

LEA VALLEY OLYMPIC AND PARALYMPIC PARK London

Undergrounding Shafts EAST-3 (Eastway)

London Borough of Newham

A report on the evaluation

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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 on the site of the proposed Shaft EAST-3 (formerly known as EDFE-3) London Borough of Newham E15. The report was commissioned from MoLAS/PCA by the London Development Agency.

Following the recommendations of GLAAS, a single evaluation trench was excavated on the site and the results have helped to refine the initial assessment of its archaeological potential. The trench was excavated to the maximum possible depth attainable with the mechanical excavator available yet the deposits at this level were still of late 19th or early 20th century date.

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1 Introduction

1.1 Site background

The evaluation took place, immediately to the southwest of the mini roundabout located at the southern end of the bridge taking Quarter Mile Lane over the A12. The area of evaluation, hereafter called ‘the site’, is bounded by Quarter Mile Lane to the north and on all other sides by the Eastway Cycle Circuit (see Fig 1). The OS National Grid References for the centre of the site is 537590 185480.

The current ground level at the position of the proposed shaft was c.XXmOD. The site code is OL-00405.

It is proposed to sink an observation shaft as part of the Powerlines Undergrounding scheme. A desk-based *Archaeological assessment* was in preparation at the time of evaluation, which 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 subsequently prepared (MoLAS-PCA 2005), which formed the project design for the evaluation.

1.2 Planning and legislative framework

A general background to the planning and legislative framework covering all sites included in the Lower Lea Valley Olympic applications was included in the previous *Environmental statement* (Capita Symonds 2004).

1.3 Planning background

In accordance with local and national policies, archaeological evaluation of the site 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 authority can formulate responses appropriate to any identified archaeological resource.

The Newham Powerlines Undergrounding Planning Application No. LB Newham P/05/0824, Conditions 33 & 34 (relating to the Main Works) are:

33. *Prior to the commencement of the Remediation Works a programme of archaeological investigation and work shall be completed in accordance with a written scheme for investigation and work which has been submitted and approved in writing by the Local Planning Authority. Such a scheme shall comprise a methodology for recording and historic analysis, which considers building structure, architectural detail and archaeological evidence.*

Reason: Archaeological remains may survive on the site. The Local Planning Authority wishes to secure the provision of archaeological investigation and the

subsequent recording of any remains prior to development, in accordance with the guidance and model condition set out in PPG15.

34. *Prior to the commencement of the Main Works a programme of archaeological investigation and work shall be completed in accordance with a written scheme for investigation and work which has been submitted and approved in writing by the Local Planning Authority. Such a scheme shall comprise a methodology for recording and historic analysis, which considers building structure, architectural detail and archaeological evidence.*

Reason: Archaeological remains may survive on the site. The Local Planning Authority wishes to secure the provision of archaeological investigation and the subsequent recording of any remains prior to development, in accordance with the guidance and model condition set out in PPG15.

1.4 Origin and scope of the report

This report was commissioned from MoLAS/PCA by the London Development Agency (LDA). 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 Archaeological background

1.5.1 Modern topography

The site is located on the floodplain (valley floor) of the River Lea, c 4km to the north of its confluence with the River Thames. The modern topography and drainage of the area has been much modified by man and bears little resemblance to the landscape of the site in historic and prehistoric times. Ground raising prior to industrial development has masked the natural landsurface by several 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 man-made canalised and culverted channels, including the Waterworks River that is followed by the western boundary of the site.

1.5.2 Geoarchaeology

There is very good potential for the deposits at the Cable Shaft location to record evidence of earlier courses and characteristics of the channel (river regime), besides human activity associated with it, from the Late Pleistocene (Upper Palaeolithic) to twentieth century.

1.5.3 Prehistoric

The archaeological potential of the site for the prehistoric period, is considered to be moderate to high. Archaeological remains of prehistoric date are likely to lie within the floodplain alluvium, which represents a range of different wetland and dry land environments dating from the Mesolithic period onwards. In contrast, on the river terrace to the east, archaeological remains (where not eroded away by landscape processes during the Holocene) are likely to lie at the surface of the natural deposits, or be cut into them. The surface of bedrock, which in this area is variably Tertiary London Clay and Woolwich and Reading Beds, acts as the bottom line for deposits of archaeological interest. Fine-grained deposits within the reworked gravels have potential to preserve evidence of the environment during the Late Glacial period. In the site area, which may have formed an area of higher ground, prehistoric remains might be expected at the surface of the gravel and within the lowest part of the alluvium; environmental remains and organic artefacts may survive within the alluvium, and this is likely to be of Iron Age and later date.

