



46-50 St Mary Axe, London, EC3A 8EL.

Archaeological Evaluation Report

**46-50 St Mary Axe, London, EC3A 8EL**

**GLSMR: AMX 07**

**NGR: 533324 181335**

**Archaeological Evaluation Report**

Prepared on behalf of  
**FREP St Mary Axe Limited**  
**11-15 Wigmore Street**  
**London**  
**W1A 2JZ**

by  
**Wessex Archaeology**  
**Portway House**  
**Old Sarum Park**  
**SALISBURY**  
**SP4 6EB**

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## Archaeological Evaluation Report

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# 46-50 St Mary Axe, London, EC3A 8EL

## Archaeological evaluation report

### Summary

This report has been prepared on behalf of FREP St Mary Axe Limited and presents the results of archaeological evaluation work undertaken in advance of the development of 46-50 St Mary Axe, London, EC3, (hereafter 'the Site'), NGR 533324 181335 (**Figure 1**). It has been prepared in accordance with guidance contained within the Corporation of London's Department of Planning and Transport Planning Advice Note 3 'Archaeology in the City of London', 2004.

The archaeological evaluation included a watching brief on a geotechnical investigation comprising two boreholes, and an archaeological investigation comprising two test pits.

Monitoring of the borehole investigation took place on 19th February 2007. The test pits were opened and investigated, following demolition of existing buildings, between the 8th and 13th August 2007.

The result of the evaluation would appear to indicate that a small area of severely truncated pits has survived in a localised area to the south-east and possibly north-east of Test pit 1. The archaeological features found in Test Pit 1 were observed as cut into natural gravel, with only their lower portions remaining, seemingly the result of the severe impact of the construction of the existing slabs. The features comprised two or possibly three large pits, probably related to quarrying and certainly to the disposal of waste, dating to the medieval period. In the location of Test pit 1, the formation of the existing slab appears to have reduced the archaeological features and adjacent natural gravel to a depth of **10.74m aOD** on three sides, with greater truncation on the south-west side to a depth lower than **10.38m aOD**.

It is recommended that, further to consultation with the City of London Senior Planning and Archaeology Officer and in mitigation of the impact of the proposed development, to include formation of a new raft foundation at generally *c.* **10.14m aOD**, a programme of archaeological work is carried out aimed to investigate the small area of medieval pits revealed by Test Pit 1. The aim of the work will be to excavate the medieval pits under controlled archaeological conditions, to ensure an appropriate record of them is made and to recover artefacts and environmental remains.

# **46-50 St Mary Axe, London, EC3A 8EL**

## **Archaeological evaluation report**

### **Acknowledgements**

Wessex Archaeology is grateful to FREP St Mary Axe Limited for commissioning the archaeological evaluation and to Coleman & Co, demolition contractors, for providing assistance on Site. Soil Consultants Limited kindly provided information to Wessex Archaeology concerning the results of geotechnical investigations.

Wessex Archaeology is also grateful to Kathryn Stubbs (City of London Senior Planning and Archaeology Officer) for her assistance and advice.

The evaluation fieldwork was carried out by Kirsten Egging, who also prepared this report, with contributions from Lorraine Mephram (finds) and Dr Chris Stevens (environmental remains). The report illustrations were prepared by Rob Goller. The project was managed for Wessex Archaeology by Paul McCulloch.

# 46-50 St Mary Axe, London, EC3A 8EL

## Archaeological evaluation report

### 1 INTRODUCTION

#### 1.1 Project Background

1.1.1 This report has been prepared on behalf of FREP St Mary Axe Limited and presents the results of archaeological evaluation work undertaken in advance of the development of 46-50 St Mary Axe, London, EC3, (hereafter 'the Site'), NGR 533324 181335 (**Figure 1**). It has been prepared in accordance with guidance contained within the Corporation of London's Department of Planning and Transport Planning Advice Note 3 'Archaeology in the City of London', 2004.

1.1.2 The archaeological evaluation included a watching brief on a geotechnical investigation comprising two boreholes, and an archaeological investigation comprising two test pits.

1.1.3 Monitoring of the borehole investigation took place on 19th February 2007. The test pits were opened and investigated, following demolition of existing buildings, between the 8th and 13th August 2007.

#### 1.2 The Site

1.2.1 The Site covers approximately 510m<sup>2</sup>, and comprised two buildings, Nos. 46 and 48-50 St Mary Axe. Both were demolished prior to the test pit evaluation. The latter, constructed in 1981 and recently the National Bank of Greece, stood on the corner of St Mary Axe and Bevis Marks and was flanked to the south by No. 46 St Mary Axe. Both buildings had basements extending to all boundaries.

1.2.2 46 St Mary Axe was the subject of archaeological excavations in 1988. That excavation and subsequent construction work is believed to have removed all archaeological potential. Consequently, the perceived archaeological potential of the Site, and the subject of the evaluation, was confined to 48-50 St Mary Axe.

#### 1.3 Planning Background

1.3.1 FREP St Mary Axe Limited obtained the Site with conditional planning consent (Registered Plan No: 02-5250), granted in 2003, for the erection of a new office building of 8 storeys with one basement level.

1.3.2 It is intended that the new building will be supported on a **1.2m** thick raft foundation, the surface of which will be at *c.* **11.34m aOD** (similar to that pre-existing).

- 1.3.3 The consented planning application was supported by an Archaeological Impact Assessment (MoLAS 2002) prepared for the Applicant, the National Bank of Greece, in accordance with the principles of the Department of the Environment's Planning and Policy Guidance Note 16- Archaeology and Planning, November 1990 (PPG16).

## **2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND**

### **2.1 The Site and its Environs**

- 2.1.1 The City of London stands on a terrace of fluvial glacial outwash gravels, normally capped by fine grained, possibly Pleistocene loessic 'brickearth' (Langley silts). Underlying solid geology comprises Tertiary London Clay beds (BGS 1994).
- 2.1.2 Information derived from archaeological investigations within 46 St Mary Axe in 1988 suggests any brickearth formerly on the Site had been removed; natural deposits, comprising sands and gravels, surviving to a maximum height of between **9.50m above Ordnance Datum (aOD) and 10.25m aOD** were recorded. In contrast, to the east of the Site 'brickearth' was recorded surviving to a height of 11.58m aOD in investigations carried out in 1980. It was suggested that natural sand and gravel deposits across the Site had been reduced by at least 1.25m.

