

PETERBOROUGH TO MARCH LINK, PHASE II: THE KING'S DELPH TO LINWOOD PIPELINE, CAMBRIDGESHIRE

An Archaeological Evaluation



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Jonathan L. Tabor

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Event No. ECB 2827

Report No. 818

March 2008

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An archaeological evaluation was undertaken by Cambridge Archaeological Unit (CAU) in January and February 2008, along the proposed route of a water supply pipeline, as part of the Anglian Water Peterborough to March reinforcement scheme. The proposed pipeline route links King's Delph reservoir, Whittlesey (TL 234 960), in the west, to Linwood reservoir, Wimblington (TL 409 935), in the east. The work was commissioned by Grontmij Ltd on behalf of Anglian Water Services Ltd and comprised a programme of trial trenches and 4x4m test pits located in order to evaluate three areas of archaeological and palaeoenvironmental potential (Areas A-C) along the proposed route.

The archaeological remains exposed along the proposed route of the pipeline were confined to two areas of high ground, or formerly 'dry land' (Areas A and C), at each end of the route. In Area A, remains provisionally dated to the later prehistoric period in the form of a possible pit alignment and ditch occupying the fen edge were exposed. A series of four parallel ditches, one of which contained a fragment of Late Bronze Age / Early Iron Age pottery, were also exposed on the crest of the high ground. In Area C, evidence of later prehistoric land division was encountered in the form of a series of ditches, two of which yielded Late Bronze Age / Early Iron Age pottery fragments. Further potential phases of land division or drainage are also represented by a number of undated ditches. An area of low lying fen (including Area B), measuring some 16km in length, which divides the two areas was confirmed to be of low archaeological potential.

The results of the investigations have also added considerably to our knowledge of the palaeoenvironment and sedimentary sequence in the Whittlesey area (Area A), enhancing the results of previous work in the vicinity as well as providing a context for archaeological remains exposed in Area A.

INTRODUCTION

An archaeological evaluation was undertaken by Cambridge Archaeological Unit (CAU) along the proposed route of a water supply pipeline, as part of the Anglian Water Peterborough to March reinforcement scheme. The proposed pipeline route (Figure 1) extends from King's Delph reservoir, to the west of Whittlesey (TL 234 960), in the west, to Linwood reservoir, north of Wimblington (TL 409 935), in the east, crossing 18.66km of agricultural land.

The project was undertaken on behalf of Grontmij Ltd for Anglian Water Services Ltd. The evaluation, comprising trial trenching and test pits, was carried out in January and February 2008.

Geology and topography

The route of the proposed pipeline covers an area typical of low-lying fenland and links two areas of 'high ground' at Whittlesey and Wimblington, separated by an expanse of fen stretching for over 16km.

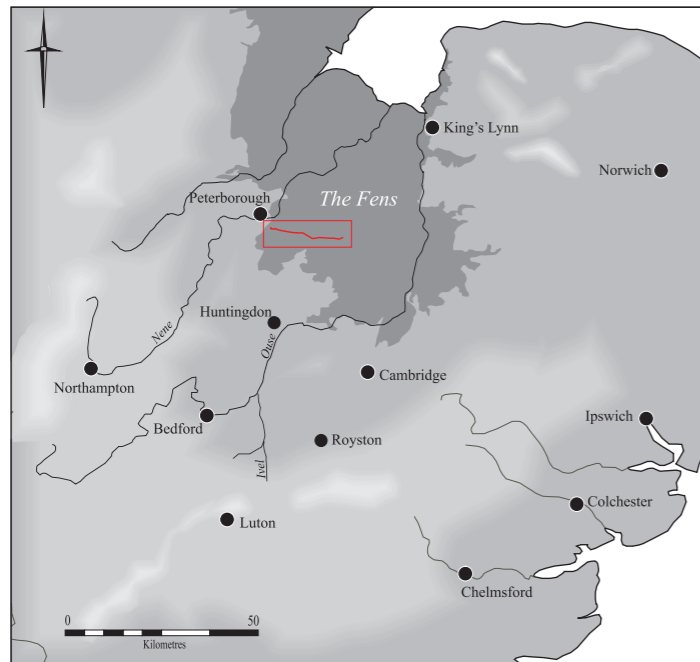
At the west end of the proposed pipeline in King's Delph, Whittlesey, the pipeline route runs south, immediately ascending a gradual north facing slope reaching a height of *c.*4m OD before turning eastwards. From here the land surface falls away gradually as the higher ground, formed by Jurassic Oxford Clay – which underlies almost the entire route - overlain by clay till deposits, gives way to deep fen deposits.

The deposits in the area of 'deep fen' between Whittlesey and Wimblington largely comprise intertidal sediments known as the Barroway Drove Beds - representing Bronze Age marine incursion – often overlying Holocene silty clays and organic sediments. In some areas an Iron Age Nordelph peat remains intact above the Barroway Drove Beds. The area of deep fen is dissected by a multitude of palaeochannels or 'roddons' representing tidal creeks and former courses of the River Nene. A major roddon system is located at Floods Ferry, midway along the proposed pipeline route.

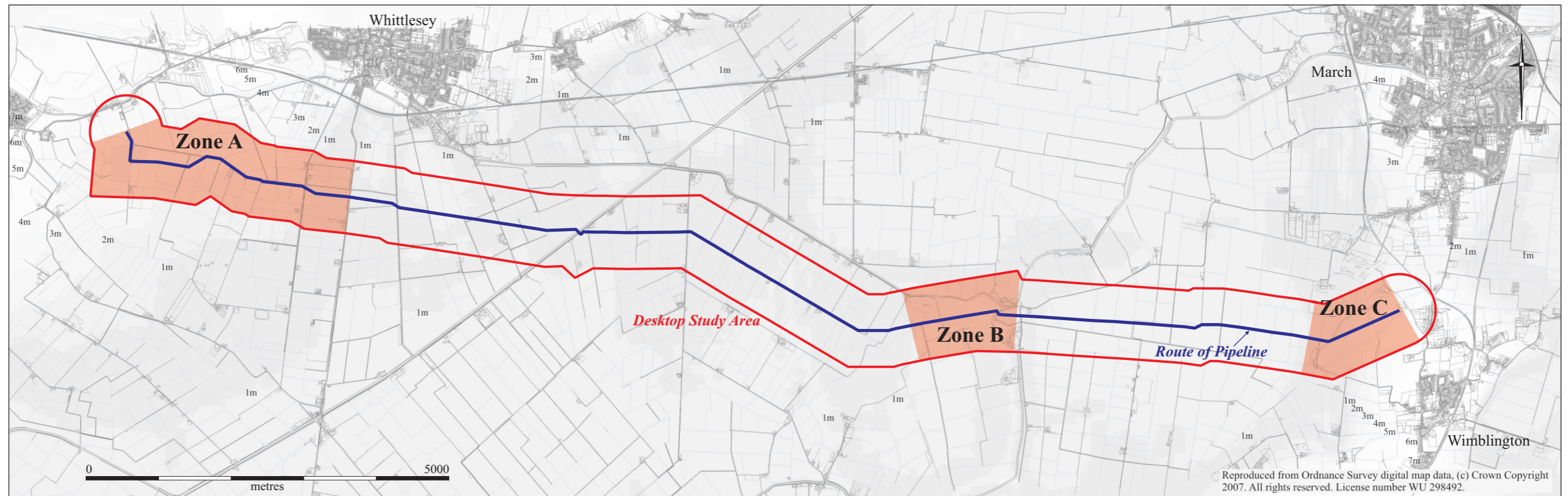
At the east end of the proposed pipeline the land surface ascends to a maximum height of 3m OD at Linwood reservoir as the route passes onto the higher ground of the March-Wimblington ridge. Here the geology comprises Ampthill Clay and chalky boulder clay overlying Jurassic Oxford Clay.

Archaeological background

The proposed pipeline route traverses an area which can be divided into three landscape zones; the high ground and associated fen edges at Whittlesey, to the west and March / Wimblington, to the east, and the expanse of drained fenland which lies between. Based on previous work, particularly around Whittlesey, it is clear that there is a strong correlation between elevation and archaeological potential. As such the areas of high ground and associated fen edges at Whittlesey (Area A) and March / Wimblington (Area C) have been identified as sites of higher archaeological potential with one further area at Floods Ferry (Area B) identified as a site of moderate archaeological potential (Figure 1). A full account of



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Figure 1. Location of the Whittlesey to Wimblington pipeline showing the main evaluation areas A-C and the desktop study area.

the archaeological and historical background of the area along the proposed route is detailed in the desk-based assessment (Appleby et al. 2007). The archaeological background is summarised below.

Prehistoric

A long history of fenland research has highlighted the archaeological potential of fen edge locations in terms of prehistoric occupation and utilisation of natural resources. Recent work around Whittlesey (Area A) has identified a particularly strong prehistoric presence in the area, which coincides with often exceptional preservation of archaeological remains. Bronze Age sites are particularly well documented with barrow complexes occurring on the high ground around Whittlesey at Eldernell and Suet Hills as well as two barrows at Must Farm immediately to the north-west of King's Delph reservoir. Recent excavations at Must Farm have also revealed a Bronze Age timber alignment, contemporary to the early timber post at Flag Fen (Knight pers comm) as well a timber platform, or crannog site. The timber platform site in particular was exceptionally well preserved within the silts of a palaeochannel and yielded a significant artefactual assemblage including preserved timbers, complete pottery vessels, glass beads, textiles and terminal Late Bronze Age metalwork. Further north, evidence of Neolithic, Bronze Age and Iron Age settlement has been excavated at quarry sites at Bradley Fen Farm, Bradley Fen and King's Dyke and recent evaluation and excavation at Must Farm (Evans *et al* 2005; Tabor 2008) indicates settlement activity extending into this area. Iron Age settlement is also recorded at Black House Farm and Bunting's Farm immediately to the south of the proposed pipeline route (Phillips 1970), and south of Horsey Hill fort, c. 1km to the east (Kenney 2007).

In contrast, the high ground and fen edge at March / Wimblington (Area C), at the eastern extent of the proposed pipeline route has yielded only limited evidence of prehistoric activity. Mesolithic and Bronze Age scatters are recorded on the western fen edge of March to the north of Linwood Farm (Hall 1987) but elsewhere the evidence largely comprises stray finds of flint and metalwork. Away from the fen edge no significant prehistoric sites are known, which may be a reflection of the fact that built up areas now largely cover the well-drained gravel belt forming the spine of March island. In the wider area, however, activity within the later prehistoric period is better represented within the archaeological record. Evidence of Late Iron Age settlement has been recorded during archaeological evaluation next to Wimblington Road, March (Cooper 2003) and to the east of Wimblington the remains of a major late Iron Age camp are located on Stonea island (Jackson and Potter 1996).

Roman

Once again, evidence from the Roman period is limited to the areas of high ground at the western and eastern limits of the proposed pipeline route. In the vicinity of Area A, evidence includes the known Roman farmstead or settlement at Bunting' Farm, King's Delph (Phillips 1970) as well as sherds of Roman pottery associated with a ditch at Black House Farm (*ibid.*). South of Horsey Hill fort excavations along a pipeline route also revealed Roman features including a rectangular double ditched enclosure (Kenney 2007). In Area C, a hoard of 816 Roman coins dating from the 3rd century AD was discovered in 1934 during ploughing at Linwood Farm and further finds in the area include a bronze gilt two-piece brooch and Romano-British pottery.

Medieval – Post-Medieval

No medieval remains are recorded within the vicinity of the proposed pipeline route although evidence of Middle Saxon activity was encountered at the Roman site south of Horsey Hill fort (Kenney 2007). However, the exploitation of the fens for fisheries, eel trapping and wildfowl is well attested from at least the 9th century. The drained fenland landscape in its current form dates largely from the post-medieval period and cartographic evidence from the 18th century records the location of early wind pumps and the network of rectilinear fields divided by drainage ditches. Early mapping in the form of Bleau's 1645 map also depicts Flood's Ferry (Area B) - which lies on the route of the proposed pipeline - as an island and therefore, an area of possible habitation in the pre-drainage landscape.

Methodology

The project was undertaken in accordance with a project design specification (Standing 2007) produced in response to a brief for archaeological evaluation written by K. Gdaniec (2007) of Cambridgeshire Archaeology Planning and Countryside Advice. The evaluation comprised successive phases of trial trenching and test pits in three areas of archaeological potential (Areas A, B and C) identified along the proposed pipeline route and based on the landscape zones discussed above. The work was carried out in full accordance with the IFA's *Standard Guidance for Archaeological Field Evaluations*.

4x4m test pits

A programme of 40, 4x4m test pits was undertaken along the proposed pipeline route in order to evaluate archaeological potential in areas of deeper deposits and model the palaeotopographic landscape as well as recover environmental samples of significant deposits. Test pits were concentrated in areas of archaeological potential (Areas A-C) with intervening test pits excavated in order to gain an understanding of the environmental sequence along the whole route. The test pits were excavated using a 360° tracked excavator fitted with a toothless bucket. The sides of the test pits were stepped where necessary and all recording was undertaken from the trench edge. The depositional sequence, including depth and description of deposits, of each test pit was recorded and a digital photographic record maintained.

Trial trenching

A total of 26 trenches were excavated in Areas A and C in order to evaluate areas of 'high ground' and associated fen edge zones at each end of the proposed route. The trial trenches were excavated using a 360° tracked excavator fitted with a toothless bucket and operating under direct archaeological supervision at all times.

The trenches were located using an advanced Global Positioning System (GPS) with Ordnance Datum (OD) heights obtained. Potential archaeological features were planned at a scale of 1:50 and subsequently sample excavated. All potential features were hand excavated and archaeological finds retained. Where potential buried soils were encountered, 90 litre samples were hand sorted for archaeological finds. A written record of archaeological

features and environmental sequences was created using the CAU recording system (a modification of the MoLAS system) and sections drawn at an appropriate scale.

RESULTS

Geology and palaeoenvironment (Dr. Steve Boreham)

Introduction

This study focuses on sediments obtained from trial pits excavated at strategic locations along the route of a proposed east-west pipeline between Whittlesey and Wimblington, Cambridgeshire. Attention was particularly focussed on the eastern (Whittlesey) and western (Wimblington) ends of the pipeline. Excavations in Area A (Whittlesey) from King's Delph to Black Bush (Figure 2) comprised 20 trial pits (TP21-40) positioned to investigate the nature of the sediments at the eastern fen-edge including Bronze Age marine incursion deposits identified by Waller (1994) at Underwood's Grounds, Whittlesey, and by Boreham (2006) at Horsey Hill, Stanground. Two additional trial pits (TP19 & 20) were dug at Park Farm, Whittlesey (Figure 2) to investigate the 'deep fen' sequence between Area A (Whittlesey) to the east and Area B (Floods Ferry) to the west. Eighteen trial pits (TP1-18) were dug in Areas B and C (Floods Ferry - Wimblington) from White Fen Farm, Flood's Ferry, across Ranson Moor to Linwood House, Wimblington (Figure 3). These trial pits were positioned to investigate palaeochannel (roddon) features identified from aerial photography (Palmer 2008) at Flood's Ferry, and to investigate the nature of the western fen-edge at Wimblington.

At all trial pits, the stratigraphy of the exposed faces was logged and photographed by members of the CAU under the supervision of Jonathan Tabor. In addition, the author visited several key excavations in Areas A and B to make detailed supplementary notes and to take bulk samples for possible further work. In Area A (Whittlesey) Simon Timberlake (CAU) also made detailed notes of the stratigraphy and palaeoenvironmental observations at a number of locations. The logs from the 40 trial pits undertaken in this study appear in Appendix B.

Area A (Whittlesey)

The trial pits undertaken in this study, and earlier investigations in this area are shown in Appendix A, Figure 1a. The deposits at Underwood's Ground were investigated as part of Martyn Waller's (1994) Fenland Project report. The main debate at that time surrounded a possible southern course of the River Nene between Whittlesey and Black Bush and the westward extent of Bronze Age marine sediments. A 6m deep buried channel filled by Holocene sediments had been identified by Burton & Robson (1985) following this course, and Hall (1987) believed that the large roddon at Black Bush (see TP 39 & 40) represented a Bronze Age tidal creek in the same position. Waller's north-south transect of boreholes at Underwood's Ground followed a curious north-south aligned ridge or roddon which linked higher ground with pre-Holocene sediments to the south, to a further roddon near Manor

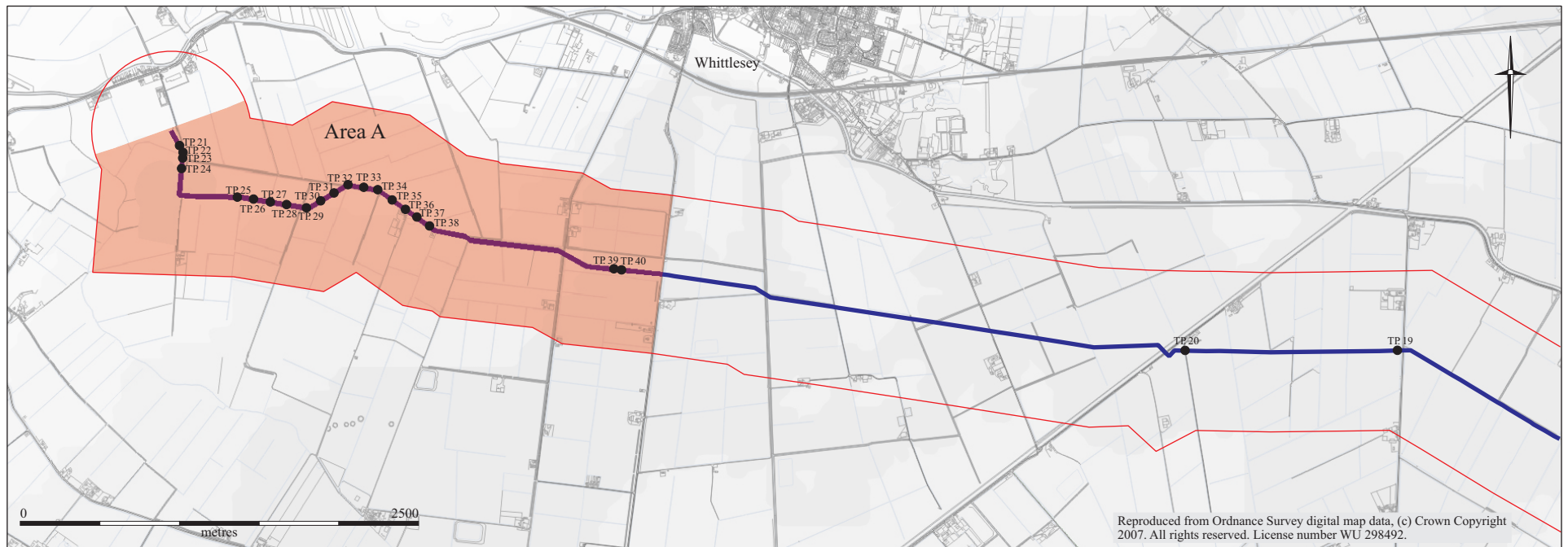


Figure 2. Location of test pits in Area A.



