PLANNING DELIVERY ZONE 3
Work Package 2
Trenches PDZ3.31
PDZ3.32
PDZ3.33
PDZ3.34
PDZ3.35
PDZ3.36
PDZ3.37
PDZ5.81(c)

E15

London Borough of Newham

Archaeological evaluation report

June 2008

REGISTERED IFA ORGANISATION

MUSEUM OF LONDON Archaeology Service

PRE-CONSTRUCT ARCHAEOLOGY

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Archaeological evaluation report

Site Code: OL-04307
National Grid Reference: 537530 183930

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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 Marshgate Lane site within the Olympic, Paralympic and Legacy Transformations Planning Applications: Planning Delivery Zone 3 (Work Package 2; Trenches PDZ3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37 and 5.81(c), London Borough of Newham, London 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, eight evaluation trenches were excavated across the north central area of PDZ3 (Work Package 2; Trenches PDZ3.31, 3.32, 3.33, 3.34, 3.35, 3.36, 3.37 and 5.81(c). Trenches 3.35 and 3.36 were contiguous and amalgamated. The evaluation results have helped to refine the initial assessment of the zone's archaeological potential. Four of the eight trenches recorded the level of the natural gravels, with the remaining three excavated partly into the alluvial deposits, which in parts of the site measured over 2m in thickness.

The inferred Pleistocene gravel topography indicates the presence of an island in the extreme south of the site, a lower-lying south and central area and an east–west gravel ridge or spur across the northern end of the site. The only indications of prehistoric and historic activity were located upon the higher gravel ridge, where prehistoric pottery was found within a buried land surface, a wattle structure perhaps associated with an activity such as retting was recorded, and a large (probably historic) NW–SE aligned ditch cut through the earlier waterlogged horizons. Further excavation is needed to fully realise the potential of these deposits.

The lower-lying area has potential for past environment reconstruction from samples taken during the evaluation. The samples were collected from a range of deposits associated with a prehistoric river, probably a channel of the Hackney Brook. Overlying active channel deposits, represented by sands, gravels and organic remains deposited by flowing water was evidence for an increasingly tranquil aquatic environment, possibly a result of impeded drainage as relative sea level rose, which led to the development of pools within the channel area. There is potential to examine the influence of the encroaching estuarine front from environmental remains preserved in samples taken from these deposits and the clays might also preserve high resolution sequences of microfossils, especially pollen, for on-site and wider landscape reconstruction. Subsequently water levels appear to have fallen and the former channel area dried out and was colonised by vegetation. There is good potential to reconstruct the characteristics of the developing marsh or fen from environmental remains preserved in the humic clays and silts associated with this phase, which might also preserve indirect evidence of local human activity. There should also be evidence within these deposits for a reversal to increasingly wet conditions and for the encroachment of estuarine and intertidal environments across the site itself. A range of deposits from mudflats to salt marsh and wet meadowland are represented by the overlying alluvial clay, which extends across the entire site. The pre-modern landsurface, buried by modern groundraising deposits, formed as a result of weathering of the uppermost alluvial clay.

The samples obtained from the site are of considerable environmental significance, as they are likely to provide evidence for changes in the prehistoric and later river

regime. Such evidence has potential to contribute to our understanding of the changing landscape of the lower Lea in which past human activity took place. Crucially, however, the alluvial sequence across the entire site, but especially in the lower-lying central and southern part, has good potential for radiocarbon dating of preserved organics. Dating is needed to correlate the stratigraphy across the site and to relate the results already obtained and those that might potentially be obtained to an archaeological chronology. Importantly, the activity recorded in Trench PDZ3.35/36 needs to be linked to the sequence of changing environments recorded in the lower-lying part of the site.

In the light of revised understanding of the archaeological potential of the site the report concludes that further fieldwork may be required in the northern part of the site (Trench PDZ3.35/36), where the prehistoric land surface, undated timber structure and early ditch were recorded.

In addition, further archaeo-environmental work on the samples already taken from the site would provide adequate mitigation of the geoarchaeological resource.

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.

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1 Introduction

1.1 Site background

The evaluation took place to the west of Marshgate Lane and north of the Northern Outfall Sewer in the northern, central area of Planning Delivery Zone 3 (PDZ3) of the Olympic, Paralympic and Legacy Transformations Planning Applications, in the London Borough of Newham, designated as work package 2 within PDZ3, hereafter called 'the site' (Fig 1).

The site occupies a roughly trapezoid area of land, bounded to the north by the River Lea, to the east by the Pudding Mill River and to the south by the Northern Outfall Sewer. The western boundary of the site is consistent with the eastern boundary of the property accessed from the Greenway. The OS National Grid Reference for the centre of the area is 537530 183930. Ground level across the site varies from approximately 7.71m to 8.44m OD. The site code (which covers all eight trenches) is OL-04307.

The footprint of Work Package 2 was defined by local property boundaries, and the limits of areas within which access was possible to excavate the evaluation trenches. Effectively, the footprint of Work Package 2 was delimited as a tool for defining the location and potential maximum extent of the group of trenches.

A desk-based assessment was undertaken for the whole of PDZ3 (MoLAS-PCA 2007a), and should be referred to for information on the natural geology, archaeological and historical background of the site, and the initial interpretation of its archaeological potential.

A Method Statement was prepared for PDZ3 (MoLAS-PCA 2007b) which forms the project design for the evaluation.

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 2007b respectively).

1.3 Planning background

In accordance with local and national policies, archaeological evaluation of Morris Fields 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 subject site, within PDZ3, was undertaken in support of a condition applied by the Olympic Delivery Agency Planning Decisions Team and

attached to Planning Application Number 07/90011/FUMODA. The condition (SP.0.38) 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 PDZ3 were established in the Method Statement for the evaluation (MoLAS-PCA 2007b) and are intended to address the research priorities established in the Museum of London's *A research framework for London Archaeology* (2002). See section 2.2 for further details on the Landscape Zones referred to below.

- Do Late Glacial deposits exist within the gravels on the site (especially within Landscape Zone 2)? What is the potential for past environment reconstruction and/or Late Upper Palaeolithic activity in these deposits?
- Did river channels cross the site in Pleistocene or Holocene and is there evidence for human activity associated with them? What information about the past river regime might be available from these channels?

- What environmental evidence suitable for past landscape reconstruction and indirect evidence of human activity exists within the wetland area of Landscape Zone 2?
- What archaeological evidence of past wetland exploitation survives within the wetland basin (Landscape Zone 2)?
- Does evidence of prehistoric and historic occupation survive on the higher, drier ground of Landscape Zone 1?
- Is there any evidence of a Roman road within the area of the site? Is there any evidence of Roman wetland or dry land occupation and other activity within the area of the site? If so, how does it relate to what is known of the settlement pattern further on either side of the Lea Valley during the Roman period?
- How extensive is modern truncation across the site? Do made ground deposits bury or truncate the post medieval / modern land surface and can more detail be obtained about the thickness of the made ground?
- What was the pre-modern / pre-Victorian topography of the site?

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 PDZ3 (MoLAS-PCA 2007a).

2.1 Modern topography and drainage

The site is located on the western side of the floodplain (valley bottom) of the Lea Valley, to the east of the River Lea and to the west of the City Mill river, which forms the eastern site boundary. Te extent to which these rivers are natural or have been manipulated or even entirely created by people in the past is not yet known. The pattern of rivers flowing across the site in the past will, however, have influenced its use and hence it's archaeological potential.

The landscape of the site in the past bears little relation to the visible landscape of today, with the deposition of made ground deposits completely obscuring the earlier topography. Modern ground level slopes slightly from 5.72m OD in the north to 5.35m OD in the south.

2.2 Natural topography and past landscape setting

The British Geological Survey (Sheet 256: North London) indicates that the site lies on alluvial sediments. These alluvial deposits would have supported a range of different environments from wetland through to dry land, which are likely to have existed within the Lea valley from the Mesolithic period onwards. These environments would have been constantly changing throughout the Holocene period. Gravels and associated deposits of Palaeolithic date underlie the alluvium. The higher ground of the gravel terrace, which forms the western side of the valley, lies a short distance west of the site, on the opposite side of the River Lea. Tertiary bedrock, which in this area is variably London Clay and Woolwich and Reading Beds, underlies the gravels. The surface of bedrock delineates the extent of archaeological deposits.

Boreholes undertaken for geotechnical Site Investigations within PDZ3 were monitored and interpreted by MoLAS-PCA geoarchaeologists, and reported in the Detailed Desk-Based Assessment (MoLAS-PCA 2007a). This indicates that:

- The majority of the PDZ3 lies within a low-lying area of the Lea floodplain that was probably a wetland basin crossed by river channels, located immediately to the west of the main Lea channel (Landscape Zone 2).
- Areas of higher ground existed within the wetland basin, notably a region along the northwest side of the PDZ3 (Landscape Zone 1), which may have been dry land in the prehistoric period and thus has potential for evidence of prehistoric occupation activity.
- A river channel may have separated Landscape Zone 1 from the high ground of the valley side to the west, although whether this was a channel of the Lea (as exists today), of the Hackney Brook or a local channel flowing off the river

terrace is uncertain. Timber piles of Roman date, possibly part of a bridge or wharf structure were found to the west of this channel, just west of PDZ3 at Dace Road, Old Ford. Similar structures may be located close to the east bank of the channel within the zone.

- Two other high areas existed in the eastern central portion of PDZ3. These would have formed dry islands within the floodplain well into historic times, and thus have potential for historic occupation activity. Together with Landscape Zone 1, these high areas probably represent outcrops of earlier terrace deposits that were not scoured away by Late Glacial meltwater.
- Relatively thick alluvial deposits of archaeological interest are likely to exist in the low lying area (Landscape Zone 2), which will include sediments accumulated within the river channels (gravels, sands, silts and tufa) and in marshy areas associated with them (peat, organic sediment and clays).
- As this part of the floodplain lies close to the intensive prehistoric, Roman and medieval occupation known to have existed in the Old Ford area, there is a strong possibility that evidence of wetland exploitation, such as the bridge or jetty mentioned above, will be found in Landscape Zone 2.
- Evidence of Late Upper Palaeolithic and Early Mesolithic activity may be found at the base of the alluvial sequence, especially on the gravel bars and sandy islands that are likely to be associated with palaeochannels in this zone.
- Evidence relating to the Late Glacial period may be preserved within the gravels, which will be of significance in reconstructing the environment in this part of the Lower Lea in the Late Upper Palaeolithic period. Deposits of Late Glacial date have already been identified in previous boreholes drilled just beyond the north-east boundary of the site.

2.3 Prehistoric

Although no prehistoric find or deposits have been recorded within PDZ3 itself, antiquarian findspots show a low level of activity in the form of disassociated finds. However, recent archaeological fieldwork in the immediate vicinity increasingly indicates that the area was occupied and exploited. Neolithic land surfaces and Bronze Age worked wood have been identified in the north of PDZ1, to the east of the site (site OL-00105). Site OL-00305 in the south of PDZ1 revealed evidence for an area of slightly higher and therefore drier land which had Bronze Age – Iron Age features, such as post-holes, pits, a ditch and a possible ring gully, cutting through it. A small amount of struck and reworked flint and a large amount of burnt flint was also recovered from the site.

Wooden structures such as trackways and jetties may be present within PDZ3. A fragment of possible Iron Age trackway, the precursor to the later Roman road, was recorded in the centre of the zone (GLSMR 080875). It should also be noted that watery areas were often a focus for ritual activity, such as the deposition of votive objects, and it is possible that the Neolithic and Bronze Age axes recovered from the neighbouring PDZ 2 are examples (GLSMR 061746, 060258).

2.4 Roman

The Roman road that connected the main port at *Londinium* (London) with the early military base and colony at *Camulodunum* (Colchester) is projected across PDZ3. There is also a moderate potential for evidence of the Roman crossing point across the Lea. This may have taken the form of a ford or via timber bridges or raised platforms, crossing the braided channels from island to island.

Associated with this road is fragmentary evidence for settlement activity in the near vicinity; either a nucleated settlement or several small farms or farmsteads dotting the landscape with associated field systems. A cemetery or cemeteries are also possible this area. Roman occupation within PDZ3, if present, is likely to be sited on the islands of higher ground.

2.5 Saxon

Evidence of Saxon activity in the area is limited to the River Lea and its channels (the Stratford Back Rivers). The river will have remained a useful resource and by the late Saxon period mills may have been located along the river. There is a moderate possibility that in situ remains associated with management of the streams and banks of this period survive within alluvial deposits.

2.6 Medieval

Although no archaeological evidence for medieval activity comes from within PDZ3, areas to the immediate west were occupied and exploited from at least the 13th century. The rivers within PDZ3 have a moderate potential for medieval deposits and features relating to the mill complexes known to have existed in the area. These features may include timber wharfing and leats set back from the waterfront themselves.

2.7 Post-medieval

During the 16th and 17th century the land in PDZ3 was, as earlier, characterised by marshes and remained undeveloped. Evidence of past land management and exploitation may survive in former stream channels. There is a possibility of evidence of post-medieval activity, particularly due to the proximity of the River Lea and the Pudding Mill River. There is potential for isolated structures relating to stream channels. Later, the area still remained largely open ground, with little development. The marsh no doubt hindered development but also attracted noxious industries, such as the 19th-century tar and turpentine distillery between the Pudding Mill and City Mill rivers. Other evidence is expected to relate to quarrying and subsequent ground consolidation. The archaeological deposits are likely to be sealed by a considerable thickness of Victorian and modern made ground. In some places the made ground may infill areas of historic excavation, such as gravel quarries, brick pits and diverted river channels.

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).

Eight evaluation trenches, all oriented north-west to south-east, were excavated across the conjectured line of the Roman road that connects the city of Londinium (London) with the early military base and colony at Camulodunum (Colchester) (Fig 2).

Due to space limitations trenches PDZ3.35 and 3.36 were amalgamated into a single trench, renumbered PDZ3.35/36. Compensatory evaluation trench PDZ5.81(c) was relocated to PDZ3 from its original location within the Olympic development and is included within this report (Fig 2).

A mechanical excavator initially using a breaker and toothed bucket removed the concrete slab from the trench areas. Grading off of the underlying deposits was undertaken by the mechanical excavator using a flat ditching bucket undertook the bulk excavation, monitored by an archaeologist and a banksman at all times. In cases where archaeological features were encountered within the sequence, machining of trenches was done in stages. MoLAS-PCA geoarchaeologists visited the trench during excavation to examine and interpret the deposits in plan and section and to take samples as appropriate.

The presence of large volumes of both perched and ground water within the soil made the excavation of the trenches difficult. Each trench was excavated to the top of the alluvium, before machining a test slot to the natural gravels in order to ascertain the extent of any hydraulic pressure in the groundwater.

On site discussions were held between MoLAS-PCA, Capita Symonds, English Heritage and site engineers (E Nuttal) to determine the depth and extent of the excavations that could be undertaken. Consequently, of the eight trenches excavated, four were of sufficient depth to expose the floodplain gravels, whilst the remaining trenches were only excavated into part of the alluvial sequence, the hydraulic pressure of the ground water making deeper excavation impractical. Details of the excavation methodology specific to each trench are outlined in the relevant trench sections below.

Work on Trench PDZ3.31 began in the week ending 3 September 07 and was completed 7 September 07. Trench PDZ3.32 began 7 September 2007 and was completed 19 September 2007. Trench PDZ3.33 began 7 September 2007 and was completed 21 September 2007. Trench PDZ3.34 began 5 October 2007 and was completed 12 October 2007. Trench PDZ3.35/36 began 10 September 2007 and was completed 28 September 2007. Trench PDZ3.37 began 19 October 2007 and was completed 26 October 2007. Trench PDZ5.81 (c) began 17 August 07 and was completed after interruptions on 31 August 07

The locations of the evaluation trenches were recorded 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 Atkins' engineers, on the river wall of the City Mill River, and imported onto the site.

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: 1 electronically surveyed overall trench plan; 7 drawn detail trench plans at a scale of 1:20, 6 single context plans also at 1:20; 275 context records and 25 sections: 20 at a scale of 1:10 and 5 at a scale of 1:20. In addition, 54 bulk samples, 10 monolith sampled sequences (23 monolith tins) and 2 organic grab samples for radiocarbon dating were collected. Thirteen of the bulk samples have been partly processed, in order to evaluate their potential. The 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 finds and records can be found under the site code OL-04307 in the MoL archive.

3.2 Results of the evaluation

3.2.1 Evaluation Trench PDZ3.31

Location	approximately 35m north of the Northern Outfall Sewer and 45m south-west of Pudding Mill River
Dimensions	22.2m NW–SE x 2.80m NE–SW (including baulks) at base; 7m deep
Modern ground level	*c.* 7.7–8.4m OD
Base of modern fill	2.84m OD
Depth of archaeological deposits seen (alluvium)	1.84m
Level of base of deposits observed and/or base of trench	0.74m OD
Floodplain gravels observed	Not seen
Environmental samples	Bulks {10-15} each of 20litres Monolith {9} of 4 tins

Table 1 Trench PDZ3.31 deposit summary

See Fig 3 and Fig 4.

The base of the trench was interrupted by two east-west cross baulks, which where retained to manage the perched water present within the trench and effectively divided the alluvial sequence into three separate interventions, which are discussed as the southern, central and northern slots.

The separation of the lower deposits by these baulks required the allocation of separate context numbers within each intervention. These contexts are discussed where possible as single entities in the text below; if relationships are ambiguous each deposit is discussed separately but cross-referenced.

A further intervention measuring 0.30m x 0.30m x 0.65m depth was hand excavated into the base of the northern slot (where the alluvial sequence was deepest) for environmental sampling purposes.

No samples from this trench have been examined as part of the evaluation.

3.2.1.1 Gravel topography and its implications

Although floodplain gravels were not reached in PDZ3.31, probing in the northern slot and the characteristics of the lowest alluvium in the central and southern slots suggest that the gravel surface dips down from the south (where it may rise to over 1m OD) to the north (where it lies at roughly 0.5m OD).

Clays were recorded at the base of each slot. The characteristics of the clay in the southern and central slots ([50]/[55]; [49]/[54]; and [48]) suggest a different environment of deposition to the clays further north ([61]) (Fig 3, Fig 4). It is preliminarily suggested that a dry landsurface, which developed in Late Glacial or Early Holocene alluvial clay, existed in the central and southern part of the trench, whereas a wetter environment, probably a pool of standing water that became a boggy marsh developed further north. However, dating is needed to correlate and understand the stratigraphic relationship of these contexts.

3.2.1.2 Dry landsurface, becoming waterlogged through time in south of trench

The deposits that probably represent a buried prehistoric landsurface in the southern and central slots comprise a sequence of clayey layers. The earliest, [50] and its equivalent [55], consisted of soft, mid bluish-grey to mid grey silty-clay that contained around 20% pebbles. The deposit measured 0.12m thick from an undulating surface at 1.40m–1.64m OD, the lowest level being the most northerly. The pebble inclusions possibly indicate that floodplain gravels lie close beneath. An increasingly wet environment is suggested by the overlying contexts [49] and its equivalent [54] (Fig 3, Fig 4). These consisted of a soft mid bluish grey to mid bluish green clay that contained small rootlets and occasional small molluscs. The surface of this deposit was between 1.6m–1.8m OD. Deposit [48] overlay alluvium [49] (Fig 4). It consisted of a soft, mid greenish-grey clay and contained small rootlets. The surface of this deposit lay at 1.77m–1.95m OD and it also likely to represent a gleyed landsurface subject to prolonged waterlogging.

3.2.1.3 Pool, silting up through time in north of trench

The stratigraphic relationship of the clayey deposit sequences in the south and central slots with deposit [61], revealed only within the northern hand-excavated intervention, which consisted of a mid bluish-grey silty-clay, is unclear (Fig 4). The surface level of this deposit was at 0.94m OD, and it measured 0.30m thick with a further 0.20m probed to floodplain gravel. It is likely that examination of the bulk and monolith samples taken from this deposit ({10} and {9} respectively) will help interpret its date and environment of deposition. It is currently interpreted as a pool of standing water existing on the floodplain and this pool probably existed at the margins of the active channel recorded in Trenches PDZ3.33 and PDZ5.81(c).

Deposit [60] overlay [61] in the northern slot at 1.29m OD and consisted of a soft, mid brown silty-clay with fragmented shell and root fibre inclusions (Fig 4). This

deposit suggests the silting-up of the former pool and its colonisation by vegetation, trapping shells and other pond or stream-edge debris. The base of this deposit, as sampled in monolith {9}(M4), should be radiocarbon dated to establish the chronology of this change in environment and its relationship to the fluvial deposits further north in Trenches PDZ3.33 and PDZ5.81(c) and the transition of dryland to a more wetland environment further south, as seen in the deposition of [48] (and possibly [47/53]) in the southern and central PDZ3.31 slots.

3.2.1.4 Marshy environment

Contexts [47], [53] and [59] consisted of a soft, mid brown to mid reddish brown humic silty-clay (to the south) and humic silt (to the north) that contained small rootlets and occasional small molluscs (Fig 4). The surface of this deposit lay at 1.47m OD (in the north) to 2.04m OD (in the south). Deposits [46], [52] and [58] were transitional between the humic clays and silts of [47], [53] and [59] and the alluvial clay of [45], [51] and [57], indicating that in all three slots a very gradual and conformable transition occurred from marsh to mudflats.

3.2.1.5 Mudflats (ie increased river influence / proximity)

Contexts [45], [51] and [57] consisted of soft, mid yellowish green to mid greenish grey silty clay with orange mottling. The surface of this layer was recorded at 1.99m – 2.58m OD (Fig 4). Occasional lenses of sand, gravel and silt were recorded in [57], within the northern slot, suggest that the deposit still retains some of its depositional waterlain characteristics and has not been significantly modified by subsequent soil formation. It is likely that this deposit accumulated in a mudflat-like environment. The same is true of [44] and [56], which overlay [45] and [57] from a height of 2.16m–2.56m OD, in the central and northern interventions respectively. These deposits comprised soft, mid brownish grey to mid greyish green silty clay containing rootlets and abundant manganese staining. These characteristics suggest that the mudflats had become vegetated and were thus less influenced by the river.

3.2.1.6 Pre-modern burial soil / landsurface

A possible levelling or topsoil deposit [43] overlay the alluvium across the trench to a maximum depth of 0.36m (Fig 4). This consisted of dark grey silty clay containing ceramics and metal fragments that were clearly of post medieval date (see Appendix 3: finds assessment).

3.2.1.7 Post medieval to modern made ground

A series of post medieval made ground deposits [63] to [68] overlay [43] to a combined thickness of around 5.00m. These consisted of various layers of sandy silts, clays, crushed mortar and CBM that contained ceramics, metal and other material of late post medieval date (late 18th to early 20th century, see Appendix 3: finds assessment) (Fig 4). These deposits represent successive episodes of ground raising probably undertaken in conjunction with the canalization of the adjacent waterways, creating flood-free areas suitable for industrial development.

Deposit [62], which consisted of dark greyish brown sandy silt, capped the sequence at 7.71m–8.44m OD. This partly vegetated context contained pebbles, CBM and other

building debris indicating industrial abandonment of the area (see: Appendix 3: finds assessment).

3.2.2 Evaluation Trench PDZ3.32

Location	20m north of the Northern Outfall Sewer 80m south-west of Pudding Mill River
Dimensions	17.40m N–S x 2.20m E–W at base (including baulks); 7.35m deep
Modern ground level	8.35m OD
Base of modern fill	2.34m OD
Depth of archaeological deposits seen (including alluvium)	1.65m
Level of base of deposits observed and/or base of trench	0.80m OD
Floodplain gravel observed	Not seen
Environmental samples	Bulks {52-55} each of 20litres Monolith {51} of 3 tins

Table 2 Trench PDZ3.32 deposit summary

See Fig 5 and Fig 6.

As with Trench PDZ3.31, the trench base here was interrupted by two east-west cross baulks, which where retained to manage the perched water that was prevalent within the made ground deposits above, and effectively divided the alluvial sequence into three separate interventions, which are discussed as the southern, central and northern slots.

The separation of the lower deposits by these baulks required the allocation of separate context numbers within each intervention. These contexts are discussed where possible as single entities in the text below; if relationships are ambiguous each deposit is discussed separately but cross-referenced.

A further sondage measuring 0.20m x 0.30m x 0.25m depth was hand excavated into the base of the southern slot, for environmental sampling purposes.

No samples from this trench have been examined as part of the evaluation. Floodplain gravels were not reached or probed in any slot.

3.2.2.1 Standing water, with evidence of drop in water level and drying out

Soft, light bluish-grey clay [127], [134] and [138] lay at the base of the sequence, with a surface at 1.40m to 1.61m OD (Fig 5, Fig 6). The layer is likely to represent standing water and the frequent carbonate nodules / concretions recorded in the geoarchaeological log in the southern slot suggest falling water levels and a drying out of the muddy surface. These clays are likely to correspond with similar deposits recorded in trenches PDZ3.33 and PDZ5.81(c), where it was possible (in both cases) to record the underlying deposit sequence down to floodplain gravel.

3.2.2.2 Marshy environment

The clays with carbonate nodules were overlain in every slot by a layer of soft dark brown humic clay to peaty silt [126], [133] and [137] measuring up to 0.37m thick that contained occasional small molluscs (Fig 6). This suggests the dried out muddy surface had been colonised by vegetation and become a wet marshy environment.

3.2.2.3 Mudflats

Soft, light orangey brown clay with very occasional granular sand inclusions [125], and [132] overlay the marsh deposits across the northern and central parts of the trench from a height of 1.84m–2.14m OD. This was overlain in turn by a layer of soft, light greyish brown clay [131] and [136] across the southern and central part of the trench, from 2.06m–2.20m OD (Fig 6). These are considered to be mudflat deposits, although they might have accumulated more gradually and tranquilly on meadowland adjacent to the river and represent an accretionary floodplain soil. Further examination of microfossils from the monolith tins ({51}) and inclusions from bulk sample {54}, in particular snails, insects and ostracods (if they are preserved) should help us clarify the environment of deposition of this layer.

3.2.2.4 Pre-modern burial soil / landsurface

A buried topsoil layer of soft, mid brown to mid greyish brown alluvial clay [124], [130] and [135] developed in the estuarine / alluvial clay, probably as a result of reduced river influence with a surface at 2.45m OD and a maximum thickness of 0.38m. Dark greyish brown, organic silty clay [123] and [129] (a possible turf line) overlay these deposits in the northern and central sondages from 2.48m OD (Fig 6). The layer contained post medieval pottery, ceramic building material (CBM) and metal fragments (see: Appendix 3: finds assessment).

3.2.2.5 Modern made ground

Topsoil [124], [130] and [135] was buried beneath a series of post medieval made ground deposits [117–122] which had a combined depth of 5.61m (Fig 6). These comprised various layers of sandy silts; silty sands; clays; crushed mortar and CBM that contained ceramics, metal, wood and other material of late post medieval date (late18th–20th century) similar to those recorded in Trench PDZ3.31 (see Appendix 3: finds assessment).

Mid- greyish brown, sandy silt [116] sealed the sequence at 8.35 OD. This context represents the industrial abandonment phase for the site.

3.2.3 Evaluation Trench PDZ3.33

Location	Site centre: 40m to the north of the Northern Outfall Sewer and 115m to the southwest of Pudding Mill River.
Dimensions	16.20m NW–SE x 3.20m NE–SW at base (including baulks); 7.1m deep
Modern ground level	8.11m OD
Base of modern fill	2.47m OD

Depth of archaeological deposits seen (including alluvium)	2.03
Level of base of deposits observed and/or base of trench	0.30m OD
Floodplain gravel observed	0.31m OD
Environmental samples	Bulks {17}, {19}, {23-27} & {30-39} each of 20litres Monolith {20} of 5 tins; {22}, {28+29} each of 1 tin Radiocarbon {21} of 2 grabs

Table 3 Trench PDZ3.33 deposit summary

See Fig 7 and Fig 8.

Again, the trench base was interrupted by two cross baulks, which effectively divided the alluvial sequence into three separate interventions, which are discussed as the southern, central and northern slots.

