An Archaeological Watching-Brief during Haul Road Construction at Willington Quarry Derbyshire

Matthew Beamish

University of Leicester
Archaeological Services

University Road · Leicester · LE1 7RH · England

An Archaeological Watching-Brief during Haul Road Construction at Willington Quarry Derbyshire

Matthew Beamish

for Western Aggregates Limited (RMC Group)

University of Leicester

Archaeological Services

Report 97/97

An Archaeological Watching-Brief during Haul Road Construction at Willington Quarry Derbyshire

Matthew Beamish

Contents

Figures

1 Archaeological Summary

A watching brief with capacity for controlled excavation during the construction of a haul road has identified some prehistoric occupation of probable Neolithic or Bronze Age date, and a large number of later prehistoric and Roman enclosures and field systems associated with nearby settlement.

A watching brief on the excavation of a test pit in the planned Plant Site Area identified undated post-alluvial archaeology and the probable existence of a palaeochannel.

Finds and records will be deposited with Derby City Museums (Accession Number 1997-89).

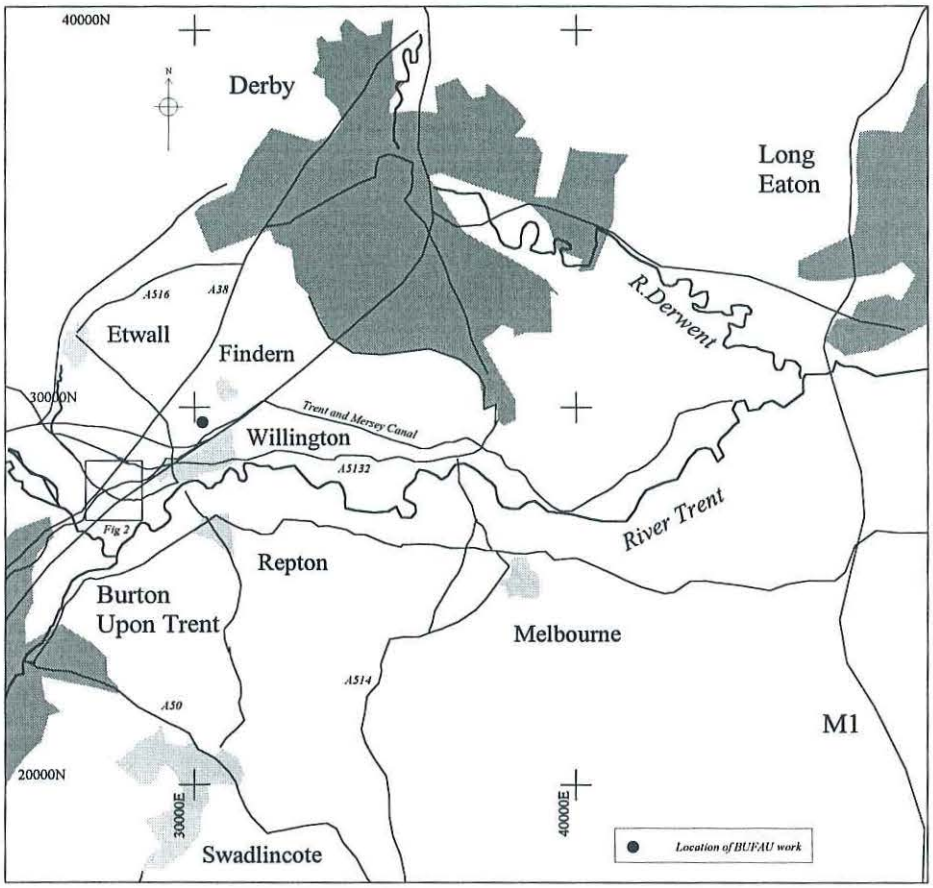


Figure 1 Site Location

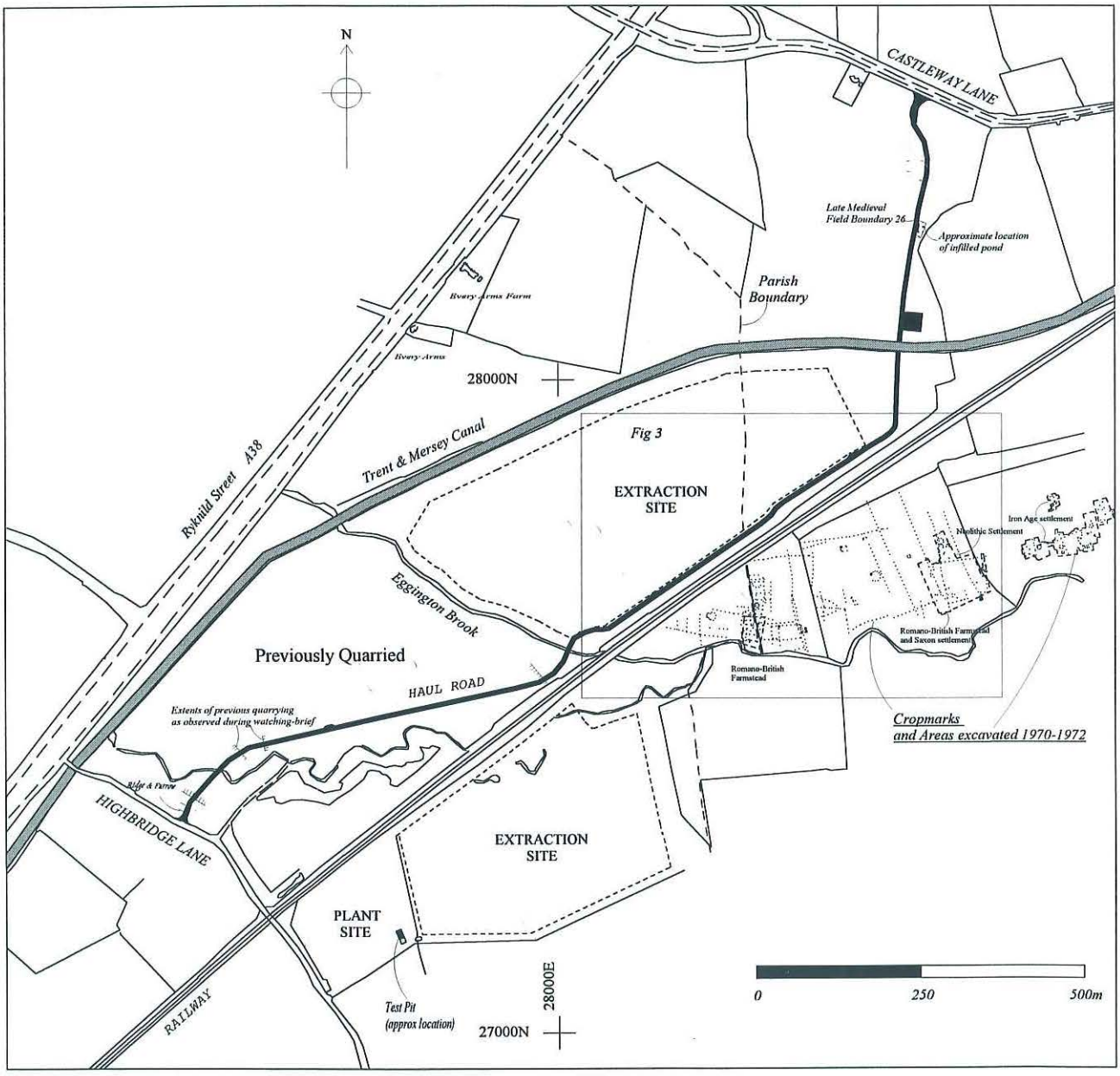
2 Development Background

In 1991 Western Aggregates (RMC Group) were granted planning permission to extract gravel from land at Willington (Ref.9 1061.1; Code No 9/689/279). A separate consent gave permission for a haul road and processing plant to service the quarry (Ref.9.10143; Code No 9/690/259). Condition 6 of the later consent required that a scheme of archaeological investigation be prepared and submitted to the Mineral Planning Authority. This scheme was subsequently prepared by Oxford Archaeological Associates (OAA 1996).

University of Leicester Archaeological Services (ULAS) were commissioned by OAA on behalf of Western Aggregates Limited to carry out a watching brief during the construction of a haul road as specified in Condition 6 (a) of the planning consent for the development. The development centres on SK282277 (Fig 2).