Figure 3. Location of test pits in Areas B and C.

Farm to the north. Note that the key to geological symbols used appears in Appendix A, Figure 4.

Underwood's Grounds

The borehole transect from Underwood's Grounds (Appendix A, Figure 2) shows Holocene sediments 4-6m thick in the northern part of the transect overlying presumably pre-Holocene silty sand, and a deeper 8m thick sequence (TL29044) filling a palaeo-channel running east-west against the rising land to the south. This is interpreted as a main Holocene distributary channel of the River Nene. The lower peat and silty/clayey peat unit represents freshwater fen and wet-woodland sedimentation, and is thought to date from the late Mesolithic/early Neolithic through to the early Bronze Age. The overlying silty clays and the silty sand 'roddon' channel-fill (TL29052) are thought to represent the mudflat, saltmarsh and tidal creek environments of the mid-Bronze Age marine incursion. The British Geological Survey (BGS) assigns the name 'Barroway Drove Beds' to this complex of intertidal facies. Above this, a thin overgrowth of peat (the Nordelph Peat of the BGS) thought to date to the Iron Age period can also be seen.

Horsey Hill

In contrast, the geological cross section from Horsey Hill, Stanground (Boreham 2006) shows the situation at the fen edge (Appendix A, Figure 3). This echoes to some extent the Bronze Age stratigraphy described by Waller (1994) from Farcet Fen and Engine Farm to the southwest. At Horsey Hill, a relatively deep (4m) north-south aligned buried channel (T14-15) was found abutting the rising land to the west. This was found to contain early to late Mesolithic silty clays which also occurred as a basal unit overlying pre-Holocene sands and gravels across the area. Above the basal silty clays (interpreted as fluvial sediments), was a lower peat unit dating from the Neolithic and early Bronze Age. The lower peat shows evidence of deposition in freshwater fen and wet-woodland environments. A thin silty clay unit, representing the Barroway Drove Beds mid-Bronze Age marine incursion is present across the area, although indicators of marine conditions within it are hard to find, leading to the suggestion that this might represent the 'backing-up' of freshwater behind the main marine front. There is an overgrowth of peat above the thin silty clay, thought to be Iron Age, and an overlying alluvial silty clay unit covering most underlying features.

King's Delph to Willow Farm (Area A, this study)

In many ways, the geological section constructed from Area A (Whittlesey) in this study (Appendix A, Figure 4) shows an intermediate situation between the fen-edge sequence at Horsey Hill and the Nene channel sequence at Underwood's Grounds. It is clear that towards Narrow Drove (Buntings Farm) trial pits 21-25 show a small buried channel containing silty clay, which is directly comparable to the situation 1km to the east at Horsey Hill. In this location, the lower silty clay (presumably of Mesolithic age and fluvial origin) is overlain by a single upper peat unit indicating reedswamp conditions. However, to the west the first presence of marine incursion sediments is noted between the lower and upper peats at trial pits 27 & 28. Between trial pits 29 and 38, it is apparent that the lower (Mesolithic) silt thins to the west, and is overlain by increasing thicknesses of lower peat. Much of this material

represents deposition in freshwater fen & wet-woodland environments, although some sediments (TP33) show indications of deeper water mere sediments, and others (TP28) have evidence of raised acid Sphagnum bogs. The Barroway Drove Beds here are represented by two discrete bodies of silty clay, presumably indicating two separate 'arms' of the main incursion, linked by silty or clayey peat containing abundant reed swamp material. The overlying upper peat contains abundant sedge remains indicating alkali fen conditions, and thin marly bands that suggest periods of longer inundation. Towards the roddon at Black Bush (TP 39 & 40), the stratigraphy changes markedly so that the silty clays of the Barroway Drove Beds become much thicker, and the base of the lower peat 'dives' down to below -5 m OD at Waller's TL29044 borehole in the Nene palaeochannel. The similarity of the logs from Black Bush and Underwood's Grounds is striking. The 'Fen Clay' roddon originally identified by Hall (1987) south of Whittlesey, is clearly a major feature, but different to the sand roddons (Area C) described elsewhere in this report.

Park Farm (TP19 & 20)

The isolated location of these trial pits means that they cannot be easily linked to the geological sections constructed for Areas A & C (Figure 1). Test pit 19 gives the best sequence, with a basal peat, a thin sand unit and a thicker overlying unit of silty sand (Appendix A, Figure 5). These sediments presumably represent reedswamp conditions (perhaps early Bronze Age) giving way to mid-Bronze Age intertidal sediments, perhaps as part of a tidal creek system. It is likely that these sediments relate directly to the Nene palaeochannel and 'Fen Clay' roddon at Black Bush and Underwood's Grounds, although it is not possible to say exactly how without more data.

Areas B and C (Floods Ferry - Wimblington)

The trial pits undertaken in this study, are shown in Figure 2. The geological section (Appendix A, Figures 1b and 6) runs across roddon features at White Fen Farm, Flood's Ferry, and through Ranson Moor towards the western fen-edge near Linwood House, Wimblington.

White Fen Farm & Flood's Ferry

Trial pits 18-8 run west-east across a pair of linked roddon features identified in the field and from aerial photography (Palmer 2008). The largest of these roddons (Flood's Ferry) is more than 500m across and both are elevated by more than a metre above the surrounding land surface. Many smaller roddons related to minor tidal creek systems were observed in the area. The geological section (Appendix A, Figure 6) shows that the two roddon channels are more than three metres deep and filled with sand. Between and adjacent to the roddons, the lower land is underlain by a thick silty clay unit, with occasional beds of organic material and sand. It is presumed that the roddon channels are cut into the underlying silty clay, although this was not directly observed. Indeed, although the most likely scenario is that these roddon-fills represent major tidal creek systems of the Barroway Drove Beds, the possibility that they may also include later sediments from the Iron Age Terrington Beds marine incursion cannot be entirely discounted. The silty clay unit at Flood's Ferry is correlated with the Barroway Drove Beds Bronze Age marine incursion. However, the lower parts of the silty clay unit

contained shelly organic material (for example TP9) containing strong evidence for freshwater reedswamp conditions, rather than marine intertidal sedimentation. It is therefore a strong possibility that the silty clay represent a composite deposit with an older freshwater facies, and an upper intertidal aspect.

Ranson Moor & Wimblington

Trial pits 7-1 run west-east across the low-lying area of Ranson Moor towards the fen-edge at Wimblington. It is clear that this is a 'deep-fen' sequence, with a basal silty clay unit, a lower peat containing bog-oaks, an upper silty clay representing the mid-Bronze Age marine incursion, and a thin and intermittent upper peat representing Iron Age over-growth. Although different in their proportions, these are essentially the same units identified from Area A in the west. The lower silty clay (for example TP4) may represent early Holocene fluvial sedimentation, although the base of the sequence was not contacted in any of the trial pits from Areas B and C. The lower peat (for example TP6) probably represents a mixture of fen and wet woodland conditions dating from the late Mesolithic to the early Bronze Age. The upper silty clay is correlated with the Barroway Drove Beds and indicates mudflat and saltmarsh conditions. The upper peat unit is very poorly preserved, and very little can be said about its mode of formation.

Synthesis

The evidence from the Whittlesey-Wimblington pipeline excavations suggests that the earliest Holocene (Mesolithic) sediments in this part of Fenland are preserved in deep palaeochannel settings at the fen edge and perhaps at the base of 'deep fen' sequences elsewhere. They are represented by fluvial silty clays and occasionally by more organic sediments. It is known that such sediments can be quite limited in distribution, and are ostensibly absent at Engine Farm and Farcet Fen (Waller 1994). Multiple radiocarbon dates from the lower peat unit in previous studies suggest an interval of the late-Mesolithic to early Bronze Age as the mostly likely time frame. Although fen and wet woodland environments are the most common facies presented, there is occasional evidence for deeper bodies of standing water, and sometimes areas of raised acid Sphagnum bog, particularly at the fen edge. The western fen-edge story is separate, but closely linked to the entry of the River Nene into western Fenland south of Whittlesey. At the extreme fen-edge, the Barroway Drove Beds can be seen to thin between the lower and upper peat units until they are apparently absent, against the rising land. However, it seems clear that across the Whittlesey-Wimblington area as a whole, the Bronze Age marine sediments can take the form of substantial sand roddon channel-fills (Flood's Ferry), 'Fen Clay' roddon channel-fills (Underwood's Grounds), linear sheets of silty clay mudflat and saltmarsh (Ranson Moor), or feather-edge silty reedswamp deposits (King's Delph), and vary in thickness from many metres to a few centimetres. The overlying upper peat (Nordelph Peat of the BGS) is in some places absent, either through destruction, or because it was never deposited. The environments indicated are usually reedswamp, alkali sedge fen or acid raised bog, but occasionally there is the hint of deeper carbonate-rich marly pools that echo the formation of Whittlesey Mere and other lakes to the south in the Iron Age. In some places there is also thin alluvium, which must relate to later Roman and Medieval flood events.

Discussion and Conclusion

This study has provided a useful view of the geology and stratigraphy of Holocene Fenland sediments between Whittlesey and Wimblington. Of particular importance was the Area A investigation, which has successfully linked together the Underwood's Grounds work of Waller (1994) and the fen-edge work of Boreham (2006). This is of particular importance, since it also potentially sheds light on geology and stratigraphy of the important Bronze Age fluvial sediments containing archaeology at Must Farm, Whittlesey. The investigation of the Flood's Ferry-Wimblington (Areas B and C) sequences was also valuable, in that it clearly contrasted both the sand roddons and 'deep fen' sediments, with the Nene channel and fen-edge sequences to the west. Two main themes run through this valuable investigation of Fenland sediments. The first theme is diversity in terms of the different facies and indicated palaeoenvironments across this part of Fenland at different times in the past. The second theme is the uniformity of the stratigraphic sequence for the Holocene sediments.

Sediment samples of key sequences have been taken and retained by the author and by CAU staff.

Archaeological remains

Area A (Figure 4)

A total of ten trial trenches were excavated in Area A in order to evaluate the area of high ground formed by the Jurassic clay and till deposits and the associated fen edges to the north and east.

Of the ten trial trenches excavated six (Trenches 17, 18, 20, 21, 22 and 26) were completely devoid of archaeological features. The majority of the archaeological remains exposed occurred in two concentrations of features, in Trench 23, on the former eastern fen edge, and in Trench 25, on the crest of the high ground. Two further possible features were encountered in Trench 19 and 24. No convincing archaeological features were exposed on the northern fen edge.

Fen edge activity (Trenches 23 and 24, Figure 5)

A concentration of archaeological features comprising a ditch, and an alignment of pits and possible postholes, was exposed at the former fen edge in Trench 23, where the high ground gradually falls away to the east giving way to lower lying deep fen deposits (see Figure 5). As such whilst the 'natural' clay deposits at the western end of Trench 23 were sealed by 0.59m of topsoil, the overlying sequence at the eastern end was 0.72m thick increasing to over 1m in Trench 24 to the east. The archaeological remains in Trench 23, situated midway along the trench, were sealed by up to 0.7m of overburden comprising topsoil and peat.

A linear ditch (F.25) was exposed for a length of 8m and was aligned north-east to south-west, with a ditch terminus at the south-west extent. The fill of the ditch contained frequent flecks of charcoal as well as a small assemblage of later prehistoric flint working debris. Cremated human bone was also recovered from the ditch fill in one area. The cremated bone

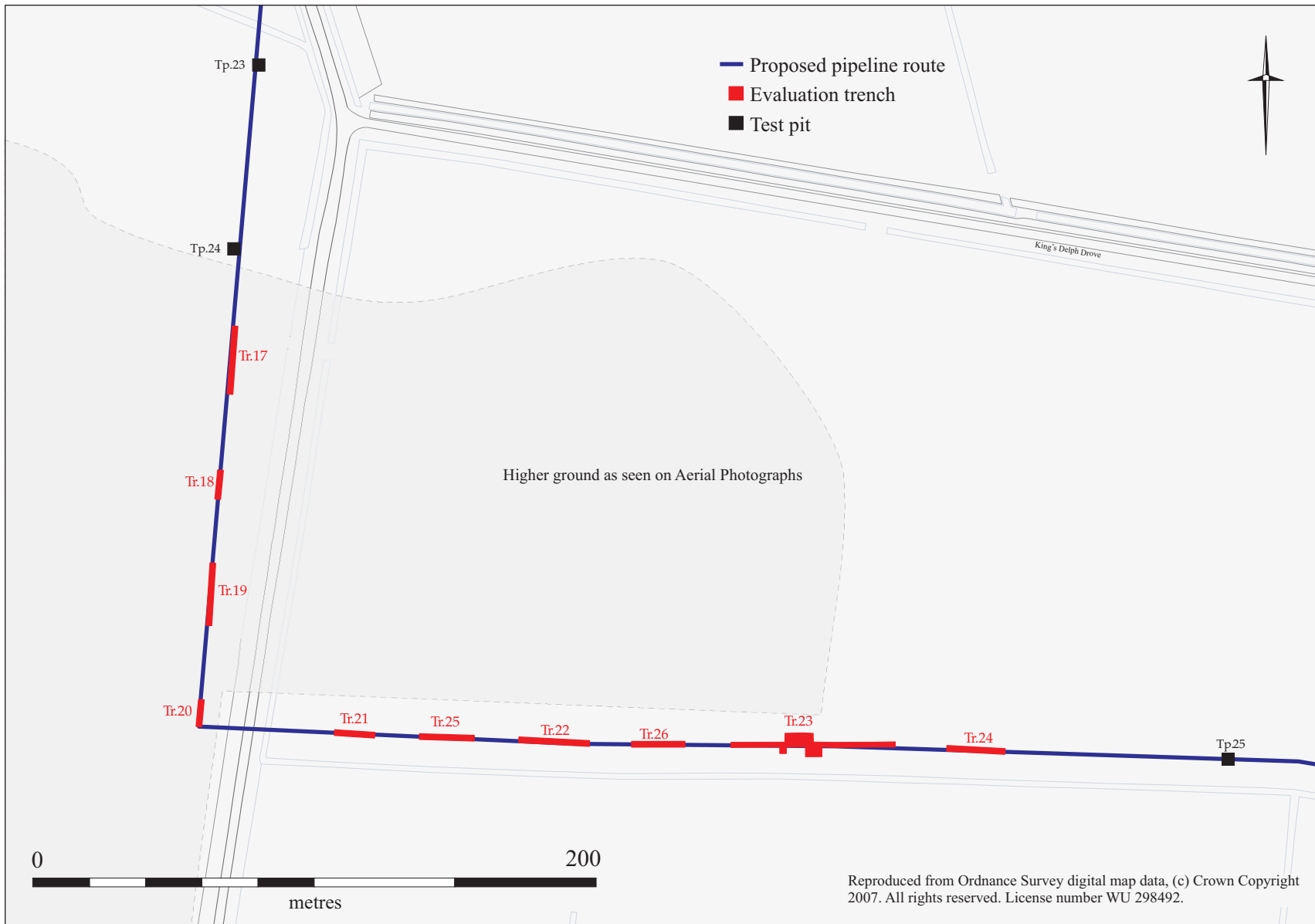


Figure 4. Location of trenches in Area A.

