Chesterton to West Cambridge Anglia Water Sewer Pipeline, Cambridge.

An Archaeological Watching Brief

Craig Cessford

CAMBRIDGE ARCHAEOLOGICAL UNIT
UNIVERSITY OF CAMBRIDGE

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University of Cambridge
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Non Technical Summary

An archaeological watching brief was undertaken between Autumn 2000 and Spring 2001 on 15 construction access shafts along the line of a major sewer pipeline extending between Chesterton (TL 5072 9374) and West Cambridge (TL 3536 8661). One shaft, M5, which has been previously reported upon, revealed a significant Roman to Post-Medieval archaeological sequence. Of the remaining 14, shaft M6 may have encountered part of the outer edge of the 4th century ditch of the Roman town, while shaft M3 revealed a Post-Medieval river defence bank. Several other shafts revealed less significant Post-Medieval features and buried soils.

Introduction

15 construction access shafts were excavated along the line of a major sewer pipeline extending between Chesterton and West Cambridge, to the north of the River Cam (Figure 1). The shafts were circular in form and ranged from three to five metres in diameter; they were designated M1 to M16, the numbering system running consecutively from east to west. The Cambridge Archaeological Unit (CAU) carried out a watching brief on the excavations on behalf of Anglia Water Plc. between the Autumn of 2000 and the Spring of 2001, with agreement that archaeological recording and excavation should take place as deemed appropriate. At shaft M5 significant archaeology was encountered; this has been reported upon previously (Mortimer and Regan 2001). Shaft M10 was dropped from the construction programme and shafts M13 to M16 along Wilberforce Road were excavated without archaeological monitoring. The only discoveries of any significance presented in this report are a possible part of the outer edge of the 4th century ditch of the Roman town (shaft M6) and a Post-Medieval river defence bank (shaft M3). All other features are Post-Medieval or Modern in date, with a number of shafts also revealing areas of potentially quite late buried soil (shafts M1, M2, M3, M7, M8 and M12).

Results

Shaft M1

Location: TL 5072 9374.
Diameter: 5m.
Modern ground surface: 8.38m OD.
Layer 1: Modern topsoil, 0.25m thick.
Layer 2: Redeposited clay, 0.19m thick.
Layer 3: Mid grey brown silty clay with frequent gravel inclusions, 0.60m thick.
Layer 4: Pale brown silty clay with few inclusions, 0.30m thick. Probably a buried subsoil at 7.34m OD.
Natural: Pale blue clay at 7.04m OD.

Shaft M2

Location: approximately TL 5000 9340.
Diameter: 5m.
Modern ground surface: 8.20m OD.
Layer 1: Concrete, 0.15m thick.
Layer 2: Modern topsoil, 0.14m thick.
Layer 3: Light brown sandy silt containing occasional tobacco pipe stems, 0.20m thick.
Layer 4: Creamy white gravel/mortar path, 0.06m thick.
Layer 5: Reddy brown sandy loam with occasional mortar/plaster and tile inclusions, 0.55m thick. Probably a garden soil layer at 7.65m OD.
Natural: Gravelly clay with flint nodules at 7.10m OD.
Comments: Layers **[01]** to **[05]** all appear to be Modern or Post-Medieval. Layer **[05]** is suggestive of Post-Medieval agricultural or horticultural activities, while layer 4 would fit best in a Post-Medieval garden context.

Shaft M3

Location: approximately TL 4910 9340.
Diameter: 5m.
Modern ground surface: 8.60m OD.
Layer 1: various modern makeup layers, mainly a mixed brown loam, 0.60m thick.
Layer 2: Dirty mid greyish brown clay with frequent brick fragment inclusions, 0.43m thick.
Layer 3: Dirty mid greyish brown clay with frequent mortar inclusions, 0.07m thick.
Layer 4: Rich brown loamy clayey silt, 0.16m thick.
Layer 5: Mixed mid grey brown sandy clayey silt, 0.05m thick.

