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**A1(M) REDHOUSE TO  
FERRYBRIDGE IMPROVEMENT  
(SOUTH OF WENT VALLEY)**

**CULTURAL HERITAGE**

**STAGE 2 REPORT**

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## *SUMMARY*

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This report constitutes a Stage II Report for the area of the preferred route south of the Went Valley. The report incorporates the results of fieldwork undertaken as a result of the Stage I recommendations. A programme of Stage II fieldwork is currently under way in the northern section and will be reported upon separately.

The Sites and Monuments Records (SMRs) and aerial photographs (APs) were used initially to locate areas of known archaeological interest and to assess the potential of areas where there was little or no archaeological information.

As a result, certain areas were identified for further evaluation to a brief approved by the relevant county archaeologists.

In all, 7 areas were geophysically surveyed and 8 were the subject of fieldwalking. The results are appended and the implications are discussed.

In general, the results of the reconnaissance fieldwalking were not sufficiently positive to justify the use of more detailed techniques, although distribution of Roman pottery on two sites was deemed to be significant.

By contrast, geophysics has been instrumental in confirming the archaeological origins of most of the sites surveyed.

# 1 INTRODUCTION

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- 1.1 This report has been produced by RPS Clouston on instructions from Owen Williams Ltd, Consulting Engineers to the Highways Agency for the A1(M) Redhouse to Ferrybridge Improvement. It contains the results of a programme of field evaluations undertaken upon the proposal area, and corresponds to a Stage 2 Study, as set out in the DOT's *Design Manual for Road and Bridges Vol. 11 (DMRB)*, issued in 1993.
- 1.2 The scope of this report is based upon recommendations for further work put forward by RPS Clouston: (*Archaeology: Stage II Proposals*, August 1993). Additional studies were undertaken in 1994, in response to route amendments north of the Went Valley and will be reported separately. The data was collected from:
- RCHM(E) National Library of Air Photographs;
  - Library of Cambridge University Aerial Photographic Committee;
  - English Heritage Scheduled Monuments (SMs) Lists;
  - North Yorkshire, South Yorkshire and West Yorkshire Sites and Monuments Records (SMRs);
  - geotechnical trial pit observation; and
  - aerial photographs held by Owen Williams Ltd.

General recommendations for further work based upon this study are set out in Section 5 and are in accordance with the *DMRB*.

- 1.3 On the basis of these studies the following elements are reported on here:-
- identification of archaeological sites which may be affected by the proposed route under consideration from the SMR and aerial photographs (APs);
  - geotechnical Trial Pit (TP) information;
  - fieldwalking;
  - geophysical survey;
  - an assessment of the possible effects, direct and indirect, of the proposed route on the archaeology; and
  - recommendations for further action.
- 1.4 The study area is based on the route as notified to RPS Clouston in September 1994 and encompasses an area 1km wide on either side of the proposed route line. Sites outside the Study Area have been referred to when appropriate.

## 2 NATIONAL AND LOCAL POLICY CONTEXT

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### *Scheduled Monuments (SMs)*

- 2.1 Statutory protection for archaeology is principally enshrined in the *Ancient Monuments and Archaeological Areas Act* of 1979, amended in 1983 by the *National Heritage Act*. Nationally important sites are listed in a Schedule of Monuments which is maintained by the Secretary of State for National Heritage. There are currently some 13,000 SMs in England, but a 10 year review (the Monuments Protection Programme) is in progress which will lead to a substantial increase, possibly 5 fold, in the total.
- 2.2 Proposals which would affect SMs must be approved by the Secretary of State prior to works commencing. The works which require the consent of the Secretary of State are any which would have the effect of demolishing, destroying, damaging, removing, repairing, altering, adding to, flooding or covering up the monument. A proposal which would have an effect on the setting of a SM does not require SM consent but may be a relevant planning requirement. The Historic Buildings and Monuments Commission for England, known as English Heritage (EH), advises the Secretary of State on scheduling and other archaeological and historic building matters.
- 2.3 The SMs in the Study Area are the Roman fort near Robin Hood's Well (South Yorkshire SM 1222), the medieval motte at Cromwell's Battery, Skellow (South Yorkshire SM 1219), Roman Ridge, Adwick Le Street (South Yorkshire SM 1179A) and Castle Hill, Hampole (South Yorkshire SM 1175). The route proposals have no direct impact on any of these sites.
- 2.4 The route option may have an indirect impact on the setting of Roman Ridge and the Roman fort at Robin Hood's Well. The route would not affect the setting of Cromwell's Battery or Castle Hill. Scheduled Monument Consent is not required if only the setting of a SM is affected, although such an effect may be a material consideration in planning matters. EH would expect to be consulted in such cases.

### *English Heritage*

- 2.5 English Heritage is the official body incorporated by the *National Heritage Act* 1983 with responsibility

**"so far as is practicable to secure the preservation of ancient monuments and historic buildings in England".**

- 2.6 EH advises the Secretary of State for National Heritage upon SM consent applications. EH may also be called upon to advise on archaeological matters even if they do not affect SMs, and it monitors the working of the 1979 Act and the *Planning Policy Guidance on Archaeology and Planning (PPG 16* see para. 2.8-2.13). It would expect to be consulted on the impact of the present scheme.

- 2.7 EH published *Roads for Prosperity: The Archaeological Impact* in September 1990, in response to the Government's White Papers *Roads for Prosperity* published in 1989 and *Trunk Roads, England: Into the 1990's*, published in February 1990.
- 2.8 Although it has no statutory or mandatory force *Roads for Prosperity: the Archaeological Impact* was a succinct statement of EH thinking in relation to road construction. The study summarises its conclusions concerning the national road programme as follows:
- the environmental impact must be fully assessed in advance of route selection to allow for the consideration of the possibilities for mitigation of impact and the reduction of possible recording costs; and
  - it is, therefore, necessary to give greater weight to the archaeological implications of trunk road development and to integrate fully such considerations into the process of assessment required for all such Developments.

The A1(M) Redhouse to Ferrybridge programme of archaeological study to date is in keeping with the work recommended in *Roads to Prosperity: The Archaeological Impact*.

#### *DoE Planning Policy Guidance (PPG 16)*

- 2.9 The *Planning Policy Guidance on Archaeology and Planning (PPG 16)* published by the DoE in November 1990 consolidated advice to local authorities on the treatment of archaeology in the planning process. *PPG 16* emphasises the importance of archaeology (paras 3-14) particularly in terms of the irreplaceability of the archaeological resource and its variety.
- 2.10 *PPG 16* also outlines the interaction of central government, EH and local authorities and the importance of the latter is emphasised. Development plans are identified as providing the policy framework for the protection, enhancement and preservation of sites of archaeological interest and their settings. The SMR is the primary source of data on such constraints. Applicants for planning permission are advised to consult the SMR and county archaeological officer at the earliest opportunity to make an assessment of the archaeological impact and put forward proposals for its mitigation prior to the determination of the application. This may require an evaluation of the site prior to determination to provide sufficient information to enable an informed decision to be made.
- 2.11 Conditions may be attached to the consent which require the applicant to "preserve by record" (excavate) sites which are not to be preserved in situ. These conditions should be fair, reasonable and practicable (DoE Circular 1/85).
- 2.12 The discovery of unsuspected archaeological remains in the course of development is considered to be a matter for informal agreement between the developers and archaeologists and attention is drawn to the British Archaeologists' and Developers' Liaison Group and EII as possible sources of advice.

- 2.13 The DOT's *Design Manual for Roads and Bridges (DMRB) Vol 11*, incorporates the principles of *PPG 16* and the procedure adopted for the A1(M) Redhouse to Ferrybridge Improvement is in accordance with its advice.

### *The Highways Agency*

- 2.14 The Government's policies for trunk roads were set out in *Trunk Roads, England; into the 1990's* published in February 1990, and the DOT's Highways Policy and Environment Division issued *Trunk Roads in England 1994 Review* in March 1994. This emphasises the procedures required to protect the environment (Chapt. 8).
- 2.15 The requirement to carry out an environmental assessment in relation to road schemes and the composition of Environmental Statements published with Draft Orders is contained in the *Highways Act 1980* Section 105A.
- 2.16 In 1993 the DOT revised the guidelines for the treatment of environmental issues in the preparation of new roads and published *The Design Manual for Roads and Bridges*. Volume 11, Section 3 considers the treatment of cultural heritage issues.
- 2.17 The HA are now (since April 1994) responsible for the funding of any necessary archaeological survey and mitigation measures required in connection with its proposals, a role previously undertaken by English Heritage.
- 2.18 This report constitutes a Stage II assessment as recommended by the *DMRB, Vol 11*.

### *Local Policy Context*

#### North Yorkshire County Council (NYCC)

- 2.19 The most recent approved North Yorkshire County Structure Plan is *The Written Statement* dated 1990. It includes the following relevant policy:-

**Policy E5**      **Development proposals which could result in damage to, or the destruction of, sites of archaeological importance will normally be refused.**

- 2.20 The County Archaeological department has been consulted since the initial involvement of RPS Clouston and discussions concerning the processes and procedures to be followed have been carried out.

#### Selby District Council (SDC)

- 2.21 The route passes through part of SDC defined in the *Rural Areas Local Plan (1980)*. There are no archaeological policies in the local plan.

## West Yorkshire

- 2.22 West Yorkshire Archaeology Service (WYAS) has been consulted since before the initial involvement of RPS Clouston in early 1992. In October 1990 the WYAS produced a document entitled *A1(M) Redhouse to Ferrybridge, Preliminary Archaeological Evaluation*. This was a review of the known archaeological features in the road corridor.

The summary is reproduced below:-

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### **A1(M) REDHOUSE - FERRYBRIDGE, Preliminary Archaeological Evaluation by West Yorkshire Archaeological Service [extract].**

#### **8. SUMMARY**

A preliminary archaeological assessment of the A1(M) Redhouse to Ferrybridge corridor (West Yorkshire section) has led to the identification of:

- i) a number of sites which require further investigation by excavation if they are to be disturbed
- ii) a requirement for further brief field evaluation of possible and certain upstanding monuments in areas to be disturbed; this could result in a need for further investigation either by detailed survey or excavation as required
- iii) a requirement for further field evaluation of levelled areas by fieldwalking and geophysical survey in areas to be disturbed; this also could result in a need for further investigation by excavation and record.

It is a clearly established principle that any onus for justifiable archaeological work ahead of development should lie with the developer. In particular, in this case where the full evaluation may not be accomplished until after the submission of an environmental assessment, any requirement for justifiable archaeological work resulting from the evaluation should be accepted in full by the developer.

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- 2.23 South Yorkshire Archaeology Service has been consulted, and responded with recommendations which were incorporated into the proposals for Stage II work.

### 3 THE ARCHAEOLOGY OF THE STUDY AREA

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#### *Geology and Topography*

- 3.1 The known archaeology is related to the geology and topography of the area for two reasons: firstly, certain soils and relief patterns are more or less attractive economically, particularly to human settlement and exploitation; and secondly, some ground conditions and land uses are more conducive to preserving and revealing traces of human activity than others. It is likely that the lighter soils of the limestone upland would have been cleared and occupied early in the prehistoric period, whereas intensive woodland clearance of heavy wet clay areas probably took place during the later prehistoric period, although the scale of this is difficult to determine.
- 3.2 As to the visibility and survival of remains, the heavily ploughed limestone areas are likely to have lost most earthworks, but the same destructive ploughing will have revealed soil- and crop-marks, particularly to aerial photographic survey. In addition ploughed fields can be fieldwalked to recover artefacts. The unploughed pasture found on the heavier clay soils will tend to favour the preservation of earthwork sites but aerial photography may be less rewarding, and artefact collection more random and restricted in scope. These two factors tend to favour a pattern of known sites which is weighted towards the lighter, limestone upland areas, particularly for the prehistoric periods.
- 3.3 The region is divided topographically by a change in the geology east and west of a Magnesian Limestone ridge which runs roughly north - south. To the west are the Coal Measures while to the east are the Bunter and Keuper sandstones and marls. The solid geology of the study area is principally the Magnesian Limestone of the Permian, with a drift geology of Glacial Till patches on upland areas and a little Alluvium in the valley of the River Went. There are areas of Middle Permian Marl north of Darrington. This geological situation means that for most of the route the conditions both for early occupation, and the visibility of the evidence as crop marks, are reasonably good, and this is borne out by the results of the initial survey. The absence of crop-mark or soil- mark sites does not necessarily mean that there is no archaeology in such areas, however, and the possibility that season, farming regime and weather conditions may not have been favourable at the time of any particular aerial photography flight should be borne in mind in assessing AP results.
- 3.4 The topography will also have had an effect on settlement. For instance, waterlogged valley bottoms and windswept heights are generally only settled if more favourable locations are unavailable, or dangerous. In the Study Area the topography is mainly a gently rolling plateau, with one river, the Went, occupying a steep valley. Other than this valley the route line is over arable farming land. The Glacial Till patches are less tractable to arable farming, and are likely to have been wooded, or used for pasture in earlier periods, although they are now mainly under plough.



## *Archaeological review*

- 3.5 The following summary is a very brief review of the current archaeological situation in the study area. It has been compiled from a study of the county SMRs and a brief review of published accounts, in particular the WYAS volumes *West Yorkshire: an Archaeological Survey to AD 1500* (1981) edited by Faull and Moorhouse. There is no comparable up-to-date survey of South and North Yorkshire archaeology, but the general situation related to the proposals is assumed to be very similar.
- 3.6 **Palaeolithic (up to c. 8,000 BC).** The glacial history of the area makes it possible that some palaeolithic material may survive *in situ* in the Study Area. Upper Palaeolithic hunters (c. 11,000 - 8,000 BC) may have moved into the Magnesian Limestone uplands, and the valley of the Went offers similar conditions to those found further south around Cresswell Crags where copious evidence of palaeolithic occupation has been found. However, geophysical survey in the Went Valley has revealed no evidence to indicate the presence of caves or other voids (Appendix 2).
- 3.7 **Mesolithic (c. 8,000 BC - c. 4,000 BC).** Most of the flints characteristic of the hunter-gatherers of this period have been collected from the highlands to the west of the Study Area. There are, however, some finds in lowland locations from the Methley and Calder terraces and the terraces of the Aire at Thorpe Stapleton and Shipley and from Ferry Fryston, just to the north of the Study Area. There is little known mesolithic evidence on the Magnesian Limestone areas, which probably reflects a lack of activity there in this period. There is, however, a high potential for mesolithic sites along gravel terraces and small streams dissecting the limestone. The River Went valley is a potential area of mesolithic interest.
- 3.8 **Neolithic (c. 4,000 BC - c. 2,000 BC).** There is a dearth of neolithic material from the Magnesian Limestone generally. Flint artefacts are, however, known from west of the study area, which may be evidence of extensive woodland clearance for farming. The Magnesian Limestone, despite its apparent attractiveness to early arable farmers, has produced only limited indications of settlement, although pottery of the period has been found at Methley and Rombald's Moor. Neolithic features such as small pits or gullies have, however, proved extremely difficult to locate from AP cropmarks. North of the Study Area is the major neolithic/bronze age henge complex ritual monument at Ferrybridge, but contemporary occupation sites have not yet been identified.
- 3.9 **Bronze Age (c. 2,000 BC - c. 600 BC).** Ritual sites are the best known features of this period. The henge at Ferrybridge probably continued in use into the early bronze age, and it is apparently surrounded by a ritual "zone" of some kind, in which a number of barrows were constructed. A possible barrow cemetery is known from Kirk Smeaton within the Study Area and adjacent to the proposed route corridor. Recent work north of Ledston (north of the Study Area) has identified possible bronze age ditched enclosures and barrows on the Magnesian Limestone, and this may prove to be a widespread pattern in similar topographical situations in the Study Area. The henge monument at Ferrybridge is likely to have been related to nearby settlements, and some of the complex cropmarks to the south of the monument may represent occupation or activity in the bronze age.

- 3.10 **Iron Age (c. 600 BC - AD 71).** The iron age seems to have ushered in a period of intense agricultural activity in the Magnesian Limestone area. Many of the extensive cropmark sites visible on APs are interpreted as evidence of fields, tracks and enclosures interspersed with small settlements. Recent excavations near Ledston have revealed a major iron-age settlement identified initially from APs. Excavated features included a burial, four-post structures, ditched enclosures and storage pits. Similar activities were probably widespread over the Magnesian Limestone in the iron age. The Ledston excavations also indicated the erosion of prehistoric features by subsequent agricultural use, and this could mean that evidence in some areas, the tops and flanks of hills for instance, may have been destroyed, and that conversely, early features in valley bottoms have been buried by colluvium. Toward the northern part of Study Area, at Castle Hill overlooking the Went at Brockadale, is the only known hillfort in the vicinity.
- 3.11 **Roman (AD 71 - c. AD 400).** In the early stages of the Roman occupation, the local tribe, the Brigantes, were apparently used by the Romans as a buffer between themselves and the northern tribes of England. The fort at Robin Hood's Well may be a testament to this early strategy. Excavation has provided details of the larger fortress at Castleford, including its history, and the ancillary *vicus* (an associated civilian settlement). No other Roman major settlements are known in the Study Area, although Pontefract appears to have been a centre of activity. In the countryside the *villa* was the main administrative unit, but only 4 are known from West Yorkshire, none in or near the Study Area. Known native settlements - farmsteads - are hardly more numerous in the Study Area, but there is evidence of a settlement on the edge of the Study Area at Ferry Fryston. Two buildings, ditches, coins and pottery suggest occupation from the early second to late fourth century AD. Some of the extensive early agricultural features may prove to be Romano-British in date. The Roman road from Doncaster (*Danum*) to Castleford (*Lagentium*) is followed by the existing A1 in the southern part of the Study Area and can be observed as a causeway in places from Adwick Le Street to Bamsdale Bar, where the proposal corridor diverges from it.
- 3.12 **British Post-Roman (c. AD 400 - 617).** Part of Yorkshire was included in the British kingdom of Elmet, whose borders in the 7th century were near that of modern West and North Yorkshire in the Study Area. To the east was the English (Anglo-Saxon) kingdom of Deira, to the west was another British kingdom - Craven. The Study Area appears to have been border country, with the Magnesian Limestone forming a defensible ridge between the British and the English. A battle was fought at *Winwaed* in AD654. Micklefield to the north of the Study Area is described as "in-Elmet", implying the need to establish its relationship with a nearby border. A district within Elmet was called "Loidis", which is preserved in the names Leeds, Ledston and Ledsham. The defensive dykes at Aberford north of the Study Area are thought to date, in part at least, to this period. There are no finds of the period in West Yorkshire except two coins.
- 3.13 **Early Anglo-Saxon (AD 617-867).** The defeat of the British of Elmet by the English of Deira at Catterick in 617 spelt the end of the British kingdom, as Celtic speaking people were forced west, or, more likely, taken over, by the English speaking Saxons. The area was disputed between the kingdoms of Northumbria in the north and Mercia to the south, finally being incorporated into Northumbria after the defeat of King Penda in 654. Place names such as Knottingley (- *ingalingas* = the place of) and

Ledsham (- *ham* = homestead) indicate settlement by Saxons. Burials of this date are known from Pontefract and Ferry Fryston, the latter from a barrow on the site where the power station stands today. Very few artifacts of this date are known in the region.

- 3.14 **Pre-Norman Conquest (AD 867-1066).** The history of the area before the Norman Conquest is very turbulent, with incursions from the Danish settlers to the east, and rapidly fluctuating political fortunes. Very little material has been found related to this period, but a fine gold ring belonging to Queen Aethelswith of Mercia was found at Aberford. The Great North Road (the A1) was the principle north-south route, and in 948 there was a battle between the armies of Eadred, the Saxon king of Northumbria, and Eric Bloodaxe, the Danish King of York, at Castleford, as Eadred made his way home from campaigning. Tanshelf (Pontefract) was apparently a royal estate, and a pagan burial from a sand pit there suggests settlement at least as early as the 7th century. Place names indicate Scandinavian settlers moving into an Anglo-Saxon speaking area, such as Skellow where the Danish *sk* sound replaces the Anglo-Saxon *sh*. The settlers seem to have occupied the prime land in an already fully exploited landscape.
- 3.15 **Medieval (AD 1066-1500).** The typical medieval *vill*, or township, contained sufficient woodland, common and pasture, to sustain a balanced local economy. The light soils of the Magnesian Limestone would have encouraged a basically agrarian regime, with large fields set out around the hamlets, subdivided to provide strips in each field for the inhabitants. The hamlet locations in the Study Area do not seem to have moved significantly since they were recorded in Domesday Book in 1086 or other early medieval documents. The townships in the Study Area are Little Smeaton, Thorpe Audlin, Stapleton, Norton, Hampole, Burghwallis and Adwick Le Street. Pontefract was a major town with a feudal castle, lying close to the Great North Road. Two smaller castles survive at Castle Hill, Hampole, and Cromwells Battery, Adwick Le Street. A deserted village appears on APs east of Skelbrooke. Medieval boundaries were often ditches and banks, and documentary references indicate that ditches and banks were frequently created and levelled again, an activity which should leave traces in the archaeological record, particularly on APs. This has been borne in mind when interpreting the AP evidence. A medieval deer park may have existed north east of Darrington.
- 3.16 **Post-Medieval (AD 1500 onwards).** In the post-medieval period the earlier open fields were enclosed and private estates built up. In the 17th and 18th centuries the Commons were enclosed. The result of these activities was to create a rural pattern which survived until the introduction of more intensive farming techniques in the 20th century. A major post-medieval development in the landscape is the establishment of parks. Those in the Study Area include Fryston Park, Pontefract Park, Cridling Park and Stapleton Park, which is the nearest to the road corridor. Quarrying, a long established industry, became more extensive in the post-medieval period. Stapleton "township" once supported a thriving community of quarry workers. Some new settlements have been built, and many medieval villages have been extended, such as Skellow and Adwick Le Street. The major routeway through the area remains, in effect, the Great North Road, now the A1.

