Suffolk County Council

ARCHAEOLOGICAL PROJECT REPORT

SCCAS REPORT No. 2009/186

Chilton Development Main Reinforcement Pipeline Scheme, Chilton CHT 019

S. Cass

www.suffolkcc.gov.uk/e-and-t/archaeology

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HER Information

Planning Application No:	**N/A**
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Grid Reference:	**TL88774284 TO TL89404121**
Funding Body:	**Anglian Water**
Curatorial Officer:	**Jess Tipper**
Project Officer:	**Robert Atfield**
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Summary

A scheme of archaeological work was carried out on land between Chilton Grove and Cornard Tye water tower in advance of the construction of a new water main between January and May 2007. Fieldwalking and an aerial photograph assessment indicated several sites of archaeological interest, in addition to those already known and recorded on the County Historic Environment Record. A short length of the new pipeline easement, corresponding with a notable concentration of Roman pottery and probable tile, adjacent to the B1115 just north of Chilton Hall was excavated in an attempt to ascertain if archaeological features would be damaged by the new pipeline. Two features, a pit and a ditch, were identified by this strip excavation and appear to date to the earlier Roman period.

1. Introduction

The archaeological works carried out on this project utilised a variety of methods; aerial photography assessment, field-walking, small-scale excavation and archaeological monitoring of intrusive ground-works. This report will cover all four phases of work undertaken in relation to the project.

2. The project

2.1 Site location

The site occupies land to the north-east and east of Sudbury, specifically from the Chilton Grove area (TL 8877 4284), east along the south side of the B1115 and past Chilton Hall, then roughly south to Cornard Tye water tower (TL 8940 4121), passing between Grange Farm and Winthrop Hall before crossing the A134.

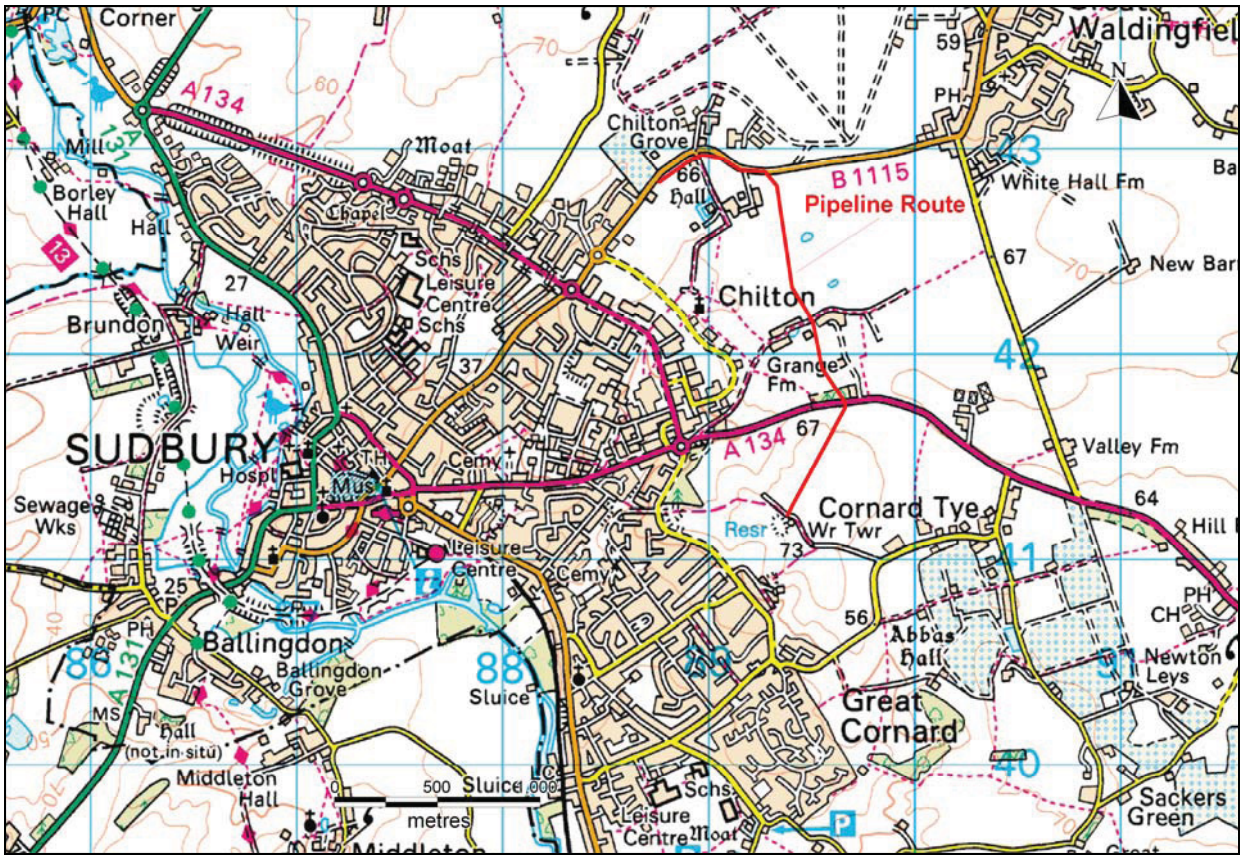

Figure 1. Site location and pipeline route (red)

2.2 Geology and topography

Most of the length of the pipeline passed through agricultural land, the majority of which was being used for cereal crops at the time the fieldwalking was carried out. The geology is listed as Glaciofluvial Drift, typically well-drained loamy sands with flint and gravel outcrops, with heights varying from 64.3m-73.8m AOD.

2.3 Archaeological and historical background

Known archaeological activity in the vicinity of the pipeline covers a broad period – from a Late Bronze Age/Early Iron Age enclosure ditch and associated settlement activity (CHT 009) c. 500m east of the pipeline to post-medieval parkland/gardens around Chilton Hall. Some of the more notable sites are a deserted medieval village (DMV) and green (CHT 002) to the south of Chilton Hall and approximately 250m west of the pipeline; an undated large circular cropmark (CHT 007) and undated trackway with associated field boundaries (CHT 008) 100m and 500m east respectively of the pipeline. Two sites crossed by the route of the pipeline are COG 019 – an area of medieval and post-medieval metalwork found by metal detecting in the vicinity of Cornard Tye Water Tower and CHT 016 – Late Saxon and medieval finds and metalwork south of Winthrop Hall and Grange Farm. A Roman road passes c. 900m to the east, and a few Roman findspots have been recorded in Sudbury to the west.

3. Methodology

A 100m wide corridor was field-walked, with an aerial photograph assessment corridor of 500m wide, along the entire length of the proposed pipeline. As a result of this, two known archaeological sites were confirmed as being affected by the pipeline route while a third, previously unknown, site was identified by fieldwalking. It was decided that the new site, just to the north of Chilton Hall, should be investigated by a small area excavation along the line of the pipeline easement to record any features that would be damaged by the works and that the two existing sites would be adequately recorded by monitoring the groundworks in those areas.

4. Results

4.1 The fieldwalking

by Robert Atfield

The fieldwalking involved a 2.4km route divided into 22 100m. segments. A total of 142 transects were walked along a 100m wide corridor centred on the proposed pipeline route. The transect/finds bag numbers start at 0010 and finish at 0152. Field-walking was carried out by Robert Atfield and Holly Stacey between the 15th and 17th January 2007.

The majority of the fields were drilled with cereal crops which had produced variable amounts of growth (80-140mm). Few of the fields were too obscured to gain a representative sample of finds. The exception to this were areas of Segment 14, which were set-aside land with dense areas of cover. However, this segment did have regular clear tramlines, which provided clear and weathered soil surfaces. The only other obscured area was between Segments 17-19 where a very dense rapeseed crop (300mm high) made any searching impossible. The soils were of sandy loam with moderate to low clay and silt content. The searched areas were all well weathered and moist, but with little standing water. The weather conditions were generally bright, with sunshine during most of day 1 and moderate cloud cover and rain during days 2 and 3. Searching took place between the hours of 9.15am. and 3.45pm. Both field-walkers regularly changed sides in relation to the centre line of the transects, usually after a pair had been walked. This was intended to equalise any personal bias towards particular types of finds.

The finds were reasonably regularly spread and few transects failed to produce any artefacts. There was a reduction noted through Segments 7-12 along with a few more segments further south. Only one notable concentration was observed, within Segment 3 and 4, (especially transects 21and 29) where a sudden and dense assemblage of Roman pottery and some probable tile occurred. Due to overlapping transects, these finds were in fact from a similar general area centred approximately on TL 8905 4291. A single transect (0110) also produced a small copper alloy buckle which is possibly medieval.

The areas recorded in the HER as locations which have produced concentrations of finds (CHT 005, CHT 016 and COG 019), failed to produce notably increased amounts, or types, of finds. Heat-altered flint regularly occurred along most of the route, as did tile fragments. All finds were retrieved except for clearly modern items. Due to the difficulty of identification of tile fragments when in the field, all tile was collected and probably included considerable numbers of brick fragments. This policy was adopted in order to avoid discarding potentially datable archaeological material. No additional historic landscape features were observed along the route and it was not possible to locate any areas of darkened or variable soils, mainly due to the exceptionally strong crop growth, as a result of a mild winter.

