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Birmingham University Field Archaeology Unit

**Report No. 259**

July 1993  
(Revised November 1993)

**A5 (T) Nesscliffe Bypass  
Archaeological Assessment  
Stage 3 Report**

**Field Survey**

**Prepared for  
Frank Graham Consulting Engineers Limited  
on behalf of the Department of Transport  
by  
Birmingham University Field Archaeology Unit**

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# A5(T) Nesscliffe Bypass Archaeological Assessment Stage 3 Report

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# **A5 (T) Nesscliffe Bypass Archaeological Assessment**

## **Stage 3**

### **Field Survey**

#### **1.0 Introduction**

The following report outlines the results of Stage 3, the field survey stage, of an archaeological assessment undertaken in November and December 1992 by Birmingham University Field Archaeology Unit (BUFAU) on behalf of Frank Graham Consulting Engineers Limited. The project was commissioned following the announcement by the Secretary of State for Transport in December 1991 of the preferred route for the A5(T) Nesscliffe Bypass in Shropshire. The report was prepared following consultation with English Heritage and the Senior Archaeologist, Leisure Services Department, Shropshire County Council.

Stage 1 of the assessment took the form of an archaeological brief which outlined the archaeological content of the study area and the archaeological constraints. This also provided an indication of the area and requirements for additional survey (Appendix I). This was prepared as part of the Technical Appraisal Report prior to Public Consultation. The Stage 2 of the assessment (Appendix II) consisted of a detailed desk top assessment of the primary and secondary documentation for the area affected by the proposed road scheme. The brief for the Stage 3 assessment required a range of investigative techniques to be applied to the evaluation. The details of the strategies employed are outlined in the relevant 'methods' sections below.

The brief for the archaeological survey (Appendix I) identified three potential archaeological sites threatened by the original proposal for the new road (Fig. 1, Sites 3, 4 and 6). Further information provided by Frank Graham Consulting Engineers suggested that part of a fourth site (Site 5) was also threatened. All four of these sites were first identified from cropmarks on aerial photographs. These cropmarks were replotted at 1:2500 as part of the Stage 1 assessment (Figs. 2 - 4). Site 3 (SA2388)

comprised a possible pit alignment running north - south for approximately 280m, beginning just to the south of the A5 (Fig. 2). Site 4 (SA2433) was originally plotted as a large (100m x 50m), rectangular, double-ditched enclosure with angular corners. During the Stage 1 assessment, all the available aerial photographs were re-examined and no trace of the large enclosure could be identified, although a smaller sub-rectangular feature (30m x 20m) was suggested by a faint cropmark in a similar position. Both the original cropmark plot and the subsequent plot of the smaller feature are illustrated in figure 2. Site 5 (SA4030) comprised an extremely regular semicircular cropmark of c.50m diameter, with its presumed continuation dissected by a mature wooded field boundary (Fig 3). Site 6 (SA2413) comprised a sub-rectangular enclosure with a double ditch to the east, apparently enclosed by an outer ditch, which may have been double-ditched at the southeast side, with a possible entrance at this point (Fig. 4). The potential significance of these four sites was outlined in the Stage 2 report (Appendix II, iii-v).

A subsequent amendment to the scheme included the redesign of both terminations of the new road scheme. The new termination at the southeastern end effectively removed the threat to Site 6. However, the results of the evaluation of this site are included in the report.

#### **2.0 Objectives**

The broad objective of the Stage 3 field survey was to undertake sufficient assessment to identify the significant archaeological impacts likely to arise from construction of the preferred route, and to identify the location, type and importance of the archaeological constraints associated with that route. In order to achieve his objective it was intended:-

- 1) to establish the presence or absence of any further archaeological remains within the area on which the bypass is to be constructed (that is, in addition to the four sites identified by the Stage 1 and 2 assessment). This involved a landscape survey, a programme of fieldwalking and a geophysical survey.
- 2) to determine the survival, condition, quality and significance of any deposits or features identified. This involved a programme of targeted trial trenching.

The area of the survey included those areas of land on which junction, side road and landscaping works are proposed. It was intended to carry out the assessment while ensuring the minimum level of disruption to buried archaeological remains.

### **3.0 Background**

The survey area is located in the northern part of the Welsh Marches and lies within the confluence of the Rivers Severn and Perry on the North Shropshire Plain - an extensive, gently undulating, lowland landscape, heavily overlain by glacial drift and fluvio-glacial deposits, and interrupted by occasional low red sandstone hills. The proposed road corridor cuts through a belt of primarily arable fields which have been widely modified and enlarged, especially in the last decade. The Broomhill is the highest point along the road corridor. To the west the land falls into a slight dip and then rises again towards Wolfshead. To the east of Broomhill the land undulates slightly, rising again towards Ensdon Bank Plantation at the eastern end of the road corridor.

### **4.0 The landscape survey**

**4.1 Objective** - to locate and assess surface indications of hitherto unrecorded archaeological features within the proposed road corridor, and to record the nature of the extant historic landscape.

**4.2 Method** - aspects of each individual field affected by the proposed road scheme were recorded on standard enclosure record forms. Features of both natural and man-made origin were recorded, including sketch plans and photographs where appropriate.

**4.3 Results** (Fig 1) - The fields included in the survey showed no new features of any particular archaeological significance. The uneven surface in Field Number 1 suggested very poorly defined earthworks, possibly associated with the known site of a Deserted Medieval Village in an adjacent field to the north west. Indications of relic (possibly medieval) field boundaries were observed in Field Numbers 20, 22 and 30, represented by reversed S-shaped boundary lines. A possible trackway was identified in Field Number 3. The only evidence for the presence of post-medieval quarries or pits (suggested by the desk-top survey), occurred in Field Number 5 where a relatively deep hollow was observed, and in Field Number 21, where a semi-circular plantation of trees extended into the root crop on the northern boundary of the field. No other evidence for buildings or settlements was observed in the survey area. The boundaries of the fields consisted for the most part of well-established hedgerows, and occasionally of mature trees.

### **5.0 The fieldwalking**

**5.1 Objective** - to locate areas of past human activity and to enhance existing knowledge of identified sites within the road corridor from the evidence of artefacts collected from the surface of ploughed fields.

**5.2 Method** - In order to recover surface artefacts a rapid pass across all the arable fields within the road corridor was undertaken covering the area in each field that will be affected by the new road. It was intended to carry out a more intensive and methodical survey in those fields producing significant quantities of artefacts. The collection strategy aimed at the recovery of all surface-observed artefacts.

**5.3 Results** - Six of the arable fields within the road corridor were in a suitable state for fieldwalking. Field Numbers 22 and 24 yielded no artefacts of any description. The remaining four (Field Numbers 8, 16, 25 and 26) produced small quantities of eighteenth - twentieth century pottery and a few fragments of clay pipe and modern glass. One very abraded sherd recovered from Field Number 8 was possibly medieval, but none of the fields produced any prehistoric or Roman finds.

## **6.0 The geophysical survey**

**6.1 Objective** - to locate potential sub-surface archaeological features by means of geophysical survey.

**6.2 Method** - The survey was carried out using a fluxgate gradiometer (See Appendix III for technical details). It was limited to those areas of the cropmark sites 3, 4 and 5 within the proposed road corridor. Site 6 was not suitable for gradiometer survey due to unfavourable local conditions at the time of survey.

**6.3 Results** - There was a clear magnetic response at Site 3 which closely corresponded with the line of the pit alignment. There was a suggestion from the results that the feature more closely resembled an interrupted ditch rather than a series of equally-spaced pits. Neither the original double-ditched enclosure at Site 4, nor the smaller sub-rectangular feature were located. A rather unconvincing curving anomaly was tentatively located at Site 5, but its position did not correlate very well with the semicircular cropmark. Full details of the results are presented in the appendix.

## **7.0 The trial trenching**

**7.1 Objective** - to determine the character, date and state of preservation of potential archaeological features associated with Sites 4, 5 and 6 by means of a programme of targeted trial trenching. In consultation with the county archaeologist, it was felt that trial trenching on Site 3 was not necessary in order to assess the impact of the scheme on this feature.

**7.2 Method** - The archaeological brief required further information concerning the character, date and state of preservation of those areas of Sites 4 and 6 originally threatened by the proposed development. This was provided by a series of trial trenches (each 1.5m wide) designed to intersect with the cropmark features. A single northwest - southeast trench, 40m in length, was excavated across the postulated ditches associated with Site 4. Its location was designed to examine elements of both the earlier cropmark plot and that produced during the Stage 2 assessment (Fig. 2; Trench 2). The cropmarks at Site 6 were examined by means of five trial trenches (Fig. 4; Trenches 3, 4, 5, 6 and 7), ranging from 30m to 60m in length. The ploughsoil horizon was

removed by machine, using a toothless ditching bucket, to expose the subsoil and any archaeological deposits. The trenches were hand cleaned at this level, in order to define any features exposed and, where necessary, sample excavation and recording of those features was carried out in order to assess their character and significance. All archaeological contexts were drawn, photographed and recorded using pro-forma record cards and environmental samples were collected from appropriate contexts.

In addition to the trenches across these two sites, the development proposals suggested that part of the semicircular cropmark at Site 5 would also be threatened. Consequently, the cropmark was tested by means of two trial trenches (Fig. 3; Trenches 1 and 1a) aligned northeast - southwest. In the case of Trench 1, which was 24m long, the ploughsoil (1000) was removed and the top of the subsoil exposed in the standard manner employed throughout the assessment. However, a section averaging 1m in depth (Trench 1a) was excavated by machine, adjacent to Trench 1, in order to locate any features in section, since the mixed nature of the deposits in Trench 1 made it difficult to define potential features.

## **7.3 Results**

**7.3.1 Site 4** - The ploughsoil in this area (2000) was 0.4 - 0.5m thick and overlay a predominantly sandy subsoil (2001). Towards the south eastern end of the trench, a shallow, irregular shaped feature (F4), backfilled with charcoal-flecked sandy silt (2002), cut the subsoil. One sherd of twentieth-century glazed china was recovered from the fill. The only other visible features in this trench were a series of field drains cutting the subsoil and in some cases part of the ploughsoil also. No trace of an enclosure of any description was encountered.

