

An archaeological watching brief on munitions clearance at Colchester Garrison, Essex July-October 2002

(evidence for WWI military practice trenches)



**report prepared by
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on behalf of
RMPA Services**

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1 Summary

During a watching brief on ordnance clearance work, within Areas C and F of the Colchester Garrison development site, a number of WW1 military practice trenches (and other related features) were recorded.

Due to time constraints, analysis of these complex features is at present incomplete. However, preliminary assessment has enabled interim conclusions to be drawn, due to the similarity of the Garrison features to examples cited in two specialist publications. In addition, examples of related features (including two sappers' 'practice tunnels' and an apparent trench-drainage feature) were also identified.

2 Introduction

- 2.1 This is an archive report on an archaeological watching brief at Colchester Garrison, Colchester, Essex, conducted between July and October 2003 by the Colchester Archaeological Trust (CAT), with RPS acting as project consultants and as Principal Contractor under CDM regulations.
- 2.2 The project was commissioned by RMPA Services on behalf of the MoD.
- 2.3 The watching brief described here was carried out according to the *Written Scheme of Investigation (WSI) for an archaeological watching brief on munitions clearance works at Colchester Garrison, Colchester, Essex* (RPS and CAT, July 2003), approved by the Archaeology Officer of Colchester Borough Council (Appendix 4).
- 2.4 A detailed methodology has also been prepared for the construction phase of the new garrison (*WSI for an archaeological watching brief at the new garrison, Colchester Garrison PFI*, RPS and CAT, January 2003), Essex. The watching brief described here is designed as a prior stage of recording, in order to mitigate the impact of the pre-construction clearance operation.
- 2.5 All work was carried out according to CAT *Policies and procedures* (2000), and was informed by *Management of archaeological projects* (English Heritage 1991), and *Guidelines on standards and practices for archaeological fieldwork in the Borough of Colchester* (Colchester Borough Council 1996, revised 1999).

3 Archaeological background

The archaeological background to the project is covered in the WSI (above, section 2.4), and has already been comprehensively explored in *An archaeological desk-based assessment of the Colchester Garrison PFI site* (CAT Report 97), and will only be summarised here. Details of all previous archaeological work¹ are summarised in the WSI.

4 Aim

- 4.1 The principal archaeological aims of the watching brief are to ensure that significant ground features and finds revealed by the ordnance investigations are fully recorded.
- 4.2 Recorded features will include WW1 military practice trenches themselves (to be recorded in plan with selected machine-dug sections). Bactec International Ltd will undertake the total excavation of the backfilled military trenches (section 6.2.2) in order to reduce the risk of encountering buried munitions at the bases of the trenches since survey cannot detect such items at the depths involved.
- 4.3 The general aim of the new garrison watching briefs are subsidiary to (but supportive of) the research aims of the Mitigation Areas excavation². Whereas the Mitigation Areas excavations are targeted on areas of significant archaeological remains which will be impacted by the redevelopment of the Garrison, the watching brief may provide useful corroborative evidence in other areas. The watching brief is designed

¹ see CAT Reports 184, 197, 203, 205, 206, 207 as listed in section 9

² see WSI for explanation of relationship between Mitigation Area excavation and watching briefs

to recover information regarding the nature, date, function and importance of the archaeological features within the area of the new garrison. A number of Project Aims have been identified in the construction stage watching brief design - the following is particularly relevant:

Project Aim 10 – To record and contextualise any modern military features within the new garrison site for which there are insufficient current records (WSI, Appendix 4, p 19).

5 Methods

Watching brief methodology, including recording, sampling and handling of finds, is fully covered in the WSI (Appendix 4, pp 19-21).

6 Trench description and interpretation

6.1 Overview (Fig 1)

- 6.1.1 By comparing the frequency, fill and approximate dimensions of backfilled Army trenches, it was found that the eastern section of Area F (Figs 2 & 4) contained a more systemic representation of military trenches, consistent with those illustrated in available reference material³. Although not ideal, the 'keyhole' view of this area has allowed a picture to emerge of an extensive network of features including a main 'fire trench' and other support lines or reserve trenches, numerous communications trenches, dugouts and practice tunnels. Many of the trenches were complex in plan, with recesses and linking trenches. These have been found to be consistent with British infantry systems in use at the Western Front during WWI. The main fire trench was in Trench B3, where Figures 2 and 4 show what appear to be traverses and fire bays, together with a possible communications trench leading westward and eastward and possibly connecting with Trenches B2 and B4.

The layout of the military trenches exceeds the complexity associated with trench positions on the Western Front. However, this simply reflects continual use of Area F east for practice trench construction, operation and training. A second arrangement of parallel trenches was encountered in Area F west (Fig 3). This apparently single-phased system is also dated to the period of WWI, and may have been utilised for bayonet-charging practice. Traces of revetment were generally absent, possibly due to the salvage of corrugated iron after WW1 or during WW2, and the acidic nature of the terrace gravels causing complete decay of wooden supports and structures.

- 6.1.2 In sections through the military trench features (Figs 5-7, 9), a tapered profile was generally observed, from 1.5m wide at the highest point (for the main trenches), to around 0.6m wide (sometimes less) at the base. Depths ranged from 1.4m to 1.1m. Profiles of the main military trenches varied from flat-bottomed, to those with a distinct step on one side, to those which were vertical-sided then sloped in on both faces to a narrow, flat bottom which was sometimes only 30 or 40cm wide.

The majority of the communications trenches were somewhat narrower at approximately 1.0-1.2m wide at the top, and between 30 and 80cm wide at the base (Fig 9). Depth varied from 1.1m to 1.2m.

The depth from current ground-level to the trenches' highest point was usually approximately 0.2-0.3m, but was as little as 0.15m in one case.

6.2 Finds

Features identified as 'military' were largely devoid of finds. However, the ordnance clearance procedure revealed numerous metal remains including diagnostic hand grenades, barbed wire (occasionally still attached to posts), nails, fittings, copper communications wire and various other objects. A full inventory of collected finds is provided here as Appendix 2. This debris was (in several features) found alongside fragments of broken pottery which seemed to date from the same period (early 20th century).

³ Bull 2002; Ellis 1976

6.3 Fills

Fills identified as 'military' were generally a light brown sandy silt, or, more usually, a darker brown sandy loam (peppered with coal and coke fragments).

6.4 Trench descriptions

General

The location of the EOD location trenches was determined by Bactec International Ltd's interpretation of the grayscale geophysical plots. The use of grayscale was particularly successful for the identification of trenches in Area F west and for Trenches B3 and B2 in Area F east. The grayscale anomalies in some trenches were caused by archaeological ditches, while some of the EOD clearance trenches did not produce any discernible military or archaeological features along their lengths. The investigation trenches are described briefly in sequence below, with regard to both military and archaeological features. A large number of metal targets (DTIs) were also investigated by Bactec International Ltd and were monitored intermittently by CAT (section 6.5 below). A brief description of the military features - usually disposal or 'burning' pits - is provided in tabulated form in Appendix 3 below.

Trenches A1-A9

A series of parallel east-west orientated military trenches and one north-south practice trench were located in Area A (Fig 3). Widths and depths varied from trench to trench. In Trenches A2, A5 and A6, east-west practice trenches were located. Where measurable, these were generally 2m wide, occasionally 2.5m wide. In Trench A8, a smaller right-angle of trench was located, probably not linking up with the east-west practice trench in Trench A5. Depths of these trenches are given in sections 55 and 56 (Fig 6).

A perpendicular north-south communication trench extended through Trench A8 and was linked to the eastern end of the east-west practice trenches in Trenches A4 and A5 (plan on Fig 3). This north-south trench (F130) is dated by 20th-century debris in its fill. It may have extended all the way to Trench A9, 100m to the north, and may also be identifiable with a short stretch of north-south trench at the end of Trench A2.

Table of typical fills in Trenches A1-A6.

Trench	Feature number	Fill
A5	F130	mid to light brown sandy silt with occasional stones and a seam of slag running the trench length
A6	F133	brown silty loam with fragments of burnt coal, and metal objects
A8	F56	mixture of orange sand, greenish grey clay, with some mid brown silt, with coal and peg-tile fragments

Trench A4 also contained two Iron Age features, a ditch and a pit (tabulated below, and for dimensions see Fig 5).

Table of prehistoric and Roman features from Garrison munitions clearance.

Trench	Feature number and type	Width	Depth	Finds
A4	F14 Iron Age ditch	0.65m	0.15m	pottery
A4	F16 Iron Age pit	2.0m	0.24m	pottery
C2	F57 ?Roman ditch	1.0m	0.20m	none

Trench B1 (Fig 2)

Three military trenches cut approximately north-south across the line of Trench B1. One, which was previously located in 2002 evaluation trench 33, may be the angle between a fire bay and a traverse.

Trench B2 (Figs 2, 4, 9)

Approximately 40m of a zig-zagging trench was recorded here (Feature or F29-F33).

This was 1.5m wide, and the excavated section is shown in Figure 9. This may have linked (as a communication trench?) with the major N-S orientated fire trench recorded in Trench B3. Alternatively it may not have been used in conjunction with Trench B3 at all, but instead as a fire trench in its own right (see Trench B4 below).

Trench B3 (Figs 2-3, 7, 9)

This trench was located to cover a clear alignment of metallic objects identified by Bactec International Ltd's AGS survey. Bactec's clearance of the trench identified a number of hand grenades, within a crenellated trench form with multiple offshoot trenches to the west and east of the main north-south trench. The main military trench in Trench B3 was 1.5m wide and 1.1-1.4m deep (sections on Figs 7, 9). The trench was typical of a WWI fire trench used on the front line. Further discussion of this trench is provided below (section 7). As with the other trenches, there was no evidence of *in situ* revetment.

Trench B4 (Figs 2, 3)

A less substantial or more fragmentary trench system was revealed here. This complex practice trench system may represent a series of communications trenches rather than a front line position. The angles at which the parts of this trench meet is more reminiscent of the layout in Trench B2 than the more right-angled layout in Trench B3. It would appear that Trenches B2 and B4 may represent a fire bay layout with angles less than a right angle.

Trench B5 (Figs 2, 3)

This trench revealed a short length of military trench and several military trenches cut across its line.

Trench B6 (Figs 2, 3)

Similarly, in Trench B6, numerous major trench elements cut across it but there was no major trench along its line. This is not altogether surprising, since the grayscale anomaly along which the trench was positioned was rather vague.

Trench B7 (Figs 2, 8)

This was similar in nature to Trench B6 at its south-west end. However, a dugout or pit was revealed approximately 12m south-west of its north-east end, which facilitated access into two tunnels running approximately northwards. The roof of the tunnels was arched and the sides were vertical to a height of 1.5m. The roof of the tunnels was 2.0m below present ground-level. The western tunnel was dug only 4.9m northwards from Trench B7 and was completely uncovered. The eastern tunnel was, however, only exposed within the 4m width of Trench B7. Following the stepping of the trench sides for safety reasons, and clearance from Bactec International Ltd, a torch was shone into the eastern tunnel. This clearly demonstrated at least 15-20m of tunnel with no end in view. The tunnel was not revetted, but had nonetheless not collapsed at any point in view. The tunnel is interpreted as a practice tunnel (see discussion below).

Table of typical fills in Trenches B1-B7.

Trench	Feature no	Fill
B1	F23	mid brown silty loam with occasional charcoal and coal fragments, and abundant barbed wire
B2	F33	mid grey brown silty loam with common coal fragments
B3	F66	mid grey brown sandy silt loam with common coal fragments and iron pieces
B8	F127	mid grey brown sandy silt loam with occasional small pebbles

Trenches C1-C4 (Fig 1)

No military features were found in these trenches.

Trenches D1-D2 (Area E north: Fig 1)

No military features were recorded in these trenches.

Trench E1

This contained a military trench which was 2.5-3.0m wide in plan, and 2.2m wide and 2.5m deep where dug. This trench had a rounded bottom, and was of a size consistent with the main (ie 'fire' trenches) in Trench B3. See discussion section below.

Trench E2

This contained two military trenches, 3m wide and 1.1m-1.2m deep. See discussion section below.

Trench E3

A military trench was cut across the line of Trench E3, but there was no trench along its line.

Trenches E4-E7

No military features were recorded in these trenches, but a substantial weight (0.85kg) of Roman brick was recovered from subsoil layer L2 in Trench E7.

Table of typical fills in Trenches E1-E7.

Trench	Feature no	Fill
E1	F1	mid grey brown loam, abundant small pebbles, charcoal flecks and fragments
E2	F2	pale yellowish brown silty loam with occasional modern iron fragment in upper fill
E2	F3	mid brown silty loam with abundant pieces of cutlery, plates, glass, asbestos, and grenades
E3	F9	orange sand/gravel with charcoal, abundant brick flecks and charcoal

6.5 DTIs

In addition to the trenches described above, a number of pits were excavated in searching for metal targets (DTIs). These pits produced much modern debris, including WWI hand grenades, and they mark the spots where military rubbish was disposed of across the areas investigated. A full list of these is provided as Appendix 3.