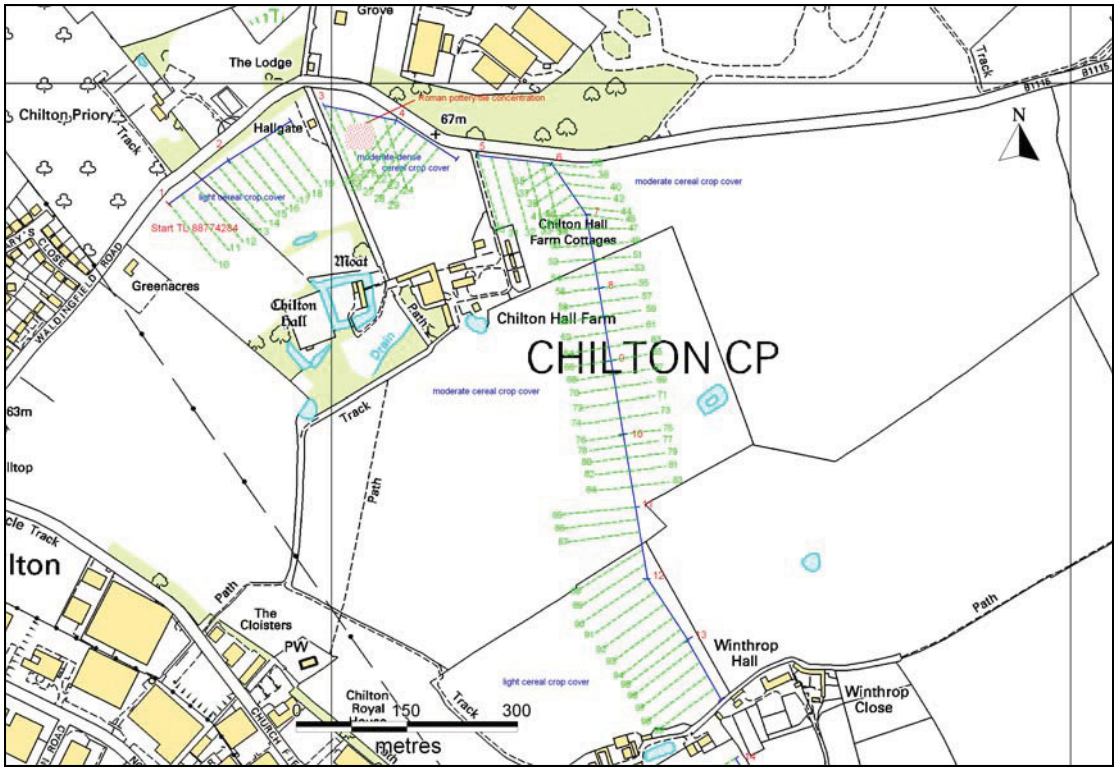

Figure 2. Fieldwalking transects, northern half

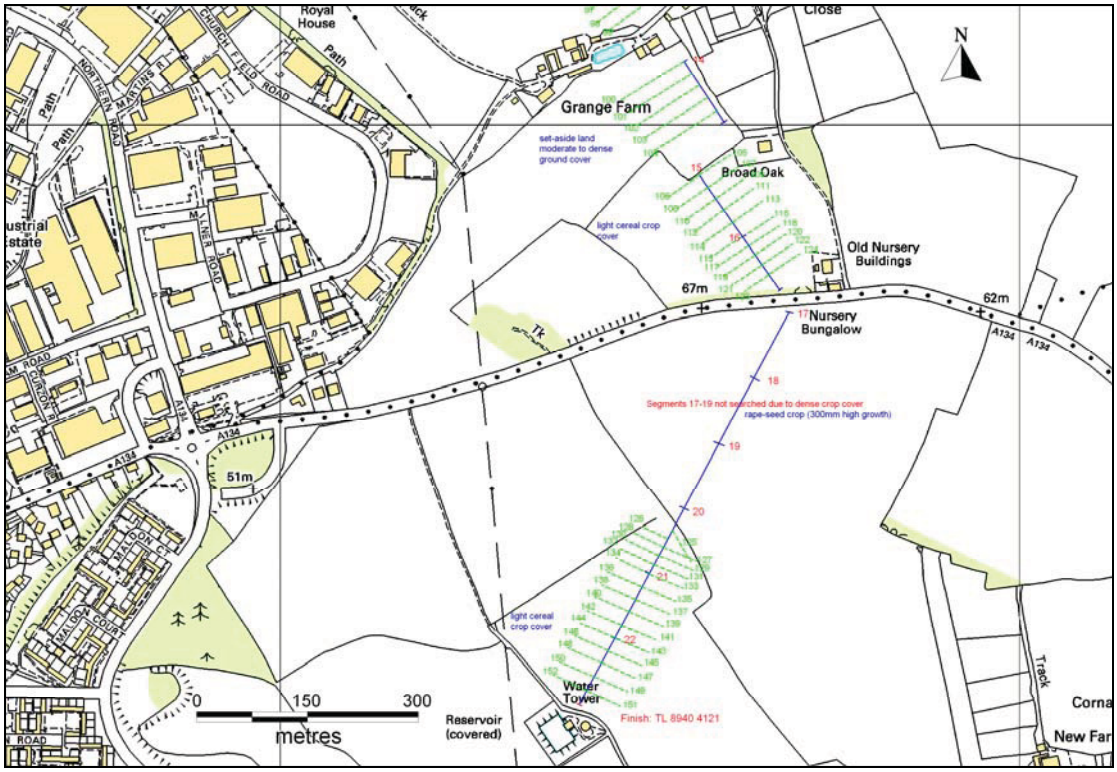

Figure 3. Fieldwalking transects, southern half

4.2 The aerial photograph survey

by Rog Palmer

This assessment of aerial photographs examined a 500m wide corridor centred on the pipeline route between TL88774284 and TL89404121 in order to identify and accurately map archaeological, recent and natural features. The original photographic interpretation and mapping was at 1:2500 level.

Archaeological features were identified at one location north of Chilton Hall in an area likely to be cut by the pipeline. One field showed traces of medieval cultivation which may once have been more extensive in the Chilton area. A group of features of, or including, archaeological structures has been mapped in the southwest of the Study Area and is not on the proposed pipeline route.

Natural and recent features include geological fissures, former field boundaries, one pond or quarry and two pipelines.

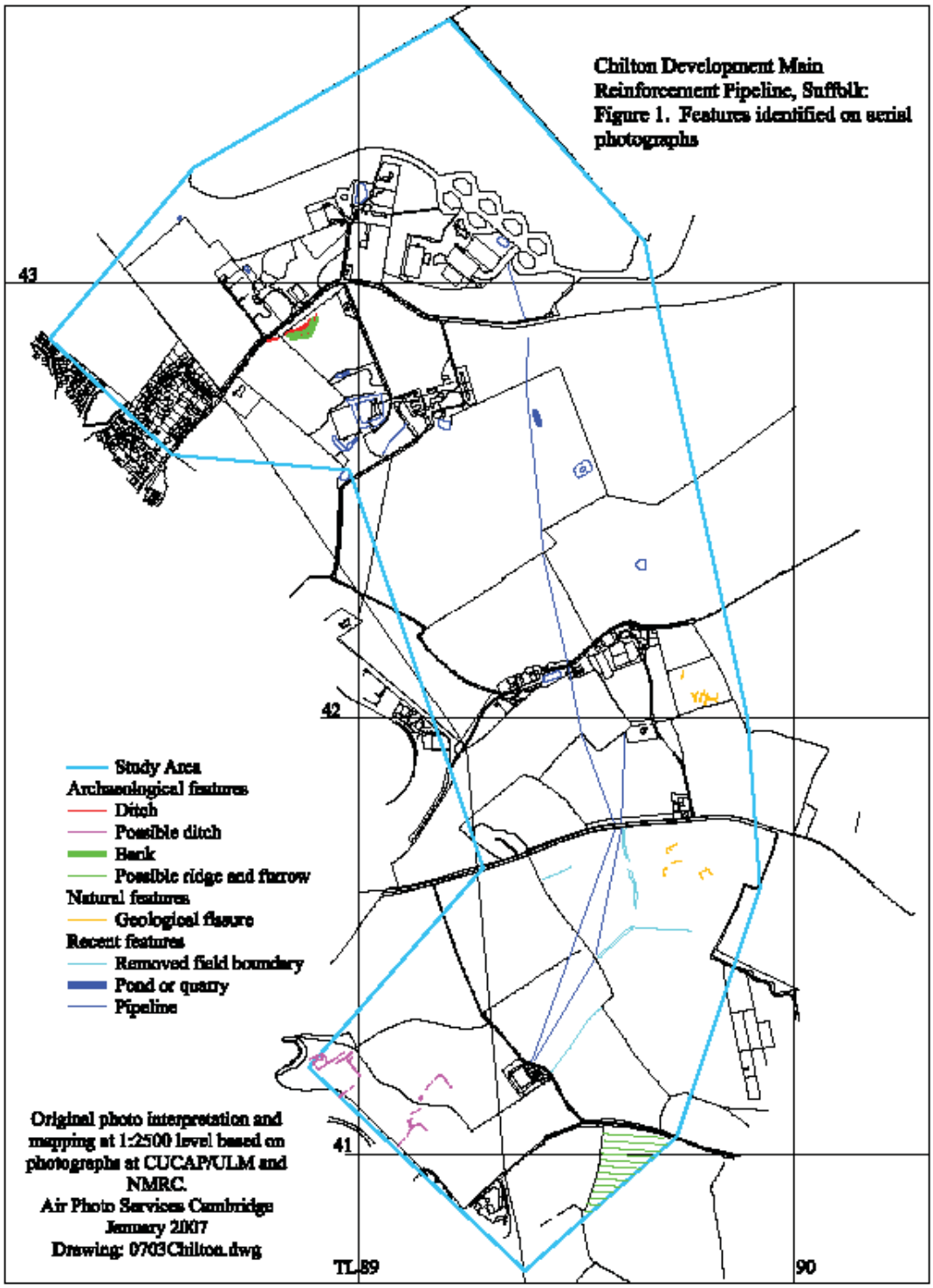

Figure 4. Aerial Photographic Assessment plan

The full aerial photograph assessment report can be found in Appendix 2.

4.3 The excavation

by Robert Atfield and Simon Cass

A small area along the pipeline corridor (within Segments 3 and 4) was stripped under supervision to the optimum archaeological level and subsequently excavated. This area contained the concentration of Roman pottery, referred to above, found during the field-walking phase. A further informal walk-over was made of the field surface prior to the soil strip and numerous additional Roman pottery sherds were collected; these were allocated the O.P. No. 0202 (unstratified surface finds). The stripped area was c. 10m wide, 75m long, and approximately 4-6m south of the road (Plate 1). Figure 5 shows a plan of the excavated area.

Plate 1. Excavation area, facing east

Two features were revealed by the stripping, a shallow ditch 0205 forming an east to west arc which curved towards the south before becoming indistinct and a small, equally shallow pit 0203 lying around 7m to the west of the ditch (Plate 2). Figure 6 shows sections of these features. Both produced pottery dating to the earlier part of

the Roman period with some Iron Age pottery and Neolithic flintwork present in the ditch, suggesting that the features do relate to the Roman material found nearby during the fieldwalking. Pit 0203 was sampled for any indications of industrial activity (Sample No. 1000: 1 bucket); likewise, the ditch was also sampled with similar aims (Sample No. 1001: 2 buckets). The concentration of features was low within the stripped area, perhaps indicating that further features relating to the concentration of Roman pottery found during the field-walking lie further to the south, well outside of the pipeline easement area.

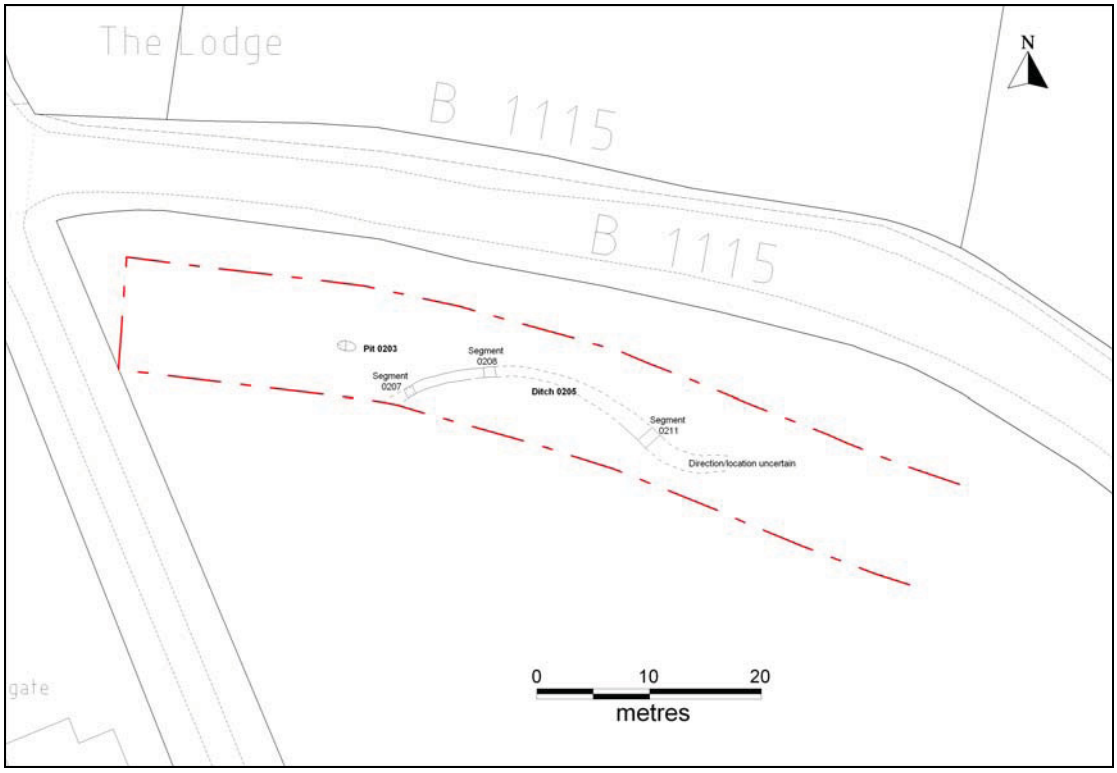

Figure 5. Plan of the excavation area

Plate 2. Pit 0203, facing east (1m scale)

