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ARCHAEOLOGY ON THE A19 EASINGWOLD BY-PASS:

Assessment Report and Updated Project Design

York Archaeological Trust

Site Investigations

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ARCHAEOLOGY ON THE A19 EASINGWOLD BY-PASS

ASSESSMENT REPORT & UPDATED PROJECT DESIGN

York Archaeological Trust: A registered charity
Piccadilly House, 55 Piccadilly, York, Y01 1PL
Tel (0904) 663000 Fax (0904) 640029

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SECTION A : DATA

A1. Introduction

A1.1 Archaeological excavation, following fieldwalking and geophysical prospection, was conducted by York Archaeological Trust (henceforth Y.A.T.) on a site *c.*1 mile (1 4 kms) south-west of Easingwold, North Yorkshire (Fig 1) The work was carried out in advance of the construction of a by-pass re-routeing the A19 trunk road around the town The site, in a ploughed field north- east of the junction of Knott Lane and Crankley Lane, was known to be that of an ancient settlement, identified during an archaeological survey of the route of the by-pass conducted early m 1991 (Y A T, 1991), and thought to be of mid/late Iron Age date The project design for the excavation reported here was submitted to English Heritage by Y A T and North Yorkshire County Council Planning Department's Archaeology Section (henceforth N.Y.C.C) in late 1992, and was accepted after a number of modifications suggested by English Heritage had been incorporated The fieldwork and subsequent assessment were funded by the Department of Transport (henceforth DTp), whose grant was administered by English Heritage Fieldwork began on 14/12/92 and continued until 26/02/93, with one week's holiday over Christmas The period included a two week extension to the original nine week schedule which was funded directly by English Heritage

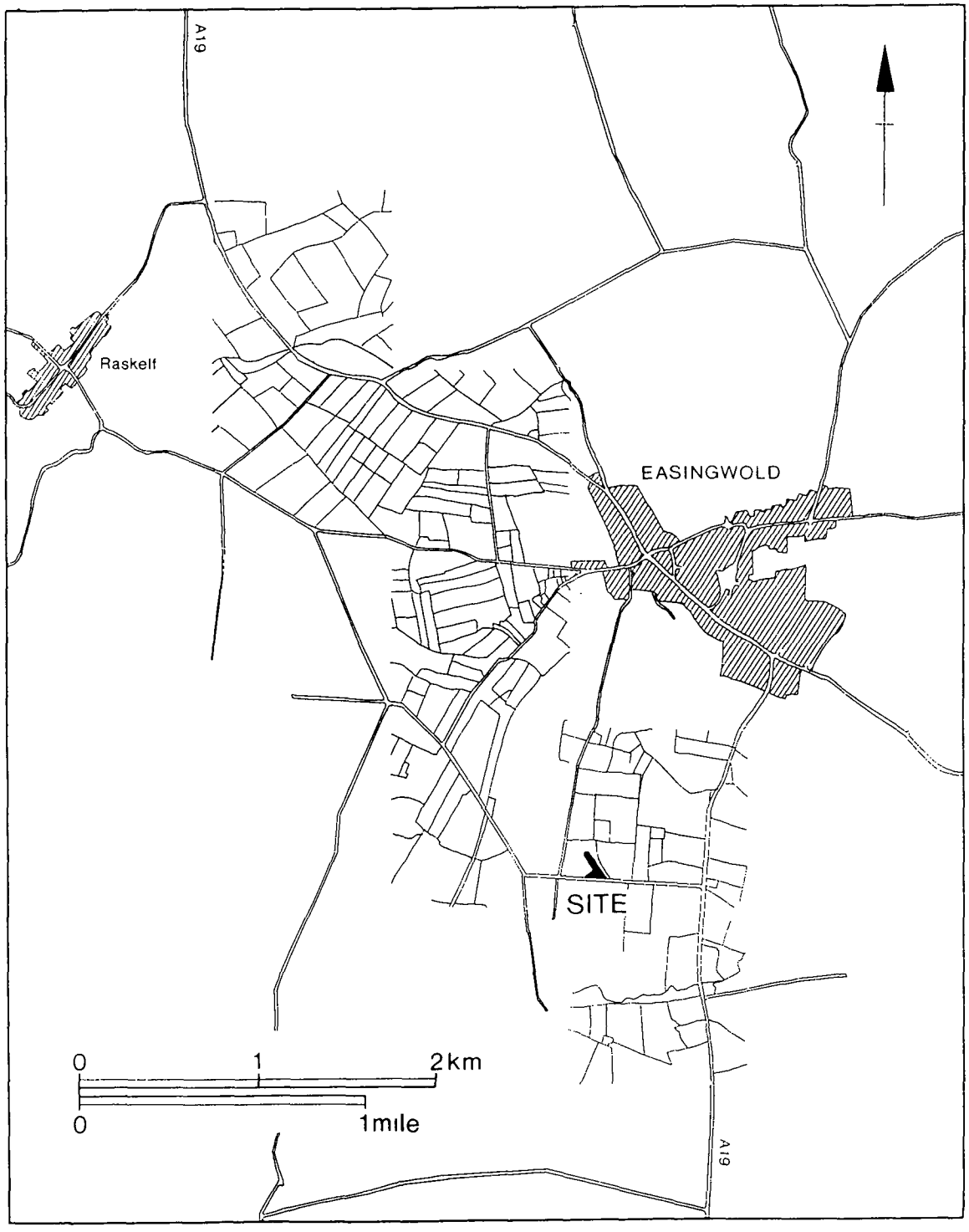

FIGURE 1 Crankley Lane, Easingwold. Site location

A1.2 Following geophysical prospection and fieldwalking a total of *c* 4,300m of ploughsoil was stripped using a tracked 360 excavator and a 20 ton Moxy dumper truck. Operations, including the dumping of spoil, were restricted to the corridor of land owned by the DTp Within this area, the bulk of the available ground in the south-eastern part of the field was cleared, including that incorporated to accommodate the slip road connecting Crankley Lane with the by-pass This area corresponded with the greatest concentration of surface material found in 1991 Further to the north-west the excavated area was reduced to a width of *c* 4m , as little surface material had been recovered from this area and space was needed within the corridor to dump and store the large quantities of machine-excavated ploughsoil The final form of the excavated area is indicated on Fig 3

A1.3 Of the *c*.4,300m stripped of ploughsoil, some 2,600m was cleaned and recorded archaeologically Initial cleaning for the most part involved shovel-scraping, working m 10m units defined by the site grid All features recognised in each square were planned at 1 20, and high level oblique colour photographs of the square were taken A written description of each context thus recorded was made on a pro-forma sheet This procedure was designed to establish the extent and layout of the site prior to selecting targets for more detailed excavation, as stated in the original project design The areas chosen for cleaning and recording in this fashion were selected largely on the basis of the visibility of features during the initial machine stripping, however, the extremely wet ground conditions which prevailed in parts of the site for much of the excavation were also a factor. There were also indications that m certain areas of the site features existed whose upper fills were all but

indistinguishable, even in the most favourable conditions experienced, from the surroundmg natural sand subsoil This was notably the case east of the site grid easting 520E, combining there with heavy disturbance caused by ploughing and the laying of land drains to obscure the existence of any archaeological traces. Similar, although less severe problems of visibility were noted between 450E and 480E. It is therefore unlikely that, in these areas at least, the recorded features represent all surviving traces of the settlement; equally, no substantial features are likely to have gone unrecognised.

A1.4 Soil-stripping in advance of the construction of the by-pass commenced in late February 1993 and continued until the end of September A watching brief was undertaken by Y.A T. staff on a 650m stretch of the route to the south-east of the Crankley Lane site, and on another 1km stretch to the north-west This work, also funded by the DTp, was conducted over a total of eight weeks with a team of varying strength totalling 128 person-days Recording strategies were adapted in accordance with the constraints imposed by the construction programme Features were cleaned, planned using an EDM linked to SDR MAP software, and sections were excavated through them To the north-west of the Crankley Lane site the total width of 16m was removed in 2 strips each 8m wide This meant that in many instances features were recorded and excavated in two halves, often as much as four weeks apart

Sections 2 - 9, *following, are based on the guidelines offered in section A4.1 of* MAPII *Sections* 2, 5, 6, 7, 8 *and* 9 *are summaries derived wholly or in part from fuller reports provided by the specialists concerned*

A2. Geophysical Survey

A2.1 Two techniques of magnetic survey were employed on the site During the initial evaluation in 1991 gradiometer surveys were undertaken at three sites along the proposed route, including that at Crankley Lane The results were largely inconclusive, suggesting that if archaeological features were present at any of these sites then the magnetic contrast between their fills and the surrounding soil would be small These results are reported in the evaluation report on the by-pass (Y A T. 1991). Excavation in 1991 confirmed the existence of archaeological features - some quite substantial - and prior to the second phase of work a topsoil magnetic susceptibility (henceforth mag sus) survey was therefore undertaken to assess the variation in this characteristic across the site.

A2.2 Fig.2 is a display of the mag sus taken using a field coil The sample interval was 10m, with the coil placed directly on the bare earth The field coil measures an induced magnetization that is observed withm a small volume of material - approximately 10 - 20 cm in depth The results suggest a clear patterning, with various zones of possible enhancement However, excavation has confirmed that there is little obvious correlation between the interpretation of the magnetic susceptibility data and excavated evidence This lack of linkage, although not unique, is thought to be the product of non-anthropogenic actions.

A2.3 In addition, a small number of soil samples taken from buried features were analysed for mag sus. In general the level of mag.sus was very low If these ditch fills are considered representative of those at the site, then two preliminary conclusions may be drawn Firstly, even if mechanisms are at

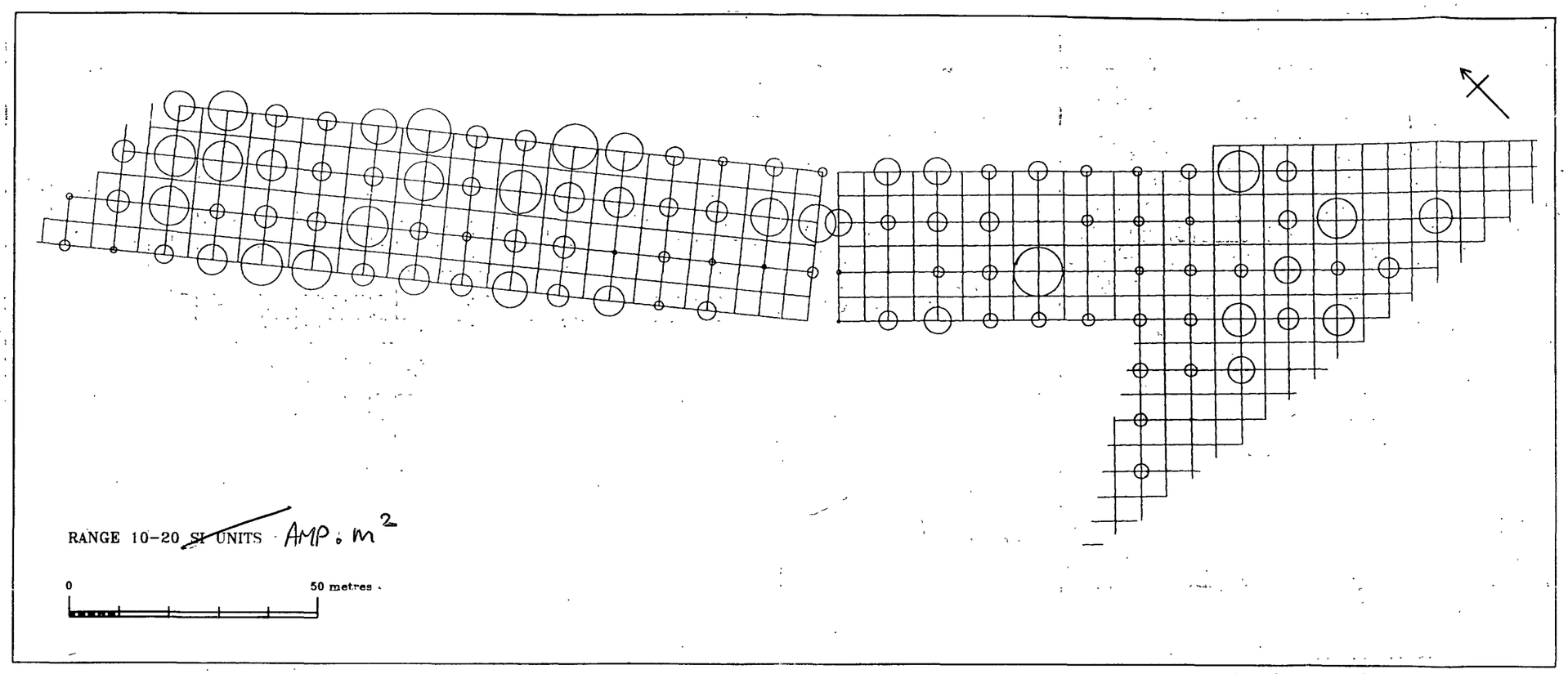

FIGURE 2 Crankley Lane, Easingwold: Magnetic susceptibility survey (after Geophysical Surveys of Bradford)

work to redistribute soil from the features, the fact that the topsoil values are higher than those from the majority of the buried feature fills means that mag sus. could never reflect the presence of the features Secondly, given the lack of magnetic contrast between the fills and the surroundmg matrix it is unlikely that a measurable gradiometer anomaly could ever be generated Further work over a 600m. stretch of the route subsequently incorporated in the watching brief, to the north- west of Crankley Lane, confirmed the existence of mag.sus enhancements withm the topsoil which did not appear to correspond with excavated features. Measurements taken from the top and base of the ploughsoil indicated that at least one area of enhancement was the result of material within, or properties of, the ploughsoil itself Establishing what the susceptibility measurements *are* a response to is one of the aims of the subsequent research proposals (**B14.1.2**, below)

A3. Fieldwalking - methodology & surface artefact distribution

A3.1 Before machine stripping of the ploughsoil began the whole of the by-pass corridor was field walked to establish the distribution of artefacts brought to the surface by the plough Surface finds were recorded by runs 5m in length, spaced 5m. apart. Thus a total of 1,995m of the field was walked (Fig 3) the width of each 5m 'corridor' visible to the walker probably being *c.*1.5m A team of four people completed this stage of the project in 2 working days

A3.2 The surface distribution of coarse pottery (see A5., below, for descriptions and discussion) recovered as a result of this exercise displayed a general correspondence with that generated by the 1991 fieldwork The 1993 pattern was, however, much sparser; 18 sherds of pottery from 1,995m walked, compared with 53 sherds from 2,000m. walked m 1991 The respective distributions are illustrated on Fig 3. The reason for this disparity in recovery of material was almost certainly the state of the surface of the field when walking took place. In February 1991 the field had the appearance of having been ploughed c.2 months before fieldwork took place, and the surface was therefore broken up and well weathered In 1992/3, m contrast, the landowner did not appear to have ploughed the field after harvesting; as a result, visibility of material on the surface was far poorer than had been the case when the earlier work took place