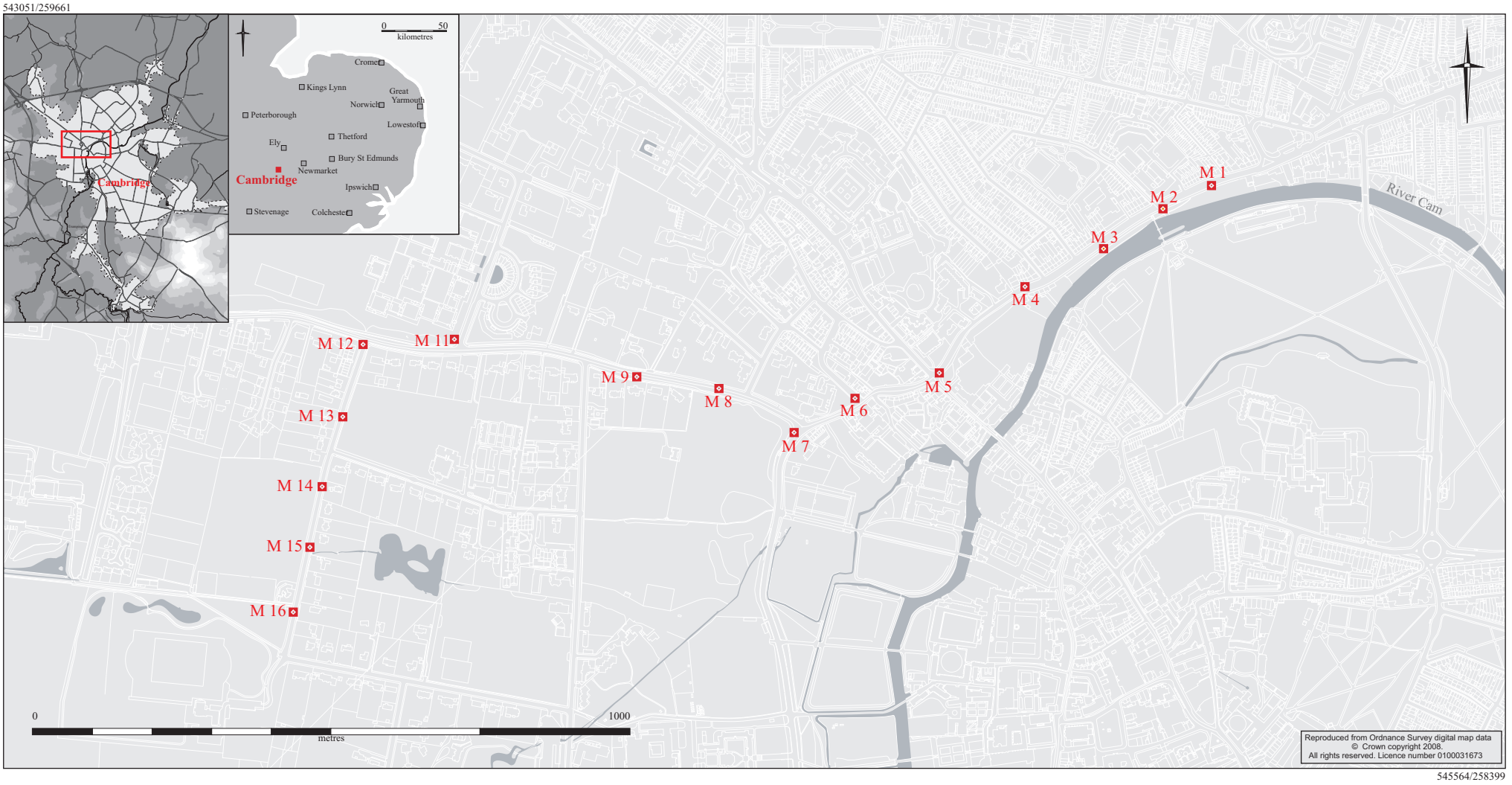

Figure 1. Location map.

Figure 2A. Location of M3 plotted against Baker's map (1830).