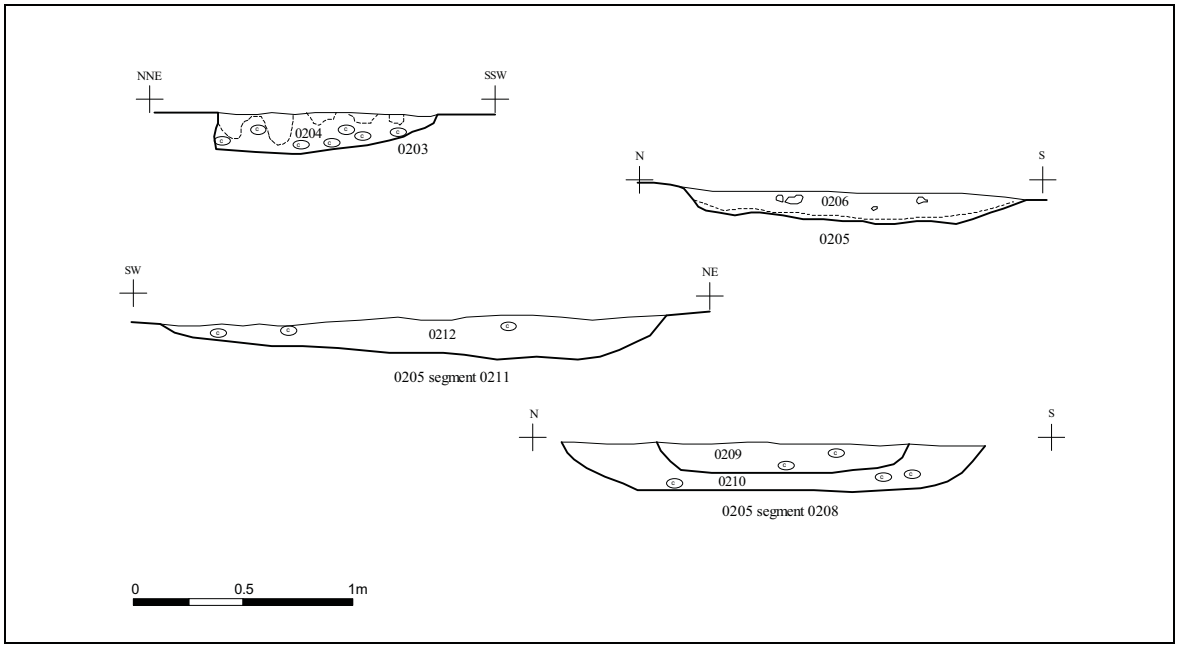

Figure 6. Sections showing ditch 0205 and pit 0203

4.4 The monitorings

by Robert Atfield

Numerous visits were made to examine the 10m wide pipeline corridor, as the topsoil was progressively stripped to form the easement, between the 22nd January and the 11th May 2007. Three areas were given particular attention. The area within Segment 14 (Grange Farm), where Anglo Saxon and medieval metal detector finds have been recorded (CHT 016) was examined after the topsoil was stripped and also metal detected. Some modern charcoal spreads were observed and other agricultural disturbance, but the area failed to produce any archaeological features or further artefactual material. Similarly, an area immediately north-east of the Water Tower, within Segments 20-22, has records of Iron Age, Roman and medieval material (COG 019), but also proved negative during the monitoring. Finally, an area within Segments 1 and 2, which had been subject to some delay before topsoil stripping was authorised was stripped. This location contained a substantial angular crop-mark, resembling the corner of an enclosure, but an examination of the subsoil structure and some hand dug test slots confirmed that the anomaly was in fact due to natural geological variations in the composition of the clays.

5. The finds evidence

By Andy Fawcett

Introduction

A total of 993 finds with a weight of 24124g was recovered from the combined field-walking and excavation stages of the archaeological investigation. However, as Table 1 demonstrates the greatest quantity of finds was recorded during the field-walking phase. A full contextual breakdown of all the finds can be seen in Appendix 4.

	Field-walking		Excavation	
Find type	No	Weight/g	No	Weight/g
Pottery	78	2366	73	1254
CBM	707	14189	8	734
Worked flint	27	168	3	14
Burnt flint/stone	63	5138	1	5
Clay pipe	9	20	-	-
Post-medieval glass	8	91	-	-
Coal	1	1	2	5
Cinder	1	2	-	-
Slate	1	8	-	-
Fossil	1	10	-	-
Animal bone	1	50	8	57
Shell	1	12	-	-
Totals	898	22055	95	2069

Table 1. Finds quantities

This report contains a brief summary of the finds recovered at the field-walking stage and followed by a full account of the finds noted during the excavation.

5.1 Field-walking

5.1.1 *Pottery*

A total of seventy-eight sherds was recovered from the field-walking stage of the project (2366g). The pottery was fully catalogued using the fabric codes employed by Suffolk County Council.

In general the pottery from the assemblage was small and abraded with very few diagnostic pieces (such as rims and bases). The pottery spans the Roman, medieval and post-medieval periods, although there are very few medieval sherds. A full breakdown of the pottery in each transect can be seen in Appendix 5. This part of the report contains a brief summary of the pottery by period.

Prehistoric

No prehistoric pottery was recorded during the field-walking part of the project.

Roman

A total of thirty-six sherds of Roman pottery was noted in eighteen transects, with the largest quantity recorded between transects 0011 and 0070. The Roman pottery assemblage is principally made up of long-lived coarsewares, the most frequent of which are Sandy grey wares (GX). In addition a small quantity of Black surfaced / Romanising grey wares (BSW) was noted and single instances of Buff ware (BUF), Red coarse ware (RX), Grog-tempered ware (GROG-S) and finally Lower Nene Valley colour-coated ware (NVC). The NVC sherd was the only recorded fineware within the Roman pottery assemblage.

Two jar forms were noted, including a storage type similar to Going's G42 (1987) in transect 036 and a lid seated version (Suffolk type 4.4) in 0128. The other jar rims were too small to be identified beyond their general class.

The most concentrated area of Roman pottery was noted between transects 0011 and 0036. This is basically the area that lies to the north, north-west and north-east of Chilton Hall. Within this area the densest cluster was noted between transects 0018 and 0025. After this only sporadic amounts were noted along the rest of the pipeline's course.

Medieval

Only three sherds of medieval pottery were recorded. These were widely spread and were noted in transects 0104, 0124 and 0146. Present within this small group are two sherds of Hedingham fine ware, represented by a jug handle and rim fragment (HFW1). The third sherd is an unprovenanced glazed ware (UPG). As a whole the medieval pottery is dated from the mid 12th to 14th century.

Post-medieval

Post-medieval pottery was recorded in twenty-five transects and amounted to a total of thirty-nine sherds. This pottery group, like the roof tile dated to this period, is distributed fairly evenly across transects. The most frequent fabric types are Glazed red earthenwares (GRE), English stonewares (ESW) and very small amounts of Iron glazed blackwares (IGBW), Transfer printed earthenwares (TPE) and Refined white earthenwares (REFW). The often high level of abrasion exhibited by this group indicates that its presence is probably as a result of manuring.

5.1.2 *CBM*

In total 707 fragments of CBM with a weight of 14189g were retrieved during the field-walking phase. Overall the assemblage is relatively fragmented and often quite abraded. As Table 2 indicates the overwhelming majority of the CBM is post-medieval roof tile.

Period	No	%	Weight/g	%
Roman	41	6	1256	9
Medieval	1	0.5	86	0.5
Late medieval/post-medieval	5	0.5	174	1
Post-medieval	660	93	12673	89.5
Totals	707		14189	

Table 2. CBM by period

Roman

A small quantity of Roman CBM was identified in twenty-two transects. The majority of this material was located in thirteen transects to the north of Chilton Hall Farm and Chilton Hall Cottages. Thereafter a smaller amount occurred south of Chilton Hall Farm (two transects), south of Broad Oak (five transects) and finally two instances near the transect finish point, north-east of the Water Tower.

In general the Roman CBM assemblage is mainly made up of undiagnostic flat tile fragments (these may not necessarily be roof tile fragments but pieces used for other purposes). One analysis of flat tile depths indicates that those pieces associated with *tegula* mid-sections have a depth of between 17-25mm and that significant numbers of other flat tile types lay between the depths of 10-16mm (Fawcett unpub).

One possible Roman flat tile type that occurred across transects had a consistent depth of 12mm. The fabric was mostly fine and over-fired, and in some cases fragments were actually vitrified. The tile displayed a blue-grey core and had bright orange surfaces, and clay pellets were observed in some of the examples.

Only two other tile types were recorded which included four *imbrex* fragments, and one possible box-flue tile. This latter piece was noted in transect 0140. It had a height of 18mm and traces of combing were present on one surface.

Medieval and early post-medieval

Only a single fragment of roof tile could clearly be dated to the medieval period (transect 0027). The example has a grey core with oxidised surfaces and its fabric is constructed of ill sorted quartz (ms). As Table 2 demonstrates a small quantity of tile (5 @ 174g) is possibly transitional, dated from the late medieval to the early post-medieval period.

Post-medieval

The larger part of the tile assemblage is made up of post-medieval peg tiles. Fragments showed varying states of abrasion and were mostly in a medium sandy fabric (ms) and frequently with black iron ore (msfe) inclusions.

5.1.3 *Worked flint*
Identified by Colin Pendleton

Worked flint was recovered from nineteen different transects (27 pieces @ 168g). A full breakdown of flint types can be seen in Appendix 6. The worked flint is not grouped in any particular zone of the field-walked area and is sparsely spread across transects.

The flint assemblage is made up entirely of flakes, some of which display edge retouch and are hinge fractured. Only three flakes with notches can be classed as tools. The assemblage is of a mixed date with a very small number of pieces dated from the Neolithic to Early Bronze Age, the remainder being placed in the later prehistoric period.

5.1.4 *Burnt flint/stone*
In total sixty-five fragments of burnt flint were recovered from thirty-five transects, weighing a total of 5138g. The flint as a whole is spread fairly evenly across the field-walked areas. In general it is variable in size and colour, although the larger part of the collection is coloured in the red/pink/orange range and a lesser amount is white/grey. One extremely large piece (2746g) was noted in transect 0010. Finally the only fragment of burnt stone (99g) was recorded in transect 0131.

5.1.5 *Miscellaneous*
Clay pipe stems (9 fragments @ 20g) were recorded in transects 0010, 0118, 0121, 0133, 0137, 0144, 0145 and 0148. Post-medieval bottle and window glass (8 fragments @ 91g) was noted in transects 0015, 0019, 0062, 0113, 0121, 0137 and 0139. A single very worn animal bone fragment (50g) belonging to a large mammal was identified in transect 0028. Other finds include single examples of oyster shell (12g) in transect 0020, coal in transect 0121 (1g), cinder in transect 0046, slate (8g) in transect 0089 and fragment of flint with a partial fossil impressed on its surface (10g).