**7.3.2 Site 5** - Ploughsoil (1000 and 1001) was removed to an average depth of 0.6m in Trench 1, to expose a variegated subsoil of sands, clays and gravelly silts (1004, 1005 and 1007), probably due to the deposition of colluvial and riverine material. After cleaning the surface, a possible linear feature was identified (F1), running east - west across the southwest end of the trench and filled with clean sandy silt (1003). On excavation, one edge appeared to be quite well defined but the other merged into natural gravelly silt (1004),



suggesting that the feature was natural rather than archaeological. Another linear feature (F2), approximately 1.7m wide, and cut by a modern field drain (F3), could be seen running north - south along the trench. Two sections were excavated through this feature, revealing it to be a very shallow gulley (0.25m deep), filled with clean silt (1002), again indicating a feature of natural origin, possibly formed by water flowing down towards the stream to the north of the site. These features were not visible in section in Trench 1A, and the only find recovered from either of the trenches was a sherd of twentieth-century pottery from the fill of the field drain (1006).

**7.3.3 Site 6** - The ploughsoil averaged 0.5m in depth and the subsoil consisted of overlapping bands of clay, sand and gravel hillwash. This overlapping effect, although present in all the trenches, was particularly noticeable in Trenches 4 and 5 and tended to obscure archaeological features cutting the subsoil. Sondages were excavated at the junctions of some of these natural bands, to ensure that none were obscuring features. On cleaning, Trenches 4 and 6 proved to be totally blank apart from several modern field drains visible in the subsoil. No traces of the linear outworks indicated in these two areas by the aerial photographs were discovered. Ditches with V-shaped profiles were located in Trenches 3, 5 and 7 (Fig. 5). The largest (F12), was recorded in Trench 5; it measured 3.9m in width and probably represents the eastern side of the postulated enclosure. Unfortunately, due to the appalling December weather conditions, this feature became waterlogged and excavation could not be completed. However, it was possible to establish that it easily exceeded 1m in depth and was backfilled with silty clay (5002) containing many stones and charcoal flecks. No trace of the linear outwork to the east in Trench 5 was identified. The other two ditches (F11 in Trench 3 and F13 in Trench 7) were considerably smaller, not exceeding 2.7m in width and 1.3m in depth. F11, corresponding with the western side of the enclosure, contained a single fill of compact, silty clay (3002) with frequent stones. F13, corresponding with the curving outwork to the northeast of the enclosure, was backfilled with a series of gritty, silty clays (7001 - 7004). One

other possible ditch (F10) was located at the eastern end of Trench 3, although this feature did not coincide with any of the cropmarks and had an irregular shape. No finds or other dating evidence were recovered from any of the ditch fills.

In summary the three major ditches (F11, F12 and F13) coincide almost exactly with the cropmark plot of the aerial photographs and demonstrate the existence of a single-ditched enclosure with at least one surviving outwork. The remaining cropmark features probably correspond with natural variations in the subsoil. It was not possible to establish from the evaluation results whether or not this site extends beyond the area currently described by the cropmark.

## **8.0 Assessment of the Archaeological Constraint of the Preferred Route**

The results of the landscape survey and fieldwalking were largely negative, indicating that there are no new features of equivalent importance to the already identified cropmark sites. The landscape still represents the basic enclosed field pattern, and the recent grubbing out of smaller field boundaries is the only significant modification. The landscape survey produced no above-ground evidence for former settlement activity within the preferred road corridor and the extremely limited quantities of plough soil and artefacts recovered during the fieldwalking suggested little or no sub-surface evidence.

The Field Survey has also produced negative evidence for two of the potential sites identified by Stage I of the archaeological survey (Sites 4 and 5). No archaeological evidence, relating to the cropmarks, was identified at either site by either the fieldwalking, geophysical survey or the trial trenching. It would seem likely that the cropmark features at these sites have either been eradicated by recent ploughing or were created by natural phenomena. It is unlikely that any further archaeological work will be required on these two sites other than a watching brief.

The archaeological field survey has effectively narrowed the archaeological constraint within the original preferred route to two sites. The geophysical survey has confirmed the existence

and survival of the pit alignment at Site 3 and the trial trenching has confirmed the initial cropmark interpretation of a rectilinear enclosure at Site 6.

Following the removal of the threat to Site 6 by the amendment of the road scheme, only Site 3 remains as an identifiable archaeological constraint.

The following detailed assessment of this site attempts to state its relative value and to assess the significance of the impact on it which would arise from the construction of the preferred route. In order to define this level of significance the non-statutory criteria for assessing the national importance of an ancient monument in England have been used (taken from Planning Policy Guidance (PPG) 16, Archaeology and Planning (November 1990, Department of the Environment).

#### **Site 3 (SA 2388)**

**Description** - The cropmark appears as a linear alignment of a series of dark stains which run north-south for approximately 280m, beginning just to the south of the A5(T). The cropmark is well-defined in the middle of Field Number 8. No trace was observable in the former small field to the north when the photograph was taken. Equally, the cropmark cannot be seen continuing to the south. This may be due to different soil conditions south of a grubbed up field boundary. Although no artefacts were recovered during the field walking the feature appeared as a distinct anomaly on the geophysical survey, (see Fig.2 and Appendix II, Fig.3) demonstrating that it has clearly survived possible plough truncation. The geophysical survey also suggested that the linear feature takes the form of a series of interrupted ditch segments rather than that of a conventional pit alignment.

**Period** - The date of this feature is at present unknown. However, its morphology is comparable with a number of sites known or thought to be of prehistoric origin.

**Rarity** - At least 32 examples of pit alignments have been recorded from aerial photographs within the Welsh Marches. A number are known in the area of the River Perry about 5 km to the

east of the Nesscliffe feature (Whimster 1989, 59).

**Documentation** - No records of any previous investigation appear to exist. The only records of the feature prior to the current field survey are a small group of aerial photographs held by the Clwyd Powys Archaeological Trust.

**Group Value** - While classified as a single feature, it may form part of a group of linear features which also includes those north and east of Coney Bank (SA4212).

**Survival/Condition** - The distinct anomaly recorded during the geophysical survey suggests that the feature has survived recent agricultural activity. However, it is likely that the feature has suffered at least some plough truncation.

**Fragility/Vulnerability** - The preferred route will effectively destroy an 80m section at the southern end of the feature. This amounts to approximately one third of the feature recorded on the cropmark.

**Diversity** - The feature is likely to be of a single phase and function.

**Potential** - The possible association with the linear features north and east of Coney Bank suggest that the Nesscliffe pit alignment may form part of a larger group of ancient field boundaries.

**Importance** - To date, no examples of this class of monument have been excavated in Shropshire, although excavated examples elsewhere have suggested a prehistoric origin. Therefore, the monument is of potential importance in clarifying the nature of prehistoric land division in the county. On this basis the site is considered to be of regional or county importance.

**Recommendations** - The Nesscliffe pit alignment/segmented ditch is only partially affected by the preferred route. The site does not appear to be of national importance and it is unlikely that preservation *in situ* of the threatened section will be required. However, the rescue excavation (preservation by record) of the threatened portion of the feature will undoubtedly improve our understanding of a poorly understood class of monument.



## **9.0 Recommendations for further archaeological work.**

### **Objectives**

The broad objective of the proposed archaeological work is the rescue excavation of the threatened portion of Site 3. The excavation will allow the opportunity to clarify the character, function and date of what appears to be a well-preserved example of a pit alignment/segmented ditch in the Welsh Marches including the testing of the hypothesis that such features are boundaries.

### **Method**

A single area excavation, 80m x 15m, is envisaged covering the whole of the threatened section of the pit alignment (Fig. 6). In addition a single, 5m wide trench is envisaged extending 15m on either side of the pit alignment. This will allow the examination of the whole of the threatened portion of the feature and test the hypothesis that the feature forms some kind of boundary.

It is suggested that the ploughsoil should be removed by machine with an appropriate bucket and under the direct supervision of an archaeologist. The underlying subsoil should be cleaned manually in order to define archaeological features cutting the natural gravels. Hand excavation of the exposed features should then be undertaken. It is suggested that at least 50% of all features including individual pits or ditch sections associated with the pit alignment/segmented ditch, should be excavated.

The assessment suggested that the potential for the survival of environmental evidence was low. However, on-site specialist advice should be sought for sampling specific features and deposits which may prove on excavation to have a high potential.

The fieldwork should be accompanied by a close re-examination of the landscape evidence, including tracings of all historic maps, and an analysis of field boundaries. A plot of other prehistoric sites in the vicinity should be made together with a survey of the published evidence for similar features.

In addition to the work carried out on Site 3 a watching brief should be maintained during

construction work on the remainder of the road. Particular attention should be paid to the work affecting the existing A5. Given the limited nature of the likely disturbance to the existing road, it is not felt that a major pre-development investigation is justified. However, any exposed sections across the road should be recorded and compared with existing recorded sections such as that at Overley Hill (Meeson 1968). Careful observations may provide the opportunity to examine evidence for changes in road building techniques through time. For example, tar macadam is likely to have been used from 1911 (VCH 1979, 193; Barrie Trinder pers.comm.). It may also be possible to determine whether or not the section of road was improved by Telford.

### **Recording of archaeological deposits**

All archaeological deposits and features will be recorded using a continuous numbered context system. All significant contexts and features will be photographed in both monochrome and colour, drawn in plan and, where appropriate, in section. The drawn record should be related to Ordnance Datum and the National Grid.

All finds will be recorded using a continuous numbered context system. Those requiring conservation will be temporarily stored in a stable environment until they have been examined by appropriate specialists.

### **Post-excavation**

A post-excavation assessment and post excavation research design will be prepared according to the guidelines outlined in the Management of Archaeology Projects, English Heritage (MAP 2). A report should be prepared for publication in an appropriate county or national journal.

The site archive including all records and finds from the excavation should be deposited in a suitable repository.

### **Estimated duration and cost of excavation and analysis**

It is expected that the excavation phase of the proposed archaeological work would take approximately four weeks with a field team of eight. A further week would be needed to produce a post-excavation assessment and research design.

At 1993-4 costs it is estimated that the cost of this phase would be in the region of £20,000. The cost of the post-excavation phase will be dependant upon the quality and quantity of the data and finds recovered during the excavation. A rough estimate, based on past experience and the results of the field survey, would be approximately £12,000.

### 10.0 Acknowledgements

The field evaluation was carried out by Bob Burrows, Lucie Dingwall, Sally Finter, John La Neice, Steve Litherland, David Kilner, Ed Newton and Andrew Rutherford, with the assistance of Jon Sterenberg. The text of the report was prepared

by Lucie Dingwall and Gwilym Hughes and the project was monitored at all stages by Gwilym Hughes. The figures were prepared by Nigel Dodds and the report was produced by Ann Humphries.

The help and advice given by both Paul Tesh of Frank Graham Consulting Engineers Limited and Mike Watson of Shropshire County Council is gratefully acknowledged. Thanks are due to all the landowners and farmers who kindly allowed us access to their land, in particular to Mr G.L. Hudson, Mr J. Warner, Mrs M.M. Richards and Mr J.C. Sockley, on whose land the trial trenching took place.

