

**ARCHAEOLOGICAL EVALUATION BY TEST PITTING:  
ZONE D, BRAYFORD CAMPUS, UNIVERSITY OF LINCOLN, LINCOLNSHIRE**

Planning Reference: 2011/1361/F  
NGR: SK 97099 71034  
AAL Site Code: LUZD 12  
Museum Accession Number LCNCC: 2012.93  
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Report prepared for the University of Lincoln

By  
Allen Archaeology Limited  
Report Number 2012049

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The  
Authority on  
Archaeological  
Planning  
Services



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## Executive Summary

- Allen Archaeology Limited was commissioned by the University of Lincoln to undertake an archaeological evaluation by test pitting in advance of a proposed new Art, Architecture and Design Building at the Brayford Campus in Lincoln.
- The site lies in an area of significant archaeological interest, within the River Witham floodplain where prehistoric activity has previously been identified, often at some depth beneath layers of peat. To the south-west of the site, a series of test pits were excavated prior to the creation of the existing pond adjacent to the Ropewalk. These identified a late Mesolithic site containing over 700 pieces of struck or modified flint. Palaeotopographic modelling of the surrounding area suggested that activity up to approximately the middle Bronze Age may be encountered, before the ground was inundated by rising water levels and abandoned.
- The test pits exposed approximately 4m of deposits and showed that the glacial sand sloped downwards from east to west from 1.91m aOD in Test Pit 1 to 1.68m aOD in Test Pit 4, over a distance of approximately 38m. A palaeosol measuring c.10 – 20mm thick was recorded in Test Pits 3 and 4 at the west end of the site; this overlay the glacial sand and was sealed by peat.
- A small assemblage of artefacts was recovered in Test Pits 2 – 4 from the glacial sand and palaeosol, comprising small unidentified prehistoric pot sherds and burnt and worked flints. One diagnostic worked flint was of Mesolithic to early Bronze Age date.
- The prehistoric material was sealed by c.1.3m of peat, with wood and reeds noted towards the base of the peat sequence. These marginal marshy deposits were sealed by 0.5m – 1m of Victorian build up layers most likely associated with the railway line and associated infrastructure built in the 19<sup>th</sup> century.
- The uppermost 1.5m – 1.8m of deposits across the site were of modern date and are most probably associated with the construction of the University campus, and a later car park surface.

## 1.0 Introduction

- 1.1 Allen Archaeology Limited (hereafter AAL) was commissioned by the University of Lincoln to carry out an archaeological evaluation on land off the Ropewalk in Lincoln, Lincolnshire, as a condition of a planning permission and following a recommendation in the Masterplan for the Brayford Campus, University of Lincoln (CgMs 2011).
- 1.2 The archaeological scheme of works conforms to current national guidelines, as set out in the Institute for Archaeologists '*Standard and guidance for archaeological evaluation*' (IfA 1994, revised 2001 and 2008), the local guidelines in the *Lincolnshire Archaeological Handbook* (LCC 2009) as well as a specification prepared by this company (AAL 2012).
- 1.3 The documentary and physical archive will be submitted to 'The Collection' (Lincoln Museum) within six months of the completion of the report and will be stored under the Museum Accession Number LCNCC: 2012.93.

## 2.0 Site Location and Description

- 2.1 The site is situated c.0.8km to the south-west of the historic core of the city of Lincoln (Bailgate area), immediately to the north of Ropewalk and south of the Brayford Pool, centred on NGR SK 97099 71034.
- 2.2 The area had in recent years been levelled as a result of the creation of a temporary car park, so the area was relatively flat at approximately 5.4m above Ordnance Datum.
- 2.3 The solid geology for the site is Lower Lias clay, shale and rare limestone (British Geological Survey 1973); however this is likely to be at some considerable depth. The superficial geology is recorded as alluvium, although the detailed palaeotopographic study of the site shows that these deposits comprise a sequence of glacial sands overlain by marsh deposits and peats, with deep deposits of modern overburden on top (James Rackham 2009).

## 3.0 Planning Background

- 3.1 Full planning permission has been granted for the '*Erection of a 5 Storey arts building*' (Planning Application Reference 2011/1361/F). The planning permission was granted in April 2011, subject to conditions, including for the undertaking of a programme of archaeological investigation in advance of development.
- 3.2 The relevant planning policy which applies to the effect of development with regard to cultural heritage is Chapter 12: Conserving and Enhancing the Historic Environment of the National Planning Policy Framework (NPPF) (Department for Communities and Local Government 2012). This superseded Planning Policy Statement 5 (PPS5) in March 2012, which was in effect when the planning condition was imposed.