A3.3 The surface distribution of coarse pottery is presented in Fig.3 A superficial examination suggests two distinct foci. The denser concentration of material is bounded by the co- ordinates 510E/080N, 490E/120N and 520E/1i0N. This area corresponds with the locations of three of the most

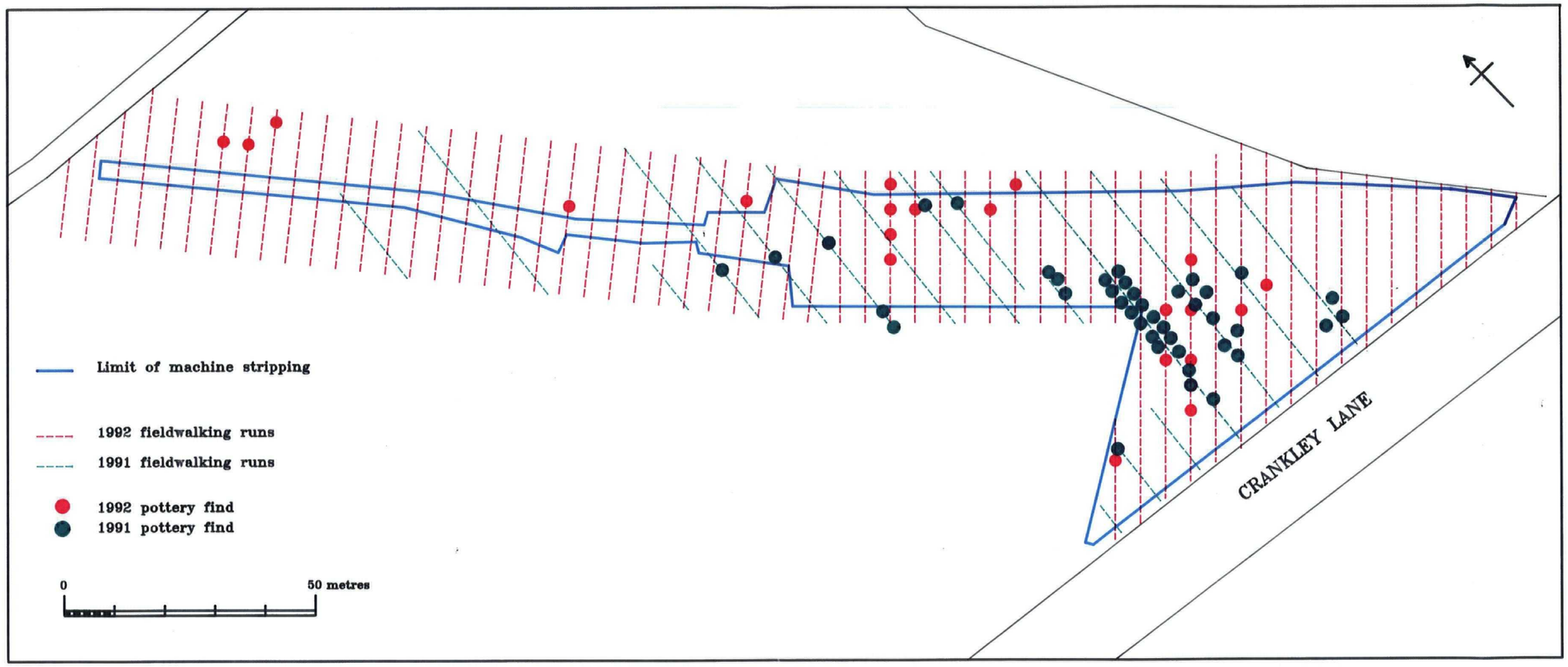

FIGURE 3 Crankley Lane, Easingwold: Fieldwalking runs and data from 1991 and 1992

substantial circular/sub-circular structures on the site, and is bounded to the north-west by a substantial palisade (see **A4.5** below for a summary of these features) A sparser distribution, further to the north-west, appears to be associated with a second complex of circular structures and boundary features (ditto).

A3.4 In addition to pottery, a number of other classes of artefact were discovered in fieldwalking, including small quantities of worked flint and iron objects, slag, and a variety of almost certainly modern material, notably brick and tile/drain fragments

A3.5 The significance of the surface artefact distribution in understanding the site, and the methods involved in realising its potential, are discussed in Section **B14.1.3**, below

A4. Excavation

A4.1 The area excavated and the methods employed have been outlined in Section A1.2-3, above A total of 447 separate contexts were *recorded*; of these 313 were excavated, to which should be added 88 excavated contexts from the evaluation excavation in 1991 (total 535/401). Single-context plans at a scale of 1 20 were made of all contexts excavated in 1992/3; contexts which were not excavated nevertheless figure on overall plans which were made of all the 10m planning zones which were cleaned for recording and possible excavation

A4.2 From the contexts excavated in 1993 a total of 170 soil samples were recovered. Of these, 111 were 10 litre samples, 43 bulk samples of 30+ litres, and the remainder samples of charred material taken for possible c14 determinations or spot finds/context samples for identification.

A4.3 The site had suffered from extensive denudation and disturbance caused by modern (and possibly earlier) agriculture This was indicated by the truncation of the upper profiles recognisable in many of the excavated features, and, more immediately by the numerous and often closely-spaced field drains and ubiquitous modern plough scars - up to c 0.25m in depth - which covered the site When sections of features were selected for excavation, the first task m every case was to empty field drains and plough scars in order to reduce as far as possible the risk of contamination Nevertheless, it is certain that not all such disturbance was recognised, particularly in the case of plough scars, which m a number of instances only became recognisable at their lowest levels, when the overlying soil had been assumed to be undisturbed. This is reflected by the quite frequent occurrence

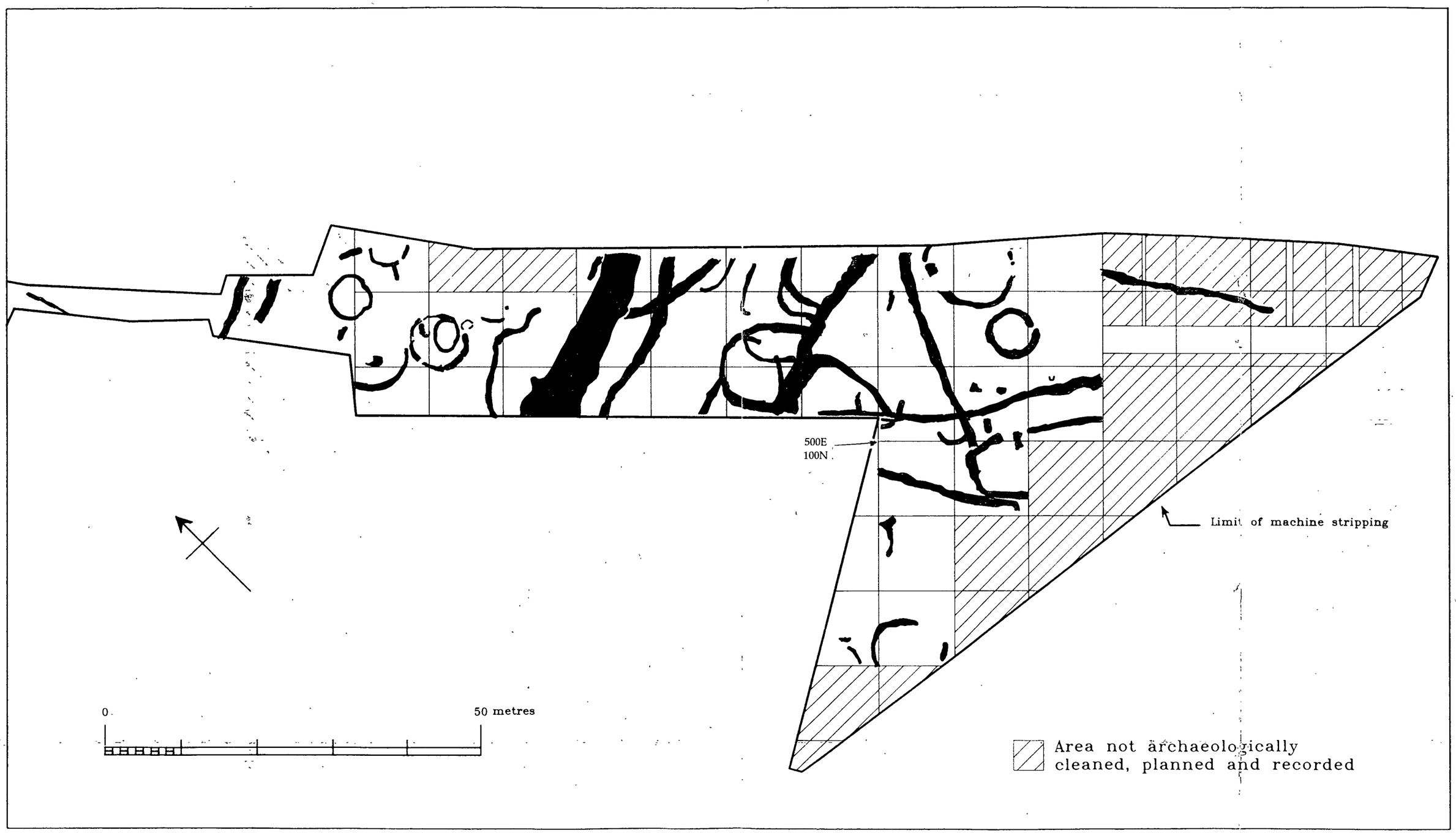

FIGURE 4 Crankley Lane, Easingwold: Excavated area and archaeological features

of modern seeds in the sieved fraction of the samples examined for this assessment The corollary of this truncation is that in only one area of the site - around grid square 510E/100N - was there any indication of surviving horizontal stratigraphy, this appearing to be nothing more than re-deposited natural

A4.4 The sum of recorded features on the site is presented as Fig **4**. A provisional phasing has been established in accordance with *MAPII* guidelines (6.6/6 12), based on direct stratigraphic relationships and apparent spatial coherence. For this purpose features - cuts *and* fills - have been viewed as unitary entities, no detailed analysis of stratification withm features, or comparison of such sequences between adjacent features, having been undertaken. Components of the longest single sequence of intercutting features, together with other features which have a strong spatial association with one of these components, have been treated as 'core' groups It is highly unlikely that the relative positions of these will alter as a result of any further study Features and groups of features not closely linked to this sequence have been termed '?associated'. The association of these with a particular 'core' group is insecure. This second category includes most of the 'free-standing' circular structures and enclosures on the site The attribution of any of these features (comprising *c* 60% of those excavated) could change as a result of more detailed stratigraphic analysis (such as comparisons of fill characteristics) or the recognition of associations of feature types in better preserved contexts on other sites

A4.5 The provisional sequence thus obtained can be summarised as follows,

Phase A - A single, ?rectilinear ditched enclosure in the south-eastern area of the site

Phase B - The addition of a second, similar enclosure, respecting the original, within which were constructed a timber-built round-house and associated sub-annular enclosure

Phase C - The construction of two (?three) semi-circular structures of uncertain function to the north of the Phase A enclosure, the Phase B enclosure having gone out of use

Phase D - The creation of a ditched ?droveway for stock, running south-east/north-west across the site to the north of the Phase A enclosure This seems to have led to a complex of fenced enclosures and pens further west.

Phase E - Modifications to and consolidation of the Phase D arrangement.

Phase F - Creation of a palisaded enclosure in north-western area of site, containing a complex of structures associated with ironworking

Phase G - Construction of a substantial 'lobed' palisade running south-west/north-east across the site, apparently enclosing the area to the south-east withm which a penannular enclosure was constructed

Phase H - Replacement of the Phase G palisade by a single, unelaborated structure on the same alignment, and the construction of a similarly oriented second palisade with ?external ditch further to the north-west

A4.6 Characteristic of this sequence is that each development appears to take account , to a greater or lesser degree, of its immediate predecessor There is no suggestion of a major hiatus between any of the phases. This seems to confirm the impression, given by the largely uniform assemblage of finds, that the occupation of the site is of a single period The material culture has been provisionally identified as being of mid/late Iron Age date (see A6.2, below)

A4.7 Following completion of the main excavation on 26/02/93, a watching brief was conducted on the course of the by-pass and its access roads to the south-east of the Crankley Lane site In August 1993 observation, recording and rapid excavation of a section of the road under construction to the north-west of the site revealed further extensive traces of ditched land boundaries, circular enclosures and possible structures, associated with quantities of coarse pottery (Fig.5). These correspond in general terms with a patchy concentration of cropmarks recognised on aerial photographs (Fig 6), and have been identified less than 200m. away from the apparent north-western limit of the Crankley Lane site It would therefore appear that land organisation and settlement m the vicinity was extensive This data has yet to be integrated with that outlined above and presented in Fig.4

A4.8 North-west of the main foci of the Iron Age site described in A4.5, a substantial north-east/south-west aligned ditch, *c* 8m wide and 3m deep, was sectioned Deposits within this feature were recognised on site as being rich in environmental evidence, and were sampled accordingly. The only dating evidence for the feature was a sherd of medieval pottery - possibly of the 13th century - from one of the fills.

A4.9 The archaeological results of the watching brief (**A1.4**, above) complemented those of the original excavation in impressive fashion Observation and recording both to the south- east and north-west of the Crankley Lane site demonstrated the existence of features and structures similar to those recognised on that site, and selective excavation produced substantial quantities of comparable ceramic material (**A6.1**, below). In particular, clusters of small circular structures and enclosures, respectively *c* 400m. and *c* 800m north-west of the excavation proper, are strikingly reminiscent of those recognised on it. These results clearly demonstrate that the Crankley Lane complex forms part of an extensive system of late prehistoric land organisation

A5. Environmental

A5.1 A series of 177 samples from 128 contexts was taken for analysis of animal and plant remains; a very small amount of hand-collected animal bone was also available for examination There were 111 'general biological analysis' (GBA) samples, mostly of about 10 litres, 43 'bulk-sieving' (BS) samples (of about 20-30litres), nine 'spot' samples, nine for possible c14 dating and a further five taken as 'context samples' (which can be treated as 'spot samples'). Of the samples taken, 11 had been 'bulk-sieved' (to 1 mm) on site. Most of the material sampled was believed to be of Iron Age date, though there were also samples from a large ditch dated to the medieval period (see A4.8, above) A further 13 samples were taken during the watching brief, subsequent to the environmental assessment

A5.2 For the purposes of assessment, a survey was made of almost all the GBA samples, together with the residues from samples bulk-sieved on site, and from a further four samples bulk-sieved in the laboratory The spot finds were examined cursorily but were either obviously charcoal (not identified at this stage) or appeared to consist of sediment without much potential for biological analysis

A5.3 GBA samples were examined in the laboratory for plant and invertebrate animal remains Of these, nine had been marked by the excavator for possible future metallurgical analysis It was decided that no bioarchaeological analysis of these samples would be undertaken at this stage The remaining samples were described and their sedimentary characteristics recorded prior to processing A 'rapid assessment' was carried out on 94 of the samples Only two of these were deemed promising for

bioarchaeological analysis and from these a 'test' subsample (Kenward et al 1986) of 1 kg was taken and processed by paraffin flotation (Kenward et al 1980) to extract insect remains A washover (to 300 um) was carried out on the remaining GBA samples. Plant remains were recorded from the flots from paraffin flotation, from the washovers and from the subsample residues. Although the nature of the residues was recorded after drying, the results have not been included here since they almost invariably consisted entirely of small amounts of sand, occasionally containing a few stones.

