

**WEST POWDER MAGAZINE NORTH BLAST WALL
TILBURY FORT
ESSEX**

**ARCHAEOLOGICAL MONITORING
AND RECORDING**



Essex County Council
Field Archaeology Unit

May 2008

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RECORDING**

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ARCHAEOLOGICAL MONITORING AND RECORDING

SUMMARY

Client: English Heritage

NGR: TQ65157543

Site Code: THTF08

Project No: 1891

Date of Fieldwork: March 2008

Oasis Accession Number: Essexcou1-38947

Archaeological monitoring and recording was undertaken by Essex County Council Field Archaeology Unit within the scheduled ancient monument of Tilbury Fort, situated at the mouth of the River Thames. The investigation was undertaken to record any archaeological remains that might be disturbed during stabilisation of the north blast wall of the fort's western powder magazine.

The archaeological work included the observation and recording of three boreholes, hand-excavation of sixteen temporary access pits for ground anchors, and hand augering in three of the access pits.

Alluvial marshland silts and the water table were encountered at c.2.8m OD by both the boreholes and hand augering. Overlying this were multiple soil layers relating to the construction of the fort, but more specifically to the build-up of the earthen bank to the rear of the northern curtain wall and the construction of the blast wall surrounding the powder magazine. The 0.6m-deep access pits encountered only a single demolition spread that contained a variety of modern domestic waste and building debris. An incomplete lower portion of a buttress located against the western side of the Master Gunner's store was also recorded within the most easterly of the access pits.

The investigation has established that the ground anchors and their access pits do not affect any significant archaeological remains, and their impact is minimal.

1.0 INTRODUCTION

1.1 Planning Background

In March 2008, the Essex County Council Field Archaeology Unit (ECC FAU) carried out archaeological monitoring and recording on behalf of English Heritage in response to small scale conservation engineering works within Tilbury Fort, Essex. The groundworks comprised the excavation of temporary access pits and installation of ground anchors to support the unstable north blast wall of the west powder magazine. The investigation was required in order to establish if any archaeological remains would be disturbed. The requirement for archaeological investigation follows guidance given in Planning Policy Guidance note 16: Archaeology and Planning (Department of the Environment 1990).

This work was carried out in accordance with requirements outlined by the Inspector of Ancient Monuments for English Heritage East of England Region and a method statement prepared by ECC FAU (2008).

1.2 Report and Archive

Copies of this report will be supplied to English Heritage and the Essex Historic Environment Record. A version will be uploaded to the Online Access Index of Archaeological Investigations (OASIS) (<http://ads.ahds.ac.uk/project/oasis>). The project archive, including two copies of the report and a selection of the finds, will be deposited at Grays Museum, Thurrock.

2.0 BACKGROUND

2.1 Location and Topography

Tilbury fort is situated on low-lying ground on the north bank of the River Thames (TQ 6515 7543), south east of the modern outskirts of Tilbury and immediately east of Tilbury Docks. It is accessed via Fort Road off of the modern A1089 (Ferry Road) from Tilbury (fig. 1). Once surrounded by marshland, it is now flanked by commercial and industrial development with Tilbury Power Station situated on its eastern edge. The fort covers an area of c.16 hectares which has been subject to extensive landscaping over time. This means that ground levels within and immediately surrounding the fort are artificial and predominantly consist of re-worked soils with the alluvial marshland sealed beneath.

2.2 Historical and Archaeological Background

The following archaeological information has been taken from the Essex Historic Environment Record, English Heritage's Scheduled Monument description, published material and previous site investigation reports.

Tilbury Fort is a Scheduled Ancient Monument (SAM 26309, EHER 1678) that encompasses the buried remains of a blockhouse built by Henry VIII and the far larger and more complex fort and battery that succeeded the blockhouse in the late 17th century. Also included are the 18th, late 19th and early 20th century components/alterations, including a World War II pillbox (fig.1)

The blockhouse is thought to have been constructed in the 1540's as part of Henry VIII's campaign to improve coastal defences and was eventually encircled by a ditch and counterscarp bank with drawbridge and timber palisade. A barrack block and associated store buildings were also thought to exist within this enclosure. The blockhouse was incorporated into the existing fort between 1670 and 1680 during the reign of Charles II following successful raids up the Thames by the Dutch. The new fort was designed by Sir Bernard de Gomme (1620-1685) and is pentagonal in plan, with arrow-shaped bastions projecting from the four main angles. A fifth bastion is thought to have been planned but never completed. A linear battery extends along the shoreline with 14 gun emplacements, and a curtain wall both encloses and links the bastions. Parapets are located along each remaining sides to allow gun emplacements for supportive defence. Massive earthen banks have been constructed behind the walls to absorb impact from bombardment. Alterations and maintenance to the curtain wall, gun emplacements and earth banks have taken place over the fort's history in order to modernise its defensive capabilities. Internal structures and buildings have also been added or altered throughout the 18th and 19th centuries.

Situated in the centre of the fort is 'The Parade', which is about a hectare in size. It is around this that the fort's internal structures and buildings are situated. To the west is the soldiers' barracks and opposite is the 18th century officers' barracks. On the north side of the parade are two powder magazines dating from 1716 that are surrounded by a blast wall that was built in 1746. The two magazines are separated by a passage that allows access via the Landport Gate directly to the north. The main entrance to the fort is known as the Water Gate and is situated in the middle of the south curtain wall. Situated on the western side of the Water Gate are the guard room and the chapel. Following damage by bombing in World War II the soldiers' barracks, kitchen, mess hall, hospital, and other internal structures have been demolished.

Elaborate earthworks surround the landward sides of the fort. The curtain wall and bastions are flanked by a broad terrace which is surrounded by a wide moat that follows the outline of the fort. A narrow strip of land that contains complex defensive structures such as the 'Covered Way' then separates this channel from a more sinuous outer moat. The moats are traversed by a series of bridges and causeways that lead up to the Landport Gate. Of particular interest is the ability to manage the water both within the moats and the immediate surroundings via a series of sluices in order to support the forts defences or provide access for maintenance.