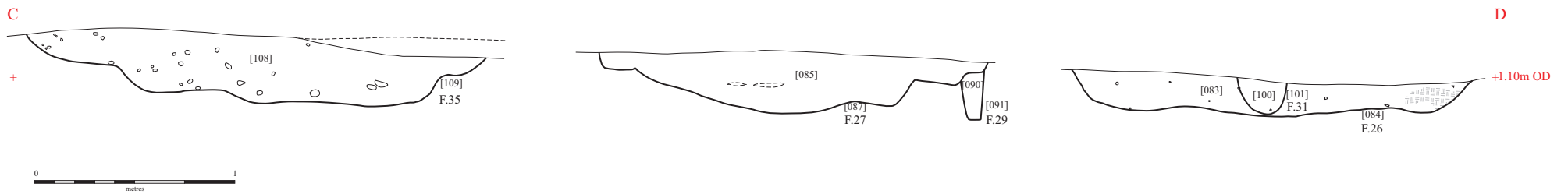
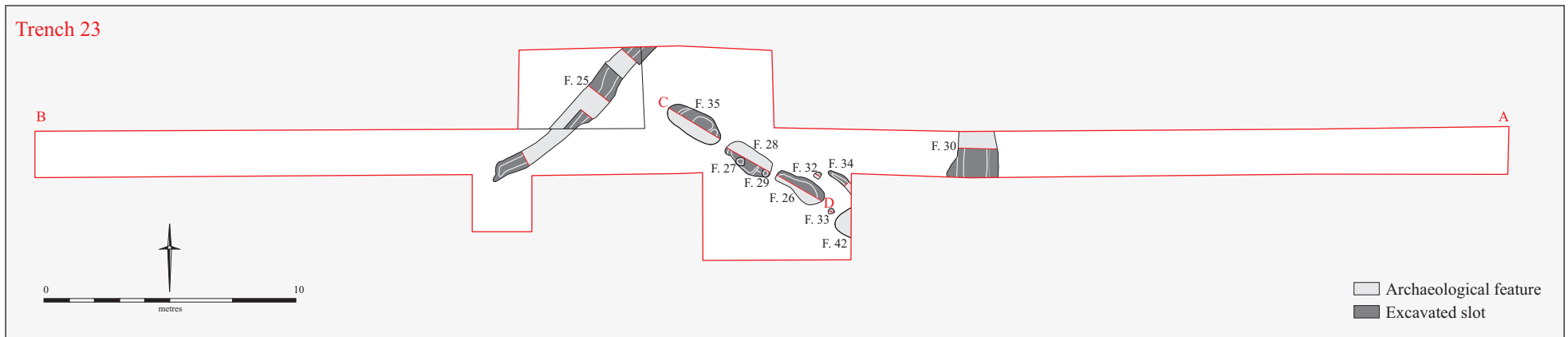
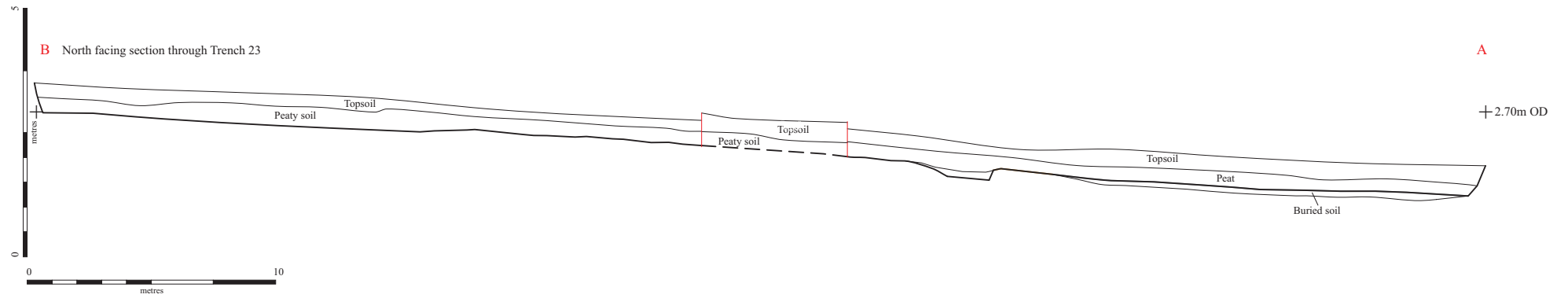


Figure 5. Trench 23.

appeared to have been washed in from a thin deposit of buried soil [130], surviving immediately adjacent to F.25, which yielded larger quantities of cremated human bone. The relatively high percentage of charcoal within the ditch fill would also be explained by cremation deposits in the vicinity.

F. 25 A shallow linear ditch exposed for a length of 8m with an irregular terminus recorded to the south-west. The ditch cut [119] had a shallow rounded V-shaped profile measuring up to 1.3m wide by 0.35m deep. The ditch contained a single mid grey silty clay fill [118] containing occasional flecks of charcoal. Finds: cremated human bone, worked flint, animal bone.

Positioned perpendicular to ditch F.25 and orientated north-west to south-east was an alignment of shallow elongated oval pits situated an average of 0.5m apart (Figures 5 and 6). Whilst one of the pits was seen to extend beyond the limit of excavation to the south-east, the alignment did not appear to continue beyond ditch F.25 to the north-west. The pits were sealed by a thin layer of blanket peat, interpreted as the remnants of the Nordelph peat. Three pits (F.26, F.27 and F.35) were sample excavated, with a fourth probable pit (F.42), remaining unexcavated. The pits were between 2m and 2.3m in length by between 0.8m and 0.94m wide and no more than 0.33m deep. Although a small assemblage of later prehistoric flint working debris was recovered from the pit fills, no definitive dating evidence was recovered and processing of bulk environmental samples produced no significant results. A possible posthole or postpipe (F.31) was recorded truncating the single fill of one of the pits (F.26). However, with the exception of possible posthole F.31, no re-cuts were evident and the pits appeared to have been relatively short-lived features which silted up rapidly.

F. 26 The pit cut [84] was elongated oval in plan measuring 2m in length by 0.8m wide by 0.2m deep. It had a shallow profile with a flat base and contained a single dark grey brown clayey silt fill [83] containing occasional charcoal flecks. Finds: flint.

F. 31 Possible cut [101] recorded in the approximate centre of F.26. The small feature which was not clearly visible in plan, had a rounded profile and measured 0.24m across by 0.14m deep [100]. It contained a single pale yellow grey clay fill. It is possible that the feature may represent a posthole or postpipe truncating the pit fill. No finds.

F. 27 The pit cut [87] was elongated oval in plan measuring 2.08m in length by 0.94m wide by 0.33m deep. It had a shallow bowl-shaped profile with an irregular rounded base and contained a single mid grey brown clayey silt fill [85] with occasional lenses of redeposited silty clay. Finds: Animal bone, flint.

F. 35 The pit cut [109] was sub-rectangular in plan and measured 2.3m in length by 0.85m wide by 0.32m deep. It had a shallow profile with an irregular flat base and contained a single mid grey brown clayey silt fill [108]. Finds: flint

F. 42 A probable pit cut [135] measuring 1.2m across and contained a clayey silt fill [136] with a high peat content. The feature extended beyond the limit of excavation and remained unexcavated. No finds.

Evidence of a series of postholes possibly predating the alignment of pits was also exposed in Trench 23. Three postholes occupied the same approximate alignment as the pits, two of which were exposed in the base of pit F.27. The relationship between the two postholes in the base of F.27 (F.28 and F.29) and the pit itself is uncertain although the fact that the postholes were not visible in plan suggests they pre-date the silting up of the pit and were therefore contemporary or earlier. Posthole F.33 was located to the south-east between pits F.26 and



Trench 23: Alignment of pits



Trench 23: Feature 26

Figure 6. Pits in Trench 23

F.42, although undated and not stratigraphically related, its position would suggest it is contemporaneous with either the pits, or postholes F.28 and F.29.

- F. 28** A posthole exposed in the base of F.27. The posthole cut [89] measured 0.26m across by 0.29m deep with steep sides and a slightly rounded base. It contained a single dark grey clayey silt fill [88]. The relationship with F.27 was undetermined. No finds
- F. 29** A posthole / stakehole exposed in the base of F.27. The posthole cut [91] measured 0.12m across by 0.23m deep with steep sides and a flat base. It contained a single dark grey clayey silt fill [90]. No finds. Although the relationship with F.27 was uncertain, no cut was visible in plan and F. 29 appears to have been truncated by F. 27. No finds
- F. 33** A post hole, the cut [105] was sub-square in plan, measuring 0.23m across by 0.3m deep. It contained a single dark grey brown clayey silt fill [104] with occasional flecks of charcoal and small gravel inclusions. No finds

Two further possible features were recorded in the vicinity of the pits. A possible truncated posthole (F.32) and a short length of a possible linear gully (F.34) were recorded immediately to the east of pit F.26. Although the features were not as convincing as others in Trench 23 and yielded no definitive evidence of date or function their location suggests they should not be dismissed and are potentially archaeological.

- F. 32** A possible truncated posthole [102] measuring 0.3m by 0.2m and 0.12m in depth. It contained a single dark brown clayey silt fill [103] with occasional charcoal flecks. No finds.
- F. 34** A possible gully terminus recorded for a length of 0.8m and extending beyond the limit of excavation to the south-east. The gully cut [107] had a shallow rounded profile with an irregular base and measured 0.32m wide by 0.08m deep. It contained a single clayey silt fill [106] with a high peat content and occasional flecks of charcoal which yielded a single flint flake.

A buried soil horizon was also encountered in the eastern half of Trench 23, surviving where the depth of overlying topsoil and peat was sufficient to protect it from the plough. The deposit thickened to the east, extending beyond the eastern limit of Trench 23, it was not, however, present in Trench 24. A 90 litre sample of the buried soil was hand sorted but yielded no finds.

To the east of the main concentration of fen edge features in Trench 23, a single possible pit or tree throw was exposed in Trench 24. The feature (F.40) was cut into a clayey silt deposit *c.* 1m below the ground surface and sealed by peat and reed swamp deposits, as such it seems unlikely to have been situated on permanently 'dry land' in the same way that features on the higher ground (eg. Trench 23) were. However, the presence of burnt stone and a worked flint flake from the fill indicate human activity in the area. Fragments of preserved wood fragments, some displaying single-facet chisel points, as well as split round wood were also recovered from the secondary fill of F.40 (Randall, below). The waterlogged sample from this feature produced a small quantity of wild plant seeds which suggest an open landscape with a certain degree of disturbance indicated by a large amount of stinging nettle seeds (de Vareilles, below).

- F. 40** An irregular sub-circular feature cut into silty deposit 134 and measuring 2.3m by 1.26m by 0.28m deep. The cut [133] had an irregular profile with moderately sloping sides and a rounded base. The

feature contained two fills, a dark grey brown silty peat primary fill [131] overlain by a dark brown organic peat secondary fill [132], which yielded a worked flint flake and very occasional fragments of burnt stone. Both fills had a high organic content, including preserved fragments of branches and twigs and were effectively the same blanket peat deposits that occurred over the rest of the trench. Fill 132 also produced fragments of trimmed and split oak roundwood.

Later prehistoric ditches (Trench 25)

A series of four, parallel, north-west to south-east aligned linear ditches were recorded extending across the width of Trench 25 (Figure 7). Situated on the crest of the east facing slope of the clay high ground, the features were cut into a mixed clay till deposit and sealed by only 0.35m of topsoil.

- F. 36** A linear ditch cut [111] measuring 0.74m wide by 0.45m deep. The ditch had a U-shaped profile and contained a single mid grey silty clay fill [110] with very occasional charcoal flecks. Finds: one sherd of Late Bronze Age / Early Iron Age pot.
- F. 37** A linear ditch cut [113] measuring 0.67m wide by 0.35 deep. The ditch had a steep sided profile rounding to a flat base and contained a single mid grey silty clay fill [112] with occasional flecks of charcoal. Finds: small fragments of calcined/cremated? bone.
- F. 38** A linear ditch cut [115] measuring 1m wide by 0.43m deep. The ditch had a rounded V-shaped profile and contained a single grey silty clay fill [114] with occasional charcoal flecks. No finds.
- F. 39** A linear ditch cut [117] measuring 0.67m wide by 0.33m deep. The ditch had a U-shaped profile and contained a single mid grey silty clay fill with occasional flecks of charcoal. Finds: flint waste flake

The ditches were situated at regular intervals, between 2.25m and 2.5m apart. Although animal bone and flint was recovered from the various ditch fills only one ditch (F.36) yielded reliable dating evidence in the form of a sherd of Late Bronze Age / Early Iron Age pottery (Knight, below). Bulk environmental samples from the ditches produced only very limited evidence of the general environment in the form of wild plant seeds. A single rye grain from F. 37 was the only evidence of cereals.

Other features

In Trench 23, c. 5m to the east of the alignment of pits a ditch cut through the Nordelph peat and filled with a mix of redeposited natural clay and peaty soil was recorded. The location and alignment of the ditch corresponded exactly with that of a post-medieval field boundary, still extant immediately to the north. Artefacts recovered from the ditch included fragments of ceramic field drain, post-medieval pottery and a corroded iron nail as well as a fine Late Neolithic to Early Bronze Age barbed and tanged arrowhead (Beadsmoore, below). Although clearly residual the arrowhead further confirms prehistoric activity in the vicinity and in itself is an interesting find.

- F. 30** A north-south aligned linear boundary ditch extending across the width of the trench. The ditch cut [96] had a shallow U-shaped profile and measured 1.8m wide by 0.65m deep. It contained a dark brown peaty soil fill [97] which yielded fragments of post-medieval pot and a corroded iron nail. An irregular 're-cut' [98] on the western edge of the ditch, measured 1.5m across by 0.55m deep and contained a

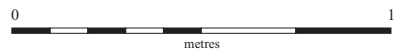
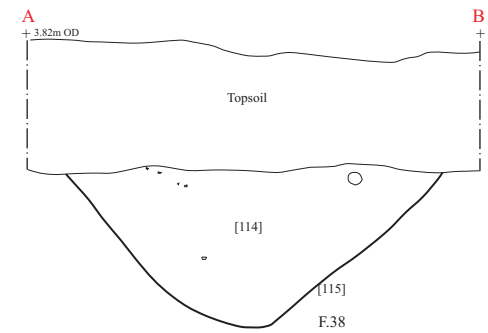
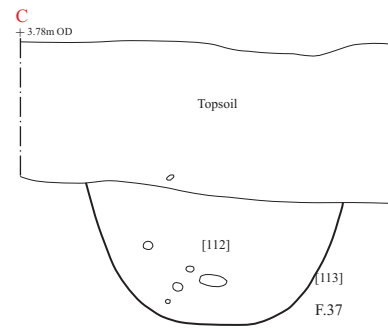
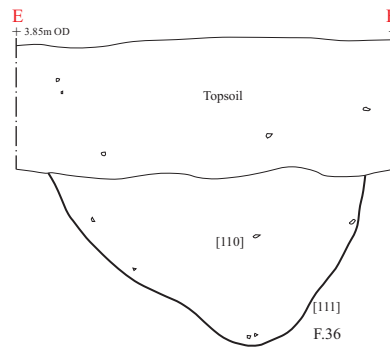
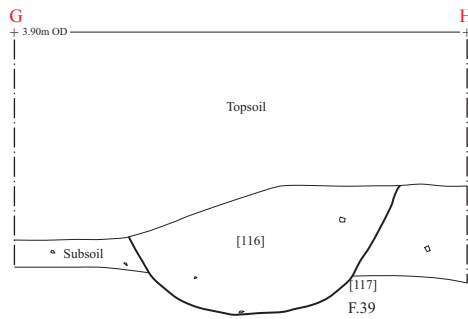
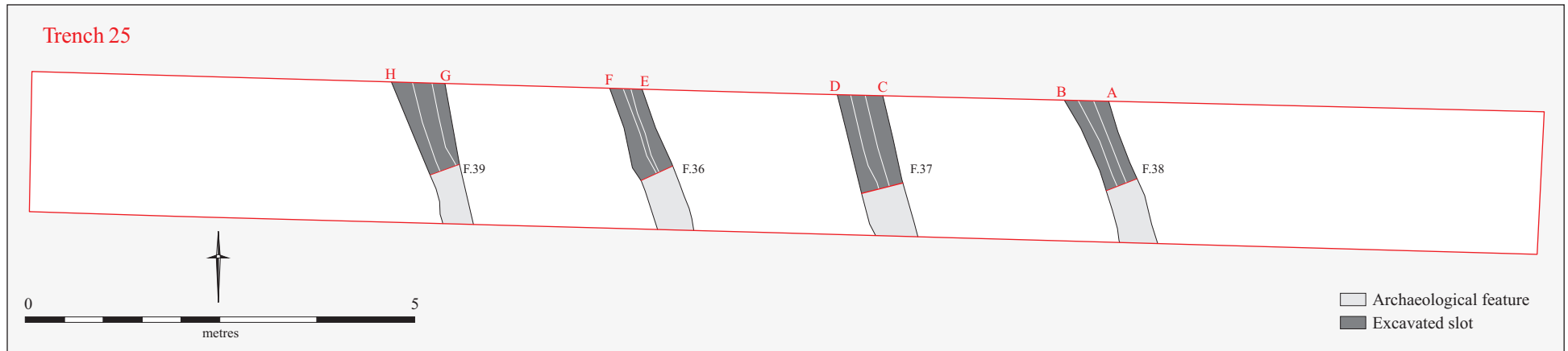


Figure 7. Trench 25.

single fill comprising a mix of topsoil and natural silty clay. It is probable that the re-cut represents disturbance caused by hedgerow removal from the boundary, which is still extant c. 10m to the north.

Beyond the two main concentrations of archaeology only one further, possible feature was exposed. The irregular clay filled linear feature was exposed in Trench 19 and measured 5m in length with a terminus to the east and west. The feature had indistinct, irregular edges and was not convincing as a ditch or gully. The feature remains of uncertain origin and could possibly be the result of natural freeze-thaw action.

F. 24 An irregular linear feature aligned approximately east to west measuring 5m in length with both an east and west terminus. The feature had an irregular steep sided profile with a rounded base and measured up to 1.05m wide by 0.55m deep. The edges and base of the feature were indistinct. Up to two fills were present, a light grey, mottled with orange, sandy silty clay primary fill [76], which was overlain by a mid grey sandy silty clay secondary fill [75]. No finds.