### 11.0 References

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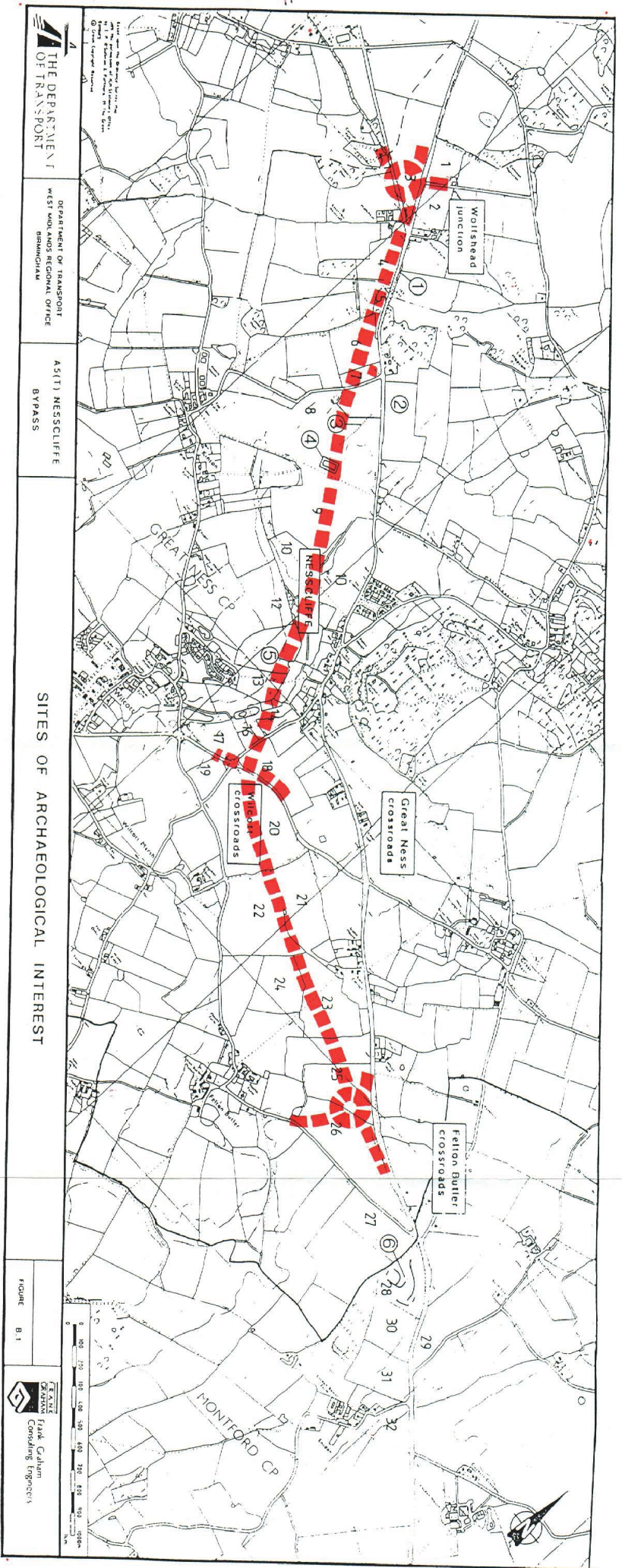


Figure 1

# FIELD 8

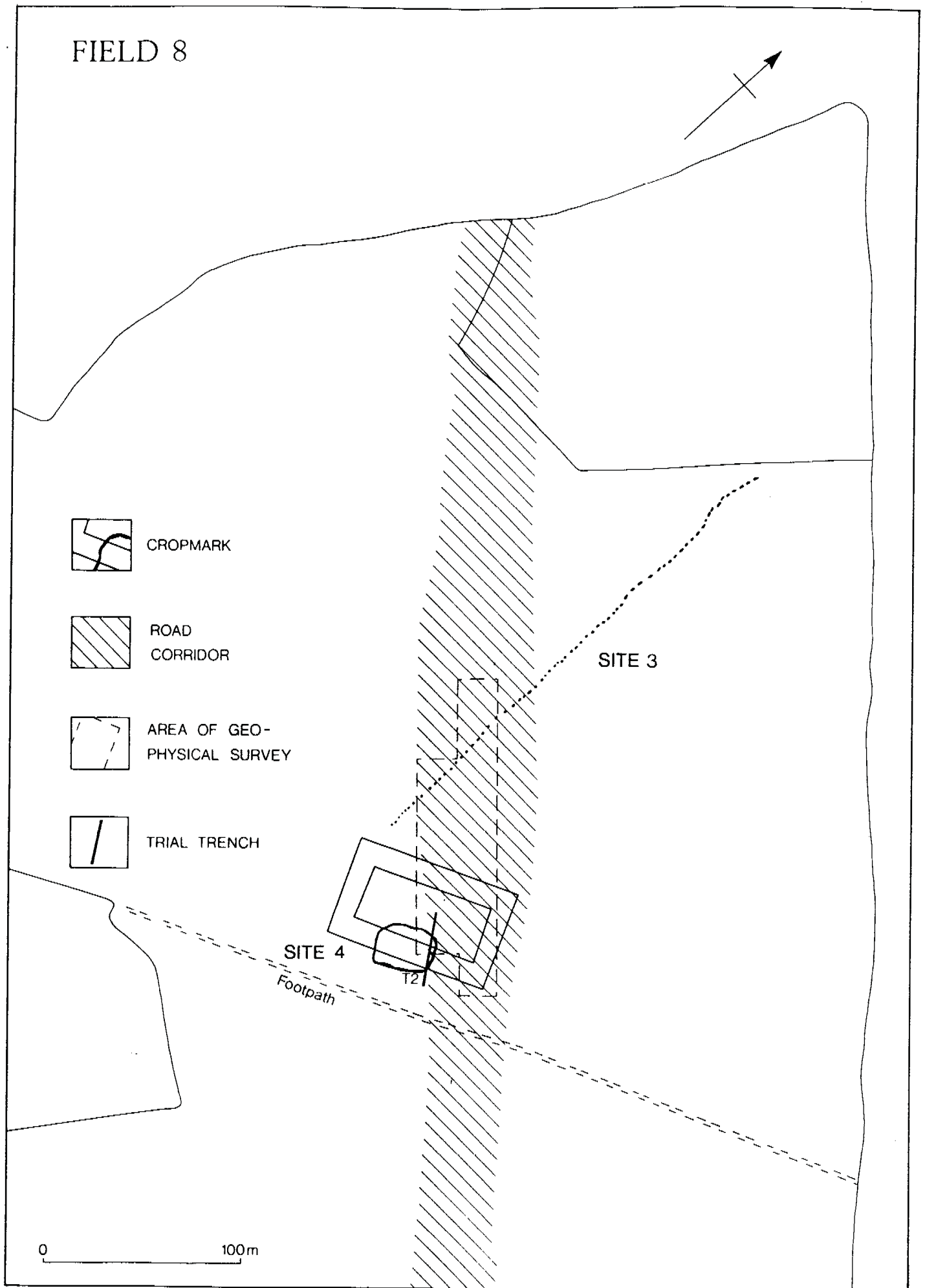


Figure 2



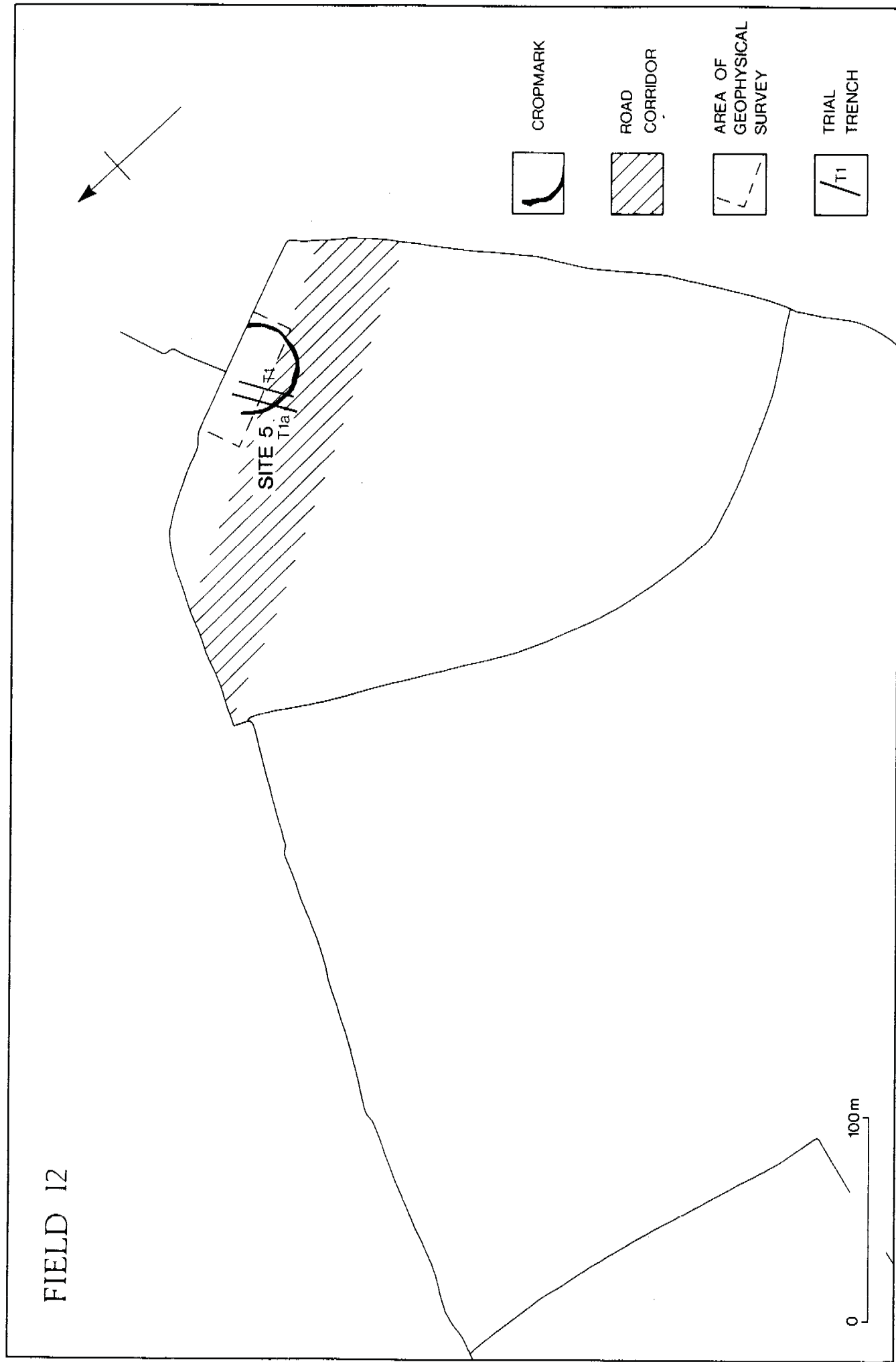
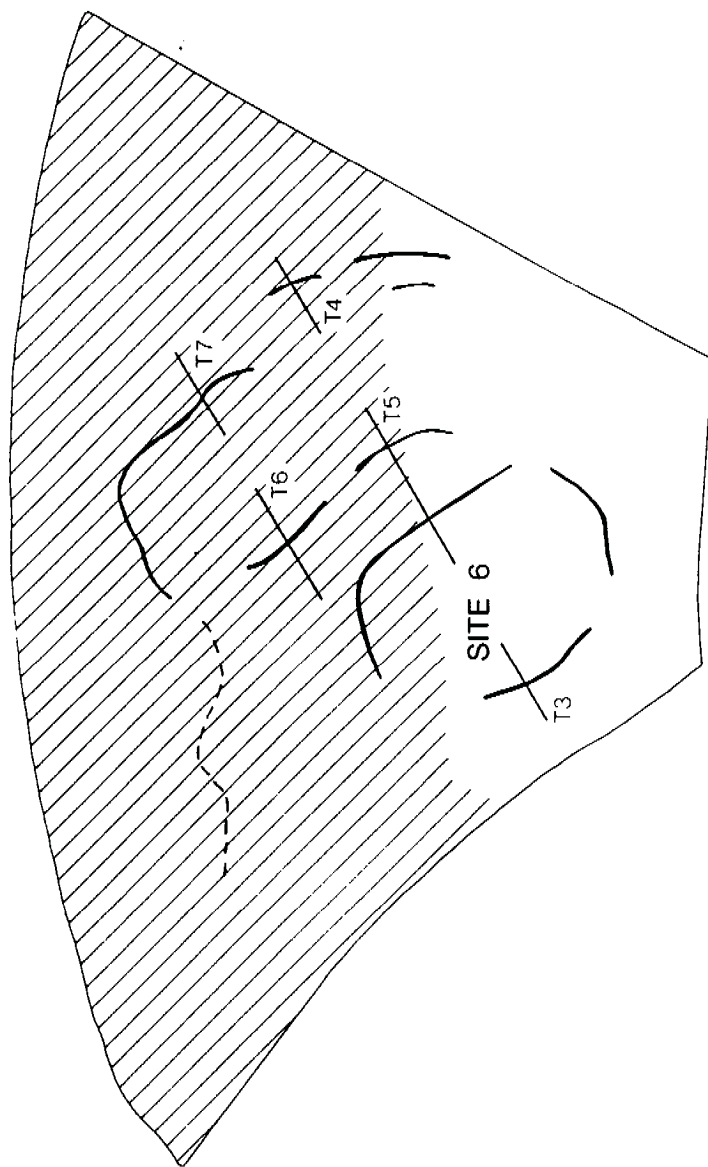