7 Discussion

- 7.1 The data on WWI training trenches obtained via the watching brief has been compared to information on WWI trench design in *World War I trench warfare (1), 1914-1918* (Bull 2002) and *Eye-deep in hell - life in the trenches 1914-1918* (Ellis 1976), which cite the 1914 field manual for the British Army.
- 7.2 The density of military trenches in Areas C, E and F has been shown to be extremely variable. There are two areas of main trenching activity: **Area F east** and part of **Area F west**.
- 7.3 It is probable that the trench pattern recorded in **Area F west** was used for training practice such as bayonet charges, since the trenches were all of simple form but varied in depth. Soldiers may have practised offensive advances attacking each trench in turn from north to south and south to north.
- 7.4 **Area F east** was far more complex, and must include multiple phases of WWI practice trenching. The trench in Trench B3 is typical of WWI front line or fire trenches. Ellis (1976, 14) notes that trenches were not simply straight lines because this would enable the enemy to machine-gun down its entire length. Therefore

trenches were broken up into sections comprising fire bays (straight sections of approximately 3m length) and traverses or bays (where the trench line kinked). Trench B3 is the best example of a trench with this typical crenellated plan. Trench B3 was clearly a focal point in hand-grenade training at the Garrison since 36 hand grenades were removed from it by Bactec International Ltd, ahead of recording by CAT.

- 7.5 This trench may have been used as a front-line position in training exercises. Ellis (1976, 15) notes that connection to the front line included 'saps' (narrow trenches extending at right angles to the front line and linking up with listening posts for sentries). It is thought that some of the perpendicular trenches off Trench B3 represent practice versions of such saps trenches.
- 7.6 It remains unclear whether Trench B3 confronted mock enemy positions to the east or to the west due to the sheer complexity of the trench systems revealed. However, the layout would best fit a situation where mock enemy lines were located to the west. This is because the more complex arrangement of trenches on the Western Front was to the rear of the main trench, where the front line was linked to parallel support trench lines and reserve trenches; this appears to be the case to the east of Trench B3. Ellis notes that there were normally three major trench lines, comprising the fire trench (front line), support trench (in which the company headquarters and medical dugouts were located), and reserve trench (Ellis 1976, 16). Numerous communications trenches were dug between the trenches to allow soldiers to move to and from the front line. These are usually the same depth as the main trenches but are narrower and lack firing bays and traverses. Such simple trench forms were very commonly encountered in Area F east and appear to have comprised the dominant practice trenching exercise.
- 7.7 Dugouts (large, covered pits for commands, medical facilities, supplies, etc) were another major component of trench systems. A practice dugout was identified in Trench B7. As noted above, two tunnels were located at depth 2m below modern ground with access into this dugout. Tunnelling was one of the tasks of the sappers in WWI, and tunnelling exercises were evidently practised at Colchester Garrison during WW1. The aim of the tunnels was to get behind enemy lines, a perilous activity both on the Western Front and even at Colchester, given the unstable nature of the sands and gravels here. The arched roofs of the tunnels have supported the tunnels well, and the unrevetted tunnels have survived, remarkably, to the present day.
- 7.8 The trenches encountered here are evidence of the existence of a training facility, perhaps used by various Army units in preparation for digging and working in real trenches on the front line⁴.
- 7.9 Finally, some U-shaped trenches in Area F (Fig 1) may have been used as machine-gun posts. Bull (2002, 21) notes that machine-gun posts were best made with an arc to the front and a shallower section on which the tripod could rest.
- 7.10 In addition to the archaeology of the WWI military practice trenches, a limited number of Iron Age and Roman features were also recorded. These are tabulated in the trench descriptions section of the report (section 6.4 above), and are listed in Appendices 2 and 3. In general, these added only a little detail to our knowledge of the late Iron Age and Roman farming landscape as revealed in the 2002 evaluations. For a fuller exposition of this landscape, see CAT Reports 197, 203, 205-207 (section 9 below).

8 Acknowledgements

The project was managed by Carl Crossan for CAT, with site work principally undertaken by Karly Weller, Stephen Tyler and Liam King. The project was sponsored by RMPA Services and monitored for them by Rob Masfield of RPS and by Martin Winter, Archaeology Officer for Colchester Borough Council.

The Trust and RPS would like to all Bactec International Ltd staff for their kind assistance on site, and during the compilation of this report.

⁴ we are obliged to Col M Foster for advice on this point

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10 Archive deposition

The archive is currently held by the Colchester Archaeological Trust at 12 Lexden Road, Colchester, Essex CO3 3NF, but it will be permanently deposited with Colchester Museums under accession code 2003.185.

11 Glossary

DTI	detailed target investigation
EOD	Explosive Ordnance Device(s)
Iron Age	period dating <i>circa</i> 700 BC to AD 43
prehistoric	dating to the years BC
Roman	period dating from AD 43 to the early/mid 400s AD

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Appendices

Appendix 1: Dimensions of machined trenches

Trench no	Length in m	Width in m	Depth in m	Area
A1	30.0	1.4-1.8	2.0	F
A2	47.0	4.0-5.0	2.0	F
A3 (no features)	35.0	4.0	2.0	F
A4	35.5	4.0	0.7	F
A5	33.0	2.5	2.0	F
A6	37.0	3.5	2.0	F
A7	26.5	3.5	2.0	F
A8	25.0	3.5	2.0	F
B1	72.0	3.5	0.7	F
B2	47.0	4.0	0.7-1.0	F
B3	87.0	4.0 and up to 12.0	6.0 at one spot, otherwise 2.5	F
B4	63.0	4.0	2.0	F
B5	40.0	4.0	2.0	F
B6	115.0	4.0	2.0	F
B7	56.0	4.0	2.0	F
B8	19.0	2.0	2.0	F
connecting trench (A6/A5)	38.0	3.0	1.0	F
connecting trench (edge A9)	57.0	3.5 reducing to 2.0	not fully opened due to presence of a pipe	F
C1	80.0	2.0	0.6	E
C2	60.0	2.0	0.7	E
C3	28.0	2.0	0.6	E
C4	30.0	2.0	0.7	E
E1	26.0	3.5	2.0	C
E2	50.0	3.0	1.1-1.2	C
E3	75.0	2.0	1.65	C
E4	39.0	3.0	1.5	C
E5	20.0	4.0	1.2	C
E6	?	4.0	0.6	C
E7	73.5	4.0	1.0	C
F1	?	4.0	0.6	C
F2	96.5	3-4.0	1.2	F
F4	28.0	3-3.5	0.7-0.85	F
G1	38.0	4.0	0.5	F
G2	45.0	4.0	0.5	F

Appendix 2: List of finds from munitions watching briefs

Roman pottery fabric descriptions are after Symonds & Wade 1999, and post-Roman pottery fabric descriptions after Cotter 2000.

CAT bag no	Target no	Trench	Context	Quantity	Weight in g	Description
1		F2	L2	3	100	pieces of brick, probably post-medieval or modern
1		F2	L2	1	24	worn natural sandstone lump
2			F2/L2	1	654	complete Colchester Brewing Company beer bottle, green
2			F2/L2	1	588	base of green beer bottle: "Greene, King & Sons Limd. Bury St Edmunds"
2			F2/L2	1	203	Lea & Perrins shaped bottle; unstamped, pale green
2			F2/L2	3	341	Fabric 48d sherds
2			F2/L2	1	55	ceramic drain fragment?
3	63		L2	1	63	lump of soil with fragmentary and indistinguishable copper-alloy sheet corroded to it
4	9			3	383	bases of two plates and one body sherd in Fabric 48d (modern ironstone)
4	9			1	13	sherd of Fabric 40 (post-medieval red earthenware)
4	9			5	471	small glass bottles, presumably for medicine
4	9			1	109	ink pot made in Fabric 45m (modern stoneware)
4	9			2	793	iron horseshoes
4	9			1	74	glass ink bottle with stopper and blue ink
5		E3	L2	2	16	sherds of a Fabric 48d Keiller marmalade jar
5		E3	L2	1	153	complete potted meat dish, transfer-printed: "Noted Home Potted Meats Prepared from Fresh English Meats Only. F Crampton, Belmont St Southport"
5		E3	L2	1	283	ceramic electrical fitting; judging by size, this is off a high-voltage lead
5		E3	L2	1	91	complete jar in Fabric 45m (modern stoneware)
5		E3	L2	1	89	vaseline jar with metal screw top intact: embossed on front "Trade Mark. Vaseline. Chesebrough. New York"
5		E3	L2	1	58	brown glass phial-shaped bottle, embossed "Valentine's Meat Juice"
5		E3	L2	1	140	high-quality square glass bottle with metal screw top stopper; for perfume, or similar
5		E3	L2	1	131	wide-mouthed green glass bottle
5		E3	L2	1	22	composite bottle stopper with screw thread, stamped "Groves & Whitnall. Salford".
5		E3	L2	1	25	table fork, corroded
5		E3	L2	4	53	fragments of green glass medicine bottle
6	39			1	686	Roman tile

CAT bag no	Target no	Trench	Context	Quantity	Weight in g	Description
6	39			1	112	Fabric 48d plate rim fragment
6	39			1	92	plate metal lid
6	39			1	22	broken table fork
6	39			1	24	copper-alloy belt buckle with leather strap attached
6	39			3	83	leather off-cuts
6	39			1	292	rusted lump of one iron hinge, one iron shoe iron, and a leather heel piece from shoe or boot
6	39			3	124	shoe irons
6	39			1	34	animal bone, medium mammal, proximal tibia
6	39			1	10	plastic tube/pipe
6	39			1	568	complete beer bottle, "Groves & Whitnall Ltd. Globe. Trade Mark. Salford"
6	39			1	127	complete green glass medicine bottle
6	39			1	36	clear green glass bottle
7	231		L1	1	6	green glass - post-medieval
7	231		L1	1	2	Fabric 40 sherd (post-medieval)
8		E3	F9	1	20	composite bottle top, screw thread: "Colchester Brewing Company"
8		E3	F9	1	2	clay tobacco-pipe stem fragment
9		E7		2	33	sherds prehistoric pottery
9		E7		1	75	stone - natural?
10		F1	L2	2	162	peg-tile fragments
10		F1	L2	4	376	septaria lumps
10		F1	L2	7	1737	Roman brick fragments
10		F1	L2	3	768	Roman tile
10		F1	L2	1	155	Roman tile: <i>tegula</i> flange
10		F1	L2	1	152	Roman tile: <i>imbrex</i>
10		F1	L2	2	164	Roman tile: box flue tile
10		F1	L2	1	513	sandstone lump
10		F1	L2	1	157	animal bone: bos tibia?
10		F1	L2	1	109	burnt Roman tile
10		F1	L2	1	232	granular stone: quern fragment?
11	30		L2	1	333	green glass bottle: "Tower Brand"
11	30		L2	1	86	small green glass jar, possibly an ink bottle
11	30		L2	1	131	glass jar, potted meat?
11	30		L2	1	45	small clear glass bottle
11	30		L2	1	122	ceramic porcelain-imitation box, top embossed "Violet Paris"
11	30		L2	2	1	small fragments of cork bottle tops
13		A4	F14	1	20	burnt flint
13		A4	F14	28	84	Roman pottery
15	2		F17	1	71	folding metal case
15	2		F17	1	80	shoe iron
15	2		F17	2	822	ceramic bowl fragments (Fabric 48d)
15	2		F17	2	115	clear green small glass bottles
16		E7	L2	17	589	Roman pottery: Fabric GX (inc Cam 299) and Colchester colour-coat - group date: mid to late AD 2nd, possibly as late as AD 4th century
16		E7	L2	2	653	Roman brick fragments

CAT bag no	Target no	Trench	Context	Quantity	Weight in g	Description
16		E7	L2	3	199	Roman tile
17		E7	F18	4	25	animal bone fragments, one with sawn-off end
17		E7	F18	1	42	small shoe iron (horseshoe-shaped)
17		E7	F18	2	25	peg-tile fragments
17		E7	F18	1	4	clay tobacco-pipe stem fragment
17		E7	F18	1	1	grey ware sherd, probably Roman Fabric GX
19		B3	F66	1	440	complete stoneware (Fabric 45m) bottle (ink?) with pouring lip
19		B3	F66	1	273	tea mug, transfer RDC. DICKESON; on base DUNN BENNETT & CO MANUFACTURERS BURSLEM
19		B3	F66	2	545	complete LEA & PERRINS glass bottles
19		B3	F66	1	247	complete HP SAUCE bottle
19		B3	F66	1	74	small green jar with screw cap
19		B3	F66	1	72	Fabric 48d plate fragment
19		B3	F66	1	51	green bottle base fragment
20			F67	1	471	green glass bottle base: "TH[....] MANUFACTURED IN BOMBAY. SHIP BRAND CHUTNEY. REGD 175813"
20			F67	1	321	base of dark green beer bottle: "BREW[ing Company] COLCHESTER"
20			F67	1	56	clear green glass bottle with cork
20			F67	1	55	small green open-mouthed bottle
20			F67	1	78	small ceramic jar in Fabric 48d - for meat paste?
20			F67	1	118	base of decorative ceramic figurine, no maker's mark
20			F67	5	129	sundry Fabric 48 bits including an egg cup marked "AB Jones & Sons Longton. 1914" and a jar rim marked "A.C.C."
20			F67	1	187	marmalade jar side "Moir & Son Seville Marmalade"
20			F67	1	52	rim of large bowl in Fabric 51a
21		B3	F66	2	348	stoneware bottles, 1 complete; stamp "BOURKE DENBY"
21		B3	F66	2	134	glass jars
23		B4	F70	1	102	Roman tile: tegula flange
23		B4	F70	1	24	flint flake, possibly humanly struck
24		A6	F32	1	366	base of post-medieval bottle
25		A8	F130	1	296	modern drain fragment
26			F129	12	114	tile/brick fragments (post-medieval)
26			F129	1	4	slate
26			F129	1	6	struck flint
26			F129	2	32	post-medieval glass
26			F129	2	9	Fabric 48d (19th-20th century)
27			F140	3	1629	Roman brick (2) tile (1: tegula)
Totals				211	21486	

Appendix 3: Table of Bactec International Ltd DTIs

With comments on archaeological finds where appropriate. Targets in topsoil (ie within 300mm of surface) are excluded from this list, as are obviously modern targets (pipes, power cables, reinforced concrete), targets which revealed no finds, and those omitted because of obstructions such as trees or paths.