Residual and surface finds

A small assemblage of residual and surface finds, largely comprising flint, was collected during the evaluation. The majority of the material was recovered from within or close to Trench 23, the main concentration of archaeological features, and provides evidence of Neolithic and Early Bronze Age activity, as well as later prehistoric activity, at the fen edge (Beadsmoore, below). In addition to the flint assemblage a possible groundstone implement utilised as a hammer stone (Timberlake, below) was recovered from the topsoil closed to Trench 23 and probably dates to the Neolithic – Bronze Age.

Discussion

The alignment of pits and associated features, located close to the fen edge, are potentially significant. It is possible that the alignment of pits in Trench 23 belong to a monument type that has been identified, through aerial photography and excavation, throughout the East Midlands / East Anglia and particularly in the Ouse and Nene valleys (Pollard 1996). Regionally, pit alignments have been found to date largely to the early to mid 1st millennium BC and have long been interpreted as a form of boundary. The position of the pits in Trench 23, perpendicular to a possibly contemporary ditch (F.25) - as well as the presence of possible postholes along the alignment - suggests that they may well have performed such a function. More recently, it has also been argued that pit alignments had a more social / ideological function, rather than being purely practical (Pollard 1996). The fact that the pits appear to have silted up rapidly and were apparently not maintained as a boundary feature would support this theory.

That the alignment of pits in Area A represents a pit alignment in the strictest sense should, however, be questioned. Although a limited finds assemblage would appear to support an Iron Age date, the form and distribution of the pits is in many ways different from examples such as those at Meadow Lane, St. Ives, Cambridgeshire (Pollard 1996) and importantly the alignment and position of the feature with regard to the fen edge is at present unclear. Furthermore, three or four pits do not necessarily make an alignment and other interpretations should not be ruled out. The cremated human bone occurring within the remnants of a buried soil in particular hints that the site should perhaps also be seen in a funerary context.

The finds assemblage, though limited and in many cases residual, attests to further prehistoric 'fen edge' activity in the vicinity of the alignment of pits. The flint assemblage, notably the barbed and tanged arrowhead, attest to a Neolithic – Early Bronze Age presence as well as the later prehistoric activity, and the trimmed and split roundwood fragments from F.40 indicate activity and utilisation of natural resources at the Fen Edge.

The four parallel ditches situated on the crest of the east facing slope in Area A, represent a second area of later prehistoric activity. Situated to the west of the area of fen edge activity there is no evidence that the two groups of features are contemporary, however, they potentially sit within a similar time bracket. The parallel ditches were exposed in only one trench and as such are difficult to interpret, however, they would appear to mark some kind of boundary and potentially enclose an area on the crest of the high ground.

Area B

No archaeological remains were exposed during the excavation of test pits at Floods Ferry. A discussion of the palaeoenvironment and landscape is provided by Boreham, above.

Area C (Figure 8)

The original sampling strategy in Area C comprised thirteen trial trenches (Trenches 1-13) positioned in order to evaluate the area of high ground of the March-Wimblington ridge and its west facing fen edge. Two of the trenches (Trenches 12 and 13) which were located in deep fen deposits were not excavated due to the depth of deposits in this area and were replaced by four 4x4m test pits. An additional three judgemental trenches (14, 15 and 16) were also excavated in order to reduce the sampling interval in two areas.

Of the fourteen trial trenches excavated, three (Trenches 9, 10 and 11) were completely devoid of features. The majority of the archaeological remains exposed took the form of silted up ditches occupying the 'high', well drained ground in the east of Area C. Whilst a number of other possible features were encountered, the majority of these were irregular in form and likely to be the result of ground disturbance caused by vegetation.

Later prehistoric ditches (Figure 9)

A series of ditches were recorded in Trenches 1-4 on the area of high ground immediately to the west of Linwood reservoir. The ditches were cut into mixed gravel and clay till deposits and occurred at a depth of between 0.4m and 0.6m below the ground surface. Two of the ditches yielded small fragments of Late Bronze Age / Early Iron Age pottery (Knight, below) and based on their alignment and position a further three ditches appear likely to be contemporary and to have formed part of the same network of fields or paddocks.

- F. 1** A linear ditch aligned north to south measuring 0.74m wide by 0.26m deep and recorded for a length of 2.25m. The ditch [07] was steep sided with a flattish base and contained two fills. The primary fill [04], 0.13m thick, comprised redeposited natural clay representing slumped material in the base of the ditch.

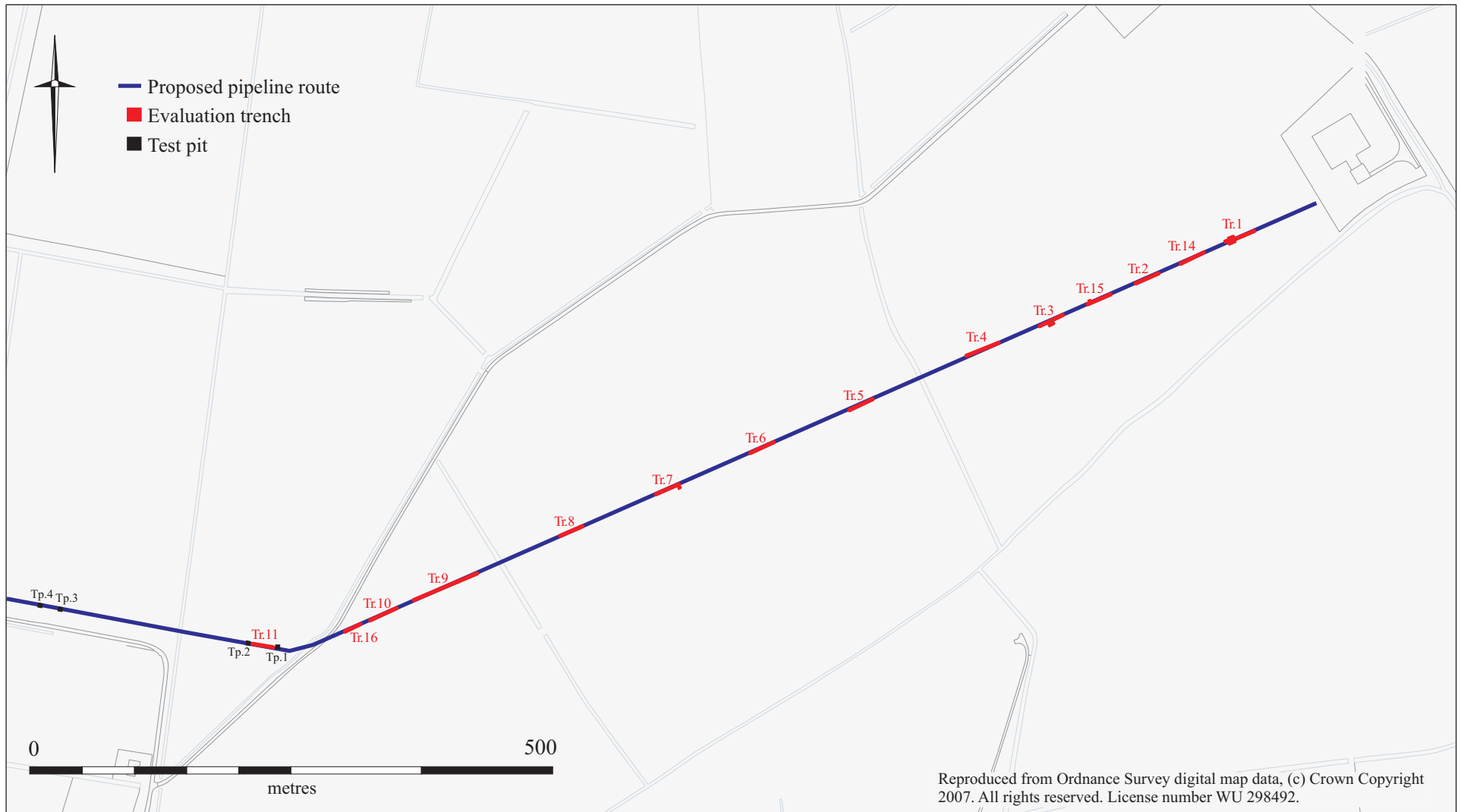


Figure 8. Location of trenches in Area C.

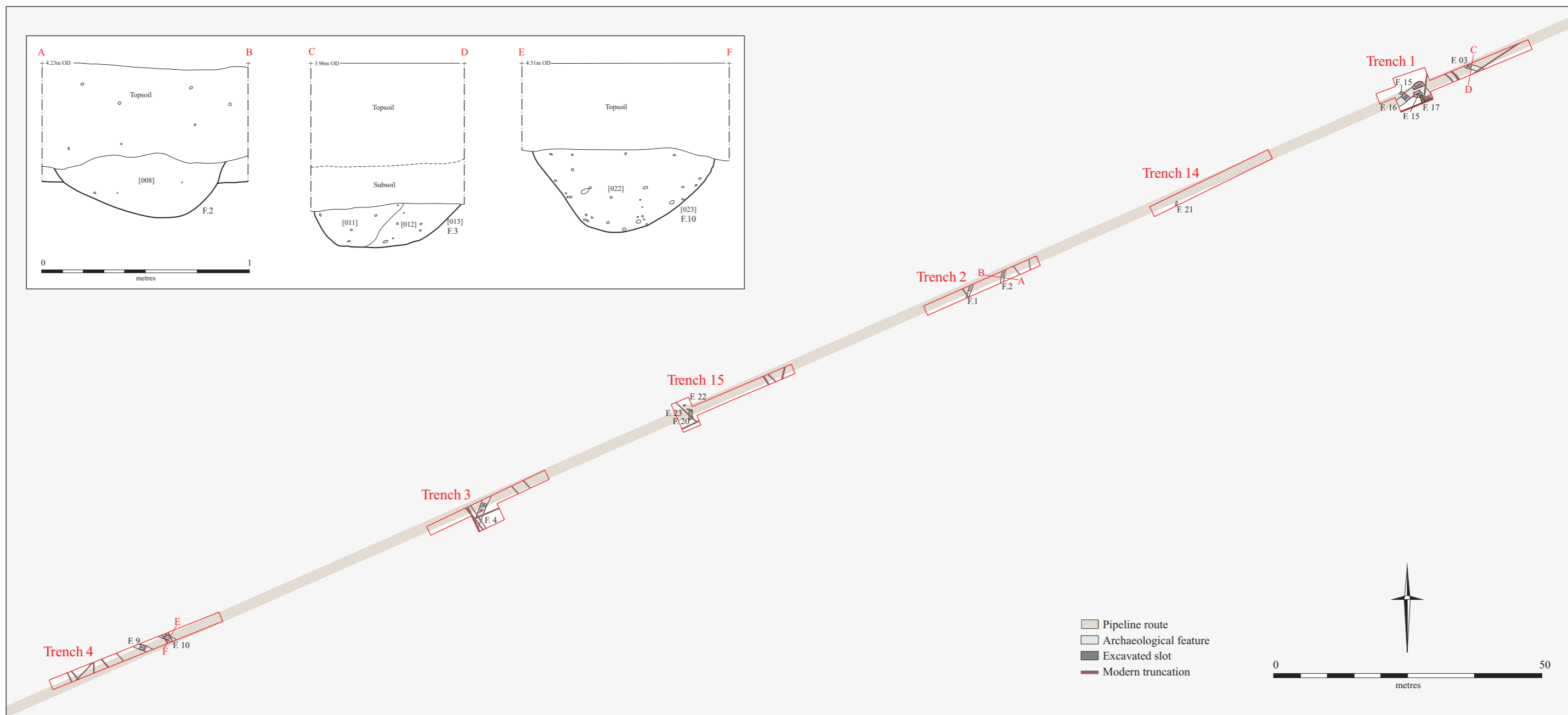


Figure 9. Trenches 1-4 and 14-15.

This was overlain by a mid grey brown clayey silt secondary fill [05] up to 0.23m thick. Finds: Late Bronze Age / Early Iron Age pottery fragments, flint and burnt clay.

- F. 2** A north-south aligned linear ditch located 6m east of, and parallel to F. 01. The ditch measured up to 0.82m wide by 0.3m deep and extended across the width of Trench 2. The ditch cut [10] had moderately steep sides with a rounded base and contained two fills. The primary fill [08] consisted of a light grey clayey silt, up to 0.4m thick, in the north facing ditch section this was overlain by a slump of redeposited natural clay [09] on the eastern edge. Finds: Late Bronze Age / Early Iron Age pottery fragments and flint.
- F.3** A linear ditch aligned east to west measuring 0.7m by 0.21m wide and extending across the width of Trench 1. The ditch cut [13] had a shallow U-shaped profile and contained two fills. The orange brown silty sand primary fill [12] as overlain on the southern side by a slump of redeposited natural material [11]. No finds.
- F. 4** A linear ditch aligned north to south measuring 0.81m wide by 0.3m deep and extending across the width of Trench 3. The ditch [15] had moderately steep sides with an irregular base and contained a single mid grey clayey silt fill [14]. Finds: one crumb of unidentifiable pot and flint.
- F.9** East-west aligned linear ditch measuring 0.72m wide by 0.2m deep and extending across the width of Trench 4. The ditch [21] had a shallow U-shaped profile and contained a single mid grey clayey silt fill [20] which had been truncated by two modern field drains. No finds.
- F.10** An east-west aligned linear ditch located 4m to the west of and parallel to F.09. The ditch [23] measured 0.82m wide by 0.31m deep and had a U-shaped profile. The single fill [22] comprised a yellowish grey silty sand. Finds: flint and burnt clay.

Undated ditches (Figures 9 and 10)

At the western end of Trench 1 a shallow linear ditch (F.16) turning at a right angle and possibly forming the corner of an enclosure was exposed. Although fragments of animal bone were recovered from the fill, the feature produced no dating evidence. A small undated linear gully (F.15) was truncated by F.16. A gully terminus was recorded to the north-west but it was not possible to determine if the gully extended to the south-east due to modern truncation.

- F.16** A shallow linear feature aligned south-west to north-east before turning to the south-east forming a corner. The ditch cut [49] measured up to 1.6m wide by 0.17m deep, with moderately steep sides and a flattish base. The feature generally contained a single fill [47=48] comprising a mid grey brown clayey silt, although a number of slumped natural lenses were recorded. A small number of animal bone fragments were recovered from the fill.
- F.15** A linear gully aligned east to west, truncated by F. 16 and measuring 0.27m wide by 0.13m. A terminus was recorded to the north-west, while to the south-east the gully was truncated by a modern field drain repair. The gully [42] had a U-shaped profile and contained a single mid grey/reddish brown silty clay fill [41]. No finds.

Four parallel north-west to south-east aligned linear ditches or thin trenches were exposed in Trench 5 at a maximum depth of 0.5m below the ground surface. The features (F.05, F.06, F.07 and F.08) were spaced at approximately 6m intervals and were all between 0.5m and 0.71m wide by between 0.23m and 0.31m deep, with steep sides and flat or slightly rounded bases. Each contained a single, mixed clayey silt fill with occasional lenses of redeposited natural clay. None of the ditches yielded any dating evidence. The regularity of the form and

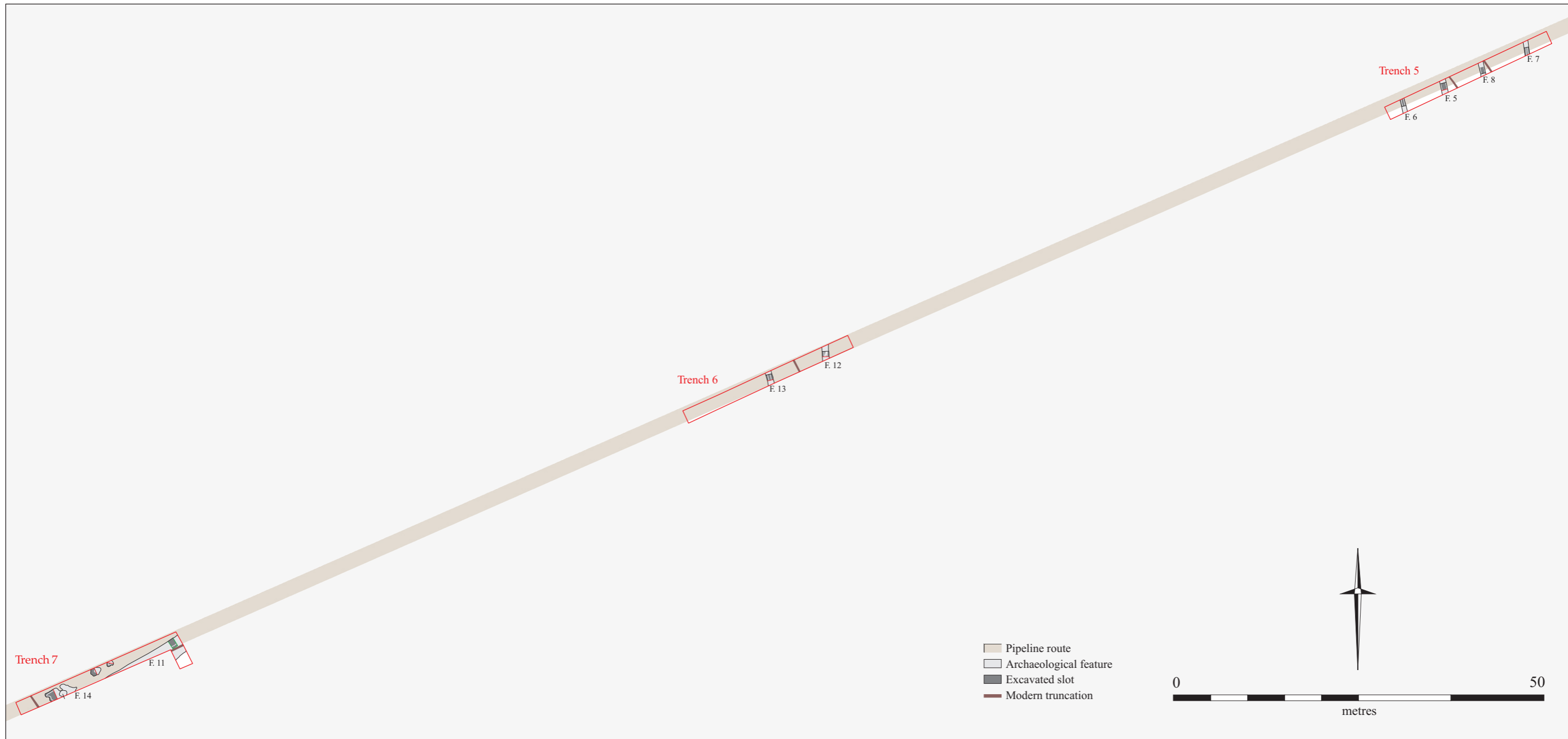


Figure 10. Trenches 5, 6 and 7 in Area C.

the distribution of the features suggest that they may potentially be associated with post-medieval or relatively recent agricultural practices / drainage although an earlier date cannot be ruled out.