1.5.4 Roman

A study of previous observations in the vicinity and recent excavations further to the north suggests that there is moderate potential for the survival of Roman remains within the area of the site, possibly in the form of occupation, which may or may not be associated with the line of a Roman road, depending on how wet or dry the environment was during the Roman period.

1.5.5 Saxon

The archaeological potential for this period is considered to be low and any such remains are likely to consist of disassociated finds. There is no evidence for Saxon activity either on or in the immediate vicinity of the site.

1.5.6 Medieval

The archaeological potential of the site for the medieval period is considered to be low, and is likely to be restricted to isolated riverside structures associated with stream channels, and slighter remains, such as fish traps or abandoned boats.

1.5.7 *Post-medieval–modern*

There is a moderate potential for archaeological features and artefacts relating to the post-medieval period as the site lay in open fields up until the late 19th century. Further evidence of post-medieval activity is likely to include quarrying and subsequent ground consolidation, including a large gravel pit marked on the 1913 edition OS map to the east of the site. Much of the quarrying and terracing activity could have been associated with the construction of rail tracks.

1.6 Aims and objectives

The following research aims and objectives were established in the *Method Statement* for the evaluation (Section 2.2) and are intended to address the research priorities established in the Museum of London's *A research framework for London Archaeology* (2002):

- Are there any high gravel islands which may have been exploited in the prehistoric or early historic eras?
- Is there any peat on the site, which can inform the palaeoenvironmental understanding of the ancient landscapes?
- Is there evidence for prehistoric human exploitation of the landscape? If so is it possible to characterise the status of occupation or land use exploitation?
- What evidence is there for Roman and post-Roman exploitation, in particular is there evidence for water inundation and water management? If so how are these activities characterised?
- Are there any in situ deposits of archaeological significance within the made ground or is it all of 19th/20th century dump and make-up deposits?
- What evidence is there for water and river management? How much of the development of the River Lee is in response to navigational or industrial requirements?
- Is there evidence of pre-20th century industrial or features?
- What is the date and significance of the redeposited alluvium?
- Has all of the alluvial clay been removed from the western part of the site?
- Where is the boundary for the edge of the quarry indicated by the boreholes?
- Does the site lie within a backfilled historic path of a river?

2 The evaluation

2.1 Methodology

All archaeological excavation and monitoring during the evaluation was carried out by a joint MoLAS/PCA team in accordance with the *Method statement* (MoLAS/PCA 2005).

A single evaluation trench was excavated, centred over the position of the proposed observation shaft (see **Error! Reference source not found.**) and measured 7m by 7m at the top.

The site contractors cleared the landscaped mound and topsoil prior to the commencement of the archaeological evaluation. A mechanical excavator, using a toothed bucket, reduced the modern overburden under archaeological supervision to a depth of 2.3m below ground level. A flat ditching bucket was employed for the remaining excavation.

Excavation of the trench was begun with steps of 1.1m and 1.2m. It was anticipated that the natural gravels would be present at c.3m below ground level, however, as this proved not to be the case, excavation continued to the maximum reach of the mechanical excavator. The resulting lower step was unsafe to work in and recording was therefore undertaken by measuring from the top of the second step.

The evaluation trench was located by the PCA surveyor. This information was electronically collated and plotted onto the OS grid. Levels were calculated from spot-heights along Quarter Mile Lane.

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 stratigraphic data from the evaluation trenches and the previous geotechnical investigation has been input into the Lea Valley Mapping Project digital TerraStation II database, as updated for the Olympics / Lower Lea regeneration scheme, with the prefix 'OL25'.

The site has produced: 1 trench location plan; 4 context records; 1 section drawing at 1:20. The site records can be found under the site code OL-00405 in the MoL archive.

2.2 Results of the evaluation

Evaluation Trench 1 was excavated to a maximum depth of 4.9m below ground level (XXm OD), where an area c. 2m by 2m was exposed.