5.1.6 *Small Finds*
Identified by Anna West

A single 16th century copper-alloy buckle (SF1000) was recorded in transect 0110. It has a circular frame with a central bar although the pin is missing. This was possibly

for a spur or shoe. Similar types can be seen in Margeson's catalogue (1993, 66: fig 40).

5.1.7 *Conclusion*

The finds assemblage is predominantly made up of post-medieval material, principally roof tile and pottery, which often occurs alongside finds from an earlier period.

Although no prehistoric pottery was recorded, a small quantity of worked flint has been noted as well a reasonable amount of burnt flint; the latter is more evenly distributed across transects. The worked flint indicates that perhaps there was some low-key later prehistoric activity around the route of the pipeline.

A significant distribution of Roman finds (pottery and CBM) was mainly grouped around the northern area of Chilton Hall. In total there were eight transects in which both Roman tile and pottery occurred together. There were not enough distinctive fabric or form types within the Roman pottery assemblage to produce any consistent dating sequences within the period, although it is likely that most is dated from the 2nd to 4th century.

Evidence for medieval activity is negligible, the period being represented by three sherds of pottery and a single abraded fragment of roof tile.

5.2 Excavation

Only five of the excavation contexts contained finds, the majority of which were recorded from the unstratified context 0202. Context 0204 (only fill of pit 0203) contained a single sherd of pottery whilst the remaining contexts (0209, 0212 and 0213) are all associated with the ditch feature 0205.

5.2.1 *Pottery*

In total seventy-three sherds of pottery were recovered from six contexts during the excavation stage (1254g). The largest part of the assemblage is dated to the Roman period but small quantities of Iron Age, medieval and post-medieval pottery were also noted.

All of the pottery has been examined at x20 vision and assigned to fabric groups; a breakdown of the Roman types can be seen in Table 3. Codes have been consigned to these groups using the Suffolk fabric series and Roman form types (where applicable) have been catalogued using the Suffolk form type series (unpub). This system has been also been supplemented by the use of Going's Chelmsford type series (1987). A full contextual breakdown of all these divisions forms part of the site archive and a version of this can be seen in Appendix 7.

The overall condition of the assemblage can be described as between abraded and slightly abraded. Only a small number of diagnostic sherds were recorded (rims and bases), but most of the rims could not be identified beyond their general class.

Iron Age

The upper ditch fill 2009 contained four sherds (21g) of slightly abraded hand-made sand and organic tempered pottery (HMSO). A small fragment of an upright rim with a flat top was identified. The sherds occurred alongside twelve sherds of Roman pottery that were also in a similar state of preservation.

Roman

In total sixty-six sherds of Roman pottery with a weight of 1129g were recorded. Roman pottery was noted in all six of the excavation contexts and ranged from abraded to slightly abraded. A full breakdown of fabrics and their percentages can be seen in Table 3.

Description	Fabric	No	%	Weight/g	%	Eves	%
Rheinzabern samian ware	SARZ	1	1.5	2	Pres	-	-
Unspecified colour coated ware	UCC	1	1.5	1	Pres	-	-
Black-surfaced wares	BSW	21	32	129	11.5	0.18	26
Grey micaceous wares (black surface)	GMB	1	1.5	12	1	0.06	8.5
Grey micaceous wares	GMG	4	6	35	3	-	-
Grog-tempered wares (Belgic)	GROG	8	12	94	8.5	-	-
Miscellaneous sandy grey wares	GX	22	33.5	263	23.5	0.34	49.5
Miscellaneous red coarse wares	RX	2	3	24	2	-	-
Storage jar fabrics	STOR	6	9	569	50.5	0.11	16
Total		**66**		**1129**		**0.69**	

Table 3. Roman pottery quantities

Half of the Roman pottery assemblage was recorded in the unstratified context 0202 (33 sherds @ 841g). It is within this collection that the only finewares were recorded

(SARZ and UCC), both of which were body sherds and considerably abraded. This context also contained medieval and post-medieval pottery.

The coarseware assemblage across all contexts is principally made up of Black surfaced ware and Sandy greyware sherds with very small numbers of other fabrics such as Belgic grog-tempered ware. This fabric was noted in the unstratified context 0202 as well as pit fill 0204, ditch fills 0206 and 0212. The coarseware fabrics are mostly long-lived, but the presence of BSW and GROG indicate that there is an earlier element to the assemblage.

The few form types that were recorded are mostly dated from around the mid 2nd to 4th century, for instance the groove-rimmed dish (6.19), hook-rimmed jar (4.6), bowl-jar (Going 1987; E2) which were all noted in the unstratified context 0202. The one clearly earlier form, from the upper ditch fill 0209, is a jar (5.1) which is similar in style to Going's G16-19 range (1987), dated from the mid 1st to early/mid 2nd century.

In general most of the later Roman pottery was noted in the unstratified context 0202 whereas the earlier material was associated with pit 0203 and ditch 0205. A similar range of dated Roman pottery was noted from another Chilton field-walking project (Tester 2004). The pottery was recorded in the area north of Chilton Hall where the highest concentration of Roman pottery was identified during the field-walking phase, and the fabric range is comparable.

Medieval

A single sherd of medieval pottery was noted in the unstratified context 0202. The sherd is cooking pot rim in a general medieval coarseware (MCW). The form is similar to Cotter's H1 type (2000, 50) and it is dated from the late 12th to 14th century. Only three sherds of medieval pottery were noted at the field-walking stage.

Post-medieval

Two post-medieval sherds were recorded in the unstratified context 0202 (64g). Both are abraded Glazed red earthenwares (GRE) dated from the 16th to 18th century. The first of these is a storage jar rim with thumbed decoration below the rim (Jennings 1981, 173) and the second is another possible jar fragment.

5.2.2 *CBM*

A total of ten fragments of CBM (1159g) was recorded in two contexts at the excavation stage of the project.

Three abraded Roman tile fragments were noted (493g) in the unstratified context 0202 representing two different pieces of *tegula* as well a single flat tile fragment.

The first of these (163g) is in a high-fired medium sandy fabric (ms) which displays a thick grey core and oxidised surfaces. The second fragment (238g) is also oxidised and contains iron rich clay pellets. The flat tile fragment is the same in style and fabric as those recorded at the field-walking phase. It has a blue-grey core and orange surfaces and is in a fine sanded fabric with clay pellets (fscp). The depth of the tile is 12mm which also matches those recorded from the previous phase. Faint traces of mortar can be observed on both sides.

This context also contained five slightly abraded pieces of post-medieval roof tile (648g). These examples all have a depth of *c* 12mm and occur in a medium sandy fabric (ms) two of which also contains black iron ore (msfe). Two of the pieces have mortar on both sides indicating probable reuse.

Two joining roof tile fragments (18g) of possible Roman date, were noted in ditch fill 0212. The pieces are oxidised and in a medium sandy fabric (msfe) which also contains common fine black iron ore as well as coarse red iron ore. This context also contained early Roman pottery.

5.2.3 *Worked flint*

Identifications by Colin Pendleton

A total of three worked flint fragments was recorded in ditch fill 2009 (14g). The first is an unpatinated long flake with limited edge retouch/use wear and parallel blade scars on the dorsal face. It is probably dated to the Neolithic period.

The second is a lightly patinated squat flake and the third is an unpatinated small irregular flake. Both of these have limited edge retouch/use wear and are dated to the

later prehistoric period. Also noted in this context were four sherds of Iron Age pottery (HMSO) as well as Roman pottery. A single piece of burnt flint was also present.

5.2.4 *Burnt flint*

A single piece of burnt flint was noted in ditch fill 2009 (5g). The fragment occurs alongside Iron Age and Roman pottery as well as worked flint and animal bone.

5.2.5 *Animal bone*

Two contexts contained animal bone, ditch fill 2009 (6 fragments @ 20g) and the unstratified context 0213 (2 fragments @ 37g). The first of these contexts contains only rib fragments that belonged to a large mammal. A further cut rib bone and a cow maxillary molar was recovered from context 0213.

5.2.6 *Coal*

Two small fragments of coal (5g) were recorded in ditch fill 0212.

5.2.7 *Charred plant macrofossils and other remains*

By Val Fryer

Introduction and method statement

Samples for the retrieval of the plant macrofossil assemblages were collected from a small number of features of probable Roman date from the excavation at Chilton. The samples were taken from fills within pit 0203 (Sample 1000) and ditch 0205 (Sample 1001) and two were submitted for assessment.

The samples were processed by manual water flotation/washover and the flots were collected in a 300 micron mesh sieve. The dried flots were scanned under a binocular microscope at magnifications up to x 16 and the plant macrofossils and other remains noted are listed in Table 4. Nomenclature within the table follows Stace (1997). All plant remains were charred. Modern fibrous roots and moss fronds were also recorded within the assemblages.

The non-floating residues were collected in a 1mm mesh sieve and sorted when dry. All artefacts/ecofacts were retained for further specialist analysis.

Results

Although plant macrofossils were recorded from both assemblages, the density of material was very low. A single, rounded, hexaploid type wheat (Triticum sp.) grain was recovered from Sample 1001 along with a bread wheat (T. aestivum/compactum) type rachis node, and Sample 1000 contained two very small fragments of hazel (Corylus avellana) nutshell. Charcoal/charred wood fragments were present within both assemblages.

Sample No.	**1000**	**1001**
Context No.	**0204**	**0212**
Feature No.	**0203**	**0205**
Feature type	**Pit**	**Ditch**
Plant macrofossils		
Triticum sp. (grain)		x
T. aestivum/compactum type (rachis node)		x
Corylus avellana L.	x	
Charcoal <2mm	xx	xx
Charcoal >2mm	xx	x
Mollusc shells		
Woodland/shade loving species		
Acanthinula aculeata		xcf
Aegopinella sp.		xx
Clausilia sp.		x
Discus rotundatus		xx
Oxychilus sp.		x
Vitrea sp.		x
Open country species		
Helicidae indet.		xcf
Vallonia sp.	x	x
V. pulchella		xcf
Catholic species		
Coclicopa sp.		x
Trichia hispida group		xx
Marsh/freshwater species		
Anisus leucostoma		x
Other remains		
Black porous 'cokey' material		xxxx
Black tarry material		xxx
Bone		x
Small coal frags.		xxxx
Small mammal/amphibian bones		x
Vitreous material		x
Sample volume (litres)	**14**	**28**
Volume of flot (litres)	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**

Table 4. Charred plant macrofossils and other remains

Key: x = 1 – 10 specimens xx = 11 – 50 specimens xxx = 51 – 100 specimens xxxx = 100+ specimens cf = compare

A moderate number of mollusc shells were recorded within the assemblage from Sample 1001. Preservation was generally quite good, with some specimens retaining delicate surface structuring, possibly indicating that they were intrusive within the assemblage. However, assuming that at least some specimens were contemporary, it would appear that the ditch, which was possibly situated within an area of short-turfed open grassland, was either partially overgrown or filled with leaf litter, although it may have been at least seasonally wet at its base.

The assemblage from Sample 1001 also contained a high density of coal fragments and pieces of black porous and tarry residues. At the time of writing, it was unclear whether these were contemporary within the feature from which the sample was taken, or later contaminants.