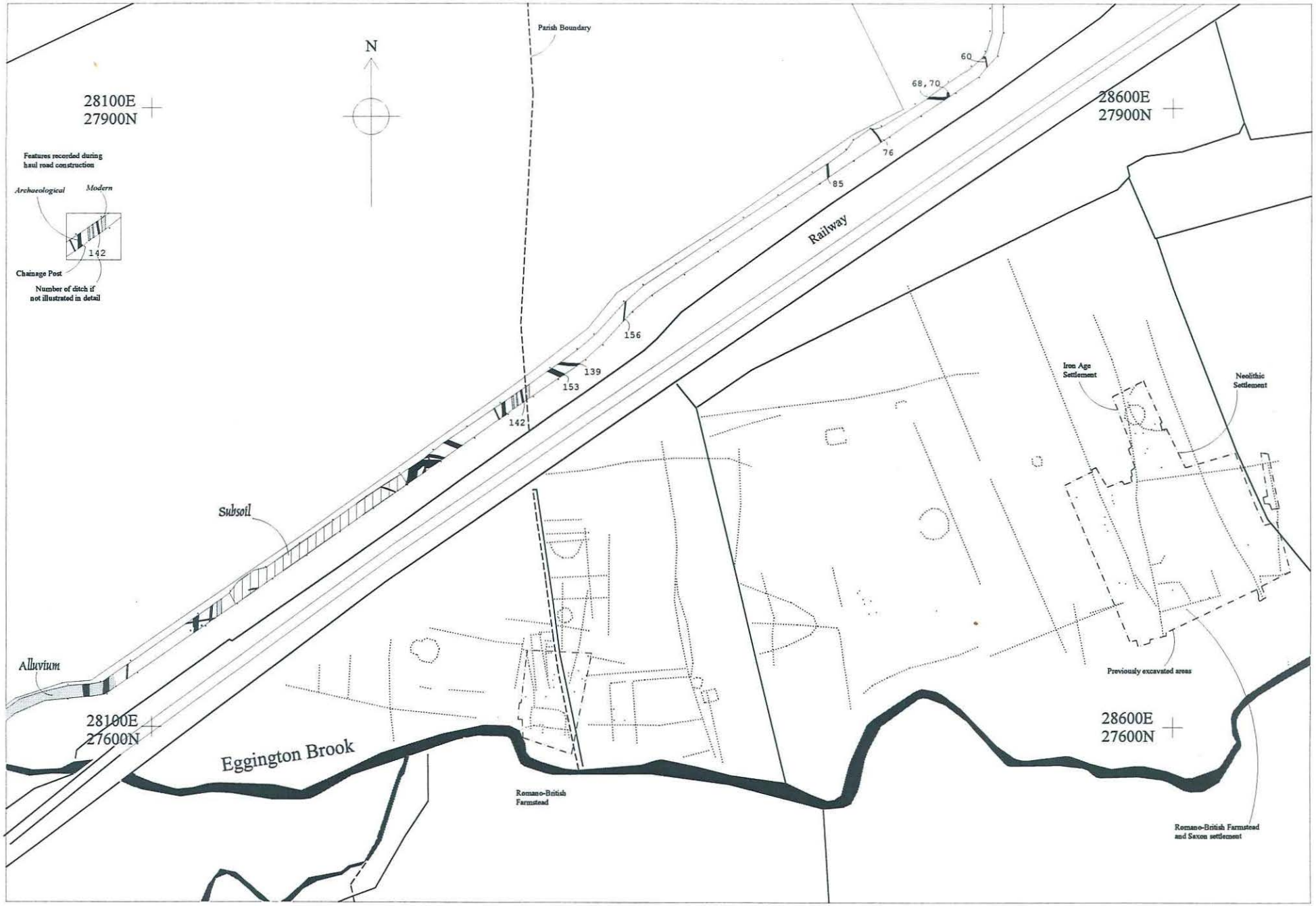
3 Archaeological Background

Between 1970 and 1972, excavations were undertaken by the Trent Valley Archaeological Research Committee, on an area of cropmarks to the east and south of the haul road in advance of quarrying, centred on SK285277 (Figs 2 and 3). Excavation demonstrated evidence of intermittent occupation from Neolithic to the Saxon period, the main features being late Neolithic settlements, Iron Age settlement and field system with at least three separate foci, three prehistoric ritual monuments, two Romano-British farmsteads, and a small Saxon settlement (Wheeler 1979 p58). Archaeological excavation has also been carried out at Hill Farm Willington, centred on SK299295 by Birmingham University Archaeological Field Unit (BUFAU)(Fig 1), where a number of cropmarks including circular and linear features appeared to possibly relate in part to a ritual or mortuary monument dating to the late third or early second millennium BC. Pottery of probable Early Neolithic date was found in a shallow pit (Hughes 1995).



CROPMARKS AFTER WHEELER 1979

Figure 2 - The development in relation to cropmarks and past work



CROPMARKS AFTER WHEELER 1979

Figure 3 - Detail of haul road (parcel 2) with cropmarks and excavated areas to the south

0 100 200m

4 Topography and Geology

The site may subdivided into three parcels. The northernmost from the Castleway bellmouth to the Trent and Mersey Canal, which crosses the development on a broad West-East alignment. The middle parcel is bounded by the canal in the north, the Exeter-Newcastle mainline railway, which crosses the development from Southwest to Northeast, in the south, and the Eggington Brook . The third parcel is between the Eggington Brook and the Highbridge Lane bellmouth.

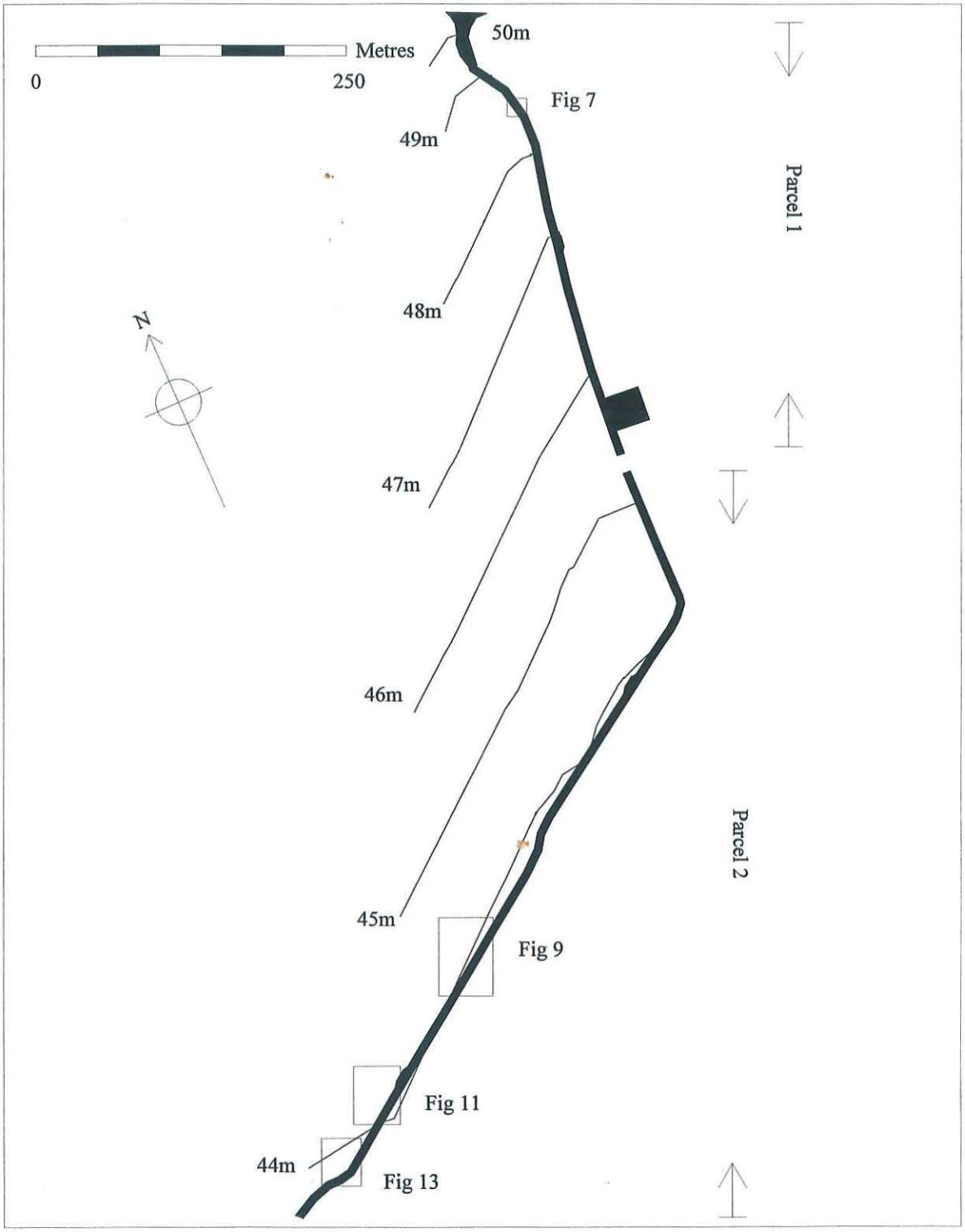


Figure 4 - Parcels 1 and 2, with digitally projected contours and detailed plan locations

The geology is fluvio-glacial sands and gravels. The modern course of the Trent lies, at its nearest some 800m to the south-east of the haul road (Fig 1).

