PLANNING DELIVERY ZONE 1
Work packages 1-6
Trench PDZ1.10, Trench PDZ1.11
Trench PDZ1.12, Trench PDZ1.13
Trench PDZ1.14, Trench PDZ1.15
Trench PDZ1.16, Trench PDZ1.17
Trench PDZ1.19, Trench PDZ1.20
Trench PDZ1.21, Trench PDZ1.22
Trench PDZ1.23
London
E15

London Borough of Newham

Archaeological evaluation report

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REGISTERED IFA ORGANISATION

MUSEUM OF LONDON Archaeology Service

PRE-CONSTRUCT ARCHAEOLOGY

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Archaeological evaluation report

Site Code: OL-01507
National Grid Reference: 538000 184300

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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) within the Olympic, Paralympic and Legacy Transformations Planning Applications: Planning Delivery Zone 1 (work packages 1–6), 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, twelve evaluation trenches were excavated across PDZ1 (across the various wok packages).

The evaluation results have helped to refine the initial assessment of the zone's archaeological potential. All twelve trenches recorded the level of the natural gravels, while the south and west extensions to Trench PDZ1.12 were limited to the surface of the surviving prehistoric features. The extent of the low terrace, an area of formerly higher ground in the south eastern part of the site, has been refined and shown to be associated with prehistoric activity in PDZ1.12. Prehistoric features, consisting of Late Bronze Age – Iron Age pits and ditches, post holes and stakeholes, were present in Trench PDZ1.12, and Trenches PDZ1.12 West and South. A wetland, marshy zone was identified fringing the low terrace and although as yet undated it is likely that this wetland area lay between the higher drier ground of the low terrace and the migrating river channels, previously recorded in OL-00105 and dated to the prehistoric and early historic period. No evidence for prehistoric activity was found within the wetland deposits, however. The deposits and features of archaeological interest were subsequently sealed by 19th–20th century made ground and landfill deposits.

There is good potential for past environment reconstruction from seeds, snails, insects, ostracods – all of which the evaluation has shown to be preserved in the bulk samples taken from the alluvial deposits. Microfossils, and in particular pollen and diatoms, are likely to be preserved in the monolith samples taken through the wetland deposits. The pollen for example will be useful in determining vegetational change and its relationship to the prehistoric activity recorded in PDZ1.12.

No radiocarbon dates have yet been obtained from the OL-01507 trenches, although there is good potential for radiocarbon dating of organic material from bulk and monolith samples, especially in the lower lying trenches. This would help to clarify the timing of river activity and wetland development across the site as a whole.

In addition to dating the deposit sequence and examining the biological remains preserved within the samples, there is very good potential for more detailed examination of the trench records to contribute to our understanding of the past topography and evolving environment, by inputting the stratigraphic information into the Olympics geoarchaeological database and modelling the semi interpreted data in ARC GIS.

In the light of revised understanding of the archaeological potential of the site the report concludes that further fieldwork may be required in the southern and central part of the site, where the prehistoric land surface and Late Bronze Age–Iron Age settlement evidence were recorded. In addition, further archaeo-environmental work on the samples already taken from the site would provide adequate mitigation of the

geoarchaeological resource. The results of this evaluation should also be assimilated into a project-wide assessment of all archaeological interventions to assign contextual significance and further refine the importance of the archaeological survival. This will enable the results to be assimilated into any publication discussing and disseminating the results.

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

Contents

List of figures

Front cover: South-west facing view of Evaluation Trench PDZ1.19, during excavation

List of tables

1 Introduction

1.1 Site background

Archaeological evaluation was undertaken within Planning Delivery Zone 1 (PDZ1), of the Olympic, Paralympic and Legacy Transformations Planning Applications, in the London Borough of Newham.

PDZ1 is located roughly in the middle of the valley floor of the River Lea, *c* 3km to the north of its confluence with the River Thames. The site covers a central area within the network of river channels known as the Bow Back Rivers. It is bounded to the north-west by the River Lea, which is tidal for some distance upstream and to the west and south by the canalised Waterworks River. The north-east and east sides of the site are bounded by the Stratford and North London Railway, while the south-east is bounded by the Great Eastern Railway.

The evaluation was broken down into a series of Work Packages, each defined due land availability and project programming. These Work Packages (1–6) break down as follows, with two additional work areas:

- Work Package 1: Trench PDZ1.10, Trench PDZ1.11, Trench PDZ1.12 (this trench was originally limited to Work Package 1, but was extended into Work Package 3), Trench PDZ1.13, Trench PDZ1.14, Trench PDZ1.15, Trench PDZ1.17,
- Work Package 2: Trench PDZ1.19
- Work Package 3: See above re Trench PDZ1.12
- Work Package 4: Trench PDZ1.21
- Work Package 5: Trench PDZ1.20, Trench PDZ1.22
- Work Package 6: Trench PDZ1.16
- Trench PDZ1.23 was excavated close to the southern limit of PDZ1
- Two further trenches, Proofing Trench 1 and Proofing Trench 2 were excavated in the south of PDZ1, close to the south-east corner of Work Package 1. A watching brief was undertaken on each of these.

In total, 15 trenches were excavated and the area covered is hereafter called 'the site'. MoLAS-PCA considers it appropriate to report these trenches together due to the comparatively close location of the trenches.

The OS National Grid Reference for the centre of the area is 538000 184300. The footprints of the Work Packages were defined by former local property boundaries, and the limits of areas within which access was possible to excavate the evaluation trenches. Effectively, the footprint of each Work Package was delimited as a tool for defining the location and potential maximum extent of the group of trenches. Current ground level in PDZ1 rises slightly from the centre of site to the north, south and east. Levels vary from 3.74 OD in the centre, to 5.00m OD on the south side, 4.86m OD at the western side, and 6.40m OD to the north. The site code assigned to the evaluation is OL-01507.

Current proposals for Planning Delivery Zone 1 (PDZ1) comprise the Main Olympics Aquatic Centre. New bridges will be constructed. Parts of the site will be lowered, and others raised. New roads, services, water supply and drainage will be required.

A *Desk-Based Assessment* was undertaken for PDZ1 (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 PDZ1 (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 PDZ1 in advance of its redevelopment was required as part of the planning process. Evaluation is intended to define the archaeological potential and significance of any deposits present on the site, so that the Local Planning Authority can formulate responses appropriate to any identified archaeological resource.

The evaluation of the site will be undertaken in support of a condition required by English Heritage and attached to the consent granted by the Olympic Delivery Authority Planning Decisions Team with respect to Olympic, Paralympic and Legacy Transformation Planning Application Reference 07/90010/OUMODA and Site Preparation Planning Application Reference 07/90011/FUMODA. Condition SP.0.38 of planning permission 07/90011/FUMODA states:

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

Reason: To ensure that archaeological remains are properly investigated and recorded.

1.4 Origin and scope of the report

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

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

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

1.5 Aims and objectives

The following research aims and objectives for PDZ1 were established in the Method Statement for the evaluation (MoLAS-PCA 2007b) and in the Desk Based Assessment (MoLAS-PCA 2007a) and are intended to address the research priorities established in the Museum of London's *A research framework for London Archaeology* (2002).

- What is the potential for Late Glacial environment reconstruction and/or Late Upper Palaeolithic activity in the Pleistocene deposits on the site?
- What evidence exists for past river channels on the site and how does this contribute to our understanding of the origin of the modern and historic River Lea and Waterworks Rivers?
- What potential is there for reconstructing the evolving river regime from environmental samples taken from the site?
- Is there evidence of past human activity associated with river exploitation or management?
- Is there evidence for past wetland exploitation?
- What environmental evidence suitable for past landscape reconstruction and indirect evidence of past human activity exists within deposits associated with ancient river channels and other wetland areas?
- Is there any evidence for Roman wetland or dryland occupation and other activity within this area of the site? If so, how does it relate to what is known of the settlement pattern further south in the Stratford Market area during the Roman period?
- What evidence for medieval/post medieval land use exists within the site area, including industrial and agricultural evidence?
- How extensive is modern truncation and how thick is modern made ground across the site?

2 Topographical and historical background

The following summary of the geological and archaeological background of the site is based upon the desk based assessment for PDZ1 (MoLAS-PCA 2007a).

2.1 Modern topography and drainage

Planning Delivery Zone 1 is located in the middle of the valley floor of the River Lea, *c* 3km to the north of its confluence with the River Thames. It covers a central sector of a network of river channels known as the Bow Back Rivers. The extent to which these are natural or have been modified or even entirely created by people in the past is not yet known. The patterns of rivers flowing across the site in the past will, however, have influenced its use and hence it's archaeological potential.

The modern topography and drainage of the area has been much modified by man and bears little resemblance to the landscape in historic and prehistoric times. Modern ground raising has obscured the natural land surface by at least two metres of 'made ground'. Similarly, very little remains in the modern landscape of the natural course of the Lea, which today flows through a series of mostly canalised and culverted channels, such as those bounding the site itself.

Modern ground level in PDZ1 is fairly inconsistent. The ground rises slightly from the centre of the area to the north, south and east. Heights vary from 3.74 OD in the centre, to 5.00m OD on the south side, 4.86 at the western side, and 6.40 to the north.

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 some distance to west of the site, on the opposite side of the River Lea.

A previous mapping exercise of the underlying floodplain gravels undertaken during the Lea Valley Mapping Project (Burton, et al 2004), demonstrated that the southern half of site lies on a promontory of the lower terrace, where the gravels occur at around 2m OD. The main channel area of the River Lea exists a few hundred metres further to the west, where the floodplain gravels occur at –1 to –2m OD. The alluvium is underlain by the Lea Valley Gravels, deposited following the scouring-out of the valley floor during the Palaeolithic period (the Pleistocene). The gravels are the most recent in a series of Pleistocene river terrace deposits, which today form an irregular series of steps in the valley side. The Kempton Park Gravels and older Taplow Gravels form the lowest of these river terraces, at the edge of the valley.

Tertiary bedrock, which in this area comprises variably London Clay and Woolwich and Reading Beds, underlies the gravels. The bedrock pre-dates the period of human evolution and thus its surface delineates the extent of potentially archaeologically significant deposits. 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.

2.3 Prehistoric

Neolithic land surfaces and Bronze Age worked wood have been identified in the north of PDZ 1, to the east of the site (site OL-001 05). Site OL-003 05 in the south of PDZ 1 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 ref 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 of this (GLSMR 061746, 060258).

It is likely that the alluvial deposits will show evidence of environmental change, with moderate potential for palaeo-environmental and other remains of prehistoric date preserved within them. There is moderate potential for disassociated prehistoric finds. The relationship between the alluvial Holocene peats and clay constitute an archaeological horizon, and accordingly are identified as having archaeological potential

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 the western side of PDZ1. A settlement was found to the north-west at Old Ford. Many burials were discovered here, along with a great number of butchered cattle bones and a possible tile kiln. Enough evidence to suggest that the settlement may have played a role in provisioning Londinium (Lakin et al., 2002, 3) has been identified. A Hypocaust system and a number of pottery finds were also uncovered at the Old Ford site at Wick Lane. There is a moderate potential for evidence of a 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 over the marsh from island to island.

Fragmentary evidence for settlement activity in the near vicinity is associated with this road, possibly indicating a nucleated settlement or several small farms or farmsteads dotting the landscape along with associated field systems. A cemetery, or cemeteries, may also be present. Roman occupation within PDZ1, if present, would be situated on islands of higher ground, due to the increasingly waterlogged nature of the area throughout this period.

2.5 Saxon

Evidence of Saxon activity has been recorded on both sides of the valley at Old Ford, *c* 550m to the west of the site, and at Stratford, *c* 650m to the east. The River Lee will have remained a useful resource and by the late Saxon period mills may have been located along its course. There is a moderate possibility that in situ remains associated with management of the streams and banks of this period survive within alluvial deposits. Recent excavations within PDZ1 revealed a pond feature dated to the Saxon period, which did contain organic material suitable for landscape and environmental reconstruction (MoLAS-PCA 2007c). Other similar features may exist across the site. However modern truncation, caused by ground build up across site may have caused much of this archaeology to be lost.

2.6 Medieval

There are no known sites or finds dated to the later medieval period within the area of proposed development. As with earlier periods, the higher ground on the valley sides west and east of the site would have been the first choice for settlement, providing dry and fertile land with good assess to the rivers and marsh. The nearest primary settlements were located on the sides of the Lea valley at Bow, on the opposite bank of the Lea west of the site, Old Ford *c* 870m to the west, and Stratford and West Ham *c* 700m and *c* 1.1km to the east and south-east of the site respectively.

2.7 Post-medieval

There are no known sites or finds dated to the later medieval period within the area of proposed development. As with earlier periods, the higher ground on the valley sides to the west and east would have been the first choice for settlement, providing dry and fertile land with good access to the rivers and marsh. The nearest primary settlements were located on the sides of the Lea valley at Bow, on the opposite bank of the Lea west of the site, Old Ford c 870m to the west, and Stratford and West Ham c 700m and *c* 1.1km to the east and south-east respectively.

During the 16th and 17th centuries the land in PDZ1 was, as earlier, characterised by marshes and remained pastoral and undeveloped. The 18th century saw huge new reservoirs constructed by the East London Waterworks Company (ELWC). These were further developed in 1808, situated east of Old Ford. A bridge over the waterworks river is still present in the south-west of the site. This brought significant change to the watercourses of the Lee Back Rivers as industry and need for better transportation to London slowly increased in the 19th century. The marsh no doubt hindered development but also attracted increasingly noxious industries so by the later 19th century a large gas works was built in the centre of PDZ1. The development of the Eastern Counties Railway, which forms the southern boundary of site, added to the industrial character of the area. A large brickworks was situated at the south end, and just 270m to the south of the site runs Sir Joseph Bazalgette's Northern Outfall Sewer (still extant, grassed over and known as The Greenway). A large area of the site was taken up by factories, which produced large quantities of chemicals. There is good potential for post medieval finds.

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).

As noted above, 15 trenches were excavated (of which 13 were evaluation trenches):

- Trench PDZ1.10 (Work Package 1)
- Trench PDZ1.11(Work Package 1)
- Trench PDZ1.13 (Work Package 1)
- Trench PDZ1.14 (Work Package 1)
- Trench PDZ1.15 (Work Package 1)
- Trench PDZ1.17 (Work Package 1)
- Trench PDZ1.19 (Work Package 2)
- Trench PDZ1.12 (Work Package 1: extended west and south into Work Package 3)
- Trench PDZ1.21 (Work Package 4)
- Trench PDZ1.20 (Work Package 5)
- Trench PDZ1.22 (Work Package 5)
- Trench PDZ1.16 (Work Package 6)
- Trench PDZ1.23
- Proofing Trench 1 (watching brief)
- Proofing Trench 2 (watching brief)

The evaluation trenches targeted locations likely to be impacted upon by the proposed development.

A further evaluation trench (PDZ1.18) had been scheduled for excavation to the south-west of PDZ1.13, but this was in an area that remained inaccessible due to space restrictions on site. Surrounding trenches indicated that this was located in an area of alluvium rather than former high dry ground. In this case, English Heritage agreed in February 2008 that the area of this trench did not require evaluation as that of the surrounding area was sufficient.

Each evaluation trench was excavated to the base of modern made ground and/or make up before machining a test slot to the natural gravels. A mechanical excavator using a straight edged ditching bucket removed the upper deposit of modern made ground. A toothed bucket was used in limited areas to remove concrete slabs and overburden. Trench sides were supported where necessary by a series of 1.00m deep and 1.2m wide steps. Underlying layers of alluvial clay where present were then graded off with a ditching bucket and the ground reduced whilst being monitored by an archaeologist and banksman at all times. Excavations ceased when the top of significant strata showing signs of archaeological potential were reached. MoLAS-PCA geoarchaeologists visited the trenches during excavation to examine and interpret the deposits in plan and section and to take samples as appropriate.

In the majority of the trenches it was possible to excavate to the level of the gravels across the length of the trench. However, due to the presence of dryland archaeological features within Trench PDZ1.12, excavation to the surface of natural gravels was not possible. Trench PDZ1.12 was extended to ascertain the limits in plan of the area of archaeological survival**.**

Following the determination that there was archaeological survival in the form of cultural remains in Trench PDZ1.12, English Heritage confirmed a requirement for the extension of the evaluation trench to determine the limits/extent of these remains. The first, original extent of the footprint of Trench PDZ1.12 is seen on Fig 2 (above and congruent with the demarcation line between Work Package 1 and Work Package 3). The extension took the trench both further south and further west. In this document the two individual additional extensions are discussed separately below as this further evaluation work was undertaken in stages (limited to the opening of each extension). Therefore the trench summaries below reflect this approach and discuss the three elements of Trench PDZ1.12 under discreet headings, thus:

- Evaluation Trench PDZ 1.12
- Evaluation Trench PDZ 1.12 southern extension
- Evaluation Trench PDZ1.12 western extension

Work on Trench PDZ1.10 began in the week ending 17 September 2007 and was completed 27 September. Trench PDZ1.11 began 16 April 2007 and was completed 2 May. Trench PDZ1.12 began 28 June 2007 and was initially completed 10 August: the additional western and southern extensions were completed between 10 October 2007 and 7 November. Trench PDZ1.13 began 16 May 2007 and was completed 22 June. Trench PDZ1.14 began 6 June 2007 and was completed 15 June. Trench PDZ1.15 began 6 June 2007 and was completed 22 June. Trench PDZ1.16 began 26 September 2007 and was completed 4 October. Trench PDZ1.17 began 26 April 2007 and was completed 2 May. Trench PDZ1.19 began 19 November 2007 and was completed 28 November. Trench PDZ1.20 began 4 October 2007 and was completed 9 October. Trench PDZ1.21 began 6 September 2007 and was completed 14 September. Trench PDZ1.22 began 23 August 2007 and was completed 5 September. Trench PDZ1.23 began 25 August 2008 and was completed 31 August. The watching brief on Proofing Trenches 1 and 2 was undertaken during intermittent periods on late April and early May 2007.

The locations of the evaluation trenches were recorded by the MoLAS-PCA surveyor using an EDM. This information was electronically collated and plotted onto the OS grid. Levels were calculated from benchmarks established by WS Atkins engineers, 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; 25 drawn detail trench plans at a scale of 1:20 and 1:50; 6 single context plans also at 1:20; 323 context records and 26 sections at a scale of 1:10 and 2 sections at a scale of 1:50. In addition, 72 bulk samples, 10 monolith sampled sequences (22 monolith tins) and 20 organic grab samples for radiocarbon dating were collected. 39 of the bulk samples have been partly processed, in order to evaluate their potential. The samples will be

retained in the on-site storage facility until a decision has been taken on their requirement for environmental assessment and analysis.

The site finds and records can be found under the site code OL-001507 in the MoL archive.

3.2 Results of the evaluation

3.2.1 Evaluation Trench PDZ1.10

Location	West side of Work Package 1.
Dimensions	20.5m northwest–southeast by 2.3m wide at base; 1.8m depth
Modern ground level	2.02m OD to 3.2m OD
Base of modern fill	2.26m OD
Depth of archaeological deposits seen (alluvium)	1.5m
Level of base of deposits observed and/or base of trench	0.94m OD
Floodplain gravels observed	0.52m – 0.94m OD
Environmental samples	{43}–{58}

Table 1 Trench PDZ1.10 deposit summary

For trench plan and sequence see Fig 3 and Fig 4.

3.2.1.1 Alluvial deposition

A layer of dark blue-grey natural gravel, with small to medium pebble [167], was present at the trench base at an untruncated surface level of between 0.52m OD and 0.94 OD (Fig 4).

The gravels were overlain by soft, alluvially deposited, mid greenish grey silty clay [169], with small inclusions of natural organic material such as tree roots, measuring 0.54m thick. The highest level of its surface was 1.41m OD.

Alluvial layer [169] was overlain in turn by a similar deposit of mid- greyish brown, alluvial silty clay [166]. This layer also measured 0.54m thick and sloped from a height of 1.55m OD to 1.01m OD.

A further alluvial deposit [168] lay above layer [166]. This comprised clean mid-greenish grey silty clay, measuring 0.74m thick sloping from 1.67m OD to 0.93m OD. Dark brown, silty clay alluvium, 0.20m thick sealed [165], from a surface of 1.87m to 1.41m OD.

A clean, blueish grey, silty clay alluvium [164], measuring an average of 0.45m thick, overlay layer [165] from 2.20m OD.

A 0.20m thick layer of silty clay with occasional shell fragments and fine pebble [163] overlay [164]. Its surface was fairly level with its highest point at 2.26m OD and it's lowest at 2.12m OD.

3.2.1.2 Modern deposition

The stratigraphy above alluvial layer [163] was entirely modern in origin. This comprised a series of three modern concrete piles and pile cuts: [170] [171], from 2.37m OD; [172] [173] from 2.35m OD and [174] [175] at 2.27m OD. This episode of modern truncation was sealed by a layer of modern levelling debris approximately 0.90m thick that extended across the full dimension of the trench at 3.20m OD.

3.2.2 Evaluation Trench PDZ 1.11

Location	East part of Work Package 1
Dimensions	4.7m width by *c* 25m north-east–south-west at base; 3.1m deep
Modern ground level	4.44m OD
Base of modern fill	3.2m OD
Depth of archaeological deposits seen (including alluvium)	1.75m
Level of base of deposits observed and/or base of trench	1.1m OD
Floodplain gravel observed	2.25m OD
Environmental samples	none

Table 2 Trench PDZ1.11 deposit summary

Sequence not illustrated as uniform deposition extended across whole trench.

3.2.2.1 Alluvial deposition

The surface of natural gravel deposits was recorded at 2.25m OD. Well-bedded sand and pebble deposits [6] were recorded at *c* 2m OD, beneath a *c* 0.25m thick layer of clayey gravel [5] that may represent the disturbed interface between gravel deposits and an overlying soil formation.

The gravel deposits were sealed by a 0.50–0.80m thick layer of silty clay alluvium [4], recorded at *c* 3m OD, indicative of seasonal flooding.

A 0.20m thick deposit of brownish grey silty, clay [3] overlay the flood silts to a height of 3.20m OD. This deposit was slightly more organic than the alluvium below and may represent a dryland soil horizon, potentially an historic land surface.

3.2.2.2 Modern deposition

A 1m thick levelling deposit [2] for an overlying concrete and tarmac slab [1] truncated the sequence from a surface height of 4.4m OD.

3.2.3 Evaluation Trench PDZ 1.12

Location	South end of Work Package 1
Dimensions	21.7m NE–SW by 8.4m wide at base; 3.60m deep
Modern ground level	3.65m OD
Base of modern fill	2.86m OD
Depth of archaeological deposits seen	0.8m

(including alluvium)	
Level of base of deposits observed and/or base of trench	2.09m OD
Floodplain gravel observed	2.09m OD
Environmental samples	{17}–{21}; {24}, {25}

Table 3 Trench PDZ1.12 deposit summary

For trench plan and sequence see Fig 5 and Fig 6.

3.2.3.1 High gravels

Pleistocene gravel, interbedded with laminate of clay and sand [81], formed the base of the trench sequence at the relatively high (where untruncated) level of 2.09m OD. It was truncated at the northern end of the trench by modern intrusions. Much of the gravel was stained black, probably due to seepage of hydrocarbons from the overlying modern industrial made ground.

3.2.3.2 Alluvium with cultural evidence

Mid blue-grey sandy clay [80], measuring 0.40m thick, overlay the gravel across the trench width from a surface level of 2.35m OD. This archaeologically rich layer contained daub fragments; burnt flint; bone and pottery, which has been dated to being no earlier than the Late Bronze Age. The layer may once have formed as a dryland surface subjected to frequent human activity at the edge of a large marsh situated to the north of the trench.

Ditch [79] cut into dryland layer [80] from 2.16m OD. The ditch measured 13.0m north–south by 0.82m width and 0.75m depth, and was filled by firm blue grey clay [120] (unexcavated fill). The fill was very clean with few inclusions, however the presence of very occasional small pottery fragments and flecks of daub suggest occupation in the vicinity at the time of deposition. This is likely to date to the Late Bronze Age or Iron Age periods (see section 11.1). The base of the ditch [79] dropped intermittently to varying depths. The impressions of small pits cut into the bottom of the ditch may have held in place support posts as part of a timber wall or boundary structure. The ditch ran to the end of the trench before being truncated by modern disturbance at the south end of the trench. Four test slots were dug through the line of ditch [80] to gather dating evidence within slot fills [75], [76], [77], and [78]. Only fill [75] contained pottery sherds, of probable Late Bronze Age date (section 11.1.1)

Blue grey alluvial layer [74], measuring 0.20m thick, sealed ditch [79] from a height of 2.49m OD. The deposit had similar characteristics to the ditch fill [120]. The layer contained charcoal flecks; gravel scatters; large fragments of daub and Late Bronze Age pottery fragments (see Table 23). The layer covered the width of the trench and extended 3.60m north–south. Firm, reddish grey sandy clay [83], measuring 0.60m thick, lay above layer [74] at 2.81m OD across the trench width. Organic fibres were seen within the layer along with a small amount of gravel. A turf line was seen in section, indicating that the layer had been exposed at some time as a surface. This deposit was recorded in section only.

Firm, mid- brownish grey sandy clay [89], 0.07m thick, formed the final alluvial deposit. This layer was recorded in section only from a surface level of 2.86m OD, extending 1.66m east–west. Modern made ground (see Appendix 3) sealed alluvium

[89] from 3.65m OD, and reflects the recent high incidence of present day ground works taking place across the area of the trench.