A5.4 Four of the 32 bulk samples submitted, representing contexts from which no other material was processed, were sieved to 1mm in the laboratory and the residues examined for plant and animal remains. The residues from the 11 bulk samples that had been sieved on site were similarly examined.

A5.5 For the most part, the deposits yielded only very small numbers of animal and plant remains, many of the latter probably modern contaminants (not unexpected in such shallow deposits under ploughsoil) In particular, it is noticeable that, although there were a few contexts yielding quite large concentrations of charcoal, charred cereals were effectively absent The exception to this generally barren rule was provided by the samples from the large ditch (**A4.**8, above) These produced abundant plant detritus and insect and mollusc assemblages

A5.6 The animal bone assemblage recovered was very small indeed It comprised a single standard-sized box of hand- collected material from 38 contexts, with each context yielding no more than a handful of fragments Preservation was almost universally very poor with most of the

bone appearing to be considerably fragmented and to have suffered from both chemical and physical abrasion. A large proportion appeared burnt and/or iron stained and the vast majority of the fragments were wholly unidentifiable There were therefore almost no bones and teeth which could be measured and used to assess age at death of any of the species where identification was possible.

A5.7 It is clear that the available data concerning environmental conditions and agricultural or pastoral regimes on the site is severely limited There are, however, a small number of specific analyses which may provide useful if limited information about the site's surroundings These are discussed in **B13.2.1** below

A6. Pottery

A6.1 A substantial assemblage of coarse pottery comprising *c* 850 sherds and weighing *c* 16 kgs was recovered from the site. A further *c* 400 sherds weighing *c*.7 kgs were retrieved in the course of the watching brief The material includes both domestic (?predominantly) and industrial vessels, m a number of cases surviving as large sherds and/or complete/near complete bases and profiles. The following comments derive from macro-observation of the entire assemblage by Dr A.J Mainman (YAT.), Mr B E Vyner (University of York) and Mr T.G Manby (formerly Doncaster Museum).

A6.2 The domestic vessels were produced in a range of fabrics. Most are of coarse fabrics, some (a few) tempered with dolerite or (mostly) large quartzsand grits. Initial visual examination suggests at least three main fabric groups, within which further more detailed analysis may allow the establishment of sub-types There are very few finer wares represented For the most part the forms are of large wide-mouthed storage or cooking vessels with straight-sided walls. There are no carinated vessels, or examples of finger decoration on rims or bodies, both usually taken as indicative of an early Iron Age date Many have external sooting marks and two were found in-situ with fire-reddened burned pebbles or stones inside them. There are many reconstructable profiles amongst the assemblage which would provide a useful form typology, particularly in conjunction with the study of the fabric groups. The characteristics of the assemblage at present suggest a date m the period of the 1st to 4th centuries BC The nearest *in situ* source of dolerite is the Whin Sill (Northumberland), but its presence as temper here may reflect availability in the form of glacial erratics.

A6.3 The industrial vessels include approximately a dozen crucibles, reconstructable to palm-of-hand size with (probably) a single pulled out pouring hp In addition, there are two or three fired clay funnels or in-gates for moulds, as well as a cup-shaped miniature vessel with a pedestal base which may also have had some industrial purpose These vessels are discussed in conjunction with associated material in Section **A8**, below.

A7. Artefacts & Conservation

A7.1 In addition to pottery, finds from the field walking, excavation and subsequent watching brief included items of flint, stone, jet, copper alloy, iron, slag, bone, and fired clay. Post-medieval material including glass, tobacco pipes, etc, was also recovered from field walking but is not discussed here. In this section the total assemblage has been grouped by material

A7.2 The 21 flint objects included blades, cores, scrapers and an arrow head, some of which may relate to pre-Iron Age activity on the site The other seven stone artefacts include burnishing stones or hones and a small bead, as well as a piece of haematite clearly used as a burnishing tool seven pieces of jet, including worked (most notably part of a ring) and unworked fragments, were also recovered, and must have been imported from outcrops on the Yorkshire coast or from seams in the North Yorkshire moors a few miles to the north-east.

A7.3 The three copper alloy finds included a pin or point and a featureless lump which further investigative conservation work may render identifiable A ring also recovered from the site should be further examined but is likely to be post-medieval or modern in date. A lead alloy point from the 1991 campaign should be considered with this material.

A7.4 39 iron objects were recovered, and except in the most obvious cases all the material has been x-rayed, a proportion of the material is likely to be post-medieval or modern One or two objects, such as a possible brooch pin and two objects deliberately bent double, one of which is a blade, should be investigated further by conservators and then studied together with comparative material.

A7.5 A bone handle (decorated with two zones of decoration employing chevron and ring-and-dot motifs) and a possible bone bead were recovered

A7.6 A large quantity of slag was retrieved from a variety of contexts, with a parficular concentration in the north-western part of the excavation This is discussed further in section A8, below

A7.7 Many fragments of fired clay, excavated as a concentrated agglomeration which seems to have formed some sort of furnace roofing, were recovered from the base of a ditch in the south- eastern area of the site, again, this is further discussed in section A8, below.

A7.8 The aims of the conservation assessment were twofold; to determine the stability and long term storage requirements of each material category, and to examine the potential of the material in accordance with the academic objectives of the project; in particular, to establish whether any form of manufacturing process was occurring on site. The quantification of material is as follows;

Bone	1
Copper Alloy	3
Fired Clay	5
Flint	23
Iron	60
Jet	8
Lead Alloy	2
Slag	90
Stone	10

Each material category is discussed in turn

A7.9 Iron The majority of the ironwork is encrusted in the typical corrosion products seen on material recovered from damp aerated conditions A number of objects are exhibiting fractures whilst one object has started to break up X-radiography has revealed that several objects have no solid core of metal surviving The ironwork is stored under desiccated conditions which is acceptable for long term requirements, and is preferred to the use of chemical stabilisation techniques Consideration should be given to repacking the material with inert 'Jiffy' foam inserts in the polythene bags to provide additional protection.

A7.10 Conservation programme All the ironwork has been radiographed and a proportion of the material is either post- medieval or modern Selection of material requiring further research was made in conjunction with the finds researcher The conservation work will involve the partial removal of the overlying corrosion crust by mechanical means, followed by desiccated storage A number of the objects, such as a possible brooch pin and two objects deliberately bent double (possible scrap awaiting reuse) require further investigation to enable possible identification and study with comparative material A number of objects have been seleected for inclusion in the final publication and will have to be cleaned for illustration purposes

A7.11 Copper alloy & lead alloy. The copper alloy objects have suffered corrosion but appear to be stable. One lead alloy object has a dull grey pitted surface whilst the other is covered in a very powdery carbonate crust. As with the ironwork, the material is stored under dry conditions. This method is suitable for long term storage, and again is preferable to chemical stabilisation

A7.12 Conservation programme One of the copper alloy fragments may be waste or nielt, thus indicating that some type of manufacturing process was occurring on the site in the Iron Age This piece warrants further investigation by mechanical cleaning The remaining two copper alloy objects require investigation to aid interpretation and possible dating, particularly the ring

A7.13 Jet Both worked and unworked pieces are showing surface cracks, but otherwise appear stable One unworked lump has started to granulate. The jet is currently stored under buffered but not controlled conditions, which is acceptable for long term requirements A ring fragment will require surface cleaning to remove residual dirt if required for illustration. Although it is likely that the provenance of the jet is Whitby or the surrounding area, consideration should be given to undertaking scientific analysis with comparative material to confirm this

A7.14 Bone The object was recovered damp from the site and treated inimniediately upon arrivalat the laboratory as it is not desirable to store this material damp for any length of time The object is stored under the same conditions as the jet, this is acceptable for long term requirements

A7.15 Stone, flint, slag, pottery, fired clay These categories do not usually require conservation treatment or special storage conditions A representative sample of slag has been radiographed m line with the policy of Y.A.T., but does not require further conservation input at present. Two stone beads were recovered and warrant further investigation to confirm the material identification and technological examination for possible toolmarks, particularly around the perforation. Two fragmentary pot bases were block

liftedon site and have now been removed, repaired and repacked The majority of the clay furnace roof sherds are in good condition and do not require any conservation input.

A8. Metallurgical evidence

A8.1 A range of evidence for metalworking was recovered from the site, all of it apparently contemporary with the settlement traces described in Section **A4** Two structures - a bowl furnace and another, possibly column type - were identified in the north-western area of the site, whilst the possible remnants of a furnace dome (**A7.7**, above) were recovered from the base of a ditch in the south-eastern sector. Quantities of slag were recovered from a nuniber of contexts across the site, but with a massive concentration (*c* 75% of all slag from the site) from one of the terminals of the structure immediately adjacent to the aforementioned bowl furnace. The ditch from which the ?furnace dome came also produced at least 12 crucible fragments and 2 probable mould m-gates (**A6.3**, above)

A8.2 Preliminary examination of samples of slag from the site by Justine Bayley of the Ancient Monuments Laboratory (AML) has suggested that it derives from iron smelting. This corresponds well with the evidence of the furnaces near the greatest concentration of the material

A8.3 X-ray fluorescence (XRF) analysis, again by Justine Bayley, of a sample of the crucibles and mould in-gates, detected traces of non-ferrous metals on both, although in insufficient quantities to indicate the nature of the alloy.

A9. Dating

A9.1 The dating of the site is currently dependent on characteristics of the ceramic assemblage, as outlined in A6.2, above These can do no more than locate the assemblage within a period of *c* 4 centuries stretching from the 4th century BC into the early Roman period. Data was, however, recovered to allow the employment of three methods of independent dating; archaeomagnetic (henceforth Amag), thermoluminescent (TL) and radiocarbon (c14)

A9.2 Dr M J.Noel of GeoQuest Associates took a series of 9 samples from the fired base of the bowl furnace 1356 (above, A8.1). Amag analysis of these resulted in a suggested date for the last firing of A.D 1160-1190 This date is problematic, as it is wholly mconsistent with all other chronological indications from the site, and yet derives from a feature which is recogmsably an mtegral part of the 'Iron Age' landscape The only other item of broadly similar date to that proposed by the Amag analysis from a stratified context *from anywhere on the site* was a smgle small sherd of ?13th century pottery from the massive ditch *c* 50m to the north-west

A9.3 Dr I.K.Bailiff of the Lummescent Datmg Laboratory, Umversity of Durham, took a series of environmental dose rates usmg a gamma ray spectrometer at three separate locations Tius established that radioactivity on the site is fairly uniform and lower than is typical, providmg a dose rate of ~0 5 - 0 7 niGy/a. These readmgs should allow reasonable assumptions concerning the uniformity of dose-rate, based on these data and the further analysis of soil samples taken at the same locations Exammation of one of the sherds recovered from the 1991 evaluation excavations mdicates that at least some of the assemblage is suitable for

the technique In addition, five samples of burnt soil from three separate locations were taken which should also be susceptible for TL testing Overall, the uniform environmental conditions across the site and the high quartz content of the exammed sherd mdicate that pottery samples are suitable for a feasibility study

A9.4 Twelve samples of charred material were taken specifically for the purpose of c14 dating, all of at least *c.*50g. Of these four (from two contexts) can fairly be described as 'sealed', i e not m direct contact with the ploughsoil Carbon appears to be present m sufficient quantities for c14 determinations from several other samples, although not as concentrated as m those from which dedicated samples were taken Organic material from the large ditch (see **A4.8**, above) and from a deposit excavated as part of the watching brief also provide potential for c14 dating

A10. Résume

A10.1 *(see A1)* Archaeological investigation of a mid/late Iron Age site at Crankley Lane, Easingwold, North Yorkshire was carried out between 14/12/92 and 26/02/93, in advance of the construction of a by-pass for the A19 trunk road. The work included geophysical survey and systematic fieldwalking in advance of an excavation which saw the removal of *c* 4,300m² of ploughsoil, of which *c*.2,600m² was subjected to detailed archaeological recording. A watching brief was conducted over a c.1 6km stretch of the route adjacent to the site

A10.2 *(see A2)* A small-scale gradiometer survey conducted as part of the evaluation programme in February 1991 failed to detect any of the archaeological features subsequently found in trial excavations In 1993 a more extensive magnetic susceptibility survey located magnetic anomalies, but their distribution bears no obvious correlation to that of the features recovered through excavation

A10.3 *(see A3)* Before ploughsoil stripping, artefacts on the surface of the site were systematically collected, recorded within runs 5m² in length, spaced 5m apart A total distance of 1,995m². was walked, assuming a visibility 'corridor' *c* 1 5m² wide along each run, this represents a total surface coverage of *c* 2992 5m² The coarse pottery distribution was sparser than that recovered from the evaluation work in 1991, due to less suitable ground conditions, but nevertheless corresponded closely with it Initial examination suggests a correspondence between the surface distribution of pottery and the circular and sub- circular structures recognised on the site Other classes of artefact recovered include worked flint, iron objects, slag and modern brick and tile

A10.4 *(see A4)* In the 1992/3 excavations a total of 447 contexts were recorded and 313 excavated, giving consolidated totals (with the 1991 trial excavations) of 535/401. The site was heavily cut about by modern land drains and plough scarring, and the extent of denudation by these agencies, although uncertain, meant that little horizontal stratification survived. The sum of the recorded features on the site is indicated on Fig 4, and the provisional sequence outlined in **A4.5**, above Feature types included fence slots, palisades, ditches, circular (timber) wall trenches and drip gullies, hearths/furnaces and post-holes.