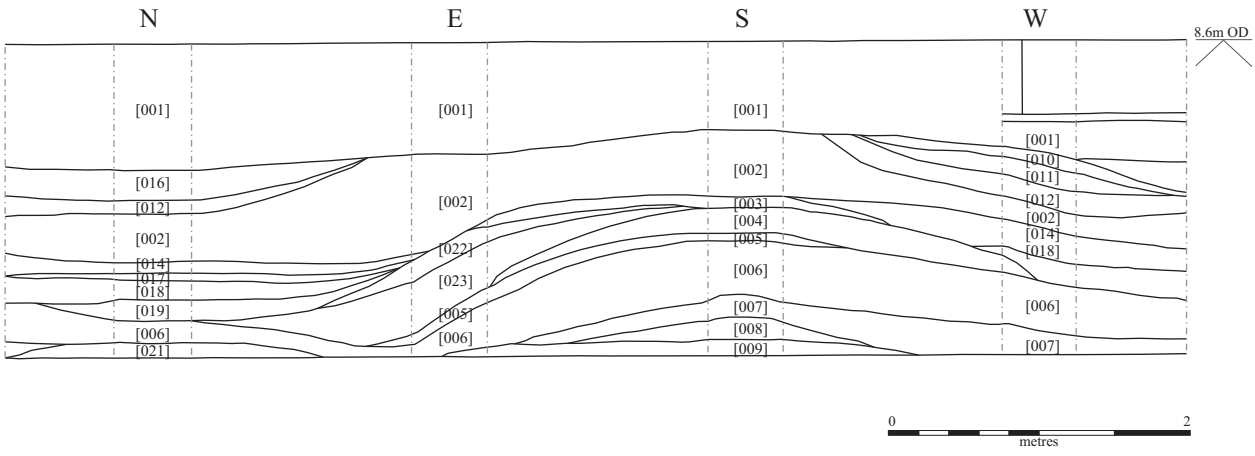

Figure 2B. Section of shaft M3.

Layer 6: Very dirty and mixed sandy silty clay with frequent brick and charcoal inclusions, 0.38m thick.
Layer 7: Very loamy brown clay with sand and flint gravel inclusions, 0.07m thick. Possibly a buried soil at 6.91m OD.
Layer 8: Mid grey clay sand, 0.18m thick. Possibly a buried soil or subsoil at 6.84m OD.
Layer 9: Dark grey brown loamy silt clay, 0.13m thick. Possibly an alluvial deposit.
Layer 10: Off white silty clay.
Layer 11: Brown loamy silt clay.
Layer 12: Pale grey stony silt.
Layer 13: Dark brown charcoal rich silty clay.
Layer 14: Mid grey gritty silt.
Layer 15: Not recorded.
Layer 17: Mid brownish grey silty clay.
Layer 18: Mid grey clay.
Layer 19: Mid greyish brown clayey silt.
Layer 20: Dark grey ashy silty clay.
Layer 21: Mid brownish grey gravelly silty clay.
Layer 22: Rubble deposit of brick and tile fragments, animal bone. Clay tobacco pipe and pottery.
Layer 23: Dark brown gravelly silty clay.
Layer 24: Yellow sand.
Natural: Clay, 6.66m OD.
Comments: The thicknesses quoted are only averages as there is a considerable degree of variation, possibly indicating slumping, but more probably because many of the layers are part of a large banked feature (Figure 2B). Layers **[10]** to **[21]** were not recorded in detail. Layers **[01]** to **[07]** (plus **[10]** to **[20]** and **[22]** to **[24]**), a total thickness of 1.8m, represent Modern and Post-Medieval deposits stretching back to around the 17th century. It is likely that layers 2 to 7 plus 22 and 23 relate to deliberate dumping of material, perhaps to form a bank for flood protection and to canalise the river. Layers **[10]** to **[12]**, **[14]** and **[16]** to **[19]** seem to represent alluvial deposits that built up against the bank. This feature is apparently orientated southwest to northeast on the same alignment as the current routes of Chesterton Road and the River Cam. It is unclear if there is a single bank with a series of layers or whether there are several phases of raising the bank. Layers **[08]**, **[09]** and **[21]** appear to be earlier and undisturbed deposits representing a buried soil, subsoil and alluvial deposit. The layers that make up the bank produced a sherd from a 16th or 17th century Glazed Red Earthenware jug or cup while deposits representing either a later phase of the bank or accumulation immediately over the bank produced a 17th century sherd of German stoneware from Frechen and some clay tobacco pipe, including two bowls belonging to Oswald's general type 9 (c.1680-1710) and 10 (c.1700-40). This indicates that the bank itself is probably 16th to early 18th century in date. The earliest plans of Cambridge up to William Custance in 1798 provide no real detail of this outlying area. Richard Baker's plan of 1830 which is the earliest to depict the area in any detail does appear to depict some form of a feature on the south side of Chesterton Lane that could be a bank (Figure 2A). A similar sequence of ground raising to the south of the river on Jesus Green has also been identified during recent fieldwork (Davenport *et al* 2008).

