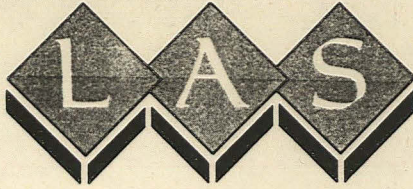


EU 485

EU 3433

93/1



43312 - Prehist
40978 - Prehist
40979 - Roman
40998 - Prehist
42781 - Med
42782 - Early Med
43697 } Prehist
43698 }
43699 - Roman
43700 - Med.

EAST KEAL BYPASS
ARCHAEOLOGICAL ASSESSMENT OF THE PREFERRED ROUTE

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EAST KEAL BYPASS
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1.0 INTRODUCTION

1.1 This assessment has been prepared by Lindsey Archaeological Services on behalf of Roger Stringer Landscape Architects. All available archaeological and historical information concerning the area to be affected by the bypass has been collated and analysed.

1.2 The Preferred Route of the East Keal bypass cuts across Keal Hill on the north side of the village, an area known to contain archaeological remains. Background research was undertaken to cover the immediate general area and a rapid field survey was undertaken within a corridor 100m wide along the route. Appendix A lists all the known archaeological remains which lie within this corridor. Appendix B lists other sites in the fields affected by the route and Appendix C lists sites in the surrounding area.

1.3 This document proposes a strategy for further investigation of archaeological remains in accordance with the recommendations outlined in the DoE Planning and Policy Guidance Note (PPG 16) published in November 1990. It has been prepared in accordance with the Code of Conduct of the Institute of Field Archaeologists, the IFA draft Standard on Archaeological Desk-Based Studies and the Archaeological Guidelines for Road Schemes (Lincolnshire County Council Archaeology Section).

1.4 Whilst every care has been taken, it is always possible that further data may emerge and LAS cannot be held responsible for any financial loss, delay or damage, material or otherwise, resulting from subsequent discovery of archaeological remains.

2.0 SUMMARY OF RECOMMENDATIONS

The present study has identified Fields 2 and 8 (as shown on Fig.1) as areas of high archaeological potential which merit detailed field investigation.

Field 2

SMR ref. 40978 (TF 3762 6364) Concentration of flint, predominantly Mesolithic with some Neolithic and early Bronze Age material. Pottery of Early-Middle Bronze Age date, together with burnt stones of unknown date.

SMR ref. 40998 (TF 3735 6370) Mesolithic flint scatter.

The rapid field survey established the presence of Earlier and Later Mesolithic, and Earlier and Later Neolithic flintwork along the whole length of the bypass route in this field.

Field 8

A concentration of Later Neolithic/Early Bronze Age flintwork was found in this field.

Intensive fieldwalking, geophysical survey and hand-excavated trial trenching is recommended for these two fields.

It is further recommended that a geophysical survey of a percentage sample of the route crossing Fields 4,5,6 and 7 should be carried out, together with machine excavated trial trenches.

The combined results from the present assessment and the proposed field evaluation would provide the necessary information upon which a strategy for the preservation and recording of the archaeological resource may be devised. This might include preservation *in situ* or excavation prior to construction and a watching brief to monitor construction groundwork.

3.0 GEOGRAPHICAL AND TOPOGRAPHICAL DESCRIPTION OF THE PREFERRED ROUTE

3.1 Topography

Keal Hill lies at the southern tip of the Lincolnshire Wolds overlooking the fens to the south. (Plates 1 and 2) The bypass route is 1.63km long and runs west and north of East Keal village, over the east side of the hill. The route begins at the junction between the A16 and the A155 and runs north-east over Keal Hill, swinging east to meet the A16 again beyond the village, opposite the Manor House (Fig.1). The ground rises from 34.50m OD at the present junction of the A153 and A16, to 78.30m on the crest of the hill. (The top of the hill lies a little to the north west of the proposed route at over 91m OD.)

3.2 Geology and Soils

Keal Hill consists of Spilsby sandstone overlying Kimmeridge clay and is covered with boulder clay (Hundleby series). The lower reaches of the hill comprise a lighter sandier soil derived from the Spilsby sandstone. Much of the route crosses the boulder clay with the lighter soils being found in the two southernmost fields (Fields 1 and 2 on Fig.1).

3.3 Archive and Documentary Sources

References have been made to the Lincolnshire and other material held in the Lincolnshire Archives Office and the Local History Collection at the National Library.

3.4 Rapid Field Survey

A rapid field survey was carried out in the beginning of February to coincide with other work. The route was numbered 1000 and 1001. There were no archaeological features seen. The results were disappointing and no archaeological features were seen. It was felt that the survey was not worth the time and cost.

Further work was done in the area of the route. There is Field 1 and 2 were observed but the results were disappointing and no archaeological features were seen. It was felt that the survey was not worth the time and cost.

3.5 Land Use Survey

Current land use was recorded during the rapid field survey and is noted in the appropriate sections.

4.0 SCOPE OF ARCHAEOLOGICAL AND HISTORICAL RESEARCH

The present study comprised a desk-based assessment together with a rapid ground survey.

4.1 Sites and Monuments Record(SMR)

The Lincolnshire SMR is a well-curated archive based on long-term recording in the county and which is currently being computerised. Records covering the proposed bypass route are up to date. The SMR was searched for records of all archaeological sites and finds within the 100m wide corridor. Details of entries are shown in Appendices A, B and C.

4.2 Aerial Photographs

Coverage for this area was disappointing. There are no aerial photographs of the parish of East Keal held at the University of Cambridge. Lindsey Archaeological Services holds three photographs of a single site lying immediately east of the bypass route. Details of cropmark features are listed in Appendix D.

The National Library of Air Photographs (RCHM Swindon) has copies of the above photographs but no other oblique coverage of the route. The lack of aerial photographs is more a reflection of poor coverage in the county than an indication of the lack of sites. Details of cropmark features are incorporated into the Appendices.

4.3 Archive and Documentary Sources

Reference has been made to cartographic and other material held in the Lincolnshire Archives Office and the Local History Collection of the Central Library, Lincoln.

4.4 Rapid Field Survey

A rapid field survey was carried out at the beginning of February to coincide with other groundworks. Fields along the route were numbered from 1-8, starting at the south end (Fig.1). Those fields which were ploughed (numbers 1,2,7 and 8) were walked over at 10m wide intervals, within the 100m corridor and finds were plotted individually.

Provision was also made to monitor trial pits along the route. Those in Fields 1,2 and 6 were observed but the results were disappointing and no archaeological features were seen. It was felt that monitoring of further pits was of limited value and time was spent recording the surface finds.

4.5 Land Use Survey

Current land use was recorded during the rapid field survey and is noted in the appropriate sections.

Faint text at the bottom of the page, likely bleed-through from the reverse side, mentioning 'Flin' artefacts from East Keal' and 'noted by A. J. ... of the Geological Survey in 1887. (Jukes-Brown 1887) further material has been gathered and illustrated by later fieldworkers including ...'

5.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

5.1 The Lower Palaeolithic (400,000-70,000 years ago)

The earliest traces of human activity belong to this era which spans a series of glaciations and warmer interglacial periods. There is a small collection of Lower Palaeolithic flint hand-axes from the county, most of which belong to the 'Acheulian' tradition and are finished by flaking the surface of the roughed-out axe with a bar-hammer of hard wood, bone or antler. They are rarely found *in situ* but three axes, from a quarry at Welton le Wold, were found in a narrow zone in the Welton Gravels underlying 13m of glacial till. They were found in association with faunal remains of elephant, deer, horse and possibly Irish Giant Deer and are dated to the Hoxnian Interglacial, c.250,000-150,000 years ago (Wymer and Straw 1977, 355). An Acheulian flint hand-axe, found at West Keal in 1976, was the first reported Palaeolithic find from the area (Enderby 1977, 78). Further material from this period may be present on the bypass route.

5.2 The Middle and Upper Palaeolithic (70,000-12,000 years ago)

During the Devensian glaciation, which began about 70,000 years ago, local ice sheets spread from the north-east to cover the coastal Marsh. Vast areas of water ponded back to cover the Humber Estuary and the valleys of the Trent, Witham and Ancholme. In parts of this period only the Wolds and the Lincoln Edge remained dry land. Keal Hill was probably at the limit of dry land and the possibility of material from this period being found on the bypass route is high.

