Kirby Muxloe, Leicestershire

Post Excavation-Project Design

Leicestershire Archaeological Unit

Report 93/17

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1 BACKGROUND

1.1 Introduction

This report presents the assessment and updated project design for the post-excavation analysis of the Kirby Muxloe site (A123 1992). The report is based upon, and closely follows, the guidelines set out in the 1991 English Heritage document *Mangement of Archaeological Projects, 2nd edition (MAP 2).*

The excavation was undertaken by Leicestershire Archaeological Unit between 25th January and 4th April 1993 in advance of construction of the Kirby Road-Ratby Lane section of the A46 Leicester Western Bypass. The site is located immediately east of the M1 motorway in agricultural land at the intersection of Kirby Muxloe and Glenfields parishes (SK 529 049). The subsoil consists of boulder clay and Mercian Mudstone.

Six areas of archaeological interest were investigated within the road line and areas affected by additional/enabling works. Areas 1-3 were identified during the evaluation stage of the project, and targeted for further work; Areas 4-6 were identified during the construction of culverts, diversion channels and drainage ditches to the north and west of Areas 1-3.

1.2 Previous Archaeological Work (fig 2)

1.2.1 Fieldwalking survey by Leicestershire Museums Archaeological Survey Team in Autumn 1992 revealed an extensive scatter of Iron Age and Roman pottery, and kiln bars, in two fields at the intersection of Kirby Muxloe and Glenfield Parishes (SMR ref. 50 SW BR and 50 NW CQ).

1.2.2 The proposed route of the Kirby Road-Ratby Lane section of the A46 Leicester Western Bypass skirted the western fringe of the site identified by fieldwalking, and therefore prompted archaeological evaluative excavation in December 1992/January 1993. Three areas of archaeological interest were identified. Areas 1 and 2 are situated on a north-east facing slope, within two fields separated by an artificial escarpment formed by borrow pit activity during the construction of the M1. Area 1 revealed an arc of a curving ditch and several pits containing charcoal and calcined bone, provisionally interpreted as a possible ring ditch with associated cremation burials. Area 2 revealed evidence for Iron Age and Roman activity. Area 3 deposits were located within an area sloping south-east from Area 2, towards a stream. Several un-dated features sealed by alluvial/colluvial deposits were identified. Due to the late stage of the development programme, negotiations between the Leicestershire Archaeological Unit and the Department of Transport were undertaken, allowing for the immediate start of excavation at the end of January.

1.3 Original Project Design

The following italicised sections are the original aims of the first Project Design document (Clay 1993):

The project has the potential to contribute to the following programmes:

1.3.1 *The study of Iron Age and Roman Leicester and its hinterland (Exploring our Past,1991 p 38).*

A major aim is to attempt to understand the relationship between different Iron Age and Roman settlements. In particular the development of proto-urban settlements and their surrounding settlements is of national importance. Recent work in Leicester and the surrounding area indicates that it was an important Late Iron Age settlement within the Corieltauvi, having trading links with the continent and producing coins and perhaps serving as a tribal capital (Clay 1985;1989;1992). The relationship between Leicester as a central place and the surrounding lower status settlements is an ongoing priority for Leicestershire Archaeological Unit (Lucas 1986). Excavations at Leicester, Enderby (Clay 1992), Shipley Hill, Ratcliffe-on-the Wreake (Beamish 1992) and Humberstone (Lucas 1985;1989) are building evidence for the chronological development of Iron Age and Roman settlement in the area and possible trading links with Leicester and beyond. Examination of this settlement situated 10 km west of Leicester will contribute to this work and fills a gap where no settlement has been excavated.

The site has considerable group value (Funding Criteria iv) within this area of the former Leicester Forest (see 1.3.2). It may also contribute to the study of Roman rural settlements to the north west of Leicester situated, as it is, close to the Mancetter-Leicester road.

1.3.2 *The study of rural Roman pottery industries (Exploring our past p 42) The study of land use continuity from the Roman to Medieval periods*

The local pattern of industry and craftsmanship is an important priority. Examination of rural settlements associated with industrial activity is categorised as a 'high absolute priority' by the Society for the Promotion of Roman Studies (1985, Section 5.1.7(b)). In Leicestershire a pattern of distribution of Roman pottery producing sites has been recognised around the perimeter of the former Leicester Forest (Liddle 1982, 43). When the Roman sites are plotted against the presumed early boundaries of the medieval extent of the forest it can be seen that with few exceptions the sites respect the boundaries (Fig 1). Fieldwalking has been undertaken in this area as part of the Leicester Forest Project (Clay 1992). From the results to date it appears likely that the Forest was already there and of a similar size in these periods. As a source of fuel the Forest would be an ideal location for a 'Leicester Forest' pottery industry perhaps forming a rural nucleation serving a major town (Leicester).

The site at Kirby Muxloe fits into this pattern of distribution. None of the pottery producing sites has been excavated and examination of the site may provide important information on their role, status and date.

1.3.3 The Prehistoric exploitation of Midlands claylands (Funding Criteria i,ii,iv)
The change from communal monuments into settlement and field landscapes (1300BC-300BC)(Exploring our past p.36)

The project will contribute to ongoing work into the geological influences on settlement and land use during the Neolithic - Bronze Age and Iron Age periods (Clay 1989 122). The distribution patterns in Northamptonshire and Leicestershire indicate prehistoric settlement and land use within areas previously assumed inconducive to early settlement and agriculture. The site at Kirby Muxloe is situated on the heavy marls often associated with Mercian Mudstone. Two types of prehistoric land use are evident; ritual areas dating from the Late Neolithic-Early Bronze Age and settlement of Iron Age date. Excavation may help our understanding of land use on these heavy soils including change from communal monuments to settlement.

1.3.4 The dating and social significance of East Midlands Scored Ware.

Iron Age settlements in the East Midlands are characterised by a particular style of pottery known as East Midlands Scored Ware (formerly Ancaster-Breedon). Sheila M Elsdon suggests that areas of Derbyshire, Nottinghamshire and Leicestershire may represent a sub-culture of the ***Corieltauvi*** *which was not in contact with the finer ware users of Lincolnshire perhaps centred on Dragonby. Dating and provenance of this and associated styles of Iron Age pottery is incompletely understood and the establishment of a site, and contribution towards a regional, chronology is a priority for this project. This work will compliment that undertaken at Wanlip.*

1.3.5 The evidence for agriculture on East Midlands prehistoric sites (see also Project aims 1.3.2-1.3.4; Funding Criteria ii,iii,iv,v,vi).
The comparison between Iron Age and Roman agricultural practices.

In the absence of surviving animal bone the site's main potential lies in recovery of identifiable carbonised plant remains.

The recovery of identifiable cereals and weeds of cultivation from prehistoric sites in the East Midlands is a priority for the region. Very little evidence has been recovered from this area although cereals have been found on sites when sieving has been carried out. In plough zone areas the problems of intrusion and contamination are ever present. In this area the problems of recovering remains from clay soils are an added problem.

The site has three areas of identifiable potential

1) A possible buried soil associated with the ring ditch in Area 1.

2) Features associated with the Iron Age and Roman settlement in Areas 1 and 2.

3) Features showing evidence of waterlogging below the alluvium in Area 3 (see 1.3.6. below).

The buried soil may provide evidence of pre burial agricultural practices similar to those found at Sproxton, Leicestershire (Clay 1981). The pH (6.1) however suggests that the soil is acid-neutral with only potential for the survival of carbonised plant remains or possibly pollen. In view of the rarity of buried soils of this period however, it is proposed to sample for the above and also undertake sediment analysis. The sediment analysis and pollen sampling will be undertaken and assessed by Dr A G Brown of Leicester University.

Very few storage pits have been identified from prehistoric sites in the area, the clayland sites eg Enderby (Clay 1992) perhaps using above ground storage. Some pits were located during the evaluation and the possibility of their being used for storage might indicate potential for the recovery of cereal information.

Despite low concentrations from sites of this type a bulk sieving programme as detailed below may provide sufficient quantities to make meaningful comparisons with evidence from other areas eg Tattershall Thorpe, Chowne et al 1987. As the site shows evidence of transition from Iron Age to Roman periods changes in arable agricultural practices may be identifiable.

To summarise the potential of the site for the recovery of carbonised plant remains lies in:

1. The potential for remains from the earlier prehistoric period, as well as the Iron Age and Roman periods, to show changes in agriculture, particularly in cereal use.

2. The potential to compare cereal remains with the Neolithic site at Oakham (Clay 1989 and Monckton forthcoming a) where bread type wheat was found, and with the Iron Age sites at Wanlip (work in progress) Enderby (Monckton 1992), Tixover (Beamish 1992 and Monckton forthcoming b) and Normanton-le-Heath (Monckton forthcoming c)

3. The potential for good preservation of deposits sealed below the alluvium in Area 3.

1.3.6 The sequence and dating of alluvium deposits (Exploring our past p45;Funding criteria i,v,vi)

Area 3 shows evidence of alluvial deposition derived from a stream to the south of the site. Local alluvial episodes are little understood and the evaluation indicated that some waterlogged deposits were sealed below the alluvium. Although the nature of these deposits is not known at present they may provide pelaeoenvironmental information. Dr A G Brown of Leicester University will assess their potential

1.3.7 The study of Late Neolithic-Early Bronze Age Burial Practices.

A wide variation in Late Neolithic-Early Bronze Age ritual and burial practices exists from area to area. Work in Leicestershire has shown evidence, for example, of excarnation (Stirland 1981) and alternate cremation and inhumation (Clay 1981). The evaluation has shown a group of cremations (c.15) in the area of the ring ditch. These may provide information on, for example, burial and pre-burial practices and palaeo-pathologies.

1.4. ***Site objectives***

To answer the overall Project Aims 1.3.1 - 1.3.7 specific objectives within the fieldwork have to be addressed. These can be summarised as follows:

1.4.1 *To ascertain the function, date and chronology of the Iron Age and Roman deposits (aims 1.3.1.-1.3.3; 1.3.5).*

1.4.2 *To locate and record any structural elements associated with these deposits (aims 1.3.1-1.3.3; 1.3.5).*

1.4.3 *To recover meaningful environmental information from the buried soil and associated features (aim 1.3.5).*

1.4.4 *To locate and record pottery sequences from the Iron Age contexts (aim 1.3.4)*

1.4.5 *To establish the sequence and date of alluvial events within the area (aim 1.3.6).*

1.4.6 *To excavate the group of cremations and other evidence of ritual and burial associated with the ring ditch (aim 1.3.7).*

1.5 Site Methodology

1.5.1 Area 1 trenches were enlarged to an open area by machine clearance of modern topsoil and medieval furrow fill. An area beyond the road line was also uncovered to reveal the full extent of the ditched enclosure (ie the assumed ring ditch), with the permission of the land owner. This was undertaken to allow a full understanding of the feature, and to prevent any loss of context and integrity to the remaining segment. This area was only subject to minimal excavation.

The area was hand cleaned by trowel and planned at 1:20 in 5 x 10m zones. All finds located during Excavation and recording followed the standard procedures detailed in the LAU recording manual.

Area 1 was afforded greater priority in the early stages of excavation, resulting in the full excavation of most features.

1.5.2 Area 2 trenches were enlarged to an open area by machine clearance. Difficulties were encountered due to the presence of platy limestone at the interface of the modern topsoil and the natural clay. Initially this interface horizon was left intact to be carefully removed by mattock and trowel. As this strategy proved too time consuming, with

little noticeable improvement in archaeological recovery, the remaining area was machined down to the clay. However, due to the effects of periodic waterlogging and dessication much of the area was excavated `blind' ie piecemeal cleaning and excavation by 5 x 10m zone. A consequence of this situation was the late identification of the concentration of features in the central area. A pragmatic strategy was adopted during the last two weeks of excavation to allow the recording of these features. The `salvage recording' involved planning with annotations recording the salient points. In total 611 contexts were recorded for Area 2, c.150 of which under `salvage' conditions.

1.5.3 Additional machining of Area 3 revealed a continuation of Area 2 features for c. 30m downslope to the south. From henceforth Area 3 features are combined with those from Area 2, and discussed as such. Similar clearance problems to Area 2 were encountered. Limited machining of the southern extent of Area 3 demonstrated alluvial/colluvial cover, but waterlogging problems and slurry contamination prevented detailed recording. The area was abandoned after the discovery of waterlogged deposits in Areas 4-6.

1.5.4 Areas 4-6 were revealed during the construction work for culverts, drains and channels by the road contractors. Archaeological recording was dictated by the contractor's programme, usually involving weekend work. Sections were cleaned, photographed and drawn with minimal excavation to provide environmental samples.

1.5.5 Additional features were recorded during the ground preparations for road construction. Recording was by annotated plan drawing.

1.6 Results of Excavation

1.6.1 Area 1

Once the full plan of the assumed ring ditch was revealed it became obvious that the feature did not fit well into this interpretation, a better description being a sub-polygonal ditched enclosure with an inturned entrance to the south-east, some 23m across. Within this entrance area were two arcs of a structural gully, dissected by a medieval furrow, apparently representing a single structure with a curving drainage gully. Four similar postholes may represent an off-centre rectangular structure associated with the circular structure.