#### **4.0 Archaeological and Historical Background**

- 4.1 The archaeological background to the development area has already been provided within the Masterplan for the Brayford Campus of the University of Lincoln (CgMs 2011), so is therefore not included here in detail.
- 4.2 The on site sequence comprises glacial sand sealed by marsh silts of Mesolithic and Neolithic date, and by the middle Bronze Age peat began to form across the area. This continued throughout the Bronze Age before changing to organic sediments as water levels rose. The uppermost deposits likely to be encountered include Victorian upcast associated with the railway construction immediately to the north, and modern infilling of a large pond.
- 4.3 A series of test pits were hand excavated at depth to the south-west of the site, prior to the creation of the existing pond (Field and Rylatt 2008). These recovered 785 pieces of struck or modified flint of almost exclusively later Mesolithic date, including 154 pieces of burnt flint and chert.

#### **5.0 Methodology**

- 5.1 The archaeological evaluation was carried out on Wednesday 6<sup>th</sup> and Thursday 7<sup>th</sup> June 2012 by a team of experienced field archaeologists, supervised by the author. Four test pits measuring 2m x 2m in plan were excavated with a wheeled 360° excavator fitted with a toothless ditching bucket.
- 5.2 Each test pit was initially positioned using a Leica GS08 RTK NetRover GPS, allowing each test pit to be accurately 3D plotted and tied into the National Grid. The test pits were all subsequently moved slightly to take account of unknown services encountered in Test Pits 1 and 2 and resurveyed.
- 5.3 Initially the agreed methodology entailed the machine excavation of the top 150mm of hardcore, followed by the hand excavation of the following 350mm of material to identify services. This was because although service plans were provided, it was recognised that further unknown services, etc may be present. Upon excavation however, it became clear that this level reached only the base of the recent temporary car park deposits. It was therefore decided on site to machine strip to immediately below the temporary car park level and hand dig up to 350mm beyond this point. By revising this methodology an electric cable was identified and the corresponding test pit moved to accommodate the service.
- 5.4 It was known that the glacial sand was present approximately 4m below the existing ground surface, so the machine excavator was required to excavate the deposits in spits until the sand was observed. The basal peats and upper sand were then stored separately from the main spoil heap to facilitate analysis for artefactual material and to allow the sieving of the sand using a 1000 micron sieve.
- 5.5 Due to the depth of the test pits no persons were to enter the excavations, with the recording archaeologist required to wear a horizontal lifeline system to ensure a safe working environment. This comprised an arrestor system where the individual is secured to a secure anchorage point on the site, thus ensuring that should the test pit edge collapse the individual will not fall into the void. To measure the depth of the deposits, a Leica DISTO D5 laser distance

measurer was used. This allowed a safe and relatively accurate model of the deposits to be made within in each test pit.

- 5.6 All exposed plan and section surfaces were visually inspected from the ground surface for any archaeological features and deposits to determine the stratigraphic sequence. Each context observed was recorded on pro-forma AAL context record sheets, accompanied by a profile drawing of each test pit at 1:10 scale. A photographic record was maintained throughout the fieldwork with selected shots included as an appendix to this report (see Appendix 1).
- 5.7 Each layer, deposit or feature was allocated a unique two digit identifier (context number), and accorded a written description, a summary of these are included in Appendix 4.