Conclusions and recommendations for further work

In summary, plant macrofossils are scarce within the assemblages, with those recorded possibly being derived from a low-density scatter of hearth waste or domestic/agricultural detritus. The mollusc assemblage would appear to indicate that the ditch had ceased to function effectively as either a drain or a boundary feature, as it was either overgrown or choked with leaf litter.

As neither assemblage contains a sufficient density of material for quantification (i.e. 100+ specimens), no further analysis is recommended.

5.2.8 Conclusion

The finds assemblage from the excavation is dominated by the pottery assemblage and in particular that part which dates to the Roman period. The remainder of the finds collection is very limited in its range and numbers.

Although only a small amount of prehistoric pottery was noted during the excavation (as well as worked flint) examples of worked flint were identified in the same area (north of Chilton Hall) during the field-walking stage.

The Roman pottery recovered at the excavation stage certainly reflects that which was identified during the field-walking phase. However, in general the pottery is poorly dated, being represented mostly by small numbers of coarseware body sherds. Nevertheless the excavation demonstrated some form of Roman activity to the north of Chilton Hall and the presence of Roman CBM hints at the possibility of a substantial building in the general area. With the exception of the Roman road to the east, there are no other records of Roman activity in the immediate area of Chilton Hall. This finds assemblage therefore provides new and important archaeological data for the area.

6. Discussion

The evidence from the field-walking stage suggested that there is a promising site of Roman activity, possibly including a significant building with a tiled roof, in the vicinity of the excavation area. The features identified in the excavation appear to predate this however, and could form a precursor site that was then developed further during the Roman period. While the evidence is currently very sparse, it is tempting to suggest a similar development to that seen at Cedars Park Estate in Stowmarket, where an occupied late Iron Age site carried on in use into the Roman period, and was developed in (probably) the mid 2nd century, with a more Romanised form, including a bathhouse. While finds can be expected to have travelled some distance in an actively farmed medium, the presence of discrete features in the excavation area suggests that the recovered finds from the fieldwalking may not have not been transported too far from their original deposition site. The small number of features, however, suggests that the likely focus of the site lies elsewhere.

7. Conclusions and significance of the fieldwork

The fieldwork carried out appears to have identified the approximate location of a Roman structure, possibly dating to the 2nd to 4th centuries, during fieldwalking and a slightly earlier phase of activity, represented by the features from the excavation. While the evidence is very sparse, it is possible that further work in this location may identify a site similar to that found in Stowmarket, with an early Roman site to Mid Roman development and higher status.

8. Archive deposition

Paper and photographic archive: SCCAS Ipswich T:\ENV\ARC\PARISH\ Chilton
Finds and environmental archive: SCCAS Bury St Edmunds, Store location J/114/5

9. List of contributors and acknowledgements

The fieldwork was carried out by Robert Atfield and Holly Stacey from Suffolk County Council Archaeological Service, Field Team. The project was managed and directed by John Newman, who also provided advice during the production of the report.

The post-excavation was managed by Richenda Goffin. Finds processing and the production of site plans and sections was carried out by Jonathan van Jennians and Simon Cass, and the specialist finds report by Andy Fawcett. Other specialist identification and advice was provided by Colin Pendleton and Val Fryer. The aerial photographic assessment was carried out by Rog Palmer of Air Photo Services. The report was checked by Richenda Goffin.

10. Bibliography

Cotter, J. P., 2000, Post-Roman pottery from excavations in Colchester 1975-85 Colchester Archaeological Report No 7

Fawcett, A., unpub., A catalogue of Roman building material from the Allen & Hanbury/Glaxo-Welcome sites in Ware 1976 to 1999, Herts Arch.Trust Report

Going, C. J., 1987 The mansion and other sites in the south-eastern sector of Caesaromagus: the Roman pottery, Chelmsford Archaeological Trust Report 3.2, Counc. Brit. Archaeol. Rep. 62

Jennings, S., 1981, Eighteen centuries of pottery from Norwich. EAA 13, Norwich Survey

Margeson, S., 1993 Norwich households: The medieval and post-medieval finds from Norwich survey excavations 1971-1978, East Anglian Archaeology Report No 58

Stace, C., 1997 New Flora of the British Isles. Second edition. Cambridge University Press

SUFFOLK COUNTY COUNCIL

ARCHAEOLOGICAL SERVICE - CONSERVATION TEAM

Brief and Specification for Archaeological Monitoring of Development

CHILTON DEVELOPMENT MAIN REINFORCEMENT PIPELINE SCHEME

Although this document is fundamental to the work of the specialist archaeological contractor the developer should be aware that certain of its requirements are likely to impinge upon the working practices of a general building contractor and may have financial implications.

1. **Background**

1.1 The route of a pipeline has been proposed by Anglian Water between TL 8877 4284 (north) and TL 8940 4121 (south).

1.2 The 2.4km route, orientated north to south, is located around the eastern side of Chilton, on a ridge above the Stour Valley. It is situated on chalky till with deep loam to clay at *c*. 65 - 70m OD.

1.3 The route of the proposed pipeline passes through or close to several known important archaeological sites recorded in the County Sites and Monuments Record. The central part of the proposed route passes through both Anglo-Saxon and medieval metal-detected find scatters (CHT 016). The southern part of the route passes through a medieval finds scatter (COG 019). The find scatters are indicative of further occupation deposits in these areas.

1.4 The pipeline route has been evaluated by fieldwalking; the results of the aerial photographic assessment are not yet known. This work confirmed the two known archaeological sites along the line of the route (CHT 016 and COG 019). In addition, the non-intrusive field survey defined a further site, located along the northern E to W section of the route (centring on TL 8903 4296) consisting of a dense assemblage of Roman pottery.

1.5 Assessment of the available archaeological evidence indicates that the known areas of archaeological interest affected by the work can be adequately recorded by archaeological monitoring.

1.6 In accordance with the standards and guidance produced by the Institute of Field Archaeologists this brief should not be considered sufficient to enable the total execution of the project. A Project Design or Written Scheme of Investigation (PD/WSI) based upon this brief and the accompanying outline specification of minimum requirements, is an essential requirement. This must be submitted by the developers, or their agent, to the Conservation Team of the Archaeological Service of Suffolk County Council (Shire Hall, Bury St Edmunds IP33 2AR; telephone/fax: 01284 352443) for approval. The work must not commence until this office has approved both the archaeological contractor as suitable to undertake the work, and the PD/WSI as satisfactory. The PD/WSI will *provide the basis for measurable standards* and will be used to establish whether the requirements of the planning condition will be adequately met.

1.7 Before commencing work the project manager must carry out a risk assessment and liase with the site owner, client and the Conservation Team of SCCAS in ensuring that all potential risks are minimised.

2. Brief for Archaeological Monitoring

2.1 To provide a record of archaeological deposits which are damaged or removed by any development.

2.2 The main academic objective will centre upon the potential of this development to produce evidence for Roman, Anglo-Saxon and medieval, and also earlier, occupation along the route.

2.3 The principle ground disturbance will involve stripping associated with the easement believed to be *c*. 8.00m in width, and also the cutting for the pipe trench, believed to be *c*. 0.40m wide. Five sections of the pipe-line will be laid by directional drilling.

2.4 Coinciding with the three known archaeological sites (see Section 1.4, and marked on the accompanying plan), and with the exception of those parts that will be directly drilled, three sections of the pipeline route will require a controlled strip under archaeological supervision, to achieve the required archaeological depth (*c*. 660m in total). In addition, if the aerial photographic assessment produces evidence of further archaeological sites along the route of the pipeline, these areas will also require a controlled strip.

2.5 The remainder of the route also will require archaeological monitoring, although not part of a controlled archaeological strip.

2.6 This project will be carried through in a manner broadly consistent with English Heritage's *Management of Archaeological Projects,* 1991 (*MAP2*). Excavation is to be followed by the preparation of a full archive, and an assessment of potential for analysis. Analysis and final report preparation will follow assessment and will be the subject of a further brief and updated project design.

2.7 In accordance with the standards and guidance produced by the Institute of Field Archaeologists this brief should not be considered sufficient to enable the total execution of the project. A Project Design or Written Scheme of Investigation (PD/WSI) based upon this brief and the accompanying outline specification of minimum requirements, is an essential requirement. This must be submitted by the developers, or their agent, to the Conservation Team of the Archaeological Service of Suffolk County Council (Shire Hall, Bury St Edmunds IP33 2AR; telephone/fax: 01284 352443) for approval. The work must not commence until this office has approved both the archaeological contractor as suitable to undertake the work, and the PD/WSI as satisfactory. The PD/WSI will *provide the basis for measurable standards* and will be used to establish whether the requirements of the planning condition will be adequately met; an important aspect of the PD/WSI will be an assessment of the project in relation to the Regional Research Framework (*East Anglian Archaeology* Occasional Papers 3, 1997, 'Research and Archaeology: A Framework for the Eastern Counties, 1. resource assessment', and 8, 2000, 'Research and Archaeology: A Framework for the Eastern Counties, 2. research agenda and strategy').

3. Arrangements for Monitoring

3.1 To carry out the monitoring work the developer will appoint an archaeologist (the archaeological contractor) who must be approved by the Conservation Team of Suffolk County Council's Archaeological Service (SCCAS) - see 1.3 above.

3.2 The developer or his archaeologist will give the Conservation Team of SCCAS five working days notice of the commencement of ground works on the site, in order that the work of the archaeological contractor may be monitored. The method and form of development will also be monitored to ensure that it conforms to previously agreed locations and techniques upon which this brief is based.

3.3 Allowance must be made to cover archaeological costs incurred in monitoring the development works by the contract archaeologist. The size of the contingency should be estimated by the approved archaeological contractor, based upon the outline works in paragraph 2.3 of the Brief and Specification and the building contractor's programme of works and time-table.

3.4 If unexpected remains are encountered the Conservation Team of SCCAS must be informed immediately. Amendments to this specification may be made to ensure adequate provision for archaeological recording.

4. Specification for Monitoring

4.1 In the three areas marked on the accompanying plan, topsoil and subsoil deposits can be removed by machine with a toothless bucket to the top of the first archaeological level under controlled archaeological supervision.

4.2 Along the remainder of the route, opportunity must be given to the 'monitoring archaeologist' to hand excavate and record any discrete archaeological features which appear during earth moving operations, retrieve finds and make measured records as necessary. Where it is necessary to see archaeological detail one of the soil faces is to be trowelled clean.

4.3 All features which are, or could be interpreted as, structural must be fully excavated in these areas. Post-holes and pits must be examined in section and then fully excavated. Fabricated surfaces within the excavation area (e.g. yards and floors) must be fully exposed and cleaned. Any variation from this process can only be made by agreement with a member of the Conservation Team of SCCAS, and must be confirmed in writing.

4.4 All other features must be sufficiently examined to establish, where possible, their date and function. For guidance:

a) A minimum of 50% of the fills of the general features is be excavated.

b) Between 10% and 20% of the fills of substantial linear features (ditches, etc) are to be excavated, the samples must be representative of the available length of the feature and must take into account any variations in the shape or fill of the feature and any concentrations of artefacts.

4.5 Any variation from this process can only be made by agreement [if necessary on site] with a member of the Conservation Team of SCCAS, and must be confirmed in writing.