## **3 ARCHAEOLOGICAL BACKGROUND SUMMARY**

### **3.1 Archaeological Impact Assessment**

- 3.1.1 The Archaeological Impact Assessment of the Site prepared by the Museum of London Archaeological Service (MoLAS 2002) detailed the archaeological and historical background to the Site, information which is not reproduced here. However, for the purpose of illustrating the archaeological potential of the Site the information is summarised below.

### **3.2 Prehistoric (to AD 43)**

- 3.2.1 There is growing evidence that the area of the City of London was exploited in the later prehistoric periods, although evidence for this has been severely compromised by all subsequent periods. Nevertheless, to the south of the Site in St Mary Axe a Bronze Age axe and Iron Age pottery have been recorded. Further evidence of prehistoric activity in this area of the City would be of significance.

### **3.3 Romano-British (AD 43-410)**

- 3.3.1 Located in the north-eastern part of Roman *Londinium*, the Site lies some 25m south-east of (within) its 2<sup>nd</sup> century walled defences. An earlier defensive ditch, recorded to the south of the Site, suggests the Site initially lay outside the earliest extent of *Londinium*. In this location, the Site lies away from the Roman City's principal streets and monuments in an area that



was relatively undeveloped and which, on the basis of information recorded beneath 46 St Mary Axe, and to the east, was exploited for the quarrying of brickearth, used in building materials, and waste disposal. Apparently dumped deposits recorded at 46 St Mary Axe may relate in some way to the City wall, perhaps representing upcast from excavation, an attempt to relieve drainage problems, or, conceivably an earthen rampart behind the wall.

### **3.4 Saxon (AD 410 – 1066)**

3.4.1 In keeping with evidence of Saxon occupation located initially west of the former Roman City and scant evidence for reoccupation of the Roman City until the 9th and 10th centuries, no discoveries of Saxon date have been made close to the Site.

### **3.5 Medieval (AD 1066 – 1499)**

3.5.1 The medieval City expanded rapidly from the 11th century and was characterised by timber and masonry structures, including churches, from the 12th century. The proliferation of religious houses is reflected in the vicinity of the Site with Holy Trinity Priory, founded 1108, lying to the east. The churches of St Mary Axe and St Andrew also appear to be 12th century foundations while another church, St Augustine Papey, lay north of the Site against the City wall until its demolition in the 16th century.

3.5.2 Bevis Marks and St Mary Axe appear to be established streets in the medieval period and are likely to have been built up, the former running inside the line of the former Roman City wall, which was maintained in this period.

3.5.3 Archaeological evidence, structures, boundaries, industry, and domestic waste in pits, from 46 St Mary Axe and immediately to the east of the Site, appear to indicate the thriving medieval City extended as far as its defences. The area of the Site and possibly the Site itself was built up by the late medieval period, an indication of which is its depiction on the Agas map, dated 1560, which appears to show the corner of Bevis Marks and St Mary Axe occupied by a tenement.

### **3.6 Post-Medieval and Modern (AD 1500-Present Day)**

3.6.1 Cartographic evidence shows the area of the Site intensely built up with tenements in the 17th and 18th centuries, reflecting London's growing population and economic importance. Rocque's map of 1746 appears to show the Site was partially occupied by the Fletchers Hall, the livery hall of the Fletchers Company and later maps suggest the Site's current property boundaries were established by the late 17th century.

3.6.2 The façade of 46 St Mary Axe is all that survives of the building erected in the late 19th century and substantially replaced in 1988. The recently demolished property at 48-50 St Mary Axe, previously the National Bank of Greece, was erected between 1979 and 1981.

## **4 THE PRESENT SITE**

### **4.1 Condition**

4.1.1 The Site, on the north-east corner of St Mary Axe, comprised 46 and 48-50 St Mary Axe. Both buildings contained extensive basements and stood unoccupied during the borehole investigation. The buildings had been demolished down to the basement slab prior to the test pit evaluation. There remained a substantial quantity of demolition rubble on the Site, which was used in the form of a ramp to allow access to the Site.

### **4.2 Estimate of surviving archaeological remains and finds**

4.2.1 This estimate (statement of expectation) considers the extant archaeological potential of the Site to be confined to beneath the basement slab of 48-50 St Mary Axe alone and does not extend south over the remainder of the Site, i.e. below 46 St Mary Axe, for reasons set out in the Archaeological Impact Assessment (MoLAS 2002).

4.2.2 The existing basement slabs over the Site have a surface level around 11.34m aOD. Formed during development between 1979 and 1981, the basement slab of nos. 48-50 St Mary Axe is thought to be 0.50m thick and overlies underpinning works to the southern and eastern party walls, and mass concrete pad foundations the number, extent and depth of which are not known. The underside of the slab is estimated to lie at approximately 10.84m aOD. In places deeper installations occur, including two lift pits (inside southern wall), which descend to a level of 8.75m aOD, and a strong room (inside western wall), the foundations of which extend to c.9.85m aOD (MoLAS 2002). It may be concluded that construction of the existing building has reduced levels down to 10.84m aOD generally, and to deeper levels in specific areas.

4.2.3 The surface level of natural deposits comprising sands and gravels, probably reduced from their original height, is estimated as being between 9.50m aOD and 10.25m aOD, and may vary across the Site, based on evidence derived from investigations beneath 46 St Mary Axe.

4.2.4 Taking account of the extrapolated surviving height of natural deposits and the underside of the present slab and deeper installations, it is suggested that archaeological deposits may survive beneath the slab in localised areas. The thickness of these deposits may vary between 1.34m and 0.59m and be most shallow inside the western boundary of the Site, coincident with the deeper impact of the existing strong room. Given the number size and extent of the mass concrete pad foundations remains uncertain, the volume of archaeological deposits is not possible to estimate.