The boundary between the Parishes of Eggington and Willington crosses the haul road mid way along parcel 2 (fig 3).

The third parcel, under grass, was mostly quarried for gravel earlier this century; and had been backfilled. The extent of this extraction was observed within the easement (Fig 2).

Parcels 1 and 2 are all currently arable with a thin topsoil of 0.30m maximum. For the most part, removal of the topsoil exposed clean bright sandy gravels, with very little subsoil.

Topographically the land surface falls ever more gradually from north to south; it is at its highest at the north end, falling initially quickly from the 50m contour (on the Castleway Lane) at approximately 1 in 15, and thereafter at 1 in 60 between 48m and 46m contours, 1 in 65 to 70 between 45 and 44m contours. The land-use is currently arable. A late medieval field boundary was recorded at site grid 2084/1820, running towards a pond that had been infilled with the memory of the farmer (Fig 2). Ridge and furrow was present only in the field adjacent to the Highbridge Lane bell-mouth (Fig 2), but was not present elsewhere. Many nineteenth and twentieth Century horseshoe and pipe drains were noted within the easement, particularly in parcel 2, where the ditched boundary between the railway and the field was wet.

Without assessment of any cartographic information available on land-use history, it appears that parcels 1 and 2, have only been brought into cultivation in the last two-hundred years due to poor drainage, and proximity to water courses. This is supported by the general lack of subsoil or medieval plough soils below the current plough soil. Despite this, no fine alluvial deposits were recorded in these parcels which might have been deposited by flooding watercourses, other than immediately adjacent to a wet ditch and the Eggington Brook (Fig 3).

An area of subsoil was recorded in parcel 2 to the north east of the Eggington Brook which probably relates to past ploughing history.

The fluvio-glacial deposition of the gravels incorporated many pale *periglacial features* that appeared to resemble archaeological deposits. Also present were some clear tree root disturbances and possible animal burrows. It was not always possible to differentiate these from archaeological features.

5 Aims and Objectives

Paragraphs 4.1, 4.2 and 4.3 of the Scheme of Archaeological Investigation (OAA 1996 p3) stated :

The objective of this scheme is to determine whether there are any significant archaeological remains adversely affected by the quarry, haul road or processing plant and to produce a programme of mitigation.

The construction of the haul road will be observed throughout its length, serving as an evaluation of the archaeological potential of the quarry.

..the observation of the construction of the haul road.....may lead to a programme of mitigation through preservation by record of archaeological remains assessed to be of sufficient importance

6 Methods

The programme of work was as is follows:

Phase 1: Topsoil and any interface onto clean subsoil was removed with 180^0 wheeled machines with ditching buckets.

Phase 2: Following the release of parcels from archaeological work, the surface was graded and covered with stone in preparation for the concrete road. The grading resulted in gravel being removed from some areas and deposited in others to effect a more level surface.

Phase 3: A trench was excavated along the northern or western sides of the road to take a French Drain.

After the surface had been stripped a varying period was available for archaeological work. During the topsoil strip areas of anomalous material were immediately identified, and tagged. Virtually all anomalies were part excavated to establish their origins, unless an irregular plan shape, and fill characteristics made interpretation immediately possible (e.g. in the case of some periglacial deposits).

Many features contained a dark brittle manganese deposit and in some cases decayed roots appeared to have been replaced by such mineralisation. Small pieces of charred material were noted in the upper levels of different types of feature and had probably been introduced by bioturbation which is marked in relative soft silty sand deposits.

All anomalous deposits were planned with reference to Chainage Posts established at 20m intervals on both sides of the easement throughout its length by the developer. These posts and all linear features with their drawn section points were subsequently surveyed using a Topcon GTS 212 with data-logger.

Identification and recording of deposits: all possible archaeological anomalies were assigned a context number, and planned; if the anomaly was not subsequently discounted as non-archaeological at this stage, a section was excavated and drawn; if the anomaly was convincing as a probable archaeological deposit, further context numbers were issued. Numbers in the text if emboldened refer to the cuts of archaeological deposits, and if not emboldened the deposits themselves.

7 Results

Stripping started on 19th June and finished on 9th July. There was continuous archaeological presence until 11th July. Intermittent visits were made until 28th July.

Eighty six anomalies were recorded; of which 47 were demonstrably archaeological in origin; of these some 31 were linear features. The remaining 39 were deposits either with periglacial origins, or formed by some other mechanism such as tree roots or animal burrows. Of the 31 recorded linear features six turned out to be nineteenth or twentieth Century drainage features with pipes *in situ*. (Many more field drains crossed the easement but were not recorded if self-evidently modern).

7.1 Parcel 1

Fig 4: 1:5000 Plan
Fig 6: 1:20 Sections
Fig 7: 1:80 Detail Plan

Neolithic/Bronze Age Deposits

Many pale silty anomalies were recorded along the easement; some of these may have had archaeological origins but are not interpretable on the basis of current knowledge. They are not shown here. Further detail is located in the archive. Deposits of demonstrable archaeological origin are shown in Fig 6, and are described below.

An elongated pit **6** with which were associated a number of postholes and possible stakeholes were recorded. The pit was 1.75m by 0.70m; its depth varied between 0.19 to 0.29m with a possible post-setting at its west end. The pit contained two fills, a firm charcoally dark greyish brown silty sand (5) which overlay a firmer light greyish brown silty sand that contained dense pockets of charred material (7); a number of large pebbles lay at the fills' interface, notably at the bowled western end, where the base of the pit deepened.

A polished stone axe fragment (Ext 1997-89-1)(Fig 5) was found during the initial excavation of a transverse segment of the feature with mattock, from the upper 0.05m of (5) (*section 6)*. Despite subsequent total excavation of the feature by trowel the pit contained no further finds. Multiple soil samples of the deposits were retained for environmental analysis.

The axe fragment has been passed to Tim Clough for thin section analysis. It may be from a Welsh source (Tim Clough *per. comm.)*

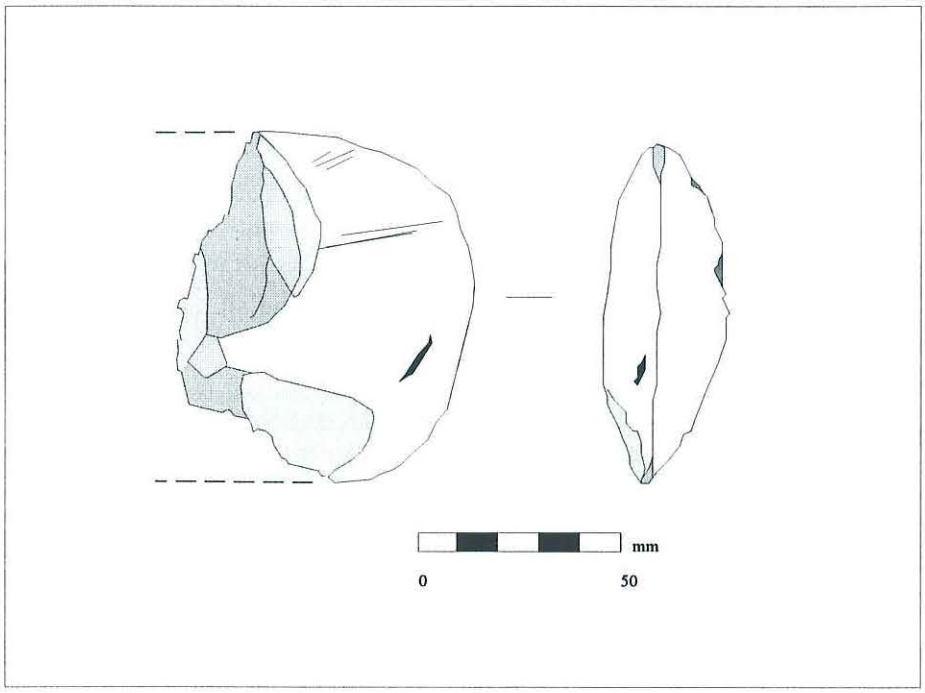


Figure 5 Polished Stone Axe fragment

Following the identification of the pit, the surrounding area was hand cleaned. Clear postholes with similar upper fills to (5) were identified to the east (16),**17** and (51), **50** and north-west (45, 46), **44**. The postholes were of varying depths; **44** which retained a clear post-pipe and packing cobbles was 0.34m deep, with a base at 47.91 AOD. Postholes **17** and **50** were 0.07m and 0.11m deep respectively.

Another possible posthole **34** was found 2.2m to the west of pit **6** but was filled with a slightly paler sandy silt clay fill, that appeared more leached than those of the adjacent features. This posthole contained a lower possibly slumped packing material fill (36) which contained frequent large pebbles.

14m to the north-east, a further posthole **52** was identified, excavated and recorded during the Phase 2 machining of the road, filled with a similar dark grey silty above a leached creamy grey sandy clay.

Various samples of the posthole fills were retained for environmental analysis. All the above were fully excavated, but contained no artefacts.