4.6 The fills of all archaeological features should be bulk sampled for palaeoenvironmental remains and assessed by an appropriate specialist. The Project Design must provide details of a comprehensive sampling strategy for retrieving and processing biological remains (for palaeoenvironmental and palaeoeconomic investigations and also for absolute dating), and samples of sediments and/or soils (for micromorphological and other pedological/sedimentological analyses. All samples should be retained until their potential has been assessed. Advice on the appropriateness of the proposed strategies will be sought from J. Heathcote, English Heritage Regional Adviser in Archaeological Science (East of England). A guide to sampling archaeological deposits (Murphy, P.L. and Wiltshire, P.E.J., 1994, *A guide to sampling archaeological deposits for environmental analysis*) is available for viewing from SCCAS.

4.7 A finds recovery policy is to be agreed before the project commences. It should be addressed by the Project Design. Use of a metal detector will form an essential part of finds recovery. Sieving of occupation levels and building fills will be expected.

4.8 All ceramic, bone and stone artefacts to be cleaned and processed concurrently with the excavation to allow immediate evaluation and input into decision making.

4.9 Metal artefacts must be stored and managed on site in accordance with *UK Institute of Conservators Guidelines* and evaluated for significant dating and cultural implications before despatch to a conservation laboratory within 4 weeks of excavation.

4.10 Human remains are to be treated at all stages with care and respect, and are to be dealt with in accordance with the law. They must be recorded *in situ* and subsequently lifted, packed and marked to standards compatible with those described in the Institute of Field Archaeologists' *Technical Paper 13: Excavation and post-excavation treatment of Cremated and Inhumed Human Remains*, by McKinley & Roberts. Proposals for the final disposition of remains following study and analysis will be required in the Project Design.

4.11 Plans of the archaeological features on the site should normally be drawn at 1:20 or 1:50, depending on the complexity of the data to be recorded. Sections should be drawn at 1:10 or 1:20 again depending on the complexity to be recorded. All levels should relate to Ordnance Datum. Any variations from this must be agreed with the Conservation Team.

4.12 A photographic record of the work is to be made, consisting of both monochrome photographs and colour transparencies.

4.13 Excavation record keeping is to be consistent with the requirements Suffolk County Council's Sites and Monuments Record and compatible with its archive. Methods must be agreed with the Conservation Team of SCCAS.

5. Archive Requirements

5.1 Within four weeks of the end of field-work a timetable for post-excavation work must be produced. Following this a written statement of progress on post -excavation work whether archive, assessment, analysis or final report writing will be required at three monthly intervals.

5.2 An archive of all records and finds is to be prepared consistent with the principle of English Heritage's *Management of Archaeological Projects*, 1991 (*MAP2*), particularly Appendix 3. However, the detail of the archive is to be fuller than that implied in *MAP2* Appendix 3.2.1. The archive is to be sufficiently detailed to allow comprehension and further interpretation of the site should the project not proceed to detailed analysis and final report preparation. It must be adequate to perform the function of a final archive for lodgement in the County SMR or museum.

5.3 A clear statement of the form, intended content, and standards of the archive is to be submitted for approval as an essential requirement of the Project Design (see 2.5).

5.4 The site archive quoted at *MAP2* Appendix 3, must satisfy the standard set by the “Guideline for the preparation of site archives and assessments of all finds other than fired clay vessels” of the Roman Finds Group and the Finds Research Group AD700-1700 (1993).

5.5 Pottery should be recorded and archived to a standard comparable with 6.3 above, i.e. *The Study of Later Prehistoric Pottery: General Policies and Guidelines for Analysis and Publication,* Prehistoric Ceramics Research Group Occ Paper 1 (1991, rev 1997), the

Guidelines for the archiving of Roman Pottery, Study Group Roman Pottery (ed M G Darling 1994) and the *Guidelines of the Medieval Pottery Group* (in draft).

5.6 All coins must be identified and listed as a minimum archive requirement.

5.7 The data recording methods and conventions used must be consistent with, and approved by, the County Sites and Monuments Record. All record drawings of excavated evidence are to be presented in drawn up form, with overall site plans. All records must be on an archivally stable and suitable base.

5.8 A complete copy of the site record archive must be deposited with the County Sites and Monuments Record within twelve months of the completion of fieldwork. It will then become publicly accessible.

5.9 Finds must be appropriately conserved and stored in accordance with UK Institute Conservators Guidelines.

5.10 Every effort must be made to get the agreement of the landowner/developer to the deposition of the finds with the County SMR or a museum in Suffolk which satisfies Museum and Galleries Commission requirements, as an indissoluble part of the full site archive. If this is not achievable for all or parts of the finds archive then provision must be made for additional recording (e.g. photography, illustration, analysis) as appropriate. If the County SMR is the repository for finds there will be a charge made for storage, and it is presumed that this will also be true for storage of the archive in a museum.

5.11 Where positive conclusions are drawn from a project, a summary report in the established format, suitable for inclusion in the annual 'Archaeology in Suffolk' section of the Proceedings of the Suffolk Institute for Archaeology journal, must be prepared and included in the project report, or submitted to the Conservation Team by the end of the calendar year in which the evaluation work takes place, whichever is the sooner.

6. Report Requirements

6.1 A report on the fieldwork and archive must be provided consistent with the principle of *MAP2*, particularly Appendix 4. The report must be integrated with the archive.

6.2 The objective account of the archaeological evidence must be clearly distinguished from its archaeological interpretation.

6.3 An important element of the report will be a description of the methodology.

6.4 Reports on specific areas of specialist study must include sufficient detail to permit assessment of potential for analysis, including tabulation of data by context, and must include non-technical summaries. Provision should be made to assess the potential of scientific dating techniques for establishing the date range of significant artefact or ecofact assemblages, features or structures.

6.5 The report will give an opinion as to the potential and necessity for further analysis of the excavation data beyond the archive stage, and the suggested requirement for publication; it will refer to the Regional Research Framework (see above, 2.5). Further analysis will not be embarked upon until the primary fieldwork results are assessed and the need for further work is established. Analysis and publication can be neither developed in detail or costed in detail until this brief and specification is satisfied, however, the developer should be aware that there may be a responsibility to provide a publication of the results of the programme of work.

6.6 The assessment report must be presented within six months of the completion of fieldwork unless other arrangements are negotiated with the project sponsor and the Conservation Team of SCCAS.

Specification by: Dr Jess Tipper

Suffolk County Council
Archaeological Service Conservation Team
Environment and Transport Department
Shire Hall
Bury St Edmunds
Suffolk IP33 2AR Tel: 01284 352197

Date: 19 January 2007 Reference: / ChiltonMainReinforcement2007

This brief and specification remains valid for 12 months from the above date. If work is not carried out in full within that time this document will lapse; the authority should be notified and a revised brief and specification may be issued.

If the work defined by this brief forms a part of a programme of archaeological work required by a Planning Condition, the results must be considered by the Conservation Team of the Archaeological Service of Suffolk County Council, who have the responsibility for advising the appropriate Planning Authority.

Appendix 2 The documentary evidence

CHILTON DEVELOPMENT MAIN REINFORCEMENT PIPELINE SCHEME, TL88774284 TO TL89404121,

SUFFOLK:

AERIAL PHOTOGRAPHIC ASSESSMENT

SUMMARY

This assessment of aerial photographs examined a 500m wide corridor centred on the pipeline route between TL88774284 and TL89404121 in order to identify and accurately map archaeological, recent and natural features.

Archaeological features were identified at one location north of Chilton Hall in an area likely to be cut by the pipeline.

One field showed traces of medieval cultivation which may once have been more extensive in the Chilton area.

A group of features of, or including, archaeological structures has been mapped in the southwest of the Study Area and is not on the proposed pipeline route.

Natural and recent features include geological fissures, former field boundaries, one pond or quarry and two pipelines.

Original photo interpretation and mapping was at 1:2500 level.

CHILTON DEVELOPMENT MAIN REINFORCEMENT PIPELINE SCHEME, TL88774284 TO TL89404121,

SUFFOLK:

AERIAL PHOTOGRAPHIC ASSESSMENT

Rog Palmer MA MIFA

INTRODUCTION

This assessment of aerial photographs was commissioned to examine a 500m wide corridor centred on the pipeline route between TL88774284 and TL89404121 in order to identify and accurately map archaeological, recent and natural features and thus provide a guide for field evaluation. The level of interpretation and mapping was to be at 1:2500.

ARCHAEOLOGICAL AND NATURAL FEATURES FROM AERIAL PHOTOGRAPHS

In suitable cultivated soils, sub-surface features – including archaeological ditches, banks, pits, walls or foundations – may be recorded from the air in different ways in different seasons. In spring and summer these may show through their effect on crops growing above them. Such indications tend to be at their most visible in ripening cereal crops, in June or July in this part of Britain, although their appearance cannot accurately be predicted and their absence cannot be taken to imply evidence of archaeological absence. In winter months, when the soil is bare or crop cover is thin (when viewed from above), features may show by virtue of their different soils. Upstanding remains, which may survive in unploughed grassland, are also best recorded in winter months when vegetation is sparse and the low angle of the sun helps pick out slight differences of height and slope.

Grass sometimes shows sub-surface features through the withering of the plants above them. This may occur towards the end of very dry summers and usually indicates the presence of buried walls or foundations. Such dry summers occurred in Britain in 1949, 1959, 1975, 1976, 1984, 1989 and 1990 (Bewley 1994, 25) and more recently in 1995, 1996 and 2006. This does not imply that every grass field will reveal its buried remains on these dates as local variations in weather and field management will affect parching. However, it does provide a list of years in which photographs taken from, say, mid July to the end of August may prove informative.

Such effects are not confined only to archaeological features as almost any disturbance of soil and bedrock can produce its own range of shadow, crop and soil differences. On the chalky till in this area there may be indications of geological fissures that can be confused with archaeological features. Pockets of deeper soil may also be apparent where they have collected in local hollows.

PHOTO INTERPRETATION AND MAPPING

Photographs examined

The most immediately informative aerial photographs of archaeological subjects tend to be those resulting from observer-directed flights. This activity is usually undertaken by an experienced archaeological observer who will fly at seasons and times of day when optimum results are expected. Oblique photographs, taken using a hand-held camera, are the usual products of such investigation. Although oblique photographs are able to provide a very detailed view, they are biased in providing a record that is mainly of features noticed by the observer, understood, and thought to be of archaeological relevance. To be able to map accurately from these photographs it is necessary that they have been taken from a sufficient height to include surrounding control information.

Vertical photographs cover the whole of Britain and can provide scenes on a series of dates between (usually) 1946-7 and the present. Many of these vertical surveys were not flown at times of year that are best to record the archaeological features sought for this Assessment and may have been taken at inappropriate dates to record crop and soil responses that may be seen above sub-surface features. Vertical photographs are taken by a camera fixed inside an aircraft and with its exposures timed to take a series of overlapping views that can be examined stereoscopically. They are often of relatively small scale and their interpretation requires higher perceptive powers and a more cautious approach than that necessary for examination of obliques. Use of these small-scale images can also lead to errors of location and size when they are rectified or re-scaled to match a larger map scale.

Cover searches were obtained from the Cambridge University Collection of Aerial Photographs (CUCAP) and the National Monuments Record: Air Photographs (NMRAP), Swindon. Photographs included those resulting from observer-directed flights and routine vertical surveys.

Photographs consulted are listed in the Appendix to this report.

Base maps

Digital data from original surveys at a scale of at least 1:2500 were provided by the client.

Study area

Photographs were examined in detail within a corridor 500m wide that was centred on the proposed pipe route.