4.2.5 The severity of impact caused by the existing building on nos. 48-50 St Mary Axe will have been considerable and has almost certainly significantly reduced the Site's archaeological potential. Nevertheless, surviving archaeological deposits that may be expected would seem most likely to comprise remains of Roman, medieval, and post-medieval date. Roman and

medieval deposits similar to those encountered beneath 46 St Mary Axe may be expected as well as deep features such as wells, pits, and foundations of all periods up to the mid-19th century.

4.2.6 There is no evidence from the Site to date that it may contain archaeological remains of any period of exceptional quality and condition. However, it can be demonstrated that the Site has archaeological potential comprising:

- A low potential for remains of Prehistoric date, although such finds would be rare and locally significant
- A high potential for remains of Roman date of local significance
- A low potential for remains of Saxon date although such finds would be rare in the area of the Site and locally significant
- A low potential for remains of medieval date although such finds would be locally significant

## **5 AIMS AND OBJECTIVES**

### **5.1 Summary**

5.1.1 The area surrounding the Site has provided archaeological information that appears to characterise the Site's potential, notwithstanding the considerable impact of the existing structure on that potential.

5.1.2 Excavations in 1988 on the Site, beneath 46 St Mary Axe, recorded a stratified sequence of Roman and medieval deposits, possibly associated with the defences of *Londinium* and suggestive of the Site's open character in these periods, attracting waste or agricultural activity. Later use of the Site was suggested by a cellar of post-medieval date.

### **5.2 Research Aims**

5.2.1 The aim of the evaluation was to record the location, extent, date, nature, character and relationships of archaeological remains revealed.

5.2.2 Specific questions that the evaluation sought to answer include:

- Do archaeological deposits survive beneath and between the slab and foundations of the existing building?
- What is the extent of modern disturbance and foundations?
- What is the surviving extent of the archaeological deposits?
- Is there any evidence for Prehistoric activity on the Site?
- Where Roman deposits survive, what do they represent- part of defensive works, waste disposal, or agriculture?
- Does the possibly late 3<sup>rd</sup> century east-west ditch encountered east of the Site continue into the Site?
- Do remains of medieval date survive and what is their nature?

- When was the Site first built on, and does the Site contain structural remains of either medieval or post-medieval date for which a use may be suggested?

## **6 METHODS**

### **6.1 Introduction**

6.1.1 The above aims were addressed through a programme of archaeological work comprising an evaluation of two test pits (TP 1 & 2) formed from the existing basement slab and the monitoring of a borehole (BH2) of a geotechnical Site Investigation (**Figures 1 & 2**).

### **6.2 Fieldwork**

6.2.1 The test pits were located to provide a sample of deposits across the Site while taking into account the physical constraints on their location presented by the demolition activity and services. The test pits were located to provide a reasonable spread of information concerning existing impacts and actual archaeological potential.

6.2.2 The bore hole and test pits were formed and broken out by subcontractors on behalf of Wessex Archaeology and Soil Consultants Ltd (for geotechnical works).

6.2.3 Both test pits were c. 2m x 2m and expected to be c. 1m deep.

6.2.4 The test pits were formed by the sub-contractor through the existing slab and modern deposits to the top of archaeological deposits under the supervision of Wessex Archaeology. All subsequent excavation, of and through archaeological deposits, was carried out by Wessex Archaeology.

6.2.5 Formation of the borehole (Borehole 2) was monitored by Wessex Archaeology and a log was made of the immediate results in conjunction with the geotechnical contractor. It was intended, primarily, to record slab thickness, modern deposits, archaeological deposits and the uppermost natural deposits in this way.

### **6.3 Standards and Practices - Fieldwork**

6.3.1 All fieldwork was conducted in compliance with the standards outlined in the Institute of Field Archaeologist's Standard and Guidance for Archaeological Evaluations (revised September 1999), and the Corporation of London's Department of Planning and Transport Planning Advice Note 3 'Archaeology in the City of London', 2004.

### **6.4 Standards and Practices - Recording**

6.4.1 Recording was undertaken in accordance with the guidance given in the Corporation of London's Department of Planning and Transport Planning Advice Note 3 'Archaeology in the City of London', 2004.

- 6.4.2 A unique site code (**AMX 07**) was agreed with the Museum of London. All exposed archaeological deposits were recorded using a *pro forma* recording system compatible with those used most extensively across London.
- 6.4.3 A complete drawn record of excavated archaeological features and deposits was compiled. The graphic record includes plans and sections, drawn to appropriate scales (1:20 for plans, 1:10 for sections), and with reference to a site grid tied to the Ordnance Survey National Grid. The OD height of all principal features and levels was calculated and plans/sections have been annotated with OD heights. All plans were electronically scanned and digitised as necessary.
- 6.4.4 A ‘Harris matrix’ was employed to record stratigraphic relationships.
- 6.4.5 A full photographic record of the recording project was maintained using both colour transparencies and black and white negatives (35 mm film) and digital images. The photographic record illustrates the detail and the general context of the principal features, finds excavated, and the site as a whole.

## **6.5 Standards and Practices - Finds and Environmental Sampling**

- 6.5.1 Finds and environmental samples were treated in accordance with the guidance given in the Corporation of London’s Department of Planning and Transport Planning Advice Note 3 ‘Archaeology in the City of London’, 2004.
- 6.5.2 All artefacts were retained from excavated contexts, except features or deposits of undoubtedly modern date (post 1800 AD).
- 6.5.3 All artefacts were, as a minimum, washed, marked, counted, weighed and identified. The metalwork will be X-rayed and stored in a stable condition along with other fragile and delicate material.
- 6.5.4 The strategy for sampling archaeological and environmental deposits and structures was developed by Wessex Archaeology in consultation with the Corporation of London Senior Planning and Archaeology Officer.
- 6.5.5 Bulk environmental soil samples were taken from appropriate sealed archaeological features for plant macrofossils, small animal bones and small artefacts.

## **7 RESULTS**

### **7.1 Introduction**

- 7.1.1 This section summarises the results of the archaeological monitoring and evaluation undertaken in February and August 2007. A more detailed summary of the borehole survey and full details of the test pits are in tabulated form in Appendix 1 and 2. The geotechnical report (SCL 2007) contains the comprehensive borehole results.