## 4 THE EFFECTS OF THE PROPOSALS

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### *General*

- 4.1 This section describes the known and potential archaeological features which would be, or are likely to be, encountered by the scheme. The data from the SMR, aerial photographs, field survey and geophysical survey are combined to produce this assessment. The effects are those which would remain after agreed mitigation measures have been taken into account.
- 4.2 A methodology for assessing the significance of effects has been proposed by G. Lambrick in *Environmental Assessment and Archaeology* (eds. Ralston and Thomas, 1993). The method attempts to identify the separate elements which go to make an assessment, and to combine them in a single judgement. It has been used in road scheme assessments by several bodies. A modified version of this methodology has been used in this report. It is described below.
- 4.3 The assessment of the EFFECT of a proposal will depend upon the assessment of the IMPORTANCE of the features and sites affected, and the degree of IMPACT of the proposals. There are occasions when insufficient data is known to make informed judgements and an assessment of RISK is all that can be offered. The definitions of these terms and their categories are set out below.
- 4.4 IMPORTANCE: The assessment of the importance of archaeological sites has been the subject of considerable debate in archaeological circles, and the Monuments Protection Programme (MPP) being undertaken by English Heritage has clarified many of the issues. Guidelines as to the criteria to be taken into account have been published by English Heritage (eg PPG 16 Annex 4), and an amended version for assessment has been published (Darvill 1988). The recommended criteria are:
- 1 Survival - the condition of the monument should be taken into account
  - 2 Potential - how much information is likely to be forthcoming from the monument
  - 3 Diversity - the number of components comprising the monument
  - 4 Amenity value - the value of the monument for public education, appreciation or recreation
  - 5 Documentation (I) - records of previous work
  - 6 Documentation (II) - historical material, only applicable to medieval and later monuments
  - 7 Group value (I) - association with other monuments of different types, periods, etc
  - 8 Group value (II) - association with similar type of monument

In addition rarity, representativeness, currency and diversity of form are relevant factors.

The assessment of the importance of built structures has been based on the grading accorded to listed buildings.

There is no standard scale of importance used in cultural heritage studies, with various systems in use by different agencies. Scoring methods have been proposed (eg. Darvill 1988; Startin 1993) but a more flexible method has been adopted in this report. To avoid the official implications of such terms as "National", "County" and "Local" in this report the following categories are used:

- Major:       \*   the highest status of site eg. SMs, Listed Buildings Grade I and II\*, using the EH criteria to assist in the judgement.
- Average:     the bulk of sites with reasonable evidence of occupation, ritual, industry, etc, Listed Buildings Grade II.
- Minor:       sites with some evidence of human activity, but in a fragmentary or poor state, buildings of local importance.
- Unimportant: destroyed, non-antiquities, random stray finds, buildings of no merit.
- Uncertain:   insufficient evidence available to judge importance.

4.5   IMPACT: as with importance there is no agreed terminology or definition for assessing the degree of impact. It cannot be a simple percentage calculation of the proportion of a feature etc. which would be destroyed, because some parts of a site may be more important than others, or partial destruction may lead to the loss of all significance. Impact on the settings of SMs or Listed Buildings is usually caused by the effect of noise, vibration or visual intrusion. These are judged as less of an impact than physical effects because although they may affect the experience of the feature, they probably do not affect its structure or integrity. The assessment of the degree of impact is clearly as qualitative as judgements of importance. The following terms are used in this report:

- High:         loss of all or the majority of significant features, such that the site or building is effectively destroyed or seriously damaged.
- Medium:     loss of sufficient part of sites or encroachment on their setting such that their integrity is compromised, or enough damage to buildings' fabric or ambience to impair their enjoyment, understanding or academic potential.
- Low:         slight damage or encroachment, such that sites or buildings and their settings are largely retained.
- None:        no discernable impact.
- Unknown:    insufficient information regarding the design of the proposal or the extent/location/ or layout of the feature to be able to make a judgement.

4.6 **EFFECT:** the significance of the effect of a proposal is a combination of the previous two judgements. The effect of a high impact on a minor site is obviously different to that of a high impact on a major site. Again there is no standardised terminology to categorise these judgements; this report uses the following:

- Maximum:** high impact on a major site
- Severe:** medium to high impact on major or average site
- Moderate:** low/medium impact on a major site low/medium impact on an average site, or high/medium impact on an average/minor site
- Slight:** low impact on average/minor site to medium/low impact on minor site.
- Zero:** no impact or non-site

4.7 **RISK:** this is an assessment of the likelihood, and the severity, of an effect in situations where either the importance of the site or the degree of impact is unknown. If both are unknown no judgement can be offered, but there may be other evidence which suggests potential risk. Risk refers to the probability that the proposal would cause a significant effect, where significant means sufficient effect to warrant mitigation measures. The following terms are used in this report:

- Very Probable:** high impact on a site where the importance is uncertain or a major site where the impact is unknown
- Probable:** medium impact on a site where the importance is uncertain, or an average site where the impact is unknown
- Possible:** low/medium impact on a site where the importance is uncertain, or an average/ minor site where the impact is unknown
- Unlikely:** low/no impact on an site of uncertain importance, or an unknown impact on a site of minor/no importance.
- Potential:** used when evidence from surrounding areas or similar situations would suggest that features might exist.



4.8 Table 1. Matrix of Effects

		IMPORTANCE			RISK	
		MAJOR	AVERAGE	MINOR	UNIMPORTANT	UNCERTAIN
IMPACT	HIGH					V. PROBABLE
	MEDIUM					PROBABLE
	LOW					POSSIBLE
	NONE					UNLIKELY
	UNKNOWN	V. PROBABLE	PROBABLE	POSSIBLE	UNLIKELY	POTENTIAL

**EFFECT**



*Sites on the Proposed Route*

4.9 This assessment considers each area where archaeology is known, or could reasonably be expected, commencing at the southern end of the route corridor. The sites mentioned below are shown on RPS plans 2-5. Numbers are those given by RPS Clouston, except in the case of Scheduled Monuments, which are given their SM number. RPS Clouston's numbering is in 2 series, one derived from the SMRs (RPS 1, etc) and the other from an interpretation of Owen Williams APs (OW 1, etc). On the plans RPS numbers are in black, OW numbers are in red, and SM numbers in blue. The trial pits observed in the study are also shown on the plans (red dots) and their numbers are prefixed by 'TP' in the following text. The report on the observations of the Geotechnical Pits is at Appendix 1, the fieldwalking is reported at Appendix 2, the Geophysics at Appendix 3 and the Gazetteer of sites is at Appendix 4. The list of APs held by Owen Williams Ltd is at Appendix 5.

- 4.10 South of the Redhouse Junction is the Roman Ridge (SM1179A), part of a Roman road, now the boundary of a new estate. It continues north of the junction on the line of the present A1(T). In the south western quarter of the clover leaf junction are AP traces of probable Romano-British (R-B) features (RPS 4). Other possible R-B enclosures are visible on APs to the west (RPS 1,2,6), to the north (RPS 5, OW 099, OW 114), and to the east (OW 169, OW 170). Site RPS 4 lies within the area which would be affected by the proposals, and was evaluated by geophysical survey and fieldwalking, the latter technique being relatively unproductive. Geophysics revealed the site to contain remnants of iron age/Romano-British field boundaries.

Site 4            Iron Age/Romano-British field boundaries  
Importance:    Minor  
Impact:        Medium  
Effect:         Moderate/Slight

- 4.11 North of the Redhouse junction the A1(T) follows the Roman road, and in places the remains of the agger (causeway) of the road survives to the east of the modern carriageway. Trial pits 44 - 45 were observed but no archaeological features were revealed despite AP traces of enclosures and field boundaries near the northern sliproad (RPS 5, OW 099). About 1km to the west is the medieval motte of Castle Hill, Hampole (SM 1175) while about 800m east is the castle at Cromwell's Battery (SM 1219). Site RPS 5 lies in the area which would be affected by the proposals and was evaluated by fieldwalking. Geophysical Survey was not practicable at this site. Aerial photographs indicate the presence of linear features and an enclosure, but this cannot be confirmed at this stage.

Site 5            Linear features and enclosure  
Importance:    Uncertain  
Impact:        Medium  
Effect:         Probable

- 4.12 North and south of Green Lane the agger of the Roman road is visible to the east of the A1(T) embankment. Further east are traces of enclosures and tracks (RPS 8, 9, OW 148) visible on APs, although they are too far from the road to be affected by the scheme. To the north of Robin Hood's Well (RPS 47) is a scheduled Roman fort (RPS 10, SM 1222, OW 147) which has produced finds of coins and a brooch. Further material associated with the site might be affected by the proposed route which passes to the west, but the site has not been evaluated in detail. The trial pits to the west of the A1 opposite the site were observed (TPs 89, 91,92,93) but no evidence of any archaeological features was seen. Robin Hood's well-head is 18th century, and although it is within the proposed route corridor, it would not be affected. A little to the north is the site of the Bishop's Tree (RPS11), an oak documented in medieval times. Geophysical survey in this area (referred to as Sites 10a, 10b) was carried out in conjunction with fieldwalking. Site RPS 10a showed evidence of early ditched field boundaries and a former trackway. The geophysical survey work at Site RPS 10b examined the site of the Bishop's Tree, indicating that it may be a backfilled pond, but there also a field system in the area, although the fieldwalking results did not provide any dating evidence.



Site 10 Roman Fort environs  
 Importance: Average  
 Impact: Medium/Low  
 Effect: Moderate/Slight

Site 10a Field boundaries and trackway  
 Importance: Minor  
 Impact: Medium  
 Effect: Moderate/Slight

Site 10b Field systems  
 Importance: Minor  
 Impact: Medium  
 Effect: Moderate/Slight

4.13 North of New Close Lane is a possible R-B hut circle (RPS 15) and other features known from APs (OW 143). The area between them and the A1(T) has been quarried and backfilled as the observation of TPs 108 and 111 confirmed. South and east of Barnsdale Bar are two enclosures (RPS 22, OW 140) and a track (OW 141) known from APs, one of which is within the route corridor. Tracks are also visible on APs to the west of the A1(T) (OW 141). Site RPS 22 was the subject of geophysical survey and fieldwalking. The geophysical survey revealed an area of linear ditches, which may be field boundaries and a trackway. All the finds, however, were of medieval or later date.

Site 22 Field boundaries  
 Importance: Minor  
 Impact: Medium  
 Effect: Slight

4.14 At Barnsdale Bar the Roman road (RPS 49) diverges from the line of the A1(T) and can be seen as a well-defined causeway to the west before it becomes the line of the A639. South of Wrangbrook Lane the agger of the Roman road is visible as a substantial earthwork. Although it is not statutorily protected at this point, any works on the east of the existing carriageway would adversely affect this feature. North of the Barnsdale junction there is an area of field boundaries visible on APs (RPS 26) to the west and east (OW 131). A possible barrow cemetery to the east (RPS 27) adjoins the route corridor. The barrow cemetery, if confirmed, is of considerable interest in view of the scarcity of bronze age features from the region, and the association of at least 15 separate features would make it a high priority for preservation. The trial pits TP 164 - 168 were observed in this area but no archaeological features were noted. A trackway is visible from AP traces also (OW 132). Site 26 has been the subject of fieldwalking and magnetometer survey, producing evidence of probable prehistoric activity in the form of ditched field boundaries, a pit alignment and fire-cracked flint. Site 27 has not been evaluated, but the identified features lie outside the route corridor.

Site 49 Roman Road causeway  
Importance: Average  
Impact: Medium  
Effect: Moderate

Site 26 Field boundaries, pit alignment  
Importance: Average  
Impact: Medium  
Effect: Moderate/Slight

Site 27 ?Barrow cemetery  
Importance: Uncertain  
Impact: Low  
Effect: Possible

- 4.15 A dismantled railway in cutting passes east to west adjacent to the Crab Tree Lane service area, but north of this there are no further known sites until near Upper Wells Farm, where there are several AP traces of unidentifiable features (OW 072). They appear to form part of a wide prehistoric landscape which stretches from Went Edge for over a kilometre south (RPS 36, OW 071, 069). On APs further details of this landscape are visible adjacent to the Went Edge Road southern slip road (RPS 40, OW 068). Magnetometer survey of site 36 showed a number of features of archaeological origin, including pits, linear ditches and field boundaries. These results, in conjunction with a relatively high fieldwalking yield of Roman pottery, indicate an archaeological potential for this site. Site 40 was not geophysically surveyed, but produced a significant quantity of Roman pottery.

Site 36 Pits, linear ditches, trackways  
Importance: Average  
Impact: Medium  
Effect: Moderate

Site 40 Roman pottery scatter  
Importance: Uncertain  
Impact: Low  
Effect: Possible

- 4.16 Immediately north of the junction is the Wentbridge Viaduct over Brockadale. On a spur to the east of the Wentbridge Viaduct, outside the route corridor, is an iron age defended enclosure (RPS 50). The Went Valley itself is a potential palaeolithic site (RPS 51), in parallel with sites in Derbyshire in comparable situations. To the west of the viaduct are the sites of a mill (RPS 52) and a chapel (RPS 53). On the north bank the proposed route corridor diverges to the east of the present A1(T), impinging on part of an extensive prehistoric landscape (RPS 55 - 59). Site RPS 51 has been surveyed using ground probing radar in an attempt to locate caves or other voids which could have been potential settlement or activity sites, but no such features were identified.

Site 51

Possible palaeolithic sites

Importance: Unlikely

Impact: Low

Effect: Possible

## 5 RECOMMENDATIONS FOR STAGE III WORK

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- 5.1 No obvious concentrations of archaeologically significant material were identified during the initial fieldwalking programme. A secondary phase of more detailed fieldwalking, is therefore considered inappropriate in this case. The low levels of archaeological material recorded on the various sites is not indicative of a lack of archaeological activity, but of the unsuitability of further, more intensive fieldwalking on these sites where the results could be unrepresentative of past site uses. Geophysical survey, however, has been instrumental in confirming the archaeological origins of most of the sites surveyed and the recommendations below are predominantly based on the results of the geophysical survey.
- 5.2 **Site 4.** No further archaeological work is required prior to motorway construction, but a watching brief should be carried out during the first phase of construction, in order to gain information on the period and nature of the probable field boundary features.
- 5.3 **Site 5.** Trial trenching is recommended through the enclosure, in order to gain information on its date and function. If geophysical survey could be carried out at a future date this is advisable as this could identify any additional smaller features that are associated with settlement.
- 5.4 **Site 10.** While no construction work will be undertaken on the site of scheduled the Roman Fort, a watching brief should be undertaken upon any works in the area in order to identify and record any finds or peripheral activity zones.
- 5.5 **Site 10a.** Trial trenching is recommended through the field boundaries and trackway identified by geophysical survey as M10A/26, also in the region of the badly defined features around M10A/31, where Roman pottery was found on the surface. A broad linear feature M10A/30 does not appear to be a usual field boundary and should be investigated by trial trenching.
- 5.6 **Site 10b.** A watching brief is recommended for the possible pond referred to in the geophysical report as M10B/4, together with the adjacent feature referred to as M10B/5. A broad date for the field system should be ascertained for M10B/2 and 3, and possibly the linear features to the east of the area. Comparison of the date and form of the field system seen in area 10a and 10b is recommended to ascertain whether these two field systems may be contemporary.
- 5.7 **Site 22.** The linear field boundaries are worthy of recording through a watching brief, as is the complex of features including M22/17,18,19,20,21, and 22. In addition small features that do not fit into the pattern of field boundaries, such as M22/4 and 5 should be observed.

- 5.8 **Site 26.** If they were to be affected by the proposals, the linear feature M26/1 should be investigated during a watching brief along with the series of pits or large post holes running parallel (M26/2). Trial trenching should be carried out for features M26/8,9,10,and 13. The features on the south western edge of the survey area (M26/3,4 and 5) should be observed.
- 5.9 **Site 27.** Trial trenching should be used to explore whether this site is indeed a barrow cemetery, as confirmation of this would have a serious impact on the level of mitigation required.
- 5.10 **Site 36.** Many features were identified by geophysical survey, and trial trenching would be necessary to assess their nature, importance and period. Trial trenching is recommended through selected features identified by geophysical survey.
- 5.11 **Site 40.** Trial trenching is recommended to date and discover the nature of the cropmark feature. Specific trenches should be planned with reference to an accurate aerial photograph trace.
- 5.12 **Site 49.** The Roman road causeway at Wrangbrook Lane is sufficiently clearly defined for no further evaluation to be necessary. The proposals would result in the removal of part of the causeway, which should be recorded in advance of road construction.

## 6 MITIGATION MEASURES

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6.1 With all the archaeological sites discussed in this report, the range of mitigation options is broadly similar and is set out in *DMRB Vol 11* (para 7.2). They are:

- i) avoidance;
- ii) reduction of impact by modification to construction methods;
- iii) total archaeological excavation in advance of construction; and
- iv) a commissioned watching brief on all significant works, in order to identify and record all archaeology which is revealed during the construction process.

To enable detailed mitigation measures to be proposed sufficient information regarding the archaeological resource and the engineering detail of the proposals is required.

6.2 Section 5 sets out the specific options for sites where it is deemed that sufficient evaluation measures have been undertaken. These are:

- |          |  |
|----------|--|
| Site 4   | Romano-British field boundaries. A watching brief during construction is recommended.  |
| Site 10  | Roman Fort environs. A watching brief is recommended during the construction programme in order to identify and record any artefacts or evidence of peripheral settlement or other activity. |
| Site 10b | A watching brief is recommended in order to attempt to recover dating material from the field systems.   |
| Site 22  | The field boundaries should be the subject of a watching brief.  |
| Site 49  | Roman Road embankment: excavation of the affected section prior to construction.   |
| Site 51  | No further evaluation necessary, but a watching brief is recommended.  |

## 7 RESIDUAL IMPACTS

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- 7.1 Residual impacts are those remaining after the mitigation measures have been implemented. These would be, in part impacts arising from the use of the improved road. They would also include situations where it was not possible to avoid archaeological features. The excavation of threatened features involves a residual impact in that preservation *in situ* is the preferred option; features buried under embankments similarly may suffer a residual impact caused by compaction etc. It is not possible at present to assess the residual impacts until all the mitigation measures have been agreed.

## 8 CONCLUSIONS

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- 8.1 The sites of known archaeological features have been established, through the study of available records, APs, a walk-over survey, the observation of selected geotechnical trial pits, fieldwalking and geophysical survey.
- 8.2 Reconnaissance fieldwalking has produced no archaeologically significant objects, such as coins or metalwork and thus no further detailed fieldwalking was undertaken or is planned. These results are in line with recent fieldwalking results from South Yorkshire, although experiences in West Yorkshire have differed.
- 8.3 Geophysical survey, using magnetometry, has been effective in demonstrating the archaeological nature of many of the features located by aerial photography, but this technique provides no evidence of date.
- 8.4 There remains some uncertainty concerning the extent, date, status and survival of some sites, and there is the possibility that the pre-iron age, and iron age/Romano-British remains are more extensive than is apparent from APs.
- 8.5 It is recommended that further survey work is necessary to establish these aspects sufficiently for a programme of mitigation to be worked out.



