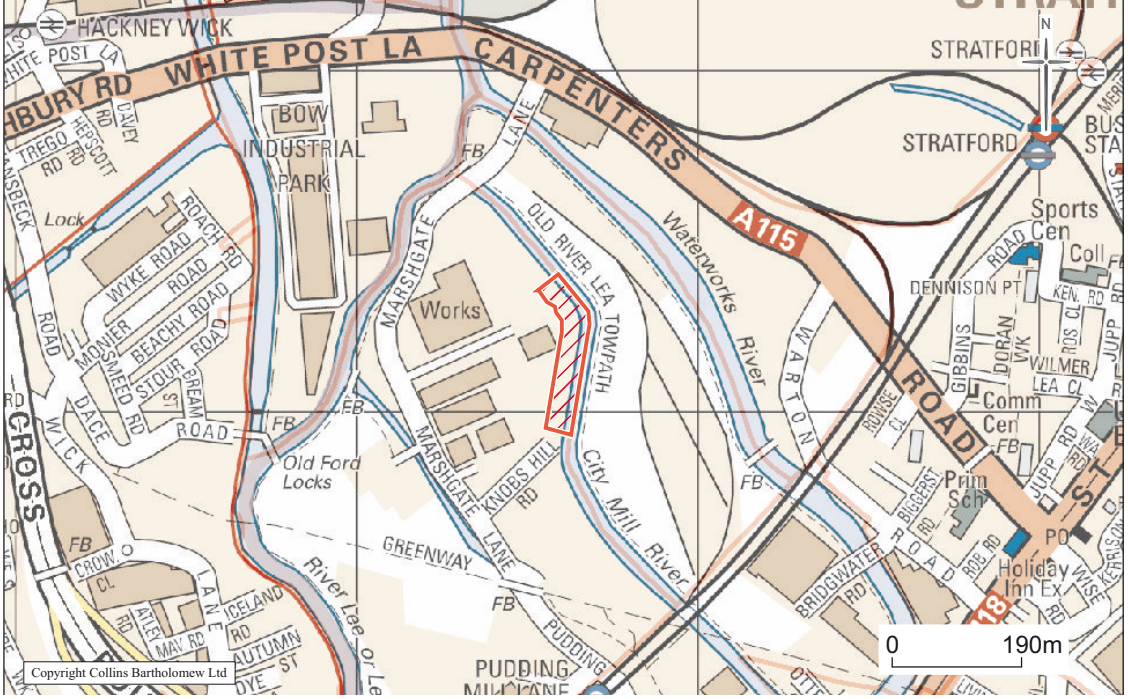

PLANNING DELIVERY ZONE 3
Work Package 1
Trenches PDZ3.01
PDZ3.24
PDZ3.25

E15

London Borough of Newham

REGISTERED IFA ORGANISATION

MUSEUM OF LONDON Archaeology Service

PRE-CONSTRUCT ARCHAEOLOGY

PLANNING DELIVERY ZONE 3
Work Package 1
Trenches PDZ3.01
PDZ3.24
PDZ3.25

E15

London Borough of Newham

Site Code: OL-04207
National Grid Reference: 537810 184100

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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 Sun Wharf within the Olympic, Paralympic and Legacy Transformations Planning Applications: Planning Delivery Zone 3 (Work Package 1; Trenches PDZ3.01, 3.24 and 3.25), 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, three evaluation trenches were excavated on the site (Trenches PDZ3.01, 3.24 and 3.25)and the results have helped to refine the initial assessment of its archaeological potential.

One of the three trenches was excavated to the level of the natural gravels, with only initial exploratory slots dug down to gravel in the remaining two sequences. The gravel surface dipped down from north to south across the three trenches, from just below 2m OD in PDZ3.01. This appears to support the previous modelling that had identified an island of higher gravel in the north and west of PDZ3. The gravel observed in PDZ3.01 has the characteristics of a vegetated channel bar and it is possible that a historic channel formerly crossed the site, with most of the alluvial deposits representing its silting up and the subsequent development of a dry landsurface (perhaps following the reveting of the channel, see below), which was buried by Victorian groundraising.

The alluvial sequence was about 1m thick in PDZ3.01 and 1.5m thick in PDZ3.24 and PDZ3.25, where the gravel surface was lower. The alluvium in all three trenches was predominantly clayey and likely to represent episodes of prolonged flooding. The characteristics of the gravel surface and of the overlying alluvium do not seem to indicate that a dry landsurface existed above the gravels in the past, as has previously been suggested, however. More information needs to be obtained from the samples taken from the site to establish the environments of deposition of the alluvial sequence and in particular its date.

The deposits were recorded and sampled by a geoarchaeologist and preliminary evaluation of the samples has indicated that survival of environmental remains within the alluvial clay is variable with good preservation of snails, insects, seeds and even leaves in some samples, but poor survival of all types of environmental evidence in others. The characteristics of the palaeoenvironmental sequence and its location, at the interface of the island of higher ground and the deeper part of the valley bottom is likely to be important in understanding the natural formation and change of the lower Lea Valley in the past. The samples obtained from the trench could be of considerable environmental significance, as they are likely to provide evidence for changes in the 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.

Other features of archaeological significance within the site include timber reveting (Trench PDZ3.24), constructed to contain an earlier course of the City Mill River, and the land surface that existed prior to modern groundraising. 19th–20th century made ground/landfill deposits sealed the sequences of archaeological interest.

The variable presence and preservation of archaeological horizons, features, organic remains and palaeoenvironmental evidence suggests that the site has local archaeological and geoarchaeological significance in understanding the natural and cultural formation and change of the lower Lea Valley.

In the light of revised understanding of the archaeological potential of the site the evaluation report concludes that excavation of the revetment in PDZ3.24, alongside off-site archaeo-environmental work on the samples already taken from the site would provide adequate mitigation of the archaeological resource.

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1 Introduction

1.1 Site background

The evaluation took place at Sun Wharf, adjacent to the City Mill River, within Work Package 1 in the east of Planning Delivery Zone 3 (PDZ3) of the Olympic, Paralympic and Legacy Transformations Planning Applications, in the London Borough of Newham, hereafter called 'the site' (Fig 1).

The site occupies a narrow strip of land, bounded to the north by vacant land fronting onto the west side of the City Mill River, between it and the northern terminus of Knobs Hill Road (to the south) and (to the west) industrial warehousing accessed from Marshgate Lane.

The three trenches (Trenches PDZ3.01, 3.24 and 3.25) were located next to the City Mill River, and designated Work Package 1 (Fig 2). The OS National Grid Reference for the centre of the site is 537810 184100. Ground level across the site is fairly consistent, sloping very slightly to the south. Heights vary from 5.72m OD in the north, to 5.35m OD in the south. The site code is OL-04207.

The footprint of Work Package 1 was defined by local property boundaries, and the limits of areas within which access was possible to excavate the three evaluation trenches. Effectively, the footprint of Work Package 1 was delimited as a tool for defining the location and potential maximum extent of the group of trenches (Fig 2).

Detailed architectural and engineering designs are not yet available, but current proposals for Planning Delivery Zone 3 (PDZ3) comprise construction of the Main Olympics Stadium and Warm-up Athletics Tracks. New bridges will be constructed. Parts of the site area will be lowered, and others raised. New roads, services, water supply and drainage will be required.

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).

Three evaluation trenches were excavated, targeting locations likely to be impacted by the proposed development (Fig 2). 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.

In two of the three trenches (PDZ3.24 and PDZ3.25), this pressure was, by Atkins' engineers, considered to be too great to render exposure of the gravels practicable. In these cases, with the agreement of English Heritage, a 0.30m sealant layer of alluvium was left in place on top of the gravels to separate the uncontaminated pressurised groundwater from the contaminated perched water present in the made ground. The remaining trench (PDZ3.01) was excavated to the level of the natural gravels.

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. MoLAS-PCA geoarchaeologists visited the trench during excavation to examine and interpret the deposits in plan and section and to take samples as appropriate.

Work on Trench PDZ3.01 began in the week ending 24 August 07 and was completed in week ending 5 October 2007 (however, work was suspended on more than one occasion). Trench RDZ3.24 began in the week ending 7 September 2007 and was completed in week ending 5 October 2007. Trench PDZ3.25 started in week ending 24 August 2007 and was completed in week ending 14 September 2007.

The locations of the evaluation trenches were recorded by the MoLAS-PCA surveyor using an EDM (Fig 2). 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; 3 drawn detail trench plans at a scale of 1:20; 56 context records; 2 sections drawn at a scale of 1:10 and 1 at a scale of 1:20. Four monolith sequences (one of one tin, two of three tins and one of four tins) were taken through the alluvial deposits, two sequences from PDZ3.01 and one from each PDZ2.24 and PDZ2.25. Bulk samples were taken from the alluvium adjacent to the tins, as well as from the fills associated with the revetment in PDZ3.24. Seven bulk samples of the fourteen taken from the site were

processed as part of the evaluation, to gauge the potential of the alluvial clay for the preservation of environmental remains suitable for past landscape reconstruction. The site finds and records can be found under the site code OL-04207 in the MoL archive.

3.2 Results of the evaluation

(See Fig 2 for trench locations).

3.2.1 Evaluation Trench PDZ3.01

Location	Northern part of Work Package 1
Dimensions	20.6m x 0.8m at trench base; 4.15m deep
Modern ground level	5.68m–5.72m OD
Base of modern fill	2.59m OD
Depth of archaeological deposits seen (alluvium)	1.17m
Level of base of deposits observed and/or base of trench	1.56m OD
Floodplain gravel observed	1.56m–1.88m OD

Table 1 Trench PDZ3.01 deposit summary

Natural, mid to dark blueish-grey clayey gravels of small to medium size [55] were observed in the trench base, marking the base of the deposit sequence at a surface level of 1.88m OD to the north-west to 1.56m OD to the south-east (Fig 3).

