HERITAGE NETWORK

A10: Wadesmill Bypass
Phase 1

(HN353, HN355, HN356, HN360)

Archaeological Evaluation Report

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Archaeological Director: David Hillelson, BA MIFA

A10 WADESMILL BYPASS:
Phase 1

HN353, HN355, HN356, HN360

Archaeological Evaluation Report

Prepared on behalf of Fitzpatrick Contractors Ltd and Lafarge Aggregates

by

Chris Turner, BSC

Report No. 148

May 2002

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Acknowledgements

Fieldwork for the present evaluation projects was carried out by Chris Turner, Geoff Saunders and Karin Semmelmann. The auger survey of Plot 15 was carried out by Andrea Snelling of the Environmental Archaeology Consultancy with the assistance of Jeremy Dubber and James Rackham. The finds report was prepared by Helen Ashworth and the illustrations were prepared by Karin Semmelmann.

The Heritage Network would like to express its thanks to John Quinlan, Tony Lawler and the team at Fitzpatrick Contractors Ltd; Phil Wayles, Marcus John and the team at URS Corporation; and Stewart Bryant and Jonathan Smith at the County Archaeology Office, Hertfordshire County Council, for their cooperation and assistance.

Summary: Plot 15

Site name and address:	A10 Wadesmill, High Cross and Colliers End Bypass - Plots 14-15		
County:	Hertfordshire	**District:**	East Hertfordshire
Village/town:	Thundridge	**Parish:**	Thundridge
Planning reference:	n/a	**NGR:**	TL 3627 1720
Client name and address:	Fitzpatrick Contractors Ltd, Hertford Road, Hoddesdon EN11 9BX		
Nature of development:	Roadbuilding	**Present land use:**	Agriculture/woodland
Size of study area:	1650m^2	**Size of area investigated:**	155m^2
Site Code:	HN 360	**Other reference:**	n/a
Organisation:	Heritage Network Ltd	**Site Director:**	David Hillelson
Type of work:	Evaluation	**Curating Museum:**	Hertford Museum
Start of work	8 April 2002	**Finish of work**	16 April 2002
Related SMR Nos.:	n/a	**Periods represented:**	Modern
Previous summaries/reports:	n/a		

Synopsis: As part of the enabling works for the construction of the A10 Wadesmill Bypass, the Heritage Network was commissioned by Fitzpatrick Contractors Ltd and Lafarge Aggregates, to undertake a programme of targeted archaeological evaluation of key areas identified along the construction route.

The present site is located the between the River Rib and Cold Christmas Lane, and forms the construction site for a bridge carrying the new road across the river. The site is in the flood plain of the river, and close to *Site 2* (Plots 16-22), an area of possible prehistoric and Roman activity identified following a fieldwalking survey carried out as part of the advance archaeological investigations commissioned by the Highways Agency. The potential risk to the construction programme of the discovery of archaeological remains in this location was noted in the Heritage Network's *Archaeological Mitigation Statement,* dated November 2001.

In order to investigate the potential presence of palaeochannels in the valley of the River Rib, and associated islands which might have been favourable for habitation in antiquity, an auger survey was carried out by the Environmental Archaeology Consultancy in advance of trial trenching in Plot 15. Eleven auger holes were driven at 5m intervals between chainage points 2595 and 2645, using a hand operated 2.5cm diameter, 1 metre gouge auger, and a 7cm diameter, 20cm bucket auger, beginning in the north. The recorded stratigraphy in the cores allowed a diagrammatic section to be drawn which suggested a build-up of alluvial material but no defined channels or islands. The auger survey has provided a sequence of deposits, however, which represent an important record of changes in the valley environment, over a potentially long period of time. It is considered that radiocarbon dating and palaeo-environmental study of the deposits could yield an important local environmental context for archaeological sites in the area.

Three evaluation trenches were dug, focused on the areas proposed for the construction of the bridge abutment (Trench 1) and a line of supporting piers (Trenches 2 and 3). These provided a 155m^2 sample of the 0.165ha site. A V-shaped ditch [102] was recorded running east-west in Trench 1 which has been identified as the field boundary between Plots 14 and 15. A bank of reddish brown gravel was also recorded at the western end of the trench, overlain by the alluvial deposits previously recorded in the auger survey. This bank of gravel was also recorded in Trench 2, located to the north of Trench 1, but only the alluvial deposits were recorded in Trench 3, to the east of Trench 2. No significant archaeological features or deposits were identified but the evaluation has clearly shown the presence of a large palaeochannel filled with alluvial clays, running approximately northwest- southeast, the western banks of which were recorded in Trenches 1 and 2. The excavation of Trench 3 was intended to identify an eastern limit to the channel but this would appear to lie outside the area affected by the bridge construction.

On the basis of the evaluation, there appear to be no significant concentrations of archaeological activity which may cause disruption to the construction programme, although the information derived from the auger survey is of intrinsic interest and holds the potential for further study. It is considered that any further potential archaeological features and deposits which may be exposed in the course of the construction groundworks, could be adequately recorded as part of the monitoring programme defined as *Phase 3* in the Heritage Network's *Archaeological Mitigation Statement,* dated November 2001, which has been approved by the Highways Agency as part of the tender submission for the construction project.

Summary: Plots 28-29

Site name and address:	A10 Wadesmill, High Cross and Colliers End Bypass - Plots 28-29		
County:	Hertfordshire	**District:**	East Hertfordshire
Village/town:	High Cross	**Parish:**	Thundridge
Planning reference:	n/a	**NGR:**	TL 3688 1866
Client name and address:	Fitzpatrick Contractors Ltd, Hertford Road, Hoddesdon EN11 9BX		
Nature of development:	Roadbuilding	**Present land use:**	Agriculture
Size of study area:	48,900m^2	**Size of area investigated:**	1260m^2
Site Code:	HN 356	**Other reference:**	n/a
Organisation:	Heritage Network Ltd	**Site Director:**	David Hillelson
Type of work:	Evaluation	**Curating Museum:**	Hertford Museum
Start of work	4 April 2002	**Finish of work**	9 April 2002
Related SMR Nos.:	n/a	**Periods represented:**	EIA, LPRIA, RB
Previous summaries/reports:	n/a		

Synopsis: As part of the enabling works for the construction of the A10 Wadesmill Bypass, the Heritage Network was commissioned by Fitzpatrick Contractors Ltd and Lafarge Aggregates, to undertake a programme of targeted archaeological evaluation of key areas identified along the construction route.

The present site is located between North Drive and Sutes Wood, and forms *Site 3*, an area of possible prehistoric and Roman activity identified following a fieldwalking survey carried out as part of the advance archaeological investigations commissioned by the Highways Agency. No further evaluation of this site was commissioned as part of the advance works.

Twenty-four evaluation trenches were located across the area providing a 1260m^2 sample of the 4.89ha site. Plough marks were evident in all the trenches except Trench 11. Two linear features [902] and [905] were recorded in Trench 9, a further two linear features [1004] and [1006] and a pit [1001] were recorded in Trench 10, and a further linear [1102] was recorded in Trench 11.

Ditch [1006] in Trench 10 appears to be a field boundary which is shown on the Standon Tithe Map of 1838/9 and the Ordnance Survey map of 1946-50, but which had been removed by the time of the Ordnance Survey map of 1977. Fragments of post-medieval peg-tile were retrieved from the upper fill of this feature, and also from the fill of pit [1001] suggesting that this too might be post-medieval in origin.

Ditches [902] and [905] appear to form the corner of a possible enclosure. Pottery, daub and animal bone were recovered from the fills of these ditches, suggesting the possibility of domestic activity within the enclosure. The pottery indicates a Late Bronze Age/Early Iron Age date. Ditch [1004] in Trench 10 may form a continuation of ditch [902] but no finds were recovered from its fill which could confirm its date.

Ditch [1102] in Trench 11 contained two fills, from each of which pottery and animal bone fragments were recovered. This material dates to the Late Pre-Roman Iron Age/Early Roman period and suggests that this feature may have lain on the edge of an area of domestic activity. Residual pottery of a similar date was also recovered from the lower fill in ditch [1006].

On the basis of the evaluation, it is clear that a concentration of multi-period activity has been located in Plot 29 which may cause disruption to the construction programme and for which a mitigation strategy will need to be prepared.

Summary: Plots 35-37

Site name and address:	A10 Wadesmill, High Cross and Colliers End Bypass - Plots 35-37		
County:	Hertfordshire	**District:**	East Hertfordshire
Village/town:	Colliers End	**Parish:**	Standon
Planning reference:	n/a	**NGR:**	TL 3730 2015
Client name and address:	Fitzpatrick Contractors Ltd, Hertford Road, Hoddesdon EN11 9BX		
Nature of development:	Roadbuilding	**Present land use:**	Agriculture
Size of study area:	24,700m^2	**Size of area investigated:**	720m^2
Site Code:	HN 355	**Other reference:**	n/a
Organisation:	Heritage Network Ltd	**Site Director:**	David Hillelson
Type of work:	Evaluation	**Curating Museum:**	Hertford Museum
Start of work	27 March 2002	**Finish of work**	28 March 2002
Related SMR Nos.:	n/a	**Periods represented:**	Modern
Previous summaries/reports:	n/a		

Synopsis: As part of the enabling works for the construction of the A10 Wadesmill Bypass, the Heritage Network was commissioned by Fitzpatrick Contractors Ltd and Lafarge Aggregates, to undertake a programme of targeted archaeological evaluation of key areas identified along the construction route.

The present site is located between Gore Lane and a track linking Colliers End with Plashes Farm, immediately north of *Site 4* (Plots 33-34), an area of possible prehistoric activity identified following a fieldwalking survey carried out as part of the advance archaeological investigations commissioned by the Highways Agency. No northern limit for this activity was established as Plots 35-37 were not fieldwalked.

Eleven evaluation trenches were located across the area providing a 720m^2 sample of the 2.47ha site. Plough marks were evident in Trenches 4-11 (numbered from the north) and two land drains running north-northwest - south-southeast were observed in Trench 3. A single modern pit was observed in Trench 7. The pit measured approximately 2m in diameter, and the dark black silty fill contained modern metal and plastic. This feature appears to be a modern agricultural rubbish pit. The remaining two trenches exposed no archaeological features or deposits.

On the basis of the evaluation, there appear to be no significant concentrations of archaeological activity which may cause disruption to the construction programme. It is considered that any further potential archaeological features and deposits which may be exposed in the course of the construction groundworks, could be adequately recorded as part of the monitoring programme defined as *Phase 3* in the Heritage Network's *Archaeological Mitigation Statement,* dated November 2001, which has been approved by the Highways Agency as part of the tender submission for the construction project.

Summary: Plot 51

Site name and address:	A10 Wadesmill, High Cross and Colliers End Bypass - Plot 51		
County:	Hertfordshire	**District:**	East Hertfordshire
Village/town:	Puckeridge	**Parish:**	Standon
Planning reference:	n/a	**NGR:**	TL 3805 2245
Client name and address:	Fitzpatrick Contractors Ltd, Hertford Road, Hoddesdon EN11 9BX		
Nature of development:	Roadbuilding	**Present land use:**	Agriculture
Size of study area:	15,000m^2	**Size of area investigated:**	390m^2
Site Code:	HN 353	**Other reference:**	n/a
Organisation:	Heritage Network Ltd	**Site Director:**	David Hillelson
Type of work:	Evaluation	**Curating Museum:**	Hertford Museum
Start of work	25 March 2002	**Finish of work**	26 March 2002
Related SMR Nos.:	n/a	**Periods represented:**	Post med; undated
Previous summaries/reports:	n/a		

Synopsis: As part of the enabling works for the construction of the A10 Wadesmill Bypass, the Heritage Network was commissioned by Fitzpatrick Contractors Ltd and Lafarge Aggregates, to undertake a programme of targeted archaeological evaluation of key areas identified along the construction route.