*APPENDICES*

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*Appendix 1*  
*Geotechnical Trial Pits*

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## Appendix 1: Geotechnical Trial Pits

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- A1.1 The geotechnical ground survey was carried out by Soil Mechanics, on behalf of Owen Williams, in June and July 1992. Following a meeting with representatives of the DOT the county authorities requested that certain trial pits in sensitive areas should be observed by archaeologists in order to establish depths of soils and to check for any archaeological material. The trial pits specified were in the following areas, (see plans RPS 2-5 for locations):

44,45,47,49 Romano-British enclosure (RPS 5)  
89,91,92,93,94,97,99 Roman fort vicinity (RPS 10)  
108,109,111 hut circle (RPS 15)  
164,165,166,167,168 ?barrow cemetery (RPS 27)  
198,199,201,202,204 prehistoric landscape (RPS 35)  
278,279,280,282 Romano-British rect. enclosure (RPS 57)

- A1.2 Romano-British enclosure (RPS 5). TPs 44,45,47,49.

There were no archaeological remains detected in any of these pits. TPs 44 and 45 had a 0.3m thick layer of ploughsoil over solution hollows up to 0.6m below the surface. TPs 47 and 49 were at the bottom of the slope and exhibited alluvial clay at about 1m, and limestone was reached at 3.4m in 47 but not reached at 3.7m in 49.

- A1.3 Vicinity of Roman fort (RPS 10). Tps 89,91,92,93,94,97,99.

There were no archaeological features in these pits. The rock was approximately 0.5m below the surface in TP 89 (casual observation of TPs 83 and 85 were the same although in both of the latter there were solution hollows about 0.5m deep). TPs 91,92 and 93 had a layer of orange clay of natural origin below the plough soil to a depth of 2m. TP 93 also had a linear solution hollow trending SW-NE. TP 94 was in woodland and was disturbed by tree roots. It was not possible to observe TPs 97 and 99.

- A1.4 Vicinity of hut circle (RPS 15). TPs 108,109,111.

There were no archaeological features in these pits, which were located in an area of a quarry recently filled with domestic waste and rubble.

- A1.5 Barrow cemetery (RPS 27). TPs 164 - 168.

There were no archaeological features or artifacts from these pits.

- A1.6 Prehistoric landscape (RPS 35). TPs 198,199,201,202,204.

There were no archaeological features observed in these pits. TP 199 had layers of natural clay beneath the ploughsoil down to rock at 2.9m. TPs 198,201,202 and 204 had ploughsoil over a red clay with yellow clay between 0.5m and 0.8m and rock at 1.6m to 2m.

**A1.7 Romano-British rectangular enclosure (RPS 57). TPs 278,279,280,282**

There were no archaeological features observed in these pits.

**A1.8** The trial pits did not reveal any new information about the archaeological features seen on APs in their vicinity. They did show the variability of the soil depths and composition,<sup>1</sup> and the presence of natural hollows and channels in the rock. The 1992 APs taken for Owen Williams show extensive areas of geological features interpreted as gullies, solution channels, etc.

*Appendix 2*

*Fieldwalking Report*

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**A1(M) REDHOUSE TO FERRYBRIDGE,  
SOUTH OF THE WENT VALLEY  
STAGE II ASSESSMENT**

**APPENDIX 2**

**FIELDWALKING REPORT**

# CONTENTS

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1. *Introduction*

2. *Methodology*

3. *Results*

*Figures*

# 1 INTRODUCTION

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- 1.1 This report forms part of the Stage II assessment of the A1(M) improvements between Redhouse and Ferrybridge, specifically the section south of the Wentbridge Gorge to Redhouse. The northern section between the Wentbridge Gorge and Ferrybridge is to be dealt with separately.
- 1.2 It summarises information from preliminary reconnaissance fieldwalking carried out during April 1994 by staff archaeologists of RPS Clouston, and complements the geophysical survey carried out by Stratascan at selected sites on the proposed A1(M) improvements.
- 1.3 Fieldwork took the form recommended by RPS Clouston in their report *A1(M) Redhouse to Ferrybridge Improvement, Archaeology Stage II proposals* of April 1994. Fieldwalking has been carried out to the specifications laid out in the respective briefs. (The *methodology* for *preliminary reconnaissance* fieldwalking was that outlined in the brief and specification of April 1994, based on the approved brief which forms part of the fieldwork archive). The aims of the work were to identify possible constraints at an early stage using non-destructive techniques of archaeological survey, as recommended in the Department of Transport (DOT) *Design Manual for Roads and Bridges (DMRB)*.
- 1.4 The aims of the archaeological fieldwalking programme were:
  - to record archaeological artefacts in the ploughsoil/topsoil surface associated with features identified through the desk-top survey;
  - to recover evidence for the date of archaeological features identified through the desk-top survey, where appropriate;
  - to prospect for archaeological material not predicted by the desk-top survey;
  - to provide evidence on which recommendations can be made for further archaeological investigations as appropriate.

This report includes the following:

- a description of the methodology and techniques used (section 2);
- the final results of the initial fieldwalking stages, presented in tabulated form and summarised on plans at 1:1000 and 1:2500 scales, showing surrounding OS detail, the locations of grids used, and the density distributions of each artefact category recorded; and
- descriptive text (section 3) indicating the nature of any concentrations of artefacts identified.



## 2 METHODOLOGY

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- 2.1 The fieldwalking was to be undertaken in two stages:- preliminary reconnaissance followed by more detailed fieldwalking in areas identified by the reconnaissance as worthy of further investigation, if any. It followed a similar pattern to that adopted elsewhere in Yorkshire. In the event no sites were identified which merited a detailed fieldwalk, so preliminary reconnaissance only was carried out.
- 2.2 Preliminary reconnaissance is designed to scan extensive areas rapidly, to locate concentrations of surface artefacts, to record them in sufficient detail to recover their position and extent at a later date, if appropriate, and to make recommendations for areas requiring further, more detailed, investigation. It was carried out on a survey grid related to Ordnance Survey map features. Some of the areas surveyed coincided with geophysical survey areas on the proposed road alignment and lay parallel to the present road where possible. The grids used for fieldwalking are shown in the attached plans.
- 2.3 The field staff walked in parallel transects 10 metres apart whilst visually scanning the ploughed surface for archaeological material. Any archaeological material seen was recorded within 10 metre sub-divisions of the transect. Each site, transect and subdivision was given a reference number. For example 10b/D/20-30 indicates the site reference (10b), transect reference (D) and metres along the transect (20-30) respectively.
- 2.4 No archaeologically significant objects, such as metalwork or coins, were observed or collected so no detailed fieldwalking was carried out.

### 3 RESULTS

- 3.1 The results of the archaeological fieldwalking are presented in this section. Their relationship to the geophysical survey results (Appendix 3) is shown on the drawings.
- 3.2 During the preliminary reconnaissance fieldwalking no finds were collected, but artefacts were identified on site without being retrieved, and their position recorded.
- 3.3 Complete records, including field record sheets, finds record sheets, location maps and photographs form part of the full archive. Sites that were selected for fieldwalking are listed below, running from north to south.

A description of the fieldwalking conditions and results for each selected site is given below.

#### 3.4 Site 068

Archaeological fieldwalking was not carried out in this field as the current crop (oil seed rape) was too far advanced in growth to allow an effective archaeological assessment by fieldwalking.

#### 3.5 Site 40

This field had been ploughed and harrowed and was in a condition ideal for producing the most representative fieldwalking results. Ground visibility was 100% and the light conditions were favourable; so a good recovery rate of finds would be expected. Geophysical survey was not to be carried out at this site so an independent grid was set up, the location of which is shown on figure RPS 40/1.

The following artefacts were recorded during preliminary fieldwalking at site 40:

Roman Pottery	5 sherds
Medieval pottery	24 sherds
post-medieval/modern pottery	83 sherds
brick/tile	24 fragments

Other material noted includes animal bone, glass, shell, coal, coke, clay pipe, slag and slate. A distribution plot at figure RPS 40/1 shows no identifiable concentrations of material of any significance. A fairly even spread of post medieval pottery, and a less dense spread of medieval pottery are apparent over the survey area. Ceramic building material was also fairly evenly distributed over the site, but no flintwork or fire-cracked flint was observed.

3.6 Site 36 The following artefacts were recovered from this site. Visibility in this field was approximately 50%, as the crop (winter wheat) was already well established. The results obtained from walking this field will not be so representative of the site's archaeological potential as they could have been in a different season. The grid established for geophysical survey was utilized for fieldwalking by extending it 50 metres at each end. Figure RPS 36/1 shows the distribution of archaeological material.

The following archaeological material was recorded.

Roman pottery	17 sherds
Medieval pottery	6 sherds
post-medieval/modern pottery	223 sherds
tile/brick	164 fragments
flint flake	1 item

Also recorded were oyster shell, glass, clay pipe, coal, and animal bone/tooth.

### 3.7 Site 26

At this site ten 600-metre long transects were walked over relatively flat terrain. The fieldwalking survey again utilised the geophysical survey grid, extending it 200 metres north and 200 metres south. The field contained winter wheat at two different stages of growth, the area to the north being more advanced. The presence of the following was recorded:

Roman Pottery	1 sherd
Medieval pottery	4 sherds
Post-medieval/modern pottery	147 sherds
Tile	112 fragments
Fire cracked flint	6 items

The distribution of this material is shown on figure RPS 26/1.

Other finds recorded on this site included glass fragments, modern iron objects, slag, slate, clay pipe stems, bone, coal and oyster shell.

### 3.8 Site 22

The ground surface of this field was only 30% visible due to the advanced state of the winter wheat crop. The geophysical survey grid was used for the fieldwalking survey. The presence of the following artefacts was recorded:

Medieval pottery	4 sherds
post-medieval/modern pottery	40 sherds
tile/brick	32 fragments
flint tool	1 item

The distribution of this material is shown in figure RPS 22/1.

Also present in this field was slag, slate, glass, animal bone, oyster shell, coal, and patches where large local stones were present within the ploughsoil, perhaps remnants of a former dry stone wall as was evident at some of the other boundaries.

3.9 Site 10 incorporating 10b and 10a

This site lies in two portions, north and south of a stream. The northern portion, closest to the cricket ground is 10b, and the southern section is 10a.

3.10 In field 10b the following artefacts were recorded.

Medieval pottery	1 sherd
Post-medieval/modern pottery	4 sherds
tile and brick	23 fragments
fire cracked flint	1 item
flint tool	2 items

A diffuse spread of building material was recorded, and prehistoric activity in the vicinity may be suggested as was the presence of two worked flint items and a fire cracked flint. The distribution of this material is shown on figure RPS 10b/1.

3.11 In field 10a the following artefacts were recorded:

Roman pottery	15 sherds
Medieval pottery	2 sherds
Post-medieval/modern pottery	264 sherds
tile/brick	338 fragments

The distribution of this material is shown on figure RPS 10a/1.

3.12 Site 5

A larger area was walked in this field than was originally proposed. A grid was set up for fieldwalking purposes as no geophysical survey was carried out in this area. The location of this grid and the distribution of artefacts is shown in figure RPS 5/1.

The following artefacts were recorded during preliminary fieldwalking:

Medieval Pottery	2 sherds
Post-medieval/modern pottery	19 sherds
tile/brick	41 fragments

In addition, slate, drainpipe, oyster shell, glass, coal, and clay pipe were noted in this field.

3.13 Site 4

An aerial photograph trace showed linear ditches at this site. This field consists of made ground and has been disturbed to a large extent during previous A1 road improvements. (personal communication from the farmer) The winter wheat was well established and ground visibility was only approximately 50%. A grid was set up for fieldwalking purposes as no geophysical survey was carried out in this area. The location of this grid and the distribution of artefacts is shown in figure RPS 4/1.

The following artefacts were recorded:

Medieval pottery	1 sherd
post-medieval/modern pottery	16 sherds
tile/brick	45 fragments

### 3.14 Summary of artefacts recorded in fieldwalking areas















Site	Number of Roman sherds	Number of medieval sherds	Number of post-medieval or modern sherds	Building material (brick and tile fragments)	Other artefacts of note
40	5	24	83	24	oyster bone glass, clay pipe, slag, slate, coal
36/072	17	6	223	164	1 flint flake oyster, glass, clay pipe, bone
26/27	1	4	147	112	6 fire cracked flint, glass, coal, bone, slate, slag.
22/140	0	4	40	32	1 flint tool, coal , slag, glass, oyster.
10a	0	1	4	23	1 flint tool, 1 fire cracked flint, glass.
10b	15	2	264	338	glass, slag, clay pipe, oyster, slate
5/099	0	2	19	41	slate, oyster, glass, coal, clay pipe.
4/099	0	1	16	45	slate, coal, granite.

*Figures*

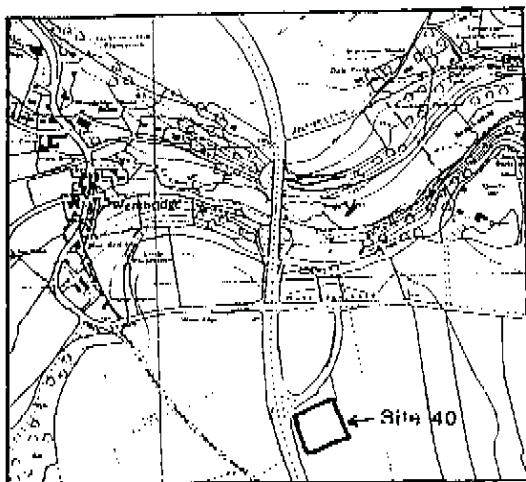
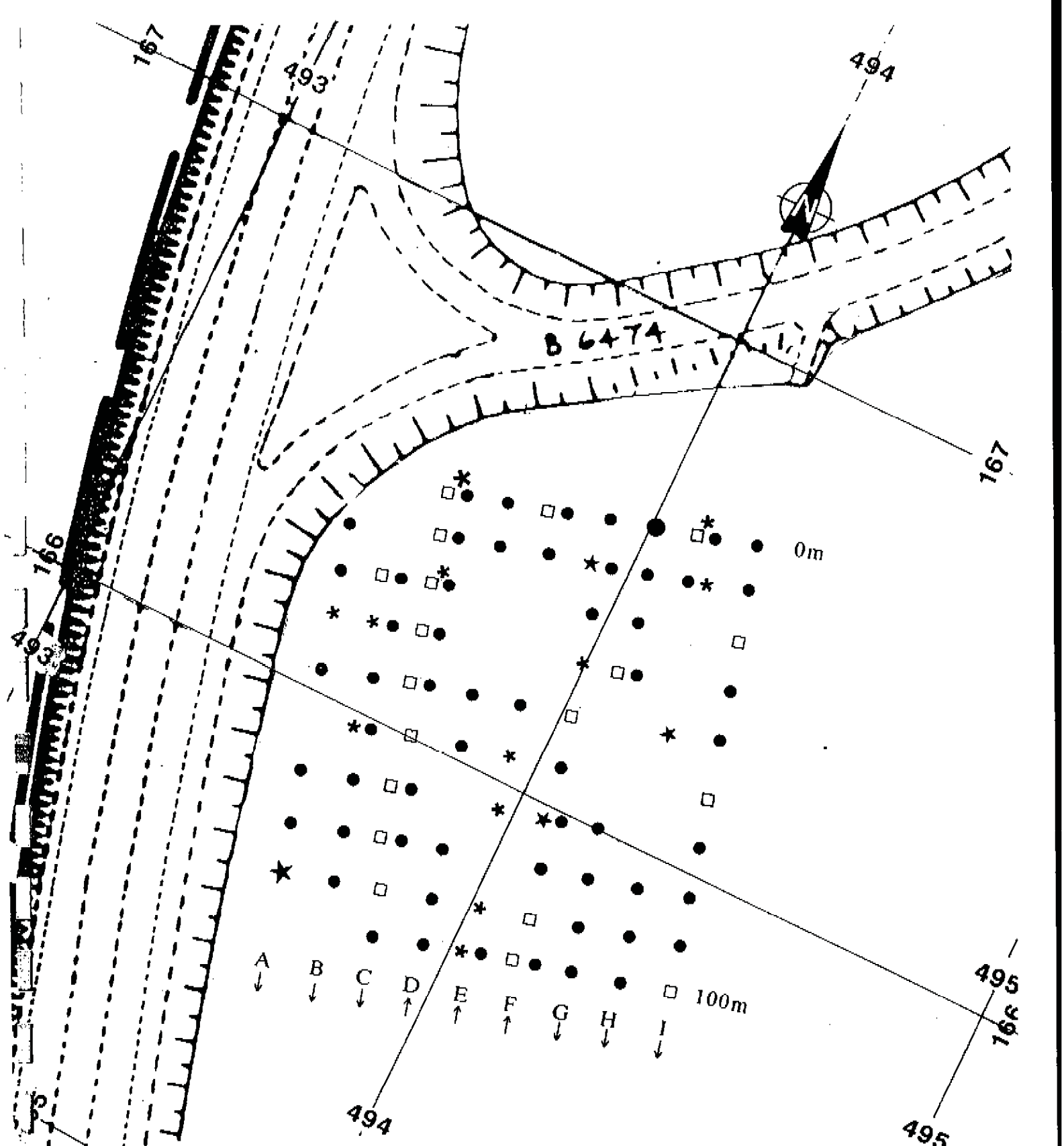
*Fieldwalking Results*