5.3 The Mesolithic (10,000 - 3,500 B.C.)

The Flandrian period which followed the Devensian Ice is the period in which we still live. The climate rapidly improved and land was quickly re-inhabited. Hunting and food gathering was the principal means of subsistence and evidence for human activity during this period tends to comprise scatters of flint artefacts on the land surface. In Lincolnshire there appears to be a concentration of such sites in the Scunthorpe area, the Ancaster-Grantham area and at the south end of the Wolds. (This may in part reflect areas where fieldworkers have been most active).

Excavations of sites from this period are few and recorded features are rare. Hearths were recorded at Willoughton in the 1930s, Sheffields Hill and Risby Warren, near Scunthorpe in the 1930s and 1950s and just recently at Dogdyke, in the Witham valley, near Billingham. Any Mesolithic site with structural remains would be considered to be of regional if not national importance, depending on the level of survival.

Flint artefacts from Hall Hill, West Keal were first noted by A.J. Jukes-Browne, of the Geological Survey, in 1887 (Jukes-Brown 1887). Further material has been gathered and illustrated by later fieldworkers including

J.G.D. Clark and C.W. Phillips in the 1930s (Clark 1932; May 1976). The forms include scrapers, burins and micro-burins and have been ascribed to the sixth millenium B.C. It has been noted that sandy soils such as those present at West Keal were particularly favourable for Mesolithic occupation (May 1976). More recent fieldwork has established a near continuous spread of flintwork skirting the lower levels of Keal Hill from Hall Hill to the west to Mardon Hill in East Keal.

A programme of extensive fieldwalking of available land within East Keal, as part of the Fenland Survey, produced 156 Mesolithic flints from Field 2 in 1986 (SMR 40978, 40998, 42781). Another scatter of Mesolithic flints was found in Field 8 (SMR 40976), to the north of the bypass route.

The rapid survey produced many more flints of Earlier and Later Mesolithic date in Field 2.

5.4 The Neolithic (3,500 - 2,000 B.C)

This period is characterised by the domestication of plants and animals and a change from a nomadic to a settled existence. It is generally accepted that the spread of new farming techniques was the result of migrations of new people into Britain. They also brought with them the use of pottery and elaborate funerary monuments. Whilst there is a good understanding of the Neolithic material culture and Neolithic funerary practices little is known about settlements of this period. Any domestic sites with surviving structural remains would be considered of great importance.

The Fenland Survey project found Neolithic flints from Field 2 (SMR 40978) and further flints were found during the rapid survey in all four of the fields examined.

5.5 The Bronze Age (2,000-800 B.C.)

At around the beginning of the second millenium B.C. metalworking was introduced into Britain. New pottery forms and new flint tools were being developed and there was a change in funerary monuments from long barrows to round barrows. Evidence for this period in Lincolnshire is prolific with hundreds of round barrows which have been recorded from aerial photographs, although few survive as mounds. Flint scatters and to a lesser extent pottery have been recorded from all parts of the county. However, few domestic sites have been investigated. A hearth and associated pits and postholes were found on a 'Beaker' (early Bronze Age) site at Risby Warren in the 1950s. In the 1970s a late Bronze Age settlement was excavated at Billingborough. Excavation of enclosure ditches at Kirmond le Mire in 1991 produced late Bronze Age pottery but no buildings were located.

The Fenland Survey identified 53 sherds of early Bronze Age pottery in Field 2 (SMR 40978). This material has not yet been located, to confirm its date. Flints of this

period were also found on the same site and further material was found in Field 8 to the north-east of the proposed bypass route (40976).

5.6 The Iron Age (800 B.C.- A.D.45)

Little is known of the transition from the Bronze Age to the Iron Age when iron working technology was acquired. As for other prehistoric periods knowledge of settlements is poor. A timber causeway of the 5th century B.C. was excavated at Fiskerton, near Lincoln in 1981 and a large defended enclosure of the same period was excavated in 1980 and 1986 at Tattershall Thorpe. The later Iron Age is better known with at least 14 major settlements identified including those excavated at Dragonby (Scunthorpe), Sleaford and Ancaster. Minor settlements are becoming well documented including a site near Spilsby, not far from East Keal. Rural sites are known mainly from aerial photography but in recent years a handful have been excavated. They have produced small quantities of pottery and remains of gullies and post-holes have been recorded at Burgh Top and Cold Hanworth. Nothing of this period has been found on Keal Hill although pottery has been found in the parish on lower ground to the south (see Appendix C).

5.7 The Roman Period (A.D 45-410)

Aerial photography has transformed our understanding of the Roman settlement of Lincolnshire. There is probably not a single parish in the county (except for those areas which were then under water) without evidence for Roman settlement. Rural settlements took the form of dispersed farmsteads, some of which developed from Iron Age sites. Evidence for villas is confined to the later Roman period and examples of which may be found on the Wolds to the north of East Keal e.g. Walesby. Closer to the southern edge of the Wolds was the important town of Horncastle, which was Iron Age in origin. It was fortified in the late 3rd-early 4th century. A Roman road from Lincoln leads to Burgh le Marsh, which is less well known, but finds from the whole of the Roman period have been recorded there. There may have been a coastal fort at Burgh le Marsh.

Roman pottery was found in Field 2 east of the bypass route (SMR 40979/42784) and in Field 8 (SMR 40991) to the north of the bypass route. Further Roman pottery was found in these fields during the rapid survey.

5.8 The Anglo-Saxon Period (A.D.410-1066)

The period immediately following the departure of the Romans is best known in Lincolnshire from the large number of cemeteries. However, evidence from settlement remains has been recorded as scatters of pottery and excavations have been carried out on a small number of sites including Cherry Willingham (1980) and Nettleton Top (1987). Later Saxon settlements are no better known and again there have been a only a small number of

excavations which include Normanby le Wold (1968) Goltho (1973-4) Osbournby (1970s) and Gosberton (1992). Pottery from this period has been found in Fields 2 and 3 (SMR 40979, 40992) just south of the bypass corridor. It has also been recorded near to the parish church (SMR 41129). The rapid survey produced a handful of sherds in Field 2.

5.9 The Medieval Period (A.D.1066-1485)

There were two manors (estates) in the parish of East Keal at the time of the Lincolnshire Domesday Survey of 1086. One was held by the Bishop of Durham and the other by Eudo, son of Spirewic. There was also sokeland belonging to the manor of Bolingbroke (held by Ivo de Taillebois). The entries record the presence of a church and areas of arable and meadow land. Two manors imply distinct communities within the parish at an earlier period. This is borne out by the distribution of early medieval pottery in the village. There are two distinct concentrations, one around the church and the other to the west of the village, close to the proposed bypass route, in Fields 2 and 3.

The Lindsey Survey of 1115 refers to West Keal (*Cale'*) and East Keal (*Oustcal*) perhaps indicating that East Keal was the less important of the two.

In the 1960s Toynton All Saints was recognised as a major medieval centre of pottery production, producing wares at an earlier date than the kiln industry at Old Bolingbroke. In 1432/3 John Hancocke (possibly of Toynton All Saints) sued Robert Potter of East Keal for breaking and destroying a cartload of pots (Rudkin 1987). This suggests rivalry between potters in adjacent villages and points to a pottery industry existing in East Keal as well. It is thought to have been located on the hillside above the beck and as far as the S side of the church.

Pottery from fieldwalking along the bypass route includes medieval sherds which are broadly identified as Toynton/Bolingbroke types. It is currently not possible to distinguish material from the East Keal kilns.

5.10 Post-Medieval (A.D. 1485 - present)

Our knowledge of East Keal during the post-medieval period is best served by the examination of documentary sources which are beyond the scope of this survey. However, East Keal is fortunate in having a map of 1757 drawn by John Grundy, a surveyor who was involved in the draining of the Fens (Fig. 5). Together with the enclosure map of 1774 (Fig.6), which shows how the old open fields were divided up amongst the local landowners, it can be seen that the village was of a similar size to today. The bypass route crosses over land which was enclosed (i.e. taken into private ownership) prior to 1757. It does not appear to cross any former built-up areas of the village (except the Methodist chapel, see below).

The present landscape reflects the use that has been made of natural mineral resources in the parish. The modern OS map shows a disused marl pit on Mardon Hill and disused sand pits on Keal Hill and opposite Jenkin's Carr beside the A16. None of these pits are recorded on the 18th century maps and are therefore thought to be 19th century in origin. The proposed by-pass route crosses the sand pit on Keal Hill. The ground is overgrown and the past disturbance means that it will be archaeologically sterile.