Two further possible ditches (F.12 and F.13) were recorded in Trench 6. The north-west to south-east aligned features remain undated and contained largely sterile fills.

- F.12** North-west to south-east aligned ditch measuring 0.77m wide by 0.24m deep and extending across the width of the trench. The ditch comprised an original shallow U-shaped cut [34] containing a single light yellow brown clayey silt fill [33], which had apparently possibly re-cut. The possible re-cut [36] took the form of a thin gully measuring 0.36m wide by 0.22m deep containing a single light grey silty clay fill [35]. Whether the “re-cut” was deliberate or a channel resulting from running water is unclear. No finds.
- F.13** North-west to south-east aligned ditch measuring 0.86m wide by 0.4m deep. The ditch [38] had a U-shaped profile with indistinct edges and contained a single light yellow grey brown silty clay fill [37]. No finds were recovered and the fill appeared very sterile, however, the presence of small amounts of charcoal would suggest the feature is real.

Post-medieval features

A substantial south-west to north-east aligned linear ditch (F. 11) was recorded extending across the width of Trench 7. The various fills of the ditch yielded fragments of post-medieval ceramic field drain and its location corresponds to a former field boundary depicted on early Ordnance Survey maps.

- F.11** A south-west to north-east aligned ditch truncated by modern land drain. The ditch [29] measured 2.3m wide by 0.76m deep and was recorded for a length of __m. Due to the presence of an active land drain a full profile was not recorded, however, the moderately steep, stepped side and flat base on the north-west side was very regular and likely to be mirrored on the south-east side. The ditch contained three fills, a mid brown slightly clayey silt primary fill [30] was overlain by a light brown silty clay [31] which was in turn overlain by a mixed fill of redeposited top soil and natural clay [32]. Fragments of ceramic land drain were recovered from fills 30 and 32.

A number of silty patches (Trench 7 and 8) and a probable tree throw (F.14, Trench 7) almost certainly resulted from ground disturbance caused by vegetation growing along the former boundary (F.11), probably in the form of a hedgerow.

Other features

A number of undated features were exposed in two judgmental trenches (Trench 14 and 15) excavated to reduce the sampling interval in the area occupied by the Iron Age ditches. Of these the only convincing archaeological feature comprised a small, steep sided lozenge-shaped pit (F.21) the fill of which yielded a small number of animal bone fragments. A small cluster of features (F. 20, F.22 and F.23) in Trench 15 are of unknown origin but are considered unlikely to be archaeological.

- F.21** Lozenge-shaped feature measuring 0.77m long by 0.31m wide by 0.39m deep. This possible pit [70] had steep, almost vertical, sides with a rounded base and contained a single dark brownish grey fill [69] with shale and charcoal inclusions. A small number of animal bone fragments were recovered from the fill.
- F.20** Elongated oval feature originally thought to be the terminus of a gully, which was proven to be an irregular discrete feature by an extension to the trench. The feature [68] measured 1.9m long by 0.53m wide by 0.14m deep, with a shallow U-shaped profile, although a northern 'terminus' was excavated, no real terminus was recorded to the south. It contained a single, sterile orange grey sandy silt fill [67]. No finds were recovered and F.20 is unconvincing as an archaeological feature.
- F.22/23** Two small, irregular features no more than 0.27m across by 0.17m deep, to the north of F.20. Each contained a single mottled grey /reddish brown fill with occasional flecks of charcoal. The features had no real form and are not considered to be archaeological. No finds.

Residual and surface finds

Further artefactual evidence from Area C - surface finds and one find from a buried soil/subsoil sample - comprised a very limited flint assemblage which provided further evidence of later prehistoric activity in the area but also indicated a Neolithic/Beaker/Early Bronze Age presence (Beadsmoore, below).

The fen edge

No archaeological remains were exposed at the fen edge in Area C and the nature of the deposits encountered suggest it took a very different form to the fen edge in Area A. No evidence of peat encroachment or preserved buried soil horizons were encountered in any of the trenches and although key relationships were obscured by the existing track and dyke between Trenches 11 and 16, the fen edge appears to have been marked by a steep escarpment rather than a gradual fall in elevation. It is possible that this steep escarpment was the result of a probable palaeochannel identified from aerial photographs (Palmer 2008), the deposits of which were identified in Trench 11 and Test Pits 1 and 2, abutting the edge of the high ground.

Discussion

Of the features exposed in Area C only the linear ditches occupying the high ground in the east were convincing archaeological features. Based largely on alignment and a limited finds assemblage at least three phases of land division / enclosure are evident. Of these, the most significant is the potential later prehistoric land division and the associated finds in the east of Area C. Prehistoric sites on the western margins of March island are generally scarce – although early Iron Age sites have been recorded by the Fenland survey (Hall 1987) in the north – and although a number of potentially early ditches or field systems (eg. Jones 2006) have been recorded in the area, they remain undated. As such the pottery and flint finds, though limited and not closely diagnostic, are nevertheless significant.

The corner of the possible undated enclosure (F.16) in Trench 1, which truncates an earlier linear gully, potentially represents a further phase of activity. The feature is apparently aligned differently to the later prehistoric ditches and, although shallow, may represent a separate episode of enclosure. A third phase of land division in evidence is represented by a

substantial boundary ditch (F.11) which early Ordnance Survey Maps indicate existed well into the 19th century.

The remaining six ditches (F.5, F.6, F.7, F.8, F.12 and F.13) exposed in Area C were situated to the west of the features discussed above and appear unrelated. Whilst not convincing as early features these ditches have also not been confidently dated to the post-medieval period.

CONCLUSION

The archaeological remains exposed along the proposed route of the pipeline were confined to two areas of high ground (Areas A and C), or formerly ‘dry land’, at each end of the route. In Area A, remains provisionally dated to the later prehistoric period in the form of a possible pit alignment and ditch occupying the fen edge were exposed. A series of four parallel ditches, one of which contained a fragment of Late Bronze Age / Early Iron Age pottery were also exposed on the crest of the high ground. Worked wood in the form of split and trimmed round wood fragments, and plant remains from one feature also indicate a reasonable degree of preservation of waterlogged remains close to the fen edge. In Area C, evidence of later prehistoric land division in the form of a series of ditches, two of which yielded Late Bronze Age / Early Iron Age pottery fragments, was exposed. Further potential phases of land division or drainage are represented by a number of undated ditches. The area of low lying fen, measuring some 16km in length, which divides the two areas was found to be of low archaeological potential.

In Area A the archaeological horizon was situated between 0.35m and 1m below the current ground surface with the depth of overburden – topsoil, peat and buried soil - increasing towards the fen edge. In Area C the archaeological horizon was situated between 0.4m and 0.6m below the current ground surface.

The results of the investigations undertaken by Dr. S. Boreham have added considerably to our knowledge of the palaeoenvironment and sedimentary sequence over a wide area that has not seen previous systematic research. In the Whittlesey area (Area A), this work has enhanced the results of a previous study on an Anglian Water pipeline (Boreham 2006) and the Fenland Project (Waller 1994) providing a context for archaeological remains adjacent to King’s Delph.

ACKNOWLEDGEMENTS

The work was commissioned by Peter George of Grontmij Ltd on behalf of Anglian Water Services Ltd. Lindsey Taylor of AWS and Mark Campbell of Savills provided valuable support. The project was monitored by Kasia Gdaniec and Eliza Gore of Cambridgeshire Archaeology Planning and Countryside Advice. The author was assisted on site by Marcus Brittain, Ilanith Pongolini, Simon Timberlake and Andrew Whelan. Donald Horne was responsible for the field survey and the graphics were produced by Vicky Herring. The project was managed by Robin Standring.

SPECIALIST STUDIES

Flint - Emma Beadmoore

A total of 40 (<299g) flints were recovered from the evaluation of the site; 38 (<261g) are worked, whilst 2 (38g) are worked and burnt. The flint is listed by context and type in Table 1. The flint was recovered from two groups of trenches in Areas A and C. Features 25, 26, 27, 30, 34, 35, 39 and 40 were in Area A, whilst Features 1, 2, 4, 10, 13 and 14 were in Area C.

Feature/ sample	Type									totals
	chip/chunk	secondary flake	tertiary flake	core rejuvenation flake	irregular core	multiple platform core	miscellaneous retouched flake	piercer	barbed and tanged arrowhead	
F. 1	1	1								2
F. 2	1									1
F. 4			1				1			2
F. 10		1								1
F. 13	1	1								2
F. 14		1								1
F. 25	2	3	2			1				8
F. 26	1		3							4
F. 27	2									2
F. 30									1	1
F. 34		1								1
F. 35			1							1
F. 39		1	1							2
F. 40			1							1
near F. 40				1						1
Tr 17 stray								1		1
Tr 19/bs		1								1
Tr 22 stray	1									1
Tr 23 stray	2	2	2		1					7
Sub totals	11	12	11	1	1	1	1	1	1	40

Table 1 – Flint types and contexts

Area A

Thirty one flints were recovered from Area A, ten of which were collected as stray finds or from bucket samples from Trenches 19, 22 and 23, whilst features in Trenches 23, 24 and 25 yielded the remaining twenty one flints. The majority of the flint recovered from Area A was from Trench 23. Evidence for systematic, potentially Neolithic flint working was recovered

from Feature 25, Feature 40 and as stray finds. The flakes from Feature 25 are likely to have been residual in the later feature; however both flints from Feature 40 are potentially Neolithic and are more likely to be broadly contemporary with the tree throw. A possible later Neolithic piercer was recovered from Trench 17. Area A also yielded evidence for Beaker/Early Bronze Age activity, in Trench 23; cores were collected as a stray finds and from Feature 25, whilst Feature 30 yielded a barbed and tanged arrowhead.

Three pits in the pit alignment exposed in Trench 23, Area A contained flint; Features 26, 27 and 35 yielded 7 flints; flint working waste that was the product of expedient flake production/core reduction strategies characteristic of later prehistoric flint utilisation. The stray finds recovered from Trench 23 also include an expediently manufactured, potentially later prehistoric flake.

Area C

Nine flints were recovered from Area C. Tentative evidence for later prehistoric activity was provided by flints from Features 13 and 14, whilst Feature 14 also yielded a potentially Neolithic flake.

The flint recovered from the site provides evidence for Neolithic/Beaker/Early Bronze Age activity within the landscape, although the material is generally residual in later features. Probable later prehistoric material was also recovered from the site, some of which is potentially broadly contemporary with features in Area A.

Prehistoric Pottery – Mark Knight

The prehistoric pottery comprised 10 small pieces weighing 16g in total. There were no feature sherds and all of the pieces were plain. The diminutive size of most of the fragments made any definite attribution difficult so the main diagnostic criterion has been fabric and sherd thickness.

Feature	Context	Number	Weight (g)
1	5	5	8
2	8	3	3
36	110	2	5
<i>Totals:</i>	<i>3</i>	<i>10</i>	<i>16g</i>

Table 2: Assemblage Breakdown

The five tiny sherds from F.1 shared the same hard sandy fabric with small quartz sand inclusions as did the even smaller pieces from F.2 (only these seemed to have been burnt). The ‘whole’ sherds from these features were about 5mm thick. A slightly larger sherd (2 x 3 cm) was recovered from F.36 and this was made of a softer fabric tempered with flecks of crushed shell. The sherd was also thin-walled (c. 5mm). The fabric and thinness of all of the sherds suggests that they once belonged to Late Bronze Age/Early Iron Age forms.

Worked stone – *Simon Timberlake*

A broken sub-rectangular cobble was recovered as a surface find from the top of the plough-soil some 20m to the north of Trench 23. Dimensions: 95mm (long) x 60mm (wide) x 50mm (deep), weight 662g. The rock is composed of orthoquartzitic sandstone, perhaps Cretaceous (a Lower Greensand sarsen) or Jurassic in origin, but almost certainly transported as a glacial erratic and locally collected from the gravel or tills.

The cobble is fractured (snapped through) in the middle, evidently an old break with a small impact scar adjacent to this on one side, and shows evidence of being used as a hammer stone at the other end. The latter shows some evidence of its use as a hand-held pounding implement. Most intriguing is the symmetrical rounded square profile in cross section suggesting its possible use also as a groundstone implement on all of the flattish surfaces (this may have been used either as a large whetstone or as a rubber for a saddlequern). However, there remains some doubt as to this attribution. This sort of wear could be natural, although the type of fluvial erosion or weathering process which might have produced such an angular profile is not at all clear. The level of wear or polish evident on these surfaces is high, yet all of the faces show evidence for a slight camber (i.e. none have been ground flat). If artificial, one possible explanation may be that this was a rubber stone used equally on all sides within a hollowed rather than flat-surfaced saddlequern. The most likely date for this would be Neolithic-Bronze Age.

Faunal remains - *Vida Rajkovic*

Introduction

A small assemblage of animal bone was recovered from the WWP site during an evaluation carried out in 2008. The overall size of the assemblage numbered 43 fragments, 41 (95.3%) of which were identifiable to element and only further 5 (4.7%) identified to species. The assemblage was identified using CAU reference collection, Schmid (1972) and Hillson (1999).

Preservation

Of six contexts analysed, three demonstrated poor and three showed quite poor preservation. This equates to a total number of 6 fragments showing poor preservation and 37 fragments quite poorly preserved showing less bone damage or signs of weathering.

Results

Animal bones recovered were found in two areas (Areas A and C). Therefore, two subsets were created in order to study the site. Features 16 and 21 (both undated ditches) were located in area C and later prehistoric Features 25 (ditch), 27 (pit) and 37 (ditch) were found in Area A. Feature 16 yielded 35 bone fragments, five of which were identified as ovicaprid. Thirty fragments were not possible to identify and they were assigned to size category (unidentified medium mammal). Four unidentifiable medium sized mammal bones were

recovered in Feature 21. Only four bone fragments were found in Area A. Two unidentified fragments were found in F. 25. Both features 27 and 37 yielded one unidentified large sized mammal limb bone fragment each.

The low percentage of fragments identifiable to species is due in part to the relatively high numbers of fragmented limb bones which could only be assigned to a size category (Large, Medium or Unidentified Mammal). Therefore, 34 fragments assigned to Unidentified Medium Mammal category can be indicative for the presence of possibly significant ovicaprid population on the site.

Species	NISP	MNI
Sheep/Goat	5	1
UUM	3	-
ULM	1	-
UMM	34	-

Table 3: Species frequency by NISP (Number of Identifiable Specimens) and MNI (Minimum Number of Individuals). Key: UMM & ULM = Unidentified Medium and Large Mammal / UUM = Unidentified Fragment.

Conclusion

It is difficult to discuss this assemblage further in the absence of any toothwear data, and near absence of butchery or measurements. However, the general size of the elements would seem to indicate medium sized domesticates. Further analysis should involve the analysis of the age structure of the common domestic stock species with a view to interpreting the site economy.

Cremated Human Bone – *Natasha Dodwell*

Cremated human bone was recovered from two contexts. A small quantity (84g) of white, well calcined bone fragments were recovered from a spread within the buried soil, [130] in trench 23. The fragments were small, the largest being only 29mm and many were unidentifiable. However, skull, rib and limb shafts were recognisable and the thickness of the skull, the sharpness of the sutures and the relatively gracile limb and rib shafts suggest that the bones derive from an older subadult/young adult. A smaller quantity (12g) of small, white, well calcined bone fragments were recovered from [128] F.25, sample 34. Most were unidentifiable but they are probably human.

Assessment of Bulk Environmental Samples - *Anne de Vareilles*

Methodology

Twelve bulk soil samples were chosen for analysis. Eleven were processed using an Ankara-type flotation machine at the Cambridge Archaeological Unit, using 300µm aperture meshes

for collecting the flots and a 1mm mesh for the heavy residue. The flots were dried indoors and scanned in their entirety for the presence of charred plant macro remains. Since sample 36 from F.40 was waterlogged a 500ml sub-sample was processed in the Pitt-Rivers Laboratory, McDonald Institute, University of Cambridge. The remainder of the sample is stored at the CAU.

