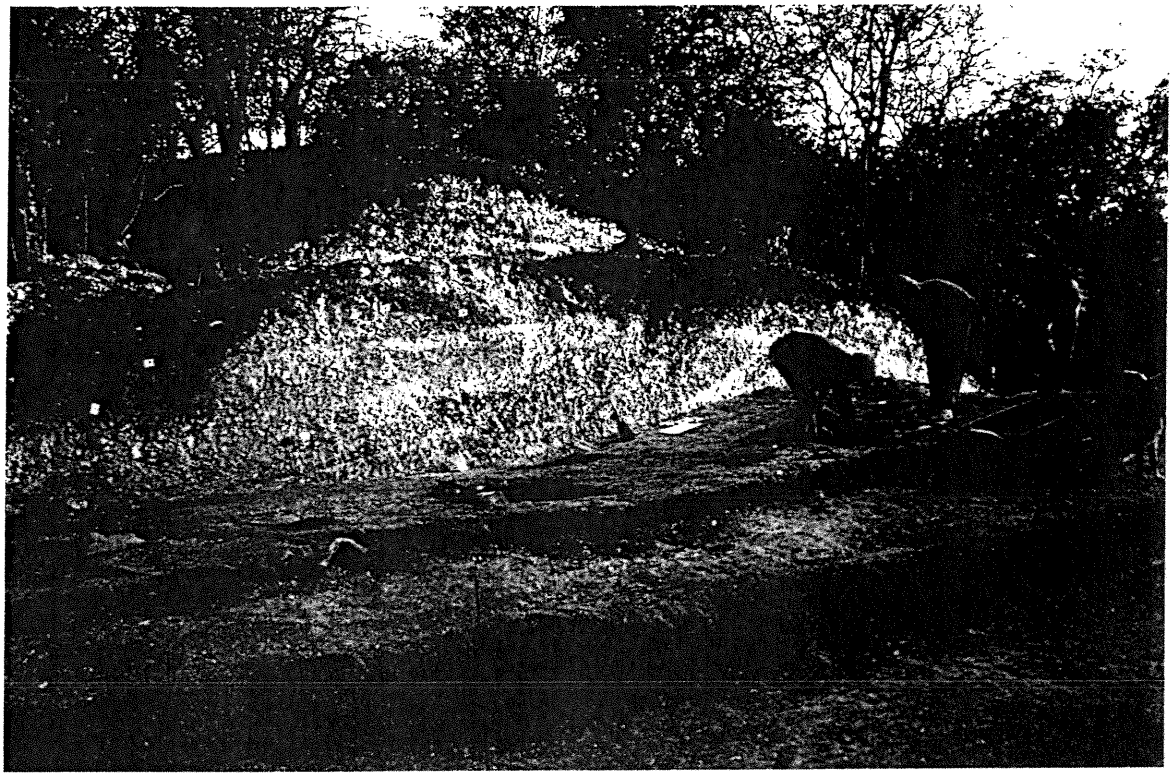
FLEAM DYKE, 1991

- INTERIM REPORT

Dr Gerald A Wait AIFA

Archaeology Section
Property Department
Shire Hall Castle Hill
Cambridge CB3 OAP
Tel. (0223) 317312



Report no. 49

Section through Fleam Dyke

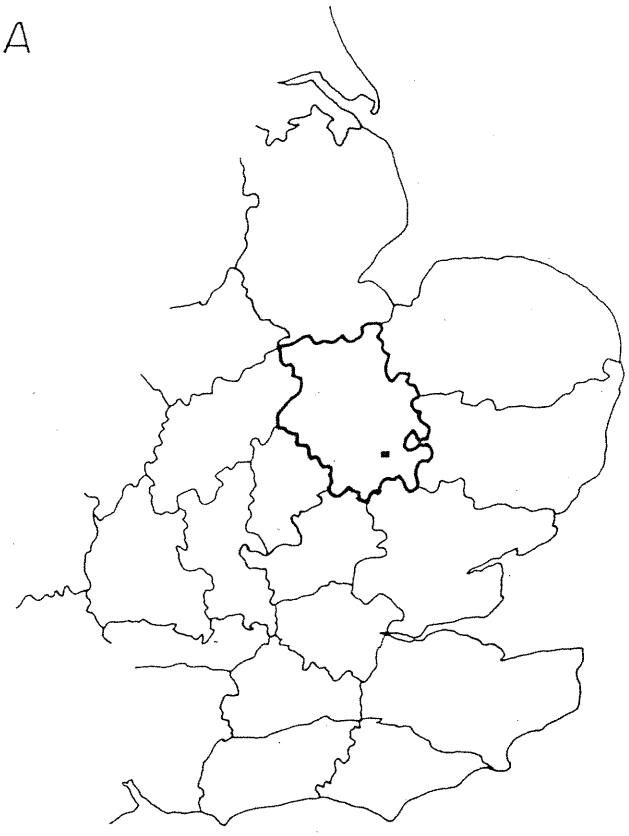
cambridgeshire archaeology

Contents

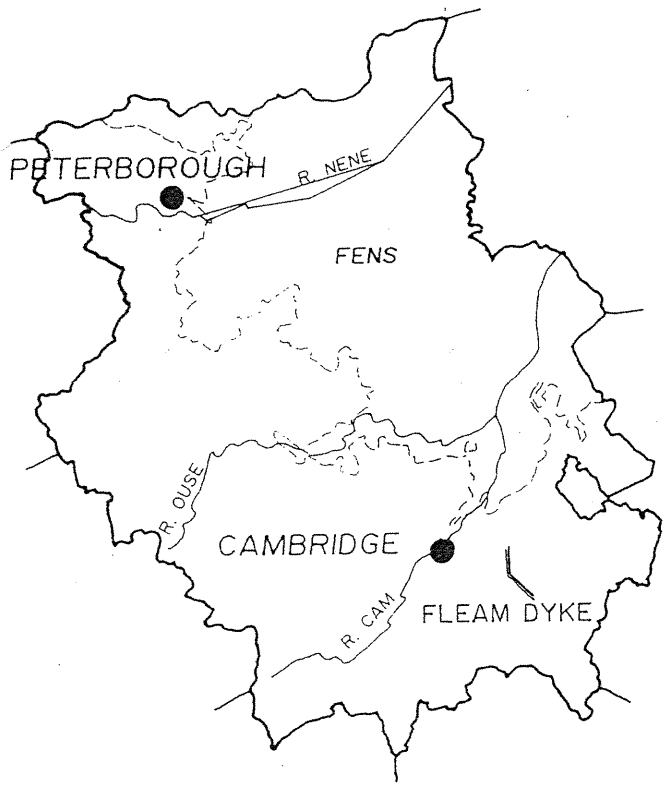
Appendices

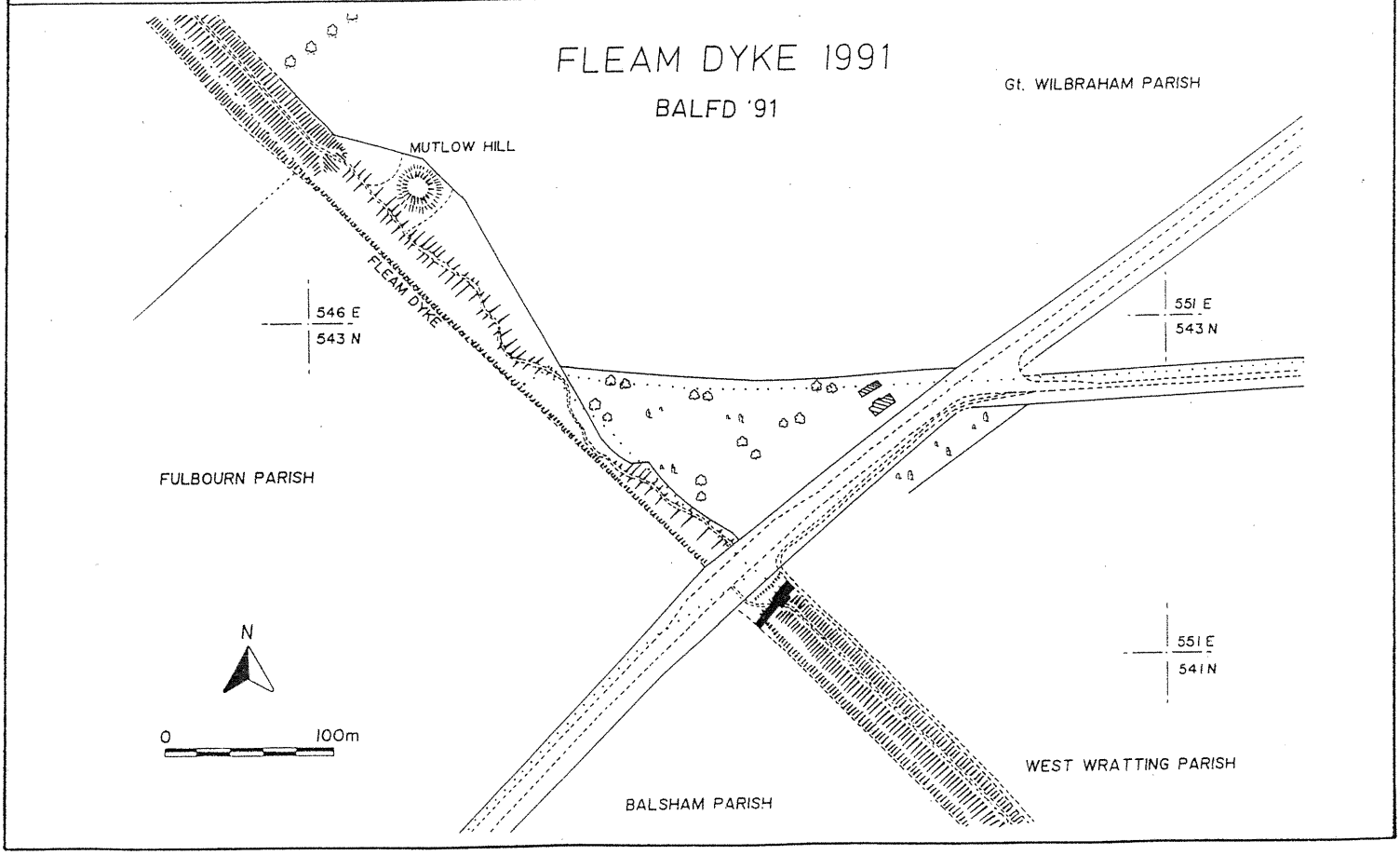
Figures

A



B





Based upon Ordnance Survey Map No.(Edit):
with the sanction of the Controller of H.M.S.O [Licence No LA 07649 X]

For identification purposes only

Cambridgeshire
County Council

Department of Property
Archaeology Section

FLEAM DYKE 1991

PREPARED BY:	DATE:
R.P.	2/92

SCALE:

PLAN NO: 1

FLEAM DYKE EXCAVATIONS 1991

BALFD91 NGR TL541/548

Gerald A Wait DPhil AIFA

Summary

A section across the Cambridgeshire Fleam Dyke *scheduled ancient monument* (Cambs no. 6) was excavated by a team from Cambridgeshire Archaeology under the direction of the author in October-November 1991. The excavation was funded by English Heritage, and undertaken to record that part of the Dyke which will be destroyed by the dualling of the A11 trunk road. The goals of the excavations included a reconsideration of the dating and construction of the dyke, and particular attention was directed toward the buried soils below the bank of the Dyke. The methodology employed made use of the artificial terminus left by previous roadworks (and excavation by C Fox in the 1920's) to achieve a "stepped" section across the bank exposing about 35 square metres of buried soil. The bank as revealed was about 15 metres wide and 3.5 to 4.0 metres high. The excavated section was carried across the ditch (14 metres long by 3.5 metres wide).