The site of East Keal Wesleyan Chapel (built in 1862 and demolished in 1976) lies at the north end of Field 1. The church yard is still clearly defined and lies in the path of the by-pass. A photographic record has been made of the area and the churchyard entrance.

Test pits 1, 2 and 3 were excavated but no archaeological features were observed. Test pit 4 contained a few fragments of 19th-century pottery, possibly associated with the chapel.

Artifacts: No further archaeological work recommended for this field.

Field 1: Fig. 2. Plates 7-11
Condition of field: Ploughed and sown. Soil very heavy and poorly drained. Poor conditions for retrieval of artefacts.

Soils: Southern half, light sandy soil. Northern half, light heath clay.

The south-west corner of the field is a disused sand pit. The area was not searched, except when test pit 4 was dug. This yielded the scattered remains of the sand pit.

Field 2: The field is bounded by the A16 to the west and is very heavily overgrown. An important archaeological site was identified along the edge of the proposed by-pass. A strip of land 200 m either side of the by-pass was examined, walking in tracks 10 m apart. Test pits were individually numbered and plotted. No concentrations of material could be identified.

The rapid survey demonstrated that flints were present all along the corridor with no special concentrations. The density of flint fell only slightly on the steep slope at the north end of the field where the soil is not heathier. Further flintwork was observed outside the 200 m corridor - with a particular concentration on the eastern edge of the field. This group of material contained a number of blades and blade cores, suggesting a Mesolithic date.

6.0 RESULTS OF THE RAPID SURVEY (FIG.4)

Field 1 (Plates 3-6)

Condition of Field: Pasture. Ploughed after main survey and only slightly weathered when walked.

Soil: Predominantly light and sandy, except on the north-east corner where the ground was more clayey.

The proposed village link road, as well as the bypass route, crosses this field so the whole field was walked. The transects were 10m apart and aligned north-south. There were only thirteen finds from the field. This may in part be because the field was freshly ploughed but there was a general absence of flint in the soil and over half the pieces seen were in fact worked, including three broad flakes, probably Neolithic in date. Only three pieces of pottery were found.

Test pits 5, 7 and 8 were monitored but no archaeological features were observed. Test pit 8 contained a few fragments of 19th-century pottery, possibly associated with the chapel.

Action: No further archaeological work recommended for this field.

Field 2 (Fig.2, Plates 7-11)

Condition of field: Ploughed, well-weathered. Northern half of field very heavy and poorly broken up. Ideal conditions for retrieval of artefacts.

Soils: Southern half, light sandy soil. Northern half, flinty boulder clay.

The south-west corner of the field is a disused sand pit and the area was not examined, except when Trial pit 10 was dug. This confirmed the disturbed nature of the upper deposits.

Field 2 is the largest of the fields affected by the bypass route and is also the one known to contain important prehistoric flintwork. A baseline was established along the middle of the proposed route and a strip of land 50m to either side of the baseline was examined, walking in transects 10m apart. Each find was individually numbered and plotted so that any concentrations of material might be identified.

The rapid survey demonstrated that flints were present all along the corridor with no special concentrations. The density of flint fell only slightly on the steep slope at the north end of the field where the soil is much heavier. Further flintwork was observed outside the 100m corridor, with a particular concentration on the western edge of the field. This group of material contained a number of blades and blade cores, suggesting a Mesolithic date.

The material from the corridor was examined but a detailed analysis was not possible within the time available. There is a relatively high number of blades and cores, the cores being of both Earlier and Later Mesolithic type. Some of the cores have flake removals and are possibly Neolithic. Diagnostic tools include Earlier Mesolithic obliquely blunted point microliths, an Earlier Neolithic leaf-shaped arrowhead and a probable laurel leaf arrowhead. No diagnostic Later Mesolithic pieces were found, but given their small size and the rapidity of the survey this is not surprising. At least one of the scrapers could belong to a Later Neolithic collection (Pl.9).

No prehistoric pottery was found during the rapid survey but there was a slight scatter of Roman and Anglo-Saxon pottery, together with larger quantities of medieval pottery. A single piece of burnt amber and a rectangular piece of polished bone were found and are probably also Anglo-Saxon in date.

Test pits 11-14 were observed in this field but no archaeological features were seen in them (Pl. 10,11).

This is the only field where material was noted on the route of the bypass prior to the rapid survey. The presence of both Earlier and Later Mesolithic material both within the 100m corridor and beyond, makes this potentially a site of major archaeological interest. In addition to the Mesolithic evidence, Neolithic Roman and Saxon material has been found within the survey area.

Action: Top priority must be given to this field for further evaluation and possibly larger-scale excavation prior to road construction. Gridded intensive fieldwalking of the 100m corridor to identify concentrations of flintwork and other finds. Full geophysical survey of the corridor. Hand-dug test pits to be undertaken in areas identified by the fieldwalking and geophysical survey.

Field 3

Condition of Field: Very clayey and weathered. Brassica crop.

Soils: Boulder clay

The 100m transect clips the north-west corner of this field. It was walked over but no finds were made.

Action: Field 3 is on the margins of the route. No further archaeological work recommended prior to construction work. Special attention should be taken during the watching brief, given the presence of both Roman and Anglo-Saxon pottery in the southern part of this field.

Field 4

Condition of Field: Stubble and weeds. Very poor visibility.

Soils: Boulder clay

This field was not examined in detail because the ground conditions were too poor. However, a single flint core was picked up at its southern end and the scatter of flint in Field 2 probably extends into this area. ,

Action: Geophysical survey and test pits of a percentage of the corridor to search for archaeological remains.

Field 5

Condition of Field: Pasture

Soils: Boulder clay

There were no investigations in this field.

Action: Geophysical survey and test pits of a percentage of the corridor to search for archaeological remains.

Field 6

Condition of Field: Stubble and weeds. Very poor visibility.

Soils: Boulder clay

The 100m corridor was walked over but no finds were made.

Action: Geophysical survey and test pits of a percentage of the corridor to search for archaeological remains.

Field 7 (*Fig.3 ,Plates 12-14*)

Condition of Field: Dead potato crop. Visibility fair.

Soils: Boulder clay

Nineteen worked flints were found by the Fenland Survey, which covered the whole field. Eighteen more flints were found in the 100m corridor during the rapid survey, together with three pieces of Roman and two pieces of medieval pottery. Each find was individually plotted. The density of finds was far less than that of Field 2 and even Field 8 (see below).

To the south of Field 7 lie the remains of medieval earthworks of unknown function (*Pl. 13*).

Action: The presence of worked flint may be connected with the main area of activity in Field 8. Geophysical survey and test pits of a percentage of the corridor to search for archaeological remains.

7.3 DISCUSSION: THE SIGNIFICANCE AND POTENTIAL OF THE

Field 8 (Fig.3, Plate 14)

Condition of Field: Freshly ploughed, but well weathered.

Soils: Boulder clay

The south-west corner of this field was walked over and the finds individually plotted. The Fenland Survey identified a Roman site in this field but it lies just to the north of the bypass corridor and only two pieces of Roman pottery were found in the rapid survey area. There was a generous scattering of medieval pottery, which was not unexpected, given the proximity of the medieval village remains on the south side of the A16. However, as in all the fields which were walked over the majority of finds comprised worked flint. These were predominantly broad flakes and in contrast with Field 2 few blades or cores were found. Together with the few pieces of flint from Field 7 a Later Neolithic/Early Bronze Age date is suggested.

Action: Gridded intensive fieldwalking of the 100m corridor to identify concentrations of flintwork and other finds. Full geophysical survey of the corridor. Hand-dug test pits of to be undertaken in areas identified by the fieldwalking and geophysical survey.

7.0 DISCUSSION; THE SIGNIFICANCE AND POTENTIAL OF THE ROUTE

The prominence of Keal Hill in the modern landscape is very clear. What is more difficult to imagine is its even greater impact and importance during periods when the land beneath it, to west, south and east, was either under water or too marshy to inhabit. This was the case from the earliest periods of prehistory through to the medieval period when the East and West Fens were drained by the nearby monastic communities.

Discoveries over the last century have confirmed the importance of Keal Hill and show that it was densely inhabited from at least the Early Mesolithic period. Most recently the work of the Fenland Survey has identified sites in East Keal including the the two Mesolithic and Neolithic sites which lie on the bypass route in Field 2.

Together with other information from the SMR the rapid survey has confirmed the potential for multi-period settlement and land use dating from the Mesolithic through to the Anglo-Saxon periods (excluding the Iron Age) along the bypass corridor. The rapid survey has defined the known sites more accurately and identified new sites. It remains to be seen whether any features have survived the many years of agricultural activity.

