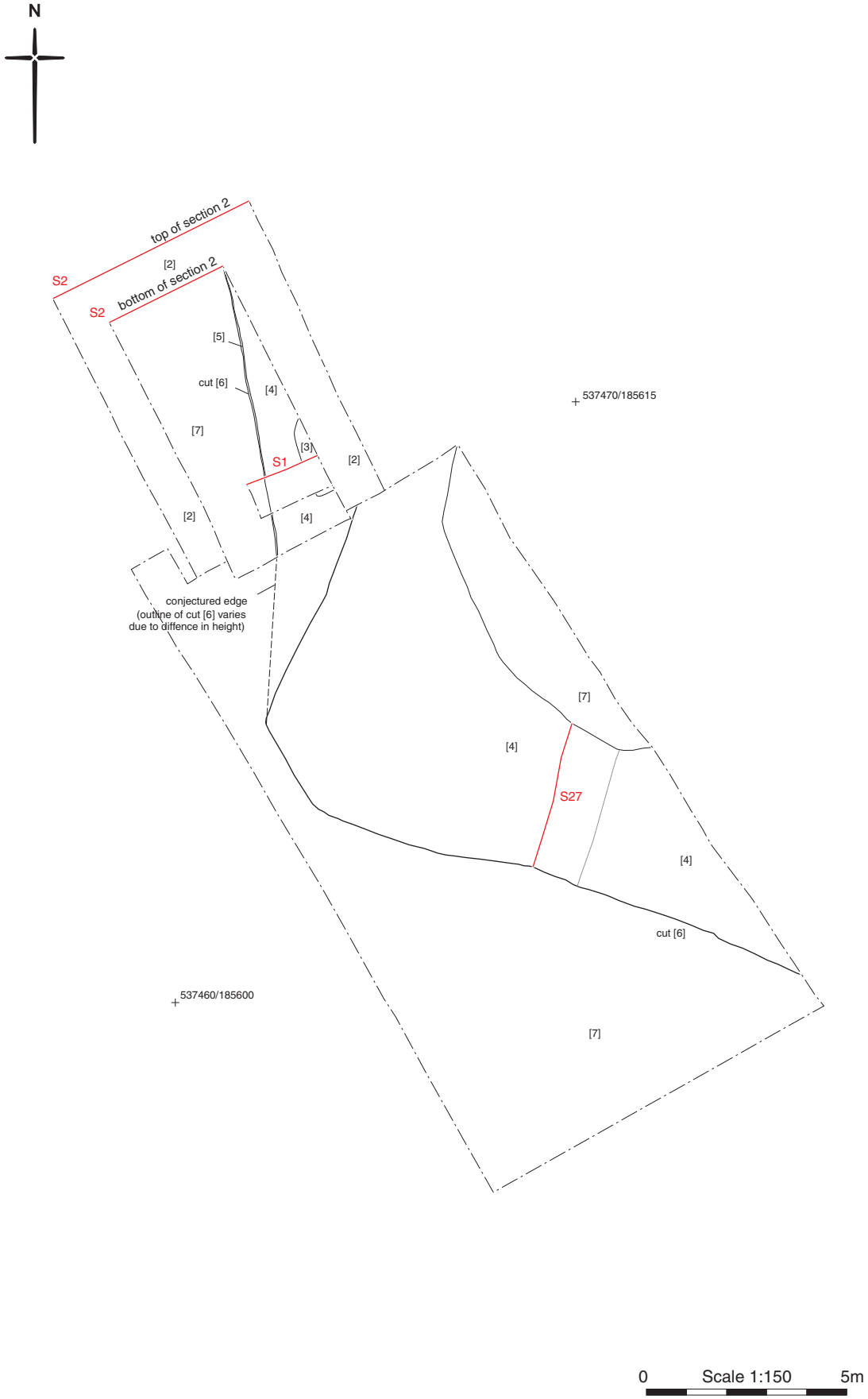


Fig 7 Detailed plan of the upper part of Trench PDZ7.02

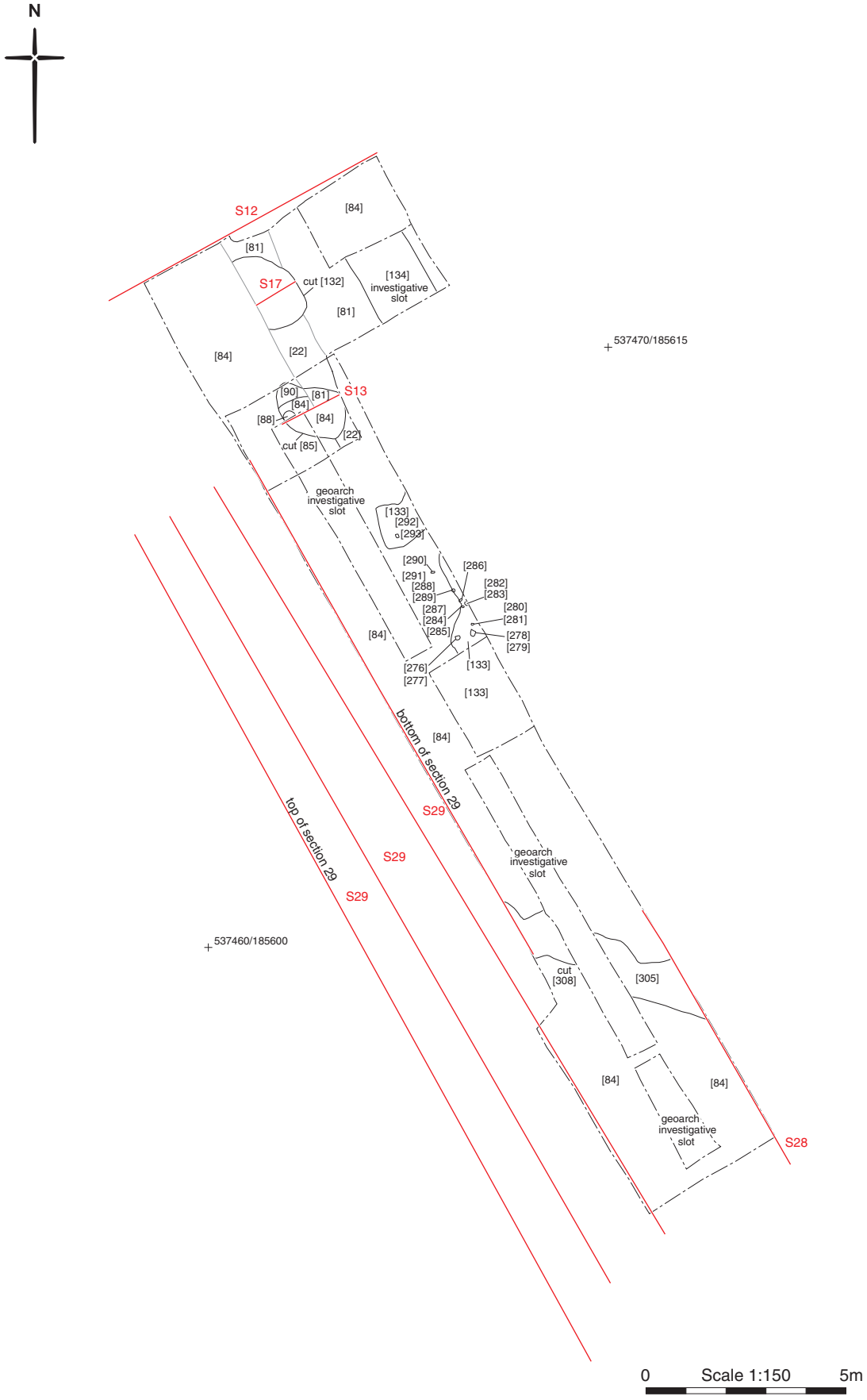


Fig 8 Detailed plan of the lower part of Trench PDZ7.02

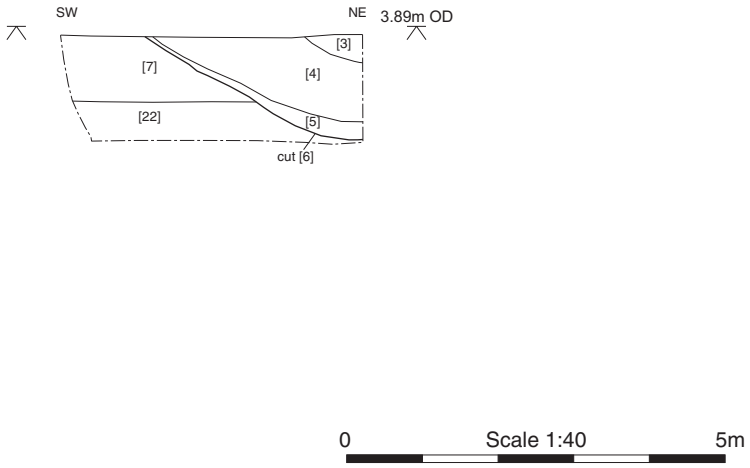


Fig 9 South-west facing section 1 of Trench PDZ7.02

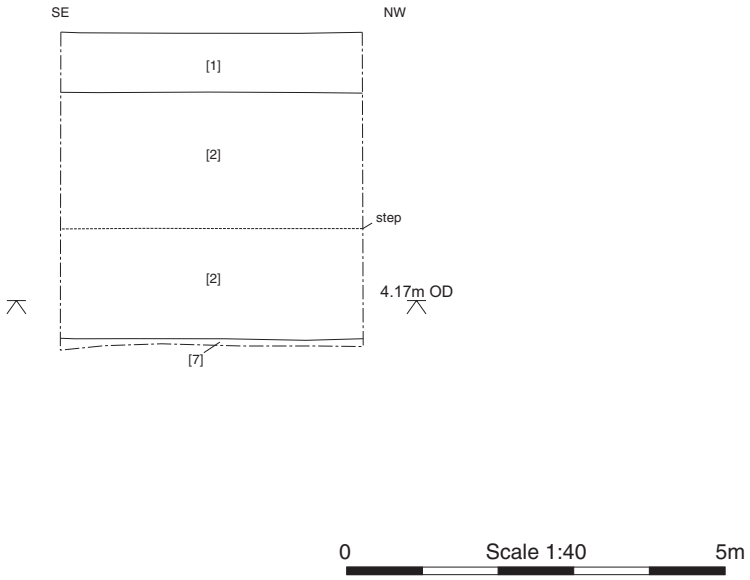


Fig 10 North-east facing section 2 of Trench PDZ7.02