Figure 3



# FIELD 28



CROPMARK

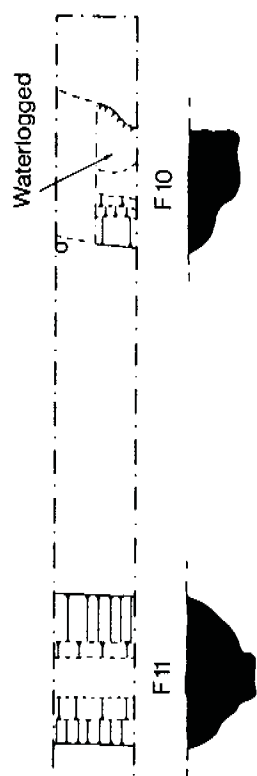
ROAD CORRIDOR  
(ORIGINAL SCHEME)

TRIAL TRENCH  
T7

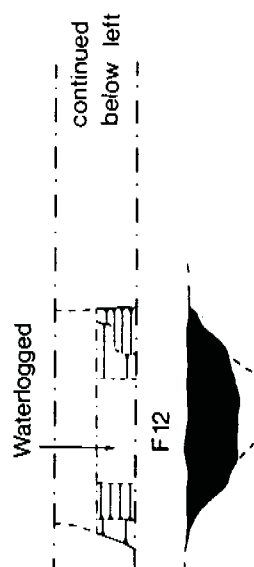
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Figure 4

Trench 3



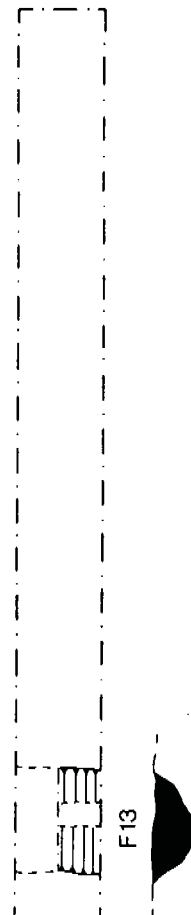
Trench 5



continued from  
above right

Sondage 1

Trench 7



0 5m

Figure 5

# FIELD 8

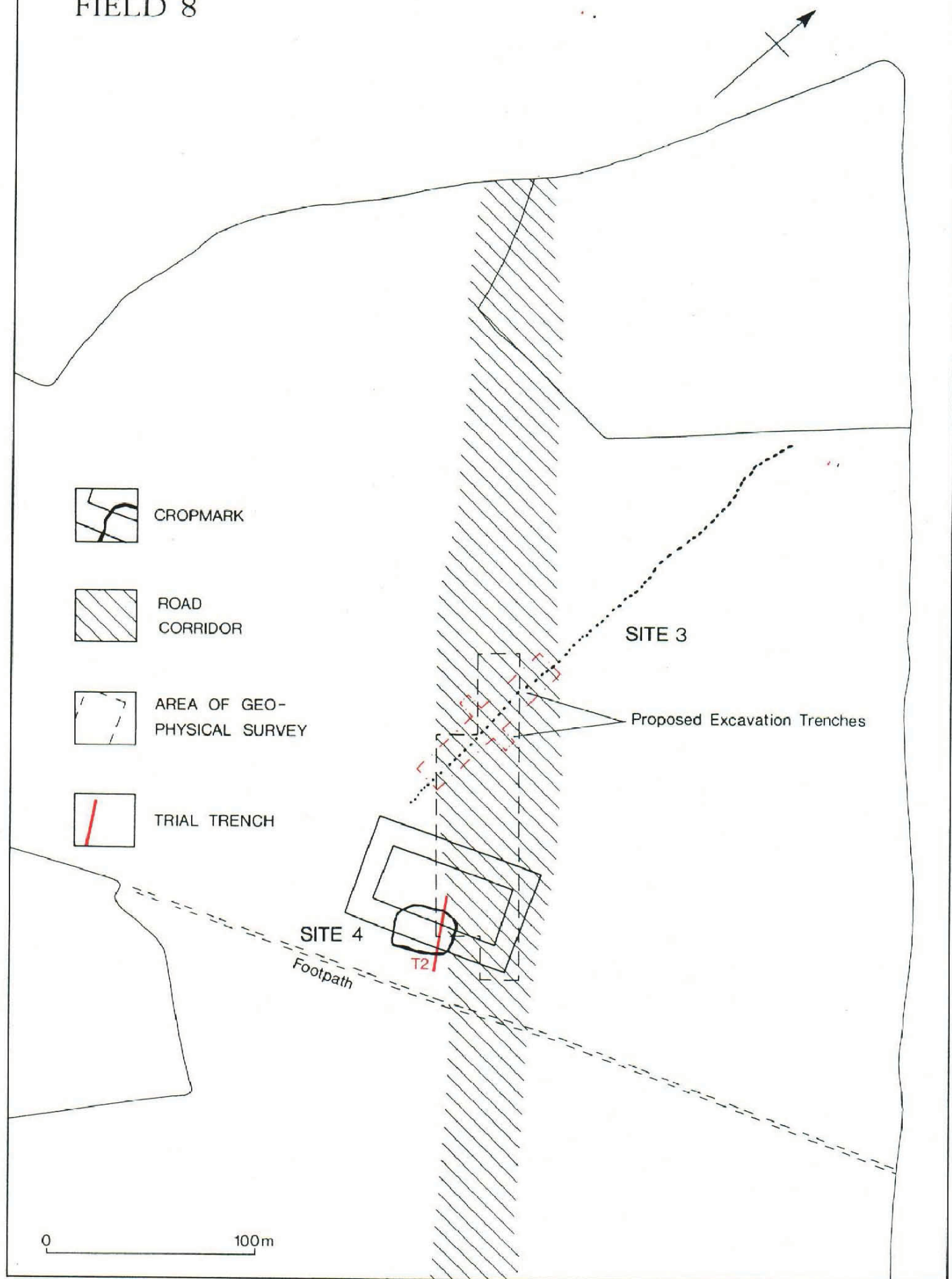


Figure 6

## **APPENDIX I**

### **A5(T) Nesscliffe Bypass Archaeological Assessment**

#### **Stage 1 - Archaeological Survey**

Discussions with Shropshire County Council revealed six sites of archaeological significance. These are shown on Figure 3.7 and are described below:

- Toll house by Thomas Telford at Wolfshead junction (Feature 1)
- Ring ditch, probably a ploughed in barrow (Feature 2)
- Pit alignment (Feature 3)
- Well preserved double ditched rectangular enclosure (Feature 4)
- Ring ditch (Feature 5)
- Rectangular enclosure with double ditch outer enclosure with entrance and roughly north-south pit alignment (Feature 6)

These sites, except for Feature 1, are presumed to be of prehistoric or Roman date.



## **APPENDIX II**

### **A5(T) Nesscliffe Bypass Archaeological Assessment**

#### **Stage 2 - Desk Top Study**

**by Steve Litherland**

# **A5(T) Nesscliffe Bypass Archaeological Assessment**

## **Stage 2 - Desk Top Study**

by Steve Litherland

### **Introduction**

The following report outlines the results of the second stage of an archaeological survey carried out by Birmingham University Field Archaeology Unit on behalf of Frank Graham Consulting Engineers Limited. The preliminary assessment consisted of a 'desk top study' of the primary and secondary documentation for the area affected by the proposed road scheme. The majority of the documentation consulted is held by the County Sites and Monuments Record and County Records and Research Unit of Shropshire County Council.