A 0.09m thick layer of soft dark greyish brown silty clay, with gravel inclusions [54] overlay layer [55]. Its surface fell from1.91m OD in the north-west to 1.62m OD in the south-east (Fig 3). This gravely alluvial clay layer was overlain by a similar deposit of dark greyish brown alluvial silty clay [53], differentiated by a lack of gravel inclusions. Layer [53] measured 0.11m thick and sloped from 1.98m OD in the north-west to 1.71m OD in the south-east. Above layer [53] was alluvial deposit [52]. This was comprised a mid-brownish yellow silty clay that contained frequent manganese flecks. The layer measured 0.23m thick from 2.08m OD in the north-west of the trench sloping to 1.86m OD in the south-east. Greyish brown, silty clay alluvium [51], measuring 0.16m thick, sealed layer [52]. This layer followed the previous slope, dropping from 2.10m OD in the north-west to 1.91m OD to the south-east (Fig 3).

The slope to the southeast observed in layers [54], [53], [52] and [51] is likely to reflect the area of higher, drier land to the north-west of the trench identified in the previous borehole modelling work. This sequence of alluvial deposits was sampled with a monolith tin to examine whether evidence for fluvial deposition, vegetation growth and/or subsequent soil formation exists at the base of the alluvium in this trench. Abundant rootlets were recovered from a bulk sample processed from the gravel. The characteristics of the deposits suggest vegetation colonising a gravel bar, but the date and environment of deposition requires further scrutiny.

A greyish blue, silty clay [20], with inclusions of calcium carbonate nodules, overlay layer [51]. The surface of this layer was more consistent in level, (at approximately 2.17m OD throughout the trench) than that of the underlying deposits (Fig 3). A dark blueish grey, silty clay layer with heavy manganese staining [19] lay above layer [20].

Vertical streaks of orange coloured iron oxide stains were visible, probably following the path of root channels of vegetation, the presence of which is evidenced by the decayed organic material within the alluvium. The deposit was 0.30m thick and its surface was fairly level at 2.54m OD in the south-east and 2.47m OD in the north-west. The top layer of alluvially deposited material comprised a mid blueish grey silty clay layer [18], measuring 0.27m thick. The surface of this layer sloped down slightly from 2.71m OD in the north-west to 2.63m OD in the south-east of the trench. The deposit contained occasional organic remains, along with small fragments of mollusc shells and some manganese staining.

The greater thickness and relatively more even heights of deposits [20], [19], and [18], in contrast to the earlier alluvial deposits, appear to indicate a change in the depositional environment, either from vegetated channel bars to a silting-up abandoned channel, or from a relatively dry landsurface to a more frequently flooded environment. Further work on the samples taken from the trench is needed to determine the environments represented and to better understand when this sequence of events took place.

A thin layer (0.04m thick) of slightly clayey organic silt [17], sealed layer [18] (Fig 3). This probably represents the buried pre-groundraising land surface. The palaeosoil contained frequent decayed vegetation, including intact leaves, see section 3.4.7, and formed at a level sloping gently from 2.73m OD in the north-west of the trench to 2.65m OD in the south-east. This suggests the level of the natural post medieval / Victorian floodplain lay somewhere between 2.5 and 3m OD in this area. Seeds, the leaves and insect remains from the bulk sample taken from the palaeosoil have good potential for reconstructing the natural environment of the area, immediately prior to Victorian groundraising. The buried landsurface deposit covered the majority of the trench, although in a few small and localised patches it appears to have been displaced by the depressions left by later deposition of large amounts of heavier material upon its soft surface.

Overlying layer [17] was a series of Victorian to modern made ground deposits [25], [24], [23], [15], [16], [14] and [13], which consisted of layers of sandy silts, silty sands, clays, silty clays, and crushed building materials, as well as ceramics, glass, metal, wood and other material of 19th century date (Fig 3). These had a maximum combined thickness of around 2.55m and a surface height of 5.14m OD to the north-west and 5.07m OD to the southeast. These deposits seem likely to represent successive episodes of deliberate deposition that are thought to have formed part of a concerted effort to raise and consolidate the original ground level to create a dry, flood free area.

On top of the made ground were several thinner layers of sand and crushed building materials [12], [11] and [10] (Fig 3). These had a combined thickness of 0.45m and a surface level of 5.52m OD in the northwest and 5.47m OD to the southeast of the trench. These appear to have been deposited in order to create a level surface to accommodate the overlying concrete slab.

A modern service trench, [21], cut through the levelling layers. This contained a drainage pipe and was backfilled with sand [22]. The pipe trench was 0.75m wide by 0.60m deep and was orientated north-east to south-west, perpendicular to the trench alignment.

The latest deposit encountered within Trench PDZ3.01 was the modern concrete slab, which sealed the service trench and levelling layers. The slab varied in thickness from 0.15m to 0.25m and had a surface level of 5.72m OD on the south-east side of the trench, sloping slightly to 5.68m OD to the north-west.

3.2.2 Evaluation Trench PDZ3.24

Location	Southern part of Work Package 1
Dimensions	29.7m x 1.8m at base; 4.09m deep
Modern ground level	5.36m–5.48m OD
Base of modern fill	2.31m OD
Depth of archaeological deposits seen (including alluvium)	1.4m
Level of base of deposits observed and/or base of trench	1.51m OD
Floodplain gravels observed	NA (gravels not reached)

Table 2 Trench PDZ3.24 deposit summary

Floodplain gravel was recorded at roughly 1m OD in an initial sondage and in a hand-dug geoarchaeological slot excavated to about 0.5m below the base of the trench. The overlying alluvial clay, below the base of the trench was blue grey silty clay with occasional gravel and some manganese staining. Soft, brownish black silty clay alluvium [41], which contained inclusions of calcium carbonate nodules, was observed above this, at the base of the trench sequence. The layer sloped from 1.91m OD on the north side of the trench to 1.51m OD on the south (Fig 4).

A bulk sample taken from [41] had poor preservation of organic remains, suggesting it had been subject to weathering and drying out (Fig 4). Context [41] was sealed by a brownish black, silty clay layer [40], measuring 0.48m thick. Streaks of orange iron oxide stains were visible, probably following the path of root channels. The layer was again higher to the north, at a height of 2.38m OD, and lower to the south, at 1.89m OD.

Above layer [40] was the uppermost alluvially deposited layer, [39]. This was brownish black silty clay with heavy manganese staining. The deposit was 0.68m thick and its surface level varied between a maximum of 2.65m OD on the south side of the trench and a minimum of 2.31m OD where it appears to be partially truncated by the cut of a later feature [56] (Fig 4). A sample taken from this clay had moderately good preservation of seeds and insects and it is likely to represent the silting of a river channel, not subject to prolonged episodes of drying out.

A timber revetment was present in the eastern side if the trench (Fig 5). Vertical timber posts [42], [43] and [44] were driven through layer [39]. Attached to the eastern side (the City Mill River side) 45], [46], [47] and [48], laid horizontally, on edge and placed end-to-end. These were on a north–south alignment in the eastern (west-facing) section of the trench and appeared to form a timber revetment (structure [38]). The revetment was 5.10m in length, although it was obscured to the south by the limit of excavation (which it extended beyond) and appeared to be truncated to the north by a later feature [56]. The highest (truncated) point of revetment [38] was at 2.84m OD. Its full height was obscured by the stepping of the trench (Fig 4).

It seems likely that structure [38] formed a revetment to contain the western bank of an earlier, perhaps wider, course of the adjacent City Mill River. Although it appears logical to surmise that the structure was positioned within a cut, no evidence of this was apparent during the course of the evaluation.

Brownish black, clayey silt [37] lay above structure [38]. This was only present within the eastern (west facing) section of the trench. It measured 5.10m in length, obscured to the south by the limit of excavation and truncated to the north and from above by feature [56]. Its surface level varied from 2.81m –2.91m OD (Fig 4). Deposit [37] could represent a fluvially lain fill within the cut [37]. Further investigation is required with to address this interpretation.

Feature [56], a further cut, truncated contexts [39], [38] and [37]. It extended across the trench and its edge sloped down towards the west, where it truncated the top layers of alluvium [40] and [39] in the east facing section. The top of the cut is presumed to lie somewhere to the east of the trench and the base to the west, leaving only a segment of the feature's straight, moderately sloping edge visible in the trench edges to the north and south. The cut sloped from 2.91m OD in the east of the trench to 1.80m in the west. Very soft, white deposit [36], which appeared to consist predominantly of chalk, filled the cut [56]. The surface of the fill lay at 4.04m OD, with the fill varying in thickness from 1.26m to 2.0m (Fig 4).

A series of post-medieval made ground deposits: [35], [34], [33], [32], and [31] sealed fill [36] (Fig 4). The deposits generally consisted of various layers of silty sands, silty clays, and sandy gravels that contained ceramics, glass, metal, wood and other material of 19th century date. The glass and pottery recovered from contexts [31] and [35] were spot dated to the latter half of the 19th century (see Appendix 3: finds assessment). Altogether the deposits had a combined thickness of *c* 1.8m and a surface height of 5.29m OD in the south to 5.12m OD to the north.

As a result of the top edge of cut [56] lying outside of the area of investigation, it is unclear whether the 19th century made ground deposits are later fills of the feature, or overlying layers. Deposits of material (layer [15] and lenses within layer [04]), which are similar to the chalky primary fill [36], have been encountered in trenches PDZ3.25 and PDZ3.01 to the north. This may indicate that some of this material could alternatively be interpreted as fills of cut [56].

