HERITAGE NETWORK

A21 LAMBERHURST BY-PASS
Lamberhurst, Kent

HN419

Phase 1:
Archaeological Evaluation Report

REGISTERED IFA ORGANISATION

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Registered with the Institute of Field Archaeologists as an Archaeological Organisation
Archaeological Director: David Hillelson, BA MIFA

A21 LAMBERHURST BYPASS

Lamberhurst, Kent

HN419

Phase 1

Archaeological Evaluation Report

Prepared for May Gurney Construction

by

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Contents

Illustrations

(following page 11)

Summary

Site name and address:	A21 Lamberhurst Bypass		
County:	Kent	**District:**	West Kent
Village/town:	Lamberhurst	**Parish:**	Lamberhurst
Planning reference:	n/a	**NGR:**	56784 13515 - 56825 13737
Client name and address:	May Gurney Construction, Trowse, Norwich NR14 8SZ		
Nature of work:	Roadbuilding	**Present land use:**	Agriculture/Woodland
Size of affected area:	c.15 hectares	**Size of area investigated:**	688m^2
Site Code:	HN419	**Other reference:**	
Organisation:	Heritage Network	**Site Director:**	David Hillelson
Type of work:	Evaluation	**Curating Museum:**	Tunbridge Wells Museum
Start of work	27/05/2003	**Finish of work**	24/06/2003
Related SMR Nos:	n/a	**Periods represented:**	Med; Post-Med; Modern
Previous summaries/reports:	Barber 1992; Babtie 2002		

Synopsis: As part of the enabling works for the construction of the A21 Lamberhurst Bypass, the Heritage Network was commissioned by May Gurney Construction, to undertake a programme of targeted archaeological evaluation of eight key areas identified along the construction route.

The eight evaluation areas included the investigation of earthworks in Plots 7/8, Plot 11, Plot 13, and Plot 15/17, an auger survey along the line of the River Teise diversion in Plots 15/17, the investigation of the footprint of Pierce Barn overbridge in Plot 20, the investigation of soilmarks in Plot 36, and the investigation of a ceramic findspot in Plot 40. A total of twelve trenches and a larger open area were excavated over the seven plots.

The results of the fieldwork in Plots 7 and 13 demonstrated the presence of earlier field divisions but no archaeological activity was noted in Plots 11 and 20. Post medieval/modern drainage ditches were observed in Plot 15, while recent ploughing appears to have removed any trace of the previously observed soil mark in Plot 36.

The auger survey in Plots 15/17 provided valuable palaeo-environmental information relating to the morphology of the river channel, but demonstrated only limited archaeological potential.

The evaluation of the previously stripped area in Plot 40, and the excavation of further trial trenches in the vicinity, revealed five linear features and a possible pit. Evidence for iron working was recovered but dating evidence was limited to the recovery of a single unabraided sherd of 13th century domestic pottery in the preliminary site walkover. The recorded features are considered to define an archaeological site which should be investigated further.

Acknowledgements

The fieldwork for this project was carried out by Chris Turner, Geoff Saunders, Mark Winter, and Karin Semmelmann. The report was compiled by Chris Turner and Geoff Saunders and the illustrations prepared by Chris Turner and David Kaye. The report was edited by David Hillelson.

The Heritage Network would like to express its thanks to: Ron Henry, URS Corporation; Nigel Steer and Steve Bowen, May Gurney; Neil Humphries, Humphries Rowell Associates; Jeremy Parker, FIRA; Peter Lingwood, CEC; Wendy Rogers and Casper Johnson, KCC Heritage Conservation Group; and Caroline Thackray, National Trust, for their co-operation and assistance in the execution of this project.

1. Introduction

1.1 This report has been prepared on behalf of *May Gurney Construction* as part of the targeted archaeological evaluation of key areas in advance of the construction of the A21 Lamberhurst Bypass, Kent. 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 approved *Archaeological Management Plan* (AMP), dated January 2003. The detailed methodologies for the eight evaluation areas forming the Phase 1 works, are contained in the Heritage Network's *Archaeological Project Design* dated May 2003. This was submitted to the Project Manager (PM) and to the Kent County Council Heritage Conservation Group (KCC), and approved by the KCC as the lead curatorial authority for the county.

1.2 The route of the bypass runs to the east of the village of Lamberhurst (see Figure 1), leaving the present route of the A21 two hundred metres to the south-east of its junction with the B2169 (NGR 56784 13515), and rejoining the route via the A262 at its junction with the B2162 (NGR 56825 13737).

1.3 On the basis of advance works undertaken along the bypass route since 1992, the AMP defined six areas where it was considered to be desirable to mitigate the archaeological risk before the start of topsoil stripping operations. A site inspection, carried out by the Heritage Network after the award of the construction contract, demonstrated that evaluation of Field Plot 45, in the area of the southern roundabout, was no longer viable. Advance groundworks in Field Plot 13 also reduced the amount of data that could be retrieved in this area. The site inspection did note that topsoil stripping in Plot 40 (to provide material for an artificial badger set) had exposed some archaeological ceramic evidence, which suggests the presence of an archaeological site close by. This area was added to the list.

1.4 The first phase of archaeological work represents the targeted advance evaluation of a representative sample of the following eight areas of defined archaeological potential or risk:

a. Earthworks in Plots 7/8 (Barber 1992)

b. Earthworks in Plot 11 (Barber 1992)

c. Earthworks in Plot 13 (Barber 1992)

d. Earthworks in Plot 15/17 (Barber 1992)

e. River Teise diversion in Plots 15/17

f. Pierce Barn overbridge in Plot 20

g. Soilmarks in Plot 36 (Barber 1992)

h. Ceramic findspot in Plot 40

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 Project Design has been prepared for the investigation, recording and clearance of the identified archaeological remains.

2. Methodology

General

2.1 Trial trenches were excavated across six of the defined areas of potential or risk. The justification for the choice of the areas was set out in the AMP and the subsequent Project Design, and is summarised below:

Phase	Plot	Justification
1a	7/8	Possible earthwork features identified in 1992 advance evaluation
1b	11	Possible earthwork features identified in 1992 advance evaluation
1c	13	Possible earthwork features identified in 1992 advance evaluation
1d	15/17	Possible earthwork features identified in 1992 advance evaluation
1f	20	Risk of unexpected discoveries disrupting construction programme
1g	36	Possible soilmark identified in 1992 advance evaluation

2.2 An auger survey was also undertaken in Plots 15/17 (Phase 1e), along the line of a new cutting to divert the line of the River Teise. This was intended to assess the potential survival of deposits that might be indicative of prehistoric activity in the locality.

2.3 In Plot 40, advance topsoil stripping undertaken by the Highways Agency in order to provide material for an artificial badger sett, revealed a sherd of pottery which was considered to be medieval or earlier in date and might be indicative activity nearby. The stripped area was cleaned and four additional trial trenches excavated to investigate this.

2.4 All the evaluation work followed the provisions set out in the approved Project Design, and the procedures set out in the Heritage Network's operations manual.

Trial Trenches

2.5 A total of 12 trenches, and the open area in Plot 40, was opened using a JCB fitted with a 1.5m toothless ditching bucket, under close archaeological supervision.

2.6 Within each trench, topsoil and overburden was removed down to the first significant archaeological horizon. Spoil from the machining was inspected for archaeological artefacts.

2.7 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.

2.8 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.

2.9 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.

Auger Survey

2.10 The auger survey in Plots 15/17 was carried out on behalf of the Heritage Network by Geodrive Ltd, under the direction of Dr Rob Scaife of *Palaeopol*.

2.11 The survey followed the line of a new channel for the river Teise diversion. Five boreholes were sunk using a powered auger and a 1m - 2m window corer/gouge. Cores were logged using a standard Munsell colour chart, and sub-sampled in the field. Two sleeved cores were retained for laboratory analysis of the palaeo-environmental potential.

3. Results

PHASE 1a: Plot 7

3.1 A single trench was located along the boundary with Plot 8, approximately 100m north of the boundary with Plot 11 (see Figures 4 & 5). The trench measured 1.55m x 15.20m and was aligned north to south across the potential earthworks identified in Plots 7/8.

3.2 The stratigraphy in this trench consisted of a layer of dark grey clay silt topsoil overlying reddish brown clay subsoil with flecks of ironstone. Beneath this was the reddish brown clay natural with iron flecks and grey mottling. No evidence to suggest that the earthwork bank was anything other than natural in origin was revealed in the trench.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
701	Layer	Firm, dark grey, clay silt. Topsoil.	0.20 thick	75.03
702	Layer	Firm, reddish brown, clay with flecks of iron stone. Subsoil.	0.23 thick	74.83
703	Layer	Firm, reddish brown, clay natural with iron flecks and grey mottling.	0.23+ thick	74.68

PHASE 1b: Plot 11

3.3 A single trench was located immediately to the east of Plot 12, approximately 45m north of the boundary with Plot 13 (see Figures 6 & 7). The trench measured 1.55m x 20.00m and was aligned north to south across the line of the potential earthworks.

3.4 The stratigraphy in the trench consisted of a dark greyish brown silty clay topsoil over a light greyish brown slightly silty clay subsoil, beneath which was the natural geology. Two possible shallow features [1104] and [1105] were identified in this trench on the line of the suspected earthworks. The fill of these features was similar to the surrounding ploughsoil and it is likely that they are natural in origin, possibly the result of differential erosion of the natural geology on a slope. Pottery recovered from the features is likely to derive from plough action and was of a late 19th/ early 20th century date.

3.5 There was no evidence to suggest that this feature was a quarry or an accessway to the pond, immediately to the west in Plot 12.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
1101	Layer	Firm, dark greyish brown, silty clay. Topsoil.	0.25 thick	55.97
1102	Layer	Firm, light greyish brown, slightly silty clay. Subsoil.	0.20 thick	55.77

Trench Data				
Context Number	Type	Description	Dimensions (m)	Level (mOD)
1103	Layer	Firm, yellowish brown, clay with iron panning and bluish grey mottling. Natural geology.	-	55.67
1104	Deposit	Firm, dark greyish brown, clay. May represent remains of earthworks.	1.55 + long 4.65 wide 0.07 thick	54.09
1105	Deposit	Firm, dark greyish brown, clay. May represent remains of earthworks.	1.70 + long 3.10 wide 0.10 thick	54.89

PHASE 1c: Plot 13

3.6 Advance clearance works undertaken by the Highways Agency had truncated a potential earthwork identified in Plot 13 (see Figures 6 & 8). Which was of the northern plot boundary. The exposed section, located approximately 180m south of the boundary with Plot 11, was examined, cleaned and fully recorded to establish the nature of the earthwork.

3.7 The earthwork appears to be natural in origin, formed from topsoil and subsoil collecting against a boundary along the break of slope. The topsoil ranges from 0.15-0.20 to the south of the feature, increasing to 0.40m to the north. A possible tree bole [1302] with associated root activity was observed, suggesting that a boundary line of trees and possibly a hedge may account for this feature.

3.8 The earthwork coincides was the rising of a natural layer of compacted ironstone rich clay [1307].

Trench Data				
Context Number	Type	Description	Dimensions (m)	Level (mOD)
1301	Layer	Firm, dark greyish brown, silty clay. Topsoil.	0.15 - 0.40 thick	40.25-41.15
1302	Layer	'U' shaped dark greyish brown, silty clay with roots. Tree bole.	0.80 wide 0.50 deep	40.15
1303	Layer	Light brown silty clay. subsoil	0.40 thick	40.25
1304	Layer	Light whitish brown silty clay, with iron inclusions. Decayed subsoil	0.30 thick	39.90
1305	Layer	Light brown silty clay with light reddish brown mottles. Specks of iron inclusions. Subsoil	0.52 thick	40.15-40.75
1306	Layer	Light brown clay with light reddish brown mottles, occasional large iron inclusions. Natural	0.42 thick	39.70-40.40
1307	Layer	Concrete reddish brown clay with high degree of iron.	0.30 + thick	39.45-39.75

PHASE 1d: Plot 15

Trench 1

3.9 Trench 1 was located 38m south of the boundary with Plots 13/14 (see Figures 9 & 10). The trench measured 1.55 x 17.00m and was aligned east to west across a curvilinear soilmark.

3.10 The stratigraphy in the trench consisted of a compact, dark greyish brown, sandy clay topsoil over a compact, light greyish brown, sandy clay subsoil beneath which was the natural geology. The trench contained a single feature in the form of a large ditch [1504]. The ditch was cut through the subsoil from beneath the topsoil, contained two fills and was aligned north to south. Pottery from the lower ditch fill [1506] suggests a 18th /19th century date.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
1501	Layer	Compact, dark greyish brown, sandy clay. Topsoil.	0.25 thick	38.00
1502	Layer	Compact, light greyish brown, sandy clay with occasional small angular sandstone fragments. Subsoil.	0.35 thick	37.80
1503	Layer	Compact, reddish brown, sandy clay with flecks of iron and occasional large angular sandstone fragments. Natural geology.	0.30+ thick	37.45
1504	Cut	Cut of a linear feature on a north to south alignment. Large ditch with shallow concave sides and a slightly rounded base.	1.55 + long 6.20 wide 0.70 thick	37.60
1505	Fill	Soft, reddish brown, sandy clay. Secondary fill of ditch [1504]	1.55 + long 6.20 wide 0.35 thick	37.60
1506	Fill	Firm, greyish brown, silty clay with occasional root disturbance. Primary fill of ditch [1504]	1.55 + long 5.70 wide 0.35 thick	37.60

Trench 2

3.11 Trench 2 was located 98m south of the boundary with Plots 13/14 (see Figures 9 & 11). he trench measured 1.55 x 17.10m and was aligned east to west across a curvilinear soilmark.

3.12 The stratigraphy in this trench consisted of a compact, greyish brown fine silty topsoil overlying a compact, light reddish brown fine silty clay subsoil beneath which was the natural geology. The stratigraphy in the trench was disturbed by a narrow strip of reddish brown silty clay which appeared to be cut from beneath the topsoil through the subsoil. It is possible that this may represent one side of a feature, though the other side was not evident. To the west of this disturbance the subsoil contained a lens of grey silty clay which ran undisturbed for the remaining length of the trench.

Trench Data

Context Number	Type	Description	Dimensions (m)	Level (mOD)
1510	Layer	Compact, greyish brown, fine silt with occasional charcoal flecks. Topsoil.	0.30 thick	37.61
1511	Layer	Compact, light reddish brown, fine silty clay with a lens of grey silty clay. Subsoil.	0.50 thick	37.41
1512	Layer	Plastic, reddish brown, clay. Natural geology	0.45 + thick	36.96
1513	Feature	Narrow strip of reddish brown silty clay with occasional flecks of grey clay. Possibly forming one edge of a feature.	1.55 + long 0.30 wide 0.75 thick	37.36

Trench 3

3.13 Trench 3 was located 85m south of the boundary with Plots 13/14 (see Figures 9 & 11). The trench measured 1.55 x 12.20m and was aligned north-west to south-east across a curvilinear soilmark.

3.14 The stratigraphy in the trench consisted of a dark greyish brown silty clay topsoil over a light greyish brown mottled silty clay subsoil beneath which was the natural geology. The trench contained a single feature, ditch [1523], which ran across the trench on a south-west to north-east alignment. The ditch was cut from below the topsoil through the subsoil with steep sides and a flat base. It contained a single fill (1524) which was a mottled grey silty clay. Ceramic building material (CBM) within the fill suggests a relatively modern date for the feature.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
1520	Layer	Firm, dark greyish brown, silty clay. Topsoil.	0.25 thick	37.65
1521	Layer	Firm, light greyish brown, mottled silty clay. Subsoil.	0.30 thick	37.45
1522	Layer	Firm, reddish brown, silty clay. Natural geology	0.40+ thick	37.10
1523	Cut	Cut of linear feature on a southwest to northeast alignment. Small ditch with steep sides and a flat base.	1.55 + long 0.65 wide 0.40 thick	37.40
1524	Fill	Mottled grey silty clay with CBM inclusions. Single fill of ditch [1523].	1.55+ long 0.65 wide 0.40 thick	37.40

PHASE 1e: Plots 15/ 17

3.15 Five boreholes were examined along the line of the proposed new river diversion channel (see Figure 9). Only borehole 4, at chainage 150m, contained any organic sediments of note (see Figure 12). This included macroscopic wood and twig remains.