A10.5 *(see A5)* 177 samples were taken from 128 contexts for environmental analysis 11 of these were sieved on site to 1nim. Subsequent laboratory analysis of 94 saniples, including paraffin flotation and sieving to 300um, indicated that only two samples held any promise for further bioarchaeological analysis The vast majority produced only very small quantities of animal and plant remains, most of the latter probably being modern contaminants In the samples containing much charred material, cereals were effectively absent The animal bone assemblage from the site was tiny - a single, standard-sized box of hand- collected material - and most of the material had suffered extensively from both chemical and physical abrasion. Species and age-at-death identification of this material is for the most part impossible Little environmental data is therefore available from the site, although a small nuniber of specific analyses may prove useful. A further 13 samples of material thought to have possible bioarchaeological potential were recovered in the course of the watching brief.

A10.6 *(sec A6)* A substantial assemblage of coarse pottery totalling *c* 850 sherds and weighing *c* 16kgs was recovered from the original excavation The material included both domestic and industrial vessels, with a number of large sherds and/or complete/near complete bases and profiles. A further *c* 400 sherds (*c* 7kgs) were recovered m the course of the watching brief Initial examination of the range of coarse fabrics, mostly tempered with quartzsand grits, suggests at least three main groups. Few finer wares are represented Most of the forms are of storage or cooking vessels No carinated wares are present. The overall characteristics of the assemblage suggest a date in the period of the 4th to 1st centuries BC Industrial vessels include approximately a dozen small crucibles and two or three ingates for moulds

A10.7 *(see A7)* Other material recovered from the excavation includes worked flint, copper alloy objects, iron objects, a simply decorated bone handle, quantities of iron smelting slag and the clay fragments of a probable hearth, furnace or kiln dome.

A10.8 *(see A8)* The range of evidence for metalworking from the site included two probable furnaces, the remnants of a possible furnace dome, and quantities of what has been provisionally identified as iron-smelting slag. Non-ferrous casting on the site is suggested by the crucible and mould ingate fragments referred to in **A10.6**; XRF analysis has confirmed the presence of residual traces of alloy on samples of both

A10.9 *(see A9)* The dating of the site to the 4th to 1st centuries BC currently depends on the characteristics of the ceramic assemblage Amag samples were taken from one of the bowl furnaces - analysis of these returned an

anomalous date of AD 1160-90. A series of environmental dose rates to facilitate subsequent TL dating of ceramics were taken, establishing a uniform and low level of radioactivity. Five samples of burnt soil which should be susceptible to this technique were also taken Twelve samples of charred material were taken specifically for the purpose of c14 dating, all of at least 50g. Carbon also appears to be present in sufficient quantities for this purpose in several other samples. Organic material from two other contexts also offers potential for the use of this technique

SECTION B : POTENTIAL

B11. Introduction

B11.1 To establish lines for further research, the data presented in Section A now needs to be examined against the amis of the original research design (YAT, 1992), and for new research questions prompted by the data collection which that data is particularly suited to answer Underpinning both are local and regional research issues pertaining to the mid/late Iron Age.

B11.2 The main points of the excavation's original research agenda are reiterated below. Arguably, data has been recovered which has the potential to address, or has already elucidated, these stated aims, albeit to varying degrees; the general absence of environmental data, for example, renders responses to **11.2.2**, **11.2.4** and **11.2.5** partial at best When examined in the light of data available from the site, as enumerated in Section A, the responses are as follows,

11.2.1(3.2) To establish the prevailing environmental conditions in the Vale of York at the time of the Crankley Lane settlement

No data as yet analysed which relates directly to this question

11.2.2(3 3) To establish whether the settlement was originally situated on land newly modified for use by the local population. If not, how it relates to earlier land use

Recognisable traces of land organisation appear to emerge contemporaneously with the Iron Age settlement - traces of earlier activity restricted to the presence of worked flint

11.2.3(3.4) To determine the extent and form of the settled area and its individual components, and to identify major changes in these characteristics

Extent and form indicated on Fig 4, although extent is clearly greater than the limits of the excavation, at least to the south-west and north-east Major changes broadly as outlined in **4.5**

11.2.4(3.5) To characterise the activities carried out in the settlement

Probable movement, penning and grazing of stock Iron smelting, manufacture in non-ferrous metals

11.2.5(3.6) To characterise the patterns of exploitation operated by and from the settlement

Use of area for pasture, extraction of resources required for metalworking - ?particularly timber

11.2.6(3.7) To determine the origin and duration of the settlement

Characterised broadly as late Iron Age - 4th to 1st centuries BC Duration uncertain

11.2.7(3.8) To assess the extent of recognisable contacts with other parts of the region

No immediate and obvious indications of strong contacts with other localities/regions, e.g. pottery diagnostic of particular production centres Dolerite gritted ware may be imported but may be the result of the use of glacial erratics for temper Jet, probably from the vicinity of Whitby, suggests some contact with that area, but whether direct or indirect is impossible to assess

B11.3 To provide a framework for further research on this material, these summary statements need to be examined in the context of current issues concerning the late Iron Age in Britain, specifically northern England.

Alongside this, the potential of the data to address problems of site visibility in the base of the Vale, and the interpretation of surface artefact distributions in terms of underlying archaeological patterning in the late Iron Age, require consideration

B12. Research Background

B12.1 Archaeological research into the Iron Age in Yorkshire has until recently been heavily weighted towards the upland areas, most particularly the Yorkshire Wolds, to a lesser extent the North York Moors, and still less the eastern Pennines Over the last two decades work has extended into the lowlands, but the bulk of this has been concentrated in the east of the county, particularly in the Vale of Pickering Lack of knowledge of prehistoric settlement m the Vale of York was amongst the prime reasons for attributing significance to the Crankley Lane site As a result, no 'ready-made' research framework exists; most previous discussion has been concerned with the widely recognised and thus more tractable upland archaeology of the Wolds and the North York Moors Although several existing strands of research into these sites are pertinent to the Crankley Lane data, the study of the lowland/upland interrelationship between the Vale and its environs has scarcely begun. As research of this kind in other parts of the country has suggested it is central to understanding the economic and social basis of Iron Age society, and has generated at least one apparently well-supported settlement model, it needs to be briefly summarised and brought to bear on the data under scrutiny.

B12.2 Campaigns of aerial and field survey and extensive excavation in the upper Thames valley over the last 20 years havegenerated a wide range of settlement evidence embracing valley floodplain, terraces and surrounding uplands. The range of evidence has facilitated impressive syntheses (e g Hingley & Miles, 1984) based on a more than usually comprehensive dataset This has resulted in a classification of settlement type by topographical/environmental zones Whilst regional differences should not

be overlooked, nor evidence forced into inappropriate categories defined in other localities, brief examination suggests strong similarities between the handful of sites extensively excavated in the Vale and on its periphery (i e Crankley Lane, Thorpe Thewles [Heslop, 1987] and Dalton Parlours [Wrathmell & Nicholson, 1990]) and some of the site categories defined in the upper Thames region. The small clusters of circular structures interspersed amongst enclosure ditches at Claydon Pike, Lechlade, bear direct comparison with the Crankley Lane plan (Hingley & Miles, 1984, p.61), and the greater contextual information available for this site and the landscape of which it formed a part may provide much of relevance in understanding aspects of Crankley Lane for which direct evidence from the site itself is absent (e g *ibid*, p.57).

B12.3 As indicated in **B12.1**, the archaeology of the Vale of York is poorly understood. The prime reason for this is the lack of ground-based fieldwork, the result of a general absence of visible monuments, the associated lack of any tradition of archaeological fieldwork in the area, and the vagaries of cropmark visibility on the heterogeneous drift geology. The plotting of the patchy aerial photographic evidence from the area against the detailed geological survey carried out by the County Highways Department in advance of the by-pass suggests a near- 100% correlation between certain types of subsoil (described as 'gravelly') and the visibility of cropmarks (Y.A.T.1991 : Fig.6) The results of the watching brief go a long way towards confirming that far larger areas of the Vale of York were subject to early land organisation than are now visible through remote sensing of any type - aerial photography, geophysics or surface collection (Fig.5). Similarities with the extensive land organisation recognised in the upper Thames valley (**12.2**) are

therefore highly likely Although Easingwold parish forms a component of one of the 'resource patches' defined in the York Environs Project (Vyner & Richards, 1991), no other work has as yet been carried out in the immediate vicinity Any information concerning prehistoric land use and site visibility resulting from the study of Crankley Lane and its surrounding landscape would thus further the aims of the Environs Project The comparison with the Thames valley, and the contrasting quantity of data, recall the ' .need to redress the regional and chronological imbalances in our knowledge of the historical development of the landscape' referred to in *Exploring Our Past* (henceforth *EOP*, 7.2, 'Ploughed Landscapes', p.45). A related concern is the need for 'further basic work in identifying, dating and analysing field systems' (*EOP*, 7 1, 'Landscape features' p 38). Additionally the intensification of exploitation of lowland areas around the late pre-Roman Iron Age/Romano-British interface has been identified as a significant theme by Martin Jones (1989) The data therefore has a bearing on the theme 'Briton into Roman' (*EOP*, 7 1, p 36)

B12.4 As the results of the watching brief begin to delineate the landscape context of the Crankley Lane site, so the original excavation retrieved data of relevance to a number of themes which have figured quite extensively in the study of later prehistory in the region. The North York Moors is a known source of iron ore, and a handful of ironworking sites are known which are probably broadly contemporary with Crankley Lane The clearest evidence comes from the sites at Roxby (Spratt, 1985) and Levisham Moor (Spratt, 1982). Substantial pottery assemblages from Thorpe Thewles and Dalton Parlours have been examined and analysed in some detail using a variety of techniques including TL (Bailiff, 1987) and petrography (Buckland *et al*, 1990)

The Thorpe Thewles assemblage included a small number of crucible fragments and sherds of other vessels which appear to have had a manufacturing purpose (Swain, 1987). Material comparable to that from Crankley Lane has, therefore, been studied previously, and certain research issues have thus been raised, which are referred to below (**B13.5**). These have on the whole, however, been questions relating to the specific class of material concerned, e.g metalworking technology or the shared regional characteristics (or lack of them) of pottery. The relevance of this type of information to wider issues involved in understanding Iron Age society has rarely been discussed, and the issues themselves have tended to be pursued as rather half- hearted afterthoughts. The general shortage of data from the Vale of York and its environs, and lack of knowledge of the landscape and settlement context of the sites which have been found, are prime reasons for this. These shortcomings are largely the result of the poor visibility of archaeology in the Vale and, partly as a result of this, a near total lack of ground-based survey The sigmficance of the study of manufacturing processes in addressing wider aspects of social orgamsation is acknowledged in *EOP*, 'The development and distribution of technological expertise and practice in the production of artefacts is crucial for our understanding of many aspects of society.' (7 **1**, p.45)

B12.5 Further research on the Crankley Lane material should therefore aim to address social and economic organisation in the region in the later Iron Age through the available data. Some points of departure for this are provided by work carried out on the sites referred to in **B12.4** Additionally problems of archaeological visibility at the surface, and the mterpretafion of what can be seen, should be examined through the comparison of different data-sets from the site

B13. Research Proposals : Archaeology

B13.1 The following proposals develop some of the aims set out in the original excavation project design (Y A T, 1992, restated here in **B11.2**) In each case the data resource(s) which has the potential to refine understanding is stated, and the manner in which the results might bear on the understanding of social and economic organisation is suggested The proposals, the data relating to them and the wider issues they address are hsted as in **B11.2.1-7**

B13.2.1.1 The environmental conditions which prevailed when the Crankley Lane site was occupied are clearly crucial to an understanding of its function, and at a more general level in determining the resources and constraints the Vale presented to its late prehistoric inhabitants Only the most general comments can be made on the basis of what is already known; the large amounts of timber implied by the fuel requirements of ironworking, and the seemingly substantial timber palisades evident in the later phases, suggest the existence of woodland nearby Whether this was restricted or extensive, managed or unmanaged, is unknown Two sources offer the possibility of amplifying this picture From the main excavation a nuniber of contexts produced charred material which included burnt wood fragments These are susceptible to species identification, thus indicating something of the nature of the surroundmg woodland and possibly, by extension, of the general character of the environment Additionally a highly organic deposit (probably bog-peat) recovered in the course of the watching brief some 300m south-east of the site has been identified as being rich in pollen The date of the deposit is, however, unknown Although the resource base here is

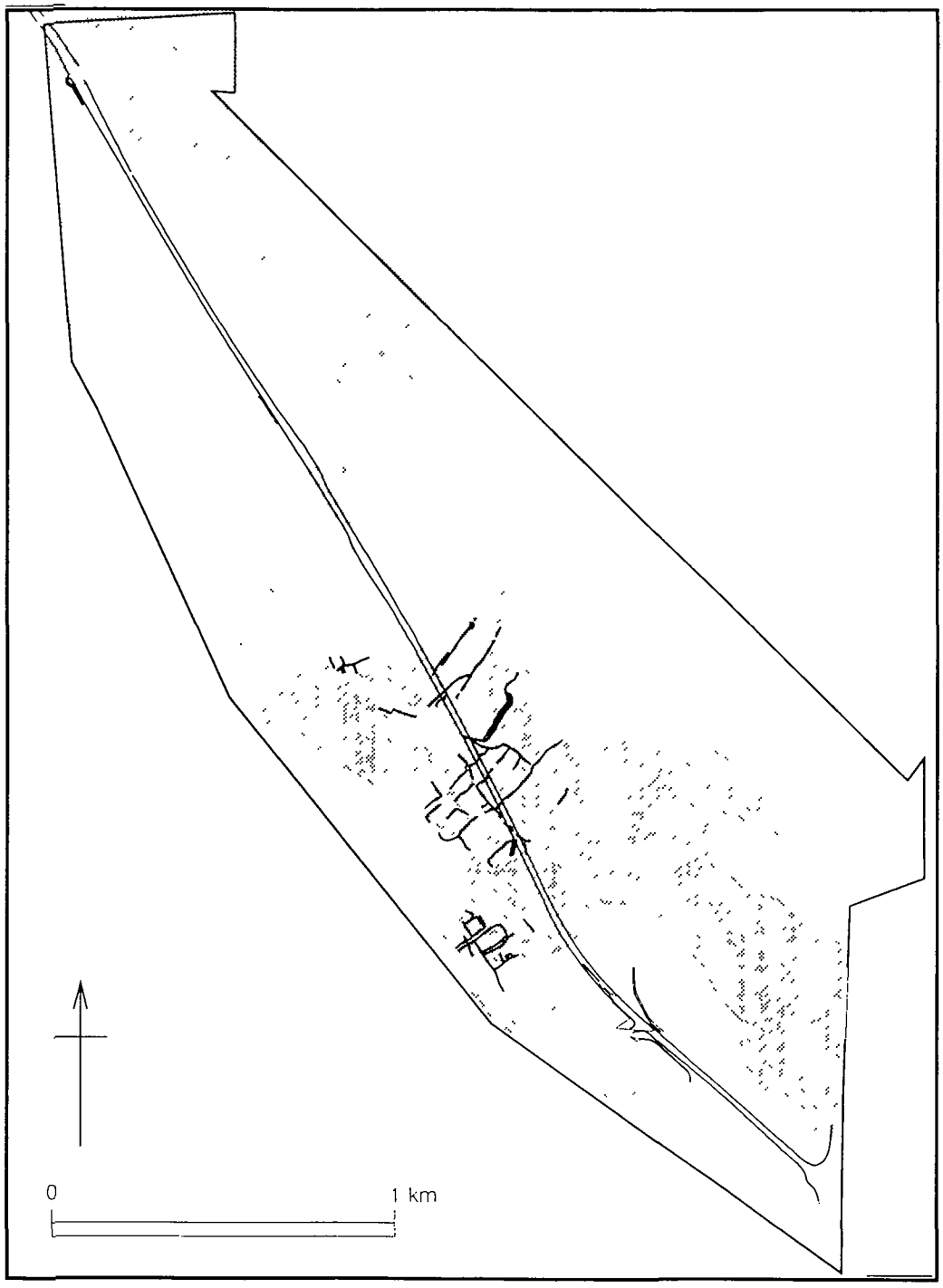

Figure 5 Easingwold By-Pass Location of crop marks and (in red) extent of sand and gravel subsoils

slender, the work is justified by the complete absence of any palaeoenvironmental data from this part of the Vale