Table 1 Details of depositional sequence in Evaluation Trench 1

Location		Centred over Shaft EAST-3	
Dimensions		7m by 7m and 5m deep	
Modern ground level		c XXm OD	
Base of modern fill		Not observed	
Top of alluvium observed		Not observed	
Level of base of deposits observed			
Thickness of deposits of archaeological interest (ie: alluvium) observed			
Context numbers		[1 to 4]	
Samples	Bulk		
	Radiocarbon		

The lowest deposit observed [4] was a deposit of loose dark greyish brown silty sand and fine clinker including late-19th or early-20th century pottery and glass and was present at a level of XxmOD. This was sealed by a 0.20m thick layer of moderately compacted light brownish grey sand and gravel [3] and 0.20m of loose dark grey to black sandy silt buried turf horizon [2]. The sequence was completed by a 2.8m thick deposit of loose mixed dumped deposits of late-20th century date, with inclusions of brick, concrete and other demolition material together with waste such as plastic fencing and assorted car parts.

2.3 Stratigraphic discussion of the site

2.3.1 Buried topography

The stratigraphy recorded in the evaluation trenches and previous geotechnical investigation has been added to the updated Olympics / Lower Lea Regeneration version of the Lea Valley Mapping Project database.

2.4 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 single trench excavated did not expose any archaeological sensitive deposits. The natural strata were not attained due to the constraints of issues of health and safety and practicability.

The thickness of the modern sequence prevented the examination of deposits in excess of 4.80m below present ground level. This means that the characteristics of the stratigraphy down to the top of Pleistocene gravel is not known. It is possible that the depth of the modern deposits is due to the excavation of a gravel quarry in the locality.

3 Archaeological potential

3.1 Realisation of original research aims

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

Are there any high gravel islands, which may have been exploited, in the prehistoric or early historic eras?

The evaluation trench did not expose any of the natural strata. As the gravels have been recorded in boreholes elsewhere on the site, if such an island exists on the site, it would not appear to be in the location of the observation shaft.

Is there any peat on the site, which can inform the palaeoenvironmental understanding of the ancient landscapes?

No palaeoenvironmental deposits were exposed in the evaluation trench.

Is there evidence for prehistoric human exploitation of the landscape? If so, is it possible to characterise the status of occupation or land use exploitation?

No evidence for prehistoric activity was exposed in the evaluation trench and no finds of this date were found residually in later deposits.

What evidence is there for Roman and post-Roman exploitation, in particular is there evidence for water inundation and water management? If so how are these activities characterised?

No evidence for exploitation of the natural resources was witnessed.

Are there any in situ deposits of archaeological significance within the made ground or is it all of 19th/20th century dump and make-up deposits?

All deposits encountered were of late-19th/early-20th century to late-20th century

What evidence is there for water and river management? How much of the development of the River Lee is in response to navigational or industrial requirements?

No evidence for water management was observed.

Is there evidence of pre-20th century industrial or features?

The only possible evidence for industrial activity on the site was a deposit of fine clinker that may have been produced by industrial heating processes nearby. However, the presence of domestic wares within the deposit would suggest this is not the case.

What is the date and significance of the redeposited alluvium?

No redeposited alluvium was recorded within the trench.

Has all of the alluvial clay been removed from the western part of the site?

As no alluvial clay was exposed in the trench it is possible that this evidences the removal of such material. As only a single trench was excavated, it would be audacious to base site-wide conclusions on the evidence of such a small area.

Where is the boundary for the edge of the quarry indicated by the boreholes?

The depth of the made ground and early-modern deposits exposed would suggest that the trench was located over the quarry, however, no edges of this feature were exposed.

Does the site lies within a backfilled historic path of a river?

No evidence of historic river paths was observed.

3.2 General discussion of potential

As the earliest deposits encountered were of late-19th/early-20th century date, the potential for archaeologically sensitive deposits relating to earlier periods cannot be assessed.

No past environmental issues can be addressed within the scope of this evaluation.

3.3 Significance

Very little is yet known about the evolving environment of the Lower Lea and its relationship to the changing landscape and river regime of the Thames and to the archaeology of the river terraces on either side of the valley floor.

If subsequent work was able to produce records and samples from an alluvial sequence surviving on the site, this could contribute to our current understanding of the past environment of the site and its surroundings and would be undoubtedly of local significance. However, there is nothing to suggest that it would be of regional or national importance.

Any evidence of prehistoric, Roman, Saxon and medieval activity would similarly aid in our understanding of the past land use of the site and of the area in general.

4 Proposed development impact and recommendations

It is proposed to sink an observation shaft associated with the undergrounding of power cables on the site. No detailed plans for its construction are yet available but it will involve the excavation of a shaft c.7m in diameter to a depth of c.35m. Following completion of the construction works, the area surrounding the shaft will be re-landscaped.

The evaluation has shown that in the immediate location of the shaft, there is little chance for disturbing archaeologically sensitive deposits within 5m of excavation from present ground level. This may be due to the trench being located over a former quarry that will have previously removed any surviving archaeology.