On top of the made ground were several thinner layers of sand containing frequent inclusions of crushed building material [30], [29] and [27] (Fig 4). The final layer [27] yielded 2 fragments of 19th century pottery (1820–1900). The layers had a combined thickness of 0.68m and a surface level of 5.23m OD on the north side and 5.36m OD in the south of the trench. These appear to have been deposited in order to create a level surface to accommodate the overlying concrete slab [26]. A modern services trench [50] cut through the levelling deposits. This contained a drainage pipe and was backfilled with a light greyish brown sandy silt [22]. The pipe trench was 3.60m wide, 0.94m deep and crossed the trench on a northeast to southwest orientation. A brick built inspection pit, [28], was also partially visible within the cut.

The uppermost deposit encountered within Trench PDZ3.24 was the modern concrete slab [26], which sealed the service trench and levelling layers. The slab varied in thickness from 0.06m to 0.20m and had a surface level of 5.48m OD on the south of the trench, sloping very slightly to 5.36m OD to the north.

3.2.3 Evaluation Trench PDZ3.25

Location	Centre of Work Package 1
Dimensions	20.2m x 1.8m at base; 4.78m deep
Modern ground level	5.5m OD
Base of modern fill	2.57m OD
Depth of archaeological deposits seen (including alluvium)	1.24m
Level of base of deposits observed and/or base of trench	1.57m OD
Floodplain gravels observed	NA (gravels not reached)

Table 3 Trench PDZ3.25 deposit summary

Floodplain gravel was recorded at roughly 1m OD in an initial sondage and in a hand-dug geoarchaeological slot excavated to about 0.6m below the base of the trench. The overlying alluvial clay, below the base of the trench, was similar to that observed at just above the base of the trench, a layer of blueish grey silty clay alluvium, layer [08] (Fig 6). The layer contained inclusions of finely sorted gravel, along with nodules of calcium carbonate. Its surface was fairly consistent at 1.65m OD. A sample taken from this deposit produced good assemblages of seeds, insects and snails, suggesting a permanently wet environment. The deposit (together with the overlying alluvium) is likely to represent the silting up of a former river channel. Blue-grey, silty clay alluvium [07] overlay layer [08]. The deposit was 0.34m thick and its surface sloped slightly from 1.99m OD on the north side of the trench to 1.95m OD to the south. This was overlain in turn by blue-grey silty clay alluvial layer [06]. This deposit contained occasional small, sub-rounded pebbles and streaks of orange iron oxide, probably following the path of root channels. The layer had a maximum thickness of 0.41m and sloped from 2.36m OD in the south to 2.23m OD to the north.

Blue-grey silty clay [05] formed the uppermost alluvial deposit within the trench (in which a landsurface, [09] had developed). Manganese streaks were visible, within the layer, indicating probably the paths of root channels associated with overlying vegetation, the presence of which is evidenced by the inclusion of decayed organic material within the alluvium. The layer was 0.23m thick and had a surface level of 2.59m OD in the south of the trench to 2.45m OD in the north. Clayey organic silt [09] probably represents a buried land surface (Fig 6). This layer contained a high proportion of decayed vegetation. It measured 0.24m thick from a surface that sloped gradually from 2.83m OD on the north side of the trench to 2.57m OD to the south. It is likely to be part of the same 'pre-Victorian groundraising' landsurface seen in PDZ3.01.

A series of post medieval made ground deposits: [25], [24], [23], [15], [16], [14] and [13] overlay the early soil horizon [09] (Fig 6). These variously consisted of sandy silts, silty sands, silty clays; containing crushed building materials, ceramics, glass, metal, wood and other material of 19th century date. These had a maximum combined thickness of around 2.45m and a surface level of *c* 5.05m OD. A layer of sand containing frequent inclusions of broken up building materials [01] sealed the made ground deposits. This had a maximum thickness of 0.35m and a surface level of 5.29m OD on the north side and 5.23m OD on the south. The layer appears to have been deposited to provide a level surface supporting the overlying concrete slab. The modern concrete slab, which lay above levelling layer [01], varied in thickness from

0.26m to 0.21m and had a surface level of 5.50m OD on the north side of the trench and 5.49m OD to the south.

3.3 Stratigraphic interpretation of the site.

3.3.1 Phase 1: floodplain gravel

Trench	Contexts	Samples
PDZ3.01	[55]	{14}

Table 4 Phase 1 summary

The mid–dark blue-grey clayey gravels recorded in Trench PDZ3.01 sloped down from a high point of 1.88m OD in the northwest to 1.56m OD to the southeast. This gradient continued further to the south, with the gravel surface recorded at roughly 1m OD in the slots dug in trenches PDZ3.24 and PDZ3.25. The slope of the gravel surface 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 (Landscape Zone 1), while the area to the south was a lower lying, wetter environment (Landscape Zone 2).
However, given the elevation of the gravel, at between 1m and 2m OD, and the characteristics of the overlying deposits, it is possible that the gravel in PDZ3.01 represents a vegetated gravel bar and relates to a historic phase of the river. It may represent a historic riverbed, earlier than the reveted watercourse excavated in PDZ3.24, which later silted up. Dating of the root mat within the gravels of PDZ3.01 (from {14}), as well as some of the seeds and organic remains from the overlying alluvium might help to determine whether the gravels observed within the site are of prehistoric or historic date. Such information will greatly contribute to our understanding of the evolving river regime and deposit survival across the site.

3.3.2 Phase 2: alluvial deposits

Trench	Contexts	Samples
PDZ3.01	[18], [19], [20]; [51], [52], [53], [54]	{6}; {8}, {9}, {10}
PDZ3.24	[39], [40], [41]	{11}, {12}, {13}, {15}, {16}, {17}, {18}
PDZ3.25	[5], [6], [7], [8]	{1}, {2}, {3}, {4}

Table 5 Phase 2 summary

The gravels described above were overlain by a succession of alluvial layers, with a thickness of *c* 1m in PDZ3.01 and 1.5m in PDZ3.24 and PDZ3.25. The deeper alluvial sequence in the southern two trenches was only observed and sampled in a geoarchaeological slot, as a sealant layer approximately 0.30m thick was left in place in the southern trenches (See section 3.1 above). In Trench PDZ3.01, where the sequence was observed in most detail, the alluvial deposits changed from thinner layers with a pronounced surface gradient to thicker layers with a more level surface and a higher organic content. This is likely to reflect the transition from a river bed with vegetated bars to a marshy, wet abandoned channel that was silting up.

The alluvial deposits suggest that a former course of the river channel that was subsequently reveted (see below), which is probably a forerunner of the City Mill River, is likely to have crossed all three trenches. However, the timespan represented by the deposits is not yet clear and they may be of prehistoric or historic date, although a historic date is considered more likely.

The previous modelling suggests the high gravel beyond the north of the site (in the north west part of PDZ3) might represent a former island of higher ground within the floodplain, which may have remained as dry ground from the prehistoric period onwards. Although the results from the evaluation trenches appears to confirm that the floodplain gravels are high in the area of the trenches, especially PDZ3.01, the characteristics of the gravel surface and of the overlying alluvium would not seem to suggest that a dry landsurface existed above the gravels in the past. The alluvium appears to indicate that a historic channel formerly crossed the site, with most of the alluvial deposits representing its silting up. More information needs to be obtained from the samples taken from the site to establish the environments of deposition of the alluvial sequence and in particular its date, from radiocarbon dating of organics preserved within the samples collected on site.

3.3.3 Phase 3: management of the City Mill River

Trench	Contexts	Samples
PDZ3.24	[38]: [42], [43], [44], [45], [46], [47], [48]	NA

Table 6 Phase 3 summary

A timber structure [38] was present above the alluvial layers in Trench PDZ3.24 (Fig 5). This comprised the remains of a north–south plank and post revetment sited along an earlier west bank of the City Mill River. Further investigation of this structure is required in order to determine its extent, age and exact relationship with surrounding deposits due to its position on the extreme periphery of the area of investigation.

3.3.4 Phase 4: buried landsurface

Trench	Contexts	Samples
PDZ3.01	[17]	{6}, {7}
PDZ3.25	[9]	{1}, {5}

Table 7 Phase 4 summary

A thin layer of slightly clayey organic silt sealed alluvial layers in Trenches PDZ3.01 and PDZ3.25, containing remains of decayed vegetation that probably represents a buried soil horizon. Although no definite relationship between the reveting found in Trench PDZ3.24 to the south and the buried land surface could be ascertained, it is likely to have formed after the effective drainage and embankment of the marshy land prevented further alluvial deposition. Additional investigation of the reveting has the potential to produce additional evidence to corroborate this.

3.3.5 Phase 5: channel silting

Trench	Contexts	Samples
PDZ3.24	[37]	–

Table 8 Phase 5 summary

Brownish black clayey silt, observed only in the eastern (west facing) section of Trench PDZ3.24, could represent a fluvially lain fill of the channel contained by revetment [38]. This probably extends eastwards from the timber structure and may reflect the abandonment of regular maintenance of the waterway. Again, further investigation is required to ascertain the validity of this hypothesis and to retrieve dating evidence from the deposit.

3.3.6 Phase 6: 19th century ground reclamation

Trench	Contexts	Samples
PDZ3.01	[13]–[16]; [23]–[25]	–
PDZ3.24	[31]–[36], [56]	–
PDZ3.25	[13]–[16]; [23]–[25]	–

Table 9 Phase 6 summary

The putative channel fill was overlain by successive deposits of 19th century made ground. In Trench PDZ3.24 the earliest of these were observed to be fills of a very large feature [56], the limits of which lay outside the trench. The top of the cut appears to lie somewhere to the east of the trench and the base somewhere to the west. Its edge extended throughout the entire trench sloping down towards the west, where it truncated the top layers of alluvium in the western section. It is unclear whether the later made ground deposits also comprise fills of the feature, or alternatively overlying layers. Similar deposits found in Trenches PDZ3.01 and PDZ3.25, could also be interpreted as either fills of the cut or later superimposed layers.