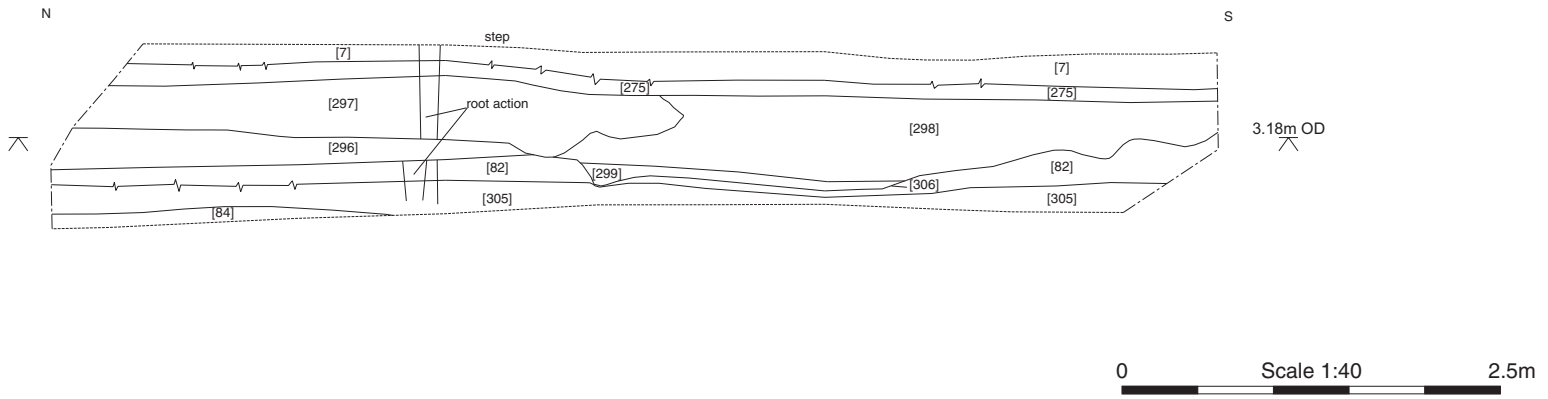


Fig 11 South-east facing section 27 of Trench PDZ7.02

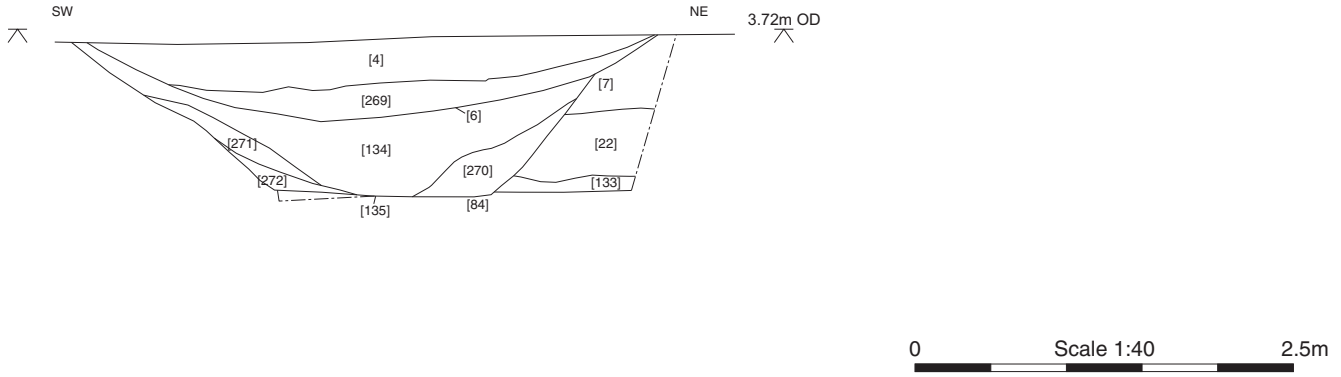


Fig 12 West facing section 28 of Trench PDZ7.02

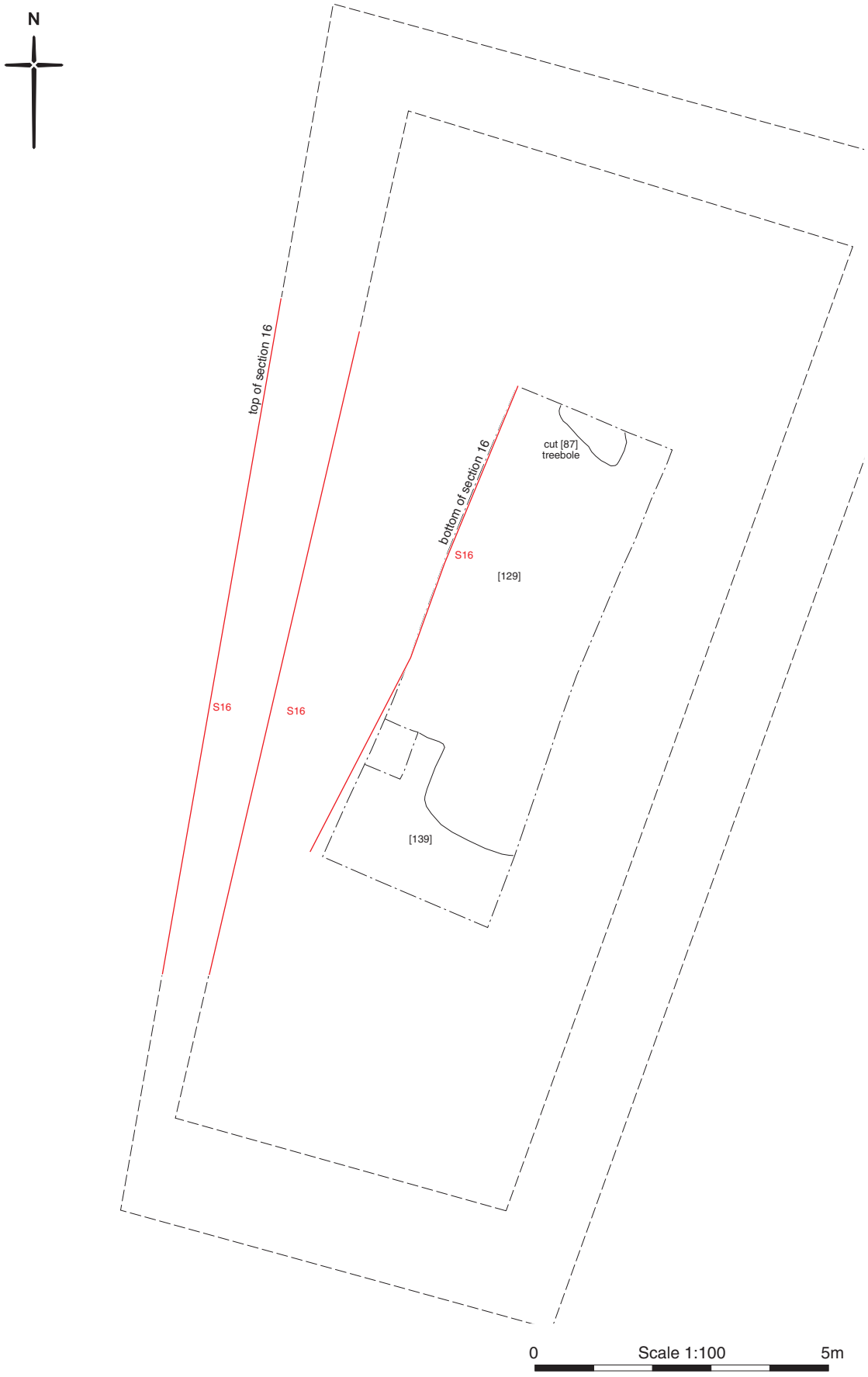


Fig 13 Plan of Trench PDZ7.03

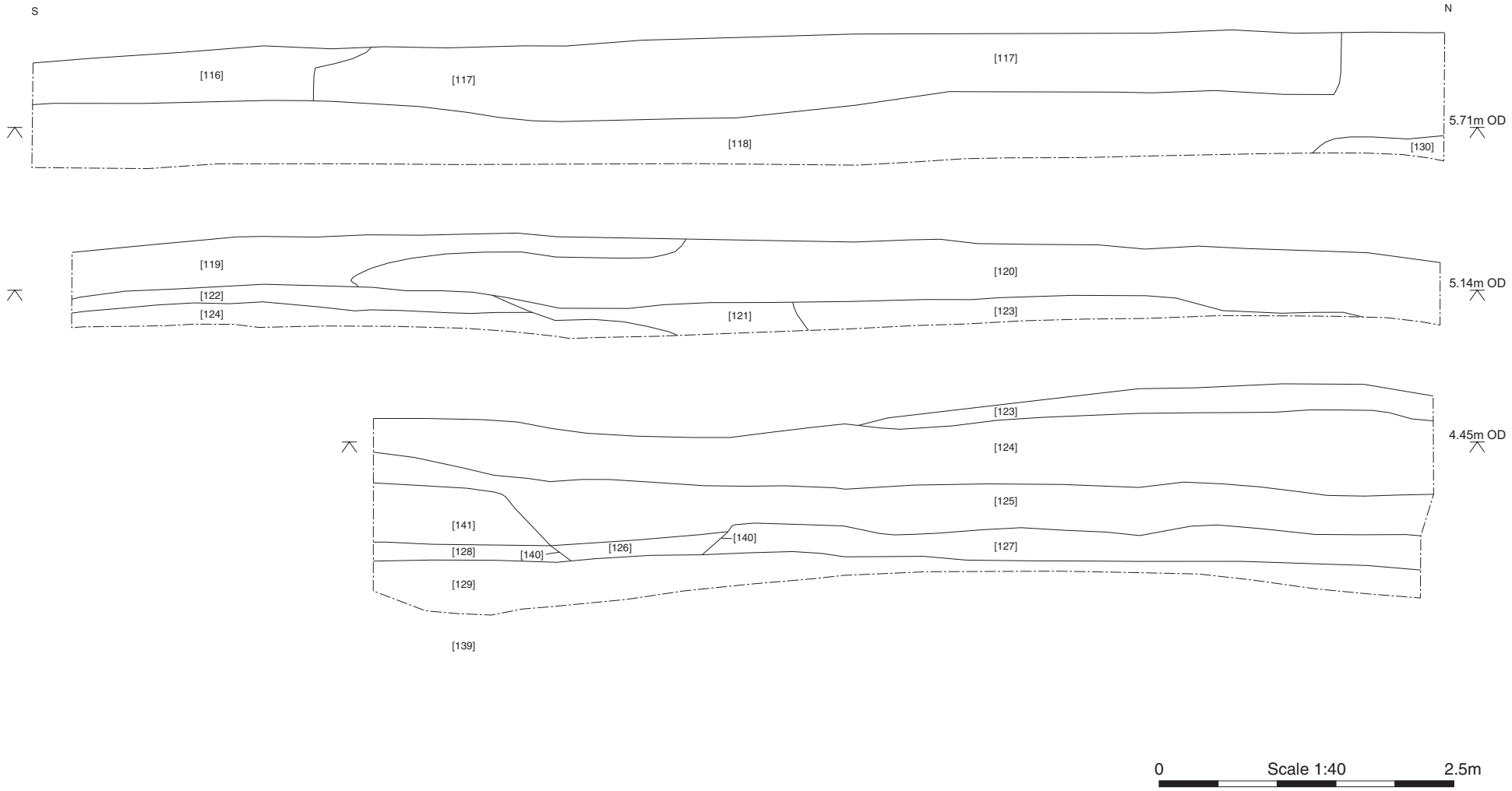


Fig 14 East facing section 16 of Trench PDZ7.03

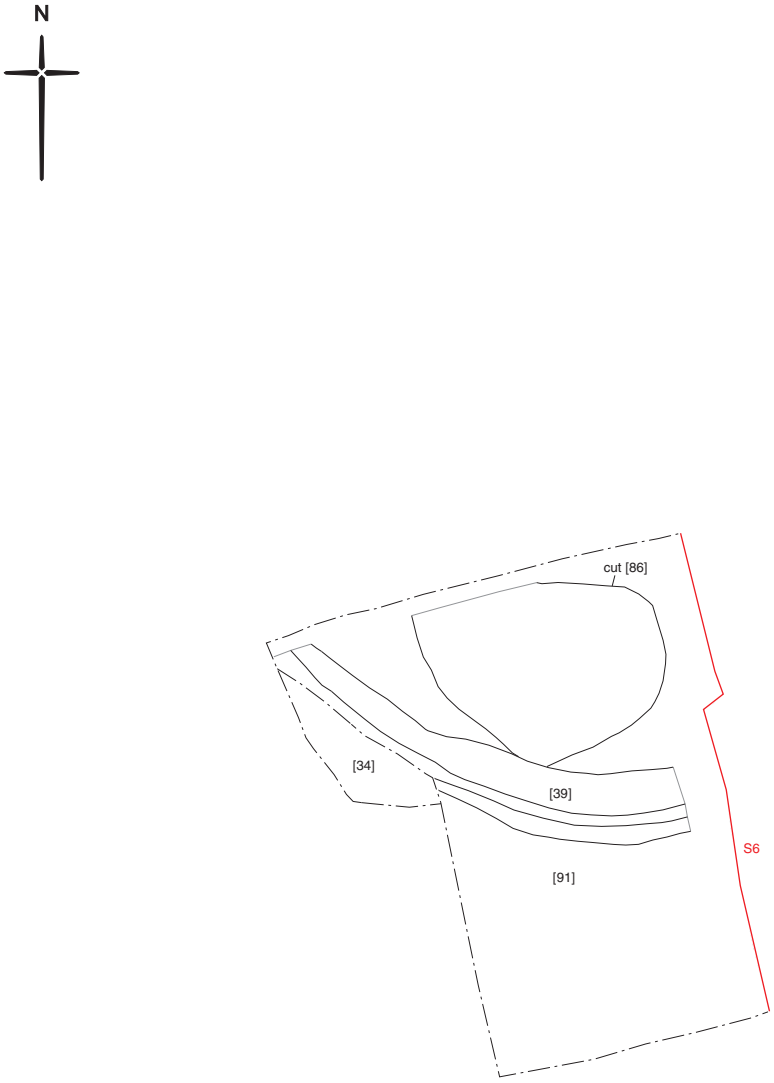