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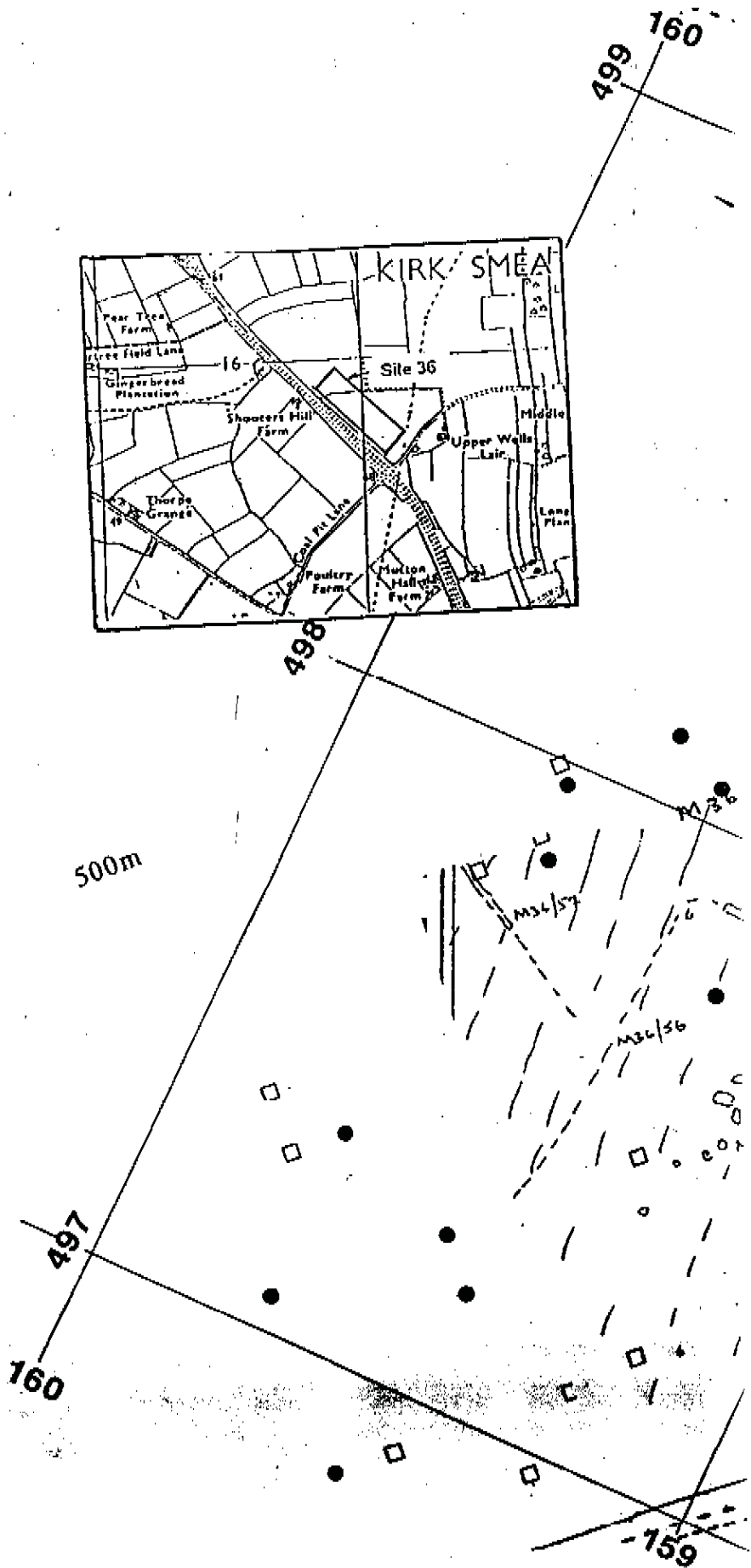
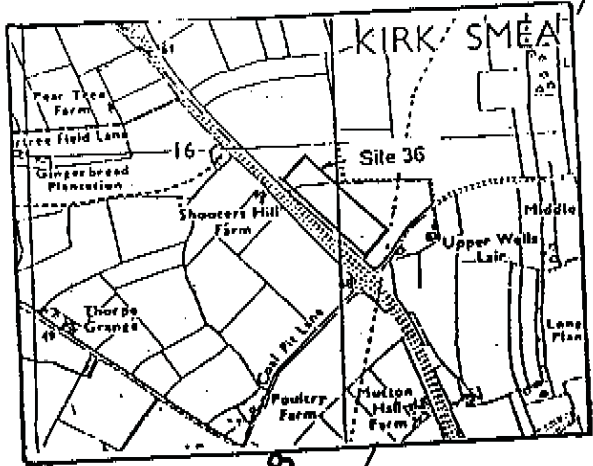
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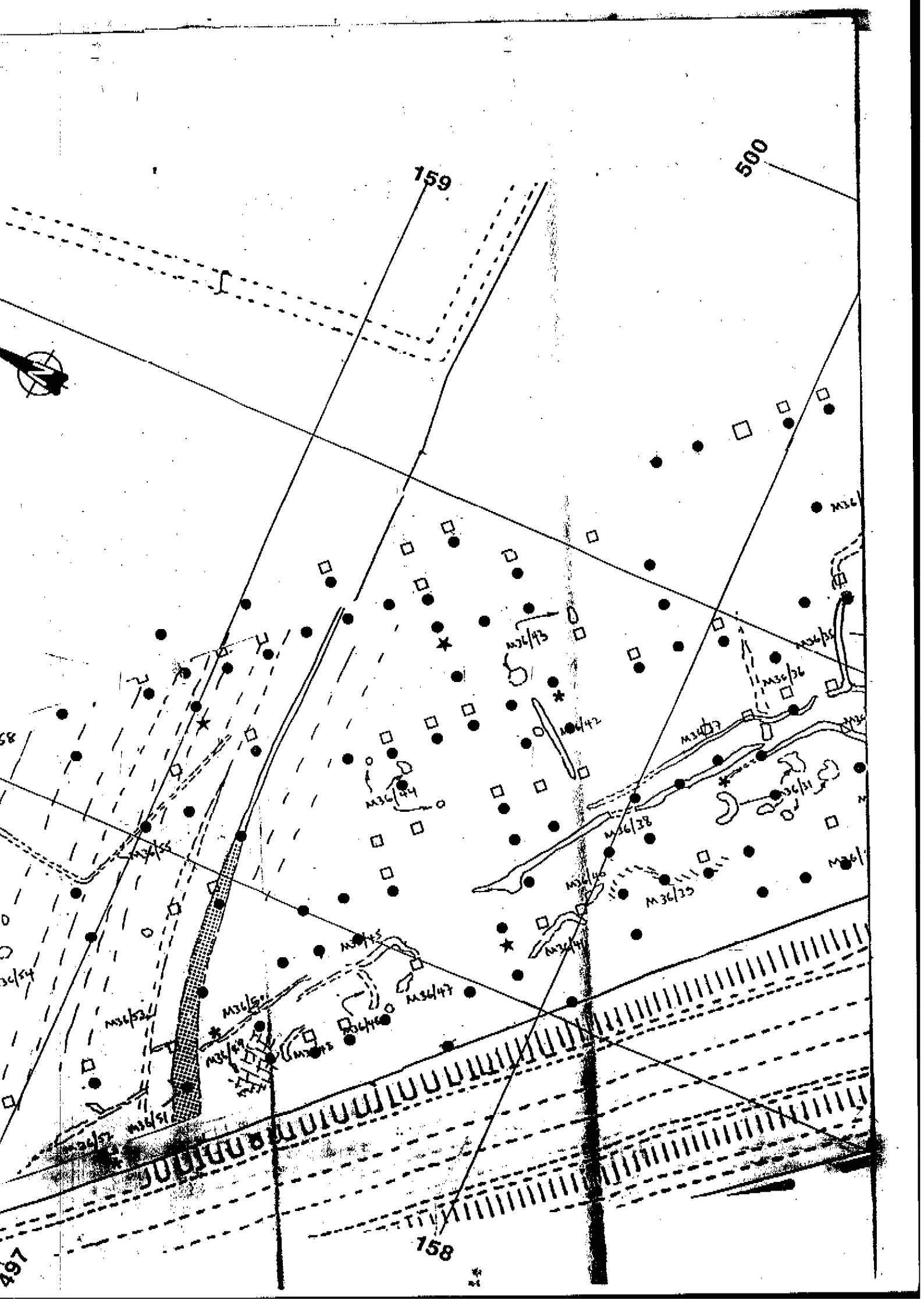
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	"	2 sherds
	Medieval Pottery	1 sherd
	"	2 sherds
	Post-Medieval Pottery	1-5 sherds
	"	6-10 sherds
	Flint (worked and fire cracked)	1 fragment
	Tile and Brick	1-5 fragments
	"	6-10 fragments
	"	11-15 fragments
	Grid Reference	
	Transect Reference	
	Distance along Transect	
	Direction of Fieldwalking for each Transect	

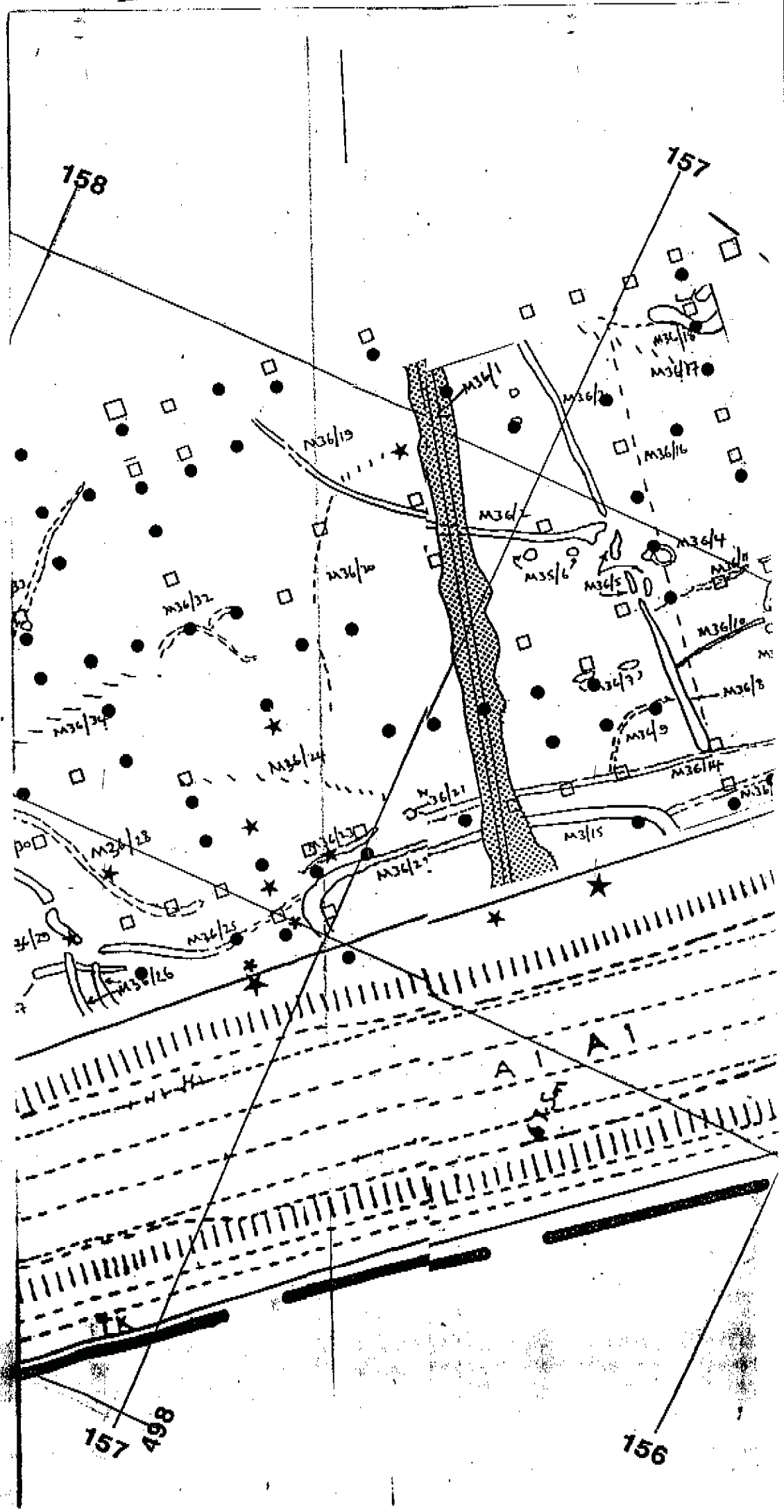


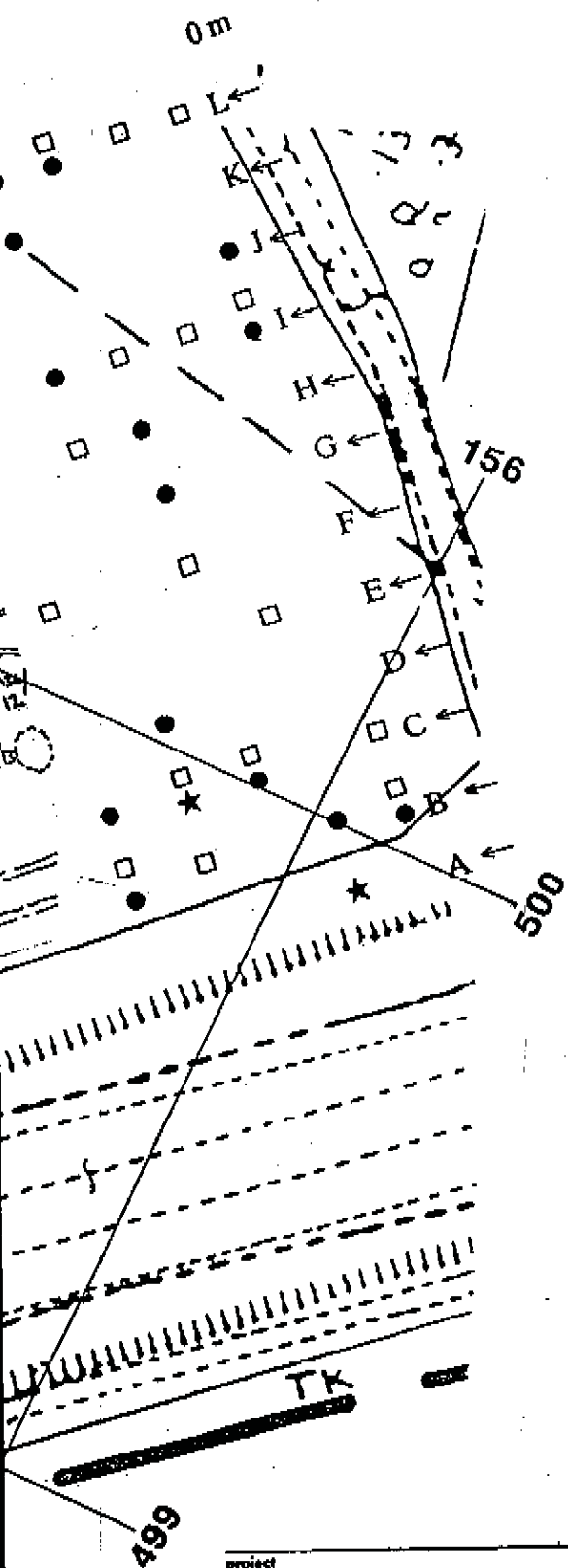


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title	
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project number	drawing number
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scale	date
1:1000	September 1994



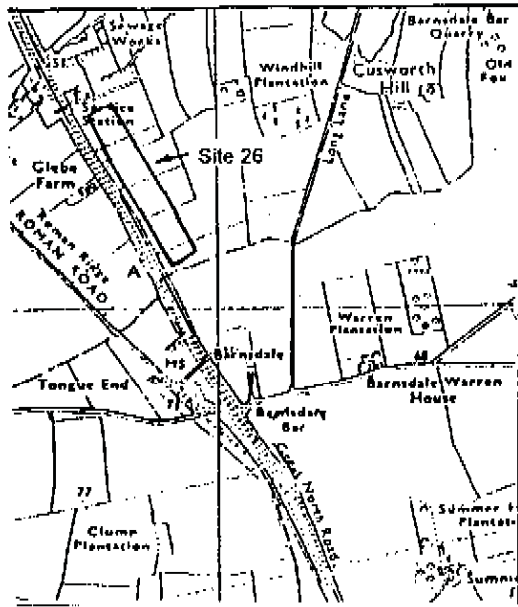
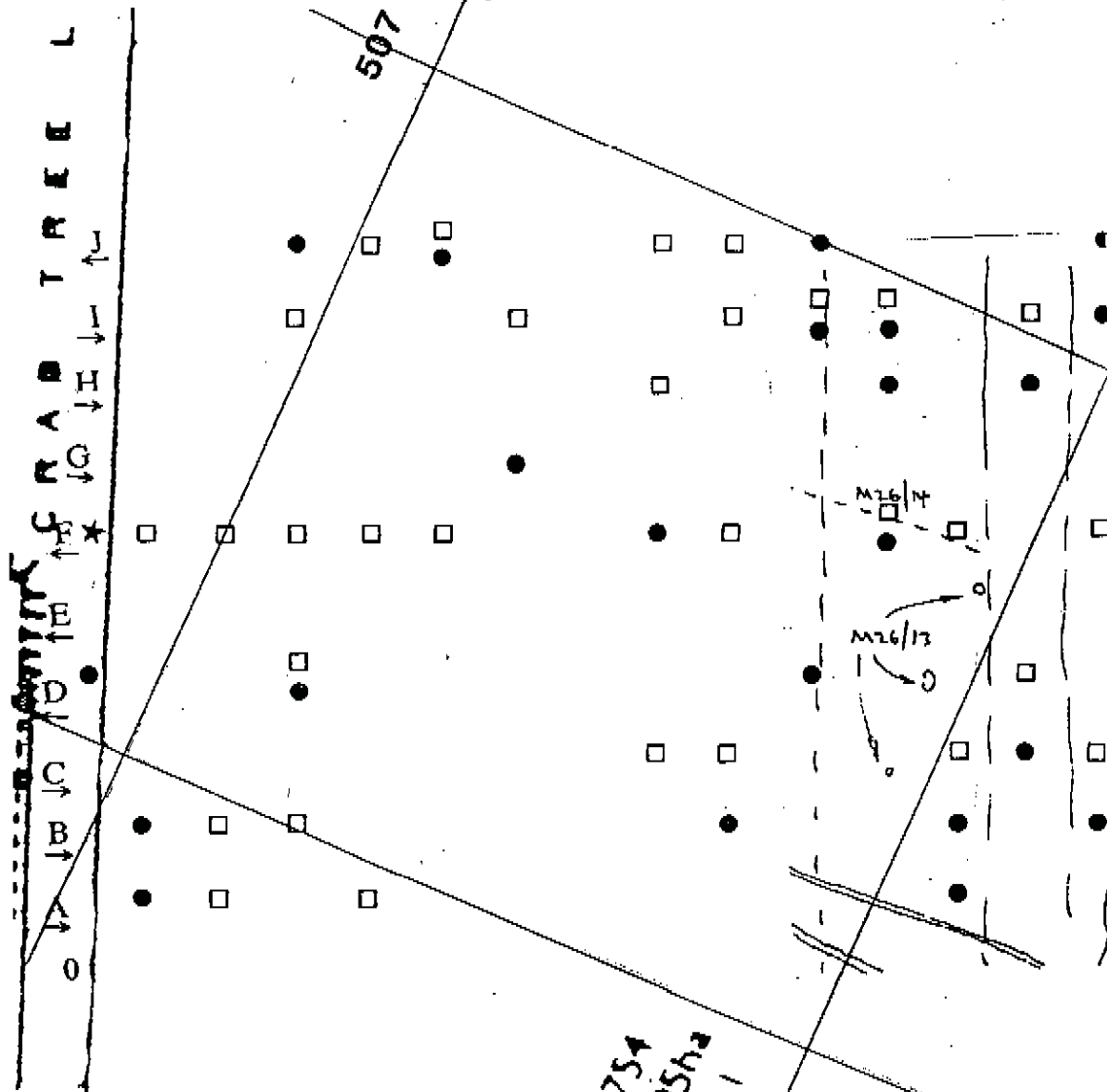