3.3.7 Modern

Several, thin layers of sand and crushed building materials overlay the 19th century made ground. These appear to have been deposited in order to create a more level surface to accommodate the overlying concrete slab. Several modern service trenches cut through the levelling deposits across the site. The final deposit encountered within trenches was the modern concrete slab, which covered the whole of Work Package 1 and sloped gradually towards the south of the site

3.4 Evaluation of environmental evidence

3.4.1 Introduction

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

The stratigraphy recorded in a representative profile of the trench sequence, as drawn and described by the geoarchaeologist, should 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

A sequence of monolith tins was taken through the natural deposit sequence in each trench, with a second sequence (a single tin) through the gravels and clays at the base of PDZ3.01. Three tins {15} were taken from PDZ3.24, four tins {1} were taken from PDZ3.25 and three tins {6} from PDZ3.01. In each case the tins record the sequence from the top of floodplain gravel to the top of the alluvial deposits. Although trenches PDZ3.24 and PDZ3.25 were not excavated to the top of gravels, a hand dug slot was excavated by the geoarchaeologist at the sampling location in both cases to enable a full sequence of alluvial deposits to be sampled. The alluvial sequence appeared to have been truncated in PDZ3.24, but evidence for the soil or landsurface that existed pre- modern groundraising was identified in the uppermost alluvium in PDZ2.25 and PDZ3.01 (contexts [9] and [17] respectively), suggesting that the full alluvial sequence might survive in these trenches.

The tins provide an undisturbed column of sediment through the alluvial deposits, for off-site examination. The location selected for sampling was considered to be a representative profile of the alluvial deposits exposed in each trench. The monoliths are suitable for sub-sampling for microfossils and sedimentary techniques, intended to gain a better understanding of the changing environments represented by the Holocene alluvial deposits across the site as a whole.

Sedimentary techniques such as loss on ignition, magnetic susceptibility and soil micromorphology might tell us more about the depositional and post depositional environment of the alluvial clay, which with subtle lateral and vertical variation comprised the alluvium in all three trenches. In particular, these techniques might help determine whether a dry landsurface formerly existed at the base of the alluvial sequence, prior to the build-up of alluvium, as a result of rising river levels. Microfossil examination might also be able to provide information about the river characteristics and surrounding vegetation.

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 alluvial clay deposits, which comprised the alluvium on the site, might preserve microfossils, such as pollen and diatoms, as well as cladocera, chironomids and other microscopic remains. Such evidence can provide valuable information about the evolving past environment. In particular, information about the past vegetation, water characteristics, and indirect evidence for human activity, such as landscape clearance, cultivation and other disturbance, might be gleaned from the study of microfossil assemblages. Such evidence is likely to be complimentary to the information obtained from macro-remains from the bulk samples.

Preservation in the more heavily manganese and iron-stained parts of the alluvial clay may be poor, however, as a result of oxidation and weathering. These deposits, which include the pre-modern landsurfaces, contexts [9] and [17] are likely to have been subject to episodic drying out, which may lead to preservation of only the most durable pollen, spores and diatoms. However, this is only a guide - without assessment of the microfossil inclusions their survival and potential cannot be reliably evaluated. The preservation of microfossils in the deposits needs to be assessed as a further stage of work.

3.4.4 Bulk sample processing

Seven of the fourteen environmental bulk soil samples taken from the site were processed to determine the potential for the recovery of plant remains, molluscs and insect remains, with the expectation that they might provide information on the local environment and evidence of any human activity in the area (see Table 10). Such work should stand alongside any environmental information resulting from analysis of the monolith samples and should help to look at any environmental changes across the site, which in turn should contribute to an understanding of past landscape change within the Olympics area, as a whole. The aim of this evaluation was to establish whether a full assessment of any of the samples or categories of environmental remains present in the samples should be carried out.

The samples were twenty litres in size and sub-samples of five litres 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. No residues were produced and so they were not sorted. 15 litres of soil was retained from each sample for further work.

Small amounts of the flots were scanned to show whether further assessment would be worthwhile for these samples. The flots were scanned rapidly under a low-power binocular microscope. As this was not a full assessment, detailed comments of the contents have not been made. However, an indication of the survival of different categories of environmental remains has been obtained, which has helped suggest a strategy for further environmental assessment. A summary of the results is given in Table 10.

3.4.5 Radiocarbon dating

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

In general, few artefacts suitable for spot dating were recovered from the alluvial sequence (excepting the uppermost part of the alluvial clay). However, the alluvial deposits excavated contained twigs and other plant remains, from which radiocarbon dates might be obtained. Although no samples specifically for radiocarbon dating were taken, the sequence of bulk samples (and the monoliths if necessary) should provide sufficient material for the extraction of single entity organic remains suitable for radiocarbon dating by AMS (Accelerator Mass Spectrometry).

3.4.6 Molluscs and ostracods

Three of the seven samples processed contained snails, which suggests there is some, but fairly low, potential for the assessment of molluscs from the alluvial clay samples as a further stage of work. Moderate mollusc assemblages were present in sample 2 from context [8] and sample 9 from context [19]. One of these seemed to be dominated by freshwater molluscs and the other by terrestrial molluscs. It is recommended that these two samples are assessed for molluscs as part of any further work. The flot from PDZ3.01 also contained two single molluscs. Although this is too few to merit further assessment, the size of the sample scanned was small with respect to the whole sample and a greater number of snails might be obtained if the whole sample is processed as part of any further work.

3.4.7 Plant remains

The seven processed samples produced waterlogged plant material of various kinds. Five were very rich in rootlets. Five samples contained seeds with, in particular, sample 2 from context [8], sample 7 from context [17] and sample 11 from context [39] containing more than just occasional seeds. Sample 2 from [8] and 13 from context [41] contained tiny fragments of charcoal. Wood fragments were present in sample 7 from context [17] as were very well preserved leaves, sometimes still on their stems or in clumps.

The seeds present in these samples were mainly from plants of the kind that are found in disturbed ground and included goosefoot types (Chenopodiaceae indet.), dock (*Rumex* spp.), pinks (*Stellaria* spp.), buttercup (*Ranunculus* spp.), dandelion (*Taraxacum officinale*), polygonums (*Polygonum* spp.), and persicarias (*Persicaria* spp.). Sample 2 was dominated by goosefoot type (*Chenopodium* spp.) seeds. Wetland plant remains were also present in these samples including seeds from water plantain (*Alisma plantago-aquatica*) and sedges (*Carex* spp.).

3.4.8 Insect remains

Beetle remains were present in sample 2 from context [8], sample 7 from context [17], sample 9 from context [19] and 11 from context [39] in small to moderate quantities, the richest sample being sample 9 from context [19]. Mites were present in sample 11 from context [39] and in moderate quantities in the clay flot from PDZ3.01. The survival of insect remains suggests insect assessment, to determine the potential of insects for past landscape reconstruction, is likely to be worthwhile.

context	sample	soil processed (l)	soil retained (l)	vol residue (l)	vol washed material (ml)	sample type	wood	seeds/fruits	insects	molluscs	comments	Potential
PDZ2.01	organic clay flot				10	wet flot			++ mites	+	rooty, no wlg seeds	low botanically, moderate for mites
PDZ3.01	gravel flot				20	wet flot					roots only	low
8	2	5	15	0	20	wet flot	++ charcoal	++	+beetles	++	low variety of seeds, mainly chenopodium, molluscs more interesting	low for botany, moderate for snails
17	7	5	15	0	20	wet flot	+++	++	+beetles, +daphnia		mod wlg seeds, better than some of the others	moderate for beetles and botany
19	9	5	15	0	50	wet flot		+	++ beetles	++	Good beetles and molluscs, poor seeds	low for seeds, good for beetles and molluscs
39	11	5		0	10	wet flot		++	+ mites and beetles		mod distbd ground wlg seeds, low	moderate

											mites and beetles	
41	13	5		0	5	wet flot	+ charcoal	+			low wlg seeds	low

Table 10 Evaluation of environmental evidence

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'.

The evaluation trenches exposed Holocene or earlier gravels, sealed by sequences of alluvial deposits, followed by a structure and deposit of unknown date. These were overlain by 19th century made ground, and finally by modern services, levelling layers and a concrete slab. The gravels represent a horizon beneath which no deposits of archaeological significance are likely to be found. The areas exposed represented a minimum of 5% of the areas to be impacted upon by construction works. The trenches thus satisfy the original requirements of the evaluation as stated in the Written Scheme of Investigation (MoLAS-PCA 2007b).

4 Archaeological potential

4.1 Realisation of original research aims

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

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?

No evidence for Late Glacial deposits, environments or Late Upper Palaeolithic activity was recorded.

The gravels were only reached in the northernmost Trench PDZ3.01, due to issues with hydraulic pressure from groundwater (See sections 2.1.3 & 2.1.4 above). The top of the deposit marked the vertical extent of excavation within the trench and none of the gravels were fully excavated.

However, the abundant rootlets and other organics observed within the upper part of the gravel and overlying alluvial deposits in PDZ3.01 suggests they might be of Holocene and, given their elevation, even historic date. There is potential to date the organics within the gravels by radiocarbon, to confirm their age. This would lead to a better understanding of the survival of deposits on the floodplain, for migration by historic river channels could have eroded earlier information from many places, including perhaps the present site.

Although the evaluation suggests that the high gravels on the site are related to a former river channel, as opposed to dry landsurfaces, the Pleistocene gravel surface might also have been (and probably was) high in the area of the site. Any landsurfaces developed above it are likely to have been removed by the encroachment of the later river channel, however.

The presence of later prehistoric or historic gravel does not mean that Pleistocene gravel did not exist at high levels or form the edges of an island of higher ground at this location. The later channel is likely to have merely reworked the uppermost part of the Pleistocene gravels, as it migrated across the site, as opposed to depositing new gravel transported from elsewhere.

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?