The separation of the lower deposits by these baulks required the allocation of separate context numbers within each intervention. These are discussed where possible as single entities in the text below; if relationships are ambiguous each deposit is discussed separately but cross-referenced.

One small hand excavated sondage measuring 0.85 x 0.80 x 1.07m deep into the trench base in the northern slot allowed further examination and more complete sampling of the alluvial sequence.

The samples taken from PDZ3.33 have not been examined as part of the evaluation.

3.2.3.1 Active (probably prehistoric) river channel deposits

A series of gravels, sands and organic strandline deposits recorded in the hand-excavated sondage in the north slot of the trench are likely to represent channel bars accumulated within and at the margins of a Holocene (most likely prehistoric) river channel. The lowest of these deposits consisted of loose, dark grey, poorly sorted humic sandy gravel with frequent organic inclusions [113] with a surface at 0.31m OD (Fig 7, Fig 8). The organic inclusions within the gravels suggest they are of Holocene date and organics from bulk sample {39}, taken from this context, would be suitable for radiocarbon dating.

The gravel was sealed by a 0.07m thick layer of soft, mid brown humic clay [112], with a surface level of 0.38m OD (Fig 8). Such deposits would accumulate in hollows (swales) between the gravely ridges of channel and point bars on a river bed and along its banks. The overlying 0.06m thick deposit of soft, dark grey silty sand [111] containing abundant wood and bone fragments is a strandline deposit, washed-up along the edges of the river, probably in a time of flood. The wood and bone fragments within sample {33} need to be examined for cut and tool marks and are also suitable for radiocarbon dating. The overlying mid green silty sand [110], measuring 0.13m thick and containing occasional wood fragments is also a fluvial deposit, banked up along the river bank and / or as channel bars within the river. The surface of these active channel deposits within the sondage was at *c* 0.5m OD, however it is likely that similar deposits would undulate across the surrounding area, as is the nature of channel deposits.

3.2.3.2 Backwater

The overlying soft mid greenish blue silt [109], 0.27m thick and containing molluscs and wood fragments, with a surface at *c* 0.85m OD is likely to be a backwater deposit indicating a slackening of stream flow at this location and the development of channel marginal pools and sluggish flowing water. A continuation of this backwater environment, with still more tranquil conditions was represented by the overlying 0.21m thick layer of mid-brownish grey silty clay [108], interrupted by fine root channels and containing frequent shell and charcoal fragment and fibrous organic matter (Fig 8).

The overlying layer of soft, light bluish grey, silty clay [97], [102] and [107], with occasional mollusc fragments and abundant calcium carbonate nodules was revealed across the base of the entire trench and is likely to represent an episode of deeper standing water (Fig 8). Whether this reflects a general rise in river levels or impeded drainage is uncertain. It is also possible that this more minerogenic clayey deposit reflects an increase in the sediment load carried by the river water or/and the rapid deposition of suspended sediment (for example as a result of tidal encroachment). Further examination of the monolith {20} and bulk {23} samples is needed to shed more light on the significance of this context. It is possible, for example that it is linked with the initial surge of estuarine water into this part of the Lower Lea and if so a date for its deposition would be of real interest. The surface of [97], [102] and [107] lay at 1.20m–1.49m OD and along its entire length it had a profoundly undulating interface with the overlying deposit, possibly reflecting vegetation growth across the mud, but trampling by animals or/and people is another possibility. The abundant carbonate nodules within this deposit also suggest a subsequent period of drying out.

3.2.3.3 Linear features

Context [102] in the trench centre was partly truncated by two NW–SE aligned linear cuts (Fig 7). Cut [103] was aligned NW–SE and was located approximately 3.00m from the south end of the trench (Fig 7). Only the southern edge of the cut was revealed, as the north-eastern edge was hidden by the cross baulk. The cut measured 0.54m in length by 0.24m width, and was 0.30m deep. Its sides, although only seen in section, appeared straight with a gradual slope whilst the base at 1.16m OD was flat. The cut was filled by waterlain soft, dark brown silty clay [104], of similar characteristics to the overlying deposit [101], containing frequent shell fragments.

Cut [105] was also aligned NW–SE and was revealed in plan extending across the southern part of the trench (Fig 7). The cut, as seen, measured 3.80m in length by 0.68m wide and 0.28m deep. The cut sides were very irregular both in plan and in section, with the slope varying from shallow to moderate, whilst the base at 1.17m OD was flat. The cut was filled by soft dark brown humic silty clay [106], similar to [104] and to the overlying deposit [101] and also containing frequent shell and occasional bone fragments.

Both features were strikingly similar in both alignment and fill type, and are thought to be either natural rills or rivulets draining the muddy surface, perhaps following the flooding event or to be man-made drainage gullies. The fills of both features were sampled with monoliths ({28} and {29}) and with bulk samples ({27} and {17} respectively).

3.2.3.4 Development of marsh or fen

The irregular muddy surface [97], [102] and [107] and the features cut into it were overlain by organic peaty clay deposits [73], [96] and [101] that represent vegetation colonisation and the development of a marsh or fen (Fig 8). These marsh deposits consisted of soft dark brown to dark greyish brown humic clay that contained occasional small molluscs, wood fragments, twigs and sand lenses towards its base. The surface of this layer lay at 1.19m–1.70m OD, and had a maximum thickness of 0.45m.

3.2.3.5 Alluvial clay: mudflats or accretionary soil

The overlying alluvial clay deposits formed distinct layers visible across the trench as a whole. The lowest, [72], [95] and [100], with a surface at 1.70m–1.78m OD, was essentially a pale grey and contained occasional fine rootlets. The overlying soft, light bluish grey clay with heavy orangey brown mottling [71], [94] and [99] had a surface at 1.64m–2.08m OD (Fig 8). These alluvial clays were less humic / organic than the underlying marsh or fen deposits and as such are likely to represent one of several things including: more rapid sediment accumulation; a decrease in on-site vegetation growth; conditions less suitable for the preservation of organics. These factors could occur if the environment became wetter and more greatly influenced by the river, perhaps as a result of tidal encroachment and regular inundation, in a mudflat or lower salt marsh environment; or conversely became drier and less directly influenced by the river, with the development of an episodically flooded grassy meadowland. Examination of the bulk and monolith samples {34}, {35} and {20} would help to clarify the depositional environment.

3.2.3.6 Post medieval and later soil / subsoil

The greyish brown upper part of the alluvial clays formed the subsoil for the post medieval and later soil. It comprised contexts [70], [93] and [98] and was characterised by manganese staining and penetrated by fibrous and iron-stained root channels (Fig 8). It contained occasional small pebbles and CBM fragments. The surface of the deposit lay at 2.13m–2.33m OD. It was overlain by a buried topsoil layer of dark brownish black crumbly sandy silt [92] and [114]. The silt contained occasional pebbles and fragments of glass (see Appendix 3: finds assessment) and bone. The surface of the buried topsoil lay at 2.31m–2.47m OD.

3.2.3.7 Post medieval and modern made ground

A series of post medieval made ground deposits, [75]–[91], sealed the buried topsoil to a combined depth of 5.52m (Fig 8). These comprised various layers of sands, gravels, mixed clays, with additional deposits of unidentified industrial materials that contained ceramics; metal, wood and other post medieval materials (see Appendix 3: finds assessment). These deposits probably represent rapid and successive episodes of dumping as part of a concerted effort to raise the ground level. This was probably undertaken in conjunction with the canalization of the adjacent waterways to create dry areas suitable for industrial development. Mid to dark grey gravel and fragmented asphalt [74], representing a temporary road surface, capped the sequence at a height of 7.72m–8.11 OD.

3.2.4 Evaluation Trench PDZ3.34

Location	*c* 90m to the north of the Northern Outfall Sewer and 95m to the southwest of Pudding Mill River..
Dimensions	14.74m NW–SE x 1.90m NE–SW at base (including baulks); 6.2m deep
Modern ground level	8.27m OD
Base of modern fill	2.70m OD (maximum)
Depth of archaeological deposits seen (including alluvium)	1.05
Level of base of deposits observed and/or base of trench	1.56m OD
Base of alluvium observed	*c* 1.40m OD
Environmental samples	Bulks {70-75} each of 20litres Monolith {69} of 2 tins

Table 4 Trench PDZ3.34 deposit summary

See Fig 9 and Fig 10.

3.2.4.1 Buried soil / landsurface

Although floodplain gravels were not reached in the excavation of PDZ2.34, the lowest deposit recorded [261] is similar to that seen at the southern end of PDZ3.31 and in the base of PDZ3.35/36 and is likely to represent prehistoric soil development in Late Glacial / early Holocene alluvial clay in a relatively high and dry part of (or island within) the floodplain. This is supported by the elevation of the deposits, at over 1.4m OD (Fig 10).

The potential soil / landsurface [261] consisted of a soft mid bluish-grey to mid grey silty-clay that contained around 15% pebbles. The deposit was partly excavated to a maximum depth of 0.31m, from a surface level of 1.76–1.79m OD. The presence of pebble inclusions suggests that the floodplain gravels may lie close beneath.

3.2.4.2 Marsh / wetland development

Soft, dark brown clay [260], containing moderate bone and frequent wood fragments overlay the buried soil deposit (Fig 10). The surface of the layer was seen at 1.98m–2.02m OD. It is likely that this deposit represents the waterlogging of the former landsurface and it is likely to represent the continuation and feather edge of the marsh recorded in the trenches further south (PDZ3.33, PDZ5.81(c), PDZ3.13 (north end). A date for this deposit (from the organic inclusions of sample {74}, one of several samples taken from this context, for example) would help clarify the timing and significance of the wetland development and subsequent inundation by estuarine / alluvial clay across the site.

3.2.4.3 Alluvial clay: mudflats or accretionary soil

Soft, light orangey grey clay [259], overlain by soft, light grey brown clay [258], with a surface at *c* 2.6m OD sealed the brown humic (wetland) clay (Fig 10). These alluvial or estuarine clay deposits could represent mudflats, saltmarsh or meadowland

and the low quantity of seeds and lack of insects and snails in bulk sample {72} from [258] confirms that the deposits have been subject to exposure, intermittent drying out and weathering, as indicated by the iron-staining in the sediments themselves. Comparison of the characteristics and inclusions of these estuarine or alluvial clays with clays in a similar stratigraphic position elsewhere across the site is needed to reconstruct its historic environment.

3.2.4.4 Post medieval and later soil

The alluvial sequence was overlain by a buried topsoil [257] from a level of 2.75m–2.78m OD (Fig 10). The topsoil comprised dark brownish black sandy silt, containing occasional fragments of CBM, ceramics, and metal (see Appendix 3: finds assessment).

3.2.4.5 Post medieval and modern made ground

A series of post medieval made ground deposits, [244]-[256], which had a combined thickness of around 5.25m, sealed the early topsoil (Fig 10). These deposits consisted of various layers of silty sands and chalk lenses, containing quantities of CBM, metal, pottery and glass fragments (see Appendix 3: finds assessment). As with the previous trenches the deposits reflect ground raising across the site, reclaiming former marshland for later post medieval industrial use.

A temporary road surface [276] capped the sequence. This comprised mid to dark grey gravel and fragmented asphalt at *c* 8.27m OD.

3.2.5 Evaluation Trench PDZ3.35/36

Location	northern area of site, *c* 40m to the south-east of the River Lea and 60m to the south-west of Pudding Mill River
Dimensions	39.20m NW–SE x 2.60m NE–SW at base (including baulks); 6.49m deep
Modern ground level	8.33m OD
Base of modern fill	3.03m OD (maximum)
Depth of archaeological deposits seen (including alluvium)	1.50
Level of base of deposits observed and/or base of trench	1.65m OD
Floodplain gravel observed	1.70m to 1.84m OD
Environmental samples	Bulks {58-64} each of 20litres plus 8 other bulks Monolith {65} of 2 tins

Table 5 Trench PDZ3.35/36 deposit summary

See Fig 11-Fig 13.

Evaluation Trenches PDZ3.35 and PDZ3.36 were originally planned as separate trenches; PDZ3.35 located approximately 20m to the west of PDZ3.36. However due to logistical constraints within the site, the trenches were combined to form a single excavation unit. This has been renamed PDZ3.35/36 as a consequence.

The PDZ3.35/36 trench base was interrupted by two cross baulks, which where retained in order to manage perched water. The separation of the lower deposits by baulks required allocation of separate context numbers within each sondage. These, where possible, are discussed as single entities; if relationships are ambiguous each deposit is accounted separately but cross-referenced in discussion.

Additional machine and hand excavation (mitigation) was carried out at the request of English Heritage in an effort to investigate as fully as possible areas of archaeological interest. This additional work is referenced here, but not fully discussed within the text, as it will form a separate post-excavation assessment and updated project design report.

3.2.5.1 Floodplain gravel and prehistoric topography

Naturally deposited loose, mid grey poorly sorted sandy gravel [173], [174] and [210] was revealed at 1.70m–1.84m OD, across the overall base of the trench sequence (Fig 11, Fig 12). The deposit probably represents Late Pleistocene river gravels. Its elevation suggests it formed a high part of the Early Holocene / prehistoric floodplain.

3.2.5.2 Buried soil / prehistoric landsurface

Pebbly clays, overlying the floodplain gravel in the southern part of the trench may have originally been deposited in the Late Glacial or Early Holocene, but were subsequently subject to soil formation and formed the prehistoric soil / landsurface. The lowest of these deposits, soft, dark greenish grey clay [262], containing approximately 30% angular and sub-angular pebbles had a surface at 1.83m OD. The pebble inclusions are probably derived from bioturbation (burrowing animals and plant roots) a key part of soil formation, which would have mixed the clay with the underlying gravels and also incorporated material deposited on the ground surface.

A single sherd of abraded LBA–MIA pottery was recovered at the contact between the layer and overlying deposit [197] (see Appendix 3: finds assessment).

Contexts [215] and [217] within the centre of the trench are thought to represent the same deposit as [262] (Fig 12). These were excavated as part of the additional mitigation works and are not further discussed here except to mention they contained LBA–EIA pot sherds (see Appendix 3: finds assessment).

Clayey deposit [172] is probably a lateral equivalent of [197] and was partly revealed overlying contexts [215]/[217] and ceramics were found at the base of this deposit. The surface of layer [172] lay at 1.65m–2.08m OD measuring a maximum 0.22m in thickness.

The sub-division of the buried landsurface into two layers ([262], [215]/[217] overlain by [172] / [197]) reflects the similar sequence recorded in the buried landsurface deposits of PDZ3.31 and is suggestive of increasingly wet conditions.

3.2.5.3 River encroachment

A deposit of loose sand comprised layers [169], [128] and [198], within the southern and central interventions (Fig 12). The sands varied in size from coarse to granular, with the grains fining downwards within the deposits. The colour varied from light brownish yellow in the trench centre [169], to dark blackish grey to the south [198].

The surface of the layer was found at 1.96m–2.28m OD, across an overall area measuring approximately 21.90m NW–SE by 2.54m NE–SW.

The sand represents the encroachment of a river across the former dry landsurface and this might initially have been the result of a large-scale flooding episode.

The surface of layer [198] was irregular and was recorded as cut [265] at the north end of the southern part of the trench, which continued into the trench centre as [264], where it delineated the surface of deposit [169] (Fig 13). However, contexts [264] and [265] mark a depression in the surface of a sand bar feature made up of the sand of contexts [198], [169] and [128]. Such depressions (or swales) exist between the sandy ridges of point and channel bars. The depression was irregular in plan and aligned roughly north–south across the width of the trench. Overall, it measured *c* 11.8m in length by 1.8m in width by 0.40m depth, with convex and moderately shallow sides and an uneven base. The fill of the swale comprised soft dark brownish grey humic (ie organic) clayey silt [168] and [266] containing occasional sub-angular pebbles. Two separate numbers were allocated due to the intervening baulk. The swale would have formed a wet hollow within the newly formed sand bar.

A radiocarbon date from organic remains preserved in [168] or [266] would help to place the encroachment of the river across the north west part of the site into the archaeological timescale.

3.2.5.4 Historic activity

Cutting into the fluvial sands [169], [128] and [198] were two anthropogenic features, of possible historic date, discussed below.

Deposit [169] was truncated by ditch cut [213] from a level of *c* 2.1m OD. The ditch was aligned NE–SW across the trench width (Fig 12). It measured 3.60m in length by 1.36m in width and was 0.48m deep. The cut sides were straight and moderately sloping, whilst the base, at 1.66m OD, was flat. The cut was only partly excavated with all the fills revealed in section. Primary fill [205] consisted of a 0.04m thick, dark brown sandy silt containing organic fibres. The fill probably formed as a result of erosion of the sides and base. Dark yellowish brown silty coarse sand 0.07m thick [204] sealed the primary fill and sloped down from the southern side of the cut. This was overlain in turn by fill [203] which comprised light greyish yellow coarse granular sand 0.15m thick, and also sloped from the southern edge of this ditch. It was mainly filled with mid grey silty coarse sand 0.25m thick [202]. The final fill consisted of loose mid greyish yellow coarse granular sand [201], 0.10m thick.

The fill contained abraded Roman and Medieval pottery fragments, and a heavily abraded 1st century Roman coin (see Appendix 3: finds assessment), as well as glass from bulk sample {76} taken from [201].

Deposit [198] was cut by [239] at a level of 2.06m OD in the southern end of the trench (Fig 12). The cut extended beyond the west edge of the trench, with a NE–SW length of 3.2m running across the narrow trench base. It had a width of *c* 1.7m. The base of the feature lay at 1.88m OD. It was irregular in plan, with irregular shallow sides and the base was uneven.

The remains of a timber structure [159] lay within the cut, which may have been made or exacerbated by water action, but could have been man-made (Fig 11). The timber

structure [159] consisted of the following elements and is elaborated upon in section 11.6.

- Timber post [175], measuring 450mm (length) x 40mm x 60mm, was set vertically within the north-east part of the cut. Its driven end (tip) was sharpened into a point. The post top survived to 2.08m OD.
- Timber [176] was located approximately 0.20m to the south-west of [175]. This was lying north-south, horizontally on the base of the cut. It measured 200mm (length) x 40mm x 60mm. It appeared to be a quartered timber, but was otherwise unworked. Its highest level was 1.93m OD.
- Small roundwood stake [177] lay against the south-eastern edge of the cut, approximately 0.24m to the south of [176]. The stake was set at an angle of *c* 45° and measured 120mm (length) x 20mm (diameter). Its top was at 2.06m OD.
- Resting against stake [177] and directly upon the side of the cut were three horizontally lain branches: [178] measured 230mm (length) x 20mm (diameter); [181] measured 500mm (length) x 10mm (diameter) and [182] measured 600mm in length by 10mm diameter. These all appeared deliberately lain, potentially being the rods of a small wattle structure.
- Lying upon the base of the cut were small wood fragments: [179], [180] and [183]–[190]. If they had once formed a part of structure [159], these were no longer in-situ.

The structure was overlain by primary fill [200], a firm dark brown peat approximately 0.10m thick. This was present in the northern half of the cut only and appeared to comprise laminated bands, with clearly visible organic fibres. On site identification of reed fibres forming the bulk of the matrix was convincing, and likely indicative of the nature of the surrounding environment during the deposit's formation. The peat formed either in-situ or was possibly a detrital strandline deposit. The secondary fill [241] consisted of firm, dark orangey brown clay, *c* 0.10m thick and contained frequent organic fibres. Its surface level was 2.06m OD.

The initial flooding appears to have been the earliest in a series of episodic events, probably resulting from the migration of a river channel into the north west part of the site, which now lay at the margins of the river. The sandy lenses within clayey silt [199], which sealed feature [239], suggest episodic runnels of flowing water draining across the muddy surface of a backwater. Charred cereal and waste from crop processing in bulk sample {66} suggest human activity nearby. Context [199] comprised dark greyish brown clayey silt, 0.18m thick from a surface at 1.98m–2.15m OD. It extended across an area 6.00m NW–SE by 2.50m NE–SW. This deposit was recorded as context [240] in the remainder of the trench.

Channel [264] and ditch [213] were also partly overlain at 2.21m–2.33m OD by deposits suggesting deposition at the margins of a river channel. These deposits comprised friable, dark grey silty sand layer [167] in the central part of the trench. The medium to coarse sands contained very frequent small angular pebbles. The layer measured 7.10m NW–SE by 2.50m NE–SW and had a maximum thickness of 0.15m. The dark colour and mixed composition suggest that an episode of flowing water, which deposited the sand, was followed by a stable period when vegetation colonised the sandy surface and an ephemeral soil horizon began to develop.

This layer contained abraded LBA-EIA pottery fragments (see Appendix 3: finds assessment), which are unlikely to be *in situ* and were probably brought in by the river at the time the sand was deposited.

3.2.5.5 Historic river channel (active phase)

All the deposits discussed in this section accumulated within a branch of a river, probably a meander, which migrated across the area of the trench in historic time.

The southern edge of a NE–SW oriented thalweg (or main artery of water flow) [209] that would have existed within a river channel was present across the centre and north side of the trench. It was recorded as a mainly linear cut with shallow, irregular sides and an uneven base, which measured 3.20m NE–SW by 13.55m NW–SE and was 0.45m deep. The top of this feature, as recorded, survived to 2.05m OD while the base lay at 1.65m OD (Fig 12). It truncated layer [167] and in places cut down to the top of Pleistocene gravel. The sequence of fills was complex with some being deposited on the edge or outside of the feature (Fig 12–Fig 13). This is because the thalweg [209] was just one part of a complex and interactive feature (a river), which contained silt, sand and gravel bars, clayey pools, slackwater and channel marginal areas, as well as the thalweg itself.

A soft, mid brownish grey silty clay, 0.18m thick, with occasional lenses of coarse sand with some mineralisation [166] lay on the south-eastern edge of [209]. A single abraded LBA–EIA pottery fragment was recovered from this deposit (see Appendix 3: finds assessment). The deposit may be a channel bar (or riffle) accumulating at the edge of the thalweg.

Layers [143] and [162] overlay [166] within the northern and central sondages respectively (Fig 11). The layer consisted of a soft, dark grey to greyish brown clayey silt, with *c* 60% sub-rounded to sub-angular small pebbles and frequent lenses of coarse sand. The surface of this deposit appeared to undulate greatly, ranging between 1.91m–2.27m OD, with a maximum thickness of 0.30m. Overall contexts [143] and [162] measured *c* 11.35m NW–SE by 2.54m NE–SW, and they accumulated as channel bars during episodes of differing water flow. The surface undulations are possibly the result of water turbulence.

The overlying contexts [142] and [141] suggest slowly moving river water and are characteristic of either slowly moving water within an active channel or the silting up of an inactive channel. Context [142] overlay [143] in the northern part of the trench and consisted of firm, dark greyish brown silty clay with *c* 20% sub-rounded to sub-angular small pebbles. The surface of this deposit undulated between 2.03m–2.23m OD and within the machine slot it measured 10.45m NW–SE by 2.50m NE–SW by 0.36m thick. Context [141] overlay [142] at 2.24m–2.40m OD. This consisted of firm, mottled mid greyish brown and mid reddish brown sandy clay containing very frequent sub-rounded small pebbles. The deposit measured 10.80m NW–SE by 2.50m NE–SW by a maximum thickness of 0.33m within the machine excavated slot.

Although the following deposits lie outside the thalweg [209], they are likely to be part of the same historic river channel or meander feature and they probably represent deposition in the quieter parts of the river. They comprise a series of gravely clay deposits ([165] and [195]; [115]; [171]; [170]; [164]; [194] and [208]), which probably accumulated in pools and hollows on the riverbed and in backwaters along its margins. These deposits are described in detail below.

Contexts [165] and [195] were revealed within the southern and central interventions and represent the same layer. Deposit [165] overlay [162] whilst deposit [195] overlay [196]. Both deposits comprised soft, mid brownish orange clay with frequent, small lenses of coarse sand. The surface of this deposit was between 2.45m to 2.16m OD, and had a maximum thickness of 0.20m. Overall the layer measured approximately 24.10m NW–SE by 2.54m NE–SW. Context [115] overlay [165] within the centre of the trench, to the south of [209]. It consisted of soft, mottled mid grey and dark brownish orange clayey silt containing very frequent, small sub-rounded and sub-angular pebbles. The machine excavated deposit measured 5.85m NW–SE by 0.20m thick; no further dimensions were recorded as the deposit was visible within the southwest facing trench section only. Some lateral sorting was observed, with inclusions lessening towards the southeast possibly indicating increasing distance from the main thread of flowing water. The deposit contained a single residual sherd of abraded LBA–EIA pottery (Appendix 3: finds assessment).

Soft, mottled mid greyish brown and mid brownish orange clayey silt [171], containing occasional small pebbles, overlay [115]. The deposit was only visible within the south-west facing section and measured 2.85m NW–SE, from a level of. 2.41m–2.58m OD. Context [170] measuring 0.15m thick, overlay [171]. It consisted of soft, mid greyish brown clayey silt intermixed with around 30% coarse sand with occasional small pebbles. The deposit was only visible within the south-west facing section (Fig 12–Fig 13). It was overlain by [164] at a height of 2.45m–2.67m OD, which consisted of soft, mid greyish brown silty clay containing occasional small pebbles and orange brown mineralisation flecks, and covered an area measuring 5.05m NW–SE by 2.54m NE–SW.

Deposits [194] and [208] were present in southern and central parts of the trench respectively. Layer [194] overlay [195], whilst [208] overlay [164]. The deposits consisted of soft, mid orangey grey silty clay that contained frequent small pebbles and coarse sand. Iron stained roots within the deposits suggest vegetation growth and episodic drying out and it is likely that these deposits accumulated along the reedy fringes of the river. Overall the layer measured 13.70m NW–SE by 2.54m NE–SW by 0.25m thick.

3.2.5.6 Silting up of historic channel

Clayey deposits [163], [193] and [207] constitute a single layer across the trench and are likely to represent the silting up of the historic river channel (Fig 12). Layer [193] overlay layer [194] whilst deposits [163] and [207] were recorded in opposing sides of the trench, overlying [208]. The layers consisted of a soft, mid brownish grey to mid orangey grey silty clay that contained frequent small pebbles and coarse sand. Overall the machine excavated deposit measured 23.7m NW–SE by 2.54m NE–SW by 0.23m thick.

Soft, mottled mid greyish brown and mid brownish orange silty clay [161] containing sparse sub-angular pebbles and shell fragments overlay channel fills [141] and [164] in the north and centre of the trench. The layer measured 4.40m NW–SE by 2.50m NE–SW and had a maximum thickness of 0.31m. The overlying deposit [140] shared similar formation characteristics with layer [161] and comprised mottled, light grey and light reddish brown clay, containing very occasional sub-angular pebbles. The deposit measured 10.00m NW–SE by 2.50m NE–SW at a surface height of 2.35m–

2.66m OD. Similar to [163], [193] and [207], these deposits may represent deposition by sluggish water flow within the former historic channel, after it has become an occasional flood channel feature. The mottling indicates post deposition waterlogging and weathering.

3.2.5.7 Pre-modern landsurface

The uppermost alluvial layer was present across the whole trench and comprised deposits [139], [160] and [192]. Deposit [139] overlay context [140], whilst context [160] overlay alluvial layer [161], [163] and [207]. Deposit [192] overlay layer [193] (Fig 12, Fig 13). The layer consisted of firm greyish brown silty clay that varied in hue from light to dark, and contained occasional small angular to sub-angular pebbles and very occasional shell fragments. It was heavily manganese speckled and iron stained and is likely to have formed the subsoil for the soil buried by Victorian and modern groundraising. The surface was recorded at 2.93m–3.16m OD and the deposit was a maximum 0.60m thick.

A pre-modern topsoil [206] at a level of 3.03m–3.37m OD had developed in the alluvium. The 0.35m thick layer consisted of dark brownish black sandy clay containing occasional pebbles.