Whilst the central section of the bypass route was unsuitable for rapid survey there is every reason to believe that further archaeological remains may be located.

8.0 IMPACT ON ARCHAEOLOGICAL REMAINS

8.1 The considerable variation in ground levels along the proposed route means that there will be a deep cutting at its west end. Whilst detailed engineering drawings for the proposed have not been examined it is clear that the following ground interventions may have considerable impact on the archaeological remains along the route:

- a) geotechnical investigations including machine-excavated bore-holes and test pits.
- b) creation of compounds for contractors' site accommodation.
- c) possible excavation of borrow pits
- d) stripping of topsoil to form the working easement
- e) excavation to form the cutting at the west end of the route
- f) landscaping, tree planting etc.

Full consideration must be given to archaeological monitoring of all these activities including evaluation of any areas which lie outside the 100m corridor which is the subject of the present assessment.

9.0 CONCLUSIONS

9.1 The desk top study and rapid field survey has identified a number of major archaeological sites which lie in the path of the Preferred bypass route. Our current understanding of these sites relies entirely upon the distribution of artefacts lying on the ploughed field surface, the exact nature and degree of survival of any associated structures can only be established by means of trial excavations and possibly geophysical survey.

9.2 Field Evaluation

This involves detailed examination of the route through gridded fieldwalking, geophysical survey and machine and/or hand excavated trial trenches.

To allow sufficient time for the processing of evidence and report preparation a field evaluation must be carried out well in advance of the first groundwork. The timing of fieldwalking, in particular, is critical since most of the route crosses arable land. The winter months, when fields are freshly ploughed offer the most suitable conditions, although geophysical work may also be carried out on stubble fields.

9.2.1 Stage 1 Fieldwalking

The high proportion of Mesolithic flintwork present in Field 2 means that a careful strategy must be devised because associated features rarely survive. Sometimes areas of activity are recognisable only as concentrations of worked flint within the ploughsoil. High intensity gridded fieldwalking is therefore recommended for Fields 2 and 8. Each find to be individually plotted. The aim of this proposed survey would be to identify greater concentrations of flintwork and pottery within the 100m corridor.

9.2.2 Stage 2 Geophysical Survey

The multi-phased occupation of Field 2 makes this the area of highest archaeological potential along the bypass route. A magnetometer survey of the whole bypass corridor is recommended for this field. In addition, a similar survey should be conducted in Field 8 and a sample of the route in the fields unavailable for fieldwalking.

9.2.3 Stage 3 Trial Trenching

Using the results from Stages 1 and 2, trial trench excavation is recommended to establish the date, quality and extent of archaeological remains.

Concentrations of Mesolithic and Neolithic flint will require the application of special techniques. Depending on the results of Stages 1 and 2 selected areas should be hand excavated and the ploughsoil sieved, to obtain the full range of flintworking material from the site. Many waste flakes and some tools are tiny, especially those from the Later Mesolithic period, and it is only by

sieving that they can be retrieved in sufficient quantities to allow meaningful analysis of the remains.

9.3 Archaeological Impact and Resource Management

The purpose of the above stages in an evaluation is to collect data for an Archaeological Impact Statement. This would indicate the quality and range of archaeological remains affected by the proposed bypass route as measured against local, regional and national criteria.

The information would provide the basis for further proposals concerning the long term resource management of the archaeology. Such proposals might include *in situ* preservation of remains or archaeological excavation in advance of construction and a watching brief to monitor construction groundwork.

Naomi Field
March 2nd 1993

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Prehistoric Society, vol. 49, pp. 243-254

Acknowledgements

The field survey was carried out under the supervision of Michael...
Field staff...
The following people...
The following people...

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The field survey was carried out under the general direction of Michael Clark with assistance from Naomi Field, Geoff Tann and Fred Coupland. Geoff Tann undertook the background research for the report. Thanks are due to Mr R.Humphrey for supplying results from the test pits.

Fig.1 Location map of East Keal bypass showing field numbers allocated during field survey



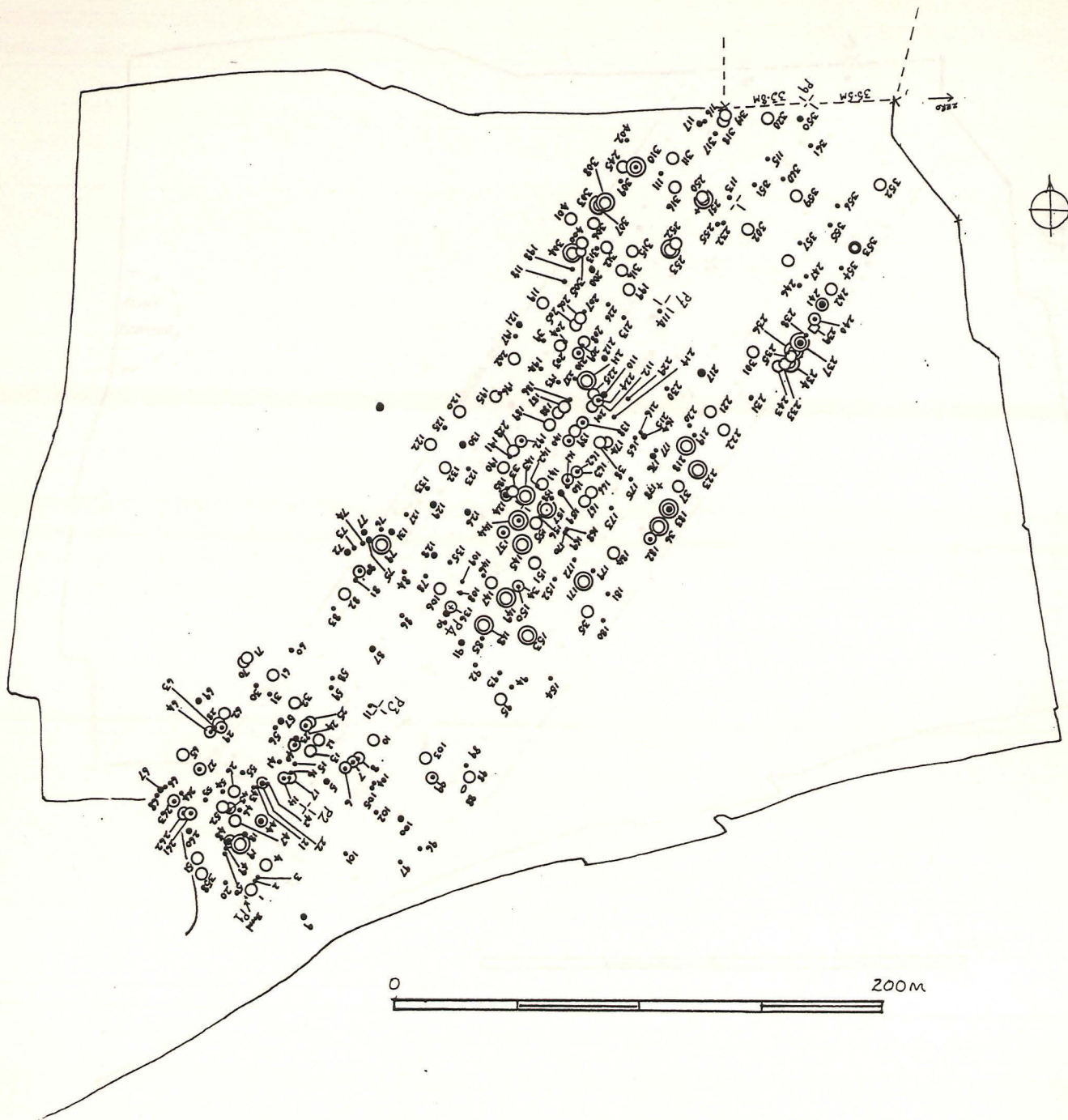


Fig.2a Field 2. Distribution of finds . Open circles=pottery
 black circles= flint. Larger circle=more than one find
 in same spot