The present site is located close to the original line of the Roman road known as Ermine Street, and to the north of *Site 6* (Plots 45-49), an area of possible prehistoric activity identified following a fieldwalking survey carried out as part of the advance archaeological investigations commissioned by the Highways Agency. In addition to the road construction works, this area is intended to be stripped to provide a site compound for the contractors, and will ultimately be landscaped to provide a public amenity area.

Seven evaluation trenches were located across the area providing a 390m^2 sample of the 1.5ha site. Plough marks were evident in Trenches 1-3 (numbered from the north) and three land drains running northwest-southeast were observed in Trench 1. A ditch, aligned north-northeast - south-southwest was recorded in the eastern end of Trench 4. It was 4.10m wide and 0.95m deep and appears to have been backfilled in the post-medieval period. A post-hole measuring 0.40m in diameter and 0.12m in depth was also recorded at the western end of this trench but no dateable material was recovered from its fill. The remaining three trenches exposed no archaeological features or deposits.

On the basis of the evaluation, there appear to be no significant concentrations of archaeological activity which may cause disruption to the construction programme. It is considered that any further potential archaeological features and deposits which may be exposed in the course of the construction groundworks, could be adequately recorded as part of the monitoring programme defined as *Phase 3* in the Heritage Network's *Archaeological Mitigation Statement,* dated November 2001, which has been approved by the Highways Agency as part of the tender submission for the construction project.

1 Introduction

1.*1* This *report* has been prepared on behalf of *Fitzpatrick Contractors Ltd* and *Lafarge Aggregates* as part of the targeted archaeological evaluation of key areas in advance of the construction of the A10 Wadesmill By-pass, Hertfordshire. The evaluation forms the agreed Phase 1 archaeological works to be carried out as part of the construction programme and follows the provisions set out in the Heritage Network's *Archaeological Mitigation Statement,* dated November 2001, approved by the Highways Agency as part of the tender submission for the construction project. The detailed methodologies for the four evaluation areas were contained in four separate *Project Designs* (HN353, HN355, HN356, HN360) submitted to the Highways Agency (HA) and to the County Archaeology Office (CAO), and approved by the CAO as the agreed curatorial authority for the project.

1.*2* The route of the bypass (see Figure 1) runs approximately north-northeast from the junction of the present A10 with the A1170, north of Ware (TL 2542 1600), to the east of the villages of Thundridge, Wadesmill, High Cross and Colliers End, and rejoins the present route at its junction with the A120 southwest of Standon (TL 3806 2265)

1.*3* Initial work undertaken by the Essex Field Archaeological unit for the Highways Agency, in advance of the start of the construction contract, identified six potential sites along the route of the bypass. Sites 1,2 and 6 were evaluated by them.

1.*4* Four areas of potential were identified in the Heritage Network's *Archaeological Mitigation Statement* for evaluation by trial trenching.

- *Plot 15* Land immediately to the south of the River Rib.
- *Plots 28-29* An area identified as 'Site 3'.
- *Plots 35-37* An area adjacent to 'Site 4' to identified its full extent.
- *Plot 51* Land adjacent to Ermine Street.

1.*5* The aim of the evaluation has been to consider the location, extent, date, character, condition, significance and quality of any surviving archaeological remains which are liable to be threatened by the construction programme in the defined areas of risk along the road corridor.

1.*6* This report sets out the results of the Phase 1 targeted evaluation. A separate Method Statement has been prepared for the investigation, recording and clearance of the identified archaeological remains.

2 Previous Archaeological Work

2.*1* A programme of archaeological investigation was commissioned by the Highways Agency, in advance of the start of the construction contract. Reports made available by the Highways Agency include, to date:

- a desk-based assessment (Vaughan, 2001a) which incorporates data derived from the County Sites and Monuments Record, and historical, documentary and cartographic data derived from a number of sources;
- a fieldwalking survey (Vaughan, 2001b), carried out over approximately half of the route, which collected and mapped artefact evidence in 20m squares and analysed the results statistically to define possible archaeological sites;
- a geophysical survey (Wardill, 2001) focused on a number of areas highlighted by the fieldwalking, in order to characterise the nature of the identified archaeology by non-intrusive means.

2.*2* Further evaluation work has since been carried by the Field Archaeology Unit of Essex County Council, in the areas defined as *Sites 1, 2* and *6* in the advance reports. No significant archaeology was recorded in *Sites 2* and *6*. Medieval and post-medieval features which may be indicative of settlement, and limited prehistoric remains were identified in the north west corner of *Site 1* (Roy, 2002).

3 Methodology

1 METHODOLOGY

2 General

1.*1* In total 45 evaluation trenches were excavated across the four areas. The potential for each of the evaluation areas was assessed from the fieldwalking survey report and the desk-based study carried out by Field Archaeology Unit of Essex County Council. The justification for the choice of the areas was set out in the *Archaeological Mitigation Strategy* (Hillelson and Turner, 2001) and is summarised below.

Plot	No. of trenches	Justification
15	13	This plot lies on the southern bank of the River Rib, and 300m downhill from *Site 2*. The plot had not been fieldwalked.
28-29	24	Fieldwalking and geophysics suggested a prehistoric site in this area.
35-37	11	Plots 33 and 34 (*Site 4*) were identified as a potential site from Roman material and burnt flint recovered in fieldwalking. The northern extent of this material was not known as plots 35-37 had not been fieldwalked.
51	7	This plot lies on the west side of the original line of Ermine Street. The plot had not been fieldwalked.

1.*2*

1.*3* In addition, in order to investigate the potential presence of palaeochannels in the valley of the River Rib, and associated islands which might have been favourable for habitation in antiquity, an auger survey was carried out in advance of trial trenching in Plot 15 and was intended to help guide the location of the trial trenches.

1.*4* All evaluation work followed the provisions set out in the approved *Project Designs* for the four evaluation areas (HN353, HN355, HN356, HN360).

1 Auger survey

1.*5* The auger survey in Plot 15 was carried out on behalf of the Heritage Network by the Environmental Archaeology Consultancy.

1.*6* An area to the south of the present river channel had been cleared of trees and ground cover. A transect was laid out along the central line of the proposed bypass route, beginning approximately 5m from the south side of the river. Eleven auger holes were driven at 5m intervals between chainage points 2595 and 2645, using a hand operated 2.5cm diameter, 1 metre gouge auger, and a 7cm diameter, 20cm bucket auger, beginning in the north.

1.*7* The sediments collected were measured and described using Munsell soil colour charts as a log. The surface levels adjacent to each auger point were taken to allow an accurate section of the deposits to be prepared.

1 Evaluation trenches

1.*8* Evaluation trenches were generally laid out at right angles to each other, running diagonally across the plots, in order to maximise the opportunities for identifying linear features. In Plot 15 (which included Plot 14 for the purposes of the evaluation), however, the location of the trenches was dictated by the specific nature of construction in this area and by the results of the auger survey. In Plot 51, some adjustment to the location of the trenches was required by the presence of live services.

1.*9* Within each trench, topsoil and overburden was removed down to the first significant archaeological horizon under close archaeological supervision using a tracked 360° tracked excavator fitted with toothless ditching bucket. Spoil from the machining was inspected for archaeological artefacts.

1.*10* All exposed archaeological features and deposits were cleaned by hand and sampled as appropriate according to their accessibility, so as to ascertain their nature, depth, date and quality of preservation, while ensuring that unnecessary destruction of discrete features was minimised.

1.*11* A basic record of each trench was made on individual pro-forma *Trench Record* cards, including details of dimensions, stratigraphy and general observations together with a sketch plan and section showing significant details.

1.*12* For each trench where potential archaeological features or deposits were identified, detailed trench plans were drawn at 1:50 on polyester draughting film together with a longitudinal section or profile of the trench. Sections of excavated features were drawn at a scale of 1:10.

4 Results

1 Plot 15: Auger Survey

1.*1* Figure 3 represents a diagrammatic section drawing of the deposits recorded from the eleven cores over a 50m transect (a detailed log of the deposits can be found in Appendix 1).

1.*1.1* At each core the auger was stopped by a hard surface, which is presumed to be the bedrock. As is clear from Figure 3, this forms an undulating surface which slopes steeply down to the present river, a low ridge in the center and then a shallower slope to the south, before beginning to rise again slowly at the limit of the survey.

1.*1.2* Overlying the bedrock were calcareous, tufa like concretions, within a fine silt substrate, up to 0.4m thick. A very fine chalk paste sand, pale yellow in colour, often formed the base sediment before bedrock was hit. In some of the cores part of the tufa deposit was lost due to the high water content. Within the calcareous material, in cores 2615 and 2620, a black, organic silt was identified, less than 0.1m thick. Initial inspection of this sediment suggests that it is an organic mud with very occasional and very degraded organic fragments.

1.*1.3* Apart from in cores 2615, 2610 and 2605, the tufa is overlain by a well hummified organic silt, ranging from grey to dark grey, and contained occasional snails and calcareous concretions. All cores contained the well hummified organic clay/silty clay, which in most of the cores had a tendency to break into small blocky lumps (peds). Snail shell fragments and calcareous concretions were identified in these sediments in a number of cores.

1.*1.4* Above this horizon, approximately 1m of oxidized clays were recorded in all cores, which in some places was siltier towards the top and became stickier and clay rich to the base. The clay was very stiff, and was mottled with iron staining which became less intense towards the base. Occasional snail shell fragments were identified in a number of the cores, throughout the clay deposits.

1.*1.5* The final layer of sediment recorded was the topsoil, a grey silty clay with root and wood fragments. The topsoil was of variable thickness along the transect, but was clearly thicker at the southern end. This portion of the present land surface had previously been ploughed, whereas the land from the middle to the northern end of the transect had been covered by trees.

1 Plot 15: Evaluation Trenches

1.*2* Originally two trenches were to be excavated to confirm the findings of the auger survey. After machining Trench 1, however, the priorities of the evaluation changed and three trenches in total were excavated (see Figure 2). In this plot the new road will be carried on a bridge which will span the River Rib.

1.*3* Trench 1 was a rectangular area 16.50m in length and 5.30m wide, oriented east-west, with an extension to the eastern side measuring 2.40m in width and 8.3m long. The trench covered approximately 110m^2 in total and was located beneath the proposed bridge abutment (see Figure 4).

1.*4* The topsoil was a very dark greyish brown (10YR 3/2) silty clay, overlying a stiff yellowish brown (10YR 5/4) clay with orange iron stained mottles.

1.*4.1* A modern 'V' shaped boundary ditch [102] was observed running across the trench. This feature measured 1.50m wide and 0.80m deep. No finds were recovered from the single greyish brown silty fill (101). This boundary is apparent on modern OS maps separating Plots 14 and 15, and appears in cartographic evidence dating to the late 19th century. Elements of the ditch are still in use as a boundary to the east and west of the road corridor.

1.*4.2* The majority of the trench was covered by stiff grey clay (10 YR 5/4) with orange iron stained mottles, indicative of alluvium.

1.*4.3* Natural reddish brown (5 YR 5/8) gravel and clay was encountered at the western end of the trench at a depth of 0.45m. This indicated an edge to the alluvial clay which defined the former river channel identified in the auger survey. The extension to the eastern side of the trench failed to identify the other side of the channel.