Two very pale anomalies were identified in the vicinity of the above. Anomalies **36**, (35), **48**, (47), and **49**, (198) were some 3m to the north of pit **6**, a series of interconnecting pale greyish brown silty clay deposits, with variable edges, containing occasional large waterworn pebbles, were investigated. The maximum depth was 0.28m.

3m to the south a leached creamy grey sandy clay deposit (43) was partially exposed by the strip; this was 0.50m deep with a strong consistent edge **42** and contained some degraded charcoal and evidence of rooting within.

Other Dating

Prehistoric

In addition to the axe fragment (1997-89-1), a secondary flake (1997-89-7) was recovered from the surface of an irregular anomaly 138m to the south, which was not clearly archaeological (Anomaly 40). The flake had had its bulb of percussion removed and showed some signs of retouch.

Medieval/Post-medieval

Mid way down parcel one, two converging linear features were identified with notably soft fills; the more northern contained a sherd of Cistercian ware (late medieval/early post-medieval) in a recut, whilst the other was found to contain a drain (located on fig 2). Where the two features converged was adjacent to a pond that had been infilled within the farmers' memory. The field on the east side of the easement at this point was wet.

7.2 Parcel 2

Figs 4 1:5000
Figs 9,11,13 Detail Plans
Figs 8,10,12 Sections

Twenty-four linear features interpreted as archaeological were recorded crossing the easement on various alignments; twenty-two were hand-excavated to establish profiles and with the hope of recovering dating material (which was mostly, as anticipated, not forthcoming). The remaining two linears were not visible in Phase 1, but were recorded during Phases 2 and 3.

A wide variety of fill types were recorded, ranging between sterile pale grey silts, silty sands, and clays to greyish brown silty sands, some with charcoal components; although not enough dating material was recovered to place firm dates on any of the linear features (because of the small quantities of material involved and the high potential for residuality of finds) broadly speaking the paler the fill recorded, the longer it had been in the ground to be leached and lose its colour.

In three areas smaller non-linear features were identified in the vicinity of linear features. These comprised (158), **159** and (164), **165** exposed in the segment excavated of Linear **163** (Figs 7,8); (144), **143** adjacent to linear **119** (Figs 7,8) and (110), **109,** (107), **108** each side of linear **184** (Figs 9,10).