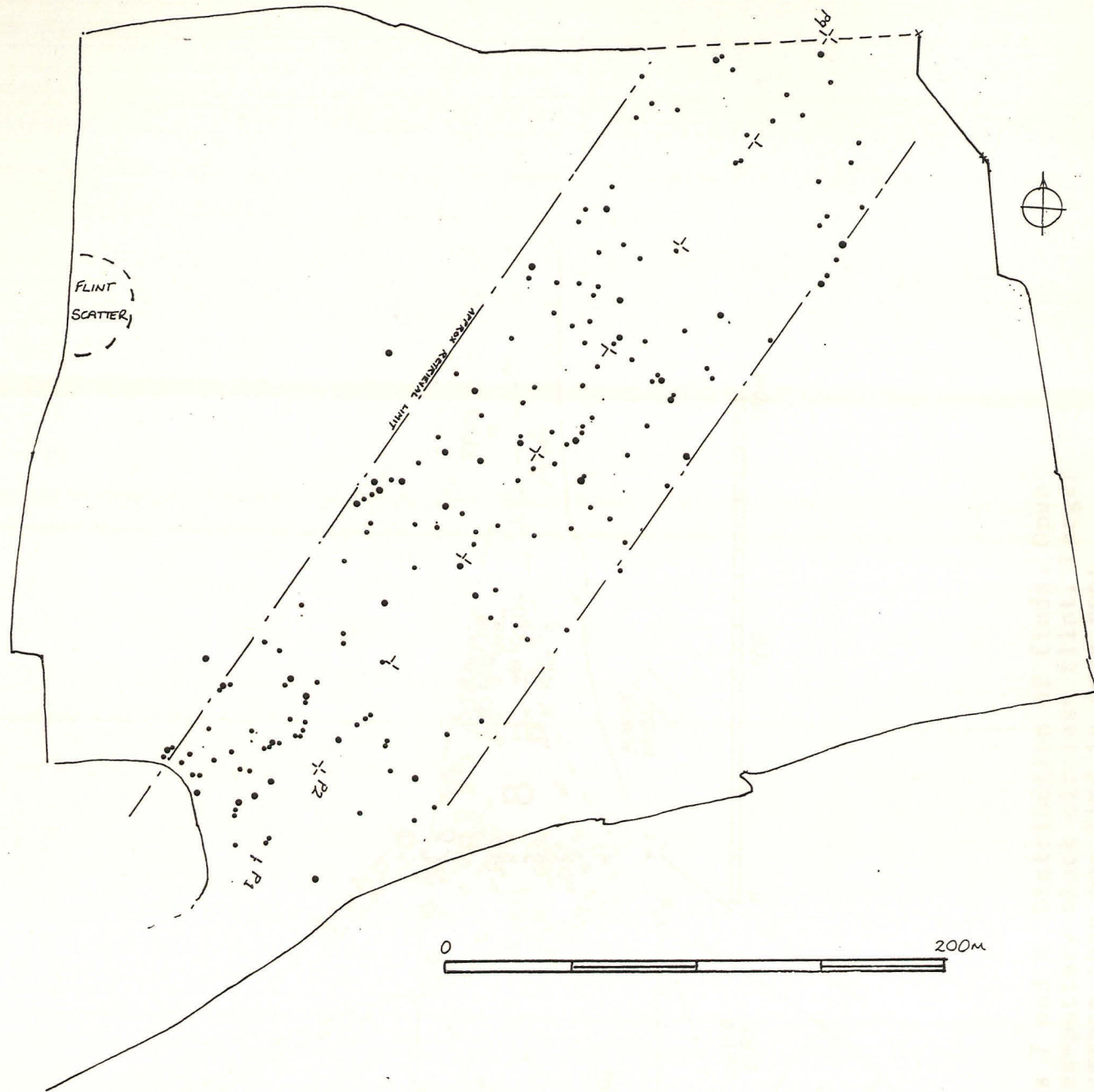


Fig.2b Field 2 Distribution of flint finds

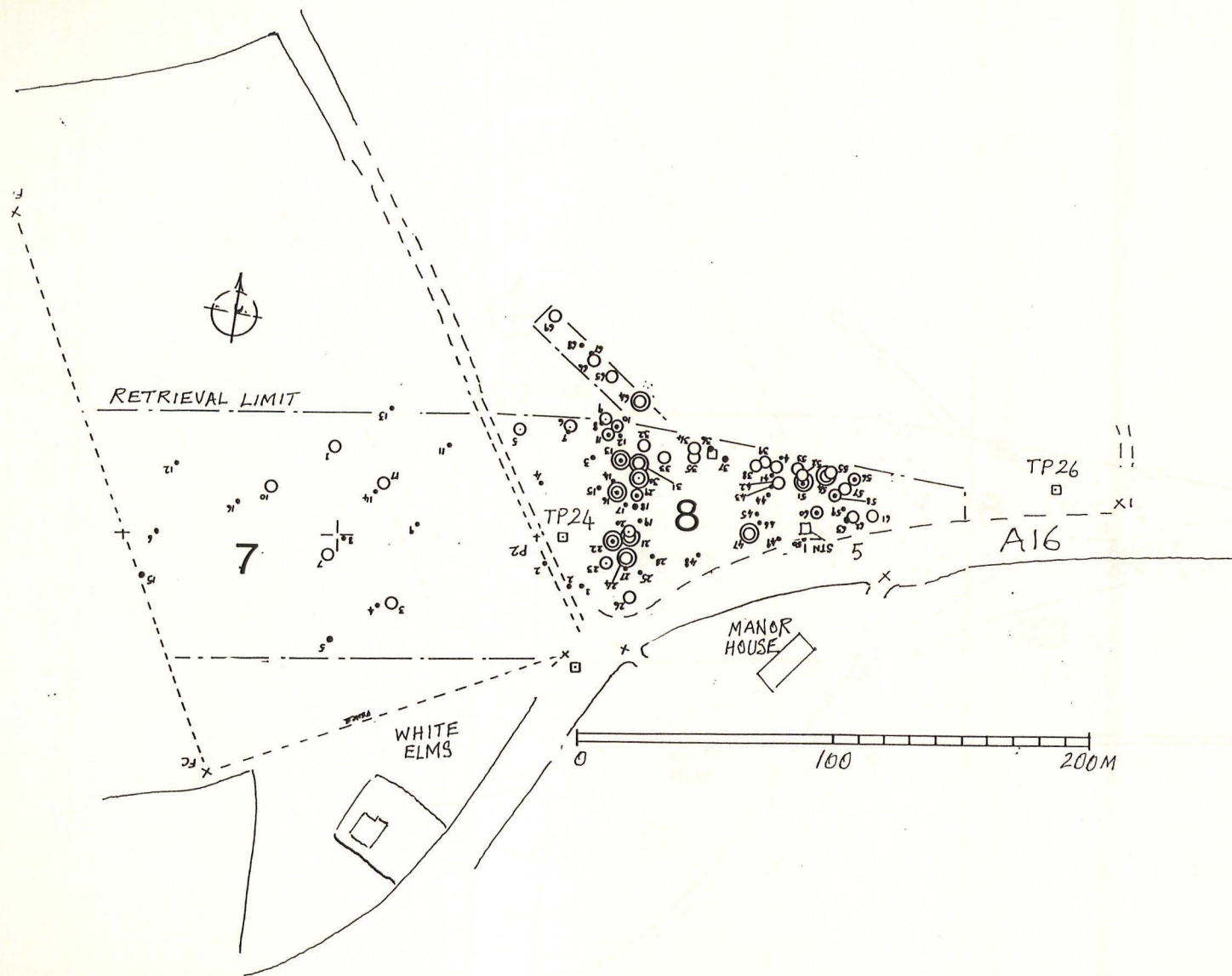


Fig.3a Fields 7 and 8 Distribution of finds. Open circles=pottery black circles= flint. Larger circle=more than one find in same spot