The principal objectives of the preliminary assessment were to provide an assessment of the archaeological sites initially identified by Shropshire County Council as potentially affected by the road scheme; and to identify from original research further sites of potential archaeological or historical interest, and provide recommendations for further work, if necessary, in order to evaluate these sites. The sites are assessed following the Secretary of State's non-statutory criteria outlined in Planning Policy Guidance Note 16: Archaeology and Planning (DoE 1990).

### **The Preferred Road Corridor**

Following submission of a Technical Appraisal Report and Public Consultation in July 1991, a preferred route for the A5(T) Nesscliffe Bypass was chosen (figure 1). This bypass route skirts the southern flank of the village of Nesscliffe along a corridor approximately 5 kilometres long, from the Wolfshead Junction in the northwest to the Felton Butler Crossroads in the southeast. The width of the corridor varies between c.50m and c.150m, dependant on the incorporation of ancilliary features such as road junctions and cuttings or banking. The immediate environs of the chosen route defined the study area of the archaeological survey.

### **Background: Geology, Topography and Landscape Development**

The survey area is located in the northern part of the Welsh Marches and lies within the confluence of the Rivers Severn and Perry on the North Shropshire Plain – an extensive, gently undulating, lowland landscape, heavily overlain by glacial drift and fluvio-glacial deposits. This lowland landscape is interrupted by occasional low red sandstone hills which early man took advantage of for settlement and defence. For example, prominent remains of an Iron Age hillfort are located on Nesscliffe Hill, which overlooks the survey area. However, where the drift geology and soils comprise gravels and well-drained sandy loams, post-war aerial photography has shown that such low-lying areas attracted some of the earliest and most intensive agricultural settlement in Shropshire.

Soil conditions in the vicinity of the survey area are generally conducive to the recovery of archaeological evidence from aerial photography, being a mixture of well-drained brown sands and brown earths. A cluster of archaeological sites: SA862, SA4150, SA2382, SA4300, SA4213, SA4211, SA4212, SA2388, SA2433, SA4210, SA4030, SA2111, SA2427, SA4250, SA2212, SA2413, SA2211 have been identified from aerial photographs in the vicinity of the survey area (figure 1), principally by Chris Musson and the Clywd Powys Archaeological Trust in the dry summers of the late 1970s and early 1980s. The majority of archaeological sites listed above are cropmark enclosures of varying size and form, although earlier funerary and ceremonial monuments may also be represented.

As in many other regions of Britain, the aerial photographic record appears to be strongest when dealing with rural settlement of the Iron Age and Roman periods. At this time the Welsh Marches

has been tentatively described as an open landscape dotted with discrete enclosures and simple field systems (Whimster 1989,64). It is expected that the majority of cropmarks identified inside and around the survey area date from these periods. Excavation of part of Nesscliffe hillfort (TSAS 1959,110) confirmed evidence of Iron Age/Romano-British occupation; a time when the Cornovii tribe occupied the area.

Further archaeological evidence has not been identified in the survey area prior to the Middle Ages. In general the medieval pattern of settlement represents a development of the earlier pattern, with scattered nucleated villages on outcrops of favourable land, and isolated farmsteads and hamlets between.

By Domesday, the manor of Nessham, based at Great Ness, was evidently already an important head-manor with a church (SA1083), a high hidage assessment, and four outlying settlements, including Kinton and Wilcott. In addition, six Welshmen were listed within the manor, showing the mixed population of the Marches. Felton Butler was an independent manor, held briefly by Henry II; the name 'Felton' may give a clue to the origin of the settlement, through enclosure within an open countryside. Several examples of the surviving earthworks of small defensive mottes, common throughout the Marchlands, can be seen at Kinton, Wilcott and Hopton in the Nesscliffe area (SA859, SA1092, SA1090), and are the most recognisable archaeological monuments of this period.

Later medieval examples of economic reorganisation in the form of deserted medieval villages are not found in the immediate survey area, but SA857 is one example located just west of the Wolfshead Junction. Four kilometres south of Nesscliffe the remains of a DMV, Abbey and Priory on the banks of the Severn near Shrawardine is evidence of the influence of the religious houses, which played an important role in establishing a pastoral economy based on sheep-rearing in the region. As late as 1700 Great Ness was one of two parishes singled out by Gough in his History of Myddle as producing the best wool in Shropshire.

However, by the late 17th century man had

begun to improve and tame the landscape more effectively than ever before. The Rocque Map of 1752 shows a landscape in transition (figure 2). Enclosure of commonland was well established in the survey area by this period, and the marshes to the south of Wilcott had begun to be drained in the 18th century. New farming methods rectified the organic deficiency of the light sandy soils, and root crops, clover and oats, and later barley, were grown, especially during the Napoleonic Wars. The basic enclosed field pattern around Nesscliffe did not change substantially for nearly 200 years, although the last decade has witnessed the grubbing out of smaller field boundaries to create larger fields.

### The Survey Area

The proposed road corridor cuts through a belt of primarily arable fields which, while based on divisions established by early enclosure in the 17th and 18th centuries, have been widely modified and enlarged, especially in the last decade. The Broomhill is the highest point along the road corridor, to the west the land falls into a slight dip north of Wilcott where a patch of marshy land has survived, then rises again towards Wolfshead. To the east of Broomhill the land undulates slightly rising again towards the woodland of Ensdon Bank Plantation at the eastern end of the road corridor. Another patch of woodland is found at Coney Bank at the western end of the road corridor. Each modern field has been given an individual field number (FN) which is shown on figure 1.

### Identified Archaeological Sites

Six archaeological sites were identified by Shropshire County Council from the Sites and Monuments Record. These were:

1. SA2551, a toll-house by Thomas Telford on the north side of Wolfshead Junction.
2. SA4221, a ring ditch, probably representing a ploughed out barrow, situated north of the A5 southeast of Coney Bank. This feature was incorrectly plotted from aerial photographs on the southern side of the road, it is therefore not threatened by the proposed roadscheme.
3. SA2388, a possible pit alignment running north-south, identified from aerial photography.

4. **SA2433**, an apparently well-preserved double-ditched rectangular enclosure, identified from aerial photographs.
5. **SA4030**, part of a ring ditch or funerary monument, identified from aerial photographs.
6. **SA2413**, a cropmark identified from aerial photography comprising a rectangular enclosure with a double ditch to the east, apparently enclosed by an outer ditch, which may be double-ditched at the southeast side, with a possible entrance at this point.

These sites with the exception of SA2551 are presumed to be of prehistoric or Roman date.

Three sites are likely to be directly affected by the proposed road scheme: SA2388, SA2433 and SA2413. In addition to these sites, the most up to date map of land-take for the proposed roadscheme appears to raise the possibility that the western portion of a further cropmark site (SA4030) may be affected by the proposed road scheme, especially given the proximity of the site to a new footbridge. These four sites are discussed in detail below:

### **SITE 3: SA2388, CROPMARK AT SJ37502010**

**Description.** This cropmark appears as a linear alignment of a series of dark stains which run north-south for approximately 280m, beginning just to the south of the A5(T). Identified in 1979, the cropmark is well defined in the middle of field FN8, but no trace is observable in the small field to the north, which was under a different crop at the time of the photography and has since disappeared. Equally, the cropmark cannot be seen continuing to the south; this may be due to different soil conditions south of a grubbed up field boundary. Overall definition of the cropmark may be characterised as fair.

**Period.** The date of the feature is unknown at present, although it is likely that the feature predates enclosure in the 17th/18th centuries, and it may be of prehistoric origin.

**Rarity.** This is the only example of such a linear alignment within the survey area, although by 1989 at least 32 alignments had been identified within the Welsh Marches, at 20 separate locations, notably in the River Perry area (Whimster 1989,59).

**Documentation.** SA2388; CPAT: 79/7/22, 79/15/7, 66/88, 80/14/28, 81/C/130, 82/01/33, 82/53/30, 82/C/065.

**Group Value.** While classified as a single feature, SA2388 may form a group with linear cropmarks north and east of Coney Bank, or the cropmark enclosure SA2433 (see below).

**Survival/Condition.** The feature is known only as a cropmark, and may survive only as a feature cut into the sand and gravel subsoil. The top of the feature has probably been denuded by ploughing, but the extent of erosion cannot be accurately gauged without excavation.

**Fragility/Vulnerability.** In addition to the site being vulnerable to erosion by further ploughing, the southern end of the pit alignment is likely to be directly affected by the road scheme.

**Diversity.** The feature is likely to be of single phase and function, although the possibility of minor modification cannot be precluded.

**Potential.** Interpretation from aerial photographic evidence alone is problematic but the form is indicative of the subclass of non-enclosure-type structures categorised by Whimster (1989) as pit alignments. Almost without exception, examples of this distinctive, but still enigmatic, form of land division are confined to a relatively narrow belt of lowland country around the River Perry, which is about 5km east of SA2388. Pit alignments have been mainly identified close to the banks of rivers or streams, although whether this has a functional significance, or merely reflects the particular sensitivity of certain riverine soils, is as yet unknown. It is interesting to note that a since dried-out stream-bed which fed into the marshland south of Nesscliffe ran close to SA2388. Equally, it has been noted that pit alignments often occur in groups, and frequently join at right angles. North of Coney Bank a linear cropmark (SA4212) runs east-west, and an 'ancient boundary' was noted on an 18th-century map of the common. If a relationship existed between the two sets of features this would probably predate Watling Street. However, the proximity of the double-ditched enclosure SA2433 may also suggest a relationship between the two features. The poor understanding of pit-alignments in the Welsh Marches potentially



provides this example with high potential.

**Recommendations.** A combination of fieldwalking, geophysical prospection, and trial trenching will be applied to this site to test its potential.

**SITE 4: SA2433,  
CROPMARK AT SJ37591989**

**Description.** This feature is discrete, and wholly defined on the aerial photographs. The cropmark appears as rectangular enclosure measuring c.50m by 100m, apparently defined by straight closely-spaced double-ditches with remarkably square corners. These characteristics place SA2433 with a small group of rectilinear double-ditched enclosures; however, the extreme regularity of the plan suggests the possibility that the cropmark may have been formed by robbed-out wall foundations.

**Period.** The regular morphology of SA2433, together with the proximity of Watling Street is certainly suggestive of a Roman origin. However, the date of SA2433 is at present unknown, and it may alternatively be of much more recent formation.

**Rarity.** Double-ditched rectilinear enclosures have been recorded throughout the Welsh Marches. With some significant exceptions this class of enclosure is less frequent in the immediate neighbourhood of Roman military and commercial centres, seeming instead to colonise the peripheries of these territories (Whimster 1989,45). However, the extremely regular form of SA2433 marks the site out as unusual.