Sorting and identification of macro-remains were carried out under a low power binocular microscope in the Pitt-Rivers laboratory. Nomenclature follows Stace (1997). All archaeological remains are listed in table 4.

Preservation

Charred plant macro-remains were found in all samples. F.40 also contained some waterlogged material. Overall the samples had very few plant remains though this is not necessarily a result of poor preservation as the seeds that were found are all in good condition.

The samples were full of intrusive rootlets and modern goosefoot (*Chenopodium* sp.) seeds, indicative of bioturbation through which archaeological contexts may have been mixed. It is therefore possible that the archaeobotanical remains are also intrusive.

Results

Ditches

The ditches in both Areas A and C all contained a little charcoal but none in sufficient quantity or size to suggest an *in situ* deposit or hearth. A few wild plant seeds were found, all of which are likely to have grown in the surrounding area. The only cereal recovered was a rye grain (*Secale cereale*) from ditch F.37.

Buried soil with cremated bone

Charcoal and some small fragments of burnt bones were seen. The deposit is thought to have spread into ditch F.25 and may explain why slightly more charcoal was found in F.25 than in all other ditches.

Alignment of pits

The 3 pits sampled (F.26, F.27 and F.35) contained only a little charcoal and one fragment of a possible hazel-nut.

Pit or Tree-throw, F.40

Other than a little charcoal the seeds identified were waterlogged. The diversity and quantity

Tables 4 and 4.1: Archaeobotanical and Other Remains from the Bulk Soil Samples

Sample number	8	16	15	35	33	34	30	18
Context	14	5	22	130	94	128	112	80
Feature	4	1	10	Buried soil	25	25	37	24
Feature type	Ditch	Ditch	Ditch	with crem.	Ditch	Ditch	Ditch	Ditch?
Phase / Date	I.A.?	I.A.?		BN			I.A.?	
Excavation Area	C	C	C	A	A	A	A	A
Sample volume - Litres	7	8	8	15	5	10	6	6
<i>Secale cereale</i> Rye grain							1	
Charcoal >4mm		-		+	++	-		-
2-4mm		-		++	++	+	-	-
<2mm	++	+	+	d	c	b	a	a
Parenchyma - undifferentiated plant storage tissue	-	-	-				-	
Wild Plant Seeds								
<i>Corylus avellana</i> Hazel-nut shell fragment	1							
<i>Atriplex patula/prostrata</i> Oraches			1					
<i>Potentilla cf. palustris</i> Marsh Cinquefoil			1					
<i>Euphorbia helioscopia</i> Sun-spurge				2				
<i>Odontites vernus</i> Red Bartsia		1						
<i>Eleocharis / Carex</i> Spike Rushes / Sedge							1	
<i>Cladium mariscus</i> Great Fen Sedge		1						
Indeterminate wild plant seeds			1				1	
2-4mm burnt bone fragments				-				
<2mm burnt bone fragments				++				

Sample number	19	23	27	36
Context	83	85	108	132
Feature	26	27	35	40
Feature type	Pit	Pit	Pit	Pit?
Phase / Date				
Excavation Area	A	A	A	A
Sample volume - Litres	5	14	4	0.5
Charcoal >4mm	+		+	
2-4mm	+	++	+	+
<2mm	c	b	b	++
Parenchyma - undifferentiated plant storage tissue		-		
Wild Plant Seeds				
<i>Ranunculus sceleratus</i> Celery-leaved Buttercup				-
<i>Ranunculus</i> sp. Buttercups				-
<i>Urtica dioica</i> Stinging Nettle				d
<i>Corylus avellana</i> Hazel-nut shell fragment	1 cf.			+
<i>Chenopodium</i> sp. Goosefoots				++
<i>Persicaria hydropiper</i> Water-pepper				-
<i>Polygonum cf. aviculare</i> possible Knotgrass				+
<i>Fallopia convolvulus</i> Black bindweed				-
<i>Rumex</i> sp. Dock				+
<i>Viola</i> sp. Violets				+
<i>Rubus</i> sp. Bramble				+
<i>Prunus spinosa</i> Sloe stone (fragments)				1 (+)
cf. <i>Anthriscus caucalis</i> possible Bur-parsley				-
<i>Stachys</i> sp. Woundworts				-
<i>Carduus/Cirsium</i> Thistles				-
<i>Sonchus asper / oleraceus</i> Sow-thistles				-
trigonus <i>Carex</i> sp. trilete Sedge seed				+
lenticular <i>Carex</i> sp. flat Sedge seed				+

Key: '1' 1 or 2, '+' <10, '++' 10-25, 'a' 25-50, 'b' 50-100, 'c' 100-500, 'd' >500 items. All items in F.40 (other than the charcoal) are waterlogged

of seeds are low which suggests that specimens have been lost to adverse preservation conditions. Stinging nettle seeds were by far the most common specimen found, and testify to a disturbed landscape. In fact, the small assemblage of plants concurs with a settled area, where the predominantly open vegetation would have been frequently trampled upon and affected by its inhabitants. The sloe stone (*Prunus spinosa*) has the mark of a small rodent bite.

Conclusion and Recommendations

Although human impact upon the landscape is visible in the archaeobotanical record, very few plant remains were found; suggestions of dates and feature use cannot be made. It may be that daily ‘living activities’ were concentrated on the higher ground, where such remains should be looked for in future excavations.

Some waterlogged artefacts may be found in the zone between areas A and C, where worsening waterlogged conditions should still be suitable for the preservation of denser material, such as wood.

Preserved wood – Nigel Randall

A small quantity of waterlogged wood was recovered from context 132, Trench 24. A total of eighteen pieces were recovered of which twelve were suitable for assessment. Table 5 gives details of their attributes.

Sample No.	Length (mm)	Diameter (mm)	Depth/ Thickness (mm)	Section	Point Length (mm)	Point type	Age (yrs)	Species	Felling season
1	47	20	-	R/W	22	Chisel	5	Ash	Spring/Summer
2	51	12	-	R/W	43	Chisel	5	Oak	?
3	182	21	-	R/W	-	-	16	Oak	Spring/ Summer
4	75	20	-	R/W	37	Chisel	c.12	Oak	Spring/Summer
5	204	28	13	Halved	-	-	c.16	Oak	Spring/Summer
6	95	60	21/27	< 1/4	-	-	30	Oak	Winter/Spring
7	27	20	12	Halved	24	Chisel	10	Oak	Spring/Summer
8	50	22	-	R/W	-	-	?	Oak	Spring/Summer
9	69	17	-	R/W	-	-	c.6	?	?
10	81	13	-	R/W	-	-	9	Oak	Spring/Summer
11	68	14	-	R/W	-	-	12	Oak	Spring/Summer
12	51	12.5	-	R/W	-	-	6	Oak	Spring/Summer

Table 5. Details of waterlogged wood.

Assessment of worked wood

Of the twelve pieces assessed, two displayed single-facet chisel points, produced in each case by a single blow, either a felling cut or applied during a later dressing operation. The length of one cut suggests the piece was vertical when the cut was made. Two further pieces display single-facet chisel points. Their surface preservation is too poor to determine positively if these are ancient features, although they are similar in form to the other two points and therefore less likely to be of modern origin.

Three of these pieces, including both definite points, are small diameter round wood; the fourth piece is a half-section, split round wood. Two other pieces are of split round wood; one a half-section and the second a quarter-section. The consistent surface preservation displayed on all three split pieces suggests they were split soon after their felling. One piece shows exit holes from wood boring beetles on its split surface suggesting the splitting process happened soon after felling. The accuracy with which two have been halved is suggestive of a deliberate action.

Species

Of the twelve pieces, ten are oak, one ash and the other unidentified. All the oak examples are very slow grown, generally displaying less than 1mm of growth per year, indicative of trees growing in the competitive conditions of the underwood within woodlands. At least seven oak examples were felled soon after the formation of the last spring vessels, suggesting a late spring or early summer felling.

Interpretation

Two of the pieces show definite points and a further two have points that may be of ancient origin. Two pieces are accurately halved and a third may have been quartered. The majority of pieces were felled in the late spring or early summer and as such, the assemblage is suggestive of a single occurrence, opportunistic gathering of naturally growing saplings from within a woodland environment. The two worked points, and particularly the two split sections, together with the other possible points and split piece suggests they were cut and halved for a specific purpose, rather than simply being the result of a clearing exercise.

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APPENDIX A

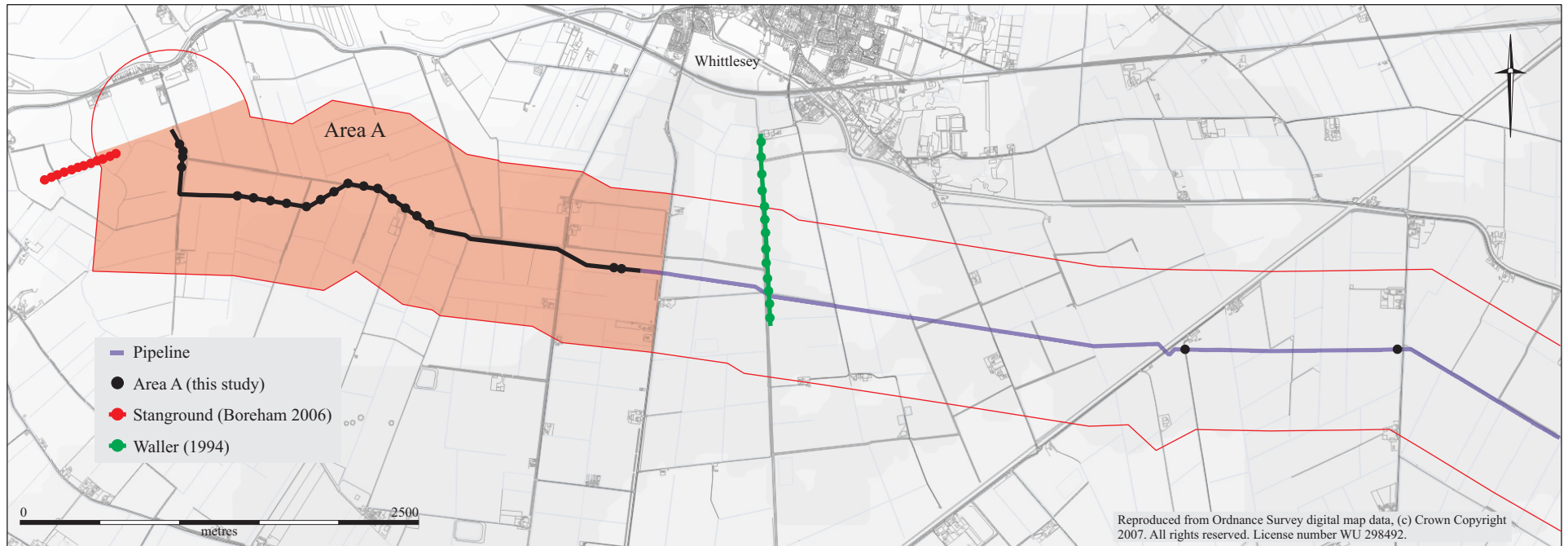


Figure 1a. Map of Area A showing geological sections



Figure 1b. Map of Areas B and C showing geological sections.