Internal features of the enclosure were concentrated within the entrance area. These comprised post-holes, possibly associated with the latter structure, and small pits interpreted on site as possible cremations, due to the presence of charcoal and calcined bone inclusions within their fills. Assessment analysis of these deposits has not identified any human bone.

Three sides of a second enclosure were revealed immediately to the south of the latter enclosure, its corner curving to respect the gulley of the entrance-way structure. The ditch cut an earlier pebble surface surviving the plough truncation in a slight hollow. This may be equivalent to two other similar areas of surface to the north-west,

possibly forming a trackway extending across Area 1 on a north-west/south-east alignment. The southern side of Enclosure 2 has a similar orientation, possibly suggesting that its layout was dictated by the earlier feature.

Elements of two intercutting ring grooves, probably representing the foundation trenches of circular structures, were located immediately north-west of Enclosure 1. A number of small post/stake holes may be structurally related. A distinct four-post structure, some 3m square, was located off-centre within one of the roundhouses. Such structures in an Iron Age context have been interpreted as storehouses and excarnation platforms for the exposure of the dead (Allison and Drewett 1971), small huts, shrines, watch-towers, fighting platforms, drying racks and animal pens (Knight 1984, 154-155). It is uncertain whether the apparent association of off-centre square/rectangular post structures within circular structures is coincidental.

Other features encountered in Area 1 included a number of small pits containing pottery, charcoal and calcined bone, interpreted on-site as cremation burials. This interpretation was probably coloured by the initial interpretation of Enclosure 1 as a Bronze Age ring ditch. A funerary interpretation was also applied to at least five other pits. One of these, located between the north-western ring grooves and Enclosure 1, certainly resembled a grave. It was sub-rectangular in plan, measuring some 3m x 1.5m x 0.28m deep, and included three near complete vessels. Although the acid/neutral pH of the subsoil does not favour survival of bone, a number of fragments were recovered.

The Area 1 features are all provisionally dated to the Early-Mid Iron Age, though further analysis of the finds and scientific dating may allow better resolution. Later features included medieval ridge and furrow and post-medieval land drains

1.6.2 Area 2

Evidence for four, possibly six, Iron Age circular structures was recorded in Area 2. The four definite structures were located in the northern half of Area 1, comprising elements of circular drainage gullies and/or structural ring grooves of 8.5-11.5m diameter. Constructional attributes for the structures are uncertain, requiring further analysis. The structures are provisionally dated to the Mid-Late Iron Age, though earlier material was recovered from Structure 3 (in the north-west corner). Structure 1 demonstrated at least two phases of recutting of the northern drainage ditch, structural modification of the ?ring groove and several internal features sealed by layers of a Roman date. Structure 2 was revealed as a discontinuous circular gully (drainage?) and several internal postholes and an arc of ring groove. Structure 3 was a circular gully severely truncated to the north by modern ploughing. Structure 4 was represented by a discontinuous circular gully, several postholes and other gullies possibly indicating other structural phases or associated features. Structure? 5 comprised an arc of a gully at the southern end of Area 1. Structure? 6 was another length of gully located during the watching brief to the north of Area 1. Other features of Iron Age date included several pits, postholes and a length of ditch, located during the

watching brief to the west of Area 1 (possibly part of the Roman field system?).

Occupation of a Roman date is suggested by a concentration of intercutting postholes and pits in the central area, structural gullies and postholes to the south and a possible rectangular post-built structure superimposed upon Structure 1. The latter comprised an area of tamped limestone flanked by postholes, some 6 x 7m, sealed by layers containing high proportions of pottery of a mid 2nd/mid 3rd century date. The limestone surface sealed features of Late Iron Age and Early Roman date suggesting the possibility of some occupational continuity.

Elements of a rectilinear field system to the south date from the 1st/2nd century. The north-south linear feature provided some evidence for post settings, suggesting part of the system was palisaded. A length of ditch to the west of Area 2, observed during the watching brief, provided Iron Age pottery but could easily be part of the same system. A large butt-ended ditch of later Roman date cut through the Iron Age and earlier Roman structures. Its alignment was consistent with the earlier field system.

Post-Roman features were few comprising the medieval ridge and furrow and the remains of a recently grubbed-out hedge.

1.6.3 Area 4 revealed silted palaeochannels of Iron Age and earlier date, a buried Iron Age soil horizon and ditch, sealed by alluvial deposits. The excellent degree of organic preservation presents good potential for environmental reconstruction.

1.6.4 Area 5 contexts were recorded from the sections of another culvert to the north of Area 1. Similar deposits to those encountered in Area 4 were recorded. Dating evidence was sparse, though the recovery of a flint blade from one of the upper alluvial deposits may indicate an earlier date than the Area 4 deposits.

1.6.5 Area 6 contexts were recorded from the sections of a culvert and drainage ditch to the north-west of Area 1. The culvert sections revealed un-dated alluvia and palaeochannels. The drainage ditch section revealed a buried soil horizon sealed by a medieval headland, and may prove useful for indicating pre-medieval environmental conditions.

2 ASSESSMENT FOR FURTHER ANALYSIS: STRATIGRAPHIC AND STRUCTURAL DATA

2.1 Quantity of Records

The documentary site archive comprises:

1,116 context records (772 sheets, 344 on computer database transcribed from salvage records)
127 site plans (5 x 10m zones)
plan index
183 site sections
section index
environmental record sheets
environmental sample index
2 site notebooks
small finds index
37 colour slide films (c. 1300 slides)
37 monochrome films (c. 1300 contact prints and negatives)
photograhic index
computerised archive (Dataease A123 1992)

2.2 Provenance of Records

The table below details the number of contexts by area and period.

Area	Prehistoric	Roman	Post-Roman	Unphased	Total
1	384	-	3O	-	414
2	188	154	20	249	611
3	-	-	-	-	-
4	38	-	-	11	49
5	33	-	-	-	33
6	-	-	4	5	9
Total	643	154	54	265	1,116

2.2.1 Prehistoric contexts are those which contained coarse hand-made pottery (or related stratigraphically). It should be noted that the Area 2 totals may include features of a Roman date, by virtue of the presence of unrecognised Roman coarseware.

2.2.2 Post-Roman contexts include medieval furrow deposits, post-medieval field drains and boundary features, and clearance/cleaning layers.

2.2.3 Unphased contexts are those which contained no datable material or relationships with dated features. Diagnostic material may be forthcoming from unprocessed soil samples and unlocated 3D finds.

2.3 Range and Variety

A diverse range of contexts were excavated; these are discussed by area:

2.3.1 Area 1 contexts were almost entirely negative features, the exceptions being four areas of cobbled surface, colluvium at the southern end, and the clearance layers. The negative features comprised ditches, a group of small pits (interpreted during the excavation as ploughed out cremation pits), a group of larger pits (some of which were thought to represent grave cuts), postholes representing at least two structures, and ring grooves representing circular structures.

The majority of Area 1 features were unaffected by intercutting, representing discrete, contained features with low residuality. These present valuable units for artefactual and environmental study.

2.3.2 Area 2 contexts were also almost entirely negative features, the exceptions being clearance layers, and three areas of horizontal stratigraphy of Roman date, slumping into consolidations of earlier features. Stratigraphically, the greatest potential for further study is the area within structure 1, where a Roman metalled surface and overlying strata survive to a depth of 0.50m, slumping into the occupation hollow of the Iron Age structure and other negative features. The metalled surface was associated with several postholes of probable Roman date, and may represent a Roman structure superimposed upon the earlier circular structure.

Elements of at least four, possibly six, circular structures and several gullies and postholes attest to Iron Age structural activity. The majority of pre-Roman features are of Mid-Late Iron Age, though some earlier material was present, eg structure 3 (north-western corner of Area 2).

Features of Roman date (mid 1st to mid 3rd century) include pits, postholes, ditches, gullies and the aforementioned horizontal strata. Further spatial analysis may indicate structures. The ditches represent elements of the Roman field system, dating from the 1st/2nd centuries.

2.3.3 Area 4 contexts were recorded from the sections of a stream culvert and diversion channel to the west of Area 1. These included silted palaeochannels of Iron Age and earlier date, a buried Iron Age soil horizon and ditch, sealed by alluvial deposits. The excellent degree of organic preservation presents good potential for environmental reconstruction.

2.3.4 Area 5 contexts were recorded from the sections of another culvert to the north of Area 1. Similar deposits to those encountered in Area 4 were recorded. Dating evidence was sparse, though the recovery of a flint blade from one of the upper alluvial deposits may indicate an earlier date than the Area 4 deposits.

2.3.5 Area 6 contexts were recorded from the sections of a culvert and drainage ditch to the north-west of Area 1. The culvert sections revealed un-dated alluvia and palaeochannels. The drainage ditch section revealed a buried soil horizon sealed by a medieval headland, and may prove useful for indicating pre-medieval environmental conditions.

2.4 Condition of the Records

2.4.1 The majority of context records and all site indices are on paper and are in a good condition. The remainder, recorded during salvage conditions, are annotated onto the zone plans and section drawings, and/or site notebooks. These have been transcribed onto the computer database.

2.4.2 The photographic record has been catalogued.

2.4.3 Site surveying was undertaken by a Topcon Electronic Distance Measurer, coupled with a Hunter Husky computer. All records are stored on 2 floppy discs. Annotated paper printouts have also been produced.

2.5 Primary Sources and Documentation

2.5.1 Records from the 1992 fieldwalking survey are lodged with Leicestershire Museums.

2.5.2 Records from the evaluation stage of the project are integrated with the main site archive.

2.5.3 Relevant documentation of comparable local sites are either published or archived with Leicestershire Museums (see 2.xx).

2.6 Methods of Data Collection for Assessment

2.6.1 All quantities have been taken from the computer database and/or the enhanced site archive.

2.6.2 Qualitative assessment has been made after a 12 week period enhancing the site archive following the end of the excavation. This involved checking and collating the site records, provisionally grouping contexts, enhancing matrices and provisionally phasing the site record. The assessment has been made after consultation with staff involved in the finds and environmental assessment.

2.7 Statement of Potential

A review of the original Project Design (1.3) and the site archive demonstrates that the majority of objectives can be addressed with further analysis. In addition further new aims can be also be addressed.

2.7.1 *The study of Iron Age and Roman Leicester and its hinterland (Exploring our Past,1991 p 38) (1.3.1).*

2.7.2 *The study of rural Roman pottery industries (Exploring our past p 42)*
The study of land use continuity from the Roman to Medieval periods (1.3.2)

Despite the presence in the fieldwalking scatter of kiln bars of Roman date, no evidence for actual pottery production was found on site. The likely location for such activity is the area of settlement to the east of the roadline. However, given the provisional dating of the site, it seems likely that the excavation revealed settlement evidence contemporary to this production. Indeed, further analysis may demonstrate activities associated with this industry.

2.7.3 *The Prehistoric exploitation of Midlands claylands (Funding Criteria i,ii,iv)*
The change from communal monuments into settlement and field landscapes (1300BC-300BC)(Exploring our past p.36) (1.3.3)

The project will still contribute to ongoing analysis into geological influences upon prehistoric settlement and land use, though the lack of pre-Iron Age features does lessen the potential. The flint assemblage includes material of Neolithic and Bronze Age type and demonstrates primary and secondary knapping. However, the nature of exploitation is uncertain. The construction of a pollen diagram sequence from monolith samples from Areas 4 and 5 provides good potential for environmental reconstruction for the prehistoric period, and help to characterise the prehistoric exploitation of this area.

The erroneous interpretation of a ring ditch precludes any investigation of the change from communal monuments into settlement and field landscapes.

2.7.4 *The dating and social significance of East Midlands Scored Ware (1.3.4).*

The ceramic evidence recovered from Kirby Muxloe provides a large assemblage of East Midlands Scored Ware, together with material stratigraphically pre- and post-dating it. With the addition of scientific dating, and complementary data from the recent Wanlip excavation, the assemblage has good potential for addressing this aim.

2.7.5 *The evidence for agriculture on East Midlands prehistoric sites (see also original aims 1.3.2-1.3.4; Funding Criteria ii,iii,iv,v,vi). The comparison between Iron Age and Roman agricultural practices (1.3.5).*

The main area of potential as set out in the original aims (1.3.2-5) which the carbonised botanical material may be used for is in the recovery of identifiable cereals and weeds of cultivation from prehistoric and Roman deposits. Scanning of a number of flots has shown that this should be possible. This is also a search priority for the Midlands region (Moffett and Greig, 1991: 2.2). Unfortunately the potential to look at cereal evidence for earlier prehistoric periods cannot really be realised as it now appears that the majority of features excavated were of an Iron Age or later date. However the question of continuity of Iron Age and later agriculture can be addressed.

2.7.6 *The sequence and dating of alluvium deposits (Exploring our past p45;Funding criteria i,v,vi) (1.3.6).*

Sediments from the fill of a small stream that runs to the north of the main archaeological excavations has revealed a stratified sequence of fluvial and organic sediments over 3m deep.

The site fits well with the priorities of the Leicestershire Unit in two ways. Firstly because the sites sit in the headwaters of a well defined small catchment (under 10 sq km) and the fill therefore reflects the land use and erosion history of a small area around the archaeological sites. Secondly the site has both colluvial and alluvial sediments which can be traced from the valley floor to the multi-period settlement sites.