3.2.4 Evaluation Trench PDZ 1.12 southern extension

Location	Annexed to south end of PDZ1.12
Dimensions	35.0m NE-SW by 6.6m wide at base; 2.36m deep
Modern ground level	3.70m OD
Base of modern fill	2.50m OD
Depth of archaeological deposits seen (including alluvium)	1.16m
Level of base of deposits observed and/or base of trench	1.34m OD
Floodplain gravel observed	NA
Environmental samples	{43}–{58}

Table 4 Trench PDZ 1.12 South deposit summary

For trench plan and sequence see Fig 5 and Fig 7.

3.2.4.1 Alluvium (first phase)

Organic silty clay layer [295] was recorded at 1.34m OD at the base of the trench (under the cut of ditch [297]; see Fig 7).

This layer was seen in plan only, due to limits placed on the evaluation by the overlying stratigraphy.

3.2.4.2 Cultural evidence (first phase)

Alluvium [206] lay above layer [295]. This [206] corresponded to layer [80] in Trench PDZ1.12 to the immediate north, and measured 18.7m north-south by 6.3m east-west at 2.17m OD. The layer was left *in-situ* in anticipation of full excavation.

The following prehistoric features cut into the surface of [206] (see Fig 5; the dating evidence for the features is dealt with in section 11.1):

- Cut [210]: an irregular cut which was half obscured by the Eastern L.O.E of the trench. The feature was half sectioned and its fill [209] produced Late Bronze age pottery and burnt flint. The majority of the fills were blue grey in colour and comprised silty clay. The dimensions of the cut were 1.60m north–south and 0.65m east–west. The highest and lowest levels were at 2.17m OD and 1.99m OD.
- Cut [212] was oval and was partially obscured by the eastern L.O.E of the trench. It had an uneven base which looked like it once held a post with packing fill holding the post in place. The fill [211] contained some Late Bronze Age pottery, bone and burnt flint. The dimensions measured 0.90m north–south, 0.52m east–west and it was 0.30m in depth. The highest and lowest levels were at 2.16m OD and 2.86m OD.
- Context [214] was a wide circular pit containing fill [213]. The dimensions of this pit were 1.90m north–south, 0.90m east–west with a depth of 0.08m. The eastern edge of the trench again obscured the eastern edge of the pit. The fill [213] contained more Late Bronze Age pottery fragments. The highest and lowest levels

were 2.15m OD by 2.05m OD and it was 0.10m in depth. This pit was truncated by a later Iron Age ditch [201].

- Oval (rubbish?) pit [216] measuring 1.41m N–S by 1.32m E–W and 0.28m in depth surviving to a maximum truncated level of 2.03m OD. The fill [215] contained Late Bronze Age to MIA pottery. Pit [216] was truncated by a later prehistoric ditch to the west [219]
- The eastern portion of a curvilinear ditch [221], measuring 0.27m in width by 8.40m in length and 0.15m in depth, surviving to a maximum truncated level of 2.09m OD. The ditch was obscured by modern truncation and ran into the western edge of the trench. The dark grey alluvial fill [220] was rich in daub, bone and Mid- to Late Iron Age (MIA–LIA) pottery fragments. Ditch [221] was cut by prehistoric ditch [219].
- Sub-circular pit [227] survived to a height of 2.15m OD, measuring 0.58m NW–SE by 0.50m NE–SW and 0.20m in depth. The pit fill [226] contained animal bone and charcoal.
- Small, oval shaped pit [231] tentatively described as a posthole, measuring 0.38m N–S by 0.22m E–W and 0.12m deep, from a maximum truncated level of 2.14m OD. The pit fill [230] contained fragments of MIA pottery.
- Posthole/stakehole [233] measuring 0.24m N–S by 0.24m E–W and 0.25m deep from a maximum truncated level of 2.17m OD. The fill [232] contained a high frequency of daub inclusions, charcoal and bone.
- Posthole [235] survived to a maximum truncated level 2.20m OD and measured 0.26m NE–SW by 0.20m NW–SE by 0.18m deep. The fill [234] contained MIA pottery fragments.
- Small pit (or possible posthole) [305] was present at 2.18m OD and measured 0.40m N–S by 0.46m E–W by 0.25m deep. The fill [304] contained frequent charcoal fragments and occasional small fragments of Iron Age pottery.

3.2.4.3 Cultural evidence (second phase)

Pit [214] (see above) was truncated by ditch [201], which extended NE–SW across the trench at a maximum truncated level of 2.17m. The ditch measured 23.0m NE–SW by 1.45m NW–SE and 0.12m deep. The fill was a blue-grey, alluvial silty clay [200] that contained occasional fragments of MIA pottery.

A possible posthole [225], measuring 0.22m N–S by 0.22m E–W and 0.28m deep, was cut into the base of pit [223] (see above) from a maximum truncated level of 2.07m OD. The post hole fill [224] may represent the position of a conjectured (decayed *in situ*?) post inserted into the pit, supported by the surrounding pit fill [222].

Iron Age ditch [219] truncated curvilinear ditch [221] and pit cut [216]. It continued into this trench from PDZ1.12 to the north (equivalent to ditch [79], see Fig 5) at a height of 2.14m OD. The ditch [219] was aligned NE–SW along the trench to extend beyond the western trench edge. The ditch measured 0.88m wide by 19.9m in length and 0.27m depth. This ditch It also cut into the surface of alluvial layer [205]. The primary ditch fill comprised a 08m thick deposit of brown-grey alluvial silt [218] containing prehistoric pot, burnt flint, gravel and daub. This was sealed by a secondary fill [217] containing similar inclusions and measured *c* 0.20m thick. Fill [217] equates to fill [120] within ditch [79].

A Middle to Late Iron Age curvilinear ditch [208] truncated ditch [219] within the northern end of the evaluation trench, at a height of 2.17m OD. The ditch segment was oriented from west to east and was truncated on its east side by modern intrusion [203]. Ditch [208] measured 4.12m E–W by 0.56m N–S and 0.30m deep No pottery was recovered from the fill [207], but bone and possible ochre fragments were present.

3.2.4.4 Alluvium (second phase)

All of the above features were sealed by green grey clay layer [260]. Geoarchaeological examination determined that this layer was a prehistoric in-situ deposit rather than a layer which was recently re-deposited.

Alluvial layers of blue-grey clay silt, with orange mottling [255] and [205] overlay layer [206]. Layer [205] survived to a height of 2.17m OD and measured 3m N–S by 2m E–W. Layer [255] contained occasional gravel and flint inclusions and overlay [206] in the southern part of the trench that was truncated by modern intrusions.

Layer [255] was seen in section only and measured 7.0m N–S by 4.5 E–W and 0.10m thick. Alluvial, blue grey silt-clay [253] with orangey mottled patches equates to [255] but was separated from the layer by modern intrusions.

Blue grey alluvium [252] overlay [253] at a surface height of 2.20m OD, and was 0.15m thick. The layer was seen in section only.

3.2.4.5 Cultural evidence (third phase)

Ditch [257] cut into the second phase alluvium across the trench width.

Overall, the ditch measured 3.4m N–S by 6.6m E–W and 0.50m dep. Three silty clay fills were found in this ditch. The primary blue-grey silt fill [294] was 0.10m thick and included charcoal fragments, burnt flint, daub and Middle Iron Age pot fragments. Secondary fill [293] was 0.05m thick, was a dark brown colour and contained inclusions of gravel, flint, burnt flint; Middle Iron Age pottery fragments and daub. Final fill [256] was 0.35m thick and contained pottery fragments as well as charcoal, bone and gravel.

3.2.4.6 Alluvium (third phase) and land surface

A 0.45m thick blue grey alluvial layer with flint inclusions [250] sealed ditch [257] from a height of 2.6m OD. It extended 3.90m N–S in section only.

Soft, green-grey clay layer [260], measuring 0.06m thick sealed the remaining inter-cutting prehistoric features (seen in section only). The layer was present to 2.23m OD.

Gravel layer [259] lay above [260] although this was also only seen in section. The layer measured 7.85m N–S and was 0.05m thick. It is possible that this layer either formed or enhanced a dry surface above the level of the adjacent marsh deposits. The highest level for this surface was at 2.39m OD. Fragments of Post-Deverell Rimbury ware pottery recovered from the layer indicate a Later Bronze Age date (see section 11.1.1).

A blue grey, yellow mottled and carbon rich alluvial layer sealed gravel [259] from a height of 2.50m OD. The silt matrix contained frequent charcoal fragments;

carbonated roots; flints and pea grit. The dimensions (recorded in section only) were 13.25m N–S and 0.34m thick.

3.2.4.7 Modern deposition

A series of modern dumped deposits capped the sequence. Considerable 19th and 20th century industrial building work had taken place in this area of site. This left many demolition layers and levelling layers near to contemporary ground level. The highest level of the modern deposits was 3.70m OD.

3.2.5 Evaluation Trench PDZ1.12 western extension

Location	Annexed to western side of PDZ1.12
Dimensions	25.0m by 11.60m at base; 2.36 deep
Modern ground level	3.70m OD
Base of modern fill	Average of 2.17m OD (truncates directly to trench base at 1.41m OD in places)
Depth of archaeological deposits seen (including alluvium)	0.7m
Level of base of deposits observed and/or base of trench	1.41m OD
Surface of gravel observed	NA
Environmental samples	{65}–{68}

Table 5 Trench PDZ1.12 western extension summary

For trench plan and sequence see Fig 3 and Fig 8.

3.2.5.1 Alluvium (first phase)

The truncated surface of blackish grey, alluvial silt and gravel [308] was present at the trench base, to a height of 2.02m OD. The layer extended across the trench

3.2.5.2 Cultural evidence (first phase)

Five stakeholes cut into layer [308]. Their shape and distribution indicate a pattern suggesting they formed part of a timber structure. Modern truncation into the surface of [308] has removed the levels and deposits from which these features were originally cut.

- Stakehole [262] measured 0.26m E–W by 0.26m N–S and 0.22m in depth, from a level of 2.18m OD. It was filled by a firm, blue-grey silty clay [261]. (All the postholes described below contained similar fill characteristics, with the exception of context [300]). Fragments of Late Bronze Age (LBA)pottery were found within the fill.
- Stakehole [270] survived to 2.07m OD, measuring 0.28m N–S, by 0.26m E–W and 0.10m deep. Fill [269] contained no dating evidence.
- Stakehole [272] measured 0.15m N–S by 0.15m E–W and was 0.15m deep and was filled by [271].
- Stakehole [282] survived to 2.09m OD and measured 0.16m N–S by 0.16m E–W by 0.15m depth. It was filled by [281].

- Stakehole [286] survived to 2.11m OD, measuring 0.50m N–S by 0.46m E–W and 0.16m deep. Fill [285] contained occasional inclusions of fire-cracked flint.

Four other features cut into layer [308].

- Cut [264] survived to 2.13m OD and measured 0.60 E–W by 0.48m N–S by 0.19m deep. Fill [263] contained LBA pottery fragments.
- Semi-circular cut [276] measured 0.48m east–west, by 0.27m north–south and 0.14m deep from 2.13m OD. Fill [275] contained burnt flint and fragments of LBA pottery.
- Circular pit [292] 0.63m E–W 0.60m N–S and was 0.14m deep from 2.10m OD. No dating or artefactual evidence was present in fill [291].
- Large sub circular pit [301] measured 1.22 N–S by 1.22 E–W by 0.16m deep at a height of 2.10m OD. Fill [300] contained a single intrusive fragment of 19th century clay tobacco pipe (see section 11.3.1).

3.2.5.3 Alluvium (second phase)

All of the above features were sealed by organic rich, soft, dark brown silty clay [306] and peaty silt [307] thin silt clay seen in plan and section. Tree roots and wood fragments were abundant in this layer. It measured 5.25m north–south and 4.70m east–west and was 0.10m thick. The top level was 1.55m OD.

Blue-grey alluvial layer [206] continued across the trench from the southern extension of Trench PDZ1.12, sealing the peaty silt [306]. Here, the layer survived to a height of 2.2m OD and was 0.2m thick.

3.2.5.4 Cultural evidence (second phase)

A series of circular features, representing postholes; pits and driven stakes, cut into the surface of layer [206].

The firm, dark blue grey clay alluvial fills are characteristic of gradual deposition over time (similar to formation of the underlying layer [206]) in contrast to a single episode of backfilling. The alluvial fills frequently included burnt flint:

- Sub-circular cut [235] measured 0.26m NE–SW by 0.20m NW–SE by 0.20m deep, from a surface of 2.20m OD. Firm, dark blue grey clay [234], containing occasional charcoal flecks, IA pottery fragments and small pebbles filled the feature.
- Post hole [266] contained fill [265], measured 0.19m N–S by 0.23m E–W by 0.22m deep, from a surface at 2.20m OD.
- Sub-circular pit [288] was present from 2.21m OD measuring 0.80m N–S, 0.40m E–W and 0.19m deep. The pit fill was [287].
- Stakehole [290] was filled by [289]. This 0.10m diameter feature cut into the surface of the preceding pit [288] to a depth of 0.10m, from 2.13m OD. Pit [288] may have acted as a packing support for a wooden post set in cut [290].
- Stakehole [297]. It was filled with [296]. [297] measured 0.18m diameter by 0.19m in depth. The highest and lowest levels were 2.19m OD and 2.00m OD.
- Stakehole [299] contained fill [298] and measured 0.20m diameter and was 0.19m in depth. The highest and lowest levels were 2.19m OD and 2.00m.
- Stakehole [303] measured 0.20m diameter by 0.23m in depth, from a surface of 2.19m OD. The fill was [302].

The following group of stakeholes were present at the eastern end of the trench, containing similar fills of soft, yellow-grey silty clay. Iron Age pottery and burnt flint were found within some of the fills (see 11.1; Table 23, prehistoric pottery).

- Stakehole [268] measured 0.35m N–S, 0.35m E–W by 0.19m deep from a height of 2.12m OD. Silty clay deposit [267] filed the stakehole.
- Stakehole [274] was recorded at a height of 2.11m OD; measured 0.25m N–S by 0.25m E–W by 0.21m depth and was filled by [273].
- Stakehole [278] was recorded at a height of 2.08m OD; measured 0.32m N–S, 0.32m E–W by 0.14m depth and was filled by [277]
- Stakehole [280] was recorded at a height of 2.09m OD; measured 0.28m N–S by 0.28m E–W by 0.15m depth and was filled by [279].
- Stakehole [284] was recorded at a height of 2.08m OD; measured 0.13m N–S by 0.13m E–W by 0.16m depth and was filled by [283].

3.2.5.5 Modern deposition

A sequence of 20th century dumps [309], consisting mainly of aggregate and broken concrete fragments and modern brick, sealed and partially truncated the archaeological deposits. The dumps varied from 0.70m to 3.70m in thickness from a surface height of 3.24m OD.

3.2.6 Evaluation Trench PDZ1.13

Location	South-eastern edge of work package 1, east of the Waterworks River
Dimensions	24.5m by 5.5m at base; 3.08m deep
Modern ground level	3.74m OD
Base of modern fill	2.25m OD; 1.74m OD (intrusions)
Depth of archaeological deposits seen (including alluvium)	1.7m
Level of base of deposits observed and/or base of trench	0.76m OD; trench base at 1.34m OD
Floodplain gravel observed	0.76m OD
Environmental samples	{26}

Table 6 Trench PDZ1.13 deposit summary

For trench plan and sequence see Fig 9 and Fig 10.

3.2.6.1 Alluvial deposition

Natural sandy gravel [136] was exposed in the trench base at 0.76m OD (see Fig 10), in an area limited to 1.05m north–south by 2.20m east–west by ongoing water drainage problems.

A 0.10m thick layer of soft, dark grey-brown, silty sand with moderate shell inclusions [135] overlay the gravel. Excavation of the layer was limited to an area measuring 2.20 north–south by 4.16m east–west due to waterlogged conditions.

Soft, dark red-brown peaty sandy silt [134] sealed [135] to a thickness of 0.18m, across the trench extent to a surface of 1.04m OD. The layer contained extensive root activity, twigs and other naturally derived material. A layer blue grey alluvium [133],

measuring 1.21m thick, overlay the peaty silt [134]. This was truncated at the northern end of the trench by a modern cut, and by pit feature [125], brick lined well [129] and brick culvert [132] (Fig 9).

3.2.6.2 Post-medieval/modern

Circular (pit?) feature [125] was cut from 2.13m OD and measured 1.92m north–south by 1.70m east–west by 0.14m deep. The fill was finds free

Brick lined well was cut from 2.29m OD and comprised a lining of red bricks [127] (dims.: 230mm x 108mm x 70mm), laid on bed; a 10mm thick wooden barrel lining /timber shuttering [128] both constructed within cut [129]. The cut measured 1.50m in diameter. Excavation of the well was limited to a depth of 0.5m due to problems with ground gases.

The brick lined culvert [132] was rectangular in plan at 2.21m OD; measuring 1.58m east–west x 1.2m north–south. The individual brick dimensions were 250mm x 100mm. The brick lining [131] was 500mm thick. Ground contamination prevented further excavation

A 1.10m thick layer of loose, brown/black modern industrial material [137] sealed the features. This layer was present across the trench, from 3.39m OD. A layer of concrete and rubble [138] capped the sequence from 3.74m OD.

3.2.7 ***Evaluation Trench PDZ1.14***

See Fig 11 and Fig 12

Location	North Eastern edge of work package 1
Dimensions	26.0m x 7.0m at base; 2.5m deep
Modern ground level	3.76m OD
Base of modern fill	3.00m OD
Depth of archaeological deposits seen (including alluvium)	0.84m
Level of base of deposits observed and/or base of trench	0.90m OD; Trench base: 2.16m OD
Floodplain gravel observed	0.90m OD
Environmental samples	{9}–{16}

Table 7 Trench PDZ1.14 deposit summary

For trench plan and sequence see Fig 11 and Fig 12.

3.2.7.1 Alluvial deposition

The surface of natural orange brown sandy gravel [56] was exposed at 0.90m OD (Fig 12). A small amount of organic material was sampled from this layer. Groundwater issues, however limited excavation of layer [56] to an area measuring 11.5m north–south by 4.5m east–west at the south-eastern end of the trench (see Fig 11)

Organic silty clay [55] overlay layer [56]. The layer measured 1.24m thick in section, at a maximum surface level of 1.80m OD. The frequent organic inclusions comprised mostly roots and grasses. This deposit was also exposed only within the south-eastern section of the trench.

Blue grey alluvium [54] overlay organic layer [55], and formed the trench base for the majority of the evaluation. The alluvium contained occasional inclusions of flint, root fragments and shells. Alluvium [54] had a surface level of 2.16m OD.

3.2.7.2 Cut features: post medieval

Features had been cut into the surface of alluvial layer [54] (Fig 11).

Circular feature [42] measured 0.62m in diameter, by 0.14m deep. A dark green grey clay [41] filled the cut.

Circular cut [44] had similar characteristics to [42], measuring 0.40m OD east–west by 0.36m OD north–south and 0.11m deep from a height of 2.54m OD. A soft dark green grey clay [43] filled the cut and contained no inclusions

Context sub rectangular cut [46] was present at 2.30m OD, measuring 0.46m east–west by 0.08m OD north–south and 0.17m in depth. A dark brown-black silty sand [45] filled the cut, containing occasional small fragments of glass and glass slag; very small fragments of ceramic building material (cbm) and post medieval pottery.

At the base of [46] was a small cut [52] measuring 0.90m east–west, 0.88m north–south and 0.13m in depth. This [52] was filled with a dark green brown sandy silt [51]. This contained occasional small fragments of CBM and flint pebbles. The highest level of [52] was at 2.30m OD and the lowest at 2.17m OD.

Sub circular pit [48] survived to 2.34m OD, measuring 1.08m east–west by 1.24m north–south by 0.30m deep. The fill was a firm dark grey clay [47], containing occasional fragments of charcoal and a post-medieval pot sherds.

3.2.7.3 Alluvium: post medieval

Post medieval silty clay layer [34] sealed the features. The layer varied in colour across the trench in patches from orange brown to dark blue black across an area 8.0m north–south by 30.6 east–west and. The variation represents a conglomeration of clays and silts redeposited together as a fill or levelling deposit. Occasional inclusions of oyster shells, gravel and brick fragments were present within the layer.

3.2.7.4 Modern

A series of circular pits cut into layer [34] (Fig 11).

Cut [38] measured 0.77m north–south and 0.74m east–west. It was filled by a green brown sandy silt [37] which contained some 19th century glass fragments (see section 11.4.1 and Table 28) and cbm.

Cut [36] was 1.35m east–west, 1.40m north–south, and 0.10m deep. The fill was a silty clay [35] containing late post medieval pottery and artefacts such as a toothbrush head; CTP fragments indicating a 19th century date (see section 11.3.2) and a button.

Pit [40] truncated [34] from 2.35m OD, measuring 0.80m north–south by 0.80m east–west and 0.19m deep. The pit sides were coated in a tar like substance. Sandy silt [39] filled the cut, containing post medieval pot fragments (see section 11.2.1, Table 24), 19th century glass fragments (see Table 28) and CTP stems (18th-19th century; section 11.3.2).

A modern east-west drain also truncated layer [34] across the centre of the trench. Modern unstratified deposits sealed the drain and features.

3.2.8 Evaluation Trench PDZ1.15

Location	northern edge of work package 1, south west of PDZ1.14
Dimensions	11.0m north–south x 5.50m east–west; 2.45m deep.
Modern ground level	3.83m OD
Base of modern fill	2.88m OD
Depth of archaeological deposits seen (including alluvium)	1.4m
Level of base of deposits observed and/or base of trench	1.39m OD
Surface of floodplain gravels	1.36m OD
Environmental samples	{2}–{8}

Table 8 Trench PDZ1.15 deposit summary

For trench plan and sequence see Fig 13 and Fig 14.

3.2.8.1 Alluvial deposition

A layer of dark, yellow brown fine sandy gravel [33] lay at the base of the trench sequence, to a surface at 1.36m OD (Fig 14). This was sealed by a 0.45m thick mid grey brown organic silt [32], present to a height of at 2.09m OD. The silt contained frequent lenses of sand and wood fragments, most probably indicating tree root activity. Layer [32] is provisionally interpreted as having formed in a slow moving body of water.

Mid blue grey silty clay alluvium [31], measuring 0.7m thick, sealed deposit [32] from 2.79m OD. It was noted that the colour changed to a mid orangey brown on exposure. The layer contained occasional small rounded flint pebbles.

3.2.8.2 Modern

A 0.95m thick layer of modern dark red brown make up, with modern brick and CBM fragments, capped the sequence to a surface level of 3.83m OD.

3.2.9 ***Evaluation Trench PDZ1.16***

Location	North end of Work Package 5; north side of Carpenters Road
Dimensions	12.0m x 3.4m at base; 3.00m deep.
Modern ground level	4.86m OD
Base of modern fill	3.23m OD
Depth of archaeological deposits seen (including alluvium)	1.37m
Level of base of deposits observed and/or base of trench	1.86m OD
Base of alluvium surface of floodplain	1.86m OD

gravels	
Environmental samples	{59}-{62}

Table 9 Trench PDZ1.16 deposit summary

For trench plan and sequence see Fig 15 and Fig 16.

3.2.9.1 Alluvial deposition

Natural sandy gravel [189] formed the trench base at 1.86m OD (Fig 16). Some hydrocarbon contamination had leached into the layer from the made ground above.

A thin layer (0.22m thick) of green grey sandy clay [188] sealed the natural gravels in section only, from 1.93m OD. Layer [188] was overlain in turn by a soft orange sandy clay [186] with some moderate inclusions of small gravel. This context was also seen only in section, to a thickness of 0.35m to a surface at 2.30m OD. Soft orange brown silty clay [185] sealed layer [186]. A moderate amount of root action and twigs were found in the deposit. This layer was recorded in section only and measured 0.50m thick. The surface of layer [185] lay at 2.70m OD.

3.2.9.2 Post medieval/modern

North–south running post medieval ditch [184] cut into layer [185] from a height of 2.30m OD and measured 11.0m north–south, 2.30m east–west by 0.38m deep (Fig 15). Soft, grey brown silty clay [183] formed the ditch fill. A thin lens of soft blue grey alluvium [187] sat over [184], and contained occasional inclusions of grit, root matter and other organic material. This layer was only recorded in section and it measured 4.35m north–south and had a depth of 0.30. The top level was at was 2.21m OD.

Green grey alluvium [182] overlay ditch [184] an alluvial layer [187]. This layer was only recorded in section, measuring 8.90m north–south and was 0.30m thick. The layer contained frequent charcoal fragments; lenses of carbonated soil and occasional gravel. The top level was at 2.84m OD. Made ground [181], overlay layer [182] to a depth of 0.39m. The surface of the layer was seen in section only at 3.23m OD. Brown orange residual soil deposit [180] stretched for 10.95 north–south, by 3.20m east–west above layer [181] at 4.19m OD.