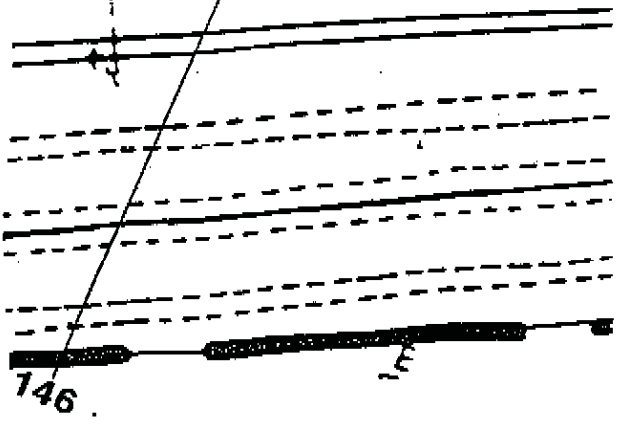


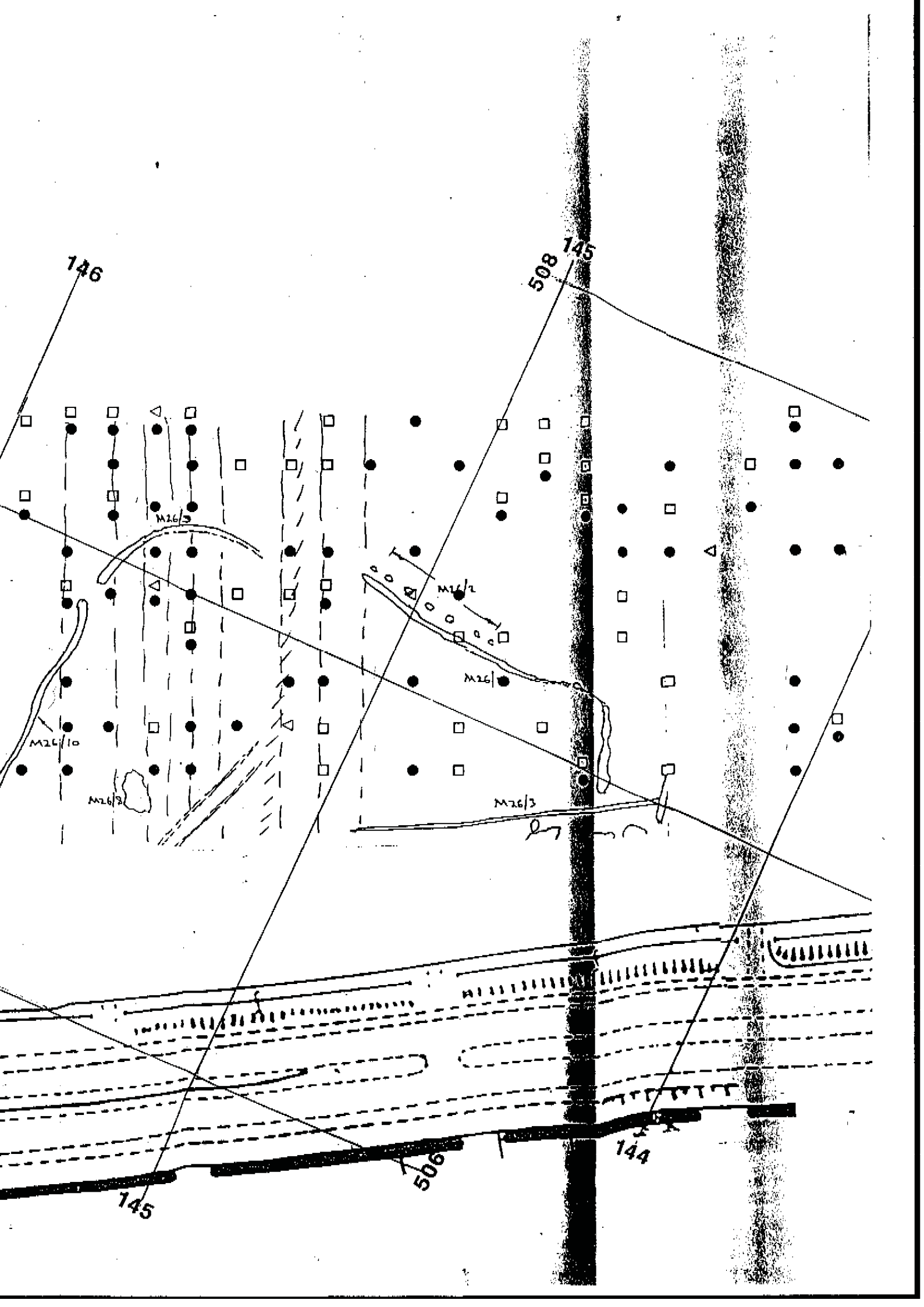
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project number	drawing number
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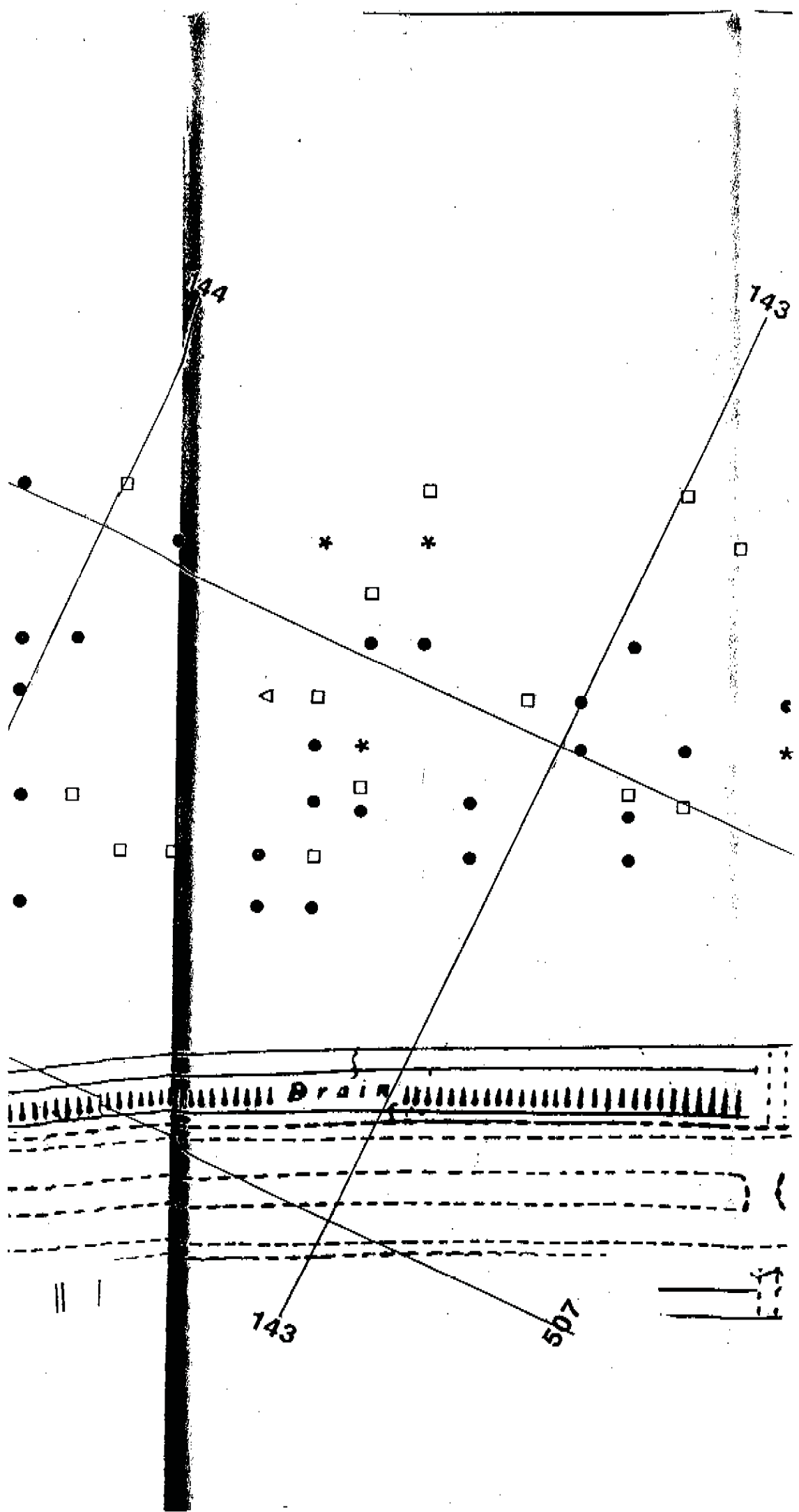
**RPS CLOUSTON**  
 ENVIRONMENTAL CONSULTANTS



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 13.11







144

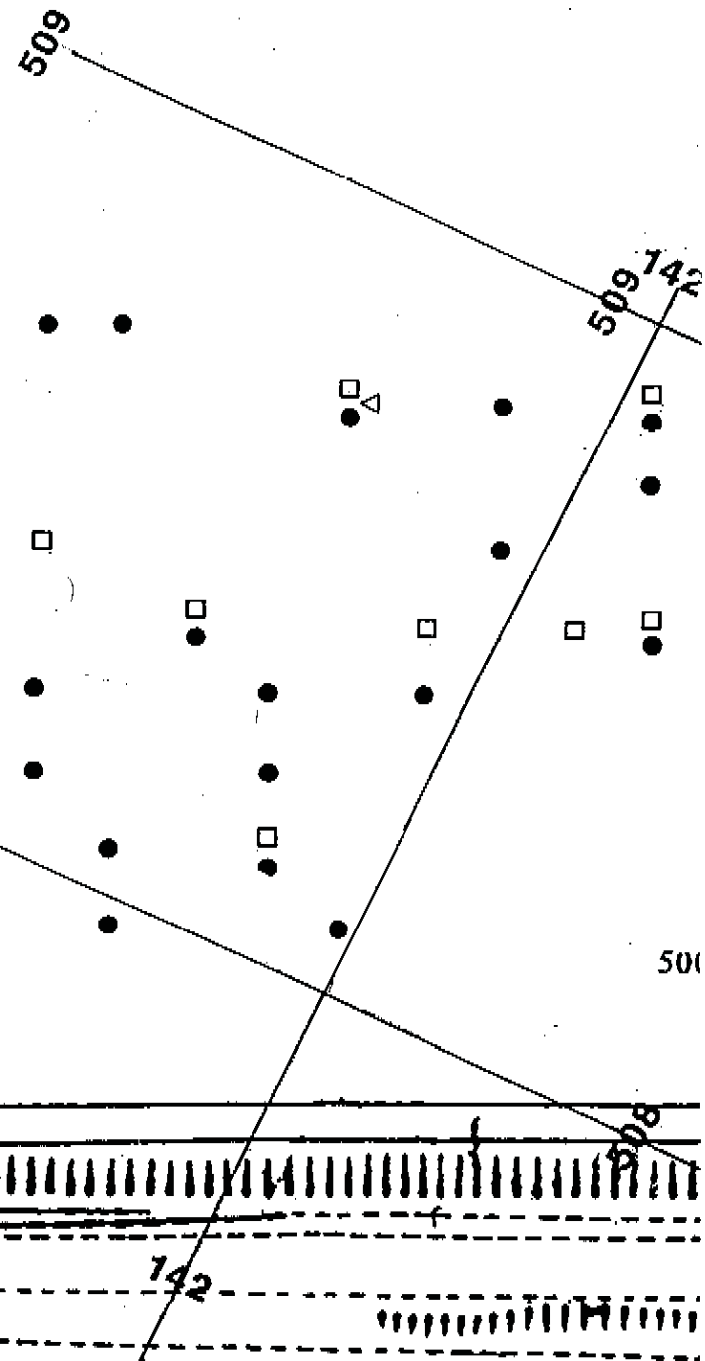
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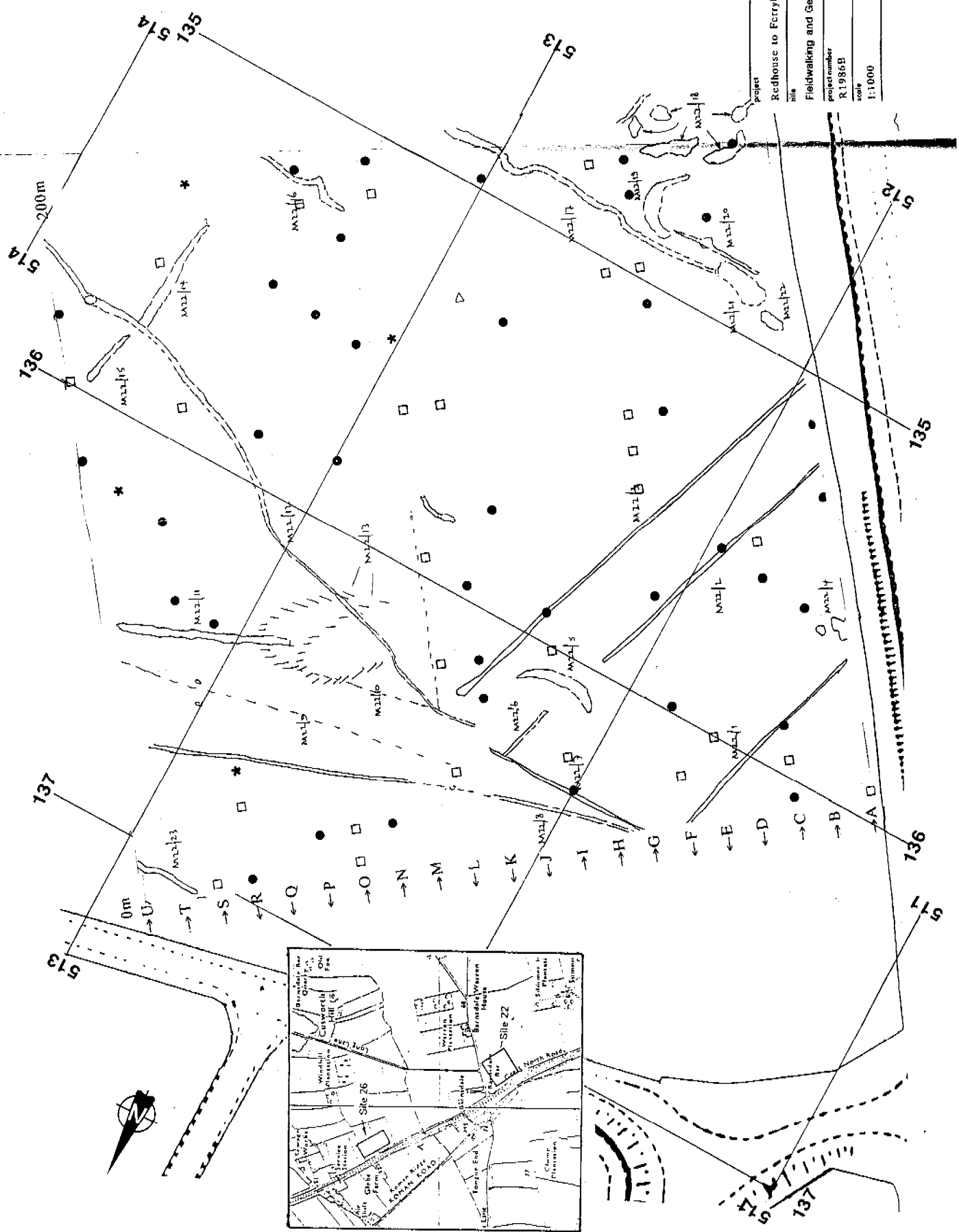
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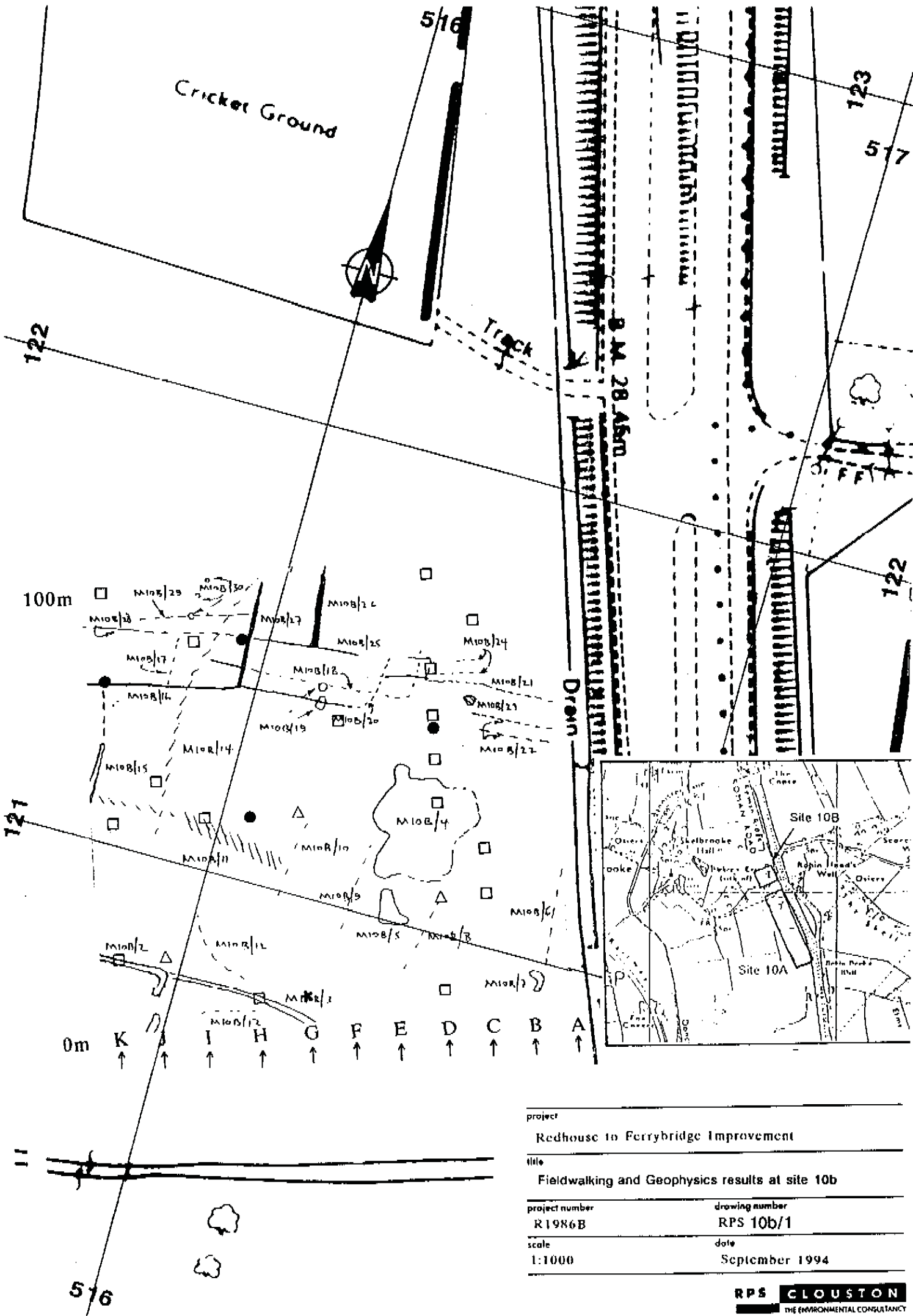
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project number	drawing number
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scale	date
1:1000	September 1994



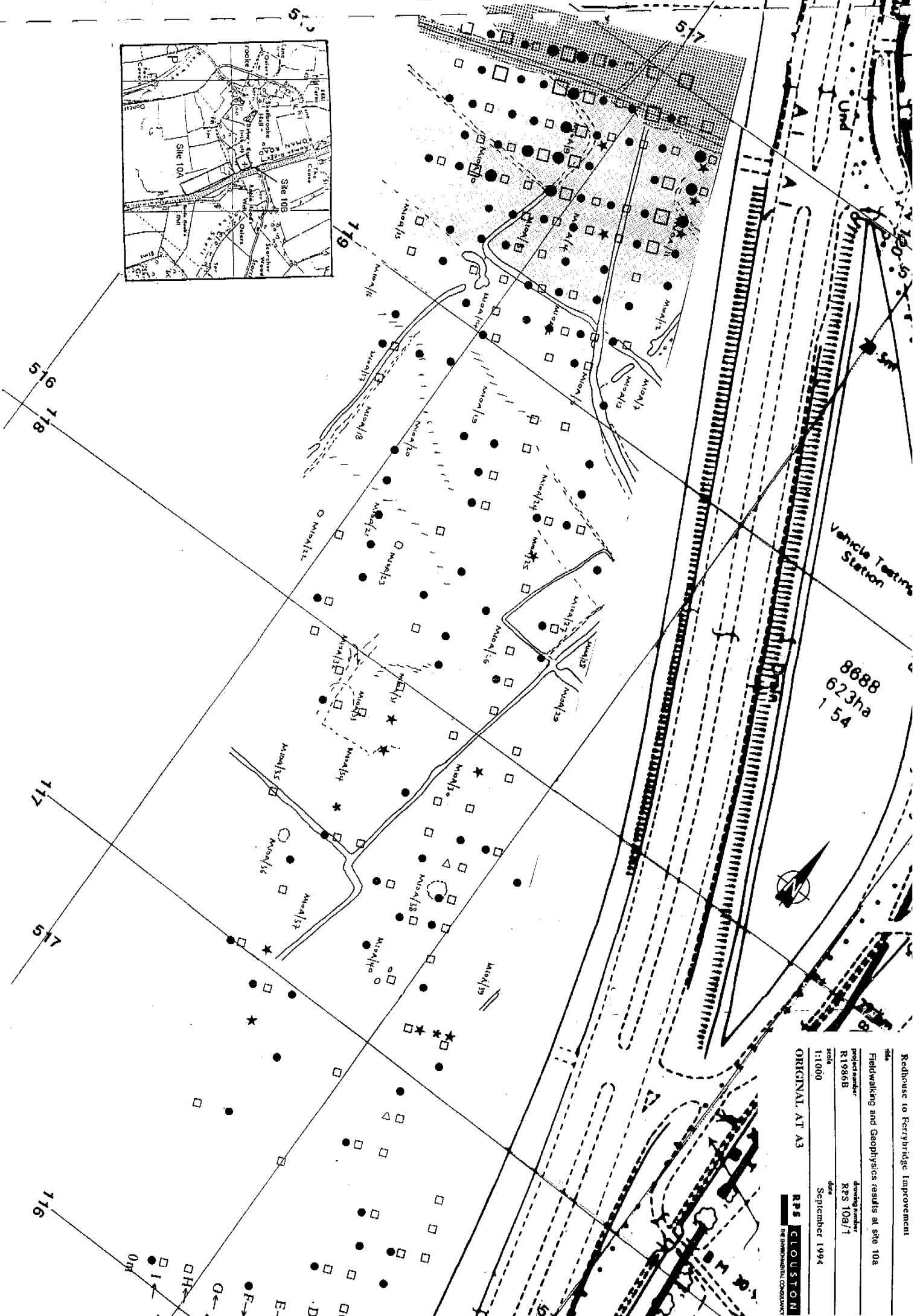
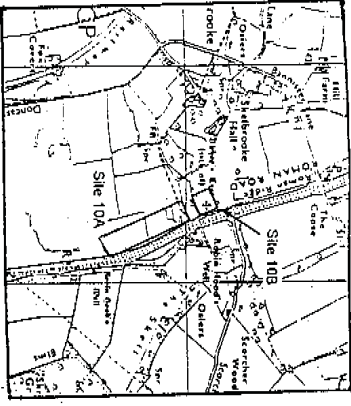
ORIGINAL AT A3

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Site	
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Drawing number	RPS 22/1
Scale	1:1000
Date	September 1994

**RPS CLOUSTON**  
THE ENVIRONMENTAL CONSULTANCY



project	
Redhouse to Ferrybridge Improvement	
title	
Fieldwalking and Geophysics results at site 10b	
project number	drawing number
R1986B	RPS 10b/1
scale	date
1:1000	September 1994