## 6.0 Results (Figure 2 – 3)

- 6.1 As the results were relatively uniform in each of the test pits, the sequence is discussed as a whole, and where deposits were demonstrably the same within each excavated area they were allocated the same context number. The only change to this methodology was that the upper sand encountered at the base of the sequence was allocated a unique context number for each test pit to differentiate the artefactual material.
- 6.2 The uppermost deposits encountered in the sequence comprised compacted gravel hardcore 01 and levelling layer 02 sealing a layer of terram that was observed within each test pit at between 0.28m below the existing ground level at the west end of the site and 0.45m at the east end. These deposits were elements of the temporary car park that was built on the site in recent years.
- 6.3 Beneath the terram layer was a deep sequence of further modern dumps that included a grey/brown silty sandy demolition spread 03 overlying dark grey silty sand with some modern brick and tile rubble 04, onto clean orange sand and gravel 14 in Test Pits 3 and 4. Layers 03 and 04 were separated by a dump of gravel, 11 in Test Pit 2. At the base of layer 04 in Test Pit 2 a metal advertising board for a London-based architectural firm ('RMJM') was observed. Below this in Test Pits 2 – 4 was a layer of plastic sheeting, which is likely to have been laid when the area contained large spoil heaps in the 1990s (J. Rackham *pers. comm.*). This sheet was observed at approximately 1.4m – 1.54m below the modern ground surface.
- 6.4 The basal limits of the modern deposits across the site comprised a compact limestone spread 05 in Test Pits 1 and 2, and modern reinforced concrete 15 in Test Pit 4. No further modern deposits were identified in Test Pit 3. Overall the modern deposits were between 1.55m thick (Test Pit 3) and 1.85m deep (Test Pit 1).
- 6.5 Deposits most likely associated with the Victorian construction of the railway and its infrastructure was noted in all four test pits. This was mainly a mix of peaty soils with ceramic building material 06 observed in Test Pits 1, 3 and 4, with the material in Test Pit 3 contaminated with petro-chemicals. In Test Pit 2 this deposit had been replaced with dark grey clinker and ash 12, which was the backfill of the cut for a previously unknown large iron gas or water pipe running broadly east – west across the test pit. In Test Pit 4 layer 06 sealed a clean yellow sand 17, which in turn sealed a medium-sized stone spread 18 that was saturated with water.

- 6.6 The probable Victorian deposits extended to 2.33m below the modern ground surface in Test Pit 1 and 2.64m in Test Pit 4.
- 6.7 The Victorian deposits lay directly on peat, attesting to the marshy environment and reclamation of the locality at the time the railway was built. The peat deposits were approximately 1.4m thick and in Test Pits 1 and 2 the uppermost peat 07 was brown in colour, suggesting it may have previously been exposed to oxidisation, possibly as part of the works for the railway. The majority of the peat horizon within all four test pits was black peat 08, with woody peat 09 observed at the base of the sequence in Test Pits 1, 3 and 4. The remains of reeds were identified in the lowermost 0.4m of the peat sequence in all four test pits.
- 6.8 The glacial sand was encountered at between 3.68m below the modern ground surface in Test Pit 1 and 3.95m in Test Pits 3 and 4. In the latter two test pits it was noted that a former land surface (palaeosol), contexts 19 and 20 respectively was preserved between the transition from glacial sand to peat. This palaeosol was observed to contain flecks of charcoal, indicative of former human activity. It was not possible to confidently separate the palaeosol from the underlying sand during the hand sieving due to the nature of the work, so all artefacts from Test Pits 3 and 4 were attributed to the sand only.
- 6.9 No artefacts were recovered from sieving the uppermost elements of the glacial sand 10 in Test Pit 1, whereas two worked flint flakes and three pieces of prehistoric pottery were recovered from sand 13 in Test Pit 2. A burnt worked flint flake and a burnt pebble were found within the sand/palaeosol 15/19 in Test Pit 3, along with a fragment of pottery and a piece of fired clay. Test Pit 4 sand/palaeosol 16/20 contained a Mesolithic – early Bronze Age flint flake and a burnt flint.

## 7.0 Discussion and Conclusion

- 7.1 The evaluation has identified a well preserved sequence of peat deposits overlying the glacial sand, buried beneath extensive Victorian and modern build up.
- 7.2 The base of the sequence comprised the glacial sand at 1.91m aOD in Test Pit 1, 1.85m aOD in Test Pit 2, 1.77m aOD in Test Pit 3 and 1.68m aOD in Test Pit 4. In addition, a thin lens of former soil containing charcoal flecks was found to be preserved beneath the peat in Test Pits 3 and 4, attesting to human activity in the vicinity. At other locations throughout the Witham Valley worked flints have been recovered from both the sand and palaeosol deposits where encountered, including the Mesolithic material from a site on the campus immediately to the south-west of the site (Field and Rylatt 2008).
- 7.3 A small density of artefacts were recovered from Test Pits 2 – 4, comprising four later prehistoric pottery sherds, a piece of fired clay and six pieces of struck flint, burnt flint and burnt stones. Although the volume is limited, it does indicate low density activity at some point in prehistory on the site.
- 7.4 A palaeotopographic model for the Lincoln University Campus suggests that the ground surface beneath the peat may have been utilised up to the middle Bronze Age before rising water levels left the area uninhabitable (Rackham 2009). The limited dating of the artefactual material from the site makes it difficult to review this model in light of the results of the study, although the ceramic specialist was of the view that the pottery recovered from the test pits was unlikely to be any earlier than late Bronze Age in date (E. Edwards pers. comm.). The worked flint



assemblage contained a single dateable piece that was probably manufactured at some point between the Mesolithic and early Bronze Age periods.