The Eastern and Western Powder Magazines

In the 17th century Sebastian Le Prestre de Vauban (1633-1707), a French military engineer who served Louis XIV, set a new standard for the construction of fortifications. Typically, his design for powder magazines was rectangular, generally measuring 20 x 8m, although there were exceptions. The gable walls were thinner than the side walls and these were reinforced with external buttresses. Ventilation was provided through the walls and access was through a single doorway in one of the gable ends. A 2m thick vault covered the building, firstly pointed, and then rounded, and a roof of slate or two layers of tile protected the vault from the weather. An enclosure wall surrounded the magazine, with a single access door guarded by sentry posts.

Clearly, Bernard de Gomme had drawn on aspects of Vauban's design at Tilbury Fort. Both magazines are larger than usual at 35.2m by 11.2m but overall their construction is typical. Each has two entrances in the south wall rather than the gable end and its internal wooden floors are reinforced with copper sheeting. Decorated copper sheeting also covers the wooden doors leading into the magazines. The surrounding blast wall originally had entrances corresponding to the magazines themselves. However, these were later blocked and new openings created that were staggered to enable more effective blast containment. The magazines were further altered in the 19th century but contain many of their original features such as ventilation slits. It is believed that the magazines are too large for the fort's needs alone so they may have been used to store gunpowder from the incoming ships so that they could safely dock at the port of London and then restock on their way back out to sea.

Recent archaeological investigation on the roofs of both the eastern and western powder magazines (Peachey 2003) indicated that they were of mid-19th century date and conventionally described as 'bomb proof'. They are certainly not original. Plugged holes

were observed in the eastern roof, presumably originally for ventilation. In the western roof, mason's marks were discovered, paired on either side to aid construction.

3.0 AIMS AND OBJECTIVES

3.1 Aims

The main aim of the monitoring was to determine the location, extent, date, character, condition, and significance of any surviving archaeological remains liable to be disturbed by the ground anchors and their temporary access pits. Furthermore, it would provide a record of those below-ground remains encountered, including the depth at which the underlying salt marsh deposits survived and where the water table was located.

4.0 METHODS

The archaeological investigation comprised two stages. The first involved the monitoring and recording of samples from three 4m-deep boreholes sunk on the upper slopes of the earth embankment adjacent and to the south of the north blast wall (figs. 1 and 2). The second part of the archaeological works comprised the excavation of sixteen access pits that were situated against the north blast wall, measuring 0.9x0.3m and 0.6m deep. These would eventually act as access pits for the ground anchors and were positioned in line with, and between the buttresses of the western powder magazine's southern façade (fig. 1). Unfortunately, the previous machine-dug boreholes were unable to get close enough to the blast wall to ensure that the ground anchors would not disturb buried wall lines or other archaeological remains in close proximity. Consequently, hand augering was undertaken to a depth of 1.5m in three of the access pits 1, 8, and 15 (fig. 3).

All fieldwork methods and recording conformed to the codes of practice and guidance issued by the Institute of Field Archaeologists (IFA 1999) and adhered to regional guidelines (Gurney 2003). Standard ECC FAU recording and excavation methods were used.

The access pits were excavated using hand tools and finds were collected and bagged by context. The location of each pit was surveyed through measurement to standing structures recorded on Ordnance Survey, and levels were taken relative to Ordnance Datum. Features and deposits were recorded using pro forma site recording sheets. Plans and sections were drawn at 1:10. A representative photographic record was maintained throughout the investigation.

5.0 RESULTS

The following description of fieldwork results is supplemented by further information on the excavated features and deposits presented in figures 2 and 3.

5.1 Borehole Survey

Three main layers were identified by boreholes 1, 2, and 3 (figs 1 and 2). Rich organic alluvial silts (6) were consistently found at the base of each bore-hole at c.2.90m OD. These silts represent the original marshland soils that included preserved plant matter and carbonised remains. Unsurprisingly, no finds were recovered to date the soils. Overlying the alluvial silts were layers (4) and (5) that denote successive levellings of the site, including the massive earthen bank to the rear of the northern curtain wall. Both likely dated to the early phases of the fort's construction and comprised clean mixed re-deposited natural clays, silts, and sands with few inclusions other than occasional rounded gravels and grits.

Periodically, the boreholes discovered pockets or lenses of other material sandwiched between the three main layers. These localised deposits were not assigned a numerical identification but are described in figure 2. These represent localised variations of material dumped during the construction process. Again, no finds were recovered to date these deposits.

Above the clean re-deposited alluvium in boreholes 1 and 3 was re-worked, re-deposited alluvium (3). The composition of the layer was similar to the clean clay silts below but contained abundant flecks and fragments of chalk, tile, and brick. It was probably up-cast from later excavation into the earth banks during construction of the blast wall that surrounds the western powder magazine.

A layer of mixed organic soil and rubble sealed layer (3) in two of the three boreholes. This layer of modern debris was also found within all sixteen subsequent access pits dug at the base of the blast wall (fig. 1). Topsoil and turf capped the described soil sequence in each of the boreholes.

5.2 Access-pits and hand augering

The access pits were excavated to a depth of c.0.60m (figs. 1 and 3). They only encountered one soil horizon of modern debris that butted up against the blast wall and overlay the re-worked clay (3) first seen in the previous borehole survey (see section 5.1).

Structural remains, other than the base of the blast wall, were identified in access pit 16. A substantial but incomplete brick-built structure that consisted of a well laid and finished southern face with a core of roughly mortared brick and stone (fig. 4) marked the continuation of a buttress against the western façade of the Master Gunner's Store. A gap of c.0.10m existed between the buttress and the blast wall. Unfortunately, because of the limited size of the access pit only a small part of the buttress was observed. Archaeological evidence together with the impractical distance between the two structures, suggests that the buttress pre-dated the blast wall.

Hand augering undertaken in access pits 1, 8 and 15 (fig. 3) enabled a deeper investigation of the underlying soils whilst also ensuring that the anchors would not cause any damage to buried archaeological remains.

The hand augering encountered the alluvial clays at their expected depth between 2.78 and 2.93m OD. Overlying these marshland deposits was the clean mixture of clays, silts and sands (4/5) that have been built up into the earthen banks behind the curtain wall. The re-worked clay, which contained small fragments and flecks of brick, tile, chalk together with gravels and grit, overlay the clean build-up layer. None of the localised deposits previously identified were present this close to the wall and no earlier foundations or buried walls were encountered.

6.0 FINDS

Finds were recovered from sixteen contexts, representing the contents of a series of access pits into the same layer. All of the finds have been rapidly recorded by count and weight, in grams, by context. Full quantification details can be found in Appendix 1. Due to the relatively recent nature of the material, all of the finds have been discarded following recording, except where indicated. Tony Blowers examined and commented on the flint scraper from access pit 15 (see below).