3.16 The organic, fine grained sediments of borehole 4 fill a palaeochannel cut on the inside edge of a curve in the river valley. It is likely that sediments started to fill this channel when there was a shift in the river's course. In the field it was possible to discern the line of a depression which appears to be another palaeochannel, lying outside of the line of the present study.

3.17 Once the erosive potential of the stream was removed, a low energy environment resulted in the accumulation of fine grained sediments in what appear to be lake muds. These sedimentary units clearly offered potential for pollen preservation, reconstruction of the palaeo-environments and possibly to provide some idea of the age of the sediments. Subsequently, the wetter channel fills were overlain and sealed by the silty alluvium/colluvium seen in the other boreholes (i.e. essentially reworked loessal silts).

3.18 Pollen analysis on the core from borehole 4 can be summarised as follows:

- The sample produced fine grained, water-logged humic sediments filling palaeochannel running on the inner edge of the valley.
- The sediment fills of this palaeochannel were the only ones recovered which offered potential for pollen preservation, analysis and palaeoenvironmental reconstruction.
- Pollen has been recovered from these sediments although abundance and preservation is very variable. However, some useful information has been obtained.
- A pollen diagram has been constructed and three local pollen assemblage zones have been recognised. Zones 1 and 2 clearly show dominance of woodland with few herbs and little direct evidence of human impact.
- The woodland was dominated by lime/linden with oak and hazel and possibly some elm in the lower zones/levels.
- Broad leaved lime (*Tilia platyphyllos*) was present and is an important palaeoecological record.
- Change occurred which saw increasing sedimentation and pollen degradation (see *Tilia*). This may have been from human activity on the interfluves although there is no direct evidence of this.
- There is an expansion of herbs (grasses and plantain) and secondary woodland types (ash and beech) which are indicative of opening up of local woodland on the interfluves. This has been postulated as of Neolithic age but is by no means certain.
- Because of the dominance of lime and general absence of elm, it is thought that these sediment fills and contained pollen are of Neolithic and early-middle Bronze Age date. This supposition is based on known regional (S.E. England) palaeo-environments and changes in them which have been previously radiocarbon dated.
- The uppermost sample indicates increasing importance of alder which possibly marks a change from grass-sedge to floodplain woodland (carr at some distance?) or alders fringing the river.

Borehole Logs

Borehole 1 (chainage: 15m)	
Depth (cm)	**Description**
0 – 20	Contemporary, humic topsoil. Good crumb structure. Typical worm sorted pasture soil. Grading into sub-soil 'B' horizon. Brown 10YR 4/3. Homogeneous silt.
20 – 126	Becoming more silty (medium to coarse). Pale brown 10YR 4/6 to 10YR 4/4. Oxidised/gleyed alluvium. Becoming darker brown downwards to 10YR 3/6 or 10YR 4/6. Small piece of red brick at 80cm.
126 – 130	Charcoal specks within medium to coarse silt as above.
130 – 176	Homogeneous brown (10YR 3/6) fine and medium silt with some Mg. Mottling.
176 – 180	Lens of clay and fine silt. Brown 10YR 3/6.
180 – 228	Homogeneous buff/brown fine and medium silt.
228 – 236	Transition to bedrock. Becoming buff, silty clay with orange/yellow inclusions (10YR 5/8 and 10YR 4/6).
236 – 300	Wadhurst Clay. Buff stiff clay with Mg ands Fe staining/mottles 10YR ¾and 6/4.

Borehole 2 (chainage: 60m)	
Depth (cm)	**Description**
0 – 10	Humic top soil under pasture.
10 – 47	Becoming grey/brown silt and fine sand 10YR 4/2 to 10YR 4/3. Homogeneous silts, friable with no stones
47 – 100	Becoming orange/yellow Mg. mottled silt. Gleyed 10YR 5/6 to 10YR 5/8. Grey mottles (10YR 5/2). Dry and friable.
100 – 165	As above but becoming darker (10YR 4/4 and 10YR 4/6) and more mottled with Mg and grey silty lenses (10YR 5/2)
165 – 178	Clay and fine silt lens with some calcareous inclusions.
178 – 190	As above clay lens. Dark brown silt with lighter/buff mottles.
190 – 200	Pale orange and grey fine silty clay.
200 – 300	Stiff, brownish yellow silt (10YR 6/6 and 6/8 with 10YR 6/2 and 6/4) with strong Mg mottles/inclusions. Wadhurst Clay basal deposits.

Borehole 3 (chainage: 100m)	
Depth (cm)	**Description**
0 – 8	Humic top soil
8 – 52	Buff and pale grey medium and coarse silt and fine sand (10YR 6/3 to 10YR 5/3). Homogeneous, well sorted with no inclusions.
52 – 60	Transition becoming orange/yellow silts.
60 – 140	Orange/yellow medium silt (10YR 5/6 with 10YR 5/8 mottles) and some pale grey (10YR 6/2). Becoming progressively darker with black Mg mottles and increasing quantities of grey silt. Less gleyed and oxidised at depth.
140 – 162	Dense black Mg and Fe. Horizon with some organics.
162 – 170	Black Mg mottled silts but less than unit above.
170 – 238	Yellow/orange (10YR 5/6 and 10YR 5/8). Friable with Mg staining and pale grey mottles of 10YR 6/2.
238 – 400	Basal Wadhurst Clay comprising typically Orange-brown silty clay with Fe fragments. Complex. Orange (10YR 5/6 and 5/8 with occasional 10YR 6/8). Pale grey (10YR 6/2 and 10YR 6/3 with 10YR 5/2). Much wetter.

Borehole 4 (chainage: 150m)	
Depth (cm)	**Description**
0 – 30	Grey silt and fine sand (10YR 5/2) with occasional charcoal specks. A soil, with good crumb and blocky structure in sub-soil.
30 – 37	Transition
37 – 118	Becoming paler with fine silt and some pale grey clay with orange/yellow mottling. 10YR 5/2 with 10YR 5/6 and 5/8 orange mottles. Loessal?
118 – 128	Black Mg/Fe horizon within silts as described above.
128 – 142	As for 37-118cm.
142 – 158	Dark orange and brown 10YR 5/8 or 7.5 YR 5/8.
158 – 243	Paler grey clay and fine silt 10YR 6/1.
243 – 248	Organic inclusions in silt.
248 – 318	Aquamarine/bright turquoise blue clay with fine silt.
318 – 338	Pale grey silt and clay (10YR 5/1).
338 – 364	Buff and darker grey silt ? lake muds. 10YR 5/3 when fresh oxidising to 10YR 5/3.
364 – 375	Wood and twig fragments in grey medium silt.
375 – 400	Homogeneous pale grey and brown silt (10YR 6/1 with 10YR 6/3).
400 – 425	Silt becoming coarser with angular gravel.

Borehole 5 (chainage: 190m)	
Depth (cm)	**Description**
0 – 12	Humic top soil
12 – 52	Grey-brown silt and fine sand (10YR 5/2). Homogeneous, no inclusions; loessal?
52 – 136	More orange component. Sandy silt with slight grey mottling (10YR 5/6). Becoming darker brown (10YR 4/6) with more grey (10YR 5/2).
136 – 140	Horizon of strong black Mg staining.
140 – 243	More grey mottles (10YR 5/1 and 5/2). i.e. less gleyed in fine yellow/brown silt with clay. Some Mg inclusions.
243 – 300	Compacted/stiff Wadhurst Clay basal geology. Black Mg inclusions. (10YR 6/8 and 10YR 5/8).

3.19 The full results from the auger survey are reproduced in Appendix 1.

PHASE 1f: Plot 20

Trench 1

3.20 Trench 1 was located 15m north of the boundary with Plot 24 (see Figures 13 & 14). The trench measured 1.55 x 9.40m and was aligned north to south across the line of the proposed eastern abutment of the Pierce Barn overbridge.

3.21 The stratigraphy in the trench consisted of a yellowish brown sandy clay topsoil over a light yellowish brown clayey sand subsoil beneath which was the natural geology.

3.22 No archaeological features or deposits were observed in this trench.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
2001	Layer	Yellowish brown, sandy clay. Topsoil.	0.35 thick	51.08
2002	Layer	Light yellowish brown, clayey sand. Subsoil.	0.20 thick	50.83
2003	Layer	Light yellowish brown, sandy clay. Natural.	0.10+ thick	50.58

Trench 2

3.23 Trench 2 was located 35m north of the boundary with Plot 24 (see Figures 13 & 14). The trench measured 1.55 x 9.4m and was aligned north to south across the line of the proposed western abutment of the Pierce Barn overbridge.

3.24 The stratigraphy in the trench consisted of a yellowish brown sandy clay topsoil overlying the natural geology.

3.25 No archaeological features or deposits were observed in this trench.

Trench data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
2010	Layer	Yellowish brown, sandy clay. Topsoil.	0.22 thick	45.40
2011	Layer	Light yellowish brown, sandy clay. Natural.	0.18+ thick	45.05

PHASE 1g: Plot 36

3.26 A single trench was located approximately 50m north-east of the boundary with Plot 39 (see Figures 15 & 16). The trench measured 1.55 x 30.80m and was aligned north-west to south-east across a charcoal soilmark previously identified in 1992.

3.27 The stratigraphy in this trench consisted of an olive brown silty clay topsoil beneath which was the natural geology. The trench contained no cut features although naturally occurring manganese staining was noted at 13.30m from the north-west end of the trench.

3.28 Ploughmarks were evident on the base of the trench indicating that deep ploughing of the plot had occurred. There was no indication of a charcoal deposit that could have produced a soilmark. It is apparent that any such evidence that may have existed had been ploughed out.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
3601	Layer	Olive brown silty clay. Topsoil.	0.50 thick	64.39
3602	Layer	Plastic, grey, clay, changes at 17.00m from the northwest end of the trench to, plastic, clay. Natural geology.	0.25+ thick	63.94

PHASE 1h: Plot 40

3.29 During the initial site walkover, prior to the start of works, a sherd of pottery was recovered from Spray Hill (see Figure 15). This sherd was located on an area that had been partially stripped to provide topsoil for the construction of a new badger set located to the east of the road corridor.

3.30 This small area was stripped by the Highways Agency as part of the enabling works prior to the award of the construction contract, and therefore was not archaeologically monitored. The sherd suggested a high potential for the discovery of medieval features and deposits in the immediate vicinity.

3.31 The stripped area Trench 2), measuring 14 x 20m, was machine cleaned and further material was removed to the first significant archaeological horizon. A further 4 trenches (numbered 3 to 6) were excavated around this area to determine the extent of the site (see Figures 15 & 17).

NOTE: Trench 1 in this plot forms part of the Phase 2 works, which will be the subject of a separate report.

Trench 2

3.32 Trench 2 was located approximately 35m south of the boundary with Plot 38 (see Figure 17). The trench measured 14 x 20m and was aligned north-east - south-west.

3.33 The stratigraphy in this trench consisted of a light brownish grey sandy silt topsoil beneath which was the natural geology. An outcrop of angular sandstone was observed in the natural across the southern half of the trench.

3.34 The trench contained four linear cut features and one possible sub-circular feature (see Figures 17 & 20). Sections were excavated through linear features [4010] and [4012]. Linear [4010] was orientated north east to south west while [4012] was on a north to south alignment. The remaining features were not excavated. Ploughmarks were evident in the base of the trench indicating that deep ploughing of the plot had occurred.

3.35 There is no cartographic evidence to suggest that these features are former field boundaries. Although no dating evidence was recovered from the fills, some iron slag was retrieved from the fill of ditch [4010].

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
4008	Layer	Light brownish grey sandy silt. Topsoil.	0.30 thick	c.82.50
4009	Layer	Yellow silty sand. Natural geology.	-	
4010	Cut	Cut of a linear feature on a north east-south west alignment. Shallow ditch with concave sides and a flat base.	3.20+ long 0.79 wide 0.09 thick	82.08

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
4011	Fill	Firm yellowish brown sandy clay with occasional charcoal flecks and sandstone. Contained some iron slag. Single fill of ditch [4010].	3.20 + long 0.79 wide 0.09 thick	82.08
4012	Cut	Cut of a linear feature on a north south alignment. Shallow ditch with slightly concave sides and a flat base.	11.00+ Long 1.15 wide 0.24 thick	81.45
4013	Fill	Moderately firm light olive brown sandy clay with occasional small charcoal fragments and frequent sandstone. Single fill of ditch [4012].	11.00+ long 0.70 wide 0.09 thick	81.45
4018	Cut	Cut of a circular feature. Unexcavated pit.	1.50 long 1.00 wide	81.30
4019	Fill	Fill of unexcavated pit [4018].	1.50 long 1.00 wide	81.30
4020	Cut	Cut of a linear feature on a east- west alignment. Unexcavated ditch.	12.00+ long 2.00 wide	82.15
4021	Fill	Fill of unexcavated ditch [4020]	12.00+ long 2.00 wide	82.15
4034	Cut	Cut of linear feature on a north – south alignment. Unexcavated ditch.	10.00+ long 2.00 wide	81.45
4035	Fill	Fill of unexcavated ditch [4034]	10.00+ long 2.00 wide	81.45

Trench 3

3.36 Trench 3 was located approximately 15m north of Trench 2, between it and the boundary with Plot 38 (see Figures 17 & 18). The trench measured 1.55 x 23.30m and was aligned east to west.

3.37 The stratigraphy in this trench consisted of a light brownish grey sandy silt topsoil beneath which was the natural geology.

3.38 The trench contained no evidence of archaeological activity. Ploughmarks were evident in the base of the trench indicating that deep ploughing of the plot had occurred.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
4022	Layer	Light brownish grey sandy silt. Topsoil	0.30 thick	79.85
4023	Layer	Yellow silty sand. Natural geology	-	79.55

Trench 4

3.39 Trench 4 was located approximately 15m west of Trench 2 (see Figures 17 & 18). The trench measured 1.55 x 29.30m and was aligned north to south.

3.40 The stratigraphy in this trench consisted of a light brownish grey sandy silt topsoil, above a brownish yellow silty sand subsoil. Beneath this was the natural geology.

3.41 The trench contained two linear cut features. Linear [4014] was a shallow ditch on a north-west to south-east alignment, while linear [4016] had an east to west orientation. [4016] appears to be on the same alignment as [4020] in Trench 2 and [4031] in Trench 6. Neither feature contained any finds. Ploughmarks were evident in the base of the trench indicating that deep ploughing of the plot had occurred.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
4014	Cut	Cut of a linear feature on a north west-south east alignment. Shallow ditch with concave sides and base.	7.20+ long 0.43 wide 0.10 thick	80.79
4015	Fill	Firm light yellowish brown silty clay containing frequent stone inclusions. Single fill of ditch [4014].	7.20+ long 0.43 wide 0.10 thick	80.79
4016	Cut	Cut of a linear feature on an east-west alignment. Ditch with concave sides and a flat base.	1.50+ long 1.70 wide 0.35 thick	82.94
4017	Fill	Firm mid yellowish brown silty clay containing moderate stone inclusions. Single fill of diitch [4016].	1.50+ long 1.70 wide 0.35 thick.	82.94
4024	Layer	Light brownish grey sandy silt. Topsoil	0.46 deep	84.09
4025	Layer	Brownish yellow silty sand. Subsoil.	0.14 deep	83.79
4026	Layer	Yellow silty sand. Natural geology.	-	83.65

Trench 5

3.42 Trench 5 was located approximately 10m south of Trench 2 (see Figures 17 & 19). The trench measured 1.55 x 31.30m and was aligned east to west.

3.43 The stratigraphy in this trench consisted of a light brownish grey sandy silt topsoil above a brownish yellow silty sand subsoil. Beneath this was the natural geology.

3.44 The trench contained no evidence of archaeological activity. Ploughmarks were evident in the base of the trench indicating that deep ploughing of the plot had occurred.

Context Number	Type	Description	Dimensions (m)	Level (mOD)
4027	Layer	Light brownish grey sandy silt. Topsoil	0.30 deep	83.77
4028	Layer	Brownish yellow silty sand. Subsoil.	0.09 deep	83.47
4033	Layer	Yellow silty sand. Natural geology.	-	83.27

Trench 6

3.45 Trench 6 was located approximately 26m west of Trench 2 (see Figures 17 & 19). The trench measured 1.55 x 38.40m and was aligned north-east to south-west.