Bactec ref	Grid reference	Target depth	Comments on materials found
4	9492.6/3447.8	1m	surface scrap
6	9406.9/3480.9	3m	2 Mills grenades ⁵
7	9548.7/3259.1	1.5	scrap metal and 'burns pit'
8	9417.8/3359.6	2.7m	burns pit, scrap, glass
9	9372.8/3424.6	?	various scrap (dump), 10 grenades
11	9396.4/3446.6	1m	scrap metal (buckets)
13	9399.5/3417.2	4m	bottles
14	9549.2/3359.8	1.2	scrap, nails, barbed wire
15	9404.4/3299.1	1m	metal plate
16	9222.1/354.4	2m	scrap metal, grenades
18	9382.2/3424.7	1.3	scrap, nails, barbed wire
19	9489.5/3401.9	1.5	scrap, nails, barbed wire
20	9372.2/3406.8	0.9m	scrap dump, glass, barbed wire
22	9227.8/3268.5	0.5m	bolts, chisel, scrap
23	9570.5/3512.8	0.6m	CGI
24	9567.7/3514.3	1.6m	CGI
29	9510.0/3543.0	1.5	scrap
31	9393.9/3301.5	0.6m	scrap
32	9405.8/3349.7	1m	barbed wire
33	9358.7/3235.8	0.6m	barbed wire
36	9339.5/3424.2	2m	scrap
37	9479.6/3404.5	1m	scrap
38	9546.6/3510.2	1m	scrap, nails
44	9558.5/3446.2	1.4m	scrap, wire
48	9562.8/3398.3	1m	scrap
49	9546.4/3361.6	1.2m	scrap, nails, wire
52	9455.7/3261.4	0.7	scrap, grenade
53	9485.0/3449.4	1.6m	scrap, bar
55	9554.0/3414.5	0.7m	scrap dump, glass, iron
56	9414.2/3264.8	1.6m	scrap
61	9475.7/3403.8	1.0	scrap
62	9561.6/3450.7	1.4m	scrap
63	9386.3/3418.6	1m	copper-alloy object at 50cm is find 3 (see Appendix 2 above), tin can
65	9375.5/3397.4	0.8m	steel bar, wire
68	9371.0/3400.0	1.2m	2.2 small arms/3.3 rounds
70	9403.7/3330.9	0.4	scrap pit, glass (dump)
72	9371.9/3410.2	1.2m	scrap (dump), glass, wire
73	9388.2/3477.3	0.5m	bar metal
75	9484.1/3404.4	1m	scrap
76	9366.6/3215.7	1m	scrap/glass dump, 2 grenades
79	9563.8/3468.4	1.7m	scrap
81	9377.1/3208.8	0.4m	wire
83	9463.2/3259.5	1.5m	various scrap (dump)
84	9541.7/3341.2	0.6m	bar, nails, wire
85	9445.9/3211.9	1m	scrap, building debris
89	9277.6/3426.6	1.3m	slag, scrap

⁵ these grenades are of WWI date

Bactec ref	Grid reference	Target depth	Comments on materials found
94	9548.3/3342.7	0.5m	bar, nails, wire
95	9367.0/3219.3	0.7m	4 grenades
96	9341.2/3407.5	1.5m	scrap, and Roman trench
97	9479.6/3448.6	1.5m	scrap
103	9402.3/3303.9	0.9m	scrap, wire, glass dump
104	9378.6/3411.4	1.1m	scrap
106	9382.7/3363.0	1m	nails, wire
107	9560.6/3519.2	1.4m	scrap
110	9333.4/4346.7	0.9m	grenade (no 23 mark II) ⁶
111	9354.9/3362.2	0.4m	wire
113	9369.6/3239.7	0.7m	chain, various scrap dump
115	9470.3/3201.3	1m	scrap dump, glass, various
117	9540.5/3258.8	0.4m	scrap dump various
120	9295.9/3452.6	1m	scrap
123	9368.3/3273.3	1.5m	scrap (dump)
131	9278.0/3239.4	1m	crow bar, grenade case
132	9528.0/3239.4	0.6m	wire and brick foundations
135	9567.5/3476.0	1.2m	scrap
138	9557.5/3371.1	0.4m	barbed wire
139	9541.5/3273.5	0.6m	scrap (dump)
145	9546.2/3481.0	0.4m	scrap
146	9514.5/3205.2	0.4m	horse shoe, spike, plate
149	9428.1/3437.5	0.4m	scrap, nails (dump)
150	9360.4/3250.1	0.4m	scrap, nails
158	9549.1/3403.2	0.5m	cast iron pipe
160	9487.9/3263.7	0.7m	building debris
164	9379.5/3392.4	0.4m	nails 11 x 6"
173	9568.5/3456.5	0.4m	scrap
175	9257.5/3259.2	0.7m	scrap, nails
185	9435.6/3438.6	0.5m	scrap, nails, chain
186	9484.4/3508.7	0.4m	nails
191	9565.0/3430.5	0.4m	scrap, barbed wire
195	9399.9/3462.3	0.5m	nail
201	9399.5/3331.0	0.4m	scrap, nails
204	9250.6/3387.4	0.4m	scrap, spike
1002	9377.3/3300.3	1.5m	scrap dump (glass)
1003	9375.1/3339.9	1.6m	scrap
1004	9369.5/3301.2	1.0m	nails
1005	9371.4/3352.4	1.3m	scrap, nails, wire
1006	9368.6/3319.3	1.3m	scrap, nails, wire
1007	9374.7/3317.2	1.7m	scrap
1008	9365.6/3303.2	0.6m	scrap dump, iron, glass
1009	9364.1/3315.1	0.4m	scrap, nails, bar
1010	9374.9/3306.1	0.4m	scrap, nails, bar
1011	9374.5/3308.6	0.4m	scrap, nails, bar
1012	9369.1/3295.2	0.5m	barbed wire
1013	9367.6/3308.8	0.4m	scrap, nails
1015	9370.4/3311.6	0.6m	scrap, nails, bar
1016	9371.3/3318.8	1.3m	barbed wire
1019	9371.0/3305.7	1m	scrap, iron, glass (dump)
1020	9376.7/3325.8	0.4m	spike
1022	9360.0/3295.8	0.4m	scrap (dump)
2000	9393.2/3301.7	1.2m	scrap
2001	9355.5/3280.8	2m	scrap, nails

⁶ this grenade type is of WWI date

Bactec ref	Grid reference	Target depth	Comments on materials found
2002	9364.1/3304.2	0.6m	scrap dump, iron, glass
2003	9397.2/3295.3	0.5m	bar
2004	9383.5/3229.3	0.6m	scrap, barbed wire
2005	9382.1/3308.1	1.1m	scrap, barbed wire, 36 Mills grenades ⁷
2006	9374.1/3306.9	0.4m	scrap, nails, barbed wire
2007	9388.2/3299.7	1.2m	scrap, nails, barbed wire
2008	9375.7/2295.5	0.5m	scrap dump, glass
2010	9363.4/3315.7	0.6m	scrap, nails, barbed wire
2012	9368.9/3290.1	0.6m	scrap
2014	9373.2/3309.1	0.4m	scrap, nails, barbed wire
2015	9365.9/3311.1	0.7m	scrap, nails, barbed wire
2016	9366.2/3299.2	0.4m	scrap dump, glass, nails
2017	9388.1/3304.6	0.7m	scrap dump, glass, nails
2018	9399.7/3304.9	0.8m	scrap dump, glass, nails
2019	9359.8/3290.2	0.5m	nails
2020	9372.1/3319.4	0.9m	nails, barbed wire
2021	9362.1/3299.6	0.4m	grenade casing
2023	9363.8/3293.9	0.5m	scrap dump, wire, nails
2025	9359.2/3285.3	0.5m	bar
2026	9390.2/3325.0	0.4m	spike
2029	9378.8/3295.0	0.6m	scrap, nails
2031	9365.9/3308.3	0.5m	scrap, nails
2032	9396.2/3298.6	1.2m	scrap, barbed wire
2034	9360.3/3287.0	0.4m	nails
2042	9365.9/3315.2	0.6m	wire, nails, barbed wire
2044	9380.2/3291.9	0.5m	scrap, wire
2049	9376.5/3288.2	0.4m	spike, plate
2051	9351.8/3306.7	0.4m	scrap, foundations, metal

⁷ this grenade type is of WWI date

Appendix 4

Colchester Garrison PFI Project

Written Scheme of Investigation for an archaeological watching brief on munitions clearance works at Colchester Garrison, Colchester, Essex

July 2003

Written by Colchester Archaeological Trust
on behalf of RMPA Services and MoD



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Written Scheme of Investigation for an archaeological watching brief on munitions clearance works at Colchester Garrison, Colchester, Essex

1 Introduction

- 1.1 The proposed development of the Colchester Garrison PFI site involves the building of a new 101 hectare garrison between the existing Kirkee & McMunn, Goojerat, and Roman Barracks, the demolition and refurbishment of existing barracks, and the redevelopment of the areas released by demolition, primarily for residential use.
- 1.2 In response to the proposed redevelopment, an appropriate programme of archaeological survey, field evaluation, excavation and monitoring was agreed between MoD, RMPA Services, RPS (the project archaeological consultants), Colchester Archaeological Trust (CAT), Colchester Borough Council Archaeological Officer (CBCAO), and English Heritage.
- 1.3 This is the Written Scheme of Investigation (WSI) for an archaeological watching brief to take place in conjunction with specialist munitions clearance works, the purpose of which is to ensure that redevelopment areas are free from buried ordnance.
- 1.4 This WSI has been written by CAT in consultation with RPS, and mirrors standards and practices contained in *Guidelines on Standards and Practices for Archaeological Fieldwork in the Borough of Colchester* (Colchester Borough Council 1996, revised 1999), *Standards and Guidance for an Archaeological Watching Brief and Standards and Guidance for Archaeological Excavation* (Institute of Field Archaeologists, September 1999).
- 1.5 CAT will submit a risk assessment for this scope of works with the Principal Contractor, RPS.
- 1.6 Any variations in this WSI will be agreed beforehand with RPS and CBCAO.

2 Site location

- 2.1 The sites subject to the current phase of ordnance clearance are:

Area D. Former allotment land to the west of Berechurch Road.
Areas C, E and F. Open land to the south of Ypres Road.

3 Archaeological background

3.1 The Garrison PFI area in its broader archaeological context

- 3.1.1 The archaeological and historical setting of the proposed Garrison redevelopment area has already been comprehensively explored in *An archaeological desk-based assessment of the Colchester Garrison PFI site* (CAT Report 97, by Kate Orr), and will only be summarised here.

The Roman cemeteries

The area around the southern side of the Roman town is dominated by Roman cemeteries. These have recently been discussed (Crummy *et al* 1993), so only a few general points will be made here. First, the density of burials is demonstrated by the very high numbers recorded at Butt Road (approximately a thousand burials; Crummy *et al* 1993), at Le Cateau Barracks (several hundred burials; Crummy *et al* 1993), and at the recent excavation on the site of the new all-weather sports pitch on Abbey Field (72 burials: CAT Report 138). The importance of these Roman cemeteries is underlined by the presence of an early Christian church at Butt Road (Crummy *et al* 1993), and their distribution is clearly shown by the fact that they spread over the Abbey Field as far as the Sobraon Barracks and the modern Colchester Cemetery. The cemeteries are considered to be of high regional importance, being some of the most extensive in the country.