APPENDIX A

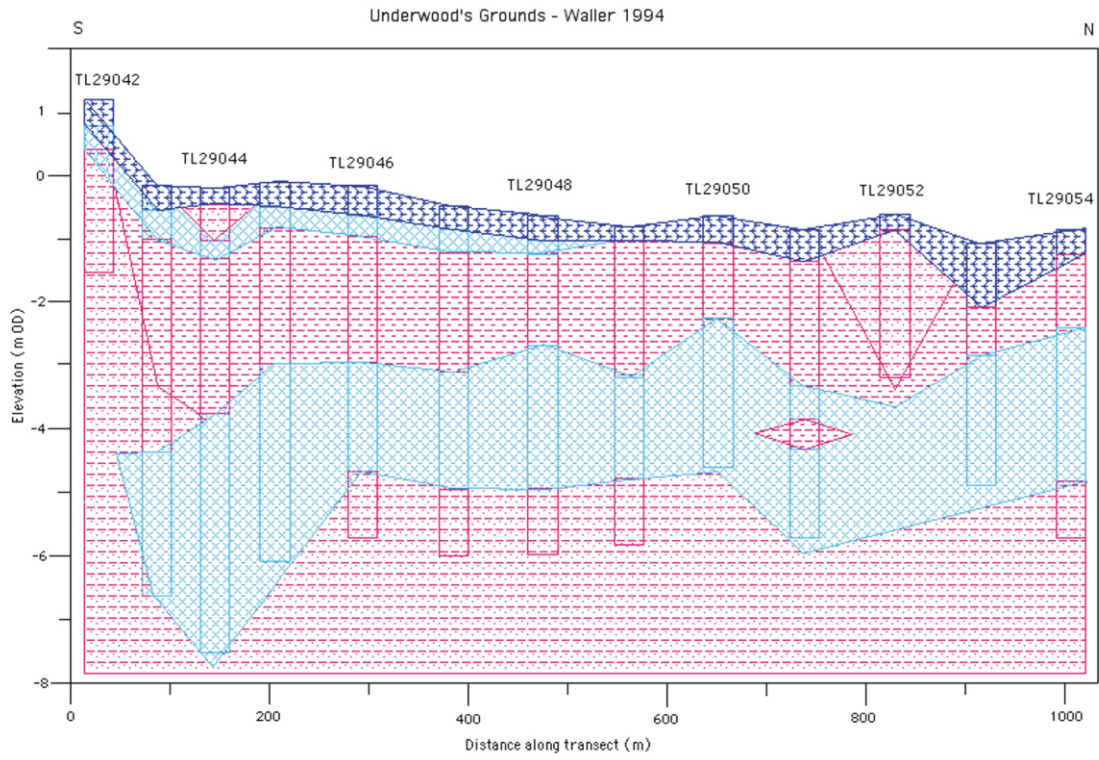


Figure 2

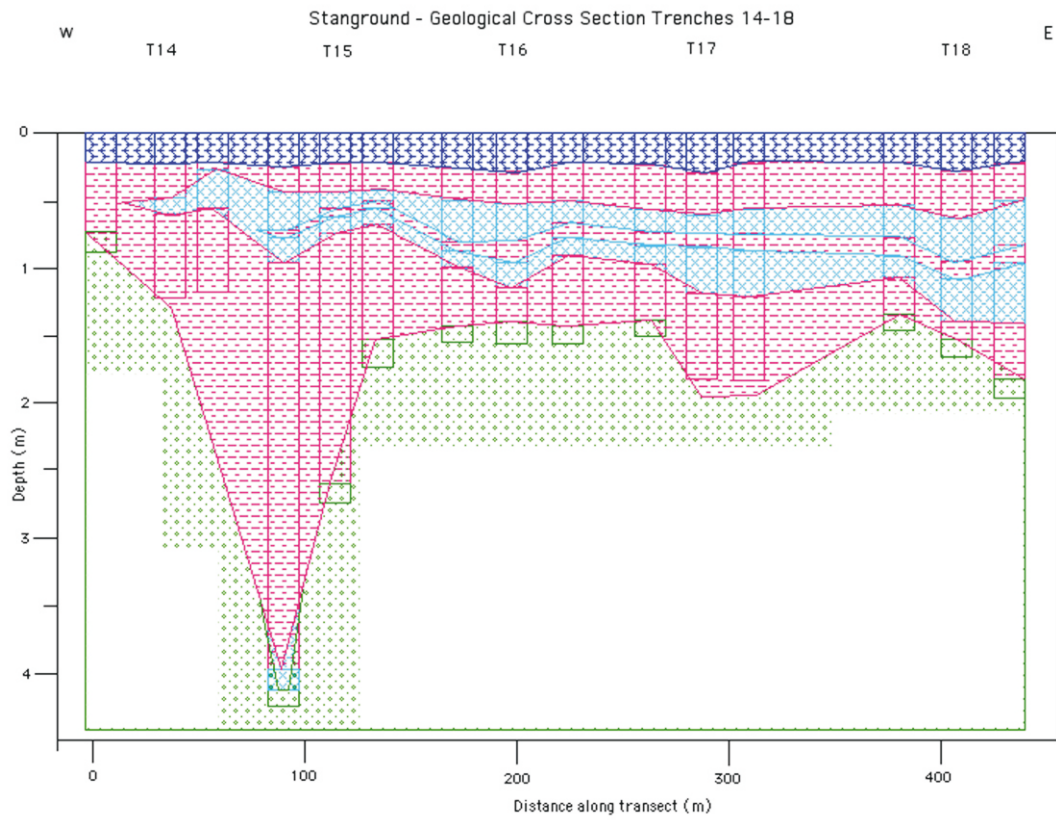


Figure 3

APPENDIX A

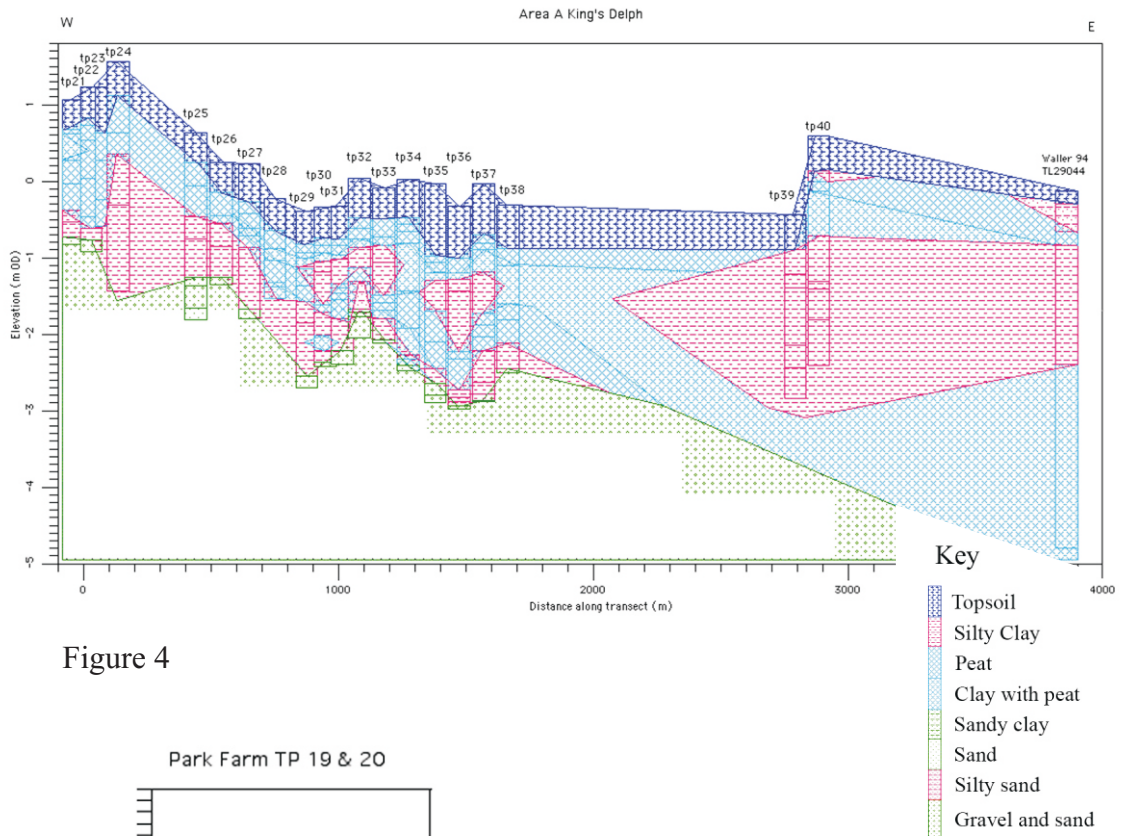


Figure 4

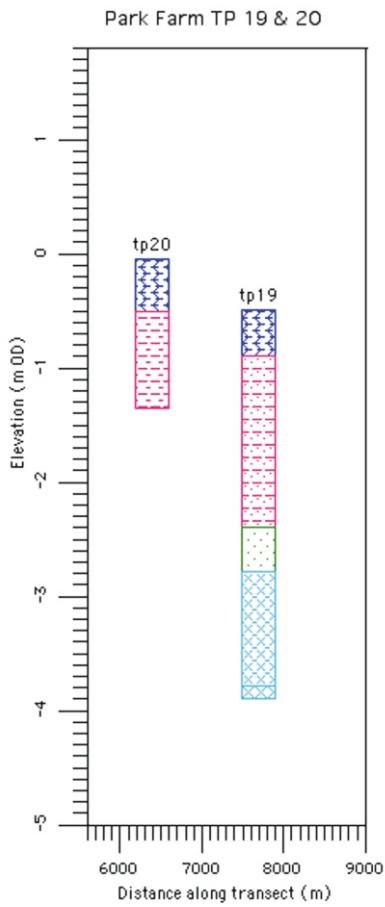


Figure 5

APPENDIX A

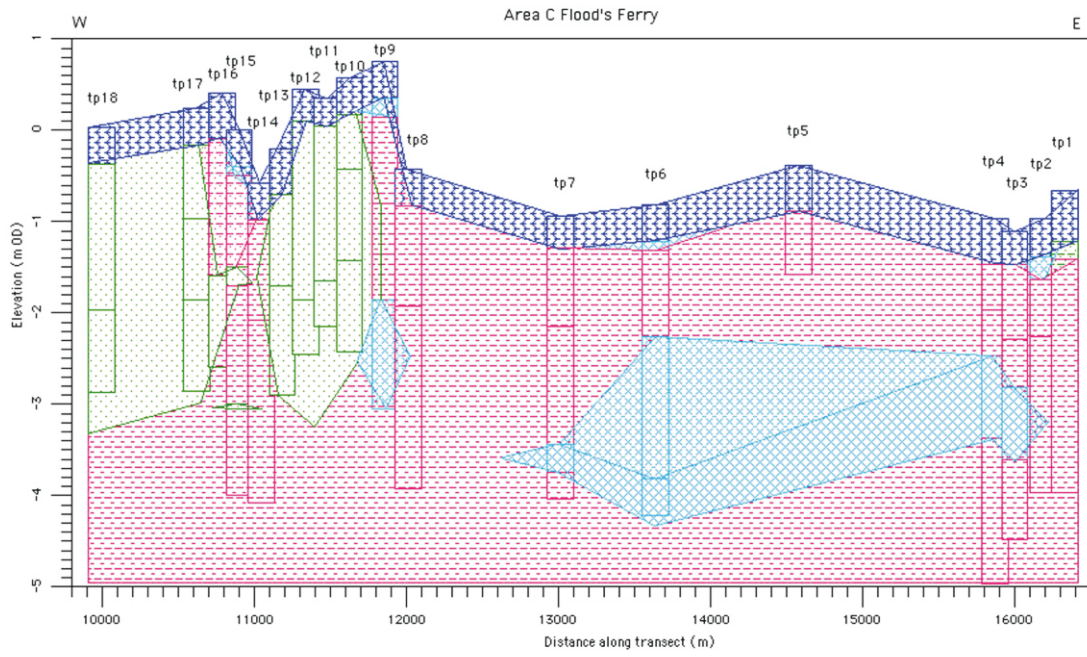


Figure 6

APPENDIX B

Test pit logs

Test Pit 1 (TL 39962 93150) Surface height -0.66 m OD

0 – 0.56m	Topsoil
0.56m – 0.75m	Mid-orange/grey sandy clay
0.75m – 3.3m	Mid-brownish grey silty clay
3.3m	Not bottomed

Test Pit 2 (TL 39935 93153) Surface height -0.96 m OD

0 – 0.42m	Topsoil
0.42 – 0.68m	Mixed dark brown clayey peat
0.68 – 1.3m	Mid-brownish grey clayey silt
1.3m – 3.0m	Mid-grey clayey silt
3.0m	Not bottomed

Test Pit 3 (TL 39752 93186) Surface height -1.10 m OD

0 – 0.37m	Topsoil
0.37 – 1.18m	Mid-brownish grey silty clay
1.18 – 1.71m	Light grey, waterlogged clayey silt
1.71 – 2.51m	Very organic dark brown peat (sulphurous and containing bog oaks)
2.51 – 3.38m	Bluish grey homogenous slightly clayey silt
3.38m	Not bottomed

Test Pit 4 (TL 39733 93190) Surface height -0.97 m OD

0 – 0.5m	Topsoil
0.5 – 1m	Oxidised Mid-orange brown silty clay
1 – 1.5m	Mid-grey brown silty clay
1.5 – 2.4m	Very organic dark brown peat (sulphurous)
2.4 – 4.0m	Bluish grey homogenous clayey silt
4.0m	Not bottomed

Test Pit 5 (TL 38223 93376) Surface height -0.38 m OD

0 – 0.5m	Topsoil
0.5 – 1.2m	Mid-grey brown silty clay
1.2m	Test pit abandoned due to disturbance caused by in-filled drainage ditch

Test Pit 6 (TL 37280 93405) Surface height -0.81 m OD

0 – 0.4m	Topsoil
0.4m – 0.5m	Desiccated upper peat horizon (occurring sporadically in lenses)
0.5m – 1.45m	Mid-grey brown silty clay (indistinct interface)
1.45 – 3.0m	Blue grey sticky silty clay rich in organic material
3.0 – 3.4m	Very organic brown peat (sulphurous)
3.4m	Not bottomed

Test Pit 7 (TL 36658 93442) Surface height -0.94 m OD

0 – 0.35m	Topsoil
0.35 – 1.2m	Mid-grey brown silty clay containing occasional shell fragments (indistinct interface)
1.2 – 2.5m	Blue grey silty clay
2.5 – 2.8m	Very organic brown fibrous peat
2.8 – 3.1m	Blue grey clayey silt
3.1m	Not bottomed

Test Pit 8 (TL 35657 93504) Surface height -0.43 m OD

0 – 0.4m	Topsoil
0.4 – 1.5m	Mid-orange brown clay
1.5 – 3.5m	Mid-grey clayey silt (containing organic material)
3.5m	Not bottomed

Test Pit 9 (SB) (TL 35503 93518) Surface height 0.75 m OD

0 – 0.4m	Topsoil
0.4 – 0.6m	Pod of brown peat apparently within top of underlying organic brown silts
0.6 – 1.55m	Orange/brown mottled silts, more or less prismatic
1.55 - 2.1m	Grey/brown with more or less laminated silty clay with rootlet channels and worm casts
2.1 – 2.6m	Grey silt/silty clay – sandy partings; organic with organic fragments; rootlets – <i>Phragmites</i> stems
2.6 – 3.8m	Grey organic silt with large bivalves, becoming organic silt with shells and organic material.
3.8m	Not bottomed

Samples taken from 0.5m, 0.6m, 1.4m, 1.8m, 2.4m, 2.6m, 3.8m (SB)

Test Pit 10 (TL 35273 93548) Surface height 0.57 m OD

0 – 0.4m	Topsoil
0.4 – 1.0m	Mid-yellow brown sand with iron replaced rootlets inter-bedded with occasional thin sandy silt layers
1.0 – 2.0m	Mid-yellow brown, waterlogged sand inter-bedded with occasional thin sandy silt layers
2.0 – 3.0m	Grey waterlogged sand
3.0m	Not bottomed

Test Pit 11 (TL 35126 93524) Surface height 0.35 m OD

0 – 0.3m	Topsoil
0.3 – 2.0m	Light orange/yellow brown sand with iron replaced rootlets inter-bedded with occasional thin grey sandy silt layers
2.0 – 2.5m	Grey waterlogged sand
2.5m	Not bottomed

Test Pit 12 (TL 34984 93501) Surface height 0.45 m OD

0 – 0.35m	Topsoil
0.35 – 2.3m	Light orange brown sand with iron replaced rootlets, inter-bedded with occasional thin sandy silt layers
2.3 – 2.9m	Grey waterlogged sand
2.9m	Not bottomed

Test Pit 13 (SB) (TL 34827 93474) Surface height -0.20 m OD

0 – 0.3m	Topsoil
0.3 – 1.5m	Orange brown sand (silty sand at top), laminated with iron replaced rootlets
1.5 – 3.0m	Grey waterlogged sand with carbonate patches
3.0m	Not bottomed

Samples taken from 1.4m, 1.8m, 3.0m (SB)

Test Pit 14 (TL 34689 93450) Surface height -0.58 m OD

0 – 0.4m	Topsoil
0.4 – 1.5m	Mid-brown clayey silt / silty clay
1.5 – 3.5m	Blue grey sticky silty clay (containing organic material)
3.5m	Not bottomed

Test Pit 15 (SB) (TL 34541 93425) Surface height 0.00 m OD

0 – 0.5m	Topsoil
0.5 – 0.65m	Desiccated peat in pockets
0.65 – 2.0m	Orange brown clayey sandy silt with iron replaced rootlets
2.0 – 2.7m	Grey sand
2.7 – 4.2m	Dark grey organic silty clay with sand lenses at 4m
4.2 m	Not bottomed

Samples taken from 1.8m, 2.5m, 3.0m, 4.0m, 4.2m (SB)

Test Pit 16 (TL 34492 93417) Surface height 0.41 m OD

0 – 0.5m	Topsoil
0.5 – 2.0m	Mid-orange brown silty sand with iron replaced rootlets
2.0 – 3.0m	Mid-brown sand
3.0m	Not bottomed

Test Pit 17 (TL 34395 93399) Surface height 0.24 m OD

0 – 0.4m	Topsoil
0.4 – 1.2m	Orange brown sand with iron replaced rootlets
1.2 – 2.1m	Reddish brown sand with iron replaced rootlets
2.1 – 3.1m	Grey waterlogged sand
3.1m	Not bottomed

Test Pit 18 (TL 33631 93300) Surface height 0.03 m OD

0 – 0.4m	Topsoil
0.4 – 2m	Mid-brown silty sand inter-bedded with occasional grey silty layers
2 – 2.9m	Grey sand with iron replaced rootlets / plant remains
2.9m	Not bottomed

Test Pit 19 (TL 31115 94659) Surface height -0.49 m OD

0 – 0.4m	Topsoil
0.4 – 1.9m	Light yellow brown slightly clayey silty sand with occasional lenses / layers of brown silty clay
1.9 – 2.3m	Grey sand
2.3 – 3.3m	Bluish grey sticky silty clay & reed cases and organic matter
3.3 – 3.4	Brown organic peat containing frequent reed cases

3.4m Not bottomed

Test Pit 20 (TL 29780 94657) Surface height -0.05 m OD

0 – 0.45m Topsoil
0.45 – 1.3m Mid-grey brown silty clay.
1.3m Test pit abandoned due to disturbance caused by in-filled ditch and local water table

Test Pit 21 (TL 23464 95941) Surface height 1.07 m OD

0 – 0.4m Topsoil
0.4 – 0.45m Dark brown desiccated peat.
0.45 – 0.8m Mid-brown slightly clayey peat (containing bog oak)
0.8 – 1.1m Dark brown peat
1.1 – 1.45m Brown very organic fibrous peat containing reed cases
1.45 – 1.6m Grey brown clayey silt
1.6 – 1.8m Grey silty clay
1.8 – 1.9m Sandy gravel

Test Pit 22 (off north edge of King's Delph island TL 23490 95900) Surface height not known

0 – 0.4m Topsoil
0.4 – 0.8m Dark brown peat (*Sphagnum?*)
0.48 – 0.7m Bog wood (alder?) in top of dark black peat
0.7 – 1.2 m Dark black fine fibrous peat (sedge & moss)
1.2 – 1.7m Dark chocolate brown coarse peat with reed horizon on top and occasional reed roots/stalks below
1.7 – 1.85m Dark grey organic detrital (fibrous) silt with re-deposited gravelly silt
1.85 – 2.0m Sticky blue-grey clay with dark black reduction black spots
2.0 – 2.15m Gravel

NB wood sample taken from 0.48-0.7m & 1.2-1.7m

Test Pit 23 (TL 23488 95864) Surface height 1.23 m OD

0 – 0.59m Topsoil
0.59 – 0.96m Reddish brown desiccated peat
0.96 – 1.47m Dark brown peat
1.47 – 1.82m Brown fibrous peat containing reed cases
1.82 – 2.25m Light bluish grey silty clay
2.25 Sandy gravel

Test Pit 24 (SB) (TL 23482 95796) Surface height 1.57 m OD

0 – 0.45m Topsoil
0.45 – 0.94m Desiccated peat (disturbed by modern activity)
0.94 – 1.22m Dark brown peat
1.22 – 1.88m Sticky blue grey clay with small orange clay lenses
1.88 – 3.0m Stiff light bluish grey silty clay
3.0m Not bottomed

Test Pit 25 (off east edge of King's Delph island) (**SB**) (TL 23831 95618) Surface height 0.64 m OD

0 – 0.4m Topsoil

0.4-0.7m	Dark brown peat
0.7 – 1.1m	Fibrous <i>Phragmites</i> peat
1.1- 1.4m	Light grey silty clay
1.4 – 1.9m	Dark grey clay
1.9-2.0m	Yellow-brown sand
2.0-2.3m	Gravel
2.3-2.45m	Grey sand
2.45m	Not bottomed

Samples taken from 0.6m, 1.0m, 1.3m, 1.8m, 1.95m, 2.2m, 2.4m (SB)

Test Pit 26 (TL 23931 95603) Surface height 0.25 m OD

0 – 0.4m	Topsoil
0.4 – 0.7m	Dark brown fine peat
0.7 – 0.8m	Mid-brown silty peat
0.8 – 1.1m	Light grey clayey silt (containing bog oaks)
1.1 – 1.5m	Mid-grey silty clay
1.5 – 1.6m	Sandy gravel

Test Pit 27 (TL 24040 95585) Surface height 0.23 m OD

0 – 0.5m	Topsoil
0.5 – 0.65m	Desiccated reddish brown peat
0.65 – 0.85m	Dark brown peat
0.85 – 0.95m	Grey brown silty peat
0.95 – 1.1m	Brown very organic layer (containing reed cases)
1.1 – 1.9m	Grey silty clay
1.9m	Sandy gravel

Test Pit 28 (ST) (TL 24139 95569) Surface height -0.23 m OD

0 – 0.41m	Topsoil
0.41 – 0.65m	Dark black fibrous peat and rootlets
0.65 – 0.8m	Light brown-grey clay-rich fibrous peat
0.8 – 0.9 m	Light brown fibrous peat (<i>Sphagnum?</i>)
0.9 – 1.1m	Light brown coarse reed and wood peat (with oak logs)
1.1 – 1.15m	Past brown peat and organic detrital silt
1.15 – 1.3m	Dark grey soft organic clay
1.3 – 1.35m	Buff to dark grey silty clay with dark black organic spots

NB Samples were taken from the light brown fibrous lower peat, and also of wood, including from the reedy and woody peat horizon within it. Within the top of the lower peat (between 0.8 – 0.9m depth) was found the *in situ* tree bole and roots of a ?birch (root bole approx 0.8m diameter) surrounded by a patch of clay and reed peat (a hump within the underlying reed peat horizon). This was located within the SW corner of the TP adjacent to the horizontal section of a small trunk or root approx. 0.2m diameter (photos taken). This TP section was interesting in that the very first indications of the clay sedimentation of the salt marsh mud could be recognised in between the lower peat and the overlying facies. Landwards both of these horizons merge (although they are still recognisable on account of the distinctive reed and woody horizon of the former) around the island edges.