Make-up layer [179], comprising loose rubble and clay silt, sealed layer [180] to a depth of 0.65m, from 4.56m OD. Made ground layer [178] was the latest deposit in the evaluation trench present to a surface level at 4.86m OD

3.2.10 Evaluation Trench PDZ1.17

Location	West edge of Work package 1, near Waterworks River
Dimensions	17m north-west–south-east by 4.5m wide at base; 3.5m deep
Modern ground level	4.14m OD
Base of modern fill	*c* 2.63m OD
Depth of archaeological deposits seen (including alluvium)	2.5m
Level of base of deposits observed	0.15m OD

and/or base of trench	
Base of alluvium/surface of floodplain gravels	0.38m OD
Environmental samples	{1}

Table 10 Trench PDZ1.17 deposit summary

Sequence not illustrated as uniform deposition extended across whole trench.

3.2.10.1 Alluvial deposition

Natural sands and gravels containing pockets of organic deposits [14] were recorded at the base of the trench at a height of 0.38m OD. Above this, and recorded at a height of 0.93m OD, was a 0.55m thick layer of gravel and sands [13] containing organic material and large numbers of snail shells.

A sequence of alluvial deposits that represent seasonal flooding overlay the sands and gravels. The first was a 0.50m thick layer of alluvial clay [12] containing frequent organic material that was recorded at a height of 1.43m OD. Above this the alluvial clay became less organic [11]. This 0.70m thick deposit was recorded at a height of 2.18m OD. Above this the alluvial clay became increasingly organic again, with very frequent fine root action [10] and was recorded at 2.63m OD.

3.2.10.2 Modern

The alluvial deposits were truncated from above by 20th century levelling; concrete slabs and foundations that make up the present ground surface, recorded at a height of 4.14m OD. No archaeological features were encountered.

3.2.11 ***Evaluation Trench PDZ1.19***

Location	Southern most part of PDZ1
Dimensions	10.0m x 8.0m at base; 3.50m deep
Modern ground level	5.00m OD
Base of modern fill	3.20m OD
Depth of archaeological deposits seen (including alluvium)	1.4m
Level of base of deposits observed and/or base of trench	1.80m OD
Base of alluvium / surface of floodplain gravels	2.26m OD
Environmental samples	{69}, {70}

Table 11 Trench PDZ1.19 deposit summary

For trench plan and sequence see Fig 17 and Fig 18.

3.2.11.1 Alluvial deposition

Loose, mid yellow brown natural sand and gravel [336] has surface level of 2.26m OD and extended the length and width of the trench (Fig 18). This layer was heavily contaminated with modern hydrocarbons.

Mid blue grey to mid yellow grey alluvial layer [335] sealed the natural layer from 3.20m OD to a depth of 0.65m. Sparse inclusions of calcium carbonate flecks were present within the layer. Vertical streaks of orange iron oxide were visible, probably following the path of former root channels. The layer appeared darker and siltier towards the surface of the deposit possibly indicating a former turf line or buried soil. However, the trench was too heavily contaminated with hydrocarbons for any further interpretation to be made.

3.2.11.2 Modern

Modern concrete, measuring 2.45m thick truncated the surface of [335] from the top of the trench at 5.0m OD. This had cut directly into the top of the alluvium [335] reducing its thickness.

3.2.12 ***Evaluation Trench PDZ1.20***

Location	North end of Work Package 5; north side of Carpenters Road
Dimensions	6.00m x 4.40m at base; 2.58m deep
Modern ground level	4.34m OD
Base of modern fill	3.92m OD
Depth of archaeological deposits seen (including alluvium)	2.1m
Level of base of deposits observed and/or base of trench	1.76m OD
Base of alluvium / surface of floodplain gravels	1.80m OD
Environmental samples	{63}; {64}

Table 12 Trench PDZ1.20 deposit summary

For trench plan and sequence see Fig 19 and Fig 20.

3.2.12.1 Alluvial deposition

The surface of natural sandy gravel [199] was present across the trench base at 1.80m OD (Fig 20). The natural sand was sealed by a 0.24m thick layer of orange brown sandy clay [198], present at a height of 2.13m OD. Green brown alluvium [197] in turn sealed [198] to a depth of 0.36m. The alluvium contained frequent root channels.

This was consequently sealed by a blue grey alluvium [196], containing occasional chalk flecks, from a surface level of 2.70m OD. Blue grey, silty clay [195] overlay the preceding alluvial layer [196], from 2.86m OD. Layer [195] contained moderate amounts of fine gravels and pea grit.

3.2.12.2 Modern

Late post medieval / modern ditch [191] cut into layer [195], from a height of 2.57m OD (Fig 19). The ditch extended 8.0m north–south by 0.85m width, by 0.17m deep. Some animal bone fragments, and a single stem fragment of CTP (probably dated to c.1580–1740; section 11.3.3) and a small sherd of 19th-20th century Yellow ware (see section 11.2.2) were found in the fill [190].

Made ground layer [194] sealed the ditch [191]. This covered the whole trench, to a depth of *c* 0.6m, from a surface of 3.45m OD and was overlain in turn by made ground layer [193] from 3.92m OD. Concrete raft [192] capped the trench sequence from 4.34m OD, to a depth of 0.38m.

3.2.13 ***Evaluation Trench PDZ1.21***

Location	Northern tip of PDZ1, north side of Carpenter's Road
Dimensions	3.20m by 3.10m at base; 5.23m deep
Modern ground level	6.40m OD
Base of modern fill	4.10m OD
Depth of archaeological deposits seen (including alluvium)	*c* 3.0m
Level of base of deposits observed and/or base of trench	1.17m OD
Base of alluvium / surface of floodplain gravels	1.32mOD
Environmental samples	{36}–{42}

Table 13 Trench PDZ1.21 deposit summary

For trench plan and sequence see Fig 21 and Fig 22.

3.2.13.1 Alluvial deposition

Natural sandy gravel layer [161] lay at the base of the trench sequence to a surface of 1.32m OD (Fig 22). Silty clay [159] sealed the natural gravels, across the full extent of the trench from a maximum height of 1.73m OD. Two sherds of Roman pottery were recovered from the layer (although this also appears to coincide with the assessment of two fragments of-possibly intrusive- post-medieval flower pot: see section 11.2.3).

A 0.45m thick layer of yellow brown, gravel and sand [158] (surface level 2.05m OD) overlay [159] The layer was noticeably clean, without inclusions of any type.

Layer [158] was sealed by a layer of soft, mid brown, organic silty clay [157]. The layer measured 0.38m thick in section, with a surface level of 2.36m OD. The organic component contained abundant inclusions of roots and twigs.

Blue clay [156] overlay the organic silt [157] throughout the trench. This was present at a height of 4.10m to a depth of 1.80m.

3.2.13.2 Modern

Heavily contaminated modern made ground [155] capped the trench sequence to a depth of 2.5m. The highest level of the made ground was at 6.40m OD.

3.2.14 ***Evaluation Trench PDZ1.22***

Location	Southern part of Work Package 5; north side of Carpenter's Road
Dimensions	6.60m x 10.20m at base with extension.

	2.58m deep
Modern ground level	3.13m OD
Base of modern fill	2.55m OD
Depth of archaeological deposits seen (including alluvium)	*c* 0.5m
Level of base of deposits observed and/or base of trench	2.11m OD
Base of alluvium / surface of floodplain gravels	2.11m OD
Environmental samples	{27}–{35}

Table 14 Trench PDZ1.22 deposit summary

For trench plan and sequence see Fig 23 and Fig 24.

3.2.14.1 Alluvial deposition

Compact natural gravel [152] was seen within two 9.0m by 1.5m sondages dug into the trench base. The sondages recorded the surface of natural gravel surviving to 2.11m OD.

3.2.14.2 ?Channel

A north-south depression [154] was seen in the surface of the gravel with a base level of *c* 1.55m OD. This may have been the remains of a channel that formerly cut across the surface of the gravels. Its west edge was within the trench, and its east side was beyond the limit of excavation. The interface between [152] and [139] on Fig 23 indicates the channel's western edge.

Alluvial fills within the limits of the channel were, successively from the lowest:

- Clean silty sand [153].
- Dark grey brown organic silty clay [139]
- Blue grey alluvium [141] with streaks of orange coloured iron oxide staining, probably following the path of root channels indicated by the presence organic material within the soil matrix. Dark yellow brown silty bands were apparent within the layer
- Light blue grey alluvial layer [148]/[149]

3.2.14.3 Modern

Modern made ground deposits and disturbance sealed the above archaeological sequence. This comprised made ground [147] containing fragments of 19th century pottery with a surface at 2.79 OD; modern dumps [145] and [146]. Modern pipe trench [151] containing pipe [143] and concrete lining fill [150], cut through layer [145], from a height of 2.83m OD. Modern demolition debris [142] was the latest deposit within the trench and was present to a thickness of c 0.5m across the entire trench, from a surface height of 3.23m OD.

3.2.15 ***Evaluation Trench PDZ1.23***

Location	South part of PDZ 1, north of Warton Road

Dimensions	26m x 5.64m at base, 3.16m deep
Modern ground level	3.81m to 4.25m OD
Base of modern fill	2.42m OD
Depth of archaeological deposits seen (including alluvium)	1.33m
Level of base of deposits observed and/or base of trench	1.09m OD
Base of alluvium / surface of floodplain gravels	1.89m OD
Environmental samples	{1500}–{1505}

Table 15 Trench PDZ1.23 deposit summary

For trench plan and sequence see Fig 25 and Fig 26.

3.2.15.1 Alluvial deposition

Loose, mid brownish-orange gravels [3022] formed the base of the observed trench sequence. These were well sorted; medium sized; sub-angular to sub-rounded, The gravel layer formed the basal limit of the evaluation trench and survived to 1.35m OD.

These were overlain by a layer of loose mid yellowish-brown sandy-gravels [3021], of small to medium size and sub-angular/sub-rounded in shape. The layer measured 0.20m thick and was encountered at 1.57m OD.

A layer of loose mid orange-brown sand [3020] lay above the gravels. This was 0.20m thick and was present from 1.77m OD. This was overlain by a 0.23m thick layer of laminated loose mid orange-brown sand and small to medium sub-angular/ sub-rounded gravels [3019], surviving to 1.89m OD.

A layer of soft, mid orange-brown clay [3011], measuring 0.65m thick from a height of 2.42m OD formed the final deposit in the observed natural sequence.

3.2.15.2 Post-medieval/modern

Late post-medieval to modern deposits directly overlay the natural sequence of sands and gravels.

The earliest was a layer of soft mid brownish-grey redeposited alluvium [3010], composed of silty-clay. It contained occasional CBM fragments, gravels, and very occasional clay tobacco pipe fragments and pottery sherds. The layer measured 0.48m thick and was encountered at 2.89m OD.

The redeposited alluvium [3010] was truncated by cut [3023]. The rectangular feature had straight, slightly sloped sides breaking sharply to a flat base, with dimensions that extended beyond the limits of excavation. The feature was cut in plan from 2.79m OD to a base at 1.73m OD. The cut contained three fills. The primary was compact mid yellowish-white medium to large gravels [3016] containing CBM, and concrete. The secondary was soft mid brownish-yellow sandy-clay with brown flecks [3015], containing moderate small to medium gravels. The last fill comprised a soft mid bluish-grey silty-clay with reddish-orange oxidisation [3014]; containing moderate small to medium gravels; very occasional pottery; CBM fragments and clay tobacco pipe fragments.

A layer of loose, dark greyish-brown clayey-silt with CBM fragments [3009] overlay rectangular feature [3023]. The deposit contained frequent gravels, had a thickness of 0.15m and was encountered at 2.98m OD. Above this was a redeposited layer of compact, mid yellowish-brown, slightly silty clay [3008], present at 3.46m OD. This layer was equal to layer [3033], which was observed on one part of the trench steps, and was composed of compact light brown clay with occasional fragments of CBM and flecks of chalk, observed at 3.42m OD. A dump layer of compact, dark greyish-brown sandy-silt [3007] overlay [3008]. The dumps contained frequent chalk flecks; pottery; CBM fragments; charcoal flecks and occasional glass and oyster shell. The layer was 0.24m thick, and was encountered at 3.84m OD. A 0.17m thick layer of moderately firm, mid greyish-brown clay [3006], with occasional fragments of wood overlay the previous dump layer [3307] from 3.84m OD.

Concrete, measuring 0.20m thick [3005] lay above [3006], from 4.0m OD. This was overlain by loose dark brown medium silty-clay [3004] with fragments of stock brick rubble. Layer [3004] was overlain in turn by 0.10m thick deposit of loose, dark brownish-black sandy-silt [3003] with frequent fragments of coal. Equal to this was the layer overlying [3033], which was composed of moderately loose dark blackish-brown coal dust and cinders [3018] with inclusions of coal, which was 0.23m thick, and encountered at 3.65m OD. It is likely that both of these deposits are associated with the railway line immediately to the east of the trench location.

A layer of loose yellowish-brown sandy-silt [3002] lay above layer [3003]. The silt contained CBM fragments; measured 0.26m thick at a height of 4.23m OD. This was equal to layer [3017], overlying [3018] at 3.80m OD.

Both [3002] and [3017] were truncated by a modern feature of unknown purpose [3030]. The modern intrusion measured 3.40m east–west at 3.92m OD and was excavated a depth of 0.75m. Compact light greyish-brown silty-clay [3012] filled the cut. Fill [3012] was partly overlain by a 0.25m thick layer of compact yellowish-brown clay [3013] with occasional CBM fragments encountered at 4.11m OD.

A modern pipe trench [3032] truncated layer [3012] from 3.81m OD. The trench measured 1.20m wide by 0.44m deep and was filled by loose medium greyish-brown sandy-silt [3031]. The remains of an east–west facing brick wall [3034] was constructed over the pipe trench. The wall was constructed of red and yellow brick in 'variation' English bond; bonded with mortar, with a height of 0.43m, a width of 0.34m, an unknown length, and it was encountered at 3.81m OD, forming the most recent of the observed deposits in this area of the trench.

The north end of the trench contained demolition rubble [3029] at 1.89m OD, and is part of the fill of an area impacted upon by modern truncation and piling observed in the trench vicinity. A modern basement wall facing east–west [3027], overlay the rubble to 4.40m OD. An equivalent basement wall [3028] was observed within the trench, forming part of the trench's stepped sides at 4.20m OD. Both walls related to the basemented area in the north of the trench location, and possibly to wall [3034]. The basemented area between [3027] and [3028] was backfilled with loose demolition rubble composed of light grey concrete and red and yellow brick [3024], [3025], [3026], all encountered around approximately 3.80m OD.

The basement backfills [3024], [3025], [3026] and layer [3002] were overlain by concrete [3001], which was 0.15m thick and encountered at 4.22m OD. This concrete formed the bedding for layer [3000], which was composed of symmetrically laid mid

brownish-red ceramic tiles, measuring 150mm by 150mm by 10mm, with an ornate frog on the underside in a flower shape. This formed a floor surface across part of the site and capped the trench sequence.

3.2.16 Proofing Trench 1

Location	Immediate west of PDZ1.13
Dimensions	19.4m by 2.10m; 3.0m deep
Modern ground level	3.7m OD
Base of modern fill	1.5m OD
Depth of archaeological deposits seen (including alluvium)	3m
Level of base of deposits observed and/or base of trench	*c* 0.5m OD
Base of alluvium / surface of floodplain gravels	Not seen
Environmental samples	none

Table 16 PDZ1 Proofing trench 1 deposit summary

3.2.16.1 Alluvial deposition

A substantial (3.0m) depth of blue grey alluvium (115) was present across the trench base and sides to a height of 1.50m OD.

3.2.16.2 Modern

Modern made ground [114] lay directly above the alluvium to a height of 3.45 OD. Concrete pile [116] measuring 0.60m in diameter by 1.70 deep, in cut [112] truncated modern layer [114]. This was probably a 20th century tie back for the Waterworks River wall. More modern material [119], which included frequent demolition debris, overlay the pile from 3.45m OD.

In the centre of the trench (and not visible in section) was a modern concrete wall [117] measuring 10.6m north–south by 0.60m flanked to either side by thin (0.13m) wooden shuttering [118], all within construction cut [123]. Overall the construction cut measured 0.8m east–west by 10.2m north–south and had a visible depth of 1.5m. The wall and construction trench were present at 3.45m OD. A 0.25m thick concrete slab [113] capped the sequence from 3.70m OD.

3.2.17 Proofing Trench 2

Note: no bench mark was available for the transfer of levels; the levels presented below are approximate for the trench location.

Location	South-west of PDZ1.13
Dimensions	33m by 2.0m; 3.0m deep
Modern ground level	Estimated 3.7m OD
Base of modern fill	1.8m OD
Depth of archaeological deposits seen (including alluvium)	0.8m
Level of base of deposits observed	*c* 1m OD

and/or base of trench	
Base of alluvium / surface of floodplain gravels	Not seen
Environmental samples	none

Table 17 PDZ1 Proofing trench 2 deposit summary

3.2.17.1 Alluvial deposition

Dark brown grey, organic alluvium [59] was present across the majority of the trench base, measuring 0.3m thick to a height of *c* 1.4m OD. This was sealed by a layer a 0.55m thick layer of blue grey alluvial clay [58] surviving to 1.80m OD.

3.2.17.2 Modern

Modern made ground [57] sealed the alluvial deposits to the top of the trench.

3.3 Stratigraphic interpretation of the site

3.3.1 Overview of the natural deposit sequence and buried topography

In general, the site spans the higher ground of the low terrace (as identified on OL-00305) and the margins of the adjacent wetland and active channel area (as identified on OL-00105 and OL-01107).

Trenches PDZ1.11, PDZ1.12, PDZ1.16, PDZ1.19, PDZ1.20, PDZ1.22 and PDZ1.23 lie on the low terrace. Here the surface of floodplain gravels lies at about 1.8m to 2.2m OD and a buried landsurface, associated with prehistoric activity in PDZ1.12, is sealed by alluvial clay representing generally dry meadowland subject to seasonal or episodically prolonged overbank flooding.

The surface of gravels (where reached) in trenches PDZ10, PDZ13, PDZ14 and PDZ17 lay between 0.5m and 1m OD and contained organic inclusions such as wood. These gravels are likely to represent an active Holocene river, which redeposited the Pleistocene gravel. In these trenches the gravel is overlain by humic (organic) deposits and softer clays, which accumulated in backwater and channel marginal areas. The distribution of these trenches indicates that they most probably formed the marshy wetland area fringing the higher ground of the low terrace, which appears to have formed a promontory in the Warton Road area. A thicker overlying sequence of alluvial clays in these wetland trenches also suggests proximity to the river and here the clays might represent intertidal environments.

No trenches recorded the thick sequence of sands seen in both OL-00105 and OL-01107 and thought to represent the migrating river channel. This might be because the trenches recorded in OL-01507 lay on and fringed the promontory of higher ground, as opposed to lying within the migrating channel area.

A sand and gravel layer at around 2m OD in PDZ1.21 might represent a historic foreshore deposit. Furthermore soil and subsoil horizons, and in several places the turf line, of a pre-industrial landsurface survive almost everywhere across the site. It is likely that this pre-modern landsurface lay and roughly 2.6m to 3.2m OD, which corresponds with the elevation of turf lines recorded on sites OL-00105, OL-00305 and OL-01107. The alluvial stratigraphy was sealed by 1-2m of made ground.

3.3.2 Late Glacial/ early Holocene deposits forming the buried topography

The surface of natural sandy gravels, forming the buried topography of the Late Glacial and early Holocene, were present in all of the evaluation trenches, excepting PDZ1.12 South and PDZ1.12 West, where evaluation was limited to the surface of prehistoric deposits.

In the south-eastern part of OL-01507 natural gravels had a surface level of c 2.10m OD. The gravels followed a downward slope to the north down to 1.58m OD in PDZ1.15 and to 1.86m OD in PDZ1.16 steadily falling to 1.22m OD in the northern trench PDZ1.21.

A sharper fall in the gravel surface to the west was observed in Trench PDZ1.13, at 0.86m OD. The gravel surface rose slightly further south, present at 2.26m OD in trench PDZ1.19. This information shows that the southern area of OL-01507 was

higher and drier, while the area to the north and west was lower lying and wetter, confirming the landscape reconstruction for the Zone as put forward by the OL-01507 desk-based assessment (MoLAS-PCA 2007a) and the earlier Lea Valley mapping project (Burton et al 2004).

Furthermore, beyond the western boundary of the site, the gravel surface continues to fall to between –2m OD and to –3.5m OD along where the main channel of the River Lea ran in the past (Burton et al 2004). The location of OL-01507 therefore, implies that the area was likely to have always been riparian, straddling the floodplain and a low terrace with the land becoming higher incrementally in a north and easterly direction. An exception to this rule however, is the promontory of low terrace that extends to the south west in the southern area of the site into the main channel area.

This slight but important differentiation in height of the gravels is significant as low terrace locations are likely to have been prime sites for human occupation in the past as evidenced by the finds at the PDZ1.12 trenches. Moreover, the surface of the sands and gravels are often found to undulate in a south-east to north-west direction indicating erosion of this surface by rivulets and small channels draining off the low terrace toward the river.

Trench	*Contexts*	*Samples*
PDZ1.10	[167]	{50}; {55}–{57}; {43}, {45}
PDZ1.12	[81]	{20}, {21}, {25}
PDZ1.13	[136]	none
PDZ1.14	[56]	{16}
PDZ1.15	[33]	{3}, {4}
PDZ1.16	[189]	{62}
PDZ1.19	[336]	{70}
PDZ1.20	[199]	-
PDZ1.21	[161]	{41}, {42}
PDZ1.22	[152]	{28}

Table 18 Phase 1 (Late Glacial topography) summary

3.3.3 Lower Organic Alluvial Clay Deposits

A thin layer of organic, dark silty clay was observed in several trenches, immediately above the surface of natural gravels. Tree roots, shells and bark were regular inclusions found within these layers. Such deposits were more apparent within the trenches sited over lower lying parts of the natural topography away from the low terrace. The layers, recorded in trenches PDZ1.14 and PDZ1.15, were probably formed by strand line deposits of organic material from the main river channel of the Lea filling low lying areas (hollows possibly formed by small palaeochannels or rivulets flowing off the low terrace) in times of flood, forming later in the Holocene as water table levels rose resulting from ponding back of drainage down the Lea Valley, in response to relative sea level rise.

Trench	*Contexts*	*Samples*
PDZ1.10	[169]	{52}, {54}, {58}; {43}, {45}
PDZ1.13	[135]	None

PDZ1.14	[55]	{9}–{15}
PDZ1.15	[32]	{2}, {3}, {5}, {6}, {8}
PDZ1.20	[198]	-
PDZ1.22	[139]	{27}, {30}, {32}, {33}, {35}

Table 19 Phase 2 early organic alluvium summary

3.3.4 Alluvial deposits

Over the gravels and, where present, the organic silts, a succession of alluvial layers were deposited. The alluvium varied from 0.4m to 1.8m in depth, tending to increase to the north, where the alluvium was characteristically more level and organic rich in contrast to those alluvial layers seen across the southern part of the site.

These deposits represent a gradual transition from humic silts representing slackwater areas at the fringes of the main river channel to humic clays likely to represent shallow standing water in backwater areas, cut off from the river. It is expected that these deposits are time transgressive and will have accumulated earlier in the south-eastern parts of the site than towards the north-west, as areas of the site became increasingly more distant from the active river channel.

Again, these sediments probably reflect a period of rising river levels in response to relative sea level rise that caused estuarine environments to encroach upstream. No dating has yet been obtained from these deposits but their timing and characteristics could be compared to current understanding of relative sea level fluctuations recorded in the alluvial sequences of the Thames.

The upper 0.5m to 1m of alluvial deposits across the site are predominantly greyish fairly stiff cohesive clays becoming orange through oxidisation over the higher, low terrace areas. These deposits accumulated by clay settling out of standing water during periods of seasonal overbank flooding. During summer months the floodwater drained away, the landsurface dried out and soil processes took place, working the clay into the soil, which built up as an 'accretionary' soil profile. Notably, it is this depositional environment into which the features of PDZ1.12 are sealed. In some areas of the low terrace however, such as PDZ1.22, organic sediments accumulated in man-made channels which presumably were cut to drain the marshy environment but which consequently silted up and of course, formed at a much later date. Thicker alluvial clay deposits in the trenches located closer to the river might represent inter-tidal mud and estuarine environments.

Trench	*Contexts*	*Samples*
PDZ1.10	[163], [164], [165], [168]	{43}–{48}; {51}
PDZ1.12	[74], [80], [83], [89]	{18}–{21}, {24}
PDZ1.12 South	[205], [206], [250], [252], [253], [255], [260], [295]	NA
PDZ1.12 West	[306]–[308], [297]	{65}–{68}
PDZ1.13	[134], [133]	{26}
PDZ1.14	[54]	-
PDZ1.15	[31]	{3}
PDZ1.16	[182], [185]–[188]	{59}–{61}
PDZ1.19	[335]	{69}

PDZ1.20	[195]–[197]	{63}, {64}
PDZ1.21	[156]–[159]	{37}–{39}; {42}
PDZ1.22	[141], [148], [149]	{29}

Table 20 Phase 3 alluvium summary

3.3.5 Prehistoric activity

Trenches PDZ1.12, PDZ1.12 West and South, in the approximate centre of the southern half of OL-01507, occupied the edge of the low terrace that provided a suitable drier environment for early activity. Large numbers of intercutting features, dated to the Late Bronze Age to the Late Iron Age, were recorded in the trenches cutting directly into the dryland deposits and earliest alluvium. The features mainly comprised pits and ditches, although sections of curvilinear gullies, reminiscent of roundhouse drip gullies, were also seen.