The gravels observed at the base of PDZ3.01 were probably deposited as a bar on the riverbed. The characteristics of these gravels and of the lowest part of the overlying alluvium suggested that the gravel bar was vegetated and it is likely that it belonged to a former course of the City Mill River. The overlying alluvial silty clay might represent the silting up of this earlier channel, perhaps as it migrated eastwards. The reveting recorded in PDZ3.24 probably represents the manipulation of a later stage of the river. The gravel deposits, representing the active river were not fully examined

and only seen in a geoarchaeological hand dug sondage in PDZ3.24 and PDZ3.25, as it was required that a 0.30m sealant layer of alluvium was left in place to separate the uncontaminated pressurised groundwater from the contaminated perched water in the made ground. Good preservation of environmental remains from several of the bulk samples taken from the alluvium suggests there is good potential for obtaining information about the characteristics of the river in the past and for radiocarbon dating. Such dating will be crucial in order to link the environmental results with archaeological and documentary evidence.

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

Landscape Zone 2, as identified in the DBA represented the lower lying area in the southern part of PDZ3 and the present site, lies on the fringes of what was likely to have been higher and drier ground to the north. The silty clay alluvial deposits on the site are likely to have accumulated within an abandoned channel that migrated across the former higher drier ground and are likely to preserve a wide range of environmental evidence suitable for past landscape reconstruction – including indirect evidence of past human activity. Dating of the alluvial sequence by radiocarbon (for example, of the organics from the bulk samples) would be needed, however, to link the information to the archaeological timescale.

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

Landscape Zone 2, as identified in the DBA represented the lower lying area in the southern part of PDZ3 and the present site lies on the fringes of what was likely to have been higher and drier ground to the north.

Other than the post-medieval revetment, no archaeological evidence of wetland exploitation was recovered from the evaluation.

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

Although the site lies at the margins of the higher drier ground of PDZ3, Landscape Zone 1, it is likely that any evidence of former landsurfaces and associated evidence of human occupation, buried by later alluvium have been truncated by the migrating river channel. Examination of the monolith samples taken from the site might be able to determine whether evidence for a previously dry landsurface exists at the interface of the alluvium and gravel.

However, examination of the section exposed in PDZ3.01 suggests that the uppermost gravels have been reworked and redeposited as a channel bar by a later Holocene, perhaps even historic, river.

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?
No evidence of Roman activity or occupation was recovered in the evaluation.

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?

The 19th century made ground deposits truncated the underlying archaeology only in Trench PDZ3.24 in the south of Work Package 1. A very large feature was found [56], the limits of which lay outside of the trench. Its cut extended across the whole trench sloping down towards the west, where it truncated the top layers of alluvium. Modern truncation is therefore much more extensive towards the west end of the work package. It is unclear whether the later made ground deposits are also fills of the feature, or constitute overlying layers. Similar deposits found in Trenches PDZ3.01 and PDZ3.25 to the north, could be interpreted either as fills of the cut or later layers. Although the deposits were not observed to be in a cut, in the underlying deposits within these evaluation trenches, there is a possibility of truncation to the west. The thickness of the made ground varied from a maximum of 2.91m in Trench PDZ3.24 to the south of Work Package 1, to 2.55m in Trench PDZ3.01 to the north.

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

In Trench PDZ3.24, a timber revetment was discovered, probably used to contain an earlier course of the nearby City Mill River and prevent erosion of its western bank. A thin layer of slightly clayey organic silt containing frequent decayed vegetation sealed the alluvial layers in Trenches PDZ3.01 and PDZ3.25, probably representing the buried pre-modern / pre-Victorian landsurface, suggesting that it lay between about 2.5m and 3m OD in this area. The palaeosoil may have formed after the revetment of City Mill River prevented further depositions of alluvial sediments.

4.2 General discussion of potential

The evaluation has shown that undisturbed deposits, including the post medieval or later ground surface, survive intact beneath late 19th century made ground. These deposits comprise gravels and alluvial sediments, which probably represent earlier courses of the City Mill River, structural evidence of reveting a subsequent course of the river and a buried soil, that developed across the silted up channel and was buried by Victorian and later groundraising.

Natural gravels were only reached in the northernmost Trench (PDZ3.01), due to problems with hydraulic pressure in the groundwater, however the level of the gravel surface was recorded in hand dug geoarchaeological slots in PDZ3.24 and PDZ3.25. The gravel surface dipped down from north to south across the three trenches, from just below 2m OD in PDZ3.01. This appears to support the previous modelling that had identified an island of higher gravel in the north and west of PDZ3. The alluvial sequence was about 1m thick in PDZ3.01 and 1.5m thick in PDZ3.24 and PDZ3.25, where the gravel surface was lower. The alluvium in all three trenches was predominantly clayey and likely to represent episodes of prolonged flooding.

The characteristics of the gravel surface and of the overlying alluvium do not seem to indicate that a dry landsurface existed above the gravels in the past, as has previously been suggested. Instead, the gravel observed in PDZ3.01 has the characteristics of a vegetated channel bar and it is possible that a historic channel formerly crossed the site, with most of the alluvial deposits representing its silting up and the subsequent development of a dry landsurface (perhaps following the reveting of the channel, see below), which was buried by Victorian groundraising. More information needs to be obtained from the samples taken from the site to establish the environments of deposition of the alluvial sequence and in particular its date.

The remains of a timber revetment was uncovered in Trench PDZ3.24. It was obscured by the limit of excavation to the south and appeared to be truncated to the north by a later feature. Although the timber structure appears to be truncated by a later feature, there is a possibility of its survival further south and possibly to the north, probably continuing its north–south orientation to the west of the existing City Mill River bank. No evidence of reveting was observed in the other trenches, and it is possible that if any were present it was beyond their extent, or had been destroyed by the construction of the modern river wall and its tie-backs.

A thin layer of slightly clayey organic silt, containing frequent decayed vegetation sealed the alluvium in Trenches PDZ3.01 and PDZ3.25. This probably represents the buried pre-groundraising landsurface. Although no definite relationship between the reveting and this deposit could be ascertained, it is likely that it formed after the drainage of the marshy land and its embankment prevented further alluvial deposition.

Nineteenth century made ground deposits truncated the underlying archaeology only in Trench PDZ3.24. A very large feature extended throughout the entire trench sloping down towards the west, where it truncated the top layers of alluvium. It is unclear whether the later made ground deposits are also fills of this feature, or represent overlying layers. Similar deposits found in Trenches PDZ3.01 and PDZ3.25 to the north, could also be interpreted as being either fills of the cut or later layers. Modern truncation is therefore extensive towards the southwest of the site. Although the deposits were not observed to cut the underlying deposits within Trenches PDZ3.01 and PDZ3.25, there is a possibility of truncation further north, on the west side of the site. The archaeological potential is considered to be higher towards the east of the site, where deposits are more likely to have remained undisturbed by later activity.

4.3 Significance

The geoarchaeological evidence from the site will be able to provide a significant amount of information which will aid in the understanding of the evolving environment and river regime of the lower Lea Valley. This information will contribute to our understanding of the past environment of the site and its environs and will assist in the construction of landscape reconstruction models to place the archaeology within its landscape context. This information is certainly of local significance and of regional significance when examined alongside the body of data from the Olympics Park as a whole.

The timber reveting provides evidence of the implementation of water management associated with the City Mill River. This aids current understanding of the past land use of the site and, when combined with the geoarchaeological evidence for earlier phases of the watercourse, from the samples and records collected through the alluvial sequence, it should be able to provide locally significant information regarding human – environment interaction.

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 within areas of development will have been truncated to dramatically different levels.

[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)

Criterion 6: fragility

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

Criterion 7: diversity

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

Criterion 8: potential

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

The evaluation has shown that 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.

The alluvium appeared to gradually form a dryland surface of probable post Roman date later sealed by 19th–20th century land raising dumps. A timber revetment was present within the southernmost trench, associated with an earlier course of the City Mill River. Further investigation of this revetment is required in order to determine its extent, age and exact relationship with surrounding deposits as its position on the extreme periphery of the area of investigation severely limited the information, which could be recovered in the evaluation works

6 Proposed development impact and recommendations

The entirety of Work Package 1 lies within the proposed footprint of the Main Olympics Stadium and concourse. The nature of the proposed foundations is not currently known (MoLAS-PCA, 2007a). Considering the nature of the geology, it is assumed that piled foundations will be used. Piling would remove any archaeology within the footprint of each pile down to the base of the alluvium and into the underlying gravels. The introduction of pathways to other deposits may also impact the geochemical stability of the buried remains. The severity of the impact would depend on the pile type, size and density.

Ground remediation may be required where there have previously been industrial processes which have contaminated the ground or where imported landfill material contains contamination. The depth of such remediation is currently not known and will depend on the extent of contamination (MoLAS-PCA, 2007a). Presently available ground investigation data indicate that contamination with heavy metals and volatile organic compounds is extensive. The impact is potentially down to a depth of several metres. Removal of contaminated ground would remove any archaeological remains present.

The depths and extents of the proposed re-profiling and realignment of the City Mill River have not yet been finalised (MoLAS-PCA, 2007a). However, any excavation into the current ground surface could potentially remove any archaeological features or deposits that may be present.

The evaluation has shown that deposits of earlier post-medieval date survive beneath late 19th century made ground. The archaeological deposits relate to management of the riverine environment and are therefore of local significance with regards to understanding former environmental conditions and the exploitation of them. In Trench PDZ3.24 a revetment was discovered, seen to contain an earlier course of the nearby City Mill River. Its position on the extreme periphery of the evaluation severely limited the information that could be recovered during this stage of the site investigations and further investigation of this revetment and its channel is required in order to determine its extent, age and exact relationship with surrounding deposits.

The site also has potential to contribute to our understanding of the evolving river regime of the lower Lea and to provide indirect evidence of local human activity from environmental evidence preserved in the alluvial deposits, which appear to have accumulated within a former channel that became abandoned and silted up. This information could be obtained from further work on the monolith and bulk samples already taken from the site.