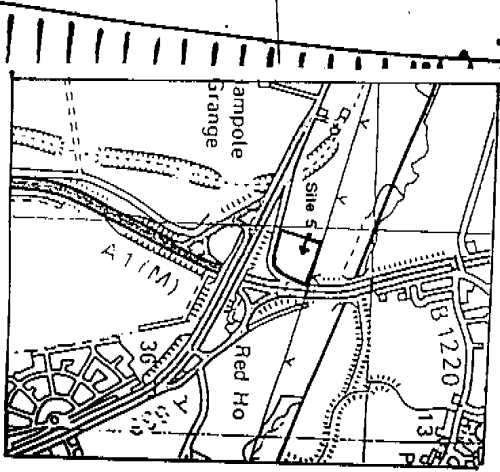
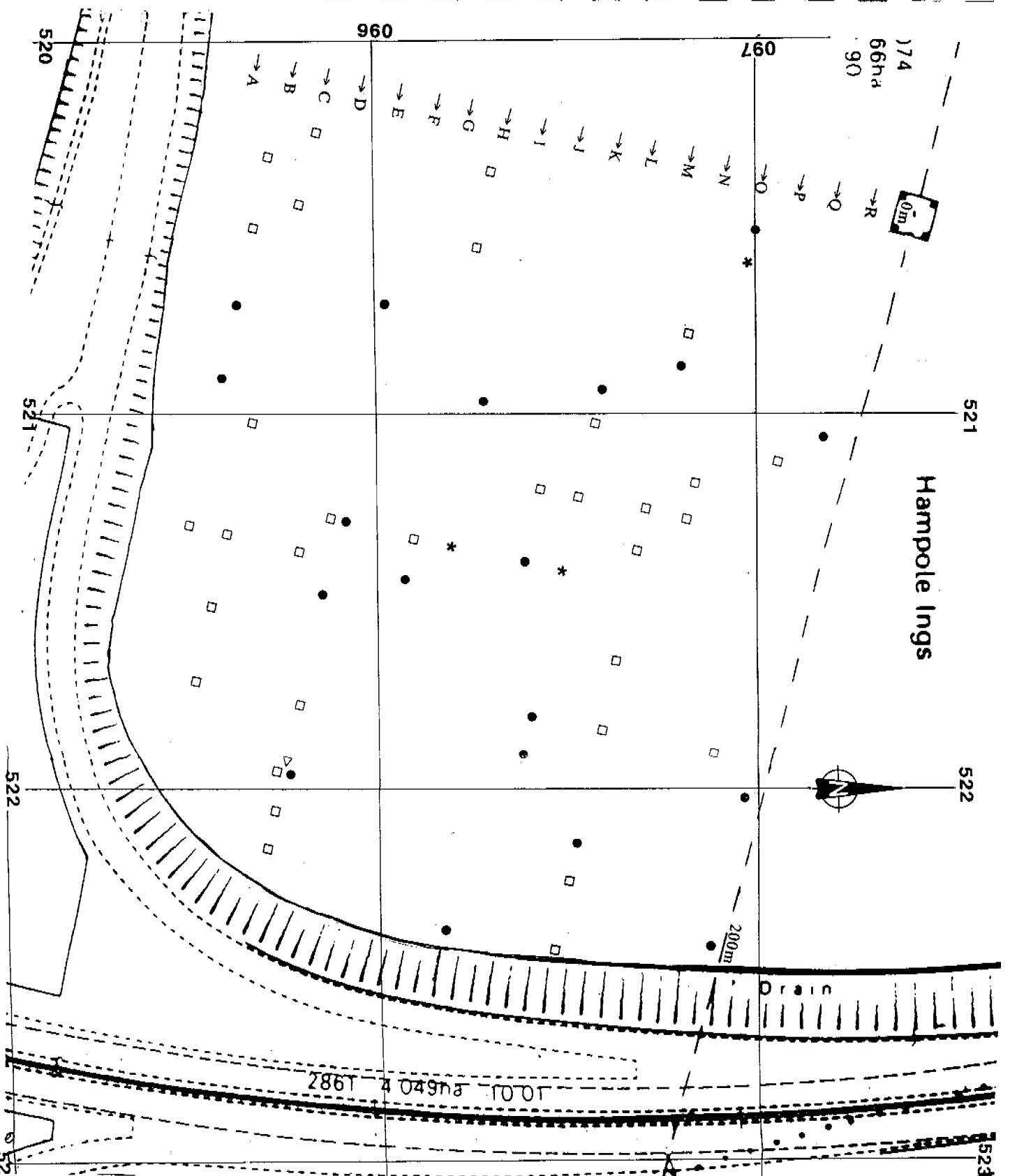
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8688  
623ha  
154

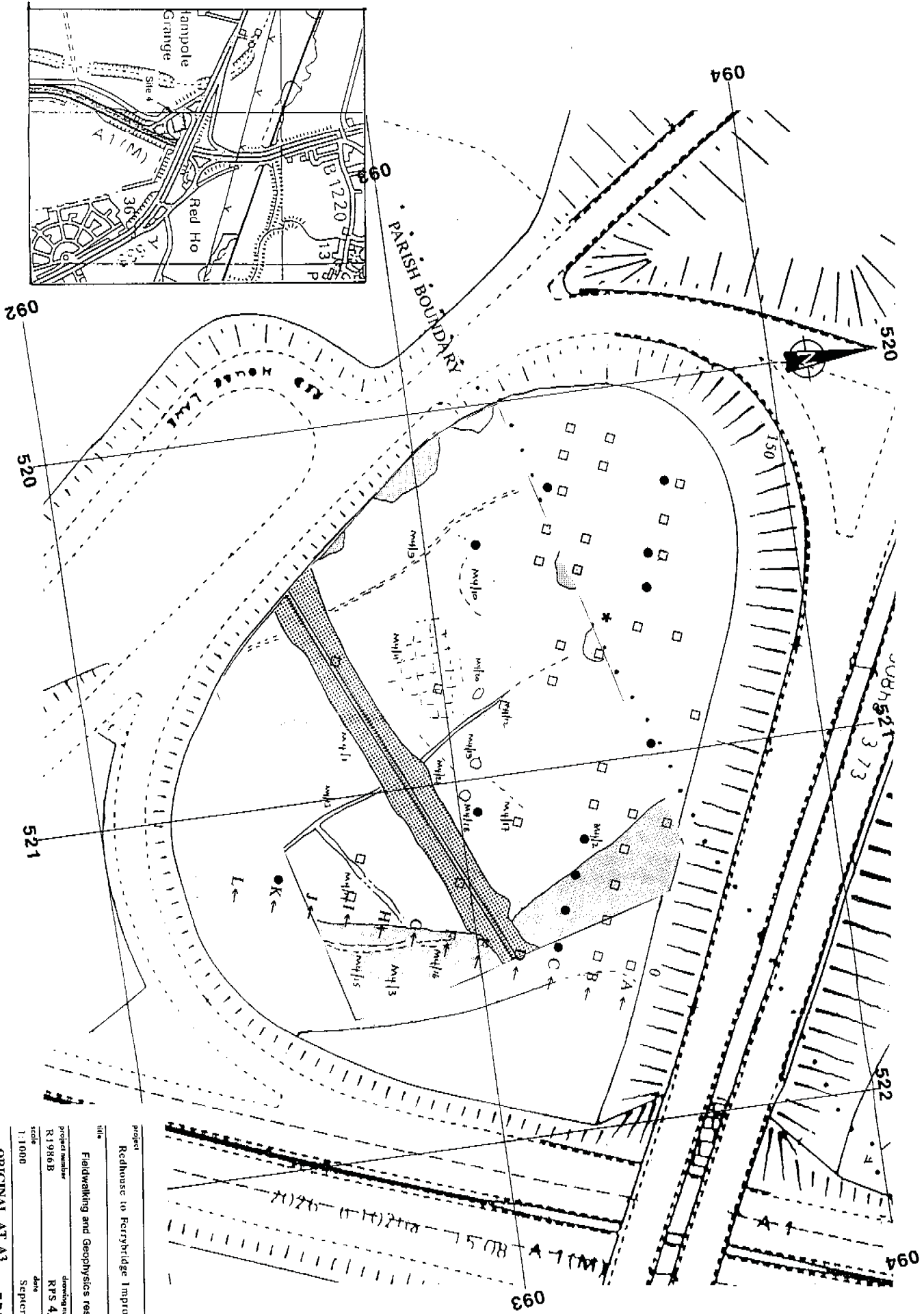
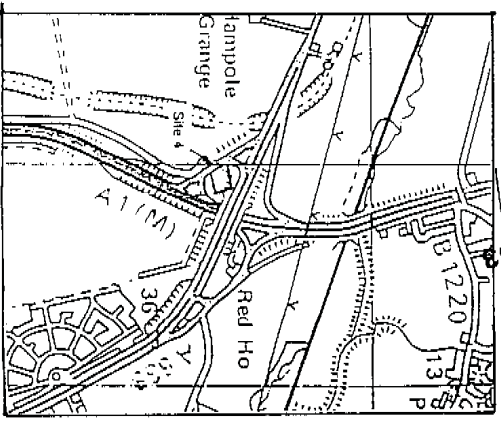


Redhouse to Ferrybridge Improvement  
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 field number R1986B  
 drawing number RPS 108/1  
 scale 1:1000  
 date September 1994  
 ORIGINAL AT A3  
 RPS CLOUSTON  
 THE ENVIRONMENTAL CONSULTANTS

Q-17  
 D-H  
 I  
 S  
 0m



project Redhouse to Ferrybridge Improvement  
 site Fieldwalking results at site 5  
 project number R1986B  
 drawing number RPS 5/1  
 scale 1:1000  
 date September 1994  
 ORIGINAL AT A3



Project  
Redhouse to Ferrybridge Improvement

Title  
Fieldwalking and Geophysics results at site 4

Project number  
R1986B

Drawing number  
RPS 4/1

Scale  
1:1000

Date  
September 1994

ORIGINAL AT A3

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*Appendix 3*

*Geophysical Survey Report  
South of the Went Valley  
(Abridged Stratascan Report)*

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A Report for

**RPS CLOUSTON**

on a

Geophysical Survey

associated with the

**A1(M) REDHOUSE to FERRYBRIDGE  
IMPROVEMENTS**

May 1994

**STRASCOAN**  
**GEOPHYSICAL & SPECIALIST SURVEY SERVICES**



A Report for

**RPS CLOUSTON**

on a

Geophysical Survey

associated with the

**A1(M) REDHOUSE to FERRYBRIDGE**

**IMPROVEMENTS**

May 1994

Notwithstanding the information given in the following contents pages, for the purpose of conciseness in this Stage II report, RPS Clouston have omitted the following Stratascan Figures:

5, 6, 7, 10, 11, 12, 15, 16, 19, 20, 23, 24, 27, 28, 31, 33 and all the RADARGRAMS.

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**Radargrams**

## INTRODUCTION

This geophysical survey was undertaken as part of the archaeological evaluation of the route corridor for the upgrading of the A1 to motorway status between Redhouse and Ferrybridge in South Yorkshire.

## DESCRIPTION OF THE SITES

The sites lay on agricultural land either side of the existing A1 trunk road. Most fields were sown with winter wheat or similar crops at the time of survey (April - June 1994). Site 51 is a heavily wooded slope on the south side of the Brockdale Gorge east of Wentbridge.

The soil type over all the sites is Aberford, being a typical brown calcareous earth derived from the underlying Permian, Jurassic and Eocene limestones. The sites were targeted for survey from the results of a desk top study. In particular, areas close to SMR sites and crop marks on aerial photographs were earmarked for geophysical survey. Part of the gorge at Wentbridge was included in the survey due to its Palaeolithic cave potential.

The approximate centres of each site surveyed is given by the OS References below.

Site	OS Ref.
4	SE 521 093
10A	SE 517 118
10B	SE 516 121
22	SE 513 136
26	SE 507 145
36	SE 500 158
51	SE 494 171

## METHODOLOGY

Two techniques were used for the survey and are briefly described below.

### Magnetometer

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTesla (nT) in an overall field strength of 48,000nT, can be accurately detected using an appropriate instrument.

The mapping of the anomaly in a systematic manner will allow an estimate of the type of material present beneath the surface. Strong magnetic anomalies will be generated by buried iron-based objects or by kilns or hearths. More subtle anomalies such as pits and ditches can be seen if they contain more humic material which is normally rich in magnetic iron oxides when compared with the subsoil.

To illustrate this point, the cutting and subsequent silting or backfilling of a ditch may result in a larger volume of weakly magnetic material being accumulated in the trench

compared to the undisturbed subsoil. A weak magnetic anomaly should therefore appear in plan along the line of the ditch.

The magnetic survey was carried out using an FM36 Fluxgate Gradiometer, manufactured by Geoscan Research. The instrument consists of two fluxgates mounted 0.5m vertically apart, and very accurately aligned to nullify the effects of the earth's magnetic field. Thus readings relate to the difference in localised magnetic anomalies compared with the general magnetic background. Readings are taken automatically with a sample trigger and held in an 'on board' data logger. The data is later downloaded into a computer for processing and presentation in the same way as the resistance meter.

Processing can emphasise various aspects contained within the data but which are often not easily seen in the raw data. Basic processing of the magnetic data involves 'flattening' the background levels with respect to adjacent traverses and adjacent grids. 'Despiking' is also performed to remove the anomalies resulting from small iron objects often found on agricultural land. Once the basic processing has flattened the background it is then possible to carry out low pass filtering to reduce 'noise' in the data and hence emphasise the archaeological or man-made anomalies. The presentation of the data for each site involves a print-out of the raw data (both grey scale and trace plot) and the "despiked and flattened data".

Magnetic features have been identified and plotted onto the 'Abstraction of Features' drawing for each site, numbered for ease of reference and prefixed with the letter 'M'.

#### Ground Probing Radar

Two of the main advantages of radar are its ability to give information of depth as well as work through a variety of surfaces, even in cluttered urban environments and which normally prevent other geophysical techniques being used.

A short pulse of energy is emitted into the ground and echoes are returned from the interfaces between different materials in the ground. The amplitude of these returns depends on the change in velocity of the radar wave as it crosses these interfaces. A measure of these velocities is given by the dielectric constant of that material. The travel times are recorded for each return on the radargram and an approximate conversion made to depth by calculating or assuming an average dielectric constant (see below).

Drier materials such as sand, gravel and rocks, i.e. materials which are less conductive (or more resistant), will permit the survey of deeper sections than wetter materials such as clays which are more conductive (or less resistant). Penetration can be increased by using longer wavelengths (lower frequencies) but at the expense of resolution.

Under ideal circumstances the minimum size of a feature seen by a 35MHz (relatively low frequency) antenna in a damp soil would be 0.7 metre (i.e., this antenna has a wavelength in damp soil of about 3 metre and the resolution is one quarter of this wavelength). It is interesting to compare this with the 300MHz antenna which has a

wavelength in the same material of 0.33 metre giving a theoretical resolution of 0.08 metre. A 500MHz antenna would give 0.2m and 0.05m respectively.

As the antennae emit a "cone" shaped pulse of energy an offset target showing a perpendicular face to the radar wave will be "seen" before the antenna passes over it. A resultant characteristic diffraction pattern is thus built up in the shape of a hyperbola. A classic target generating such diffraction patterns is a pipeline when the antenna is travelling across the line of the pipe. However it should be pointed out that if the interface between the target and its surrounds does not result in a marked change in velocity then only a weak hyperbola will be seen, if at all.

The Ground Probing Impulse Radar used was a SIR3 system manufactured by Geophysical Survey Systems Inc. (GSSI).

Most of the radar surveys were carried out with a 500MHz antenna. The reason for this is that this mid-range frequency offers a good compromise between depth penetration and resolution acceptable for archaeological purposes. It is also a smaller antenna and was thus more manoeuvrable through the wooded terrain.

Data is displayed on a monitor as well as being recorded onto both paper and audio tape. The data held on the audio tape recording can be later loaded into a computer for processing and printing out onto paper in either false colour or monochrome.

The Radar plots included in this report have been produced from the recorded data using Radan software. They were filtered to improve the clarity by reducing noise and printed out in black and white. The depth of scan has been calculated from an assumed velocity of 0.105m/nsec which is typical for the types of soils encountered. These calculations indicate a maximum depth of scan below ground level of about 2.1 metres but it must be remembered that this figure could vary by +/- 10% or more.

A further point worth making is that very shallow features are lost in the strong surface response experienced with this technique.

## **CLASSIFICATION OF RADAR ANOMALIES**

The anomalies to be seen in radargrams can be classified into various types. These types have been identified in the key on Figure 33, each being allotted a symbol. Inevitably some simplification has been made to classify the diversity of responses found in radargrams. This is felt necessary in order to demonstrate, on a two dimensional plan, the nature and density of the anomalies.

Each radargram has been studied and anomalies of interest have been noted and plotted onto Figure 33 using the allotted symbols mentioned above. An interpretation of what these various anomalies represent has then been made and plotted onto Figure 34. To help in this interpretation, an explanation of what each type of anomaly may represent is given below.

1. Convex shaped returns (as opposed to point diffractions) may be formed by a convex shaped buried interface. A development of the type of anomaly may be caused by a buried wall or slab where planar returns (see below) may start



and/or end with a diffraction so giving the appearance of a convex shaped feature.

2. Planar returns may be formed by a floor or some other interface parallel with the surface.
3. Point diffractions may be formed by a discrete object such as a stone or a linear feature being crossed by the radar traverse (see also the second sentence in 1. above).
4. Complex returns would generally indicate a confused or complex structure to the subsurface. An occurrence of such returns, particularly where the natural soils or rocks are homogeneous, would suggest artificial disturbances.
5. Inclined events may be a planar feature but not parallel with the survey surface. However, similar responses can be caused by extraneous reflections. For example, an "air-wave" caused by a strong reflection from an above ground object would produce a linear dipping anomaly and does not relate to any sub-surface feature. Normally this is not a problem as the antennae used are shielded, but under some circumstances these effects can become noticeable.
6. A category for "focused ringing" has been included as this type of feature indicates the likely presence of an air void. This is created by the signal resonating within the void, but with a characteristic domed shape due to the pull-up effect. (Ringing from buried metal objects such as manhole covers normally appear flat.)

The sub-classification into strong and weak returns gives an indication of the extent of change of velocity across the interface, which, in turn, may be associated with a marked change in material or moisture content.

## **SUMMARY OF RESULTS**

The magnetometer survey of the five sites (4, 10, 22, 26 and 36) proved productive. Many features were revealed most of which appear to be old field and enclosure boundaries. Several discrete anomalous zones were found which may be of interest.

The radar survey of the south side of Brockdale Gorge at Wentbridge did not reveal any caves or rock shelters, but the wooded terrain and steep upper slopes made a comprehensive survey difficult.

## **DISCUSSION OF RESULTS**

### Site 4 (Figure 9)

This site lies within a circular plot of land formed by the sweep of a slip road associated with the A1(M) and A638 junction.

Crossing through the middle of the survey area is a metal pipeline which caused a strong magnetic disturbance M4/1. Around the edges of the site are several other areas of magnetic disturbance, in particular M4/2 and M4/3. These are thought to be associated with the road construction and not of archaeological significance.

Crossing the middle of the site and at right angles to the pipeline are two linear features M4/12 and M4/13. Joining M4/13 is another similar linear feature M4/14. These are thought to be old field boundaries.

On the south side of the site is a further linear anomaly but weaker in nature. This may be another field boundary or possibly a track.

There are several discrete magnetic anomalies, most of which are probably "spikes" from buried metal objects (e.g. M4/18 and 19).

#### Site 10A (Figure 14)

As with Site 4, a pipeline (M10A/2) crosses this site at the northern end. There also appears to be a branch pipe running off at 45° (M10A/3). In the vicinity of these pipelines are two zones of magnetic disturbances. M10A/1 at the northern end of the site is strong in character, whereas M10A/4 to the south of the pipeline is more scattered and weaker in nature. Both have the appearance of a scatter of magnetic debris such as a spread of brick hard-core. The 1:25,000 plan of the area shows a building at the northern end of the site which is no longer in existence, together with a yard or possible hardstanding just to the south west. The obvious conclusions are therefore drawn that M10A/1 is the demolition debris from the building and M10A/4 is the remains of the yard or hardstanding.

The survey reveals a number of strong, clearly defined linear features, which all have the appearance of field boundaries. It is possible that many are from one period. These include M10A/6, 7, 8, 9, 10, 17, 28, 29, 30, 35, 37, and 39. All these form a rational rectilinear arrangement which can be interpreted as a field system with both large and small enclosures. However, there are several other features which do not seem to form part of this pattern. M10A/5 in particular has a straight section which is neither parallel or perpendicular with any of the above features. It also has a pronounced curve at the southern end. This suggests that it is of a different period to the rectilinear enclosures and may be an historic trackway.

There are some interesting details worth mentioning here.

1. Both M10A/17 and M10A/28 have lower amplitude linear anomalies running parallel with and about 4 metres from them. M10A/12 has a similar feature but made up of three small discrete anomalies. A similar feature can also be seen in Site 26 (M26/1 and 2).
2. There are several weak linear features in one area which may be of some significance. M10A/32 are two parallel lines. M10A/34 runs off 32 at right angles. M10A/33 is a semi-circular line and M10A/31 is a wider, slightly stronger reversed-S feature.

3. M10A/38 is a very strong negative anomaly about 3m in radius. This single peaked negative spike is unlike a metal generated anomaly and is therefore perhaps worthy of further investigation.