- 7.5 Following abandonment of the area as the land became boggy and marshy, local woodland was submerged and reed beds established across the site. The area probably continued as an open marsh up into the Victorian period, until the establishment of the railway in Lincoln from 1846 (Stocker 2003, 342). At this point the land was probably drained and raised through the dumping of material across the site.
- 7.6 Significant ground raising over the last two decades has seen the ground level raised by approximately 1.5m, ending with the formation of the existing temporary car park surface.

## 8.0 Effectiveness of Methodology

- 8.1 The archaeological evaluation was particularly appropriate to the scale and nature of the proposed development. It has aided the palaeotopographic modelling of the glacial sands and overlying peats, and has identified some human activity in Test Pits 2 – 4 of undetermined but prehistoric date.

## 9.0 Acknowledgements

- 9.1 Allen Archaeology Limited would like to thank the University of Lincoln for this commission, and Thornton-Firkin for their help throughout the scheme.

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**Appendix 1: Colour Plates**



**Plate 1:** Test Pit 1 under machine excavation. Showing temporary fall arrestor system in use and using laser measuring device. Looking north-west



**Plate 2:** Test Pit 1 following excavation, showing east facing section and looking west-north-west. Measuring staff to top of trench is 4m high



**Plate 3:** Test Pit 2 following excavation, showing east facing section and looking west. Measuring staff to top of trench is 4m high



**Plate 4:** Test Pit 3 following excavation, showing east facing section and looking west. Measuring staff to top of trench is 4m high



**Plate 5:** Test Pit 4 following excavation, showing east facing section and looking west. Measuring staff to top of trench is 4m high



**Plate 6:** The site following backfilling of the test pits. Test Pit 1 is in the foreground, with Test Pits 2 – 4 in the background

## **Appendix 2: Struck Flint and Burnt Unworked Flint and Stone**

*By Hugo Anderson-Whymark*

Three struck flint flakes, a possible edge-retouched flint flake and two pieces of burnt unworked stone were recovered from the evaluation (see catalogue below). The struck flints were all in fresh condition, potentially indicating that they were recovered from contemporary archaeological contexts of prehistoric date (TP2, context 13; TP3, context 15; TP 4, context 16). These artefacts cannot be closely dated, but the presence of platform edge-abrasion on the flake from TP4 context 16 indicates that this artefact probably dates from the Mesolithic to early Bronze Age.

This small artefact assemblage has no potential for further work, but these flints indicate some prehistoric activity on the evaluation site.

### ***Catalogue***

TP2. Context 13. Cortical hard hammer flake of gravel flint. Fresh condition.

TP2. Context 13. Chip of flint possibly exhibiting very slight abrupt edge retouch. Fresh condition.

TP3. Context 15. Burnt and broken flint flake.

TP3. Context 15. Burnt and broken fragment of a micaceous sandstone pebble. 10g.

TP4. Context 16. Burnt unworked flint. 10g.

TP4. Context 16. Thin and regular flint flake with slight platform-edge abrasion. Fresh condition. Probably Mesolithic-early Bronze Age

### **Appendix 3: Pottery and Fired Clay Archive**

*By Emily Edwards*

#### **The Pottery**

Four sherds of pottery (3 g) were recovered from two contexts (13, 3 g and 15, <1 g) within test pits (Test Pits 2 and 3). These sherds were very small, plain, abraded and undiagnostic. A later prehistoric date is considered likely for these; suggested by the firing and compact, sandy character of the fabric. Due to the size of these sherds, no fabric identification is possible.

No further work is recommended.