A range of mainly modern finds was recorded. The largest assemblage component is brick and tile, found in fourteen of the access pits and amounting to a combined total of just over 32kg. The bricks are a mixture of Suffolk whites, London stocks and plain reds, with a nominal depth of 65mm, and therefore all likely to date to the second half of the 19th century. The roof tiles were all of similar manufacture, with two roughly-made and randomly-spaced peg holes at one short end. The tiles measure a nominal 275 x 165 x 15mm.

Modern pottery (eleven access pits), metalwork (twelve access pits) and glass (ten access pits) were recorded. The modern pottery comprises sherds of white earthenware and stoneware, the latter probably representing blacking bottles. The white earthenware included marmalade jars and parts of a dinner service, two of which had a George V crest on the flange. A saucer is marked Royal Doulton on the underside, with the date 1911, which was George V's coronation year. The glass includes mineral water and wine bottle sherds; several clear sherds probably derive from milk bottles. Access pits 2 and 15 also contained pieces of window glass. The metalwork largely comprises iron nails, brackets and hinges, and the like. Parts of a cast-iron drainpipe were found in access pit 15. A brass cartridge case (.303 gauge) was found in access pit 6.

Other modern material includes small lumps of cement (ten access pits), slate fragments, Tarmac-type material, and a worked bone knife handle with the remains of a flat iron tang (access pit 15). Leather shoe sole fragments were recovered from access pit 11 and plastic items were found in access pits 3 and 9.

Earlier material is present in very small quantities. Clay tobacco pipes were found in five of the access pits, although the bowl from access pit 15 is an early 20th-century type. A decayed sherd of bottle glass came from access pit 11. This may well have derived from an onion-type wine bottle of possible 17th-century date. Several access pits contained sherds of post-medieval red earthenware, most with brown internal glaze. This type of pottery has a nominal date-range of 17th to 19th centuries.

Of interest, is the flint scraper from access pit 15. This is a double-ended scraper on a flake, of Late Neolithic or Early Bronze Age date. All of the edges are worn through use rather than later abrasion.

Animal bone was recovered from ten of the access pits, amounting to just under 1kg in total. Cattle, sheep/goat and pig bones were all noted, along with the leg bone from a domestic fowl and a large fish vertebra. Most of the larger bones exhibited chop and saw marks, indicating that the entire assemblage is likely to represent food waste.

6.1 Comments on the Assemblage

The layer encountered by the access pits appears to be a relatively-recent rubble layer, deriving from nearby demolition of a building or buildings. The date and nature of the finds from the access pits would be consistent with such an event. The majority of the datable

material is 20th century, with earlier, mainly structural, elements. There are few finds present which can be dated firmly to the first half of the 19th century, or earlier.

Several diagnostic finds have been retained; the 19th-century wine bottle neck from access pit 13, the crested white earthenware and clay tobacco pipe bowl from access pit 15 and the flint scraper, also from access pit 15.

7.0 CONCLUSIONS

The borehole survey identified the lower sequence of soils on site that began with alluvial marshland silts and the water table at c.2.8m OD. The fort seems to have been built directly on top of this original land surface, which, alongside any potential earlier archaeological features, deposits, or layers, remain well preserved below. Certainly the recovery of a prehistoric flint scraper suggests that during the fort's construction earlier remains may have been encountered. Above the marshland was evidence for a succession of deposits that formed a level platform for the fort and the earthen bank behind the northern curtain wall. Two of the more substantial layers (4) and (5), both undated, suggest at least two main episodes of construction. Overlying these deposits was evidence for the re-deposition of layer (4) into a re-worked layer (3). This may have been created from the upcast produced upon excavation for the footings of the northern blast wall in the middle of the 18th century. Above (3) was a relatively thin spread of modern debris (unnumbered) that was capped by the turf line.

The hand augering undertaken at the base of access pits 1, 8, and 15 achieved a depth of c.2.6m OD, and encountered a similar sequence of soil build-up found during the previous bore-hole survey. The 0.6m-deep access pits only encountered the upper limit of the soil sequence and identified a single layer of dark organic silt that overlay layer (3) that contained a significant quantity of modern debris. This could relate to the spread of material from the more recent demolition of buildings on other parts of the site in WWII (see section 2.2).

In access pit 16, the continuation of a buttress to the Master Gunner's store was identified. It was in poor condition and may have been partially dismantled at some point or was simply unfinished. Its construction pre-dated the northern blast wall.

8.0 ASSESSMENT OF RESULTS

Overall, the results of this investigation are consistent with evidence from previous archaeological trenching undertaken across the fort that have recently been combined in a publication by Peter Moore (2000). Generally, these have shown that much of the area is made up of multiple undated re-deposited or re-worked levelling layers that relate to the initial construction of the fort and subsequent regular maintenance or alterations. Specifically, parallels can be made between the results of this investigation and Trench 45 (Moore 2000, fig. 9, 45), which was located against the western curtain wall and ran through the earthen bank to its rear (fig. 1). Trench 45 encountered a variety of layers that became more frequent closer to the wall, presumably because this was where maintenance of the bank was most necessary. Layers that were more substantial were encountered on the apex of the earthen bank as it sloped into the interior of the fort. The boreholes were located in a similar position as part of this investigation and found a similar frequency of layers that could have related to the early phases of the fort's construction.

Of particular interest in the previous investigation was a midden deposit (4242) that was located at the base of the soil sequence to the rear of where the soldier's barracks, kitchen, and other demolished buildings once stood. Interestingly, it contained the majority of the finds that have been recovered from across the fort site. No midden deposits were discovered during this investigation, as no domestic activity was likely to have taken place in close in proximity to the powder magazines.

The archaeological investigation has sufficiently characterised the type, character, and significance of any below-ground remains that have been impacted by the groundworks and specifically, was able to determine that the ground anchors and temporary access pits have had no significant impact on buried structures or earlier phases of construction within the fort.