One final point is that the hedge or fence seen on the 1:25,000 map of the area (SE 41/51 revised in 1975/76) crossing the site roughly east to west is not seen in the magnetometer plot.

#### Site 10B (Figure 18)

The 1:25,000 map shows a "Site of Antiquity" within this area called Bishops Tree. This is a medieval oak no longer standing. M10B/4 is in the corresponding position on site but at some 20m diameter is rather large for the remains of a tree. A more likely interpretation is a backfilled pond.

Running north-south towards the eastern side of the survey area are a series of weaker linear anomalies which seem to make up a rather complex system of enclosure ditches. They are notably smaller and more intricate than the system already discussed on the adjacent site 10A. Again there is some evidence of more than one phase. For example, M10B/20 appears to cross M10B/18 such as would not be expected if they were in use at the same time.

There is also some evidence for a field system similar to that seen in Site 10A. Features M10B/2 and 3 are roughly at right angles to M10B/1 and 15. The overall orientation is also similar to that in Site 10A.

There are several small anomalies many of which have the appearance of ferrous spikes (e.g. M10B/18).

#### Site 22 (Figure 22)

The first impression of the magnetometer plot of this site is the random "mottled" effect over most of the area. This is thought to be from the underlying geology rather than being man-made. There is also a series of straight weakly magnetic anomalies all parallel with the nearby Woodfield Road and is either modern drainage or subsoiling. This adds to the overall noisy effect and, apart from M22/9 and 10, have not been plotted onto Figure 22 to avoid clutter.

In the western and eastern corners are four distinct parallel features M22/1, 2, 3 and 6 and M22/14 and 15). All terminate at or close to a meandering feature M22/7 and M22/12 which runs across the width of the site. These may be drainage ditches but the irregular spacing suggests that they are more likely to be boundary ditches. Similarly M22/8 and 9 are parallel with M22/8 running up to M22/7. The indication is that the meandering feature M22/7 and 12 predates the two sets of parallel features.

In the southern corner of the site are a complex of mainly negative anomalies M22/18 and 19 etc., segregated from the rest of the site by another meandering feature M22/17. (M22/16 also parallel with M22/17). These may be small ponds but no interpretation is given here for M22/17 and 16 other than they may be natural features.

### Site 26 (Figure 26)

To the east of this site there is a suspected round barrow cemetery, however no evidence for barrows is seen in the magnetometer survey.

The 1:25,000 map shows a field boundary crossing the site some 200m south of Crab Tree Lane. A weak anomaly M26/6 is seen at that point and is therefore interpreted as the remains of this hedge.

Cutting across this removed hedgeline is a sub-rectangular feature made up of three anomalies M26/1, 9 and 10 which is thought to be one enclosure. Interestingly there are a line of discrete anomalies M26/2 adjacent and parallel to M26/1 which may be pits.

A strong anomaly M26/8 approximately 6 x 10m in size is worthy of investigation to ascertain its origin.

Several other linear features are seen (e.g. M26/11, 12, 7 and 3) but as only parts of each one are seen, some being quite short, no interpretation is offered. M26/3 may be part of a removed hedge seen on the 1:25,000 map running parallel with the A1.

The distinctive "grain" crossing the site, collectively labelled M26/15 is thought to be the result of modern ploughing.

### Site 36 (Figure 30)

This area has quite a number of anomalies with varying characteristics.

M36/1 is a pipeline crossing the site. The strong feature M36/51 and the associated parallel "series" of features marked M36/58 are a modern hedgerow and modern ploughing parallel with the hedge.

It is thought that the rest of the identified features and anomalies are either of archaeological interest or are natural in origin.

At the south eastern end of the site is a linear feature made up of M36/8 and 3. Between them is a small complex of anomalies M36/5, and an adjacent small circular feature M36/4. The long curved feature M36/2 also terminates in the zone. It is felt that these may be all associated with each other and all as one phase.

The other main feature on the site is a complex linear feature running the whole length of the survey area. Starting at M36/52 it crosses the hedgeline (51), continues through M36/50 and 45. After a gap of 20m it continues again through M36/38 and 37 where it becomes a double parallel feature. A sharp deviation in line is effected through features M36/28, 30, 29 and 25. It then continues more or less straight with features M36/23, 22, 21, 14, 15 and 15A. It's total length is some 400m of which 260m is double. To the east of this line is a more disturbed zone with many small incoherent anomalies such as M36/46, 41., 31 etc.

Interpretation is not easy due to its large scale and fragmented meandering nature. If it forms a boundary to a settlement or park then it must have been constructed in a piecemeal fashion. If the double section represents a highway of some sort it is wide (up to 10m) and inexplicably meandering.

In the northern part of the site there are several weak linear features M36/55, 56 and 57, perhaps shallow boundary ditches.

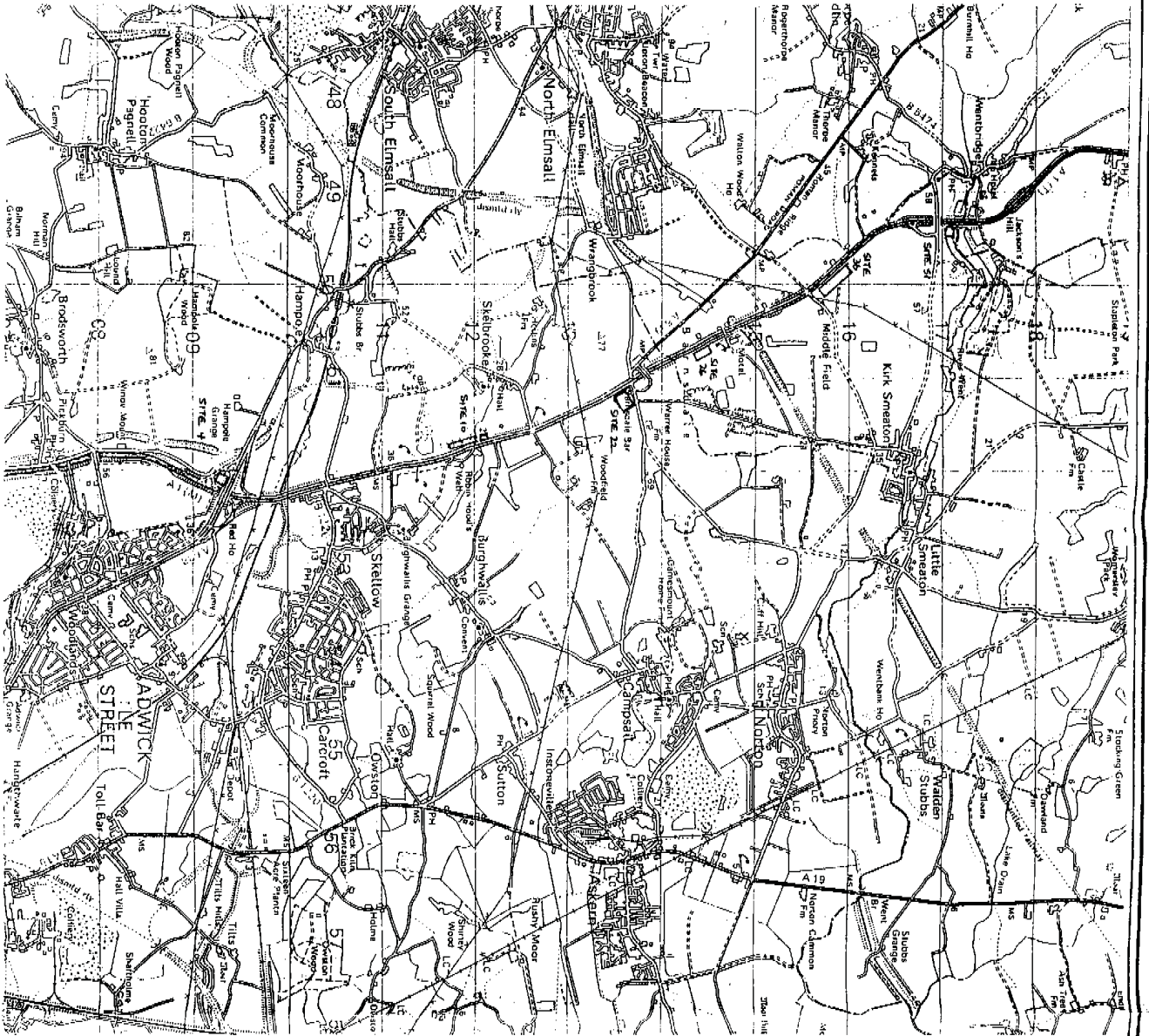
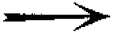
There are also many other small unrelated anomalies or features which are spurs or branches of the main feature already mentioned. No interpretation is offered here on their origin. In all, Site 36 has produced a complex magnetic plot suggesting extensive human activity, much of which appears incoherent.

#### Site 51 (Figure 34)

The 1:25,000 map shows the hollow-way joining Wentbridge with Went Edge Road which may have been in use for many years. However, from inspection on site it would seem quarrying has taken place to the south of the hollow-way with stone presumably being hauled away down the hollow-way. This quarrying has left behind spoil heaps and other mounds and hollows which in part of been filled by modern tipping from above.

It is felt that any Palaeolithic occupation of the site would have been near the top of the slope in the area of quarrying and which was too steep and rough to survey. Radar traverse 9-0 was carried out in an attempt to see behind a rather steep quarry face but no evidence for caves is seen.

Figure 34 is a rationalised interpretation of the radar survey. The lower slopes show evidence of regularly bedded rocks/subsoils changing to a more complex zone further up the slope. The radargrams become more complex again in the hollow-way but no evidence is seen in the radargrams for large voids or filled caves.



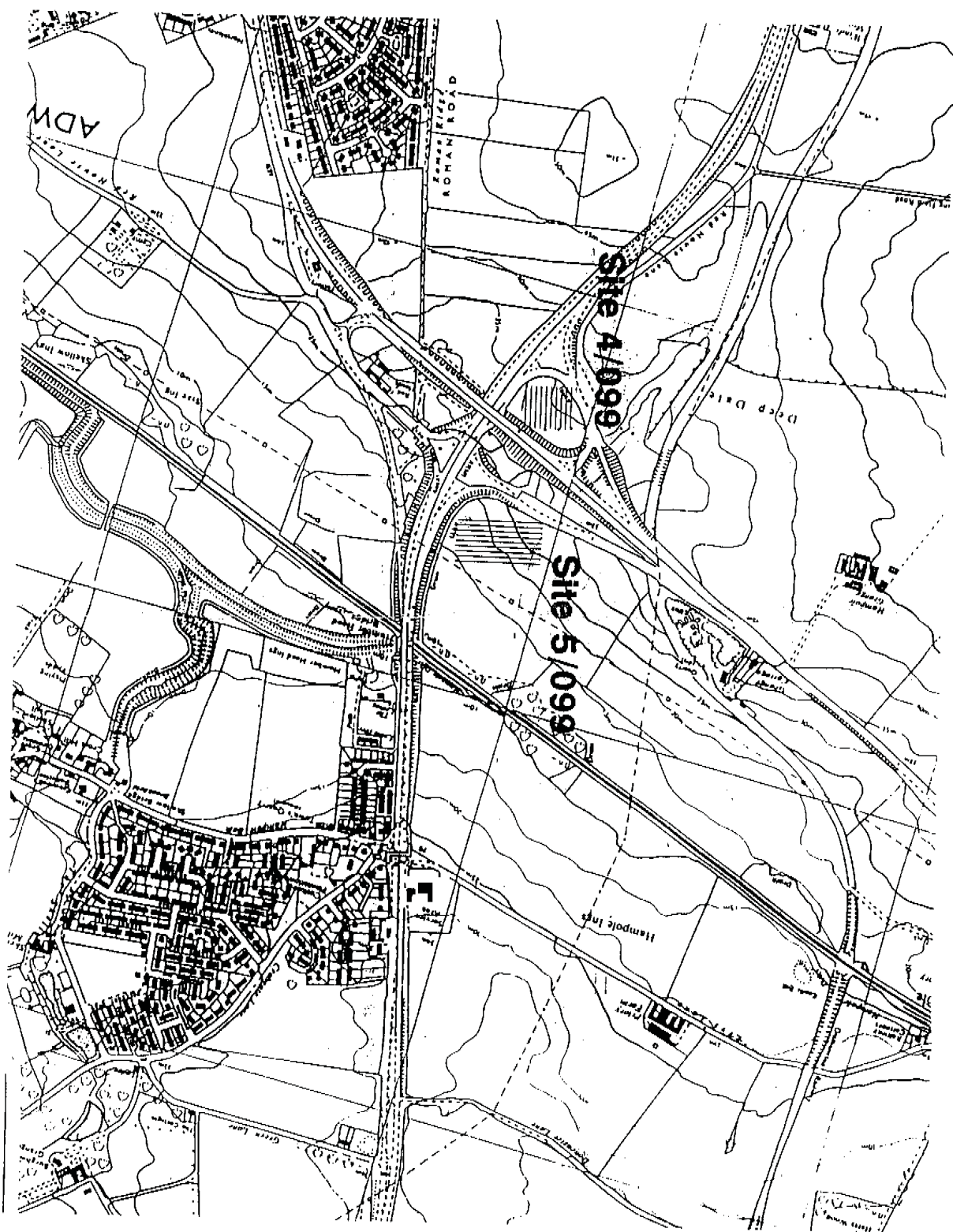
Reproduced from the Ordnance Survey map of Great Britain and Northern Ireland with the permission of Her Majesty's Stationery Office. © Crown Copyright. Licensee: Tiltridge Ltd. Upper Hook Farm, Upton Upon Severn, WR8 0SA. Licence No. AL 50254

ORIGINAL AT A3

Date	May 1994	Client	RPS CLOUSTON	Figure	1
Scale	1:50 000	Subject	Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements General Location Plan		

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ORIGINAL AT A3

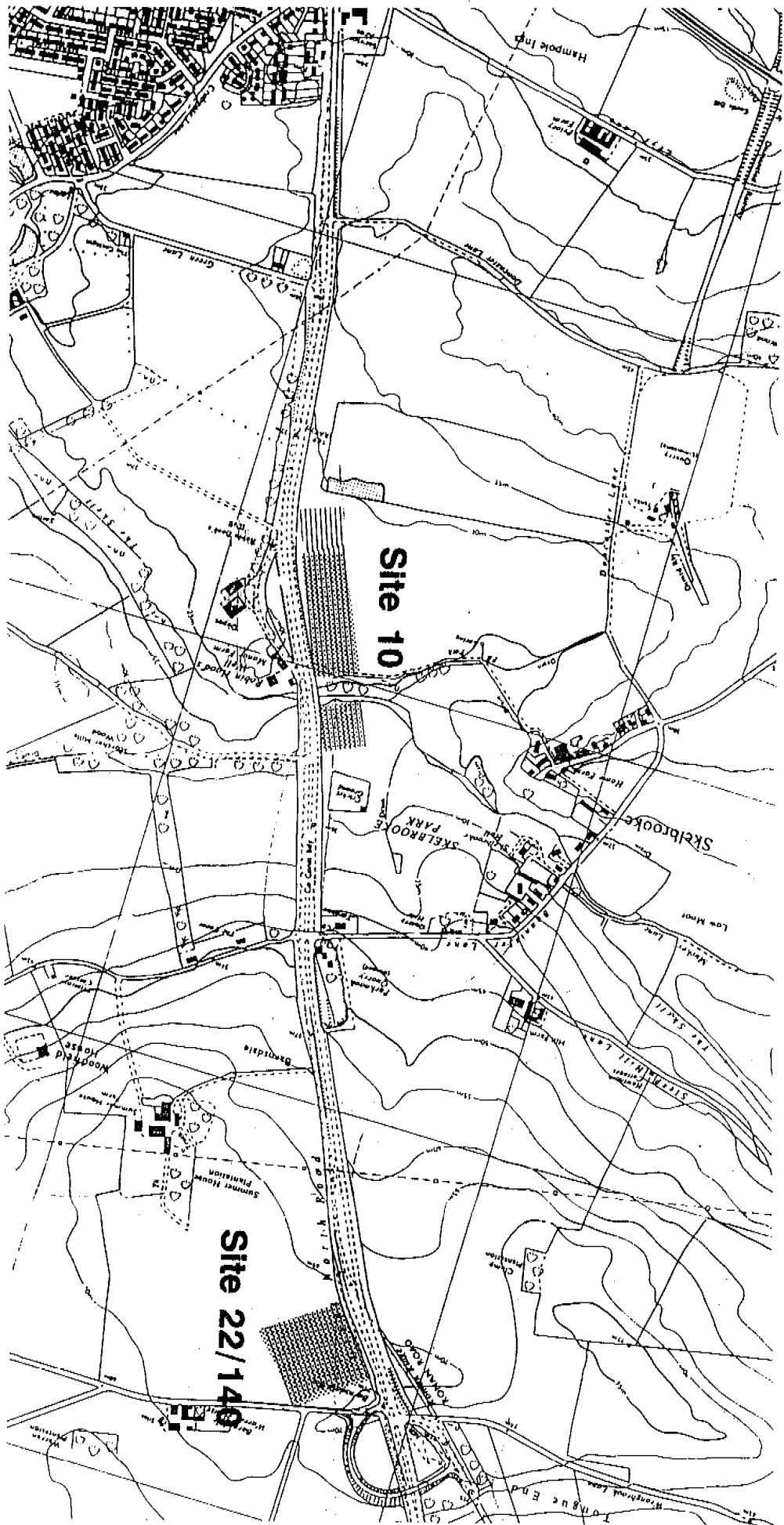
Date May 1994  
 Scale 1:10 000

Client RPS CLOUSTON  
 Subject Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
 Detailed Location Plan - Sites 4 and 5

Figure 2

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**Date** May 1994  
**Scale** 1:10 000

**Client** RPS CLOUSTON  
**Subject** Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
 Detailed Location Plan - Sites 10 and 22