3.46 The stratigraphy in this trench consisted of a light brownish grey sandy silt topsoil beneath which was the natural geology.

3.47 The trench contained one linear cut feature [4031]. This ditch was on a north-east to south-west alignment and may be a continuation of linear [4020] in Trench 2. The ditch fill appeared to be charcoal rich but shallow. No artefacts were recovered from this feature. Ploughmarks were evident on the base of the trench indicating that deep ploughing of the plot had occurred.

Trench Data				
Context Number	**Type**	**Description**	**Dimensions (m)**	**Level (mOD)**
4029	Layer	Light brownish grey sandy silt. Topsoil	0.35 deep	83.96
4030	Layer	Yellow silty sand. Natural geology.	-	83.63
4031	Cut	Linear cut on a north east-south west alignment. Ditch.	1.60+ long 2.40 wide	82.88
4032	Fill	Fill of ditch [4031]. Contains a large amount of charcoal.	1.60+ long 2.40 wide	82.88

4. Artefacts and Ecofacts

4.1 Only two contexts in the Phase 1 evaluation works contained archaeological artefacts. A further unstratified sherd was found in Plot 40.

Context	Description	g.	No.
1506	Sherd of post medieval black glazed ware 18/19th Century	1	3
1506	Post medieval peg tile	5	2
4011	Iron slag fragments	715	17
U/s. (Plot 40)	Sherd of sand and shell tempered 13th century cooking pot	20	1

4.2 The peg tile and pottery from Plot 15 are not considered to be of significance and can be discarded. No further work on these artefacts is proposed.

4.3 The medieval sherd from Plot 40, although it is from an unstratified context, should be retained for the archive, as this represents the only dating evidence recovered. However, no further work on the sherd is proposed.

4.4 The iron slag from Plot 40 will require further analysis by an industrial residues specialist to identify if it is the product of smelting or primary smithing. The composition of the slag may indicate if iron manufacturing was being undertaken in the vicinity.

4.5 No bulk samples were taken from features in the course of this phase of works, due to the absence of dating evidence. Nevertheless, the core sample retrieved from the line of the River Tiese diversion has provided a useful palaeo-environmental context for the landscape along the road corridor.

5. Discussion

Introduction

5.1 This phase of archaeological work was intended to clarify the archaeological potential of a number of features previously identified in a fieldwalking survey (Barber, 1992) and to evaluate the archaeological potential in the location of a number of key constructional elements.

5.2 The effect of modern agricultural practices, particularly deep ploughing, was noted in all the areas investigated. Plough attrition appears to be responsible for removing any traces of the soilmark in Plot 36, which was observed in 1992. Features on Spray Hill also appeared to be significantly truncated.

Phases 1a – 1g

5.3 Three areas of known earthworks were evaluated. None of the recorded features warranted further investigation.

- The features in Plots 7 and 13 may be remnants of earlier field divisions, with topsoil building up behind a now scrubbed out hedge line.

- The earthwork in Plot 11 forms a shallow depression next to an existing pond, although there does not appear to be any evidence for archaeological activity associated with it. This feature may represent an access route to the pond.

5.4 Investigation of the soilmarks in Plot 15 demonstrated that they were post medieval/ modern field ditches. Cartographic evidence indicates that they went out of use in the later half of the 20th century. The primary fill of the curved boundary which was observed in Trench 1, contained pottery and tile fragments dating to the 18th/ 19th century.

5.5 The boreholes along the length of the new river channel indicated limited potential for presence of archaeological features and deposits, but analysis of the core taken from borehole 4 has provided valuable palaeo-environmental data for the river valley.

5.6 Trenches across the abutments for the Pierce Barn overbridge in Plot 20, revealed no evidence for potential archaeological activity.

Spray Hill

5.7 The evaluation of the ceramic findspot in Plot 40, produced evidence of five linear features, and one possible pit. No direct dating evidence was recovered from these features, which were heavily truncated by ploughing. However, some fragments of iron slag were recovered from ditch [4010].

5.8 A ditch was recorded running across Trenches 2, 4 and 6 on an east – west alignment ([4016], [4020], [4031]), which may represent the southern limit of archaeological activity on this part of Spray Hill.

5.9 The area is situated on the north facing slope of Spray Hill with a natural spring located 50m to the north-east in Plot 37. Although the date of this site is uncertain, the chance find of a 13th century sherd in the vicinity coupled with the indication that iron-working is taking place in the vicinity, suggests a Medieval date. The site is located just inside the bounds of Scotney Park, which is thought to have been emparked in the 14th century. Cartographic evidence indicates the park survived into the 17th century.

Revised Risk Assessment

5.10 As a result of the evaluation works undertaken, it is possible to reclassify the risk that archaeological remains may be encountered in Plots 7, 8, 11, 13, 15, 17, 20 and 36 of the road corridor as Low. The residual risk will be managed under the Phase 3 monitoring of all stripping operations.

5.11 The auger survey in Plots 15/17 has demonstrated that there is limited potential for encountering archaeological deposits in the river Teise diversion channel. Because of the depth of the alluvial/colluvial deposits that seal the prehistoric ground surface, however, it is recommended that the entire excavation programme for the new cutting is monitored under Phase 3 of the archaeological management plan.

5.12 The remains uncovered in Plot 40 may be defined as a site of archaeological interest. The area has been fenced off and the Project Manager and Construction Manager have been informed. Because the entire area is to be excavated as a cutting for the road corridor, the appropriate mitigation strategy for the destruction of this site must be *preservation by record*. It is therefore recommended that the full width of the road corridor and the adjacent cutting should be stripped under archaeological supervision to expose the full extent of the archaeological features and deposits affected by the construction works, and their investigation and sampling in accordance with current professional practice.

Confidence Rating

5.13 The weather conditions were dry and sunny for the duration of the evaluation fieldwork. Although the natural geology is highly disturbed in some places, causing the identification of archaeological features to be problematic, 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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Appendix 1

A21 Lamberhurst Bypass: Borehole Survey and Stratigraphy

Rob Scaife

Introduction

Five boreholes were sunk by Geodrive Ltd. along the line of the road bypass and the recovered sediments sub-sampled and described in the field. Only borehole 4 (see 2.d below) contained any organic sediments of note, including macroscopic wood and twig remains. Whilst the cores were described from a window corer/gouge, this borehole (4) was also sample with a sleeve corer for any future analysis. A preliminary pollen study has also been carried out on the lower organic sediments of borehole 4.

The stratigraphy of Boreholes 1-5

Sediments were described in the field from the 1.0 and 2.0m long window corers. A standard Munsell colour chart was used to characterise the sediments which comprised largely minerogenic sand, silt and clay of various grades.

Details of the stratigraphy of the five boreholes are as follows.

Borehole 1 at 15m.

Depth cm	
0 – 20	Contemporary, humic topsoil. Good crumb structure. Typical worm sorted pasture soil. Grading into sub-soil ‘B’ horizon. Brown 10YR 4/3. Homogeneous silt.
20 – 126	Becoming more silty (medium to coarse). Pale brown 10YR 4/6 to 10YR 4/4. Oxidised/gleyed alluvium. Becoming darker brown downwards to 10YR 3/6 or 10YR 4/6. Small piece of red brick at 80cm.
126 – 130	Charcoal specks within medium to coarse silt as above.
130 – 176	Homogeneous brown (10YR 3/6) fine and medium silt with some Mg. mottling.
176 – 180	Lens of clay and fine silt. Brown 10YR 3/6.
180 – 228	Homogeneous buff/brown fine and medium silt.
228 – 236	Transition to bedrock. Becoming buff, silty clay with orange/yellow inclusions (10YR 5/8 and 10YR 4/6).
236 – 300	Wadhurst Clay. Buff stiff clay with Mg ands Fe staining/mottles 10YR ¾and 6/4.

Borehole 2 at 60m

Depth cm.

0 - 10	Humic top soil under pasture.
10 – 47	Becoming grey/brown silt and fine sand 10YR 4/2 to 10YR 4/3. Homogeneous silts, friable with no stones
47 – 100	Becoming orange/yellow Mg. mottled silt. Gleyed 10YR 5/6 to 10YR 5/8. Grey mottles (10YR 5/2). Dry and friable.
100 – 165	As above but becoming darker (10YR 4/4 and 10YR 4/6) and more mottled with Mg and grey silty lenses (10YR 5/2)
165 – 178	Clay and fine silt lens with some calcareous inclusions.
178 – 190	As above clay lens. Dark brown silt with lighter/buff mottles.
190 – 200	Pale orange and grey fine silty clay.
200 – 300	Stiff, brownish yellow silt (10YR 6/6 and 6/8 with 10YR 6/2 and 6/4) with strong Mg mottles/inclusions. Wadhurst Clay basal deposits.

Borehole 3 at 100m

Depth cm

0 – 8	Humic topsoil
8 – 52	Buff and pale grey medium and coarse silt and fine sand (10YR 6/3 to 10YR 5/3). Homogeneous, well sorted with no inclusions.
52 – 60	Transition becoming orange/yellow silts.
60 – 140	Orange/yellow medium silt (10YR 5/6 with 10YR 5/8 mottles) and some pale grey (10YR 6/2). Becoming progressively darker with black Mg mottles and increasing quantities of grey silt. Less gleyed and oxidised at depth.
140 – 162	Dense black Mg and Fe. Horizon with some organics.
162 – 170	Black Mg mottled silts but less than unit above.
170 – 238	Yellow/orange (10YR 5/6 and 10YR 5/8). Friable with Mg staining and pale grey mottles of 10YR 6/2.
238 – 400	Basal Wadhurst Clay comprising typically Orange-brown silty clay with Fe fragments. Complex. Orange (10YR 5/6 and 5/8 with occasional 10YR 6/8). Pale grey (10YR 6/2 and 10YR 6/3 with 10YR 5/2). Much wetter.

Borehole 4 at 150m.

Depth cm

0 – 30	Grey silt and fine sand (10YR 5/2) with occasional charcoal specks. A soil, with good crumb and blocky structure in sub-soil.
30 – 37	Transition
37 – 118	Becoming paler with fine silt and some pale grey clay with orange/yellow mottling. 10YR 5/2 with 10YR 5/6 and 5/8 orange mottles. Loessal?
118 – 128	Black Mg/Fe horizon within silts as described above.
128 – 142	As for 37-118cm.

142 – 158	Dark orange and brown 10YR 5/8 or 7.5 YR 5/8.
158 – 243	Paler grey clay and fine silt 10YR 6/1.
243 – 248	Organic inclusions in silt.
248 – 318	Aquamarine/bright turquoise blue clay with fine silt.
318 – 338	Pale grey silt and clay (10YR 5/1).
338 – 364	Buff and darker grey silt ? lake muds. 10YR 5/3 when fresh, oxidising to 10YR 5/3.
364 – 375	Wood and twig fragments in grey medium silt.
375 – 400	Homogeneous pale grey and brown silt (10YR 6/1 with 10YR 6/3).
410 – 425	Silt becoming coarser with angular gravel.

Borehole 5 at 190m

Depth cm

0 – 12	Humic topsoil
12 – 52	Grey-brown silt and fine sand (10YR 5/2). Homogeneous, no inclusions; loessal?
52 – 136	More orange component. Sandy silt with slight grey mottling (10YR 5/6). Becoming darker brown (10YR 4/6) with more grey (10YR 5/2).
135 – 140	Horizon of strong black Mg staining.
140 – 243	More grey mottles (10YR 5/1 and 5/2). i.e. less gleyed in fine yellow/brown silt with clay. Some Mg inclusions.
243 – 300	Compacted/stiff Wadhurst Clay basal geology. Black Mg inclusions. (10YR 6/8 and 10YR 5/8).

Discussion

There is little published data pertaining to the Wealden palaeoecology of Kent, which has thus raised much discussion regarding its wooded or non-wooded character in the late-prehistoric and historic periods. There is, however, now more information available from the southern Weald in Sussex. Burrin (1983) established the presence of substantial thickness' of Holocene alluvium filling the river valleys of the Rother, Ouse and Cuckmere. These were shown to be of primary (Devensian) loessal derivation but reworked from the interfluves into the valley bottoms by both hill-wash/colluviation and fluvial transport. This was established by detailed field survey of the river valley and sedimentological analysis.

Previously pollen was little studied from such sediments due to poor pollen preservation, the possibility of reworking from older sediments and long distance fluvial transport (Smith 1967, Grichuk 1981). However, pollen analysis of these Sussex valley fills have shown that they accumulated during the late-Prehistoric period, and especially from the early Bronze Age (Burrin and Scaife 1984, 1992; Scaife and Burrin 1983; 1985, 1987, 1989; Scaife 1987, 1989).

The sediments recorded from Lamberhurst (A21), whilst not as thick as those of the major river valleys do, however, have similar characteristics to the upper lithostratigraphic units noted elsewhere. That is, excepting the basal fine grained, organic channel fills found at the base of borehole 4. The 2-3 metres of sediment in all boreholes is of a brown or grey/mottled brown gleyed character. This appears to be a mixture of fluvially transported alluvium but with colluvial processes. With the exception of a small number of charcoal fragments in borehole 1 at 1.26 to 1.36m and a fragment of redbrick at 0.80m, no visible archaeology was found and thus, dating of such mineral material is not feasible. It can only be postulated that the sediment is probably of similar age and character to that described from the principal Sussex valley draining from the southern Weald. Thickness' are clearly less with this being a much smaller fluvial catchment and interfluve area.

The fact that there has been sediment deposition does, however, imply that there has been instability, consequent erosion and transportation of soil/sediments from the interfluves to the valley bottoms. There is, in some cases, an inverse relationship between environmental stability and such sediment deposition. Sediment supply is naturally poor in a wooded environment where roots binding the soil prevent hill-wash. Deforestation and agriculture result in sediment erosion and transport and it is possible that initiation of sedimentation here was in response to prehistoric human activity. Without any significant basal or intercalated archaeology, the age of this is at present unclear. Pollen analysis of the palaeochannel sediments does, however, provide some indication that this was during the late-prehistoric period.

The borehole 4 palaeochannel: The organic, fine grained sediments of borehole 4 fill a palaeochannel cut on the inside edge of a curve in the river valley. It is likely that sediments started to fill this channel when there was a shift in the rivers course. It is possible that the channel moved to the other side of the valley. In the field it was possible to discern the line of a depression which appears to be another palaeochannel. This, however occurs outside of the line of development and thus the present study. Once the erosive potential of the stream was removed, a low energy environment resulted in accumulation of fine-grained sediments in what appeared to be lake muds. These sedimentary units clearly offered potential for pollen preservation, reconstruction of the palaeo-environments and possibly to provide some idea of the age of the sediments. Subsequently, the wetter channel fills were overlain and sealed by the silty alluvium/colluvium seen in the other boreholes (i.e. essentially reworked loessal silts).

Appendix 2

Pollen Assessment Analysis
of Sediments Filling the Palaeochannel of Borehole 4

Rob Scaife

Introduction

Borehole 4, as noted above, falls within what is likely to be the main palaeochannel of the river running along the inside bend and river cliff at this curve in the river. Consequently, the sediments filling the palaeochannel were finer grained, deeper, wetter (and thus less gleyed than in the other boreholes) and with a greater organic component.

This profile therefore offered potential for pollen analysis and reconstruction of the local palaeo-environment at time of sediment deposition.

A pollen assessment analysis has been carried out with the following aims.

- To ascertain if sub-fossil pollen and spores are present in these and sediments and if so, their state of preservation.
- To provide preliminary information on the pollen taxonomic content and a preliminary pollen diagram from this profile
- If sub-fossil pollen and spores were present, to ascertain the differing vegetation environments and specifically any indications of human impact/activity in the environment.
- To ascertain if the site/sequences offer potential for more detailed and valid work in the future, i.e. for reconstructing the local and regional vegetation and environmental history.
- Although pollen analysis is not now regarded as a dating technique, some indication of the age of the sediments and the palaeo-environments might be gained from comparison of the contained pollen spectra with other known regional data.