3.2.5.8 Modern made ground

The southern end of the buried soil layer was truncated by a large, shallow cut filled with modern material, which did not appear within the final trench intervention. Two smaller features, also of recent date, were visible within the final sondage. North–south aligned linear cut [211] was located at the northern end of the central trench. It had near vertical sides and a flat base at 2.26m OD. The cut measured approximately 0.55m wide by 0.75m deep. The cut, the function of which remains unclear was filled with dark brownish black clayey silt [212], which contained post medieval material, mainly CBM fragments (see Appendix 3: finds assessment).

The southern edge of a NE–SW feature [145] was present at the northern end of the trench. It had a moderately steep irregular side and cut down into the underlying natural gravel. The base of the cut was not seen, although the sides reached a depth of 0.85m at 1.72m OD. Mid brownish grey silty clay [144] that contained post medieval material, mainly CBM and some slate fragments (see Appendix 3: finds assessment) filled the cut. The function of this cut is similarly unclear.

The relationship between these two modern cuts and the modern levelling deposits discussed below were not investigated but they were probably part of the same event.

A series of post medieval made ground deposits [147]–[158] was present across the entire trench overlying the buried topsoil and the intervening cuts [145] and [211] to a combined depth of 4.82m. These deposits variously consisted of layers of sands and chalk lenses, containing CBM, metal, ceramics and glass fragments (see Appendix 3: finds assessment). These deposits represent ground raising activity as seen across the rest of the site.

Abandonment/disuse deposit comprising dark brown silty sand [146], capped the sequence. The layer was partly vegetated and contained pebbles, glass, metal and CBM plus other building debris (see Appendix 3: finds assessment).

3.2.6 Evaluation Trench PDZ3.37

Location	north-eastern area of site; 90m south-east of the River Lea, *c* 35m north of the Northern Outfall Sewer and 45m south-west of Pudding Mill River
Dimensions	21.50m NW–SE x 2.80m NE–SW at base (including baulks); 2.25m deep
Modern ground level	5.86 OD (recent ground reduction)
Base of modern fill	2.38m OD (maximum)
Depth of archaeological deposits seen (including alluvium)	1.36m
Level of base of deposits observed and/or base of trench	1.06m OD
Base of alluvium / possible Pleistocene deposits observed	1.53m OD
Environmental samples	One bulk sample from [273] of 20litres One monolith sequence of 2 tins

Table 6 Trench PDZ3.37 deposit summary

See Fig 14 and Fig 15.

The trench was excavated after approximately 3–4 metres depth of the post medieval made ground had been removed as part of the ongoing development works. The trench depth was therefore 2.25m below the reduced ground surface.

The base of the trench was interrupted by three cross baulks, which where retained to manage perched water. The stratigraphy within the trench was clear enough to interpret contexts across the baulks.

3.2.6.1 Possible buried prehistoric landsurface formed in Pleistocene deposits

The earliest context seen consisted of a firm light yellowish brown sandy clay with poorly sorted sub-angular to sub-rounded pebbles [275] in the trench base (Fig 14, Fig 15). The surface of the layer undulated across the trench between 1.12m–1.53 OD. The origin of this deposit is at present uncertain and it might be of Holocene or Pleistocene age, although Pleistocene is considered most likely.

It may represent prehistoric soil development and vegetation growth in Late Pleistocene deposits, similar to those seen at the southern end of PDZ3.31 and in PDZ3.34 and PDZ3.35/36. Its calcareous appearance, elevation and irregular surface are, however, similar to the surface of the layer of pale clay with carbonate nodules recorded across the prehistoric channel to the south in trenches PDZ3.32, PDZ3.33 and PDZ3.81(C).

Furthermore, the clay could have infiltrated the loosely packed gravels and could relate to the deposition of the overlying deposit not to the gravels themselves. Further work on the monolith sample taken through the trench sequence is needed to clarify its environment of deposition (ostracods and pollen in particular but also loss on ignition might be useful).

3.2.6.2 Standing water / prolonged flooding

A layer of mottled mid bluish-grey and mid yellowish brown silty-clay [274] measuring a maximum of 0.52m thick, overlay and filled the undulations of [275] (Fig 15). The deposit characteristics suggest prolonged flooding and are reminiscent of the clayey deposits forming the upper part of the buried landsurface in PDZ3.31, PDZ3.34 and PDZ3.35/36.

Again, examination of microfossils from the monolith sample might elucidate its environment of deposition. A floodplain pool does not seem unlikely and might tie in with similar deposits in the trenches further south west, but its elevation could be a little high for this and prolonged flooding of a landsurface might be more likely.

3.2.6.3 Marsh or fen

The overlying soft, dark greyish brown clayey silt [273], containing frequent shell fragments and very occasional pieces of daub/degraded pottery (see Appendix 3: finds assessment) is also similar to the humic clayey silt layer recorded across the prehistoric channel to the south in trenches PDZ3.32, PDZ3.33 and PDZ3.81(C) and may represent a similar marshy fen environment. The daub inclusions, as they are light, could have been transported in with floodwater and become trapped around the stems of reeds and sedges.

However, as such a sedge fen or reedswamp environment is likely to fringe a waterbody it is possible that people were active nearby, using artefacts of daub or building hearths in proximity to the water's edge. The surface of this organic deposit lay between 1.68m–1.93m OD. Organic remains from the bulk sample taken from this deposit would be suitable for radiocarbon dating, which would enable correlation with the sequences from the other trenches in OL-04307.

3.2.6.4 Alluvial clay

The overlying alluvial clay [272] was recorded from a height of 2.38m–2.60m OD (Fig 15). It was firm, mid yellowish brown and might represent a wet meadowland or estuarine salt marsh or mudflats. It was not sampled with monoliths or bulks.

3.2.6.5 Made ground

The uppermost deposits recorded comprised a series of post medieval made ground deposits [268]–[271] which had a combined thickness of *c* 3.26m (Fig 15). These layers variously consisted of silty sands and sandy silts, containing CBM, metal, ceramics and glass fragments (see Appendix 3: finds assessment). As with the previous trenches the deposits reflect ground raising across the site, reclaiming former marshland for later post medieval industrial use. The arbitrary machine level for the ground reduction works lay at *c* 5.86m OD.

3.2.7 Trench PDZ5.81(c)

Location	central area of site; 30m north of the Northern Outfall Sewer and 90m south-west of Pudding Mill River
Dimensions	32.0m NW–SE x 2.0m NE–SW at base

	(including baulks); 7.22m deep
Modern ground level	8.15m OD
Base of modern fill	2.44m OD (maximum)
Depth of archaeological deposits seen (including alluvium)	1.9m
Level of base of deposits observed and/or base of trench	0.77m OD
Floodplain gravels (Holocene) observed	Irregular, *c* 0.7 to 0.9m OD

Table 7 Trench PDZ5.81(c) deposit summary

See Fig 16 and Fig 17.

The base of the trench was interrupted by two cross baulks, which where retained to manage perched water. The separation of the lower deposits by these baulks required the allocation of context numbers within each intervention. These are interpreted as single entities, where possible, in the text below; where the relationships were ambiguous each deposit is discussed separately but cross-referenced within the trench sequence.

3.2.7.1 Holocene (probably prehistoric) river channel

A series of active channel deposits comprising gravels, sands and strandline deposits were recorded within two hand-excavated sondages at the southern end of the trench. The surface of loose, dark grey, poorly sorted sandy gravel [267] lay at 0.79m–0.92m OD. The gravels were overlain within the southern trench intervention by a 0.12m thick layer of dark reddish brown peaty silty clay [29] containing wood fibres and sample {7} revealed a varied assemblage of waterlogged seeds, possibly indicating shrubby and herbaceous vegetation colonising a gravel bar (Fig 16, Fig 17).

Vegetated channel bars were a feature of the prehistoric floodplain and appear to have been targeted for contemporary human activity, as has been demonstrated in PDZ12 and PDZ7. The woody fibres from sample {7} taken from this deposit would be suitable for radiocarbon dating, which would enable the period of channel activity to be placed within an archaeological chronology.

3.2.7.2 Backwater

The overlying soft, mid bluish grey silty clay [28] present in the southern intervention at a height of 1.27m–1.32m OD probably represents a backwater environment suggesting a rise in river levels and a change in the character of the river in this location.

A layer of soft, light grey clay with frequent calcium carbonate nodules plus small root channels was recorded at the base of the trench as excavated in the southern, central and northern interventions, comprising contexts [27], [36] and [42] respectively (Fig 17). The surface of this deposit lay at 1.43m–1.66m OD. The presence of iron-stained root channels within this deposit and the carbonate nodules indicate a period of falling water levels and drying out of the backwater muds.

An isolated lens of soft, mottled mid brownish grey and mid yellow clay [41] overlay a high point on the surface of layer [42], in the northernmost part of the trench (Fig

17). The deposit contained carbonate nodules and root channels and was recorded in section only at a surface level of 1.60m–1.73m OD.

3.2.7.3 Linear features

North–south aligned curvilinear feature [35] truncated deposit [36] at the north end of the trench (Fig 16). The feature measured 3.70m in length, by 0.28m in width and 0.26m in depth. It's sides were concave with a moderate slope, breaking imperceptibly onto a concave base, at 1.29m OD. The cut was filled by soft, dark reddish brown silty clay [34] containing moderate shell fragments and sand, of similar characteristics to the overlying deposit [33].

The feature is similar to those recorded in PDZ3.33 and could be either a natural rill or runnel cut by water draining across the surface of the mud or could be a man-made gulley.

3.2.7.4 Development of marsh or fen

Soft dark reddish brown humic silt / humic clay containing organic fibres moss and plant remains overlay the carbonate rich clays across the entire trench, comprising contexts [26], [33] and [40] in the southern, central and northern interventions respectively (Fig 17). The surface of this deposit lay at 1.77m–1.91m OD, and was at its maximum 0.28m thick.

This layer represents vegetation colonising the muddy surface and the development of a marsh or fen. Sample {4} taken from this deposit contained a rich and diverse assemblage of wetland seeds.

3.2.7.5 Alluvial clay: mudflats or accretionary soil

A series of alluvial clay deposits overlay the organic marsh deposits. Contexts [25], [32] and [39] consisted of soft, light bluish grey clay that contained manganese staining. The overlying contexts [24], [31] and [38] within the southern, central and northern interventions respectively consisted of iron-stained and mottled light yellowish grey and light greyish brown silty clay, with a surface height of 2.20m–2.54m OD (Fig 17). These upper alluvial clays had been weathered and impacted upon by the development of the overlying soil.

Similar to the other trenches in OL-04307, it is uncertain whether the clays represent mudflats, saltmarsh or accretionary floodplain meadowland soils and further work on the monolith sample{1} and bulk samples {2} and {3} is needed to reliably interpret them.

3.2.7.6 Post medieval or pre-modern soil and landsurface

A buried landsurface that existed prior to burial by made ground was recorded across the trench with a surface at 2.44m–2.75m OD. It comprised crumbly soft light yellowish grey silty clay containing occasional fragmented shells [23], [30] and [37] (Fig 17).

3.2.7.7 Post medieval to modern made ground

A series of post medieval made ground deposits [2]–[21] overlay the alluvial sequence to a combined depth of 5.31m (Fig 17). These consisted of various layers of sandy silts, clayey silts, clays and sands with lenses of chalk and clinker. The deposits held varying amounts of post medieval CBM, pottery, metal and wood (see Appendix 3: finds assessment). As with the previous trenches the deposits reflect ground raising activity across the site, reclaiming former marshland for later post medieval industrial use.

A layer of light greyish brown sandy silt [1], containing gravel, CBM and pottery (see Appendix 3: finds assessment) capped the trench. This represented a temporary surface associated with the final industrial phase for the site.

3.3 Stratigraphic interpretation of the site

Any geoarchaeological interpretation of the site-wide natural stratigraphic sequence is based on an understanding of changing environments both across the landscape and through time. Although set out and discussed in the text below, this revised phasing has not been used to revise the site-wide matrix, as no reliable correlations of the deposits between trenches can be made without radiocarbon dating.

Such dating should form the first stage of any further work undertaken on samples from the site, as it is of pivotal importance in understanding the stratigraphic sequence and assessing its potential and significance.

3.3.1 Phase 1: the Pleistocene template

Trench	*Contexts*	*Samples*
PDZ3.35/36	[173], [174], [210]	{58}

Table 8 Phase 1 (Pleistocene gravels) summary

Pleistocene gravels and associated deposits were recorded in the northern and southern parts of the site, but not in its central area.

At the south of PDZ3.31 they were recorded at *c* 1.2m OD and in PDZ3.34, PDZ3.35/36 they were recorded between about 1.6m and 1.8m OD, their surface falling to *c* 1.2m to 1.5m OD in PDZ3.37. The gravels at the base of the sequence in the central trenches (where recorded) are not considered to be of Pleistocene date (see below) and in these areas Holocene alluvium and associated fluvial deposits were recorded below 1m OD and in some trenches (PDZ3.33 and the northern part of PDZ3.31) as low as 0.3m OD.

The surface of the Pleistocene deposits forms the template that influenced environments and sedimentation in the prehistoric period, if not later. This template comprised two areas of higher ground (forming islands of dryland) separated by a lower lying area, exploited by a prehistoric channel and associated pools, backwaters and bogs. This reflects the earlier landscape modelling proposed by the Desk based assessment (MoLAS–PCA 2007a), which indicated a zone of higher, drier land in the northern area of the site, whilst the western and southern areas were lower lying.

The environments created by the topography of the Pleistocene template are outlined in sections 3.3.2 to 3.3.6 below. The subsequent stages of the natural landscape change were influenced by other factors, such as the evolving river regime, relative sea level rise and human activity.

3.3.2 Phase 2: islands of dry ground and prehistoric landsurfaces

Trench	*Contexts*	*Samples*
PDZ3.37	[275], [274]	–
PDZ3.35/36	[262], [215], [217], [172] and [197]	{58}, more
PDZ3.34	[261]	Yes
PDZ3.31	[50]/[55]; [49]/[54] and [48]	Yes

Table 9 Phase 2 (prehistoric islands/landsurface) summary

The northern edge of an island of higher, drier ground was clipped by the southern part of PDZ3.31 and a more extensive expanse of higher ground was recorded in PDZ3.34, PDZ3.35/36 and PDZ3.37.

The Pleistocene gravels (or inferred Pleistocene gravels) in these areas were overlain by gravely clay deposits of likely Pleistocene date but in which soils had developed in the Holocene ([50]/[55] in PDZ3.31; [261] in PDZ3.34; [262], [215] and [217] in PDZ3.35/36; [275] in PDZ3.37). The buried soils / landsurfaces lay at roughly 1.6m to 2m OD.

Pottery fragments found within these buried soil deposits in PDZ3.35/36, suggest LBA–MIA activity in this part of the site and it is likely that the islands formed stable, dry landsurfaces from the Mesolithic until the Iron Age.

In each trench evidence for eventual waterlogging of the dry landsurface was observed ([49]/[54] and [48] in PDZ3.31; [172] and [197] in PDZ3.35/36; [274] in PDZ3.37). This is likely to correspond with evidence for rising river levels in the lower lying parts of the site (3.3.4) but radiocarbon dating of organics extracted from samples taken from these contexts would help in comparing the chronology of these events.

At the margins of the lower lying central part of the site the waterlogged landsurface was overlain by the feather edge of the marsh or fen described in 3.3.6 below and it is likely that the islands formed a useable, dry landsurface within the floodplain until at least the time the marsh encroached across them. Again, radiocarbon dating of organics preserved in samples taken from the marsh deposits, such as {74} from [260] in PDZ3.34 would help to tie these significant stages of landscape change into the archaeological chronology.

3.3.3 Phase 3: prehistoric channel

Trench	*Contexts*	*Samples*
PDZ3.33	[113], [112], [111] and [110]	{39}, {40} & more
PDZ5.81(c)	[267] and [29]	–

Table 10 Phase 3 (active prehistoric channel) summary

The lower lying central part of the site was exploited by an active prehistoric channel and it is likely that phases 3.3.3 to 3.3.6 associated with the channel were accumulating at the same time as the higher parts of the site existed as islands of higher drier ground.

Samples taken from these deposits contain organic remains suitable for dating as well as for past environment reconstruction and such dating is needed to correlate the deposits across the site.

The active channel deposits were recorded in PDZ3.33 ([113], [112], [111] and [110]) and PDZ5.81(c) ([267]). They comprise a series of gravels, sands, organic strandline deposits, which would have formed channel and point bars on a river bed, and humic clays, which would have accumulated in the hollows (swales) between the gravely ridges. The surface of these deposits lay at about 0.5m OD in PDZ3.33 and at *c* 0.8-0.9m OD in PDZ5.81(c). The organic inclusions within the gravels suggest they are of Holocene date and organics from bulk sample {39} taken from [113] would be

suitable for radiocarbon dating. An organic deposit [29], which overlay the gravels in PDZ5.81(c), is likely to represent shrubby vegetation colonising the gravel bar.

Vegetated channel bars were a feature of the prehistoric floodplain and appear to have been targeted for contemporary human activity, as has earlier been demonstrated in PDZ12 and PDZ7. The woody fibres from sample {7} taken from this deposit would be suitable for radiocarbon dating, which would enable the period of channel activity to be placed within an archaeological chronology.

Modelling of the surrounding deposits would be needed to determine whether this watercourse was a meander of the Lea or a channel of the Hackney Brook.

However, the southern arm of the Hackney Brook is shown in the current geoarchaeology/topographic models to flow across the floodplain in this area and it is likely that this is the origin of the prehistoric channel.

3.3.4 Phase 4: rising water levels

Trench	*Contexts*	*Samples*
PDZ3.31	[60]	{9}, {10}
PDZ3.32	[127], [134], [138]	{51}, {52}
PDZ3.33	[109], [108], [97], [102] and [107]	Yes
PDZ5.81(c)	[28], [27], [36], [41] and [42]	Yes

Table 11 Phase 4 (rising water levels) summary

An episode of rising river levels might be represented by the clayey deposits accumulated over much of the channel area, which are likely to represent standing water in pools and backwater areas ([61] in PDZ3.31; [127], [134] and [138] in PDZ3.32; [109], [108], [97], [102] and [107] in PDZ3.33; and [28], [27], [36], [41] and [42] in PDZ5.81(c).

Some of these deposits / environments could be contemporary with the active channel and others a result of impeded drainage following abandonment of the channel (for example as an indirect result of rising relative sea level). This evidence for rising water levels from the lower lying prehistoric channel area might also be contemporary with the evidence for waterlogging of the dry landsurfaces on the islands in the northern and southern part of the site (see 3.3.2).

The clayey deposit [61] in PDZ3.31, with a surface level at 0.94m OD, is currently interpreted as a pool of standing water and it is possible that this pool existed at the margins of the active channel recorded in Trenches PDZ3.33 and PDZ5.81(c). The clays in PDZ3.32 had a surface at *c* 1.40m to 1.60m OD and also indicate tranquil conditions in a backwater environment. However, the series of clayey deposits in PDZ3.33, with a surface at 1.2m–1.5m OD, are likely to indicate slackening of stream flow at this location and the development of channel marginal pools and sluggish areas of the river prior to a deepening of water, as identified in the uppermost clay deposits ([97], [102] and [107]). A similar sequence was observed in PDZ5.81(c), where clays that had accumulated in standing water overlay the vegetated channel bar and had a surface that lay between *c* 1.4m and 1.7m OD

It possible that the uppermost clay in these trenches reflects an increase in the sediment load carried by the river water or/and the rapid deposition of suspended

sediment (for example as a result of tidal encroachment). Further examination of the monoliths and bulk samples, in particular monolith {20} and bulk {23} from PDZ3.33, is needed to shed more light on the significance of this uppermost clay. It is possible that it is linked with the initial surge of estuarine water into this part of the Lower Lea and if so a date for its deposition would be of real interest.

The uppermost of the clay deposits in all three trenches were characterised by frequent carbonate nodules. The carbonate nodules and the presence of iron-stained root channels within these deposits indicate a period of falling water levels and drying out of the backwater muds and pools. An increasingly dry environment is also indicated by the overlying humic silts and clays, which represent the development of a marshy landsurface across the former channel area (see 3.3.6).

3.3.5 Phase 5: natural runnels or prehistoric man-made gullies

Trench	*Contexts*	*Samples*
PDZ3.33	[103]–[106]	{27}, {28}, {29}, {17}
PDZ5.81(c)	[34], [35]	{8}

Table 12 Phase 5 (natural or man-made gullies) summary

Two NW–SE aligned curvilinear cuts cut across the muddy prehistoric channel surface in PDZ3.33 and another was recorded in PDZ5.81(c). These features were about 0.3m deep and *c* 0.3 to 0.7m wide where fully excavated and were infilled with humic silts and clays of similar characteristics to the overlying marsh deposits, containing frequent shell fragments and occasional bone.

The features were similar in size, alignment and fill type, and are thought to be either natural rills or rivulets draining the muddy surface, perhaps following a flooding event, or to be man-made drainage gullies.

The fills of each feature were sampled with monoliths ({28} and {29}) and with bulk samples ({27} and {17} respectively).

3.3.6 Phase 6: development of marsh or fen

Trench	*Contexts*	*Samples*
PDZ3.31	[46] / [52] / [58] and [47] / [53] / [59]	Yes
PDZ3.32	[126], [133] and [137]	Yes
PDZ3.33	[73], [96] and [101]	Yes
PDZ5.81(c)	[26], [33] and [40]	Yes
PDZ3.34	[260]	Yes
PDZ3.37	[273]	Yes

Table 13 Phase 6 (development of marsh or fen) summary

A layer of humic clay or humic silt often with shells, occasional sand lenses and iron-stained and fibrous root channels was recorded across the lower-lying central part of the site and its feather-edge overlay the waterlogged soil deposits in the lower parts of the drier islands to the north and south.

The humic (organic) deposit was thickest over the former channel (about 0.8m thick at most) and thinnest where it overlay the fringes of the islands (less than 0.2m). Its surface lay at roughly 1.6m to 2m OD and its base undulated between *c* 0.9m and 1.8m OD, depending on the undulating underlying topography. It comprised contexts: [26], [33] and [40] in PDZ5.81(c); [46] / [52] / [58] and [47] / [53] / [59] in PDZ3.31; [126], [133] and [137] in PDZ3.32; [73], [96] and [101] in PDZ3.33; [260] in PDZ3.34; and [273] from PDZ3.37.

It is likely to represent the development and expansion of a marsh or fen across the site. The samples so far processed from these deposits suggest they preserve a wide range of environmental remains, such as seeds, insects and snails, suitable for past landscape reconstruction. Initially the humic silts are likely to have accumulated as a result of increasingly dry conditions, as the former prehistoric channel silted up and became a boggy marsh. Its expansion across the fringes of the islands, however, is more likely to be a response to an increasingly wet environment, causing the former meadowland to become a marsh or fen.

The organic nature of this deposit lends itself to radiocarbon dating and past environment reconstruction and bulk and monolith samples were taken from it in most trenches for these purposes. Crucially, dating is needed in order to reconstruct the changing environment represented by the humic clays and silts and to understand the impact of the expanding marsh on the evolving landscape, as well as consider its cause.

Daub inclusions were found in the humic silt marsh deposit in PDZ3.37. As they are light, they could have been transported in with floodwater and become trapped around the stems of reeds and sedges. However, it is possible that people were active nearby, using artefacts of daub or building hearths. Although the daub is likely to be prehistoric, the marsh deposits are likely to span the prehistoric and historic period and it is likely that later stages of the marsh were contemporary with the historic channel deposits recorded in PDZ3.35/36.

3.3.7 Phase 7: river encroachment

Trench	*Contexts*	*Samples*
PDZ3.35/36	[169], [128] and [198]; [264] and [265]; [168] and [266]	Yes

Table 14 Phase 7 (encroaching river) summary

Sandy deposits [169], [128] and [198] overlay the buried prehistoric landsurface in PDZ3.35/36 at *c* 2m to 2.3m OD.

The sand represents the encroachment of a river across the former dry landsurface and this might initially have been the result of a large-scale flooding episode. The sand formed an irregular sandbar feature, with humic clay [168] and [266] subsequently accumulated in the hollow ([264] and [265]) formed in its surface, which would have created a boggy area adjacent to the encroaching river.

The relationship of the encroaching river to the marsh or fen (see 3.3.6) developed across the site needs clarification, but it is likely that the site had already become a marshy area by the time the river meandered into its north western part.

A radiocarbon date from organic remains preserved in [168] or [266] would help to place the encroachment of the river across the north west part of the site into the archaeological timescale.

3.3.8 Phase 8: human activity associated with the encroaching river

Trench	*Contexts*	*Samples*
PDZ3.35/36	[213], [239], [159], [205] to [201]	Yes

Table 15 Phase 8 (human activity associated with the encroaching river) summary

Cutting into the fluvial sands of Phase 7, in PDZ3.35/36 were two anthropogenic features, of possible historic date, a ditch [213] and a cut [239] containing a wattle structure or lining [159].

The ditch was cut from a level of *c* 2.1m OD. Its primary fill [205] contained organic fibres and the sandy secondary fills [204-201] were suggestive of flowing water, the uppermost containing abraded Roman and Medieval pottery fragments, and a heavily abraded 1st century Roman coin.

Feature [239] was cut from a level of 2.06m OD in the southern end of the trench. The remains of a timber structure [159] lay within the cut, which may have been an erosional gulley or deliberately man-made and exacerbated by water action.

The ancient woodwork specialist's report suggests the roundwood wattle structure could have formed the lining to a retting pit or similar feature, of uncertain but probably historic date. The retained timbers would be suitable for radiocarbon dating.

3.3.9 Phase 9: historic channel migration and abandonment

Trench	*Contexts*	*Samples*
PDZ3.35/36	[167]; [209]; [115]; [140]–[143]; [161]–[166]; [170], [171]; [193]–[196]; [207], [208]; [193]	{77}; {78}, {79}, {80}; {60} – {63}; {65}

Table 16 Phase 9 (historic channel) summary

The man-made features of Phase 8 were partly overlain by a sandy deposit [167]. Its dark colour and mixed composition suggest that an episode of flowing water, which deposited the sand, was followed by a stable period when vegetation colonised the sandy surface and an ephemeral soil horizon began to develop. Context [167] belongs to the sequence of sandy deposits in PDZ3.35/36 that suggest a river was encroaching the site and definite evidence for this river overlay these earlier sandy spreads, as outlined below.

The southern edge of a NE–SW oriented thalweg (or main artery of water flow) [209] that would have existed within a river channel was recorded across the centre and north side of PDZ3.35/36. It was recorded as a mainly linear cut with shallow, irregular sides and an uneven base and was 0.45m deep. The top of this feature, as recorded, survived to 2.05m OD while the base lay at 1.65m OD. It truncated layer [167] and in places cut down to the top of Pleistocene gravel. The thalweg was just one part of a complex and interactive feature (a river), which contained silt, sand and

gravel bars ([166] [143] and [162]); clayey pools and backwaters ([165], [195], [115], [171], [170], [164], [194] and [208]); slackwater deposits ([142], [141] and [143]); and channel marginal areas where reedbeds probably fringed the water ([194] and [208]); as well as the thalweg [209] itself.

It is likely that these deposits represent a meander of the Lea, which migrated across the area of the trench in historic time. Subsequently, this segment of the river became abandoned, perhaps as a result of river straightening, and silted up ([163], [193] and [207], [161] and [140]). The surface of these river (probably estuarine) silts was recorded at *c* 2.35m–2.66m OD.

3.3.10 Phase 10: estuarine mud or episodic flooding (alluvial clay)

Trench	*Contexts*	*Samples*
PDZ3.31	[45], [51], [57], [44] and [56]	Yes
PDZ3.32	[125], [132], [131] and [136]	Yes
PDZ3.33	[100], [71], [94] and [99]	Yes
PDZ3.34	[259] and [258]	Yes
PDZ3.35/36	([163], [193], [207], [161] and [140]) + [139], [160] and [192]	Yes
PDZ3.37	[272]	Yes
PDZ5.81(c)	[25], [32], [39], [24], [31] and [38]	Yes

Table 17 Phase 10 (mudflats or accretionary floodplain soil) summary

The uppermost alluvium across the entire site consisted of clay, variably mottled, occasionally pebbly, often with fibrous or iron-stained roots and often with other inclusions such as CBM or clay pipe and molluscs.