**Documentation.** As SA2388 (above).

**Group Value.** SA2433 is an apparently discrete enclosure, although its setting near SA2388 and Watling Street gives the cropmark some group value.

**Survival/Condition.** While the feature survives only as a cropmark and may have been subject to erosion through ploughing, the definition of the feature is relatively good and therefore it may be comparatively well preserved.

**Fragility/Vulnerability.** The east half of SA2433 will be directly affected by the proposed road scheme. The site is also vulnerable to continued erosion through ploughing.

**Diversity.** Although the cropmark exhibits little diversity in terms of morphology, geophysical survey or trial excavation may provide evidence of greater complexity.

**Potential.** Excavation of this general class of enclosure has been limited. Given the anticipated condition of the monument and its unusual form, this enclosure may be deemed to have quite high archaeological potential.

**Recommendations.** Fieldwalking, geophysical prospection and trial trenching will be used to further assess the archaeological potential of SA2433 in the second phase of archaeological investigations.

**SITE 6: SA2413,  
CROPMARKS AT SJ40601753**

**Description.** SA2413, located in field FN 28, is the most difficult cropmark within the survey area to define adequately from the aerial photographs. The cropmark is not amenable to simple morphological classification, but appears to define a rectilinear enclosure with a double-ditch on the eastern side, which in turn is partially enclosed by a further ditched enclosure, double-ditched on the southeast side through which an entrance may have been placed. Overall definition is poor and the possibility cannot be excluded that SA2413 extends beyond the area currently described by the cropmark, or has a more complicated structure than can at present be defined.

**Period.** SA2413 is currently undated. However, limited excavation of other quadrilateral-type single-ditched enclosures in the Welsh Marches points to the probability of either an Iron Age or Romano-British date.

**Rarity.** Quadrilateral enclosures of various types form the largest and least homogeneous class of enclosure in the Welsh Marches. However, SA2413 is unusual because of the suggestion of a second ditch enclosing part of the central enclosure.

**Documentation.** CPAT: 79/16/4, 79/57/28, 79/CQ/12, 79/CQ/13.

**Group Value.** Despite the fact that this general class of 'farmstead' enclosure is the commonest throughout the Welsh Marches, SA2413 is the



only example to be affected by the proposed roadscheme. There are a number of similar enclosures, including SA2211 and SA2427, in the Perry valley east of Nesscliffe Hill, however.

**Survival/Condition.** Knowledge about SA2413 is derived from aerial photographic information only, and the site may survive only as features dug into the sand or gravel subsoil. The poor definition of SA2413 may reflect the degree to which the site has been eroded by ploughing, but the condition of the site can only be gauged from excavation.

**Fragility/Vulnerability.** Nearly all of SA2413 will be affected by the proposed road scheme, and in addition the enclosure is vulnerable to continued erosion through ploughing.

**Diversity.** SA2413 is the most complex cropmark feature affected by the proposed road corridor, and may form part of a cropmark complex with diverse functions, rather than an individual enclosure.

**Potential.** The site, which as noted above, may reasonably be ascribed a later prehistoric or Romano-British date, has considerable archaeological potential for extending knowledge about the settlement pattern in the Severn Valley region north of what has been defined as the 'Wroxeter Hinterland' (Buteux and Gaffney, forthcoming).

**Recommendations.** SA2413 will be subject to fieldwalking, geophysical prospection and trial trenching as part of the second phase of archaeological investigation.

#### **SITE 5: SA4030, CROPMARK AT SJ38101910**

**Description.** SA4030 appears as a well-defined, extremely regular semicircular cropmark of c.50m diameter in field enclosure FN12. The cropmark is not visible in the fields to the east, and its presumed continuation is dissected by a mature wooded field boundary. The ditch to the enclosure is very well-defined and appears to be unusually broad for this class of enclosure.

**Period.** SA4030 is currently undated, but the morphology of SA4030 invites comparison with similar prehistoric enclosures in the Welsh Marches (Whimster 1989,36).

**Rarity.** Curvilinear single-ditched enclosures comprised 18.3 per cent of cropmarks identified in the Welsh Marches by Whimster (1989). The majority probably enclose Iron Age or Romano-British farming settlements, but a proportion may belong to earlier or later periods. The regularity of form and apparent breadth of the ditch of SA4030 is suggestive however of a neolithic/Early Bronze Age ceremonial enclosure, perhaps a henge monument, sites of considerable rarity in the Welsh Marches.

**Documentation.** CPAT 84/29/29, 84/29/30.

**Group Value.** Enclosures of this class are generally solitary, although henge monuments may be associated with other ring-ditched enclosures (eg. Berriew, Powys; Whimster 1989,36).

**Survival/Condition.** The cropmark is well-defined. This may be because of the proximity of SA4030 to a mature field boundary which has meant that the feature has not been subject to deeper ploughing.

**Fragility/Vulnerability.** As noted above, SA4030 may be affected by machine disturbance associated with the construction of a nearby footbridge.

**Diversity.** SA4030 is a discrete cropmark enclosure. However, the possibility that it may be ceremonial monument raises a potential for complex associated features.

**Potential.** SA4030 may have a potential to reveal information, at present very scarce, of prehistoric ritual activity in the Welsh Marches.

**Recommendations.** Careful consideration of the possible impact of the proposed road scheme on SA4030 is required. It may be possible to ensure that the cropmark remains undisturbed by construction work. However, if this is not possible then provision needs to be made for the archaeological evaluation of the site in order to determine an appropriate archaeological response.

#### **Further Areas of Potential Archaeological Interest**

The documentary research was based on a combination of cartographic research allied to a review of secondary sources and field name evidence. In addition to the 19th century Tithe

and Ordnance Survey mapping, the parishes of Great Ness and Montford are well served by estate maps, comprising 12 maps ranging in date from the mid-17th to 19th centuries. The majority of these maps reflect the gradual improvement of the landscape through enclosure and the application of new farming techniques designed to maximise agricultural production.

Given the open nature of the survey area it is not surprising that no evidence was found for buildings or settlement in the fields affected by the proposed road scheme. Apart from elucidating the general historic development of the landscape around Nesscliffe (above), the main results of the documentary review derived from the field name evidence. The results are listed in Appendix 1, against the modern field numbers (FN) to be used in the second phase of the assessment.

The presence of a number of post-medieval quarries or pits is suggested within the survey area; notably in FN9, FN19, FN21, FN26, FN27, FN29 and FN31. These were probably dug to extract the local sands and gravels; most of the fields in the survey area were enclosed by the 18th century and therefore it is likely that this

activity pre-dated or was roughly contemporary with enclosure. In addition, a number of fields have names with possible historical implications. Coney Bank (FN5) may indicate the presence of a rabbit warren, Rag or Rig (FN6, FN7) may refer to land covered with large or rough stones (Field 1972). Marker stones of uncertain antiquity are also noted in FN17 near Wilcott. Finally, Bell Meadow (FN32) may be a reference to the rent of the field supporting the maintenance of the bells of Great Ness church.

None of the above evidence necessitates further work not already outlined in the second phase programme.

### Acknowledgements

Thanks are due to the staff of the Shropshire Sites and Monuments Record, the County Records and Research Unit, and the Local Studies Library for their help during the research stage of this report. At B.U.F.A.U. the report was edited by Gwilym Hughes, project coordinator, and Simon Buteux, unit manager. The figures were drafted by Nigel Dodds.

### References

- |                          |             |   |
|--------------------------|-------------|---|
| Buteux, S. & Gaffney, V. | forthcoming | The Wroxeter Hinterland: A Research Design                  |
| Field, J.                | 1972        | English Field Names: A Dictionary                           |
| Gough, R.                | 1700        | The History of Myddle                                       |
| Whimster, R.             | 1989        | The Emerging Past: Air Photography and the Buried Landscape |

## Estate Maps

Held at Shropshire County Record and Research Office

### Parish of Great Ness

Hexley Moor, Kynton. 1650. (Bridgwater Collection 212/466/16)

John Edwards Estate, Nesscliffe. c.1690 (Edwards 93/872)

Felton Butler Township. c.1728 (Powis Colln. 552/8/300)

Alderton, T.Wingfield esq. 1756 (Powis Colln. 552/8/30)

Sir H. Bridgeman's Estate, Nesscliffe. 1768 (3657/2/11)

Wilcott Farm. 1799 (Salt Additional Colln.3652/Large Map Box)

Wilcott Farm. 1811 (4175/5)

T.Jeffrey's Estate. 1820 (Salt Additional Colln.3651/Jeff 8.27)

Felton Butler. 1820 (Powis Colln. 552/8/308)

### Parish of Montford

Montford. 1683 (Powis Colln.552/8/389)

Ensdon. 1728 (Powis Colln. 552/8/303)

Montford/Great Ness. 1825 (Powis Colln. 552/8/327)

## Appendix 1 Field Name Catalogue

FNo.	Landuse	Significant Field Name
1	Arable	
2	Arable	
3	Arable	
4	Pasture	
5	Woodland	Coney Bank
6	Arable	Raghouse Piece (1768)
7	Arable	Righthouse Croft (1761)
8	Arable	Banky Field, Rughouse Piece
9	Arable	Sandhole and Sut Leasows
10	Arable	(Old Furlongs of Nesscliffe Field)
11	Pasture	(Meadowland)
12	Arable	Big Nesscliffe Field
13	Arable	
14	Pasture	
15	Woodland	Pool and Sling
16	Arable	Pool and Sling
17	Arable	Pool Piece
18	Arable	Crossway Leasow
19	Arable	
20	Arable/Pasture	Clerks Croft, Brickhill Field
21	Arable	Pissing Hill, Broomhill Field
22	Arable	
23	Arable	
24	Arable	
25	Arable	
26	Arable	Gravel Hole Leasow
27	Arable	Gravel Hole Field
28	Arable	
29	Arable	The Pitacres and Quoittings
30	Arable	
31	Arable	Coach Road Field, Gravel Hole Field
32	Arable	Bell Meadow, Millers Gate

## List of Figures

Fig.1. Nesscliffe Bypass Proposed Route and Archaeological Survey Area (showing Field Survey Numbers, Shropshire Sites and Monuments numbers, and the approximate line of the proposed road)

Fig.2. Detail of the Rocque County Map of 1751.