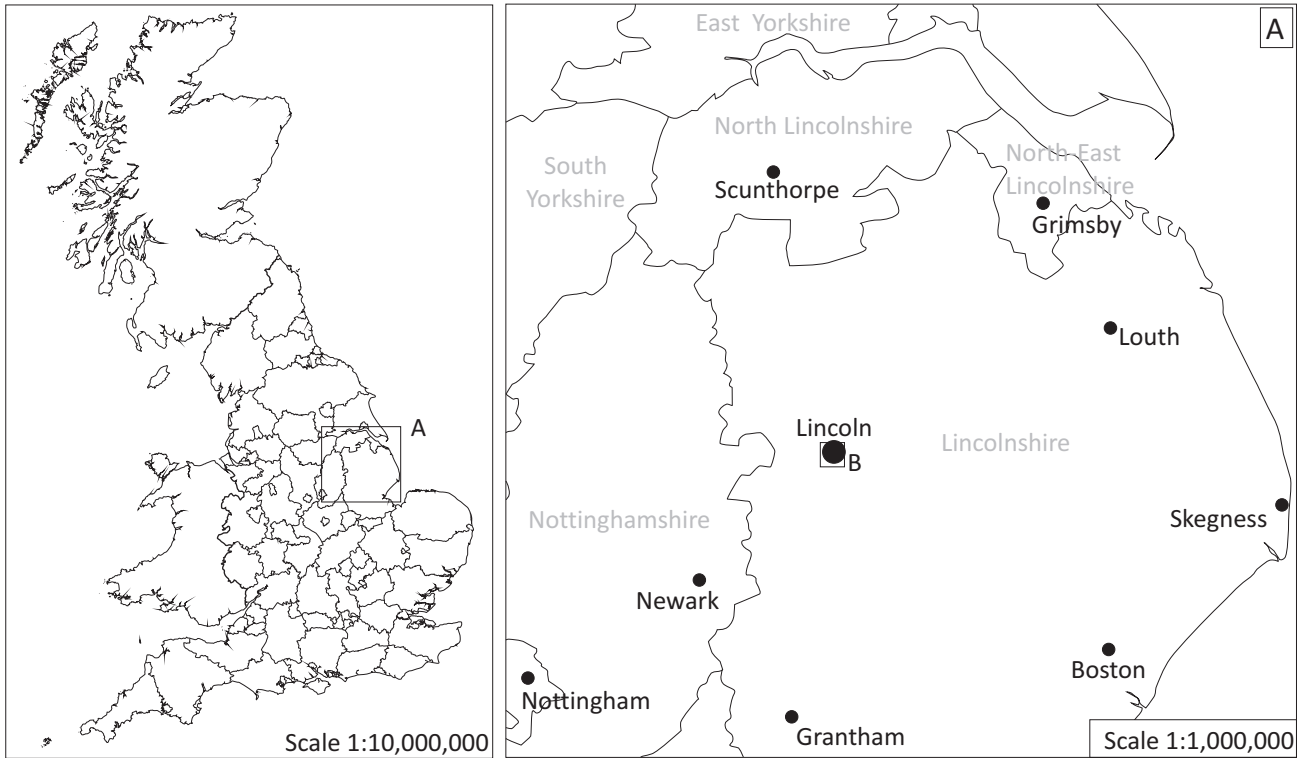
#### **The Fired Clay**

A small lump of fired clay (14 g) was recovered from TP3 (context 15). This was compact, unoxidised and sandy, although too small for fabric identification. The lump appears to have been burned, post firing, as is indicated by a small patch of oxidisation.

No further work is recommended.

**Appendix 4: Context Summary List***CBM = Ceramic Building Material (e.g. brick and tile)**TP = Test Pit*

<b>Context No.</b>	<b>Type</b>	<b>Description</b>	<b>Interpretation</b>
01	Layer	Grey gravel hardcore	Car park surface
02	Layer	Red/brown hardcore	Levelling layer
03	Layer	Grey/brown silt with modern CBM	Modern dump of material
04	Layer	Dark grey silty sand with some modern CBM	Modern dump of material
05	Layer	Limestone spread	Modern dump of material
06	Layer	Black humic soil with some CBM	Victorian dump of material
07	Layer	Brown peat with no inclusions	Undated peat
08	Layer	Black peat with some reed inclusions towards base	Undated peat
09	Layer	Black peat with wood remains	Woody peat
10	Layer	Grey/yellow sand	Glacial Sand in TP 1
11	Layer	Loose gravel	Modern dump in TP 2
12	Layer	Dark grey clinker and ash	Backfill of Victorian pipe trench
13	Layer	Grey/yellow sand	Glacial Sand in TP 2
14	Layer	Orange sand and gravel	Modern dump in TP 3
15	Layer	Grey/yellow sand	Glacial Sand in TP 3
16	Layer	Grey/yellow sand	Glacial Sand in TP 4
17	Layer	Clean yellow sand	Victorian dump of material in TP 4
18	Layer	Medium sized sub-angular stone spread	Victorian dump of material in TP 4
19	Layer	Grey/brown sand with some charcoal flecks	Palaeosol in TP 3
20	Layer	Grey/brown sand with some charcoal flecks	Palaeosol in TP 4