Shaft M4

Location: TL 4760 9205.
Diameter: 5m.
Modern ground surface: 9.75m OD.
Layer 1: Modern tarmac and hardcore, 0.60m thick.
Layer 2: brown grey gravelly clay, 0.28m thick.
Layer 3: brown grey clay with charcoal, brick, tile and blue and white pottery inclusions, 0.27m thick. 19th century.
Layer 4: grey clay with occasional charcoal and tile, 0.35m thick.
Layer 5: mixed fill of mid to dark grey clay with pale yellow clay tip lines, 0.7m deep. Contains animal bone, tile and pottery. Fill of a cut feature with upper surface at 8.25m OD.
Natural: Clay at 7.55m OD.
Comments: Layers **[01]** to **[04]** represent Modern deposits while layer **[05]** appears to be a large Post-Medieval pit for clay extraction. Other evidence for Post-Medieval quarrying was found nearby at Sunnyside House (Regan 2001; Wills 2003).

Shaft M5
Location: TL 4462 5906.
Diameter: 3m.
Modern ground surface: 10.0m OD.
Natural: Mixed clays, sands and gravels at 6.0m OD, representing the infill of a palaeo-river channel.
Comments: Shaft M5 revealed an impressive 4.0m deep Roman to Post-Medieval archaeological sequence (CHER ECB15492 to ECB15495) that has already been reported upon (Mortimer and Regan 2001) and published (Allen 2005; Cessford with Dickens 2005; Cessford *et al* forthcoming).

Shaft M6
Location: TL 4476 9019.
Diameter: 5m.
Modern ground surface: 10.12m OD.
Layer 1: Modern tarmac and hardcore, 0.90m thick.
Layer 2: Brownish grey gravelly clay silt, 0.20m thick. This contained no artefacts and may have been dumped immediately prior to Layer 1, which certainly compacted it.
Layer 3: Loose pale grey/white marl with bands of loose orange sand, 0.90m thick with upper surface at 9.02m OD. This deposit appeared first in the southern part of the shaft and the underlying natural appeared to slope downwards slightly to the northwest with a difference in height of up to 0.5m across the shaft. This potentially represents the outer edge of the 4th century ditch of the Roman town which is projected to run along the eastern side of Pound Hill (Alexander and Pullinger 1999, 59-61).
Natural: Blue grey clay at 8.12m OD.
Comments: Although the nature of the observations precludes certainty Layer **[03]** may be the outer edge of the 4th century town ditch (Figure 3).

Shaft M7
Location: TL 4374 8961.
Diameter: 3m.
Modern ground surface: 8.94m OD.
Layer 1: Tarmac and makeup 1.40m thick.
Layer 2: Bluey grey clay with gravel and flecks of brick and tile inclusions, 0.34m thick. A substantial deliberate dump.
Layer 3: Mid brown to orangey brown sandy loam, 0.20m thick. Buried soil or subsoil at 7.20m OD.
Natural: Grey clay at 7.00m OD.
Comments: Layers **[01]** and **[02]** are Modern, layer **[03]** probably relates to Post-Medieval agriculture.

Shaft M8
Location: TL 4248 9035.
Diameter: 4m.
Modern ground surface: 10.58m OD.
Layer 1: Modern tarmac and makeup, 0.95m thick.
Layer 2: Brownish grey gravelly silty clay, 0.30m thick.
Layer 3: Dark grey organic rich clay 0.20m thick at 9.33m OD.
Natural: Grey clay at 9.13m OD.
Comments: Layer **[03]** is probably a buried soil.

Shaft M9
Location: TL 4111 9055.
Diameter: 3m.
Modern ground surface: 11.14m OD.
Layer 1: Modern tarmac and other deposits, 0.30m thick.
Layer 2: Disturbed deposits from earlier service pipes, 1.20m thick
Natural: Grey clay at 9.64m OD.
Comments: Disturbance would have removed any earlier deposits.

Shaft M10
Shaft M10 was scoped out of the work and not dug.