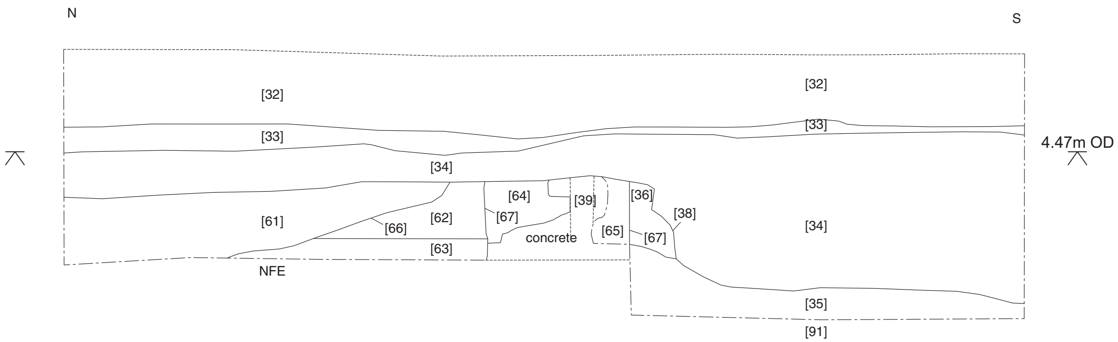


Fig 15 Plan of Trench PDZ7.04



0 Scale 1:40 2.5m

Fig 16 West facing section 6 of Trench PDZ7.04

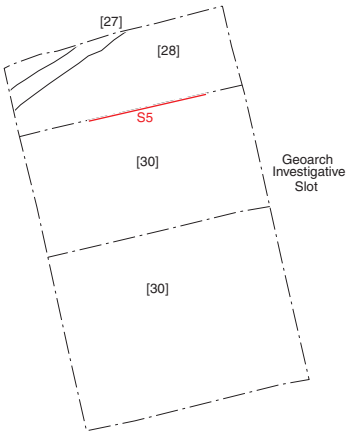


Fig 17 Plan of Trench PDZ7.05

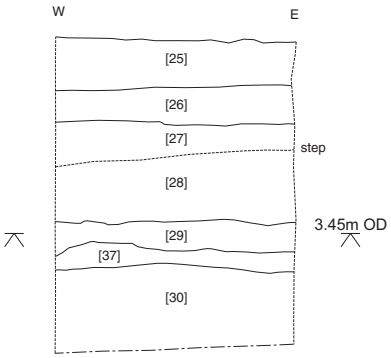


Fig 18 South facing section 5 of Trench PDZ7.05

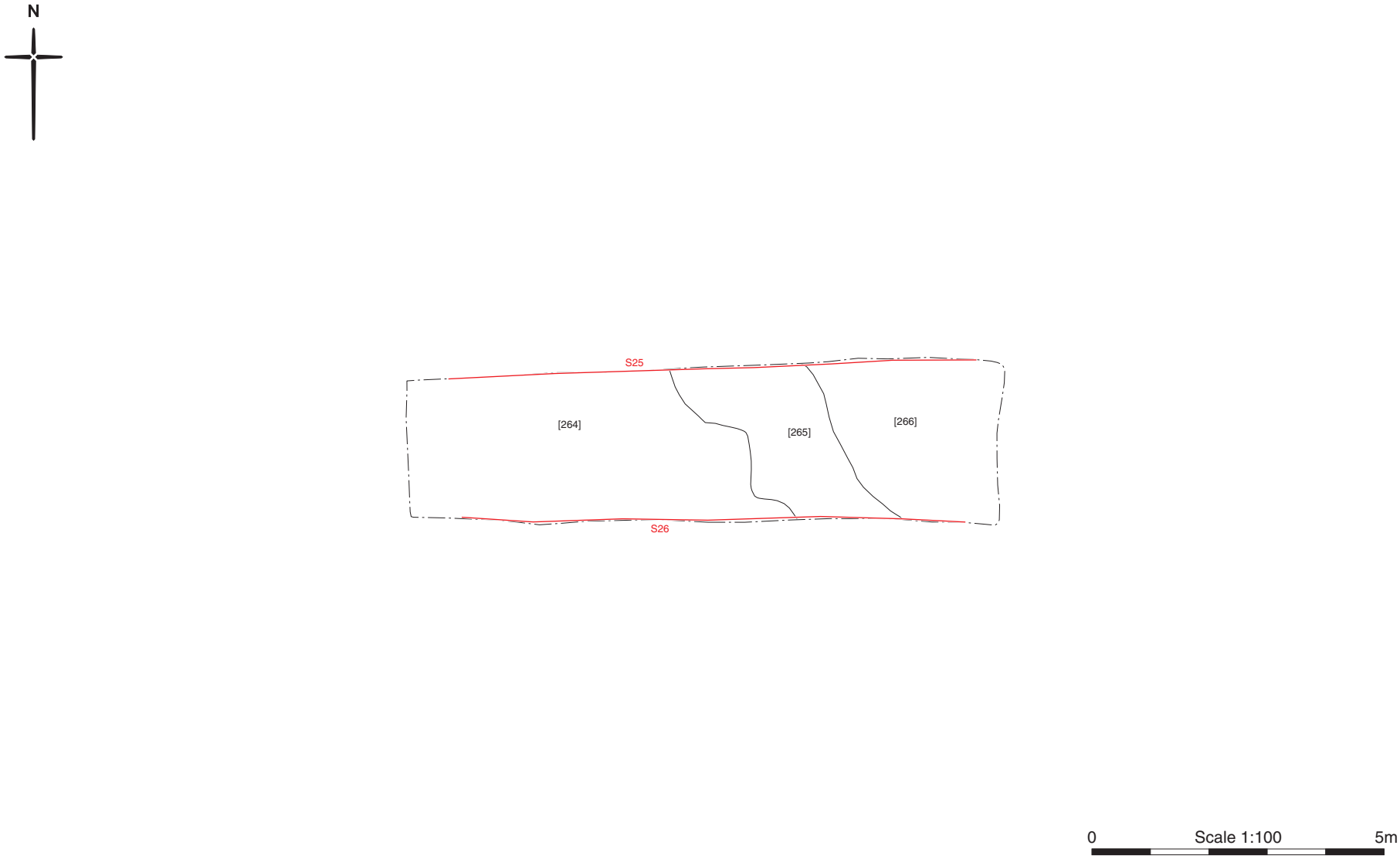


Fig 19 Plan of Trench PDZ5.01 (C)