Test Pit 29 (ST) (TL 24263 95549) Surface height -0.40 m OD

0 – 0.43m	Topsoil
0.43 – 0.53m	Dark black fine peat
0.53 – 0.6m	Light brown woody peat layer
0.6 – 0.72m	Light brown – light grey peaty clay with reeds

0.73 – 0.75m	Thin layer or lens of clay
0.75 – 0.97m	Dark brown reed peat with black lenses
0.97 – 1.17m	Dark black reed and wood peat with branches and large horizontal trunks of trees and <i>in situ</i> root boles of oaks
1.17 – 1.45m	Light grey sticky clay/silt with yellowish <i>Phragmites</i> reeds
1.45 – 2.14m	Light grey-buff soft clay and silt with dark organic reduction spots and some of burnt (?) or oxidised sediment. Becomes much more silty/sandy towards base
2.14 – 2.3m	Clay-filled gravel

NB Samples of wood were taken. The woody horizon within the top of the silty clay may be tree roots from the base of the overlying peat. Here the main woody horizon is within the base of the lower peat, and consists of *in situ* remains of small tree boles and roots of oak (?) plus some larger fallen sections of the same. The lower part of the muds is distinctive through its dark mottling, formed either by organic matter or else by the reduction spots typical within mudflat sequences. The latter may be associated and with roots or invertebrate burrows. Also distinctive of this facies were the more occasional spots of soft brick-red material, which had a ‘burnt’ coloration rather than an iron oxide replacement. These appear to be associated with the same burrows or root holes, thus may not be anthropogenic in origin.

Test Pit 30 (ST) (TL 24351 95591) Surface height -0.34 m OD

0 – 0.4m	Topsoil
0.4 – 0.5m	Dark black peat
0.5 – 0.6m	Dark brown fibrous peat with woody roots at base
0.6 – 0.7m	Mottled pale yellow-brown reedy silt and clay
0.7 – 0.85m	Reed bed at top of grey-blue clay
0.85 – 1.28m	Pale grey-blue soft clay with dark black organic reduction spots
1.28 – 1.38m	Wood horizon at top of peat with pine and oak logs
1.38 – 1.68m	Dark brown-black coarse fibrous peat with wood
1.68 – 1.88m	Dark blue-black sticky clay with black organic reduction spots and some red ‘burnt’ streaks
1.88 – 2.03m	Pale yellow-brown clay and silt with some gravel
2.03 – 2.08m	Clay-rich gravel

NB The same dark (black) spots can be seen in the mud facies at the base of the silty clay unit, as well as within the base of the lower peat in the above sequence. This suggests a repetition of exactly the same conditions, although here the ‘brick-red’ spots are only present within the lower silty clay. The wood within the very top of the lower peat includes horizontal (fallen) sections of what appears to be pine (photographed and sampled). The base of the basal silty clay includes a clay-silt with gravel inclusions. This suggests a small amount of re-working of the underlying gravel, and thus a minor erosion surface. The current water table was at a depth of approx. 2.05m.

Test Pit 31 (ST) (TL 24437 95642) Surface height -0.32 m OD

0 – 0.44m	Topsoil
0.44 – 0.52m	Dark black finely fibrous peat (<i>Sphagnum?</i>)
0.52 – 0.64m	Light brown – dark brown fibrous peat (sedge?)
0.64 – 0.70m	Light brownish clay with reeds/ roots
0.70 – 1.02m	Light grey-blue sticky clay with layers of reeds (<i>Phragmites</i>)
1.02 – 1.08m	Mid-dark brown reed peat with wood fragments (incl. acorn)
1.08 – 1.15m	Wood peat (include. logs of oak and pine)
1.15 – 1.23m	Brown coarse fibrous peat
1.23 – 1.48m	Peaty clay and silt with flinty gravel at base
1.48 – 1.90m	Dark grey clay and silty gravel with dark yellow sand inclusions
1.90 – 2.08m	Silty gravel

NB From the wood horizon at the top of the lower peat an acorn shell was collected. This was broken, and may or may not show evidence for squirrel activity. Just beneath this horizon was the main layer of wood including roots and/or horizontal thin trunks of pine and oak. A palaeo-channel deposit (> 0.5m deep) that contains increasing amounts of (re-worked) gravel towards its base seems quite dissimilar to the fills of the later roddons.

Test Pit 32 (ST) (TL 24523 95697) Surface height 0.03 m OD

0 – 0.51m	Topsoil
0.51 – 0.65m	Black fibrous peat with thin layers of white clay towards top
0.65 – 0.78 m	Coarse brown reed peat with woody fragments
0.78 – 0.90m	Reed (<i>Phragmites</i>) horizon and roots in top of clay
0.90 – 1.16m	Light grey clay with reed horizons
1.16 – 1.34m	Dark green – black coarse fibrous peat with reeds and wood fragments
1.34 – 1.70m	Light grey silty clay with dark black organic and burnt (?) red spots towards base
1.70 – 2.04m	Silty sand overlain by clay within small channel up against E side of North section
1.70 – 1.80m	Light brown-yellow clay-rich gravel
1.80 – 2.08	Gravel and silt

NB The lower peat was noticeably thinner here, and by contrast contained no substantial wood fragments. However, both this and the thin woody horizon at the base of the largely wasted away peat above were sampled. Thin lenses of ‘white clay’ in the disturbed plough base of the topsoil in this case might not represent a relict shell marl (*Chara* sp. accumulation), but within other sections examined this seems credible. Beneath the silty clay a small channel cut into the basal gravel may represent the earliest channelling in this particular vicinity, the fuller and later expression of which could be seen in TP31.

Test Pit 33 (ST) (TL 24622 95680) Surface height -0.09 m OD

0 – 0.4m	Topsoil
0.4 – 0.64m	Dark black fibrous peat with white marl streaks (<i>Chara</i> sp.?)
0.64 – 0.75m	Reed lenses (<i>Phragmites</i>) in top of oxidised grey clay
0.75 – 0.97m	Pale grey sticky clay with chalky streaks (and some reeds)
0.97 – 1.40m	Mid-grey clay with dark organic spots towards base. Alder wood log at 1.32m depth
1.40 – 1.50m	Dark green-grey fibrous peat
1.50 – 1.59m	Woody peat with some small tree logs towards top, silty towards base
1.59 – 1.70m	Dark clay silt with organic detritus
1.70 – 1.98m	Mid-grey sticky clay and silt with dark black organic and burnt (red) spot towards base (mottled)
1.98 – 2.03m	Silty gravel

NB Horizontal tree root system exposed within the bottom of the lower peat at approx. 1.5m depth. This includes logs of possible oak? Samples were taken both from the upper dark green-grey fibrous peat horizon of the lower peat and from the grey clay (mudflats horizon) of the overlying. The latter included alder wood (a small log) within the clay at 1.32m depth, presumably a piece of relatively locally sourced and washed-in driftwood. Vertical laminae evident within the top of this clay horizon may in fact be incipient desiccation cracks developing upon the emergent surface of mudflats (see subsequent test pits). At the base of the lower peat there appears to be the development of back channel sedimentation – a thin horizon consisting of clay/silt with organic detritus; perhaps a brackish-freshwater mere.

Test Pit 34 (ST) (TL 24712 95665) Surface height 0.02 m OD

0 – 0.5m	Topsoil
0.5 – 0.58m	Dark black fibrous peat
0.58 – 0.68m	Light brown fibrous peat (sedge?) and clay
0.68 – 0.83m	Buff- light brown peat with white marly lenses (<i>Chara</i> sp.?)
0.83 – 1.46m	Sticky blue-grey clay with reeds (<i>Phragmites</i>)
1.46 – 1.94m	Reed and wood peat with large pieces wood at top
1.94 – 2.29m	Light grey to brown clay with peaty streaks
2.29 – 2.35m	Blue-grey clay with dark black and some red (burnt?) spots towards top
2.35 – 2.43m	Thin organic horizon with some tree roots/wood basal peat/soil?
2.43 – 2.5m	Silt and gravel

NB The lower peat within this section is much deeper with less wood in it. Thin tree trunks are generally rare within this whilst the wood fragments recovered are much more twiggy (brushwood). Samples were taken from

the base of the peat (incl white marly lenses), from the 'woody' horizons at the top of the lower peat, and from a thin organic horizon seemingly containing small tree or shrub roots at the base of the basal silty clay. The latter horizon lay immediately beneath a clean blue-grey mud (presumably an mudflat facies) that suggests a fairly rapid inundation of low-lying land by the sea. Over the length of a 6m long E-W section exposed within the stepped TP the depth to the surface of the lower peat drops from 1.35m (at the W end) to 1.5m (at the E end).

Test Pit 35 (ST) (TL 24804 95600) Surface height -0.30 m OD

0 – 0.68m	Topsoil
0.68 – 0.76m	Dark black peat
0.76 – 0.9m	Light brown – orange sedge peat and sand
0.9 – 1.0m	Pale grey-blue sticky clay with reeds (<i>Phragmites</i>) on top
1.0m – 1.4m	Pale grey-blue sticky clay with vertical desiccation cracks and dark black organic reduction spots towards base
1.4 – 1.8m	Woody peat with some large wood sections (branches) towards top
1.8 – 2.15m	Sedge and reed peat.
2.15 – 2.35m	Blue-grey clay with sand and gravel towards base
2.35 – 2.6m	Very small channel with sand and gravel fill seen in west end of north section channel fill
2.10 – 2.6m	Gravel

NB Within this section the basal peat has slightly more wood, this time concentrated at the top. Samples were taken from this horizon as well as from the sedge and reed peat underneath and from the base of the overlying orange-brown sedge peat, the latter beneath the obviously oxidised horizon. At 1m depth, the top of the emergent mudflat horizon was scraped clean revealing a series of polygonal desiccation cracks each approx 1.5 – 2m in diameter with a vertical depth of about 0.4m down to the base of the uneven junction (erosion surface). The latter surface dipped to the west. Beneath the peat a channel dipped steeply to the west (from 2.1m to 2.6m), suggesting that this TP lay on the very edge of a palaeo-channel cutting through the underlying gravels.

Test Pit 36 (Drake's Farm) (**ST**) (TL 24885 95542) Surface height -0.33 m OD

0 – 0.67m	Topsoil
0.67 – 0.87m	Dark black fine peat
0.87 – 0.95m	Clay-rich peat with reeds and roots and white marly wisps towards base
0.95 – 1.1m	Light grey-blue clay
1.1 – 1.9m	Light grey-blue clay with desiccation cracks
1.9 – 2.0m	Woody peat with small tree sections/branches on top
2.0 – 2.4m	Reed peat
2.4 – 2.45m	Organic clay
2.45 – 2.5m	Grey clay
2.5 – 2.55m	Grey clay with dark spots
2.55 – 2.6m	Grey silty clay
2.6 – 2.65m	Gravel

NB The TP was dug along the field edge on the other side of the road from Drake's Farm. The desiccation cracked surface within the silty clay was still visible although there appeared to be no *Phragmites* reed bed horizon above. Instead the junction with the overlying unit appeared to be uneven, suggesting some slight erosion in this area. The base of this peat was rooty with very thin marly lenses (an incipient shell marl (*Chara* sp)? immediately beneath it). Once again a woody horizon was developed at the top. Beneath this the silty clay was thin (only 0.2m thick), but represented a complete sequence from organic to silty clay overlying gravel at the base.

Test Pit 37 (ST) (TL 24954 95493) Surface height -0.03 m OD

0 – 0.68m	Topsoil
0.68 – 0.78m	Dark black fibrous peat
0.78 – 0.87m	Black peat with white marly lenses

0.87 – 0.95m	Oxidised brown peat and palaeo-soil, uneven boundary with clay (non-conformity)
0.95 – 1.15m	Grey-brown oxidised zone of clay with <i>Phragmites</i> and root-holes
1.15 – 1.7m	Blue-grey clay
1.7 – 1.85m	Wood peat with fallen tree sections plus in situ. Tree bole and roots
1.85 – 2.0m	Brown (<i>Sphagnum?</i>) peat
2.0 – 2.18m	Reed and sedge peat
2.18 – 2.6m	Sticky blue-grey clay
2.6 – 2.75m	Blue-grey clay with black (organic/reduction) spots
2.75 – 2.84m	Silty blue-grey clay
2.84 – 2.85m	Silty-sandy gravel

NB The base of the upper peat was interesting in that a clear succession from an oxidised buried peaty soil formed upon an emerged erosional clay surface through to a soil with impeded drainage, a thin lens of marl peat (shell marl with *Chara* sp.?), sedge peat a possible *Sphagnum* peat could still be detected beneath the level of the plough soil disturbance. The formation of an erosional surface at the top of the clay here is also supported by the presence of a 0.2m thick weathered or oxidised horizon within the emergent clay. A wood sample was taken from an *in situ* tree bole (oak?) located within the top of the wood peat horizon. The sequence beneath this appeared to be fairly complete without any erosional surfaces. The water level was encountered at about 2.6m. This TP was sampled at depth (within a 2m wide sondage) only at its east end.

Test Pit 38 (SB) (TL 25036 95435) Surface height -0.31 m OD

0 – 0.57m	Topsoil
0.57 – 0.79m	Desiccated black peat
0.79 – 1.29m	Grey-brown clay with reed (<i>Phragmites</i>) inclusions particularly at top
1.29 – 1.5m	Woody peat
1.5 – 1.8m	Reed-filled peat with wood
1.8 – 2.14m	Blue-grey clay (less organic)
2.14 – 2.2m	Gravel

Samples taken from 1.25m & 1.35m (SB)

Test Pit 39 (Black Bush) (TL 26192 95165) Surface height -0.44 m OD

0 – 0.45m	Topsoil
0.45 – 0.78m	Grey silty-clay
0.78 – 0.95m	Orange-brown silt with iron-oxide replaced organics
0.95 – 1.71m	Mottled grey-brown silty clay with desiccation cracks on surface
1.71 – 2.0m	Soft blue-grey silty clay with shelly material
2.0 – 2.4m	Dark organic silts with bivalves (<i>Unio</i> sp?)

Test Pit 40 (TL 26242 95160) Surface height 0.59 m OD

0 – 0.45m	Topsoil (silty clay)
0.45 – 0.60m	Grey silty clay
0.60 – 0.72m	Orange-brown oxidised peat
0.72 – 1.3m	Orange to grey-brown silty clay with partly oxidised organic material
1.3 – 1.9m	Brown silts and interbedded silty clays
1.9 – 2.00m	Blue silty clay
2.00 – 2.4m	Blue-grey silt with oxidised rootlet channels
2.4 – 3.0m	Increasingly laminated blue-grey silts interbedded with clays

Sections described by Dr Steve Boreham are labelled (SB)

Sections described by Simon Timberlake (CAU) are labelled (ST)

Other sections described by various CAU staff under the supervision of Jonathan Tabor.

APPENDIX C

Trench descriptions

Trench No.	Area	Length (m)	Orientation	Depth (m)	Features
1	C	27	NE - SW	NE end: 0.78 SE end: 0.64	F. 03, F. 15, F. 16
2	C	24	NE - SW	NE end: 0.55 SE end: 0.60	F. 01, F.02
3	C	25	NE - SW	NE end: 0.52 SE end: 0.55	F. 04
4	C	34	NE - SW	NE end: 0.42 SE end: 0.60	F. 09, F. 10
5	C	25	NE - SW	NE end: 0.59 SE end: 0.48	F. 05 - 08
6	C	25	NE - SW	NE end: 0.58 SE end: 0.50	F. 12, F. 13
7	C	24	NE - SW	NE end: 0.44 SE end: 0.46	F. 11, F. 14
8	C	23.5	NE - SW	NE end: 0.50 SE end: 0.50	F. 18, F.19
9	C	76	NE - SW	NE end: 0.40 SE end: 0.60	None
10	C	25	NE - SW	NE end: 0.55 SE end: 0.50	None
11	C	25	E - W	E end: 0.55 W end: 0.55	None
12	C	Not excavated (replaced by TP)			
13	C	Not excavated (replaced by TP)			
14	C	24.5	NE - SW	NE end: 0.45 SW end 0.50	F. 21
15	C	23.5	NE - SW	NE end: 0.50 SE end: 0.50	F. 20, F. 22, F. 23
16	C	15	NE - SW	NE end: 0.35 SW end: 0.30	None
17	A	20	N - S	N end: 1.39 S end: 1.05	None
18	A	10	N - S	N end: 1.08 S end: 1.06	None
19	A	25	N - S	N end: 0.95 S end: 0.65	F. 24
20	A	10	N - S	N end: 0.57 S end: 0.42	None
21	A	15	E - W	E end: 0.64 W end: 0.60	None
22	A	25.5	E - W	E end: 0.49 W end: 0.42	None
23	A	58.5	E - W	E end: 0.7 W end: 0.55	F. 25 - 35
24	A	20	E - W	E end: 1.17 W end: 0.97	F. 40
25	A	20	E - W	E end: 0.63 W end: 0.63	F. 36 - 39
26	A	20	E - W	E end: 0.63 W end: 0.70	None