The Fleam Dyke was revealed as an unexpectedly massive defensive earthwork - the apparently unimpressive ditch was originally 4.5 metres deep and 8 metres wide. With it's near vertical sides and flat bottom it was an effective barrier. At least two phases of ditch were observed - an earlier V profile ditch (5 metres wide by 3 metres deep) close to the bank, replaced by the major ditch described above. The section across the bank was equally fruitful. Three phases of bank can be distinguished, the last representing a long period of ditch maintenance and cleaning. Artefacts were not numerous, but nonetheless sufficient to confirm a post-Roman date. Many small abraded sherds of Roman pottery (studied by C Going) and a third-fourth century coin were sealed in the buried soil below the bank. A few animal bones were recovered from layers within each of the bank phases, as well as from layers within the ditch fill, and may be used for radiocarbon dating. More significantly, the buried soil was extensively sampled for molluscs and botanical remains, which should provide new information about the environment of the area when the Dyke was built (P Murphy, for English Heritage). It is hoped that carbonised remains, such as nuts or seeds, will be recovered and can be used to provide a good radiocarbon date. Soil micromorphology samples were also taken from the buried soil (Dr CAI French). Molluscan samples from the ditch fill should allow for a reconstruction of the environment of the ditch during the silting process. No evidence for an original causeway to carry a Roman road through the Dyke was found, confirming the conclusions that Fox reached that the Dyke was a complete barrier.

The finds, samples and paper archive are in storage in the Cambridgeshire County Council Field Archaeology offices at Fulbourn.

Topography and Geology

The Fleam Dyke extends from the Fen edge between Fulbourn and Little Wilbraham (TL537/556) towards the south-east, for a distance of about five miles. Thereafter, for a further two miles it is greatly diminished in size, appearing only as a large embanked hedge. For nearly its entire length the Dyke crosses the chalk hills of south Cambridgeshire - its north-western end skirts Fulbourn Fen along the edge of a low chalk ridge, and its south-eastern end climbs up onto the clay-hill plateaux north of Balsham village.

Known Archaeology

Fleam Dyke is traditionally interpreted as an Anglo-Saxon defensive earthwork spanning the chalk ridge between Fen and forested clay hill in southern Cambridgeshire. It is one of several interpreted in this way, the others being the Devils Dyke, Brent or Pampisford Ditch, The Bran or Heydon ditch, and the Royston Mile ditches. It is refered to in the Anglo-saxon Chronicle for the year AD 905. The surviving upstanding earthwork of Fleam Dyke appears to terminate to the south-east of Fulbourn village at approximately TL 537/556. However, the first Edition OS map (ca. 1806-22) shows a reduced earthwork proceeding at an angle from this point and yurning north again to end against the Little Wilbraham River at TL537/577. This extension also appears on a map, probably drawn by Roach Smith (ca 1860-70) now in the Maynard Collection (Vol I, 58/5/1) in the Cambridgeshire Record Office. Although no longer extant as an earthwork, this extension of the Dyke was observed from the air and on the ground by staff of the Archaeology Office, Cambrideshire County Council.

Archaeological interest in the Fleam Dyke has focussed on the short stretch from Mutlow Hill south-wards across the A11 to Dungate Farm. In this stretch of the Dyke, Cyril Fox excavated at least a dozen trial trenches (Fox 1921-22; 1924). A prominent feature of Fox's results can be seen in his section drawings of the ditch: a shelf or V-shaped notch appears consistently on the ditch side nearest the bank (to the north-east). Fox interpreted this as a first phase of ditch, later replaced by the broad flat bottomed ditch immediately to the south-west (Fox 1922, 40-41). Fox also observed a series of major episodes of bank construction, all sealing a buried soil horizon (1922, 40). Fox recovered many small abraded sherds of Romano-Celtic pottery from within the buried soil (1922, 45-51) and was thereby able to demonstrate that Fleam Dyke was a post-Roman (and presumptively Anglo-Saxon) construction.

Fox returned to Fleam Dyke the following year (1922) to resolve outstanding questions relating to the date of the dyke and its association with the A11 road, and the relationship of the Dyke to the "straet" mentioned with the Dyke in a Charter of 974 (Fox 1927, 32; Fox 1924, 21). During this season Fox confirmed the general profile of the ditch, the post-Roman date of construction, and the likelihood that the Dyke had been a continuous barrier across the Icknield Way and the Roman road under the A11 (that is, the apparent gap from the A11 north to Mutlow Hill is a recent feature). However, Fox convinced himself that the probable enlargements of the bank could not be linked to a small first phase ditch, and that therefore the "shelf" or V notch was a deliberate, integral part of the original design of the Dyke. The Dyke was a single phase monument(Fox 1924, 31-33).

Subsequent archaeological work on the Dyke has been limited to the recording of a section across the Dyke near TL542/548. Unfortunately the part of the ditch fill crucial to establishing a phase sequence, was not excavated or recorded (Smith 1973, 30-33).

It should be noted that Mutlow Hill, a Bronze Age barrow and later Romano-Celtic temple, was excavated by R C Neville, 4th Lord Braybrooke in 1852. There is a poorly documented tradition that burials with Anglo-Saxon weapons were found in the ditch of Fleam Dyke near Mutlow Hill (Fox 1924, 25).

The 1991 Excavation

Methodology

The present "terminal" of the Dyke to the south of the A11 is to be destroyed by the dualling of the A11. Therefore a small scale excavation was proposed by the County Archaeology Office and the author employed to undertake the fieldwork. Limitations of time and money meant that excavation by hand was not feasible, and therefore a mechanical excavator was utilised to excavate a series of steps across the bank, and continued across the ditch, removing only the most recent ditch silts. A further step was hand excavated across the top of the bank, and the machine-step was continued by hand. The lowest one metre of the bank was hand-excavated, and all sections drawn and photographed. The bank was severely damaged by tree-root action, and rodent burrows had destroyed the upper 0.75-0.80 m of the ditch fill.

The academic objectives focussed on the following questions left unresolved since Fox's excavations in the 1920's. First, could more than one construction phase be identified in either the bank or ditch? Could the Dyke be datedmore accurately than post-third century to pre-tenth centuty? The buried soil horizon was extensively sampled for soil micromorphology, molluscan, macroscopic botanical, and pollen analysis, in an attempt to learn more of the contemporary land-use near the Dyke.

Overview of Results

The excavation has provided answers to some of the questions posed. The bank can be shown to be of two/three phases, and the ditch of two phases. Roman pottery and a coin from the buried soil confirm a construction date after the late fourth century AD. Soil micromorphology and molluscan evidence seems plentiful and promises to produce information about the environment and land-use prior to construction. Unfortunately pollen preservation in the oxidised soil was very poor. It is hoped that the flotation of about 140 litres of soil will produce carbonised remains which can be used to provide a radiocarbon date for the initial phase of construction.

Detailed Results

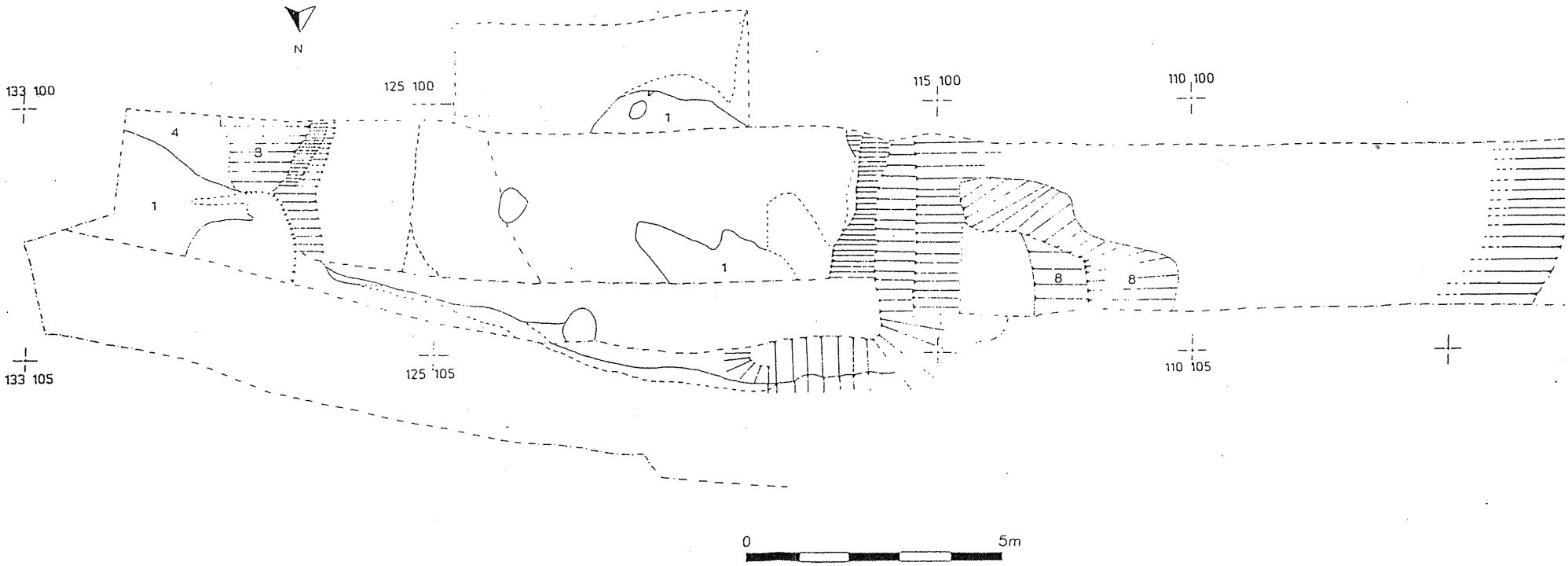
Detailed List of Contexts

Key: Colours: All colours given in Munsell colours, from 10YR card unless noted
L=light, M=Mid, B=Brown, G=Grey, W=White
Soil: Z=silt, Ch=Chalk, C=Clay, S=Sand
Compaction of soils range from Soft to Very Hard, comp=compact
V=very

Ctx	Bank	Phase	Colour	Fine/Coarse Component	Compaction	Comments
1	BD		7.5YR3/2 DB	SZ Chalk		Topsoil
2	B		5/3 B	C, Ch	soft/loose	Disturbed layer
3	B		White	Ch	Comp	
4	B		6/4 or 5/4, B	ZCh	soft/comp	Buried Soil
5	D		7/4 VLB	ZCh	V soft	subsoil over ditch
6	D		6/3 LB	ZCh	V Com	layer in ditch below 5
7	D		5/3 B	ZCh	Hard	Layer on W side
8	D		6/2 LGB	ZCh rubble	Hard	Layer on E side
9	D		6/2 LGB	ZCh rubble	Hard	W side
10	D		6/2 LGB	ZCh rubble	Hard	E side N section
11	B	3	7/2 LG	ZCh rubble	Hard	below 1 W side
12	B	3	6/2 LGB	ZCh rubble	Hard	below 11, top, greyer than 11/13