## **7.2 Borehole 1 (46 St Mary Axe)**

7.2.1 The basement floor slab was at **c. 11.34m aOD**. The initial deposits comprised a concrete slab to a depth of c. 2m below the slab surface (**c. 9.35m aOD**).

7.2.2 Natural deposits of sand and gravel were encountered immediately below the base of the slab. No archaeological material was observed. The archaeological resource appears to have been removed from this location, confirming previous information, which suggested that no archaeological potential survives beneath No. 46 St Mary Axe.

## **7.3 Borehole 2 (48-50 St Mary Axe)**

7.3.1 The basement floor slab was at **c. 11.34m aOD**. The initial deposits comprised two concrete slabs separated by approximately 0.2m of gravel and building rubble, extending to a depth of c. 2m below the slab surface (**i.e. to c. 9.35m aOD**).

7.3.2 Natural gravel and sand was encountered immediately below the slab base, with no evidence for any archaeological remains. Natural clay deposit was recorded at **5.15m aOD**.

## **7.4 Test pits (48-50 St Mary Axe)**

### *Test Pit 1*

7.4.1 Modern overburden (**100-102**) in the form of three distinct concrete slabs (one reinforced) extended to a depth of 0.6m (**10.74m aOD**) (**Figure 2 & Plate 1**). The slab immediately overlay two to three archaeological features, pits cut into natural gravel and sand also visible immediately below the slabs. A thin deposit of sandy gravel (**103**) was observed just below the slabs, above pit fill **106**, and is probably associated with construction of the slabs.

7.4.2 All three features were large pits, possibly the result of quarrying activity, and subsequently in-filled with waste. The pits, observed in the south-eastern section of the test pit were sampled only to a limited, if informative, degree, would appear to be of medieval date.

7.4.3 The earliest pit(s) in the sequence (**107 & 112**) are potentially the same pit (over 2.9m long if this is the case). The sides were straight and vertical, although exposure was incomplete. The backfill (**104 & 106**) was a dark grey and greenish grey silty clay with sand, contained flecks of brown brickearth and numerous finds including charcoal, oyster & mussel shell, ceramic building materials (CBM), pottery and daub. A small copper alloy object was found in **106**.

7.4.4 Pit **111** was characterised by interrupted lenses of brown brickearth and grey stiff sandy silt. The southern side was defined by a clear deposit (**108**) of reddish brown cess (or fish waste, see below 9.4.8). The latest deposit was **105**, a dark brownish grey silty clay and sand containing abundant charcoal

fragments and gravel. This deposit also contained CBM, daub, pottery, shell, animal bone and a small copper alloy object (small find number 2).

*Test Pit 2*

- 7.4.5 The test pit revealed an initial concrete slab c. 1m thick (**200**) (**Figure 2 & Plates 2-3**). Below this was a deposit of gravel, sand and building debris, c. 0.1m deep (**201**). Further machine excavation revealed a second concrete slab (**203**), below the gravel and sand, at a depth of **10.24m aOD**.
- 7.4.6 Due to the depth at which the lower slab was found, it was concluded that the results of Borehole 2 could be confirmed and that deeper excavation beneath the deepest slab was not necessary.

**8 FINDS**

**8.1 Introduction**

- 8.1.1 A small quantity of finds was recovered, deriving from the fills of two (or three) pits encountered within Test Pit 1. Datable material (pottery, ceramic building material) suggests that these pits are of medieval date. All finds recovered have been quantified by material type within each context, and the results are presented in **Table 1**.

**Table 1: All finds by context (number / weight in grammes)**

<b>Context</b>	<b>Animal Bone</b>	<b>CBM</b>	<b>Fired Clay</b>	<b>Pottery</b>	<b>Other Finds</b>
104	3/96	2/176	1/12	4/75	1 worked flint
105	1/37	1/128			1 copper alloy
106			1/161		1 building stone; 2 copper alloy
108	1/4			1/12	
<b>TOTALS</b>	<b>5/137</b>	<b>3/304</b>	<b>2/173</b>	<b>5/87</b>	

CBM = ceramic building material.

**8.2 Summary**

- 8.2.1 Finds from pit(s) **107/112** (fills **104** and **106**) comprise animal bone (cattle and bird), ceramic building material (medieval glazed roof and unglazed floor tile), fired clay (abraded and featureless fragments), medieval pottery, building stone, copper alloy (?waste fragments), and one piece of prehistoric worked flint. The pottery wares include early medieval shelly and sandy/shelly wares (EMSH, EMSS), including one jar rim, which can be dated c. 1000-1150; and South Hertfordshire/Limpsfield greyware (SHER; c. 1140-1300). A fourth sherd may not be pottery, but possibly some form of ceramic mould fragment, perhaps from bronze-casting, an interpretation supported by the presence of the copper alloy ?waste fragments.

- 8.2.2 Fewer finds were recovered from pit **111** (fills **105** and **108**), comprising animal bone (cattle), medieval ceramic roof tile, one sherd of early medieval shelly ware, and one tiny piece of copper alloy? waste.

## **9 PALAEO-ENVIRONMENTAL EVIDENCE**

### **9.1 Aims**

- 9.1.1 Bulk samples were taken from two features in Test Pit 1 to evaluate the presence and preservation of palaeo-environmental remains. This information can contribute to the archaeological significance of sampled features, thus providing an indication of the significance of the archaeological potential as a whole.

### **9.2 Palaeo-environmental summary**

- 9.2.1 The charred remains would be in keeping with a general medieval date. This is both through the absence of glumes of spelt wheat (*Triticum spelta*) which are common upon other Roman sites in the City of London; e.g. Roman waterfront (Straker 1984); Fenchurch Street (Wessex Archaeology 2004); the East London Cemetery (Davies 2000), and through the presence of free-threshing wheat and rye, both of which mainly occur from the Saxon period to the present (Greig 1991). Pit **107** which contained the rye rachis was of possible Romano-British date, and while rye is known from other parts of Roman Britain, it is not present on any of the sites listed above.
- 9.2.2 The small amounts of fish bone, mussel shell and charred cereal remains are all indicative of general settlement waste and midden material for this period. There is at least some indication of cess, although calcium phosphate mineralisation can also be related to rotting fish.