Trenches for two culverts (areas 4 and 5) have revealed these sediments which have been drawn and sampled. Both are within 200m of the Iron Age and Roman site and downslope. The most promising site, the downstream (easterly culvert; area 5) has the potential to provide the following:

1) A local vegetation record, in all probability covering a time period between c. 6000 years bp and c. 2000 years bp.

2) Date the major alluviation of the small floodplain, which due to the very small size of the catchment will relate erosion on and around the settlement sites being investigated.

3) Document stream and floodplain resources. The culverts are upstream of a slight bedrock constriction and the area may have been a pool. There are some suggestions of water management from the site.

The stratigraphic assessment has demonstrated that the data collection has the potential to contribute to several new objectives.

2.7.7 *Establish the chronological framework for the site (see also 2.7.3)*

Provisional dating suggests settlement activity from the Early Iron Age to the later Roman period. A primary objective is to establish a chronological framework for the site as a whole, so that changes and trends over time and space can be examined and explained. For example, Areas 1 and 2 have some chronological overlap, so the different characters of the areas would seem to imply a functional difference.

Greater chronological resolution will allow for characterisation of the Late Iron Age/Roman interface, answering the question of occupational and land use continuity (see iii).

2.7.8 *Examine the evidence for crafts, industries and commerce*

Metalworking evidence of Iron Age and Roman date was located in Areas 1 and 2. Spatial analysis may demonstrate areas of metalworking. Although no evidence for pottery production was found in the excavated area there was evidence from the fieldwalked material. An examination of the Roman features and material may indicate activities associated with pottery production.

2.7.9 *Examine the evidence for changes and trends in the site's spatial organisation and land use*

Different activities were evident from the fieldwalked and excavated areas. Further examination of the spatial distribution of features and material together with the environmental evidence from areas 4-6 may elucidate how the area was exploited during the Iron Age-Roman periods.

2.7.10 *Examine the evidence for structural techniques and building methods.*

The site has produced evidence for structures from the Early Iron Age to Roman period. The structural differences may be a chronological or functional attribute. Analysis of other sites in the area may demonstrate analogous structures.

2.7.11 *The function and status of enclosure types*

Two enclosures were revealed in Area 1. Enclosure 1 was revealed in its entirity and subject to a 50% excavation sample in the area affected by the roadline. The ditch demonstrated evidence for recutting phases, suggesting longevity in its use. Internal features were concentrated in the entrance area and were essentially structural in character. Enclosure 1 is provisionally interpreted as a compound associated with the entranceway structure(s). Further analysis of the stratigraphic record, finds and environmental data will help to define its function, date and status.

Enclosure 2 respected the curving gully of the Enclosure 1 entranceway structure, suggesting near contemporeneity. The excavator noted that the filling of the ditch was of a very different character to that observed in Enclosure 1. This may be indicative of some functional difference.

2.7.12 *Function of non-structural features relating to settlement activity*

Such features included small and medium sized pits of unknown function. On-site interpretations included cremation pits and graves for Area 1. No human bone has been recovered so far, though it should be noted that at least one of the pits was morphologically grave-like and contained three near complete vessels. The clay subsoil was quite conducive in the recognition of structural features, suggesting that many of the small pits served a different function. Depositional analysis, together with environmental and artefactual analysis, may suggest functions for these features.

2.7.13 *The use of flint material in Iron Age contexts (Funding Criteria ii)*

Recent work in Warwickshire and Leicestershire (Young and O'Sullivan 1992; A Brown pers comm) has explored the possibility of flint working and use in Iron Age contexts. Previous work has tended to assume all flint from such contexts to be residual. The condition and style of some of the flint recovered during the excavation suggests the possibility of contemporary use. The sieving programme will help to recover stratified flint material from Iron Age contexts.

2.8 Radiocarbon and Thermoluminesence Dating Assessment

2.8.1 Radiocarbon dating for Area 1 is proposed for the following features:

i Enclosure 1, primary ditch fill (201)

ii Ring groove, Enclosure 1, fill (333) *or* fill (72)

iii Rectangular pit (?grave), lower fill (177)

iv Posthole of rectangular structure within Enclosure 1, primary fill (74)

Radiocarbon dating for Area 2 is proposed for:

i Structure 1, ring groove/ gully fill (1325) *or* fill (1407)

ii Structure 3, gully fill (1413) *or* (1417)

iii Structure 4, gully fill (1457)

C14 dates fom these contexts will contribute to aim 2.7.7. All of the above contexts are provisionally dated to the Iron Age and all bar (201), are from structural features. Charcoal has been recovered from all of the above contexts, though the amounts for some contexts may not be suitable for conventional analysis and may require accelerator dating. However, it should be noted that this assessment is based upon pilot sub-sample processing; it is anticipated that further processing will yield greater quantities. For this reason alternative contexts are included in the above proposal; those with greater potential will be chosen.

2.8.2 Thermoluminesence dating is proposed for:

Contexts (201), (72), (177), (1407), (1413), (1457): see Radiocarbon Assessment above. The contexts were chosen to allow for comparison with Radiocarbon dates. The samples include scored and non-scored ware of suitable size and provenance for TL dating. Contamination/residuality is not present.

2.9 Methods of Analysis and Task Quantification

S1 Site Archive Enhancement (2 weeks)

i Incorporation of salvage records from watching brief observations. This includes areas of archaeological interest not outlined in the original project design, such as the three Rothley Brook culverts. Due to time constraints the recording adopted in these areas was pragmatic, generally comprising annotated section/plan drawings with additional notes. Rapid surveying was undertaken by EDM.

ii Finish inputting all data into D'ease computer system.

S2 Complete Provisional Context Groups (4 weeks)

i On-site recording of archaeological deposits was by context, whereby each stratigraphic unit was assigned a context number. For the archive and any future analysis the site data is placed into hierarchical interpretive groups of related contexts known as sub-groups and groups. Sub-groups should represent self-contained archaeological episodes requiring the lowest level of interpretation to justify their creation. Typical examples are a post-hole and its construction backfill or a pit and its primary silting. Sub-groups form the basic unit upon which further analysis will be based, and will include a written section in which descriptions, interpretation and cross referencing to other data are discussed. Subsequent analysis of finds data may prompt revision in exceptional cases. Groups form the next level of interpretation, ideally representing a set of related sub-groups, such as post-holes thought to represent a distinct structure. However, some groups will consist of miscellaneous features whose relationship with the more interpretatively secure groups is uncertain. These groups are only provisional and may require subsequent revision in light of further analysis and refined dating. Sub-groups will be assigned to groups to allow for provisional finds grouping, thereby providing larger samples which will be of greater statistical significance.

ii To be undertaken for the remaining contexts in Areas 2-6, approximately 700 contexts.

S3 Check Interpretations for Groups (2 weeks)

i The narrative sections and interpretations for Area 1 context groups need to be checked for consistency to ensure that similar interpretive processes are used for all areas.

ii To be undertaken on all contexts.

iii Further analysis of the artefactual and environmental data may suggest alternative or refined interpretations for groupings.

iv Alternative groupings, including redundant interpretations, should be explicitly stated in the research archive.

S4 Enhance Stratigraphic Record/Provisional Phasing (3 weeks)

On completion of the above tasks (S1-S3) the context groups can be placed in provisional phases. Any phasing problems will have been identified by the above analysis, allowing for further structural analysis.

S5 Spatial Distribution Analysis (3 weeks)

i Phasing of the groups will allow for the analysis of chronological and locational variation of structural and other features.

ii Spatial analysis of artefactual and environmental data will complement the above analysis.

S6 Incorporate Specialist Data (2 weeks)

Throughout the analysis there will be a need for communication between the project director and specialist staff. Information received from the specialists will require input into the research archive and consequent revision of group records.

S7 Update Site Interpretations (1 week)

During the above analysis process interpretations of the site will probably change. It is proposed that bi-monthly reports should be circulated to all staff involved in the analysis, informing them of such changes (see S19). This will allow for integration of all information, highlighting any problems at an early stage.

S8 Compile Archive (2 weeks)

Completion of the above analysis tasks will allow for the production of the research archive comprising: stratigraphic/structural, artefactual, environmental and other catalogues and records. Compilation and updating of the archive will be ongoing throughout the above stages.

S9 Write Excavation Report (4 weeks)

S10 Incorporate Specialist Reports (2 weeks)

S11 Prepare Illustrations (6 weeks)

S12 Edit Excavation Report (2 weeks)

S13 Proof Read Final Report (2 weeks)

S14 Edit Printer's Proofs (2 weeks)

S15 Enhance Archive (2 weeks)

Time is required to finally check the archive and cross reference to any publication. This should provide a comprehensive and accessible archive to anyone wishing to gain information for future syntheses or analytical work.

S16 Dissemination of Results (4 weeks)

The primary means for disseminating the results of the project will be the main publication. Time should also be allowed for the production of an interim report and popular articles, as well as preparation for public talks, lectures and displays.

S17 Management and Maintenance of the Database (4 weeks)

The computerised records form the basis for the analysis, archiving and final publication of the site, and should therefore be constantly up-dated and maintained to a high standard. Each of the project members will be producing work on their own discs. These will require uploading and backing-up on a regular basis.

S18 Documentary Analysis (2 weeks)

Time will be needed to allow comparison between the Kirby Muxloe site and other sites in the region, eg Wanlip (Beamish, forthcoming), Leicester (Enderby (Clay 1992), Shipley Hill, Ratcliffe-on-the Wreake (Beamish 1992) and Humberstone (Lucas 1985;1989).

S19 Review Procedures (1 week)

S20 Radiocarbon dating of selected samples

S21 Thermoluminescence dating of selected samples.

3 ASSESSMENT FOR FURTHER ANALYSIS:FINDS

3.1 The Prehistoric Pottery

3.1.1 Quantity

A total of 4,537 sherds, weighing 42,685 gms was recovered from the excavations. Further records will be added during the analysis stage as material is included from processed environmental samples, and from evaluation fieldwalking. This material was not available during the assessment stage.

The tables below detail the quantity of material recovered from Areas 1 and 2. The weight is recorded in grammes.

	Scored Ware		Non-scored Ware		Total	
	Sherd No.	Weight	Sherd No.	Weight	Sherd No.	Weight
Area 1	204	3,572	2,232	15,684	2,436	19,256
Area 2	326	5,865	1,775	17,564	2,101	23,429
Combined	530	9,437	4,007	33,248	4,537	42,685

	Scored Ware % of prehistoric assemblage per area	Non-scored Ware % of prehistoric assemblage per area	% of site total (all periods)
Area 1	18.6	81.4	27.5
Area 2	25.0	75.0	33.4
Combined	22.1	77.9	60.9

A number of sherds from area 1 were provided with small finds numbers during cleaning when features were indistinct. One hundred and fifty-two numbers were assigned, of these only 29 were recorded with their context number. During the analysis the remaining 123 will be located and assigned to a context.

3.1.2 Provenance and Dating

i) The prehistoric material makes up 60.9% (by weight) of the total pottery assemblage from areas 1 and 2. Of this material 19.5% represents material recovered from unstratified and cleaning layers.

ii) The majority of features are distinct entities with little vertical stratigraphy. There is some contamination and residuality within certain contexts, emphasized by the low average sherd weight for the site (see section 3.1.3.iii).

iii) A rapid scan of the assemblage placed the prehistoric pottery within the Iron Age. The early Iron Age is suggested by a number of finger impressed sherds, particularly rim sherds. The extent of this range of pottery will become apparent with further analysis.

450BC (in terms of Wanlip).

The assemblage of Scored ware indicates a middle to late Iron Age occupation, broadly dated from the mid-third century BC to the late first century BC. Data from other sites in the Midlands suggests Scored ware continues in use until the first century AD (Elsdon, 1992).

Finer burnished wares, and vessels with crude fabrics which have adopted Roman forms are indicative of the late Iron Age.

3.1.3 Range and Variety

i) All ceramic material was recovered during excavation. After processing it was quantified by sherd count and weight, the prehistoric material was sub-divided into Scored ware and non-Scored ware.

ii) The material from Kirby Muxloe compares favourably with the assemblages from other Iron Age sites in Leicestershire. From the assessment phase the similarities with the Wanlip assemblage are noted in fabric types, though Kirby Muxloe has a broader range of forms, suggesting longer occupation.

iii) The average sherd weight for the prehistoric material is 9.4 gms which is considerably less than at Wanlip and Grove Farm, Enderby with 15.1 gms and 18.3 gms respectively (Marsden, forthcoming and Elsdon, 1992).

3.1.4 Condition of the Material

The condition of the material varied although most of sherds suffered some degree of surface abrasion. A more detailed catalogue of abrasion will be undertaken during the analysis phase.

Profiles are provided by two near-complete vessels, further groups of sherds can be reconstructed to provide partial profiles of a small number of vessels.

Storage space will be required at LAU for 16 boxes. One large sherd requires conservation, the remaining material is stable and would require no further treatment.

3.1.5 Documentation

The information was recorded on sheets based on standard LAU record sheets. The data will be transferred to computer, stored in the 'data-ease' database.

3.1.6 Selection of Data for Further Analysis

i) A primary concern will be to resolve problems of stratigraphic relationships and dating within specific groups.

ii) It is hoped to analyse as much of the assemblage as possible. This will enhance and expand the knowledge of the East Midlands fabric series, and provide the framework for a form series.

iii) Priority will be given to the sherds which were recovered from contexts phased and grouped together.