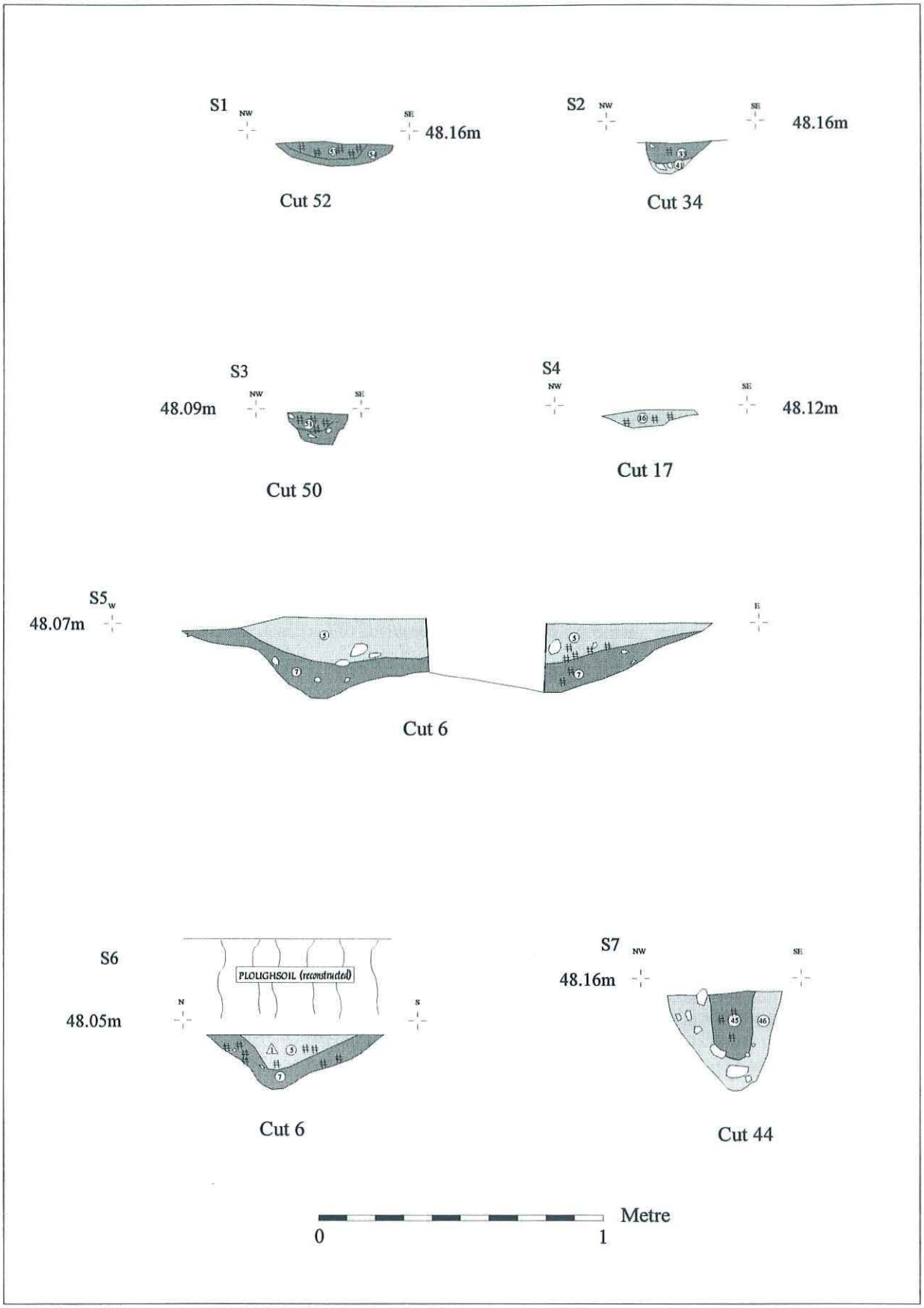


Figure 6 - Sections of features in Figure 7

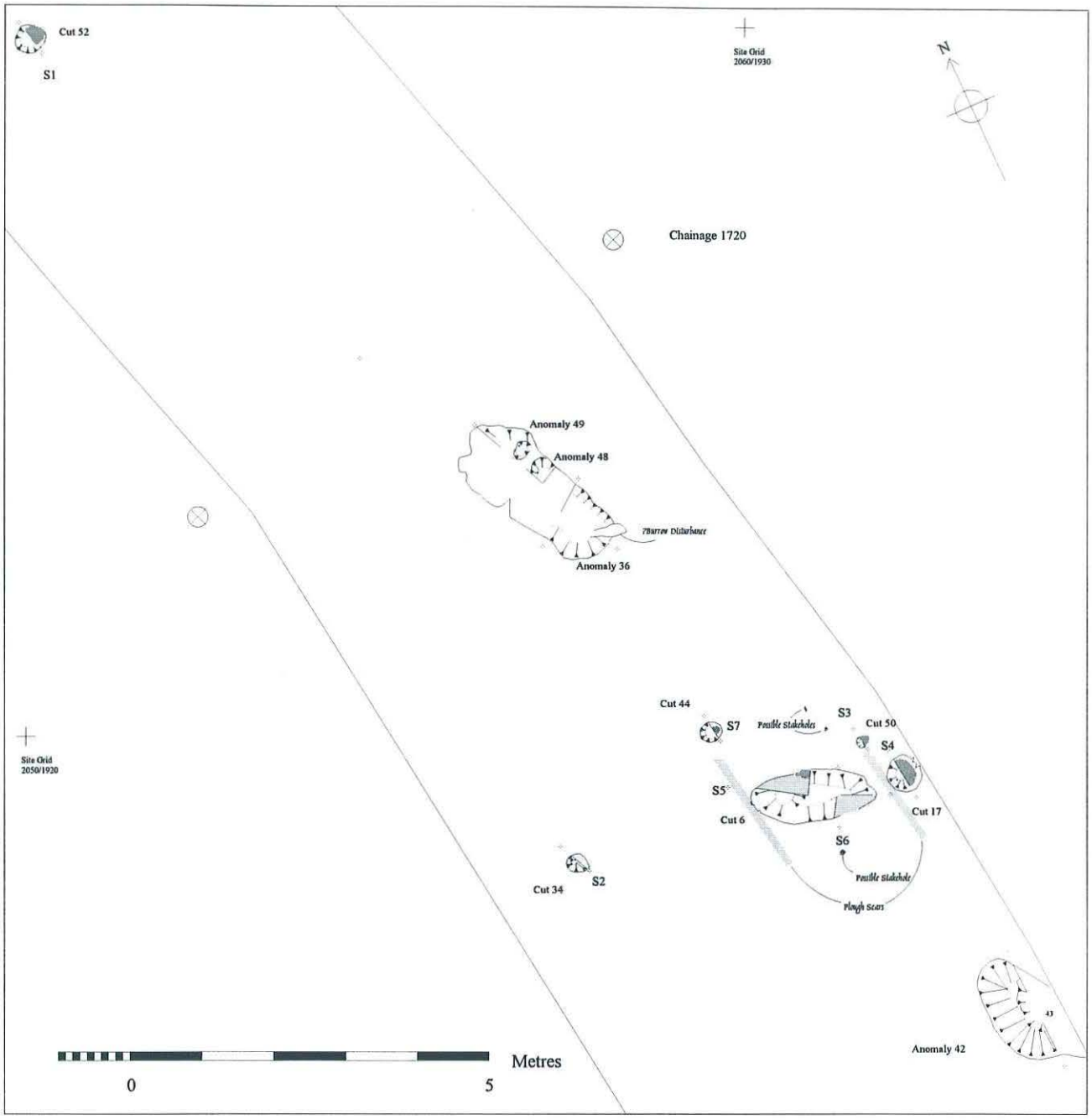


Figure 7 - Neolithic/Bronze Age features and undated anomalies in parcel 1

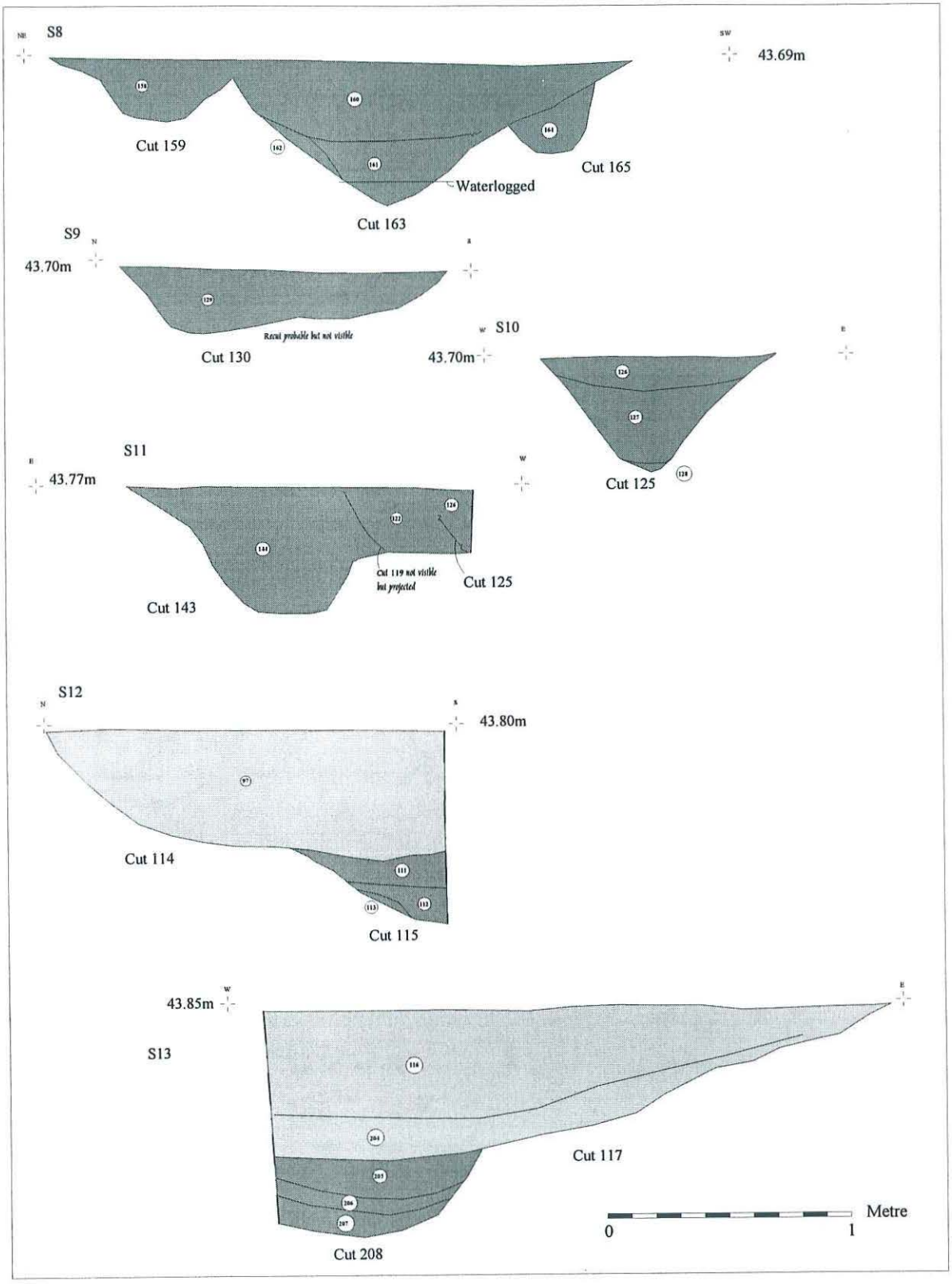


Figure 8 - Sections of features in Figure 9

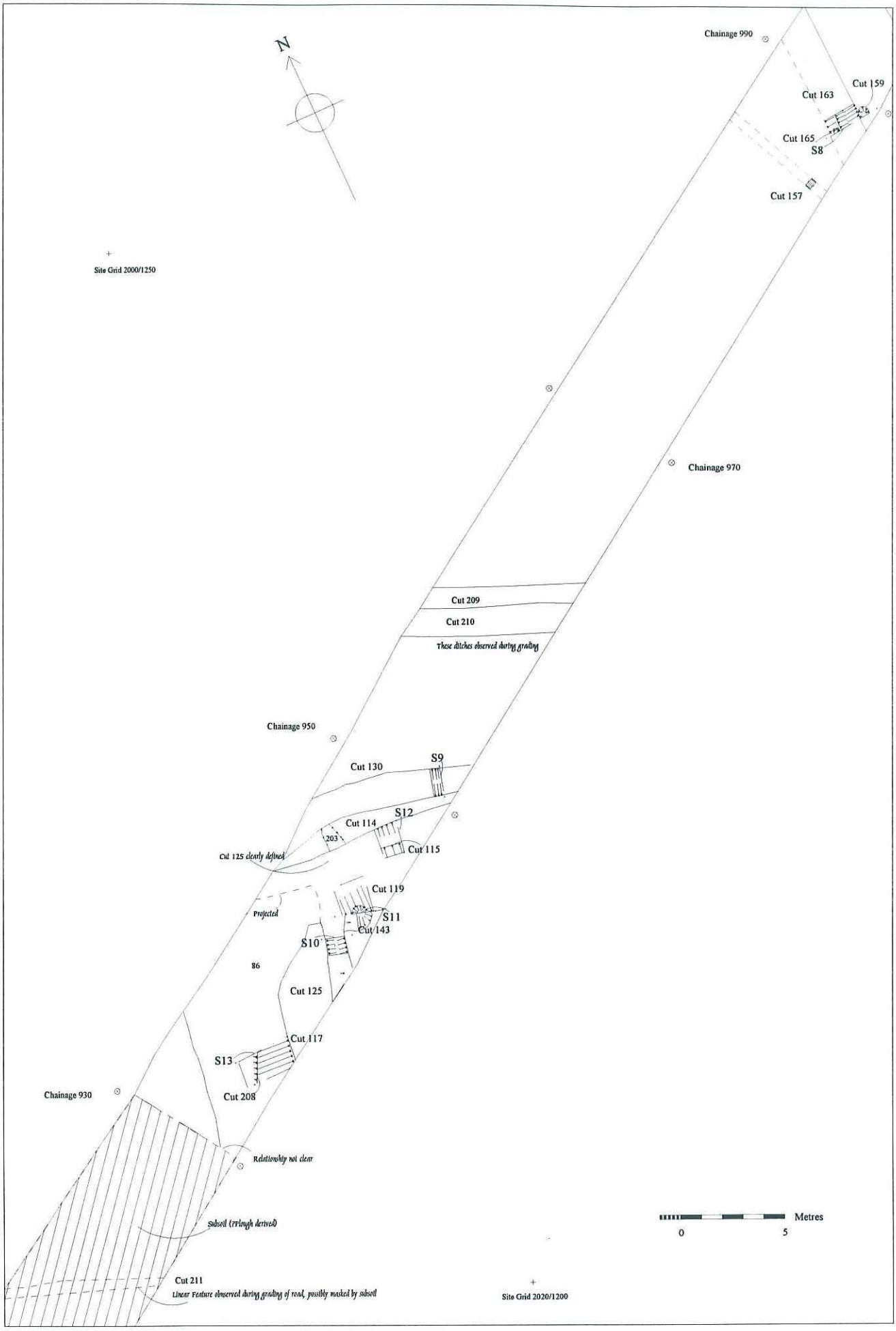