Photo interpretation and mapping

All photographs were examined by eye and under slight (2x) magnification, viewing them as stereoscopic pairs when possible. Scanned digital copies of the most informative were transformed to match the digital data using the specialist program AirPhoto (Scollar 2002). All scanned photographs were enhanced using the default setting in AirPhoto before being examined on screen. Transformed files were set as background layers in AutoCAD Map, where features were overdrawn, making reference to the original prints, using standard conventions. Layers from this final drawing have been used to prepare the figures in this report and have been supplied to the client in digital form.

Ridge and furrow has been sketched schematically to indicate the direction of the furlongs and some lengths of the modern pipelines have been added by hand between parts that were mapped from transformed photographs.

Accuracy

AirPhoto computes values for mismatches of control points on the photograph and map. In all transformations prepared for this assessment the mean mismatches were less than ±1.50m. These

mismatches can be less than the survey accuracy of the base maps themselves and users should be aware of the published figures for the accuracy of large scale maps and thus the need to relate these mismatches to the Expected Accuracy of the Ordnance Survey maps from which control information was taken (OS 2007).

COMMENTARY

Soils

The Soil Survey of England and Wales (SSEW 1983) shows the area to comprise two deposits of different chalk-based soil. Underlying the whole corridor is chalky till (soil association 571o: MELFORD) upon which, mostly south of the A134, is a different chalky till (soil association 582d: HORNBEAM 3) which is noted as being slowly permeable and with a higher clay content that of soil association 571o. Crops on the lighter soil association 571o, are more likely to indicate sub-surface differences and this is borne out by the contents of some of the photographs examined.

Archaeological features

The most probable archaeological features identified during this Assessment are the banks and ditches in the field north of Chilton Hall (TL889429). These appear to have been substantial features and have been apparent on most aerial photographs taken since 1950 – sometimes as a pair of banks, at other times as a pair of ditches. The small part that is visible makes any interpretation of the type of feature little more than guesswork and no such classification will be suggested here.

In the southwest part of the Study Area is a series of inter-connected ditched features, some of which have the appearance of prehistoric or Romano British forms. Because many of these appear to conform to the modern field layout they may be, or include, more recent elements so all have been categorised as 'possible archaeological ditches'.

One modern field has shown traces of ridge and furrow cultivation which may formerly have been more extensive.

Non-archaeological features

Aerial photographs taken on some dates have shown that the local soils around Chilton include local areas that have been fissured by geological processes. These fissures can appear very similar to archaeological features and those mapped include a number of enclosure-like forms. However, on the basis of their appearance on the photographs, on the character of the crop-marked lines, these seem more likely to be geological than of archaeological origin.

Three types of recent feature have been identified: a small number of recently-removed field boundaries, one former pond or quarry, and the routes of at least two pipelines that run to, or from, the water tower at Cornard Tye. These are of two dates: the longer length has been visible from 1962 and the shorter eastern length seems to have been laid in 1965-66.

Land use and visibility

All fields on the proposed route of the pipeline have been in arable use on most dates of photography. Elsewhere in the Study Area there are two small fields, both close to Chilton Grange, that appear to be permanent pasture. Arable use offers the best opportunities for seeing features from the air although this depends on the type of crop and date of photography. Among the photographs examined there have been two dates on which crop-marked evidence was especially good: 13 July 1962 and 12 March 1989. The former is a 'normal' summer date, the latter somewhat unexpected but a time at which crop responses seemed to be in what may have been 'under growth' in stubble fields – something observed elsewhere but usually in August or September. The sum of the evidence on those and the other photographs suggest that the area may be devoid of sub-surface archaeological features although their absence on aerial photographs is no guarantee of their real absence.

REFERENCES

Bewley, R. H., 1994. *Prehistoric Settlements.* Batsford/English Heritage, London.

OS, 2007. http://www.ordnancesurvey.gov.uk/productpages/landline/positional-background.htm

Scollar, I., 2002. Making things look vertical, in Bewley, R.H. and Rączkowski, W., (ed). *Aerial archaeology: developing future practice*. NATO Science Series, Vol **337**, 166-172.

SSEW, 1983. *Soils of England and Wales: sheet 4: Eastern England (1:250,000)*. Soil Survey of England and Wales, Harpenden.

APPENDIX

Aerial photographs examined

Source: Cambridge University Collection of Aerial Photographs (web search 12 Jan 2007)

Oblique photographs

PQ 12	14 April 1955
PQ 13-16	14 April 1955
AKR 33	1 April 1965
BPK 20-21	6 February 1974

Vertical photographs

RC8-AA 252	2 November 1971	1:8000
K17-AL 77	23 June 1976	1:15000

Source: National Monuments Record: Air Photographs (cover search 9436)

Specialist collection

TL8842/4	9 June 1977
TL8941/1-3	5 June 1980
TL8942/5	9 June 1997

Vertical collection

RAF/106G/LA/227: 2028-2032	17 April 1945	1:10000
RAF/106G/LA/227: 2088	17 April 1945	1:10000
RAF/3G/TUD/UK/119: 6150-6151	3 April 1946	1:10200
RAF/3G/TUD/UK/119: 6172-6173	3 April 1946	1:10200
RAF/3G/TUD/UK/119: 6232-6233	3 April 1946	1:10200
RAF/58/216: 5104-5105	18 April 1949	1:8000
RAF/58/299: 5218	5 August 1949	1:7700
RAF/58/480: 5124	5 June 1950	1:8000
RAF/58/480: 5169-5171	5 June 1950	1:8000
RAF/58/480: 5224-5226	5 June 1950	1:8000
RAF/58/480: 5228	5 June 1950	1:8000
RAF/58/480: 5267	5 June 1950	1:8000
RAF/58/480: 5329	5 June 1950	1:8000
RAF/58/575: 5147	5 October 1950	1:8000
RAF/540/706: 3079-3084	9 April 1952	1:5100
RAF/540/706: 3102-3106	9 April 1952	1:5100
RAF/540/706: 4079-4083	9 April 1952	1:5100
RAF/58/955: 3122-3127	23 September 1952	1:5000
RAF/58/955: 3150-3154	23 September 1952	1:5000
RAF/58/955: 4129-4133	23 September 1952	1:5000
RAF/58/955: 4151-4154	23 September 1952	1:5000
RAF/58/4646/F44: 581-582	28 August 1961	1:12000
RAF/58/5304/F22: 24-25	13 July 1962	1:10000
RAF/58/5304/F22: 36-38	13 July 1962	1:10000
OS/67064: 16-19	27 April 1967	1:7500
OS/67064: 30-33	27 April 1967	1:7500
OS/72092: 46-50	21 April 1972	1:5000
OS/72092: 57-61	21 April 1972	1:5000
OS/74091: 160-162	30 May 1974	1:7500
OS/74091: 182-184	30 May 1974	1:7500
OS/74232: 381-383	17 September 1974	1:7500
MAL/80040: 223, 225	16 December 1980	1:12000
MAL/80040: 227	16 December 1980	1:12000
OS/89041: 49-53	12 March 1989	1:5200
OS/89041: 60-65	12 March 1989	1:5200
OS/89061: 182-185	30 March 1989	1:8100
OS/93337B: 256-257	7 June 1993	1:7800

OS/93337B: 366-367	7 June 1993	1:7800
OS/96246: 87	22 July 1996	1:8100
OS/96246: 166-167	22 July 1996	1:8100

Most informative photographs

K17-AL 77
RC8-AA 252
RAF/58/480: 5226
OS/72092: 58
OS/96246: 166
TL8941/3

TERMS AND CONDITIONS

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We suggest that if a period of 6 months or more elapses between compilation of this report and field evaluation new searches are made in appropriate photo libraries. Examination of any newly acquired photographs is recommended.

That the original working documents (being interpretation overlays, control information, and digital data files) will remain the property of Air Photo Services and be securely retained by it for a period of three years from the completion date of this assessment after which only the digital files may be retained.

It is requested that a copy of this report be lodged with the relevant Sites and Monuments Record within six months of the completion of the archaeological evaluation.

Appendix 3. Context database

context	feature	description
0202	0202	Surface finds from field surface prior to soil strip
0203	0203	Shallow pit
0204	0203	Fill of shallow pit (sampled for 'industrial activity' - < 1
0205	0205	East-West ditch
0206	0205	Fill of ditch [0205]
0207	0207	Excavated segment of ditch [0205] at West end.
0208	0208	Excavated segment of ditch [0205] at Centre.
0209	0208	Upper fill of ditch 0205 within seg 0208
0210	0208	Lower fill of ditch 0205 within seg 0208
0211	0211	Excavated segment of ditch 0205 at East end
0212	0211	Fill of ditch 0205 in Seg 0211. (Sampled for 'ind activit
0213	0205	Surface (unstrat) finds from stripped surf of ditch 0205

Appendix 4. Field-walking and excavation finds

Ctxt	CBM No	Wt	Pot No	Wt	Flint No	Wt	Bt Flint No	Wt	C pipe No	Wt	Glass No	Wt	Miscellaneous
0010	57	744	3	33	2	13	5	2843	1	2			
0011	24	434	4	39	2	3	2	26					
0012	5	98	1	2									
0013	10	112	2	63	1	1	2	143					
0014	1	20	1	8			1	27					
0015	17	138	1	14			4	57			1	1	
0016	3	77			1	22							
0017	20	183	2	10			2	115					
0018	5	140	1	3									
0019	18	232	9	98							1	46	Flint with fossil 1 @ 10g
0020	8	238	3	78			1	150					Shell 1 @ 12g
0022	13	379											
0023	3	164	4	116	1	4							
0024	19	430	1	32			3	25					
0025	6	172	1	9									
0026	14	369											
0027	7	159	1	6									

Ctxt	CBM No	Wt	Pot No	Wt	Flint No	Wt	Bt Flint No	Wt	C pipe No	Wt	Glass No	Wt	Miscellaneous
0028	14	1375			1	21	1	233					Animal bone 1 @ 50g
0029	8	260											
0030	17	623	1	1			5	83					
0031	3	51					1	10					
0032	3	234					5	179					
0033	3	61											
0034	12	283					1	140					
0035	3	32											
0036	3	193	9	179	1	1	3	364					
0037	7	343											
0038	2	35					1	4					
0041	2	44											
0042	14	374											
0043	1	32	1	21									
0044	31	554	2	16			2	30					
0045	1	20											
0046	17	384											Cinder 1 @ 2g
0047	11	265											
0048	10	334					1	37					
0049	2	19											
0050	3	23											

Ctxt	CBM No	Wt	Pot No	Wt	Flint No	Wt	Bt Flint No	Wt	C pipe No	Wt	Glass No	Wt	Miscellaneous
0051	3	43											
0052	15	163					1	16					
0053	1	11			1	7							
0054	2	57	1	11									
0055	2	5	1	7									
0058	2	25											
0059	1	29											
0062	1	9									1	24	
0063	2	19					1	21					
0064	3	95											
0065	2	15											
0066	2	30											
0068	2	59											
0070	1	26	1	3									
0071	3	7	1	4									
0072	3	55											
0073	1	22					1	25					
0075	2	69											
0076	1	10											
0077					1	36							
0078	3	15					1	27					

Ctxt	CBM No	Wt	Pot No	Wt	Flint No	Wt	Bt Flint No	Wt	C pipe No	Wt	Glass No	Wt	Miscellaneous
0080	4	62	1	3									
0082	6	62											
0083	5	64											
0085	5	85											
0086	6	109											
0087	9	145											
0088	1	15											
0089	3	44			1	1							Slate 1 @ 8g
0090	8	185											
0091	1	4											
0092	3	35											
0093	1	21					1	134					
0095	2	21					1	9					
0096	4	55	1	5	1	3							
0098	1	19			1	7	1	99					
0099	3	61											
0100	1	25											
0101	1	21											
0102	1	10											
0103	1	28			1	3							
0104	7	76	1	60									