These alluvial clays are less humic / organic than the underlying marsh or fen deposits and as such are likely to represent one of several things including: more rapid sediment accumulation; a decrease in on-site vegetation growth; and conditions less suitable for the preservation of organics. These factors could occur if the environment became wetter and more greatly influenced by the river, perhaps as a result of tidal encroachment and regular inundation, in a mudflat or lower salt marsh environment; or conversely became drier and less directly influenced by the river, with the development of an episodically flooded grassy meadowland soil.

As yet, it is uncertain whether the clays represent mudflats, saltmarsh or accretionary floodplain meadowland soils and further work on the monolith and bulk samples taken from most trenches is needed to reliably interpret the uppermost alluvial clay, which probably represents different environments laterally across the site, as well as through time.

The base of the alluvial clay deposits followed the surface of the marsh and in the northwest part of the site they infilled the historic channel (phase 6, see 3.3.6). The upper surface of the clay was irregular, between 1.7m and 2.6m OD and to some extent this probably emphasises the different environments laterally represented by the alluvial clay, although it also reflects the inclusion in some trenches of the weathered uppermost part of the clay with the buried soil deposits of phase 11 (see 3.3.11).

The alluvial clay comprised contexts: [45], [51], [57] (all probably mudflats) and [44] and [56] (probably vegetated mudflats) in PDZ3.31 with a surface recorded at *c* 2m to 2.6m OD; [125], [132], [131] and [136] in PDZ3.32, with a surface lying between *c* 1.8m and 2.2m OD; [72], [95], [100], [71], [94] and [99] in PDZ3.33 with a surface between about 1.7m–2m OD; [259] and [258] in PDZ3.34, which might represent a slightly drier, saltmarsh or meadow-like environment with a surface at *c* 2.6m OD; the silting up of the historic channel in PDZ3.35/36 (discussed in Phase 9, 3.3.9) might also be included in this phase and it was overlain by weathered alluvial clay [139], [160] and [192] with a surface at 2.93m–3.16m OD; [272] in PDZ3.37 had a surface of *c* 2.4m–2.6m OD; and contexts [25], [32], [39], [24], [31] and [38] in PDZ5.81(c), with a surface height of 2.2m–2.5m OD.

3.3.11 Phase 11: post medieval / pre-modern soil or landsurface

Trench	*Contexts*	*Samples*
PDZ3.31	[43]	{9}, {10}, {16}
PDZ3.32	[123], [124], [129], [130] and [135]	{51}, {55}
PDZ3.33	[92], [114] [70], [93] and [98]	{20}, {37}
PDZ3.34	[257]	–
PDZ3.35/36	[206]	–
PDZ5.81(c)	[23], [30], [37]	{1}

Table 18 Phase 11(buried post medieval or pre-modern landsurface) summary

The uppermost part of the alluvial clay was weathered, crumbly, relatively humic/organic, sometimes gritty and soily in most trenches, and was in places intermittently capped by a thin matted organic turf line. This deposit represents the pre-groundraising landsurface.

Although reduced river influence (for example as a result of embanking and drainage) would seem to be a reasonable enough assumption for the development of these stable landsurface / soil horizons, it must also be borne in mind that rapid burial by modern made ground, in sealing the former landsurface will also have prevented or reduced the decay of organic inclusions. Thus, had they not been rapidly buried, weathering and decay is likely to have caused the post medieval / pre-modern buried soils to have appeared exactly the same, on excavation, as the underlying alluvial clays.

Buried soils and subsoils, comprising the pre-burial landsurface were recorded in the uppermost alluvium in most trenches. The weathered alluvium in PDZ3.35/36 was sealed by a pre-modern topsoil [206] at a level of 3.03m–3.37m OD, which was 0.35m thick. Context [43] in PDZ3.31 was recorded across the trench to a maximum depth of 0.36m. The weathered uppermost alluvium in PDZ3.32 comprised [124], [130] and [135], which was sealed by a possible turf line [123] and [129] at 2.48m OD, containing post medieval pottery, Ceramic Building Material (CBM) and metal fragments. Weathered alluvium (subsoil) [70], [93] and [98] in PDZ3.33 was overlain by a buried topsoil layer [92] and [114], which contained fragments of glass and bone. The surface of the buried topsoil lay at 2.31m–2.47m OD. The buried topsoil [257] recorded in PDZ3.34 from a level of 2.75m–2.78m OD also contained occasional

fragments of CBM, ceramics, and metal. A buried landsurface ([23], [30] and [37]) was also recorded across PDZ5.81(c) with a surface at 2.44m–2.75m OD.

The irregular topography of this pre-modern landsurface, which undulates between about 2.3m and 3.4m OD, probably reflects the range of different environments represented by the alluvial clay of the previous phase 10 (see 3.3.10). It might also reflect variable compaction of the deposits across the site by later activity (though given the minerogenic content of the deposits such compaction is unlikely to have been great). As the landsurface survives where recorded, the variation in levels is not a result of later truncation.

3.3.12 Phases 12 and 13: 19th–20th century made ground

All of the trenches were sealed by a considerable depth of made ground (ground raising deposits) that was consistent across the site. Surfacing associated with the most recent use and disuse of the site covered these made ground layers

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.

A sequence of monolith tins was taken from every trench and a series of bulk samples was also taken adjacent to the monolith tins to provide sediment of off-site examination of deposit characteristics macrofossils, microfossils and radiocarbon dating, as described below. Archaeological features, where excavated were also sampled with bulks and/or monoliths, as appropriate.

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 PDZ3.31 ({9} of 4 tins), PDZ3.32 ({51} of 3 tins), PDZ3.33 ({20} of 5 tins, {22}, {28} and {29} each of 1 tin), PDZ3.35/36 ({65} of 2 tins), PDZ3.34 ({69} of 2 tins), PDZ3.37 (2 tins), and PDZ5.81(c) ({1} of 4 tins). 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 prehistoric channel, especially the stream bed pools, backwaters and marsh or fen deposits, as well as the similar deposits in the historic meander and the 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 (as sampled in the monoliths) needs to be assessed as a further stage of work.

3.4.4 Bulk sample processing

Fifty four environmental bulk soil samples were collected from the site for the potential recovery of plant remains, molluscs and insect remains, with the expectation that they might provide information on the local environment and evidence of human activity in the area. This work should stand alongside any environmental information resulting from analysis of the monolith samples and should help to look at environmental changes across the site, through space and time. The aim of the evaluation was simply to establish the presence and/or absence of biological remains in a selection of the samples from key stratigraphic contexts and to establish whether a full assessment of various categories of environmental remains should be carried out on all or some of the 54 bulk samples.

Sixteen of the fifty four bulk soil samples were processed. These samples were ten, fifteen or twenty litres in size and either five or ten litre sub-samples were processed for this evaluation by floating the soil into 250µm mesh and washing the residue over a 500µm mesh. The flots were stored wet to help with the preservation of any organic material and the wet sieved fractions were dried. Either five or ten litres of soil were retained from each sample for further work.

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 and, in particular, fragments of glass were present in sample {76} from [201].

A summary of the results of the sample processing and scanning is given in Table 19. 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 and the buried landsurface in PDZ3.35/36). 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 Plant remains

Fourteen wet flots were obtained from the sixteen samples processed. Of these, all produced organic waterlogged plant remains, including seeds, wood and rootlets. Clumps of waterlogged compacted straw were present in two samples, {66} from context [199] and {67} from context [200]. Small to moderate amounts of charred wood were present in seven of the samples and charred grain or other plant remains were present in two samples, one of which, sample {66} from context [199], contained moderate amounts of charred cereal and a rachis internode. Large numbers of waterlogged plant remains were present in sample {4} from context [26], sample {66} from context [199] and sample {74} from context [260] and from the bulk sample from [273].

The majority of the waterlogged plant remains are typical of a wetland environment and included crowfoots (*Ranunculus* BATRACHIUM), sedges (*Carex* spp.), rushes (*Juncus* spp.), spike-rush (*Eleocharis* spp.), celery-leaved crowfoot (*Ranunculus sceleratus*), bog bean (*Menyanthes trifoliata*), water plantain (*Alisma plantago-aquatica*), horned pondweed (*Zanichellia palustris*) and branched bur-reed (*Sparganium erectum*). Charophyte (stonewort) oospores were also present in some samples, indicative of wetland environments. Also present were plants more typical of waste/disturbed ground and these included buttercups (*Ranunculus* spp.), stinging nettle (*Urtica dioica*), Persicaria (*Persicaria* spp.), goosefoot/oraches (*Chenopodium/Atriplex* spp.), thistle (*Carduus/Cirsium* spp.), dock (*Rumex* spp.) and polygonums (*Polygonum* spp.). These plants are typical of a disturbed wetland environment even today.

Finally occasional food plants were present in samples {68} from context [217] and sample {72} from context [258] and included seeds of fig (*Ficus carica*) and blackberry/raspberry (*Rubus fruticosus/idaeus*).

3.4.7 Insect remains

Beetle remains were present in two samples, {4} from context [26] and {74} from [260]. These were present in moderate quantities. Daphnia eggs were also present in sample {75} from context [261] and sample {68} from context [217].

3.4.8 Molluscs and ostracods

Moderate quantities of both terrestrial and freshwater molluscs were present in sample {2} from context [24], sample {76} from context [201] and the bulk sample from [273]. A possible ostracod was also present in sample {2} from [24].

context	sample	soil processed (l)	soil retained (l)	vol residue (l)	vol washed material (ml)	sample type	wood	seeds/fruits	insects	molluscs	comments	Potential
24	2	10	10	0.01	5	wet flot		+	poor condition ostracod	++	low wlg seeds	low wlg seeds but mod snails
26	4			0.01	20	wet flot		+++	++		high levels of wetland seeds, especially lamiaceae	good
27	5	10	10	0.1	5	wet flot		+			low wlg seeds	low
28	6	10	10	0.01	10	wet flot		+			low wlg seeds	low
29	7	5	15		2000	wet flot	+++	++			mod wlg seeds	mod seeds, worth looking at as so much wood, might have missed seeds
199	66	5	5	0.1	50	wet flot	+	+++			v good wlg seeds,wetland, nice chd material, cereal, wlg straw	very good
200	67	5	5	0.1	200	wet flot	++ chd	++			mod wlg seeds	good – worth looking at – so much straw and sludge it's hard to tell
217	68	5	5	2	5	wet flot	++ chd	++	daphnia		mod wlg seeds	some food plants, mod wlg seeds, chd grain
258	72	5	5	0	5	wet flot	++ chd	+			low wlg seeds	low
260	74	5	5	0	50	wet flot	++ chd	+++	++		good wlg seeds	very good wlg seeds wetland plants, charophytes
261	75	5	5	0	50	wet flot	+ chd	++	daphnia		mod wlg seeds	good(ish) wetland plants
201	76	5	5	2	5	wet flot	++ chd	+		++	low wlg seeds	Low wlg but mod snails
273			10	0.01	10	wet flot	+ chd	+++		++	good wlg seeds	good wetland, wlg seeds, mod snails

Table 19 Evaluation of environmental evidence from selected bulk soil 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, as a result of water ingress issues, not all the evaluation trenches exposed late Pleistocene/early Holocene gravels. However, an evaluation of the likely depth and significance of the deposits not observed has been made, based on correlation of the observed deposits between the trenches and inferences of the depositional environments represented.

Radiocarbon dating is needed to reliably correlate the trench sequences, which reveal a lateral and chronological succession of alluvial deposits of probable prehistoric and historic date overlying, a Pleistocene template, which forms a high in the north and extreme south of the site and a lower-lying area in between.

The alluvial sequence was sealed by a buried land surface of probable 19th- century date. Made ground deposits overlay this and they probably represent a deliberate attempt to reclaim this marginal environment in the recent past.

The evaluation satisfies the original requirements of the evaluation as stated in the Method Statement (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:

Do Late Glacial deposits exist within the gravels on the site (especially within Landscape Zone 2)? What is the potential for past environment reconstruction and/or Late Upper Palaeolithic activity in these deposits?

Pleistocene gravels were only observed in PDZ3.35/36 and an insufficient depth of gravel was exposed to determine their Palaeolithic potential.

Did river channels cross the site in the Pleistocene or Holocene and is there evidence for human activity associated with them? What information about the past river regime might be available from these channels?

A prehistoric river channel was recorded in the lower lying central part of the site (in trenches PDZ3.33 and PDZ5.81(c), which may have been a channel of the former Hackney Brook. Such a channel has previously been inferred in roughly this location during geoarchaeological modelling. Strandline deposits of the active channel contained wood and bone, but no examination of the samples taken from these deposits (to look for evidence of working and cut marks) have yet been made. This channel appears to have become a backwater and eventually a marsh or fen. Although no dating for the channel and its demise are available, deposits suitable for radiocarbon dating were sampled. Rills or gulleys scoured the muddy surface of the abandoned channel, but it is not yet clear if these were on natural or human origin.

Clear evidence of river channel migration and of the encroachment of a meander of the Lea across the north west part of the site, was observed in the north end of trench PDZ3.35/36. The River Lea is today located approximately 35m to the northwest. Deposits associated with this river channel had truncated the prehistoric landsurface in this trench and the south-eastern edge of a 'thalweg' of the river was observed. The river channel deposits cut a large ditch, the fills of which contained objects of LBA through to medieval date, suggesting a medieval date or later for the migrating channel of the Lea.

Trench PDZ3.37 was located nearest to the Pudding Mill River, adjacent to its south-western edge. However this trench appeared to show a similar alluvial sequence to that seen in other trenches and not river channel fills. Nevertheless, daub recovered from the marsh or fen deposit might indicate material washed up amongst the reeds and sedges in times of flood and could indicate the trench was close to a watercourse in this period. The adjacent Pudding Mill River appears to have been canalised (or artificially created) at some point in the past, the lack of direct evidence for a river channel in PDZ3.37 suggests that its natural course (if one existed) lies to the northeast of its present course and outside of the evaluation

What environmental evidence suitable for past landscape reconstruction and indirect evidence of human activity exists within the wetland area of Landscape Zone 2?

The lower-lying part of the site identified in trenches PDZ3.31 (north part of this trench), PDZ3.32, PDZ3.33 and PDZ5.81(c) lies within the wetland area previously referred to as Landscape Zone 2. PDZ3.33 and PDZ5.81(c) revealed linear features that may be the result of human activity.

The alluvial sequence in these trenches revealed evidence for a prehistoric river channel and subsequent evidence for a rise in water levels (perhaps a result of impeded drainage, influenced by rising relative sea level) and of subsequent drying out and fen or marsh development. Scanning of selected samples taken from these deposits has demonstrated that there is good potential from seeds, insects, and snails and also, potentially, from microfossils for past landscape reconstruction.

Crucially, organic remains from many of the deposits will be suitable for radiocarbon dating, which should be able to tie the environmental evidence into an archaeological chronology.

What archaeological evidence of past wetland exploitation survives within the wetland basin (Landscape Zone 2)?

No archaeological evidence for past wetland exploitation was found in trenches PDZ3.31, PDZ3.32, PDZ3.33 and PDZ5.81(c), which lie within the wetland area previously referred to as Landscape Zone 2. However, the historic cultural evidence observed in PDZ3.35/36 could be the result of channel margin activity. Probable evidence for past land management was identified in trench PDZ3.35/36 in the form of a large NE–SW aligned ditch. However the isolated nature of this ditch makes any interpretation difficult, although clearly a drainage and/or boundary function is a reasonable supposition.

In addition, the ephemeral probably historic wood remains located within the cut in trench PDZ3.35/36 might also be associated with wetland exploitation (and a retting function, which requires steeping in water and flowing water, has been suggested).

Does evidence of prehistoric and historic occupation survive on the higher, drier ground of Landscape Zone 1?

Although no evidence of prehistoric or historic occupation was seen, evidence of cultural activity was observed in a soil horizon identified at the base of the alluvial sequence in the north of the site (tPDZ3.35/56), which is associated with an island in the floodplain, created by a rise in the underlying gravels. Within the central and area of the excavation, the underlying gravel becomes increasing deeper and this coincides with an absence of anthropogenic activity and the presence of a stream / river channel.

Is there any evidence of a Roman road within the area of the site? Is there any evidence of Roman wetland or dry land occupation and other activity within the area of the site? If so, how does it relate to what is known of the settlement pattern further on either side of the Lea Valley during the Roman period?

The evaluation trenches were placed to bisect the proposed line of the Roman London to Colchester road. Despite this no evidence for the Roman road or roadside activity was observed within the site.

It seems therefore unlikely that a road crossed this area, however, it must be remembered that the surviving stratigraphy in the extreme north of the area which

comprises the historic river channel cut and fills are of post Roman date, and could possibly have truncated earlier Roman archaeology

How extensive is modern truncation across the site? Do made ground deposits bury or truncate the post medieval / modern land surface and can more detail be obtained about the thickness of the made ground?

Considerable depths of made ground buried earlier landsurfaces across the site. The made ground contained no deposits of archaeological significance, all of which appeared to be 19th/20th dump and ground level raising deposits. Steep tip lines observed within these deposits suggest fairly rapid deposition, rather than sporadic disposal of unwanted material. This reflects a deliberate attempt to reclaim this marginal environment for industrial use in the 19th century.

What was the pre-modern / pre-Victorian topography of the site?

The pre-modern landsurface undulates between about 2.3m and 3.4m OD across the site. This irregular topography probably reflects the range of different environments represented by the alluvial clay (see 3.3.10). It might also reflect variable compaction of the deposits across the site by later activity (though given the minerogenic content of the deposits such compaction is unlikely to have been great). As the landsurface survives where recorded, the variation in levels is not a result of later truncation.

4.2 General discussion of potential

The evaluation has shown that undisturbed deposits of archaeological interest, including the post medieval ground surface, survive intact beneath late 19th century made ground

Although not yet reliably dated, a sequence of alluvial sediments of archaeological interest were revealed of between about 1.30m to 2m in thickness, possibly spanning the early prehistoric to Victorian periods and indicative of dryland, active and abandoned river channels, backwaters, marsh and fen, estuarine environments or/and wet meadowland.

This alluvial sequence increased in thickness towards the south, as indicated by limited probing within the base of trench PDZ3.32. This probing suggested an overall thickness of the alluvium at this point of around 2.80m. Excavation of the southernmost trench PDZ3.31 revealed only a partial sequence of alluvium, which was already of 1.80m in thickness (in the north of the trench), although the underlying gravel rose to the south.

The inferred Pleistocene gravel topography indicates the presence of an island in the extreme south of the site, only clipped by trench PDZ3.31, a lower-lying area across the south and central part of the site (trenches PDZ3.32, PDZ3.33 and PDZ5.81(c), and an east–west gravel ridge or spur across the northern end of the site (within trenches PDZ3.34, PDZ3.35/36 and PDZ3.37). It is worth noting that this gravel was not seen within the next nearest trench to the north (trench PDZ3.39, work package 3) and one could extrapolate a gravel ridge of approximately 100m width at this point. This gravel spur when projected to the west would lie within the area of the River Lea known as Old Ford.

The only indications of prehistoric and historic activity were located upon the higher gravel ridge, notably in the form of the possible buried land surface and the large NW–SE aligned ditch. These appear to have a date range beginning in the LBA–EIA (*c* 1000-300 BC) for activity on the buried land surface through to Roman or possibly later for the ditch. There was no clear evidence for medieval activity, and it is likely that much of the site was too waterlogged in medieval times for occupation, or to be effectively exploited in an archaeologically visible manner. Indeed the waterlogging of the dry landsurface / gravel spur or island might date from the later prehistoric period.

The archaeological potential of the site is varied. The central to southern area seems likely to have been an active channel and wetland environment for a considerable period, possibly from the Mesolithic. Further analysis of the geoarchaeological samples taken from these deposits will assist in aiding present understanding of this area. However, the basic pattern of landscape evolution has been obtained from the evaluation. The earliest deposits are likely to relate to a prehistoric river, probably a channel of the Hackney Brook. The range of environments associated with this channel and the characteristics of the river itself might be better understood from an examination of the samples and deposit modelling. An increasingly wet environment, possibly a result of impeded drainage as relative sea level rose, led to the development of pools within the channel area.

There is potential to examine the influence of the encroaching estuarine front from environmental remains preserved in samples taken from these deposits and the tranquil environment of deposition should also preserve high resolution sequences of microfossils, especially pollen, for on-site and wider landscape reconstruction. Subsequently water levels appear to have fallen and the former channel area dried out and was colonised by vegetation.

There is good potential to reconstruct the characteristics of the developing marsh or fen from environmental remains preserved in the humic clays and silts associated with this phase, which should also preserve indirect evidence of local human activity. There should also be evidence within these deposits for a reversal to increasingly wet conditions and for the encroachment of estuarine and intertidal environments across the site itself. A range of deposits from mudflats to salt marsh and wet meadowland are represented by the overlying alluvial clay which extends across the entire site and the pre-modern buried landsurface formed as a result of weathering of the uppermost of these deposits.

Crucially, however, the alluvial sequence across the entire site, but especially in the lower-lying central and southern part, has good potential for radiocarbon dating of preserved organics. In fact without such dating the results as obtained so far mean very little and the further examination of samples would be pointless, as environmental remains are not intrinsically dateable. Dating is needed to correlate the stratigraphy across the site, to make the potential evidence suggested above meaningful and to relate the results already obtained and those that might potentially be obtained to an archaeological chronology.

Importantly, the activity recorded in PDZ3.35/36 needs to be linked to the sequence of changing environments from channel to pool to marsh to mudflats recorded in the lower-lying part of the site. Radiocarbon dating of key levels and deposits should

form the first stage of any further work and should supplement the present report if no further work is undertaken on the records and samples from the site.

The northern part of the site contained clear archaeological potential, with indications of prehistoric to post medieval activity. The potential in this area is moderate for the prehistoric period, but subsequent alluvial deposition and the impact of a migrating meander of the Lea in the historic period may result in a potential decrease for later archaeological material. Generally speaking, it is likely that the site was partly dry land and partly within an active and later abandoned river channel, where a marshy or waterlogged environment existed during the prehistoric period and mostly a wetland area in the historic periods. During the later post medieval period when the area was reclaimed as a result of landfill, drainage and canalisation works.

4.3 Significance

The evaluation of PDZ3 Work Package 2 has added direct information to the archaeological understanding of the area.

It has provided evidence indicative of prehistoric and historic river channels, the presence of a buried landsurface and of historic wetland exploitation as indicated by a ditch and a wattle structure that may have belonged to a feature used for retting.

The possibility that the migrating historic meander identified in PDZ3.35/36 represents a former course of the River Lea or a possible forerunner to the Pudding Mill River is locally significant and should relate to evidence from historic maps, deposit modelling and excavation at other locations within the vicinity. Cultural activity was associated with this area.

The evidence of prehistoric activity associated with the island of dry ground in the north west of the site and of the large ditch of possible Roman or later date in the same area aids in our understanding of the past land use of the site and of the area in general. This evidence is of at least high local significance, if not regional.

Should further work and especially radiocarbon dating on the samples obtained be undertaken, the geoarchaeological evidence from the site has potential to provide a significant amount of information, which will aid in the understanding of the evolving environment of the Lea Valley.

This information will contribute to our understanding of the past environment of the site and its environs and will assist in landscape reconstruction models being developed. This information is certainly of local significance. When considered alongside the information currently being obtained from the other parts of the Olympics site, however, the geoarchaeological evidence undoubtedly has regional significance.

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'.[1]

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

Taken as a whole, archaeology of the site is not characteristic of any particular period. The Evaluation indicates a multi period site.

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

Whilst there may be considerable contemporary documentation for the later medieval period from *c* 1300 onwards, it is unlikely that any of this will be specific enough to relate to individual features.

Criterion 4: group value

The landscape features relate to and are part of the wider pattern seen within the Olympic Park and elsewhere in the Lea Valley. Full interpretation is only possible in that context. The post-medieval survival is remnants of part of the spread eastwards from the City of London and the industrialisation of the site area, combined with the management of the water courses within the Lea Valley.

Criterion 5: survival/condition

The evaluation results have demonstrated that geoarchaeological and archaeological remains (including a timber structure) were preserved beneath several metres of modern made ground, although locally within areas of development these will have been truncated to dramatically different levels.

Criterion 6: fragility

[1] 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)

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 variable depths of alluvium overlying late Pleistocene/early Holocene gravels are likely to exist elsewhere in the local vicinity. 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.

Later exploitation of the site was evidenced within Trench PDZ3.35/36 with the insertion of a timber structure within a possibly natural channel feature; fragments of LBA–EIA pottery and daub were recovered from an early land surface (see The Prehistoric pottery, in Appendix 3: finds assessment) and its successive alluvial layers; a possible Roman ditch was also present within the alluvial sequence. The alluvium appeared to gradually form a dry-land surface (topsoil) of probable post medieval date later sealed by 19th–20th century land raising dumps.

6 Proposed development impact and recommendations

It is proposed to construct two bridges T03 and T04 as part of the development of the site plus the reprofiling and replacement of some of the river walls. The construction methods for these works are likely to disturb or destroy all archaeological deposits within their footprints. Other construction works are planned: mainly earthworks and hardstanding, although these have been assessed as not impacting upon the archaeological resource (MoLAS-PCA, 2007b). The area will eventually comprise part of the principal Olympic and Paralympic stadium, with associated front of house and back of house areas.

No detailed plans for the construction of the buildings are available, but it is known that the works will involve piling to a depth of up to 30m. This will disturb and partially destroy all (geo)archaeological deposits within the footprint of the stadium.

The assessment above (Section 5) does not suggest that preservation *in situ* would be an appropriate mitigation strategy. MoLAS-PCA considers that earlier deposits of prehistoric to post-medieval date survive beneath late 19th century made ground. The majority of the deposits have local importance for archaeological finds and features and have good palaeoenvironmental potential.

In particular, the presence of a possible prehistoric land surface and timber structure in trench PDZ3.35/36 warrants further attention in excavation to define the nature and date of this cultural activity, as does the large ditch within this trench.

In addition, detailed work on the samples already taken from the sequence is needed to gain a better understanding of the local river regime and evolving past landscape. Crucially, this work should involve a programme of radiocarbon dating to correlate the stratigraphy recorded in each individual trench across the site itself and tie it in to an archaeological chronology.

The site has high geoarchaeological significance. However, if further work is carried out on the information and samples that have already been obtained at the evaluation stage, this should suffice as a record of the localised environment and little additional significant evidence is likely to be gained from a continuation of excavations at the same locations. Therefore it is recommended that no further geoarchaeological fieldwork be carried out around the evaluation trenches, but that a programme of geoarchaeological analysis be carried out on the samples recovered from the site.