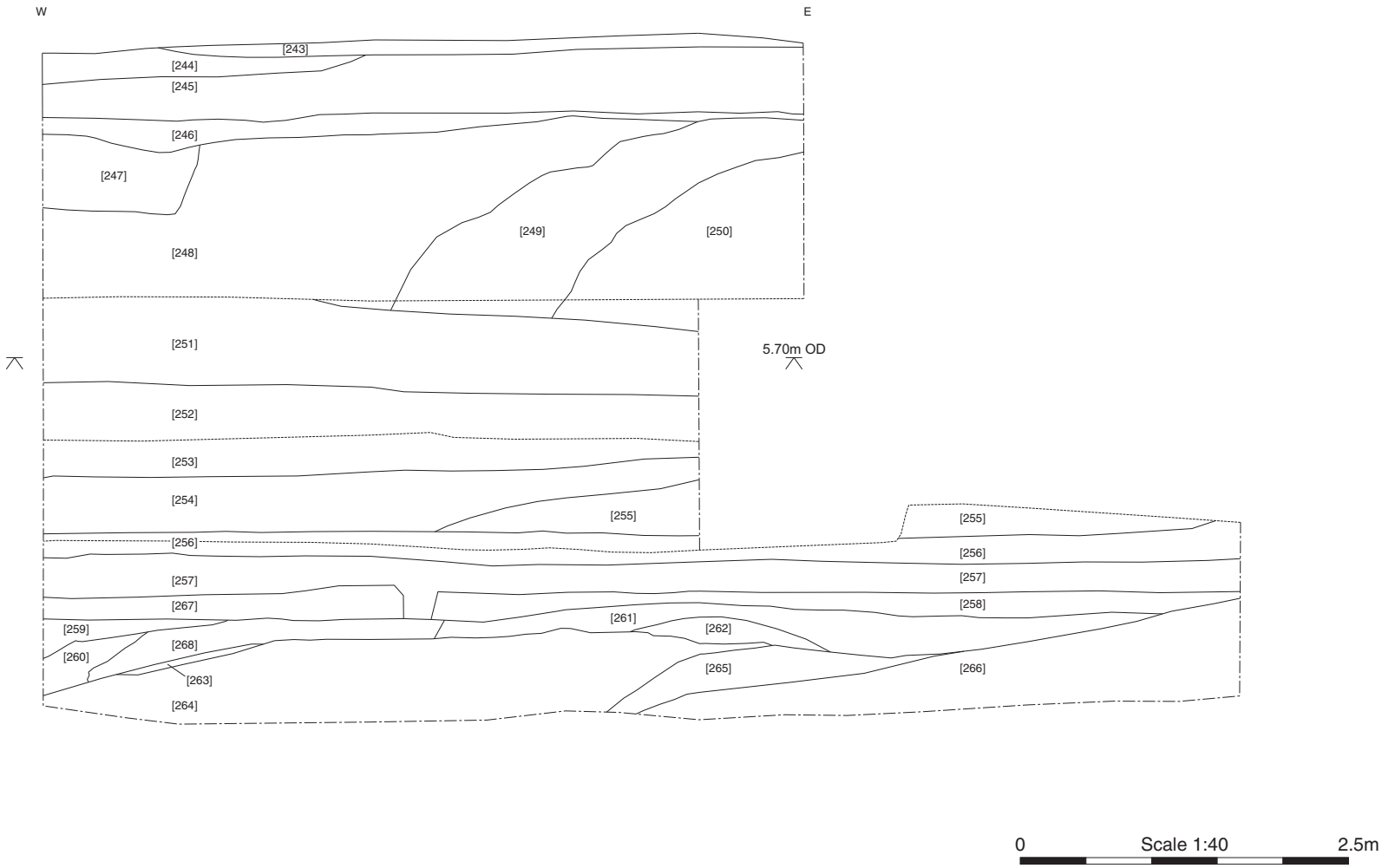


Fig 20 South facing section 25 of Trench PDZ5.01(C)

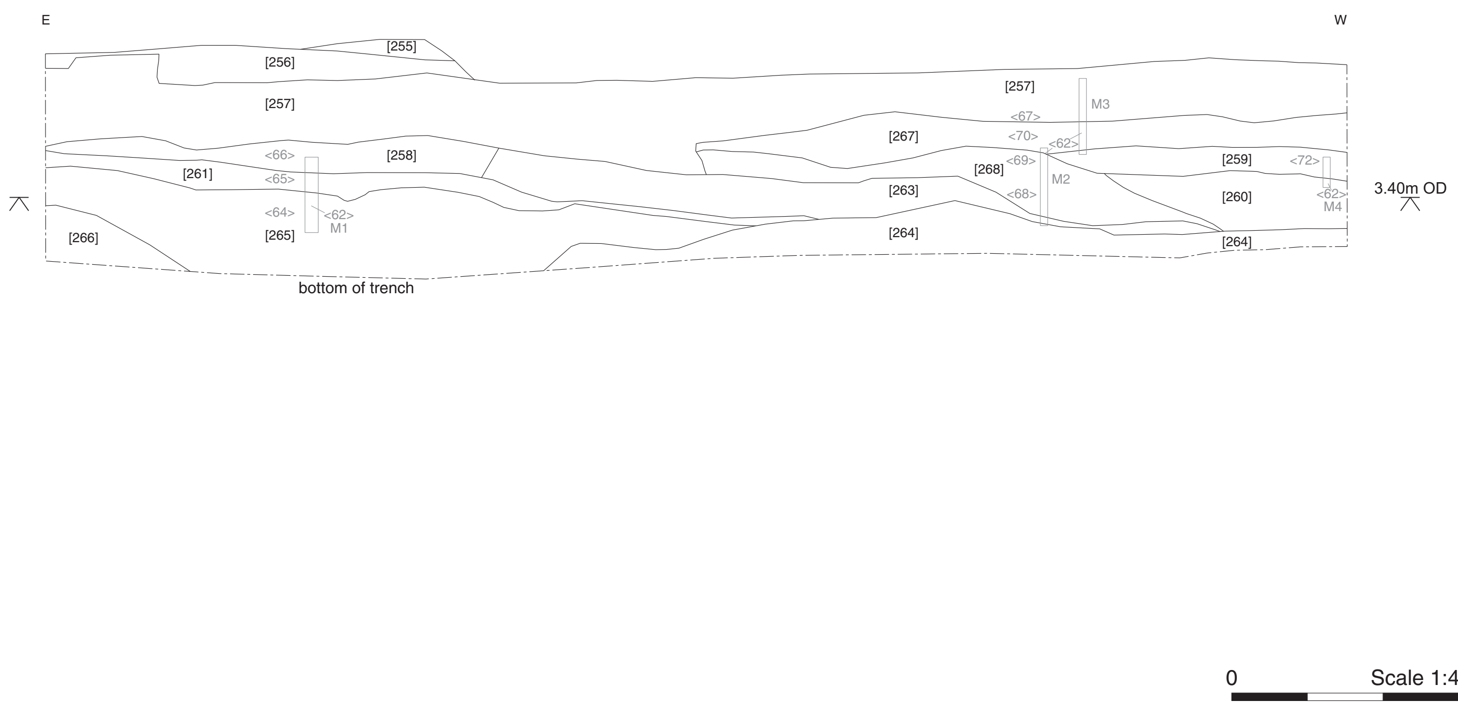


Fig 21 North facing section 26 of Trench PDZ5.01(C)

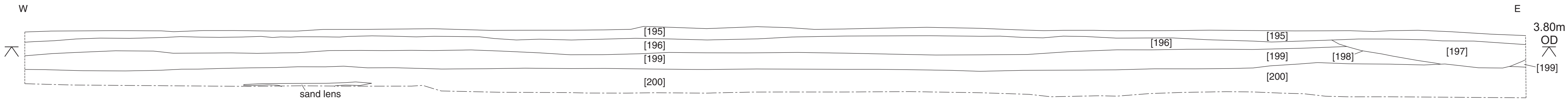


Fig 22 South facing section 22 of Trench PDZ5.02(C)

MULTI1072_OL01607_EVR08#22

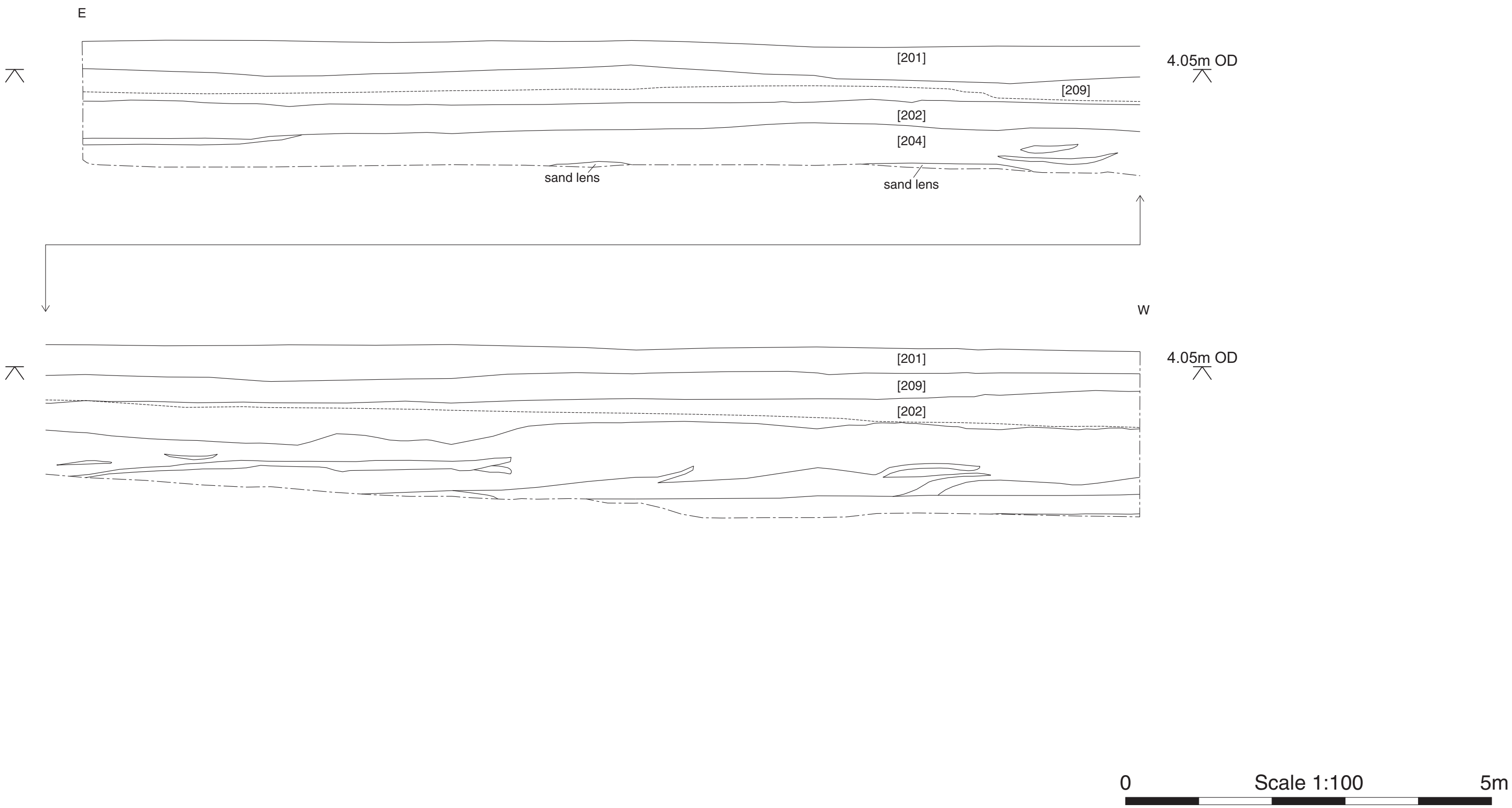


Fig 23 North facing section 23 of Trench PDZ5.04(C)