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APPENDIX 1: FINDS

All Finds

Context	Count	Weight	Description	Date
TP1	1	142	Iron bolt and washer	Modern
	1	116	Pottery; large tripod foot with internal brown glaze PMRE	17th-19th C
TP2	1	230	Iron bolt	-
	1	18	Cylindrical carbon rod	Modern
	1	20	Animal bone; scapula, glenoid cavity, sheep/goat, chopped	-
	1	50	Slate fragment	-
	3	176	Glass; mineral water bottle base sherds, one with '...ner Brothers Makers' embossed along lower edge; window sherd	Post med.
	2	1845	Brick fragments, one Suffolk white with shallow frog, 110 x 65mm, one red, 100 x 60mm	19th C and earlier
	3	318	Roof tile fragments	Post med.
TP3	4	50	Pottery; rim and body sherds, white earthenware, marmalade jar	Modern
	1	14	Iron nail, length 100mm	-
	1	60	Iron bracket	Modern
	1	16	White metal, ?flashing	Modern
	1	56	Animal bone; vertebra fragment, large mammal	-
	3	186	Slate fragments	-
	1	42	Cement fragment	Modern
	1	1	Plastic	Modern
	3	50	Glass; mineral water bottle base sherd, embossed with BATES; bottle body sherds, one clear, one aqua	Modern
	2	565	Brick fragments; Suffolk white, depth 65mm	19th C
4	22	Pottery; rim and body sherds, white earthenware, two with blue transfer-printing; rim sherd, brown internal glaze, PMRE	Modern	
TP4	3	92	Iron strips, angled and pierced	Modern
	1	14	Cement fragment	Modern
	1	530	Stone, ?paving slab, depth 35mm	-
	1	12	Slate fragment	-
	9	70	Glass; rim and body sherds, mineral water bottle; clear rim sherd, ?milk bottle	Modern
	1	1210	Brick fragment, ?Suffolk white, mortared, 100 x 65mm	19th C
	2	138	Roof tile fragments	
	39	274	Pottery; rim, base and body sherds, white earthenware, most with blue transfer-printing; rim sherds, modern stoneware bottle; rim sherd, brown teapot lid	Modern
TP5	2	90	Cement fragments	Modern
	1	44	Slate fragment	-
	7	3255	Brick fragments, widths 100mm, depths 65mm	Post med.
	5	186	Roof tile fragments, one with peg hole	Post med.
	3	56	Pottery; rim, base and body sherds, white earthenware	Modern
TP6	3	1615	Iron bolt, very large with nut at end; iron strip with wire loops, as TPs 10, 12 and 13; iron bar	Modern
	1	10	Brass cartridge case, .303 gauge	Modern
	1	22	Glass; mineral water bottle body sherd	Post med.
	1	8	Clay pipe stem, large diameter (11mm)	Post med.
	1	825	Brick fragment, Suffolk white, 100 x 65mm	19th C
	5	242	Roof tile fragments, one with peg hole	Post med.
TP7	1	790	Iron pipe with angled joint at one end (gas pipe)	Modern
	2	2850	Brick, complete Suffolk white with shallow frog, 220 x 100 x 65mm; fragment, 100 x 63mm	19th C
	1	24	Roof tile fragment	Post med.
TP8	2	42	Animal bone; femur, proximal end and molar, sheep/goat	-
	1	56	Cement fragment	Modern

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Context	Count	Weight	Description	Date
	2 4 4 2 2	102 88 780 228 20	Tarmac-type fragments Glass; mineral water bottle base sherd; clear body sherds, two with rippled finish (?jelly mould) Brick fragments, depth 62mm Tile fragments Pottery; rim and body sherds, brown internal glaze, PMRE	Modern Modern Post med. Modern 17-19th C
TP9	1 3 2 1 3 3 3 1 3	8 24 64 4 8 2520 386 2 64	Iron nail, length 85mm Animal bone; vertebra fragments, chopped, large mammal; rib fragment Cement fragments Glass; clear body sherd (?milk bottle) Clay pipe stems Brick, Suffolk white, near-complete with shallow frog, 230 x 105 x 65mm; fragments Roof tile fragments, one mortared Plastic; bottle cap Pottery; body sherds, modern stoneware	- - Modern Modern Post med. 19th C Post med. Modern
TP10	1 1 3 3 1 1 3 1	410 10 66 22 8 4 1800 120	Iron strip, as TPs 6, 12 and 13 Iron nail, length 50mm Animal bone; ?pelvis fragments, large mammal Tarmac-type fragments Slate fragment Clay pipe stem, diameter 8mm Brick fragments, one Suffolk white with shallow frog, 105 x 65mm, one London stock, 108 x 65mm Roof tile fragment	Modern - - Modern - Post med. 19th C Post med.
TP11	1 1 1 17 1	30 66 34 26 34	Animal bone; scapula fragment, large mammal Shell, oyster, single valve Slate fragment Leather fragments, from a shoe sole Glass; dark green bottle body sherd, embossed with GRAW...	- - - Modern Modern
TP12	1 3 2 2 3	406 280 126 40 560	Iron strip, as TPs 6, 10 and 13 Animal bone; cattle astragalus and femur condyle, sawn at both ends; mandible fragment, large mammal Cement fragments Glass; dark blue poison bottle base sherd; wine bottle body sherd, decayed (possible onion-type bottle) Roof tile fragments, one with peg hole	Modern - Modern Post med/ modern Post med.
TP13	2 1 2 1 2 1 1 6 2	382 104 44 222 120 90 1185 620 50	Iron strips, with twisted wire loops attached Iron 'tin can' remains, flattened, height 105mm Animal bone; rib fragments, large mammal Cement fragment Stone tile fragments Glass; wine bottle neck and rim, applied lip (Retained) Brick fragment, 102 x 65mm Roof tile fragments, one with peg hole Pottery; rim sherds, white earthenware, marmalade jar	Modern Modern - Modern - 19th C Post med. Post med. Modern
TP14	1 3 8	70 1845 230	Cement fragment Roof tile fragments, each with two peg holes, widths 155 and 165mm, one near-complete, 275 x 165 x 15mm Pottery; rim, base and body sherds, plain white earthenware, two joining sherds from a fluted lid, one base sherd marked incuse 'MALING'	Modern Post med. Modern
TP15	1 5 6 19	10 1210 368 238	Length of twisted copper alloy wire, bent into a loop Cast iron drainpipe fragments Iron strip; iron bearing (with 'balls' still in place); iron boot-heel; iron tool shaft; iron fragments Animal bone; molar and metapodial, proximal end, pig;	Modern Modern Modern -