B13.2.1.2 The richest environmental assemblage from the site was retrieved from a substantial ditch to the north-west of the main area of excavation, provisionally identified as being of medieval date However, this attribution is based on the presence of a single, small sherd of medieval pottery in one of the organic-rich fills It is possible that this was introduced into the deposit by the cutting of a modern field drain, at least one of which cut quite deeply into the ditch fills c14 determinations on some of the organic material should establish whether the feature is in fact broadly contemporary with the late Iron Age settlement That this is a possibility is supported by the fact that the ditch appears to mark the north-western limit of archaeological features visible after machine stripping. The topography of the field in which the site is located suggests that the excavated section is part of a curvilinear feature enclosing the whole of the south-eastern area of the modern field and possibly extending beyond its limits Determining whether or not it is contemporary with the other features on the site is thus important in terms of the site itself, as well as in its implications for study of the palaeoenvironment.

B13.2.2 *PROPOSAL Examination of all existing sieving residues with significant quantities of charcoal to identify the wood species present Further biological analysis to determine the composition of the sample of bog peat, accompanied by a c14 determination on the organic material to establish its contemporaneity (or otherwise) with the settlement* Ditto *for the organic-rich fdls of the large ditch*

B13.3.1 The only evidence for pre-Iron Age activity on the site is the small group of worked flints (**7.2**, above). Some of these are of types which would conventionally be classified as Bronze Age The group is small and would not seem to merit further study in isolation The late Iron Age occupation appears to represent the first intensive activity on the site.

B13.3.2 *PROPOSAL No further research*

B13.4.1 Although the extent and form of the settlement (at least within the excavated area) are indicated on Fig **4**, and the phases of the site are enumerated and briefly described in A**4.5**, the phasing is provisional (A**4.4**, above), and may in parts be subject to revision Although stratigraphic relationships between intercutting features will not be susceptible to change, adjacent features may be shown to be contemporary by more detailed examination and comparison of the composition of their fills This is particularly likely to be the case in the central/south- western area of the site, and to a lesser but still appreciable degree in the north-west, in the vicinity of the metalworking features/enclosure The presence/absence of metalworking residues from deposits may be one of the most likely fingerprints. The sieved fractions already taken as part of the assessment should be adequate for this purpose A prerequisite of this work is more detailed examination of the stratigraphic record for these areas than has previously been possible Further refinement of the phasing may be achieved by examination of what appear to be comparable sites in other regions (e g see **B12.2**, above), where greater preservation and recovery levels provide a fuller picture Such sites are likely to provide useful analogies which may clarify some of the more ambiguous configurations of features at Crankley Lane The combination of data from excavation and watching brief will allow

consideration of the wider landscape of which the Crankley Lane 'site' (a particularly arbitrary term in this instance) formed an integral part

B13.4.2 *PROPOSAL Detailed stratigraphic analysis of c 100 contexts in areas between 500/090 - 520/110 and 410/110 - 460/120 in conjunction with examination of contents of sieved residues, with particular emphasis on metalworking traces Research into comparable sites in other regions where evidence more fully represented Integration of watching brief data with that from 'set-piece' excavation*

B13.5.1.1 As a result of work carried out so far two distinct activities have been recognised on the site; the keeping of stock (inferred from the form and disposition of fences, ditches etc.), and metalworking - the reduction of iron ore and the manufacture of objects in non-ferrous metals Direct evidence exists for both of these processes. It is unlikely that much, if any, further progress can be made towards understanding the stock-keeping aspects of the site, as the animal bone assemblage is minute Even if this were not the case, the extent to which consumption and discard on the site would have reflected the major species kept there is at best debatable There is, in contrast, considerable potential for further analysis of the metalworking evidence As full an understanding as possible of the range of processes carried out at Crankley Lane is highly desirable in considering the production context - social and economic - of ferrous and non-ferrous metals in the period. This is particularly the case given the lowland, probably marginal and initially unexpected location of these activities, and the unusual occurrence of ferrous and non-ferrous production on the same site Issues such as access to resources and the integration of metalworking into subsistence practices can be addressed, the more so because the extent of the excavated area allows consideration of production in its immediate landscape context

B13.5.1.2 The metalworking evidence from the site can be summarised as; structures and features, macro residues, ?micro residues (i e mm), industrial ceramics and ?manufactured products Characterisation of macro residues is an obvious first step, as the material has only been provisionally identified as smelting slag. Visual examination should be followed by a programme of more detailed investigation. This should include samples of each visually separable category, taken from each context in which the material is present, particularly in the case of slag-bearing deposits which are remote from each other on the ground. The sieved fraction of each sample (which for most deposits already exists, as a result of the environmental assessment) should be examined for fine residues This procedure has already been proposed in connection with **B13.4.1**, above. Testing the mag sus. of the unsieved fractions would assist m isolating fine residues. It also corresponds with the requirements of **B14.1.2** (below) in establishing why the mag sus survey bears no obvious relationship to the excavated site plan

B13.5.1.3 A sample of the vessel fragments thought to be from crucibles has been examined using XRF, which confirmed the presence of non-ferrous alloy traces (A8.3). In combination with the mould m-gates (also testing positive for alloy under XRF), these results testify to the manufacture of ?copper alloy castings on the site. Further XRF should be carried out on the remaining crucible fragments, to try to characterise more precisely the nature of the alloys employed Research into parallels for the crucible forms should be undertaken to establish their affinities elsewhere, and thus gain access to possible contextual data from other sites. It is possible that other ceramics from Crankley Lane relate to industrial processes. Ascertaining this requires the creation of a type series for the site, to identify forms and fabrics and

their combinations m order to evaluate possible functions This work may be refined by analysis of the residues adhering to a nuniber of sherds from deposits closely associated with that which contained the crucibles

B13.5.1.4 The quantity of iron and copper alloy objects from the site was small (A7.3/4, above) In the context of the evidence for production on the site, however, the assemblage is significant. Investigative conservation of the single unidentified copper alloy object (A7.3) is certainly called for, as it may represent a failed casting Further to this, the apparent richness of the ditch fills from which the crucibles discussed above were recovered led to extensive sampling *c* 200 litres of soil was kept; apart from the possibility of it containing fine residues (**B13.5.1.2**), further small artefacts, including metal objects, can be expected The case for this additional retrieval is enhanced by the fact that the deposits were of necessity excavated rapidly on the final days of the excavation

B13.5.1.5 The combination of a substantial ceramic assemblage with good evidence for ironworking provides an opportunity to examine the relationship between these two aspects of production. Although no direct evidence for pottery manufacture was recognised on the site, the fuel and raw material (wood, clay) requirements it has in common with iron smelting suggest that an association is likely The possibility of such an association was raised at Dalton Parlours as a result of petrographical analysis of the pottery (Buckland *et al*, 1990). Although no evidence of metalworking was found on the site, petrography indicated the use of crushed iron slag as temper (*ibid.*, p.134) in some of the pottery. Whilst acknowledgmg the possibility that all of the Dalton Parlours pottery was manufactured within 10 kms of the site (*ibid* p.133), the authors favoured a more remote origin The use of iron slag, alongside tempers

compatible with a source m the Cleveland Hills (where ironstone is known to have been worked), suggested this area as the production centre for at least some of the Dalton Parlours material (*ibid* p 134) Thin- sectioning and subsequent radiography of the Crankley Lane assemblage by type (as defined in the type-series) would enable the identification of ironworking residues. Should any be present, microscopy may identify whether such inclusions correspond to the metalworking by-products recovered from the site. This approach would test the idea of combined iron- making/pottery manufacturing centre close to the metal ore source against one envisaging far more widespread production sites, where other raw material requirements (e.g wood and clay) are abundant and to which the metal ore is transported *Prima facie*, the latter seems more likely in the case of Crankley Lane Presence/absence of metalworking detritus may also allow the characterisation of groups of pottery in terms of source, function or the chronology of the site

13.5.2 *PROPOSAL Determination of the mag sus of all soil samples, examination of the sieved fraction and characterisation of residues Visual examination/identification of the hand- retrieved slags followed by archaeometallurgical analysis of samples of each type from each spatial grouping Carry out XRF analysis on further crucible fragments and research parallels for forms Sieve further 200 litres of soil to 1mm for possible Cu objects (products of the casting evidenced on the site) and conduct investigative conservation & research into this assemblage Establish ceramic type series for the site, with thin-sectioning, radiography and (if appropriate) microscopy of samples of each type*

B13.6.1 The patterns of exploitation operated from the site will be defined, usually inferentially, by the activities carried out within it The absence of useful animal bone or pollen assemblages precludes direct examination of

land-use around the settlement, with the exception of the single sample discussed in **B13.2.1** Any understanding of the role of the settlement in terms of resources available in the surrounding landscape will thus be arrived at indirectly from the programme of work put forward in **B13.5.1**

B13.6.2 *PROPOSAL See* **B13.5.1** *and* **B13.2.1**

B13.7.1.1 Currently appreciation of the origin and duration of the site rest on the characteristics of the ceramic assemblage. The absence of carinated vessels and decoration suggests a date of the 4th century BC or later, whilst the lack of any Romano-British material may indicate that the site was no longer occupied by the later 1st century AD However, these statements need to be qualified on a number of grounds The chronology of Iron Age pottery in the north is far from secure, and arguments based on the absence of RB wares make what may be unwarranted assumptions about the extent to which products of the 1st and earlier 2nd centuries AD circulated within the indigenous settlement hierarchy If the dating of material from the site can be shown to cluster around one end or the other of the suggested range, or indeed near its centre - even within a *c* 200 year 'band' - the chronology of the site will have been refined Duration is more difficult - an overall occupation span of *c* 20 years is unlikely to be separable from one of *c* 200 years on the basis of the dating techniques available The character of the site sequence perhaps suggests a tendency to the former rather than the latter

B13.7.1.2 The independent dating techniques available for Crankley Lane are Aniag , TL and c14. The problematic archaeomagnetic results have been briefly outlined above (**A9.2**), and their integration into any continuing dating programme is discussed in **B14.4**, below The TL data is given in **A9.3**,

c14 in A9.4 The use of TL for the purpose of dating the site itself is somewhat difficult, as the date spans for pottery groups provided by the technique is usually in the region of 300-400 years (*cf* Thorpe Thewles, Heslop 1987, p 112) This seems unlikely to improve on typological dating However, the Luminescence Dating Laboratory at the University of Durham is conducting a programme of research into the TL dating of coarse pottery of the 1st millennium BC In the context of this programme, an evaluative survey of a sample of the assemblage would provide a baseline for further, more detailed work which might attract funds from other sources (Dr IK Bailifr, pers conim) This would also allow assessment of the utility of TL samples from the bowl furnace in 'calibrating' the Aniag date from that feature (**14.1.4**, below)

B13.7.1.3 12 samples were taken from deposits with concentrations of charred niatenal, specifically for the purpose of obtammg c14 determinations Such determinations would serve two purposes; to establish whether certain potentially sigmficant deposits and features - whose associations are currently uncertain - are contemporary with the Iron Age occupation, and to refine estmiates of the date of that occupation. Samples from two deposits located away frrom the mam site, one (probably decayed bog peat) of wholly uncertam date and one possibly but not certainly medieval m origin (see **B13.2.1.1**, above), nient the technique on the grounds of their environmental potential. Four features contammg substantial quantities of burnt niatenal which can be regarded as being *in situ* hvae been identified, m discussions with Dr Alex Bayhss of the Ancient Monuments Laboratory (AML), as bemg appropnate for c14 determinations One of these is the bowl furnace (**A8.1**, above) which produced an archaeomag date of AD 1160-90 (**B14.1.4**, below), and c14 will provide a much needed check on this result Two of

the other three are closely associated with a round-house and a circular enclosure respectively In only one deposit which appears likely to derive from the construction of a structure - a relatively msubstantial fence - (Phase D, A4.5, above) does charred material survive in quantity This may also merit the application of the technique Should these determinations be made, the close proximity of samples taken for both c14 and TL would allow very closely related material to be dated using different techniques

13.7.2 *PROPOSAL c14 determinations made on samples rich in environmental data from deposits with uncertain relationship to the excavated 'core', a series of determinations within that 'core' to serve as a control, totalling 18 Evaluative survey of a sample of the ceramic assemblage to establish suitability of TL dating, possibly followed by more detailed and extensive programme*

13.8.1 The material most likely to indicate the range of contacts enjoyed by the site is the pottery However, the apparent localisation of late prehistoric coarse wares in the region is notorious (Swain, 1987, p 65) Whilst a regional tradition can be discerned, to which most excavated groups clearly belong, more detailed subdivisions which would allow the identification of intra-regional contact appear impossible This situation is exacerbated by the common availability of the clays and tempers used in the fabric of the pottery Wares imported from beyond the region are absent fom the site. In spite of this, comparison of the fabrics from Crankley Lane with those from other sites may pay dividends, particularly in the context of potential lowland/upland interaction The fabrics described from Dalton Parlours and Thorpe Thewles are distinctly different from each other (Swain, 1987,p. 63; Buckland *et al*, 1990, pp 131-4), with the Crankley Lane material appearing to have more in common with that from Thorpe Thewles. Establishing

similarities and contrasts would be a first step towards delineating subdivisions within the overall tradition Comparison with these sites, and assemblages from sites on the North York Moors (e.g Roxby) could be instructive and should be undertaken.