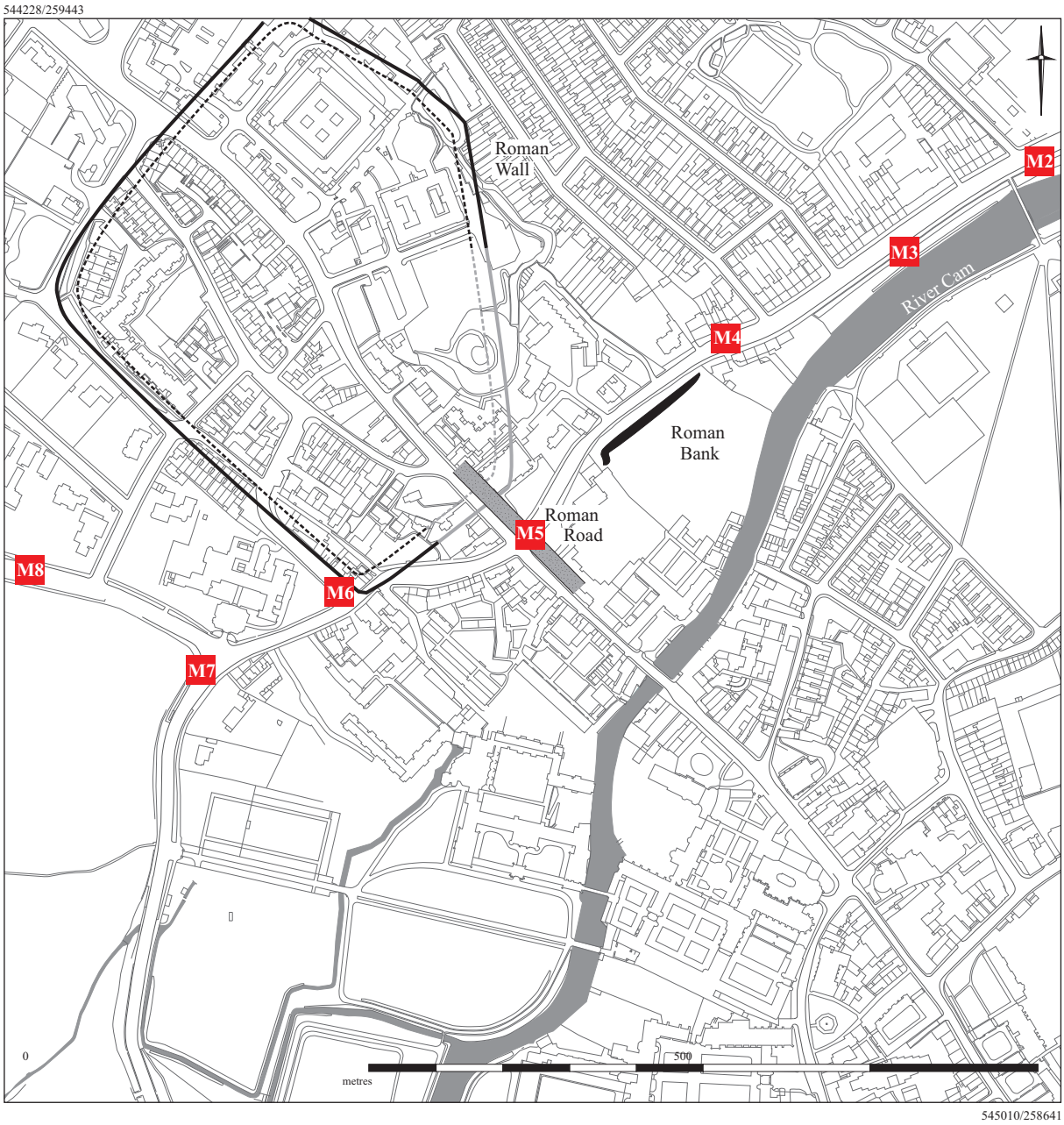

Figure 3. Plan of shafts shown against defences of Roman Cambridge.

Shaft M11
Location: TL 3806 9117.
Diameter: 5m.
Modern ground surface: 12.63m OD.
Layer 1: Modern topsoil, 0.25m thick.
Layer 2: Dump of modern red frogged bricks, 0.80m thick.
Layer 3: Dark blue clay, 0.10m thick.
Natural: Grey clay at 11.48m OD.
Comments: Disturbance would have removed any earlier deposits.