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Context	Count	Weight	Description	Date
	7	14	vertebra, astragalus and rib fragments, large mammal, chopped; scapula, sheep/goat; bird metatarsus; large fish vertebra	-
	6	114	Shell; large garden snail	Modern
	1	10	Cement/ vitrified fragments	-
	1	10	Slate fragment	Prehistoric
	3	56	Flint scraper (Retained)	Modern
	1	24	Worked bone knife handle fragments with remains of flat tang	20th C
	12	210	Clay pipe bowl, complete, with harp motif incuse (Retained)	Modern
	2	5090	Glass; mineral water and medicine bottle body sherds; window fragments x 6	Modern
	8	2345	Bricks, complete, one red, with ROSHER impressed along the frog, 230 x 105 x 65mm, one London stock with 'stepped' longer side, 230 x 100 x 65mm	Post med.
	36	1130	Roof tile fragments, four with two peg holes and width of 150mm, four with one peg hole	Modern
			Pottery; white earthenware sherds from plates, jugs and dishes, two with George V crest on flange and Royal Doulton marks on underside; modern stoneware bottle body sherds and neck with pouring lip; flowerpot saucer sherds; lower half of PMRE vessel with dark brown internal glaze (possible jug) Crested pottery retained (7/280g)	
TP16	2	220	Iron strip; iron angled bar with 11mm dia. hole at one end	Modern
	1	6	Iron nail	-
	2	94	Animal bone; vertebra fragments, large mammal, chopped	-
	1	186	Cement fragment	Modern
	1	2	Clay pipe stem	Post med.
	2	2515	Brick fragments, width 105mm, depths 62-65mm	
	2	590	Roof tile fragment with two peg holes, width 150mm; pantile fragment (curved outer edge)	Post med/ modern
	8	414	Pottery; joining rim, base and body sherds, white earthenware marmalade jar; base sherd with brown glaze both sides PMRE	Modern

APPENDIX 2: CONTENTS OF ARCHIVE

SITE NAME; WEST POWDER MAGAZINE NORTH BLAST WALL, TILBURY FORT, ESSEX

Index to the Archive

File containing:

1. Introduction

- 1.1 Brief for the archaeological investigation
- 1.2 Written scheme of investigation

2. Research Archive

- 2.1 Client Report
- 2.2 Analytical Reports
 - 2.2.1 Finds Report
- 2.3 Catalogues
 - 2.3.1 Context Finds Record
 - 2.3.2 Finds Catalogue

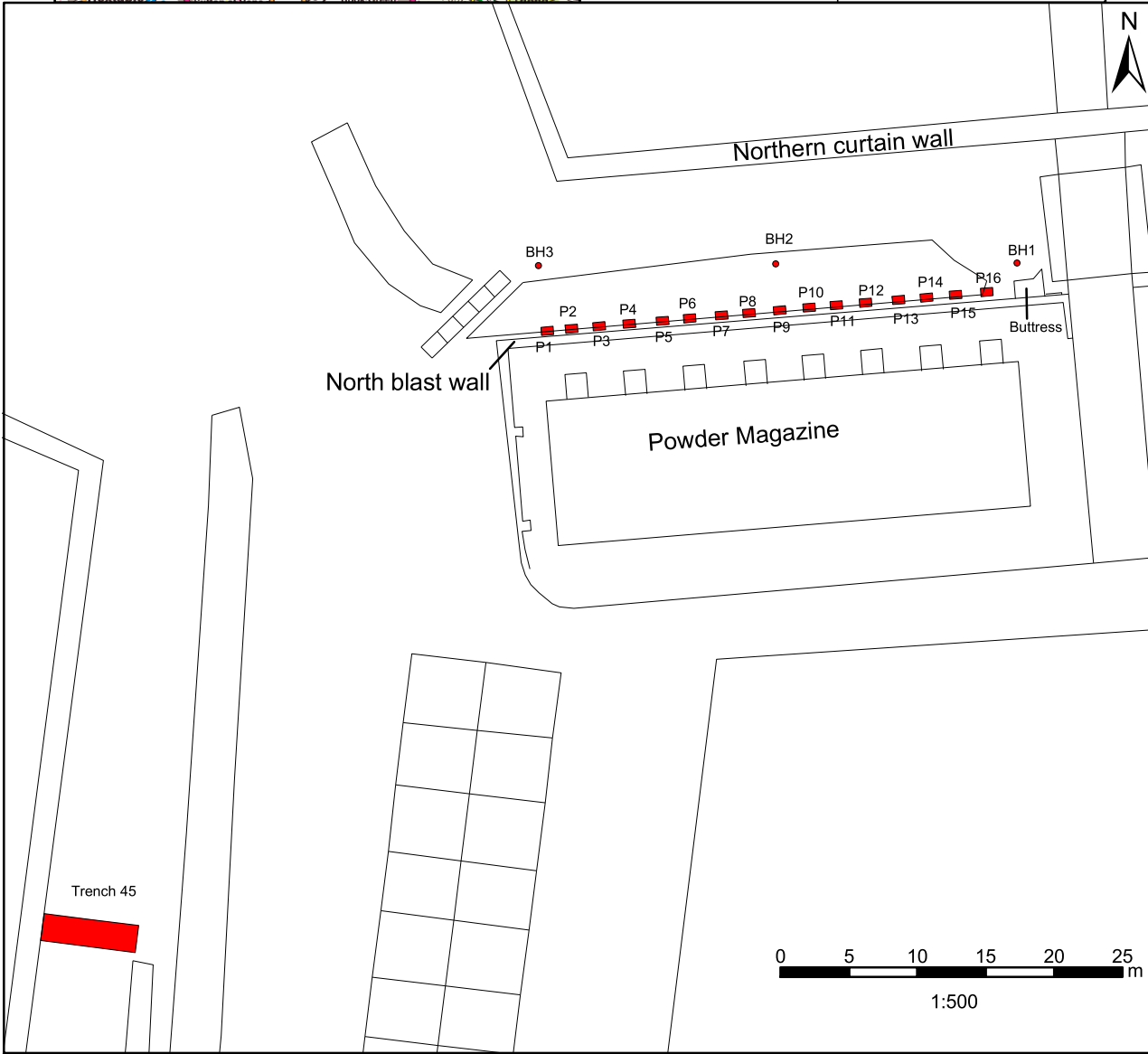
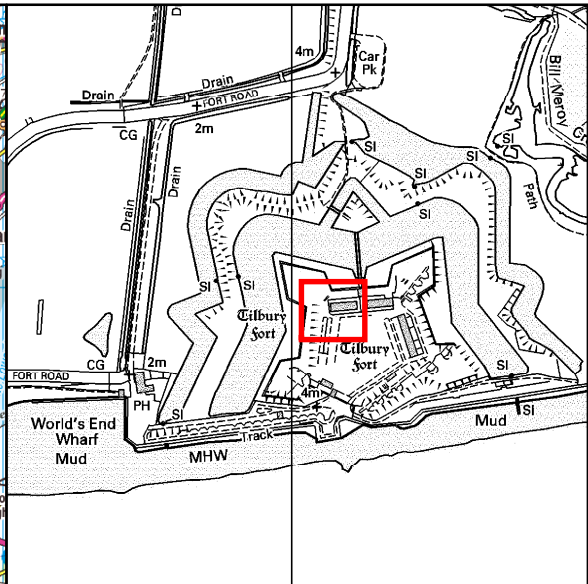
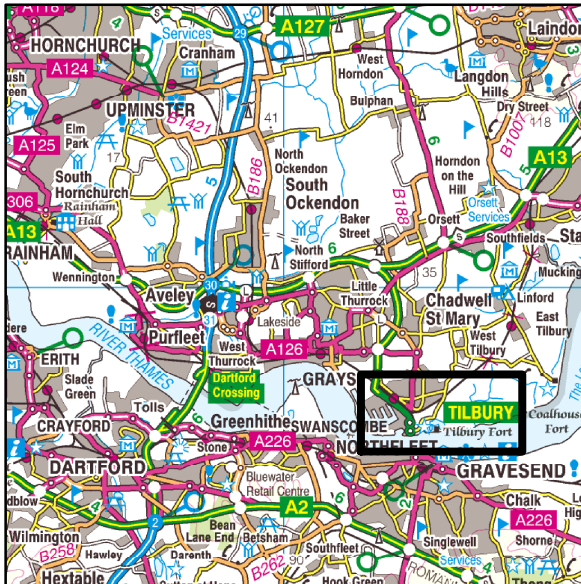
3. Site Archive