13.8.2 *PROPOSAL : Comparison of the type and fabric series from the site with those from sites around the rim of the Vale, to establish similarities/differences and thus likely associations and possible contacts*

B14. Research Proposals : Methods & Techniques

B14.1.1 Previous discussion has considered the potential of the Crankley Lane data to address questions of production and economic and social organisation in the Iron Age Aspects of this data can also be used to investigate important issues in the identification and characterisation of sites elsewhere in the Vale and beyond The first concerns their visibility (or lack of it) at the surface through the medium of geophysical prospection, particularly mag.sus. and magnetometry The second is the relationship between surface artefact distributions and underlying, sub-surface archaeological patterning Finally, the surely anomalous Aniag date from the bowl furnace (A9.2, above) can be tested against c14 and TL determinations taken from the same feature

B14.1.2. As stated in A2.2, there is no obvious correlation between the results of the mag sus survey and the archaeological features revealed on excavation It would therefore be of considerable value in evaluating the technique to try to isolate the factors which *were* responsible for the pattern generated (see Fig 2) The mag sus results should be examined against two data sets in addition to the overall excavated plan. These are the surface distribution of *all* artefacts recovered as a result of fieldwalking, the surface distribution of all *ferrous* objects, and the mag sus. levels of samples of all excavated contexts This would require the tabulation and plotting of the fieldwalking data and the testing of soil samples for mag sus The latter has already been proposed in connection with **B13.5.1.2** Correspondence between the patterns of data generated could then be tested statistically

B14.1.3. The distribution of coarse pottery recovered from the surface of the site does seem to relate in general terms to the location of structures and sub-circular enclosures (compare Figs 3 & 4) This association should be tested statistically The pottery distribution should also be examined against the total surface artefact distribution, to see whether more recent activity has significantly affected the patterning - extreme displacement of soil, and the artefacts within it, by potato- harvesting machinery, for example Examination of the distribution of pottery on the surface against that from excavated features may suggest whether the surface fmds originally derive from feature fills or from now ploughed out horizontal deposits. Comparison of the pottery types present m each assemblage may also provide insights into the survival of different types of pottery in the ploughsoil This could have significant implications for future fieldwork in the Vale of York, particularly if differences in fabric can be shown to relate to functional differences, or to the chronology of the site (see **B13.5.1.3** and **B13.5.1.5**, above)

B14.1.4. The Amag date from the lining of the bowl furnace - A D 1160-90 (A9.2, above) - is anomalous in terms of all other indications of the date of the material culture from the site The accuracy of the Amag date can be assessed by employing either c14 or TL, or both, as samples were taken for both purposes *from the same feature*. Given the precision of the Amag date, these formal tests of its validity appear justified in trying to understand the causes of its apparent inaccuracy. In this context the broad date spans offered by c14 and TL cease to be a problem, as either technique should be equipped to distinguish between the end of the 1st millennium BC and the beginning of the 2nd millennium AD

14.2.1 *PROPOSAL Compare surface mag sus. results with surface artefact distributions, surface distributions of ferrous objects, and mag sus readings on excavated samples - check for any statistical correlation Ditto surface pottery distribution with total surface distribution, features revealed from ploughsod and pottery from excavated features Acquire c14 and TL determinations on samples from bowl furnace subjected to Amag dating*

B15. Prospects for further research

B15.1 The following outline proposals are presented as statements of the potential for developing understanding of aspects of ancient settlement in the Vale of York raised by the work at Easingwold (after *MAP II*, p 34, A5.3.1, iv) and v)). They are not proposed as integral parts of the research proposals put forward in this document

B15.2 The archaeological work prompted by the construction of the Easingwold by-pass has identified late prehistoric land-use and organisation on a scale previously unsuspected This raises a number of questions,

- how much of the base of the Vale of York was habitable in later prehistory ?

- what range of site-types, from the Mesolithic to medieval periods, might be expected within the Vale, how does the location and visibility of these relate to the detailed drift geology of the area ?

Crucial to further progress in addressing these closely related questions is a more detailed knowledge of the drift geology of the Vale Obtaining this, either from published sources (for example the field records of the Geological Survey) or if necessary from fresh fieldwork, is a prerequisite for developing an adequate picture of the archaeology of this lowland landscape The rationale for such a study in a regional and national context is to redress the upland/lowland imbalance which still, notwithstanding recent work in the Vale of Pickering, afflicts north-eastern England (see *EOP*; 7 **2**, 'Ploughed Landscapes', p 45, quoted in **B.12.3**, above).

B15.3 Consideration of the excavated archaeological features against the field systems visible on aerial photographs to the north-east of the Crankley

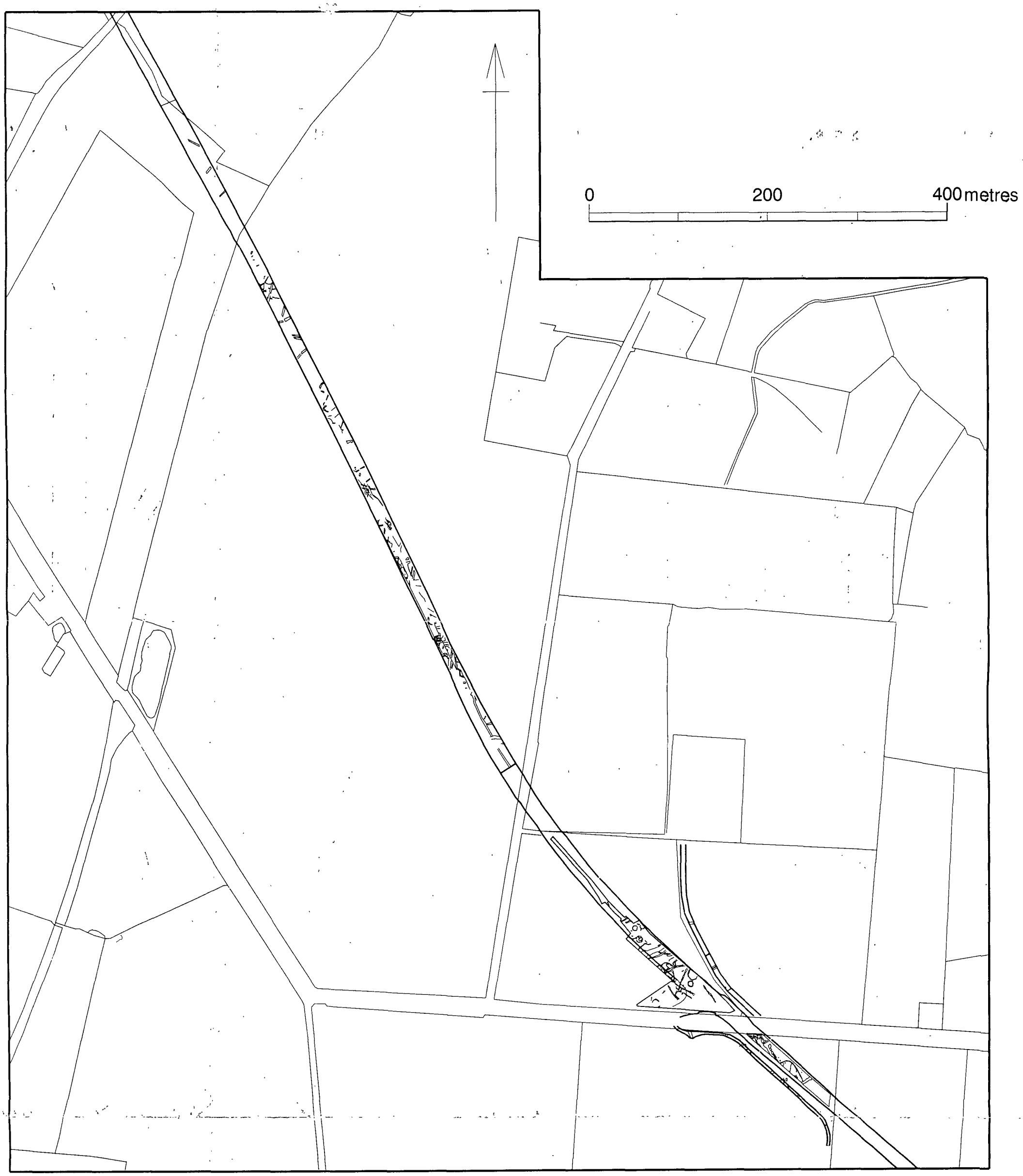

Figure 6 Easingwold By-Pass: Excavation and watching brief

Lane site (SMR no 3288; Y A T, 1991, 1.3 1, p 5) suggests the second major research direction The equation of the visible cropmarks with large ditches which were encountered in both excavation and watching brief, and which may very well *not* be directly contemporary with the structural features and slighter boundary features, suggests the possibility of studying a lowland landscape in transition Although the evidence currently available favours the large ditches post- dating the 'classic' late Iron Age features, this is far from certain, the post-excavation analysis proposed in this document may clarify the issue. Further fieldwork designed to establish the relationship firmly and to recover artefacts - through surface collection and possibly excavation - associated with cropmark enclosures away from the line of the by-pass and apparently integral to the visible field systems, would allow the sequence and date of this transformation to be confirmed. The presence of small quantities of Roman pottery in features recorded during the watching brief (A6.1, above) indicates that research of this type may prefigure an opportunity to study the transition 'Briton into Roman' (*EOP*, 7 1, p 36)

B16. Bibliography

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B17.Publication

B17.1 The following is a provisional report format for the publication of the results of the proposed research programme The word estimates provided may vary according to the results of research yet to be undertaken It is suggested, however, that they are likely to be accurate to withm *c* 20% The proposed report is broken down into its constituent components, with word estimates and a cumulative word total appended. Plans and illustrations to accompany each section are presented in *italics*. The sections are envisaged as statements of the results of the analysis of each category of data as they bear on the research questions presented above. Whether the archives produced by this research are published on microfiche or made available on request in some other medium (?computer disk) is yet to be decided

Report Section	Words	Cumulative Total
Background to project	500	500
Location plan		
Previous prehistoric study in region		
- general	1000	1,500
- effects of drift geology/topography	200	1,700
- aerial photography	300	2,000
	(1500)	

Plan of AP data against detailed drift geology in immediate area, with excavation & watching brief data incorporated

Evaluation, excavation and watching brief methodology	500	2,500

Recorded features in excavation (?& watching brief) against surface distribution of ceramics/slag/geophysical data

Account of site/landscape development, incorporating results of other PX analysis	3000	5,500

?5 phase plans

?3 detail plans

Data specific reports

- ceramics	2000	7,500
- metalworking residues	2000	9,500
- artefacts	1000	10,500
- environmental	1500	12,000
- TL	1000	13,000
- c14	1000	14,000
- archaeomagnetism	1000	15,000
- geophysical	1000	16,000
	(10,500)	

3 pages of illustrations

Discussion of archaeological visibility in the Vale of York	1500	17,500
Discussion of the project results in a regional context	2500	20,000
	Total	20,000

Additional illustrative material

?5 tables

8 plates

Total illustrative material

c.11 plans

3 pages illustrations

5 tables

8 plates

B17 2 Copies of this table have been sent to the Editors of *The Archaeological Journal* and *Proceedings of the Prehistoric Society* for consideration of the inclusion of the final report in one of those periodicals An alternative form of publication also under consideration is a slim monograph.

B17.3 A small exhibition, comprising three display boards (*c* 1 6m.x 1.6m each) displaying graphic, photographic and textual information is proposed for long-term display in Easingwold Public Library. This reflects the level of

progress, and will provide an immediate and accessible resumé of its results, as well as publicising the role of the Department of Transport and English Heritage m sponsoring and commissioning the work

B18. Acknowledgements

This report has been compiled from reports submitted by and discussions with the following, Drs Keith Dobney, Allan Hall, Harry Kenward & Annie Milles and John Carrott, Deborah Jaques and Frances Large of the Environmental Archaeology Unit, University of York; Dr IK Bailiff, C Pickin and S Chyriwski of the Durham Luminescence Dating Service, Dr C Gaffney of Geophysical Surveys of Bradford; Dr Ailsa Mainman of Y.A T, Blaise Vyner of the York Environs Project, Terry Manby, formerly of Doncaster Museum; Drs J G McDonnell and Carl Heron of the School of Archaeological Sciences, University of Bradford, Dr Paul Nicholson of the Department of Prehistory and Archaeology, University of Sheffield, Drs Alex Bayliss and Justine Bayley of the Ancient Monuments Laboratory, English Heritage; Ian Panter of English Heritage, Dr Julie Gardiner of Wessex Archaeology and Dr Martin Millett of the Department of Archaeology, University of Durham The main author is Mark Whyman of Y A T