3.1.7 Statement of Potential

Dating: A large percentage of the pottery sherds are undiagnostic, which will result in broad dating. However, charcoal samples from contexts in securely stratified groups will be sent for radiocarbon dating. It is hoped that pottery from these contexts can be correlated with the dating results. This will assist in narrowing the date ranges so contributing important information to Proj aim 2.7.7.

Stratigraphic problems: Vertical stratigraphy is limited, therefore there are few stratigraphic problems particularly in area 1. Hut 1 in the north-east corner of area 2 will require stratigraphic analysis, for which the radiocarbon dates and pottery analysis should prove useful. It may be possible to use the technique of seriation, if the quantity and quality of pottery permit.

Functional use: The analysis of form and fabrics to determine function may be of some use (Proj aims 2.7.8;12). It may transpire that functional differences will be noted through fabric only, for example vessels of less well fired fabrics used for storage.

As work progresses there will be comparisons with the Wanlip assemblage, this will concentrate on forms, but in particular fabrics. On completion of the analysis the results should incorporate comparisons with other sites, such as Grove Farm, Enderby, approximately 6.5 Km to the SSE of Kirby Muxloe, Shipley Hill and the fieldwalked site at Glenfield (Proj aim 2.7.1). All sites occupy similar topographical situations.

An important aspect of studying the prehistoric material is to supplement and refine the fabric series for the East Midlands (Proj aim 2.7.4). Initial microscopic examination of the material would highlight fabrics not represented in the existing fabric series. If thin-sectioning was undertaken on sherds representative of each fabric group, it would further refine descriptions. Thin-sectioning would also serve to verify the use of local clay sources during the Iron Age.

With the material from Kirby Muxloe and Wanlip, it should be possible to begin a form series framework for Leicestershire. If more time was available additional sites could be included, and the series more comprehensive.

3.1.8 Methods

The assemblage will be analysed using the pottery recording system recommended by the Prehistoric Ceramics Research Group (PCRG, 1992), as outlined below.

Fabric: Initially, the fabric will be identified by the major visible inclusions, this will then be refined with the identification of further inclusions and the use of a binocular microscope. Inclusions will be defined using the following attributes; frequency, sorting, roundness, sphericity and size. Fabric definition will use the following attributes; colour, firing, hardness, texture and the way it fractures.

Form: Wherever possible the vessel form will be recorded, however it may be more useful with this assemblage to record form elements, that is, sherds diagnostic of date. This would include rim and base sherds, decorated body sherds or handles.

Quantification: Sherds will be quantified by number and weight within fabric groups. Where possible the percentage rim diameter will be measured, this will prove useful if it is decided to use EVES. The extent of the vessel profile will be noted.

Ceramic links: Initially links will be looked for within each grouping, subsequently looking beyond to verify the nature of the groups and stratigraphic relationships.

Vessel dimensions: Where possible rim and base diameters will be recorded, and the thickness of the walls recorded as a maximum and a minimum. Where a profile of a vessel can be reconstructed height will be recorded, which may provide information on functional use.

Decoration: Any decoration or surface treatment will be noted and described under one of the categories as listed in PCRG (1992, p.21).

3.2 THE ROMAN POTTERY

3.2.1 Quantity

The total number of sherds recovered from areas 1 and 2 is 3,184, weighing 25,592 gms. A further 79 sherds of unknown weight, and the sherds from environmental samples are to be included during the analysis phase. These were not made available during the preparation of the assessment report.

The table below details the quantity of material recovered from areas 1 and 2.

	Sherd number	Weight	% of site total (wt.)
Area 1	126	820	1.2
Area 2	3,058	24,772	35.3
Total	3,184	25,592	36.5

As with all the pottery assemblages, initial sorting was by period only. Therefore, at this stage there has been no identification of fabrics.

3.2.2 Provenance and Dating

i) 61.0% of the Roman material recovered from area 1 was unstratified or from cleaning layers, from area 2 40.6%. An overall site total of 41.2%.

ii) Much of the stratified material on area 2 was recovered from the area of hut 1. The features consisted of a series of ditches, and a large circular area of rough cobbling overlying a large pit. The stone area and pit were almost exclusively Roman.

iii) There is a high level of residuality, suggested by the low average sherd size, 8.0 gms. This was apparent in contexts which were later revealed to be ditches, as would be expected.

iv) The assemblage suggests a date for occupation from the middle to late first century AD through to the mid-third century AD. Sherds of Rusticated wares and Colour-coated wares suggest a date range from the mid-first century AD to the early second century AD. Forms such as wide-mouthed or carinated bowls, and platters are also indicative of that early Roman period.

The mortaria, mostly manufactured at the Hartshill/Mancetter kilns, and the Black-burnished ware have date ranges from the mid-second century AD to the early to mid-third century AD.

3.2.3 Range and Variety

i) The material represents a typical domestic assemblage. The occurrence of early second and first century AD material, combined with the occurrence of late Iron age material would suggest Kirby Muxloe occupation spanned the transitional phase. Further, more comprehensive analysis would be required to substantiate these assessment findings.

ii) Grey wares account for a substantial percentage of the assemblage, with the occurrence of Black-burnished wares, mortaria and Samian. Also present, though in smaller quantities, was Colour-coated and Rusticated wares.

3.2.4 Condition of the Material

i) The pottery is in relatively poor condition, with the majority of sherds suffering from severe surface abrasion.

ii) The average weight of a sherd for the site was 8.0 gms. On area 2 this was increased to 8.1 gms, with the more residual material on area 1 weighing 6.5 gms.

iii) Storage space will be required at the LAU for 6 boxes, the material is stable and would require no further conservation.

3.2.5 Documentation

The information was recorded on sheets based on the standard LAU record sheets. The data will be transferred to computer and stored in the 'Data-ease' database.

3.2.6 Selection of Data for Further Analysis

Further analysis will be undertaken on the material which will address dating and stratigraphic problems, particularly in area 2.

3.2.7 Statement of Potential

Dating: Much of the pottery can be dated from form and decoration. It will provide secure dating and a suggested length of occupation (Proj aim 2.7.7).

Stratigraphic problems: The more secure dating from the pottery should resolve potential stratigraphic problems on area 2.

Functional use: The study of form will produce results which can be used to determine the function of a particular vessel. This would then lead to an interpretation for the use of a specified area (Proj aim 2.7.8;12).

Primary concern is to further substantiate the theory that Kirby Muxloe represents a transitional phase, from the Iron age to the Roman period (Proj aim 2.7.1). This is important work for intra-site interpretation, however the potential and importance is increased in the wider environs of Leicestershire (Proj aims 2.7.1;7).

The assemblage from Kirby Muxloe would complement and enhance existing knowledge of Roman rural settlements, for example, Normanton-le-Heath, Scalford Brook, Melton Mowbray and Ravenstone. Of particular interest would be the analysis and comparison of the Grey ware forms.

Initial scanning of the material has produced a number of imports, this has implications for determining status, trading and more importantly redistribution of material from Roman Leicester. This information can be compared with the results of existing studies from the sites mentioned above.

3.2.8 Methods

Fabric: The pottery will be divided into fabric groups and recorded by sherd count and weight. This will be recorded on paper to be entered on 'data-ease' database.

Quantification: Where possible the percentage rim diameter will be measured, this will prove useful if it is decided to use EVES. The extent of the vessel profile will be noted to enhance any decisions on functional use.

Forms: Forms will be analysed to determine dates and functions of vessels.

Ceramic links: Links will be looked for in order to support groupings or to link features with no direct stratigraphic relationship.

3.3 THE POST-ROMAN POTTERY

3.3.1 Quantity

A total of 132 sherds, weighing 1,416 gms were recovered from site. The table below details the quantity of material from the separate areas.

	Sherd number	Sherd weight	% of site total
Area 1	41	657	0.9
Area 2	91	759	1.1
Combined	132	1,416	2.0

86.0% of the post-Roman material recovered from area 1 was unstratified or from cleaning layers. The remaining 14.0% have been recorded by small finds number, without the context number. For the assessment phase it was decided to consider them from stratified deposits, this may change during the analysis. On area 2, 92.4% of the material was unstratified or recovered from cleaning layers. An overall site total of 89.4%

3.3.2 **Provenance and Dating**

i) The post-Roman pottery which was not recovered from unstratified and cleaning layers can be considered as contamination of earlier features. It can be concluded that there are no post-Roman features at Kirby Muxloe.

ii) The assemblage was dominated by the medieval Sandy wares, Cistercian ware and Midland Purple dating from the fourteenth century to the sixteenth century. Several sherds of the Cistercian ware were decorated with applied pads.

iii) Each area produced one sherd of Basalt ware from Staffordshire which dates from the eighteenth to nineteenth century.

iv) The early medieval period was only represented on area 2 by occasional sherds of Potters Marston.

3.3.3 **Condition of the Material**

i) The material is in good condition with no extensive post-depositional abrasion. The material is stable and would require no further conservation.

ii) Storage space will be required at LAU for 1 box.

3.3.4 **Documentation**

The material was quantified by sherd count and weight in period divisions only. The information was recorded on sheets based on standard LAU record sheets. The data will be transferred to computer, stored in the 'data-ease' database.

3.3.5 **Statement of Potential**

Only 10.6% of the material is from definite stratified contexts, and this represents contamination of Roman features. The material has no potential to resolve intra- or inter-site problems.

Further work should be limited to quantification by fabric groups for the archive.

3.4 **THE FLINT**

3.4.1 **Quantity**

i) A total of 505 fragments of flint (weighing 6,569 gms) were recovered from Kirby Muxloe. The total from area 1 is 273 fragments, with 232 fragments from area 2. The table below details recovery from each area.

	Stratified		Unknown		Cleaning		Unstratified	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.
Area 1	70	431	29	319	130	1,999	44	621
Area 2	50	664	-	-	151	1,974	31	561
Total	120	1,095	29	319	281	3,973	75	1,182

ii) The material was quantified by fragment count and weight, and divided into the categories as follows; flakes, cores, tools (retouched flakes), burnt, flake/tool, core/tool and flake/core. The table below indicates the number of fragments assigned to each category.

	Flakes		Cores		Tools		Burnt		F/T		C/T		F/C	
	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt.	No.	Wt
Area 1	142	753	55	1,839	68	720	3	16	3	28	1	2	1	12
Area 2	132	629	59	2,061	32	435	6	34	1	12	1	19	1	9
Total	274	1,382	114	3,900	100	1,155	9	50	4	40	2	21	2	21

iii) Further records will be included as environmental samples are sorted and the material is made available for quantification.

3.4.2 **Provenance and Dating**

i) Only 23.8% (by fragment number) of the assemblage was recovered from definite stratified contexts, this will affect the extent of the analysis. There were no concentrations of flint in any context.

ii) Scanning of the flint group demonstrated few diagnostic tool types, though the predominance of flake technology material would imply a later prehistoric date. The stratified material could be residual, though the possibility of Iron Age flint knapping should not be discounted.

iii) The unknown category in area 1 (see table), is a result of flint fragments recorded as small finds with 3-dimensional co-ordinates, but with no context number. During the analysis phase these fragments will be assigned to a context.

3.4.3 **Range and Variety**

The group includes material demonstrating primary and secondary knapping, derived from local pebble sources.

3.4.4 **Condition of the Material**

The material is in good condition and unabraded. Storage space will be required at LAU for 2 boxes.

3.4.5 Documentation

The information collected as described in 3.4.1 was recorded on sheets based on standard LAU record sheets. The data will be transferred to computer, and stored in the 'data-ease' database.

3.4.6 Statement of Potential

i) It is most likely that area 1 will reveal the most useful results, since there was a greater percentage of flint recovered from stratified contexts (Proj aims 2.7.3;8;13).

ii) Comparisons will be made with contemporary Iron age sites which produced flint. These will include the results from Wanlip (Cooper, forthcoming), Grove Farm, Enderby (Young and O'Sullivan, 1992) and Normanton-le-Heath (Young, forthcoming)(aim 2.7.13).

3.4.7 Methods

Initially only the material recovered from stratified contexts will be studied in detail. This analysis will include retouching, wear analysis, the quality of flint and the standard of manufacturing.

If a spatial distribution is carried out using the 3-dimensionally recorded flint from area 1, it may also reveal useful results.

3.5 THE CERAMIC BUILDING MATERIAL

3.5.1 Quantity

A total of 21,949 gms, 575 fragments of building material were recovered from the excavations. The total percentage of material from unstratified and cleaning layers is 27.6% (by weight).

	No. of fragments	Weight (gms)	% of total assemblage
Area 1	57	1,232	5.6
Area 2	518	20,717	94.4

Several fragments were small and others had no identifiable features, for this reason 43.8% of the fragments have been catalogued as unclassified.

3.5.2 Documentation

The material was catalogued according to the LAU ceramic building material divisions, each category was quantified by fragment count and weight. This data will be transferred to 'data-ease' database.

3.5.3 Statement of Potential

Only two contexts from area 2 have sufficient material to warrant individual study. Context 1483 produced 7,709 gms of ceramic building material, however 35.2% was unclassified. The other context is 1224 from which 2,489 gms of building material was recovered, 66% was unclassified. Analysis will contribute to Proj aims 2.7.2;8;10-11.