Test samples were taken from the open core in the field for preliminary analysis and two one meter long sleeved cores were also obtained for any subsequent and more detailed work. Eleven samples were prepared spanning a depth of 2.60m to 4.00 m. The lowest sample at 4.00 m was barren.

Pollen Method

Sub-samples of 2ml volume were taken from the core were prepared using standard procedures for the extraction of sub-fossil pollen and spores (Moore and Webb 1978 and Moore *et al.* 1991). Pollen counts of up to 200 grains per level were made where possible plus all extant marsh/aquatic taxa and spores of ferns. Identification was carried out using an Olympus biological research microscope fitted with Leitz optics and phase contrast. Data obtained from these counts are presented in standard pollen diagram form (figure 1) with percentages calculated as follows:

Sum = % total dry land pollen (tdlp)
Marsh/aquatic = % tdlp+sum of marsh/aquatics
Spores = % tdlp+sum of spores
Misc. = % tdlp+sum of misc. taxa.

These calculations and the pollen figure were made using Tilia and Tilia Graph. Taxonomy in general follows that of Moore and Webb (1978) modified according to Bennett *et al.* (1994) for pollen types and Stace (1992) for plant descriptions. Laboratory work was carried out in the Department of Geography, University of Southampton.

The Pollen Data

Pollen preservation was very variable in these sediments and in the less organic sediment in the upper part of the profile, pollen counts were only obtained with difficulty. These samples also show a substantial number of degraded pollen grains (largely *Tilia*). Inspection of the pollen diagram immediately shows that trees and shrubs are dominant with subordinate numbers of herbs. Furthermore, within the former, *Tilia* (lindens) are dominant attaining high pollen percentages. This is extremely diagnostic in terms of the local vegetation and in providing some indication of the age of the sediments and contained pollen.

Although this study is only an assessment, three tentative local pollen assemblage zones (lpaz) can be recognised in the data. These zones are delimited and characterised as follows.

<u>l.p.a.z. 1: 380cm to 335cm Quercus-Tilia-Corylus avellana type.</u>

Pinus has highest values in the base of the zone (10%) but declines. *Quercus* (45%) is dominant with *Tilia* (increasing to 30%) and *Corylus avellana* type (to 45%). *Ulmus* has highest values at 360cm (9%) but declines. Herbs are relatively few with a single peak of Poaceae (25%) at 350cm. Cyperaceae (9%) is the principal marsh taxon. Spores of ferns comprise largely monolete, *Dryopteris* type with high values in the lowest level (72%) along with substantial numbers of derived pre-Quaternary/geological palynomorphs. *Dryopteris* values are generally 5-10% and with a small maximum of *Pteridium aquilinum*.

<u>l.p.a.z. 2: 335cm to 265cm Tilia-Corylus avellana type-Poaceae-Dryopteris type</u>**.**

This zone is characterised by a sharp increase in degraded (reworked?) *Tilia* pollen and some expansion of herbs and spores. *Quercus* values are reduced from zone 1 to an average of *c*. 20%. Overall values of *Tilia* are higher both the reworked pollen and normally preserved forming the dominant taxon in this zone. *Fraxinus* is incoming in small numbers whilst *Pinus* and *Ulmus* die out. *Corylus avellana* type remains important 20-25%. Herbs are dominated by Poaceae (expanding to 20%) with occasional *Plantago lanceolata*. In the marsh/autochthonous group, Cyperaceae remains most important but with only small numbers. *Typha* *angustifolia/Sparganium* type and *Nuphar* is present. There is a sharp increase in spores of *Dryopteris* type and derived geological palynomorphs.

l.p.a.z. 3: 260cm. Alnus-Poaceae

Although only a single sample/level, this has been delimited as a zone by the high values of *Alnus* (to 50%), higher Poaceae values and a single grain of cereal type pollen. Because of the expansion of *Alnus*, other tree and shrub pollen percentages are reduced. This is perhaps a statistical as well as real reduction (through deforestation) in tree pollen.

Discussion and Inferred Vegetation

There are few pollen data from the Weald of Kent and the nearest detailed analysis are of Scaife and Burrin (1983, 1985, 1987, 1992), Burrin and Scaife (1984) and Waller (1987, 1993, 1994) from Sussex. However, enough is known of the general vegetation chronology of the South East of England to place the pollen sequence at Lamberhurst within the generally accepted sequence of Holocene vegetation and environmental changes.

The two most apparent aspects of the pollen data are (i.) the general paucity of herbs and general dominance of trees and shrubs throughout most of the pollen profile and (ii.) the very substantial numbers of and thus, importance of lime (*Tilia*). Three pollen zones have been delimited with zone 2 and 3 showing very tentative evidence of the opening up of the woodland. Zone 1 shows the dominance of oak (*Quercus*), lime (*Tilia*) and hazel (*Corylus avellana*) possibly with some elm (*Ulmus*). It must be noted, however, that lime pollen is very under-represented in pollen spectra due to its entomophily and summer flowering when other trees are in full leaf. This also hinders wide-spread dispersion of its pollen (Andersen 1970,1973). This implies that lime woodland was indeed, the dominant local tree/woodland of the drier soils of the adjacent valley interfluves.

In recent years, it has been established that such woodland was widespread over most of southern and eastern England during the middle Holocene (from *c.* 7,000BP) and late prehistoric period (Birks *et al*. 1975; Moore 1977; Scaife 1980; Greig 1982; Waller 1994) when there was a significant but asynchronous decline in its pollen in many pollen profiles. This was due to a number of factors (see Waller 1994) but was largely due to woodland clearance for agriculture (Turner 1962, 1970). The majority of dates for this event fall within the middle and late Bronze Age periods with some Neolithic removal in some regions. This implies that the sediment fills of this palaeochannel are of middle Holocene and the early late-prehistoric period that is, between c. 7,000BP and *c.*3,500-3,000 BP. The small values of elm (*Ulmus*) may also provide a further indication as to the age of the palaeochannel sediments. The 'Primary Elm Decline' at *c.*5,000 BP (see Smith 1970; Scaife 1987 for discussion of causes) saw the decline of typical pollen values of 15-20% to low values and absence followed by a secondary late Neolithic phase of regeneration along with secondary woodland communities (Scaife 1987). It is possible that the values of elm from 360cm to 300cm represent this late Neolithic phase of secondary woodland expansion, followed by early Bronze Age increase in human pressure for land that resulted in the increase of grass and other herb pollen. This would only be verified by additional pollen analysis and radiocarbon dating of wood extracted from the borehole/core at 3.64-3.65m.

One particular aspect of special interest is the lime pollen itself. The majority of lime woodland across the country at this time has been attributed to small leaved lime (*Tilia* cordata L.) with only sporadic instances of broad leaved lime (*T. platyphyllos*). Pollen differentiation is difficult due to only minor differences in the pollen morphology between these two species. A substantial number of grains in this study have the appearance of broad leaved lime. This requires further confirmation and would be an important palaeo-ecological record and also corroborate data of Dimbleby's (1960) coming from the Mesolithic site at High Rocks, Tunbridge Wells.

The top sample examined at 2.60m (zone 33) shows an environmental change from grass-sedge fen or floodplain community to one with more alder present. Also of note are the higher values of grasses (Poaceae) with ribwort plantain (*Plantago lanceolata*) and a single pollen grain of cereal type. This may indicate a further phase of increased human activity.

Summary and Conclusion

The significant points highlighted by this assessment study are as follows;

- Borehole 4 produced fine grained, water-logged humic sediments filling palaeochannel running on the inner edge of the valley.
- The sediment fills of this palaeochannel were the only ones recovered that offered potential for pollen preservation, analysis and palaeoenvironmental reconstruction.
- Pollen has been recovered from these sediments although abundance and preservation is very variable. However, some useful information has been obtained.
- A pollen diagram has been constructed and three local pollen assemblage zones have been recognised. Zones 1 and 2 clearly show dominance of woodland with few herbs and little direct evidence of human impact.
- The woodland was dominated by lime/linden with oak and hazel and possibly some elm in the lower zones/levels.
- Broad leaved lime (*Tilia platyphyllos*) was present and is an important palaeoecological record.
- Change occurred which saw increasing sedimentation and pollen degradation (see *Tilia*). This may have been from human activity on the interfluves although there is no direct evidence of this.
- There is an expansion of herbs (grasses and plantain) and secondary woodland types (ash and beech) which are indicative of opening up of local woodland on the interfluves. This has been postulated as of Neolithic age but is by no means certain.
- Because of the dominance of lime and general absence of elm, it is thought that these sediment fills and contained pollen are of Neolithic and early-middle Bronze Age date. This

supposition is based on known regional (S.E. England) palaeo-environments and changes in them that have been previously radiocarbon dated.

- The uppermost sample indicates increasing importance of alder which possibly marks a change from grass-sedge to floodplain woodland (carr at some distance?) or alders fringing the river.

Suggestions for Additional work

The remit of this study was to assess the stratigraphy of the sediments along the line of a proposed river diversion channel on the route of the A21 Lamberhurst by-pass, for archaeological potential and information that might show human influences on the area. Clearly, the region has been shaped by human activity probably since the Mesolithic as we are not seeing today, any vestiges of the 'natural' vegetation. This region of Kent (in fact Kent as a whole) has a paucity of pollen and thus palaeo-vegetational data which has caused much discussion as to the wooded or other wise status of the Weald in the prehistoric and historic periods. This study although only an assessment has produced some useful information which adds to our knowledge of Wealden palaeoecology. As such, it is suggested that some additional work should be carried out. This is especially the case if publication of these results is required.

Should additional work be required, the following aspects should be considered.

- Pollen analysis at a closer sampling interval of 5cm or closer where samples are available.
- Larger pollen counts (the pollen sum) are required as standard to increase statistical and taxonomic accuracy. Typically 300 or more grains per level where pollen preservation permits. Note, however, that preservation in these sediments is highly variable.
- Radiocarbon dating of the profile is needed to establish the age of the sediments and pollen assemblages. Wood is available from the profile that would suffice.

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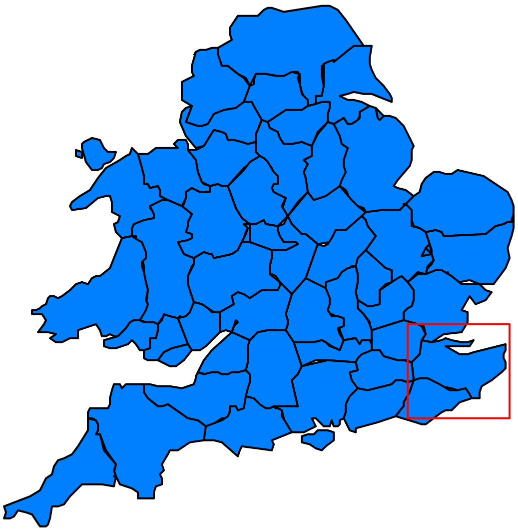