- 3.1 Trench Sheets 1-16
- 3.2 Photographic Register
- 3.3 Miscellaneous maps, plans and sketch sections

N.B. The finds occupy less than one box.

APPENDIX 3: EHER SUMMARY

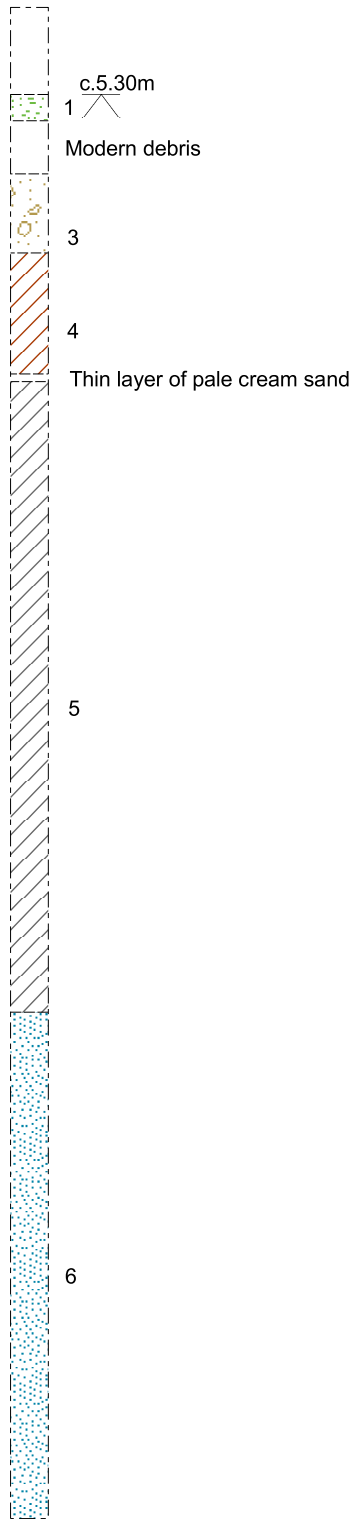
SITE NAME/ADDRESS: Tilbury Fort, Tilbury, Essex	
CONTRACTING UNIT PROJECT NUMBER 1891	
OASIS ACCESSION NUMBER Essexcou1 - 38947	
PARISH:	DISTRICT: Thurrock
NGR: TQ65157543	SITE CODE: THTF08
TYPE OF WORK: Monitoring and Recording	SITE DIRECTOR/GROUP: M.Pocock of ECC FAU
DATE OF WORK: March 2008	SIZE OF AREA INVESTIGATED: n/a
FINDS/CURATING MUSEUM: Grays Museum	FUNDING SOURCE: English Heritage
FURTHER WORK ANTICIPATED. No	RELATED HER Nos. (SAM 26309), (EHER 1678)
FINAL REPORT: Yes	
PERIODS REPRESENTED: Post-medieval, Modern	
SUMMARY OF FIELDWORK RESULTS:	
<p>An archaeological evaluation was undertaken by Essex County Council Field Archaeology Unit on land within the grounds of the scheduled ancient monument of Tilbury Fort (SAM 26309, EHER 1678) situated at the mouth of the River Thames. The investigation was undertaken to record any archaeological remains during conservation engineering works to support the north blast wall of the western powder magazine that would be disturbed.</p> <p>The archaeological work undertaken included the observation and record of three boreholes, hand excavation of sixteen temporary access pits for ground anchors, and further hand augering in three of the access pits.</p> <p>Alluvial marshland silts and the water table were encountered at c.2.8m OD by both the boreholes and hand augering. Overlying this were multiple soil layers relating to the construction of the fort, but more specifically to the build-up of the earthen bank to the rear of the northern curtain wall and the construction of the blast wall surrounding the powder magazine. The 0.6m-deep access pits encountered only a single demolition spread that contained a variety of modern domestic waste and building debris. An incomplete lower portion of a buttress located against the western side of the master gunner's store was also recorded within the most easterly of the access pits.</p> <p>Parallels can be found with previous archaeological investigations, specifically the trench that was cut through the bank to the rear of the western curtain wall. The midden deposits that were encountered within the western walls bank material were not seen in this investigation. This may have been because of the confined nature of these works but is more likely due to the difference in activity between the two areas of the fort.</p> <p>The investigation has established that the ground anchors and their access pits will have made only a minimal impact on any archaeological remains.</p>	
PREVIOUS SUMMARIES/REPORTS: Peachey, M. 2003 (ECCFAU Rep. 1131)	
AUTHOR OF SUMMARY: Matthew Pocock (ECCFAU)	DATE OF SUMMARY: May 2008