### **9.3 Introduction and environmental samples taken**

- 9.3.1 Three bulk samples of 1 litre were taken, two from a probable medieval pit, pit **111**, and a further sample from a possible Romano-British pit, **107**. The samples were processed for the recovery and assessment of charred plant remains and charcoals.

### **9.4 Assessment Results: methods and data**

#### **Charred Plant Remains and Charcoals**

- 9.4.1 Bulk samples were processed by standard flotation methods; the flot retained on a 0.25 mm mesh, residues fractionated into 5.6 mm, 2mm and 1mm fractions and dried. The coarse fractions (>5.6 mm) were sorted, weighed and discarded. Flots were scanned under a x10-40 stereo-binocular microscope and the presence of charred remains quantified (**Table 2**). Preliminary identifications of dominant or important taxa are noted below, following the nomenclature of Stace (1997).



**Table 2: Assessment of the charred plant remains and charcoal**

Feature type/no	Context	Sample	size litres	flot ml	size	Grain	Chaff	seeds charred	Charcoal 4/2 mm	Other	Residue analysis	
											Charcoal >5.6mm	
Test Pit 1												
pit 111	105	1	1	120 <sup>2</sup>		C	-	-	50/20ml	fish (B) otic	-	
pit 111	109	2	1	5 <sup>0</sup>		C	-	-	-/2ml	min (C) fish (C) otic		
pit 107	104	3	1	10 <sup>0</sup>		C	C	-	2/2ml	moll-m(C) fish (C)		

KEY: A\*\* = exceptional, A\* = 30+ items, A = ≥10 items, B = 9 - 5 items, C = < 5 items, (h) = hazelnuts, smb = small mammal bones; Moll-t = terrestrial molluscs Moll-f = freshwater molluscs;

Analysis: C = charcoal, P = plant, M = molluscs, C14 = radiocarbon suggestions

NOTE: <sup>1</sup>flot is total, but flot in superscript = % of rooty material.

9.4.2 There were no roots in the samples, although that from pit **111** did contain a few, of what appeared to be modern, seeds of *Chenopodium* sp. However, otherwise the deposits seemed very well sealed. The charred material where present was generally well preserved.

#### *Charred plant remains*

9.4.3 The number of charred plant within each of the samples was generally small, although it must be remembered that they came from relatively small, 1 litre samples.

9.4.4 Pit **111 (105)** contained only a single grain of barley, while the sampled mineralised deposit from the edge of this feature (**109**) yielded both a grain of free-threshing wheat (*Triticum aestivum* sl) and a further grain of barley (*Hordeum vulgare* sl). The deposit yielded only a few mineralised seeds of woundwort (*Stachys* cf. *annua*), dead-nettle (*Lamium* sp.), and elder (*Sambucus nigra*). The samples also contained some conglomerated mineralised material with the impressions of plant stems of straw upon them.

9.4.5 In the way of cereals, pit **107** yielded a single unidentified fragment of cereal, one of barley (*Hordeum vulgare* sl), and a well preserved fragment of rye (*Secale cereale*) rachis. A possible fragment of stinking mayweed (*Anthemis cotula*), was also identified, along with two seeds of oat (*Avena* sp.), a seed of thistle (*Cirsium/Carduus* sp.) and amphibious bisort (*Persicaria amphibia*).

9.4.6 While this feature (pit **107**) did not contain any mineralised remains it did contain several seeds of elder (*Sambucus nigra*), which while possibly modern often survive by virtue of the nature of their hard seed coat.

#### *Charcoal*

9.4.7 Wood charcoal was recorded in all the flots (**Table 2**). That from pit **111 (105)** contained many fragments of large wood, including some possible fragments of bark.

### **Marine molluscs and shell fish**

- 9.4.8 The two samples from pit **111** both contained frequent vertebrae of fish and several otic bulae (the ear bones of fish) signifying the presence of fish-heads. The sample from pit **107** also contained fish vertebrae as well as several fragments of mussel (*Mytilus edulis*).

## **10 DISCUSSION**

### **10.1 Introduction**

- 10.1.1 The aims of the archaeological evaluation were agreed after consultation with the City of London Senior Planning and Archaeology Officer and set out in the approved Written Scheme of Investigation (Wessex Archaeology 2007). The results of the evaluation are considered below with regard to the aims and will be used to establish whether further mitigation is warranted and how it is to be undertaken.

### **10.2 Results of Evaluation**

- 10.2.1 The main aim of the evaluation was to record the location, extent, date, nature, character and relationships of archaeological remains, where revealed. The evaluation has addressed these aims as far as was practicable. The result of the evaluation would appear to indicate that a small area of severely truncated pits has survived in a localised area to the south-east and possibly north-east of Test pit 1.
- 10.2.2 The archaeological features found in Test Pit 1 were observed as cut into natural gravel, with only their lower portions remaining, seemingly the result of the severe impact of the construction of the existing slabs. The features comprised two or possibly three large pits, probably related to quarrying and certainly to the disposal of waste, dating to the medieval period.
- 10.2.3 At the location of Test pit 1, the formation of the existing slab appears to have reduced the archaeological features and adjacent natural gravel to a depth of **10.74m aOD** on three sides, with greater truncation on the south-west side to a depth lower than **10.38m aOD**.
- 10.2.4 The archaeological features were observed along the south-eastern edge of Test pit 1 (2.9m in length). It was not possible to establish their depth beyond c. 0.4m.
- 10.2.5 The modern disturbance and foundations in the location of Test pit 2 and Borehole 2 comprised approximately 2m depth of concrete slab that have removed all deposits above c. 9.34m.
- 10.2.6 Evidence for Prehistoric activity on the Site was found in the form of a single piece of worked flint, which was retrieved from a later pit fill and therefore considered residual.