13	B	3	6/3 LB	ZCh rubble	Comp/friable	below 12, paler B Z on E side
14	B	3	6/2 LGB	ZCh rubble	Comp/friable	Below 13, E side
15	B	3	7/2 LG	ZCH rubble	Comp/friable	E side
16	B	3	7/1 White	Ch	comp	E side
17	B	3	6/2 LGB	ZCh	comp/friable	E side
18	B	3	7/1 white	Ch	soft	E side
19	B	2	7/1 white	CH	V hard	E side, pos turf line worn, compacted hard
20	B	2	7/1 white	Ch	soft	E side, worn/comp surface
21	D	1/2	7/1 white	Ch	V hard	turf? worn comp, top of Phase 1?
22	B	1	5/8 GB	ZCh	hard	mottled layer, poss turf?
23	B	1/2	7/1 LG	ZCh	comp/friable	W side, top of Phase 2?
24	B	2	7/1 white	Ch	comp/hard	top of phase 1, comp silty top
25	B		6/1 GLB	ZCh	V soft	disturbance?
26	B		6/2 LGB	ZCh	V soft	disturbance
27	B	1	7/1 white	Ch	comp/hard	turf? thin compact, within 1
28	B	2	7/1 white	Ch	comp/hard	thin compact layer
29	B	2	7/1 white	Ch rubble	hard	major rubble layer
30	B	2	7/1 LG	ZCh	comp/friable	low mound of chalky silt near "tail" of phase 2 bank
31	B	2	7/4 VLB	ZCh	friable	thin, =19 ?
32	B	1	7/2 LG	ZCh	comp/hard	
33	B	1	7/2 LG	ZCh	soft/friable	v soft layer
34	B	1	7/1 white	Ch	comp/hard	fine comp surface
35	B	1	5/2 GB	ZCh	comp/hard	
36	B	1	7/1 white	Ch rubble	V hard	chalk rubble
37	B	1	7/1 white	Ch rubble	soft	rubble
38	B	1	6/2 LBG	ZCh	soft	fill of hollow ?
39	B	2?	7/1LG	ZCh 50%	hard	W side
40	B	2?	6/2 LBG	ZCh 60%	soft	W side
41	B	1	5/3 B	Zch 60%	comp	
42	B	1	6/3LB	ZCh	soft	upper layer in hollow
43	D		6/4 LYB	ZC, occ Ch	hard	below 6, major ditch silts
44	D		7/3 VLB	CZ	hard	thin lense on W side
45	D		7/3 VLB	ZCh	V hard	rubble layer on W side, fairly chalky
46	B	1	GB	ZCh	hard	
47	B	1	7/2 LGB	ZCh	comp	silty rubble, poss turf line
48	B	2	7/1 white	Ch	soft	chalk rubble
49	D		7/3 VLB	ZCh	comp/hard	W side ditch, more Ch nr bottom, more silt than 45
50	D		4/4 DYB	ZCh 50-60%	hard	hard, with large chalk rubble on W side
51	B	1?	6/2 LGB	Z occ Ch	comp/hard	layer immed over buried soil
52	B	3	7/2 LGB	ZCh	comp	
53	B	1	4/4 DYB	Z	comp/friable	Mounded turf, with lenses of fine chalk, over 4
54	B	2	7/2 LG	ZCh 60%	hard	lowest layer of phase 2 bank on W side

FLEAM DYKE 1991



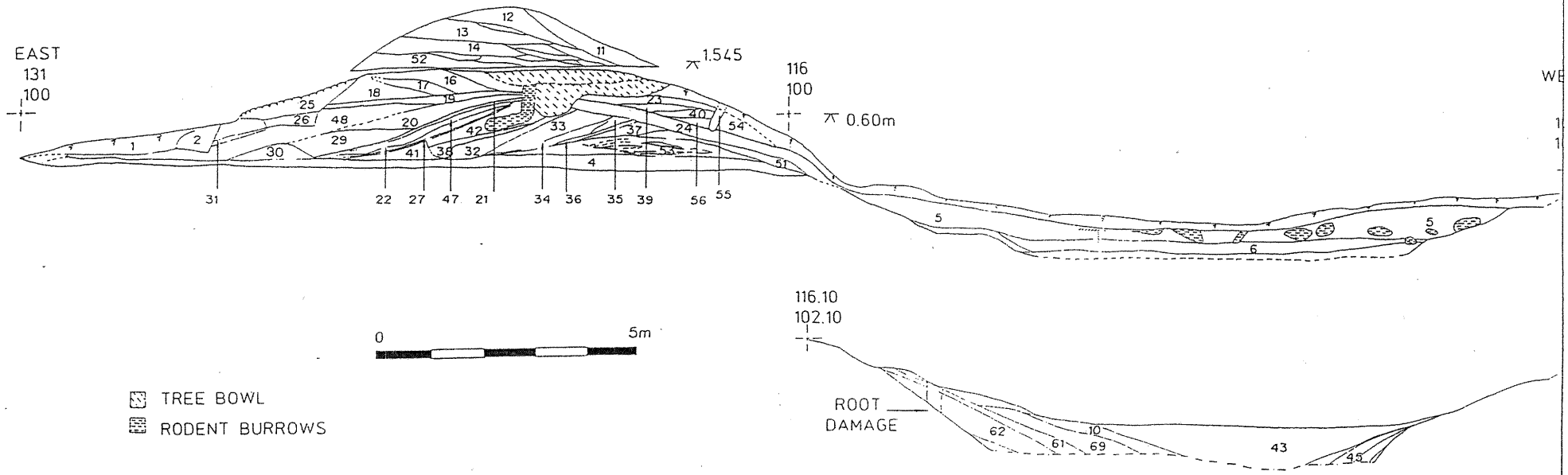
Archaeology Section
Cambridgeshire County Council

Fig. 2

Initials
R.P.

FLEAM DYKE 1991

NORTH FACING SECTION OF BANK AND DITCH



Archaeology Section
Cambridgeshire County Council

FLEAM DYKE 1991
NORTH FACING SECTION OF BANK AND DITCH

Crown Copyr

Fig. 3

Initials
R.P.

55	B	2	7/1 white	Ch	hard	Fill of posthole cut into P2 bank?
56	B	2	7/1 white	Ch	comp/hard	Poss=54, lowest of P2 bank, W side
57	D	2	6/8 BY	Ch rubble	loose	"orange stained loose chalk rubble
58	D	2	7/1 LG	ZCh rubble	loose	Silty Ch rubble
59	D	2	6/8 BY	Ch rubble	loose	major layer, stained loose chalk rubble
60	D	1	7/2LG	ZCh	comp	chalky silt below 59
61	D	1	6/2 LGB	Z occ Ch	comp	thin silty band, over natural on E side
62	D	1	7/2 LG	ZCh	comp	below 61; prob same as 70?
63	D	1	7/2 LG	ZCh,40-50%	comp	below 62
64	D	1	7/2 LG	ZCh, 60%	V comp	below 63, more Ch
65	D	2	6/3 LB	ZCh50-60%	comp/hard	below 58/69, rubble layer,diffuse edges in centre with 66, prob same as 66
66	D	2	7/3 VLB	ZCh50-60%	comp	below 65? smaller rubble, prob same as 65
67	D	2	6/3 LB	Z-ZC,Ch30-40%	comp/friable	V friable
68	D	2	6/6 BY -5/3 B	CZ	comp	distinct from 67?
69	D	2	8/2 W-VLB	ZCh	hard	excav as 10, tend to merge
70	D	2	7/2 LG	Z-C, Ch	V compact	excav as 62, prob same as 62
71	D	2	6/4 LYB	CZ	V comp	hard gravelly layer
72	D	2	5/3 B	CZ	V comp	silty layer above frost talus
73	D	2	7/1 white	Ch	loose	Frost talus
74	D	2	7/1 white	Ch	loose	Initial frost talus on W
75	D	2	7/1 white	Ch	loose	Initial frost talus on E
76	D	1				Cut of Phase 1 ditch, V shaped 5-6.0m wide, max 2.5 m deep (3.0 m from old ground surface)
77	D	2				Cut of Phase 2 ditch, Flat bottomed, max 7-8.0 m wide, 3.5 m deep (4.0 m from old ground surface), bottom 3.0 m wide

Phasing of the Bank

The excavated section across the Fleam Dyke bank (Fig 3,4) confirms the general sequence recorded by Fox (1922, 40-41; and later modified, Fox 1924, 23), that is, of two or three successive reconstructions.

The first phase bank was constructed as follows. A marker bank of heaped up topsoil and turf was laid out over the ploughsoil (ctx 53). Over this were dumped layers 51, 37, 36, 35, 34, 33, 32, 24, 38, 42, 27, 22 and 21, creating a bank that survives as 9.75m wide and 1.10m above the old ground surface (which appears to correspond closely with the modern ground

surfaces in adjacent fields). The original height of this bank is unknown, as it may have been flattened by either erosion or in the proces of constructing the second phase bank. The top of this proposed first bank is layer 21/24, comprising mostly chalk rubble. Layer 24 is very thick (0.25m) while 21 is only 0.08m thick. The top few centimetres of each is finer rubble, very compressed or worn into a hard surface and markedly more silty than the remainder of the layers. This is interpreted as an incipient turf line forming during a pause (of unknown duration) in the construction phase. Attempts to take a sample of this layer for micromorphological analysis failed because the sample collapsed into fine rubble and chalk dust.

The second phase of bank appears to begin with the deposition, on the reverse slope of the bank, of a series of layers composed largely of chalk rubble. These include 0, 29, 30, 25, 39, 40, 56, 54, 48, 19, 18, 17, 16, and 52. Within this series the top of layer 19, on the reverse slope, is siltier worn/compressed hard, and therefore may represent a pause in construction. This is not interpreted as a separate phase as it would require that layer 24 serve as the top for two successive phases, which is unlikely. It is likely that other rubble layers were dumped on the forward (western) slope but have since eroded (or been thrown) into the ditch. Overlying these rubble layers are layers 14, 13, 12 and 11, all of which contain fine lenses of silt and chalk rubble. The character of these layers suggests that they represent periodic cleaning of the ditch, with the spoil added to the top of the bank. Attention is drawn to context 55, which appears to be a posthole about 0.20m in diameter and surviving to a depth of 0.60m from modern ground surface. This posthole is angled "downslope" to the west, typical of a rampart upright which has been forced out of vertical by the collapse of the rampart.

Recent disturbance to the bank is clearly marked by the huge "tree-bowl" in the centre of the section and also contexts 25/26 on the eastern slope, which may likewise be tree root damage.