3.5.4 Methods

By referring to the LAU fabric series for brick and tile, many of the unclassified sherds should be identified.

3.6 THE INDUSTRIAL MATERIAL

3.6.1 Quantity

1,802 gms of industrial material (slag) were recovered from Kirby Muxloe. When divided by area, area 1 produced 412 gms of slag (and 20 gms of coal), with 15 gms unstratified or from cleaning layers. Area 2 produced 1,389 gms of slag (and 19 gms of coal), with 310 gms unstratified or from cleaning layers.

3.6.2 Documentation

The material was classified under the categories of hearth slag, tap slag, furnace lining and fuel ash slag. Each category was quantified by fragment count and weight. This data will be transferred to 'data-ease' database.

3.6.3 Statement of Potential

The slags were not found in sufficiently large concentrations to suggest obvious areas of industrial activity. However it may be possible to isolate potential areas when contexts have been grouped and phased (Proj aims 2.7.8;12).

3.6.4 Methods

i) The contexts which were sampled, and from which industrial material had been recovered will be tested for hammerscale. Findings from the sample of context 63, may prove interesting as it was from this pit fill that a hearth bottom was recovered. This may possibly indicate an isolated area of industrial working.

ii) Context 1089 produced 203 gms of hearth slag, and 78 gms of furnace lining. The material was recovered from a ditch and may represent hearth clearance on a very small scale, further analysis will be undertaken in an attempt to establish the validity of this theory.

iii) A limited number of pieces would benefit from sectioning to verify the initial identification. The material will be studied with more knowledge of context location and groupings.

3.7 THE WORKED STONE

3.7.1 Quantity

Slate - 3 fragments of slate weighing 499 gms were recovered from unstratified and cleaning layers. The two fragments from area 1 had nail holes.

Worked stone - 2 fragments weighing 813 gms were recovered from cleaning layers in area 2, one with a nail hole. A third stone was recovered from area 1 but was too heavy to weigh.

Pot boiler - 3 fragments weighing 231 gms of burnt and cracked stone were recovered from area 1.

Quern stone - Each area produced a quern stone, the one from area 2 weighed 1,490 gms, and represented less than a quarter of the original size. The other, recovered from area 1 was unstratified and too heavy to weigh. An iron rod remains in the hole of the quern stone, the fragment represents approximately half of the original size.

Grindstone - A grindstone was recovered from area 1 weighing 3,070 gms.

Whetstone - A possible whetstone weighing 27 gms was recovered from the cleaning layers on area 2.

3.7.2 Statement of Potential

The worked stone will contribute towards aims 2.7.8;10 and 12.

3.7.3 Methods

The fragments which can be assigned to a stratified context should be studied in relation to other artefacts from that feature. They should then be catalogued and recorded for the archive.

3.8 THE METAL SMALL FINDS

3.8.1 Quantity

There are a total of 67 metal small finds.

	Fe. obj	Coins	Brooches	Cu.alloy	Pb. obj	Buckle	Button
Area 1	10	-	-	2	-	1	1
Area 2	35	4	3	8	2	-	1
Total	45	4	3	10	2	1	2

64.2% of the material was unstratified or recovered from cleaning layers.

3.8.2 Statement of Potential

The metal small finds will contribute towards project aims 2.7.7-8 and 12. The coins and brooches will provide reasonably secure dating. Although only two of the coins and one of the brooches are from stratified contexts, they will provide a terminus post quem for the features (Proj aim 2.7.7).

3.8.3 Methods

The existing catalogue will be enhanced with the addition of further classification by measurements, decorative elements, condition, completeness and provisional dating.

3.9 THE GLASS

3.9.1 Quantity

A total of 14 fragments of glass were recovered from area 2, there was no glass recovered from area 1. Nine of the fragments were unstratified or from cleaning layers.

3.9.2 Provenance and Dating

Only 5 fragments were recovered from stratified contexts, 4 of these were Roman fragments. A total of 8 fragments dated to the Roman period with the remainder from the post-medieval period.

A rapid scan of the Roman material has identified 2 fragments of bottle glass, 1 lip fragment of a small flask and part of a melon bead.

3.9.3 Statement of Potential

In view of the small quantity of glass, further analysis would provide limited useful information.

3.9.4 Methods

The glass should be recorded and catalogued for the archive, and stored in stable conditions at LAU.

3.10 THE CERAMIC ARTEFACTS

3.10.1 Quantity

Two fragments of a loomweight weighing 320 gms were recovered from a post-hole in area 2.

One stem of a clay pipe weighing 5 gms was recorded as unstratified from area 1.

3.10.2 Statement of Potential

The loomweight fragment contributes to Proj aim 2.7.8. Context 1166, from which the loomweight was recovered also produced a large quantity of ceramic building material. It is possible that the material was used as post-packing.

The data recorded is sufficient for the archive.

3.11 *Storage and Curation*

The metal finds and a small amount of the pottery will require long-term conservation. The boxes of finds, archive files, and computer disks will be stored at Leicetershire Museuma, Arts and Records Service (LMARS). This will follow established procedures as agreed with the Keeper of Archaeology and the Assistant Keeper (Conservation).

No material will discarded.

3.12 Timescales for the Analysis of Finds from Kirby Muxloe

3.12.1 Prehistoric Pottery.
30 weeks.

F1 Analysis - 13 weeks
F2 Compiling fabric series - 4 weeks
F3 Report writing - 10 weeks
F4 Illustration - 3 weeks

3.12.2 Roman Pottery
15 weeks.

F5 Analysis - 8 weeks
F6 Report writing - 6 weeks
F7 Illustration - 1 week

3.12.3 Post-Roman Pottery
1 week.

F8 Analysis - 3 days
F9 Report writing - 2 days

3.12.4 Flint
8 weeks

F10 Analysis/Rep - 7 weeks
F11 Illustration - 1 week

3.12.5 Building Material
4 weeks

F12 Analysis - 2 weeks
F13 Report writing - 1 week, 3 days
F14 Illustration - 2 days

3.12.6 Industrial Material
2 weeks, 2 days

F15 Analysis - 1 week, 2 days
F16 Report writing - 1 week

3.12.7 Stone Artefacts
2 weeks

F17 Analysis - 1 week
F18 Report writing - 1 week

3.12.8 **Metal Small Finds**
4 weeks

F19 Analysis - 2 weeks
F20 Report writing - 1 week
F21 Illustration - 1 week

3.12.9 **Glass**
1 week, 1 day

F22 Analysis - 3 days
F23 Report writing - 2 days
F24 Illustration - 1 day

3.12.10 Misc

F25 Assimilate finds reports - 1 week
F26 Conservation - 1 week
F27 Thin section Analysis

4 ASSESSMENT FOR FURTHER ANALYSIS: ENVIRONMENTAL SAMPLES

P. Boyer

4.1 Introduction

Samples were taken from a range of features across areas 1 and 2 on a judgemental basis. Sampling was also carried out in culverts dug as part of road construction work (areas 4, 5 and 6), where substantial waterlogged deposits were found.

It was hoped that sampling on the two archaeological sites would enable the recovery of sufficient quantities of carbonised plant remains in order to provide information concerning Iron Age and Roman agriculture (PD 3.1.5). Evaluation had also shown the likelihood of finding cremation burials on the sites (PD 3.1.7). Other types of environmental remains were thought unlikely to be preserved on site except in areas of waterlogging, though a small quantity of badly abraded, non-calcined animal bone was recovered, mainly by hand.

It was further hoped that samples taken from the waterlogged deposits in areas 4 and 5 would yield other materials such as pollen, plant macrofossils and insects, as well as allowing for sediment analysis. These would be used in order to provide a better understanding of the local palaeoenvironment. Radiocarbon dating of materials from these deposits would be necessary where archaeological dating material was not available.

4.2 Methods

A selection of deposit types were taken from features across both sites and ranged in size from small spot samples to large c.150 litre samples, the majority being between 5 and 10 litres. All samples of more than c.5 litres from the two sites (excluding presumed cremations, of which only 12 sample parts) and six culvert samples were wet sieved using a sieving tank obtained from York Archaeological Trust with 0.5mm mesh and flotation to 0.3mm. Sample units were processed and numbered accordingly. 190 sample units were processed amounting to 1698.5 litres (1.9504 tonnes). Of these, 147 were from Area 1, 12 were from Area 2 Iron Age contexts, 24 were from Area 2 Roman contexts and 7 were from Area 4.

The residue from the mesh was dried then separated with a 4mm riddle and the coarse fraction >4mm sorted for finds and remains which are included in the relevant sections of this report. The fine fraction 0.5-4mm was reserved unsorted to consider for a second flotation (see below). This was necessary as much carbonised material did not to float upon first flotation, due to saturation within the clay soil.

A small quantity of hand collected bone from the sites was also recovered and carefully dried for analysis.

Waterlogged samples taken from the culverts were of a number of types, dependent upon the proposed analysis. These consisted of: general context samples of 2 to 10 litres for insect and other analysis;

monolith and Kubiena samples for pollen and plant macrofossil analysis; waterlogged wood samples for identification, analysis and C14 dating; bone spot samples. These materials were not treated in the same way as bulk samples from the two sites and so are considered separately in this assessment.

4.3 Archive

Records of all samples and sample processing are held in the site archive. All materials from samples, fine residues, flots and all unprocessed samples (except six monoliths held in the Department of Geography, University of Leicester) are currently in stable storage at the Leicestershire Archaeological Unit.

Estimates for work on materials to be carried out during the analysis stage are therefore divided into two sections: Non-waterlogged deposits (4.4-4.7; areas 1 and 2) and waterlogged deposits (4.8-4.13;areas 4, 5 and 6).

4.4 Animal Bone

I Baxter

4.4.1 *Factual Data*

Bone was recovered by hand from 76 contexts in area 1 and 99 contexts in areas 2 and 3, a total of 175 contexts. Further bone remains to be recovered from 42 unprocessed sample units. Quantity per context is generally small but in some cases consists of complete jaws represented by teeth. Bone, both calcined and unburnt, occurs in small quantities in over 80% of samples from both parts of the site (residues >4mm). Additionally, a very small number of bones was recovered from waterlogged contexts in area 5, and one from unstratified material in area 6.

The following species have been identified so far: Horse, Cattle, Sheep/Goat, Pig. Most of the identifiable bone consists of teeth but there are also a number of long bone fragments.

Bone condition and preservation is generally poor but variable. In many cases jawbones have decayed but tooth rows have been preserved in an identifiable state. There are a small number of relatively well preserved long bone fragments. An estimated 60% of hand collected bone is identifiable to species.

All recovered bone is bagged and boxed in dry, stable conditions at the Leicestershire Archaeological Unit.

4.4.2. *Means of Collecting Data*

The numbers of contexts with bone have been counted and the bone scanned.

4.4.3 *Statement of Potential*

Contrary to the original project design (3.1.5), there is survival of animal bone, although preservation is variable and the overall sample is probably biased by taphonomic factors related to bone size and density combined with variations in pH levels throughout the site. However, further analysis may help to elucidate problems identified during scanning which are unrelated to preservational factors (such as an unusually high number of horse teeth recovered, compared to those of pig). It may also provide an indication of relative frequency of domestic species for the site as a whole, and where appropriate, specific features (Proj aim 2.7.5).

4.4.4 *Analysis Stage*

All surviving bone, both hand collected and from samples is to be analysed. Identification where possible will be by comparison with reference specimens and text book illustrations. General quantification will be made using a fragment count.

4.4.5 *List of Tasks*

E1 Identification of species.

E2 Fragment counts per species per phase for each area (1, 2).

E3 Write report.

E4 Contact consultant: Human Bone

4.5. Carbonised Plant Remains — P Boyer

4.5.1 *Quantity*

Carbonised remains were recovered in the tank flots of each of the 190 sample units processed, though much of this material consisted of flecks of charcoal with many flots yielding very sparse carbonised remains. However it was noticed during wet sieving that a great deal of carbonised material failed to float because of saturation in the clay soil. Because of this, the dried fine fractions of a significant number of the samples required re-flotation to recover these carbonised remains. 110 sample units were treated in this way; 89 from Area 1, 7 from Area 2, Iron Age contexts, 12 from Area 2 Roman contexts and 2 from Area 4.

54 sample units from 18 features originally interpreted as cremations were taken. Of these, 12 units were processed (included above) and found to be rich in carbonised material. The remaining 42 units require processing.

4.5.2 *Method of Assessment*

When dry each flot (from the first flotation) was briefly examined by eye so that a quantification of carbonised material could be made in order that more productive samples could be targetted for the analysis stage. 42 flots were thus targetted; 19 from Area 1, 6 from Area 2 Iron Age contexts and 17 from Area 2 Roman contexts, and were considered for analysis together with the 110 re-flots.

4.5.3 *Pilot Study*

Thirty flots (13 targetted from the first flotation and 17 from re-flotation) were sorted in a pilot study using a x10 stereo microscope in order to ascertain what carbonised and other materials were present. This showed the amount of carbonised material to be quite sparse from first flotations, as was expected, but was plentiful from the re-flotations. 16 of the 30 samples scanned contained carbonised plant remains. 11 of these contained seeds which appear to be mainly of species associated with arable or waste land environments, e.g. *Chenopodium album, Hyoscyamus niger* and *Sambucus nigra.* Evidence for cereals was also observed in 10 samples (4 from Iron Age and 6 from Roman contexts), cereal chaff was also found in 2 of these, one from an Iron Age and one from a Roman context from the re-flotations only. This will allow the identification of the cereals present. Nutshell fragments were also recovered.