1.*5* Trench 2 was an 'L' shaped trench measuring 6.60m long and 2.40m wide. The width was increased at the western end by 1.20m for a distance of 3.10m. This trench covered approximately 20m^2 and was orientated east-west across the line of the proposed bridge piers (see Figure 4).

1.*5.1* A continuation of the of the river channel edge was observed running across the western limits of this trench. Again the bank was defined by a change from the grey (10YR 5/4) alluvial clay to the reddish brown (5 YR 5/8) clay and gravel.

1.*5.2* No finds were recovered from alluvial deposit, and no features were observed cut into the gravel bank.

1.*6* Trench 3 measured 10.20m long and 2.40m wide and was also orientated east-west across the line of the proposed bridge piers.

1.*6.1* Only the mottled alluvial clay (10YR 5/4) of the river channel [300] was observed in this trench. There was no indication of an eastern edge to this deposit.

1.*6.2* No finds were recovered from alluvial deposit.

1 Plots 28-29

1.*7* Twenty-four trenches were excavated, all 2.15m in width and ranging from 23 - 27m in length, giving a total sample of approximately 1260m^2 (see Figure 5). The average depth of the trenches was 0.28m.

1.***7.1*** The ploughsoil in the trenches was grey brown (2.5 Y 4/2) in colour, composed of silty clay and extended to a maximum depth of 0.32m below the surface.

1.***7.2*** Subsoil was absent in all of the trenches.

1.***7.3*** The natural consisted of an olive brown (2.5 Y 5/4) clay with small chalk inclusions and occasional flints. In addition there were patches of reddish brown (10YR 5/8) clays and gravelly areas.

1.***8*** Modern geo-technical test pits were encountered in four of the trenches (11, 14, 21 and 24)

1.***9*** Modern plough marks were observed cutting into the natural, indicating fairly intensive farming of these plots.

1.***10*** Archaeological features were encountered in three of the trenches, indicating a defined area of activity approximately 70m in length between trenches 9,10 and 11 (see Figure 6).

1.***11*** Trench 9 contained two 'V' shaped ditches [902] and [905] forming a right angle across the trench (see Figure 6). Ditch [905] was aligned NW-SE, and [902] was orientated NE-SW. These ditches appear to meet just outside the northern baulk of the trench.

1.***11.1*** Both ditches contained two fills (see Figure 7). A primary olive brown (2.5 Y 5/3) silty clay fill (901) and (904), measuring c.0.07m in depth, which was indicative of natural silting. Overlaying the primary fill was a dark brown (10YR 4/3) silty clay measuring c.0.30m deep (900) and (903).

1.***11.2*** These two ditches measured 0.60m in width. Archaeological material was recovered from both ditches, which suggests that they are of a Late Bronze Age/Early Iron Age date.

1.***12*** Trench 10 contained a large former field boundary ditch [1006], a ditch [1004], similar to and on the same alignment as [902], and a possible posthole [1001] (see Figure 6).

1.***12.1*** The boundary marked by ditch [1006] appears on tithe maps and was only grubbed-out in the middle of the 20th century. The ditch was orientated E-W across the evaluation trench and measured 1.30m in width and 0.55m deep. The northern side was stepped and the southern side was slightly convex, leading to a flat base (see Figure 7). Two fills were recorded within this feature. The primary fill (1007) was a naturally formed olive brown (2.4 Y 5/4) silty clay. Some sherds of pottery dating to the late Iron age/ Early Roman period were recovered from this lower fill. This material appears to be residual, however, and has fallen into the ditch from the sides. The upper fill (1008) was grey olive brown (2.5Y 4/3) silty clay. This fill was 0.33m deep and contained tile and animal bone fragments of post-medieval date.

1.***12.2*** Ditch [1004] was approximately aligned with ditch [902] from Trench 9. It measured 0.64m wide and 0.22m deep, and contained two fills: a naturally formed

primary olive brown (10 YR 4/6) silty clay (1005), measuring c.0.15m in depth, and a secondary was a dark brown (10YR 3/4) silty clay (1003) (see Figure 7). No finds were recovered from this ditch.

1.***12.3*** A shallow post hole [1001] was investigated adjacent to the southern baulk and 6.20m from the eastern end of the trench. This subcircular feature measured 0.35m in width, 0.65m in length and 0.07m in depth. The single dark olive brown (2.5Y 3/3) silty clay fill (1000) contained tile and animal bone fragments dating to the 18th/19th centuries (see Figure 7).

1.***13*** Trench 11 contained a single ditch [1102] orientated N-S across the western end of the trench (see Figure 6).

1.***13.1*** This feature measured 1.10m in width and 0.35m in depth. Two fills were recorded: the primary fill (1101) was a dark yellowish brown (10 YR 4/4) silty clay, and the secondary fill (1100) was a dark yellowish brown (10 YR 3/4) silty clay with a higher proportion of silt than (1101) (see Figure 7).

1.***13.2*** Pottery and animal bone fragments recovered from this feature suggest a Romano-British date.

1 Plots 35-37

1.***14*** Eleven trenches were excavated, all 2.40m in width and ranging from 25m-32m in length, giving a total sample of approximately 720m^2 (see Figure 8). The average depth of the trenches was 0.28m.

1.***15*** The trenches lie in arable land, with the ground sloping down into the valley of the Barwick Tributary to the south. Over the length of the evaluation the land falls from c.90m to c.79m OD.

1.***15.1*** The ploughsoil in the trenches was grey brown (2.5 Y 4/4) in colour, composed of silty clay and extended to a maximum depth of 0.30m below the surface.

1.***15.2*** Subsoil was absent in all but three of the trenches (3, 10 and 11). Where it was observed it was reddish brown (10YR 4/4) in colour, composed of silty sandy clay. The depth of this deposit ranged from 0.30-0.60m in depth. Subsoil survived due to the local topography and colluvial build up.

1.***15.3*** The natural consisted of an olive brown (2.5 Y 5/4) clay with small chalk inclusions and occasional flints. In addition there were patches of reddish brown (10YR 5/8) clays and gravelly areas.

1.***16*** Modern plough marks were observed cutting into the natural, indicating fairly intensive farming of these plots.

1.*17* A single modern pit was observed in Trench 7 (see Figure 10a). The pit measured approximately 2m in diameter, and the black (2.5 Y 3/2) silty fill contained modern metal and plastic. This feature represents a modern agricultural rubbish pit.

1.*18* No other archaeological features or deposits were observed in these trenches.

1 Plot 51

1.*19* Seven trenches were excavated, all 2.15m in width and ranging from 25 - 27m in length, giving a total sample of approximately 390m^2 (see Figure 9). The average depth of the trenches varied between 0.35 and 0.70m, reflecting the undulating nature of the subsoil in this plot.

1.*19.1* The ploughsoil in the trenches was grey brown (2.5 Y 4/2) in colour, composed of silty clay and extended to a maximum depth of 0.32m below the surface.

1.*19.2* Subsoil was observed in all of the trenches, which consisted of dark yellowish brown (10YR 4/4) silty sandy clay. The depth of subsoil varied between 0.10 and 0.30m in depth, although in Trench 4 it extended to 0.40m at the eastern end.

1.*19.3* The natural consisted of an olive brown (2.5 Y 5/4) clay with small chalk inclusions and occasional flints. In addition there were patches of reddish brown clays (10YR 5/8) and lenses of gravel.

1.*20* Modern plough marks were observed cutting into the natural, indicating fairly intensive farming of this plot.

1.*21* Apart from some modern land drains in Trench 1, only Trench 4 contained any archaeological features (see Figure 10b). A possible post hole [405] was observed 8.2m from the western end of the trench. This feature was 0.40m in diameter and 0.12m in depth, and the single mid-greyish brown silty clay fill (404) contained no finds.

1.*22* The second feature in Trench 4 was a large ditch [403] running NE-SW across the eastern end of the trench. The 'U' shaped ditch contained two fills and measured 4.10m in width and 0.96m in depth. The latest fill (401) consisted of light reddish yellow sandy silt, 0.15-0.20m in depth. This overlay a greyish brown silt (402) which contained finds which indicate that it fell out of use in the late 18th or early 19th century.

1.*23* No other archaeological features or deposits were observed in these trenches.

5 Finds Assessment

1 PLOT 29

1.*1*

Trench	Context	Pot		Tile		Daub		An Bone		Shell		Comments
		Wt	No	Wt	No	Wt	No	Wt	No	Wt	No	
9	900	30	6	-	-	-	-	-	-	3	1	snail shell
9	903	95	35	-	-	10	7	75	9	30	1	fossilised shell
9	904	5	1	-	-	-	-	-	-	-	-	
10	1000	-		25	2	-	-	2	1	-	-	
10	1007	5	2	-	-	-	-	-	-	-	-	
10	1008	-	-	50	5	-	-	3	1	-	-	
11	1101 + 1100	10	5	-	-	-	-	35	14	-	-	
Total		145	49	75	7	10	7	115	25	33	2	

1 Pottery

1.*2* A total of 49 sherds, weighing 145g, was recovered from features in three trenches in Plot 29. All the sherds collected during the evaluation were small and abraded, the result of frequent deep ploughing across the site.

1.*3* The material was weighed and counted, before being examined by hand. This enabled a date to be assigned to the context on the basis of the fabrics present.

1.*4* The majority of this assemblage (85.7% by count) comprises handmade flint-tempered wares of Late Bronze Age/Early Iron Age date. These were recovered from fills (900) in ditch [902] and (903) and (904) in ditch [905]. Seven sherds of late pre-Roman Iron Age and early Roman date (14.3% by count) were recovered from fills (1007) in ditch [1006] and (1100) + (1101) in ditch [1102].

Prehistoric

1.*5* A total of 42 sherds of Late Bronze Age/Early Iron Age pottery, weighing 130g, were collected from the fills of ditches [902] and [905]. They comprised 41 abraded bodysherds and 1 base sherd, with a thumbed footring.

1.*6* Two fabric groups could be identified:

- Fabric 1 - a handmade coarse flint tempered ware: a fine black matrix tempered with ill-sorted crushed flint, up to 2mm in diameter. Additional tempering of grog, shell and quartz was visible in some sherds. The surfaces varied in colour from black to

reddish brown, with evidence of burnishing on the exterior surfaces of some sherds and faint traces of combed decoration on others. This was the most common fabric on the site, accounting for 83.6% of the assemblage by sherd count.

- Fabric 2 - a fine red ware, tempered with moderate ill-sorted coarse and finely crushed flint, occasional pebbles and red ironstone. It was handmade, with a roughly wiped exterior surface. A single sherd of this fabric was recovered from (904), the primary fill in ditch [905].

1.*7* The ceramic evidence suggests that ditches [902] and [905], which lay at a 90^0 angle to each other, are of Late Bronze Age/Early Iron Age date. They may well represent one corner of an enclosure ditch. No residual earlier material or intrusive later material was observed in these fills.

Late pre-Roman Iron Age and Romano-British

1.*8* A total of seven sherds, which could be dated to the period between the mid 1st century and mid 2nd century AD, were collected from the fills of two features. They comprised five abraded body sherds and two rim sherds, one from a small necked jar, the other from a large storage jar.

1.*9* Three fabrics were identified:

- Fabric 3 - black grog-tempered ware: a fine grey matrix, with frequent ill-sorted black grog grits, up to 1mm in diameter. The surfaces of the present assemblage are dark grey in colour, with evidence of burnishing on the exterior surface of one sherd. The rim of a small necked jar was collected from ditch [1006].
- Fabric 4 - red-brown grog-tempered ware: a fine reddish brown clay matrix with frequent ill-sorted grog grits, mostly red-brown in colour, but occasionally dark grey. It is likely that the exterior surface of this vessel was originally burnished, but no evidence survives. Three sherds of this fabric were collected from one fill, all from one vessel, a large storage jar.
- Fabric 5 - early Roman sand- and grog-tempered ware: a sandy textured matrix, varying in colour from dark grey to black, with frequent coarse quartz sand tempering. Two sherds of this fabric were collected from ditch [1002].