Phasing of Ditch Silts

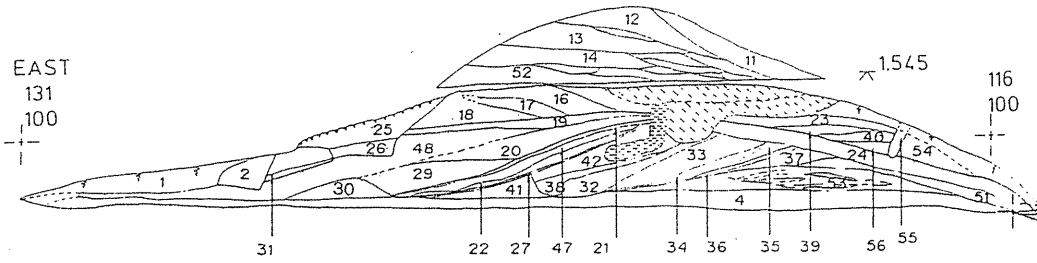
The sections recorded by Fox make it clear that more than one phase is represented, notwithstanding his argumenst to the contrary. The general sequence of layers here (consistent with the stylized section drawing by Fox) further suggest that the "V" notch nearest the bank is the remains of the first phase of ditch.

The phase 1 ditch is represented by only five layers - 60, 61, 62/70, 63, and 64, all on the east side of the ditch. The ditch profile would appear to have been a deep V shape, approximately 6.0m wide at the old ground surface, and 3 m deep. Layers 63 and 64 are the initial fills, and although they contain a considerable amount of small chalk fragments they do not have the appearance of the chalk rubble usually expected from the weathering of a ditch (exp earthwork). This suggests that the ditch was cleaned out after the initial frost talus accumulated and then silted in with a mixture of silts and fine chalk fragments. The upper, later fills are similarly silty in nature, and must derive from the weathering of the rampart bank.

The phase 2 ditch was located about two metres to the west of the first. Phase 2 was a massive ditch between 7 and 8 metres wide and 4.2 to 4.4 metres deep (measuring from the old ground surface). The "cut" of the phase 2 ditch cut through the accumulating fill of the phase 1 ditch, but there is no surviving evidence to indicate how much of the phase 1 ditch was in-filled when phase 2 was dug. The initial fills are layers 73, 74 and 75. These are comprised largely of chalk rubble, the frost-talus expected to accumaulate in the base of a ditch left open over the course of a couple of winters. Layers 72-75 are frost talus rubble. This indicates that the ditch was not cleaned out completely during maintenance, but rather down to the top of layer 72. Above these are several layers of silts with mostly fine chalk fragments. Layers 65/66, 59, 58, 57, and 8/69 are markedly more chalky, and represent an accelerated rate of silting. In particular layers 57, 58, and 59 and almost entirely chalk rubble with very small proportions of silt, and may be interpreted as a larger scale period of erosion of the rampart bank into the ditch. The excavated section revealed in plan a curious feature of these layers - they were very thick in the northern section face but almost non-existant on the southern face. This was initially interpreted as solid cjhalk (the layers were very hard and appeared to be made up of only chalk) and led to speculation that by chance the excavations had located an original

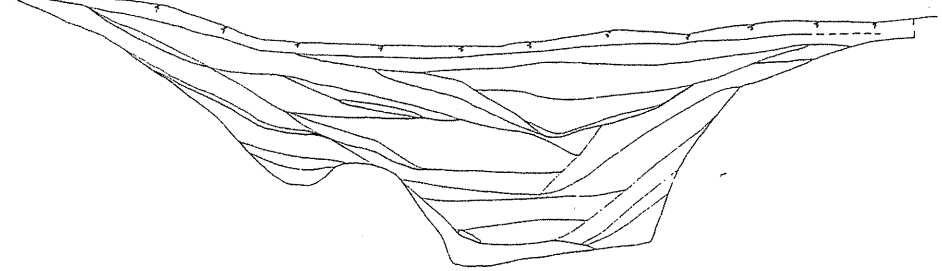
FLEAM DYKE 1991

NORTH FACING SECTION OF BANK



FLEAM DYKE 1991

SOUTH FACING DITCH SECTION REVERSED



TREE BOWL

RODENT BURROWS

Archaeology Section
Cambridgeshire County Council

FLEAM DYKE 1991
COMPOSITE BANK AND (REVERSED) DITCH SECTION

Scale Fig. 5

Initials R.P.

FLEAM DYKE 1991
SOUTH FACING SECTION OF DITCH

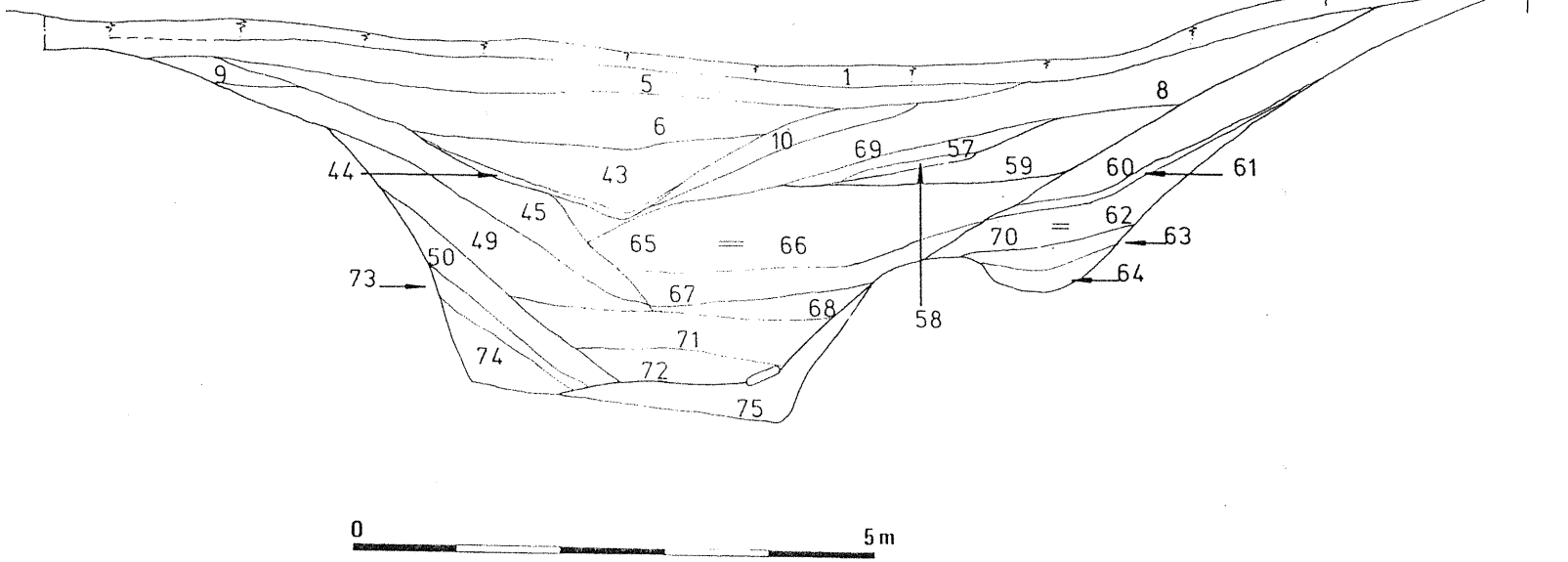
WEST

100
104.20

0.35

EAST

116.15
104.40



0 5m

Cambridgeshire County Council

Department of Property
Archaeology Section

FLEAM DYKE 1991:

SOUTH FACING SECTION OF DITCH

PREPARED BY:	DATE:
R.P.	2/92

SCALE:

PLAN NO:
4

causeway across the ditch. This proved not to be the case and therefore the layers, suggest a localised episode of erosion, or perhaps the deliberate slighting of part of the rampart.

The upper fills of the phase 2 ditch (layers 6, 43 and 10) are probably of nineteenth century origin, as they contain Victorian pottery. This sudden influx of silts may be explained by the introduction of intensive arable agriculture in place of traditional heathland pasture. Unfortunately the earlier layers are undatable by ordinary means as no pottery was recovered (and would still have had problems of residuality). A few animal bones were recovered from even the earliest layers and could perhaps yield a radiocarbon date.

Discussion of 1991 Excavation

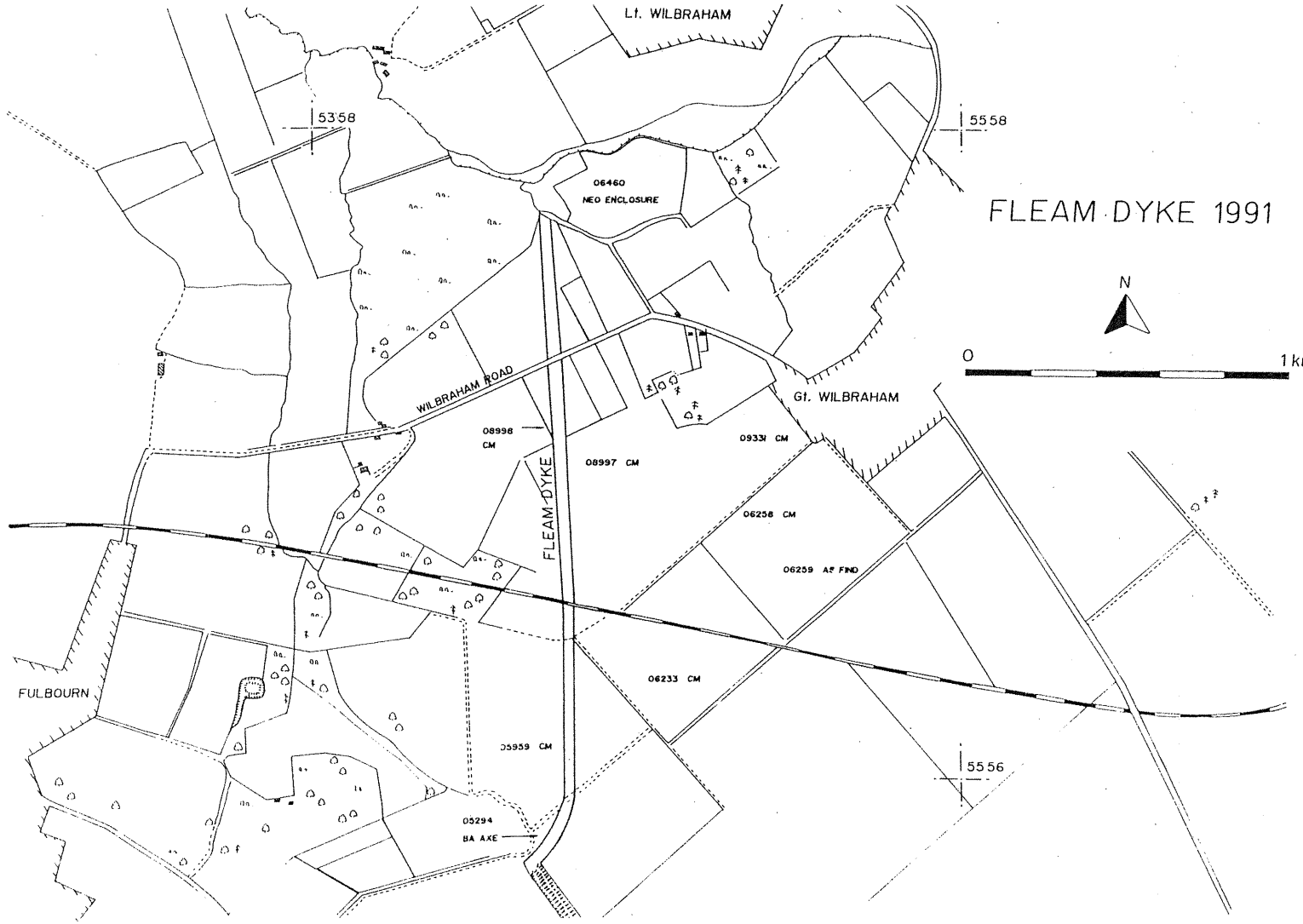
The 1991 excavation has produced new information about Fleam Dyke. It seems likely that the Dyke was built in at least two phases. The first was a deep V ditch and a corresponding bank, followed by a much deeper, wide flat-bottomed ditch and a commensurately larger bank (the modern bank has probably lost nearly a metre in height, judging from the quantity of bank-derived fill in the ditch). The post-hole recorded in the forward slope of the bank may be used to suggest that a wooded framed rampart fronted the phase 2 bank, but it should be borne in mind that the post-hole is undated and simpler explanations for a single post-hole may be prefered. The ditch and bank, without a rampart, would still have formed a formidable barrier.