Figure 9 - Complex of ditches in parcel 2 probably of mainly Roman date

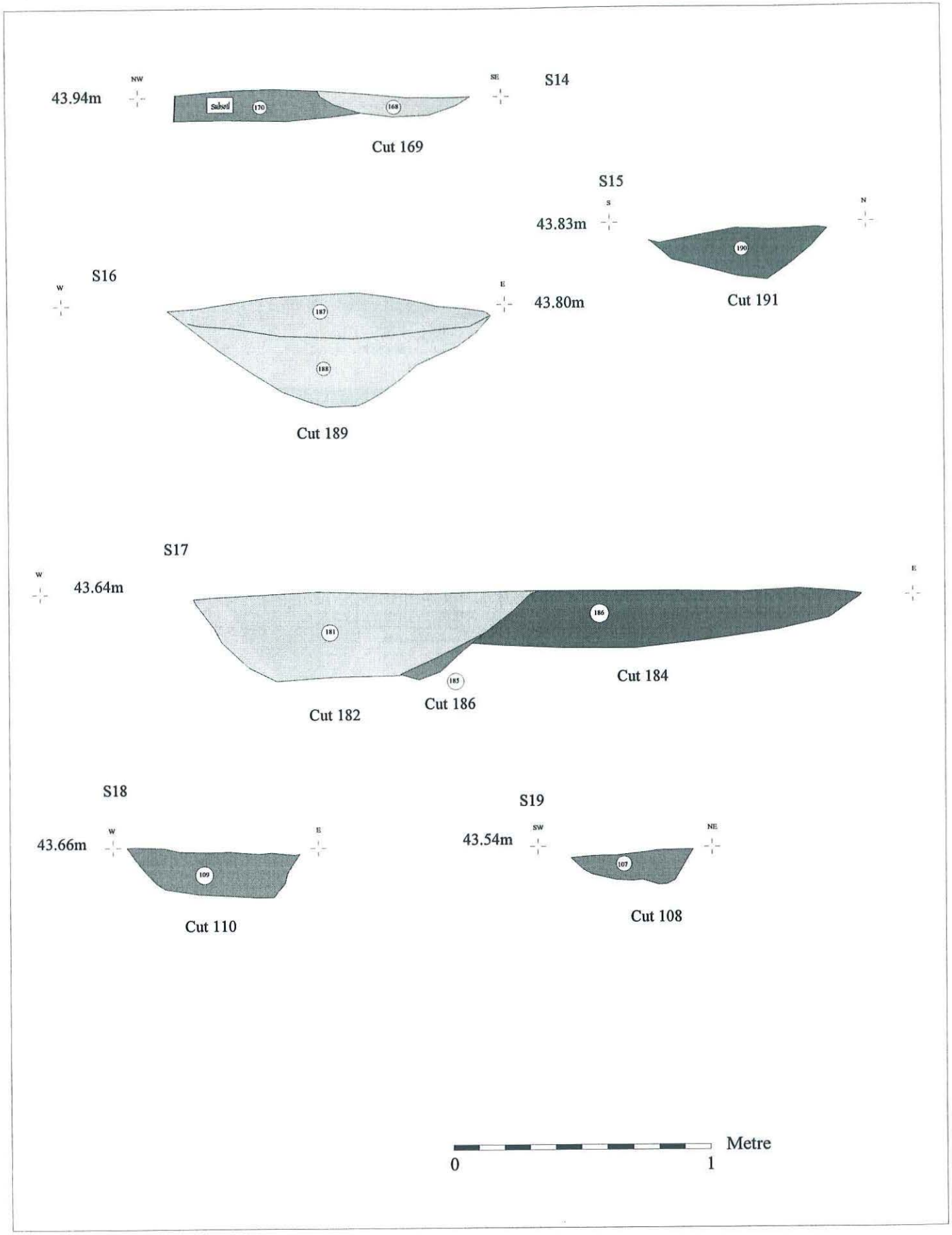


Figure 10 - Sections of features in figure 11

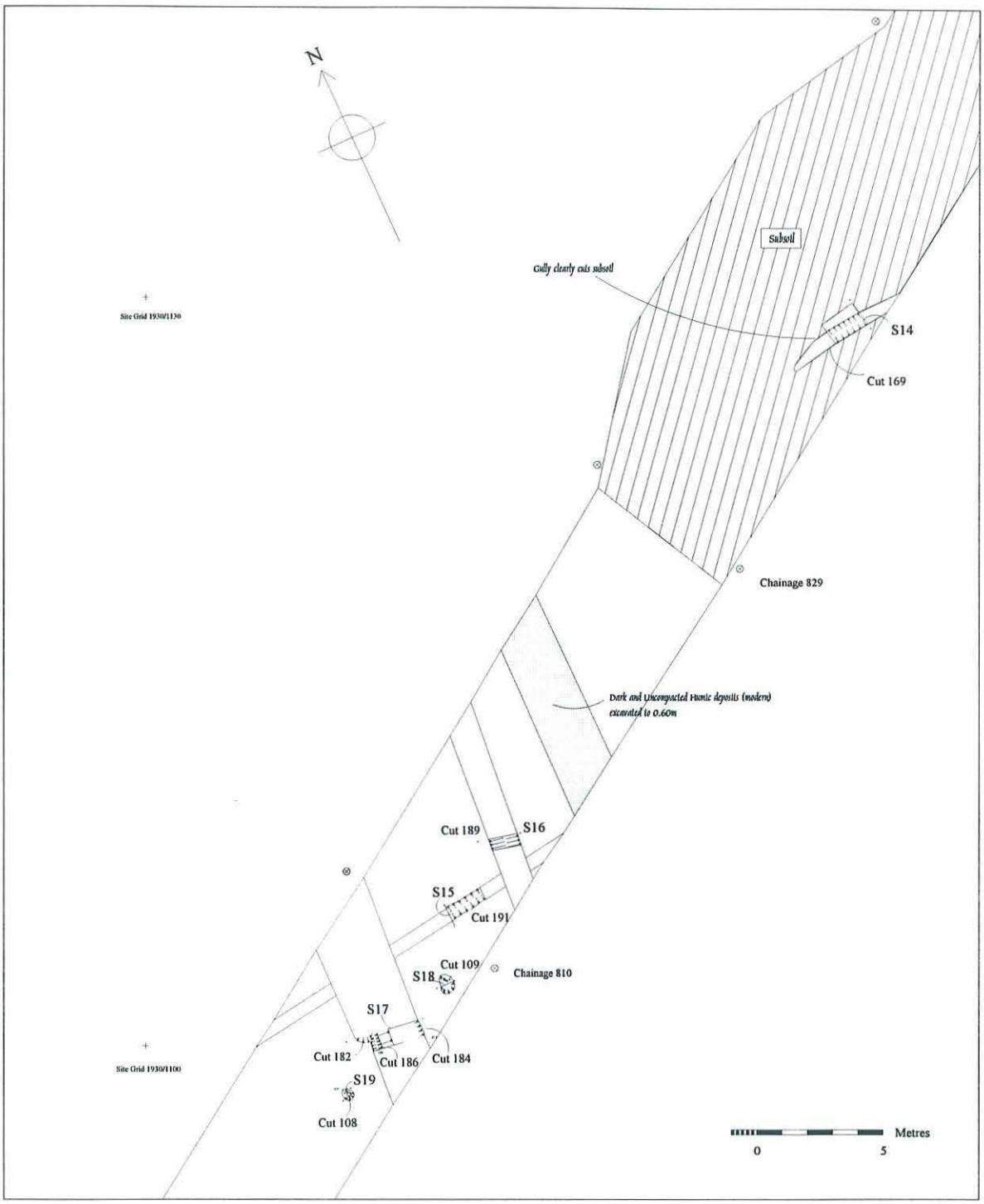


Figure 11 - Complex of features in the west of parcel 2.
Those in the lower half are probably prehistoric.