1.*10* Two sherds of Fabric 3 were recovered from fill (1007) and probably represent residual sherds in a later feature. They came from the lower fill in ditch [1106], which appears to be the remains of a field boundary grubbed out in the 1950s. The upper fill, context (1008) contained post-medieval tile fragments.

1.*11* The remaining five sherds, comprising three sherds of Fabric 4 and two sherds of Fabric 5 were recovered from the fills of ditch [1102], which lay approximately 50m south of the suggested prehistoric enclosure ditch. All the pottery from this feature dated to the period

between the mid 1st century and the mid 2nd century AD, implying that this feature represents evidence for the continuation of activity into the early Roman period.

1 Tile

1.*12* A total of 7 fragments of peg tile, weighing 75g, were recovered from the fills of two features, posthole [1001] and ditch [1006]. The peg tile probably dates to the 18th and 19th centuries.

1 Daub

1.*13* Seven fragments of daub, weighing 10g, were recovered from fill (903) in ditch [905]. Its presence suggests the possibility of at least one structure of LBA/EIA date in the vicinity of the ditch.

1 Animal Bone

1.*14* Twenty five fragments of animal bone was recovered from four contexts. All of the fragments were small and abraded in nature, similar to the state of the pottery. Only the fragments recovered from prehistoric ditches were of interest, the rest of the assemblage consists of small rodent and bird bones from late post medieval features. These consisted of 7 fragments of bovine metatarsal, tooth and shaft from ditch fill (903) in ditch [905] and 14 bovine and sheep/goat fragments of teeth and shafts from fill of ditch [1102]. This material reflects domestic waste, suggestive of an occupation site in the proximity.

1 Discussion

1.*15* The artefactual evidence from Trenches 9 - 11 in Plot 29 indicates that there were at least three phases of activity on the site.

1.*16* The first phase is represented by ditches [902] and [905] in Trench 9, which are datable to the Late Bronze Age/Early Iron Age. Pottery, daub and animal bone were recovered from the fills of these ditches, suggesting the possibility of domestic use of the site. Their spatial relationship suggests that they may represent part of a possible enclosure ditch of that date.

1.*17* Phase 2 dates to the Late Iron Age/Early Roman period and is represented by ditch [1102] in Trench 11. Pottery and animal bone fragments were recovered from the ditch fills. The evidence suggests that this feature may have lain on the edge of domestic activity. Residual pottery of this date was also recovered from the lower fill (1007) in ditch [1006].

1.*18* Phase 3 dates to the post-medieval period and is represented by a single posthole, cut [1001] and a field boundary, cut [1006]. The line of the field boundary could be traced on post-medieval maps. Fragments of peg tile, of probable 18th and 19th century date, were recovered from the fill of [1001] and the upper fill (1008) of [1006]. They are probably evidence of post-medieval manuring of the fields with broken tile.

1.*19* Further work is anticipated on the finds assemblage as part of the proposed open-area excavation of this site.

1 PLOT 51

Trench	Context	Pottery		Brick		Tile		Comments
		Wt	No	Wt	No	Wt	No	
-	U/S	3	1	-	-	125	7	
4	402	10	1	480	2	90	4	
Total		13	2	480	2	215	11	

1.***20***

1.***21*** The artefacts recovered from Plot 51 date to no earlier than the 18th or 19th century. One sherd of black-glazed ware and 2 fragments of the same brick were recovered from context (402). The brick appears to be hand made and measures at least 5¼" (13.5cm) in width, with a maximum depth of 1½" (4cm).

1 Discussion

1.***22*** Ditch [403] appears to be a post-medieval boundary ditch, positioned to the north of the present plot boundary. the material was recovered from the basal fill suggesting that it went out of use in the late 18th or early 19th century. The unstratified pottery probably represents field manuring. No further work on this finds assemblage is anticipated.

6Discussion

6.*1* This series of evaluations was intended to clarify the potential for the discovery of archaeological remains within the defined road corridor. Although weather and ground conditions were generally favourable throughout the duration of the fieldwork, only Plot 29 yielded any significant archaeological remains requiring further work.

6.*2* The features in Trenches 9 to 11 in Plot 29 appear to represent a late Bronze Age/ early Iron Age enclosure or boundary which has been modified, but continued to be in use up to the late Iron Age and into the Roman period. The date range of artefacts recovered from stratified contexts in the evaluation demonstrates a long lived settlement on this site.

6.*3* It is clear that modern ploughing has significantly truncated the archaeological evidence so that only the bases of the deeper features are likely to survive. Plough damage to features in Trench 10 was greater due to the topography. For example, ditch [1004] is the continuation of ditch [902] in Trench 9, but it is 0.15m shallower due to plough attrition. It is likely that most of the shallower and subtler archaeological features associated with this site, such as drip gullies, beamslots or stakeholes will already have been destroyed. The importance of the remaining evidence cannot be overstated, however, as this has the clear potential to contribute to the regional research agenda described in *Research and Archaeology: A Framework for the Eastern Counties* (Brown and Glazebrook, 2000).

6.*4* The discovery of the edge of a former river channel in Plot 15 suggests that there is potential for archaeological remains to be present on the banks of the channel. This lies outside the area which will be impacted by the bridge construction and therefore presents no risk to the construction programme.

1 Revised Risk Assessment

6.*5* The risk that the road construction programme will disturb archaeological remains of any significance in the areas evaluated as part of the present project, may be considered to be Low for Plots 15, 28, 35-37 and 51. For Plot 29, however, the risk is now confirmed to be High.

6.*6* It is recommended that the area around trenches 9, 10 and 11 in Plot 29 is stripped and archaeologically investigated, in order to minimise any potential delay to the construction programme in this area, and to ensure the controlled preservation by record of the archaeological remains.

1 Confidence Rating

6.*7* The weather conditions were dry and sunny for the fieldwork in all four evaluation areas, and are considered to have been acceptable for the successful identification of any archaeological features or deposits present. There were no circumstances where the overall confidence rating for the results obtained in each of the evaluation areas would be considered to be less than High.

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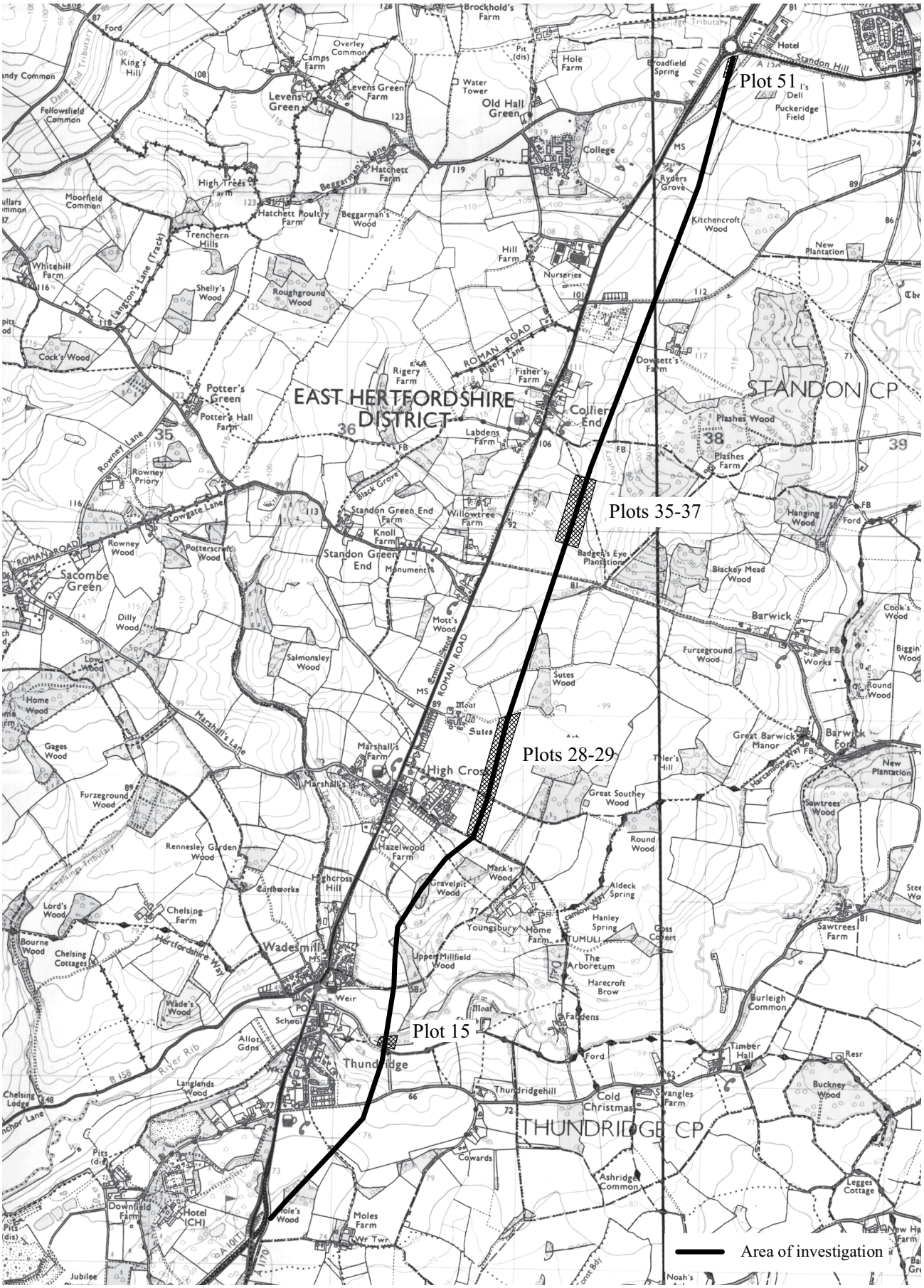
8Illustrations

Figure 1 . 1 . . . . . Site location
Figure 2 . 2 . . . . . Plot 15: trench location
Figure 3 . 3 . . . . . Plot 15: diagrammatic section from auger survey
Figure 4 . 4 . . . . . Plot 15: trenches 1 and 2
Figure 5 . 5 . . . . . Plots 28-29: trench location
Figure 6 . 6 . . . . . Plot 29: trenches 9-11
Figure 7 . 7 . . . . . Plot 29: sections
Figure 8 . 8 . . . . . Plots 35-37: trench location
Figure 9 . 9 . . . . . Plot 51: trench location
Figure 10a 10 . . . . . Plots 35-37: trench 7
Figure 10b 11 . . . . . Plot 51: trench 4