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 chronology. It is suggested that a total of 15-18 radiocarbon dates taken from the sampled sequences 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. Deposits to target for dating should include those representing the:

  - waterlogging of the buried landsurface (PDZ3.35/36);
  - onlap of humic marsh deposits over the buried landsurface (PDZ3.34 and PDZ3.37);
  - active prehistoric channel (PDZ3.33 and/or PDZ5.81(c);
  - pools formed within the active and abandoned prehistoric channel;
  - onset of marsh development in the deepest / lowest lying parts of the site (PDZ3.31, north end; PDZ3.33 and/or PDZ5.81(c);
  - changing characteristics within the marsh deposits (PDZ3.31, north end);
  - surface of the marsh deposits in the deepest part of the site (PDZ3.33 and/or PDZ5.81(c);
  - organics within the alluvial clay (from 2-3 locations, where / if organics survive).
- The bulk samples (54 samples) are processed for the assessment of plant remain, snail, ostracod and insect assemblages;
- Five of the ten monolith sampled profiles (14 of the 23 tins) are sub-sampled and assessed for microfossils (pollen, diatoms). It is likely that *c* 4 - 8 sub-samples for assessment of pollen and diatoms are required from each sequence, in total assessment of *c* 32 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 the results of this evaluation and of the proposed environmental mitigation are assimilated into a site-wide assessment of all 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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ODA, 2007d *Olympic, Paralympic and Legacy Transformation Planning Applications Annexure Code of Construction Practice, Vol 15* (OLY/GLB/ACC/DOC/CCP/01)

9 Appendix 1: NMR OASIS archaeological report form

OASIS ID: preconst1-42218

Project details

Project name	Planning Delivery Zone 3 archaeological evaluation
Short description of the project	Following the recommendations of GLAAS, eight evaluation trenches were excavated on the site and the results have helped to refine the initial assessment of its archaeological potential. Of the eight trenches excavated five reached the level of the natural gravels, with the remaining three excavated partly into the alluvial deposits. This overlying alluvial sequence where fully revealed had a thickness of between 1.36m to 2.03m. The dominance of alluvial and probably some fluvial sediments within all of the trenches indicates an environment that has been subjected to numerous episodes of both seasonal flooding and probably river or stream migration over a long period. Features of archaeological interest observed within or cutting into these deposits included possible land surfaces, natural channels, timber stakes plus a ditch of early date. The sequences of archaeological interest were then sealed by 19th-20th century made ground or landfill deposits. The varying presence and preservation of archaeological horizons, features, organic remains and palaeoenvironmental evidence suggests that the site has a low archaeological significance and a high geoarchaeological significance in understanding the natural and cultural formation and change of the lower Lea Valley.
Project dates	Start: 13-08-2007 End: 13-11-2007
Previous/future work	No / Not known
Any associated project reference codes	Planning Application Number 07/90011/FUMODA - Planning Application No.
Any associated project reference codes	OL04307 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Industry and Commerce 1 - Industrial
Monument type	LANDSURFACE Late Prehistoric
Monument type	DITCH Roman
Significant Finds	POTTERY Late Prehistoric
Methods & techniques	'Sample Trenches'
Development type	Public building (e.g. school, church, hospital, medical centre, law courts etc.)
Prompt	Direction from Local Planning Authority - PPG16
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	England
Site location	GREATER LONDON NEWHAM STRATFORD Planning Delivery Zone 3
Study area	32670.00 Square metres
Site coordinates	TQ 3753 8393 51.5369983790 -0.01677637739610 51 32 13 N 000 01 00 W Point
Height OD	Min: 0.31m Max: 1.70m

Project creators

Name of Organisation	Pre-Construct Archaeology Ltd
Project brief originator	London Development Agency
Project design originator	Gary Brown
Project director/manager	Gary Brown
Project supervisor	john payne
Type of sponsor/funding body	London Development Agency

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Planning Delivery Zone 3 evaluation report
Author(s)/Editor(s)	Payne, J
Date	2008
Issuer or publisher	Pre-Construct Archaeology
Place of issue or publication	London

Entered by	john payne (nasreenmohammed2003@yahoo.com)
Entered on	14 May 2008

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 ie: 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: finds assessment

11.1 Ceramic building material

Kevin Hayward

11.1.1 Trench PDZ3.31

One example of ceramic building material from Trench PDZ3.31 an overfired Flemish floor tile were recorded using the London system of classification with a fabric number allocated to this object. The condition of the tile was poor.

Context	Fabric	Form	Size	Date range of material		Latest dated material	
63	*1977*	Overfired Flemish Floor Tile	1	1450	1800	1450	1800

Table 20 Distribution of CBM within Trench PDZ3.31

11.1.1.1 Significance, potential and recommendations for further work

The presence of a solitary fragment of post-medieval Flemish floor tile is of little significance. The silty fabric *1977* occurs during throughout Post-Medieval period though it seems likely, given the presence of the fine moulding sand that it dates from between 1700 and 1800.

There are no recommendations for further work; however the assemblage may need to be referenced for any future publication of the archaeological sites of the Olympic development area (Chris Jarrett pers. comm.)

11.1.1.2 Trench PDZ3.35/36

Two abraded examples of Roman ceramic building material and a burnt flint from Trench PDZ3.35/6 were examined using the London system of classification with a fabric number allocated to each object.

Context	Fabric	Form	Size	Date range of material		Latest dated material	
201	*3023*	Tiny fragment of Roman cbm	1	50	120	50	120
202	*2459c*	Highly Abraded Roman Tile edge	1	140	250	140	250
217	*3117*	Burnt Flint	1	50	1800	50	1800

Table 21 Distribution of CBM within Trench PDZ3.35/36

11.1.1.3 Significance, potential and recommendations for further work

All the ceramic building material that has been recovered and recorded from this trench has a fabric and form that is early-mid Roman (AD 1st–3rd century) in date. The sandy chaff-tempered fabric *2459c* has a restricted chronological range AD140 to 250 and has been identified nearby in a brick from Trench 5.81(c) (see this report). This is interesting in itself but the fragments are tiny and highly abraded which indicates post-depositional exposure and transportation

There are no recommendations for further work; however the assemblage may need to be referenced for any future publication of the archaeological sites of the Olympic development area.

11.2 The Prehistoric pottery

Mike Seager-Thomas

11.2.1 Trench PDZ3.35/36

The small assemblage of prehistoric pottery from Trench 35/36 is of Late Bronze Age (LBA) / Middle Iron Age (MIA) date. It incorporates no non-flint-tempered fabrics and includes no decorated sherds.

Context	Comments/dating evidence	Spot date
115	FMF (PDR)	LBA
116	FF (PDR)	LBA
167	FF, MCF (both PDR)-heavily gritted base	LBA
197	FMF (PDR)-base	LBA
216	MF (PDR)	LBA
217	FMF, MF (PDR)-thin bodied, fingered	LBA

Table 22 The prehistoric pottery from Trench PDZ 3.35/36

FF	fine flint temper
FMF	fine to medium flint
MF	medium flint
MCF	medium to coarse flint
Sandy	quartz sand rich fabric
Shelly	shelly fabric etc.
(PDR)	post Deverel-Rimbury fabric type
(DR)	Deverel-Rimbury fabric type
ND	Not Dated

Table 23 Expansion of codes used in Table 24

11.3 The Post-Roman Pottery

Chris Jarrett

Standard Museum of London pottery codes were used to classify the pottery and the assemblages were recorded in an Access database.

11.3.1 Trench PDZ3.31

There are a total of sixteen sherds of post-Roman pottery (and fifteen are unstratified) from site trench PDZ3.31 dating from the 19th century onwards.

The pottery is generally in a good condition, with more complete items than fragmentary examples and vessel shapes can be recognised.

Deposition of the material is most likely caused by secondary or tertiary circumstances but involved processes that did not cause abrasion. The pottery occurs in one context only. Standard Museum of London pottery codes were used to classify the pottery and the assemblage was recorded in an Access database.

Table 24 shows the distribution of the stratified pottery. The other material was not stratified.

Context	Sherd count	Spot date
62	1	1805-1900+

Table 24 Trench PDZ3.31: Pottery spot dating index

11.3.1.1 Significance, potential and recommendations for further work

The stratified pottery is not significant at a local level while the unstratified pottery contains forms that are in-frequent in most 19th-century pottery assemblages. The ceramic profile of the assemblage is standard for the local area. The main potential of the pottery assemblage is as a dating tool for the context it occurs. Some of the unstratified vessels may merit illustration or photographing. The pottery is generally mundane with no unusual fabrics, but some forms are of interest. There are no recommendations for further work, but if a publication report is produced on other grounds then the assemblage will need to be referenced.

11.3.2 Trench PDZ3.32

There are five sherds of post-Roman pottery from this trench and all are stratified. All date from the 19th-century onwards. The assemblage is in a good condition and appears to have been deposited soon after breakage or was not subjected to any abrasion. The forms have either complete profiles or are intact.

Table 25 shows the distribution of the pottery in the contexts it was recovered from, the number of sherds and a spot date for each deposit.

Context	Sherd count	Spot date
10	1	1780-1900
122	4	1840-1900

Table 25 Trench PDZ3.32: Pottery spot dating index

11.3.2.1 Significance, potential and recommendations for further work

There is no or little significance of the pottery at a local or any other level. The pottery types (a black transfer-printed toothpaste lid, a brown-transfer printed plate marked ‘Chusan’, and an upright bottle and milk jug in Bristol-glazed English stoneware. An English porcelain miniature toy jug from context [10]) is known to

have been marketed nationally over its period of production. The main potential of the pottery is as a dating tool for the context it was found in. There are no recommendations for further work.

11.3.3 Trench PDZ 3.34

There are three sherds of post-Roman pottery (none unstratified) dating to the 19th century. The pottery is in a good condition, indicating rapid deposition after being discarded. The pottery derives from one context.

Table 26 shows the distribution of the pottery in the contexts it was recovered from, the number of sherds and a spot date for each deposit.

Context	Sherd count	Spot date
254	3	1810-1900+

Table 26 Trench PDZ3.34 Pottery spot dating index

11.3.3.1 Significance, potential and recommendations for further work

There is little significance to the pottery at a local level, although the forms (such as a square refined whiteware jar, accompanied by two black transfer-printed lids for cherry toothpaste and a third lid for cold cream are unusual as archaeological finds. These finds are interesting for further demonstrating late 19th-century consumption.

The pottery has the potential to date the context it was found in. There are no recommendations for further work; if the excavations are taken to publication then this assemblage should be noted and retained for comparison with other sites within the Olympic and Paralympic Games and Legacy Transformations Development.

11.3.4 Trench PDZ3.37

There are eight sherds (none unstratified) from PDZ3.37, all dating to the 19th-century. The pottery is in a good condition, with fragmentary and intact items present indicating that deposition took place soon after breakage or discard. The pottery derives from one context.

Table 27 shows the distribution of the pottery in the context it was recovered from, the number of sherds and a spot date for the deposit.

Context	**Sherd count**	**Spot date**
271	8	1864-1891+

Table 27 Trench PDZ 3.37 Pottery spot dating index

11.3.4.1 Significance, potential and recommendations for further work

The pottery is of little significance at a local or regional level, but it reflects domestic activity from the source of its origin. The assemblage has a national ceramic profile with frequent industrial finewares. These include in refined white earthenware (REFW) a doorknob and a lid with chrome coloured glazes (REFW CHROM), besides transfer printed wares (TPW) in the form of a dish with the Asiatic Pheasant design and an oval dish with a black transfer. Stonewares include a wide mouth bottle with a 'Bailey, Fulham' stamp and an imported Westerwald stoneware (WEST)

seltzer bottle. The main potential for the pottery is to date the context it was found in. A small number of items should be photographed. Recommendations for further includes documentary research to find out where these ceramics came from. Were local authorities, such as West Ham, dumping household refuse on the site or did the material come from other areas of London. Publication of this material should be considered in conjunction with contemporary ceramics from the other Olympic archaeological excavations.

11.3.5 Trench PDZ 5.81(c)

There are a total of 87 sherds of post-Roman pottery (six unstratified) from trench 5.81(c) dating from the medieval period, the 18th century and later. The pottery is generally in good condition, ranging from sherds to intact items with vessel shapes being recognisable. There is little or no abrasion despite probable secondary or tertiary deposition processes being involved. The pottery derives from 22 contexts.

Table 28 shows the distribution of the pottery in the contexts it was recovered from, the number of sherds and a spot date for each deposit.

Context	Sherd count	Spot date
2	7	1820-1900
5	4	1830-1900
9	4	1850-1900
23	4	1835-1900
25	2	1835-1900
27	6	1835-1900
28	1	1830-1900
29	4	1800-1900
30	1	1170-1350
32	1	1580-1900
40	4	1830-1900
41	1	1800-1900
42	1	1580-1900
43	1	1835-1900
47	3	1830-1900
48	3	1810-1900
67	9	1850-1900
68	3	1720-1780
70	7	1850-1900
71	8	1830-1900
72	2	1830-1900
75	5	1850-1900

Table 28 Trench PDZ5.81(c): Pottery spot dating index.

11.3.5.1 Significance, potential and recommendations for further work

There is little or no significance to this stratified pottery at a local level. The ceramic profile of the assemblage follows what would be usual for the local area and similar ceramic assemblages can be found on other excavations in the locality. The single

sherd of medieval pottery is in South Hertfordshire-type ware, which was traded over a large area of greater London (particularly north of the Thames) during the period 1170-1350. The post-medieval assemblage has mostly a national ceramic profile with industrial finewares (mid 18th-century white salt-glazed stoneware and later 19th-century refined white earthenware, majolica, Rockingham-type ware and transfer-printed ware) with a Midlands source being most prominent amongst the ceramics. Local wares include stoneware containers and post-medieval redware mostly flowerpots. The only imports comprise cheap continental porcelains.

The potential for the pottery is to date the contexts it occurs in. Some of the unstratified vessels may merit illustration or photographing. The pottery is generally mundane with no unusual fabrics, but some forms are of interest. If a publication of the archaeological trenches is agreed then the pottery will need to be referenced.

11.4 Clay tobacco pipe

Chris Jarrett

11.4.1 Trench PDZ3.32

A small assemblage of clay tobacco pipes (one stratified bowl) was recovered from trench 32. The tobacco pipe consists of a single bowl of Atkinson and Oswalds' (1969) type 29 (AO29) found in context [122] and dates to between 1840-80. The item is not maker marked but is decorated with oak leaf and acorn borders. It is in a good condition and was therefore probably deposited soon after breakage.

Context	Sherd count	Spot date
122	1	1840-1880

Table 29 Clay Tobacco Pipe spot dating for Trench PDZ3.32

11.4.1.1 Significance, potential and recommendations for further work

The clay tobacco pipe has no significance, its only potential is to date the context it was found in and there are no recommendations for further work.

11.4.2 Trench PDZ 3.33

A small assemblage of clay tobacco pipes (three fragments, all stratified comprising two bowls and one nib) was recovered from the trench. The bowls are both of the Irish type AO33, defined as having moulded milling around the rim and which date to after 1840. The first comes from deposit [71] and is notable for having a spur bent back towards the stem. The second AO33 bowl is notable for a splayed heel and was found in deposit [75]. Neither bowl has a maker's mark. The nib came from deposit [72]. The material is in a good condition and therefore probably deposited soon after breakage.

Context	Sherd count	Spot date
71	1	1840+
72	1	1580-1910
75	1	1840+

Table 30 Clay Tobacco Pipe spot dating for Trench PDZ3.33

11.4.2.1 Significance, potential and recommendations for further work

These clay tobacco pipes have little significance at a local level and reflect the fashion and type of pipe marketed and made in London during the later 19th century. Their main potential is to date the contexts in which they were found. There are no recommendations for further work but reference to this assemblage should be made in any publication report on the archaeological excavations at the Olympics site.

11.4.3 Trench PDZ5.81(c)

A small assemblage of clay tobacco pipes (two stratified bowls) was recovered from trench PDZ5.81(c) (c). The first bowl from [29] consists of an oversized Atkinson and Oswalds' type 28bowl (AO28: Atkinson and Oswald 1969). It is thick walled and the internal base is flat and has four holes surrounding a larger central hole. This pipe may be a patented registered design, but no information survives to confirm this. It probably dates to after 1880. The second bowl was recovered from deposit [30] and is a complete cutty (short pipe) version of the AO30 type dated 1850–1910, but also with the briar design. A mid to late 19th-century moulded stem was also found in context [29]. The pipes are in a good condition so were probably deposited soon after breakage or discard.

Context	Sherd count	Spot date
29	2	1840-1880+
30	1	1850-1910

Table 31 Clay Tobacco Pipe spot dating for Trench PDZ5.81(c)

11.4.3.1 Significance, potential and recommendations for further work

The clay tobacco pipes have some significance at a local level as they are unusual types not frequently encountered in archaeological excavations. Their main potential is to date the contexts they were found in and they require illustrating or photographing. It is recommended that these pipes are incorporated in any publication of the excavations.

11.5 The glass

Sarah Carter

11.5.1 Trench PDZ3.31

There are a total of 34 fragments of glass from this trench all of which date to the 19th century onwards. The glass is in good condition, much of it being complete bottles and jars indicating that the deposition occurred soon after the material was discarded.

Table 32 shows the distribution of glass in the contexts from which it was recovered, the number of fragments and a spot date for each deposit.

Context	Number of Frags.	Spot date
+	15	Late 19th - 20th C
48	1	Late 19th - 20th C
61	1	20th C
63	1	20th C
65	7	19th - 20th C
66	1	Late 19th - 20th C
67	6	19th - 20th C
68	2	Late 19th - 20th C

Table 32 Distribution of Glass within Trench PDZ3.31

11.5.1.1 *Significance, potential and recommendations for future work*

There is little significance for this glass assemblage as the majority of it is unstratified. It does, however, demonstrate domestic activity happening on or near the vicinity where the material originated, and reflects the range of products in use. All the glass represents bottles and jars from foodstuffs, medicines, drinks and ink apart from one fragment of glass tube probably of an industrial purpose. The potential for this assemblage is as a reference collection. There are no recommendations for further work except that the material should be considered in conjunction with that from the other Olympic sites.

11.5.2 Trench PDZ3.32

Three complete bottles were recovered from this trench. They all date to the late 19th century onwards. The deposition is likely to be secondary or tertiary.

Table 33 shows the distribution of glass in the context from which it was recovered, the number of fragments and a spot date for each deposit.

Context	No. of Frags.	Spot date
122	3	Late 19th - 20th C

Table 33 Distribution of Glass within Trench PDZ3.32

11.5.2.1 Significance, potential and recommendations for future work

These three bottles, two ink and one medicinal, were all recovered from a modern ground level raising deposit. Their significance is therefore as an indication of the glass containers used in this period. The potential for this assemblage is as part of a reference collection of 19th – 20th century glass. It is recommended that these bottles should be viewed in conjunction with glass from he other Olympic sites.

11.5.3 Trench PDZ3.33

There are a total of 37 fragments from this trench, all of which date from the 19th century onwards. All the glass is very fragmentary. The deposition is likely to be secondary of tertiary.

Table 34 shows the distribution of the glass in the context in which it was recovered, the number of fragments and a spot date for each deposit.

Context	No. of Frags	Spot date
70	4	19th - 20th C
71	4	20th C
72	4	19th - 20th C
73	3	20th C
74	21	20th C
75	2	L19th - 20th C

Table 34 Distribution of Glass within Trench PDZ3.33

11.5.3.1 Significance, potential and recommendations for future work

The glass fragments represent a range of forms including wine, medicinal and drinks bottles and window glass .The majority of the glass, however, is from unidentifiable forms. This reduces the significance of the assemblage and minimises its potential. Three fragments of almost black, moulded glass may be from an industrial, possible electrical piece of glassware. If the 19th century archaeology of the Olympics excavation is to be explored for publication then this piece should be further studied and photographed.

11.5.4 Trench PDZ3.34

Only one bottle was recovered from this trench, which dates to the late 19th-20th century. It is a complete bottle and was probably deposited soon after being discarded. The glass came from one context.

Table 35 shows the distribution of glass in the contexts from which it was recovered, the number of fragments and a spot date for the deposit.

Context	No. of Frags.	Spot date
254	1	L19th - 20th C

Table 35 Distribution of Glass within Trench PDZ3.34

***11.5.4.1** Significance, potential and recommendations for future work*

There is little significance for this glass except as part of a range of medicinal glass bottles recovered from the Olympic sites. Its potential is therefore as part of a reference collection. It is recommended that this bottle is viewed in conjunction with the material from the other Olympic sites.

11.5.5 Trench PDZ3.37

Only one fragment of glass was recovered from this trench, which dates to the late 19th–20th century. It is a large fragment, and was probably deposited soon after being discarded. The glass derives from one context.

Table 36 shows the distribution of glass in the context from which it was recovered, the number of fragments and a spot date for the deposit.

Context	No. of Frags.	Spot date

Context	No. of Frags.	Spot date
271	1	Late 19th - 20th C

Table 36 Distribution of Glass within Trench PDZ3.37

11.5.5.1 Significance, potential and recommendations for future work

There is little significance to this glass fragment as it was found in a modern ground raising level. However it has potential as part of a reference collection of glass bottles and other containers from this period. It is recommended that it is viewed in conjunction with the other glass recovered from Olympic sites.

11.5.6 Trench PDZ5.81(c) (c)

There are a total of 28 fragments of glass from this trench all of which date from the 19th century onwards. The glass is in good condition with more complete vessels than fragmentary ones. The deposition of the material is likely to be secondary or tertiary.

Table 37 shows the distribution of the glass in the contexts from which it was recovered, the number of fragments and a spot date for each deposit.

Context	No. of Frags.	Spot date
1	4	Late19th - 20th
6	3	19th - 20th
7	1	20th
12	1	Late19th - 20th
23	1	Late19th - 20th
28	2	20th
29	2	Late19th - 20th
38	1	20th
40	4	19th

Table 37 Distribution of Glass within Trench PDZ5.81(c)

11.5.6.1 Significance, potential and recommendations for future work

The assemblage is significant as an indication of the range of consumer products in use during the 19th and 20th century. The glass includes examples of medicinal, drinks and ink bottles which are usual for the period. The potential for this assemblage would be as a reference collection, particularly because of the good level of preservation of the majority of the material. Recommendations for future work could include documentary research into the waste disposal of the period and the areas from which these deposits came. This assemblage should be viewed in conjunction with the glass from the other Olympic sites.

11.6 The timber

DM Goodburn

11.6.1 Trench PDZ35/36

The very disturbed remains of a roundwood structure [159] were found in shallow cut [239] at the south end of the trench at *c* 2.10m OD (Fig 11).

The structure was partially revealed during the evaluation phase, the deep, narrow stepped-in trench base was subsequently very slightly extended to the west where further waterlogged wood was revealed. However, unfortunately, the findings of the extension were more inconclusive than the material originally observed.

The following notes are intended as a brief summary of the material and disturbed structure, followed by a very brief attempt to suggest a possible function for it. Finally, it is difficult to see the extensively canalised multiple channels in the Lea Valley as once being part of an intensely varying and sometimes fierce delta in which natural trees and worked timbers were washed around and scoured out. It should also be noted that the text below was prepared against the background of a large corpus of recorded woodwork of prehistoric to recent date recovered from East London.

11.6.1.1 Disturbed roundwood structure [159]

The remains of clearly cut roundwood were found at the south end of the evaluation trench Excavation showed that some elements were either vertical or lying at 45° whilst other material was horizontal. The worked roundwood, and possibly worked roundwood items, comprising context [159] were confined to an irregular shallow cut surviving only *c* 0.2m deep [239]. The structural arrangement had been massively disturbed in antiquity. It is very likely that this disturbance was caused by scouring during periods when the R. Lea was in spate. Several excavations in the area have shown the scouring out of worked roundwood and timber is a typical feature of worked wood assemblages in the Lea valley.

Cut [239] extended beyond the west edge of the trench, with a NE–SW length of 3.2m running across the narrow trench base. It had a width of *c* 1.7m. In the north-east corner what appeared to be the base of a wattle lining to the feature survived virtually in situ. This comprised three pointed stakes: [175], [176] and [177]. Stakes [175] and [176] were made from small cleft ¼ poles measuring *c* 60 x 40mm, whilst [177] was a whole small stem c 20mm in diameter. The longest stake only survived to *c* 450mm long. The base of the cut was strewn with small diameter regular rods, probably of coppiced origin. Also in the north-east corner several regular rods, between 20mm and 10mm in diameter [181], were found wedged behind one of the stakes, and were thus possibly in situ.

11.6.1.2 Dating and possible function for the disturbed structure

This type of disturbed wattle work has no dateable features based on technological grounds. Indeed, there are remnants of modern wattle revetments to the River Lea just 80m north of the trench. Stratigraphically a medieval date seems likely.

It may be worth submitting a C14 sample to clarify the dating of the feature.

Insofar as the possible function of [159], one might very tentatively suggest it saw use as a retting pit in which flax (or nettle) stems are partially rotted prior to working into separate fibres for weaving. Fresh or brackish water was used for this process in

which shallow rough pits were required to contain the material. The finding of organic fibres in the fills of the cut may be suggestive here.

11.6.1.3 Recommendations for future work

A short updated summary of the disturbed wooden structure should be produced following the species identification analysis and closer dating (C14 as cited above) of the material.

Comparison with other similar features may be useful in particular, with a rather similar wattle structure recently excavated by MoLAS-PCA at 150 Stratford High Street.