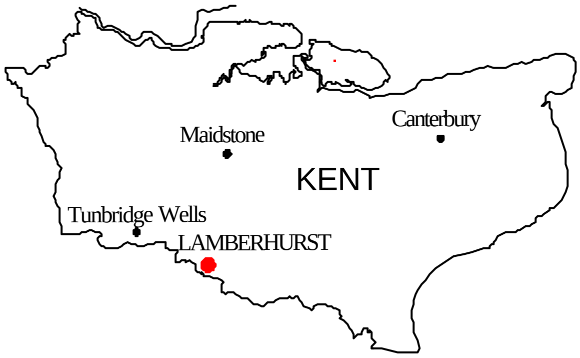

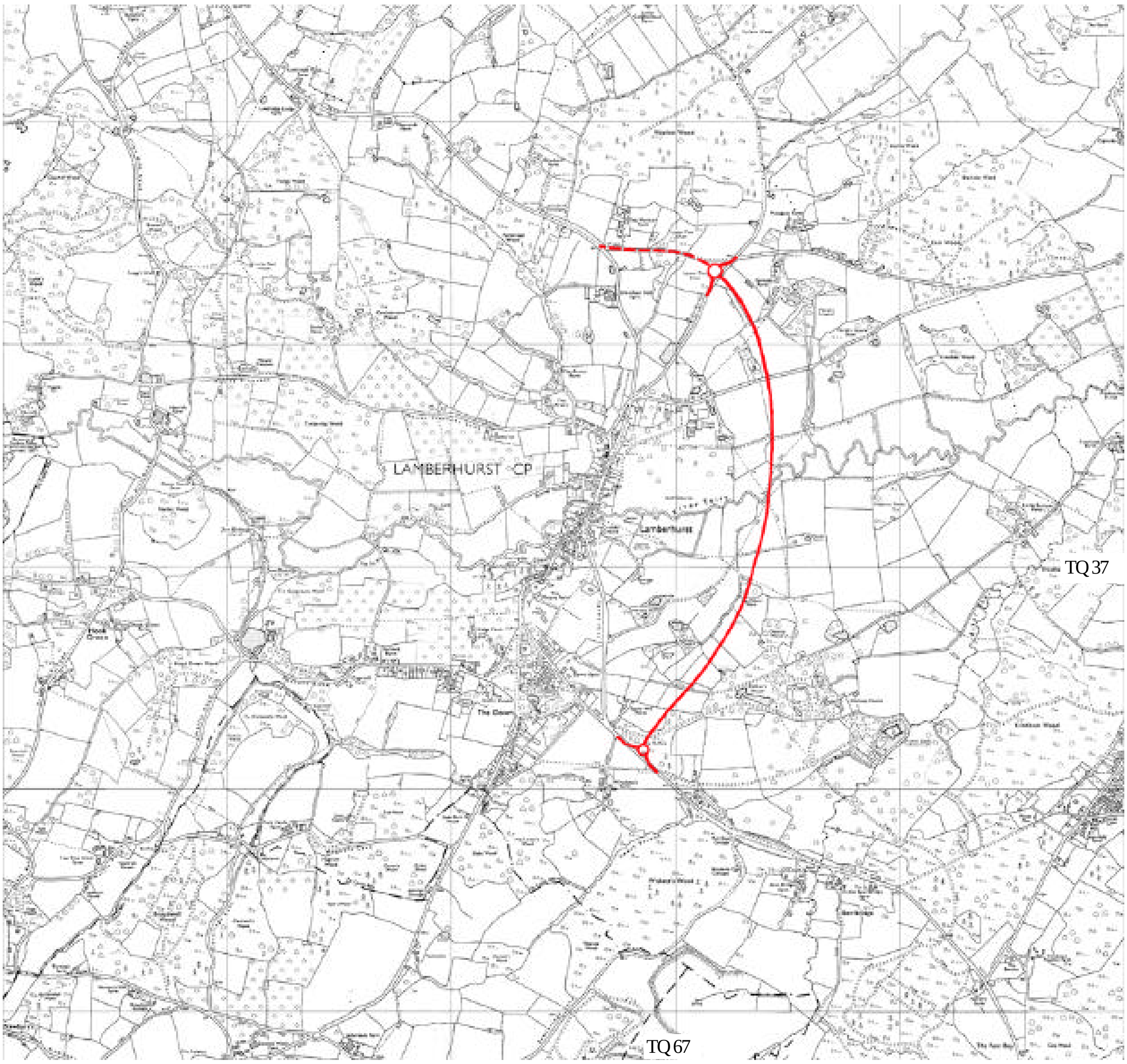

Site Location

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Scale 1:30000

Figure 1

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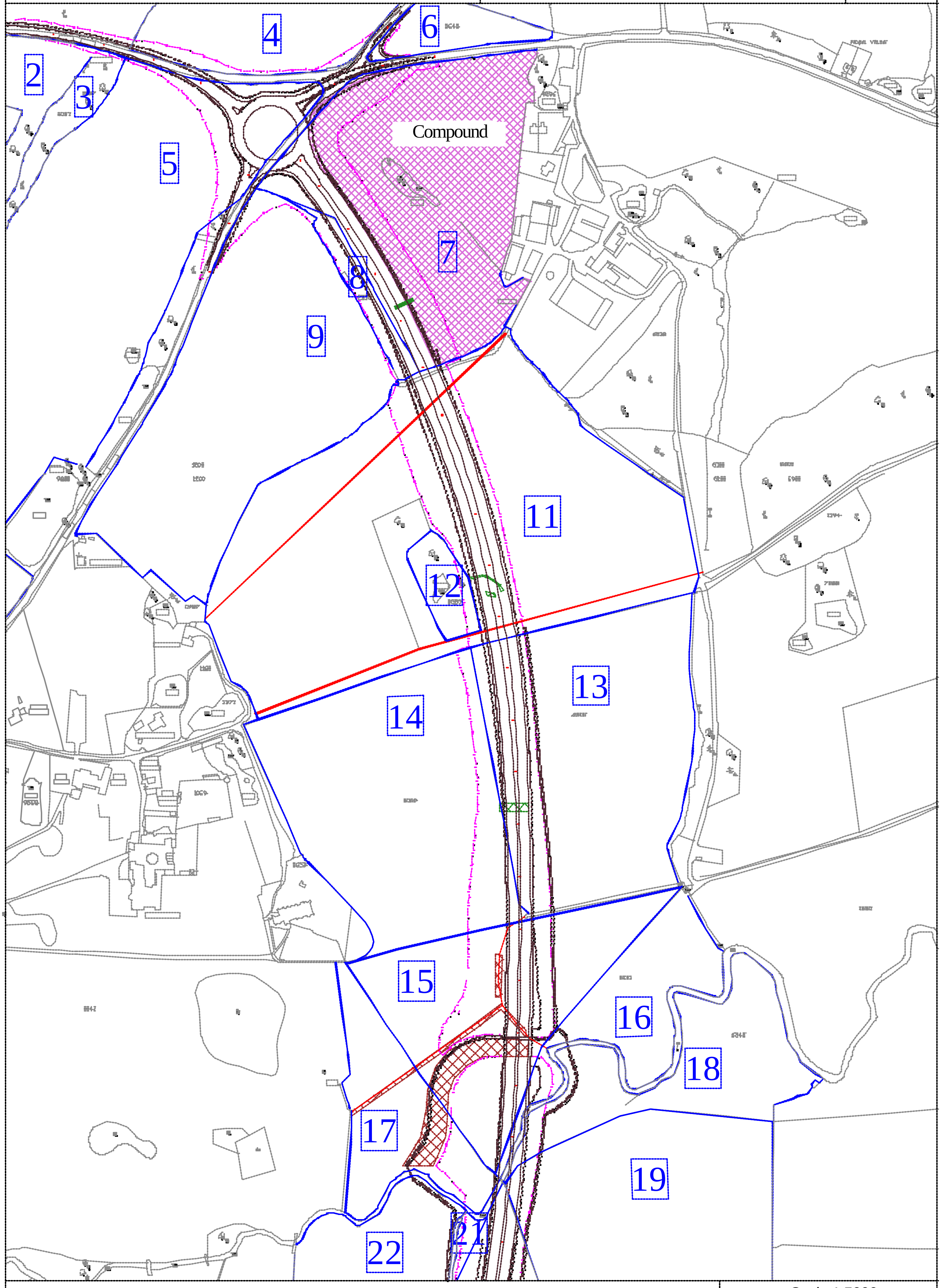

Northern Plots	Scale 1:5000
	Figure 2

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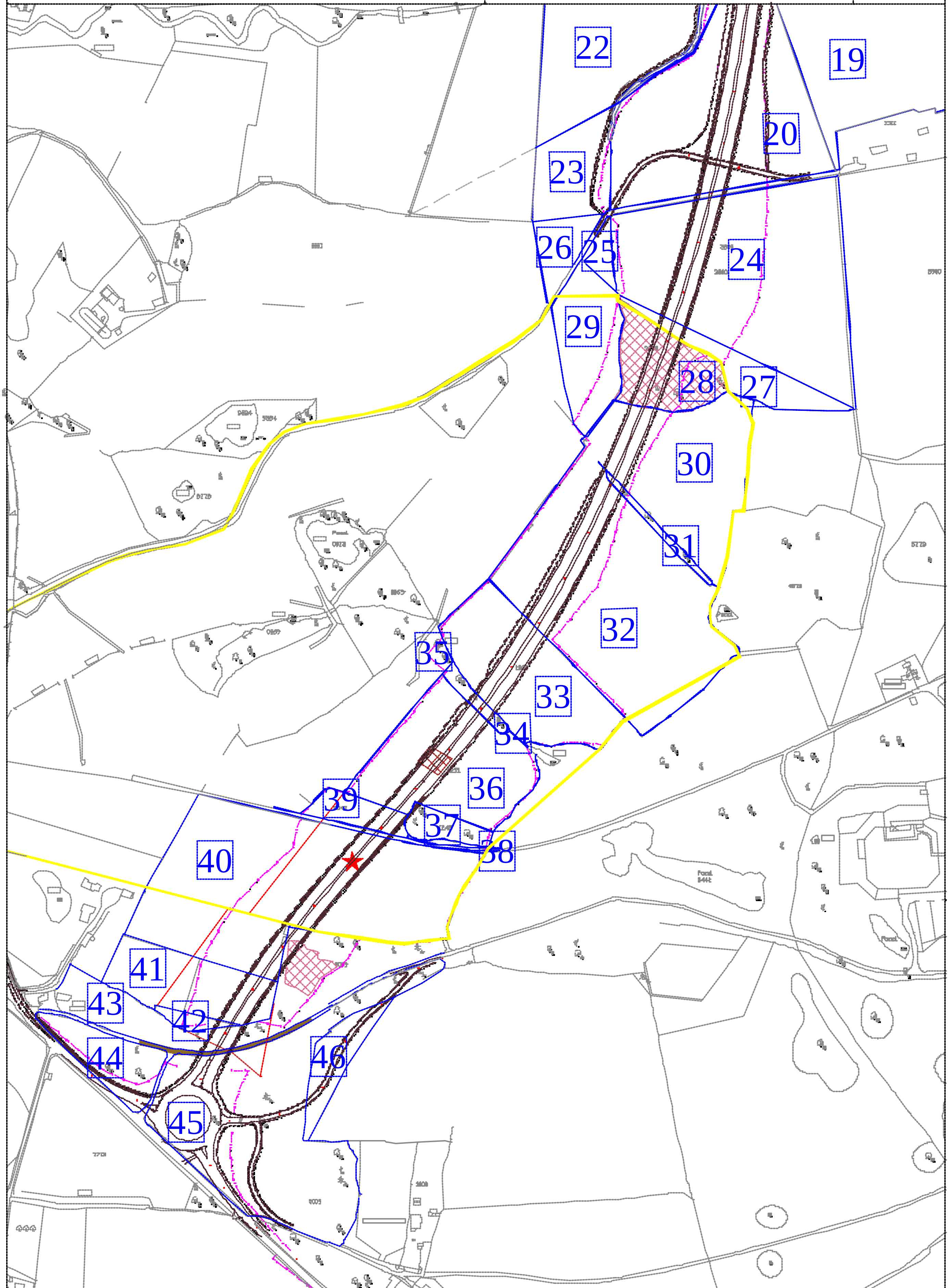

Southern Plots

Scale 1:5000

Figure 3

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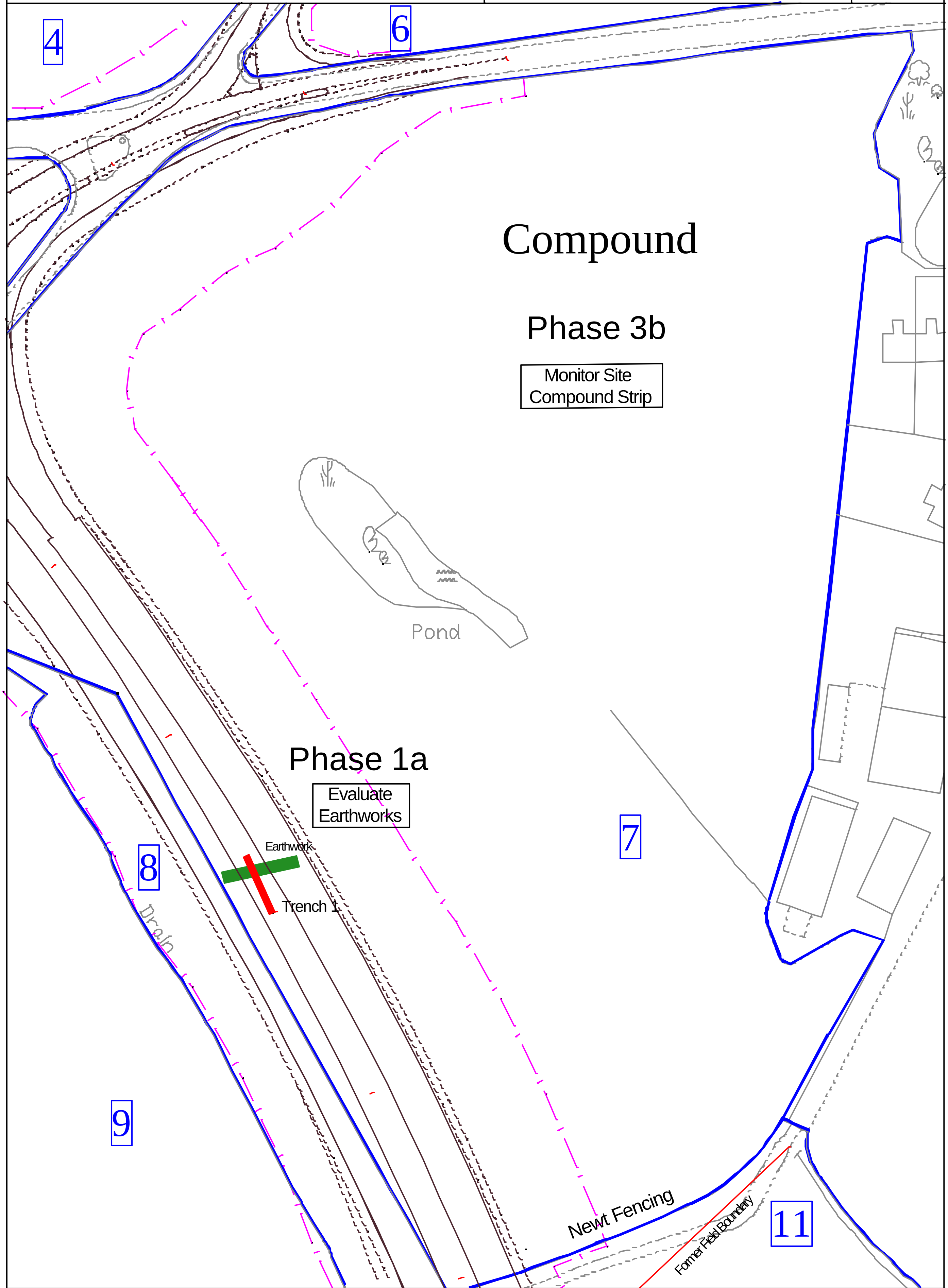

Phase 1a: Earthworks in Plots 7/8

Scale 1:1250

Figure 4

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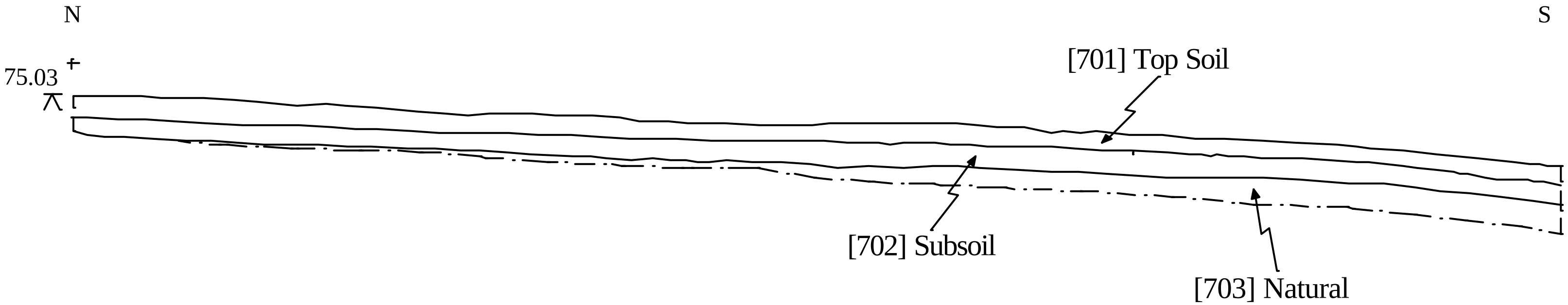
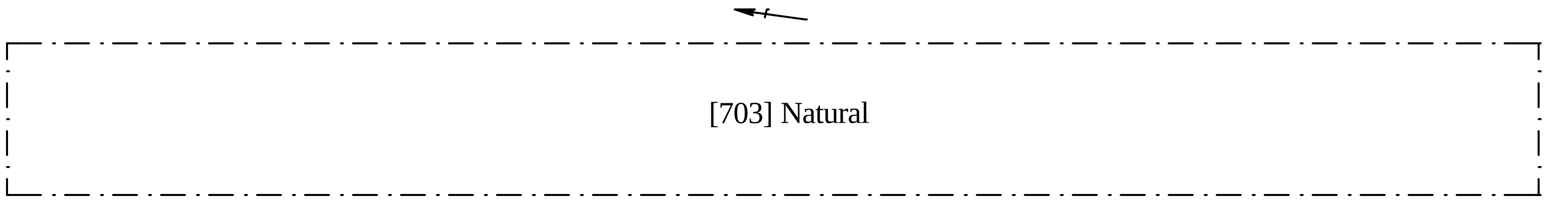
Phase 1a, Plot 7
West facing section of Tr. 1



Phase 1a, Plot 7
Plan of Tr. 1



Phase 1a	Scale 1:75
	Figure 5

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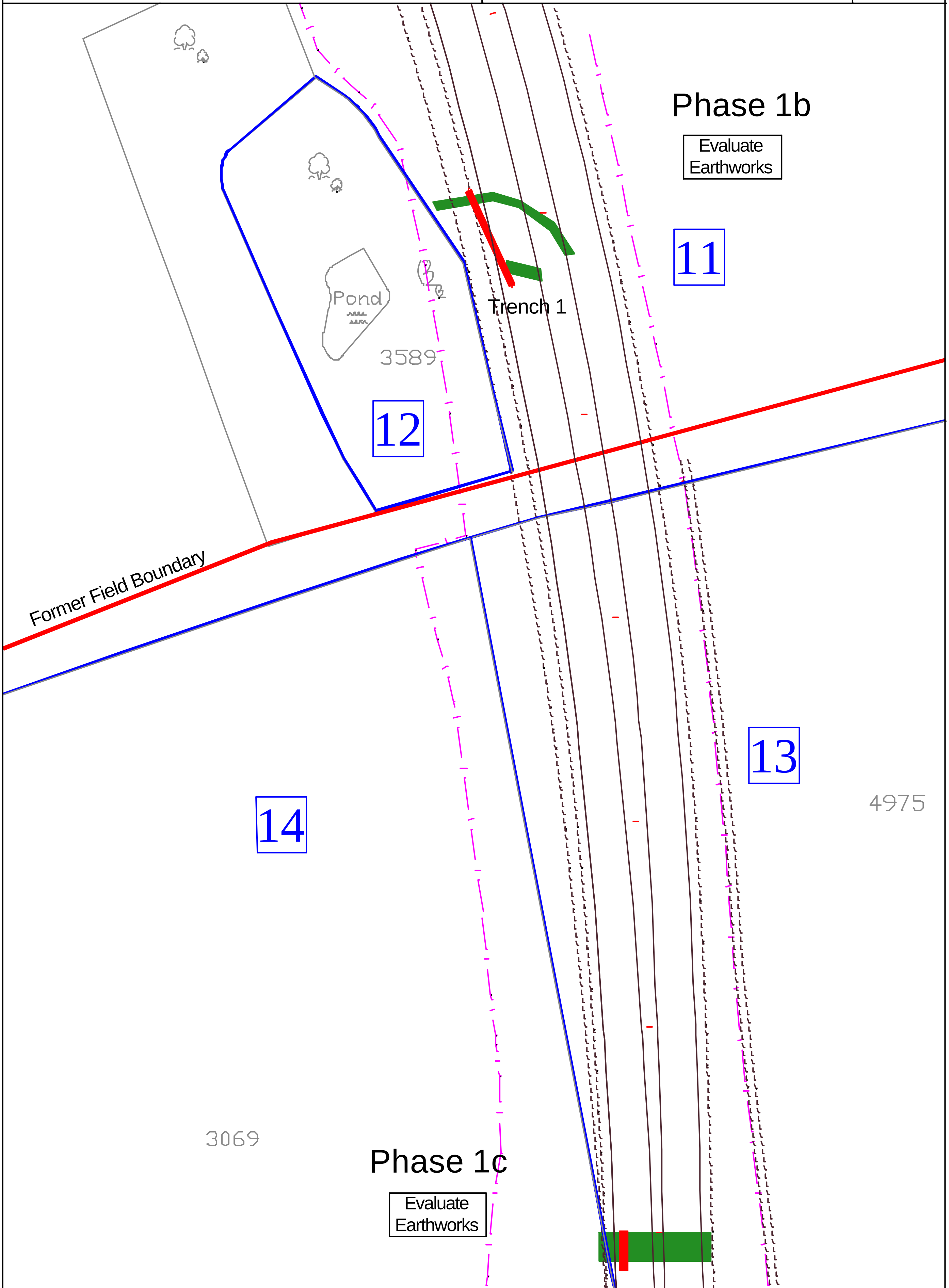