Trench	*Contexts*	*Samples*
PDZ1.12	[75]–[79]; [84], [85]	{17}, {18}, {20}
PDZ1.12 West	[261]–[294]; [296]–[305]	-
PDZ1.12 South	[200], [201]; [207]–[235]; [256], [257]	-

Table 21 Phase 4 Prehistoric activity within the alluvium, summary

3.3.6 19th Century Ground Reclamation

Successive deposits of 19th/ 20th Century made ground sealed the alluvial strata. The evidence from the evaluation trenches, limited to buried cultivation soil and turflines, indicate that prior to the 19th century, the majority of the site was largely fields in a rural setting. During the 19th century the whole area changed radically. Archaeological evidence of the gas and chemical works present within PDZ1 at this time was indicated by the high degree of soil contamination found in the alluvium and later layers. Occasional pits from this date were excavated in PDZ1.15; a brick lined well was present in PDZ1.13 and a north–south ditch was recorded in PDZ1.16. The post medieval deposits were mainly recorded in section. No significant post medieval features were present.

3.3.7 Modern

Across the site, the 19th century made ground deposits were overlain by layers of sand and crushed building materials, deposited as levelling material preparatory for the overlying concrete slab. Modern service trenches cut through these levelling deposits, sealed by either concrete slab or modern dump horizons. Contemporary ground level dips across the centre of Carpenters Road with higher ground at the north and the south ends of 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 stratigraphic interpretation in section 3.3 above.

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

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

3.4.2 Sediment characteristics

Monolith samples were taken through the natural deposit sequence, as exposed in trenches PDZ1.10, PDZ1.12, PDZ1.14, PDZ1.15, PDZ1.16, PDZ1.21 and PDZ1.22. The tins provide an undisturbed column of sediment for off-site examination. The location selected for sampling was considered to be a representative profile of the deposits exposed in the trench. The monolith sequence is suitable for sub-sampling for microfossils and sedimentary techniques, intended to gain a better understanding of the changing environments represented by the Holocene gravels and 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 deposits. 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 Microfossil

Microfossil examination of sub-samples taken from selected monolith tins might be able to provide information about the evolving river regime, floodplain and low terrace characteristics and surrounding vegetation. The monoliths will be retained until environmental assessment is undertaken, when sub-samples for microfossils such as pollen and diatoms will be examined to determine their potential for past environment reconstruction (see below).

3.4.4 Bulk sample processing

Thirty nine samples, associated with a number of trenches, were selected and processed for the evaluation for the potential recovery of plant and invertebrate

remains, to provide information on the local environment and any human activity at the time of deposition. Any such information would complement that obtained from monolith samples through sedimentary sequences. The aim of the evaluation was to establish the presence or absence of biological remains, and whether a full assessment of any of the materials present in the samples should be carried out.

Five litre sub-samples from each sample were processed by flotation over a 0.25mm mesh, with the residue washed over a 0.5mm mesh. The flots were stored wet to help with the preservation of any organic material and the wet sieved fractions were dried. Five litres of soil or less were retained from each sample for further work. Small amounts of each flot were scanned rapidly under a low-power binocular microscope to determine whether further assessment would be worthwhile.

This information has been used to determine the most appropriate strategy for assessment (see below).

3.4.5 Radiocarbon dating

Although some idea of the date of the deposits excavated has been inferred from their characteristics and level, 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, many of the deposits excavated contained plant remains, from which radiocarbon dates might be obtained. Samples specifically taken for radiocarbon dating, as well as additional bulk samples from the monoliths and bulk samples, should provide sufficient material for the extraction of single entity organic remains suitable for radiocarbon dating by AMS (Accelerator Mass Spectrometry).

3.4.6 Insect remains

Rich assemblages of insect (beetle) fragments were noted in the following 10 samples (26, 29, 31, 32, 48, 49, 50, 68, 79, 81), all of which also contained rich 'waterlogged' seed remains except sample 81. Moderate amounts of beetle fragments were present in another 11 samples.

3.4.7 Molluscs and ostracods

Large amounts of freshwater snails were noted in four samples (31, 46, 80 and 81) with moderate quantities in another six samples (samples 4, 14, 40, 61, 52 and 78). Moderate amounts of terrestrial snails were present in three samples (16, 61 and 68) while occasional ostracods were noted in six samples.

3.4.8 Plant remains

Virtually all the flots produced 'waterlogged' plant remains, with 17 samples (2, 4, 16, 26, 27, 31, 32, 39, 40, 50, 52, 61, 66, 67, 68) producing rich 'waterlogged' plant assemblages in terms of numbers of identifiable fruits and seeds with moderately high to high species diversity. A further six samples (14, 15, 29, 48, 49 and 51) produced moderately good 'waterlogged' plant assemblages in terms of seed numbers and species diversity.

A large quantity of the identifiable fruits and seeds were from wetland (particularly aquatic) species, for example water plantain (*Alisma* spp.), pondweeds (*Potamogeton* spp.), crowfoots (*Ranunculus Batrachium* gp), dropwort (*Oenanthe* spp.), celery-leaved crowfoot (*Ranunculs sceleratus*), branched bur-reed (*Sparganium erectum*), sedges (*Carex* spp.), spike-rush (*Eleocharis* spp.) and gypsy-wort (*Lycopus europaeus*). Trees and shrubs were noted in several samples, including alder (*Alnus glutinosa*), which grows in wetland environments and was well represented (in terms of both seeds and catkins) in sample 26. Other woodland/shrub species included hazel (*Corylus avellana*), elder (*Sambucus nigra*) and brambles (*Rubus* spp.). Plants of disturbed (including cultivated) ground and waste places, included stinging nettle (*Urtica dioica*), goosefoots (*Chenopodium* spp.), stinking mayweed (*Anthemis cotula*), docks (*Rumex* spp.) and buttercups (*Ranunculus* spp.).

Other 'waterlogged' plant material in the samples included wood in 25 flots, with large amounts in 13 of these, with most of this material being very fragmented except for large fragments (including round wood) in the sample from context [33]. Occasional moss fragments were noted in two samples while roots/rootlets were noted in varying amounts in virtually all the flots.

Charred plant remains were occasionally present in some of these samples, namely a rachis fragment in sample 60 (context [182]) and an indeterminate cereal grain in sample 19 (context [80]). Very fragmented charcoal was present in 15 samples with moderate to large amounts in eight flots.

Trench No.	Context	Sample	Volume (litres)	Processed (litres)	chd wood	wlg seeds/fruit	insects	molluscs
PDZ1.15	32	2		5	++	++	+	+
	33	4	10	5	++	++	+	+
PDZ1.14	55	13	10	5		++	+	+
		14	10	5		+	+	+
		15	10	5		+	+	+
	56	16	10	5	++	++	+	+
PDZ1.12	74	18	10	5	+			
	78	17		5	++	++		
	80	19	10	5	+	++		
	81	25	10	5			++	++
	83	24		5				
PDZ1.13	134	26		5		++	+	+
PDZ1.22	139	27		5		++	+	+
		31		5		++	++	+
	141	29	10	5		++	++	+
		32		5		++	++	+
	152	28		5				
PDZ1.21	156	36	10	5		++		+
	158	38	10	5		++		
	159	39	10	5	++	++	+	+
	160	40	10	5		++	+	+
	161	41	10	5		++	+	
PDZ1.10	163	46		5	++	++	+	+
	164	47	10	5		++		

Trench No.	Context	Sample	Volume (litres)	Processed (litres)	chd wood	wlg seeds/fruit	insects	molluscs
	165	480		10		++		
	166	48		5		++	+	
		490		10		++	+	
	167	49	10	5		++	+	
		50		5		++	+	+
	168	51	10	5		++	++	
	169	52		5		++	+	+
PDZ1.16	182	60	10	5		++	+	+
	187	61	10	5	+	++	+	+
	189	62	10	5			+	
PDZ1.20	196	64	10	5	+	+		
	197	63	10	5	+			
PDZ1.12 W ext	306	66	10	5	+	++	+	+
		67		5	+	++	+	+
		68		5	+	+	++	+

Table 22: 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'.

In the case of this site, the evaluation trenches exposed the surface of Late Pleistocene to Holocene gravels, sealed by sequences of alluvial deposits. These were overlain partially by buried soil layers and occasionally turf lines indicative of post medieval open land, and by 19th century made ground, truncated by modern services. The sequence was capped by 20th century levelling layers and concrete slab. In PDZ1.12, and its south and west extension trenches in the approximate centre of site, Late Bronze Age to the Late Iron Age features consistent with settlement activity truncated the earliest dry land and alluvial layers. 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).

The evaluation satisfies the original requirements of the evaluation as stated in the Method Statement (MoLAS-PCA 2007b).

4 Archaeological potential

4.1 Realisation of original research aims

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

What is the potential for Late Glacial environment reconstruction and/or Late Upper Palaeolithic activity in the Pleistocene deposits on the site?

None of the gravels were excavated beyond their surface levels. No material relevant to reconstruction of the Late Glacial environment-beyond formation of surface topography- or Upper Palaeolithic activity was encountered.

The extent of the low terrace across the southern and south eastern part of the site was refined, providing information that will help reconstruct the Late Glacial environment of this part of the Lea Valley.

What evidence exists for past river channels on the site and how does this contribute to our understanding of the origin of the modern and historic River Lea and Waterworks Rivers?

The lower level of the floodplain gravel surface and inclusions of organic remains within the gravels in PDZ1.10, PDZ1.13, PDZ1.14 and PDZ1.17 implies Holocene river channel activity in these areas. It is likely that these trenches lie within former channels of the Thames or its tributaries that skirted the promontory of low terrace in the Warton Road area.

This area subsequently became a wetland, fringing the main river channel(s) following their migration westwards or north westwards. The date of these episodes and their relationship to fluvial sands deposited by an active river channel in OL-00105 and OL-01107, needs to be clarified by radiocarbon dating.

What potential is there for reconstructing the evolving river regime from environmental samples taken from the site?

There is good potential for the reconstruction of the evolving river regime from environmental samples taken from OL-01507.

The initial evaluation of the botanical remains suggests a mainly wetland environment with standing or slow-moving bodies of water although some of the plant material suggests areas of more stable, shrubby disturbed/waste ground. The plant and insect data may provide complimentary information on the character of the local environment in this area of the Lea Valley in conjunction with the sedimentary data and other possible micro environmental remains from the monolith tins such as diatoms and pollen analysis coupled with radiocarbon dating.

Is there evidence of past human activity associated with river exploitation or management?

Possibly. The stakeholes and postholes found in PDZ1.12 may have formed part of a larger raised timber walkway crossing wetland patches across the site. This preliminary interpretation could only be tested by further excavation.

Other than the proximity of the settlement evidence to the former wetland environment, there was no other archaeological evidence for wetland exploitation.

Is there evidence for past wetland exploitation?

The LBA–LIA features within trench PDZ1.12 (overall) provide only tangential evidence for wetland exploitation. The features are evidence of settlement on a higher dryland area within OL-01507 with ready access to the resources provided by the wetland shore to the north: nutrient rich soils; food (fish and wild fowl) and speculatively, even trade with communities scattered across the Lea Valley wetlands.

What environmental evidence suitable for past landscape reconstruction and indirect evidence of past human activity exists within deposits associated with ancient river channels and other wetland areas?

A wide range of environmental indicators have been shown by the environmental evaluation to survive in the alluvial deposits on the site. Seeds, insects, snails, and ostracods are likely to be preserved in the bulk samples, as well as pollen and diatoms in the monolith samples. Good preservation of organics in most of the sampled deposits will enable the environmental evidence to be tied in to an archaeological chronology.

Is there any evidence for Roman wetland or dryland occupation and other activity within this area of the site? If so, how does it relate to what is known of the settlement pattern further south in the Stratford Market area during the Roman period?

No evidence was found for activity or occupation during to the Roman period.

One tiny sherd of Roman pottery was found in an alluvial layer in PDZ1.21. However due to the isolated nature of the find and the lack of any cut features seen in this layer, the pottery is likely to have been washed into the layer by river processes and may have come to rest some distance from where it was dropped.

What evidence for medieval/post medieval land use exists within the site area, including industrial and agricultural evidence?

Evidence of post-medieval land use prior to the 19th century was limited to buried turflines and soils in trenches PDZ1.12 and 1.19, supporting the cartographic evidence that the site was mainly lightly cultivated or pasture at this time. A post medieval brick lined well was uncovered in PDZ1.13. This well included the compacted modern fill, red bricks, a thin wooden barrel lining and the circular cut itself. The cut measured 1.50m diameter (N–S), only 0.50m depth was excavated due to ground gas problems. The building of this well suggests that the area must have been dry. A rectangular brick lined pit was also uncovered in PDZ1.13. However it was too heavily contaminated to excavate. (This itself is testament to the nature of the industry on site in the later post medieval period). Three shallow pits of post medieval date were found in PDZ1.15 but yielded little artefactual evidence. The evidence for large post medieval buildings and factories seems to have been truncated away by modern levelling and dump layers.

How extensive is modern truncation and how thick is modern made ground across the site?

Modern truncation is extensive. The impact was seen in all trenches. The PDZ1.12 trenches contained large concrete intrusions and modern pipe cuts which truncated some of the archaeology. PDZ1.12 West was heavily truncated by modern concrete foundations for the large brick wall which sat over the trench. The foundations locally truncated most of the alluvial layers, leaving a thin gravely alluvial layer at a deeper level than the rest of the trench. Also redeposition of alluvial layers as backfill or levelling layers in modern times occurred across the site, including PDZ1.12. The modern deposits were thinnest towards the centre of OL-01507 with the thickest areas of modern made ground being to the north and south, compensating for the historic topography. In the centre of OL-01507 trenches had a thickness of between 0.90m and 1.03m of modern made ground. At the very north of site, Trench PDZ1.21 had 2.50m of made ground. To the very south in PDZ1.19, 1.80m of modern made ground was encountered.

4.2 General discussion of potential

The evaluation has shown that undisturbed deposits of archaeological potential survive intact beneath the 19th century made ground.

These deposits comprise natural gravels, alluvial sediments and prehistoric settlement remains dated from the Late Bronze Age to the Late Iron Age.

OL-01507 straddles the low terrace and fringes of the deeper part of the valley floor, where a wetland area existed at some (as yet undated) period. Modelling the natural gravel surfaces and sequences of overlying alluvial deposits recorded across the site have the potential to contribute to a better understanding of the prehistoric and later topography and Holocene evolution of the lower Lea Valley. Although no evidence for wetland archaeology was found in the lower lying area of the site (trenches PDZ1.10, PDZ1.13, PDZ1.14 and PDZ1.17) samples taken from the deposits in these trenches have very good potential for past landscape reconstruction from seeds, snails, insects, ostracods – all of which the evaluation has shown to be preserved in the bulk samples. Microfossils, and in particular pollen and diatoms, are likely to be preserved in the monolith samples taken through the wetland deposits. Furthermore, some categories of environmental remains, such as pollen, might provide indirect evidence for prehistoric activity taking place in the drier parts of the site, in the vicinity of PDZ1.12.

The potential for survival of archaeological remains appears greatest on the higher drier area of the low terrace, in particular around PDZ1.12. This evaluation trench and its extensions to west and south confirmed that the dryland parts of OL-01507 were exploited for prehistoric settlement and exploitation. This makes the likelihood of further archaeology being found, should further excavation take place, exceptionally high. The number of stakeholes and postholes seen within the trenches suggests that timber structures were constructed during the Late Bronze Age / Late Iron Age. Environmental information is needed to infer the characteristics of the local environment in this period.

Post medieval deposits and features were limited to instances of buried soil horizons representing pre 19th century land use; replaced by thick deposits of 19th century made ground, present across the site. Further evidence of late post medieval land use comprised a well in PDZ1.13; three shallow rubbish pits cut into a possible

occupation layer [34], and four pits in PDZ1.14. However as the majority of the post medieval layers were contaminated with chemical residues left over by the former industries located across the site (gas works; chemical and varnish factories; railway sidings and, more recently, motor spares dealerships) the potential for post-medieval deposits is limited.

No radiocarbon dates have yet been obtained from the OL-01507 trenches, although there is good potential for radiocarbon dating samples from organic material especially in the lower lying trenches. This would help to clarify the timing of river activity and wetland development across the site as a whole.

A key question to be addressed regarding the alluvial sequence is when and in what way did estuarine incursion reach this part of the Lower Lea. The encroachment of estuarine environments and tidal water up the Lea Valley would have had a significant impact on the activities of people living in and exploiting the locality. There is good potential for the samples obtained from the evaluation to provide dates and useful information (such as from ostracods, diatoms and forams) from which we can infer the timing and nature of the transition from a freshwater to tidal river.

In addition to the evidence for prehistoric occupation, when the stratigraphic information from the site has been tied in to the information recovered from the surrounding area (by inputting the data into the MoLAS-PCA geoarchaeological database for the Olympic Project), linked to the environmental evidence from the samples collected during the evaluation and dated it could have potential to contribute to our understanding of the evolving environment and river regime of the Lower Lea. It is likely that the environmental evidence from this site will relate particularly to the earlier prehistoric period.

4.3 Significance

The archaeology and geoarchaeological evidence seen on the site and potentially still to be recorded during excavation, will provide a significant amount of information that should aid in the understanding of the past environment of the site and its surrounds, and associated human activity. The evidence for prehistoric occupation and activity found on the site is likely to be of regional significance.

Cultural activity over the southern part of the site (PDZ1.12) has shown prehistoric settlement dating from the Mid Bronze Age to the Late Iron Age. Sparse evidence for prehistoric settlements within the Lea Valley has been found, however, the density of features indicate a high scale of activity on the low terrace in OL-01507, which might contribute to our understanding of the prehistoric land use in the Lower Lea. This evidence, combined with geoarchaeological research will provide locally to potentially regionally significant information regarding the distribution and nature of prehistoric floodplain activity.

The geoarchaeological and environmental evidence recovered from the site has already been able to provide a significant amount of information which will aid in the understanding of the evolving environment of the Lea Valley. When the samples have been fully examined and the geoarchaeological records and environmental sample information added to the site-wide landscape reconstruction models being developed, the evidence for Holocene landscape change is likely to be of regional significance.

The information will assist in landscape reconstruction models being developed for the Lower Lea Valley and in considerations of the relationship between the changing environment and human activity. It is certainly of local significance and collectively when integrated with similar information from other sites on the Olympics as a whole, would be regionally significant, however, there is nothing to suggest that they are of national importance..

5 Assessment by EH criteria

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

'Assessment of results against original expectations (using criteria for assessing national importance of period, relative completeness, condition, rarity and group value) .....' (Guidance Paper V, 4 7)

A set of guide lines was published by the Department of the Environment with criteria by which to measure the importance of individual monuments for possible Scheduling. These criteria are as follows: *Period*; *Rarity*; *Documentation*; *Survival/Condition*; *Fragility/Vulnerability*; *Diversity*; and *Potential*. The guide lines stresses that 'these criteria should not...be regarded as definitive; rather they are indicators which contribute to a wider judgement based on the individual circumstances of a case'.[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
There may be considerable contemporary documentation for the post-medieval period of the site and there may be some possibility that some of this could be specific enough to relate to individual features.

Criterion 4: group value
The prehistoric landscape features relate to and are part of the wider pattern seen within the Olympic Park and elsewhere in the Lea Valley. Full interpretation is only possible in that context. The location of this site, close to the former confluence of the Lea and the Thames, has a bearing on the understanding of the past environment of the Thames' floodplain. The post-medieval survival is remnants of part of the spread eastwards from the City of London and the urbanisation of the site area, combined with the linking of the former villages of Stratford and Mile End.

Criterion 5: survival/condition
The evaluation results have demonstrated that geoarchaeological and archaeological remains (including prehistoric settlement evidence) were preserved beneath modern made ground, although locally within areas of development these will have been truncated to dramatically different levels.

Criterion 6: fragility

[1] Annex 4, DOE, Planning and Policy Guidance 16, (1990). For detailed definition of the criteria see that document. Reference has also been made to Darvill, Saunders & Startin, (1987); and McGill, (1995)

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

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

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

The evaluation has shown that variable depths of alluvium overlying late Pleistocene/early Holocene gravels are likely to exist elsewhere in the local vicinity. Further examination of samples already taken from the alluvial deposits on the site has 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. There is good potential for past environment reconstruction from seeds, snails, insects, ostracods – all of which the evaluation has shown to be preserved in the bulk samples. Microfossils, and in particular pollen and diatoms, are likely to be preserved in the monolith samples taken through the wetland deposits. No radiocarbon dates have yet been obtained from the OL-01507 trenches, although there is good potential for radiocarbon dating samples from organic material especially in the lower lying trenches. This would help to clarify the timing of river activity and wetland development across the site as a whole.

In addition to dating the deposit sequence and examining the biological remains preserved within the samples, there is very good potential for more detailed examination of the trench records to contribute to our understanding of the past topography and evolving environment, by inputting the stratigraphic information into the Olympics geoarchaeological database and modelling the semi interpreted data in ARC GIS.

Later exploitation of the site was evidenced within Trench PDZ1.12 and its south and west extensions, with the presence of a dense pattern of stakeholes, post holes pits and ditches; fragments of LBA–EIA pottery and daub were recovered from an early land surface, and in concert with sections of possible drip gullies support a conjectured site of a settlement in the immediate vicinity at this time. The alluvium appeared to gradually form a dry-land surface (topsoil) of probable post medieval date that survived in the eastern part of the site, later replaced across the majority of OL-01507 by 19th–20th century land raising dumps and demolished industrial buildings.

6 Proposed development impact and recommendations

Detailed architectural and engineering designs are not yet available, but current proposals for Planning Delivery 1 includes the construction of the Olympic and Paralympic Games and Legacy Transformations proposed 'Aquatic Centre' with swimming pools in the area considered in this document. In summary the archaeological remains located within the site will be severely impacted, if not completely removed by, the planned construction works, which are certain to include a considerable amount of deep excavation. The construction methods for these works will locally disturb and destroy all archaeological deposits within their footprints.

The alluvial deposits surviving within the site are of considerable importance with respect to prehistoric settlement evidence and palaeoenvironmental potential

Elements of a potential Late Bronze-Age / Iron Age settlement, comprising ditches, a drip gully, postholes, post pits and pits have been identified. Considering their distribution the occupation evidence suggests a substantial settlement of considerable time depth. Sites of this period are known in the greater London area, though they are not 'common'. With respect to the East London area they form part of a greater occupied landscape which includes settlement sites at Oliver Close in Leytonstone, Dagenham Heathway, Fairlop in Redbridge, Uphall Camp in Ilford as well as sites in Rainham and elsewhere.

In terms of the Lea valley this site will form a crucial aspect of our understanding of the landuse of this floodplain during the later prehistoric period and will elucidate the nature of the human activity and impact on the landscape during this period. In addition, information relating to the evolving Holocene environment and past river regime is likely to be preserved in the samples taken from the site.

The significance of the archaeological evidence suggests that preservation *in situ* will not necessarily be the appropriate mitigation strategy. In order to clarify the potential of the archaeological resource and to refine the research aims it might be able to address, MoLAS-PCA considers that:

- Further excavation of the prehistoric deposits in the vicinity of PDZ1.12 is undertaken. Such excavation is likely to provide valuable information that will contribute to our understanding of the prehistory of Greater London.
- Further work should be undertaken on the samples already taken from the sequence to gain a better understanding of the local river regime and evolving past landscape. It is recommended that:
    - The unprocessed samples are processed by paraffin flotation for the assessment of insect remains;
    - The snail assemblages from the wet-sieved fractions of the samples already processed are assessed;
    - Plant remains from the flots from samples already processed are assessed;

- Any samples not already processed are processed in order to recover assemblages of snails and ostracods, plant remains and insects for assessment;
- Twenty radiocarbon dates are obtained by AMS on identified twigs, seeds or other plant material likely to have received its carbon from atmospheric sources;
- The stratigraphic, dating and sample assessment data is entered into the MoLAS-PCA geoarchaeological stratigraphic database and used to update the current GIS themes;
- Research aims that might realistically be addressed by the samples are identified.

It is also recommended that the results of this evaluation and of the proposed environmental mitigation are assimilated into a site-wide assessment of all archaeological interventions to assign contextual significance and further refine the importance of the archaeological survival, and thereafter assimilated into any publication discussing/disseminating the results.

The decision on the appropriate archaeological response to the deposits revealed within the evaluation rests with the Local Planning Authority and their designated archaeological advisor (GLAAS).