MULTI1072_OL01607_EVR08#23

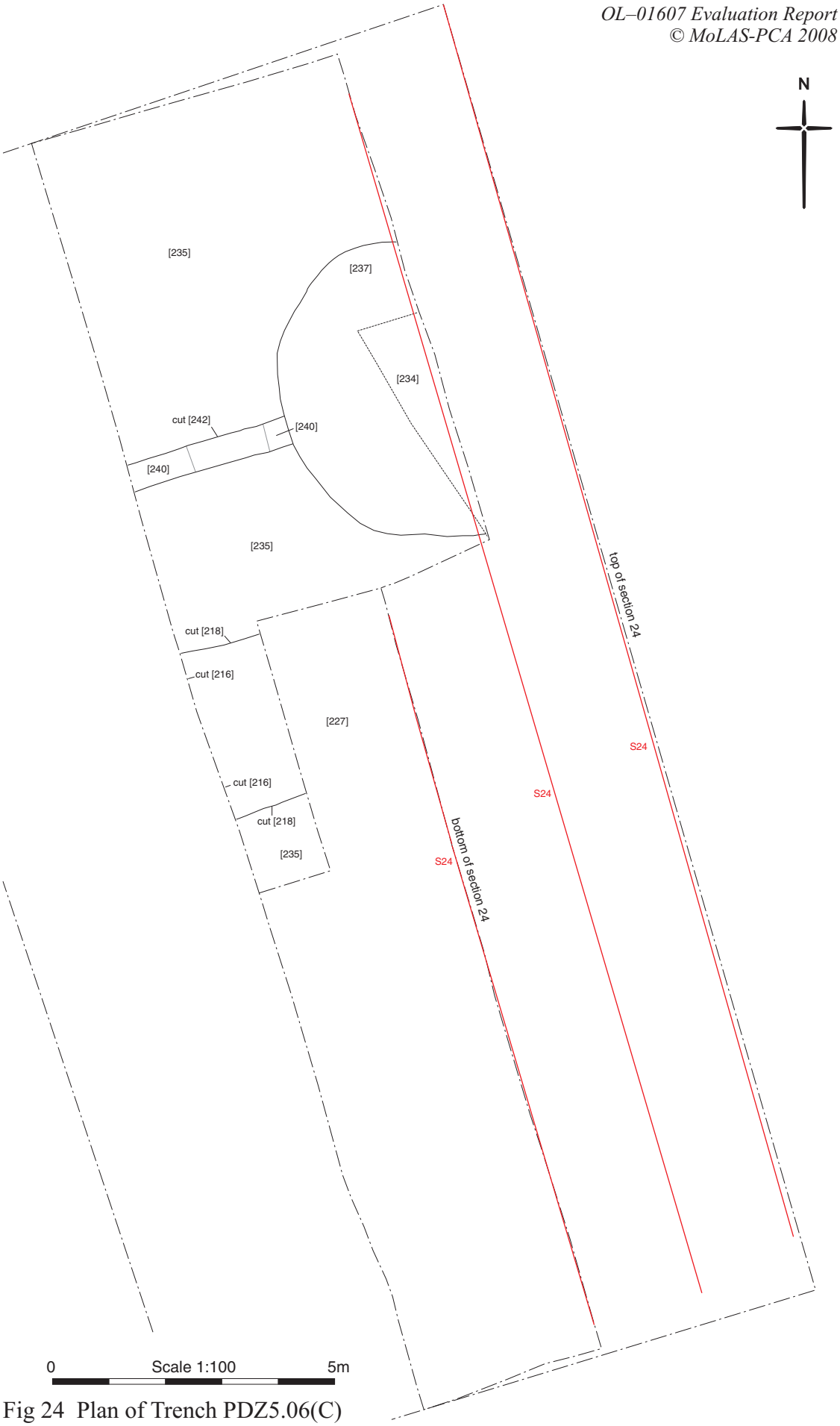


Fig 24 Plan of Trench PDZ5.06(C)

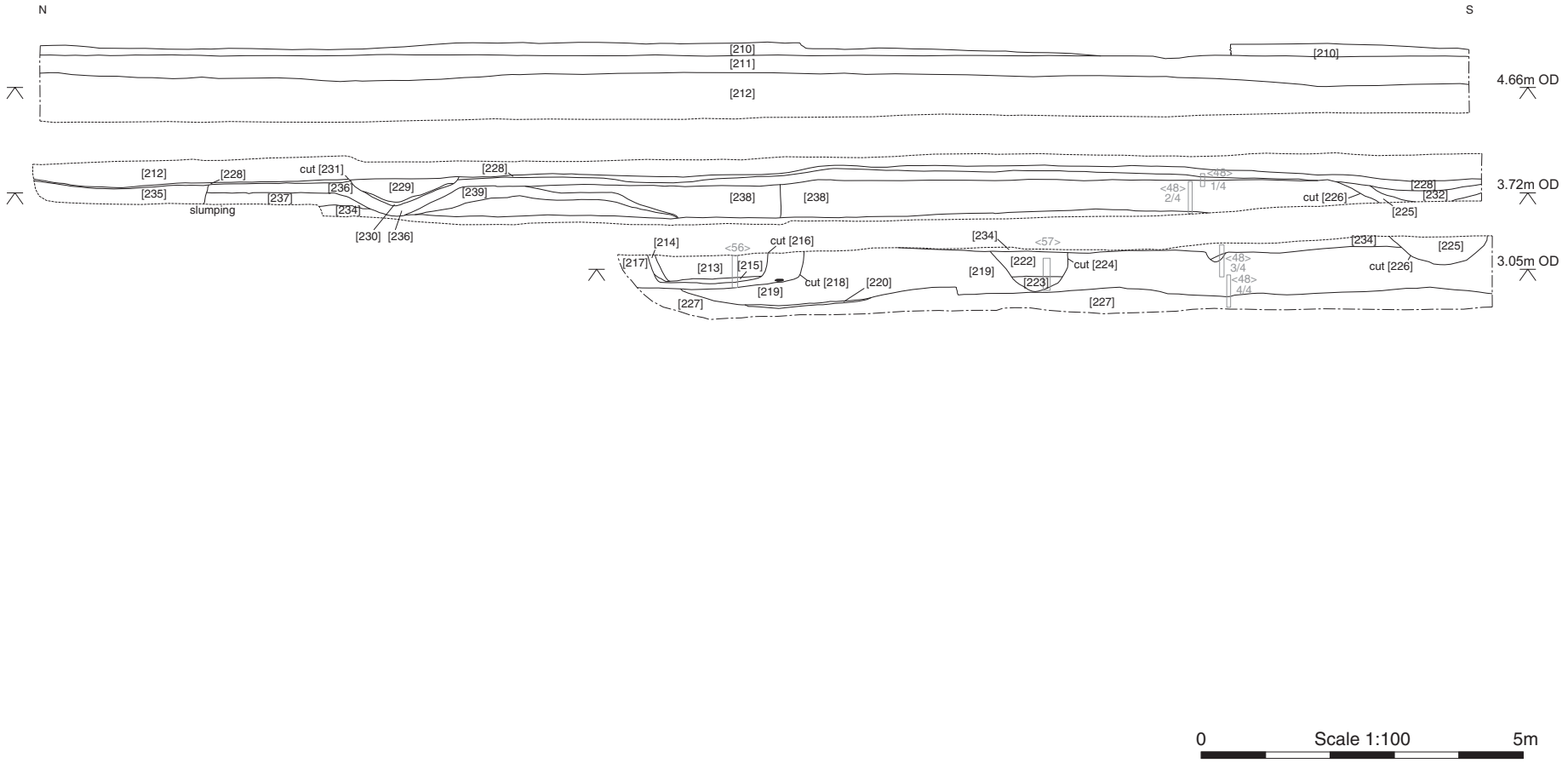


Fig 25 West facing section 24 of Trench PDZ5.06(C)