SECTION C: PROGRAMME OF WORKS AND COSTINGS

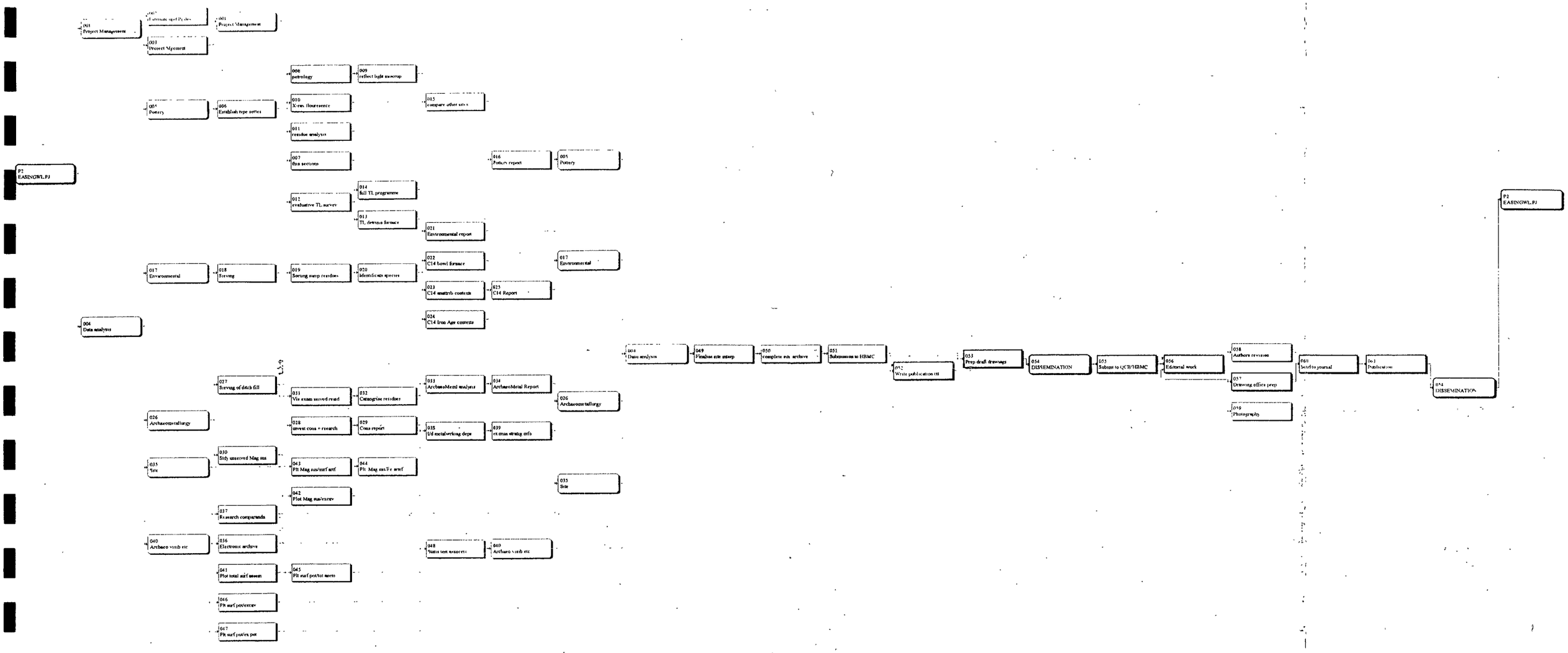
AIM	METHODS	TASKS	TASK No	COST
B13 2 1 Characterise environment around site	B13 2 2 species identification of charred wood	sorting of samples identification	019 020	£ 182 80 £1757 73
	dating/bioarchaeological analysis of off-site sample & medieval ditch	?sieving identification ci4 determination	018 020 023 TOTAL	£ 227 16 £---- -- £1200 00 £3367 69
B13.4 1 Determine/confirm site sequence	B13 4 2 stratigraphic analysis aided by deposit characterisation	detailed examination of stratigraphic information for c 100 contexts examination of sieved residues for common characteristics, particularly metal-working	039 038	£1191 86 £---- --
	parallels elsewhere for better-defined, functionally specific feature combinations	research into comparable sites	037 049 TOTAL	£ 833 98 £1084 17 £3110 03
B13 b.1 Characterise activities on site	B13 5 1 2/B13 5 2 identify range/distribution/type of metalworking residues	mag sus examination of unsieved samples* visual examination/identification of sieved fraction categorisation of macro/micro residues archaeometallurgical analysis	030 031 032 033	£1936 59 £1255 48 £---- -- £1501 00
	B13 5 1.3/B13.5.2 identify functions of ceramics	type series* XRF analysis residue analysis	006 010 011	£1424 93 £ 491 00 £1610 00
	B13.5 1.4/B13.5 2 examine objects possibly manufactured on site	sieving of 120 l of soil from ditch investigative conservation of metal artefacts	027 028	£ 616 47 £1459 47
	B13 5 1 5/B13 b 2 search for links between metalworking & ceramic production	thin sections petrography reflective light microscopy	007 008 009 TOTAL	£1005 83 £ 440 00 £ 731 00 £12503 67
B13 7 1 Establish origin & duration of site	B13 7 2 employ independent dating techniques	ci4 determinations on unattributable contexts* ditto on contexts clearly associated with I A occupation evaluative survey for TL, possibly followed with more detailed dating programme	022 024 012 TOTAL	£1200 00 £2700 00 £1133 23 £5033 23
B13 8 1 Establish extent of recognisable contacts	B13 8 2 comparison of pottery fabrics/forms with those from other sites in region	type series* direct comparison with assemblages from other sites	006 015 TOTAL	£1424 83 £1372 54 £2797 37

AIM	METHODS	TASKS	TASK No	COST
B14.1 2 Investigate ineffectiveness of geophysics	B14 2 1 compare mag sus /magnetometry with other categories of data	mag sus examination of unsieved samples* plot mag sus data against excavated plan plot mag sus data against surface artefacts plot mag sus data against ferrous artefacts/residues ?test statistically	030 042 043 044 048 TOTAL	£1938 59 £ 125 10 £ 125 10 £ 125 10 £ 250 19 £2654 08
B14 1 3 Investigate significance of surface pottery distribution	B14 2.1 compare surface pottery with other categories of data	tabulate/characterise/plot total surface artefact assemblage plot surface pottery against total surface artefact assemblage plot surface pottery against excavated plan plot surface pottery against excavated pottery compare excavated/surface pottery assemblages	041 045 048 047 see 006 TOTAL	£ 125 10 £ 125 10 £ 125 10 £ 125 10 £---- -- £ 500 40
B14 1 4 Evaluate independent dating techniques	B14 2.1 . compare Amag results with c14 & TL	c14 determination on charcoal fill of bowl furnace . TL determination on sample from furnace lining (& other TL)	022 010 TOTAL	£1500 00 £1133 22 £2633 22

* indicates a task necessary for more than one research aim
The figures quoted refer only to the basic costs of executing the task, i e excluding report writing, overheads etc For more detailed information on costs, see the accompanying cascade

RLK
16Feb 94

Easingwold PERT



Easing apply
16Feb 94

Ideal timetable (subject to change) + Cost breakdown

Project: EASINGWL.P
Revision:

Task No	Task 12 Days Per Column	Resource	Estimated No of days	Estimated No of hours	Scheduled Start	Scheduled Finish	£ per hr No o/heads	Salary costs No o/heads	Brought in costs	Total Cost
P2	EASINGWL.PJ		338. 20	2702. 70	16Feb 94 >	04Sep 96	7. 71	19302. 80	27639. 32	46942. 12
001	Project Management		21. 00	155. 40	16Feb 94	04May 94	11. 61	1804. 86	905. 00	2709. 86
002	Estimate upd Pj des		11. 00	81. 40	16Feb 94	18Mar 94	11. 93	970. 88	0. 00	970. 88
002		M. Whyman	8. 00	59. 20	16Feb 94	15Mar 94	11. 27	667. 18	0. 00	667. 18
002		M. Stockwell	3. 00	22. 20	16Feb 94	18Mar 94	13. 68	303. 70	0. 00	303. 70
003	Project Mgement		10. 00	74. 00	01Apr 94 =	04May 94	11. 27	833. 98	905. 00	1738. 98
003		M. Whyman	10. 00	74. 00	04Apr 94	04May 94	11. 27	833. 98	0. 00	833. 98
003		Materials	0. 00	0. 00	01Apr 94	01Apr 94	0. 00	0. 00	105. 00	105. 00
003		Computer ap	0. 00	0. 00	01Apr 94	01Apr 94	0. 00	0. 00	800. 00	800. 00
004	Data analysis		197. 62	1462. 41	01Apr 94 =	24Feb 95	5. 19	7587. 12	21800. 32	29387. 44
005	Pottery		57. 94	428. 74	01Apr 94	24Feb 95	2. 52	1078. 67	7489. 84	8568. 51
006	Establish type series		21. 42	158. 50	01Apr 94	18May 94	3. 06	484. 75	940. 08	1424. 83
006		A. Maisman	4. 52	33. 44	01Apr 94	18May 94	13. 68	457. 46	0. 00	457. 46
006		A. Gwilt	10. 00	74. 00	01Apr 94	14Apr 94	0. 00	0. 00	555. 00	555. 00
006		B. Vyner.	1. 50	11. 10	01Apr 94	04Apr 94	0. 00	0. 00	360. 08	360. 08
006		Finds admin	0. 40	2. 96	01Apr 94	01Apr 94	9. 22	27. 29	0. 00	27. 29
006		Travel	5. 00	37. 00	01Apr 94	07Apr 94	0. 00	0. 00	25. 00	25. 00
007	thin sections		6. 00	44. 40	02Jan 95 =	06Jan 95	1. 54	68. 23	937. 60	1005. 83
007		P. Nicholson	0. 00	0. 00	02Jan 95	02Jan 95	0. 00	0. 00	900. 00	900. 00
007		Travel	5. 00	37. 00	02Jan 95	06Jan 95	0. 00	0. 00	37. 60	37. 60
007		Finds admin	1. 00	7. 40	02Jan 95	03Jan 95	9. 22	68. 23	0. 00	68. 23
008	petrology		0. 00	0. 00	03Jan 95 =	02Jan 95	0. 00	0. 00	440. 00	440. 00
008		P. Nicholson	0. 00	0. 00	02Jan 95	02Jan 95	0. 00	0. 00	440. 00	440. 00
009	reflect light microp		5. 00	37. 00	02Jan 95	06Jan 95	0. 00	0. 00	731. 00	731. 00
009		G. McDonnell	5. 00	37. 00	02Jan 95	06Jan 95	0. 00	0. 00	731. 00	731. 00
010	X-ray flourescence		2. 00	14. 80	18May 94	20May 94	0. 00	0. 00	491. 00	491. 00
010		G. McDonnell	2. 00	14. 80	18May 94	20May 94	0. 00	0. 00	491. 00	491. 00
011	residue analysis		0. 00	0. 00	18May 94	18May 94	0. 00	0. 00	1610. 00	1610. 00
011		K. Heron	0. 00	0. 00	18May 94	18May 94<	0. 00	0. 00	1610. 00	1610. 00
012	evalutive TL survey		6. 00	44. 40	03Oct 94 =	07Oct 94	1. 54	68. 23	1065. 00	1133. 23
012		Durham Univ	0. 00	0. 00	03Oct 94	03Oct 94	0. 00	0. 00	1000. 00	1000. 00
012		Finds admin	1. 00	7. 40	03Oct 94	04Oct 94	9. 22	68. 23	0. 00	68. 23
012		Travel	5. 00	37. 00	03Oct 94	07Oct 94	0. 00	0. 00	65. 00	65. 00
013	TL determin furnace		0. 00	0. 00	07Oct 94 =	07Oct 94	0. 00	0. 00	0. 00	0. 00
013		Durham Univ	0. 00	0. 00	07Oct 94	07Oct 94	0. 00	0. 00	0. 00	0. 00
014	full TL programme		0. 00	0. 00	10Oct 94	14Oct 94	0. 00	0. 00	0. 00	0. 00
015	compare other sites		16. 02	118. 54	05Jan 95	23Feb 95	3. 86	457. 46	915. 08	1372. 54
015		A. Maisman	4. 52	33. 44	09Jan 95	23Feb 95	13. 68	457. 46	0. 00	457. 46
015		A. Gwilt	10. 00	74. 00	09Jan 95	20Jan 95	0. 00	0. 00	555. 00	555. 00
015		B. Vyner	1. 50	11. 10	09Jan 95	10Jan 95	0. 00	0. 00	360. 08	360. 08
016	Pottery report		1. 50	11. 10	23Feb 95	24Feb 95	0. 00	0. 00	360. 08	360. 08
016		B. Vyner	1. 50	11. 10	23Feb 95	24Feb 95	0. 00	0. 00	360. 08	360. 08
016		A. Maisman	0. 00	0. 00	23Feb 95	23Feb 95	13. 68	0. 00	0. 00	0. 00
016		A. Gwilt	0. 00	0. 00	23Feb 95	23Feb 95	0. 00	0. 00	0. 00	0. 00
017	Environmental		18. 01	133. 28	01Apr 94	20Jun 94	0. 61	81. 87	8069. 61	8151. 48
018	Sieving		2. 28	16. 88	01Apr 94	13Apr 94	4. 85	81. 87	145. 29	227. 16
018		EAU tech	1. 08	8. 00	12Apr 94	13Apr 94	0. 00	0. 00	89. 04	89. 04
018		Travel	0. 00	0. 00	01Apr 94	01Apr 94	0. 00	0. 00	56. 25	56. 25
018		Finds admin	1. 20	8. 88	01Apr 94	05Apr 94	9. 22	81. 87	0. 00	81. 87
019	Sorting samp residues		2. 16	16. 00	13Apr 94	13Apr 94	0. 00	0. 00	182. 80	182. 80
019		EAU tech	2. 16	16. 00	13Apr 94	15Apr 94	0. 00	0. 00	182. 80	182. 80
020	Identificatn species		10. 59	78. 40	15Apr 94	13Jun 94	0. 00	0. 00	1757. 73	1757. 73
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020		EAU Fellow	1. 62	12. 00	15Apr 94	19Apr 94	0. 00	0. 00	273. 12	273. 12
021	Environmental report		2. 97	22. 00	14Jun 94	17Jun 94	0. 00	0. 00	583. 79	583. 79
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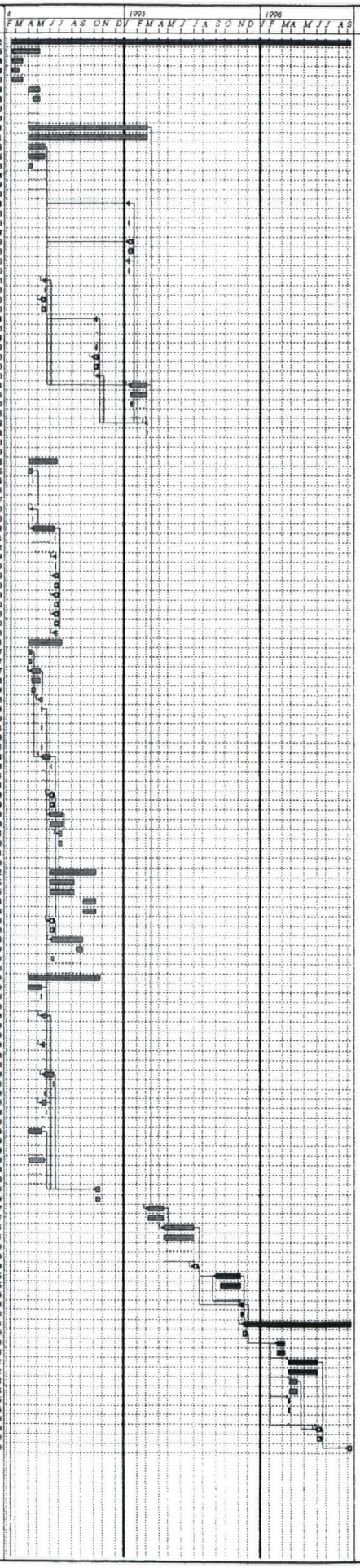
022	C14 bowl furnace		0. 00	0. 00	13Jun 94	13Jun 94	0. 00	0. 00	1500. 00	1500. 00
022		AML	0. 00	0. 00	13Jun 94	13Jun 94	0. 00	0. 00	1500. 00	1500. 00
023	C14 unattrib contexts		0. 00	0. 00	13Jun 94	13Jun 94	0. 00	0. 00	2700. 00	2700. 00
023		AML	0. 00	0. 00	13Jun 94	13Jun 94	0. 00	0. 00	2700. 00	2700. 00
024	C14 Iron Age contexts		0. 00	0. 00	13Jun 94	13Jun 94	0. 00	0. 00	1200. 00	1200. 00
024		AML	0. 00	0. 00	13Jun 94	13Jun 94	0. 00	0. 00	1200. 00	1200. 00
025	C14 Report		0. 00	0. 00	13Jun 94	20Jun 94	0. 00	0. 00	0. 00	0. 00
026	Archaeometallurgy		64. 66	478. 49	01Apr 94	05Jul 94	3. 67	1756. 27	6091. 47	7847. 74
027	Sieving of ditch fill		7. 43	55. 00	01Apr 94	12Apr 94	0. 00	0. 00	616. 47	616. 47
027		EAU tech	7. 43	55. 00	01Apr 94	12Apr 94	0. 00	0. 00	616. 47	616. 47
028	invest cons + rsearch		17. 50	129. 50	12Apr 94	06May 94	11. 27	1459. 47	0. 00	1459. 47
028		Conservator	12. 50	92. 50	12Apr 94	06May 94	11. 27	1042. 48	0. 00	1042. 48
028		Finds reschr	5. 00	37. 00	12Apr 94	22Apr 94	11. 27	416. 99	0. 00	416. 99
029	Cons report		0. 00	0. 00	06May 94	13May 94	0. 00	0. 00	0. 00	0. 00
030	Stdy unseived Mag sus		5. 73	42. 39	09May 94=	12May 94	3. 78	160. 34	1778. 25	1938. 59
030		GS (Bdfrd)	0. 00	0. 00	09May 94	09May 94	0. 00	0. 00	1400. 00	1400. 00
030		Finds admin	2. 15	17. 39	09May 94	12May 94	9. 22	160. 34	0. 00	160. 34
030		Travel	0. 00	0. 00	09May 94	09May 94	0. 00	0. 00	100. 00	100. 00
030		EAU tech	3. 38	25. 00	09May 94	12May 94	0. 00	0. 00	278. 25	278. 25
031	Vis exam reived resid		11. 00	81. 40	12May 94	03Jun 94	0. 84	68. 23	1187. 25	1255. 48
031		G. McDonnell	10. 00	74. 00	20May 94	03Jun 94	0. 00	0. 00	1131. 00	1131. 00
031		Travel	0. 00	0. 00	12May 94	12May 94	0. 00	0. 00	56. 25	56. 25
031		Finds admin	1. 00	7. 40	12May 94	16May 94	9. 22	68. 23	0. 00	68. 23
032	Catsogrise residues		0. 00	0. 00	03Jun 94	03Jun 94	0. 00	0. 00	0. 00	0. 00
032		G. McDonnell	0. 00	0. 00	03Jun 94	03Jun 94	0. 00	0. 00	0. 00	0. 00
033	ArchaeoMetal analysis		15. 00	111. 00	03Jun 94	24Jun 94	0. 00	0. 00	1531. 00	1531. 00
033		G. McDonnell	15. 00	111. 00	03Jun 94	24Jun 94	0. 00	0. 00	1531. 00	1531. 00
034	ArchaeoMetal Report		8. 00	59. 20	24Jun 94	05Jul 94	1. 15	68. 23	978. 50	1046. 73
034		G. McDonnell	7. 00	51. 80	24Jun 94	05Jul 94	0. 00	0. 00	891. 00	891. 00
034		Finds admin	1. 00	7. 40	24Jun 94	27Jun 94	9. 22	68. 23	0. 00	68. 23
034		Travel	0. 00	0. 00	24Jun 94	24Jun 94	0. 00	0. 00	87. 50	87. 50
035	Site		43. 51	322. 00	31May 94	05Oct 94	11. 01	3544. 42	149. 40	3693. 82
036	Electronic archive		20. 00	148. 00	31May 94	08Aug 94	11. 27	1667. 96	0. 00	1667. 96
036		M. Whyman	20. 00	148. 00	31May 94	08Aug 94	11. 27	1667. 96	0. 00	1667. 96
037	Research comparanda		10. 00	74. 00	31Aug 94	05Oct 94	11. 27	833. 98	0. 00	833. 98
037		M. Whyman	10. 00	74. 00	31Aug 94	05Oct 94	11. 27	833. 98	0. 00	833. 98
038	I/d metalwrking deps		0. 00	0. 00	06Jun 94	06Jun 94	0. 00	0. 00	0. 00	0. 00
038		M. Whyman	0. 00	0. 00	06Jun 94	06Jun 94	11. 27	0. 00	0. 00	0. 00
039	examin stratig info		13. 51	100. 00	06Jun 94	31Aug 94	10. 42	1042. 48	149. 40	1191. 88
039		M. Whyman	7. 50	55. 50	08Aug 94	31Aug 94	11. 27	625. 49	0. 00	625. 49
039		Graphics O.	5. 00	37. 00	06Jun 94	15Jun 94	11. 27	416. 99	0. 00	416. 99
039		EAU tech	1. 01	7. 50	13Jun 94	14Jun 94	0. 00	0. 00	149. 40	149. 40
040	Archaeo visib etc.		13. 50	99. 90	01Apr 94	18Oct 94	11. 27	1125. 89	0. 00	1125. 89
041	Plot total surf assem		1. 50	11. 10	01Apr 94	10May 94	11. 27	125. 10	0. 00	125. 10
041		M. Whyman	1. 00	7. 40	04May 94	10May 94	11. 27	83. 40	0. 00	83. 40
041		Graphics O.	0. 50	3. 70	01Apr 94	01Apr 94	11. 27	41. 70	0. 00	41. 70
042	Plot Mag sus/excav		1. 50	11. 10	13May 94	25May 94	11. 27	125. 10	0. 00	125. 10
042		M. Whyman	1. 00	7. 40	24May 94	25May 94	11. 27	83. 40	0. 00	83. 40
042		Graphics O.	0. 50	3. 70	13May 94	16May 94	11. 27	41. 70	0. 00	41. 70
043	Plt Mag sus/surf artf		1. 50	11. 10	12May 94	18May 94	11. 27	125. 10	0. 00	125. 10
043		M. Whyman	1. 00	7. 40	17May 94	18May 94	11. 27	83. 40	0. 00	83. 40
043		Graphics O.	0. 50	3. 70	12May 94	13May 94	11. 27	41. 70	0. 00	41. 70
044	Plt Mag sus/Fe artef		1. 50	11. 10	18May 94	31May 94	11. 27	125. 10	0. 00	125. 10
044		M. Whyman	1. 00	7. 40	25May 94	31May 94	11. 27	83. 40	0. 00	83. 40
044		Graphics O.	0. 50	3. 70	18May 94	19May 94	11. 27	41. 70	0. 00	41. 70
045	Plt surf pot/hot assem		1. 50	11. 10	10May 94	24May 94	11. 27	125. 10	0. 00	125. 10
045		M. Whyman	1. 00	7. 40	18May 94	24May 94	11. 27	83. 40	0. 00	83. 40
045		Graphics O.	0. 50	3. 70	10May 94	11May 94	11. 27	41. 70	0. 00	41. 70
046	Plt surf pot/excav		1. 50	11. 10	01Apr 94	11May 94	11. 27	125. 10	0. 00	125. 10
046		M. Whyman	1. 00	7. 40	10May 94	11May 94	11. 27	83. 40	0. 00	83. 40
046		Graphics O.	0. 50	3. 70	01Apr 94	04Apr 94	11. 27	41. 70	0. 00	41. 70
047	Plt surf pot/ex pot		1. 50	11. 10	04Apr 94	17May 94	11. 27	125. 10	0. 00	125. 10
047		M. Whyman	1. 00	7. 40	11May 94	17May 94	11. 27	83. 40	0. 00	83. 40
047		Graphics O.	0. 50	3. 70	04Apr 94	05Apr 94	11. 27	41. 70	0. 00	41. 70
048	Statis test assocns		3. 00	22. 20	05Oct 94	18Oct 94	11. 27	250. 19	0. 00	250. 19
048		M. Whyman	3. 00	22. 20	05Oct 94	18Oct 94	11. 27	250. 19	0. 00	250. 19
049	Finalise site interp		13. 00	96. 20	27Feb 95	11Apr 95	11. 27	1084. 17	0. 00	1084. 17
049		M. Whyman	13. 00	96. 20	27Feb 95	11Apr 95	11. 27	1084. 17	0. 00	1084. 17
050	complete site archive		26. 08	192. 99	11Apr 95	03Jul 95	11. 11	2143. 45	2265. 00	4408. 45
050		M. Whyman	24. 00	177. 60	11Apr 95	03Jul 95	11. 27	2001. 55	0. 00	2001. 55
050		Finds admin	2. 08	15. 39	11Apr 95	14Apr 95	9. 22	141. 90	0. 00	141. 90
050		Materials	0. 00	0. 00	11Apr 95	11Apr 95	0. 00	0. 00	2265. 00	2265. 00
051	Submission to HBMC		0. 00	0. 00	03Jul 95	03Jul 95	0. 00	0. 00	0. 00	0. 00
052	Write publication txt		18. 50	136. 90	01Sep 95	06Nov 95	11. 27	1542. 86	19. 00	1561. 86
052		M. Whyman	18. 50	136. 90	04Sep 95	06Nov 95	11. 27	1542. 86	0. 00	1542. 86
052		Materials	0. 00	0. 00	01Sep 95	01Sep 95	0. 00	0. 00	19. 00	19. 00
053	Prep draft drawings		2. 00	14. 80	06Nov 95	13Nov 95	11. 27	166. 80	0. 00	166. 80
053		M. Whyman	2. 00	14. 80	06Nov 95	13Nov 95	11. 27	166. 80	0. 00	166. 80
054	DISSEMINATION		60. 00	444. 00	13Nov 95	04Sep 96	11. 20	4973. 54	2650. 00	7623. 54
055	Submit to QCB/HBMC		0. 00	0. 00	13Nov 95	13Nov 95	0. 00	0. 00	0. 00	0. 00
056	Editorial work		11. 00	81. 40	13Feb 96	06Mar 96	11. 27	917. 38	0. 00	917. 38
056		Editor	11. 00	81. 40	13Feb 96	06Mar 96	11. 27	917. 38	0. 00	917. 38
057	Drawing office prep		39. 00	288. 60	14Mar 96	04Jun 96	11. 27	3252. 52	0. 00	3252. 52
057		Graphics O.	39. 00	288. 60	14Mar 96	04Jun 96	11. 27	3252. 52	0. 00	3252. 52
058	Authors revision		8. 00	59. 20	18Mar 96	10Apr 96	11. 27	667. 18	0. 00	667. 18
058		M. Whyman	8. 00	59. 20	18Mar 96	10Apr 96	11. 27	667. 18	0. 00	667. 18
059	Photography		2. 00	14. 80	14Mar 96	19Mar 96	9. 22	136. 46	25. 00	161. 46
059		Photographer	2. 00	14. 80	14Mar 96	19Mar 96	9. 22	136. 46	0. 00	136. 46
059		Materials	0. 00	0. 00	14Mar 96	14Mar 96	0. 00	0. 00	25. 00	25. 00
060	Send to journal		0. 00	0. 00	04Jun 96	04Jun 96	0. 00	0. 00	2625. 00	2625. 00
060		Materials	0. 00	0. 00	04Jun 96	04Jun 96	0. 00	0. 00	2625. 00	2625. 00
061	Publication		0. 00	0. 00	04Sep 96	04Sep 96	0. 00	0. 00	0. 00	0. 00



Negative Float
Actual
Actual Milestone
Unassigned
Noncritical
Baseline Milestone
Interrupted
Critical
Baseline
Milestone

YORK ARCHAEOLOGICAL TRUST

PROJECT GRANT APPLICATION

Name of project: Easingwold Bypass

Type of application: Post-excavation analysis and publication

Proposed Start Date: April 1994 (Year 1994/5)

Completion: August 1996

Estimated cost: £56,402.69

VAT: £9,870.47

Gross estimated cost: £66,273.16 (Calculated at 1994/5 costs)

TABLE 1 - LABOUR COSTS

CORE STAFF COSTS

Post	Name	Days	Daily £	Total £
Project Estimator	M. Stockwell	3	101.27	303.81
Project Manager	M. Whyman	131	83.43	10929.33
Graphics Officer	T. Pearson	10	83.43	834.30
	K. Leach	37.50	83.43	3128.62
Photographer	T. Bunney	2	68.19	136.38
Finds Supervisor	G. Woolrich	10.03	68.19	683.94
Editor	F. Mee	11	83.43	917.73
Head Artefact Research	A. Mainman	9.04	101.27	915.48
Artefact Researcher	H. Cool	5	83.43	417.15
Conservator	I. Panter	12.50	83.43	1042.87

Core Staff Total.....£19309.61

TABLE 1 - TOTAL STAFF COSTS £19309.61

TABLE 2 - COSTS

CONSUMABLES/EXPENSES	
Stationery, graphics & computing consumables	29.00
Artefact packaging	10.00
Exhibition consumables	80.00
Photography	40.00
Artefact storage, box grant allowance	2200.00
Delivery of final archive	40.00
Delivery & collection of all materials and artefacts	452.60
Publication costs @ 75% of total	2625.00
NEW EQUIPMENT	
Computer apportionment	800.00
NON-YAT SPECIALIST SERVICES	
Pot type series, comparison & report - A. Gwilt	1110.00
Pot type series, comparison & report - B. Vyner	1080.24
Pot petrology & thin section analysis - P. Nicholson	1340.00
Pot residue analysis - K. Heron	1610.00
Pot metal residues, X-ray crucibles, Macro slag class., Examine sieved residues, metal analysis of scrap -G. McDonnell	4775.00
TL sample & hearth evaluation - Durham lab	1000.00
C14 date for bowl furnace, burnt layers & bog peat - AML and Galsgow	5400.00
Process samples & investigate for metallurgical analysis, Process, sort & report on selected environmental samples - Environmental Archaeology Unit, University of York	3657.08
Process samples for mag. suscp - Geophysical Surveys	1400.00
TABLE 2 - TOTAL COSTS	£27648.92

TABLE 3 - OVERHEAD COSTS

Staff overheads - Costs of directing and admin staff (not included in project costs) allocated to project 25% of Core Staff labour costs	4827.39
Non-Staff overheads - 231.07 man days @ £19.98 per man/day of permanent staff time spent directly on project	4616.77
TABLE 3 - TOTAL OVERHEAD COSTS	£ 9444.16

SUMMARY

TABLE 1 - LABOUR COSTS TOTAL.....	£ 19309.61
TABLE 2 - COSTS TOTAL.....	£ 27648.92
TOTAL NETT COSTS.....	£ 46958.53
TABLE 3 - OVERHEAD COSTS TOTAL.....	£ 9444.16
TOTAL GROSS COSTS.....	£ 56402.69
	PLUS VAT

York Archaeological Trust, 15th February 1994