All of the flots are dried, bagged, boxed and labelled and held in stable conditions at the Leicestershire Archaeological Unit.

4.5.4 *Statement of Potential*

The main area of potential as set out in the project design (3.1.5) which the carbonised botanical material may be used for is in recovery of identifiable cereals and weeds of cultivation from prehistoric and Roman deposits. Scanning of a number of flots has shown that this should be possible. This is also a priority for the Midlands region (Moffett and Greig, 1991: 2.2). Unfortunately the potential to look at cereal evidence for earlier prehistoric periods cannot really be realised as it now appears that the majority of features excavated were of an Iron Age or later date. However the question of continuity of Iron Age and later agriculture can be addressed (Proj aim 2.7.5).

4.5.5 *Analysis Stage*

42 sample units, rich in carbonised remains require processing with flotation and re-flotation of fine residues.

Flotation fractions from 29 targetted first flotations and 93 re-flotations require sorting, together with those from the 42 unprocessed samples. These consist of 29 sample units from Roman contexts the remainder being Iron Age. The carbonised plant remains recovered will require identification and recording on the site database. A report will then be required, considering the remains in relation to phases of this site and comparison with other local sites as outlined in the Project design (3.1.5).

4.5.6 *List of Tasks*

E5 Process 42 sample units with re- flotation for carbonised remains.

E6 Sort and record 164 flots for carbonised plant remains.
Record on database.

E7 Identification and analysis of carbonised plant remains from above.

E8 Write report.

E9 Contact consultant on carbonised plant remains.

4.6 **Charcoal** P Boyer

4.6.1 *Factual Data*

Charcoal was recovered from the dried coarse fractions of 177 of the 190 samples processed. Much of that recovered is of quite small fragments though there is enough of sufficient size for analysis from a number of samples. The material is in good condition, bagged and boxed in a stable environment at the Leicestershire Archaeological Unit.

4.6.2 *Means of Collecting Data*

The charcoal was recovered during sorting of coarse fractions and the quantity recovered from each was recorded using a simple three point scale. These records can be used in targeting material for analysis.

4.6.3 *Statement of Potential*

The charcoal should give an indication of the type of wood resources being exploited by the inhabitants of the sites. This can be related to the wider issue of the nature of the Leicester Forest during the (Iron Age) Roman and later periods (PD 3.1.2) and the nature of industrial activity during these periods, which is an important local priority.

4.6.4 *Analysis Stage*

Of the 177 samples producing charcoal, 100 have been selected for further analysis on the basis of quantity, condition and provenance of the material.

The material will be forwarded to a specialist for identification, analysis and production of a final report.

4.6.5 *List of Tasks*

E10 Identification and analysis of charcoal. Write report.

4.7 **Phosphate Analysis** Dr A G Brown

4.7.1 *Factual Data*

Sub-samples were kept of all sample units wet sieved and smaller samples have been retained. There is thus a complete range of material from which small samples can be taken for phosphate analysis.

4.7.2 *Means of Collecting Data*

A number of contexts from areas 1 and 2 will be selected in conjunction with the specialist, where phosphate analysis may prove a useful tool. Sub-samples of these contexts will be extracted accordingly.

4.7.3 *Statement of Potential*

Phosphate samples will be taken from both of the excavated sites with the purpose of defining ambiguous cut-features and in order to look at site use (Proj aim 2.7.11-12).

4.7.4 *Analysis Stage*

30 phosphate samples will be taken and analysed by the specialist. The results will be reported upon accordingly.

Estimates for the time and costing of this work have been submitted by the specialist doing much of the analysis of waterlogged material and have been included in his costings for sediment analysis. The actual time and costing of phosphate work cannot therefore be isolated here but is included in 4.10.3 E15 below.

4.8 *Waterlogged Deposits* Dr A G Brown

4.8.1 Kirby Muxloe has a great deal of potential for environmental work. Sediments from the fill of a small stream that runs to the north of the main archaeological excavations has revealed a stratified sequence of fluvial and organic sediments over 3m deep.

The site fits well with the priorities of the region in two ways. Firstly because the sites sit in the headwaters of a well defined small catchment (under 10 sq km) and the fill therefore reflects the land use and erosion history of a small area around the archaeological sites. Secondly the site has both colluvial and alluvial sediments which can be traced from the valley floor to the multi-period settlement sites.

Trenches for two culverts (areas 4 and 5) have revealed these sediments which have been drawn and sampled. Both are within 200m of the Iron Age and Roman site and downslope. The most promising site, the downstream (easterly culvert; area 5) has the potential to provide the following:

1) A local vegetation record, in all probability covering a time period between c. 6000 years bp and c. 2000 years bp.

2) Date the major alluviation of the small floodplain, which due to the very small size of the catchment will relate erosion on and around the settlement sites being investigated.

3) Document stream and floodplain resources. The culverts are upstream of a slight bedrock constriction and the area may have been a pool. There are some suggestions of water management from the site.

The following analyses are to be carried out on samples taken from these waterlogged deposits:

4.9 Pollen Analysis

4.9.1 *Factual Data*

Six monoliths, three Kubiena tins and c. 30 spot and context samples were taken from culvert sections, which are available for pollen preparation. These are housed in stable conditions both at the Leicestershire Archaeological Unit and the Department of Geography, University of Leicester.

4.9.2 *Means of Collecting Data*

All sediment samples taken direct from culvert sections are available for processing. Observation of the sediments in situ by the specialist gave an indication of their suitability for further analysis.

4.9.4 *Statement of Potential*

Pollen analysis of these sediments has the potential to answer the important questions raised in the project design concerning the prehistoric environment (3.1.5). Although the original aim was to sample deposits in area 3 this has not been done due to high levels of disturbance in this area, however the culverts provide more than adequate replacement areas for this work to be carried out and the questions answered.

Pollen sampling particularly from the earlier prehistoric periods (pre-Iron Age) in order to further understand vegetation sequences is a high priority for the Midlands region (Moffett and Greig, 1991; 2.1).

4.9.5 *Analysis Stage*

Samples for pollen analysis are to be prepared from the six monoliths, three Kubiena tins and c.30 spot and context samples, and scanned. If these prove to be polliniferous (which is highly likely with this site) then a diagram (70 cm deep at an interval of 8cm) should be produced from the downstream exposure (area 5). This could be tied into samples from the upper exposure (area 4) and isolated samples.

4.9.6 *List of Tasks*

E11 Preparation and evaluation of pollen samples from 6 monoliths, 3 Kubiena tins and 30 spot and context samples.

E12 Pollen analysis of above. Write report.

4.10 Sediments

4.10.1 *Factual Data*

Six monoliths and three Kubiena tin samples were taken from sections in areas 4 and 5 and contain a number of waterlogged sediment sequences.

All samples are held in stable storage, the monoliths at the Department of Geography, University of Leicester, the Kubiena tins at the Leicestershire Archaeological Unit.

4.10.2 *Means of Collecting Data*

All sediment samples taken direct from culvert sections are available for processing. Observation of the sediments in situ by the specialist gave an indication of their suitability for further analysis.

4.10.3 *Statement of Potential*

Analysis of these sediments has the potential to answer the important questions raised in the project design concerning the prehistoric environment and the sequence and dating of alluvial deposits (3.1.5, 3.1.6). Although the original aim was to sample deposits in area 3 this has not been done due to high levels of disturbance in this area, however the culverts provide more than adequate replacement areas for this work to be carried out and the questions answered.

In addition to answering the questions posed in the research design, sediment analysis may also enhance understanding of the exploitation of stream and floodplain resources.

Local alluvial episodes are little understood (PD 3.1.6) and so analysis of these sediments should do much to shed new light in this area of research.

4.10.3 *Analysis Stage*

A sediment description and organic sediment type description from the monoliths from the initial stages of the pollen work.

Magnetic susceptibility and loss on ignition from the monoliths and alluvial samples.

Processing of 30 phosphate samples (see above, Non-waterlogged deposits).

4.10.4 *List of Tasks*

E13 Sediment and organic sediment type descriptions from the monoliths.

E14 Magnetic susceptibility and loss on ignition from the monoliths and alluvial samples.

E15 Analysis of 30 phosphate samples taken from both of the excavated sites with the purpose of defining ambiguous cut features and in order to look at site use.

4.11. Radiocarbon Dates from Waterlogged Deposits

4.11.1 *Factual Data*

Suitable materials from monoliths and other samples from clearly defined contexts within the culverts will be available for radiocarbon dating. These samples are stored at the Leicestershire Archaeological Unit and the Department of Geography, University of Leicester.

4.11.2 *Means of Collecting Data*

Suitable materials for radiocarbon dating will be extracted from monoliths and samples from other clearly defined contexts from sections within culverts.

4.11.3 *Statement of Potential*

Radiocarbon dating of materials from alluvial deposits will address the question of the sequence and dating of alluvial deposits as outlined in the project design (3.1.6). Although the samples were taken from a different area than proposed in the project design, the same questions can be addressed.

Local alluvial episodes are little understood (PD 3.1.6), therefore dating of these deposits has great potential for better understanding. Dated pollen sequences for the Midlands region are also of high priority (Moffett and Greig, 1991; 3.1), thus the potential of radiocarbon dating is further supported.

4.11.4 *Analysis Stage*

Radiocarbon dates on (a) in-situ roots penetrating into the gravel and Keuper Marl from the base of the peats, (b) the matrix at the base of the peats, (c) at least one feature on the pollen diagram, (d) one on the uppermost peat matrix, (e) upper penetrating roots and (f) two from the upper culvert site. The requested number would therefore be seven. Work in the East Midlands has shown that floodplain peat of this sort must be fraction dated, but that if this is done it can provide extra information on the sequence of land surfaces and history of the site (Keough and Brown, 1992).

4.11.5 *List of Tasks*

E16 Production of radiocarbon dates for seven samples.

4.12 Plant Macrofossils

P Boyer

4.12.1 *Factual Data*

The six monoliths from which samples are to be extracted for pollen, sediment and dating analysis should also yield plant macrofossils. The monoliths are currently stored at the Department of Geography, University of Leicester.

4.12.2 *Means of Collecting Data*

Ten sub-samples of waterlogged material from contexts in areas 4 and 5 were treated to a simple washover and the flots and residues scanned. These showed the presence of small numbers of seeds and an abundance of other plant macrofossils, particularly wood and stem fragments.

4.12.3 *Statement of Potential*

The analysis of the plant macrofossils from the same deposits as the pollen samples is an essential part of pollen analysis in order to draw conclusions about plants in the immediate locality. Waterlogged plant macrofossils may be used as an aid in answering questions concerning prehistoric (and later?) agricultural practices (PD 3.1.5).

The material may also be used to answer further questions concerning the prehistoric environment. Indeed recovery of plant macrofossils from early prehistoric (pre-Iron Age) contexts is an area of high priority in the Midlands region (Moffett and Greig, 1991; 2.1).

4.12.4 *Analysis Stage*

Ten samples from the monoliths are to be taken and analysed for plant macrofossils. Full analysis will only be carried out on those samples with goood assemblages of plant remains which have the potential to provide useful environmental information about the site as the specialist's time is limited.

4.12.5 *List of Tasks*

E17 Preparation and analysis of ten samples from monoliths for plant macrofossils. Write Report

4.13. Insect Analysis

P Boyer

4.13.1 *Factual Data*

Samples of waterlogged deposits from areas 4 and 5 from the same contexts as the six monoliths were assessed for insect analysis to add to the information from pollen, plant macrofossil, sediment and dating analysis from these deposits.

4.13.2 *Means of Collecting Data*

Ten sub-samples of waterlogged material from contexts in areas 4 and 5 were treated to a simple washover and the flots and residues scanned. These showed the presence of a number of insect and mite remains.

4.13.3 *Statement of Potential*

Insect analysis can be used to further enhance understanding of the prehistoric environment in this area, particularly when used in conjunction with botanical evidence. Furthermore, insect remains are of great importance for environmental evidence in the Midlands region (Moffett and Greig, 1991; 2.1).

4.13.4 *Analysis Stage*

Ten samples are to be processed and scanned for insect remains and of these a maximum of four will be analysed in detail.

4.13.5 *List of Tasks*

E17 Processing and scanning ten samples for insect remains and analysis of four of the above.

4.14 **Waterlogged Wood** P Boyer

4.14.1 *Factual Data*

Substantial pieces of waterlogged wood were encountered in sections in areas 4, 5 and 6 and a number (c. 20) were taken as samples. A great deal of wood was also observed in the context samples taken from area 5 and moderate amounts of large pieces (>5000 cu mm) recovered from four of the ten sub- samples.

4.14.2 *Means of Collecting Data*

C. 20 samples were taken direct from contexts in the field and others were recovered from trial washovers of four context sub-samples.

4.14.3 *Statement of Potential*

The questions of land use continuity from the Roman to Medieval periods and the extent of the Leicester Forest during this period have been raised in the project design (3.1.2). Analysis of waterlogged wood of this period may serve to address these questions and in elucidating much earlier environmental characteristics, particularly the nature of prehistoric tree cover and the exploitation and utilization of woodland resources. Again, such material is of a high priority in the Midlands region, particularly if it can be clearly scientifically dated (Moffett and Greig, 1991; 2.1, 3.1).