THE HERITAGE NETWORK LTD	A10 Wadesmill By-pass	HN346



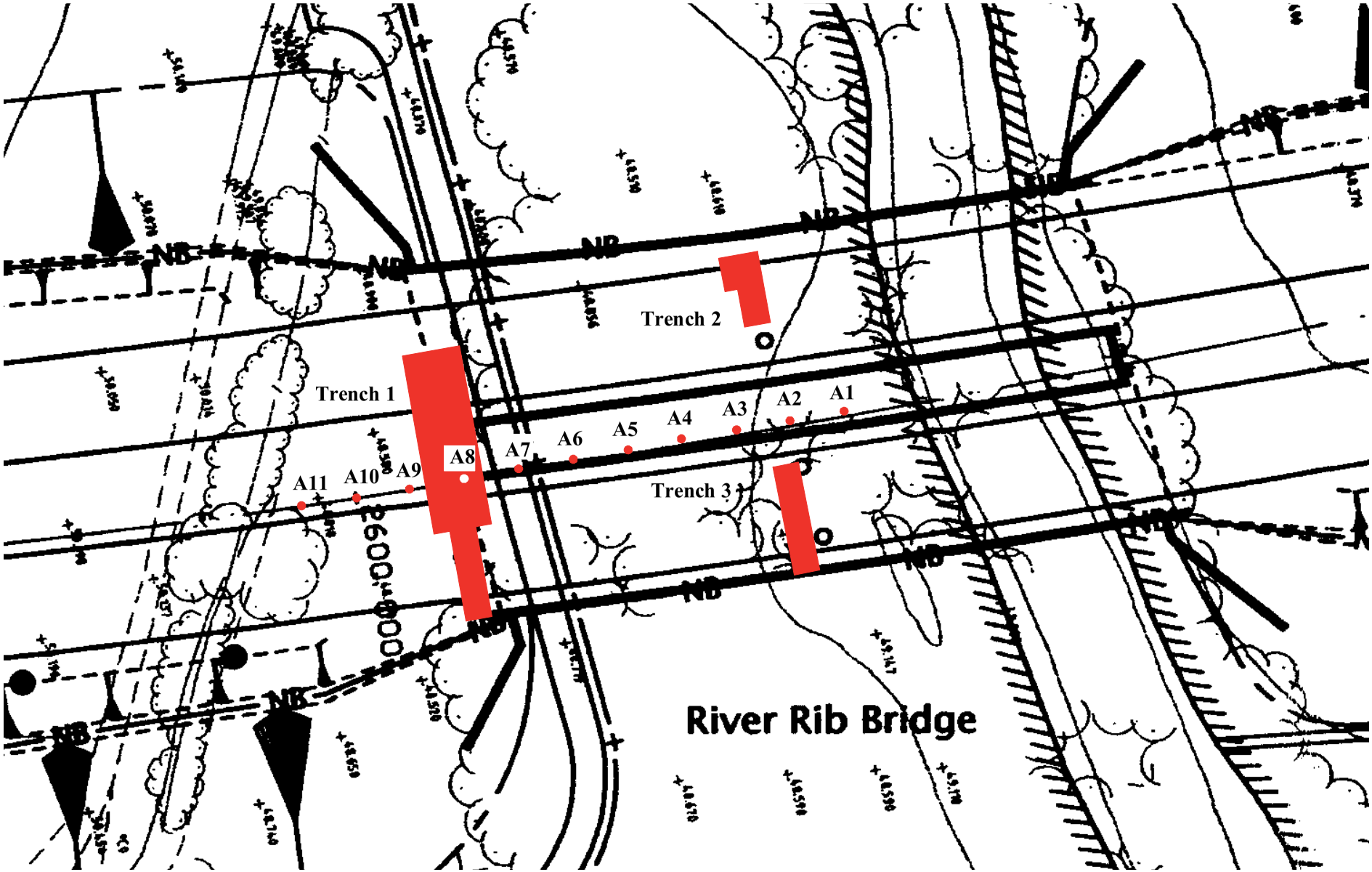
Site location

Not to scale

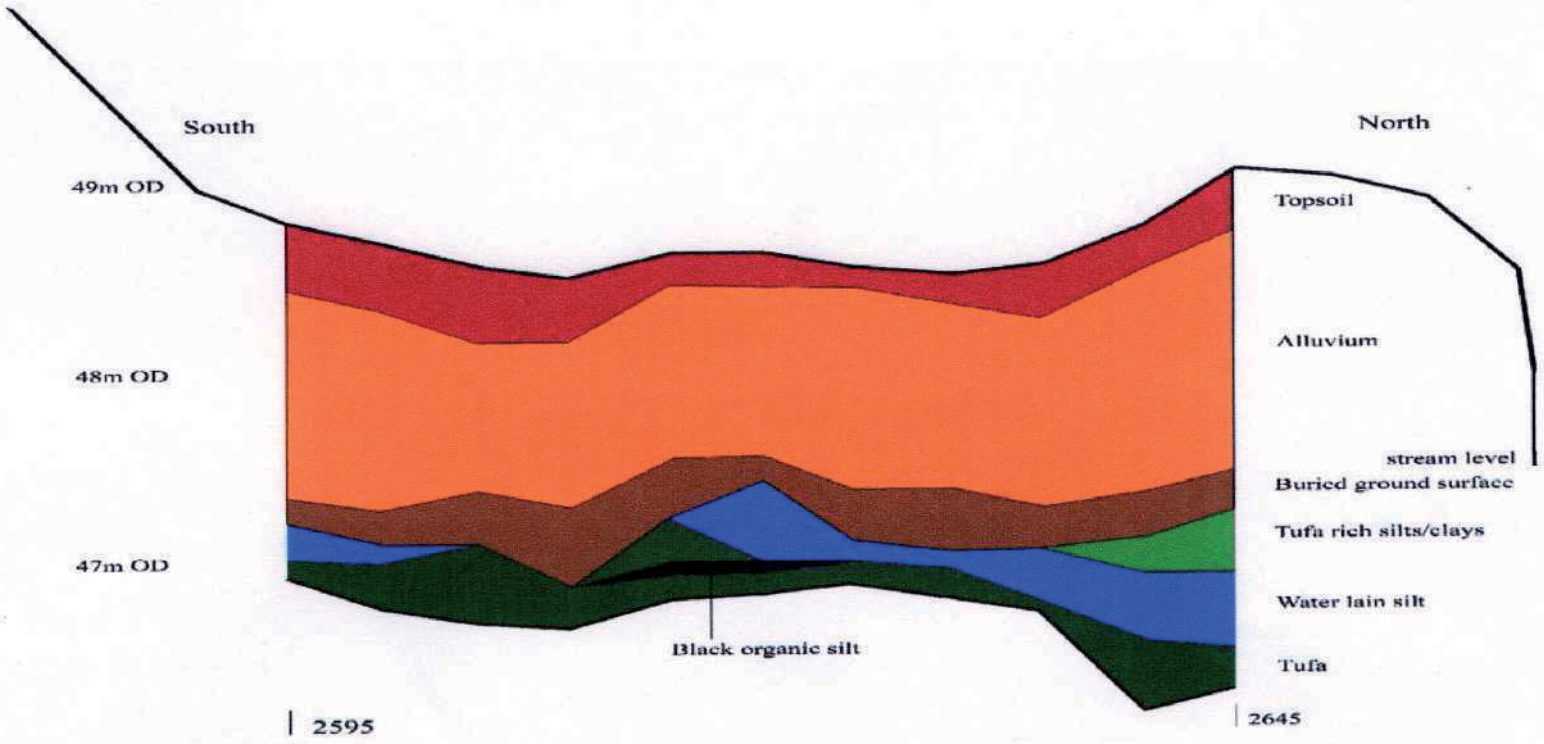
Reproduced from OS mapping with the permission of the controller of Her Majesty's Stationery Office, Licence no.AL100014861

Figure 1

THE HERITAGE NETWORK LTD	A10 Wadesmill By-pass - Plot 15	HN360



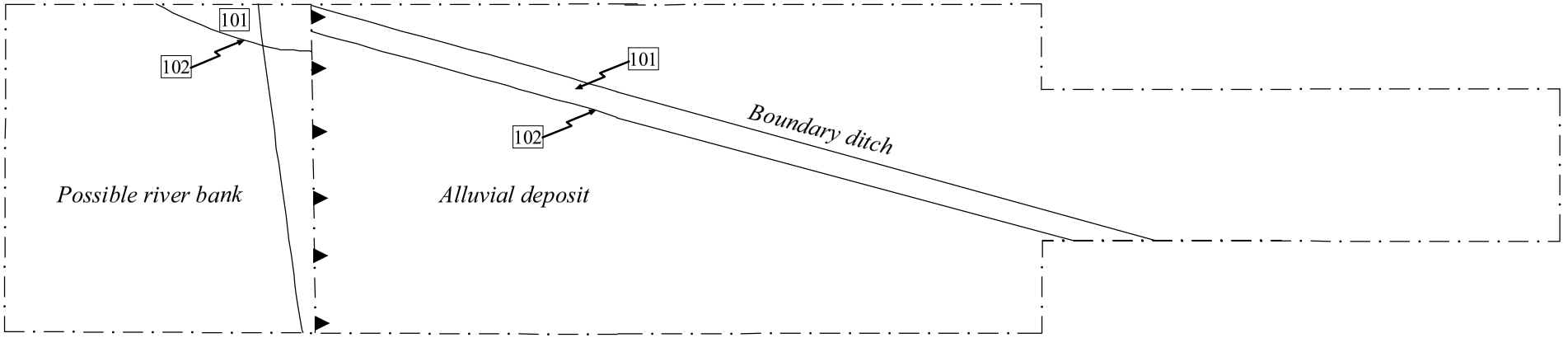
Trench location	Scale 1:500
	Figure 2



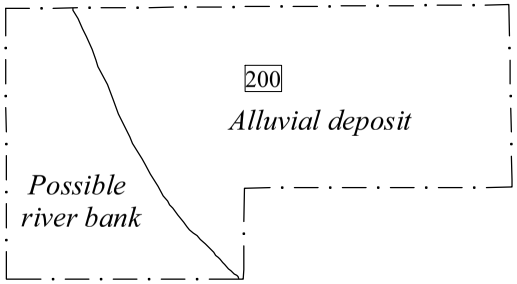
Diagrammatic section of sediments from auger survey