The assessment above (Section 5) does not suggest that preservation *in situ* would be the only appropriate mitigation strategy. GLAAS has determined that the revetment in PDZ3.24 should be mitigated by further excavation and that the environmental samples already collected as part of the evaluation be subject to detailed examination as part of the mitigation.

Furthermore, initial evaluation of the samples collected suggests they have good palaeoenvironmental potential. In particular, a number of the bulk samples are rich in

seeds, insects and molluscs and, especially if dated to the historic period, both bulk and monolith samples might preserve useful information about vegetation change and the changing environment of the Olympics Site from a time when environmental evidence is typically poorly preserved.

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:

- Five litres of each of the unprocessed samples be processed by paraffin flotation for the assessment of insect remains (14 samples);
- Five litres of each sample be wet sieved and together with the wet-sieved fractions of the parts of samples already processed, examined to assess the potential of the snail and ostracod assemblages preserved (14 samples);
- The remaining unprocessed samples be floted and the flots (together with those already processed) assessed for plant remains (14 flots);
- Four radiocarbon dates are obtained by AMS on identified twigs, seeds or other plant material taken from the processed bulk samples from the gravels at the base of the sequence; the buried landsurface ([17] or [9]); and the base of the alluvium in PDZ3.01 and PDZ3.25;
- Pollen and diatom assessment of the stratigraphic sequence is undertaken (8 sub-samples for each to be cut from the monolith tins), ideally from {1} taken from PDZ3.25;
- The stratigraphic, dating and sample assessment data is entered into the MoLAS-PCA geoarchaeological stratigraphic database and used to update the current GIS models of the past topography and environment, to contribute to the environmental assessment of PDZ3;
- Research aims that might realistically be addressed by the samples are identified and a report prepared by a geoarchaeologist or environmental archaeologist, summarising the environmental assessment results and the potential of the samples collected from the site.

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 revealed within the evaluation rests with the Local Planning Authority and their designated archaeological advisor (GLAAS).

7 Acknowledgements

MoLAS-PCA would like to thank Capita Symonds Ltd for commissioning this report on behalf of the Olympic Delivery Authority (ODA), and David Divers (English Heritage GLAAS) for monitoring the project on behalf of the London Borough of Newham.

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9 APPENDIX 1: NMR OASIS archaeological report form

OASIS ID: preconst1-36262

Project details	
Project name	Olympics, PDZ3, Work Package 1, Evaluation
Short description of the project	Following the recommendations of GLAAS, three evaluation trenches were excavated on the site and the results have helped to refine the initial assessment of its archaeological potential. Of the three trenches excavated, one reached the level of the natural gravels, with the remaining two excavated partly into the alluvial deposits. This overlying alluvial sequence had a thickness of between 1.10m and 1.15m, as revealed. The dominance of alluvial sediments within the trenches indicates an environment that has been subjected to numerous episodes of seasonal flooding over a long period. Features of archaeological significance discovered included timber reveting to contain an earlier course of the City Mill River and possible land surfaces. The sequences of archaeological interest were then sealed by 19th-20th century made ground or landfill deposits.
Project dates	Start: 31-08-2007 End: 05-10-2007
Previous/future work	Yes / Yes
Any associated project reference codes	OL-04207 - Sitecode
Type of project	Field evaluation
Site status	None
Current Land use	Industry and Commerce 1 - Industrial
Monument type	TIMBER REVETMENT Post Medieval
Significant Finds	CERAMICS Post Medieval
Project location	
Country	England
Site location	GREATER LONDON NEWHAM STRATFORD Olympics PDZ3 Work Package 1

Postcode	E15
Study area	7,500 Square metres
Site coordinates	TQ 37810 84100 51.5384577233 -0.01267473868040 51 32 18 N 000 00 45 W Point
Height OD	Min: 1.56m Max: 1.88m
Project creators	
Name of Organisation	MoLAS/PCA Ltd
Project brief originator	David Divers
Project design originator	Gary Brown/Kieron Tyler
Project director/manager	Gary Brown/Kieron Tyler
Project supervisor	Richard Archer
Type of sponsor/funding body	Olympic Delivery Authority
Entered by	Richard Archer (rarcher@pre-construct.com)
Entered on	14 January 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 The pottery

Chris Jarrett

11.1.1 Introduction

A total of six sherds of pottery (all stratified) were recorded for site OL-04207, all dating to the late post-medieval period. The pottery is generally in a good condition and indicates it was mostly deposited soon after breakage. The material has been classified following the standard Museum of London pottery codes and was recorded in an Access database.

Table 1 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
27	2	1820-1900
31	1	1780-1900
35	3	1830-1900

Table 11 Site OL-04207 pottery spot dating index

11.1.2 Significance, potential and recommendations for further work

There is little significance for the pottery on a local, national or international level and it is mundane for the period. The pottery present includes an English stoneware beer bottle for Batey's Brewed Beer, which is of some interest as a ceramic find. The assemblage can be compared to other excavations in North East London and other excavations on the Olympics site. The potential for the assemblage is that the pottery can date the contexts it derives from. There are no recommendations for further work, but the assemblage may need to be mentioned briefly in any publication or further report.

11.2 The glass

Chris Jarrett

11.2.1 Introduction

A small assemblage of glass (two complete bottles from stratified contexts) was recovered from the excavation. The intact nature of the glass vessels indicates that they were discarded soon after their contents had been used up. The data was entered on to an Access database.

11.2.2 Distribution

Table 3 shows the contexts the glass was found in, the number of fragments and a spot date for the deposit.

Context	Item count	Spot date	Description
31	1	1870+	Small brown Bovril bottle
35	1	1830+	Flat medium sized light blue green bottle embossed mark 'DR & Co'

Table 12 Site OL-04207 glass spot dating index

11.2.3 Significance, potential and recommendations for further work

The glass has little or no significance at local, regional or national level. Its main potential is to date the contexts it was found in. It is recommended that no further work is done on these and if the material needs to be referenced for publication, then information should be sought from the database.

Appendix 4: site index

Context No.	Plan	Section / Elevation	Type	Description	Date	Phase	Photos No.
1	-	S.01	Layer	Levelling Layer	Modern	6	-
2	-	S.01	Layer	Dump Material/ Landfill	19th Century	5	-
3	-	S.01	Layer	Dump Material/ Landfill	19th Century	5	-
4	-	S.01	Layer	Dump Material/ Landfill	19th Century	5	-
5	-	S.01	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
6	-	S.01	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
7	-	S.01	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
8	PDZ3.25	S.01	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
9	-	S.01	Layer	Paleosoil	Pre 19th Century	2	-
10	-	S.02	Layer	Levelling Layer	Modern	6	-
11	-	S.02	Layer	Levelling Layer	Modern	6	-
12	-	S.02	Layer	Levelling Layer	Modern	6	-
13	-	S.02	Layer	Dump Material/ Landfill	19th Century	5	-
14	-	S.02	Layer	Dump Material/ Landfill	19th Century	5	-
15	-	S.02	Layer	Dump Material/ Landfill	19th Century	5	-
16	-	S.02	Layer	Dump Material/ Landfill	19th Century	5	-
17	-	S.02	Layer	Paleosoil	Pre 19th Century	2	-
18	-	S.02	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
19	-	S.02	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
20	PDZ3.01	S.02	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
21	-	S.02	Cut	Cut of Pipe Trench	Modern	6	-
22	-	S.02	Fill	Fill of [21]	Modern	6	-
23	-	S.02	Layer	Dump Material/ Landfill	19th Century	5	-
24	-	S.02	Layer	Dump Material/ Landfill	19th Century	5	-
25	-	S.02	Layer	Dump Material/ Landfill	19th Century	5	-
26	-	S.03	Layer	Concrete Slab	Modern	6	-
27	-	S.03	Layer	Levelling Layer	Modern	6	-
28	-	S.03	Masonry	Wall of Modern Manhole	Modern	6	-
29	-	S.03	Layer	Levelling Layer	Modern	6	-
30	-	S.03	Layer	Levelling Layer	Modern	6	-
31	-	S.03	Layer	Dump Material/ Landfill	19th Century	5	-
32	-	S.03	Layer	Dump Material/ Landfill	19th Century	5	-
33	-	S.03	Layer	Dump Material/ Landfill	19th Century	5	-
34	-	S.03	Layer	Dump Material/ Landfill	19th Century	5	-
35	-	S.03	Layer	Dump Material/ Landfill	19th Century	5	-
36	PDZ3.24	S.03	Layer	Fill of [56]	19th Century	5	-
37	-	S.03	Layer	Fluvially Deposited Layer	Unknown	4	-
38	PDZ3.24	S.03	Structure	Timber Revetment	Unknown	3	-
39	PDZ3.24	S.03	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
40	-	S.03	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
41	PDZ3.24	S.03	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
42	PDZ3.24	S.03	Timber	Post of Revetment [38]	Unknown	3	-
43	PDZ3.24	S.03	Timber	Post of Revetment [38]	Unknown	3	-
44	PDZ3.24	S.03	Timber	Post of Revetment [38]	Unknown	3	-
45	PDZ3.24	S.03	Timber	Plank of Revetment [38]	Unknown	3	-
46	PDZ3.24	S.03	Timber	Plank of Revetment [38]	Unknown	3	-
47	PDZ3.24	S.03	Timber	Plank of Revetment [38]	Unknown	3	-
48	PDZ3.24	S.03	Timber	Plank of Revetment [38]	Unknown	3	-
49	-	S.03	Fill	Fill of [50]	Modern	6	-
50	-	S.03	Cut	Cut of Pipe Trench	Modern	6	-
51	-	S.02	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
52	-	S.02	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
53	-	S.02	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
54	-	S.02	Layer	Alluvially Deposited Layer	Pre 19th Century	2	-
55	-	S.02	Layer	Natural Gravel	Palaeolithic	1	-
56	-	S.03	Cut	Cut of Large Feature	19th Century	5	-