The distribution of known Roman burials is in part a reflection of the way in which the town's suburbs have grown up in the 19th and 20th centuries and is also related to the locations of sand- and gravel-pits around the town. Also the apparent patchiness of the distribution of recorded burials, eg hundreds at Le Cateau Barracks but none at the Cavalry Barracks, may have more to do with the willingness of contractors to report discoveries and the diligence of local antiquarians in chasing up and recording the discoveries than the actual distribution of burials. It may be true that those burials from Sobraon Barracks and the modern Colchester Cemetery are on the outskirts of the Roman

cemetery, but burials at Le Cateau Barracks and the north of Abbey Field would seem to be firmly within it.

Late Iron Age cremations have also been recorded in this zone, in particular in Abbey Field and Meeanee and Hyderabad Barracks, but in far fewer quantities than the Roman burials. It may be that this area was in continuous use as a cemetery from the late Iron Age and into the Roman period.

The St John's Abbey area

The dominant feature of the archaeological landscape in Area B is St John's Abbey. Parts of the precinct walls of the abbey still survive, along with the magnificent abbey gatehouse, but the surviving abbey is mostly restricted to buried remains. Below-ground remains may include domestic buildings of the abbey, the abbot's lodgings, guests' lodgings, and the post-Dissolution Lucas family house and gardens. The exact position of the medieval abbey church is not known.

The abbey was built over a Roman cemetery area; 34 Roman inhumations were found during excavations from 1971 to 1985 in St John's Abbey grounds (Crummy 1981, 40-46). The shallowest occur at approximately 1m below ground-level. Other inhumations have been found within the grounds since the 19th century, including those interred in lead coffins and one under 'The Mount' (*ibid*).

Anglo-Saxon remains

Discoveries in the 19th century of weapons and jewellery indicate the existence of an early Anglo-Saxon cemetery on Mersea Road, between Areas A and B.

Archaeological remains of the Iron Age *oppidum*

The proposed excavation site (like much of the land south and south-west of Colchester's modern town centre) falls within the area of the pre-Roman *oppidum* of Camulodunum. The only above-ground traces of this *oppidum* are the linear banks and ditches of the defensive dyke system that surrounded it. The Garrison area occupies the eastern edge of the *oppidum*, and one of the defensive dykes (the Berechurch Dyke) crosses the extreme south-eastern edge of the Garrison (on the east edge of Roman Barracks).

As presently understood, the *oppidum* had two main centres of activity: at modern Gosbecks Farm (2km south-west of the Garrison), which was a Late Iron Age (LIA) and Roman rural farmstead (and possibly the home of Cunobelin); and Sheepen (2km north-west of the Garrison), which was the industrial and trading centre.

The cropmark sites

Apart from these two large centres (above), it is likely that there were a number of smaller domestic and farming sites in the *oppidum*. One of these may have been identified by the field boundaries paddocks and other features recorded at Kirkee & McMunn Barracks in 1994 (Shimmin 1998: figs 8, 11 here).

A large area of cropmarks is recorded over the southern part of the Garrison area. Geophysical survey has confirmed and added to the pattern of linear cropmark features (CAT Report 184). An informed interpretation based on previous limited excavation would indicate that they are late prehistoric and/or Romano-British in date, and represent the trackways, paddocks and field boundaries of a rural settlement of that period.

3.2 Areas affected by the munitions clearance operation

3.2.1 In 2002, extensive archaeological field evaluation took place throughout the proposed PFI redevelopment area. Details of the evaluation can be found in CAT Reports 197, 203 and 205-7. The evaluation results from the areas affected by the current clearance proposal are summarised below:

Area C

The majority of the excavated archaeological contexts were modern or post-medieval in date (39%). Significant archaeological remains included eleven Roman ditches or pits, one Iron Age ditch, and five prehistoric pits. The largest group of Roman finds (7.9kg of tile and pottery) was residual in a modern dumped layer. The significant Roman or later prehistoric features were widely spaced. However, there was a pair of ditches defining a potential trackway (like those seen as cropmarks in Areas DR, R, M and P). Other ditches were part of a Roman (and later ?prehistoric) rectilinear landscape aligned approximately N-S/E-W. The alignment of these ditches is shared by a ditch in Trench C7 which produced the large stratified group of Middle Iron Age pottery.

Area D

In total, nineteen archaeological contexts were excavated or examined. The majority of these were topsoils, dumped soils and subsoils. The next largest group were post-medieval or modern pits and ditches. There was one natural feature and one undated context.

Area EF

There were a few isolated, probably prehistoric pits, mainly dated by single sherds of pottery. These confirm results from Area C, indicating that early prehistoric activity is very thinly spread on the site, but two points of interest are a possible Bronze Age pit with burnt flints, and a Middle Bronze Age bucket urn fragment (possibly from a disturbed burial). Late Iron Age and Roman field-ditches were so close in position and alignment that there is no doubt that they are the same as the cropmark ditches. Therefore the Areas E/F evaluation has confirmed the existence of (and added dated details to) the rectilinear field-system previously seen as cropmarks east of the Kirkee McMunn Barracks. Further, the evidence from field-ditches excavated at Kirkee McMunn Barracks in 1994 supplemented by the 2002 evaluation material clarifies the dating of a field- and trackway system originating in the late Iron Age period and continuing in use in the early Roman period. LIA or Roman settlement evidence is confined to a single Roman pit.

4 Aims

- 4.1 The principal archaeological aims of the watching brief are to ensure that significant ground features and finds revealed by the ordnance investigations are fully recorded.
- 4.2 Recorded features will include WW1 military practice trenches themselves (to be recorded in plan with selected machine dug sections). Bactec International will undertake the total excavation of the backfilled military trenches (section 6.2.2) in order to reduce the risk of encountering buried munitions at the bases of the trenches since survey cannot detect such items at the depths involved.

5 General methodology

- 5.1 All works will be undertaken by a team of professional archaeologists. The proposed team structure is given in the appendix (end of document).
- 5.2 All work will be according to CAT *Policies and Procedures* (2000), and will be informed by *Management of Archaeological Projects* (English Heritage 1991), and *Guidelines on Standards and Practices for Archaeological Fieldwork in the Borough of Colchester* (Colchester Borough Council 1996, revised 1999).
- 5.3 CAT will not be operating machinery in the watching brief areas, and have no responsibility for checking service locations.
- 5.4 If any human remains are exposed, RPS will be notified immediately. In practice, there is a distinction between the handling of isolated and demonstrably ancient cremation burials often encountered in field evaluation, and the discovery of recent burials which are the proper business of the Coroner. A Home Office license for dealing with demonstrably ancient burials will be sought as a matter of course, and it is anticipated that these will be excavated or recovered by CAT in the normal way. In the unlikely event that recent burials are encountered, then RPS and the Client will inform the Police and/or coroner. Due attention will be paid to Health and Safety. In the case of recent remains, the coroner will be informed, and both the client and CBCAO will be informed.
- 5.5 All finds of potential treasure will be removed to a safe place, and the coroner informed immediately, in accordance with the rules of the Treasure Act 1996. The definition of treasure is given in pages 3-5 of the Code of Practice of the above act. This refers primarily to gold or silver objects.
- 5.6 For purposes of deposition of the archive, a museum accession code will be obtained through Colchester Museums. This will be used this as the site code.
- 5.7 The Code of Conduct of the Institute of Field Archaeologists (IFA) will be followed.
- 5.8 All excavation of archaeological features, contexts, layers or deposits will be done by hand. The use of earth-moving machines will only be permitted in exceptional circumstances and after agreement with CBCAO.
- 5.9 Fast excavation techniques involving (for instance) picks, forks, or mattocks will not be used on complex stratigraphy.
- 5.10 Individual records of excavated contexts, layers, features or deposits will be entered on pro-forma record sheets. Registers will be compiled of finds and samples.
- 5.11 All features and layers or other significant deposits will be planned, and their profiles or sections recorded. The normal scale will be site plans at 1:20 and sections at 1:10, unless circumstances indicate that other scales would be appropriate.
- 5.12 The photographic record will consist of general site shots, and shots of all archaeological features and deposits. Standard 'record' shots of contexts will be taken on a digital camera. Colour transparencies will still be used for overall site shots and all important contexts.
- 5.13 Metal detectors will be used to scan key deposits, including spoil heaps.

5.14 The environmental sampling policy is as follows. CAT is advised by Peter Murphy (EH Regional Advisor in Archaeological Science). In consultation with Val Fryer, CAT will bulk sample any potentially rich environmental layers or features in the first Mitigation Area excavation. These will be assessed by VF, and future sampling policy on other excavations areas will follow her advice. If any complex or outstanding deposits are encountered, then PM and/or VF will be asked onto site to advise.

5.15 In addition to retrieving environmental evidence (above), bulk sampling will be used to collect charcoal for C14 dating. This will help to date features such as field ditches where ceramic evidence is not forthcoming.

5.16 A strategy of pollen analysis has been agreed with Patricia Wiltshire. The aim will be to identify a number of deep contexts from which soil columns or bulk samples can be extracted for pollen analysis. Over the length of the project this will enable an assessment to be made of the local environmental background, even if only at a basic level. Patricia Wiltshire's (or colleague) will visit each site and extract samples for analysis. Based on these test samples, the viability of further sampling on the site will be assessed by PW, and her advice will be followed. Clearly, if the test samples are unproductive, there will be no justification for further sampling.

5.17 Sampling procedures will be informed by *A guide to sampling deposits for environmental analysis* (Murphy & Wiltshire 1994).

6 Watching brief methodology

6.1 Area D

The ordnance investigation in Area D involves excavation of a 14m wide trench along the proposed course of a security fence, principally for the purpose of removing metal debris from the topsoil.

6.1.1 The machine excavations will be subject to continuous archaeological monitoring. Any features of archaeological significance will be investigated and recorded using the methods set out in section 5.

6.2 Areas C,E and F

Ordnance investigation methods in C, E and F fall into two categories:

6.2.1 Individual targets. Single pits are dug to locate the source of geophysical targets.

6.2.1.1 These will be monitored on a periodic basis. The frequency of monitoring visits will be determined by results. Any features of archaeological significance will be investigated and recorded using the methods set out in section 5.

6.2.2 Military practice trenches. Observations from earlier excavations have led to the re-evaluation and filtering of the geophysical evidence in grey scale to help identify any possible infilled military training trenches from the WW1 era. This additional survey work has clearly identified a large number of possible WW1 trenches approximately 2m in depth in Areas C, E and F. The proposed investigation of the military trenches will entail excavation of 4m wide trenches totalling 565m in length in Area C, 180m in Area E and 1000m in Area F. In order to ensure that 100% munitions exploration works are carried out along the line of the military trenches it is proposed that they are excavated to their full original depth with resultant substantial ground disturbance across a large area of established archaeological value.

6.2.2.1 The trenching will be continuously monitored and the positions of the exposed practice trenches will be recorded on plan. Selected sections of the military trenches to provide further information of trench form. The trenches, which will be battered for safety reasons, will be recorded together with all exposed features of archaeological significance using the methods set out in section 5.

7 Health and Safety

7.1 All work will be in accordance with procedures laid down in the *Safety Plan* (RPS 2002).

7.2 All the latest Health and Safety guidelines will be followed on site. CAT has a standard safety policy (CAT 1999), which will be adhered to. A risk assessment will be prepared.

7.3 No personnel will work in deep or unsupported excavations. Safety helmets will worn by personnel in deep trenches or other potentially unsafe positions.

7.4 CAT will provide suitable accommodation for staff to shelter from inclement weather and during breaks. Hand washing facilities will be provided.

7.5 CAT will provide any necessary protective footwear, high-visibility jackets, and safety helmets.

8 Finds

- 8.1 All finds will be retained from each archaeological context excavated. Policies for later disposal of any finds will be agreed with RPS, CBCAO and Colchester Museum.
- 8.2 All finds, where appropriate, will be washed.
- 8.3 A policy of marking for pottery and other finds will be agreed with Colchester Museum. Marking will include the site code and context number.
- 8.4 All lifting, conservation or other on-site treatment of delicate finds will be done by Anne-Maria Bojko of Colchester Museums. It is anticipated that robust items such as intact cremations will be lifted by site staff.
- 8.5 The site archive will be presented to Colchester Museums in accordance with the requirements for conservation and storage as outlined in *Guidelines on the Preparation and Transfer of Archaeological Archives to Colchester Museums* (Colchester Borough Council 1996).
- 8.6 All finds of potential treasure will be removed to a safe place, and the coroner informed immediately, in accordance with the rules of the Treasure Act 1996. The definition of treasure is given in pages 3-5 of the Code of Practice of the above act. This refers primarily to gold or silver objects.
- 8.7 Finds work will be to accepted professional standards and adhere to the Institute of Archaeologists' published booklet *Guidelines for Finds Work*.
- 8.8 Agreement with the landowner will be sought for deposition of the finds and paper archive. Arrangements for the finds to be viewed by the landowner will be made if he/she wishes.