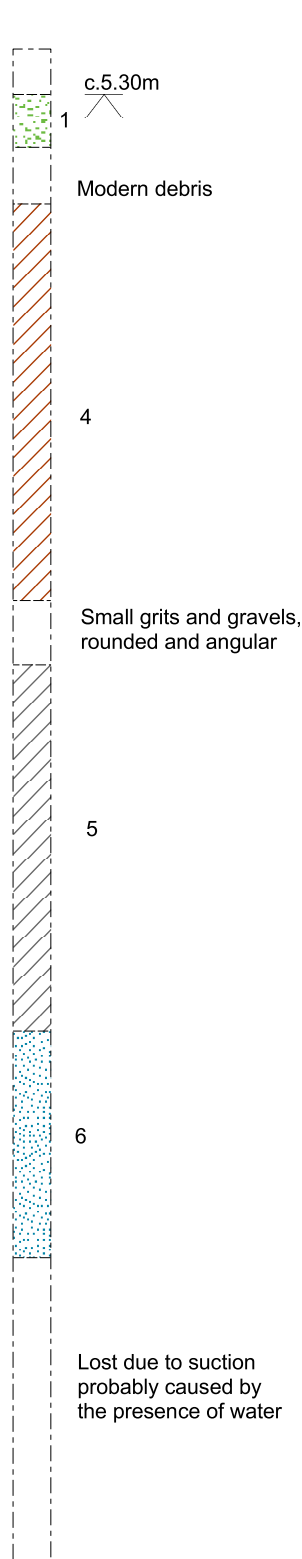
Mapping reproduced by permission of Ordnance Survey on behalf of the Controller of HMSO. Crown copyright. Licence no.LA100019602.

Fig.1. Location of Boreholes (BH) and Access-pits (P)

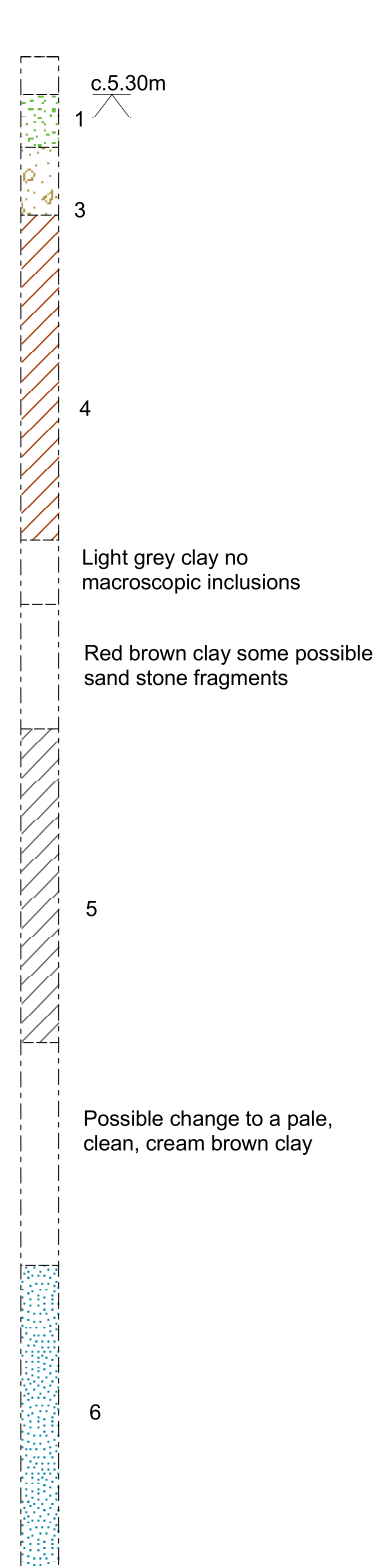
Borehole 1



Borehole 2

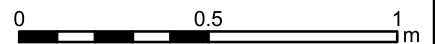


Borehole 3



Key

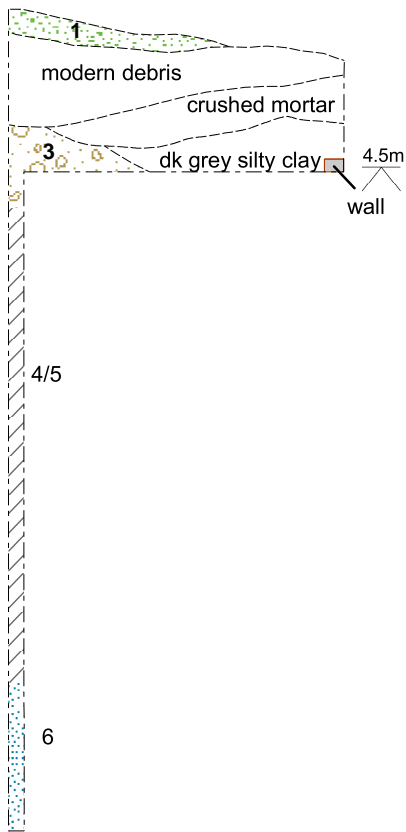
- 1; Topsoil
- 3; Mid brown clay with small fragments and flecks of chalk, tile and brick
- 4; Clean mid brown clay with orange mottling, perhaps through ironisation and occasional larger stones and small grits were present
- 5; Clean pale brown grey clay with thin bands of sand throughout. Evidence of ironisation in places. Low frequency of small grits present.
- 6; Dark, rich organic alluvial clay. Preservation of plant matter evident.