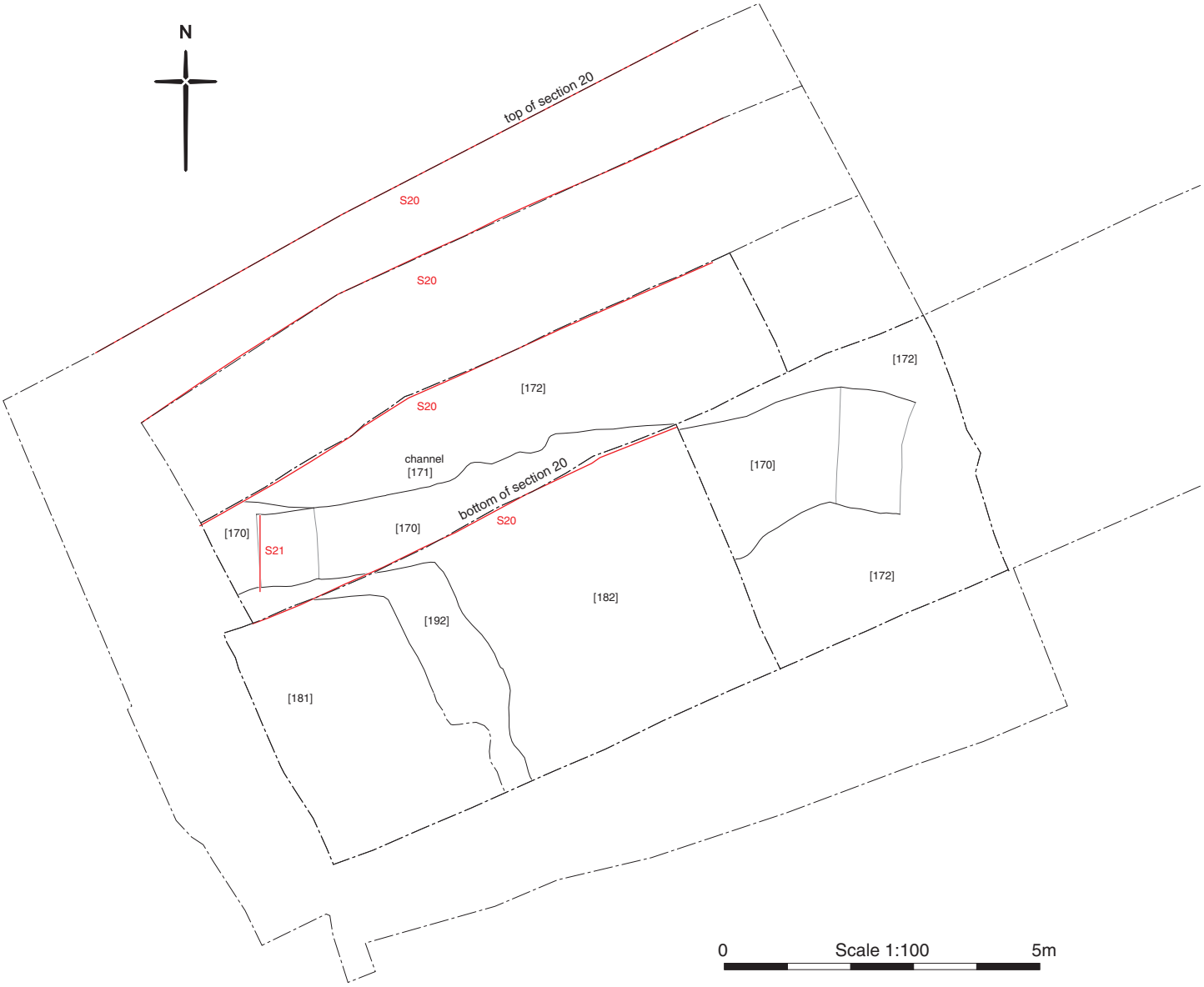


Fig 26 Plan of Trench PDZ6.04(C)

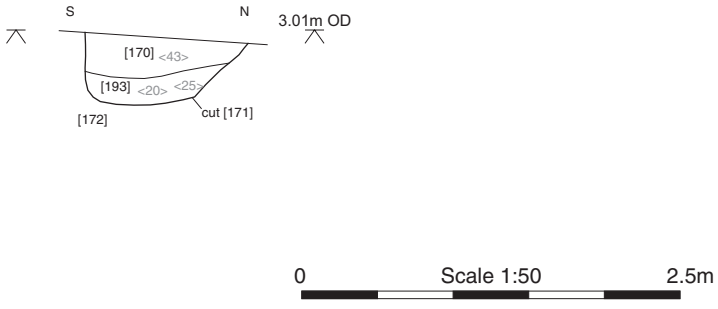


Fig 27 East facing section 21 of channel [171] in PDZ6.04(C)

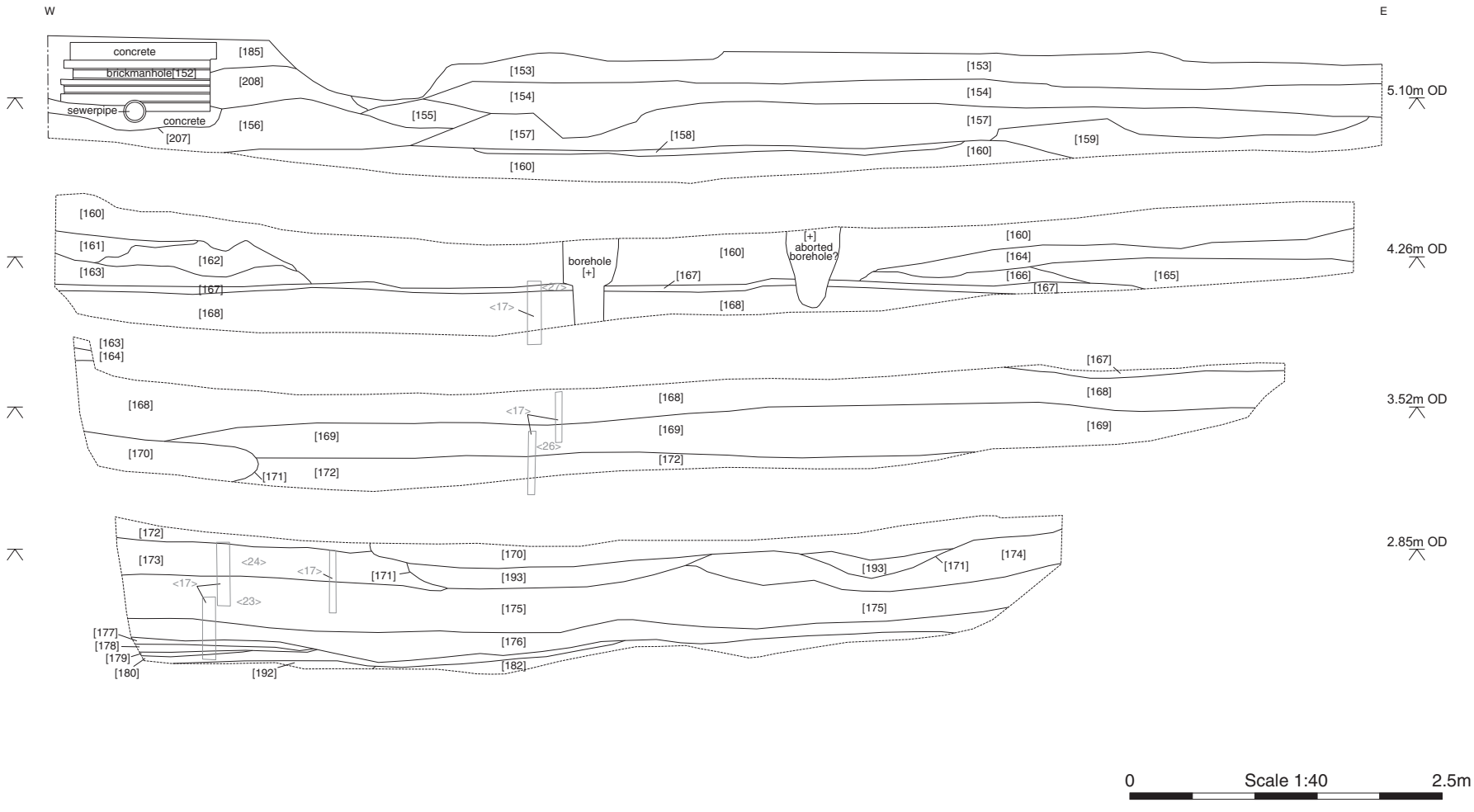


Fig 28 South facing section 20 of Trench PDZ6.04(C)

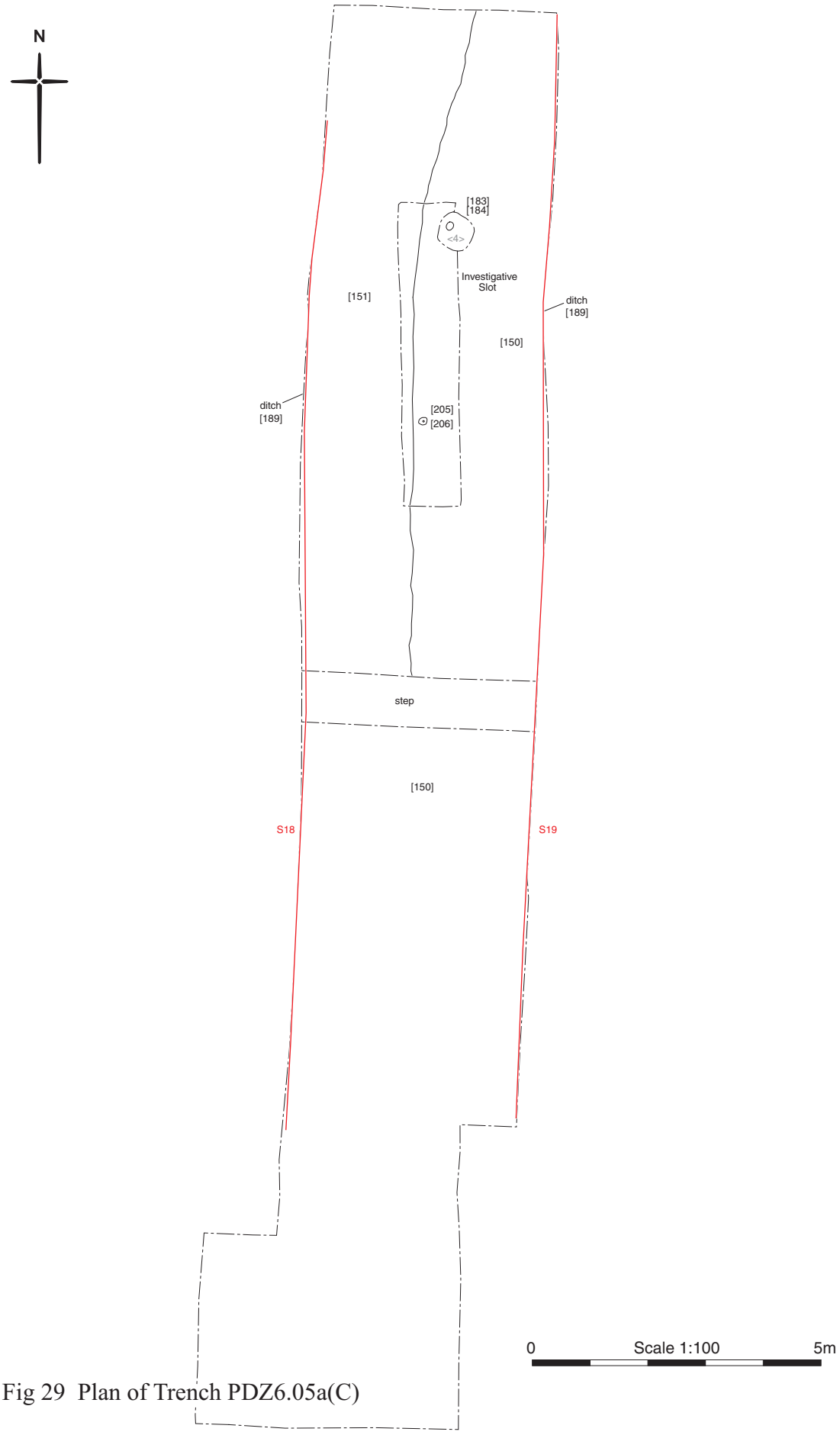


Fig 29 Plan of Trench PDZ6.05a(C)