The Roman pottery (all pre-Antonine, ca. AD 138-192) and the late Roman coin all tend to confirm Fox's dating of the construction of the bank to the very late- or post-Roman period. Greater accuracy will depend on radiocarbon dating.

The absence of pollen is disappointing, but it is hoped that the micromorphology, molluscan, and other botanical remains will provide valuable new information on the environment and land-use in the area at the time of the Dykes construction.

Outstanding Questions pertaining to Fleam Dyke

In common with many archaeological investigations, the 1991 excavation at Fleam Dyke raises as many questions as it answered. The dating of the Dyke is still in need of clarification - the period of its construction is anything between the fourth and tenth centuries AD. Following on from this, the relationship of the Dyke to the local contemporary settlement pattern is totally unknown. The rediscovered northern extension of the Dyke to the Little Wilbraham river opens up new avenues for research, and by extension suggests a link between this "Balsham-Fulbourn" Dyke and the Fen Ditton to Stow-cum-Quy dyke - are they part of an organised system of land boundaries or defences? The role of the dykes as defensive earthworks is generally assumed but remains unproven. It is generally accepted that the dyke spans the chalk ridge between impassable Fen and dense forest, but this too is unproven, particularly the southeastern end where the forest is supposed to be. The presence/absence of dense forest here is relatively easily demonstrable using land molluscan evidence, but this has not been done. Finally, the role of the Dyke within East Anglia and the southeastern Midlands must be considered - recent liaison with archaeologists in Hertfordshire and Norfolk suggests a much wider distribution of possibly similar Dykes than has been generally discussed.



Based upon Ordnance Survey Map No,(Edit): TL 55 NW
with the sanction of the Controller of H.M.S.O [Licence No LA 07649 X]

For identification purposes only

Cambridgeshire
County Council

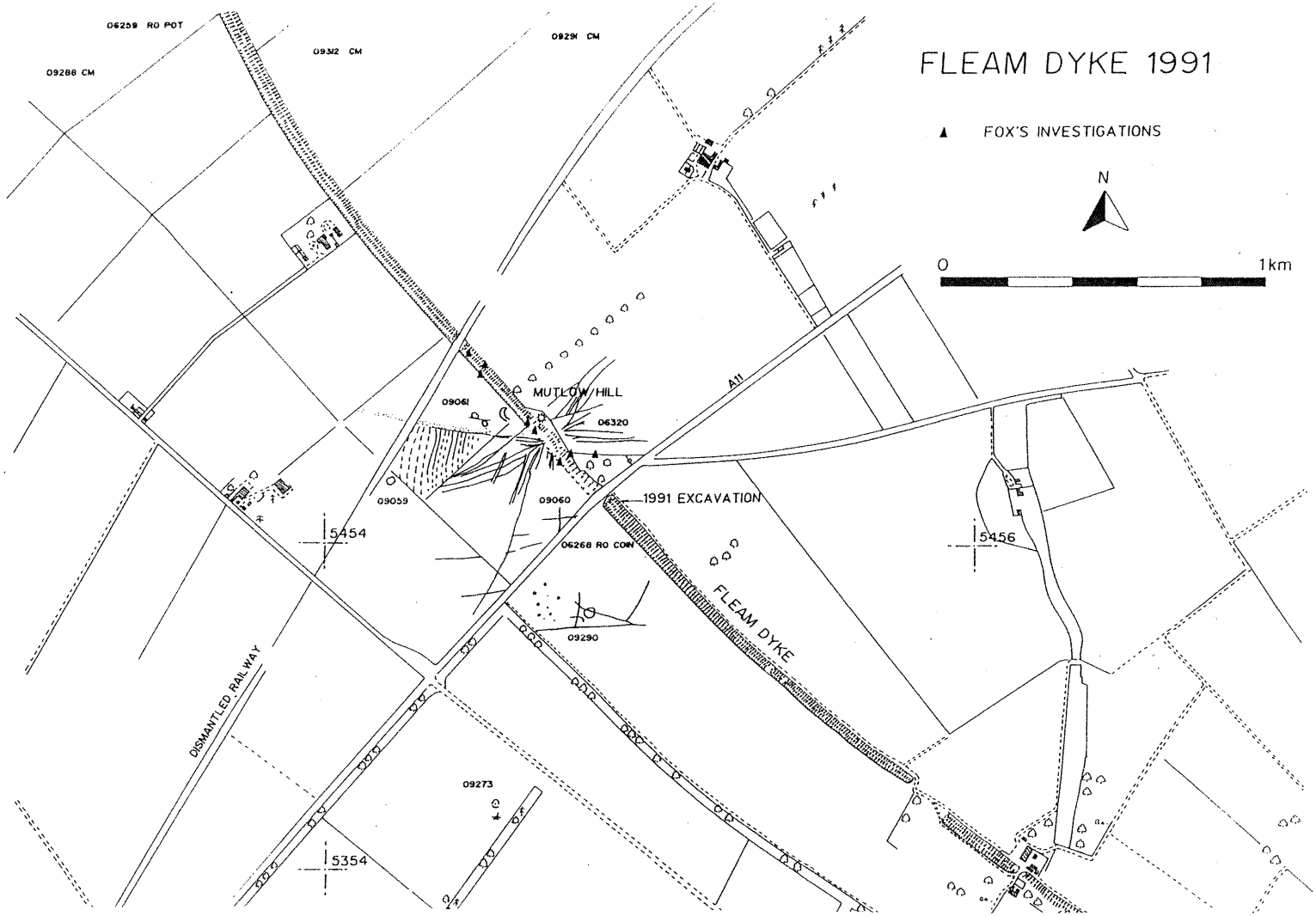
Department of Property
Archaeology Section

FLEAM DYKE - NORTHERN END

PREPARED BY:	DATE:
R.P.	1/91

SCALE: 1:20 000

PLAN NO: 6



Based upon Ordnance Survey Map No,(Edit): TL 55 SW & TL 55 SE
with the sanction of the Controller of H.M.S.O [Licence No LA 07649 X]

For identification purposes only

Cambridgeshire County Council

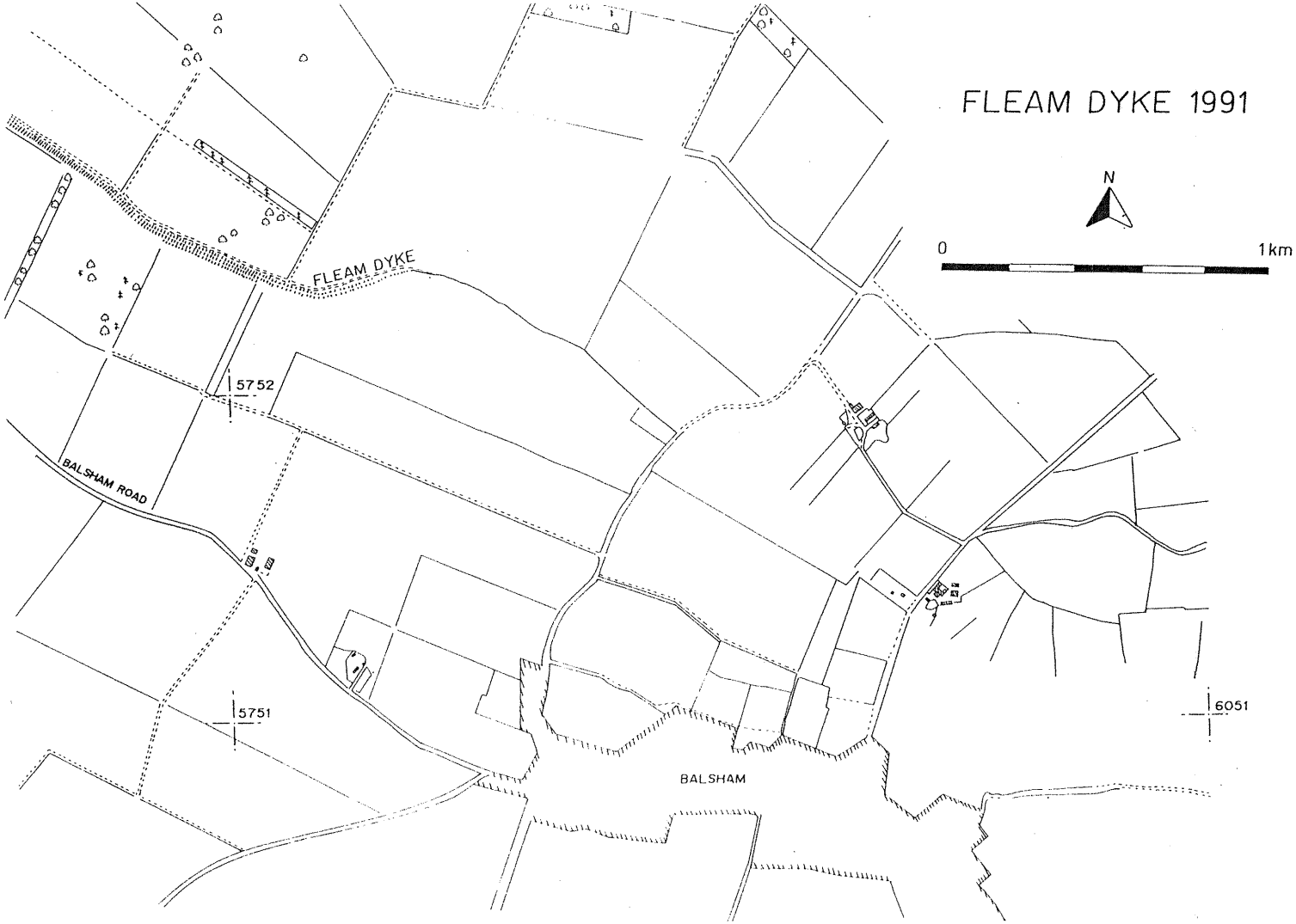
Department of Property
Archaeology Section

FLEAM DYKE, MUTLOW HILL & THE A11

PREPARED BY:	DATE:
R.P.	1/91

SCALE: 1:20000

PLAN NO: 7



Based upon Ordnance Survey Map No,(Edit): TL 55 SE
with the sanction of the Controller of H.M.S.O [Licence No LA 07649 X]

For identification purposes only

Cambridgeshire County Council

Department of Property
Archaeology Section

FLEAM DYKE - SOUTHERN END

PREPARED BY:	DATE:
R.P.	1/91

SCALE: 1:20 000

PLAN NO: 8

Proposals for Future Work

Contrary to the wide ranging questions still pagueing a consideration of the Fleam Dyke and others, the remaining work on the 1991 excavation can be succintly summarised. Three specialist analyses are outstanding and must be completed.