Phase 1b: Earthworks in Plot 11 & Phase 1c: Earthworks in Plot 13	Scale 1:1250
	Figure 6

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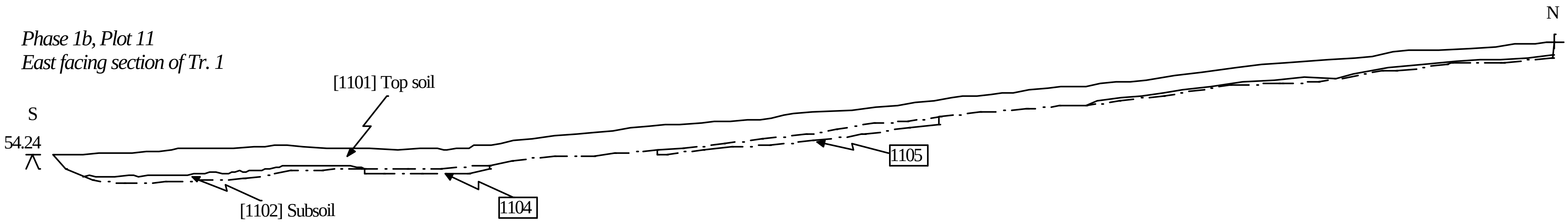

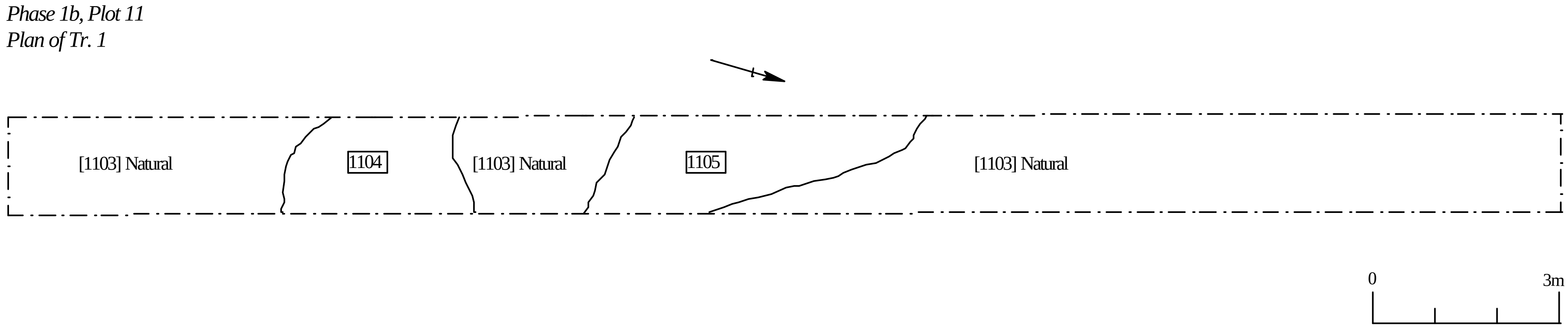

Phase 1b	Scale 1:100
	Figure 7

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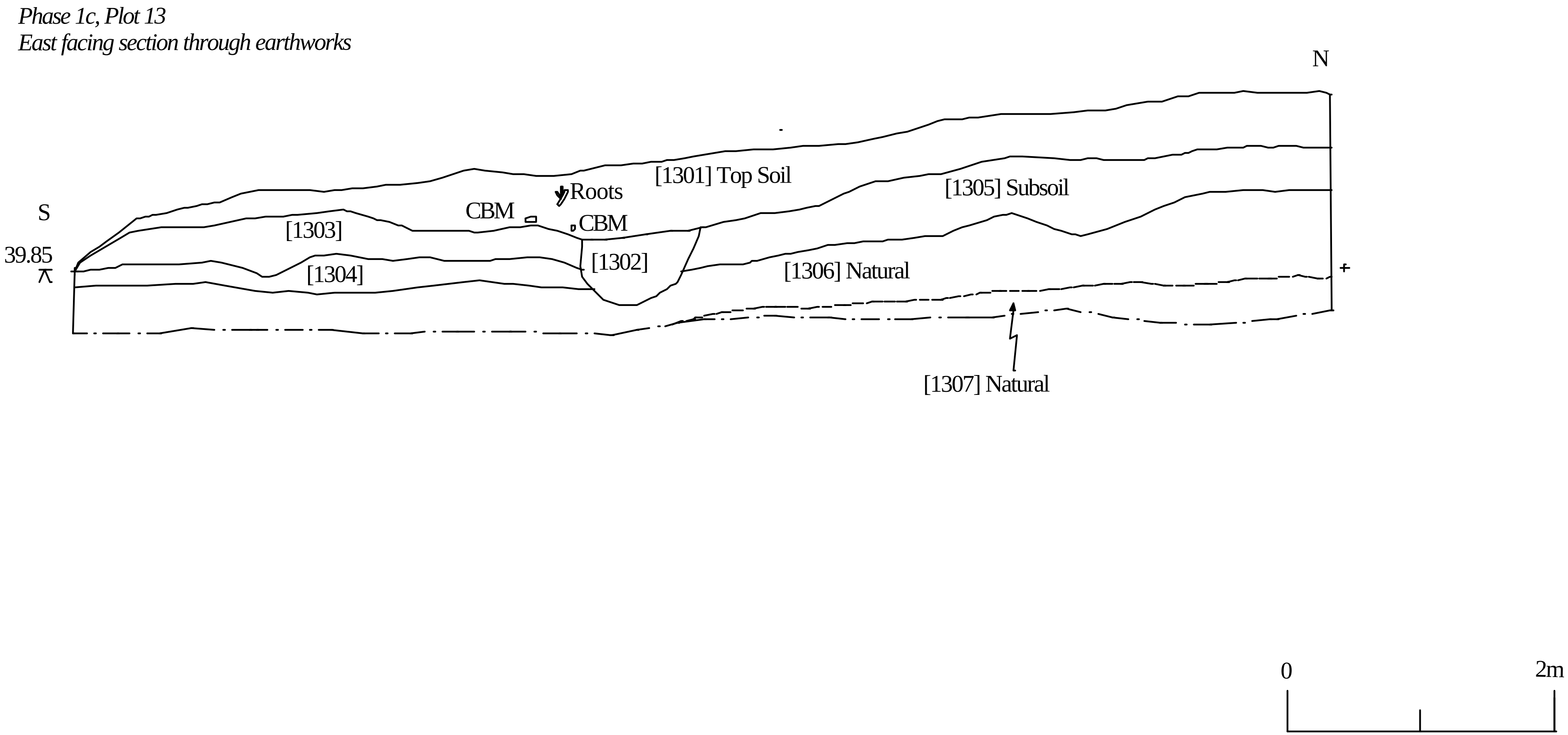

Phase 1c	Scale 1:50
	Figure 8

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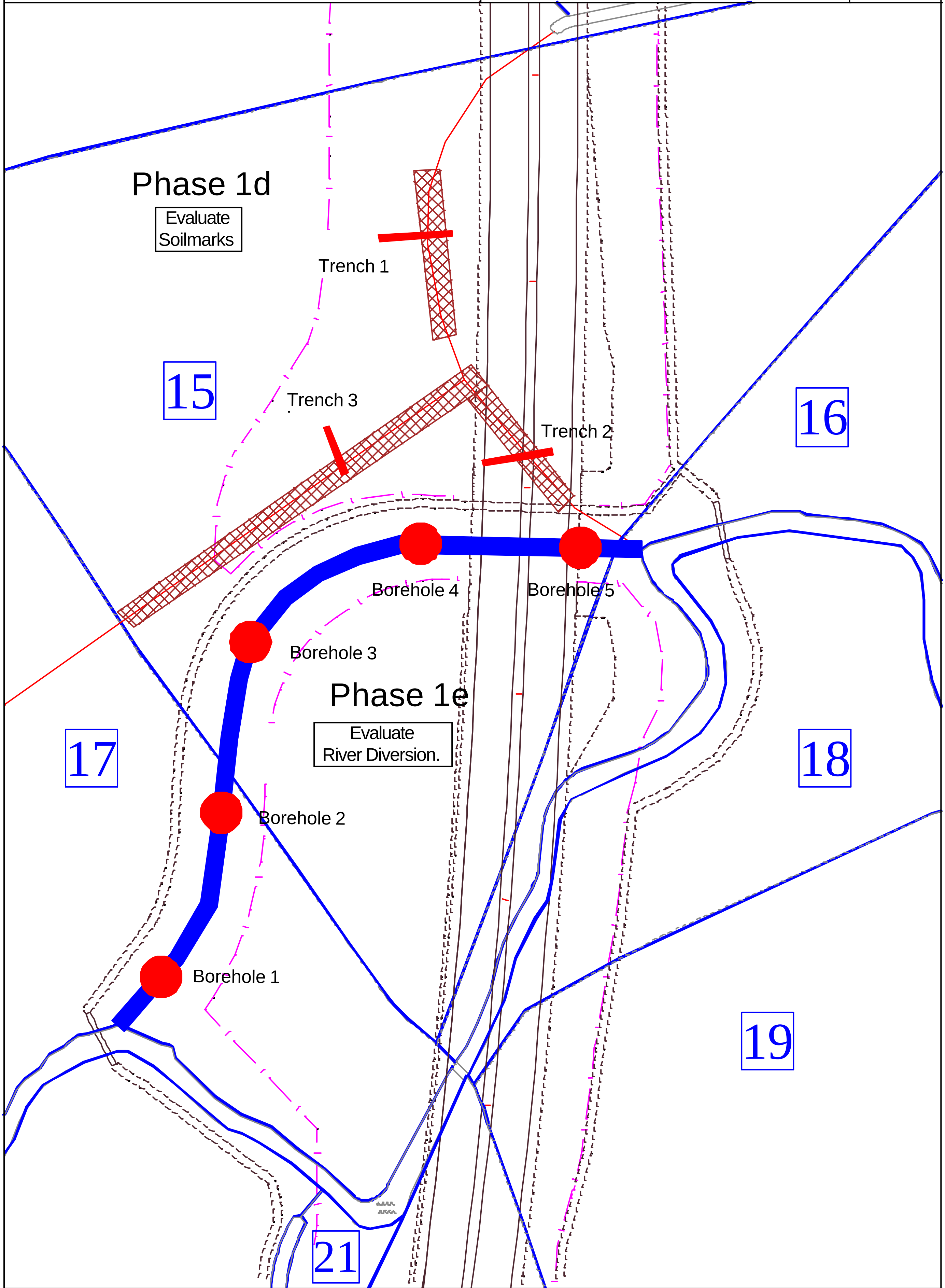

Phase 1d: Soilmarks & Phase 1e: River Teise diversion in Plots 15/17	Scale 1:1250
	Figure 9

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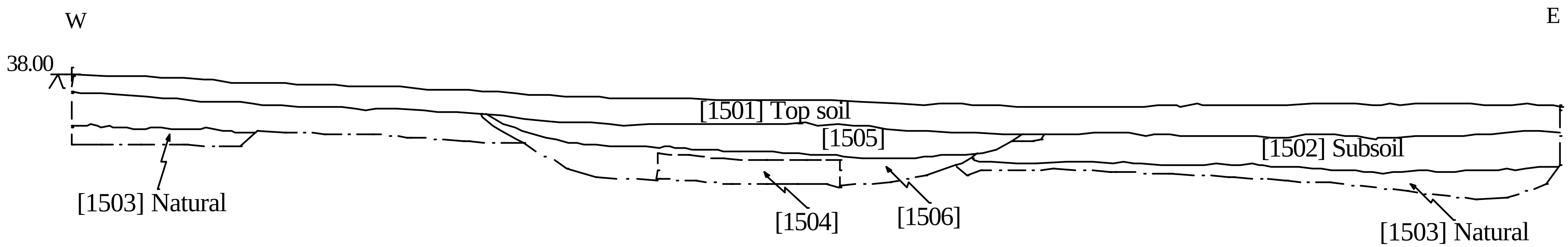
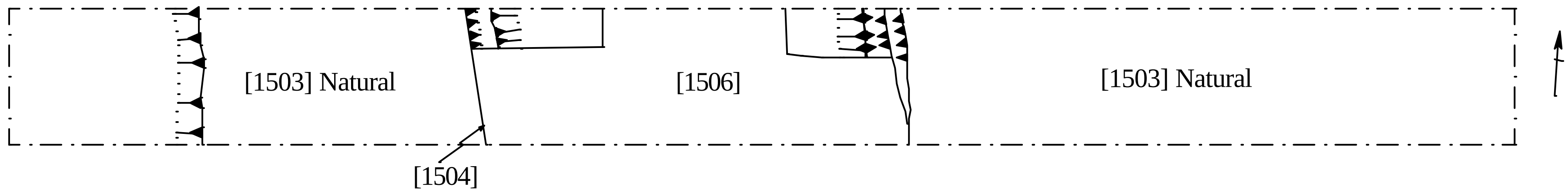
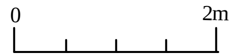
Phase 1d, Plot 15
South facing section of Tr. 1



Phase 1d, Plot 15
Plan of Tr. 1

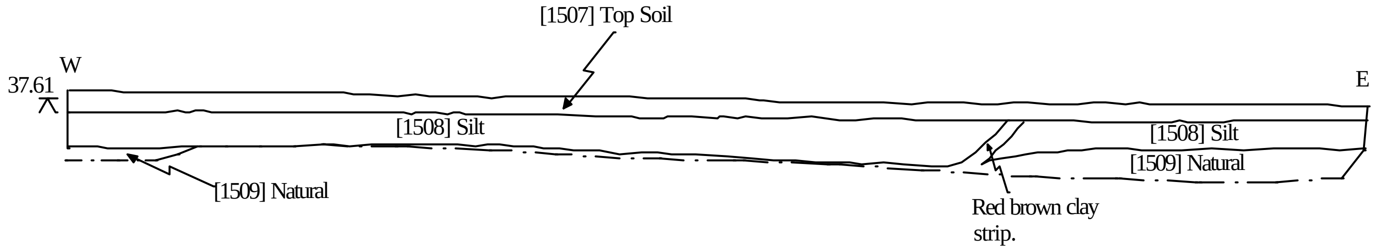




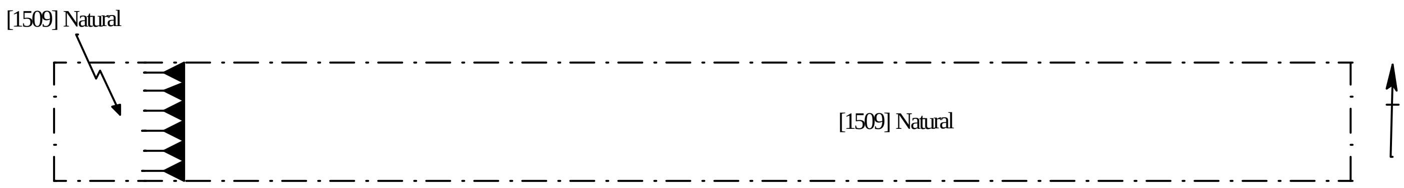
Phase 1d	Scale 1:75
	Figure 10

THE HERITAGE NETWORK LTD	A21 Lamberhurst Bypass	HN419

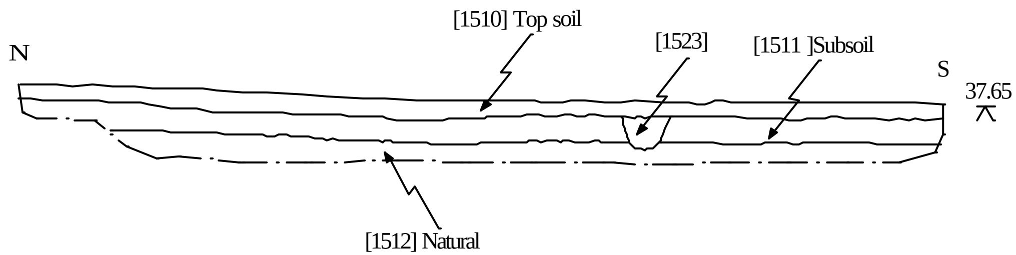
Phase 1d, Plot 15
South facing section of Tr. 2