Ctxt	CBM No	Wt	Pot No	Wt	Flint No	Wt	Bt Flint No	Wt	C pipe No	Wt	Glass No	Wt	Miscellaneous
0105	2	7											
0106	2	39											
0107	4	36											
0108	10	150											
0109	8	96	1	4									
0110	13	110											
0111	3	43			2	15							
0113	15	127	1	4							1	9	
0114	3	69											
0115	4	52					2	140					
0116	3	33	2	43									
0117	4	85	2	27									
0118	8	139			1	5			1	4			
0119	6	110	1	11									
0120	4	65											
0121	6	103							2	3	2	2	Coal 1 @ 1g
0122	8	156	1	26									
0123	4	44					1	26					
0124	1	28	2	17									
0125	3	21											
0126	4	89											

Ctxt	CBM No	Wt	Pot No	Wt	Flint No	Wt	Bt Flint No	Wt	C pipe No	Wt	Glass No	Wt	Miscellaneous
0127	2	25			1	1							
0128	8	76	2	16									
0129	2	46					1	20					
0130	3	16											
0131	7	82			1	2							Stone 1 @ 99g
0132	2	28	1	9									
0133	1	1	2	28			1	18	1	1			
0134	3	43											
0135	2	31					1	22					
0136	3	42											
0137	2	28							1	1	1	5	
0138	2	16	1	14									
0139	1	10									1	4	
0140	4	133											
0141	2	44											
0142	4	51	1	23									
0144	1	15					1	38	1	4			
0145			1	6			2	8	1	2			
0146	2	40	1	4			1	6					
0147	3	31	2	4	2	5	1	24					
0148	3	65							1	3			

Ctxt	CBM No	Wt	Pot No	Wt	Flint No	Wt	Bt Flint No	Wt	C pipe No	Wt	Glass No	Wt	Miscellaneous
0149	2	39	1	6			4	19					
0150	3	66	2	9									
0151	2	39			1	1	1	20					
0152	2	23											
0195	3	50											
0202	4	628	36	945									
0204			1	3									
0206			9	62									
0209			16	108	3	14	1	5					Animal bone 6 @ 20g
0212	2	19	3	23									Coal 2 @ 5g
0213			8	113									Animal bone 2 @ 37g

Appendix 5. Field-walked pottery

Context	Fabric	Sherd No	Weight (g)	State	Comments	Fabric date range
0011	GX, GRE, LPME	4	39	Abr	Base (LPME)	Roman & Post-medieval
0012	GX	1	2	Abr		Roman
0013	ESW, GRE	2	63	Abr	The stoneware fragment looks like piping	17th to 19th C
0014	GX	1	8	Abr	Bowl-jar rim	Late 2nd to 4th C
0015	ESW	1	14	Abr		17th to 19th C
0010	GRE, LPME	3	33	Abr	Plant pot rim	18th to 20th C
0017	?IGBW	2	10	Abr	One very small tile fragment?	16th to 18th C
0018	GX	1	3	Abr		Roman
0019	BSW, GX, ?ST	9	98	Abr	Some of the Roman fabriocs are Romanising	Roman
0020	GX, NVC, ESW	3	78	Abr		Roman & Post-medieval
0023	BSW, GX	4	116	Abr	One base fragment	Roman
0024	BSW	1	32	Abr	Whole base	Roman
0025	GROG-S	1	9	Sli		LIA to AD60/70
0027	GSW4?	1	6	Sli	Could be an English stoneware	16th to 17th C
0030	GX	1	1	Abr		Roman
0036	GX, STOR	9	179	Abr	Three jar rims one 4.5/6 and a Going G42 storage type	2nd to 4th C
0043	GRE	1	21	Abr		16th to 18th C
0044	REFW, TPE	2	16	Abr		18th to 20th C

Context	Fabric	Sherd No	Weight (g)	State	Comments	Fabric date range
0054	BUF	1	11	Abr		?Roman
0055	BSW	1	7	Abr	Base fragment	Roman
0070	GX	1	3	Abr		Roman
0071	GRE	1	4	Abr	Chamber pot or jug handle	16th to 18th C
0080	?GRE	1	3	Abr	Very tiny fragment of rim	16th to 18th C
0096	IGBW	1	5	Abr		16th to 18th C
0104	HFW1	1	60	Abr	Jug handle, some traces of glaze remain	Mid 12th to mid 13th C
0109	GX	1	4	Abr		Roman
0113	LPME	1	4	Abr	Plant pot rim	18th to 20th C
0116	ESW, LGRE	2	43	Abr	Dish rim (LGRE)	17th to 19th C
0117	ESW, ?ESWS	2	27	Abr	Two bases	17th to 19th C
0119	GRE	1	11	Very	Dish rim	16th to 18th C
0122	GRE	1	26	Abr	Possibly a lightly later version of the fabric	16th to 18th C
0124	GX, ?HFW1	2	17	Abr	Jug rim (?HFW1), no glaze traces are present	Roman & medieval
0128	GX, ?IGBW	2	16	Abr	Lid seated jar 4.4	Roman & Post-medieval
0132	ESW	1	9	Abr		17th to 19th C
0133	TPE, REFW	2	28	Abr		18th to 20th C
0138	GRE	1	14	Very		16th to 18th C
0142	ESW	1	23	Abr		17th to 19th C
0145	LPME	1	6	Sli	Plant pot rim	18th to 20th C
0146	UPG	1	4	Abr	Traces of glaze	Late 12th to 14th C

Context	Fabric	Sherd No	Weight (g)	State	Comments	Fabric date range
0147	GRE, REFW	2	4	Abr		16th to 20th C
0149	TPE	1	6	Abr		18th to 20th C
0150	GX, RX	2	9	Abr		Roman

Appendix 6. Field-walked worked flint

Context	Type	No	Patinated	Notes	Date disc
0010	flake	1	U	Retouched and notched flake	Later Preh
0010	flake	1	LP	Snapped flake	Later Preh
0011	flake	1	U	Small and notched	Later Preh
0011	flake	1	U	Small	Later Preh
0013	flake	1	U	Small and hinge fractured	NEO or EBA
0016	flake	1	U	Thick and squat	Later Preh
0023	flake	1	LP	Squat flake	Later Preh
0028	flake	1	P	Squat and retouched	Later Preh
0036	spall	1	U		
0053	flake	1	LP	Retouched	?NEO-EBA
0077	flake	1	U	Thick and snapped	Later Preh
0089	flake	1	U	Small, squat and hinge fractured	Later Preh
0096	flake	1	P	Small, squat and hinge fractured with limited edge retouch	Later Preh
0098	flake	1	U	Snapped and thick with steep edge retouch	Later Preh
0098	spall	1	U		
0103	flake	1	U	Small and retouched	Later Preh
0111	flake	1	U	Thick with limited edge retouch and hinge fracture	Later Preh
0111	flake	1	U	Thick with crude edge retouch	Later Preh

Context	Type	No	Patinated	Notes	Date disc
0118	flake	1	U	Snapped with a small notch	Later Preh
0127	flake	1	LP	Small, snapped with limited edge retouch	Later Preh
0131	flake	1	U	Small, squat with hinge fracture	Later Preh
0147	flake	1	U	Small	Later Preh
0147	flake	1	U	Small with limited edge retouch	Later Preh
0151	spall	1	U		

Appendix 7. Excavation pottery

Context	Fabric	Form	No	EVE	Weight (g)	State	Comments	Fabric date	Context date
0202	GRE	Jar	1	0.05	55	Abr	Jennings fig 73	16th to 18th C	Predominantly
0202	GRE	?Jar	1	0.06	9	Abr		16th to 18th C	Roman
0202	MCW	Cpot	1	0.11	40	Sli		L12th to 14th C	
0202	STOR	Body	4	0	241	Abr	One with clay pellets	Roman	
0202	STOR	Jar 4.1	1	0.04	48	Sli	Undercut rim like Going G45.1	2nd to 3rd C?+	
0202	STOR	Jar	1	0.07	280	Sli	Style of Going 42, too small	3rd to 4th C?	
0202	SARZ	Body	1	0	2	Very	Sherd is also shattered	Early 2nd to mid	
0202	UCC	Body	1	0	1	Abr		Roman	
0202	GROG	Body	5	0	56	Abr		LIA to c AD60/70	
0202	GMG	Body	2	0	4	Abr		Roman	
0202	BSW	Jar	1	0.02	1	Sli	Too small	Roman	
0202	BSW	Dish 6.	1	0.02	11	Sli	Going B3.2 style	Mid 2nd to 3rd/4t	
0202	BSW	Body	3	0	25	Sli		Roman	
0202	GX	Body	7	0	58	Abr-sli	Like Essex fabrics	Roman	
0202	GX	Base	1	0	38	Abr	0.50	Roman	
0202	GX	Dish 6.	1	0.07	24	Sli	Plain-rimmed	Early 2nd to 4th	
0202	GX	?Dish	1	0.02	2	Sli	Flange fragment?	2nd C+	
0202	GX	Jar 4.6	2	0.11	20	Sli	Going style G24/25	2nd to 4th C	

Context	Fabric	Form	No	EVE	Weight (g)	State	Comments	Fabric date	Context date
0202	GX	Bowl-j	1	0.07	30	Sli	Going E2	Late 2nd to 4th C	
0204	GROG	Body	1	0	3	Sli		?LIA to c AD60/7	?LIA to C AD60/70
0206	BSW	Body	6	0	17	Abr-sli	Looks like an earlier Roman fabric	Roman	Roman (early?)
0206	GROG	Body	1	0	30	Abr	Could be a storgae jar sherd	LIA+	
0206	GX	Body	2	0	15	Sli		Roman	
0209	GX	Body	3	0	23	Abr-sli		Roman	Mid 1st to early/mid 2nd C
0209	RX	Base	1	0	9	Abr	0.14	Roman	
0209	?GMB	Bowl/j	1	0.06	12	Sli	Close to BSW. Flange/bowl or jar rim	Roman	
0209	BSW	Body	6	0	37	Sli	Various fabrics	Roman	
0209	BSW	Jar 5.1	1	0.04	6	Sli	Going G16-19 style	?Mid 1st to early/	
0209	HMSO	Body	3	0	18	Sli		IA	
0209	HMSO	Jar	1	0.02	3	Sli	Upright rim with flattened top	IA	
0212	GROG	Body	1	0	5	Sli		LIA to c AD60/70	?Mid to later 1st C?+
0212	BSW	Body	1	0	6	Sli		Roman	
0212	GX	Body	1	0	12	Sli		Roman	
0213	RX	Body	1	0	15	Sli		Roman	Roman
0213	GMG	Base	2	0	31	Sli	1.00	Roman	
0213	GX	Body	1	0	15	Sli		Roman	
0213	GX	Base	1	0	12	Sli	0.12	Roman	
0213	GX	Jar	1	0.07	14	Sli	Too small	Roman	
0213	BSW	Body	1	0	7	Abr		Roman	

Context	Fabric	Form	No	EVE	Weight (g)	State	Comments	Fabric date	Context date
0213	BSW	Jar	1	0.1	19	Sli	Too small	Roman	