- 10.2.7 No features of Romano-British date were observed. There was no evidence for the possible late 3rd century east-west ditch, encountered in previous archaeological work to the east of the Site.
- 10.2.8 The finds and environmental evidence suggests a medieval date for the pits found in Test Pit 1.
- 10.2.9 It was not possible to establish when the Site was first built on. The Site appears to contain no archaeological evidence of structures of any date.
- 10.2.10 The nature of the surviving archaeological resource, i.e. pits backfilled with waste material, confirms the conclusions of previous archaeological work that the area, in the north-east corner of the city, was largely open/undeveloped and attracted quarrying and waste disposal activity, both in the Romano-British and medieval periods.
- 10.2.11 The surviving archaeological resource would appear to be of local significance and poorly preserved. The pits represent a common practice, whether as primarily the result of localised gravel extraction or as, secondarily, for rubbish disposal. Their presence on sites of this nature and location is very common and the finds and environmental retrieved from them is, while varied, not exceptional.

## **11 CONCLUSION**

### **11.1 Statement of Potential**

- 11.1.1 The result of the evaluation suggests the Site contains very little potential for archaeological remains of any period. However, in a small part of the Site, there is potential for further evidence of the medieval pits, found in Test Pit 1, to be revealed. That evidence is likely to include finds and environmental remains similar to that recovered from the evaluation.

### **11.2 Impact of Proposed Development**

- 11.2.1 The development of the Site will in all likelihood remove all remaining archaeological potential from it. This will result from removal of the existing slabs and foundations and the construction of a new reinforced concrete raft foundation **1.2m** thick.
- 11.2.2 It intended for the surface of the new raft foundation to be formed at a height similar to the existing slab, i.e. at **11.34m aOD**. This will entail, in the area of Test Pit 1, where the existing slab is **0.60m** thick, reduction of the natural gravel and the archaeological features, by a minimum **0.60m**, to **10.14m aOD**.
- 11.2.3 The impact of the proposed development will be caused by the reduction of levels in the area of archaeological potential indicated in Test Pit 1, and the consequent, unavoidable reduction of the archaeological features that have been identified.

### **11.3 Recommendation for Archaeological Mitigation**

- 11.3.1 It is recommended that, further to consultation with the City of London Senior Planning and Archaeology Officer and in mitigation of the impact of the proposed development, a programme of archaeological work is carried out aimed to investigate the small area of medieval pits revealed by Test Pit 1.
- 11.3.2 The programme of work should be carried out following removal of the existing slab in the area of Test Pit 1.
- 11.3.3 The aim of the work will be to excavate the medieval pits under controlled archaeological conditions, to ensure an appropriate record of them is made and to recover artefacts and environmental remains.
- 11.3.4 The programme of work will require to be set out in a Project Design setting out the methodology by which the work will be carried out on the Site and requirements for post-excavation assessment of the results of the work. The Project Design will be submitted to and approved by the City of London Senior Planning and Archaeology Officer in advance of the work.

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## APPENDIX 1: TEST PIT SUMMARY TABLES