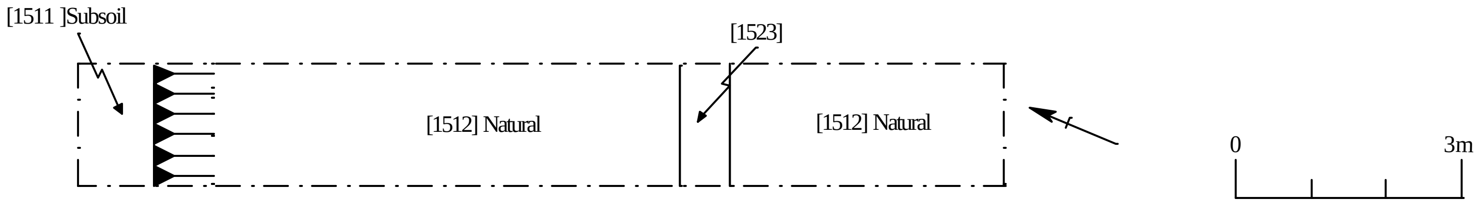
Phase 1d, Plot 15
Plan of Tr. 2



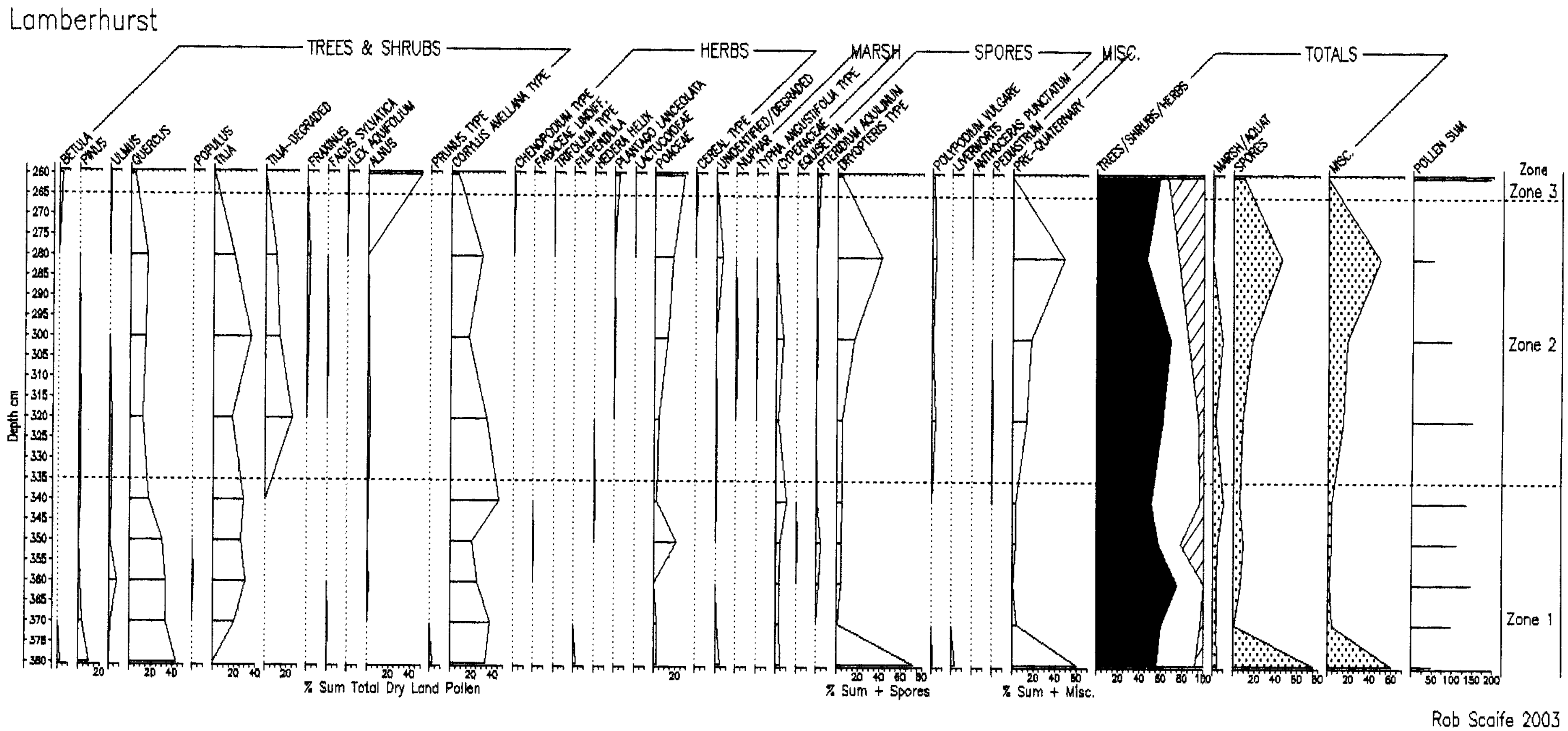
Phase 1d, Plot 15
West facing section of Tr. 3



Phase 1d, Plot 15
Plan of Tr. 3



Phase 1d	Scale 1:100
	Figure 11


Lamberhurst
TREES & SHRUBS
HERBS
MARSH
SPORES
MISC.
TOTALS
BETULA
PINUS
ULMUS
QUERCUS
POPULUS
TILIA
TILIA-DEGRADED
FRAXINUS
FAGUS SYLVATICA
ILEX AQUIFOLIUM
ALNUS
PRUNUS TYPE
CORYLUS AVELLANA TYPE
CHENOPODIUM TYPE
FABACEAE UNDIFF.
TRIFOLIUM TYPE
FILIPENDULA
HEDERA HELIX
PLANTAGO LANCEOLATA
LACTUCOIDEAE
POACEAE
CEREAL TYPE
UNIDENTIFIED/DEGRADED
NUPHAR
TYPHA ANGUSTIFOLIA TYPE
CYPERACEAE
EQUISETUM
PTERIDIUM AQUILINUM
DRYOPTERIS TYPE
POLYPODIUM VULGARE
LIVERWORTS
ANTHOCERAS PUNCTATUM
PEDIASTRUM
PRE-QUATERNARY
TREES/SHRUBS/HERBS
MARSH/AQUAT
SPORES
MISC.
POLLEN SUM
Depth cm
Zone
Zone 3
Zone 2
Zone 1
% Sum Total Dry Land Pollen
% Sum + Spores
% Sum + Misc.
Rob Scaife 2003

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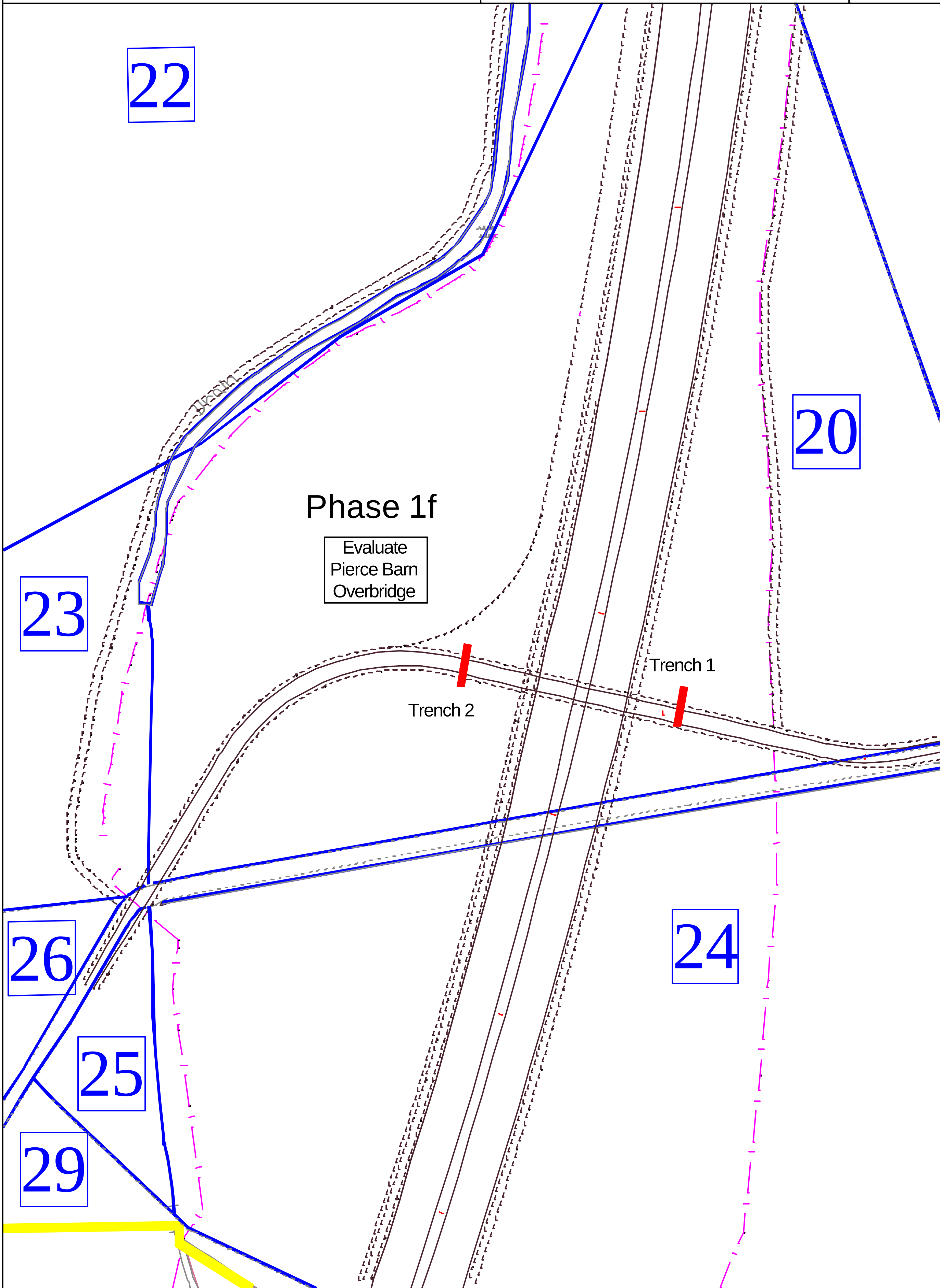
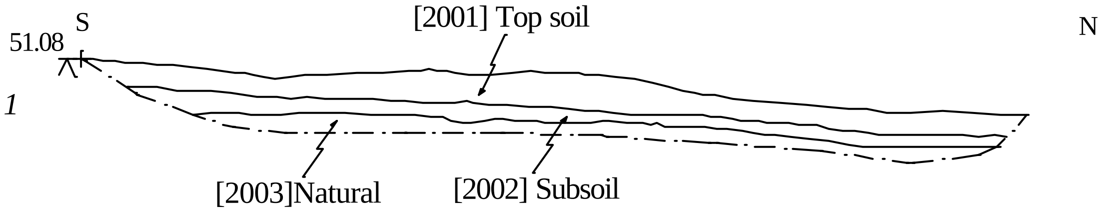
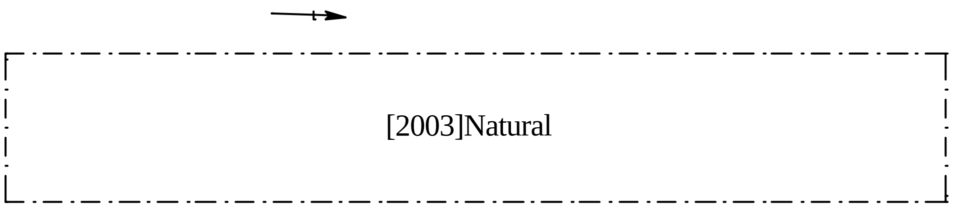


Phase 1f: Pierce barn Overbridge in Plot 20	Scale 1:1250
	Figure 13

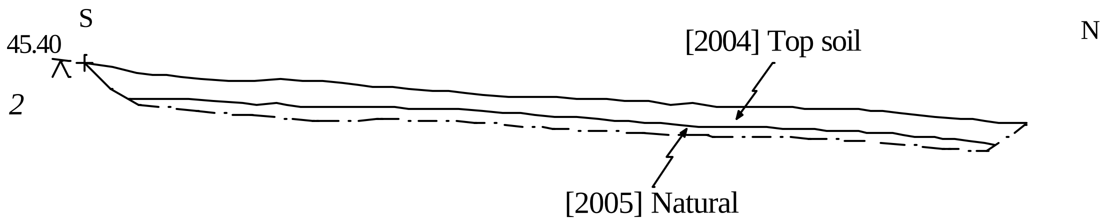
Phase 1f, Plot 20
East facing section of Tr. 1