7 Acknowledgements

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9 Appendix 1: NMR OASIS archaeological report form

OASIS ID: preconst1-44216	
Project details	
Project name	Olympics PDZ1 non - river wall trenches
Short description of the project	This archaeological evaluation comprised twelve evaluation trenches all but two reached the level of the natural gravels. The overlying alluvial sequence had a thickness of between 0.40m and 1.80m. Alluvial sediments dominated indicating an environment that was subjected to numerous episodes of seasonal flooding . Features of archaeological significance discovered include LBA & IA ditches, pits, postholes and a drip gully. The sequences of archaeological interest were subsequently sealed by 19th-20th century made ground and landfill deposits.
Project dates	Start: 01-06-2007 End: 01-02-2008
Previous/future work	Yes / Yes
Any associated project reference codes	OL-1507 - Sitecode
Type of project	Field evaluation
Site status	Local Authority Designated Archaeological Area
Current Land use	Vacant Land 3 - Despoiled land (contaminated derelict and ?brownfield? sites)
Monument type	DITCH; PIT Late Bronze Age
Monument type	DITCH PIT Iron Age
Significant Finds	CONTAINER Late Bronze Age
Significant Finds	CONTAINER Iron Age
Methods & techniques	'Environmental Sampling','Sample Trenches','Targeted Trenches','Test Pits'
Development type	Amenity area (e.g. public open space)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)
Status	Complete

Project location

Site location	GREATER LONDON NEWHAM STRATFORD Lea Valley			
Postcode	E15			
Study area	160000 Square metres			
Site coordinates	NGR	-	TQ 538000	184300
	LL	-	50.9441914985	0.18952857791 (decimal)
	Point			
Height OD	Min: 2.25m Max: 2.80m			
Status	Incomplete			

Project creators

Name of Organisation	MoLAS-PCA
Project brief originator	ODA
Project design originator	Gary Brown
Project director/manager	Gary Brown
Project supervisor	Mike Bazley
Type of sponsor/funding body	Olympic Delivery Authority
Status	Incomplete

Project Archives

Physical Archive recipient	LAARC
Physical Contents	'AnimalBones','Ceramics','Environmental','Glass','Wood','Worked stone/lithics'
Digital Archive recipient	LAARC
Digital Contents	'Ceramics','Environmental','Glass','Stratigraphic','Survey'
Digital Media available	'Database','Spreadsheets','Text'
Paper Archive recipient	LAARC
Paper Contents	'Animal Bones','Ceramics','Environmental','Glass','Stratigraphic','Wood'

Paper Media available	'Context sheet','Drawing','Map','Matrices','Photograph','Plan','Section','Survey','Unpublished Text'
Status	Incomplete

Project bibliography 1

Title	OL-01507 Evaluation Report MoLAS/PCA
Author(s)/Editor(s)	Michael Bazley
Date	2008
Issuer or publisher	PCA MOLAS
Description	Unpublished site evaluation report

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 prehistoric pottery

Mike Seager Thomas

11.1.1 Trench PDZ 1.12

11.1.1.1 Introduction

Trench PDZ 1.12, yielded Bronze Age (MBA and LBA) and Iron Age (MIA and possible EIA) pottery. MBA pottery, represented in the assemblage by fine, medium and coarse, densely flint-tempered fabrics, comes from ten contexts. All dated *c* 1,500 –1150 BC.

The greater part of the assemblage is LBA. It comprises a typical later Post Deverel-Rimbury (hereafter PDR) plainware group (*c* 900 BC), and includes a wide range of the vessel types associated with these. A continuum of a dozen or more fine to coarse, mostly sparsely flint-tempered fabrics, and two sandy fabrics are distinguishable within it. One of the latter is problematic chronologically since it occurs both in PDR and Iron Age form. Where the form is unambiguous or the fabric is associated with an apparently closed PDR context assemblages these have separated out; otherwise they are grouped as LBA or MIA. It should be emphasised however that non-feature sherds in the fabric are indistinguishable and in some cases might have been wrongly assigned.

Iron Age pottery is recurrent, but in much smaller quantities. It is characterized primarily by assemblages containing a mixture of fine to coarse sandy and shelly fabrics. Most clearly diagnostic are a handful of sherds from saucepan pots and globular bowls, which can be dated to the MIA. One of these is in a distinct a decalcified calcareous (?oolitic) fabric, which may be an import. A fine sandy fabric, used for highly burnished S-shaped vessels, and a sandy glauconitic fabric, appear to be long-lived in the Thames Valley and could be of slightly later date. (Shelly fabrics, although widespread in PDR assemblages from elsewhere, do not occur in PDR form on site and are absent from all of the most secure PDR context groups).

The assemblages are in good condition and with one or two exceptions form chronologically coherent groups: it is reasonable to suppose therefore that they provide reliable dates for the features that yielded them.

Context	Comments/dating evidence FF=fine flint temper; FMF=fine to medium flint; MF=medium flint; MCF=medium to coarse flint; sandy=quartz sand rich fabric; shelly= shelly fabric etc. (PDR)= post Deverel-Rimbury fabric type; (DR)=Deverel-Rimbury fabric type; ND=not dated. NOTE: IT IS THE SPECIALISTS VIEW THAT MOST OF THE GROUPS HERE DATED LBA OR MIA ARE	Spot date

	IN FACT MIA	
35		PM
39		PM
74	FMF (PDR), friable sandy	LBA or MIA
75	MF	LBA
80	FMF (PDR)-thin fingered sherds, MF (PDR), shoulder of shouldered jar in sandy fabric	LBA or MIA
147		PM
147		PM
157	Daub	ND
159		PM
190		PM
200	Shelly fabric, FF (PDR), friable sandy fabric. Cf. 294	MIA
202	FMF (PDR)	LBA
207	Simple rounded rim of thin bodied vessel in sandy fabric	LBA or MIA
209	Friable sandy fabric, shelly fabric, PDR fabrics	MIA
211	FF (PDR)-thin burnished, FMF (PDR)-thin fingered, MF (PDR)-fingered	LBA
213	Sandy fabric, PDR fabrics	LBA or MIA
215	MCF (PDR)	LBA
217	Friable sandy fabric, possible PDR fabrics	LBA or MIA
220	Sandy MF, daub	ND
222	FMF (PDR)-thin, fingered body sherds, MF (PDR)	LBA
224	MF (PDR)	LBA
228	Too small	ND
230	FMF (PDR), shelly fabric	MIA
234	Shelly fabric, friable sandy fabric	MIA
259	MCF (PDR)	LBA
262	FF (PDR)-burnished shoulder, MCF (PDR)-fingered	LBA
265	Sandy glauconitic fabric	MIA
274	FF (PDR)-burnished angular shoulder of shouldered jar or large bowl, FMF (PDR)	LBA
275	FMF (PDR)-thin fingered	LBA
278	MCF (PDR)-fingered	LBA
294	Friable sandy fabric, MF (PDR), harder sandy-burnished. Cf. 200	MIA
300		PM
300	MCF (PDR)-pinched, heavily gritted base	LBA
303	MF (PDR)	LBA
304	Sandy-rim of S-shaped jar	MIA

Table 23: Trench PDZ1.12 prehistoric pottery spot dating index

11.2 The Post-Roman Pottery

Chris Jarrett

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

11.2.1 PDZ1.14

11.2.1.1 Introduction

There are a total of eighteen stratified sherds of post-Roman pottery from Trench PDZ1.14. These date from the 17th century onwards. The pottery is generally in good condition, but fragmentary and although vessel shapes can be defined there are no complete profiles present. Deposition of the material was in a secondary or tertiary context, but involved processes that did not cause abrasion. The pottery derives from six contexts.

11.2.1.2 Distribution

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
[35]	7	1800–1900+
[37]	1	1580–1900
[39]	5	1810–1900+
[45]	1	1580–1700
[49]	2	1820–1900/40
[51]	2	1800–1900+

Table 24 Trench PDZ1.14 pottery spot dating index

11.2.1.3 Significance, potential and recommendations

The significance of this pottery is at a local level and demonstrates what types of activity were taking place in the vicinity of the trench. The ceramic profile of the assemblage follows what is characteristic for the local area. The assemblage comprises 17th and 18th century pottery types such as red earthenwares, with a coarse type from London (PMR) and a finer version from Essex: (PMFR), and the one imported sherd consists of German Westerwald stoneware (WEST). The majority of the ceramics are 19th-century industrial finewares, Refined whiteware (REFW), its transfer-printed version (TPW), and hard paste English porcelain (ENPO HP). The principal potential of the pottery assemblage is as a dating tool for the contexts it is associated with. None of the vessels merit illustration or photographing. The pottery is mundane with no unusual fabrics or forms and therefore there are no recommendations for further work. For the purpose of publication a brief summary description of the assemblage will suffice.

11.2.2 PDZ1.20

11.2.2.1 Introduction

There is a single sherd of stratified post-Roman pottery recorded from PDZ1.20 dating from the 19th century onwards. The sherd is in a good condition (so it was deposited soon after breakage or was not subjected to too much disturbance), but its form is uncertain.

11.2.2.2 Distribution

Table 1 shows the distribution of the pottery in the context it was recovered from.

Context	Sherd count	Spot date
[190]	1	1820–1900/40

Table 25: Trench PDZ1.20 pottery spot dating index

11.2.2.3 Significance, potential and recommendations for further work

There is no significance to this pottery. The sherd of Yellow ware was marketed nationally over its period of production. Its main potential is as a dating tool for the context it was found in. There are no recommendations for further work.

11.2.3 PDZ1.21

11.2.3.1 Introduction

There are two sherds of post-Roman pottery (none unstratified) from Trench PDZ1.21 dating to the post-medieval period. The pottery is in a good condition, though fragmentary, although its vessel shape can be recognised. Deposition of the material is likely to have been rapid after breakage. The pottery comes from a single context.

11.2.3.2 Distribution

Table 1 shows the distribution of the pottery in the context it was recovered from, the number of sherds and a spot date for each deposit.

Context	Sherd count	Spot date
[159]	2	1580–1900+

Table 26: Trench PDZ1.21 pottery spot dating index

11.2.3.3 Significance, potential and recommendations for further work

There is no significance to the pottery, but it does demonstrate that horticultural activity was occurring in the vicinity. The two sherds are from a red earthenware flowerpot which were commonplace through out the country in the post-medieval period. The two sherds have some potential to date the context they were found in. There are no recommendations for further work.

11.2.4 PDZ1.22

11.2.4.1 Introduction

There are three sherds of post-Roman pottery (none unstratified) from PDZ1.22 dating to the post-medieval period. The pottery is in a good condition, though fragmentary. Its vessel shape can be recognised. Deposition is likely to have been rapid after breakage. The pottery derives from one context.

11.2.4.2 Distribution

Table 1 shows the distribution of the pottery in the context it was recovered from, the number of sherds and a spot date.

Context	Sherd count	Spot date
[147]	3	1800–1900+

Table 27: Trench PDZ1.14 pottery spot dating index

11.2.4.3 Significance, potential and recommendations for further work

There is no significance to the pottery, but it does demonstrate domestic and horticultural activity in the vicinity of the trench. The three sherds comprise sherds of refined white earthenware and a red earthenware flowerpot. These ceramics would have been ubiquitous nationally in the 19th century. The only potential for the pottery is to date the context it was found in. There are no recommendations for further work.

11.3 Clay tobacco pipe

Chris Jarrett

11.3.1 PDZ1.12 western extension

11.3.1.1 Introduction and distribution

One fragment of a clay tobacco pipe (stratified) was recovered. It consists of a single stem found in context [300] of the western extension of Trench 12 and dates to the 19th century. It is in a good condition and was therefore probably deposited soon after breakage.

11.3.1.2 Significance, potential and recommendations for further work

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

11.3.2 PDZ1.14

11.3.2.1 Introduction and distribution

A small assemblage of clay tobacco pipe (three stratified fragments) was recovered from PDZ1.14. The clay tobacco pipe only comprise stems from contexts [35] and

[39] and can be dated to 1580-1910, except for a probable 19th-century example found in deposit [35]. The material is in good condition and was therefore probably deposited soon after breakage.

11.3.2.2 Significance, potential and recommendations

The clay tobacco pipe stems have no significance, and their only potential is to date the context they were found in. There are no recommendations for further work.

11.3.3 PDZ1.20

11.3.3.1 Introduction and distribution

One fragment of clay tobacco pipe (stratified) was recovered from PDZ1.20. It consists of as a single thick stem, probably dated to c.1580-1740 and came from context [190]. The material is in a good condition and was therefore probably deposited soon after breakage.

11.3.3.2 Significance, potential and recommendations for further work

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

11.3.4 PDZ1.22

11.3.4.1 Introduction and distribution

A small assemblage of clay tobacco pipe (four stratified fragments) was recovered from PDZ1.22. The clay tobacco pipe comprises stems from context [147] and can be dated to 1580-1910. They are probably 19th century in date. The good condition of the material indicates that it was likely deposited soon after breakage.

11.3.4.2 Significance, potential and recommendations for further work

The clay tobacco pipe stems have no significance, and their only potential is to date the context they were found in. There are no recommendations for further work.

11.4 The Glass

Chris Jarrett

11.4.1 PDZ1.14

11.4.1.1 Introduction

A small sized assemblage of glass (nine fragments none unstratified) was recovered from PDZ1.14. It comprises fragmentary items, which are un - abraded and therefore probably discarded soon after breakage. The forms were difficult to define, except for that of a thick walled lead glass lid or wine glass base (from context [45] and window pane glass). All dates from the late 19th century onwards. There are also two fragments of cullet or glass slag.

11.4.1.2 Distribution

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

Context	Fragment count	Spot date
[37]	3	19th century/post-medieval
[39]	2	19th century/post-medieval
[45]	4	19th century/post-medieval

Table 28: Trench PDZ 1.14 glass spot dating index

11.4.1.3 Significance, potential and recommendations for further work

The glass is of little significance and probably represents domestic refuse except for the cullet/slag that may indicate a local industry or dumping on the site. The main potential of the glass is to date the contexts it was found in. There are no recommendations for further work.

12 Appendix 3: Context index

CONTEXT	TRENCH	COMMENTS	HIGHEST LEVEL m OD	LOWEST LEVEL m OD	SAMPLE NO.
	PDZ1.11				
1		CONCRETE SLAB	4.44		
2		MODERN MADE GROUND	4.0		
3		PRE MODERN SOIL LANDSURFACE	3.2		
4		OVERBANK FLOODING ALLUVIUM	3.0		
5		CLAY GRAVEL SUBSOIL	2.25		
6		FLOODPLAIN GRAVEL	2.0		
	PDZ1.17				
10		ORGANIC ALLUVIUM (SOIL HORIZON)	2.63		
11		ALLUVIUM	2.18		
12		ORGANCI ALLUVIUM	1.43		
13		SHELL RICH SANDY GRAVEL	0.93		<1>
14		ORGANIC SANDS AND GRAVELS	0.38		
	PDZ1.15				
31		ALLUVIAL LAYER	3.79	2.33	
32		PEATY SILT LAYER	2.09	1.87	<2>
33		GRAVELY LAYER	1.58	1.26	
	PDZ1.14				
34		PM (POST MED) CLAY LAYER	2.65	2.26	
35		PM FILL OF 36	2.34	2.34	
36		PM RUBBISH PIT CONTAINING 35	2.34	2.25	
37		PM PIT FILL	2.37	2.37	
38		PM PIT CUT	2.39	2.27	
39		PIT FILL	2.35	2.35	
40		PM PIT	2.35	2.16	
41		FILL OF 42	2.61	2.61	

42		NATURAL TREE BOWL	2.61	2.47	
43		FILL OF 44	2.54	2.54	
44		NATURAL TREE BOWL	2.54	2.43	
45		PM / MODERN FILL OF 46	2.3	2.3	
46		NATURAL PIT	2.3	2.13	
47		FILL OF 48	2.43	2.43	
48		NATURAL TREE BOWL	2.43	2.26	
49		FILL OF 50	2.34	2.23	
50		OVAL CUT	2.34	2.23	
51		FILL OF PIT 52	2.3	2.28	
52		PM PIT	2.29	2.17	
53		TIMBER STAKE	2.31	2.24	
54		ALLUVIAL LAYER	2.16	1.15	
55		PEATY SILT LAYER	1.8	0.35	9-10-11-12 13-14-15
56		NATURAL SAND AND GRAVEL LAYER	0.9	0.35	16
	PROOFING TR.				
57		MADE GROUND LAYER			
58		GREY ALLUVIUM			
59		DARK ALLUVIUM			
	PDZ1.12				
60		MODERN FILL IN 61	1.91	1.28	
61		MODERN CONCRETE FOUNDATION CUT	1.91	1.28	
62		MODERN FILL OF 63	2.06	2.06	
63		MODERN CONCRETE FOUNDATION CUT	20.6	2.06	
64		MODERN FILL OF 65	2.06	2.06	
65		MODERN TRUNCATION	2.06	1.99	
66	VOID				
67	VOID				
68		SMILAR TO 70. MODERN FILL OF 69.	3.41	2.44	
69		MODERN CUT	3.41	2.44	
70		MODERN FILL OF 70	3.64	3.32	

71		MODERN CUT - FOUNDATION DITCH	3.64	2.32	
72		FILL OF 73	3.64	2.05	
73		MODERN DRAINAGE CUT	3.64	2.05	
74		ARCHAEOLOGICALY RICH CLAY LAYER	2.49	2.49	18
75		FILL OF DITCH 79 (SLOT A)	2.05	1.51	
76		FILL OF DITCH 79 (SLOT B)	1.99	1.74	
77		FILL OF DITCH 79 (SLOT C)	2.02	1.8	20
78		FILL OF DITCH 79 (SLOT D)	1.76	2.02	17
79		IRON AGE DITCH CUT	2.16	1.51	
80		IRON AGE ALLUVIAL LAYER	2.35	2	19
81		HIGH NATURAL GRAVEL	2.09	2.07	25
82	VOID				
83		SANDY CLAY LAYER	2.81	2.75	24
84		FILL OF POST HOLE 85	2	2	
85		POST HOLE	2	1.83	
86		FILL OF 61	1.91	1.91	
87		MODERN TARMAC	3.36	3.35	
88		MODERN LAYER	3.29	3.27	
89		ALLUVIAL LAYER	2.86	2.82	
90		MODERN DUMP LAYER	3.38	3.35	
91		CUT OF MODERN WALL FOUNDATION	3.64	3.57	
92		MODERN WALL			
93		MODERN CONCRETE	3.01	2.92	
94		MODERN DUMP	3.63	3.54	
95		MODERN INTERNAL WALL			
96		MODERN FOUNDATION	3.05	3	
97		MODERN DEBRIS LAYER	2.97	2.86	
98		CONCRETE FLOOR SURFACE	3.57	3.51	
99		TARMAC LAYER	3.47	3.43	

100		PM PIPE CUT	3.14	2.66	
101		FILL IN 100	3.33	3.29	
102		CERAMIC PIPE IN 100	2.87	2.66	
103		PIPE CUT	3.47	3.06	
104		FILL OF 103	3.47	3.46	
105		CERAMIC PIPE IN 103	3.37	3.17	
106		CUT FOR PIPE 108	3.42	3.21	
107		FILL OF 106	3.42	3.41	
108		CERAMIC PIPE	3.37	3.27	
109		MODERN TARMAC LAYER	3.44	3.4	
110		MODERN DUMP LAYER	3.31	3.26	
111		MODERN DUMP LAYER	3.17	3.13	
112		MODERN TARMAC LAYER	3.46	3.42	
	PROOFING TR.				
113		CONCRETE	3.7	3.7	
114		MODERN MADE GROUND	3.4	3.68	
115		ALLUVIUM	1.5	Base of trench	
116		FILL OF 122	2.52	2.52	
117		CONCRETE RETAINING WALL	0.7	0.7	
118		WOODEN PILINGS	0.7	0.70 Base of trench	
119		BRICK FOUNDATION	3.45	3.45	
120	**PDZ1.12**	OVERALL FILL NO. FOR IRON AGE DITCH 79			
121	**PROOFING TR.**	CUT FOR MODERN FOUNDATIONS			
122		CUT FOR 122			
123		CUT FOR RETAINING WALL			
124	**PDZ1.13**	FILL OF PIT 125	2.13	2.13	
125		CLEAN CUT	2.13	1.99	
126		FILL OF PM BRICK WELL	2.29	N.F.E	
127		BRICK LINING FOR WELL	2.29	1.28	
128		TIMBER LINING FOR	2.29	1.28	

		WELL			
129		CUT FOR WELL	2.29	1.98	
130		MODERN FILL OF 132	2.21	2.19	
133		ALLUVIAL LAYER	2.25	2.24	
134		PEATY SILT LAYER	1.04	0.86	26
135		NATURAL SILTY SAND LAYER	0.86	0.76	
136		NATURAL SANDS AND GRAVELS	0.76	0.76	
137		MODERN DUMP LAYER	3.39	1.74	
138		SILTY SAND AND CONCRETE LAYER	3.74	2.61	
	PDZ1.22				
139		ORGANIC SILTY CLAY LAYER	1.63	1.62	27-30-32-33-35
140		VOID			
141		ALLUVIAL LAYER	2.06	1.97	29
142		MODERN DEMO LAYER	3.13	2.7	
143		CONCRETE SEALING PIPE.	2.97	2.89	
144		MODERN PLASTIC PIPE	2.82	2.79	
145		MODERN BUILD UP LAYER	3.03	2.61	
146		MODERN BUILD UP LAYER	2.99	2.59	
147		MODERN LAYER	2.79	2.55	
148		NATURAL ALLUVIAL DEPOSIT	2.52	2.49	
149		MORE NATURAL ALLUVIUM	2.59	2.26	
150		FILL OF PIPE CUT 151	2.83	2.7	
151		CUT OR MODERN PIPE	2.83	2.49	
152		HIGH GRAVELS	2.11	2.11	28
153		FILL IN NATURAL CHANNEL 154	1.59	1.42	30-31-33-34
154		LINEAR CUT IN GRAVEL (NATURAL)	1.9	1.62	
	PDZ1.21				
155		MODERN MADE GROUND	6.4	6.4	
156		ALLUVIAL LAYER	4. 1	4.1	
157		ORGANICY CLAY	2.36	2.32	42

		LAYER			
158		SAND LAYER	2.05	1.97	42
159		ROMAN SILTY CLAY LAYER	1.73	1.55	39-42
160		THIN ORGANIC LAYER	1.4	1.27	40-42
161		NATURAL GRAVEL LAYER	1.32	1.22	41-42
	PDZ1.10				
162		MODERN RUBBLE LAYER	3.2	2.2	44
163		BROWN ALLUVIUM	2.26	2.12	43-44
164		BLUE GREY ALLUVIUM	2.2	1.75	43-44-47-45
165		BROWN ALLUVIUM	1.87	1.41	43-48
166		GREY BROWN ALLUVIUM	1.55	1.01	43-53-49
167		NATURAL GRAVEL LAYER	0.94	0.52	50-55-56-57-43
168		alluvial deposit	1.67	0.93	51-43
169		GREENY GREY ALLUVIUM	1.41	0.87	43-52-54-58
170		MODERN PILE PIT CUT	2.37	1.85	
171		FILL OF PIT CUT 170	2.37	2.37	
172		MODERN CUT	2.35	1.21	
173		FILL OF 172	2.35	2.35	
174		MODERN CUT	2.27	1.14	
175		FILL OF 174	2.27	2.27	
176		MODERN CUT	2.25	1,57	
177		SMALL MODERN 20THc CONCRETE BASE	2.25	1.57	
	PDZ1.16				
178		MODERN MADE GROUND LAYER	4.86	4.71	
179		MODERN MADE GROUND LAYER	4.56	4.51	
180		REDEPOSITED SOIL LAYER	4.19	4	
181		DARK MADE GROUND LAYER	3.23	2.77	
182		ALLUVIAL DEPOSIT LAYER	2.84	2.3	59-60
183		FILL OF MODERN DITCH 184	2.3	2.3	
184		MODERN DITCH	2.3	1.92	

185		ALLUVIAL LAYER	2.7	2.3	
186		MIXED ALLUVIUM / GRAVEL LAYER	2.3	2.15	
187		BLUE GREEN ALLUVIAL LAYER	2.21	2.07	59-61
188		ALLUVIAL DEPOSIT LAYER	2.15	1.93	
189		NATURAL GRAVEL LAYER	1.86	1.86	62
	PDZ1.20				
190		PM BACKFILL OF DITCH 191	2.57	2.57	
191		PM LINEAR DITCH	2.57	2.4	
192		CONCRETE SURFACE	4.34	4.06	
193		PM MADE GROUND	3.92	3.67	
194		PM MADE GROUND	3.45	3.33	
195		TRANSITION LAYER	2.86	2.7	
196		BLUEY GREY ALLUVIAL LAYER	2.7	2.52	64
197		GREENY BROWN ALLUVIAL LAYER	2.37	2.29	63
198		SANDY CLAY LAYER	2.13	2	
199		NATURAL GRAVEL	1.8	1.76	
	PDZ1.12				
	SOUTH EXT.				
200		FILL OF IRON AGE DITCH 201	2.1	2.09	
201		NARROW IRON AGE DITCH	2.1	1.98	
202		REDEPOSITED ALLUVIUM FILL OF 203	2.17	2.05	
203		CUT OF MODERN DITCH	2.17	1.93	
204		ORANGE BROWN ALLUVIUM	2.21	2.21	
205		BLUE/GREY ALLUVIUM + MOTTLED ORANGE	2.17	2.14	
206		BLUEY GREY ALLUVIUM	2.17	1.95	
207		FILL OF CURVILINEAR IRON AGE DITCH 208			