Not to Scale

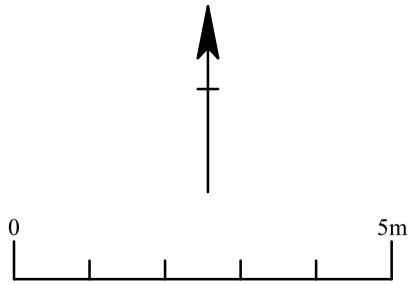
Figure 3



Trench 1



Trench 2

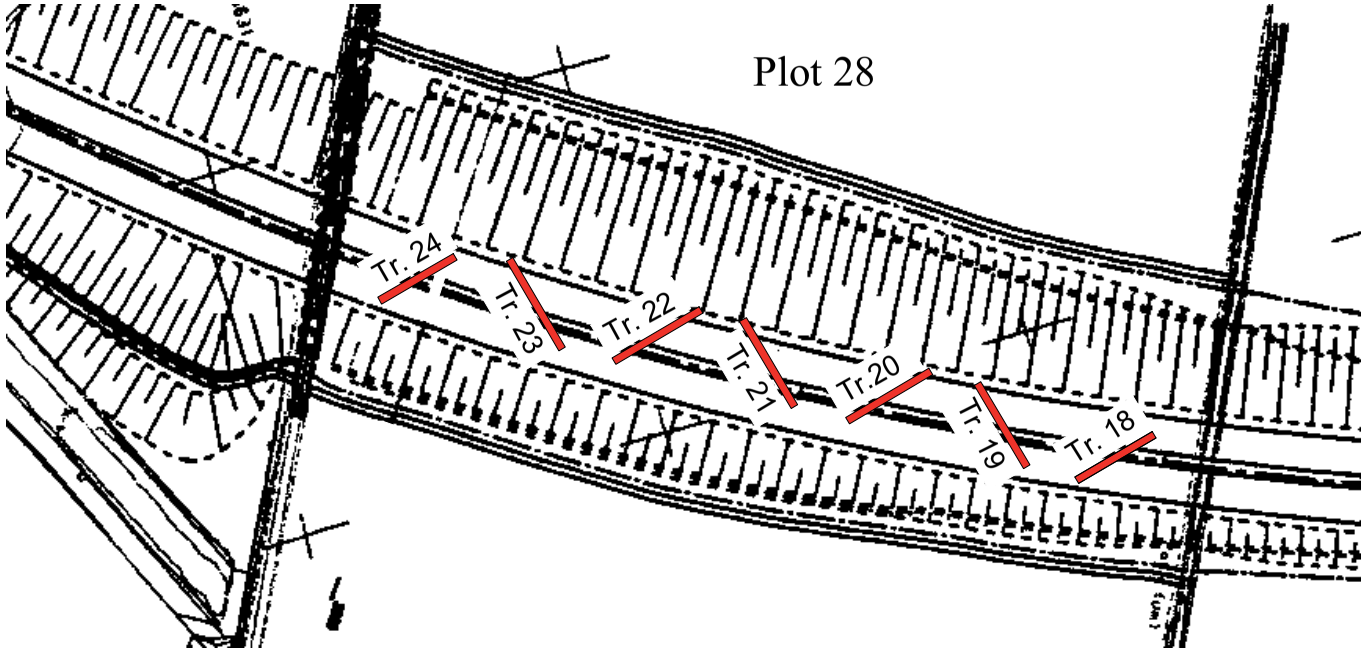


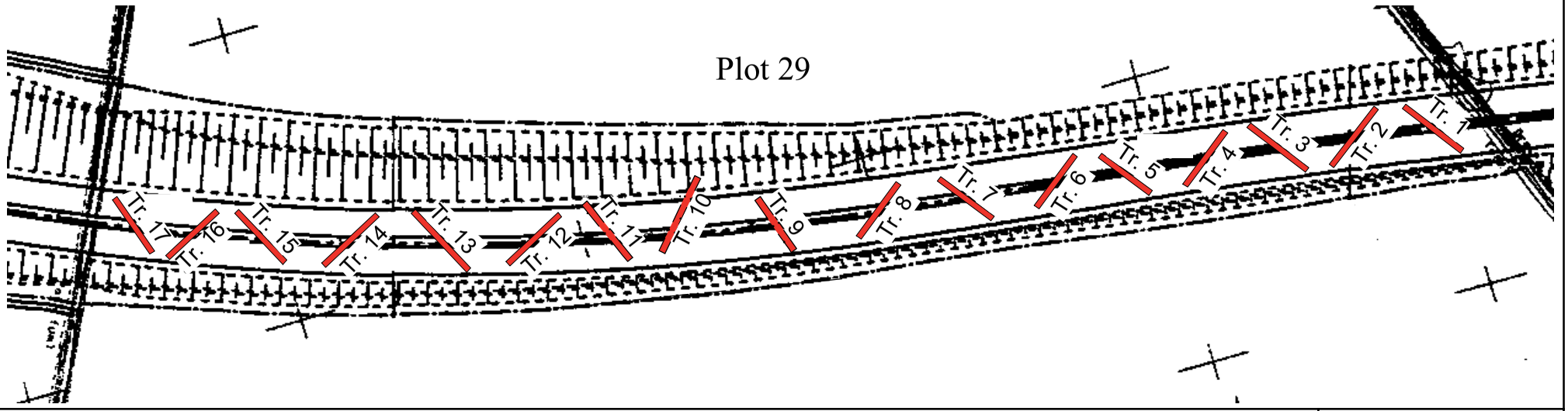
Trenches 1 & 2

Scale 1:100

Figure 4

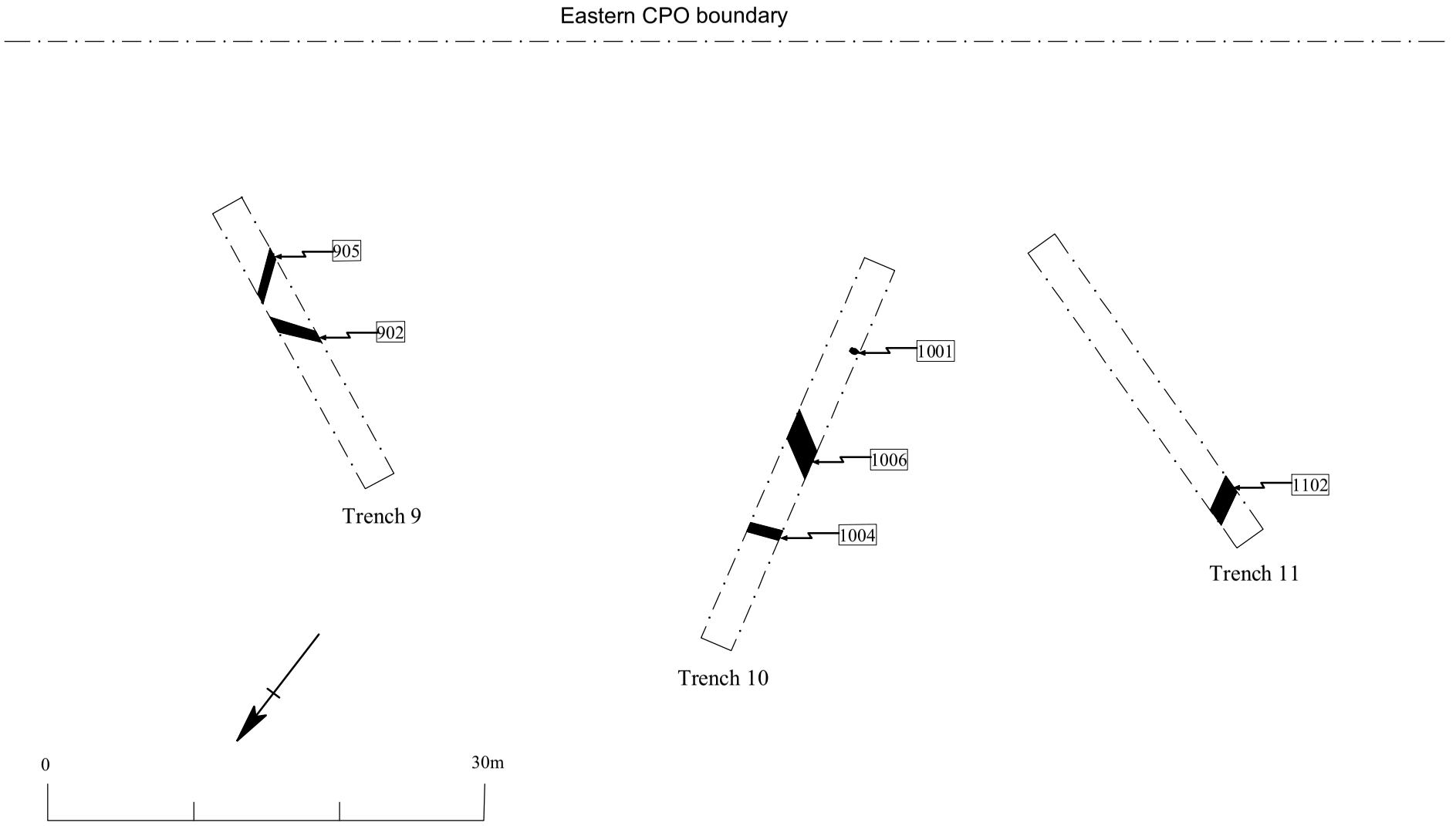
THE HERITAGE NETWORK LTD	A10 Wadesmill By-pass - Plots 28 - 29	HN356





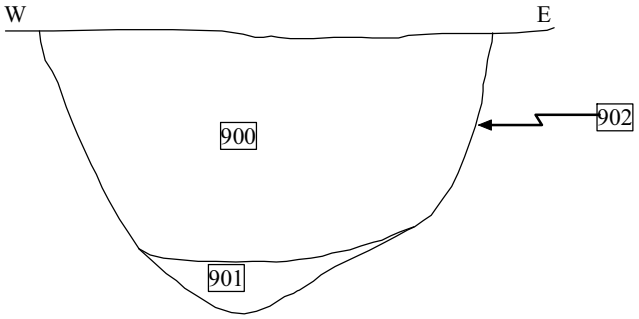
Trench Location	Scale 1:2000
	Figure 5

THE HERITAGE NETWORK LTD	A10 Wadesmill By-pass - Plot 29	HN356

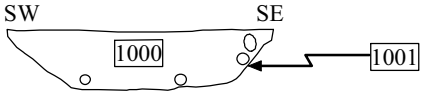


Trenches 9-11	Scale 1:400
	Figure 6

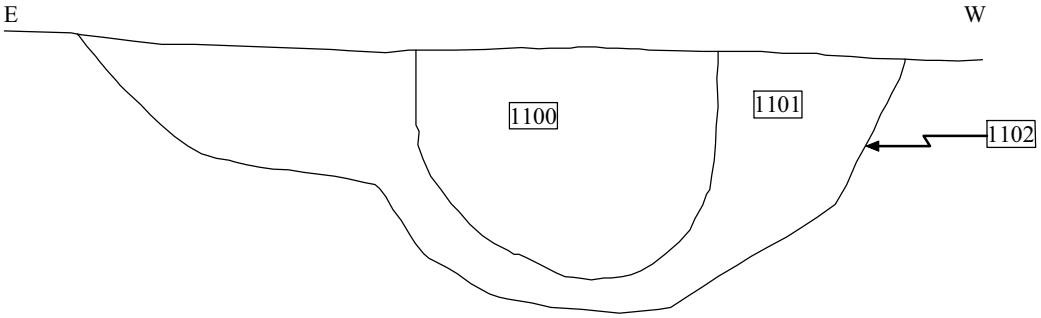
South facing section of ditch [902]



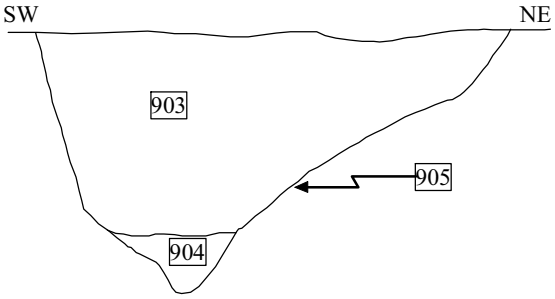
North east facing section through [1001]



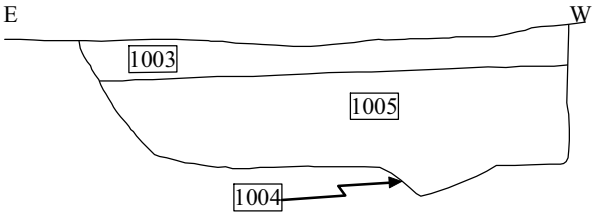
North facing section of [1102]