The naturally deposited sequence has not yet been examined (due to the constraints of health and safety and practicability) and as a result, the potential of the site for preserving evidence of the pre-modern activity is not yet known. A limited amount of further fieldwork is therefore recommended. An archaeologist should be in attendance for excavation works from a depth of c.4m until the natural gravels are attained in order to record the remaining sequence.

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.

Acknowledgements

MoLAS and PCA would like to thank the London Development Agency for commissioning this report. Also, David Divers (GLAAS) the Archaeological Advisor to the London Borough of for advice during the project, which has been managed by Peter Moore (PCA). Murphy, the main contractors on site are thanked for their co-operation during fieldwork, which was supervised by Stuart Holden (PCA). Nathalie Barrett (PCA) undertook the surveying.

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6 NMR OASIS archaeological report form

Appendix 1: 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.



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Figure 1
Site Location
1:10,000

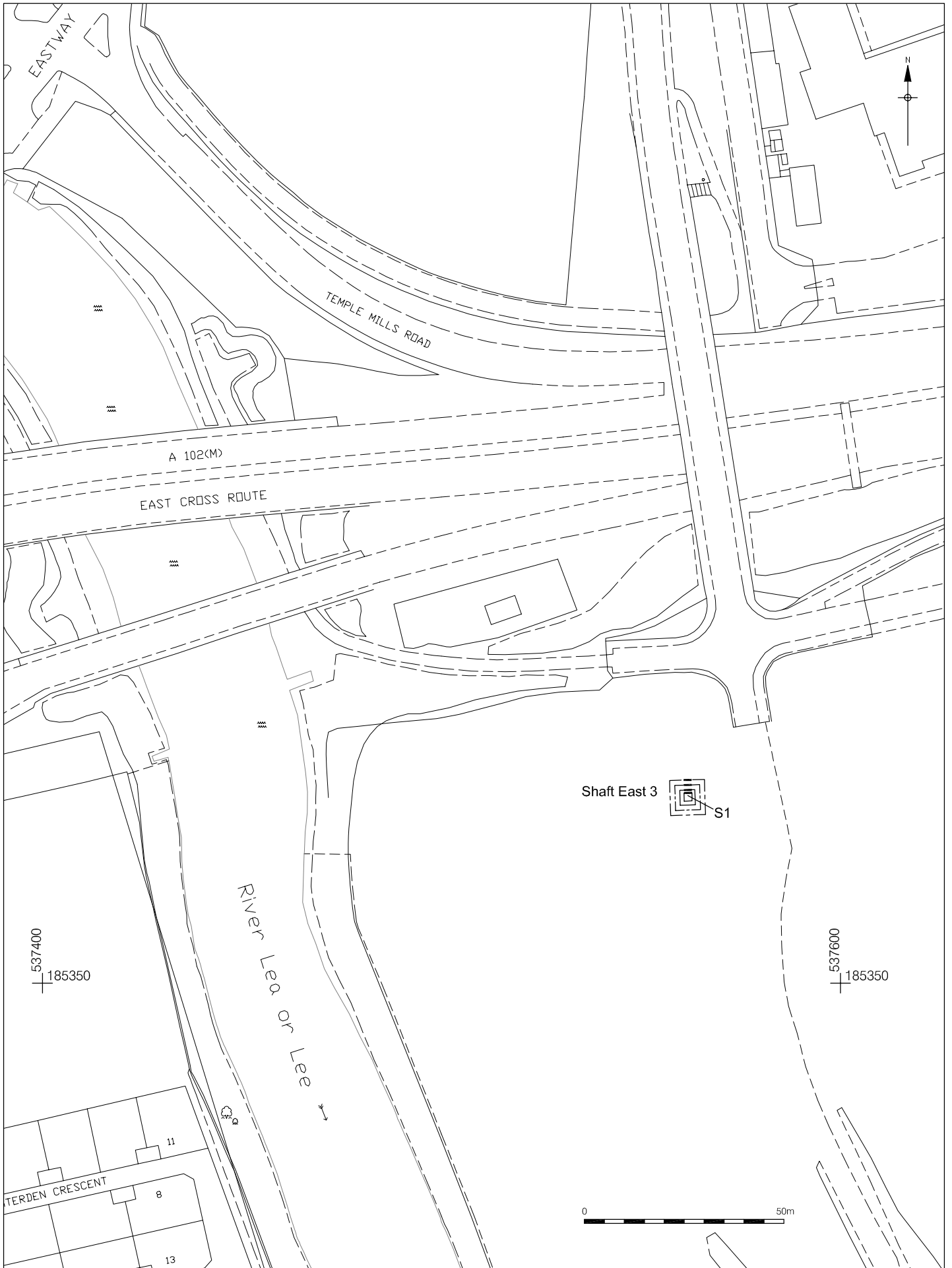


Figure 2
 Cable Undergrounding, Eastway Site Shaft East 3: Trench Location
 1:1,250