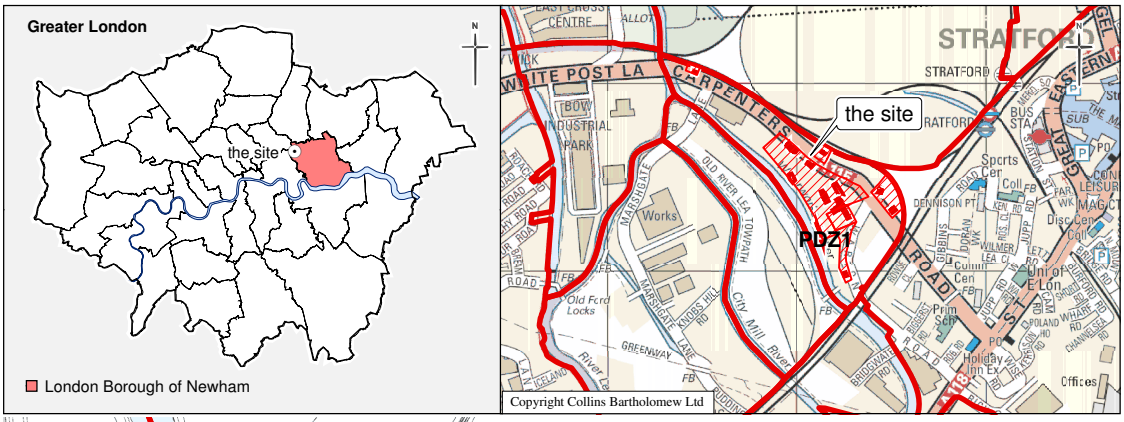
208		CURVILNEAR DITCH CUT			
209		FILL OF PIT 210	2.17	2.17	
210		IRON AGE PIT CUT	2.17	2.19	
211		FILL OF PIT 212			
212		IRON AGE AGE PIT CUT			
213		FILL OF PIT 214	2.15	2.15	
214		IRON AGE PIT	2.15	2.05	
215		FILL OF PIT 216	2.03	1.98	
216		IRON AGE DITCH CUT	2.03	1.75	
217		SECONDARY FILL OF DITCH 219	2.14	1.95	
218		PRIMARY FILL OF DITCH 219	1.71	1.71	
219		LINEAR IRON AGE DITCH	2.14	1.71	
220		FILL OF DITCH 221	2.09	2.09	
221		IRON AGE CURVILINEAR DITCH	2.09	1.91	
222		FILL OF PIT 223	2.17	2.02	
223		IRON AGE PIT	2.17	2.02	
224		FILL OF POST HOLE 223	2.07	2.07	
225		CUT OF POST HOLE	2.07	1.92	
226		FILL OF POST HOLE 227	2.15	2.14	
227		POST HOLE	2.15	1.98	
228		FILL OF POST HOLE 229	2.02	2.02	
229		CUT OF POSTHOLE (TRUNC TO WEST)	2.02	1.93	
230		FILL OF POST HOLE 230	2.14	2.14	
231		PROBABLE IRON AGE POST HOLE	2.14	2.02	
232		FILL OF POST HOLE 233	2.17	2.17	
233		POST HOLE	2.17	1.91	
234		FILL OF POST HOLE 235	2.2	2.2	
235		CUT OF IRON AGE POST HOLE	2.2	2	
236		FILL IN MODERN CUT 237	3.24	3.21	

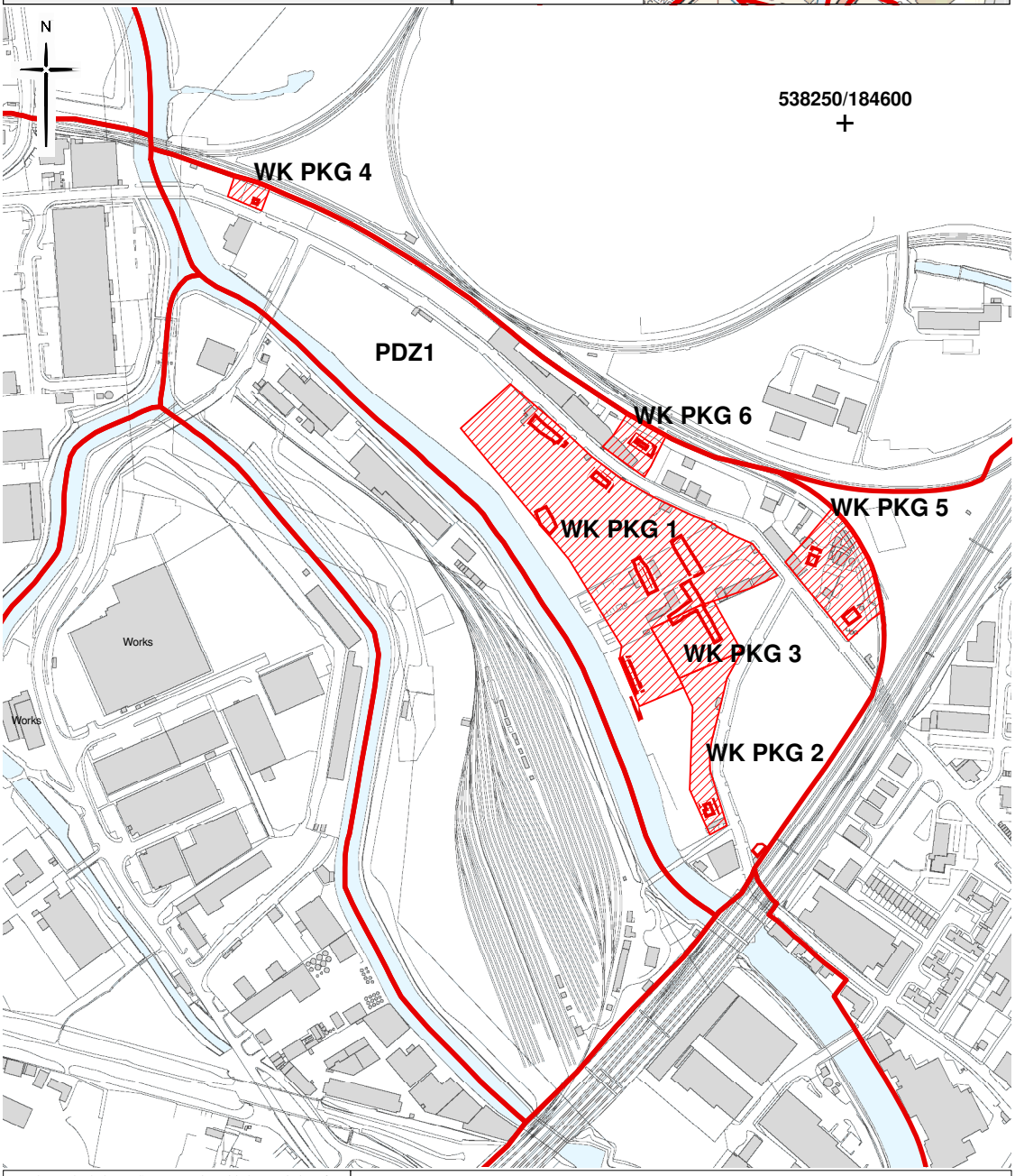
237		MODERN CUT	3.24	2.72	
238		MADE GROUND LAYER	3.19	3.16	
239		FILL OF MODERN PIPE	2.76	2.64	
240		MODERN PIPE CUT	2.7	2.22	
241		FILL OF 242	2.69	2.66	
242		MODERN CUT	2.69	1.98	
243		FILL OF 244	2.62	2.12	
244		MODERN CUT	2.62	2.53	
245		FILL OF 246	2.6	2.58	
246		MODERN CUT	2.6	1.95	
247		FILL OF 248	2.55	2.49	
248		MODERN CUT	2.55	1.93	
249		REDEPOSITED ALLUVIUM	2.73	2.69	
250		BLUE GREEN ALLUVIAL LAYER	2.6	2.55	
251		MODERN DISTURBANCE LAYER	2.38	2.35	
252		BLUE GREEN ALLUVIAL LAYER	2.2	2.19	
253		BLUEY GREY ALLUVIAL DEPOST	2.06	2.05	
254		GRAVEL DEPOSIT	2.52	2.39	
255		ALLUVIAL LAYER	2.24	2.14	
256		1 0F 3 FILLS OF CUT 257	1.86	1.86	
257		IRON AGE DITCH CUT	1.86	1.34	
258		BLUE GREY ORGANIC ALLUVIUM	2.5	2.39	
259		GRAVEL LAYER (SURFACE?)	2.39	2.19	
	PDZ1.12				
	WESTERN EXT.				
260		GREY GREEN ALLUVIUM	2.23	2,08	
261		FILL OF 262	2.18	2.13	
262		IRON AGE POS POST HOLE	2.18	1.96	
263		FILL OF 264	2.09	2.09	
264		POS POST HOLE	2.13	1.94	
265		FILL OF 266	2.2	1.98	

266		IRON AGE POS POST HOLE	2.2	1.98	
267		FILL OF 268	2.12	2.12	
268		POS POST HOLE CUT	2.12	1.93	
269		FILL OF 270	2.07	2.07	
270		CUT OF POS POST HOLE	2.07	1.98	
271		FILL OF POSTHOLE 272	2.07	2.07	
272		POS POST HOLE CUT	2.08	1.93	
273		FILL OF POSTHOLE 2.10	2.11	2.1	
274		IRON AGE POST HOLE CUT	2.11	1.9	
275		FILL OF 276	2.13	2.13	
276		IRON AGE POS POST HOLE	2.13	1.98	
277		FILL OF 278	2.08	2.08	
278		POS POST HOLE CUT	2.08	1.89	
279		FILL OF 280	2.09	2.07	
280		POSTHOLE CUT. Within a group - see sheet	2.09	1.94	
281		FILL 282	2.09	2.09	
282		CUT OF POST HOLE	2.09	1.93	
283		FILL OF CUT 284	2.08	2.06	
284		SMALL POST HOLE CUT	2.08	1.92	
285		FILL OF 286	2.11	2.11	
286		POS POST HOLE CUT	2.11	1.94	
287		FILL OF PIT 288	2.21	2.21	
288		CUT OF IRON AGE PIT	2.21	2.02	
289		FILL OF 290	2.13	2.13	
290		IRON AGE STAKE HOLE	2.13	2.03	
291		PIT FILL FOR 292	2.11	2.09	
292		PIT CUT	2.11	1.93	
293		2 OF 3 FILLS OF DITCH 257	1.46	1.44	
294		(BOTTOM FILL) 3 OF 3 FILLS OF DITCH 257	1.44	1.34	
295		PEATY SILT LAYER	1.34	1.34	
296		FILL OF 297	2.19	2.19	
297		POS POST HOLE CUT	2.19	2	

298		FILL OF 299	2.19	2.19	
299		IRONS AGE POS POST HOLE	2.19	2	
300		FILL OF PIT 301	2.1	2.1	
301		IRON AGE PIT CUT	2.1	1.98	
302		FILL OF 303	2.19	2.19	
303		IRON AGE POST HOLE CUT	2.19	1.96	
304		FILL OF 305	2.18	2.18	
305		IRON AGE PIT/ POST HOLE CUT	2.18	1.92	
306		PEATY SILTY	2.07	1.76	65-66-67-68
307		A SILTY CLAY LAYER	1.55	1.43	
308		GRAVELY ALLUVIUM	2.02	2.01	
309		MODERN MADE GROUND	3.24	2.76	
	PDZ1.01				
310		MODERN MADE GROUND	6.75	4.53	
311		MODERN INDUSRTIAL WASTE LAYER	4.63	3.59	
312		MODERN DUMP LAYER	3.61	2.67	
313		GREY BROWN ALLUVIUM	3.21	2.27	
314		MID GREYISH BROWN ALLUVIUM	2.31	2.22	
	PDZ1.23				
3000		Tiled Floor Surface			
3001		Concrete Floor Base			
3002		Hardcore for Concrete [3001]			
3003		Dump Material			
3004		Demolition Material			
3005		Concrete			
3006		Clay			
3007		Dump Material			
3008		Redeposited Clay			
3009		Made Ground			
3010		Redeposited Alluivium			
3011		Alluvium			
3012		Made Ground			

3013		Redeposited Clay			
3014		Fill of [3023]			
3015		Fill of [3023]			
3016		Fill of [3023]			
3017		Demolition Material			
3018		Dump Material			
3019		Sand and Gravel Lenses			
3020		Sand			
3021		Sandy-Gravels			
3022		Gravels			
3023		Cut Containing Concrete - of Uncertain Function			
3024		Basement Backfill			
3025		Basement Backfill			
3026		Basement Backfill			
3027		Wall of Basement			
3028		Wall of Basement			
3029		Building Rubble			
3030		Cut of Uncertain Function			
3031		Fill of [3032]			
3032		Drain Pipe Trench			
3033		Redeposited Clay			
3034		Wall			