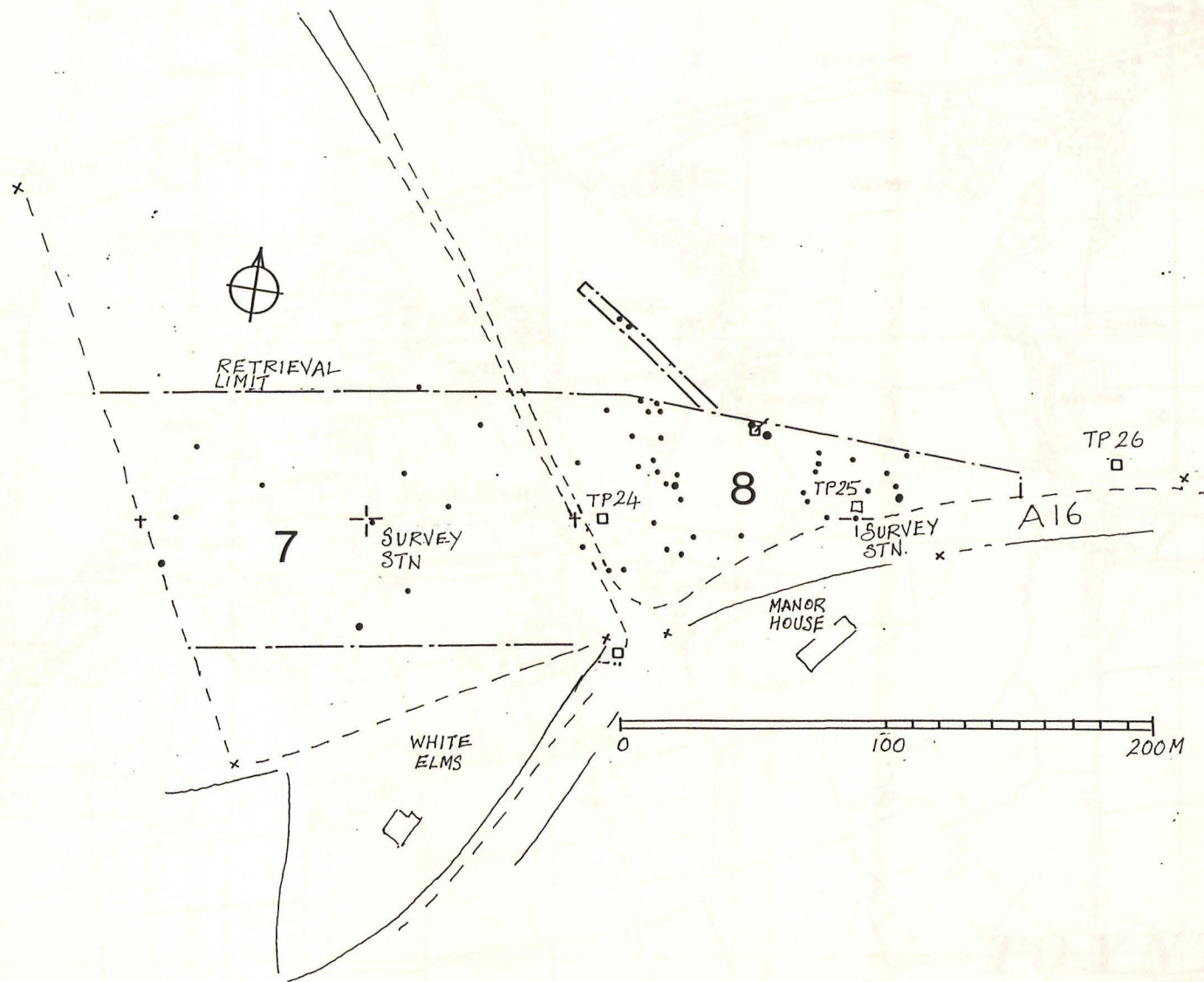


Fig.3b Fields 7 and 8 Distribution of flint finds

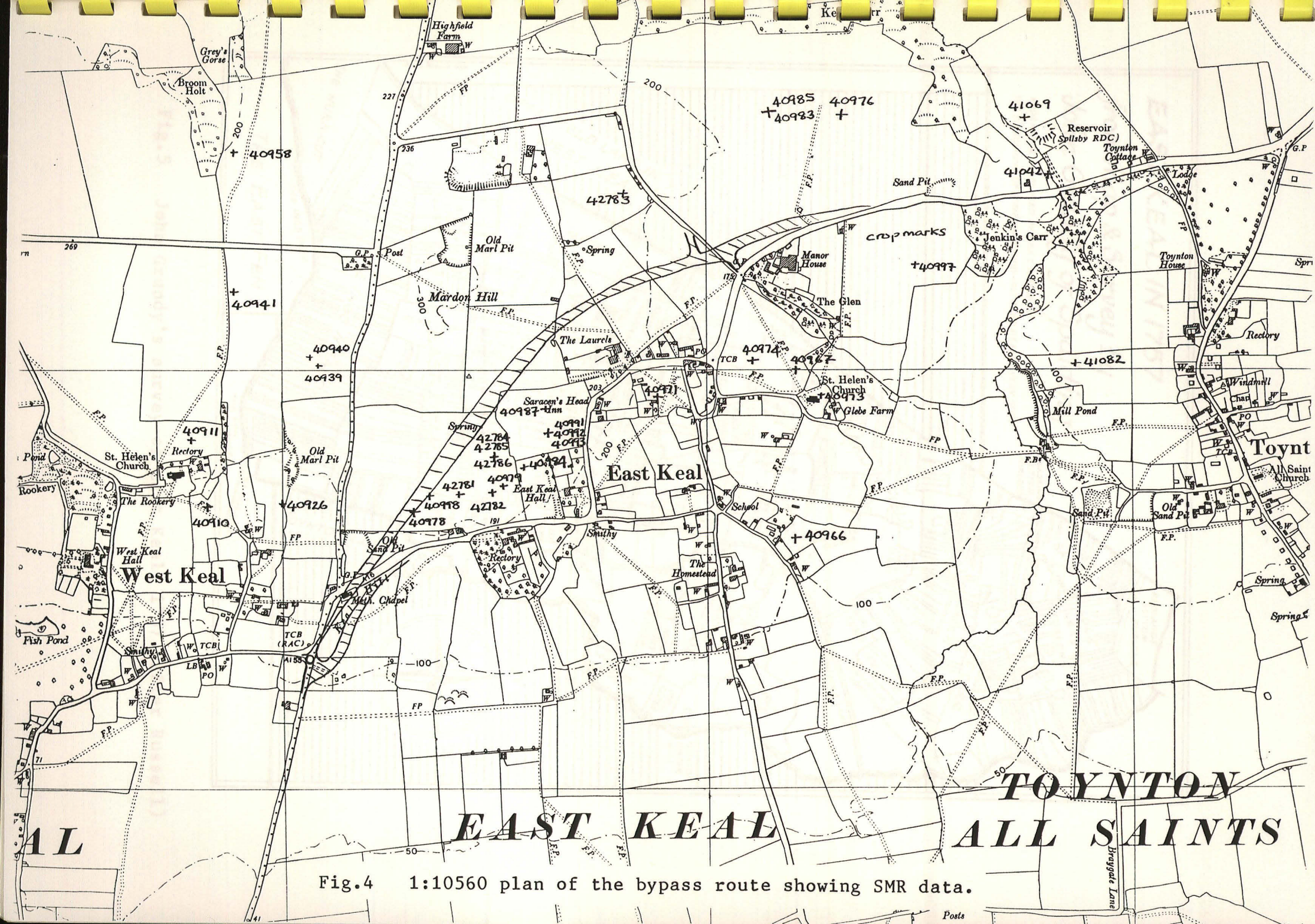


Fig.4 1:10560 plan of the bypass route showing SMR data.