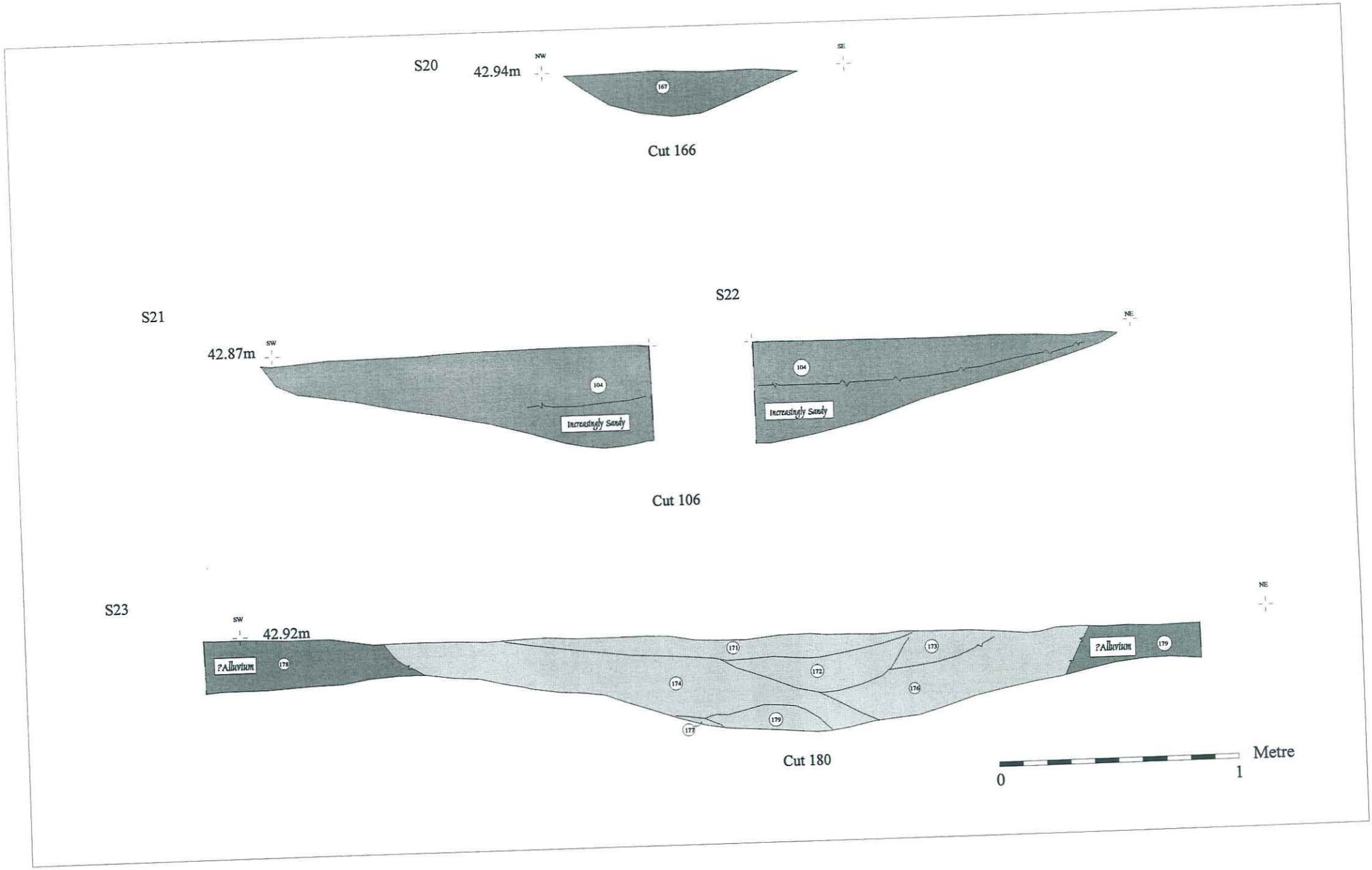


Figure 12 - Sections of undated ditches. The lower two appeared to cut a sandy alluvium.

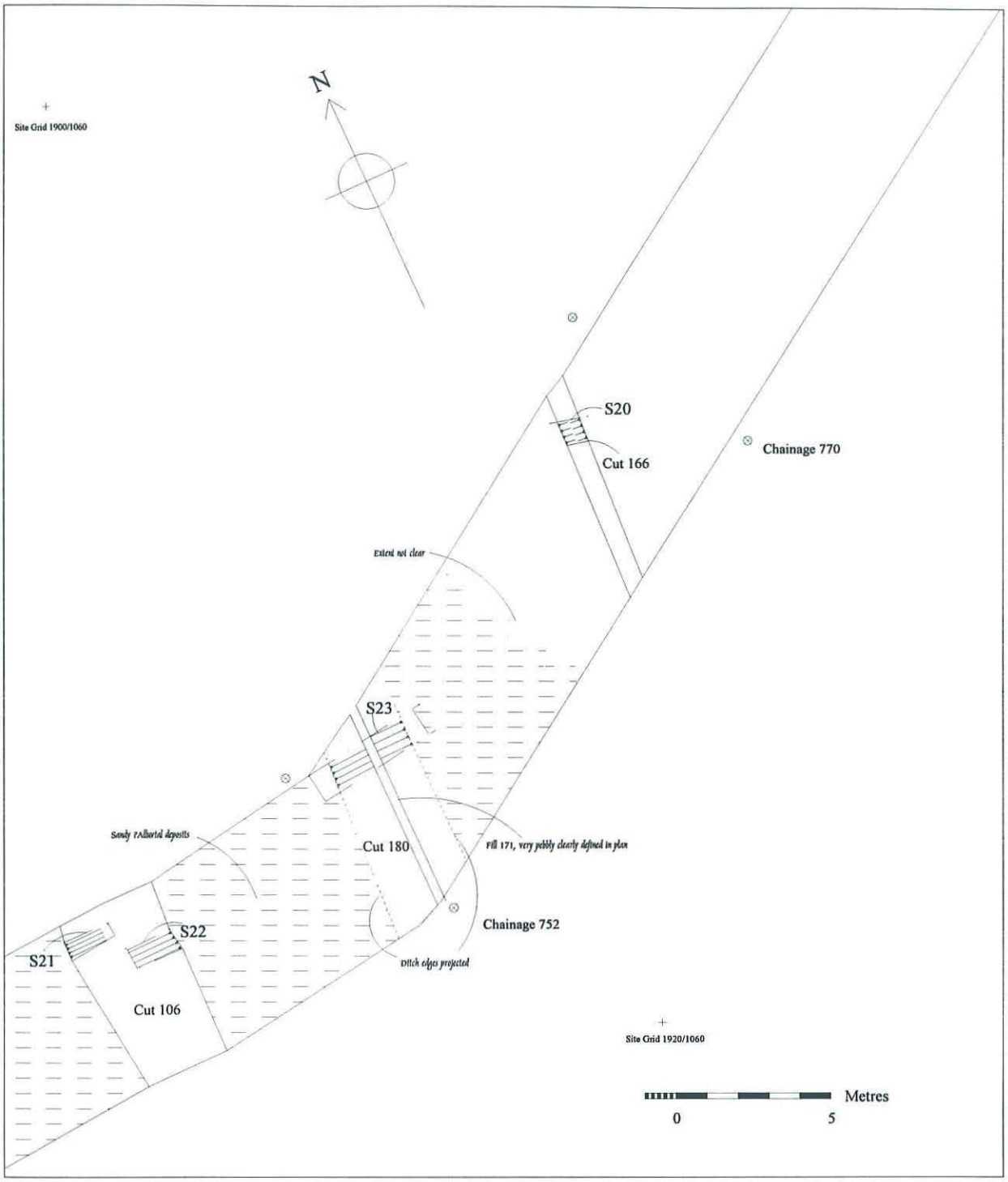


Figure 13 - Ditches and a sandy alluvium at the extreme west of parcel 2

7.3 Subsoil

An area of silty sand subsoil was recorded toward the western end of parcel 2; where tested at chainage 890 (SK 28200/27700) it was up to 0.50m deep, becoming increasingly sandy towards its base. This material appeared to have been plough derived, although there was no obvious slope down which such material might have travelled.

At its western extent the subsoil was cut by undated linear feature 169 (Figure 10). At its eastern extent the relationship between the subsoil and ditch 117/208 was unclear. Linear feature 211 was not observed in the Phase 1 work. This may have been due to the dry conditions and similarity of fill to subsoil, or may have resulted from the subsoil being later and masking any earlier deposits. Although small fragments of pottery were recovered from the subsoil at its western end (below *Prehistoric)*, it is of little use in providing an indication of date and the subsoil must remain undated.

7.4 Alluvium

To the west of the subsoil a deposit of sandy alluvium was recorded. This was clearly cut by ditch cuts 106 and 180. The eastern extent of the alluvium was not clear although it fell between ditches 180 and 166. Its western extent was not visible. More clayey alluvial soils were observed in parcel 3, extending for some 50m to the west of Eggington Brook until truncated by past quarrying (Fig 2).

The road was to be built up over the alluvial area, and there was therefore no opportunity for observing underlying deposits.

7.5 Dating

Dating evidence was very sparse in general; from 22 excavated segments, six sherds of pottery were recovered whilst slightly more was retained from the surfaces of some ditches. Such small quantities of pottery may do little more than reflect general occupation rather than specific dating, with the obvious problems of residuality of material in such a popular area.

Prehistoric

Very small fragments of Late Iron Age/Early Roman or possibly Saxon pottery were recovered from subsoil 170 (section 14) whilst better preserved prehistoric pottery was excavated from the base of ditch cut 191 (context 190)(section 15) (Figure 10). A single sherd of prehistoric pottery was recovered from the surface of periglacial feature (61), five metres to the south-west of gully **60** (fig 3).

A secondary flake (1997-89-9) was recovered from the surface of a not clearly archaeological feature (72) to the immediate east of ditch **76** (fig 3). A scraper formed on a secondary flake (1997-89-5) was found on the surface of ditch cut 125, and was probably residual.