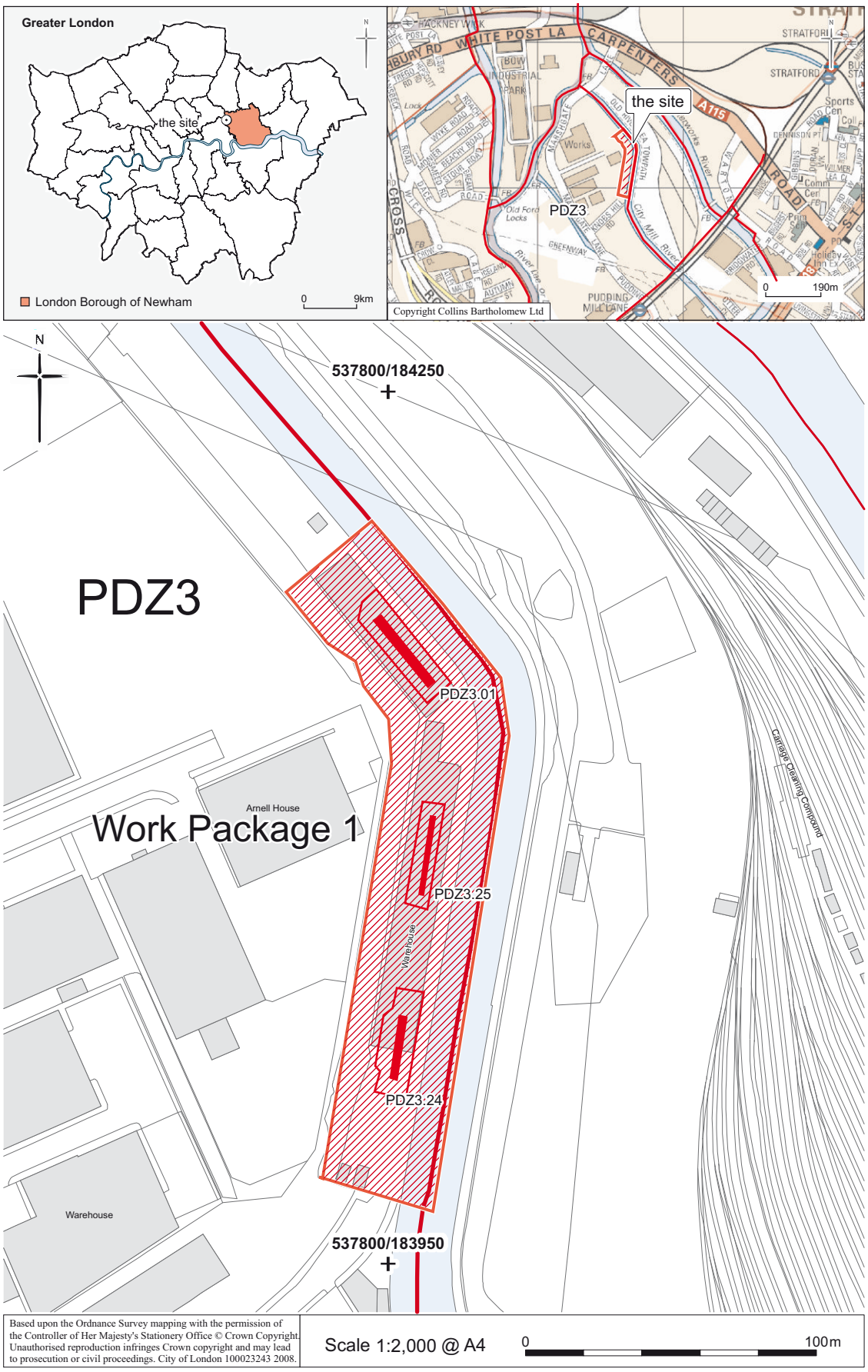

Fig 1 Location map

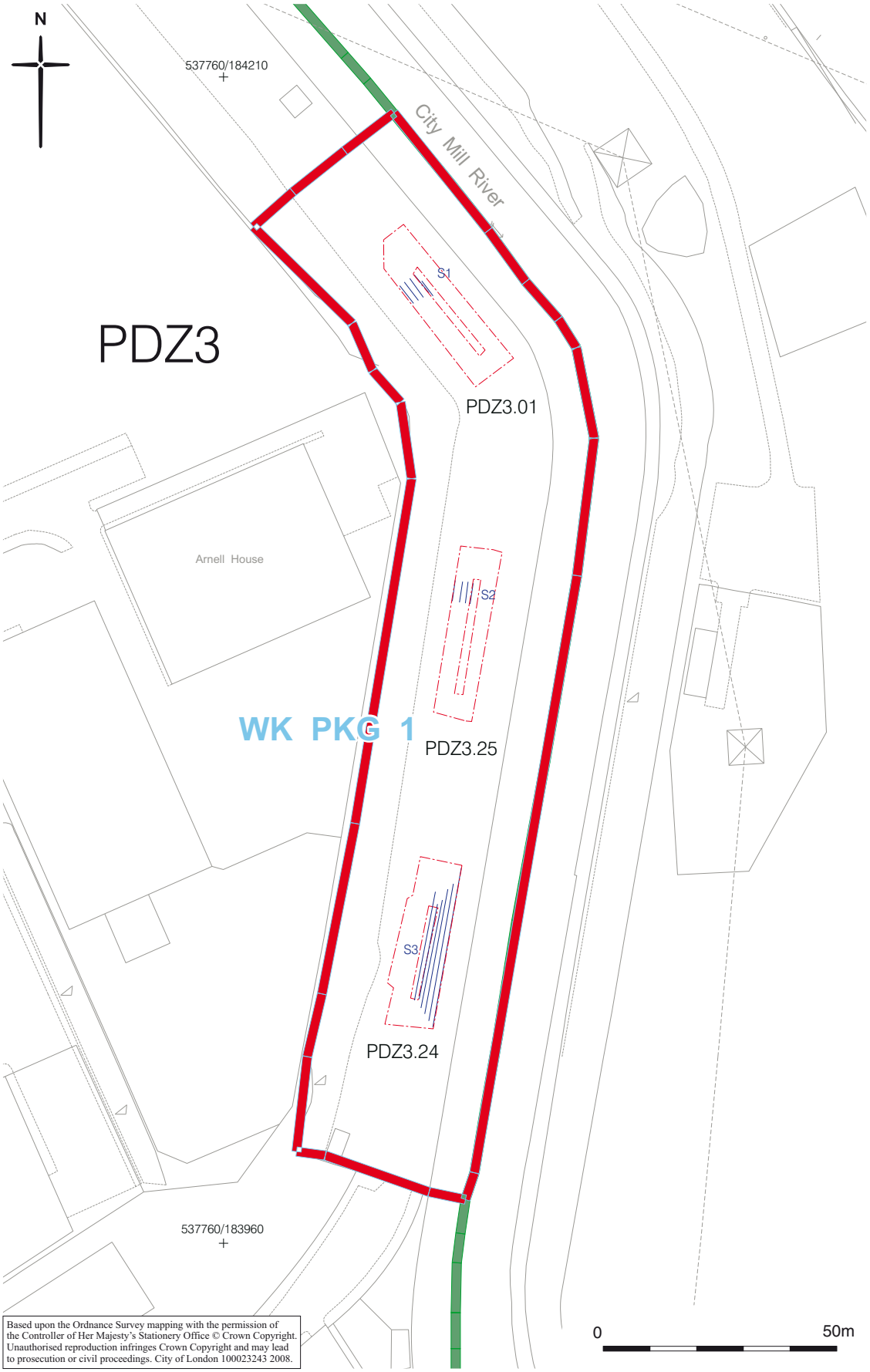

Fig 2 Trench locations

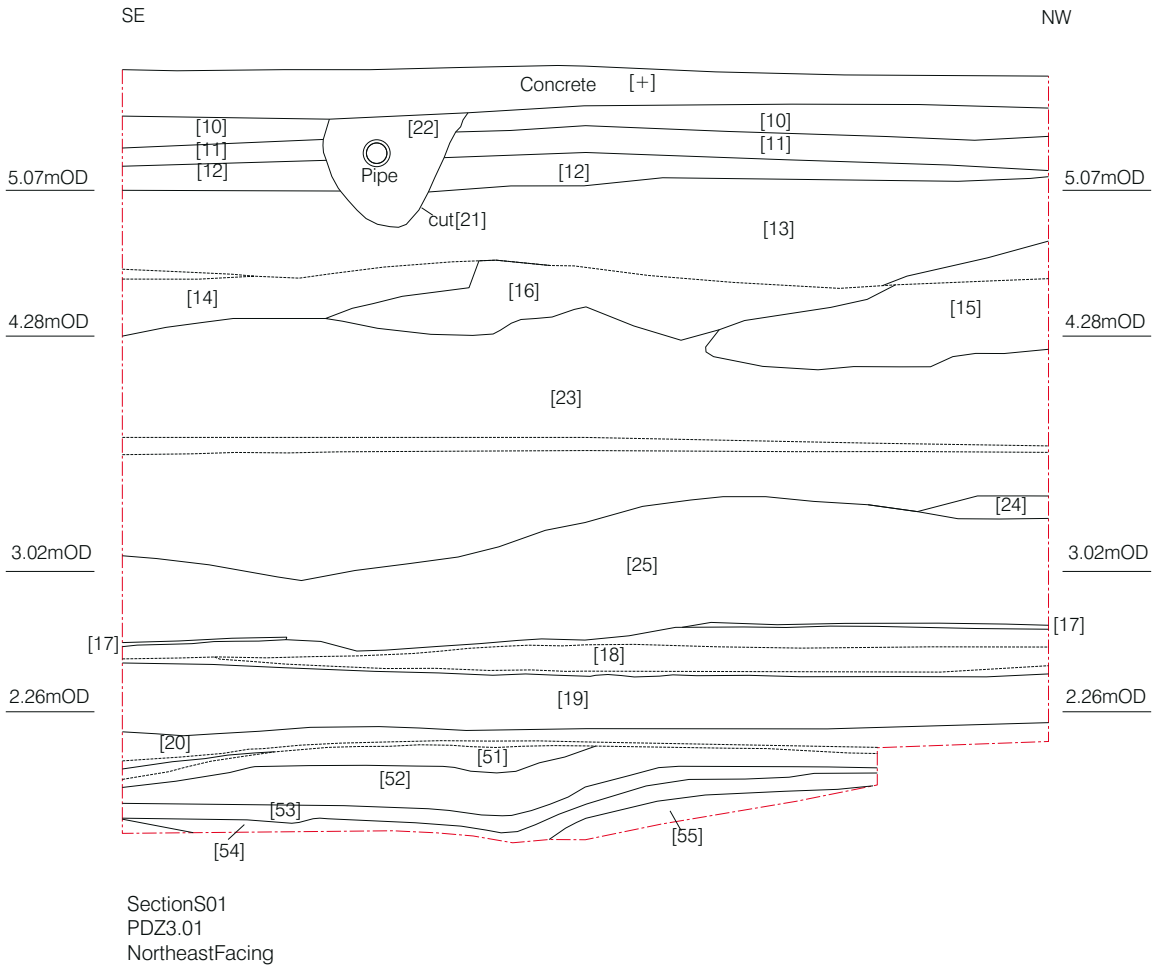

Fig 3 North-east facing Section 1 from Trench PDZ3.01

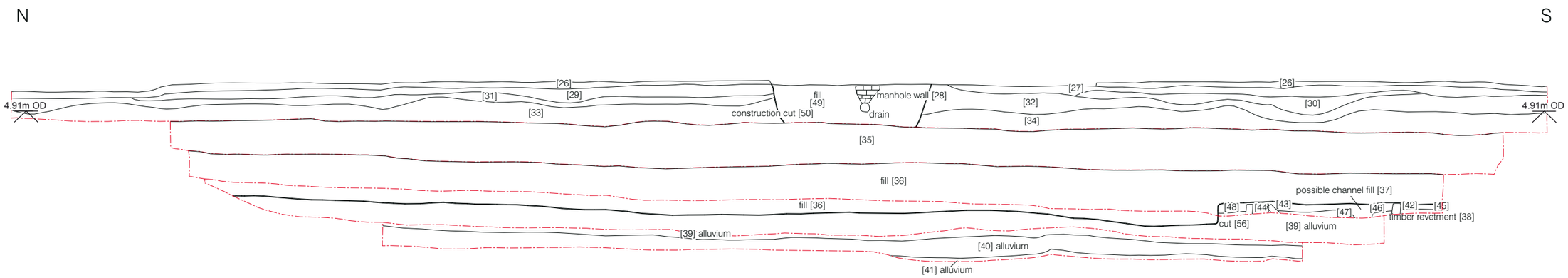