9 Results

- 9.1 The full report, including site matrices, specialist assessments and full reports on artefacts and environmental samples, will be submitted within 12 months from the end of fieldwork, with two copies supplied to the CBCAO (one for the UAD), one for the County Council Heritage Conservation Record.

- 9.2 This report will include:

- A concise non-technical summary of the project results
- Contents list, explanation of the proposed development,
- The aims and methods adopted in the course of the watching brief
- archaeological and historical background.
- Location plan of the site(s), and trenches.
- Text report giving detailed results with a suitable conclusion & discussion.
- Sufficient plans and illustrations to back up the text report
- Sections and drawings of all excavated features showing depth of deposits including present ground level with Ordnance Datum, and a scale.
- All specialist reports and assessments.
- location of the archive and proposals for deposition.
- Project timescale and staff structure
- Acknowledgements and references
- Tabulated lists of contexts and finds.
- the appropriate part of this WSI as an appendix

- 9.3 A full archive will be prepared to standards outlined in *Management of Archaeological Projects: 2* (English Heritage 1991).

- 9.4 Within eight weeks of the end of fieldwork, CBCAO will be supplied with a post-excavation programme, and a summary of the project suitable for inclusion in the Urban Archaeological Database (UAD), including a location plan, and other plans where appropriate.

- 9.5 A full report on the project will be published in an appropriate journal, yet to be decided. If the report is concise, it may be appropriate to publish it in *Essex Archaeology and History*. However, longer reports may be need to be published in a different format, perhaps the new CAT in house *Journal*. In any case, a short summary of the work will be submitted to *Essex Archaeology & History* for inclusion in the annual round-up.

10 Archive deposition

- 10.1 The full archive will be deposited at Colchester Museum as soon as is practicable, and within six months of completion of publication text on the project. All requirements for archive storage as given in Colchester Borough Council's *Guidelines for the standards and practice of archaeological fieldwork in the Borough of Colchester*, will be followed.

- 10.2 Finds (and other retained materials) will be bagged and boxed in the manner recommended by Colchester Museums.
- 10.3 Plans will be presented on hanging strips to fit Colchester Museums storage systems.
- 10.4 Photographic archive is to be presented as follows: colour slides in hanging strips or in folders of archival quality, original digital data on CD ROMs, hard copies of digital photos on high quality paper, or as otherwise requested by Colchester Museums.
- 10.5 CD ROMs of material held on computers will be presented to Colchester Museums, along with bound copies of printouts.
- 10.6 Deposition of the archive will be confirmed in writing to CBCAO, and a summary of the contents of the archive shall be supplied to CBCAO.

11 Monitoring

- 11.1 A programme of monitoring will be agreed with CBCAO and RPS, who will be responsible for monitoring progress and standards throughout the project, and will be kept regularly informed during fieldwork, post-excavation and publication stages.
- 11.2 Notification of the start of work will be given preferably in writing to the CBCAO one week in advance of its commencement.
- 11.3 Any variations of the WSI shall be agreed between RPS, CBCAO and CAT prior to their being carried out.
- 11.4 The excavation will not be deemed to be complete until CBCAO (or his agent) has had the opportunity to inspect it.
- 11.5 The involvement of CBCAO shall be acknowledged in any report or publication generated by this project.

12 References

CAT	Colchester Garrison redevelopment: method statement and risk assessments for archaeological fieldwalking survey, geophysical survey, and evaluation trenching, 2002
CAT	Policies and procedures, revision of February 2000
CAT	Site safety policy, revision of August 1999
CAT Report 97	An archaeological desk-based assessment of the Colchester Garrison PFI site, by Kate Orr, 2000
CAT Report 138	Archaeological excavations at the Garrison sports pitch, Circular Road North, Colchester, Essex, by Carl Crossan, 2001
CAT Report 184	An archaeological evaluation by fieldwalking and geophysical survey at Colchester Garrison PFI site, Colchester, Essex: January-March 2002, by Howard Brooks, 2002
CAT Report 197	An archaeological evaluation by trial-trenching on Area C at Colchester Garrison PFI site, Colchester, Essex: May-June 2002, by Howard Brooks, 2002
CAT Report 203	An archaeological evaluation by trial-trenching on Area E/F at Colchester Garrison PFI site, Colchester, Essex: May-June 2002, by Howard Brooks, 2002
CAT Report 205	An archaeological evaluation by trial-trenching on Area KR at Colchester Garrison PFI site, Colchester, Essex: June-July 2002, by Howard Brooks, 2002
CAT Report 206	An archaeological evaluation by trial-trenching on Areas A, B, D, GJ, H, J, N, V and YP at Colchester Garrison PFI site, Colchester, Essex: June-July 2002, by Howard Brooks, 2002
CAT Report 207	An archaeological evaluation by trial-trenching on Areas DR, G, M, P, Q, R, RO, S and T at Colchester Garrison PFI site, Colchester, Essex: May-September 2002, by Howard Brooks, 2002

Colchester Museums (Colchester Borough Council)	1996, revised 1999	<i>Guidelines on standards and practices for archaeological fieldwork in the Borough of Colchester</i>
Colchester Museums (Colchester Borough Council)	1996	<i>Guidelines on the preparation and transfer of archaeological archives to Colchester Museums</i>
Crummy, P, Crummy, N, & Crossan, C,	1993	<i>Excavations of Roman and later cemeteries, churches and monastic sites in Colchester, 1971-88, Colchester Archaeological Report 9</i>
Institute of Field Archaeologists	various dates	<i>Model briefs and specifications for archaeological assessments</i>
Murphy & Wiltshire	1994	<i>A guide to sampling deposits for environmental analysis</i>
RPS	2002	<i>Colchester Garrison PFI archaeological project strategy proposal</i>
RPS	2002	<i>Safety plan</i>
Shimmin, D	1998	'A late Iron Age and Roman occupation site at Kirkee McMunn Barracks, Colchester', <i>Essex Archaeology and History</i> , 29 , 260-69

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WSI appendix: team structure

LIST OF TEAM MEMBERS

Project Management

Philip Crummy

Site Managers

Carl Crossan, Stephen Benfield, Donald Shimmin

Site staff

C Austin, B Holloway, B Hurrell, K Orr, L Pooley, N Rayner, M Ripley, P Skippins.

Finds

N Weller

Metal detecting

Brian Hurrell, Francis Nicholls, John Lay

Finds consultants

Susan Anderson (Suffolk County Archaeology Service) Human bones

Stephen Benfield (CAT) LIA/Roman pottery

Joanna Bird (Guildford) Samian ware

Ernest Black (Colchester) Roman brick/tile

Nigel Brown (ECC) Prehistoric Pottery

Hilary Cool (Nottingham) Roman glass

Nina Crummy (Colchester): Small finds

Susan Curle (Norfolk Archaeological Unit) Animal bone.

John Davis (Norwich Museum) Roman coins

Val Fryer (Loddon) Environmental processing

Nick Lavender (ECC) Prehistoric pottery

Hazel Martingell (Braintree) Lithics

Peter Murphy (UEA) Environmental policy

Valerie Rigby (British Museum) LIA ceramics

Paul Sealey (Colchester Museums) Roman Amphoras

Susan Tyler (ECC) Saxon Pottery

Helen Walker (ECC) post-Roman pottery.

Graphics

M McDonald, H Brooks

Report writing

H Brooks, C Crossan

WSI appendix: details of team members

SENIOR SITE STAFF

Philip Crummy MA, FSA, MIFA

Philip is a very experienced field archaeologist, and the longest-serving director of excavations at any major archaeological organisation in Britain. Since joining CAT (or Colchester Excavation Committee as it was then, and Colchester Archaeological Unit soon after) as Site Director in the early 1970s, he has supervised or directed large urban projects including Lion Walk, Balcerne Lane, Butt Road, and Culver Street, as well as numerous small projects. Philip's publication record is outstanding, and includes sole or joint authorship of eight of the *Colchester Archaeological Report* series, principally volumes **1, 3, 6, 9, and 11**. He also produces major parts of the CAT annual magazine *The Colchester Archaeologist*. He has also contributed to *Britannia*, *Post-medieval Archaeology*, and several of the BAR series. His most recent work *City of Victory* is one of the local bestsellers in bookshops in Colchester. He lectures widely.

Carl Crossan

Carl is a very experienced field archaeologist. Since joining CAT in the early 1970s he has supervised or directed many major projects including Balcerne Lane, Butt Road Roman cemetery, St Mary Magdalene's Church, St Botolph's Priory, and the Colchester Garrison Project. His publications include *Colchester Archaeological Report 9: Excavations on Roman and later cemeteries, churches and monastic sites in Colchester 1971-88 (1993)*, and a contribution to *Colchester Archaeological Report 6: Excavations at Culver Street, the Gilbert School, and other sites in Colchester 1971-85*.

Stephen Benfield BA, Cert Archaeol (Oxon) (CAT)

After working in farming Banking, Estate Agency, and in a Jobcentre, Stephen discovered archaeology. His first involvement with Colchester archaeology was in 1985, working on a Manpower Services Commission sponsored project, assisting in processing the enormous collection of Roman pottery from excavations in the town. After that he studied for his post-graduate Certificate in Archaeology at Oxford. Returning to CAT, he has since worked on many CAT projects at various supervisory and directorial positions, including the major projects at Stanway Iron Age burial site and Gosbecks Roman temple/theatre complex. Stephen has also, through much hands-on experience, built up a considerable working knowledge of LIA and Roman ceramics. He now completes ceramic assessments and full reports for CAT, drawing on the unrivalled catalogues provided by the standard Colchester works *Camulodunum* (Hawkes & Hull 1947), *Roman Colchester* (Hull 1958) and now *CAR 10*, and by examining the fabric series held at CAT headquarters.

Howard Brooks BA (Hons) MIFA (CAT)

Howard's involvement in Essex archaeology goes back to 1970 when he dug at Sheepen, Colchester with Ros Dunnett. He worked for Colchester Archaeological Trust between 1976 and 1981, and again in 1985, and was involved at various levels of responsibility (up to Co-Director) in the excavation of deeply stratified urban remains in Roman Colchester and suburbs (*Colchester Archaeological Report 3* [1984]). Between 1985 and 1992 he worked for Essex County Archaeology Section, first in directing the fieldwalking and excavation project at Stansted Airport (forthcoming *East Anglian Archaeology*), and then in Development Control. Howard then left ECC to set up and run HBAS, the county's smallest contracting team, in which capacity he carried out over twenty field projects and wrote a dozen consultancy reports. He rejoined CAT in 1997, since when he has been involved with major excavations at the Old Post Office on Head Street, the Co-operative Stores on Long Wyre Street, and other major projects. He regularly contributes to *Essex Archaeology & History*, and teaches WEA and University evening classes on archaeology.

FINDS SPECIALISTS

Sue Anderson BA MPhil MIFA DipMusStud (SCCAS) - Human Bone

Sue is Suffolk C.C. Archaeological Service's Finds Manager, specialising in human skeletal remains, post-Roman pottery and Roman to post-medieval ceramic building material. She has worked in Suffolk since 1995, and was previously employed as a freelance human bone specialist (for English Heritage, Norfolk Archaeological Unit, Hampshire C.C. and Cleveland Archaeology), a museum cataloguer at Hampshire County Museums Service, and a site assistant at Wessex Archaeology. She has worked on large assemblages of bone from Norfolk, Suffolk and the North-East, and large groups of ceramics from Norfolk, Suffolk and Cambridgeshire. Publications include human bones from Caister-on-Sea and Burgh Castle, Norfolk (*East Anglian Archaeology* 60), and several large reports in the Ancient Monuments Laboratory Report Series (all forthcoming). A full list can be found on her website <http://www.spoilheap.co.uk/splist.htm>.

Joanna Bird FSA (Guildford) Samian

Joanna is one of the country's top Samian specialists. Among her large corpus of work is a contribution to the blockbuster *Colchester Archaeological Report 10: Roman pottery from excavations in Colchester 1971-86*.

Ernest Black (Colchester) Roman brick/tile

Ernie is a Colchester schoolteacher with a wide interest in archaeology and the classical world. In this sense, he is following in the footsteps of A.F. Hall and Mike Corbishley who were also local schoolmasters. He has developed his specialism by large scale hands-on experience with Roman brick and tile, and has contributed to the *Archaeological Journal*, *Colchester Archaeological Report 6: Excavations at Culver Street, the Gilbert School, and other sites in Colchester 1971-85*.

Nigel Brown BA MIFA FSA FSA (Scot): (Essex CC) Prehistoric Pottery.