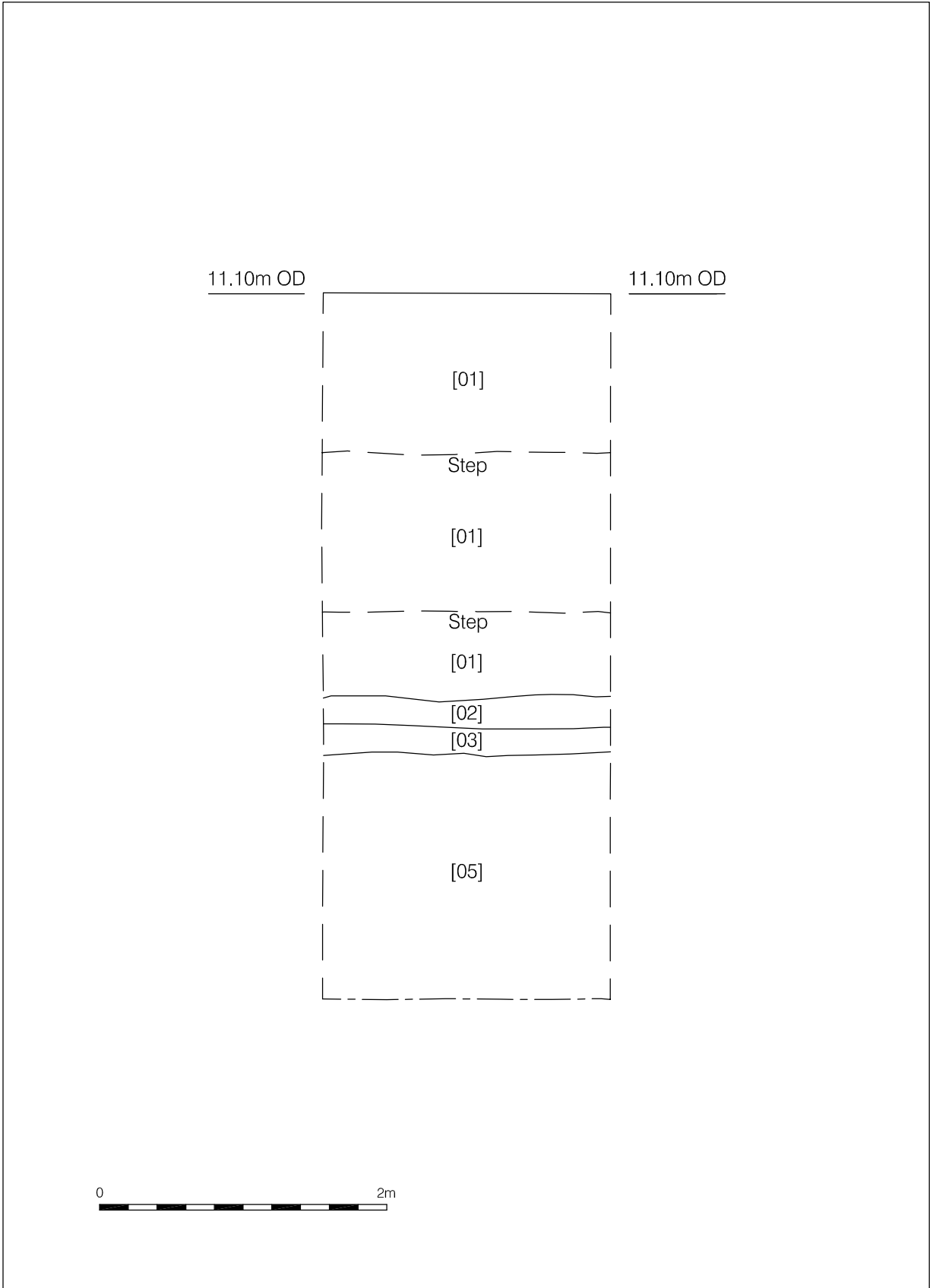


Figure 3
Measured Sketch of Section 1
1:40