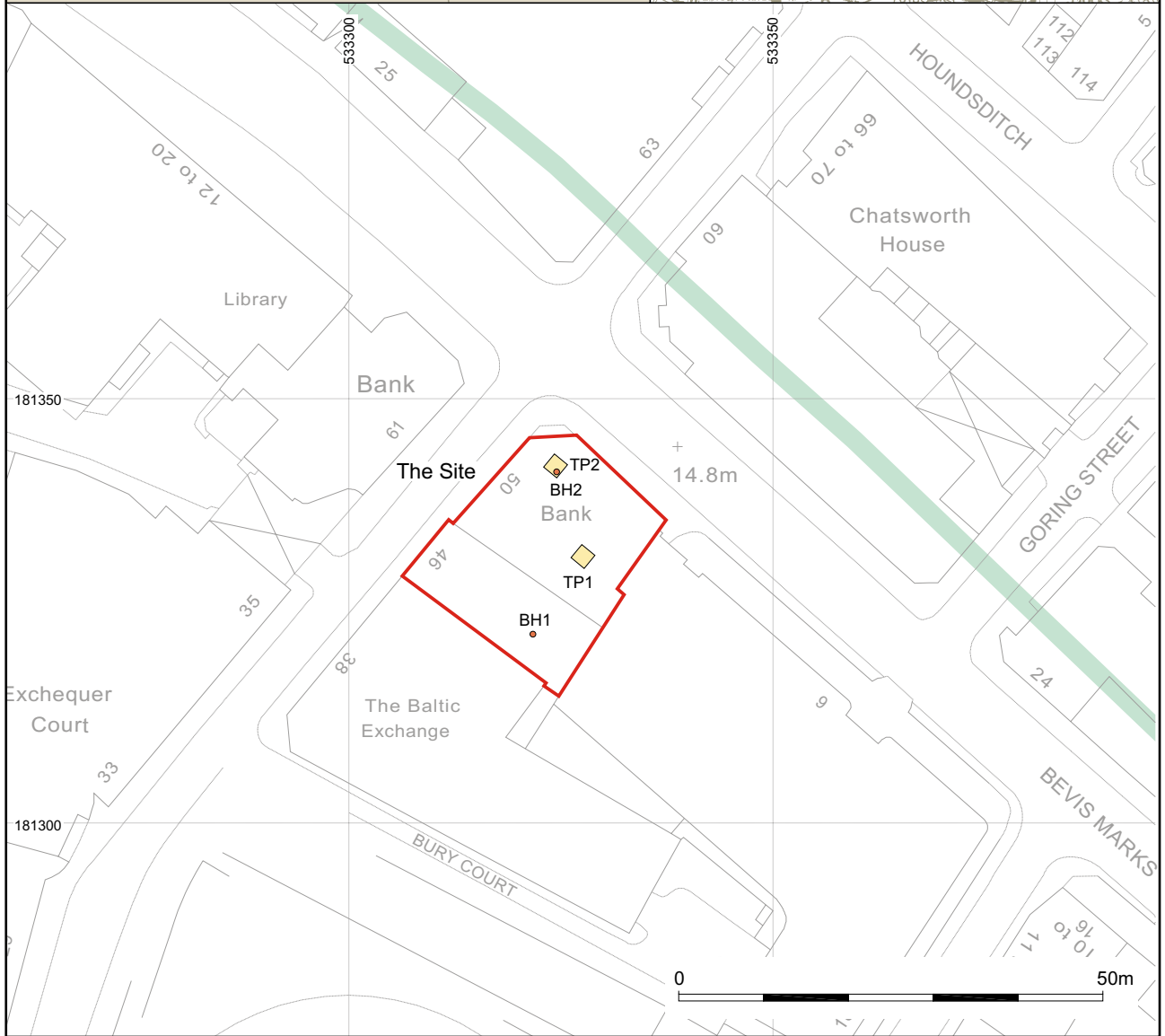
TEST PIT 1		L: 2.8m, W: 1.9m, max D: 0.94m		Ground level (m aOD): 11.34	
Context	Category	Stratigraphic relationships: Below/above	Description	Finds/ enviro	Depth (b.g.l)
100	Modern overburden	B: - A: 101	Concrete slab, possibly upper section of 101	None	0 m – 0.15m
101	Modern overburden	B: 100 A: 102	Concrete slab with steel reinforcements at base	None	0.15m – 0.35m
102	Modern overburden	B: 101 A: 103	Concrete slab	None	0.35m – 0.6m
103	Layer	B: 102 A: 105	Mid yellowish brown sand and gravel, c. 50:50. Similar to natural. Probably associated with slab construction	None	0.57m – 0.61m
104	Fill (pit 107)	B: 111 A: 107 Same as: 106?	Single observed fill. Dark grey & greenish grey silty clay & sand. Moderate flint gravel (subrounded & subangular 10-30mm). Slightly cussy. More homogenous than 105. Patches of stiff grey sandy silt (& some clay)	C/coal, CBM, pot, daub, shell (oyster & mussel) Sample <3>	0.6m – 0.9m+
105	Fill (pit 111)	B: 103 A: 108 Same as: 108	Upper fill of pit. Dark brownish grey silty clay & sand. Frequent/moderate c/coal 10-30mm. Rare flint gravel (subrounded & subangular 10-30mm)	C/coal, CBM, daub, pot, animal bone. Copper alloy object V – 2 Sampled <1>	0.6m – 0.94m+
106	Fill (pit 112)	B: 111 A: 112 Same as: 104?	Single observed fill. Dark grey & greenish grey silty clay & sand. Moderate flint gravel (subrounded & subangular 10-30mm). Slightly cussy. More homogenous than 105.	Copper alloy object V - 1	0.6m – 0.94m+
107	Pit cut	B: 104 A: 113 Same as: 112?	Unexcavated. Straight, vertical sides	-	0.6m – 0.9m+
108	Fill (pit 111)	B: 105 A: 109 Same as: 105	Dark greyish green silty clay – probably 105 stained by cussy fill 109		0.6m – 0.94m+
109	Fill (pit 111)	B: 108 A: 111	Dark reddish brown silty clay – friable. Cussy material.	Sampled <2>	0.6m – 0.94m+
110	Void	Void:	Void	Void	Void
111	Pit cut	B: 109 A: 104 & 106	Unexcavated. Straight, vertical sides	-	0.6m – 0.94m+
112	Pit cut	B: 106 A: 113 Same as: 107?	Unexcavated. Straight, vertical sides	-	0.6m – 0.94m+
113	Natural geology	B: 107 & 112 A: -	mid brownish yellow gravelly sand, poorly sorted fine & coarse sand. C. 35% gravel subrounded – subangular <40mm.	-	0.6m+
<b>Comment</b>		<i>Access difficult. Only sides of the pits were observed so excavation was minimal to retrieve finds. Small environmental samples were taken to ascertain potential and aid mitigation strategies</i>			


<b>TEST PIT 2</b>		L: c. 2.5m, W: c. 2.5m, max D: c. 1.1m		<b>Ground level (m aOD): 11.34</b>	
<b>Context</b>	<b>Category</b>	<b>Stratigraphic relationships:</b> <b>Below/above</b>	<b>Description</b>	<b>Finds/ enviro</b>	<b>Depth (b.g.l)</b>
200	Modern overburden	B: - A: 201	Concrete slab	None	C. 0 - 1m
201	Modern overburden	B: 200 A: 202	Coarse gravel and sand, grey and yellow, some concrete	None	C. 1.0m – 1.1m
202	Modern overburden	B: 201 A: -	Concrete slab	None	C. 1.1m+
<b>Comments</b>		<i>Test pit observable but inaccessible due to health and safety issues. Recorded from a distance of approx 4m. See borehole 2 for deeper sequence</i>			

## APPENDIX 2: BOREHOLE SUMMARY TABLES

<b>BOREHOLE 1</b>	<b>ground surface level: c. 11.35m aOD Diameter: 150mm</b>		<b>depth (b.g.l)</b>
1	Basement slab	reinforced concrete	0m – 2m
2	Natural deposit	Dense orange brown slightly silty sand and gravel. Rare cobbles	2m – 3.34m
3	Natural deposit	Dense orange brown sandy gravel	3.34m – 6.04m
4	Natural deposit	stiff brown mottled red brown highly fissured clay, becoming more orange towards base	6.04m – 7.34m
5	Natural deposit	dark grey brown fissured clay	7.34m – 8.49m
6	Natural deposit	claystone	8.49m – 8.84m
<b>comments</b>	<i>Borehole continues to 40m, alternating sands, clays and claystone  Taken from Soil Consultants Limited (2007). Borehole 1 was located in 46 St Mary Axe, previously excavated in 1988</i>		

<b>BOREHOLE 2</b>	<b>ground surface level: c. 11.35m aOD Diameter: 150mm</b>		<b>depth (b.g.l)</b>
1	Basement slab	reinforced concrete	0m – 0.9m
2	Basement slab	Concrete rubble & brick, wood, metal & plastic	0.9m – 1.2m
3	Basement slab	reinforced concrete	1.2m – 2.0m
4	Natural deposit	dense yellowish brown slightly silty sand and gravel, rare cobbles	2.0m – 4.75m
5	Natural deposit	dense yellowish brown sandy gravel	4.75m – 6.2m
6	Natural deposit	stiff brown mottled orange brown highly fissured clay with iron staining	6.2m – 6.8m
7	Natural deposit	stiff dark grey brown fissured clay	6.8m – 9.35m
8	Natural deposit	claystone	9.35m
<b>comments</b>	<i>Borehole continues to 40m, alternating clays and claystone (&amp; some sand lenses)  Taken from On-Site archaeological observations and from Soil Consultants Limited (2007). Borehole 2 was located in the entrance to 48-50 St Mary Axe. Very close to the location of Test Pit 2</i>		