Nigel is the county's leading prehistoric pottery specialist, and is building a reputation farther afield. He has worked for the County Archaeology Section since 1980, contributes regularly to *Essex Archaeology & History*, and has directed several major excavations in Essex, principally the Bronze Age Farmstead at Loft's Farm (*Proc Prehist Soc* 54 [1988]), and North Shoebury project (*East Anglian Archaeology* 75). He also contributed to *Colchester Archaeological Report 6: Excavations at Culver Street, the Gilbert School, and other sites in Colchester 1971-85*.

Dr Hilary Cool FSA MIFA (Nottingham) Roman glass

Yet another graduate of the University of Wales, Hilary is now a freelance glass and finds specialist, and has written many reports on glass from Colchester sites, including contributions to *Colchester Archaeological Report 6: Excavations at Culver Street, the Gilbert School, and other sites in Colchester 1971-85*, and *Colchester Archaeological Report 9: Excavations on Roman and later cemeteries, churches and monastic sites in Colchester 1971-88* (1993). Among her major works is the internationally selling *Colchester Archaeological Report 8: Roman vessel glass from excavations in Colchester 1971-85*.

Nina Crummy (Colchester) Small finds

Nina first worked in the early 1970s as finds assistant on the major urban excavations in Colchester for the Colchester Excavation Committee (later the Trust). Over the next twenty years she built up an unrivalled working knowledge of small finds of all types. She has collaborated in most of the *Colchester Archaeological Reports*, and was principal author of the best-selling *Colchester Archaeological Reports 2* (Roman small finds), *4* (*The coins from excavations in Colchester 1971-9*) and *5* (*The post-Roman small finds from excavations in Colchester 1971-85*). She recently worked for the Museum of London, and was instrumental in the recent transfer of and the massive improvement in accessibility to archaeological archives in London. She now works freelance on small finds reports for CAT, HBAS, and other bodies including Winchester Excavation Committee.

Dr John A Davies (Norwich Museum) Roman coins

John has, for some years, written reports on Roman coins from Colchester excavations. He specialises in barbarous radiates, and has contributed to *British Numismatic Journal* on that topic. Among his other publications is a contribution to *Colchester Archaeological Report 4: The coins from excavations in Colchester 1971-9*, and *Colchester Archaeological Report 9: Excavations on Roman and later cemeteries, churches and monastic sites in Colchester 1971-88* (1993).

Peter Murphy BSc MPhil (UEA) Environmental

Peter needs no introduction, but I'll give one anyway. His first contact with Essex Archaeology was as a graduate at Southampton University where he processed and reported on environmental samples from the urban excavations in Colchester the mid 1970s. He joined the Centre for East Anglian Studies (University of East Anglia) in Norwich in 1977, and from that base has established himself as the father figure of East Anglian environmental studies. He has been involved at a personal level or as an advisor on virtually every major project in the east of England over the past twenty years where environmental studies are concerned, and has written and lectured widely. He covers East Anglia in general (Norfolk, Suffolk, Essex, Lincs, Cambs, Herts) but has a specific role for English Heritage in co-ordinating environmental matters in Midland Region (most of Southern England).

Valerie Rigby (British Museum) LIA ceramics

Val is one of the country's leading authorities on later prehistoric ceramics in general, and traded wares in particular. She has published widely. Her major work include *Baldock: the excavation of a Roman and pre-Roman settlement, 1968-72* (*Britannia Monograph Series 7*, with Ian Stead). On a more local level, she has contributed to the magisterial *Colchester Archaeological Report 10: Roman pottery from excavations in Colchester 1971-86*, and to Ros Niblett's *Sheepen: an early Roman industrial site at Camulodunum* (Council for British Archaeology Research Report 57, 1985).

Dr Paul Sealey (Colchester Museums) Amphoras

Paul has worked at Colchester Museum since the late 1970s. His PhD specialism was Roman amphoras, a topic on which he writes specialist reports for Colchester sites. His main areas of interest are prehistory and the Roman period, and he has developed a familiarity with those periods and their ceramics. He has published widely. His major works include *Amphoras from the 1970 excavations at Colchester Sheepen* (British Archaeological Report 142, 1985), contributions to Ros Niblett's *Sheepen: an early Roman industrial site at Camulodunum* (Council for British Archaeology Research Report 57, 1985). He regularly contributes to *Essex Archaeology & History*.

Sue Tyler (ECC) Saxon Pottery

Sue is the County authority on Saxon material, especially pottery. She has had several spells working with Essex County Archaeology Section, interrupted by a late-1980s spell in Hertfordshire. She has written reports on Saxon material for many Essex Projects, and contributes regularly to *Essex Archaeology & History*, including the Anglo-Saxon cemetery at Prittlewell (*Essex Archaeol Hist* 19 (1988)).

Helen Walker BSc (ECC) Medieval and post-medieval pottery.

Helen is Essex County Council Field Archaeology Group's medieval and post-medieval pottery specialist. Before joining ECC in 1985, she worked on finds in Carmarthen, and for Hampshire CC on projects in Winchester. Since 1985, she has contributed reports on ceramics to many other projects in the county. A regular contributor to *Essex Archaeology & History*, her principal publications include reports on the Rayleigh kiln dump, and George Street and Church Street, Harwich (*Essex Archaeology & History*, 21 [1990]), and North Shoebury (*East Anglian Archaeology* 75).

Steven Tyler, with Howard Brooks, October 2003

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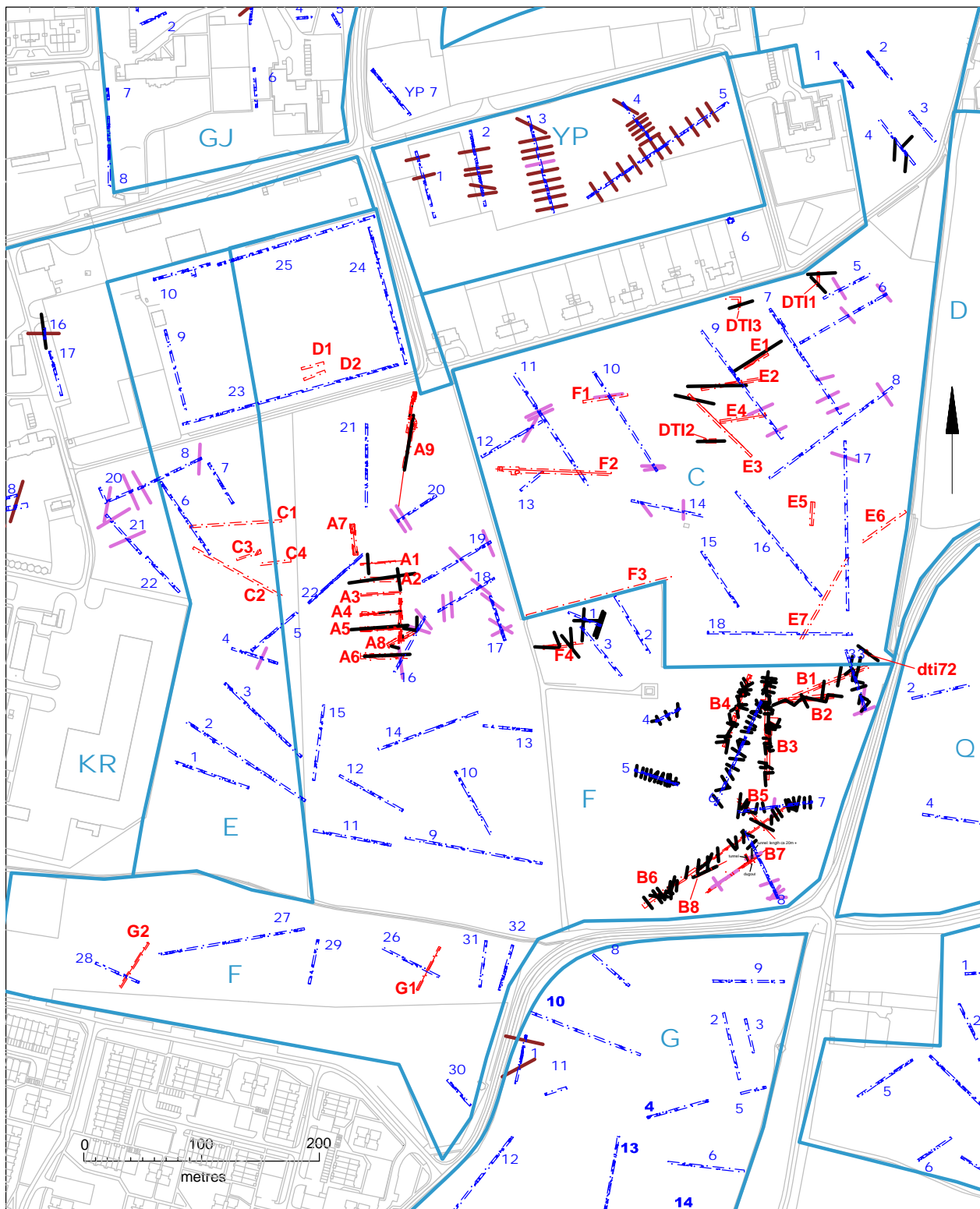
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Checked by: Philip Crummy

Date: 8.10.03



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|--|-----------------------------|--|----------------------|
| | CAT 2002: evaluation trench | | Army trench |
| | Bactec 2003: trench | | possible Army trench |
| | CAT 2002: area boundary | | other modern |

Fig 1 Colchester Garrison munitions clearance: location of Army trenches.