Figure 2

**APPENDIX III**

**A5(T) Nesscliffe Bypass Archaeological Assessment**

**Report on Geophysical Survey**

by Geophysical Surveys of Bradford




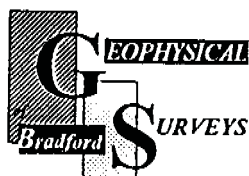
REPORT ON GEOPHYSICAL SURVEY

**A5 (T)**  
**NESSCLIFFE BYPASS**

Report Number 92/100

Work commissioned by :

*B.U.F.A.U.* 



The Old Sunday School, Kipping Lane,  
Thornton, Bradford BD13 3EL  
Telephone (0274) 835016  
Fax (0274) 830212

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## **SITE SUMMARY SHEET**

**92/100 Nesscliffe Bypass**

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NGR: SJ 380 195

### **Location and topography**

The village of Nesscliffe lies approximately eight miles northwest of Shrewsbury, on the A5 trunk road. The site of the proposed bypass route occupies a corridor of land southwest of the village and the existing road. Two areas were surveyed; the first on a sloping ploughed field and the second on a relatively flat stubble field. A proposed third area was not available for survey due to the presence of a mature sugar beet crop.

### **Archaeology**

A number of sites of interest have been identified by Birmingham University Field Archaeology Unit (BUFAU) along the route of the proposed bypass. These include: a possible pit alignment, an apparent double ditched rectangular enclosure, a semi-circular cropmark and a group of linear and sub-rectangular cropmarks (BUFAU:- Sites 3, 4, 5 and 6 respectively).

### **Aim of Survey**

A fluxgate gradiometer survey was undertaken over three of the above cropmark groups in an attempt to accurately locate them. The geophysical work forms part of a broader evaluation being carried out by BUFAU.

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### **Summary of Results\***

The survey has succeeded in accurately locating two of the three cropmarks investigated, though interpretation of the semi-circular feature is tentative. No trace of the double ditched rectangular enclosure was evident in the data set and it may be that the archaeology has been destroyed by the plough.

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\* It is essential that this summary is read in conjunction with the detailed results of the survey.

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Locational information on the geophysical survey areas is provided on Figures 2 and 3 in the main text. Figure 1 of the geophysical survey report has been omitted.

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## SURVEY RESULTS

### 92/100 Nesscliffe Bypass

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#### 1. Survey Areas (Figure 1)

1.1 Two areas (A and B) were surveyed, to cover three sets of cropmarks (Sites 3, 4 and 5). A further cropmark group (Site 6) was not investigated, as the sugar beet crop had not been harvested at the time of survey.

1.2 The grids were positioned by Geophysical Surveys of Bradford, based on approximate location markers placed by BUFAU and exact tie-in information has been lodged with them.

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#### 2. Display

2.1 The results are displayed in three formats :- dot density plot, grey-scale and X-Y trace. These display formats are discussed in the *Technical Section*, at the end of the text.

2.2 For each area data plots and simplified interpretation diagrams are produced at 1:500.

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#### 3. General Considerations - Complicating factors

3.1 Area A was in a sloping, ploughed field and the ground was particularly wet and muddy, making walking and hence data collection difficult. A ferrous borehole shaft at the southern corner of the grid created a block of disturbance 20m wide.

3.2 The ground conditions in Area B were good (flat, with short stubble) but lengths of wire fencing along the eastern edge of Area B have produced some magnetic disturbance.

3.3 The data sets for both areas are generally noisy and the archaeological responses relatively weak; this has made interpretation of the latter difficult and it may be that some features have remained undetected.

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#### 4. Results

4.1 The data will be described by the individual areas

##### 4.2 Area A (Figures 2 and 3)

*This 160x40m block covers two groups of cropmarks identified by BUFAU: a possible pit alignment (Site 3) and a double ditched rectangular enclosure (Site 4).*

4.2.1 One grid at the southern corner of the area has been excluded from the display since disturbance from the borehole (3.2 above) will have masked any archaeological responses if present. The complete data set for this area is noisy, containing a number of iron spikes.

4.2.2 A linear anomaly running approximately north-south, in the top half of the survey grid, has been identified as Site 3 (the pit alignment), though, in fact, it appears to be a segmented ditch.

4.2.3 The double ditched enclosure has not been located and it is possible that it has been destroyed by ploughing. However, given the level of magnetic noise (3.3 above), this negative evidence should not be taken as conclusive proof that no features exist.

#### 4.3 Area B (Figure 4)

*AP evidence in this area suggests a semi circular ditch (?half a circular enclosure) directly adjacent to a modern field boundary.*

4.3.1 Several areas of magnetic disturbance along the north-eastern edge of the grid are associated with lengths of wire fencing marking the field boundary. Unfortunately, these have partially obscured the response from the semi- circular feature.

4.3.2 There are two curving anomalies which might be interpreted as the cropmark feature, but neither is particularly convincing. The inner response is marginally stronger and more coherent, despite the noise from the fence; however it is displaced *at least* 10m to the east of the AP cropmark interpretation. The position of the outer magnetic anomaly coincides more closely with the AP plot, but the response is extremely ephemeral and, were it not for the cropmark, would probably not have been noted as significant.

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#### 5. Summary of Results

5.1 Three of the four cropmark sites were investigated using the gradiometer; the fourth site was unavailable due to the presence of a crop. The suggested pit alignment is clearly visible in the data set as a fragmented ditch. A tentative semi-circular anomaly has also been located but its position does not appear to coincide with the AP cropmark. The survey has failed to locate any part of the double-ditched enclosure; this feature may have been eroded by the plough to such an extent that any magnetic responses are too weak to be detected above the background noise.

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Project Co-ordinator: C Stephens

Project Assistants: J Gater and A Shields

Geophysical Surveys of Bradford

27th November 1992

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## TECHNICAL INFORMATION

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The following is a description of the equipment and display formats used in **GEOPHYSICAL SURVEYS OF BRADFORD** reports. It should be emphasised that whilst all of the display options are regularly used, the diagrams produced in the final reports are the most suitable to illustrate the data from each site. The choice of diagrams results from the experience and knowledge of the staff of **GEOPHYSICAL SURVEYS OF BRADFORD**.

All survey reports are prepared and submitted on the basis that whilst they are based on a thorough survey of the site, no responsibility is accepted for any errors or omissions.

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Magnetic readings are logged at 0.5m intervals along one axis in 1m traverses giving 800 readings per 20m x 20m grid, unless otherwise stated. Resistance readings are logged at 1m intervals giving 400 readings per 20m x 20m grid. The data are then transferred to portable computers and stored on 3.5" floppy discs. Field plots are produced on a portable Hewlett Packard Thinkjet. Further processing is carried out back at base on computers linked to appropriate printers and plotters.

### Instrumentation

#### (a) Fluxgate Gradiometer - Geoscan FM36

This instrument comprises of two fluxgates mounted vertically apart, at a distance of 500mm. The gradiometer is carried by hand, with the bottom sensor approximately 100-300mm from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is conventionally measured in nanoTesla (nT) or gamma. The fluxgate gradiometer suppresses any diurnal or regional effects. Generally features up to one metre deep may be detected by this method.

#### (b) Resistance Meter - Geoscan RM4 or RM15

This measures the electrical resistance of the earth, using a system of four electrodes (two current and two potential.) Depending on the arrangement of these electrodes an exact measurement of a specific volume of earth may be acquired. This resistance value may then be used to calculate the earth resistivity. The "Twin Probe" arrangement involves the pairing of electrodes (one current and one potential) with one pair remaining in a fixed position, whilst the other measures the resistance variations across a fixed grid. The resistance is measured in Ohms and the calculated resistivity is in Ohm-metres. The resistance method as used for area survey has a depth resolution of approximately 0.75m, although the nature of the overburden and underlying geology will cause variations in this generality. The technique can be adapted to sample greater depths of earth and can therefore be used to produce vertical "pseudo sections".

#### (c) Magnetic Susceptibility

Variations in the magnetic susceptibility of subsoils and topsoils occur naturally, but greater enhanced susceptibility can also be a product of increased human/anthropogenic activity. This phenomenon of susceptibility enhancement can therefore be used to provide information about the "level of archaeological activity" associated with a site. It can also be used in a predictive manner to ascertain the suitability of a site for a magnetic survey. The instrument employed for measuring this phenomenon is either a field coil or a laboratory based susceptibility bridge. For the latter 50g soil samples are collected in the field.



## Display Options

The following is a description of the display options used. Unless specifically mentioned in the text, it may be assumed that no filtering or smoothing has been used to enhance the data. For any particular report a limited number of display modes may be used.

### (a) X-Y Plot

This involves a line representation of the data. Each successive row of data is equally incremented in the Y axis, to produce a stacked profile effect. This display may incorporate a hidden-line removal algorithm, which blocks out lines behind the major peaks and can aid interpretation. Advantages of this type of display are that it allows the full range of the data to be viewed and shows the shape of the individual anomalies. Results are produced on a flatbed plotter.

### (b) Dot-Density

In this display, minimum and maximum cut-off levels are chosen. Any value that is below the minimum cut-off value will appear white, whilst any value above the maximum cut-off value will appear black. Any value that lies between these two cut-off levels will have a specified number of dots depending on the relative position between the two levels. The focus of the display may be changed using different levels and a contrast factor (C.F.). Usually the C.F. = 1, producing a linear scale between the cut-off levels. Assessing a lower than normal reading involves the use of an inverse plot. This plot simply reverses the minimum and maximum values, resulting in the lower values being presented by more dots. In either representation, each reading is allocated a unique area dependent on its position on the survey grid, within which numbers of dots are randomly placed. The main limitation of this display method is that multiple plots have to be produced in order to view the whole range of the data. It is also difficult to gauge the true strength of any anomaly without looking at the raw data values. This display is much favoured for producing plans of sites, where positioning of the anomalies and features is important.

### (c) Contour

This display joins data points of an equal value by a contour line. Displays are generated on the computer screen or plotted directly on a flat bed plotter / inkjet printer.

### (d) 3-D Mesh

This display joins the data values in both the X and Y axis. The display may be changed by altering the horizontal viewing angle and the angle above the plane. The output may be either colour or black and white. A hidden line option is occasionally used (see (a) above).

### (e) Grey-Scale

This format divides a given range of readings into a set number of classes. These classes have a predefined arrangement of dots or shade of grey, the intensity increasing with value. This gives an appearance of a toned or grey scale.

Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. While colour plots can look impressive and can be used to highlight certain anomalies, grey-scales tend to be more informative.