12 Appendix 4: context index

Site Code	Context No.	Plan	Section / Elevation	Type	Description	Date
OL-01807	1	PDZ5.81(c) (c)	SI	Layer	Modern ground surface	Modern
OL-01807	2	PDZ5.81(c) (c)	SI	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	3	PDZ5.81(c) (c)	SI	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	4	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	5	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	6	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	7	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	8	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	9	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	10	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	11	PDZ5.81(c) (c)	S1	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	12	PDZ5.81(c) (c)	S4	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	13	PDZ5.81(c) (c)	S4	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	14	PDZ5.81(c) (c)	S3	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	15	PDZ5.81(c) (c)	S3	Layer	Modern ground level raising deposit.	Modern/ Post medieval

OL-01807	16	PDZ5.81(c) (c)	S3	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	17	PDZ5.81(c) (c)	S3	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	18	PDZ5.81(c) (c)	S4	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	19	PDZ5.81(c) (c)	S4	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	20	PDZ5.81(c) (c)	-	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-01807	21	PDZ5.81(c) (c)	-	Layer	Landsurface, pre ground level raising episode.	Post medieval
	22	VOID				
OL-01807	23	PDZ5.81(c) (c)	S2	Layer	Alluvial silty clay	?
OL-01807	24	PDZ5.81(c) (c)	S2	Layer	Alluvial silty clay	?
OL-01807	25	PDZ5.81(c) (c)	S2	Layer	Alluvial clay	?
OL-01807	26	PDZ5.81(c) (c)	S2	Layer	Alluvial silty clay	?
OL-01807	27	PDZ5.81(c) (c)	S2	Layer	Alluvial clay	?
OL-01807	28	PDZ5.81(c) (c)	S2	Layer	Alluvial silty clay	?
OL-01807	29	PDZ5.81(c) (c)	S2	Layer	Organic Silty clay.	
OL-01807	30	PDZ5.81(c) (c)	S3 & S4	Layer	Alluvial silty clay	
OL-01807	31	PDZ5.81(c) (c)	S3 & S4	Layer	Alluvial silty clay	?
OL-01807	32	PDZ5.81(c) (c)	S3 & S4	Layer	Alluvial clay	?
OL-01807	33	PDZ5.81(c) (c)	S3 & S4	Layer	Alluvial silty clay	
OL-01807	34	PDZ5.81(c) (c)	S4	Fill	Fill of [35]	?
OL-01807	35	PDZ5.81(c) (c)	S4	Cut	Curvilinear gully	?
OL-01807	36	PDZ5.81(c) (c)	S3 & S4	Layer	Alluvial clay	
OL-01807	37	PDZ5.81(c) (c)	S5	Layer	Alluvial silty clay	
OL-01807	38	PDZ5.81(c) (c)	S5	Layer	Alluvial silty clay	
OL-01807	39	PDZ5.81(c) (c)	S5	Layer	Alluvial clay	
OL-01807	40	PDZ5.81(c) (c)	S5	Later	Organic alluvium	
OL-01807	41	PDZ5.81(c) (c)	S5	Layer	Alluvial clay	
OL-01807	42	PDZ5.81(c) (c)	S5	Layer	Alluvial clay	
OL-04307	43	PDZ3.31	S6,7 & 8	Layer	Landsurface, pre ground level raising episode.	Post medieval
OL-04307	44	PDZ3.31	S7	Layer	Alluvial clay	
OL-04307	45	PDZ3.31	S7	Layer	Alluvial silty clay	
OL-04307	46	PDZ3.31	S7	Layer	Alluvial clay	
OL-04307	47	PDZ3.31	S7	Layer	Organic clay	
OL-04307	48	PDZ3.31	S7	Layer	Alluvial clay	
OL-04307	49	PDZ3.31	S7	Layer	Alluvial clay	
OL-04307	50	PDZ3.31	S7	Layer	Clay and pebble alluvium	
OL-04307	51	PDZ3.31	S6	Layer	Alluvial clay	
OL-04307	52	PDZ3.31	S6	Layer	Alluvial clay	

OL-04307	53	PDZ3.31	S6	Layer	Alluvial clay	
OL-04307	54	PDZ3.31	S6	Layer	Alluvial clay	
OL-04307	55	PDZ3.31	S6	Layer	Alluvial clay	
OL-04307	56	PDZ3.31	S8	Layer	Alluvial silty clay	
OL-04307	57	PDZ3.31	S8	Layer	Alluvial clay	
OL-04307	58	PDZ3.31	S8	Layer	Alluvial clay	
OL-04307	59	PDZ3.31	S8	Layer	Alluvial silty clay	
OL-04307	60	PDZ3.31	S8	Layer	Alluvial silty clay	
OL-04307	61	PDZ3.31	S6	Layer	Alluvial silty clay	
OL-04307	62	PDZ3.31	S20	Layer	Modern ground surface	Modern
OL-04307	63	PDZ3.31	S20	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	64	PDZ3.31	S20	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	65	PDZ3.31	S20	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	66	PDZ3.31	S20	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	67	PDZ3.31	S20	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	68	PDZ3.31	S20	Layer	Modern ground level raising deposit.	Modern/ Post medieval
	69	VOID				
OL-04307	70	PDZ3.33	S16	Layer	Alluvial clay	
OL-04307	71	PDZ3.33	S16	Layer	Alluvial clay	
OL-04307	72	PDZ3.33	S16	Layer	Alluvial clay	
OL-04307	73	PDZ3.33	S16	Layer	Possible early soil horizon	
OL-04307	74	PDZ3.33	S17	Layer	Modern road surface	Modern
OL-04307	75	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	76	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	77	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	78	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	79	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval

OL-04307	80	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	81	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	82	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	83	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	84	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	85	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	86	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	87	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	88	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	89	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	90	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	91	PDZ3.33	S17	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	92	PDZ3.33	S16 & 18	Layer	Landsurface, pre ground level raising episode.	Post medieval
OL-04307	93	PDZ3.33	S18	Layer	Alluvial clay	
OL-04307	94	PDZ3.33	S18	Layer	Alluvial clay	
OL-04307	95	PDZ3.33	S18	Layer	Alluvial clay	
OL-04307	96	PDZ3.33	S18	Layer	Possible early soil horizon	
OL-04307	97	PDZ3.33	S18	Layer	Alluvial clay	
OL-04307	98	PDZ3.33	S19 & 21	Layer	Alluvial clay	
OL-04307	99	PDZ3.33	S19 & 21	Layer	Alluvial clay	
OL-04307	100	PDZ3.33	S19 & 21	Layer	Alluvial clay	
OL-04307	101	PDZ3.33	S19 & 21	Layer	Possible early soil horizon	
OL-04307	102	PDZ3.33	S19 & 21	Layer	Alluvial clay	
OL-04307	103	PDZ3.33	S19	Cut	Gully/ natural rivulet	

OL-04307	104	PDZ3.33	S19	Fill	Fill of [103]	
OL-04307	105	PDZ3.33	S21	Cut	Gully/ natural rivulet	
OL-04307	106	PDZ3.33	S21	Fill	Fill of [105]	
OL-04307	107	PDZ3.33	S16	Layer	Alluvial silty clay	
OL-04307	108	PDZ3.33	S16	Layer	Alluvial silty clay	
OL-04307	109	PDZ3.33	S16	Layer	Alluvial silt	
OL-04307	110	PDZ3.33	S16	Layer	Alluvial silty sand	
OL-04307	111	PDZ3.33	S16	Layer	Alluvial silty sand	
OL-04307	112	PDZ3.33	S16	Layer	Organic clay	
OL-04307	113	PDZ3.33	S16	Layer	Sandy gravel	Glacial/post glacial river gravel?
OL-04307	114	PDZ3.33	S21	Layer	Landsurface, pre ground level raising episode.	Post medieval
OL-04307	115	PDZ3.35/36	S28	Layer	Alluvial clay silt	?
OL-04307	116	PDZ3.32	S25	Layer	Modern ground surface	Modern
OL-04307	117	PDZ3.32	S25	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	118	PDZ3.32	S25	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	119	PDZ3.32	S25	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	120	PDZ3.32	S25	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	121	PDZ3.32	S25	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	122	PDZ3.32	S24	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	123	PDZ3.32	S24	Layer	Landsurface, pre ground level raising episode.	Landsurface, pre ground level raising episode.
OL-04307	124	PDZ3.32	S24	Layer	Alluvial clay	
OL-04307	125	PDZ3.32	S24	Layer	Alluvial clay	
OL-04307	126	PDZ3.32	S24	Layer	Alluvial clay	
OL-04307	127	PDZ3.32	S24	Layer	Alluvial clay	
OL-04307	128	PDZ3.35/36	S30	Layer	Coarse granular sand, fluvial or alluvial sediment.	
OL-04307	129	PDZ3.32	S23	Layer	Landsurface, pre ground level raising episode.	Post medieval
OL-04307	130	PDZ3.32	S23	Layer	Alluvial clay	
OL-04307	131	PDZ3.32	S23	Layer	Alluvial clay	?
OL-04307	132	PDZ3.32	S23	Layer	Alluvial clay	?

OL-04307	133	PDZ3.32	S23	Layer	Alluvial clay	?
OL-04307	134	PDZ3.32	S23	Layer	Alluvial clay	
OL-04307	135	PDZ3.32	S22	Layer	Alluvial clay	
OL-04307	136	PDZ3.32	S22	Layer	Alluvial clay	?
OL-04307	137	PDZ3.32	S22	Layer	Alluvial clay	?
OL-04307	138	PDZ3.32	S22	Layer	Alluvial clay	?
OL-04307	139	PDZ3.35/36	S26	Layer	Alluvial clay	
OL-04307	140	PDZ3.35/36	S26	Layer	Alluvial clay, fill of [209]	
OL-04307	141	PDZ3.35/36	S26	Layer	Alluvial clay, fill of [209]	
OL-04307	142	PDZ3.35/36	S26	Layer	Fluvial clay and gravel mix, fill of [209]	
OL-04307	143	PDZ3.35/36	S26	Layer	Fluvial clay and gravel mix, fill of [209]	
OL-04307	144	PDZ3.35/36	S26	Fill	Fill of modern cut	Post medieval
OL-04307	145	PDZ3.35/36	S26	Cut	Large irregular cut	Post medieval
OL-04307	146	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	147	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	148	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	149	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	150	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	151	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	152	PDZ3.35/36	S27	Masonry	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	153	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	154	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	155	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	156	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval

OL-04307	157	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	158	PDZ3.35/36	S27	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	159	PDZ3.35/36	S30	structure	Group number for timber within cut [239]	
OL-04307	160	PDZ3.35/36	S28 & 29	Layer	Alluvial clay	
OL-04307	161	PDZ3.35/36	S26,28 & 29	Layer	Alluvial clay, fill of [209]	
OL-04307	162	PDZ3.35/36	S28	Layer	Alluvial/fluvial clay, fill of [209]	
OL-04307	163	PDZ3.35/36	S28 & 29	Layer	Alluvial silty clay, thought to be part of bankside levee feature	
OL-04307	164	PDZ3.35/36	S28 & 29	Layer	Alluvial silty clay, thought to be part of bankside levee feature	
OL-04307	165	PDZ3.35/36	S28 & 29	Layer	Alluvial clay and gravel, thought to be part of bankside levee feature	
OL-04307	166	PDZ3.35/36	S28 & 29	Layer	Alluvial clay	
OL-04307	167	PDZ3.35/36	S28	Layer	Dark coarse silty sand, possibly sand bar.	
OL-04307	168	PDZ3.35/36	S28	Layer	Alluvial/fluvial clay, fill of [264]	
OL-04307	169	PDZ3.35/36	S28 & 29	Layer	Coarse sand, possible sand bar deposit	
OL-04307	170	PDZ3.35/36	S28	Layer	Alluvial silty clay, thought to be part of bankside levee feature	
OL-04307	171	PDZ3.35/36	S28	Layer	Alluvial silty clay, thought to be part of bankside levee feature	
OL-04307	172	PDZ3.35/36	S28	Layer	Alluvial clay	
OL-04307	173	PDZ3.35/36	S28	Layer	Sandy gravel	Glacial/post glacial river gravel?
OL-04307	174	PDZ3.35/36	S26	Layer	Sandy gravel	Glacial/post glacial river gravel?
OL-01607	175	PDZ3.35/36	plan 143	Timber	Post	
OL-01607	176	PDZ3.35/36	plan 143	Timber	Post	

OL-01607	177	PDZ3.35/36	plan 143	Timber	Post	
OL-01607	178	PDZ3.35/36	plan 143	Wood	Horizontally lain wood, possible rod	
OL-01607	179	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-01607	180	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	181	PDZ3.35/36	plan 143	Wood	Horizontally lain wood, possible rod	
OL-04307	182	PDZ3.35/36	plan 143	Wood	Horizontally lain wood, possible rod	
OL-04307	183	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	184	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	185	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	186	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	?
OL-04307	187	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	188	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	189	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	190	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	191	PDZ3.35/36	plan 143	Wood	Lain wood, possibly destroyed structure	

OL-04307	192	PDZ3.35/36	S30	Layer	Alluvial clayey silt, post medieval subsoil	Post medieval
OL-04307	193	PDZ3.35/36	S30	Layer	Alluvial silty clay	
OL-04307	194	PDZ3.35/36	S30	Layer	Alluvial silty clay	
OL-04307	195	PDZ3.35/36	S30	Layer	Alluvial clay	
OL-04307	196	PDZ3.35/36	S30	Layer	Alluvial clay	
OL-04307	197	PDZ3.35/36	S30	Layer	Alluvial clay	
OL-04307	198	PDZ3.35/36	S30	Layer	Coarse sand, possible sand bar deposit	
OL-04307	199	PDZ3.35/36	S30	Layer	Alluvial silty clay	
OL-04307	200	PDZ3.35/36	S30	Layer	Peat deposit	
OL-04307	201	PDZ3.35/36	S28	Fill	Coarse granular sand, fill of [213]	
OL-04307	202	PDZ3.35/36	S28	Fill	Coarse sand and silt, fill of [213]	
OL-04307	203	PDZ3.35/36	S28	Fill	Coarse to granular sand, fill of [213]	
OL-04307	204	PDZ3.35/36	S28	Fill	Coarse sand and silt, fill of [213]	
OL-04307	205	PDZ3.35/36	S28	Fill	Sandy silt, fill of [213]	
OL-04307	206	PDZ3.35/36	S30	Layer	Landsurface, pre ground level raising episode.	
OL-04307	207	PDZ3.35/36	S29	Layer	Alluvial silty clay, thought to be part of bankside levee feature	
OL-04307	208	PDZ3.35/36	S29	Layer	Alluvial silty clay, thought to be part of bankside levee feature	
OL-04307	209	PDZ3.35/36	S28	Cut	Natural river channel cut	
OL-04307	210	PDZ3.35/36	S30	Layer	Sandy gravel	Glacial/post glacial river gravel?
OL-04307	211	PDZ3.35/36	S30	Cut	Modern truncation	Post medieval
OL-04307	212	PDZ3.35/36	S30	Fill	Fill of [211]	Post medieval
OL-04307	213	PDZ3.35/36	S26 & 28	Cut	Ditch cut	Possibly late Iron Age
OL-04307	214	PDZ3.35/36	S28	Fill	Initial fill of [213]	
OL-04307	215	PDZ3.35/36	S28	Layer	Possible early soil horizon	Bronze Age ?
	216	VOID				
OL-04307	217	PDZ3.35/36	Plan 217	Layer	Possible early soil horizon	Bronze Age ?

OL-04307	218	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	219	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	220	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	221	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	222	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	223	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	224	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	225	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	226	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	227	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	228	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	229	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	230	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	

OL-04307	231	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	232	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	233	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	234	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	235	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	236	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	237	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	238	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	239	PDZ3.35/36	S30	Cut	Shallow irregular cut	
OL-04307	240	PDZ3.35/36	S30	Layer	Alluvial silty clay	
OL-04307	241	PDZ3.35/36	S30	Fill	Fill of [239]	
OL-04307	242	PDZ3.35/36	Plan 143	Cut	Small shallow irregular cut	
OL-04307	243	PDZ3.35/36	Plan 143	Wood	Lain wood, possibly destroyed structure	
OL-04307	244	PDZ3.34	S31	Layer	Modern ground surface	Modern
OL-04307	245	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	246	PDZ3.34	S31	Layer	Modern ground surface	Modern
OL-04307	247	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval

OL-04307	248	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	249	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	250	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	251	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	252	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	253	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	254	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	255	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	256	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	257	PDZ3.34	S31	Layer	Landsurface, pre ground level raising episode.	Post medieval
OL-04307	258	PDZ3.34	S31	Layer	Alluvial clay	
OL-04307	259	PDZ3.34	S31	Layer	Alluvial clay	
OL-04307	260	PDZ3.34	S31	Layer	Organic clay	
OL-04307	261	PDZ3.35/36	S30	Layer	Clay and pebble alluvium	
OL-04307	262	PDZ3.35/36	S25	Layer	Possible early soil horizon	
OL-04307	263	PDZ3.35/36	Plan 143	Fill	Alluvial sandy clay, fill of [242]	
OL-04307	264	PDZ3.35/36	S28	Cut	Shallow irregular cut	
OL-04307	265	PDZ3.35/36	S30	Cut	Shallow irregular cut	
OL-04307	266	PDZ3.35/36	S30	Layer	Alluvial clay	
OL-01807	267	PDZ5.81(c) (c)	S2	Layer	Sandy gravel	Glacial/post glacial river gravel?
OL-04307	268	PDZ3.37	S32	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	269	PDZ3.37	S32	Layer	Modern ground level raising deposit.	Modern/ Post medieval

OL-04307	270	PDZ3.37	S32	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	271	PDZ3.37	S32	Layer	Modern ground level raising deposit.	Modern/ Post medieval
OL-04307	272	PDZ3.37	S32	Layer	Alluvial clay	
OL-04307	273	PDZ3.37	S32	Layer	Alluvial clay silt	
OL-04307	274	PDZ3.37	S32	Layer	Alluvial silty clay	
OL-04307	275	PDZ3.37	S32	Layer	Clay and pebbles	
OL-04307	276	PDZ3.34	S31	Layer	Modern ground level raising deposit.	Modern

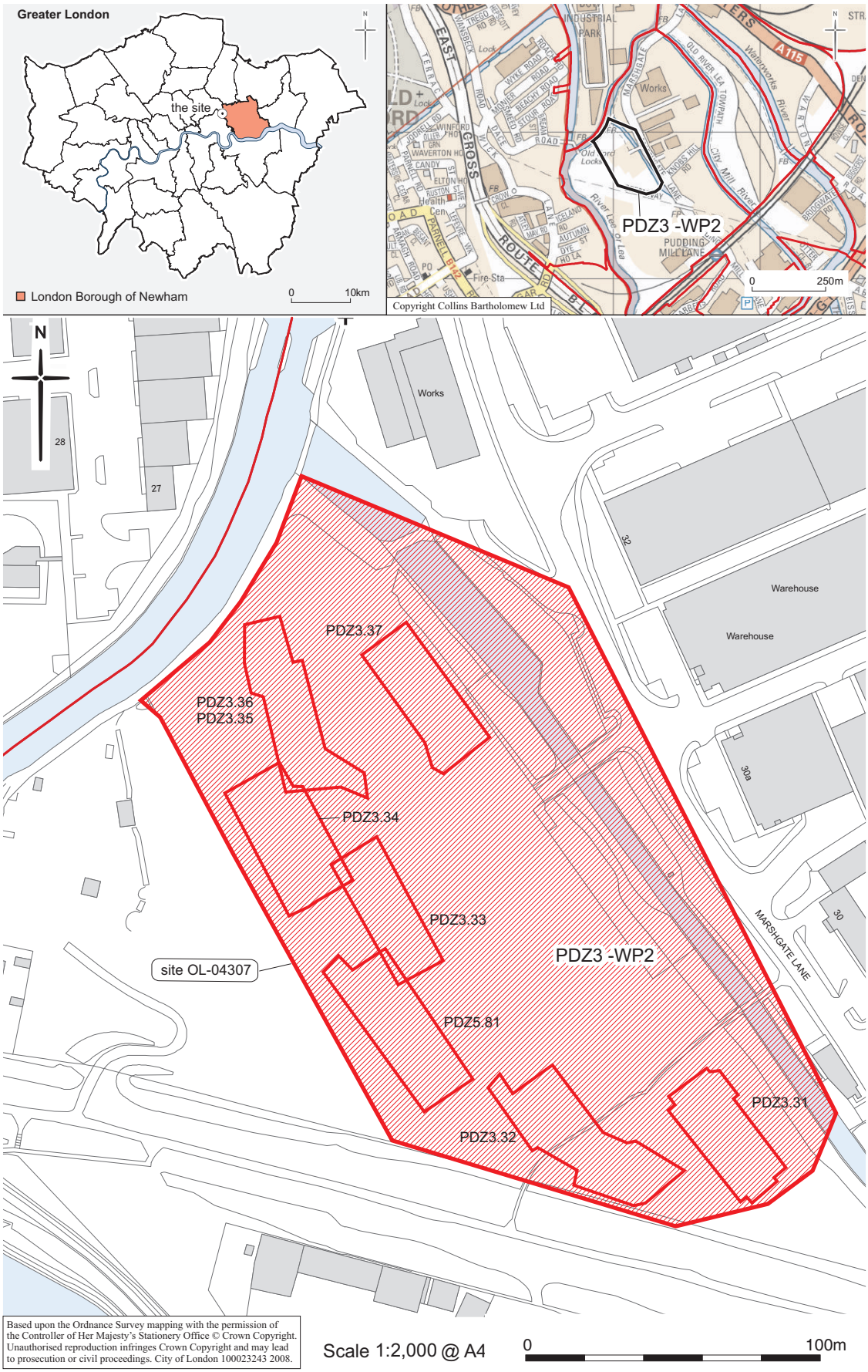


Fig 1 Location map

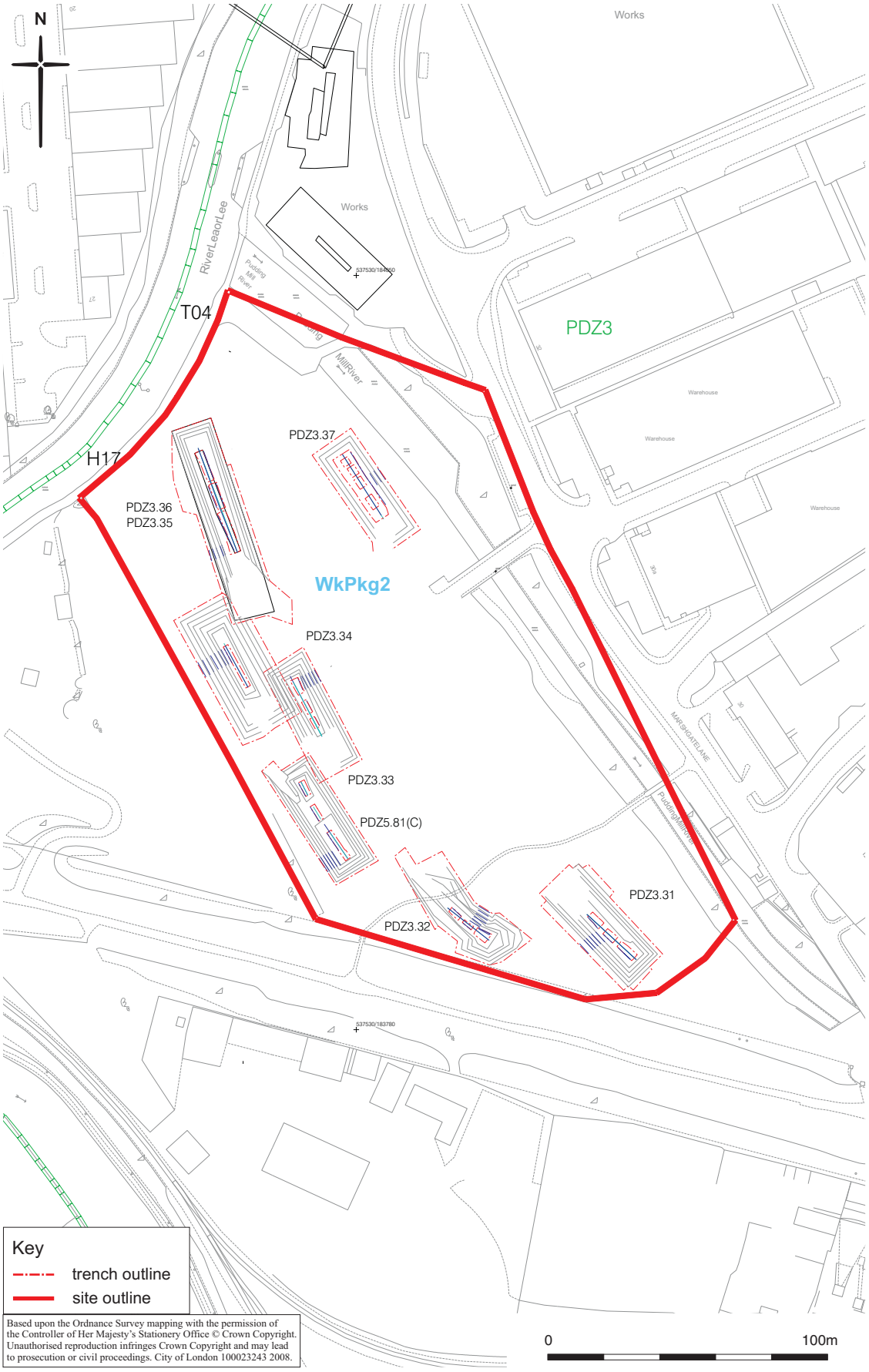


Fig 2 Trench location

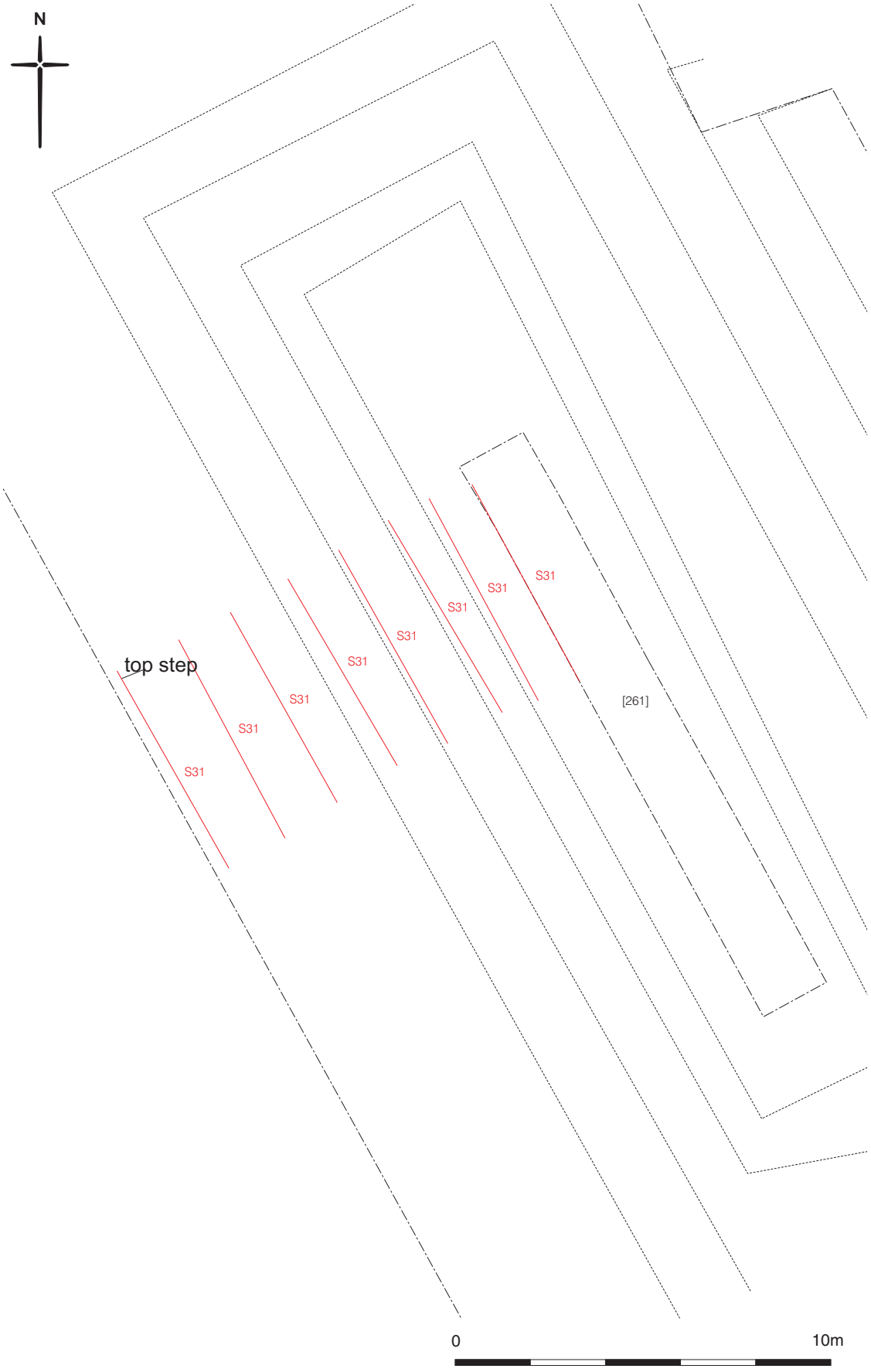
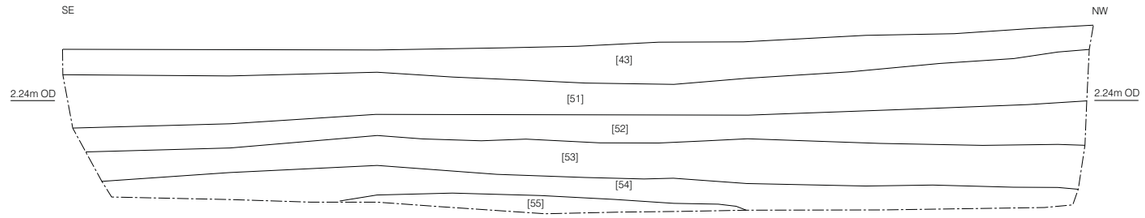
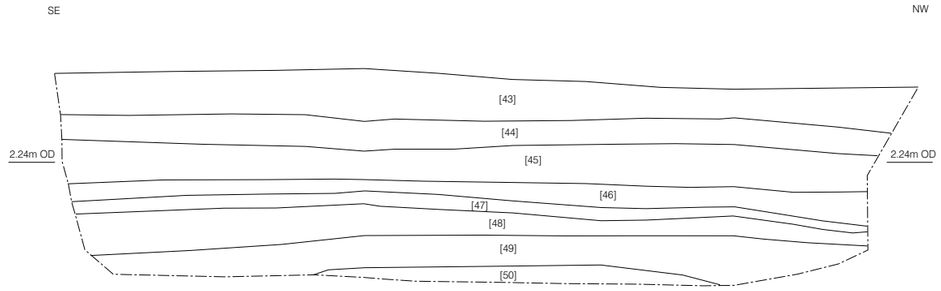