**Figure 1:** Site location with proposed development site shown in red  
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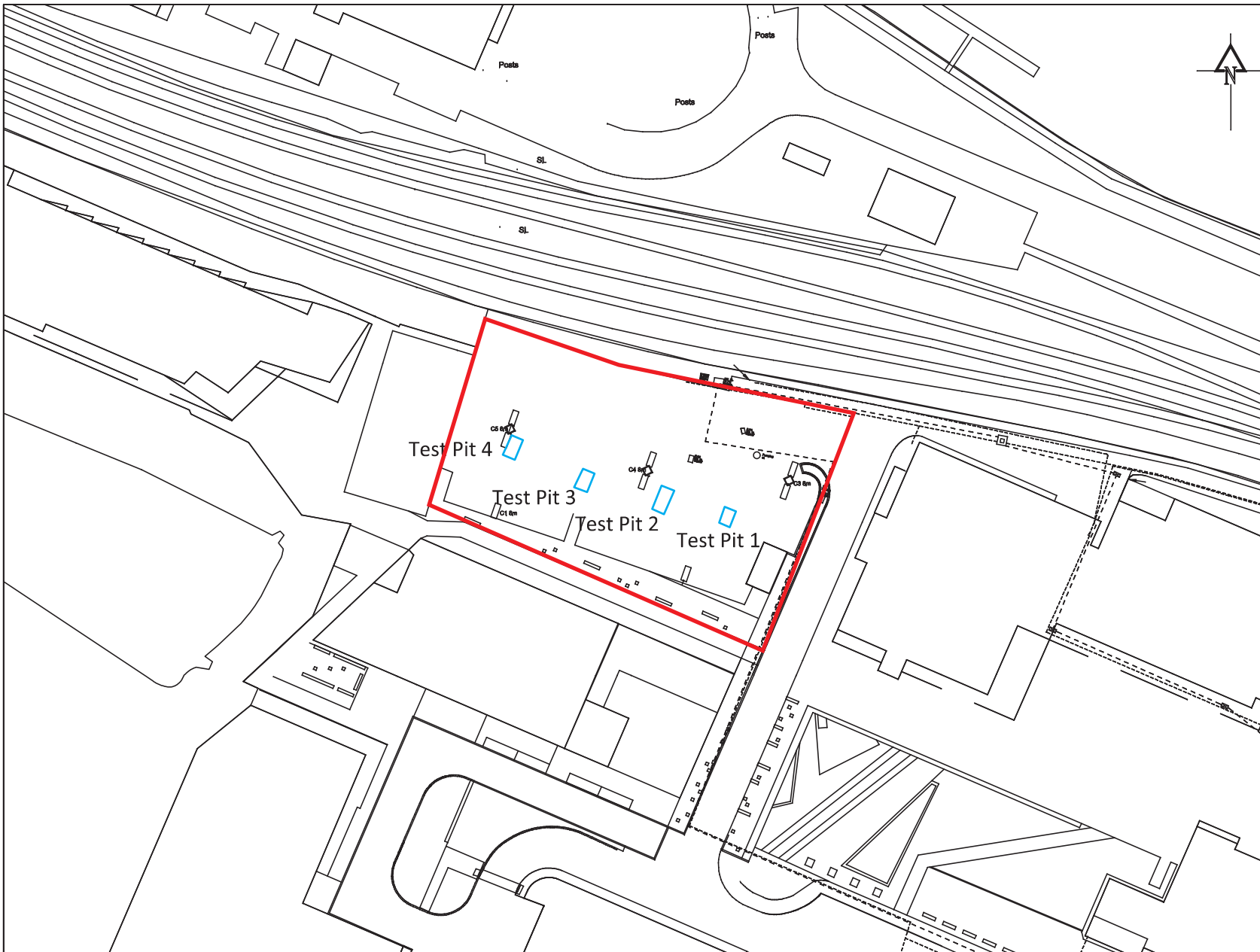
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Site Name	Zone D, Brayford Campus
Scale	1:1000 @ A4
Drawn by	GG
Date	19/06/12