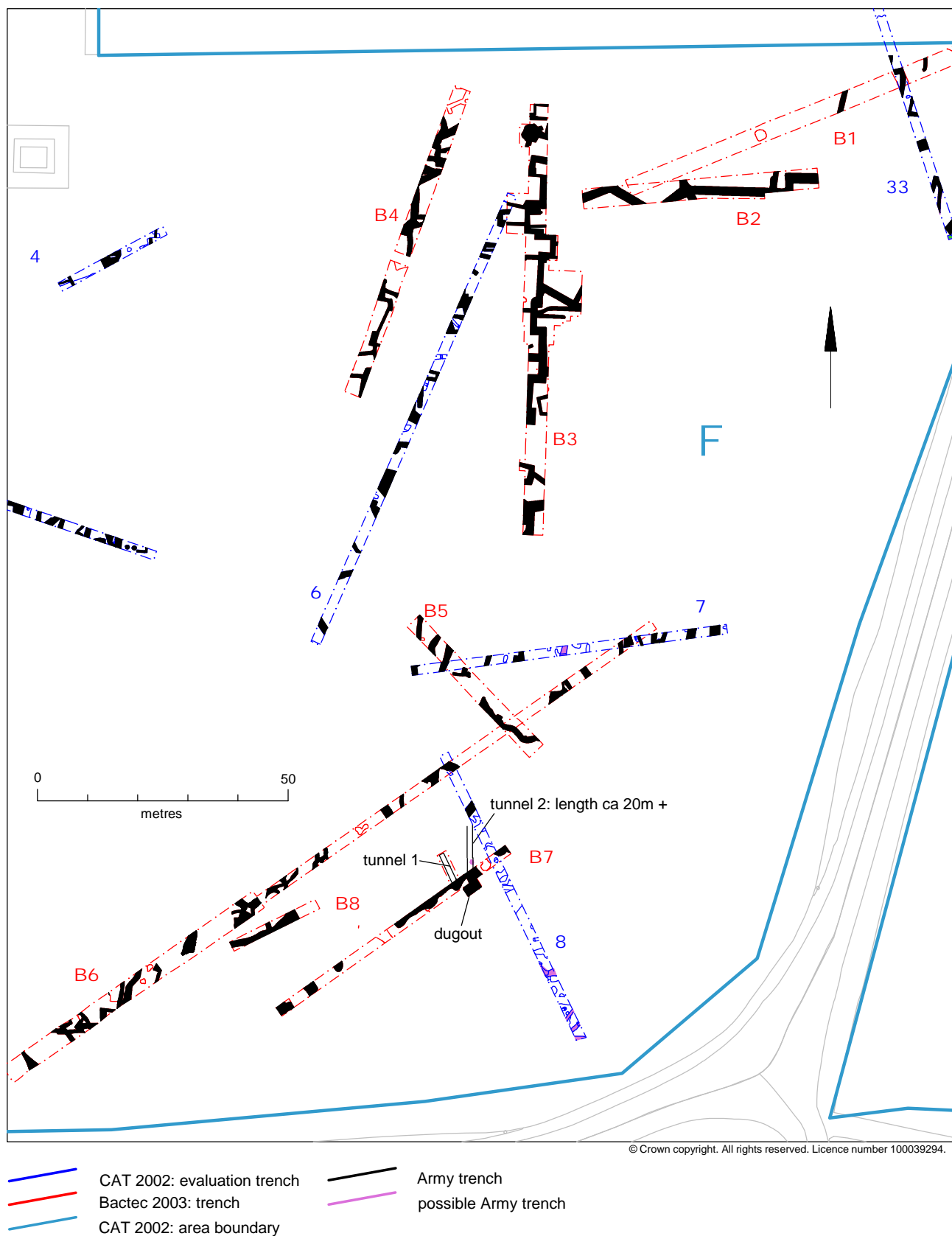
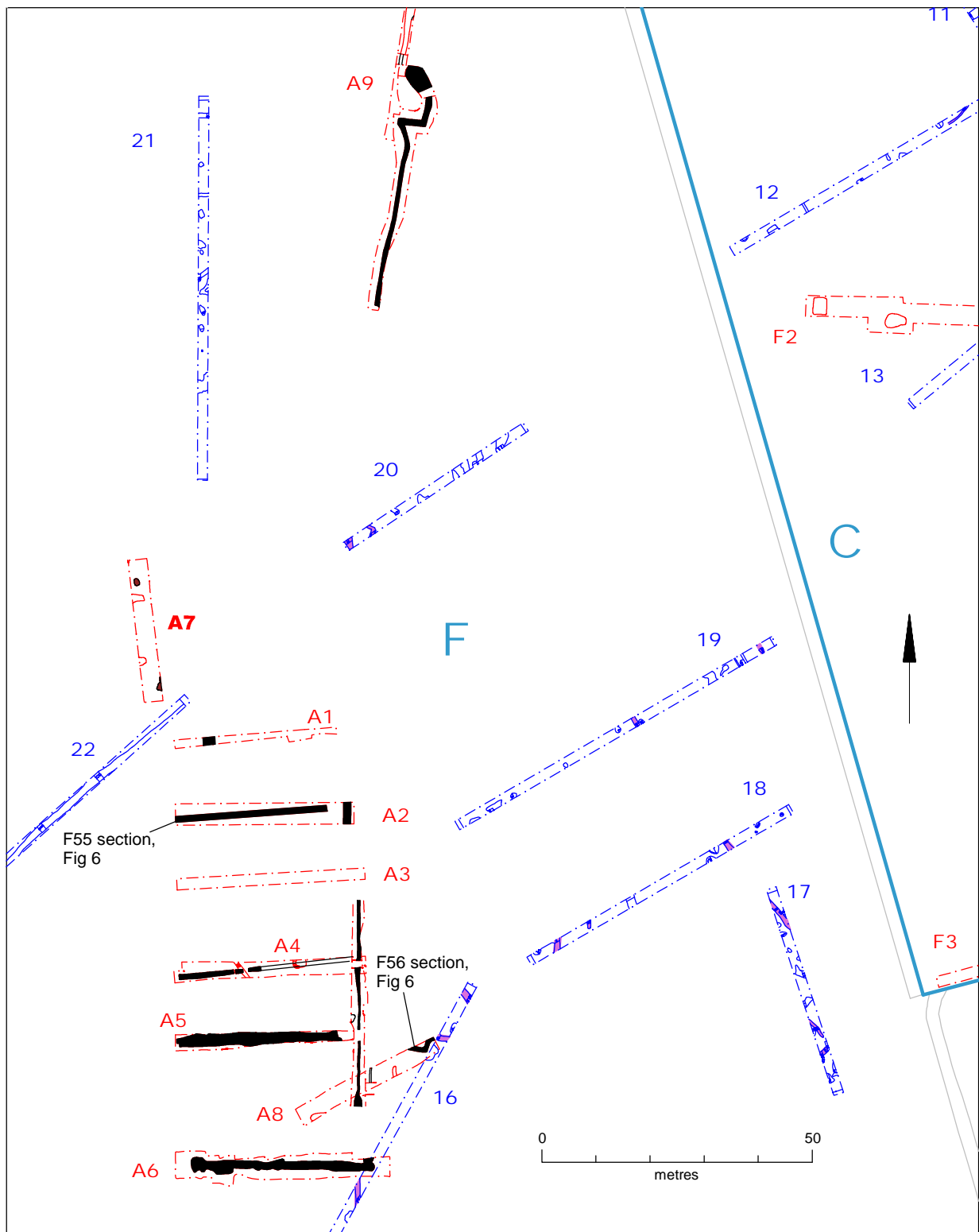


Fig 2 Army practice trenches: Area F east (B1-B8).



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- CAT 2002: evaluation trench
- Bactec 2003: trench
- CAT 2002: area boundary
- Army trench
- possible Army trench

Fig 3 Army practice trenches: Area F west (A1-A9, F2, F3).



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Fig 4 Area F east: Army practice trenches: detail of B2, B3.

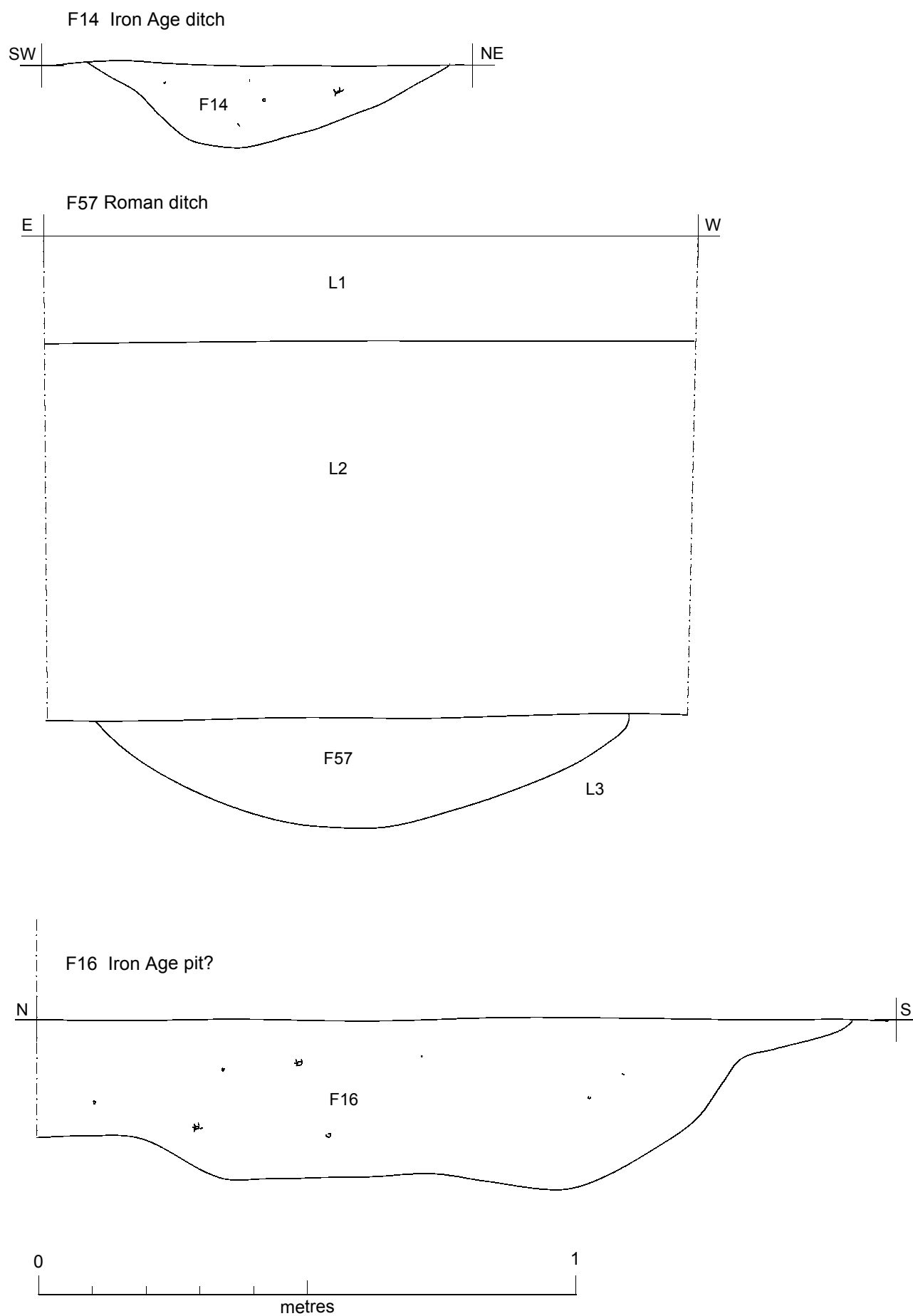


Fig 5 Munitions clearance: Prehistoric and Roman features: sections of F14, F16 (trench A4), F57 (trench C2).

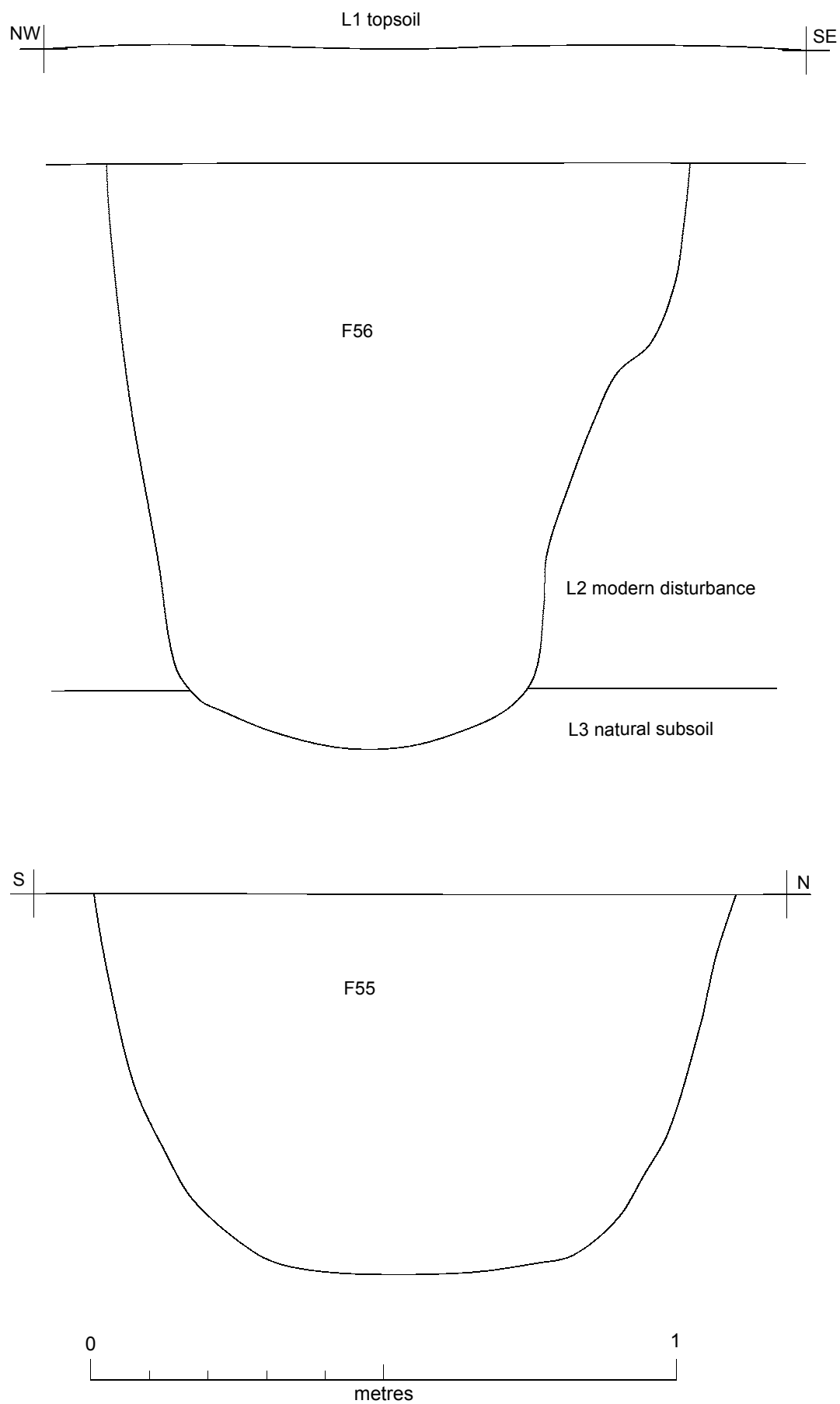


Fig 6 Area F east: Army practice trenches: sections of F55, F56 (trenches A4, A8).