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Scale @ A4

Fig 1 Site location

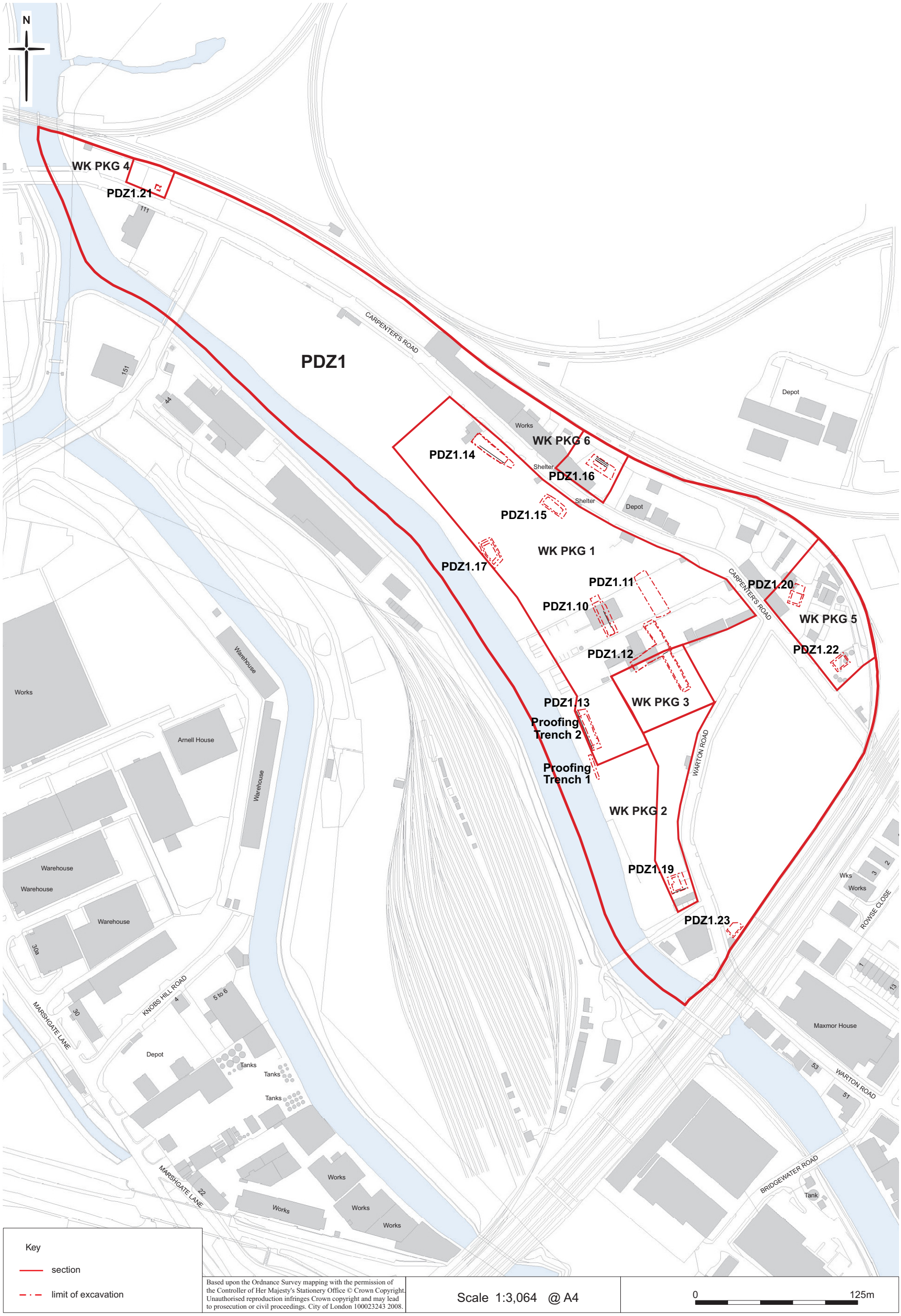


Fig 2 Trench locations

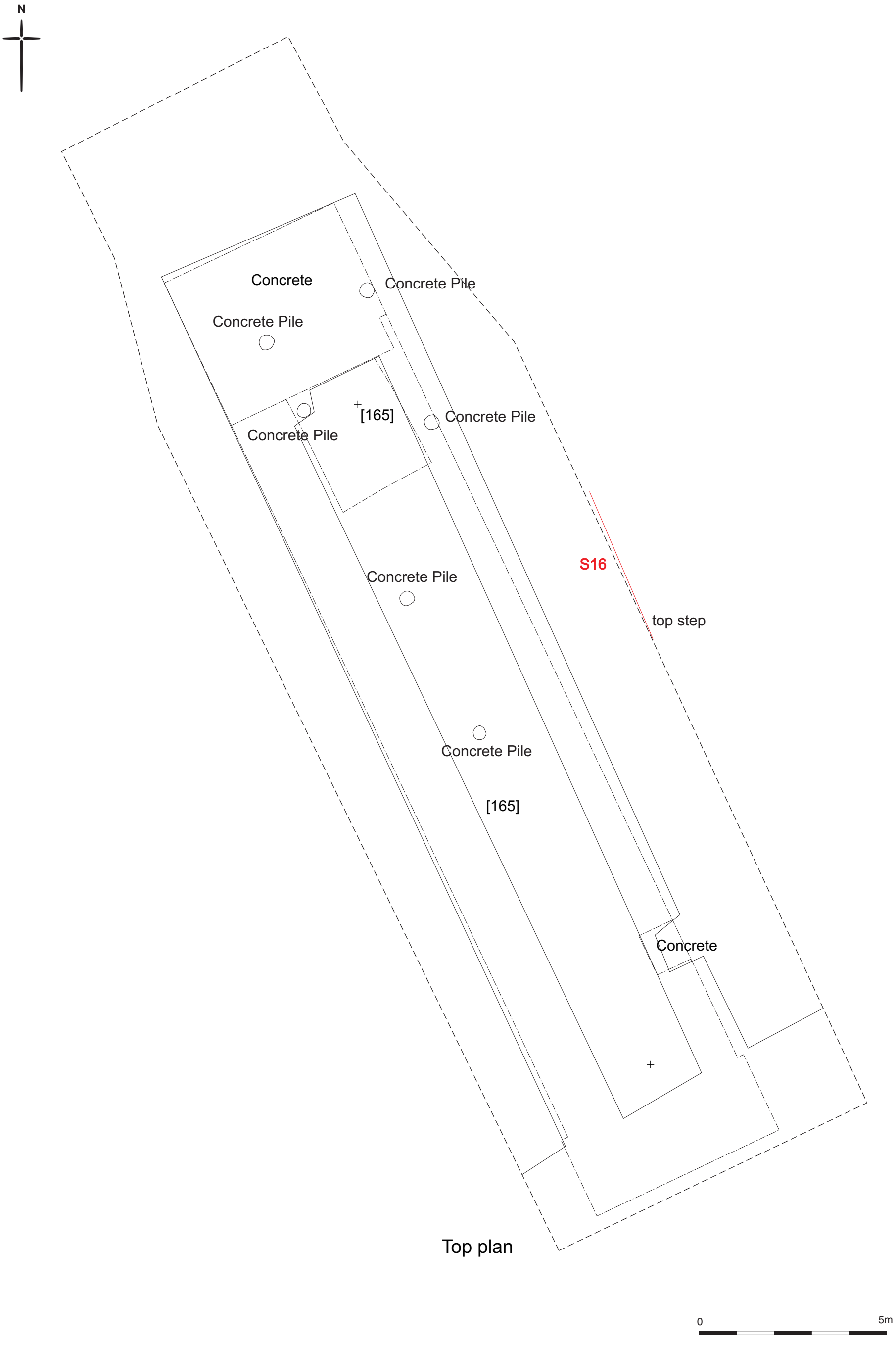


Fig 3 Plan of Trench PDZ1.10

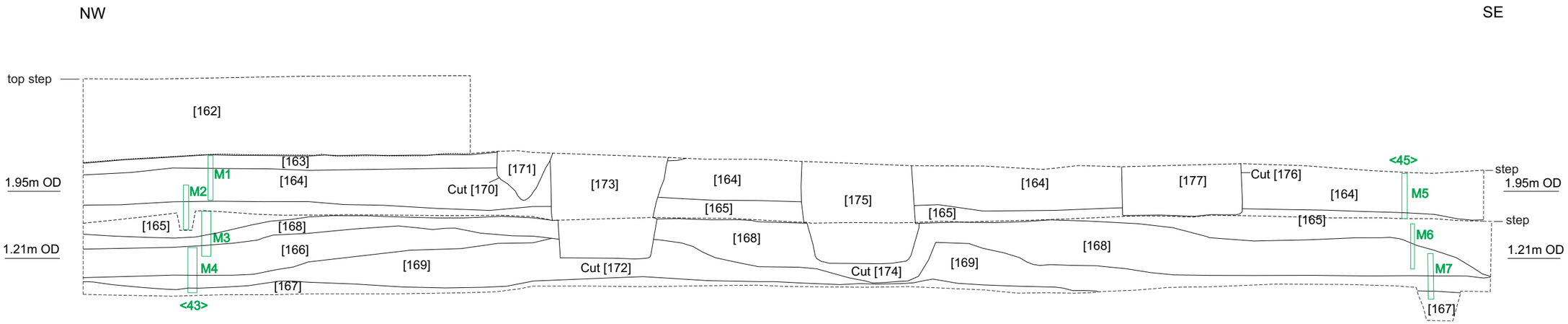


Fig 4 South-west facing section 16 of Trench PDZ1.10

Fig 5 Composite plan of Trenches PDZ1.12; PDZ1.12 South and 1.12 West

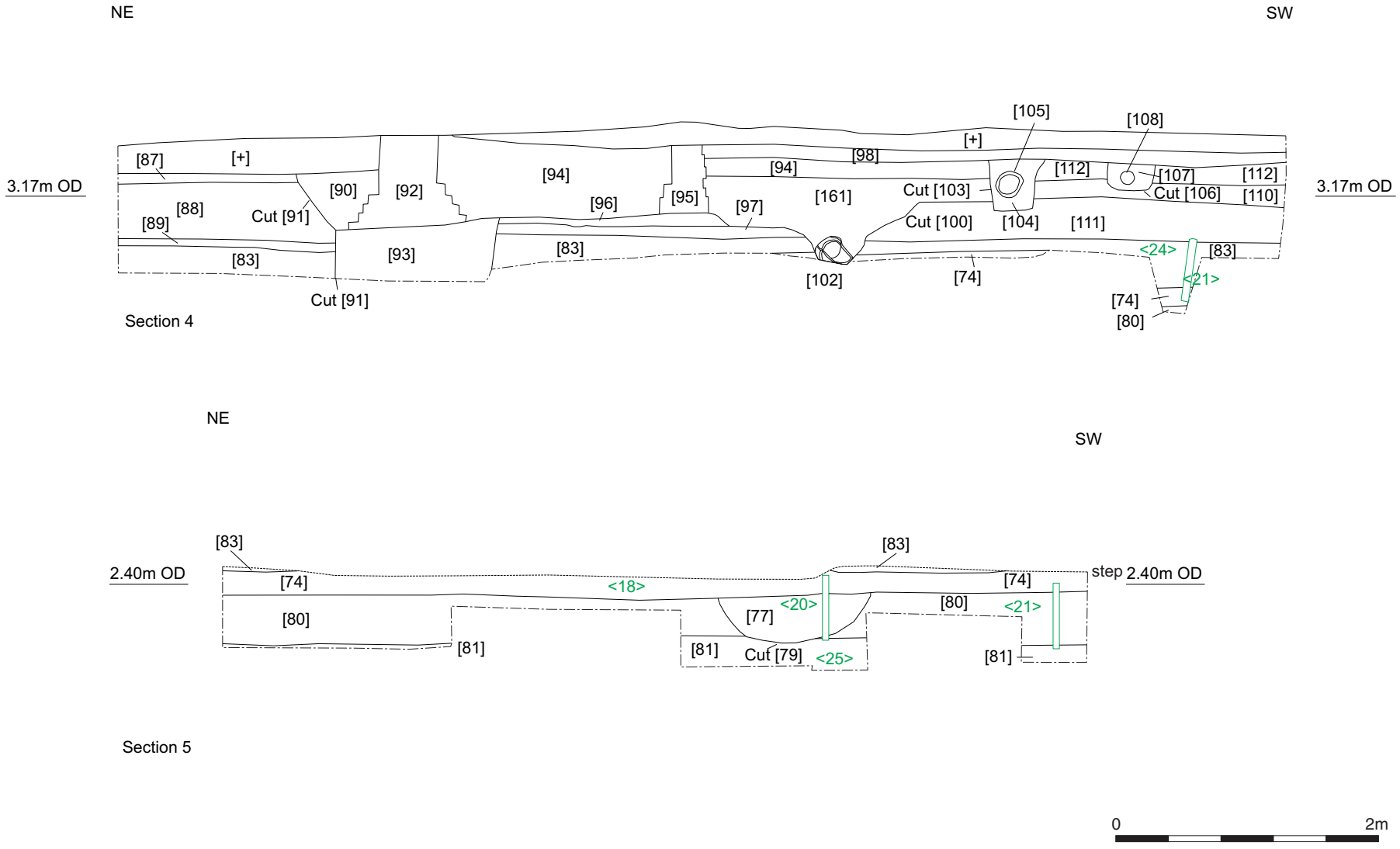


Fig 6 North-west facing sections 4 and 5 of Trench PDZ1.12

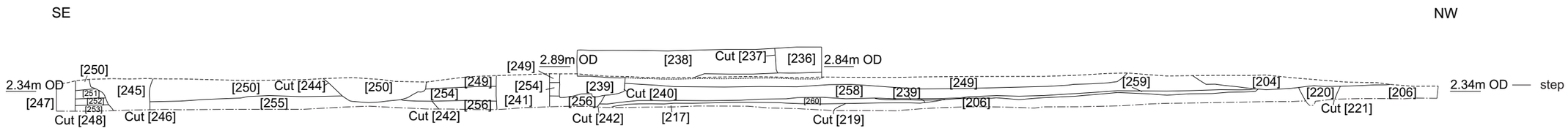


Fig 7 North-east facing section 19 of Trench PDZ1.12 South

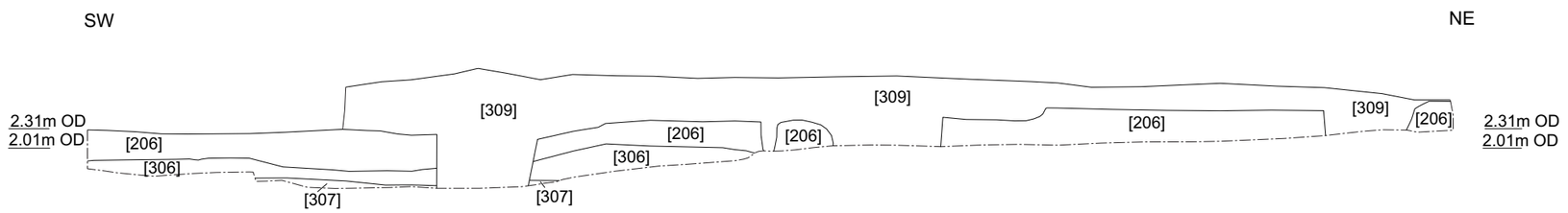


Fig 8 South-east facing section 20 of Trench PDZ1.12 West

0 4m

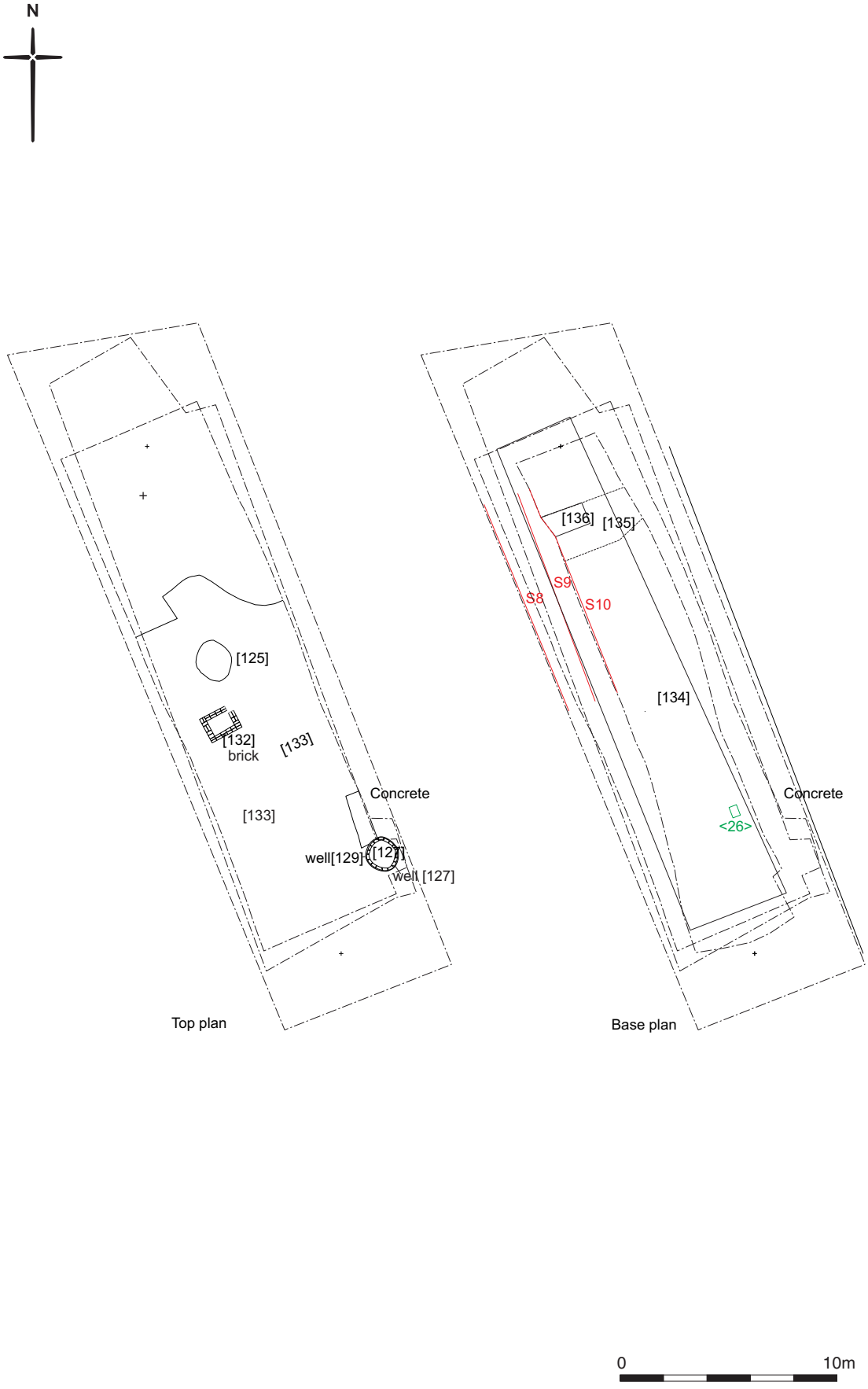
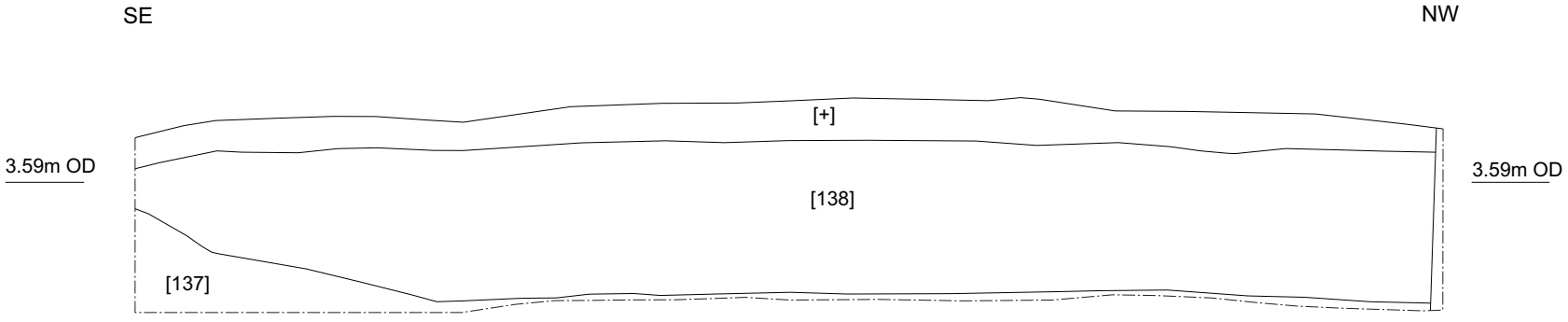
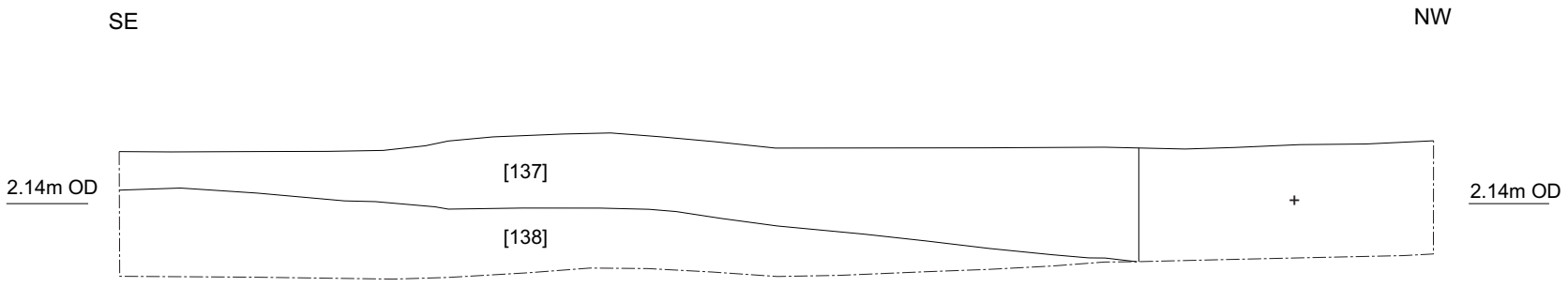


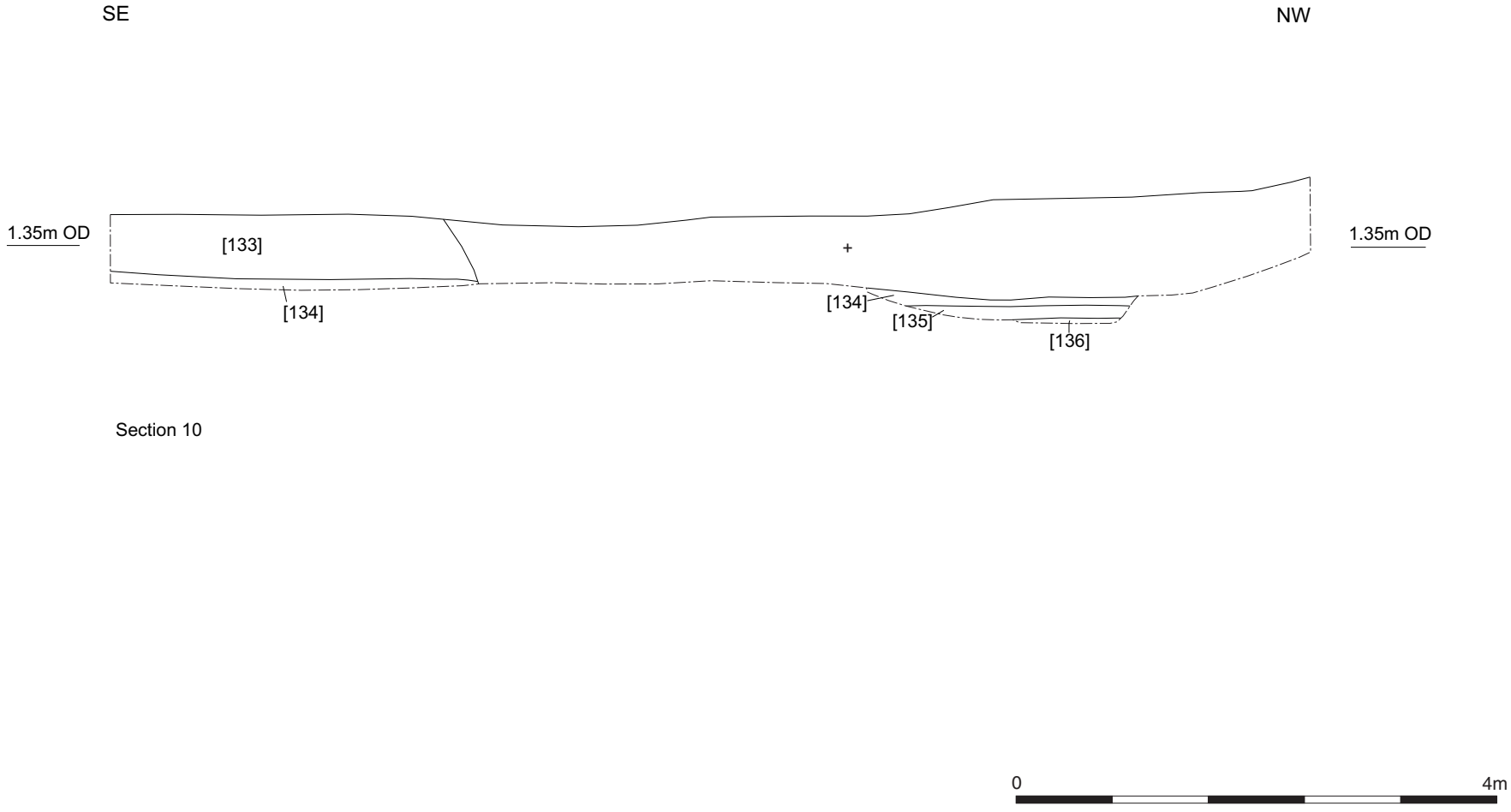
Fig 9 Top and base plan of Trench PDZ1.13