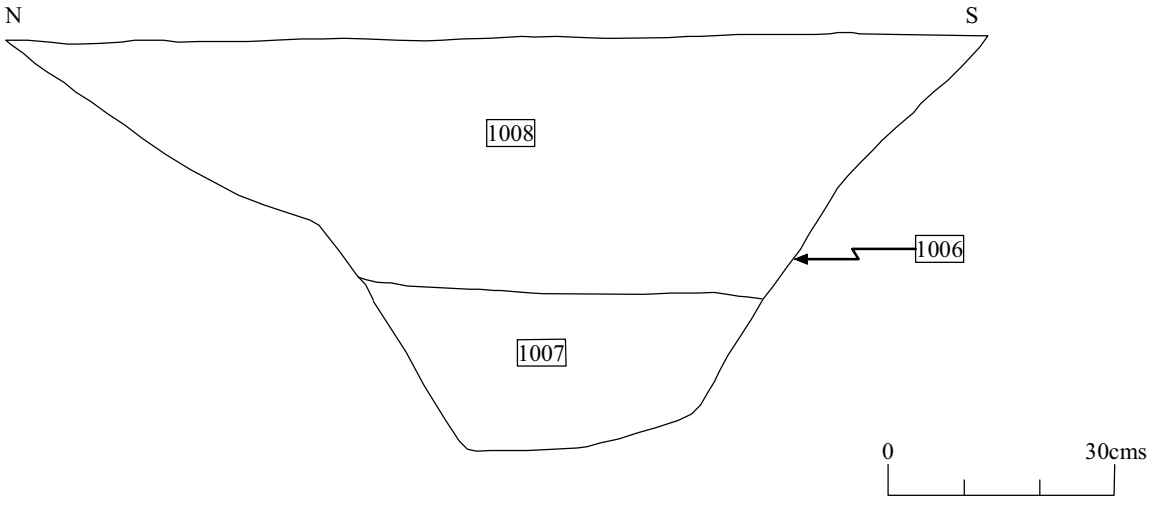
South-east facing section of ditch [905]



North facing section of [1004]



West facing section of [1006]

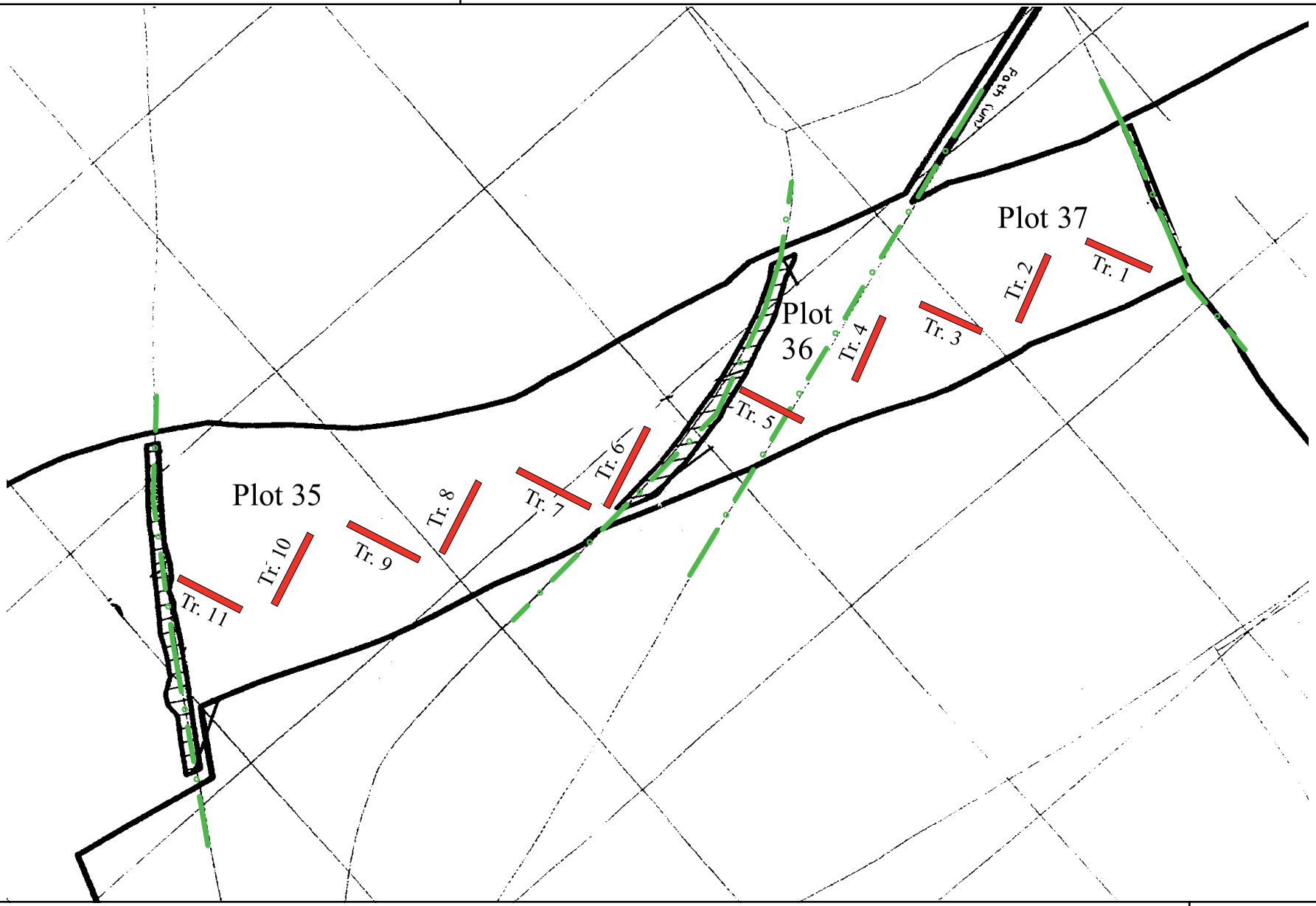


Sections

Scale 1:10

Figure 7

THE HERITAGE NETWORK LTD	A10 Wadesmill By-pass - Plots 35 - 37	HN355

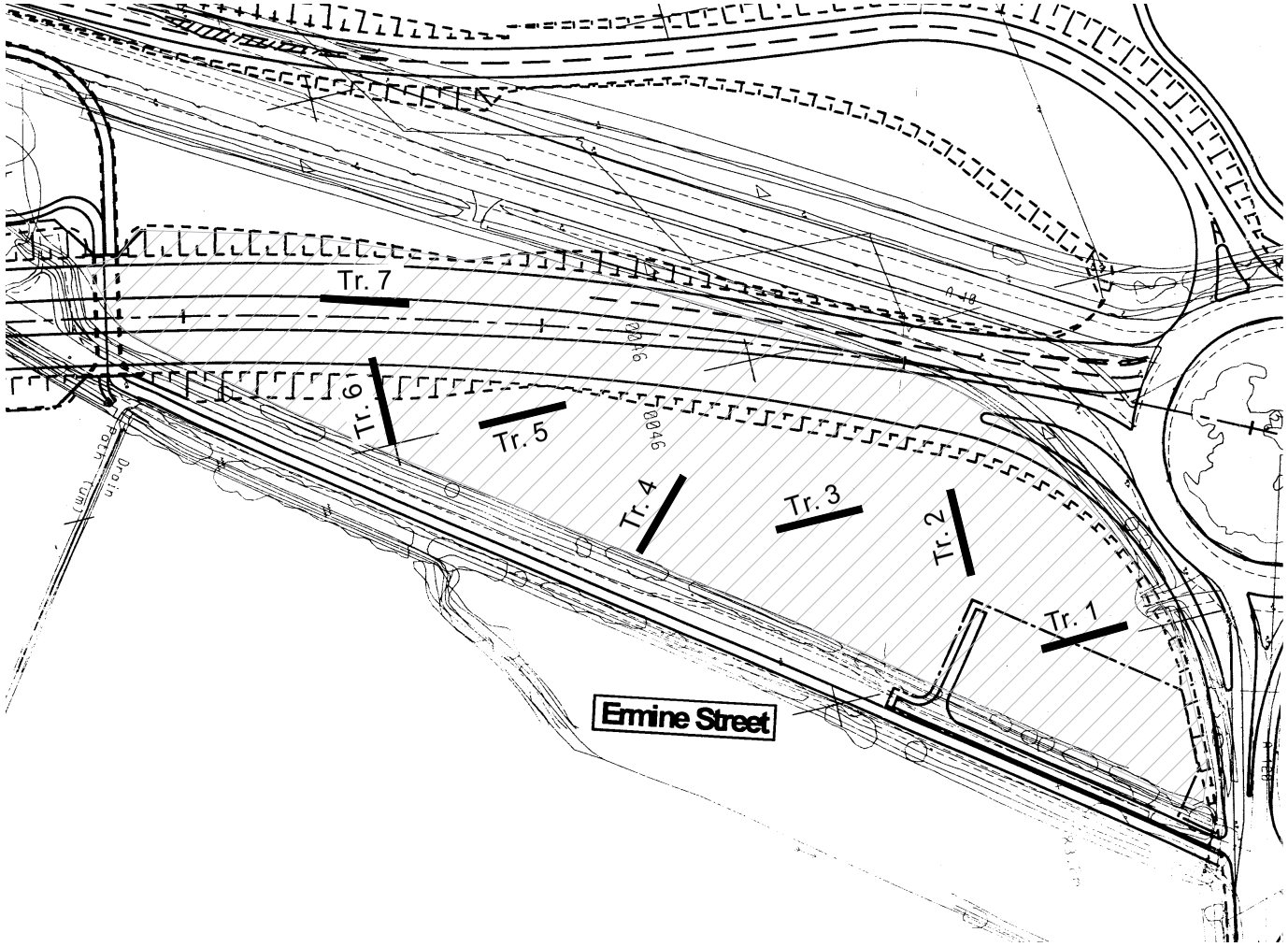


Trench Location

Scale 1:2000

Figure 8

THE HERITAGE NETWORK LTD	A10 Wadesmill By-pass - Plot 51	HN353

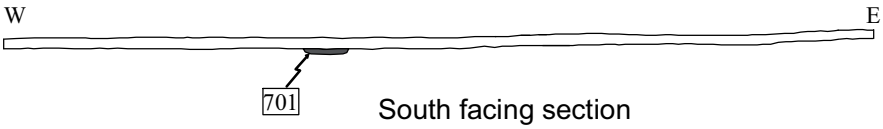


Trench Location

Scale 1:2000

Figure 9

Plan



South facing section

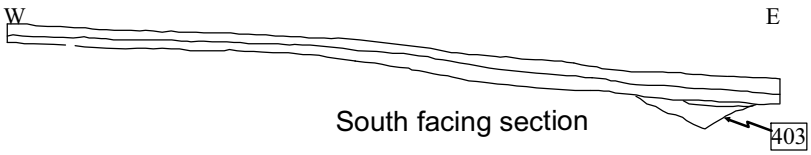
0 3m

HN 355: Plots 35-37, Trench 7

Scale 1:250

Figure 10a

Plan



South facing section

0 3m

HN 353: Plot 51, Trench 4

Scale 1:250

Figure 10b

Appendix 1

Auger Survey Log

All core measurements are recorded relative to Ordnance Datum. Chainage values refer to survey pegs running along the centre line of the road corridor, numbered from the south.

Auger 1	*Chainage 2645* (northern-most core)
49.07-48.77m OD	Topsoil: silty clay with flint and chalk fragments and wood.
48.77- 47.44m	Stiff silty clay becoming clay at base (alluvium) (7.5yr 5/1-7.5yr 6/1). Abundant iron staining.
47.44-47.25m	Organic silt (10yr 2/1) well hummified with shell fragments (buried ground surface).
47.25-46.91m	Tufa with clay and snail fragments (7.5yr 5/1).
46.91-46.49m	Organic silt (10yr 3/2), well hummified, blacker to base with abundant calcareous concretions.
46.49-46.24m	lost, very wet (probably tufa)
46.24m	Bedrock
Auger 2	*Chainage* 2640:
48.88-48.52m OD	Topsoil friable loam with flint and wood fragments
48.52-47.33m	Stiff silty clay (10yr 4/2) becoming solely clay to base (10yr 5/3) with mottles of 10yr 5/6 and occasional carbonate concretions (alluvium).
47.33-47.12m	Organic silt, well hummified, and compressed, propensity to break into lumps (buried soil).
47.12-46.90m	Sticky clay (2.5y 4/2) with snail shell fragments, calcareous concretions, becoming siltier to base.
46.90-46.56m	Organic silt (10yr 3/1-10yr 5/2), well hummified with snail shell and calcareous concretions.
46.56-46.13	Tufa with occasional degraded organics.
46.13m	Bedrock.
Auger 3	*Chainage 2635:*
48.56-48.27m OD	Topsoil (10yr 4/2), silty clay
48.27-47.26m	Stiff clay (10yr 5/4) with occasional snail shell fragments becoming greyer to base (2.5y 5/2) (alluvium)
47.26-47.04m	Organic clay, well hummified (10yr 2/1) very compacted, with propensity to break into small blocky lumps (peds). Snail shells and occasional calcareous concretions (buried ground surface)
47.04-46.76m	Organic silt (2.5y 3/1), well hummified with snail fragments and calcareous concretions
46.76-46.70m	Tufa.
46.70m	Bedrock.