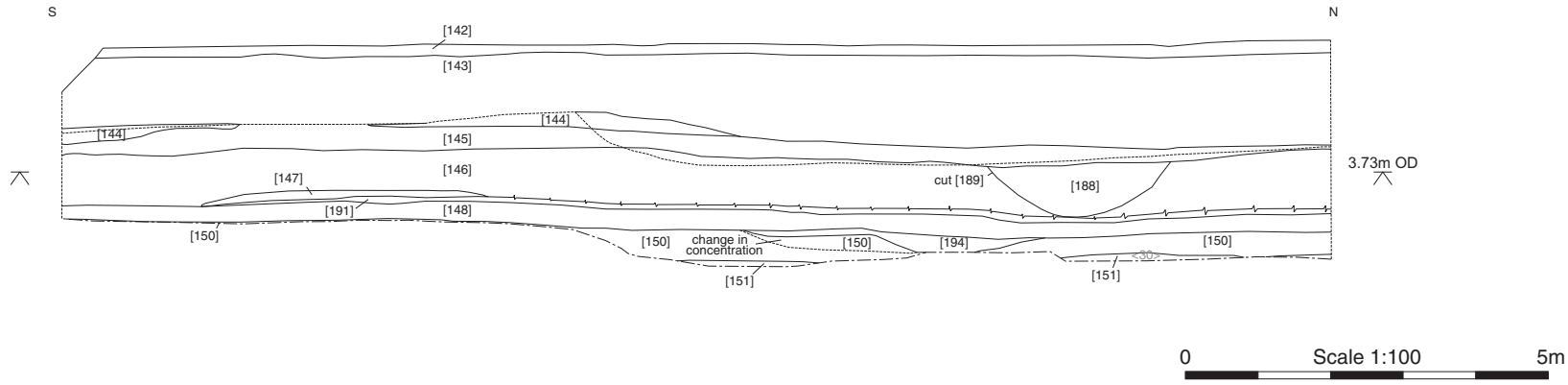


Fig 30 East facing section 18 of Trench PDZ6.05a(C)

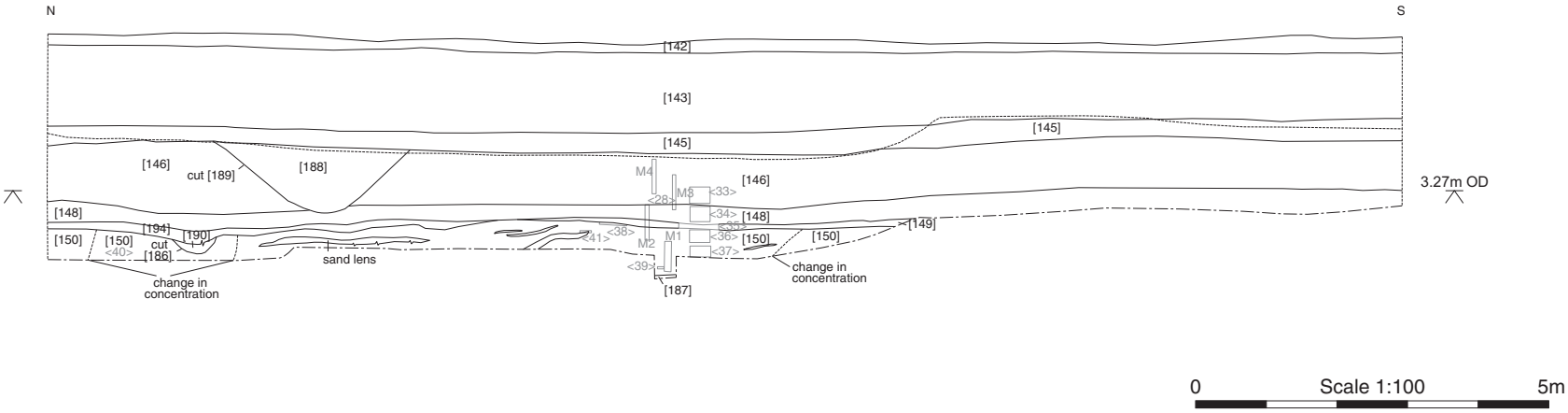


Fig 31 West facing section 19 of Trench PDZ6.05a(C)

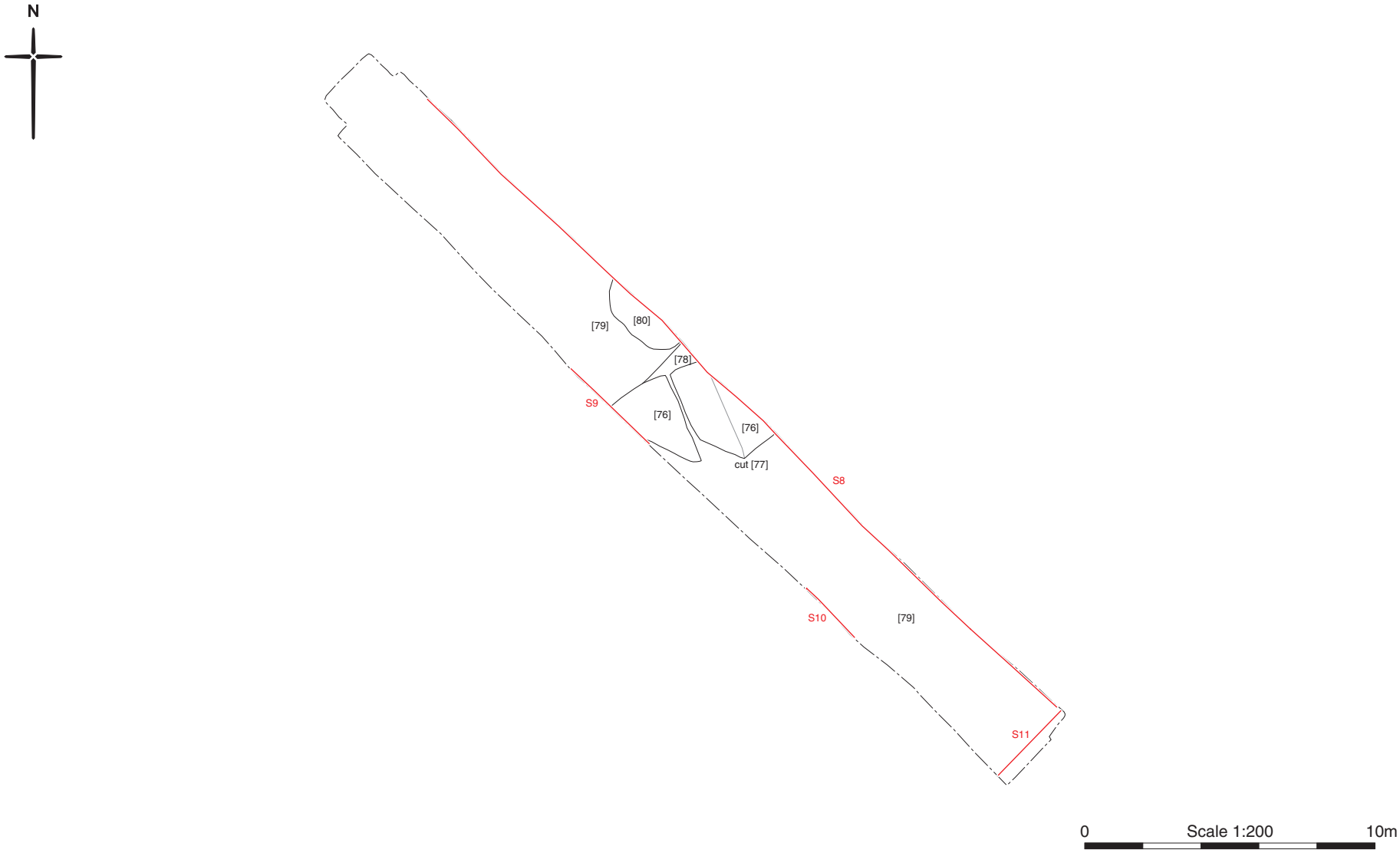


Fig 32 Plan of Trench PDZ6.05b(C)