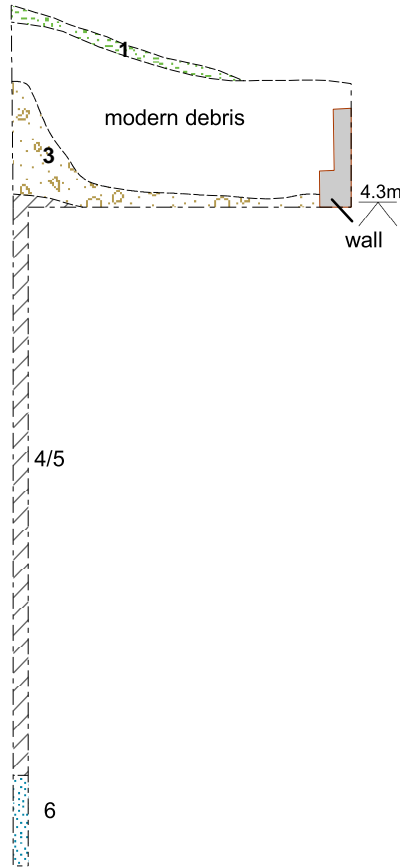
1:20

Fig.2. Boreholes 1-3

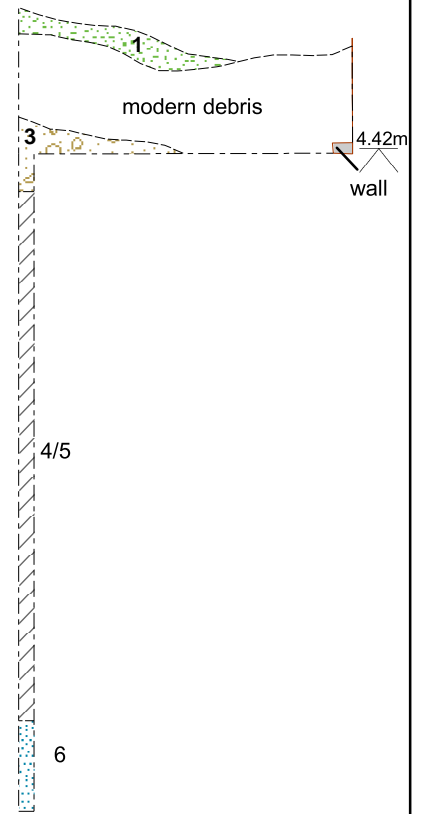
Access pit 1



Access pit 8

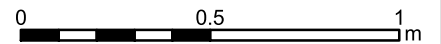


Access pit 15



Key

- 1; Topsoil
- 3; Mid brown clay with small fragments and flecks of chalk, tile and brick
- 4; Clean mid brown clay with orange mottling, perhaps through ironisation and occasional larger stones and small grits were present
- 5; Clean pale brown grey clay with thin bands of sand throughout. Evidence of ironisation in places. Low frequency of small grits present.
- 6; Dark, rich organic alluvial clay. Preservation of plant matter evident.



1:20

Fig.3. Access pits and auger holes 1, 8 and 15.

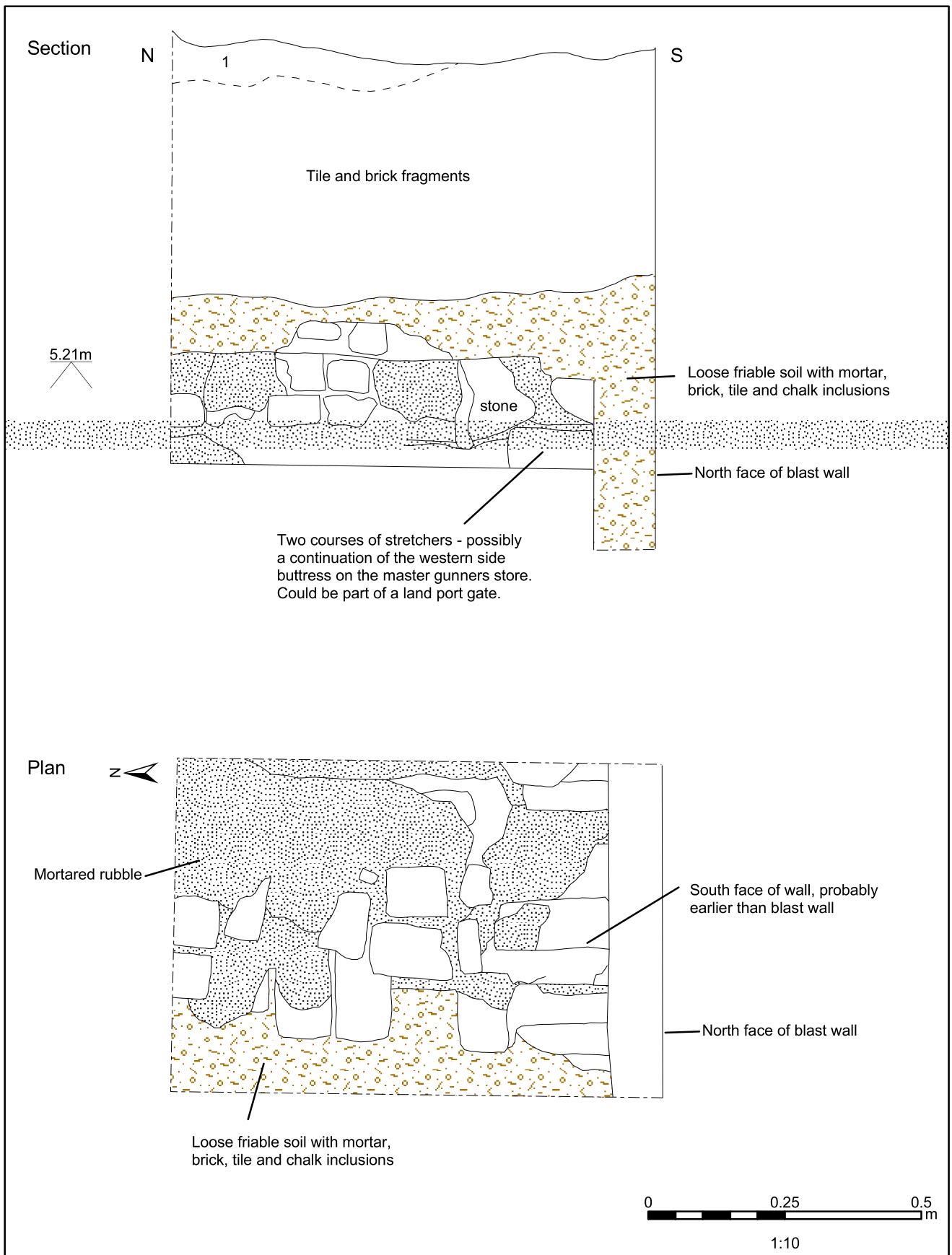


Fig.4. Access pit 16