Auger 4	*Chainage 2630:*
48.51-48.35m OD	Topsoil (10yr 3/1), silty clay with snails and twig fragments
48.35-47.36m	Stiff silty clay (10yr 5/4) with iron staining, becoming clay rich to base (alluvium)
47.36-47.03m	Slightly organic clay, well hummified, propensity to break into peds (2.5y 5/2) (buried ground surface)
47.03-46.92m	Fine silt with well hummified organic material (10yr 3/1) with calcareous concretions.
46.92-46.78m	Very fine sand/ crushed chalk paste (?) 10yr 8/2
46.78m	Bedrock.

Auger 5	*Chainage 2625:*
48.55-48.45m OD	Topsoil, silty clay (10yr 3/2)
48.45-47.35m	Stiff clay (10yr 5/4) occasional snail fragments, iron stained mottles (alluvium)
47.35-47.08m	Organic clay (10yr 5/2), well hummified and compacted, propensity to break into lumps (buried ground surface)
47.08-46.95m	Degraded organic silt (2.5y 3/1) with snail fragments and occasional fibrous material
46.95-46.84m	Very fine sand/crushed chalk paste (2.5y 8/2) with stone/flint piece
46.84m	Bedrock

Auger 6	*Chainage 2620:*
48.65-48.47m OD	Topsoil, silty clay (10yr 3/2)
48.47-47.51m	Stiff clay (10yr 5/4) with iron stained mottles, becomes grayer to base (alluvium).
47.51-47.42m	Black (10yr 2/1) degraded organic silt with snail shells (buried ground surface)
47.42-46.98m	Grey (10yr 5/1) very fine silt with snail shells
46.98-46.88m	Black, highly organic, degraded silt, wetter to base and becoming sandier with calcareous concretions.
46.88-46.81m	Very fine sand/crushed chalk paste (2.5y 8/2) and tufa
46.81m	Bedrock.

Auger 7	*Chainage 2615:*
48.65-48.52m OD	Dark grey silty clay topsoil
48.52-47.52m	Stiff grey clay (10yr 5/4) with orange iron stained mottles, occasional snail shell fragments and calcareous concretions at base (alluvium).
47.52-47.22m	Very compact degraded organic silty clay (10yr 2/1), with a propensity to break into peds, becoming greyer to base (10yr 4/1) and calcareous concretions (buried ground surface).
47.22-46.98m	Tufa with fresh water snails, very little silt.
46.98-46.92m	Black, slightly silty, very degraded organic matter.
46.92-46.78m	Slightly silty sand (2.5y 8/2) with degraded organic material, grading to a very fine sand/ chalk paste an tufa.
46.78m	Bedrock

Auger 8	*Chainage 2610:*
48.50-48.14m OD	Grey silty clay topsoil
48.14-47.27m	Stiff grey clay with orange iron stained mottles and occasional snail shell fragments (alluvium).
47.27-46.83m	Dark grey brown (10yr 5/2) well compacted silty clay, propensity to break into peds (buried ground surface).
46.83-46.77m	Calcareous concretions, with a fine silty substrate.
46.77-46.64m	Very fine sand/ chalk paste (2.5y 8/2) with occasional calcareous concretions.
46.64-46.62m	Degraded organic silty sand with snails and tufa
46.62m	Bedrock
Auger 9	*Chainage 2605:*
48.54-48.16m OD	Silty clay topsoil with chalk fragments
48.16-47.36m	Stiff grey clay (10yr 5/4) with orange iron stained mottles (alluvium)
47.36-47.06m	Grey brown (10yr 5/2), well compacted silty clay, with well hummified organic material, and a propensity to break into peds with occasional snails and calcareous concretions (buried ground surface)
47.06-46.67m	Very fine sand/ chalk paste (2.5y 8/2) with calcareous concretions and snail shells
46.67-46.66m	Tufa with snails.
46.66m	Bedrock
Auger 10	*Chainage 2600:*
48.68-48.33m OD	Grey silty clay topsoil.
48.33-47.26m	Stiff grey clay (10yr 5/4) with orange iron stained mottles (alluvium).
47.26-47.06m	Dark grey brown silty clay (10yr 5/2) with degraded organic material and snail shells and occasional wood fragments (buried ground surface).
47.06-46.99m	Silt (10yr 3/2) with calcareous concretions and snail shells.
46.99-46.74m	Tufa, snail shells and small pebbles.
46.74-46.73m	Lost due to water.
46.73m	Bedrock.
Auger 11	*Chainage 2595:*
48.80-48.47m OD	Grey silty clay topsoil.
48.47-47.31m	Stiff grey clay (10yr 5/4) with orange iron stained mottles and occasional snail shell fragments (alluvium).
47.31-47.20m	Dark grey brown (10yr 5/2) silty clay with propensity to break into peds, occasional snail shells (buried ground surface).
47.20-47.01m	Very fine, dark grey brown (10yr 3/2) silt with snails.
47.01-46.96m	Very fine silt sand/crushed chalk paste (2.5y 8/2) with shell fragments and Tufa.
46.96-46.92m	Lost due to water.
46.92m	Bedrock.

1 Interpretation

The diagrammatic representation of the core survey (Figure 3) shows that the overlying sediments roughly follow the gentle undulations of the bedrock. The calcareous, tufa is a redeposited matrix, formed when calcareous minerals are leached out in solution in one place and carried elsewhere and released when the solution becomes over saturated. The calcareous material concretes on any available surface, for example snail shells, roots or on to itself, building up larger clasts in layers. The chalky paste at the bottom of some of the cores is a result of the finer particles of the calcium carbonate. It is not clear whether the water is travelling along the valley floor or is coming from the sides of the valley but it is apparent that the tufas are forming *in-situ*, rather than being carried from elsewhere.

A small sample was taken from one of the tufa rich layers near the base of the sequence and the following species were identified:

Aquatic	**Terrestrial**
Small fish vertebrae	*Succinea* spp
Bithynia tentaculata	*Vallonia pulchella*
Pisidium spp. (small bivalves)	*Pupilla muscorum*
Planorbis planorbis	Clausilidae
Planorbis albus	
Valvata piscinalis	
Valvata macrostoma	
Lymnaea spp.	

The range of species indicates that the deposit formed in water and some of the shell fragments have the carbonate concreting to their surface. Dating evidence from tufa deposits in other parts of the British Isles suggests that tufa was being deposited during the Mid-Holocene between *c.* 7500 bp and *c.* 4000 bp. (Brown 1997 215) and it may be possible to test this through AMS dating of the opercula of *Bithynia tentaculata*, present in these tufa deposits. The reasons for the phase of deposition of tufa are unknown, but it is suggested that the most likely cause is river and floodplain stability (Brown 1997 215). The limited terrestrial element is consistent with wet grassland and Clausilidae tend to be woodland species, although one taxa is typically found near riverbanks on willows in Hertfordshire, Cambridgeshire and the London area (Cameron and Redfern 1976).

The silts that generally overly the calcareous deposits were laid down in a stream like environment. The silt is very fine and well oxidized with some degraded organic matter and was clearly deposited under water. The black organic deposit recorded in cores 2615 and 2620 possibly formed part of the stream edge margin, suggesting either a relic channel or that the present channel at one time was wider. This second suggestion is somewhat supported by the fact that the lowest tufa and the water lain silts dip down approximately 25m to the south of the present river, indicating that the river was notably wider than it is at present. A relic channel may also have been in evidence at the southern end of the survey area, given that this black layer is below the silts. At the northern end of the survey area the fine grey silts are overlain by another calcareous rich layer which is not in evidence anywhere else along the transect (Figure 1). It is not immediately clear whether this formed as a result of being close

to the river and the present water level or is actually redeposited. Interstratification of tufa with organic rich deposits is typically associated with high water tables, low levels of suspended sediment and a quiescent hydrological regime. Reworking of tufa was common in the middle to late Bronze Age and Iron Age and is another indication of changes in the fluvial regime (Brown 1997, 215).

The organic silt clay, with the tendency to break into small, blocky lumps (peds) is thought to represent a buried ground surface, in the sense that it was able to support vegetation and was occasionally dry, although probably damp and marshy most of the time and subjected to flood events. The thick band of oxidized clay above this is interpreted as alluvium and is indicative of flooding. It is representative of more than one flood event, probably seasonal, although these are indistinguishable and conditions were such that organic material did not survive. This is in contrast to the 'buried ground surface' which although well hummified has preserved the organic fraction.

At the northern end of the transect the sediments above the calcareous rich layer appear to rise rather than dip towards the stream as is the case with the water lain silts and lower calcareous concretions. This is a result of the second calcareous layer which is not present anywhere else. Although it is not immediately clear what this represents it is clear that the bank at the edge of the present river is not a manmade feature but is a result of the underlying stratigraphy. Further investigation of the deposits beyond core 2645, for clarification was not possible due to the proximity to the river

1 Potential

There is no indication of the date of these deposits, although it is likely that the tufa was deposited during the Mid-Holocene (Brown 1997, 215). Of interest is the potential buried ground surface horizon and the organic fraction of this sediment, although degraded, is potentially dateable using AMS techniques. It is likely that any archaeology on the site would be found in this horizon, given that it represents the 'driest' phase, particularly between pegs 2615 and 2630, which follows the natural rise of the bedrock and represents the highest ground in this area. The ground also appears to rise at the southern end of the transect, which could also be an area of potential activity. Dating the buried ground surface would also provide a date for the onset of alluviation, which is generally associated with land clearance for farming or other activities.

In general, on initial inspection, preservation of the organic material is moderate to poor with little plant macrofossil material or insect fragments surviving but snail shell fragments appear in a number of the deposits. These are likely to be the most useful indicators of the changing environment.

Given the calcareous nature of some of the deposits it is likely that pollen survival will be poor however, a number of deposits may be worth investigating for this line of evidence to test their viability such as the water lain silts, the buried ground surface and the alluvium.

Appendix 2

Recorded Archaeological Features

1**Plot**	2**Site ref.**	3 **Trench**	4**Feature Type**	5 **Context No.**	6**Provisional date**
15	HN360	1	River channel	100	Undated
15	HN360	2	River channel	200	Undated
29	HN356	9	Ditch	902	late Bronze/early Iron Age
29	HN356	9	Ditch	905	late Bronze/early Iron Age
29	HN356	10	Ditch	1004	late Bronze/early Iron Age?
29	HN356	10	Field boundary ditch	1006	18th/19th Century
29	HN356	10	Posthole	1001	18th/19th Century
29	HN356	11	Ditch	1102	late Iron Age/ early Roman
35	HN355	7	Pit	701	Modern
51	HN353	4	Field boundary ditch	403	18th century
51	HN353	4	Posthole	405	Undated