EAST KEAL IN 1757

from Map & Survey by
John Grundy of Spalding

REDRAWN & SIMPLIFIED BY REX C. RUSSELL
THE DIRECTIONS OF STRIPS ARE SHOWN-BUT BY NO MEANS EVERY STRIP

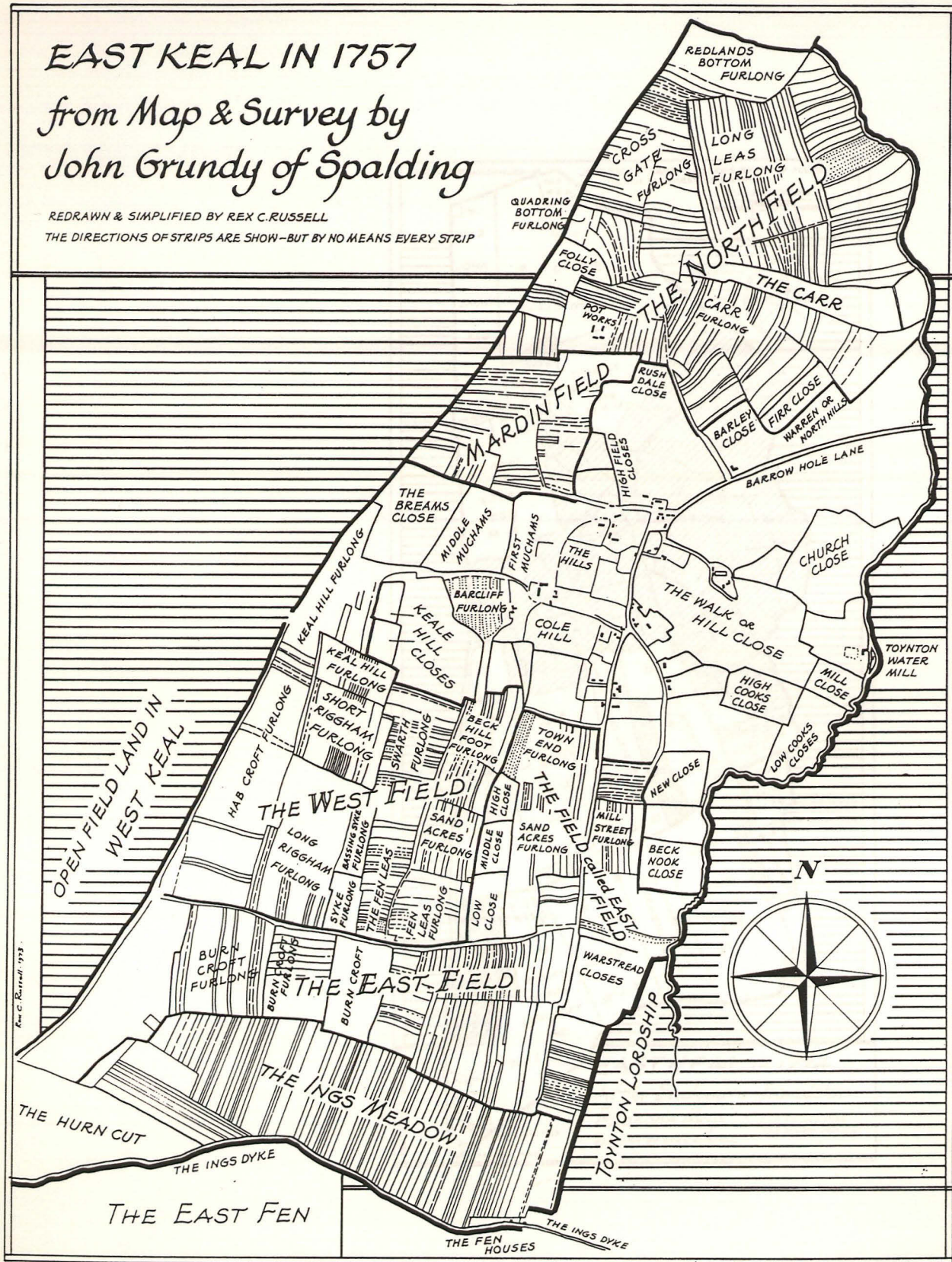


Fig.5 John Grundy's survey of East Keal, 1757 (after Russell)

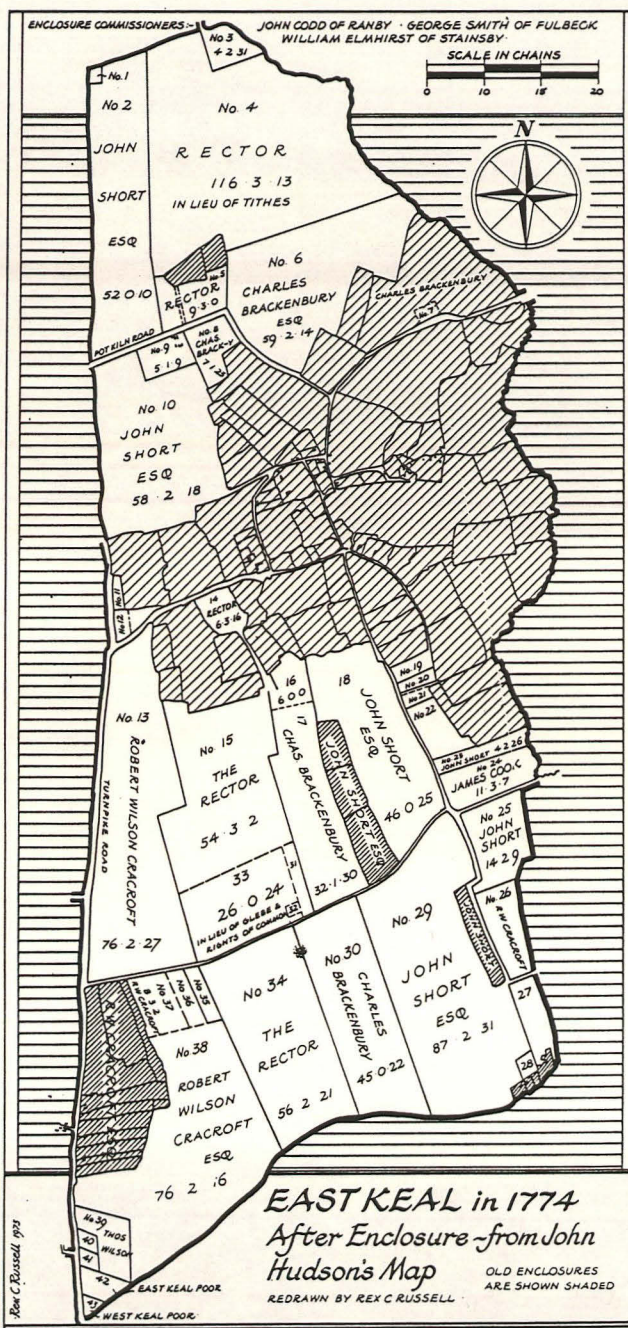


Fig.6 Enclosure map of East Keal, 1774 (after Russell)



- 1 General view of Keal Hill
- 2 View of the Fens from Keal Hill





3 Field 1, looking north

4 Field 1, Methodist Chapel





5 Methodist chapel site from the south

6 Methodist chapel, fallen gate post





7 Field 2, disused sand pit

8 Field 2, looking north, fieldwalking survey in distance





9 Field 2, flint finds. Top row, Two early Mesolithic cores and blades, 2 Later Mesolithic cores. Bottom row, two Neolithic cores, leaf and laurel arrowheads, Bronze Age scraper.

10 Test pit 12

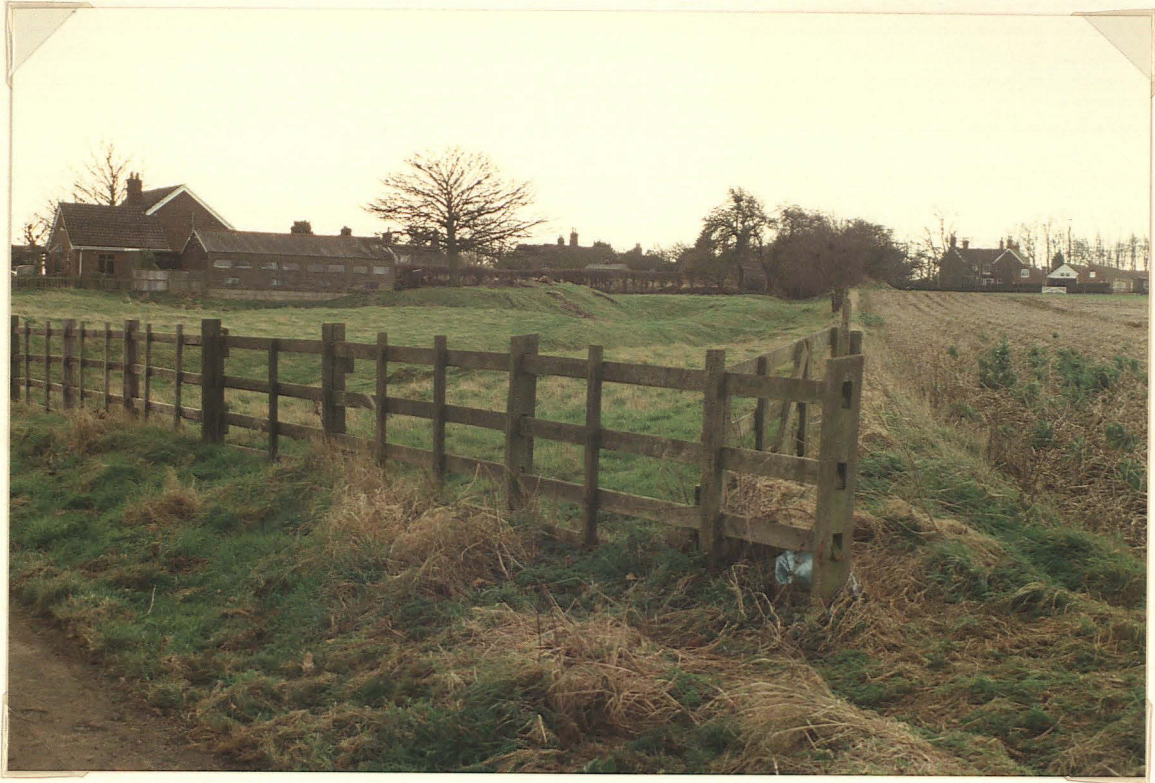




11 Test pit 12

12 Field 7, foreground looking west to Fields 6 and 5





13 Earthworks immediately south of Field 7 (right)

14 Field 7 (left) and Field 8 (right)



12.0 SITES AND MONUMENTS RECORD DATA

Appendix A: Sites on Line of Route

SMR No.:	NGR:	Description
FIELD 2		
40978	3727 6364	Prehistoric settlement; 0.2ha; Concentration of 153 flints, predominantly Mesolithic but with some Neolithic and Early Bronze Age examples. Pottery of Early - Middle Bronze Age date and undated burnt stones.
40998	3735 6370	Mesolithic flint scatter