Fig 4 West facing Section 3 of Trench PDZ3.24

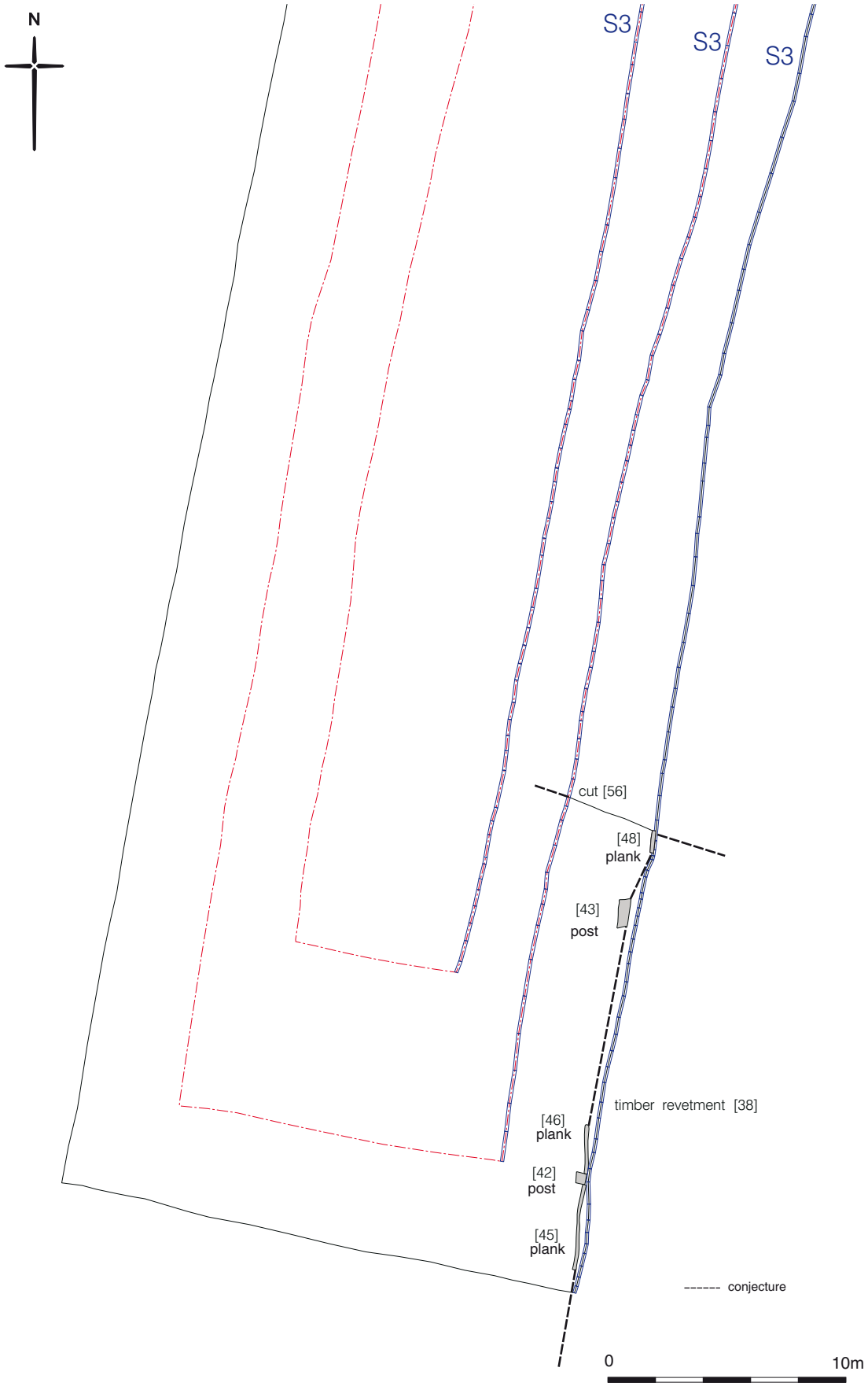

Fig 5 Detail of Trench PDZ3.24, showing revetment [38]

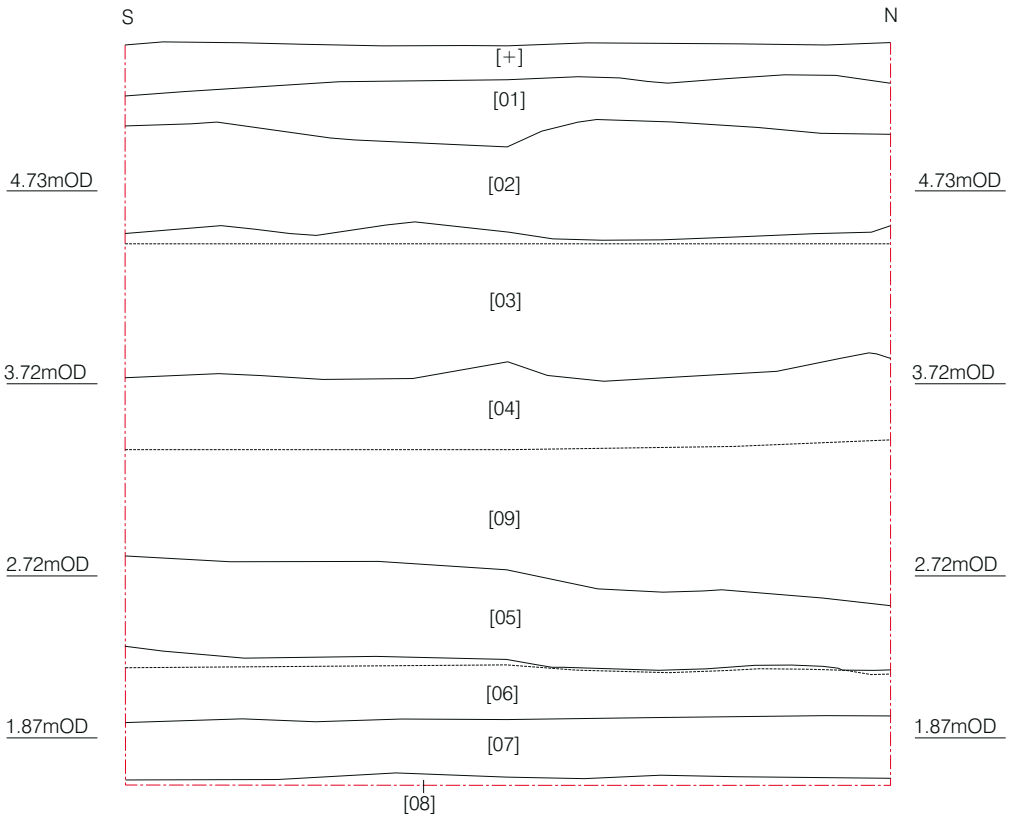

Fig 6 East facing Section 2 of Trench PDZ3.25