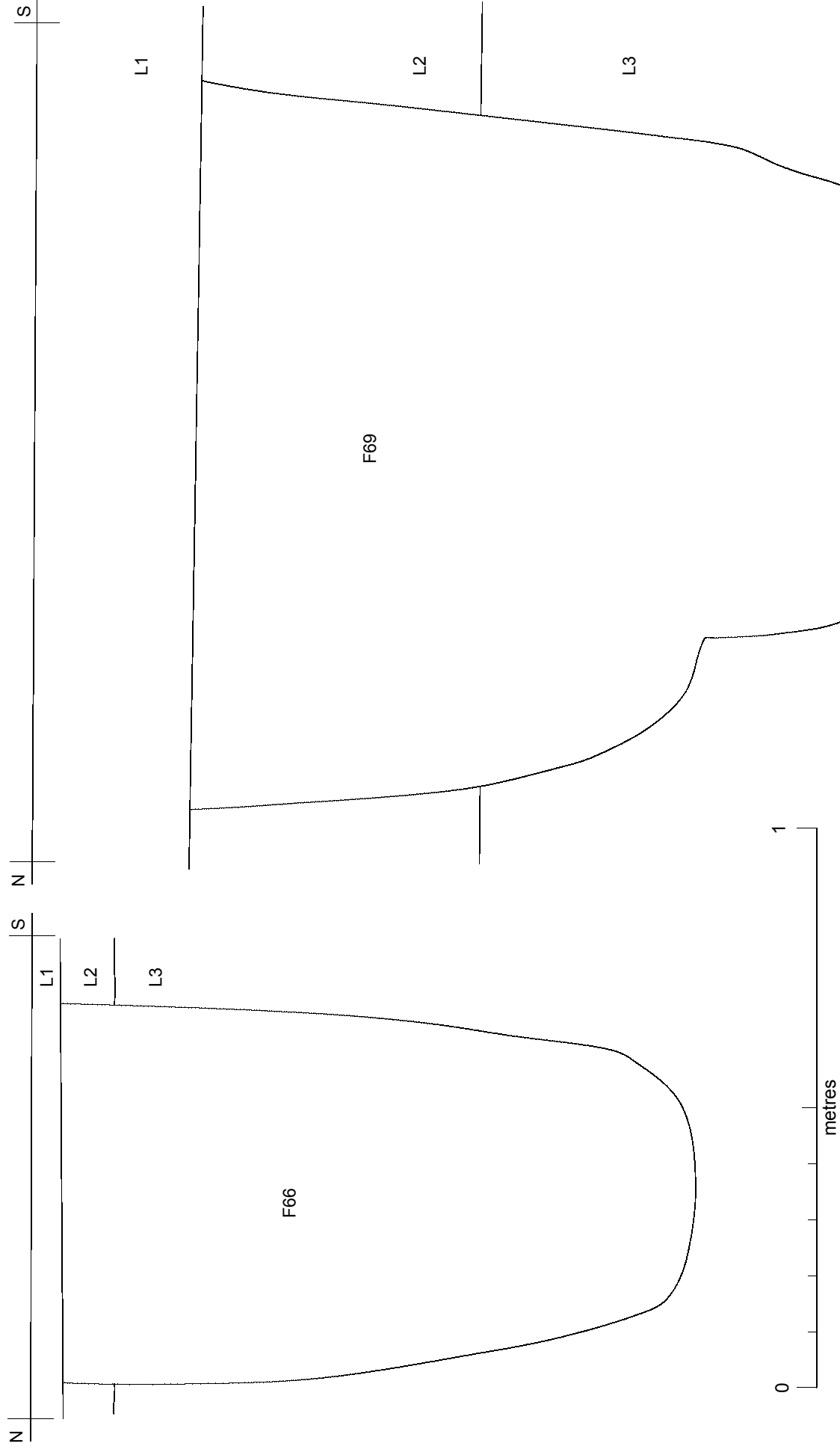


Fig 7 Area F east: Army practice trenches: sections of F66, F69 (trench B3).

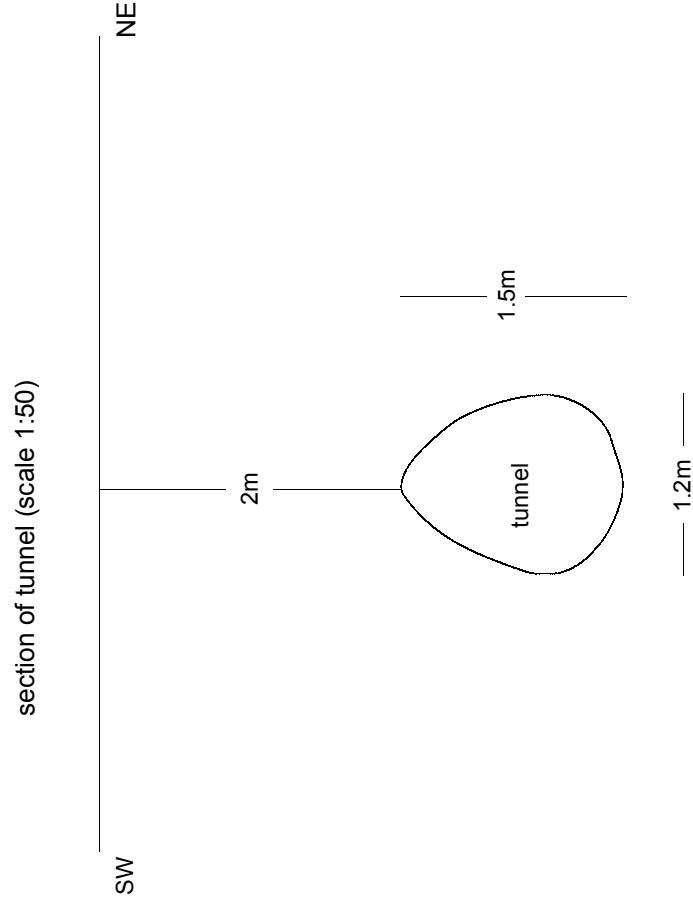
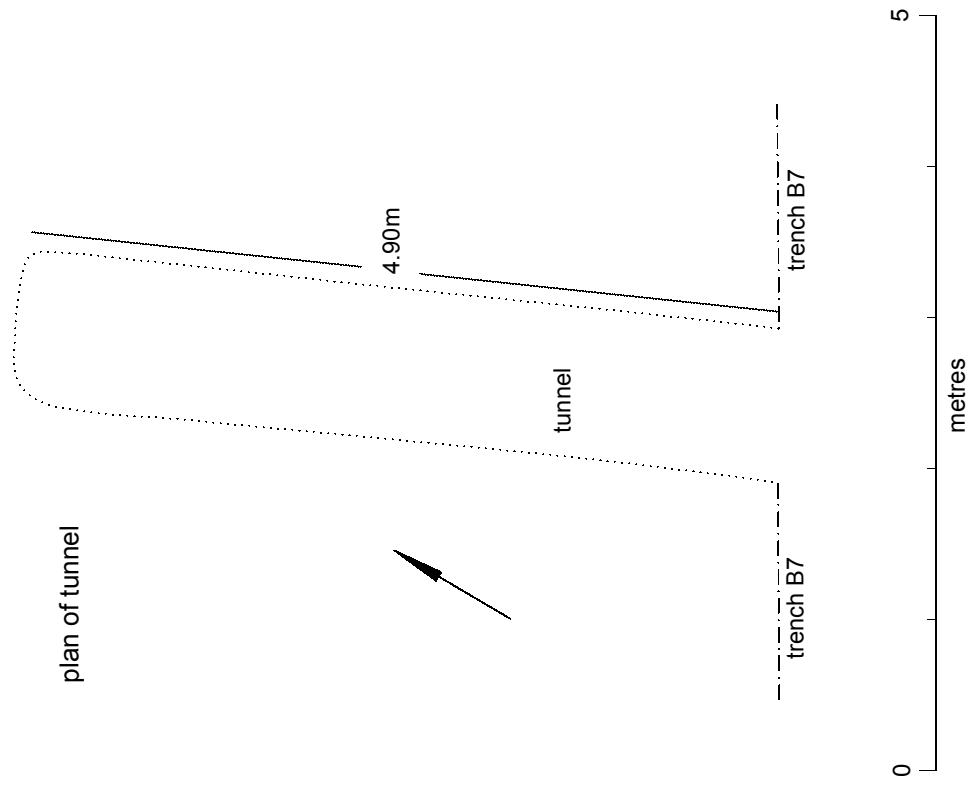


Fig 8 Area F east: Army practice trenches :plan and section of tunnel running north from B7 .

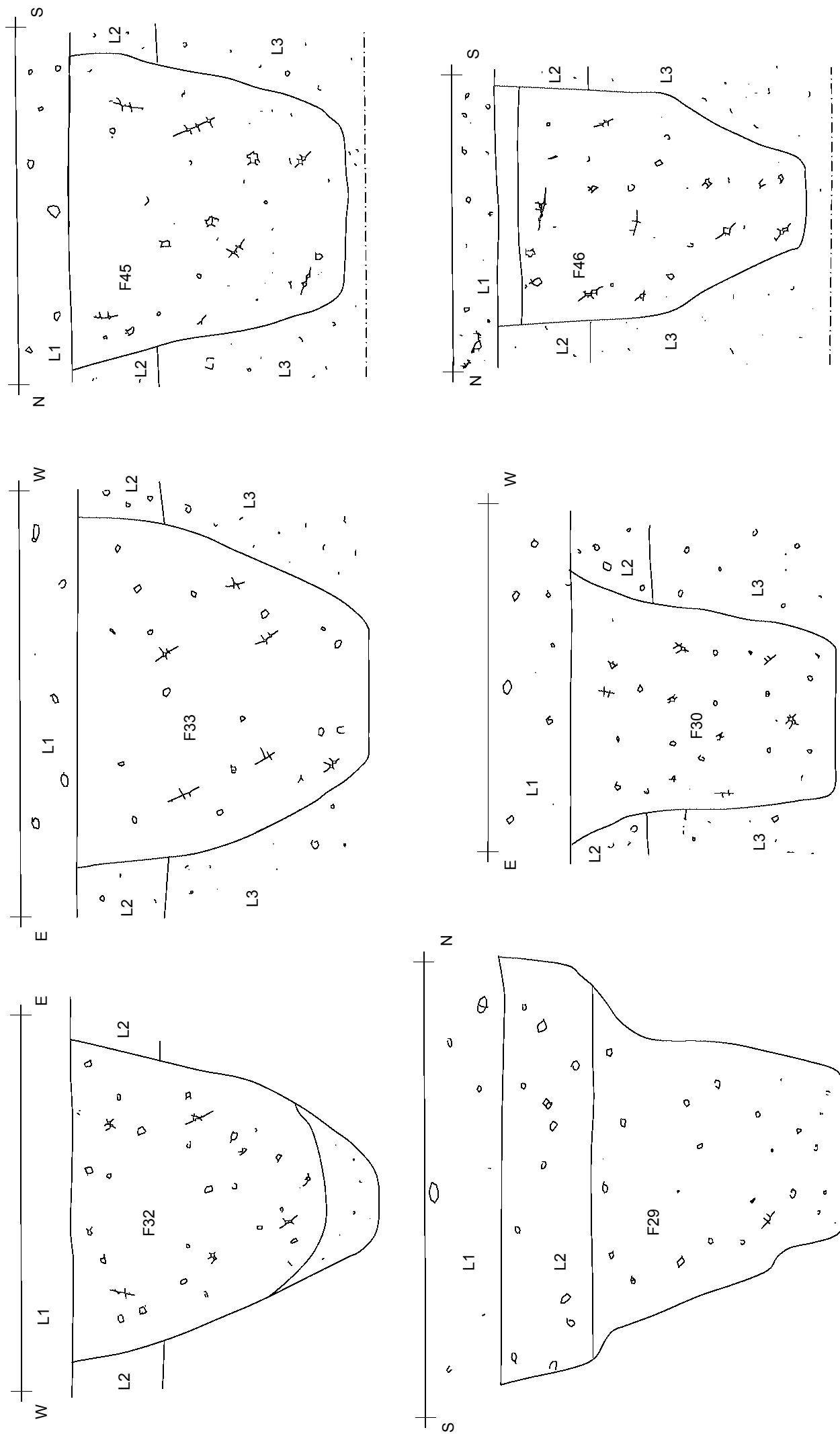


Fig 9 Area F east: Army practice trenches: section of F29-30, F32-33 (trench B2), F45-46 (trench B3).

Essex Heritage Conservation Record/ *Essex Archaeology and History*

Summary sheet

Site address: Colchester Garrison (off Ypres Road), Colchester, Essex	
Parish: Colchester	District: Colchester
NGR: TL 993 232 (centre)	Site code: Museum accession code 2003.185
Type of work: Watching brief	Site director/group: Colchester Archaeological Trust
Date of work: July 2003	Size of area investigated: approx 3,500m ² of open trench in area of approx 41 hectares
Location of finds/curating museum: Colchester Museums	Funding source: Developer
Further seasons anticipated? No	Related EHCR nos: -
Final report: CAT Report 246 and summary in <i>EAH</i>	
Periods represented: principally World War I, with some later features	
Summary of fieldwork results: During a watching brief on ordnance clearance work, within Areas C and F of the Colchester Garrison development site, a number of WW1 military practice trenches (and other related features) were recorded.	
Previous summaries/reports: None	
Author of summary: Howard Brooks	Date of summary: 24th October 2003