Appendix B: Sites in Fields Affected by the Bypass Route

A) Field 1

No recorded SMR data

B) Field 2

42781	374 637	Mesolithic flint scatter
42782	375 644	Single Mesolithic flint core
40979	3752 6371	146 sherds of R-B pottery within soil-mark; Grey ware, shell-gritted and Samian examples. 6 early A-S, 20 middle A-S and 21 late A-S sherds, slag.
42784	375 638	R-B Greyware sherds
42785	" "	Medieval pottery and kiln prop of unknown date from same location.
42786		Post-medieval sherds

C) Field 3

40987	3760 6391	Slight soil mark with 6 sherds of R-B pottery, 27 sherds of unglazed 15th C pot.
40991	3762 6383	3 concentrations of R-B material and areas of darker soil with chalk or mortar and burnt material: 8 greyware pot sherds and 2 large slag lumps; 33 sherds, greyware, mortaria and colour-coated, some slag; 8 sherds greyware, colour-coated and shell, some slag. Also 8 late A-S sherds.

APPENDIX C: Known Sites in Vicinity of Bypass Route

SMR No.	NGR	Description
40992	3762 6383	Eight sherds late Saxon or early medieval pottery.
40984	3757 6375	38 medieval sherds, building rubble, tile, animal bone and shells. Probably settlement remains.
40987	3760 6391	Slight soil-mark, with 6 R-B and 27 unglazed 15th century pot sherds and animal bone. Possible settlement site.
40993	3762 6383	Medieval pot sherds and copper alloy strap-end. Also R-B and Anglo-Saxon material.
D) <u>Fields 4, 5 and 6</u> No recorded SMR data.		
E) <u>Field 7</u>		
	378 642	Scatter of 19 flints across field
F) <u>Field 8</u>		
40976	3832 6463	Mesolithic-Early Bronze Age flint scatter
40977	3820 6478	Late Neolithic-Early Bronze Age flint scatter on edge of heavier soils
40983	3805 6464	2 concentrations of R-B pot, greyware, mortaria, Samian. 13 worked flints.
40985	" "	Early Bronze Age sherd from same spot.
40986	384 647	Crop marks recorded on air photos, no description or reference given
40988	384 647	Mesolithic microliths.
40989	384 647	Flints, mostly waste flakes.
40990	384 647	Flints and burnt stones.
40991	384 647	Early Bronze Age 'food vessel' pot sherd x 1.
40992	370 641	Flint (scraper or axe flake)

APPENDIX C: Known Sites in Vicinity of Bypass Route

PREHISTORIC

East Keal

SMR No.	NGR	Description
40997	3850 6425	Mesolithic flints.
42705	3824 6373	14 Prehistoric flints, incl. plano-convex knife.
40966	382 636	Mesolithic flints: microliths, cores, scrapers.

West Keal

40899	3560 6410	Mid Bronze Age cinerary urn (Abercromby Type I) found 1915.
40900	3560 6400	Microlith (C.W.Phillips site 2).
40902	3570 6392	Mesolithic flints and Bronze Age potsherds found 1954.
40903	3585 6391	Lower Paleolithic (Acheulian) grey flint handaxe.
40905	3581 6390	Neolithic flints, leaf arrowheads, 1 sherd Peterborough ware.
40906	" "	Bronze Age 'beaker' pot-herd (Abercromby 'A').
40933	3556 6361	86 Late Neolithic - Early Bronze Age flints; much burnt stone.
40901	359 638	Numerous flint flakes, cores and microliths (C.W.Phillips microlith - site I).
40959	360 638	'Beaker' pot-herd.
40944	3600 6376	Large concentration of Mesolithic flints, with fewer Late Neolithic and Early Bronze Age flints. (cf 40901).
40960	361 638	Bronze Age pottery scatter.
40907	363 638	Neolithic/Bronze Age flint blades, broken 'thumb-scrapers', flint axe (rough-out).
40908	" "	Mesolithic microliths.
40920	364 638	Flints, mostly waste flakes.
40935	3623 6373	Flints and burnt stones.
40958	3688 6452	Early Bronze Age 'food vessel' pot sherd x 1.
40918	370 641	Flint (scraper or axe flake).

SMR No.	NGR	Description
40940	3705 6401	Late Neolithic - Early Bronze Age flint concentration in wider scatter.
40939	3706 6401	11 flints, plough-damaged. (cf 40940).
40911	3678 6383	Neolithic axe (part) and barbed-and-tanged arrowheads.
40957	3671 6380	Early Bronze Age pot-herd and 21 flints.
40910	3682 6367	Polished stone axe, found pre. 1880.
40926	370 637	Flint flake blade.

Toynton All Saints

41069	3880 6462	Flint concentration (extends into fields to N and E).
41043	390 630	Bronze Age palstave, found 1847. (BM).
41042	3880 6447	Neolithic basalt axe hammer.

ROMANO-BRITISH

West Keal

40904	3570 6380	Pottery (G.V.Taylor) and clay floor of hut (OS).
40954	3597 6380	Greyware and shell-gritted pottery.
40914	3648 6433	Pottery (c. 250-350 AD) found 1962 in roadside trench.
40945	3668 6452	Settlement site, 0.57ha, with stone rubble spread, greyware, mortaria and colour-coat pottery.
40941	3685 6422	Greyware pottery scatter.

ANGLO-SAXON / EARLY MEDIEVAL

East Keal

41129	3824 6373	Anglo-Saxon pottery sherds.
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West Keal

40934	3556 6361	Pottery.
40962	360 638	1 sherd Anglo-Saxon pottery.
40956	3623 6373	1 sherd early Anglo-Saxon pottery.

Toynton All Saints

40942	3671 6380	72 sherds Anglo-Saxon pottery.
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MEDIEVAL/ POST-MEDIEVAL

East Keal

SMR No.	NGR	Description
40971		Manor house.

40974	3810 6403	Shrunken Medieval village. Foundations and pottery (12thC and later) found in 1959 when site bulldozed. Roadworks in 1934 revealed signs of a hearth and 12th-13thC pottery in trench section. Poll Tax Returns for 1377 list 185 individuals in East Keal.
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40967	382 640	Medieval pottery, found when draining field.
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40973		Church (St. Helen's); 14thC font and N arcade. Much rebuilt mid 19thC.
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West Keal

40934	3556 6361	Medieval pottery.
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40920	364 638	Medieval pottery.
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40935	3623 6373	264 sherds Medieval pottery (inc. 14thC Toynton wares).
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40943	3649 6398	13thC - 17thC pot-sherds; 2 querns (1 lava, 1 millstone grit).
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40927	3674 6374	Church.
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42103	3666 6369	Mound for post-mill.
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Toynton All Saints

41082	3890 6403	Medieval village.
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Appendix D: Air Photographs

1. Oblique photographs held at the National Library of Air Photographs, Swindon, and at the offices of Lindsey Archaeological Services

REF. NO.	NGR	Date
2948/14	TF384 642	17 May 1980
2948/15	TF384 642	17 May 1980
2948/16	TF384 642	17 May 1980

2. Vertical photographs held at the National Library of Air Photographs Swindon

Library No.	Sortie No.	Frame nos.	Scale	Date
466	106G/UK/1730	3136-3141	1:9800	12/9/46
9292	OS/68059	56-57	1:7500	14/4/68
-	68059	55-59	1:7500	14/4/68
10007	OS/70221	315-318	1:7500	18/6/70
10008	OS/70222	67-71	1:7500	18/6/70
7453	MAL/77005	123-126	1:15000	28/2/77

These photographs have not been examined