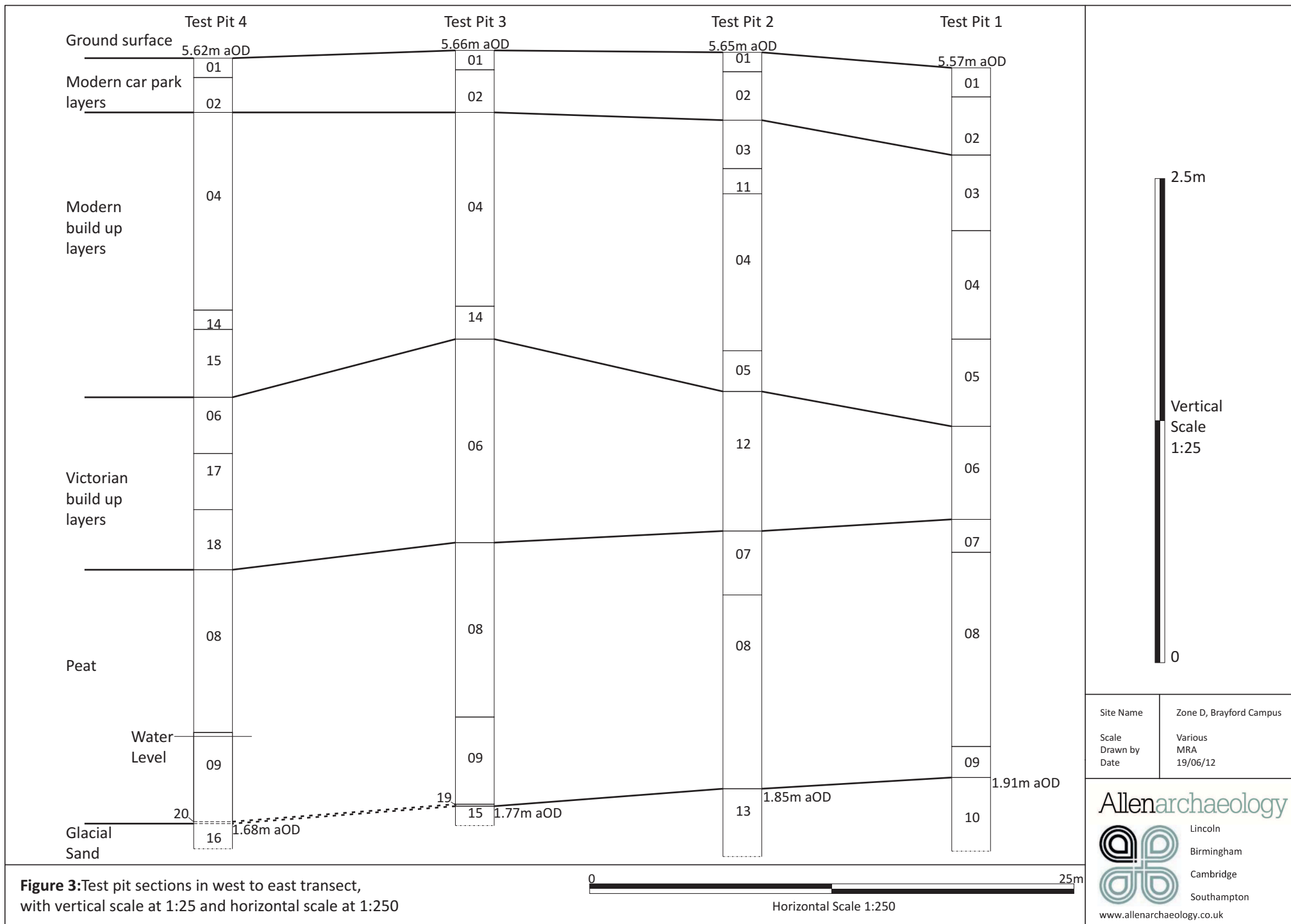
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**Figure 2:** Proposed development area outlined in red with test pits shown in blue





Site Name	Zone D, Brayford Campus
Scale	Various
Drawn by	MRA
Date	19/06/12

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