# NESSCLIFFE BYPASS

## Area A

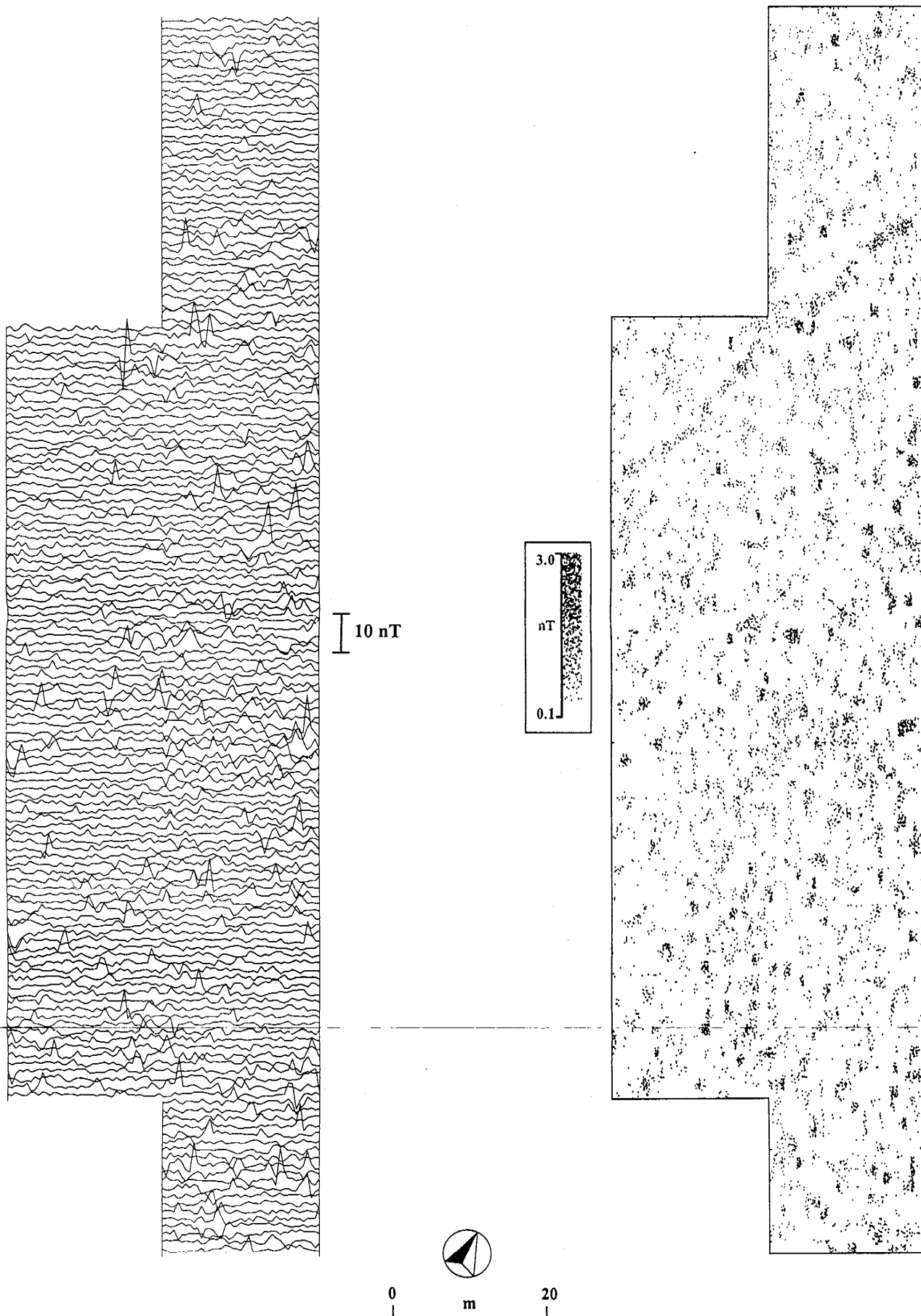
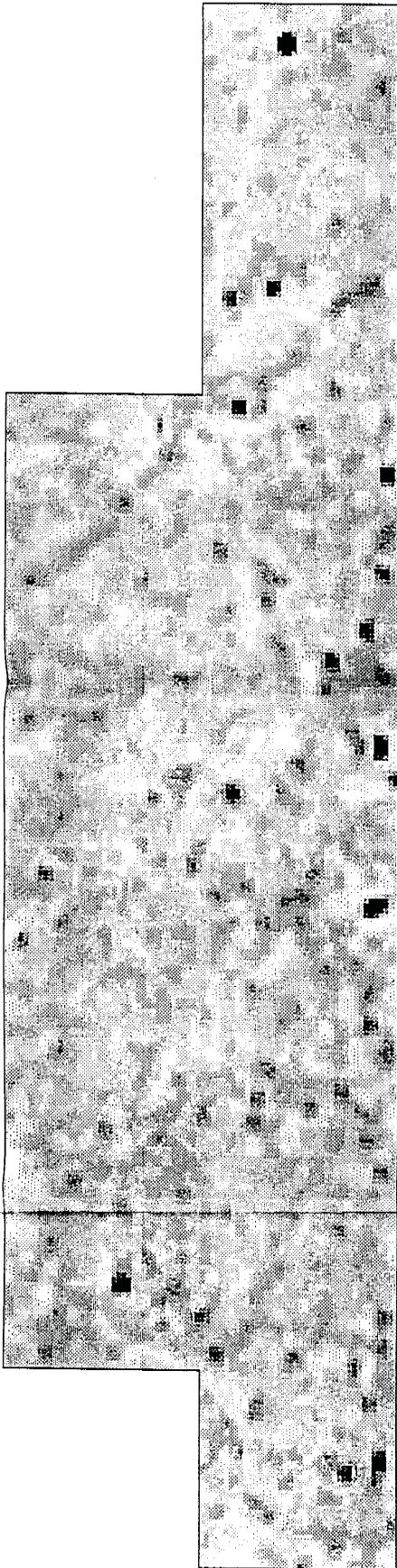


Figure 2

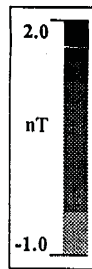
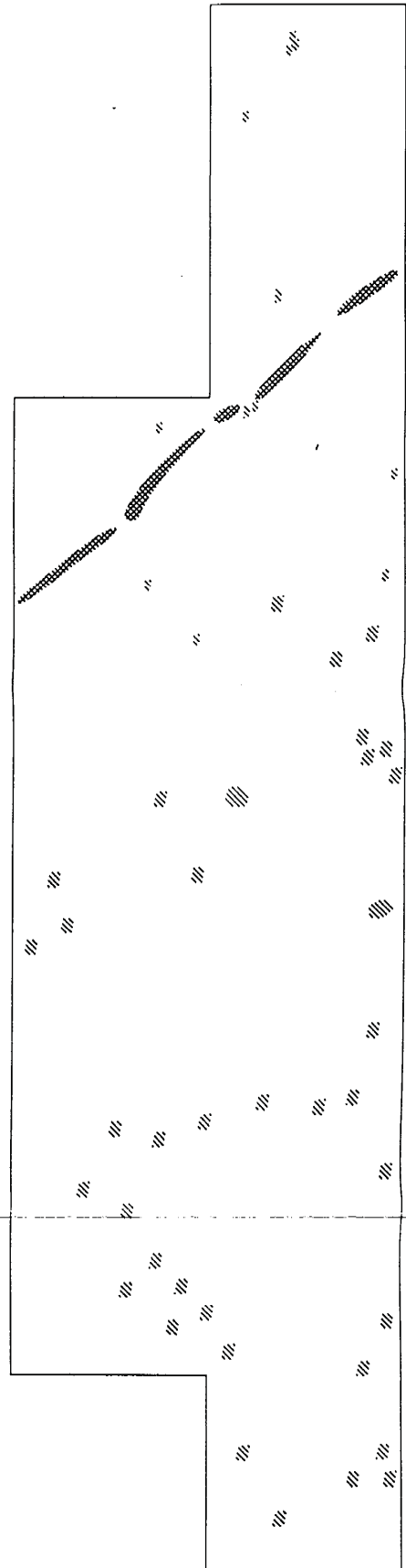
# NESSCLIFFE BYPASS

## Area A

Smoothed Data



Interpretation



Archaeology

Ferrous

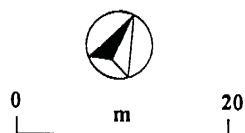
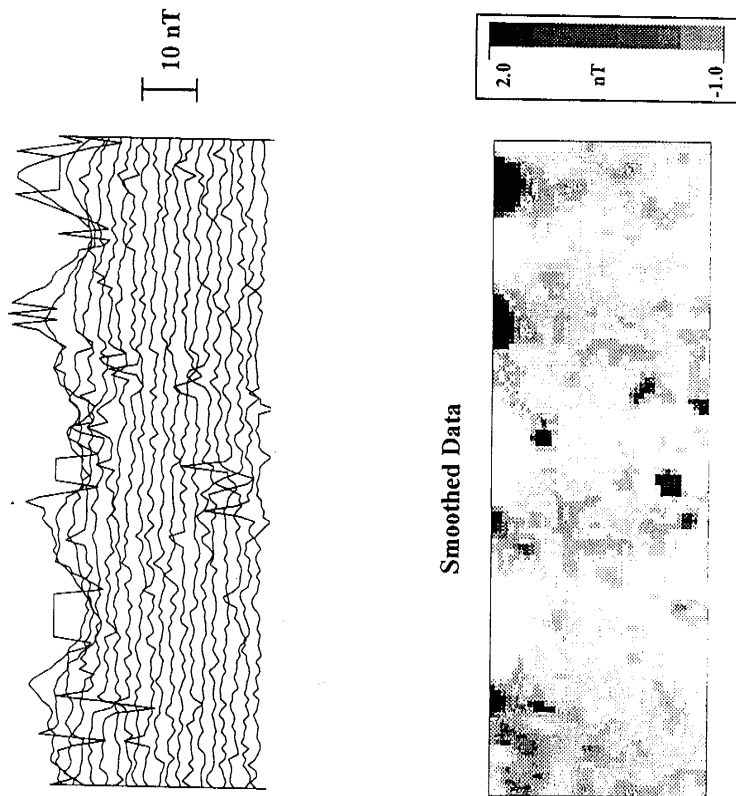


Figure 3

# NESSCLIFFE BYPASS

## Area B



Smoothed Data

Interpretation

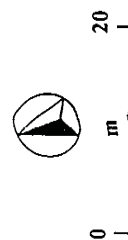
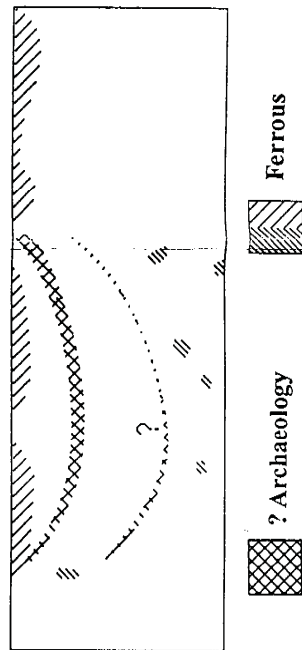


Figure 4