4.14.4 *Analysis stage*

50 samples of wood are to be sent to a specialist for identification and analysis, including examination for any signs of anthropogenic working.

4.14.5 *List of Tasks*

E18 Identification and analysis of 50 waterlogged wood samples. Write report.

5. *Publication and Presentation*

5.1 It is intended that the results of the project will be published in the Transactions of the Leicestershire Archaeological and Historical Society and the editor has been made aware of the potential project. If the results warrant it, it may be submitted to the Prehistoric Society.

5.2 The results will be published with reference to the research aims rather than as a traditional excavation report. A suggested synopsis would be as follows:

5.2.1

1) Introduction	2 pages
2) The enclosures(2.7.11)	6 pages
3) Iron Age Structures (2.7.10)	6 pages
4) Settlement Activity (2.7.9;12)	6 pages
5) Roman Activity (2.7.1-2)	5 pages
6) The settlement in its landscape (2.7.1;5-6)	6 pages
7) Iron Age Pottery (Res aims 2.7.4)	10 pages
8) Roman Pottery(res aim 2.7.2)	8 pages
9) Flint (Res aim 2.7.3;13)	2 pages
10 Sediment Analysis (Res aim 2.7.5-6)	3 pages
11) Plant Remains (Res aim 2.7.5)	3 pages
12) TL dating (Res aims 2.7.4;6;7)	2 pages
13) C14 Dating (Res aims 2.7.4;6;7)	2 pages

5.3 It is the policy of Leicestershire Archaeological Unit to present its work to as wide a public as possible and a display assistant is employed for this work. It is envisaged that a display will be prepared on the project and lectures have already been given. Further lectures are planned and, in view of the accessible nature of the site's information, a popular publication may be considered.

6. Methods Statement

6.1 To fulfill the aims appropriate methods are required for stratigraphical, artefactual and environmental analyses. These are detailed in the assessment reports (2-4) and respective task lists.

To summarise the following methods are proposed:

6.2 The stratigraphy in conjunction with the C14 and TL dating will be the basis for the chronological framework for the archaeological activities on the site (aims 2.7.1-12). The site data will be placed in an hierarchical group/sub-group system so enabling groups of contexts to be regarded at various levels within and between groups and within and across phases. Finds and environmental information will also be analysed using the hierarchical grouping system (aims 2.7.2-11).

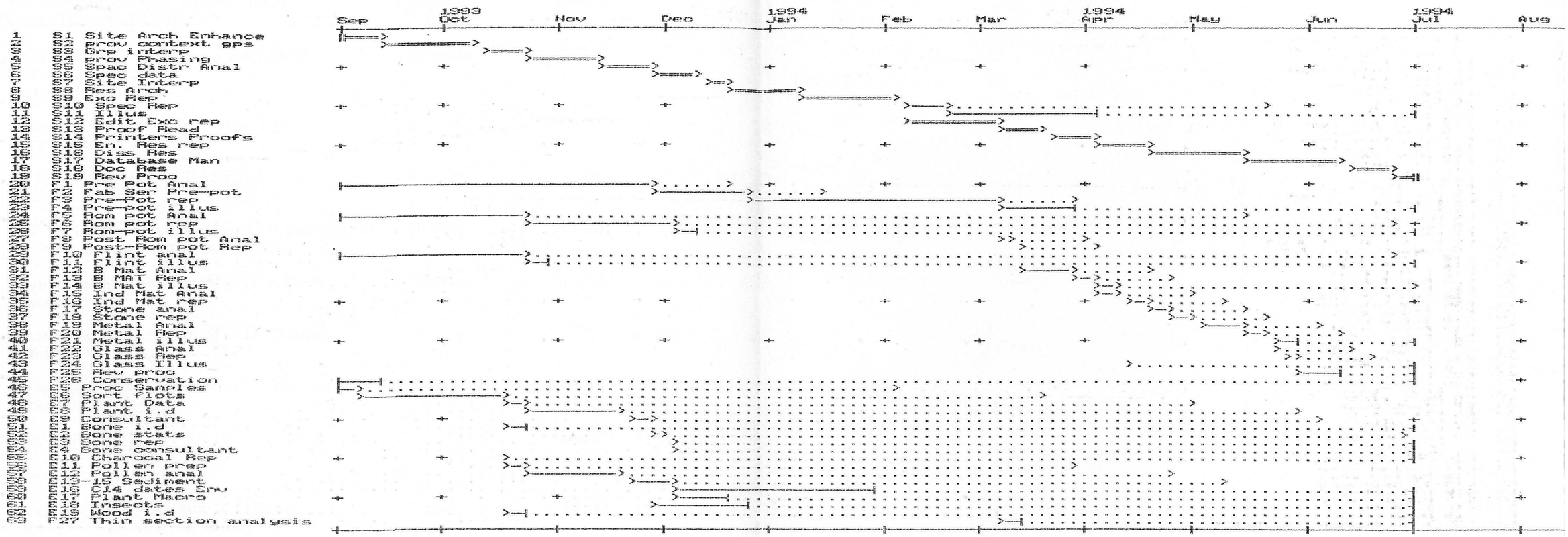
The spatial distribution of structural types and other features will be analysed (aim 2.7.9-12).

6.3 The stratified Iron Age and Roman pottery will be analysed according to fabric, form and decorative techniques following the Prehistoric Ceramics and Roman Pottery Research Group guidelines (aims 2.7.2-4;8-9;12). Quantification will include sherd number, weight and EVEs. Analysis of firing, surface treatment, manufacturing techniques, residues, perforations, abrasion and re-use will also be undertaken (aims 2.7.8;12). Comparative examination will be made of other material in particular the Iron Age pottery from Wanlip and Enderby. TL dating and thin section analysis will be undertaken for appropriate groups (aims 2.7.2;4;7. Other finds which can assist in the functions of the settlement features will be analysed as appropriate (aims 2.7.8;12).

6.4 To answer aims 2.7.5-6 the following methods are proposed; particle size analysis, mineral magnetics, phosphorous analysis and SEM analysis Analysis of the plant remains and bone is proposed to contribute to aim 2.7.5. Phosphate analysis and charcoal identification is proposed to help answer aims 2.7.8-12.

6.5 Dating of the deposits will be of primary importance if the aims are to be addressed. A particular problem in this area is the dating of Iron Age activity. Pottery is of conservative tradition showing little development over the last four centuries BC. In view of this a feasibility programme for Thermo-luminescence dating will be undertaken by the University of Durham. C14 dating is imprecise due to the fluctuations on the calibration curve during this period. However it is proposed to submit samples from key contexts for comparison with the TL dates.

KIRBY MUXLOE
POST EXCAVATION ANALYSIS
SCHEDULE



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7. Resources and Programming

7.1. *Staffing and Equipment*

	Duration	*Cost (£)*	
7.1.1 *Project Team*			
L.C.C Staff			
Project Manager SCP 28 Patrick Clay Overall management, monitoring, strategy,	56 weeks	L.C.C	5% Inflation allowance
Site Director SCP 19 Lynden Cooper Direct Tasks S1-19,F4).	56 weeks	13640.46	+ 682.00
Finds Analyst (IA Pottery and other finds) SCP 15 Dawn Harvey Tasks F1,3,5-10'-22;	40 weeks	8571.07	428.55
Finds Analyst (Roman Pottery) SCP 16 Patrick Marsden Tasks F2)	17 weeks	3642.70	182.14
Finds Analyst (Flint) SCP 15 T.B.A Tasks F4 (new cost from RY to follow 13.1.95)	8 weeks	1714.21	~~117.22~~
SCP 18 Angela Monckton Tasks E1-4;Management-Environmental monitoring and analysis)	10 weeks	2344.45	117.22
Environmental Supervisor SCP 17 P Boyer Tasks E5-6	7 weeks	1601.89	80.09
Environmental Supervisor SCP 15 I Baxter Tasks E1-3	2 weeks	428.24.	21.41
Archaeological Illustrator SCP15 D Hopkins Tasks F4;7;11;14;21;24	7 weeks	1499.93	75.00
Total staff costs		*33443.27*	+ ~~1703.61~~ 1586.39
External			
Dr G C Morgan University of Leicester Task E6 (Charcoal identification)	2 days	200.00	
Dr A Brown, University of Leicester Tasks E11-16 (Sediment analysis)		4276.00 ✓	
Dr C R Salisbury, University of Nottingham Task E19	Freeze	200.00	
L Moffett, University of Birmingham Task E9	5 days	180.00 ~~600.00~~	
J Greig, University of Birmingham Task E17		1200.00 ✓	
D Smith, University of Birmingham Task E18		2001.00	

	I.Bailiff, University of Durham Task S21 (Thermo-luminesence)	Freeze	1000.00
	C14 Dates, Task S20	1500.00	1750.00 *
	A Vince, Thin Section Analysis F27	300	~~180.00~~ 251.00 400.00
	A Morris S.M.Elsdon, University of Nottingham Tasks F1-3(Consultant Iron Age pottery)	5 days	1300.00
	A.R Reid, Assistant Keeper (Conservation) Leicestershire Museums Tasks F1,17	5 days	825.00 Freeze check if already spent
			12532.00

7.1.3 Equipment

Consumables and storage Film, Permatrace, plastic bags, boxes, Stewart boxes, chemicals, Disks,Drawing equipment	1600.50 (13.1.95) Spent	1680.00
Publication 62 p @ £40.00 per page		2480.00
Total		*4160.00*
7.1.4 Project Costs		*50135.26*
Overheads (25%)		12533.82
Total		**62669.08**

7.2.1 Timetable

The timetable is shown as a cascade chart. Milestones are included as time critical monitoring points.

7.2.2 Budget

The budget is submitted as a total cost as part of staffing and equipment above 7.2.1-4. All these costings are exclusive of V.A.T and have been made at 1993-4 prices being valid until 1.7.1994. Allowance has been for bad weather, staff holidays, training and compliance with Health and Safety legislation. LAU uses the SCAUM manual as revised in 1991 as its Health and Safety Manual although it is a preparing a Health and Safety policy in line with EEC directive. All employees, consultants and volunteers are covered by Leicestershire County Council's public liability insurance (Mutual Insurance Ltd policy To-10A001-0033).

* 120.00 from C14 re-allocated to Thin section analysis.

Beamish M,1992	Ratcliffe-on-the Wreake Shipley Hill (SK 6238 1330) *Trans Leics Archaeol Hist Soc* 66, 187
Chowne P, Girling M and J Greig, 1986,	Excavations at an Iron Age Defended enclosure at Tattershall Thorpe,Lincolnshire. *Proc Prehist Soc* 52 159-188
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This project design was prepared by Lynden Cooper (Sections 1-2), Dawn Harvey (Section 3), Peter Boyer, Angela Monckton, Ian Baxter and Tony Brown (Section 4) and Patrick Clay (Sections 5-7). It is produced on recycled paper.