Section 8



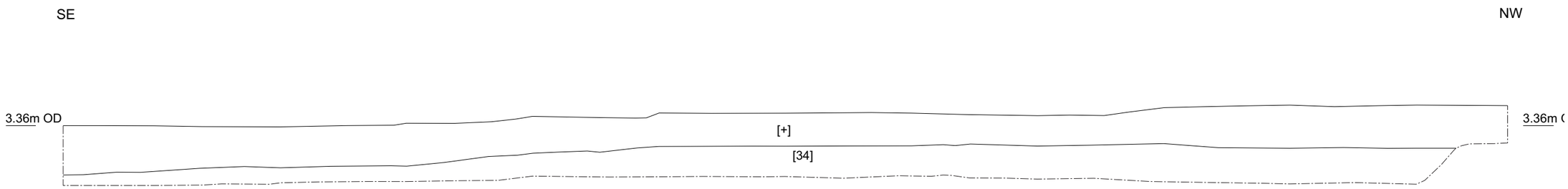
Section 9



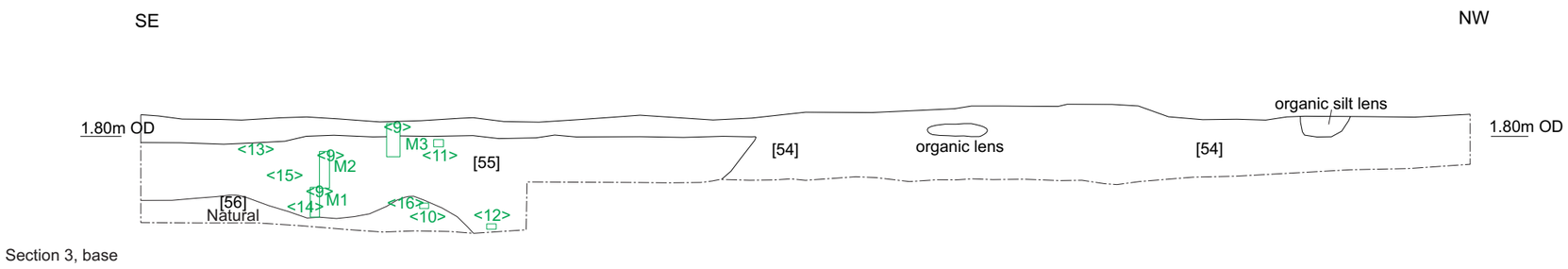
Section 10

Fig 10 North-east facing sections 8, 9 and 10 of Trench PDZ1.13

Fig 11 Top, intermediate and base plans of Trench PDZ1.14



Section 2, top



Section 3, base

0 4m

Fig 12 North-east facing top and base sections 2 and 3 of Trench PDZ1.14

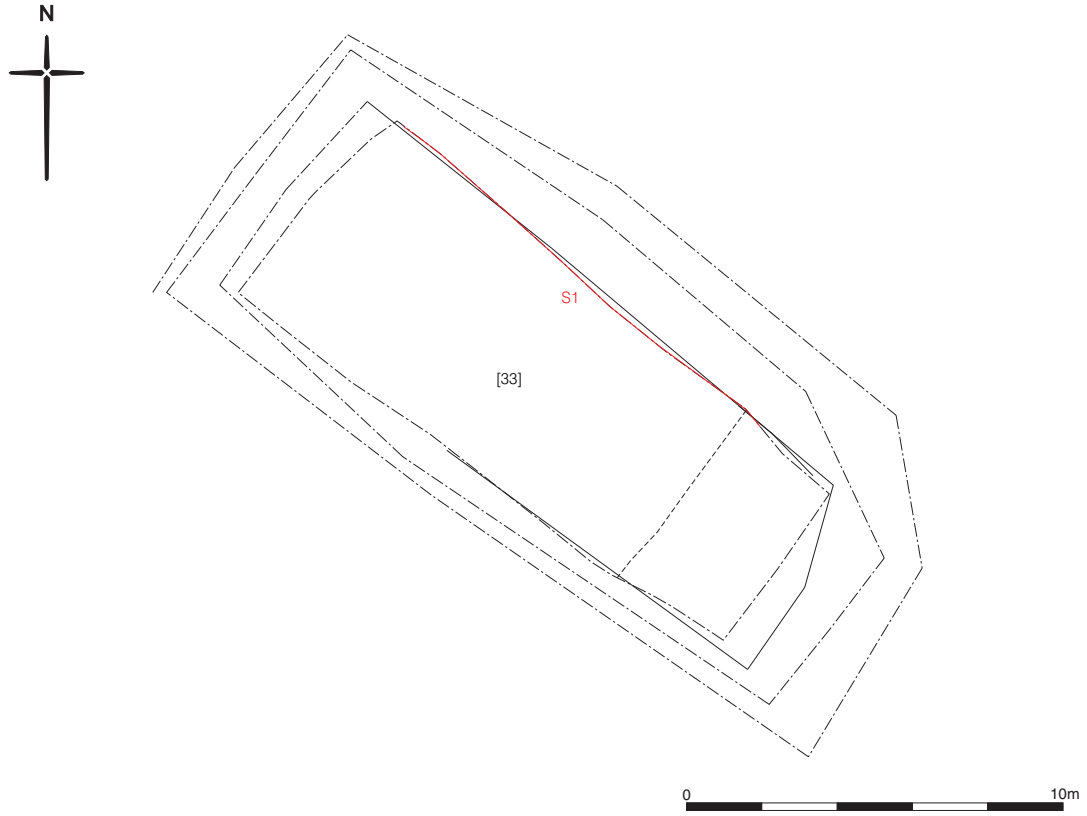


Fig 13 Plan of Trench PDZ1.15

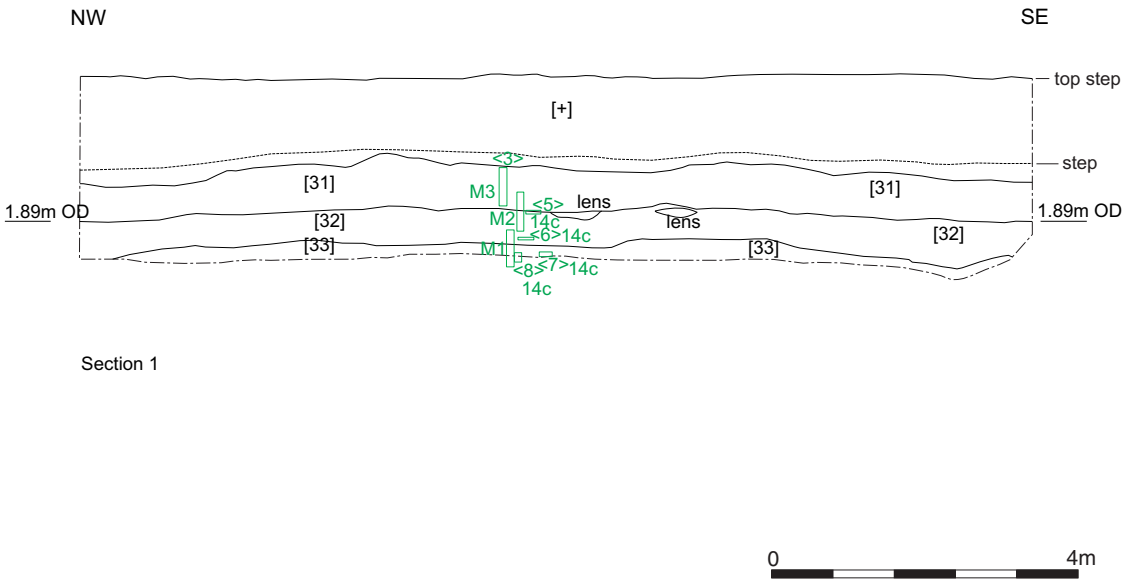


Fig 14 South-west facing section 1 of Trench PDZ1.15

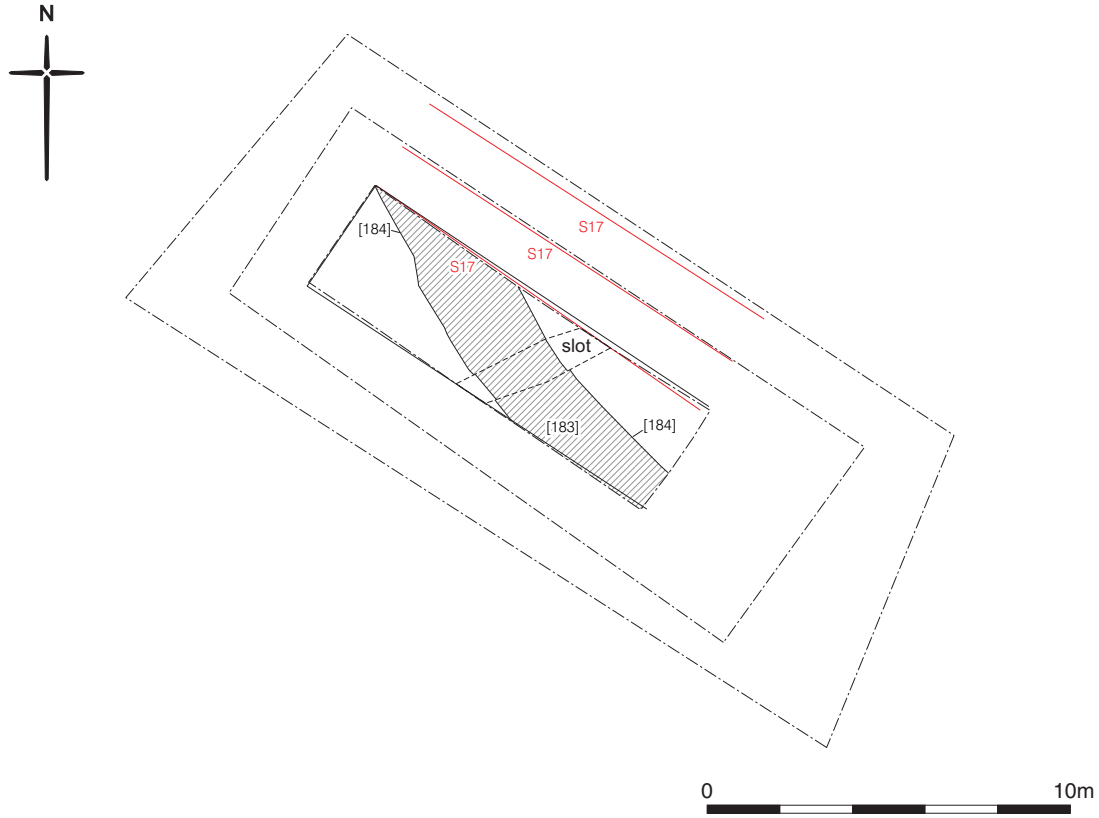


Fig 15 Plan of Trench PDZ1.16

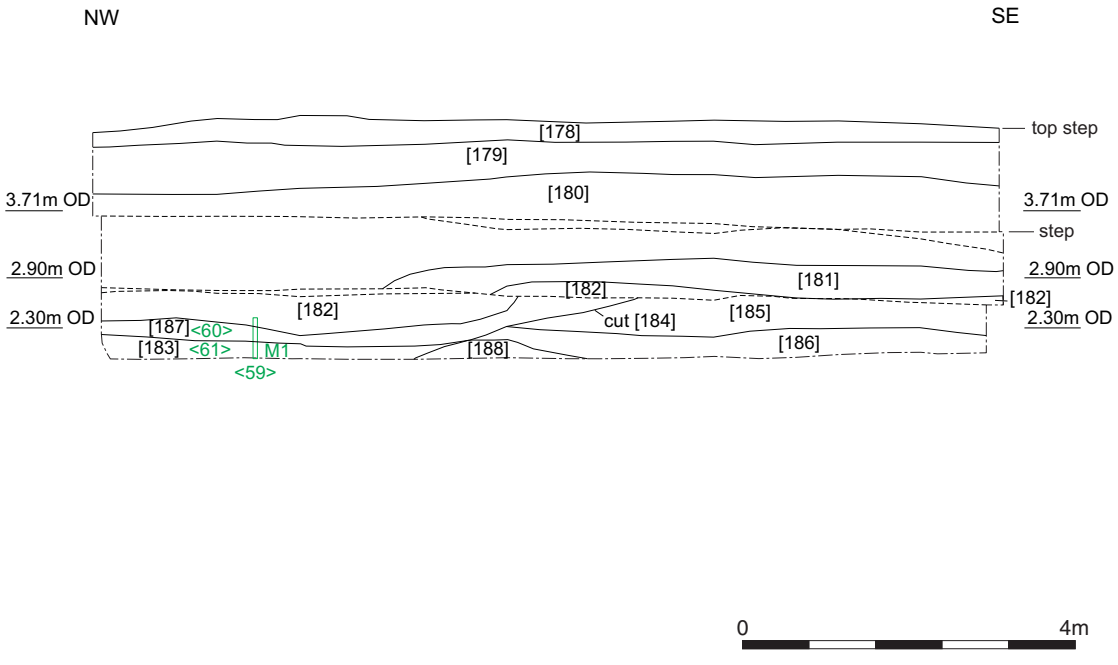


Fig 16 South-west facing section 17 of Trench PDZ1.16

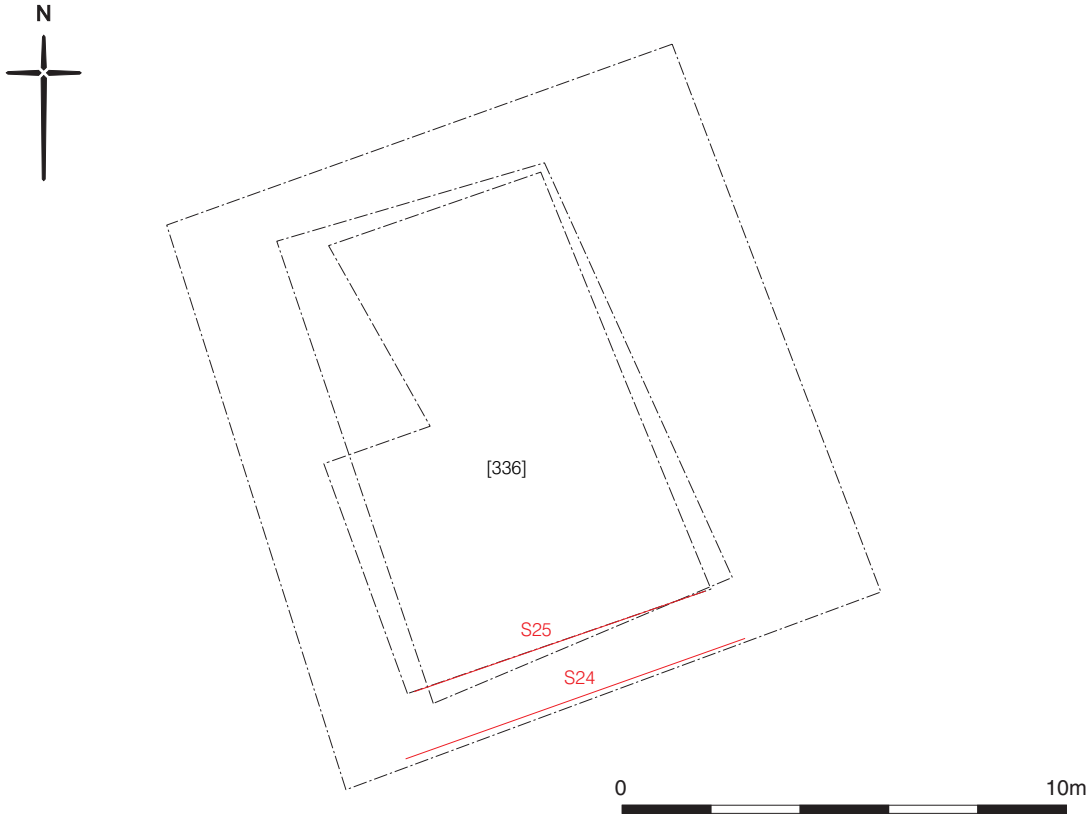


Fig 17 Plan of Trench PDZ1.19

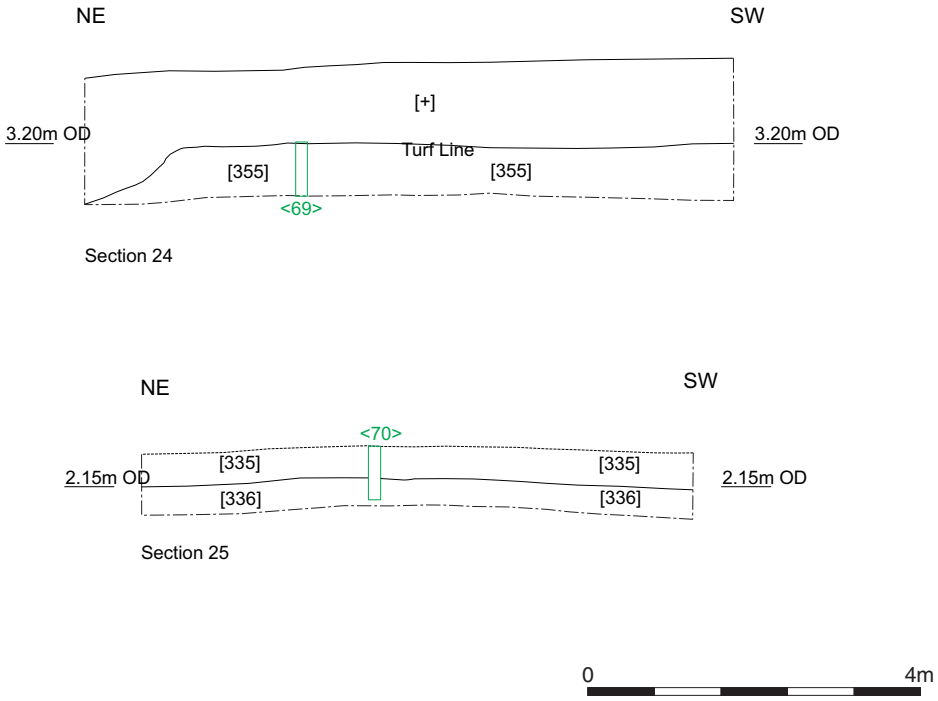


Fig 18 North-west facing sections 24 and 25 of Trench PDZ1.19

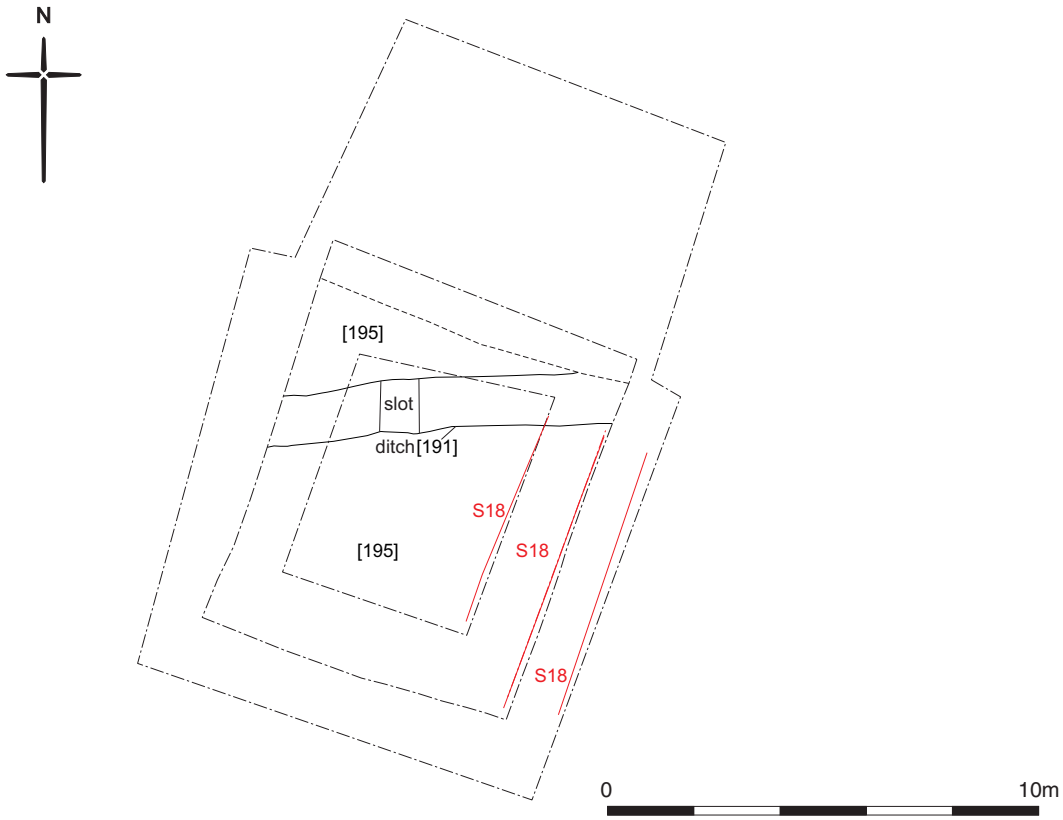


Fig 19 Plan of Trench PDZ1.20

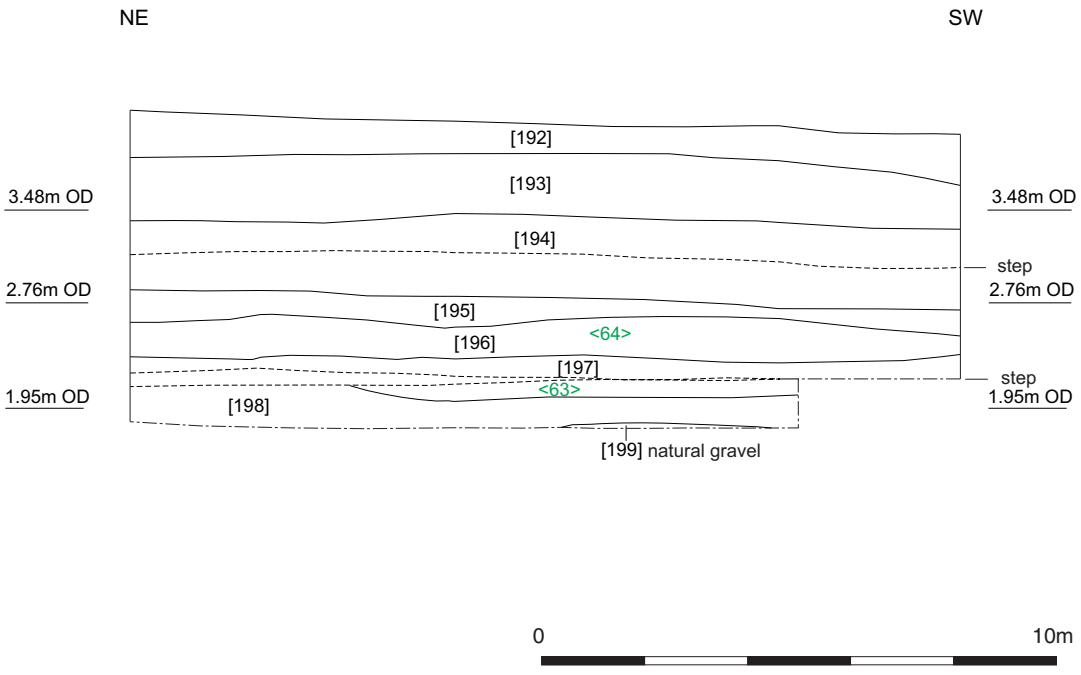


Fig 20 North-west facing section 18 of Trench PDZ1.20

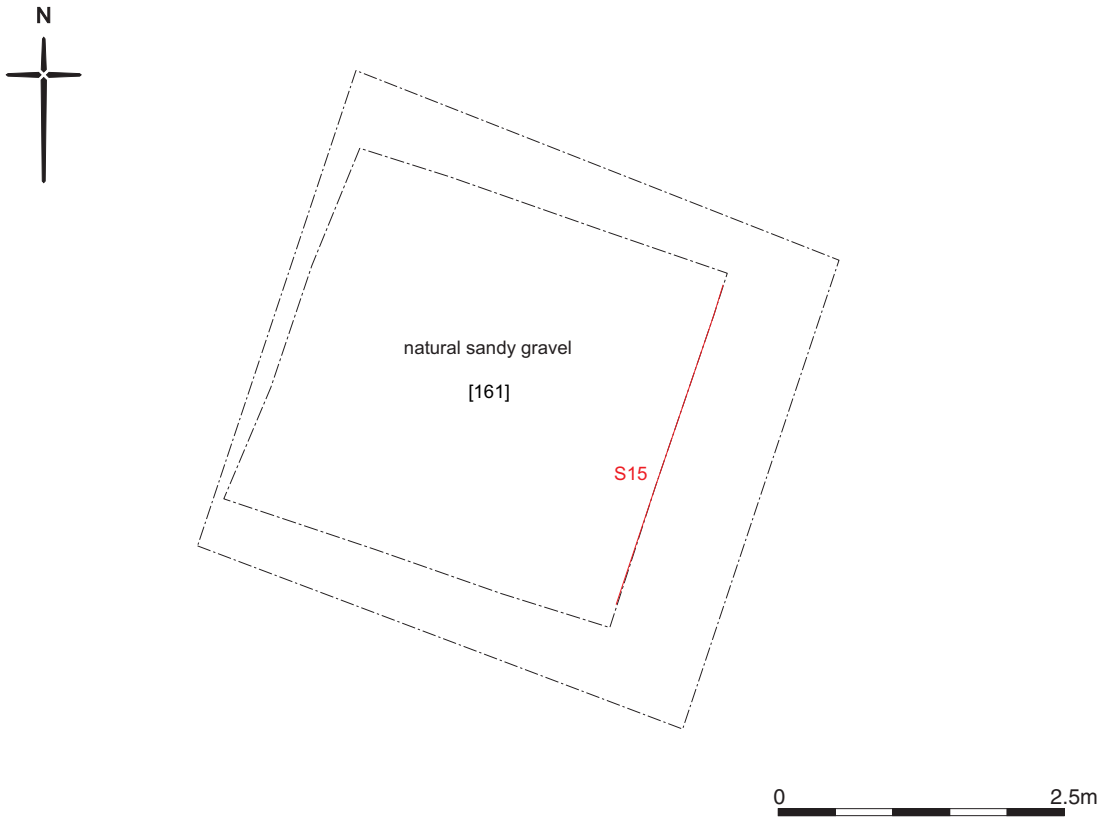


Fig 21 Plan of Trench PDZ1.21

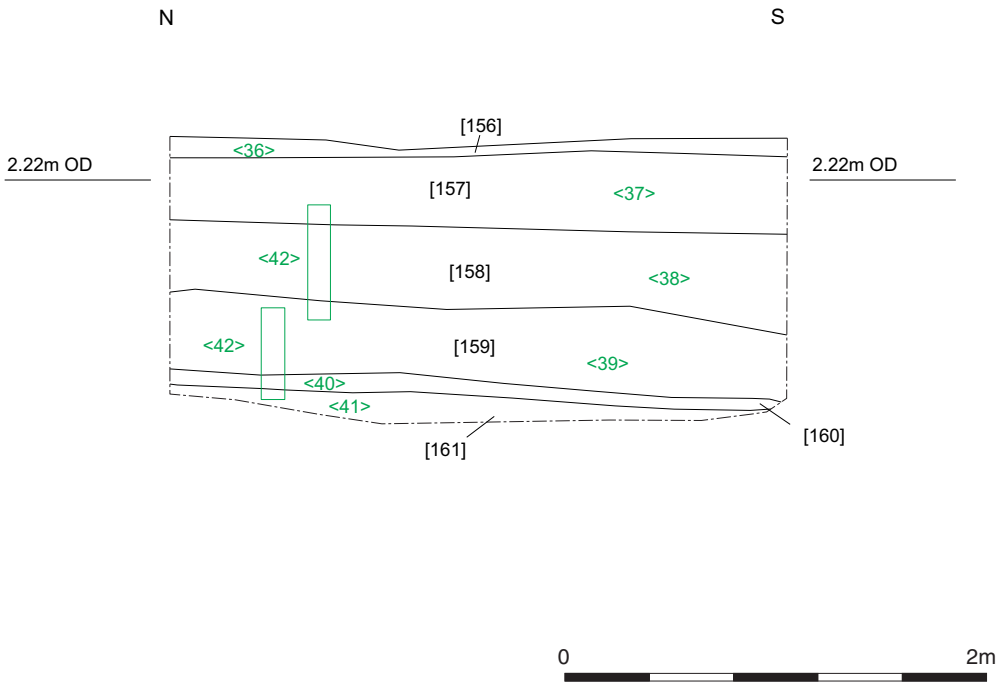


Fig 22 North-facing section 15 of Trench PDZ1.21

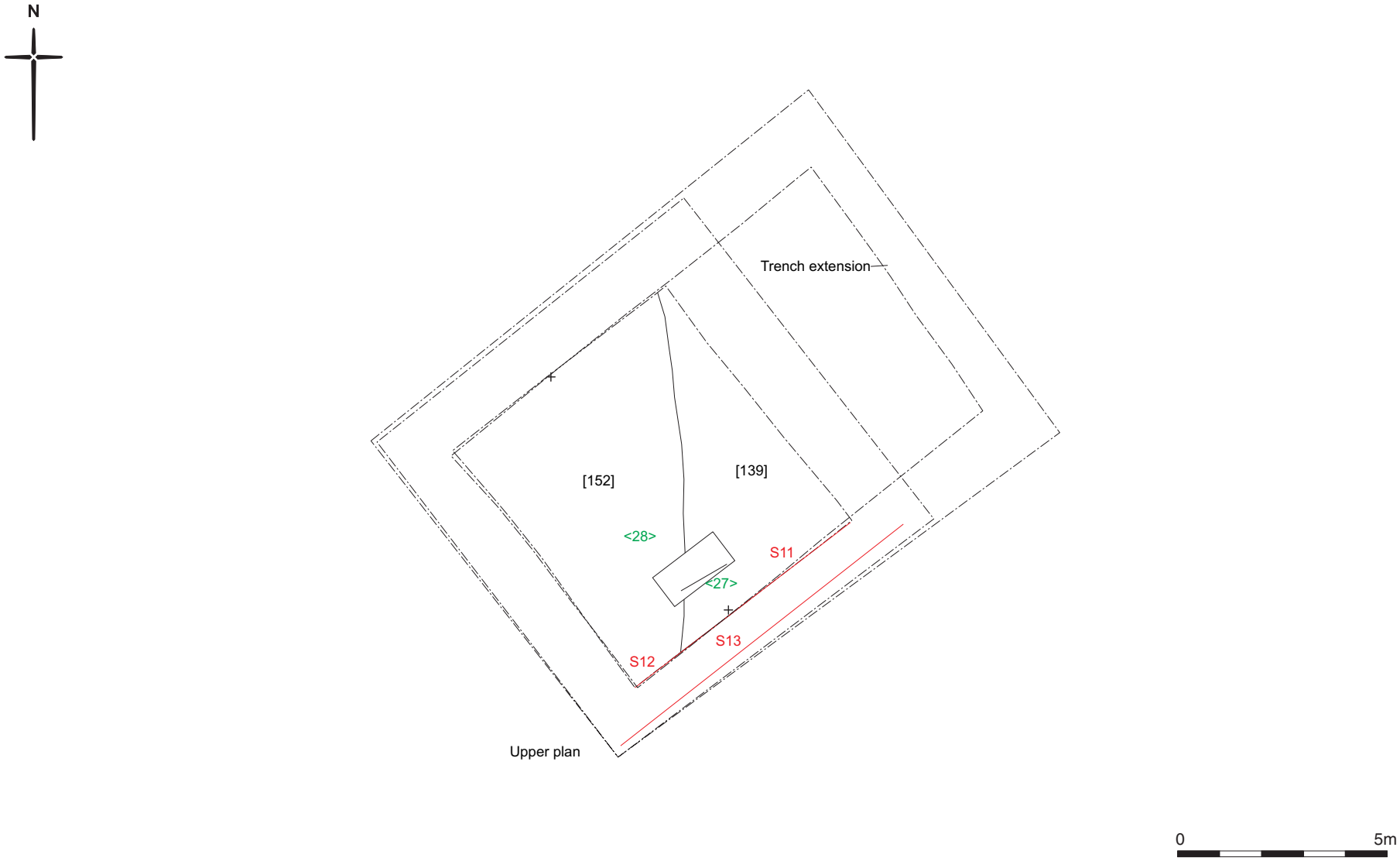


Fig 23 Plan of Trench PDZ1.22

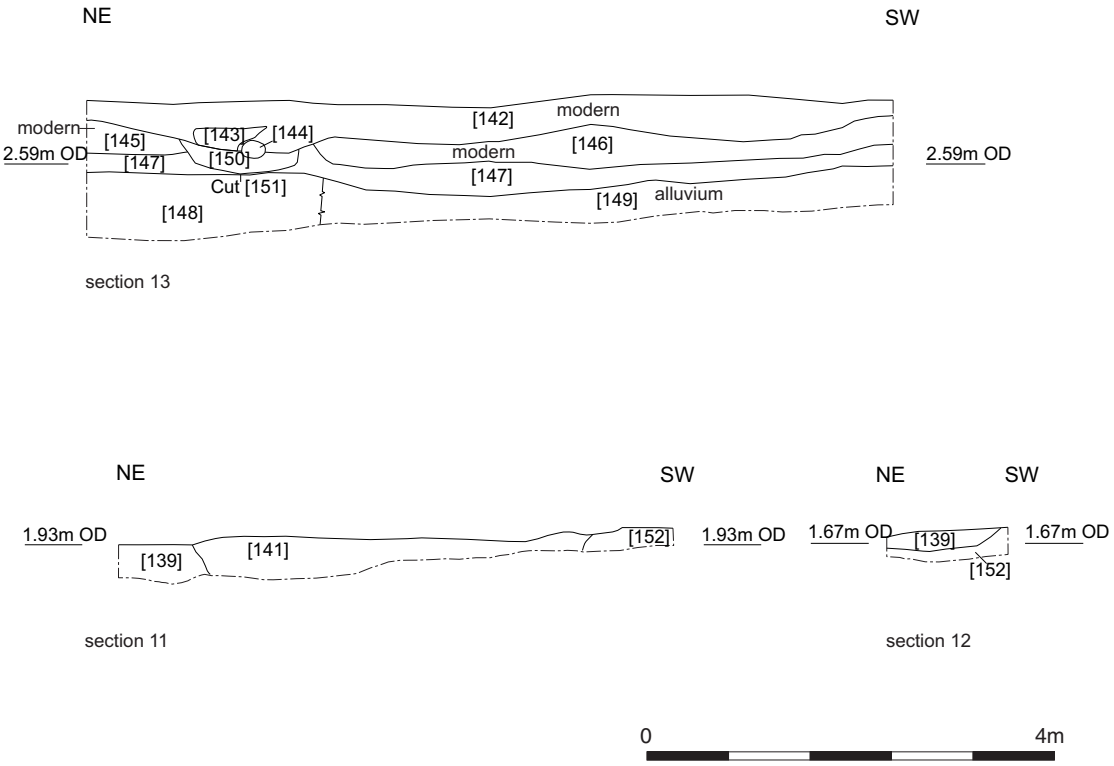


Fig 24 North-west facing sections 13, 11 and 12 of Trench PDZ1.22

Fig 25 Plan of Trench PDZ1.23

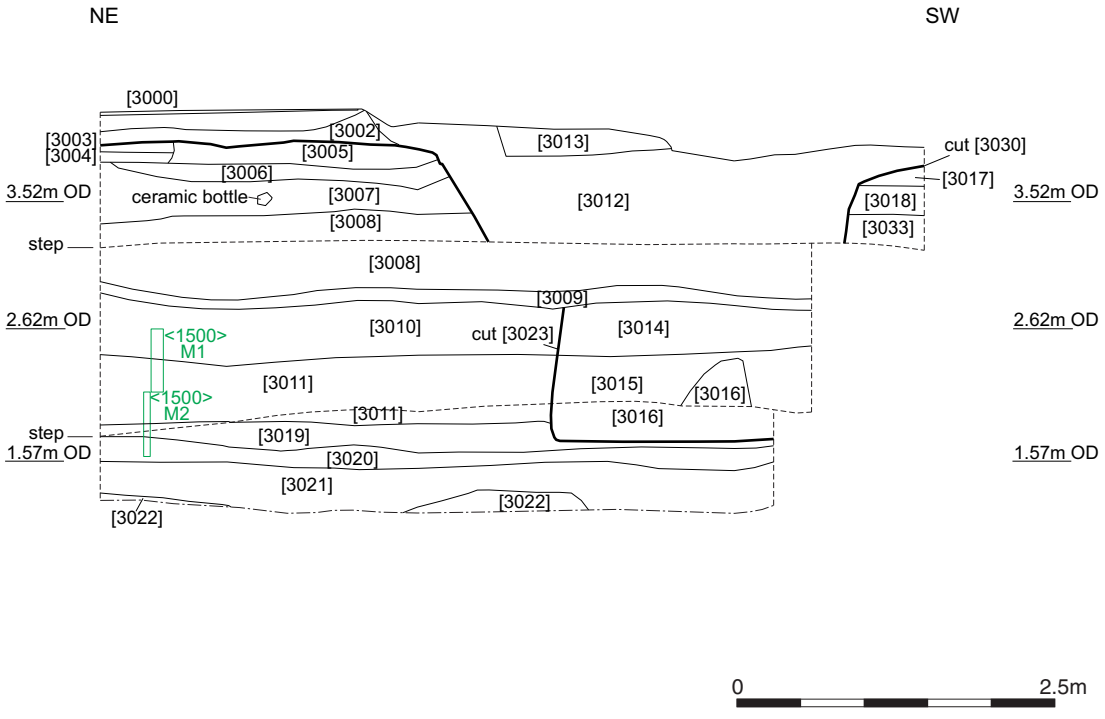


Fig 26 North-west facing section 3000 of Trench PDZ1.23