Later Prehistoric/Roman

Mid second to fourth Century AD material (including Mancetter-Hammerhead Mortarium) was recovered from ditch surfaces at finds spot 86 (Fig 9). Derbyshire ware (mid 2nd Century AD on) was recovered from the uppermost fill of ditch cut 125 (context 118) and Grey ware (1st-4th Century AD) from the upper fill of ditch cut 117 (116) whilst a sherd of undated coarse ware was recovered from lower fill (204) (section 13) (fig 9).

The dimensions and fills of the linear features recorded in parcels 1 and 2 are shown below. Sections are reproduced of those shown on detail plan.

Cut	Recut -	Width	Depth	Comments	Interpretation	Dating	Plan	Sect
26	yes	2.25	0.45		Med/Post Med field boundary	Pottery. Iron nails	2	
60		<1.0	0.20	L shaped	A small enclosure with 68,70?		3	
68, 70		<1.27	0.16	L shaped with Butt end	See 60		3	
76		0.65	0.20	Possibly curving	Prehistoric	Fill characteristics	3	
85		0.80	0.30	Dark and charcoal rich	Post Prehistoric: near to settlement?	Fill characteristics	3	
106		3.3	0.42				12	21,22
114	of 115	1.75+	0.53	Cut by 125; Cuts 203	pre 4C AD Field Ditch	?Same as 117	8	
115	by 119	0.65+	0.80		pre 4C AD Field Ditch	?Same as 119,208	8	12
117	of 208	2.60+	0.60		1-4C AD	?Same as 114	8	13
119	of 143	1.35+	0.80	Cut by 125	pre 4C AD Field Ditch	?Same as 115, 208	8	11
125		1.20	0.55	Cuts all others	L shaped. 2-4C AD Field Ditch: Roman redefinition?	Pottery	8	10
130	uncle ar	1.30	0.27	Possibly curving Cuts 203	LIA/RB	Associated with 119/117	8	9
137	of 139	0.90+	0.35				3	
139	by 139	0.80?	0.55	?Backfilled			3	
142		0.85	0.19				3	
149	uncle ar	0.90	0.28	Part of complex with 146 and 153			3	
156		0.70	0.37	Leached and Clayey	Prehistoric, water bearing.	Fill characteristics	3	
157		0.45	0.12				8	
163		1.70	0.60	Associated with discrete features,	Water bearing		8	8
166		1	0.19				12	20
169		0.60	0.10		Cuts subsoil 170		10	14
180		3	0.45	Cuts possible alluvium			12	23
184		2.7	0.24	Cut by 184; Cuts 191	Prehistoric	Similar to 191	10	17
189		1.25	0.45	Cuts 191	?Prehistoric	Similar to 191	10	16
191		0.70	0.20	Cut by 190	Prehistoric	Pottery	10	15
209	of 210	1	0.50				8	
210	by 209	0.30+	0.30				8	
211		0.70	0.55		?Pre-subsoil 170?		8	

Figure 14 - Table of recorded linear features

8 The Excavation of a Test Pit in the Plant Area

8.1 Aims and Objectives

RMC required the testing of gravels in the Plant Area for coal contamination; approximately 150 - 200 tons of aggregate were required, with area of pit dictated by the depth of aggregate present. The test pit centred on c.SK27756/27150 (Fig 2). The pit was excavated on 19th August 1997.

8.2 Methods

The pit was excavated by a 360° machine with ditching bucket. The topsoil strip and subsequent removal of alluvium was supervised by the attendant archaeologist in spits specified by the same.

8.3 Results

Initially a 13m x 8m area was stripped of 0.20m of clayey plough soil, exposing an orangey brown sandy clay alluvial soil. Land drains, but no archaeological features were visible cutting its surface although a small sherd of Derbyshire ware was recovered. A further 0.10m of the deposit was removed to confirm the absence of archaeological deposits at this level.

0.75m of alluvium was subsequently removed in its entirety down to clayey gravels. Three irregular periglacial-like features were recorded at this level, filled by dark grey sandy and silty clays.

Excavation of the gravels followed; 0.55m of clayey gravels (not suitable for RMC's purposes) overlay cleaner deposits. *In situ* tree roots were observed within the clayey gravels. The gravels at the northern end of the test pit became increasingly dark and contained waterlogged wood and plant matter.

It was decided that the area of test pit was not sufficient to provide a satisfactory tonnage of aggregate, and the pit was consequently extended by 9m south. Again no deposits were recorded cutting the surface of the alluvium, and removal of the alluvium proceeded.

However a burnt deposit containing burnt alluvial clay and large quantities of charcoal was exposed towards the western side of the extension near the surface of the alluvium. No dating evidence was apparent. Clay was backfilled over the area of the feature. Removal of alluvium was attempted to the south and east of the burnt deposit, but further charcoal deposits were observed. This area was backfilled and no further extension to the test pit undertaken.

9 Discussion

The axe fragment, the elongated pit and associated postholes at the northern end of parcel 1 are important evidence of earlier prehistoric occupation[1]. The apparently tightly focused nature of the deposits perhaps relates to the isolated nature of occupation.

The flint artefacts also indicate prehistoric occupation although the nature and character of that occupation was not clear within the haul road easement.

The linear features recorded in parcel 2 demonstrate the continuation of the field systems associated with multi-period settlements recorded to the south. The few structural features recorded (Figs 8 and 10) and the fill darkened with charcoal in ditch 85 (Fig 3) indicate perhaps a greater proximity to occupation.

[1] It is not unknown to find polished stone axes and axe fragments in much later contexts and secure dating would be better achieved with a radiocarbon date

The juxtaposition of the ditches recorded in the watching brief and the cropmarks displays a consistency, and it is possible to associate some of the ditches with each other. This is particularly so for the right angle formed by the recut ditches at chainage 950 (fig 14) where they clearly align with the recorded cropmarks to form the corner of a large enclosure (fig 3). The continuation of systems also appears likely for the ditches at chainage 810 (fig 11).

The similar substantial recut ditches (sections 12 and 13) are probably part of the same systems, with an earlier deep ditched enclosure corner later being recut with a more slack sided version. This is itself replaced with ditch **125** which perhaps redefines the system (fig 14).

The existence of the subsoil and alluvial deposits are important. Both deposits might have protected underlying archaeology from later plough damage, and there is some potential for good archaeological survival. It is possible that the disappearance of cropmarks to the south of the railway in this area might reflect the continuation of a masking subsoil (Fig 3).

In the Plant Site area, the existence of at least in part of apparently well preserved post-alluvial archaeology is significant and may hold important information on the sequence of alluviation and settlement.

The dark and organic gravels at the northern end of the pit indicate the probable existence of a palaeochannel to the north of the test pit. This may contain important environmental information.

10 Conclusion

The watching brief on the construction of the haul road effectively identified a number of archaeologically significant deposits;

- a small pocket of earlier prehistoric occupation near the Castleway Lane
- the continuation of ditch and enclosure systems from the south and east of the development area of at least, in part, Roman date.
- the presence of undated subsoil and alluvial deposits near the Eggington Brook; both deposits predated what appeared to be features of archaeological character

The watching brief on the Plant Site Area test pit identified

- a clay alluvium that was cut by undated archaeological deposits
- the adjacent existence of a palaeochannel
- the existence below some gravels deposits of *insitu* tree roots

Glossary

Alluvial/Alluvium Material transported and deposited by a stream or river

Bioturbation Disruption of a sediment by organisms

Curvilinear Feature A ditch or gully cut along a curving line

Leached, Leaching The removal of materials in solution (by the movement of water through the ground)

Linear Feature A ditch or gully cut along a straight line

Palaeochannel A river or stream channel left as a negative feature often subsequently infilled with peat deposits containing waterlogged environmental information

Acknowledgements

The site work was undertaken by the author, Simon Chapman, Tim Higgins and Jon Coward. Pottery identifications were by Pat Marsden, and flint by Lynden Cooper. The project was managed by Patrick Clay. Illustrations are by the author, and were prepared digitally using Sitebuild, Intsurveyor IS2 surveying and digitising software, and TurboCad 3.01.

Archive

The site archive comprises

211 context sheets
19 hand drawn plans
66 section drawings
context, plan, section, film, station, 3D finds and samples, index sheets.

7 raw data files of surveyed information
Various paper copies of surveyed data

11 soil samples of which 8 are bulk environmental samples currently undergoing processing.

1 box of finds

2 black and white films
5 colour slide films

Bibliography

Hughes 1995 *An Archaeological Evaluation at Hill Farm, Willington, Derbyshire, 1995* . BUFAU Report No 343. Unpublished

OAA 1996 Willington Quarry, Willington, Derbyshire. Scheme Of Archaeological Investigation

Wheeler H 1979 *Excavation At Willington Derbyshire 1970-1972* Derbyshire Archaeological Journal 99, p58-220