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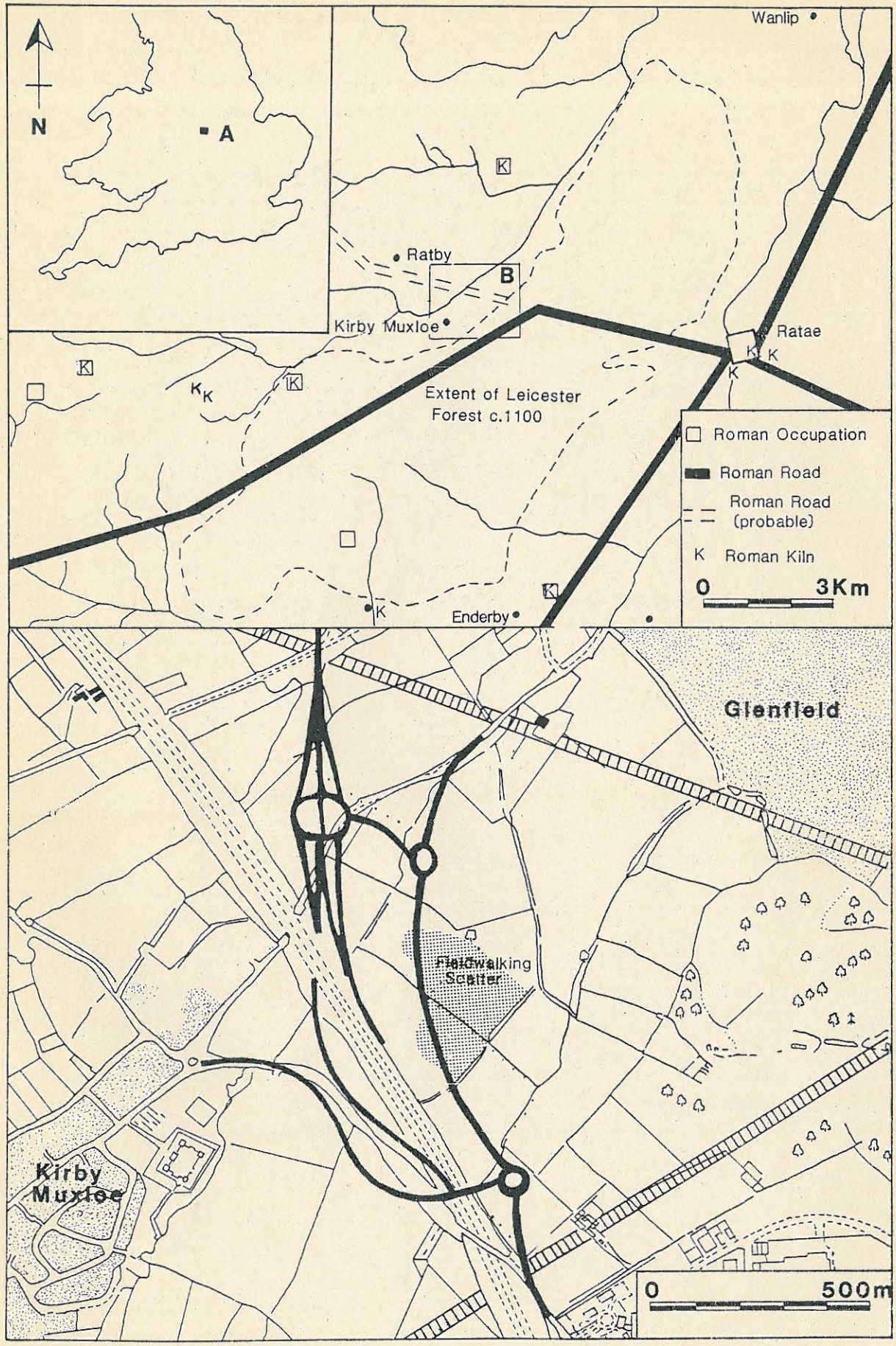
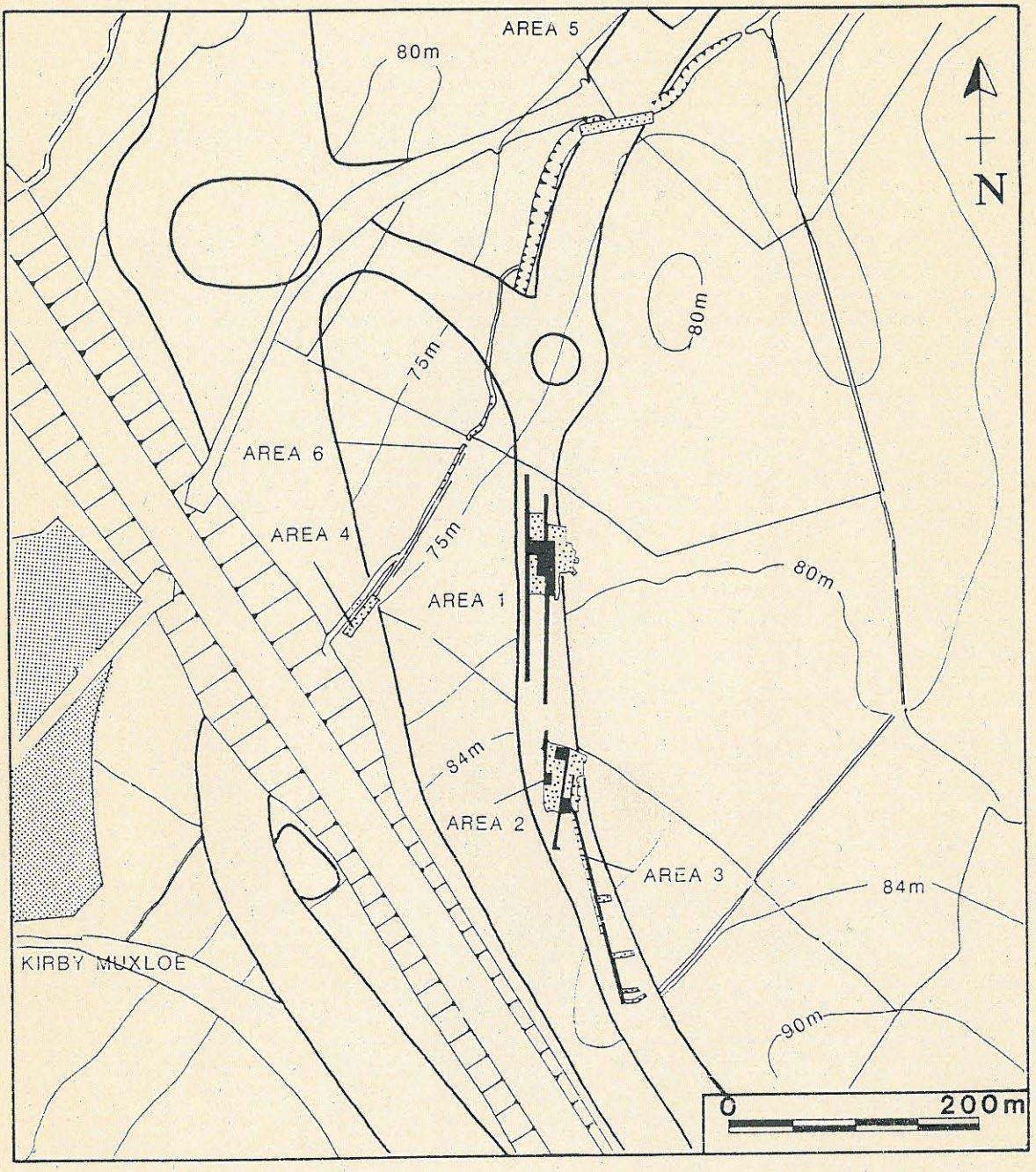
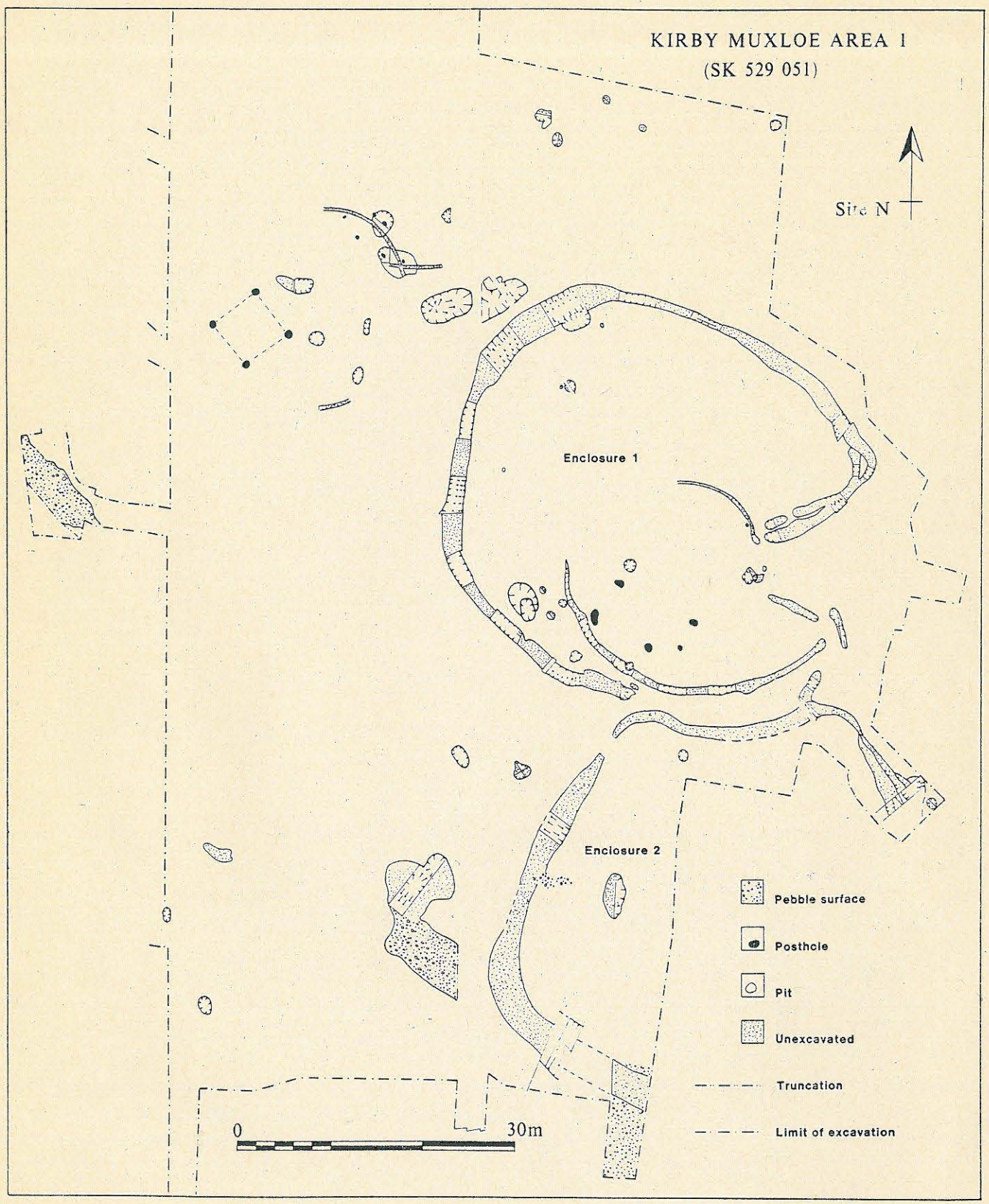
16.7.1993



1 Site Location Plan

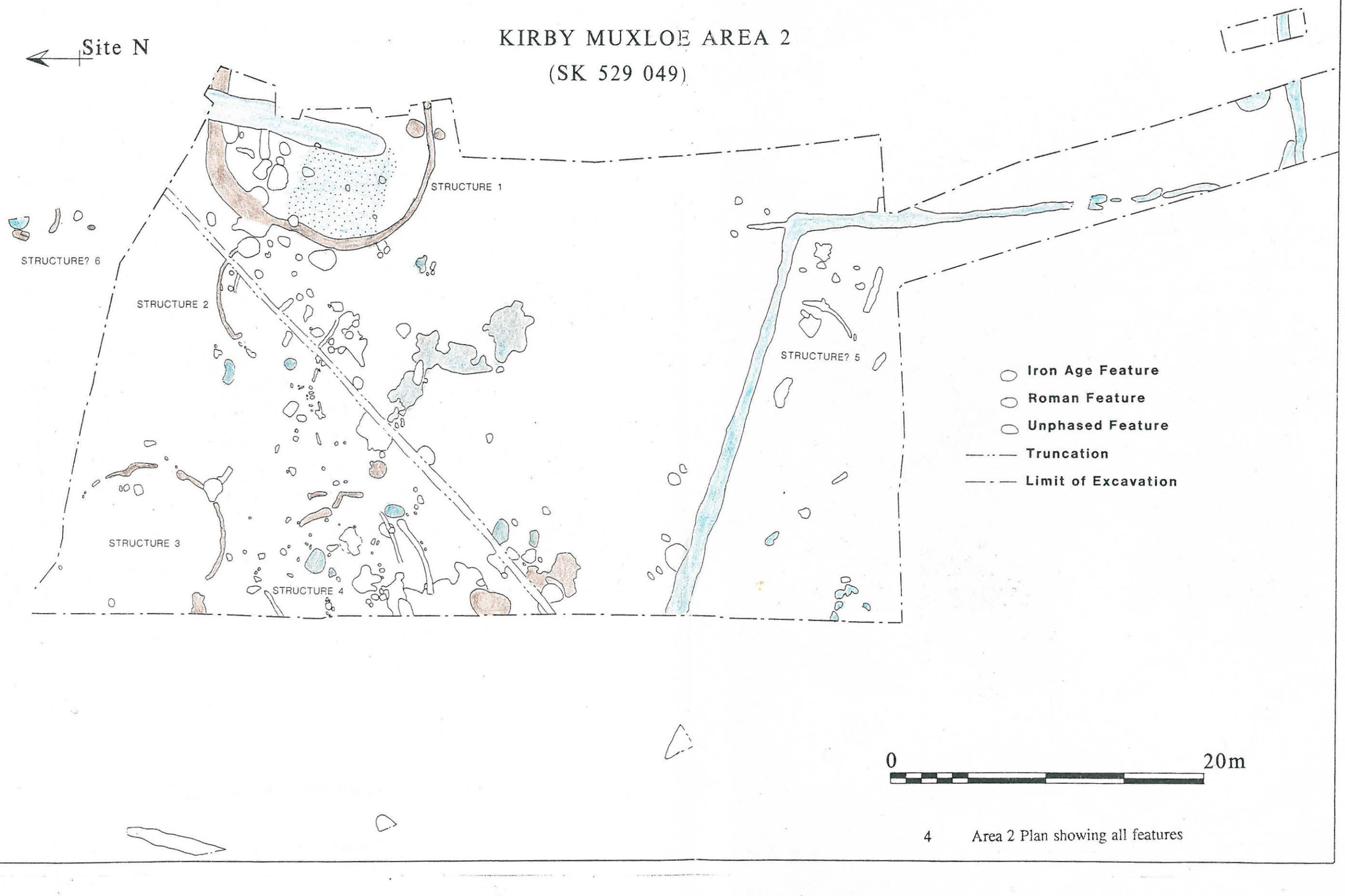


2 Trench and Area Location Plan. Evaluation trenches-solid; Excavation areas-stippled



3 Area 1 Plan showing all features

KIRBY MUXLOE AREA 2
(SK 529 049)



4 Area 2 Plan showing all features