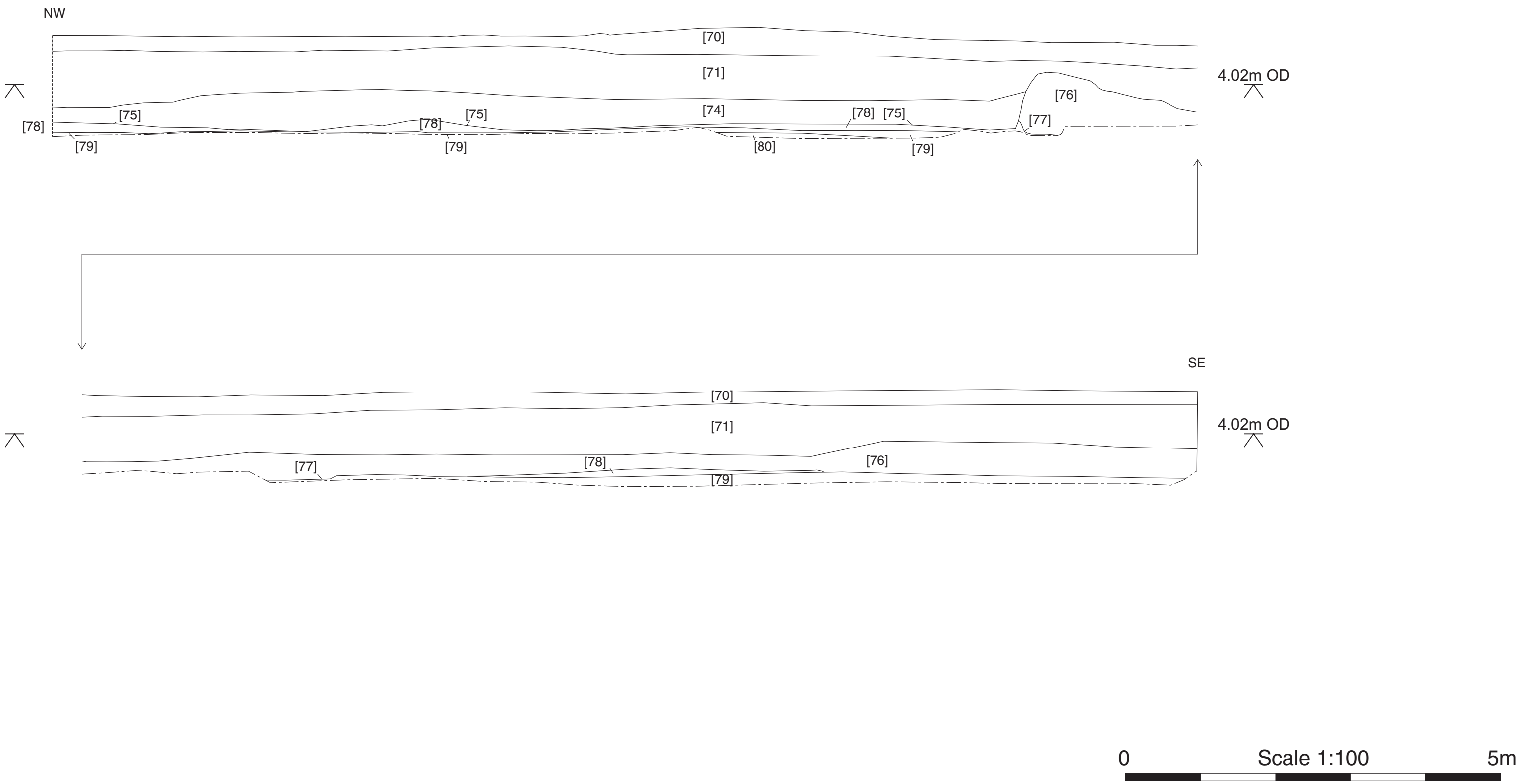


Fig 33 South-west facing section 8 of Trench PDZ6.05b(C)

MULTI1072_OL01607_EVR08#33

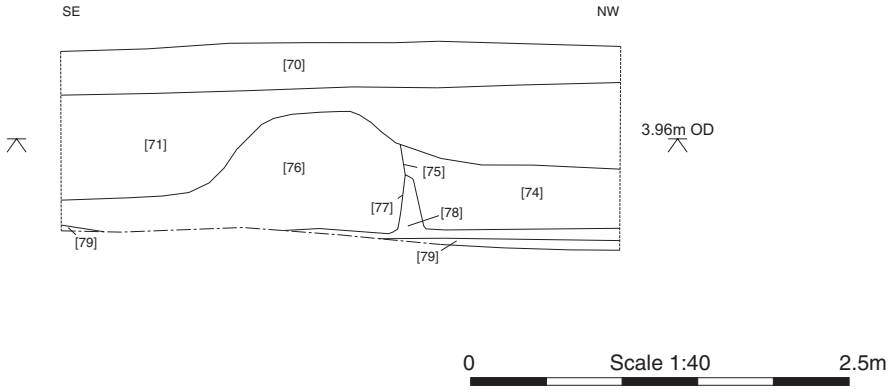


Fig 34 North-east facing section 9 of Trench PDZ6.05b(C)

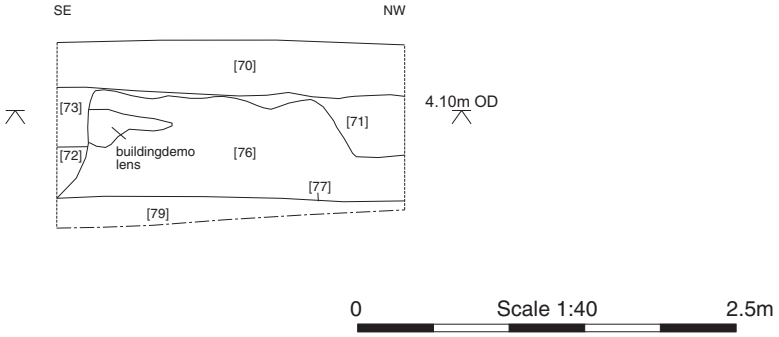


Fig 35 North-east section 10 of Trench PDZ6.05b(C)

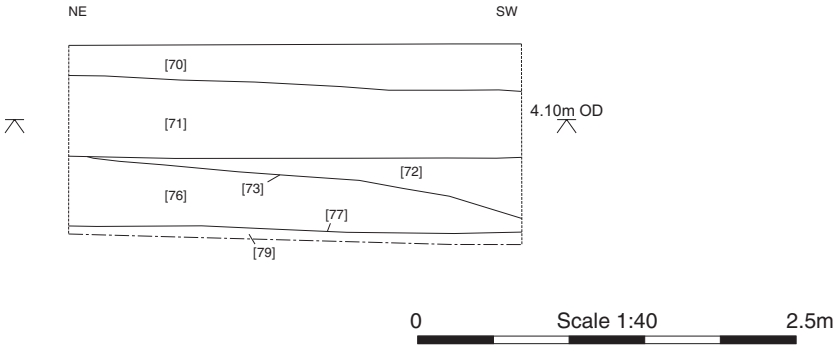


Fig 36 North-west facing section 11 of Trench PDZ6.05b(C)

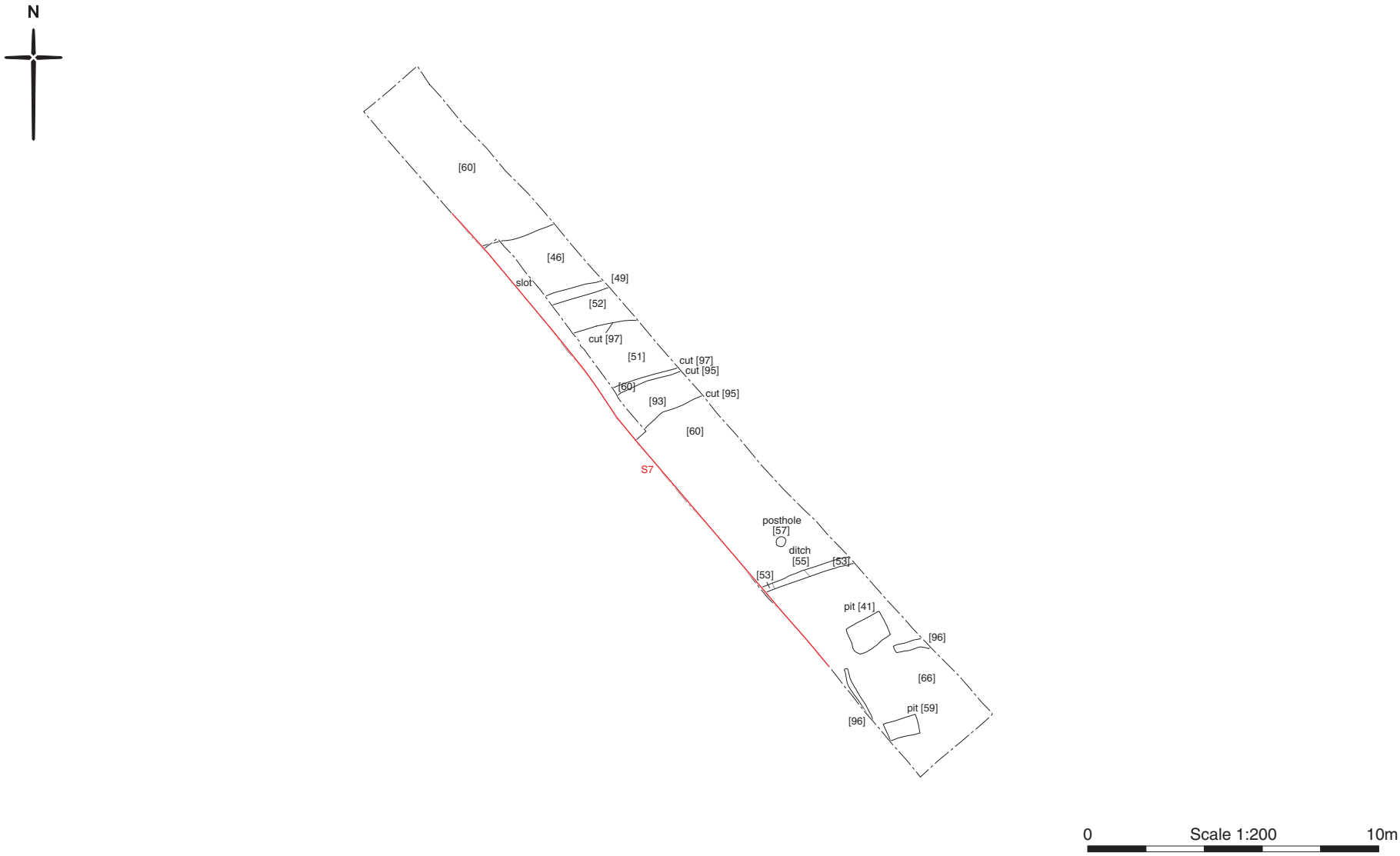
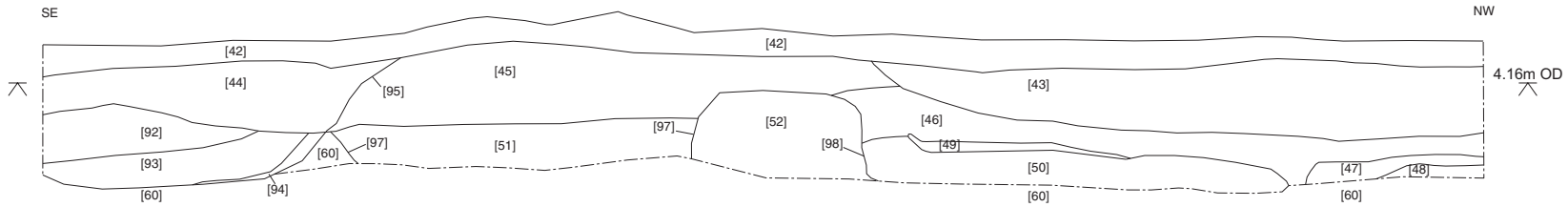


Fig 37 Plan of Trench PDZ6.06(C)



0 Scale 1:40 2.5m

Fig 38 North-east facing section 7 of Trench PDZ6.06(C)