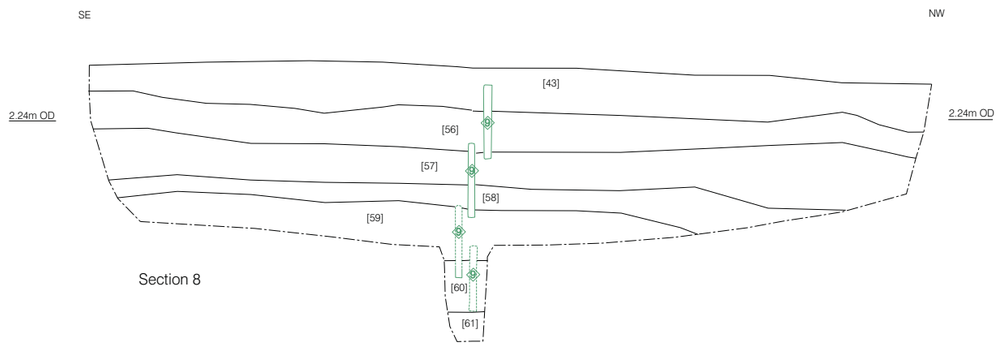
Fig 9 Plan of Trench PDZ3.34



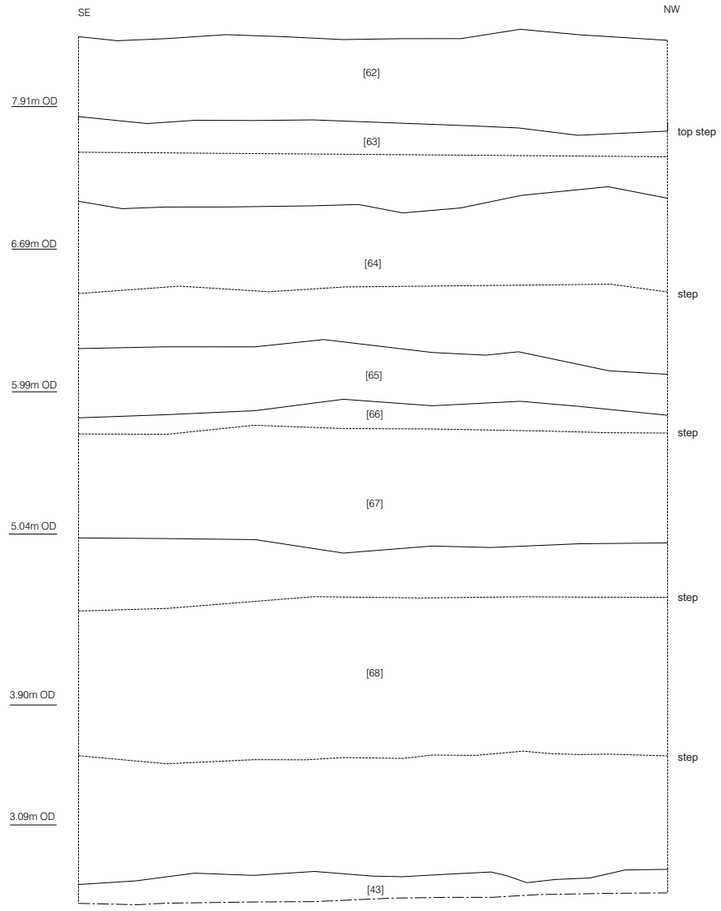
Section 6



Section 7



Section 8



Section S20

Fig 4 North-east facing Sections 6, 7, 8 and 20 of Trench PDZ3.31

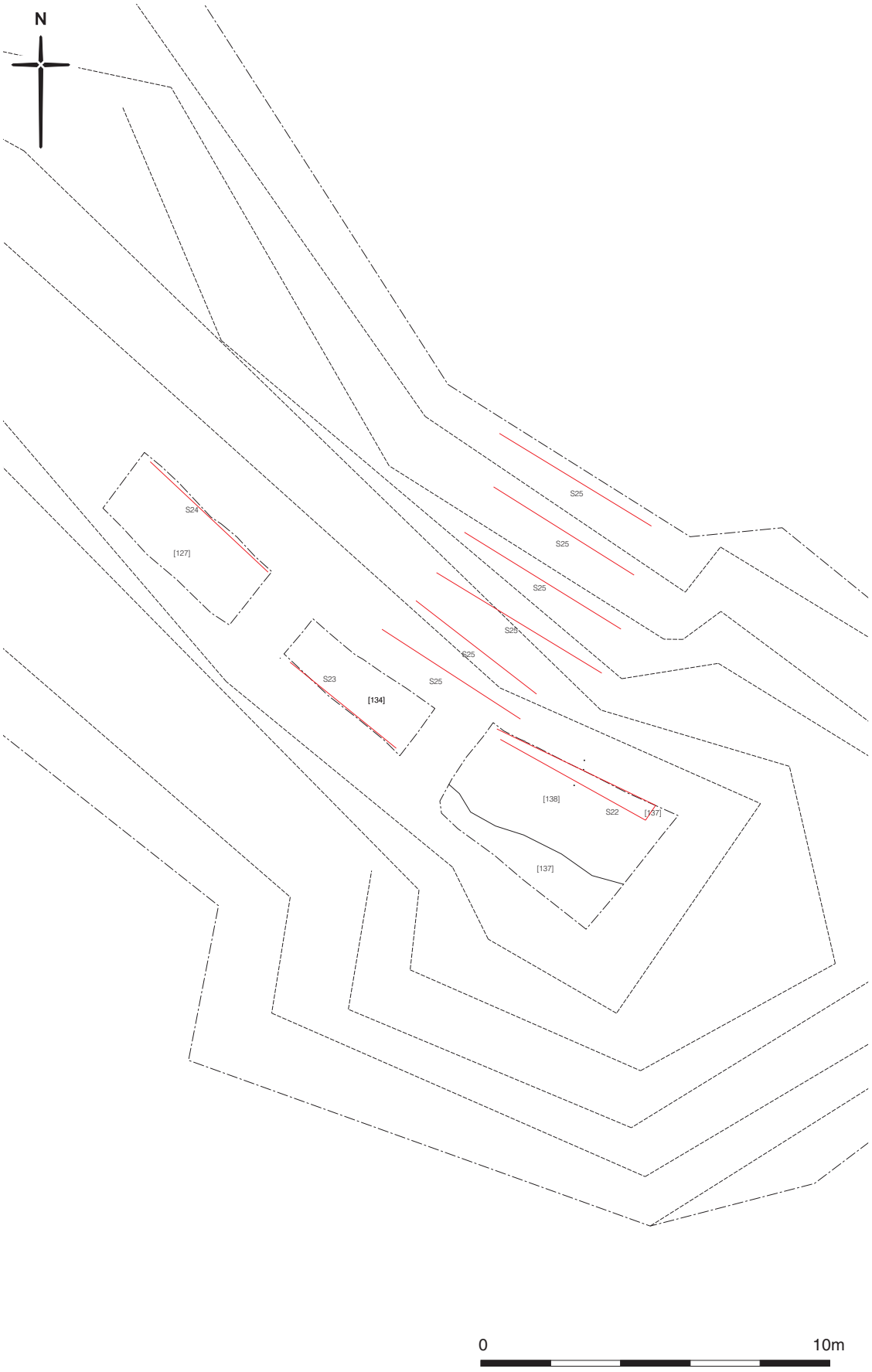
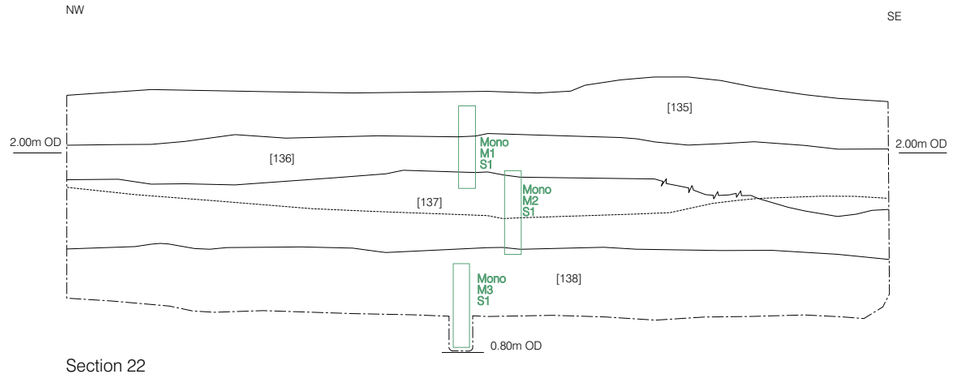
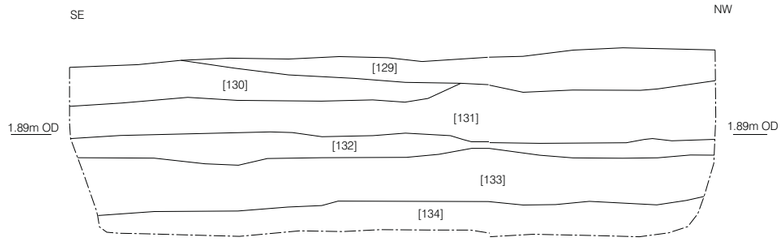


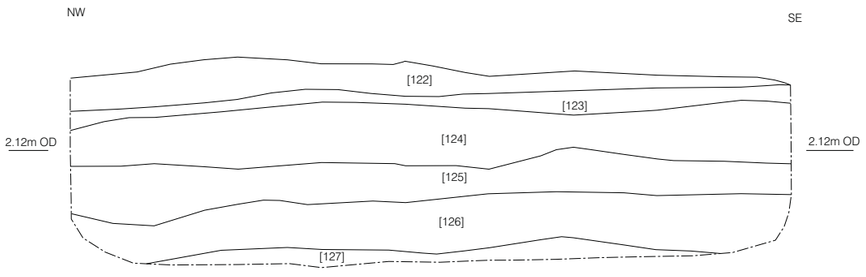
Fig 5 Plan of Trench PDZ3.32



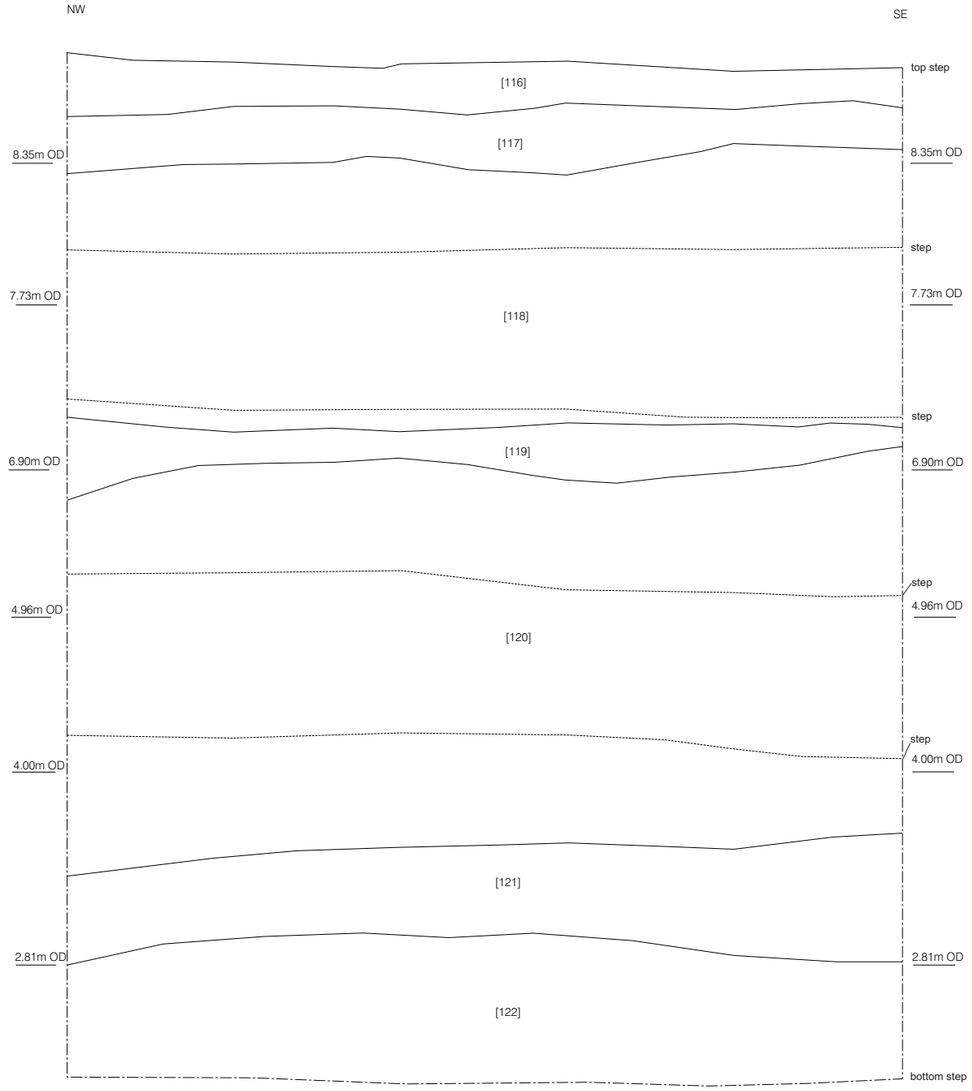
Section 22



Section 23



Section 24



Section 25

Fig 6 North-east facing Section 23 and South-west facing Sections 22, 24 and 25 of Trench PDZ3.32

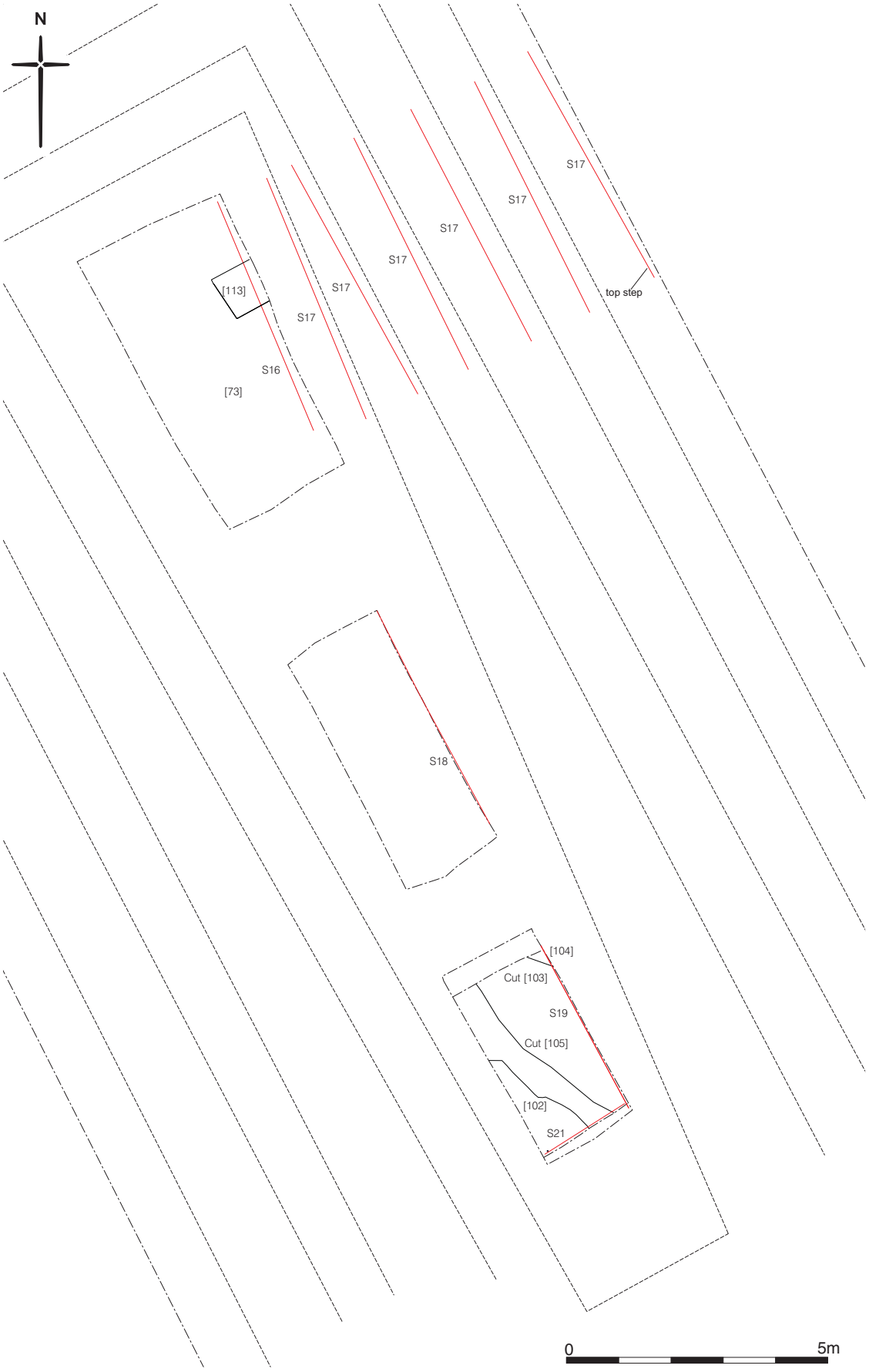
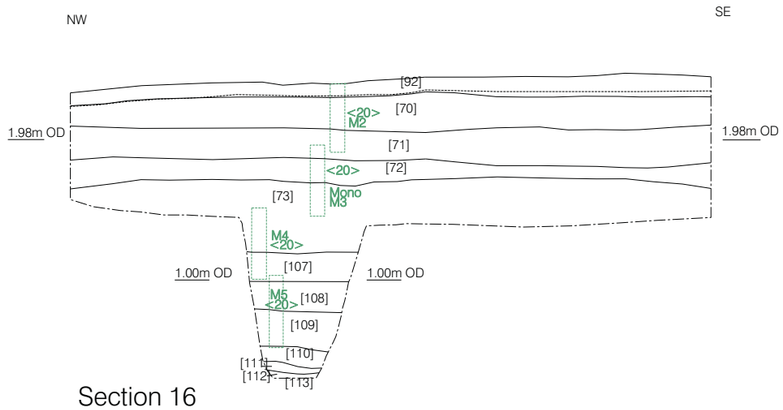
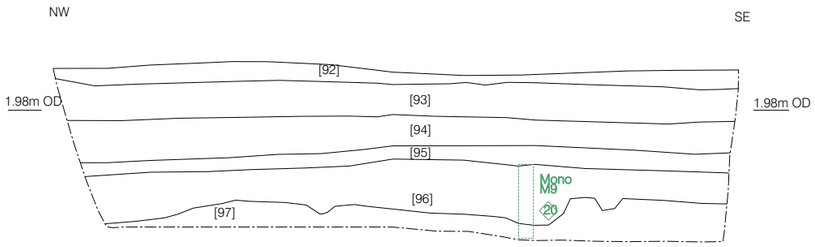


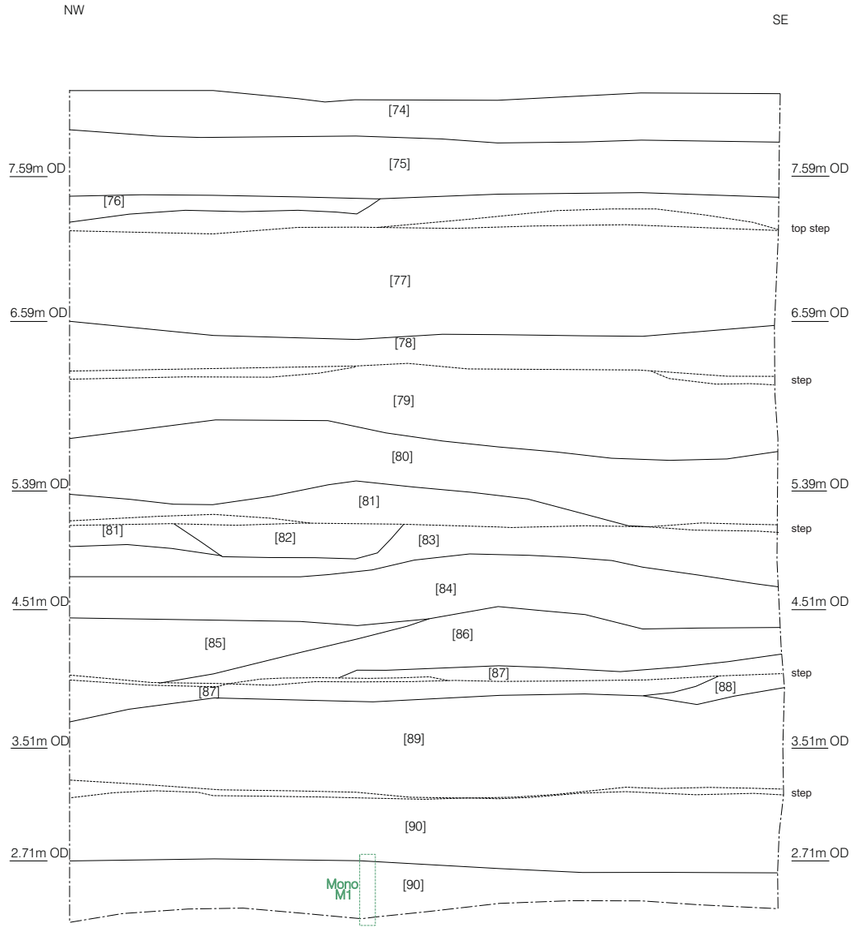
Fig 7 Plan of Trench PDZ3.33



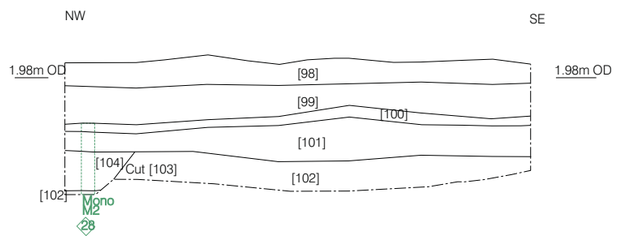
Section 16



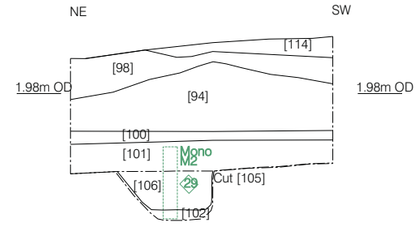
Section S18



Section S17



Section S19



Section S21

0 2m

Fig 8 South-west facing Sections 16–19, and north-west facing section 21 of Trench PDZ3.33