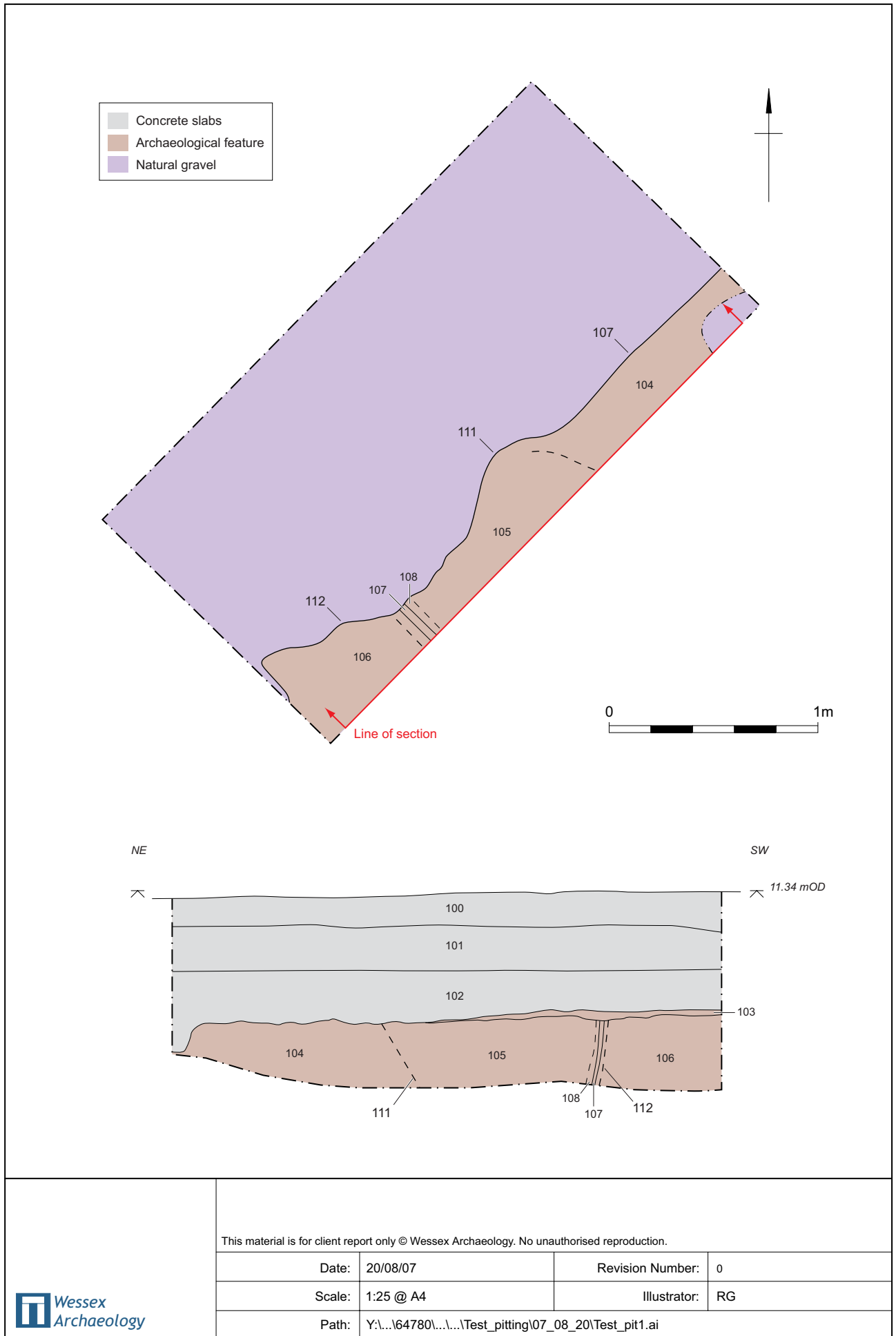


<p> <span style="display: inline-block; width: 10px; height: 10px; border: 1px solid black; background-color: yellow;"></span> Test-pit  <span style="display: inline-block; width: 5px; height: 5px; border: 1px solid black; background-color: red; border-radius: 50%;"></span> Borehole  <span style="display: inline-block; width: 20px; height: 2px; background-color: green; border-radius: 1px;"></span> Approximate line of the City Wall         </p> <p>  </p>	<p>           Reproduced from the 2000 Ordnance Survey 1:25000 Explorer © map with the permission of the controller of Her Majesty's Stationery Office © Crown copyright, Wessex Archaeology, Portway House, Old Sarum Park, Salisbury, Wiltshire. SP4 6EB. Licence Number: 100028190.            Digital data reproduced from Ordnance Survey data © Crown Copyright 2007 All rights reserved. Reference Number: 100020449.            This material is for client report only © Wessex Archaeology. No unauthorised reproduction.         </p>			
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Site location showing test-pits and boreholes

Figure 1





Test pit 1, plan and section

Figure 2

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Plate 1: Test pit 1 (taken from the south)



Plate 2: Detail of north-west facing section of Test Pit 1



Plate 3: Test pit 2 (taken from the north-east)



Before demolition



After demolition



**WESSEX ARCHAEOLOGY LTD.**

Head Office: Portway House, Old Sarum Park, Salisbury, Wiltshire SP4 6EB.

Tel: 01722 326867 Fax: 01722 337562 info@wessexarch.co.uk www.wessexarch.co.uk

London Office: Unit 701, The Chandlery, 50 Westminster Bridge Road, London SE1 7QY.

Tel: 020 7953 7494 Fax: 020 7953 7499 london-info@wessexarch.co.uk www.wessexarch.co.uk