Shaft M12
Location: TL 3653 9109.
Diameter: 5m.
Modern ground surface: 13.40m OD.
Layer 1: Modern road deposits, 0.42m thick.
Layer 2: Mixed brown clay, 0.50m thick.
Layer 3: Pale brown clay, 0.30m thick. Probably a buried subsoil at 12.48m OD.
Natural: Blue grey clay at 12.18m OD.

Shafts M13 to M16
Shafts M13 to M16 were not monitored. They were located at TL 3618 8988, TL 3584 8871, TL 3564 8770 and TL 3536 8661.

Discussion
The results from most of the shafts, with the spectacular exception of M5 (Mortimer and Regan 2001), were generally negative. Natural grey clay was identified at heights of 7.04m OD (shaft M1), 7.10m OD (shaft M2), 6.66m OD (shaft M3), 7.55m OD (shaft M4), 8.12m OD (shaft M6), 7.00m OD (shaft M7), 9.13m OD (shaft M8), 9.64m OD (shaft M9), 11.48m OD (shaft M11) and 12.18m OD (shaft M12). Apparently undisturbed buried soils were identified in shafts M1 (7.34m OD), M2 (7.65m OD), M3 (6.91m OD), M7 (7.20m OD), M8 (9.33m OD), and M12 (12.18m OD). These were undated, but probably relate to Post-Medieval and earlier agriculture. Shaft M6 may have revealed part of the outer edge of the 4th century ditch of the Roman town (Figure 3). The majority of the features identified appear to be Post-Medieval and included a path (M2) and pit (M4). The only significant Post-Medieval feature was located in shaft M3 and appears to be a bank for flood protection and canalisation of the river (Figures 2A and 2B).

Acknowledgements
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Project details

Project name	The Chesterton to West Cambridge Anglia Water sewer pipeline, Cambridge
Short description of the project	An archaeological watching brief was undertaken between Autumn 2000 and Spring 2001 on 15 construction access shafts along the line of a major sewer pipeline extending between Chesterton (TL 5072 9374) and West Cambridge (TL 3536 8661). One shaft, M5, which has been previously reported upon, revealed a significant Roman to Post-Medieval archaeological sequence. Of the remaining 14, shaft M6 may have encountered part of the outer edge of the 4th century ditch of the Roman town, while shaft M3 revealed a Post-Medieval river defence bank. Several other shafts revealed less significant Post-Medieval features and buried soils.
Project dates	Start: 01-10-2000 End: 30-03-2001
Previous/future work	Yes / Not known
Any associated project reference codes	ECB2996 - HER event no.
Type of project	Field evaluation
Site status	None
Current Land use	Transport and Utilities 1 - Highways and road transport
Monument type	RIVER BANK/FLOOD DEFENCE Post Medieval
Monument type	DITCH BOUNDARY Roman
Significant Finds	NONE None
Methods & techniques	'Test Pits','Visual Inspection'
Development type	Pipelines/cables (e.g. gas, electric, telephone, TV cable, water, sewage, drainage etc.)
Prompt	Direction from Local Planning Authority - PPG16
Position in the planning process	After full determination (eg. As a condition)

Project location

Country	England
Site location	CAMBRIDGESHIRE CAMBRIDGE CAMBRIDGE The Chesterton to West Cambridge Anglia Water sewer pipeline, Cambridge
Study area	138.23 Square metres
Site coordinates	TL 4374 8961 52.4850550381 0.117076626307 52 29 06 N 000 07 01 E Point
Height OD	Min: 6.00m Max: 12.18m

Project creators

Name of Organisation	Cambridge Archaeological Unit
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Alison Dickens
Project director/manager	Alison Dickens
Project supervisor	Duncan Mackay
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Anglia Water plc.

Project archives

Physical Archive recipient	Cambridge Archaeological Unit
Physical Archive ID	Anglia Water Pipeline
Physical Contents	'Ceramics','Glass','other'
Digital Archive recipient	Cambridge Archaeological Unit
Digital Archive ID	Anglia Water Pipeline
Digital Contents	'Survey'
Digital Media available	'Survey','Text'
Paper Archive recipient	Cambridge Archaeological Unit
Paper Archive ID	Anglia Water Pipeline
Paper Contents	'Survey'
Paper Media available	'Context sheet','Drawing','Matrices','Plan','Report','Section'

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