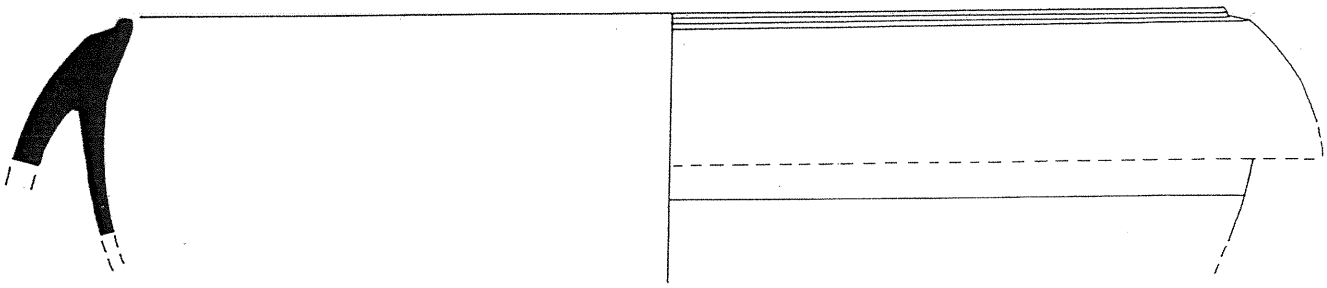
1The soil micromorphology and molluscan analyses should provide totally new information about local environment and land use.

2The flotation of large samples of the buried soil was undertaken in the hopes of recovering carbonised plant remains which could be used for (accelerated?) radiocarbon dating - it is likely that this is the only means by which the date of the construction of Fleam Dyke can be determined.

3 The assimilation of the results of these analyses into a complete final report, and further historical and cartographic research on the length of the Dyke (including the northern arm) and incorporation into the report would complete the archive and produce a synthesis suitable for publication.

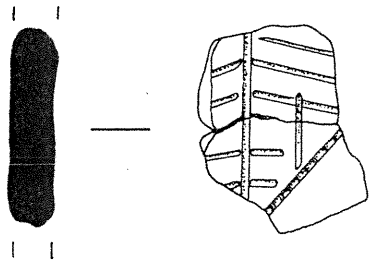
FLEAM DYKE 1991

BALFD '91



MARSH TYPE 37 - FINE WARE BOWL

CONTEXT 4 - 119E / 101N & 120E / 101N



BRONZE AGE POTTERY

CONTEXT 4 - 116E / 102N

Archaeology Section
Cambridgeshire County Council

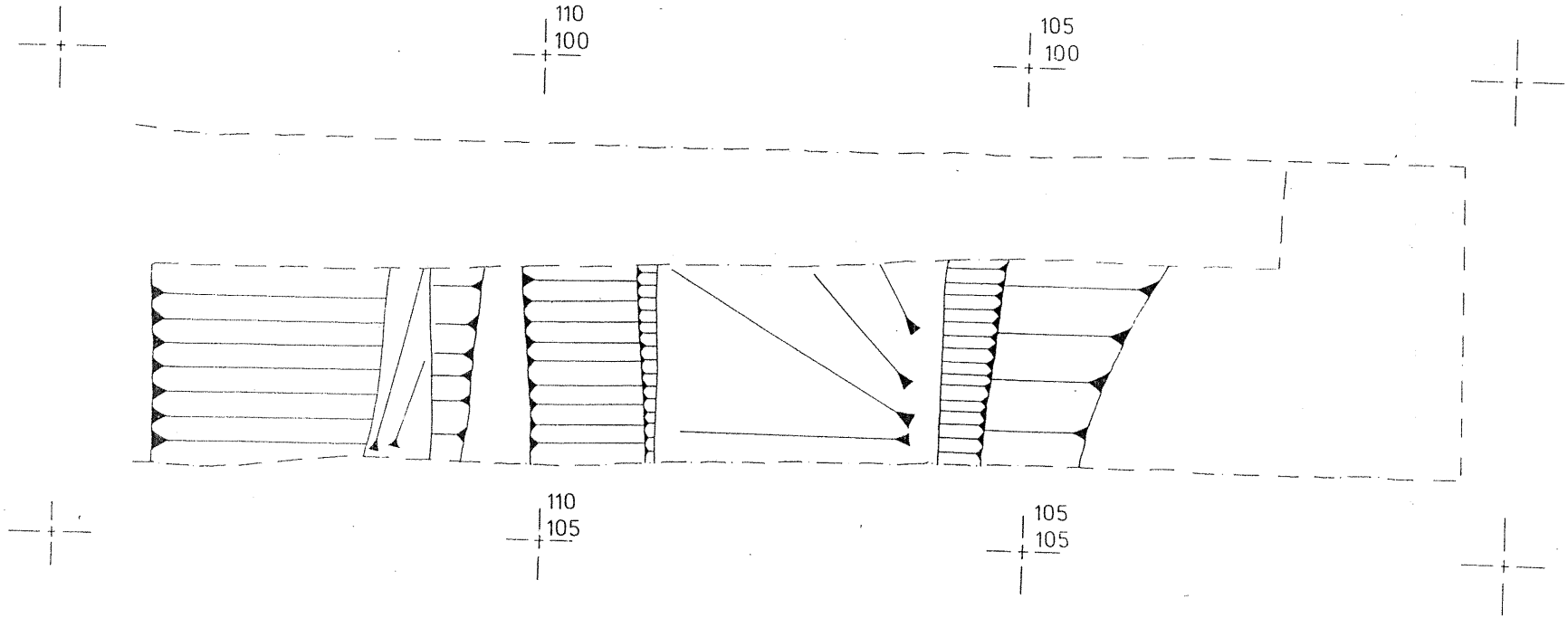
FLEAM DYKE 1991:
POTTERY

Fig. 9

Initials	Date
R. P.	2/92

FLEAM DYKE 1991

PLAN OF DITCH AFTER EXCAVATION



Cambridgeshire County Council

Department of Property
Archaeology Section

FLEAM DYKE 1991

PLAN OF DITCH AFTER EXCAVATION

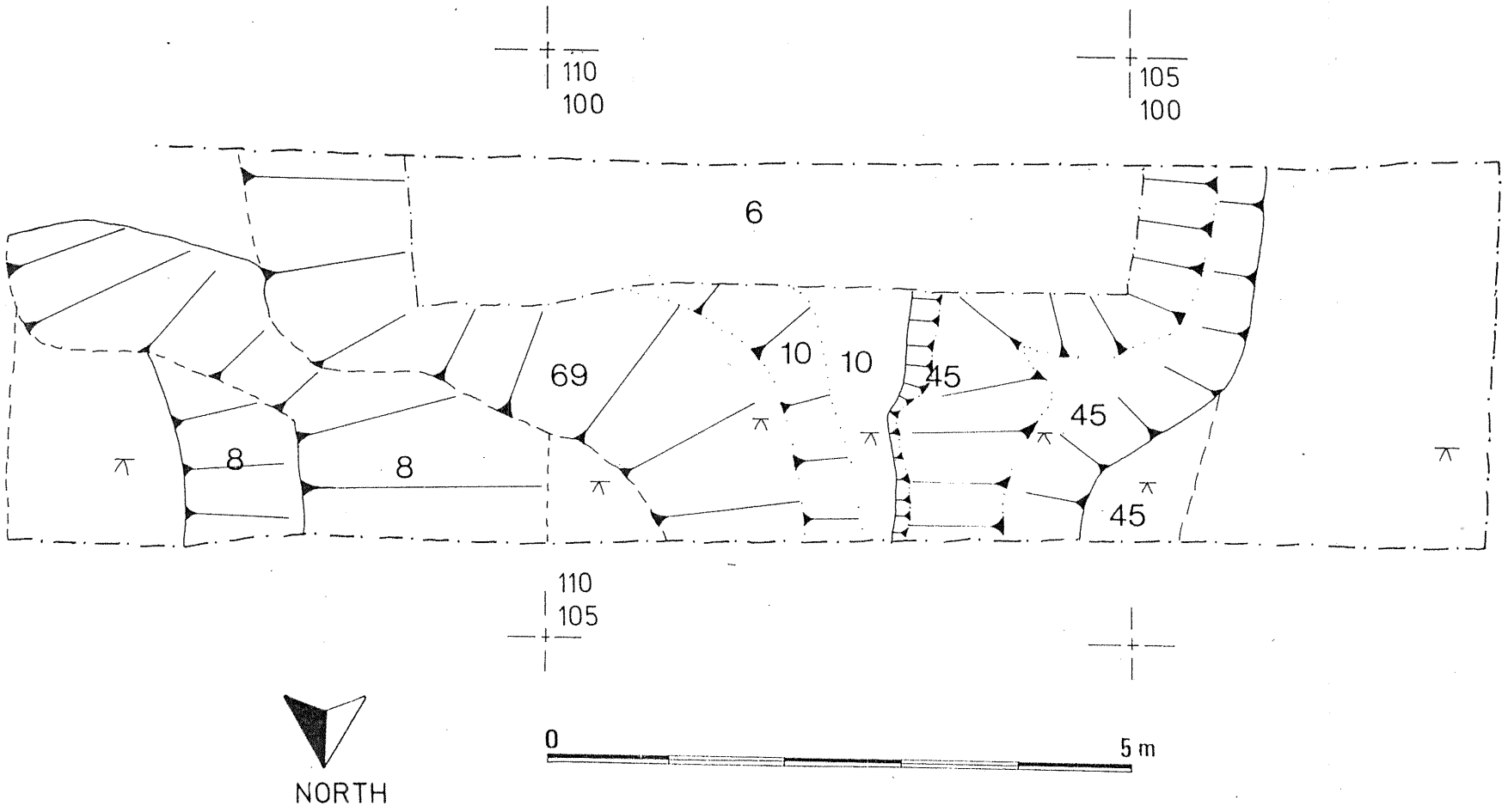
PREPARED BY:	DATE:
R.P.	2/92

SCALE:

PLAN NO: 10

FLEAM DYKE 1991

DETAIL PLAN OF DITCH AFTER EXCAVATION OF TERTIARY SILTS



Cambridgeshire County Council

Department of Property
Archaeology Section

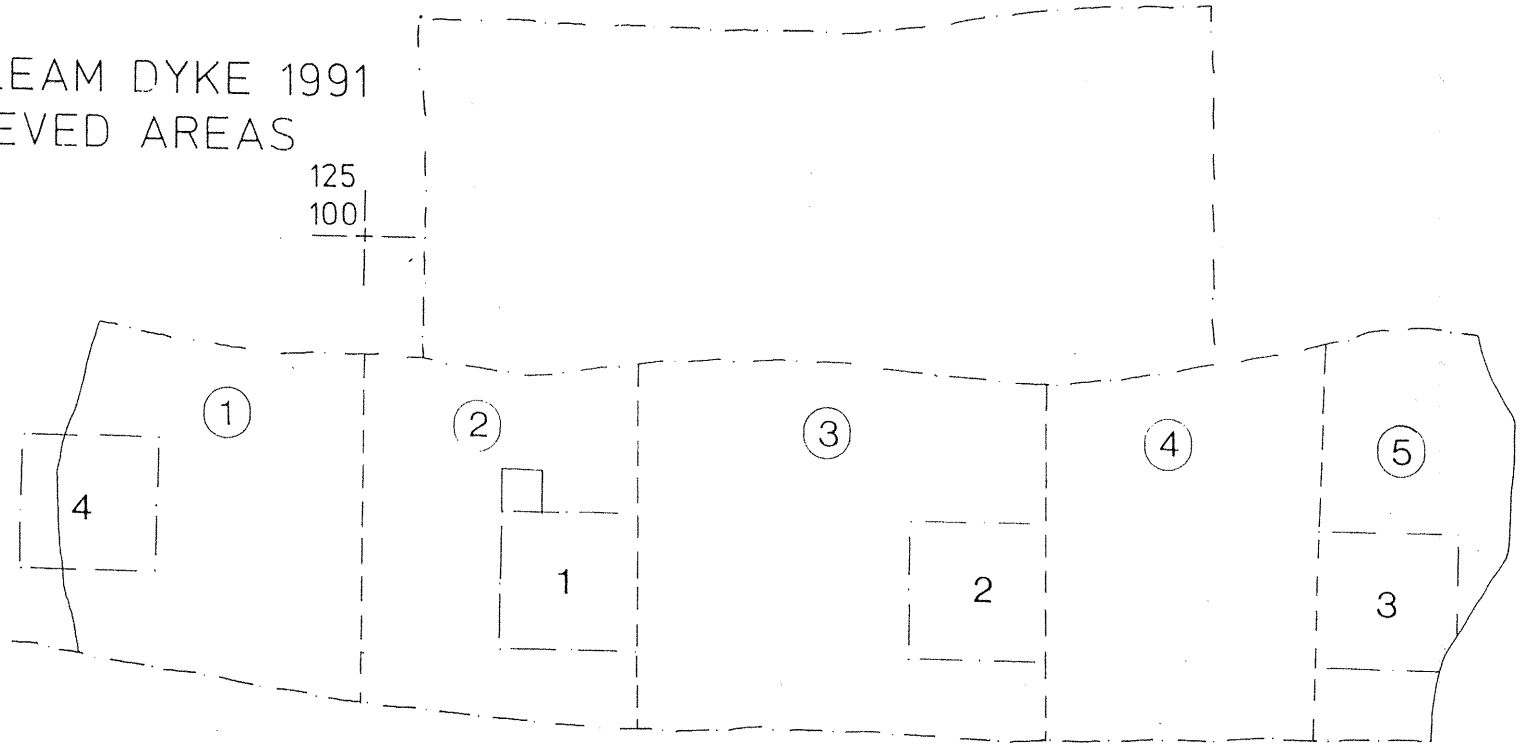
FLEAM DYKE 1991
DETAIL PLAN OF DITCH AFTER EXCAVATION OF TERTIARY SILTS

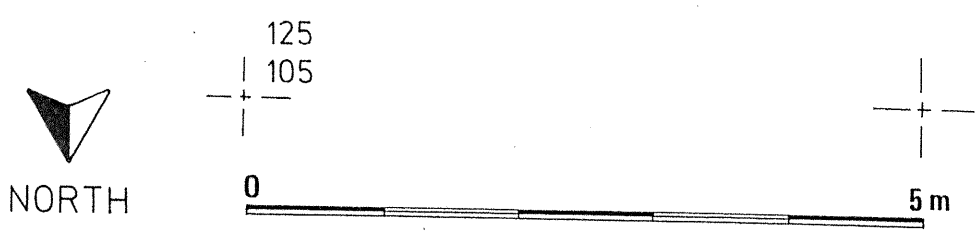
PREPARED BY:	DATE:
R.P.	2/92

SCALE:

PLAN NO:
11

FLEAM DYKE 1991
SIEVED AREAS





3 TEST PIT

SAMPLE FOR SOIL MICROMORPHOLOGY

Cambridgeshire County Council

Department of Property Archaeology Section

FLEAM DYKE 1991

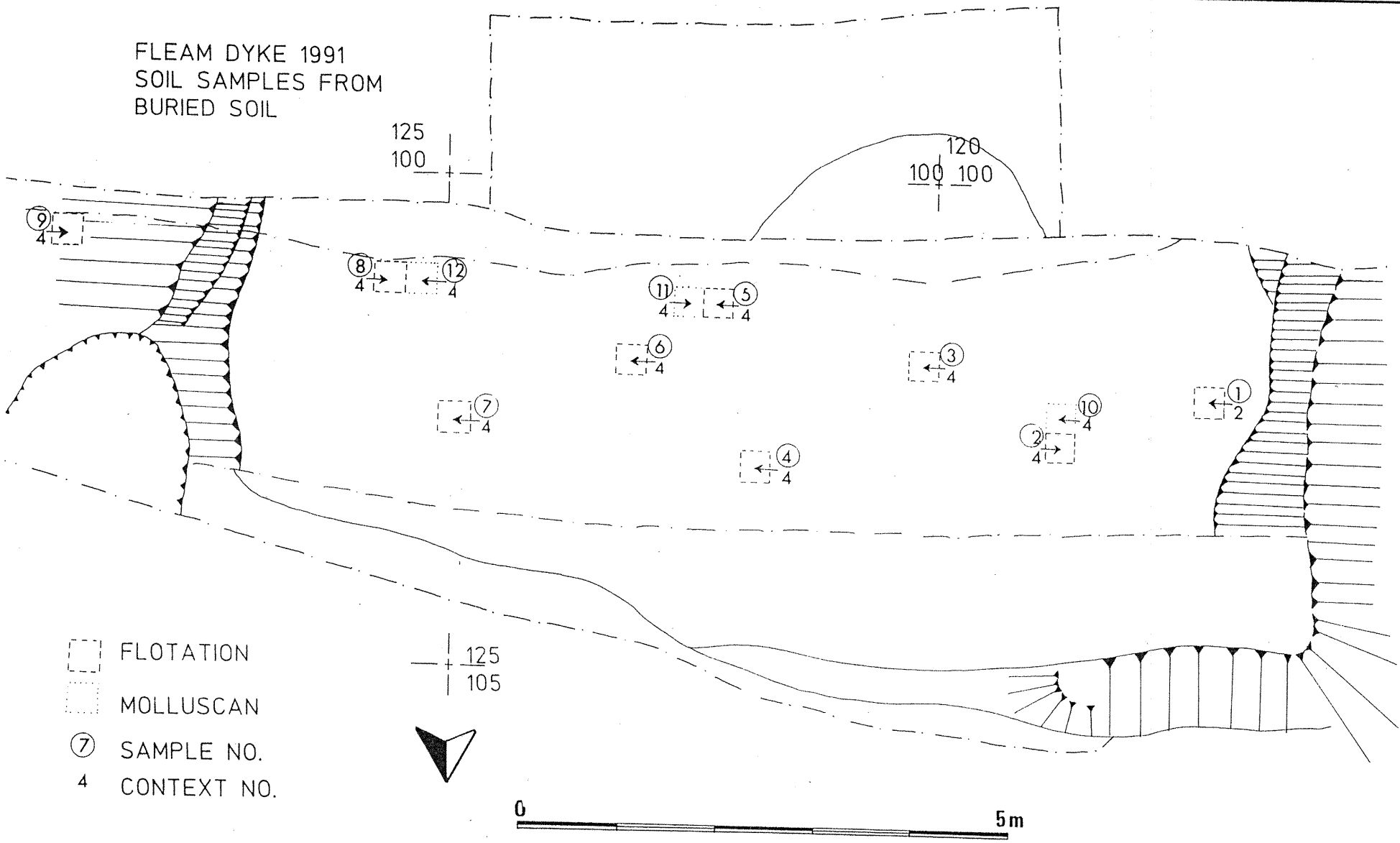
SIEVED AREAS

PREPARED BY:	DATE:
R.P,	2/92

SCALE:

PLAN NO: 12

FLEAM DYKE 1991
SOIL SAMPLES FROM
BURIED SOIL



Cambridgeshire
County Council

Department of Property
Archaeology Section

FLEAM DYKE 1991

SOIL SAMPLES FROM BURIED SOIL

PREPARED BY:	DATE:
R.P.	2/92

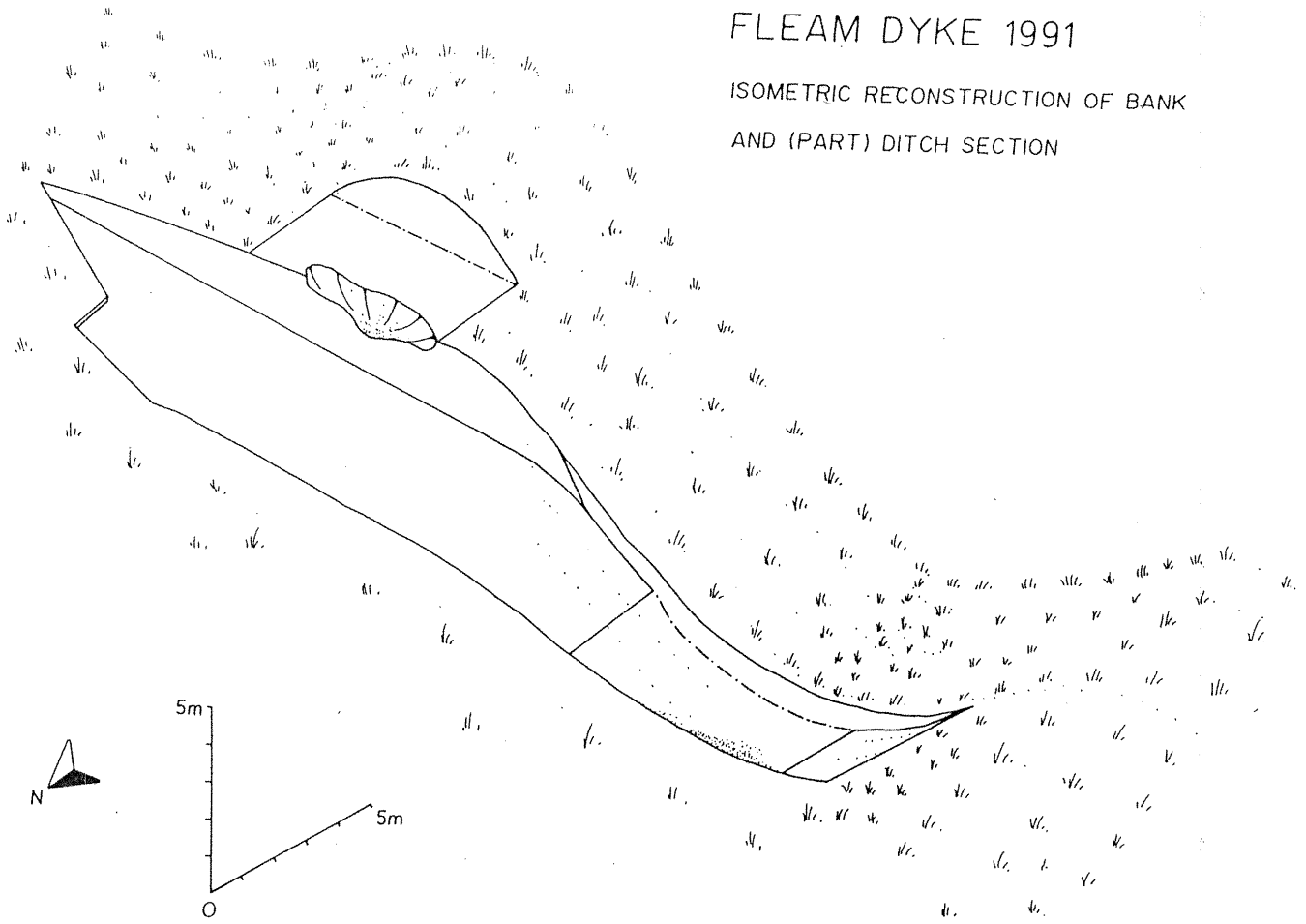
SCALE:

PLAN NO:
13

FLEAM DYKE 1991

ISOMETRIC RECONSTRUCTION OF BANK

AND (PART) DITCH SECTION



cambridgeshire archaeology

Archaeology Section
Cambridgeshire County
Council

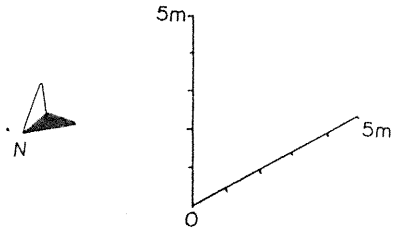
FLEAM DYKE 1991

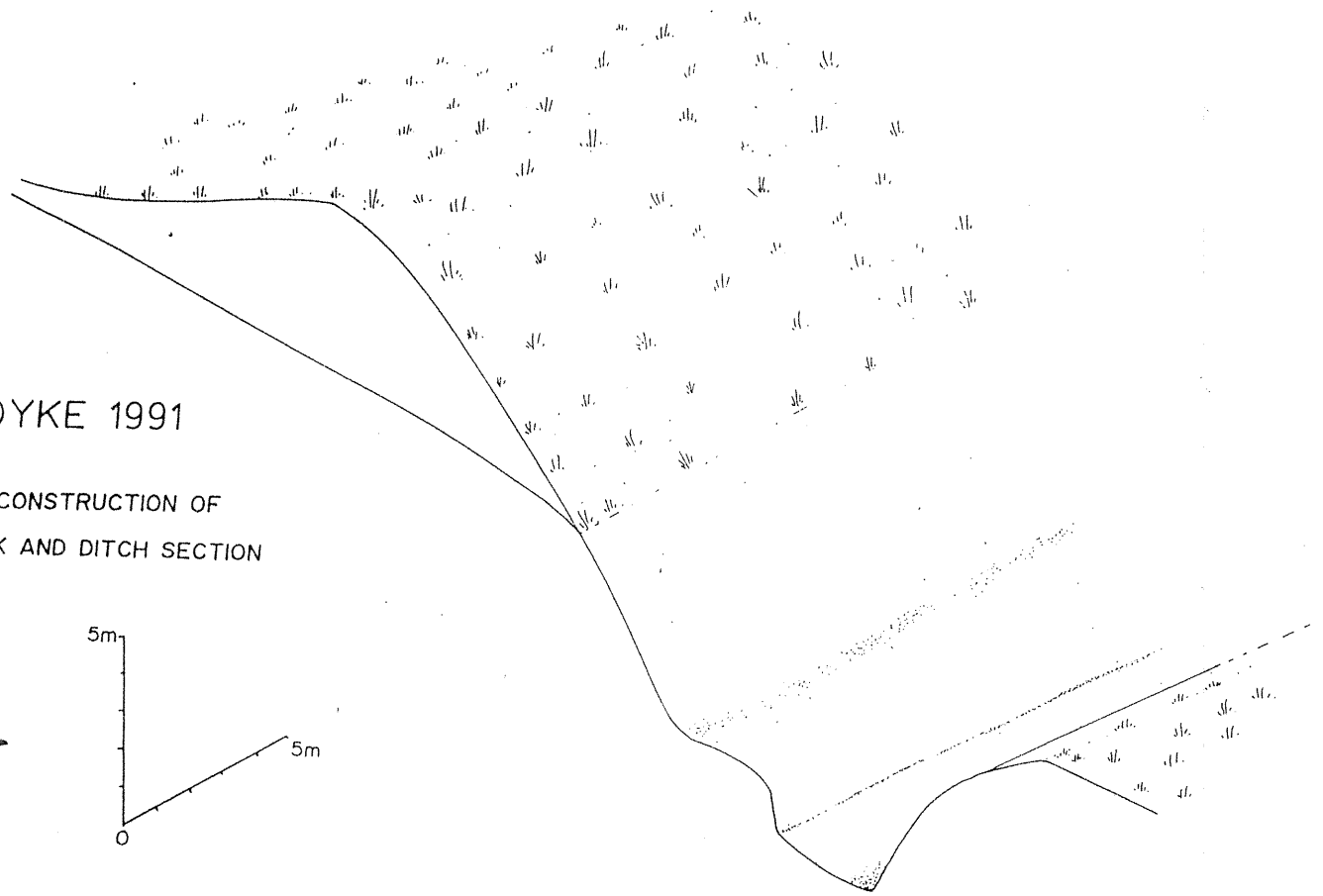
Fig. 14

Initials	Date
R.P.	2/92

FLEAM DYKE 1991

ISOMETRIC RECONSTRUCTION OF
ORIGINAL BANK AND DITCH SECTION





Archaeology Section
Cambridgeshire County
Council

FLEAM DYKE 1991

Fig. 15

Initials	Date
R.P.	2/92

Appendix 1 The Pottery

by C J Going

The Fleam Dyke section produced a small assemblage of ceramics (216 sherds), some 98% of which came from a buried soil (ctx 4) which was sealed by the bank of the Dyke itself. Contexts associated with the ditch fills and upper bank include post-Medieval material. This is of little archaeological significance in a feature of this type, as it can have been introduced at any date anterior to its construction.

As noted, the bulk of the material came from the pre-bank context 4. It is mostly highly pulverised, and derives, as far as its condition allows us to tell, from coarse ware vessels of the first-second centuries AD. It clearly represents either redeposited surface trample, or pottery broken up to a high degree by subsequent agricultural (?) activity.

The earliest pottery noted in context 4 were three sherds in an oxidised flint-tempered fabric decorated with impressed chevrons and a toothed linear stamp, probably of Early to Middle Bronze Age date (Figure 9). Of the Roman material, the only vessel represented by more than a few sherds (with the exception of a badly pulverised form in a reduced coarse ware from 128.83/103 in context 4) was a flanged rimmed bowl (possibly originally mica-gilt) in a fine oxidised fabric. This form (Figure 9) is similar to Marsh 1978, type 37, and is probably datable to the Trajanic-Hadrianic period (ca. AD 98-138; from squares 119/101 and 120/101). A chronologically undiagnostic reduced coarse ware jar rim was in 116/101, while from 132.5/100 (possibly ctx 4, but this is not certain) is a base-lower side wall sherd from a central Gaulish f37 bowl, probably of mid-Antonine date.

There was nothing in context 4 clearly datable to the later Roman era (the third and fourth centuries AD), and no material at all of post-Roman date. This suggests a *terminus post quem* of at least the second century AD for the original dyke bank - perhaps well after if the condition of the pottery is taken into account. The absence of any later material suggests a pre Saxo-Norman construction date. Although it is unwise to base much on the evidence of a single transect of a linear feature, the pottery evidence nowhere conflicts with the historical and cultural data adduced elsewhere in support of an Early to Mid Saxon date for the bank, but it should be borne in mind that the evidence does as easily support a late Roman date for the first linear earthwork.

Figure 9, lower -Three sherds of a flint tempered fabric, probably E-M Bronze Age
Figure 9 upper - Fine pinkish buff fabric, possibly once mica-gilt but now badly abraded, Trajanic-Hadrianic

References

Marsh, G D 1978. "Early Second Century Fine Wares in the London Area" in Arthur P and Marsh G D (eds) Early Roman Fines Wares British Archaeological Reports British Series No 57, 119-223

Appendix 2 Pollen Assessment

E Guttman

The buried soil was a very chalky, compact and somewhat oxidized silt loam. Two 20 cm monolith tins were placed so as to recover a contiguous 40 cm column spanning the depth of the soil. Samples of 1 cc were taken at 5 cm intervals for assessment of the state of pollen preservation.

Treatment began with decalcification in 7% hydrochloric acid followed by two minutes of boiling in 10% NaOH. Sieving was at 180 um and two one hour sessions in hot HF served to eliminate most of the mineral material. Samples were then subjected to acetolysis and were mounted in silicon oil.

Some organics were preserved but pollen grains were sparse (less than one grain per traverse) and were mostly too degraded to identify. A few Filicales spores, a Polypodium, and a Pteridium were noted; these more resilient grains often outlast their more fragile, thinner walled contemporaries and are not representative of the actual palaeoenvironment.

Recommendations

In a recent collection of papers on archaeological research priorities, Scaife (1987) emphasized the importance of pollen analysis of buried soils, and especially of buried chalkland soils. The oxidation of this particular series of samples should not dissuade researchers from pursuing further palynological studies at Fleam Dyke. Dimbleby (1985) found countable levels of pollen beneath the Devil's Dyke, and it is strongly recommended that a suitably undisturbed section at Fleam Dyke should be examined and the results compared with those of Dimbleby.

References:

Dimbleby, G.W. 1985. The Palynology of Archaeological sites. Academic Press.

Mellars, P. 1987. Research Priorities in Archaeological Science. Council for British Archaeology.

Appendix 3 Soil Micromorphology

by Dr C A I French MIFA

Site Appraisal

On site examination on October 31, 1991, of the open section through the bank and ditch of Fleam Dyke on the east side of the A11 revealed a well preserved buried soil. It is sealed beneath the bank make-up, and is developed on a chalk subsoil.

The buried soil is composed of one homogeneous horizon, a silt loam with small, sub-rounded chalk fragments c. 20cm thick. Although there is no indication of disturbance or truncation, it is approximately half the thickness of the buried soil observed in section at the nearby Wool [Worsted]Street Roman Road excavation (FULMF91; Wait 1992).

The buried soil deserves soil micromorphological analysis for four reasons:
1. The absence of well preserved soils of the period that survive elsewhere in the county;
2. Potential comparison with the other monuments to be examined in the same project, Brent Ditch and Devils Dyke;
3. Comparison with the buried soil found beneath the Roman Road at the nearby Wool [Worsted] Street site;
4. Comparison with other profiles already examined at Haddenham and Castor/Ermine Street.

In addition, there were several possible stabilisation zones observed within the bank section. Although these may only reflect bank construction and they are mainly composed of weathered chalk fragments, their examination may give some idea of the time intervals involved between different phases of bank construction.

Proposal for Future Work

A continuous column was taken through the buried soil for future impregnation and micromorphological analysis.

A spot sample was also taken from one of the possible stabilisation horizons within the bank.

(**Note**: After Dr French's site visit (31/10/91) it was discovered that the apparent rise in the buried soil was due to the presence of layer 53, tentatively interpreted as a linear marking bank of turf. Therefore a second continuous column was taken from both 53 and the underlying 4. This would explain the relatively thin buried soil compared to the nearby Roman Road. Secondly, the spot sample taken from the stabilisation horizon failed and is therefore not available for analysis.)

Molluscs and Macro-botanical Remains By P Murphy

Report not yet available.