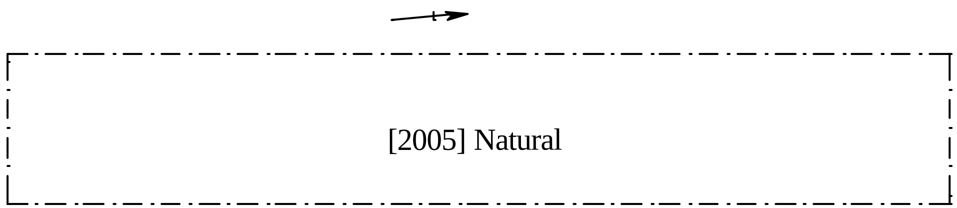
Phase 1f, Plot 20
Plan of Tr. 1



Phase 1f, Plot 20
West facing section of Tr. 2



Phase 1f, Plot 20
Plan of Tr. 2



Phase 1f

Scale 1:75

Figure 14

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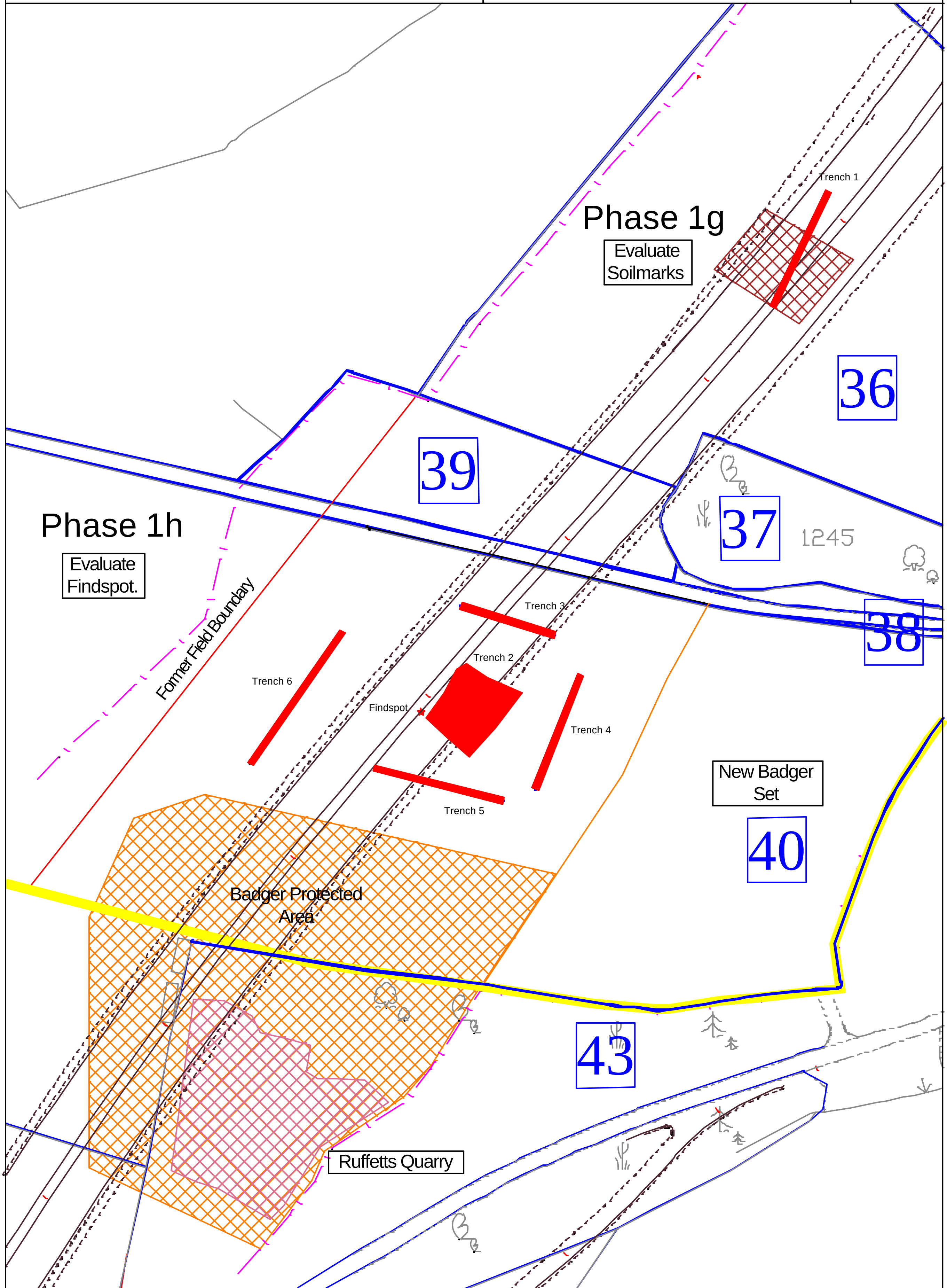

Phase 1g: Soilmarks in Plot 36; Phase 1h: Findspot	Scale 1:1250
	Figure 15

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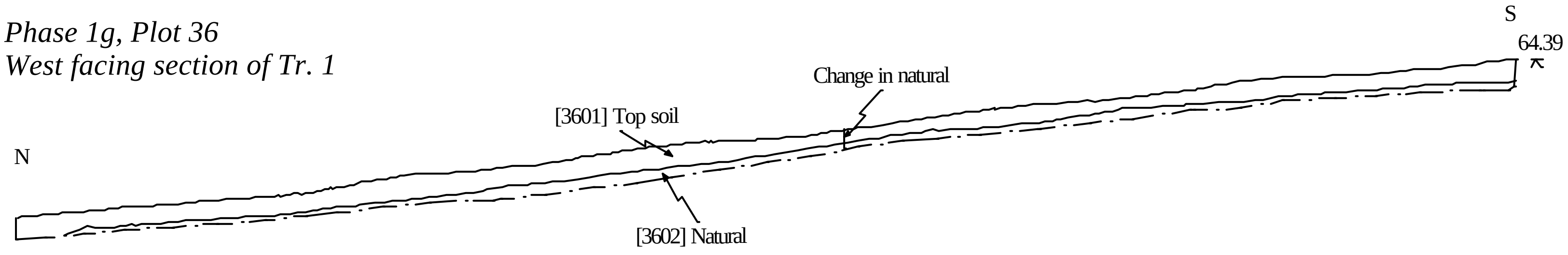
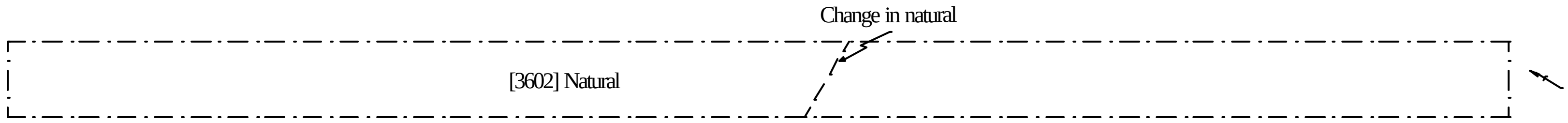
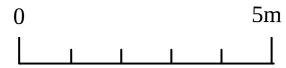
Phase 1g, Plot 36
West facing section of Tr. 1



Phase 1g, Plot 36
Plan of Tr. 1





Phase 1g	Scale 1:150
	Figure 16

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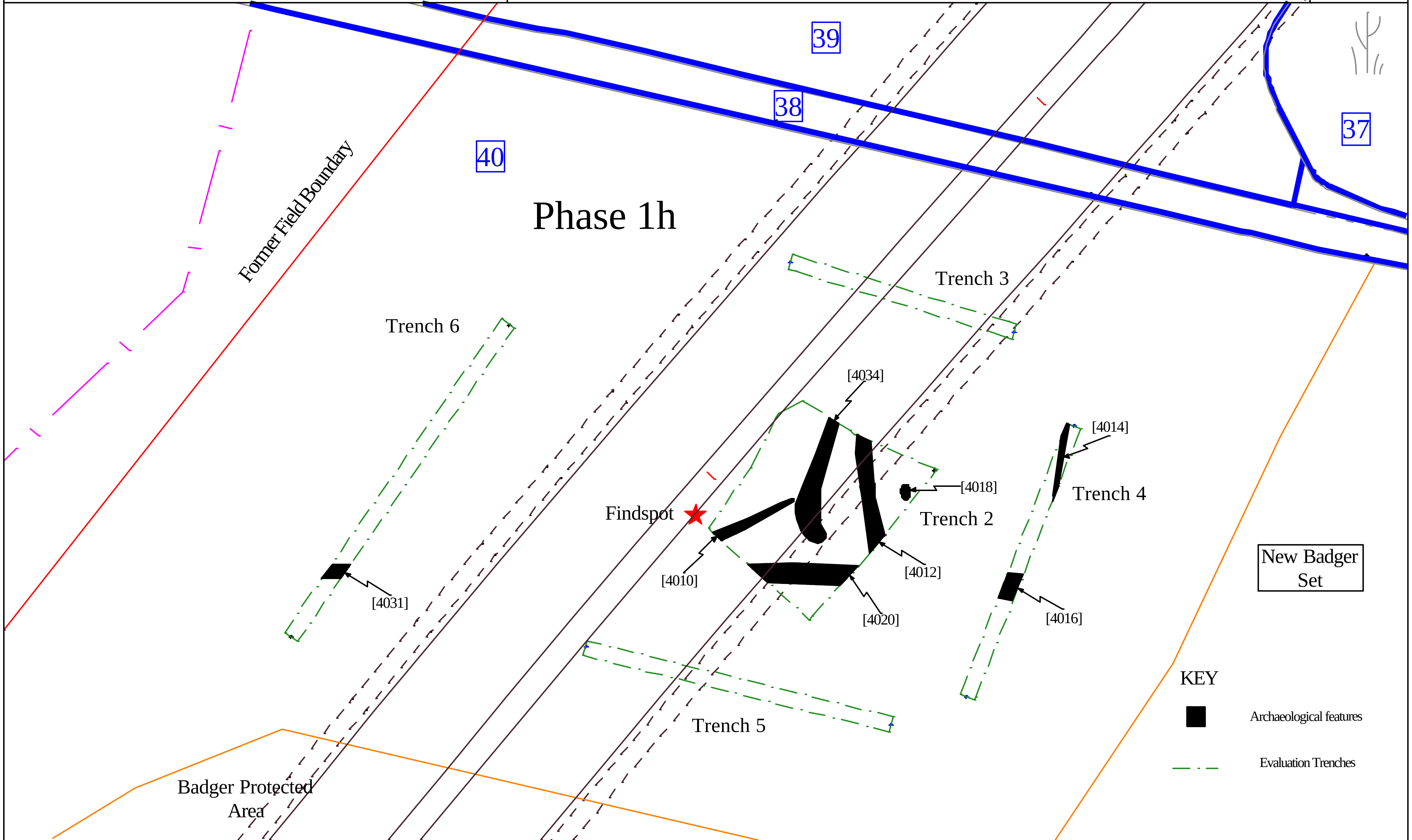

Plot 40. Phase 1 h - Evaluation of ceramic findspot	Scale 1:500
	Figure 17

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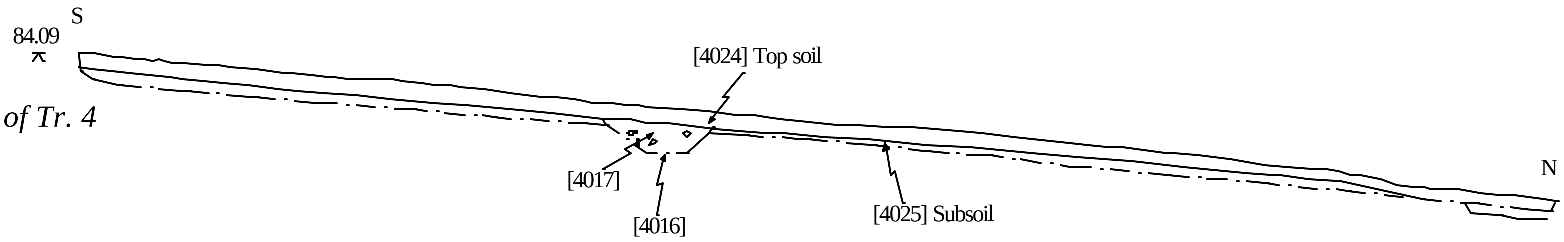
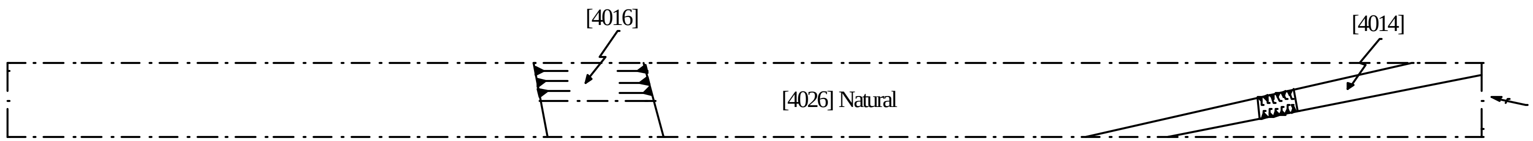
Phase 1h, Plot 40
South facing section of Tr. 3

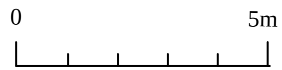
Phase 1h, Plot 40
Plan of Tr. 3

Phase 1h, Plot 40
East facing section of Tr. 4



Phase 1h, Plot 40
Plan of Tr. 4





Phase 1h	Scale 1:150
	Figure 18

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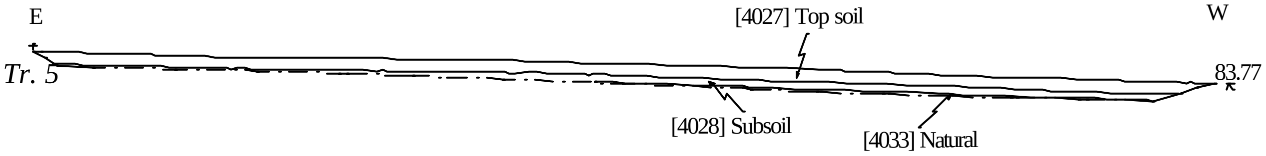
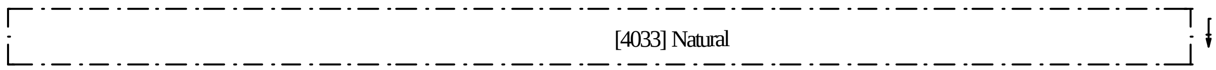
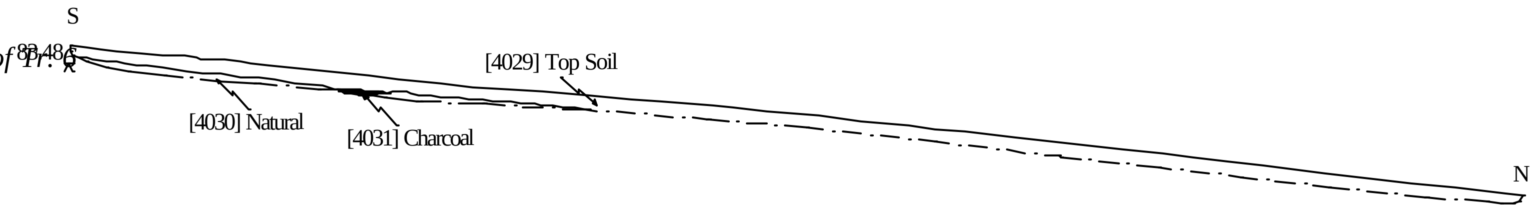
Phase 1h, Plot 40
North facing section of Tr. 5



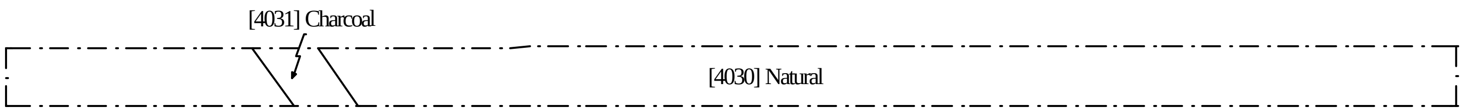
Phase 1h, Plot 40
Plan of Tr. 5



Phase 1h, Plot 40
East facing section of Tr. 6



Phase 1h, Plot 40
Plan of Tr. 6

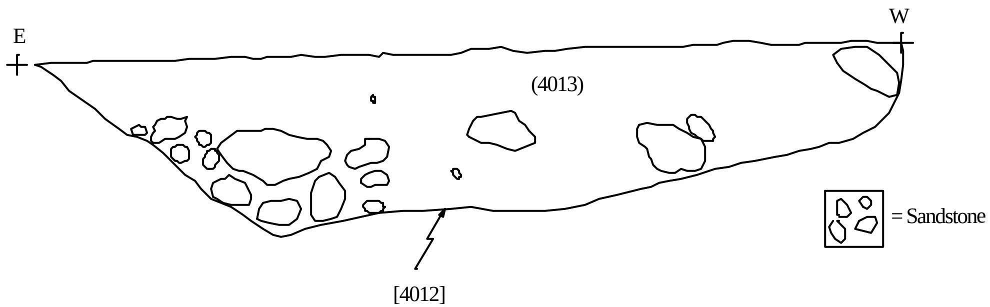


Phase 1h

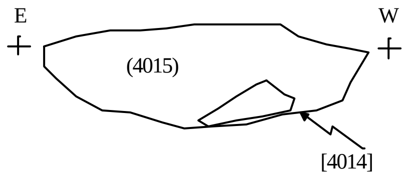
Scale 1:200

Figure 19

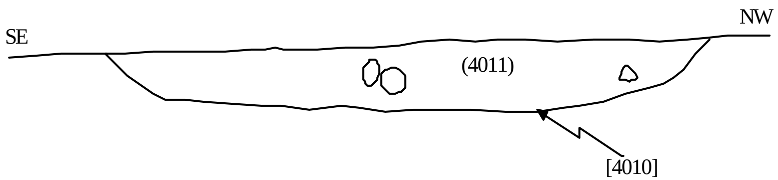
Phase 1h, Plot 40
North facing section
through linear [4012]

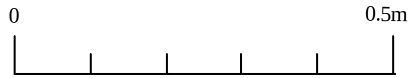


Phase 1h, Plot 40
North facing section
through linear [4014]



Phase 1h, Plot 40
North East facing section
through linear [4010]





Phase 1h

Scale 1:10

Figure 20