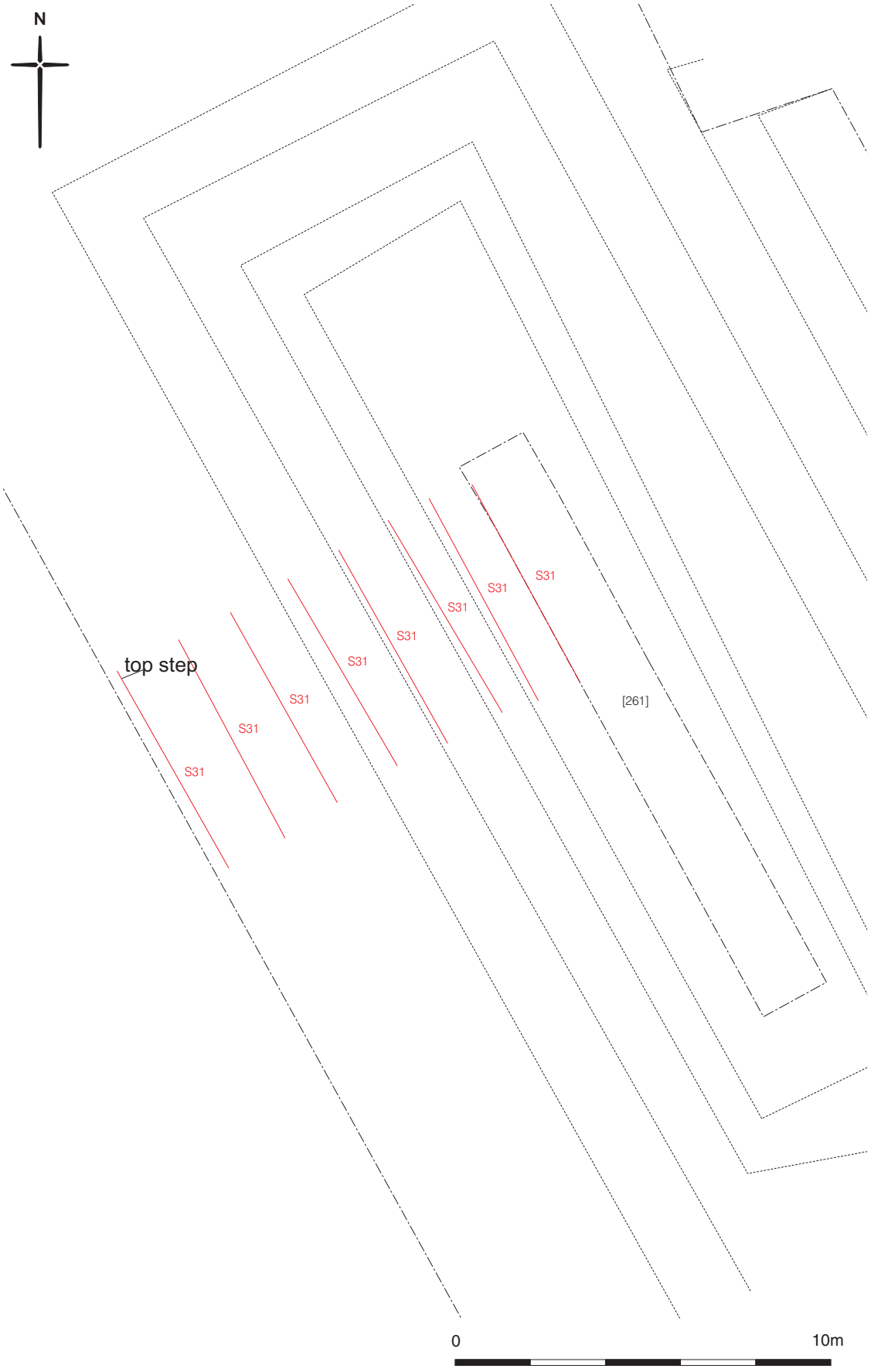


Fig 9 Plan of Trench PDZ3.34

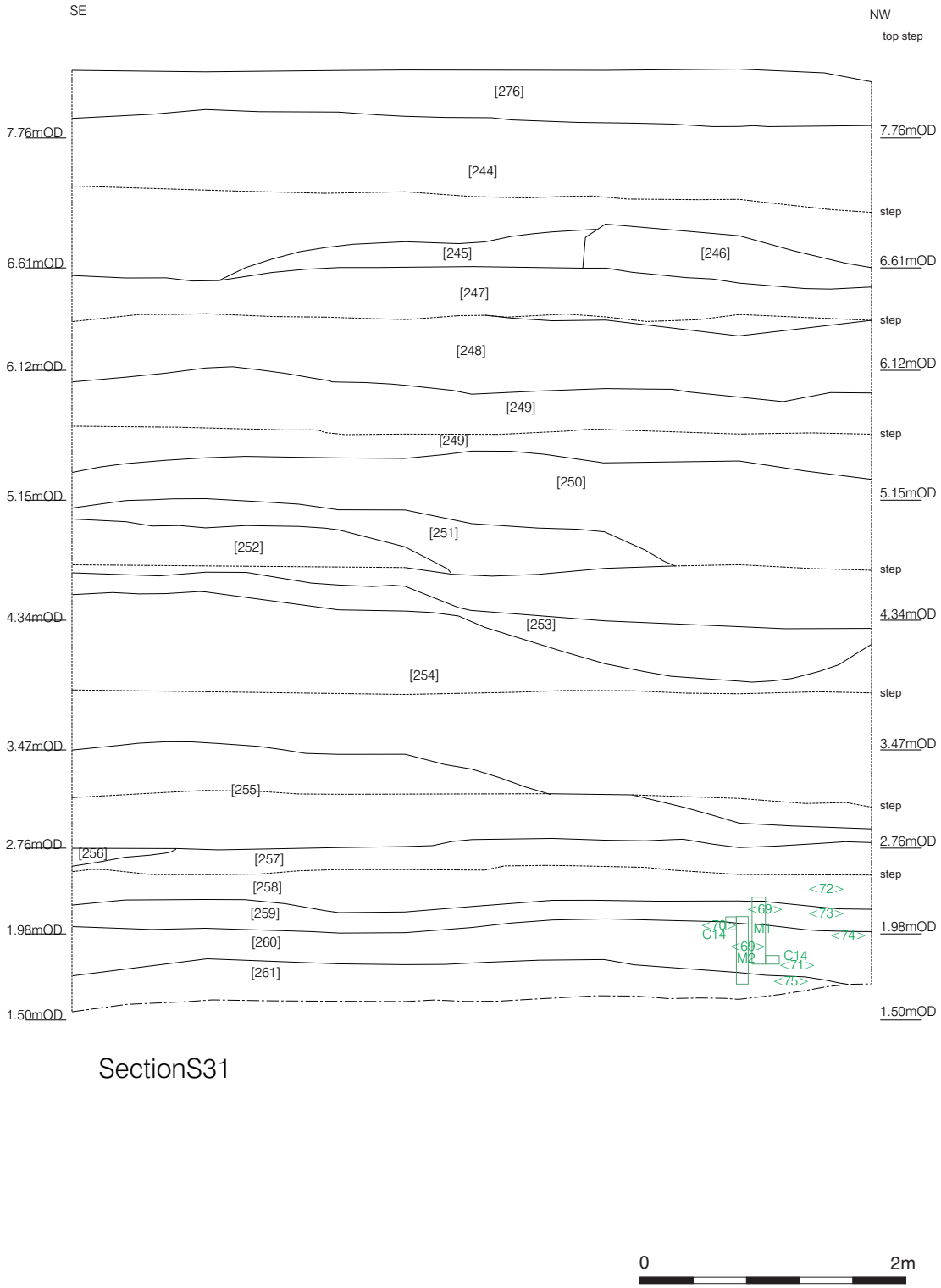


Fig 10 North-east facing Section 31 of Trench PDZ3.34

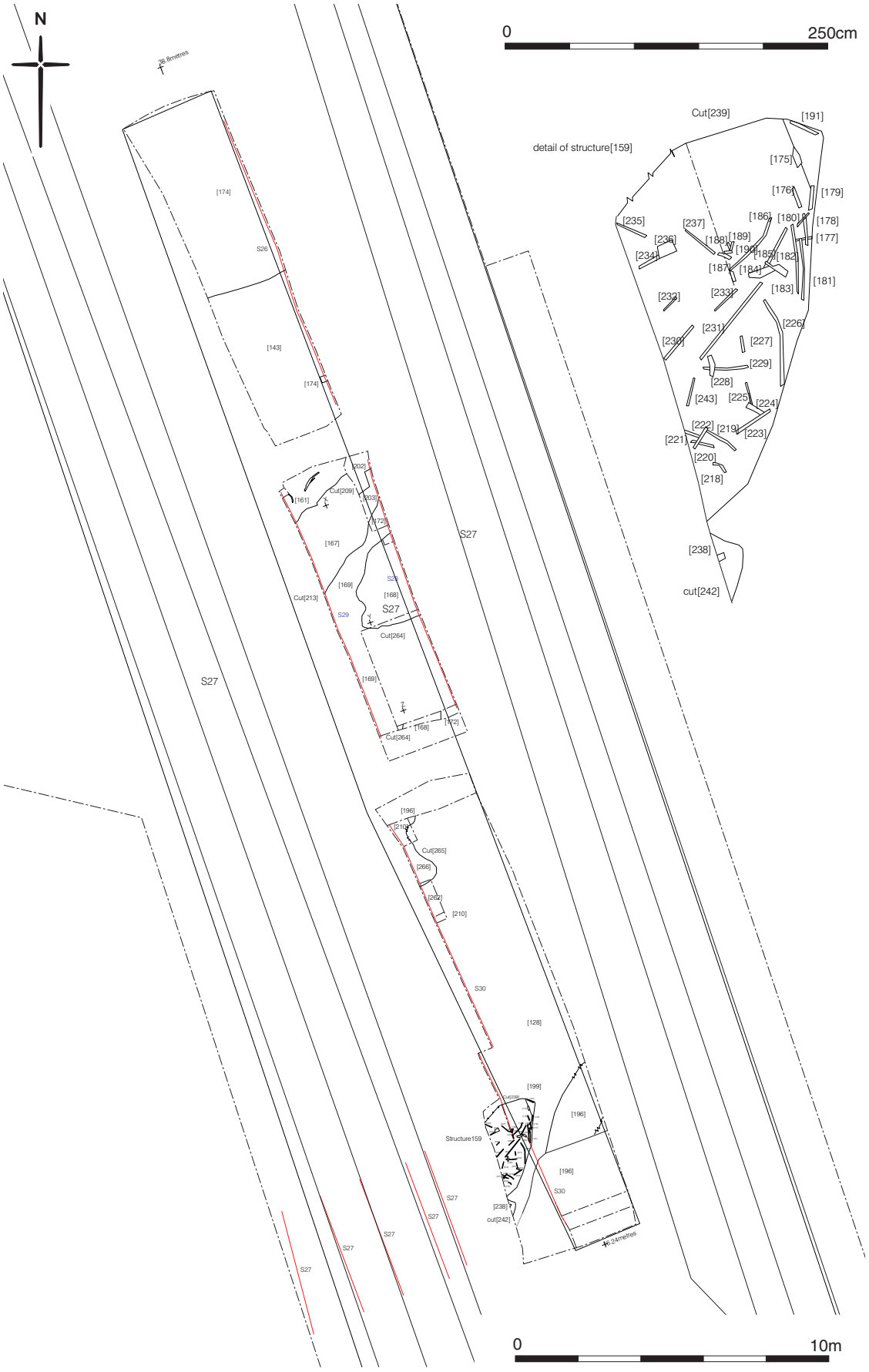
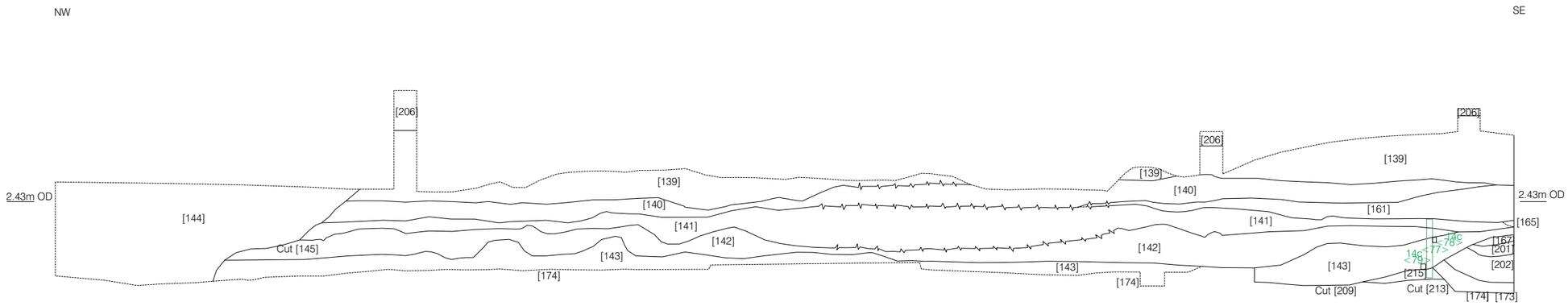
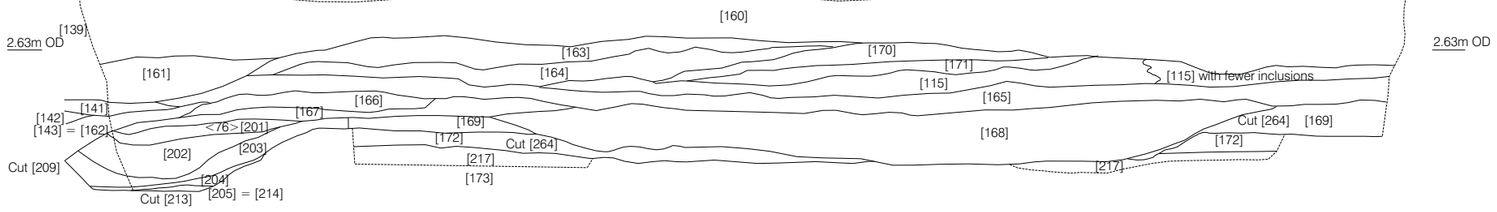


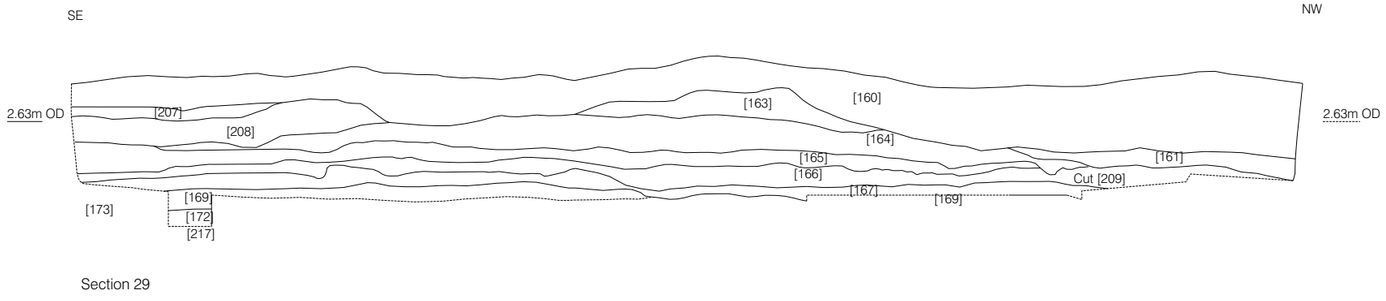
Fig 11 Plan of Trench PDZ3.35/36



Section 26



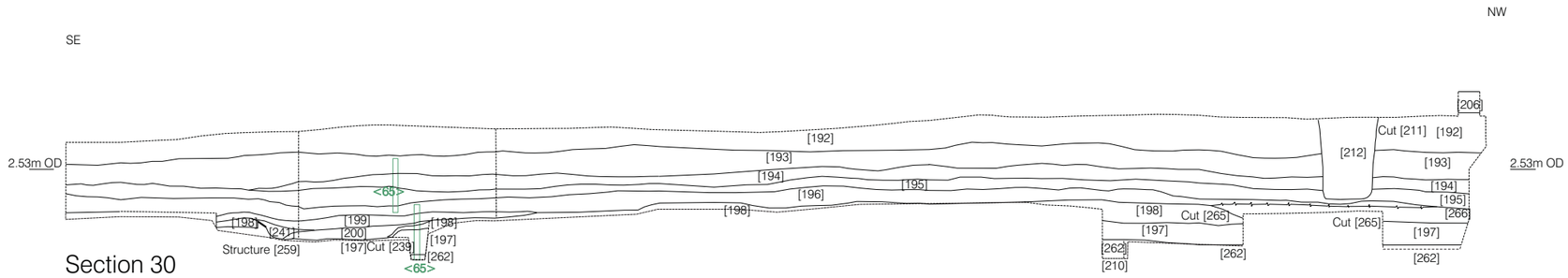
Section 28



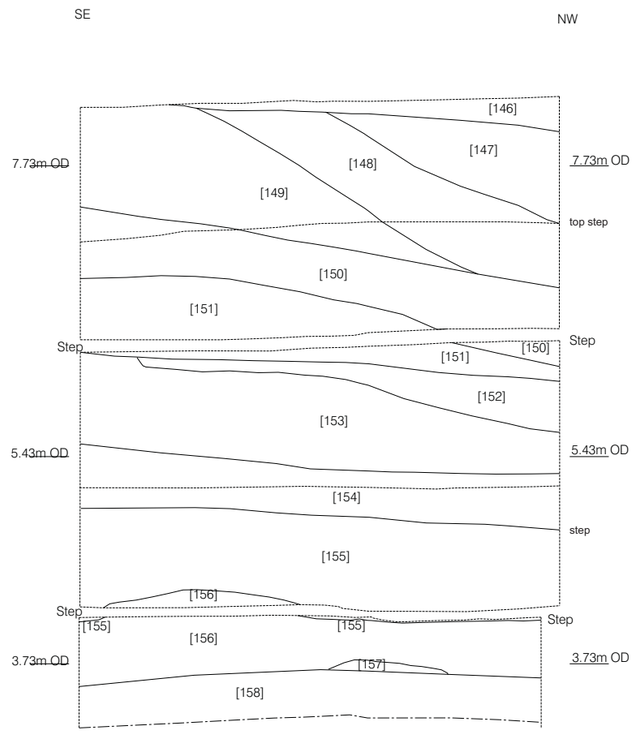
Section 29

0 2m

Fig 12 South-west facing sections 26 and 28, and north-east facing section 29 of Trench PDZ 3.35/36



Section 30



Section 27

0 2m

Fig 13 North-east facing Sections 27 and 30 of Trench PDZ3.35/36

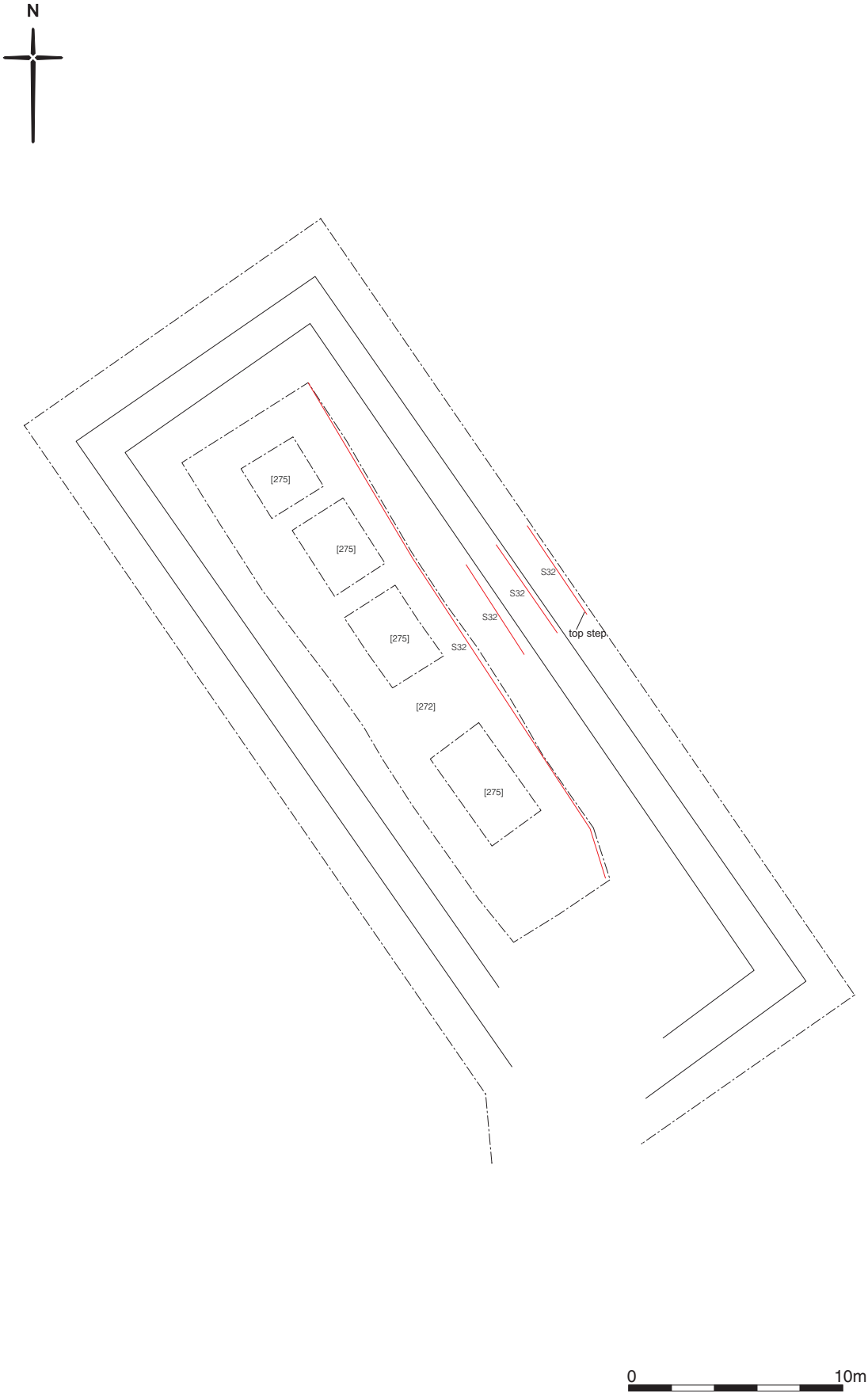


Fig 14 Plan of Trench PDZ3.37

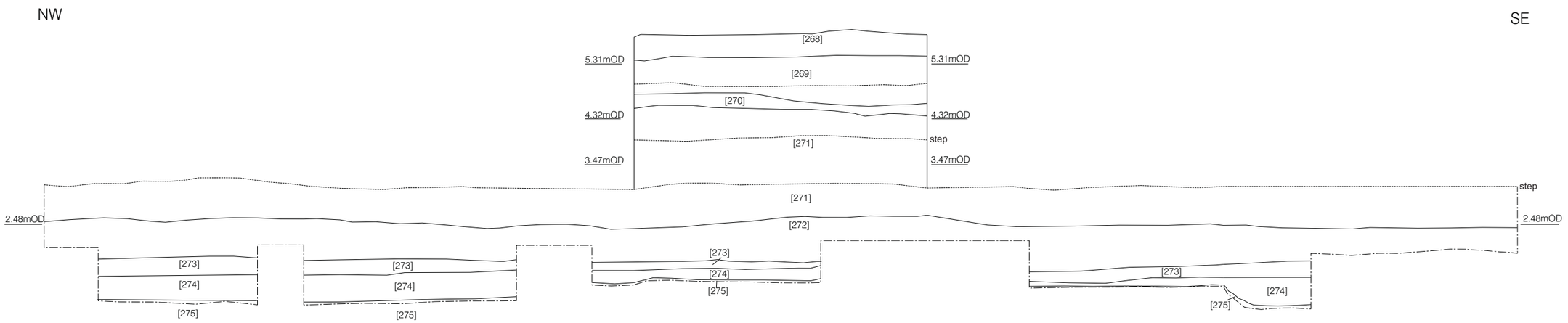


Fig 15 South-west facing Section 32 of Trench PDZ3.37

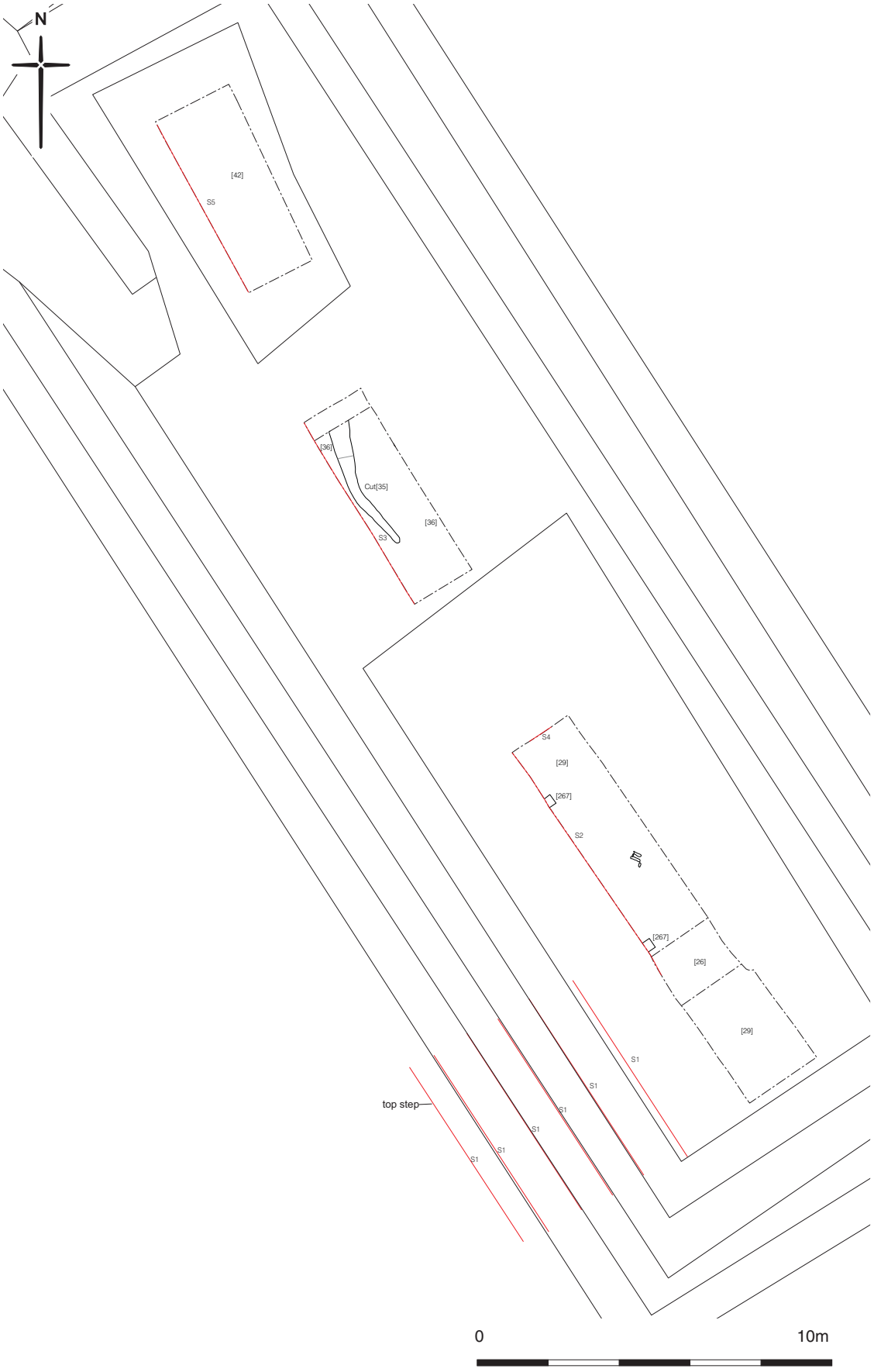
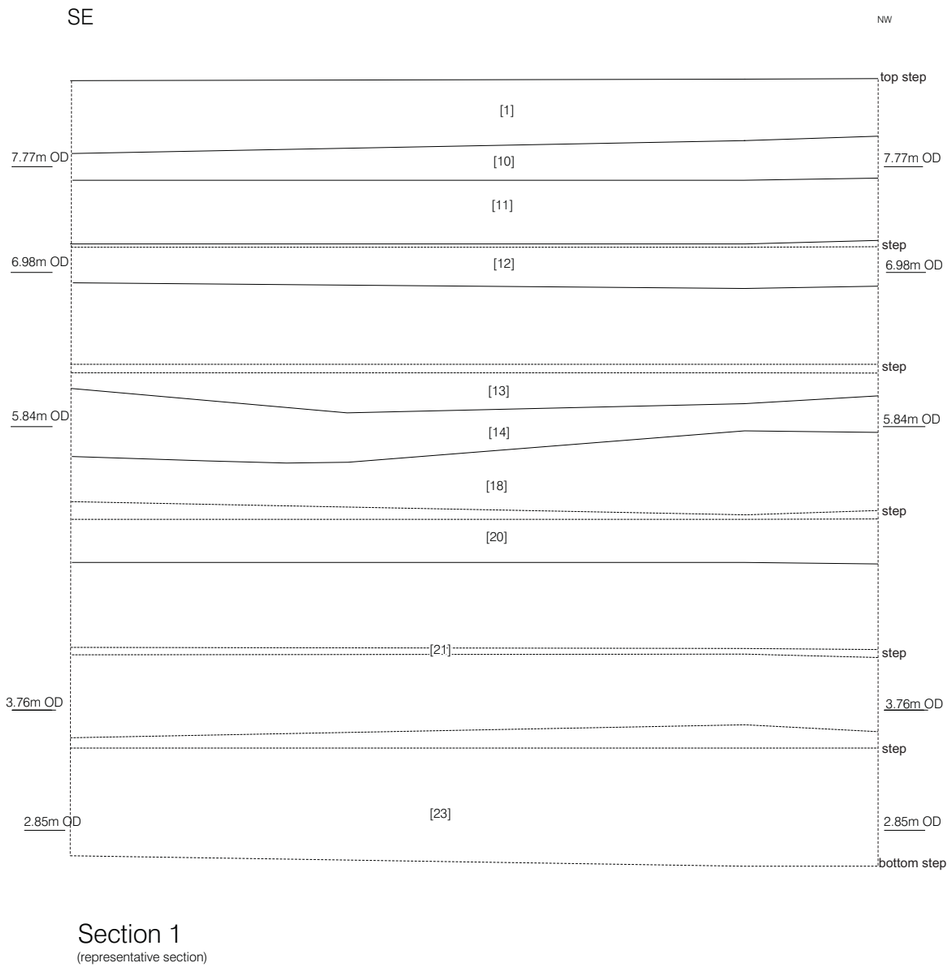
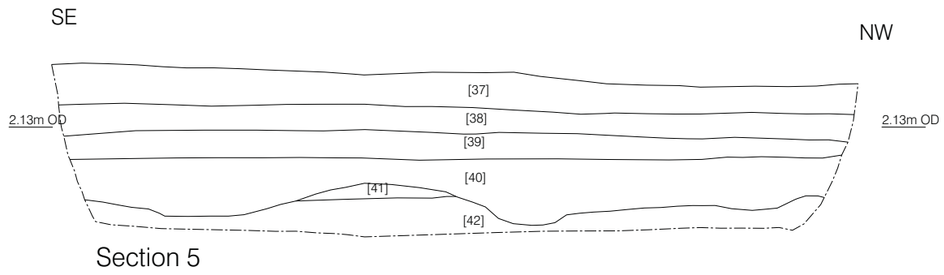


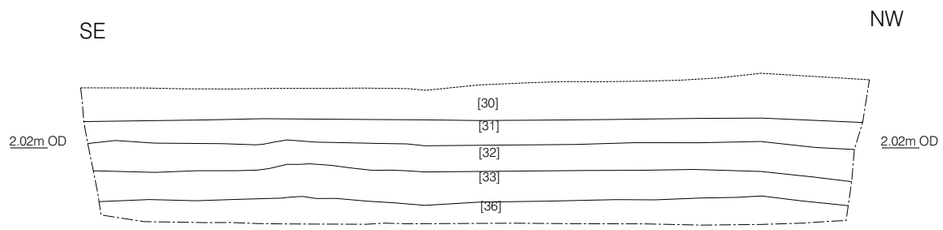
Fig 16 Plan of Compensation Trench PDZ5.81(c)



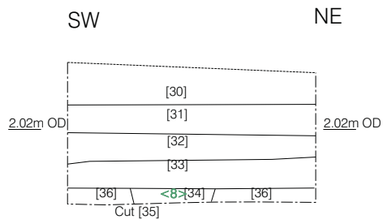
Section 1
(representative section)



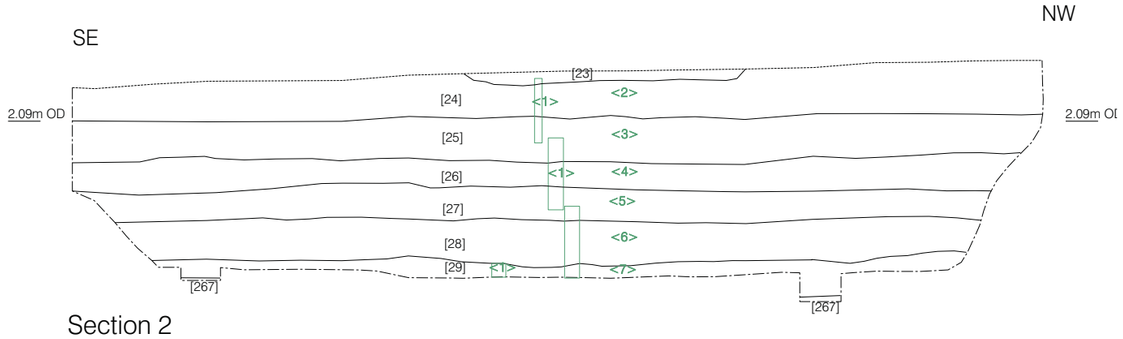
Section 5



Section 3



Section 4



Section 2

0 2m

Fig 17 North-east facing Sections 1, 2, 3 and 5, and south-east facing Section 4 of Trench PDZ5.81(c)