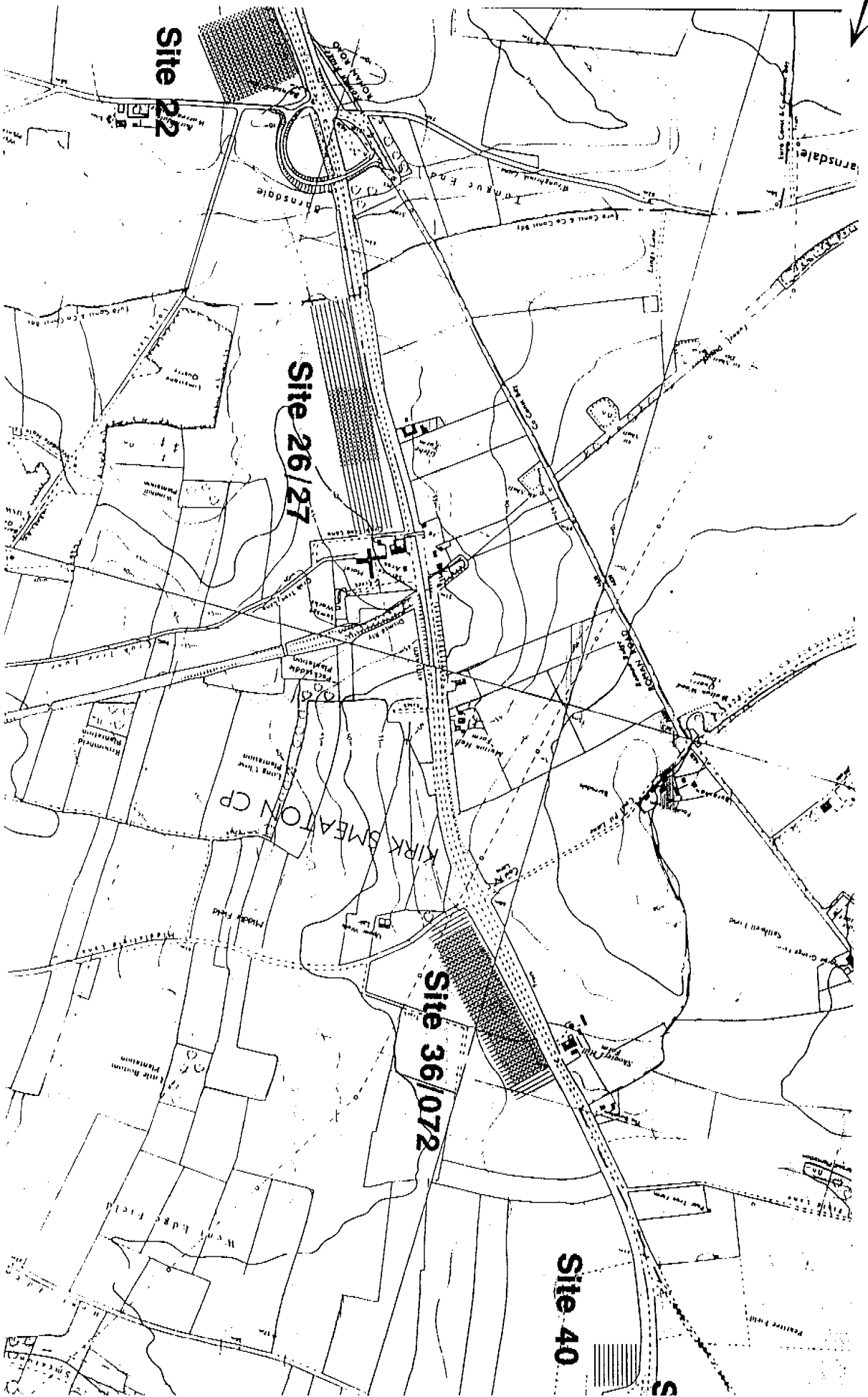
**Figure** 3

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ORIGINAL AT A3





ORIGINAL AT A3

Date May 1994

Client RPS CLOUSTON

Figure 4

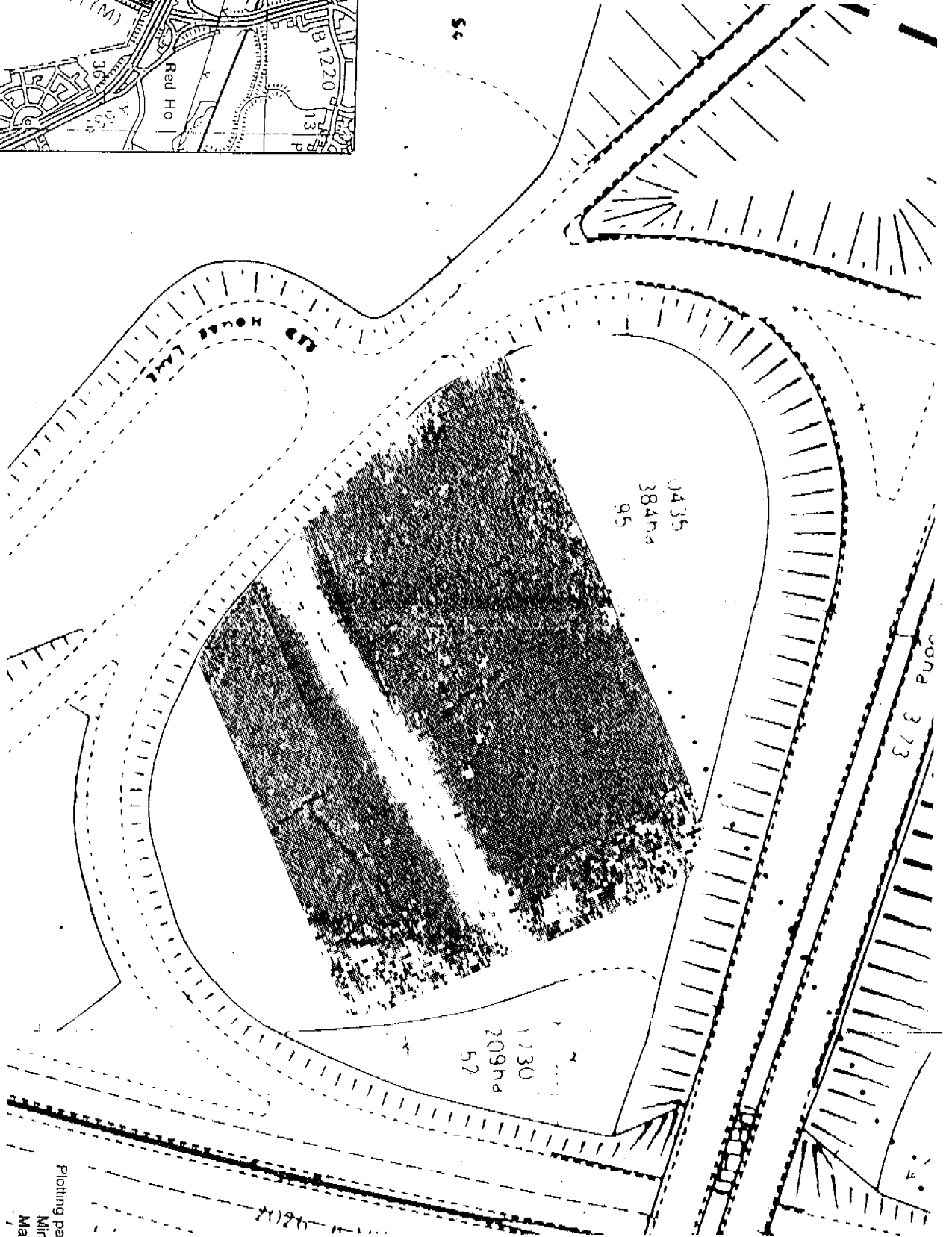
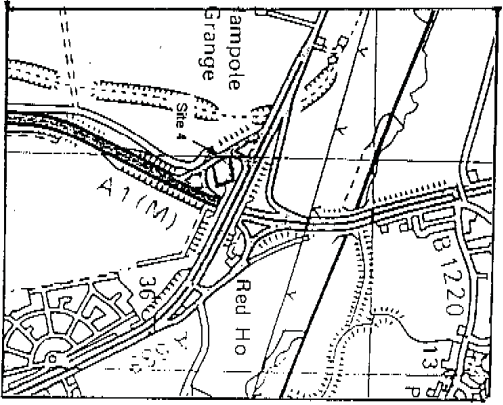
Scale 1:10 000

Subject

Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
Detailed Location Plan - Sites 22, 26 and 36

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FAX (0894) 594142



Plotting parameters  
 Minimum -3nT (white)  
 Maximum +3nT (black)

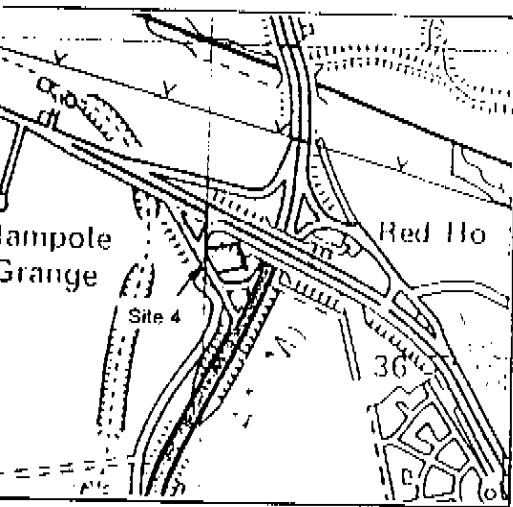
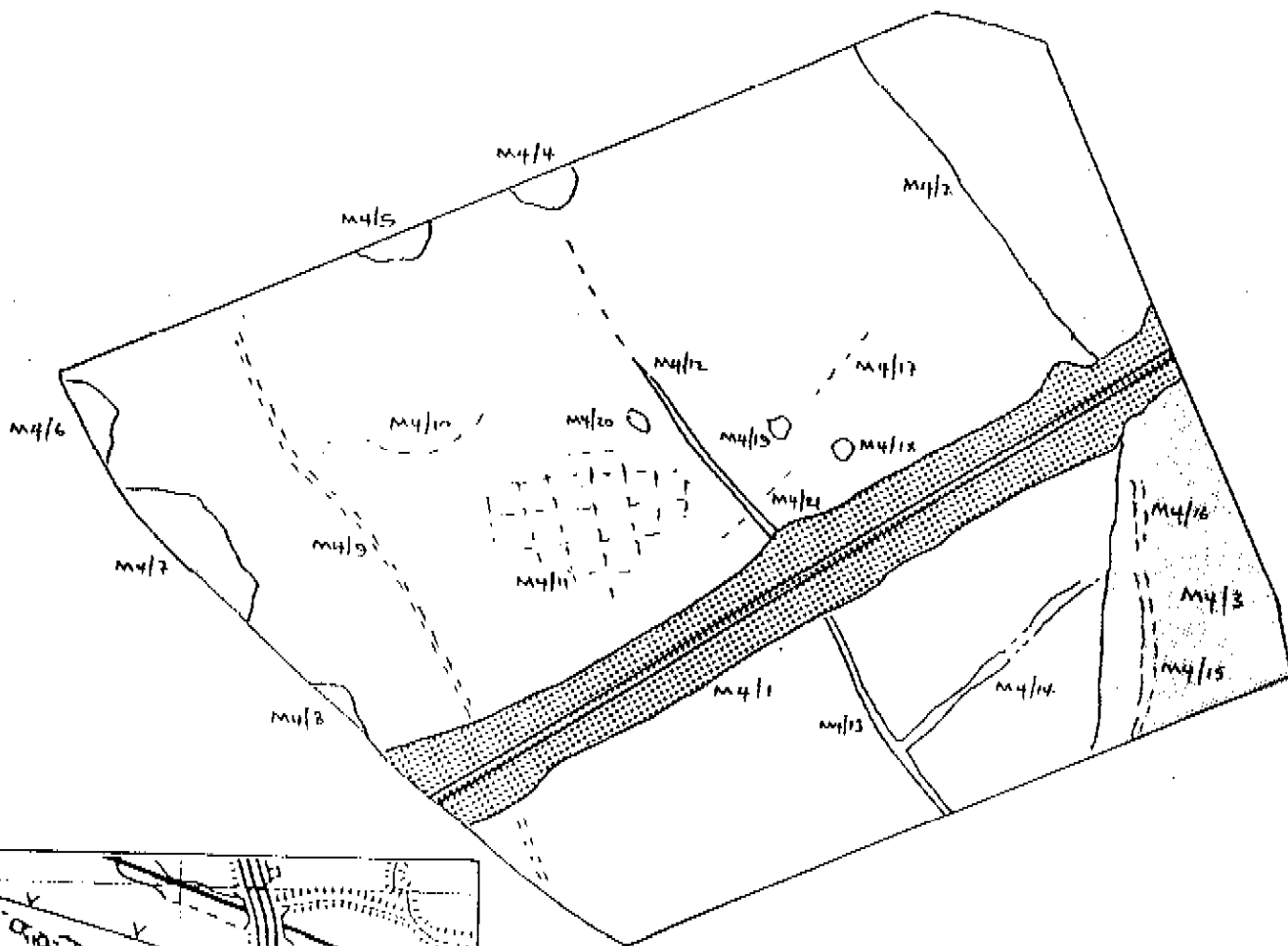
ORIGINAL AT A3

Date May 1994  
 Scale 1:1000

Client RPS CLOUSTON  
 Subject Geophysical Survey - A1(M), Redhouse to Ferrybridge Improvements  
 Plot of magnetometer data processed to reduce the effects of a pipeline - Site 4

Figure 8

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	Magnetically disturbed area
	Strong magnetic disturbance

Date	May 1994
Scale	1:1000
Figure	9

Client	RPS CLOUSTON
Subject	Geophysical Survey A1(M) Redhouse to Ferrybridge Improvements Abstraction of Anomalies / Interpretation - Site 4

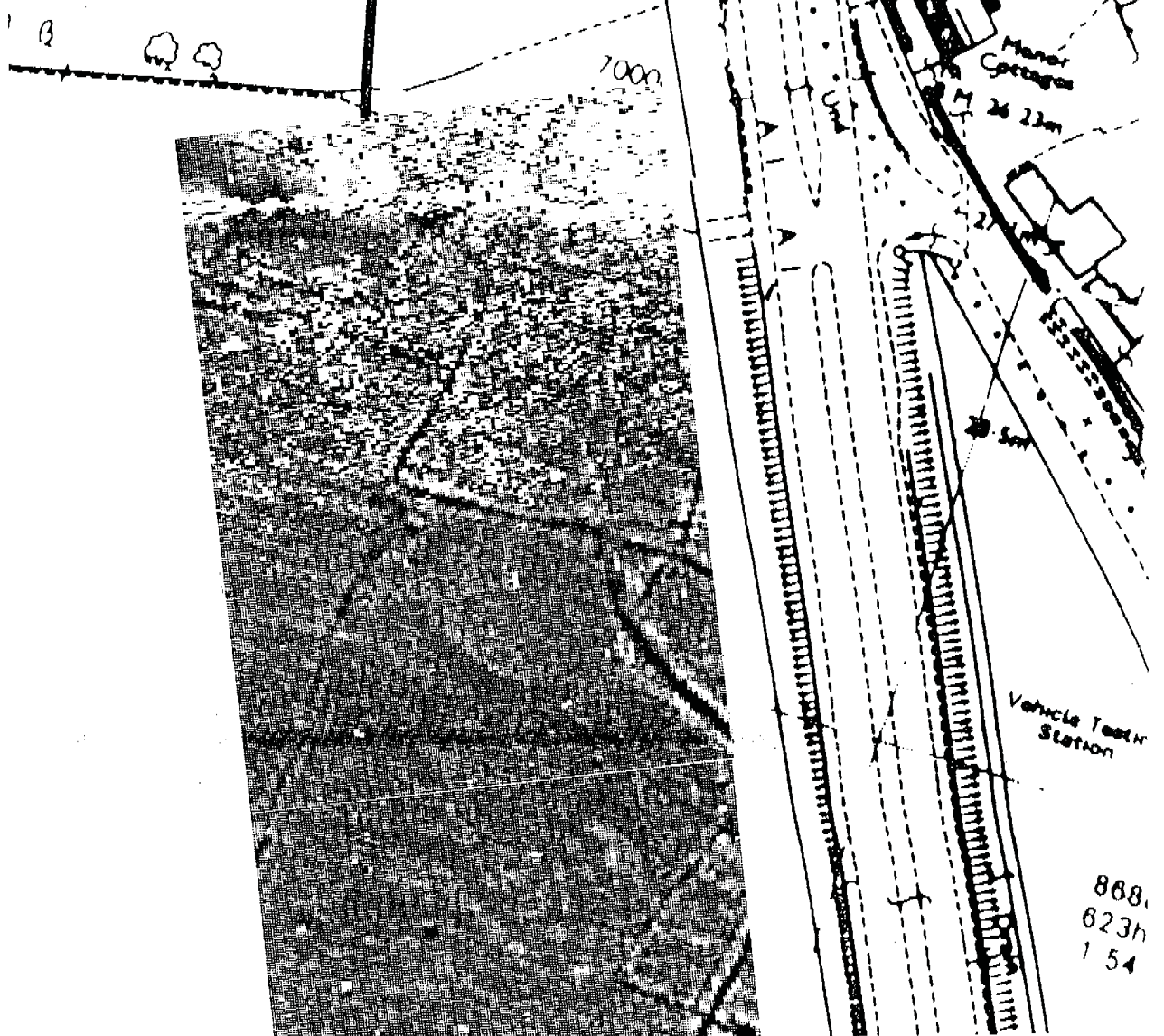
**STRATASCAN™**

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 HIPPEN HOOK ROAD  
 DUTTON UPON SEVERN  
 WORCESTERSHIRE WR8 6SA UK

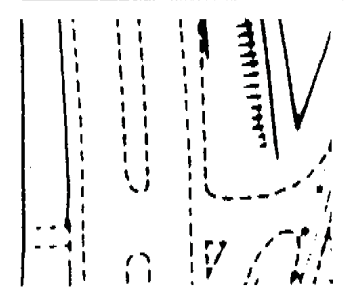
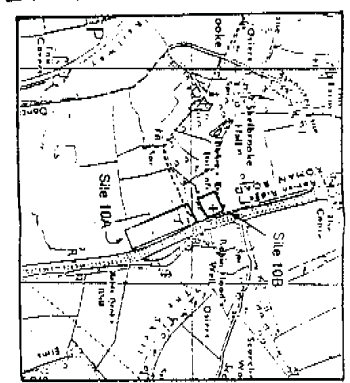
TELEPHONE (0584) 592266



8000  
827ha  
155



868  
823h  
154



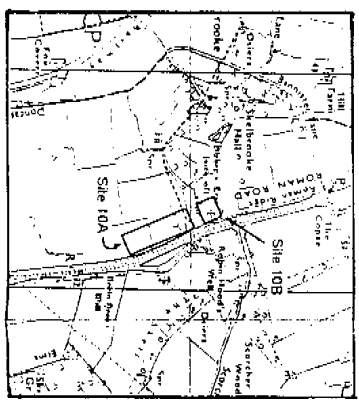
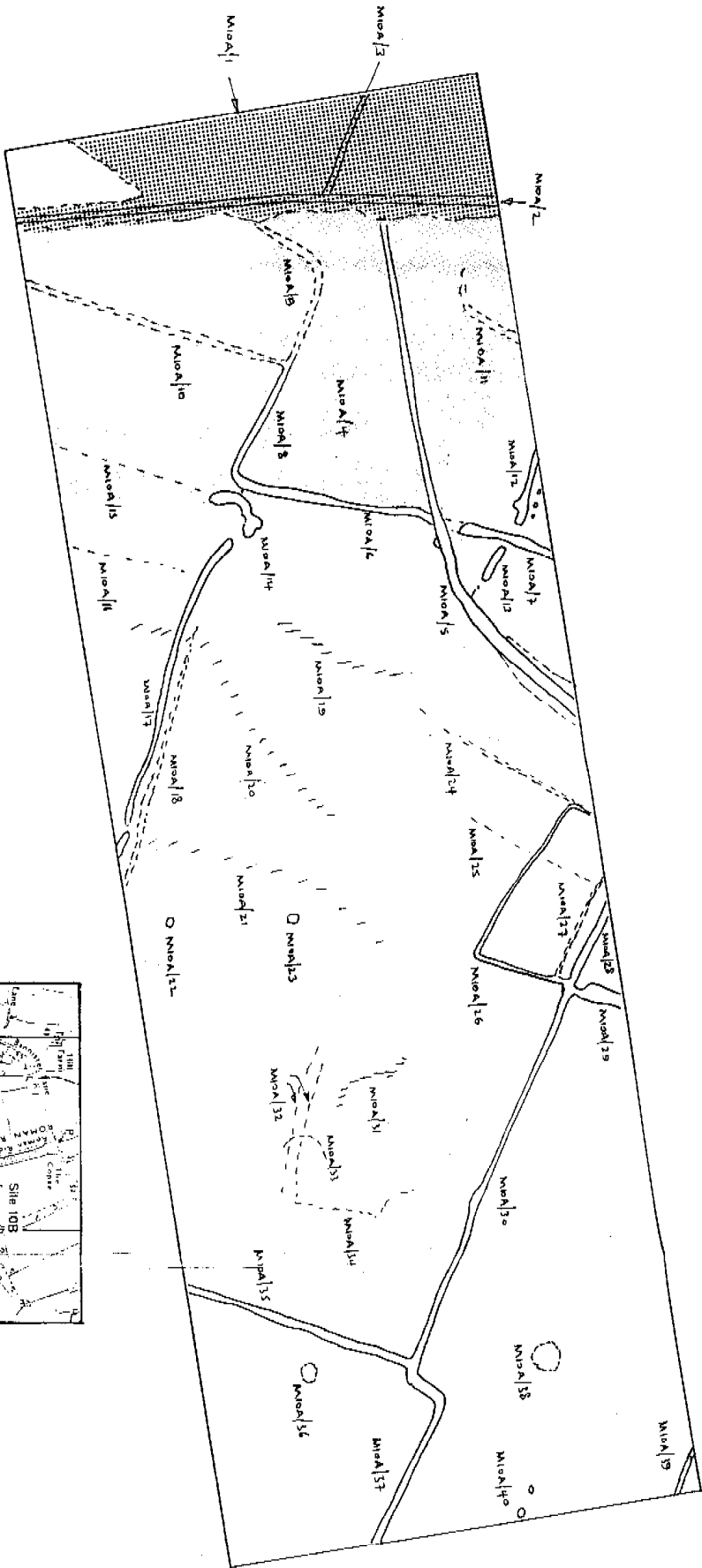
Plotting parameters  
Minimum -3nT (white)  
Maximum +3nT (black)



ORIGINAL AT A3

Date	May 1994	Client	RPS CLOUSTON	Figure	13
Scale	1:1000	Subject	Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements Plot of magnetometer data processed to reduce effect of a pipeline - Site 10A		

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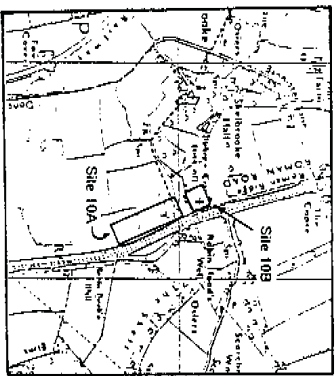


	Magnetically disturbed area
	Strong magnetic disturbance

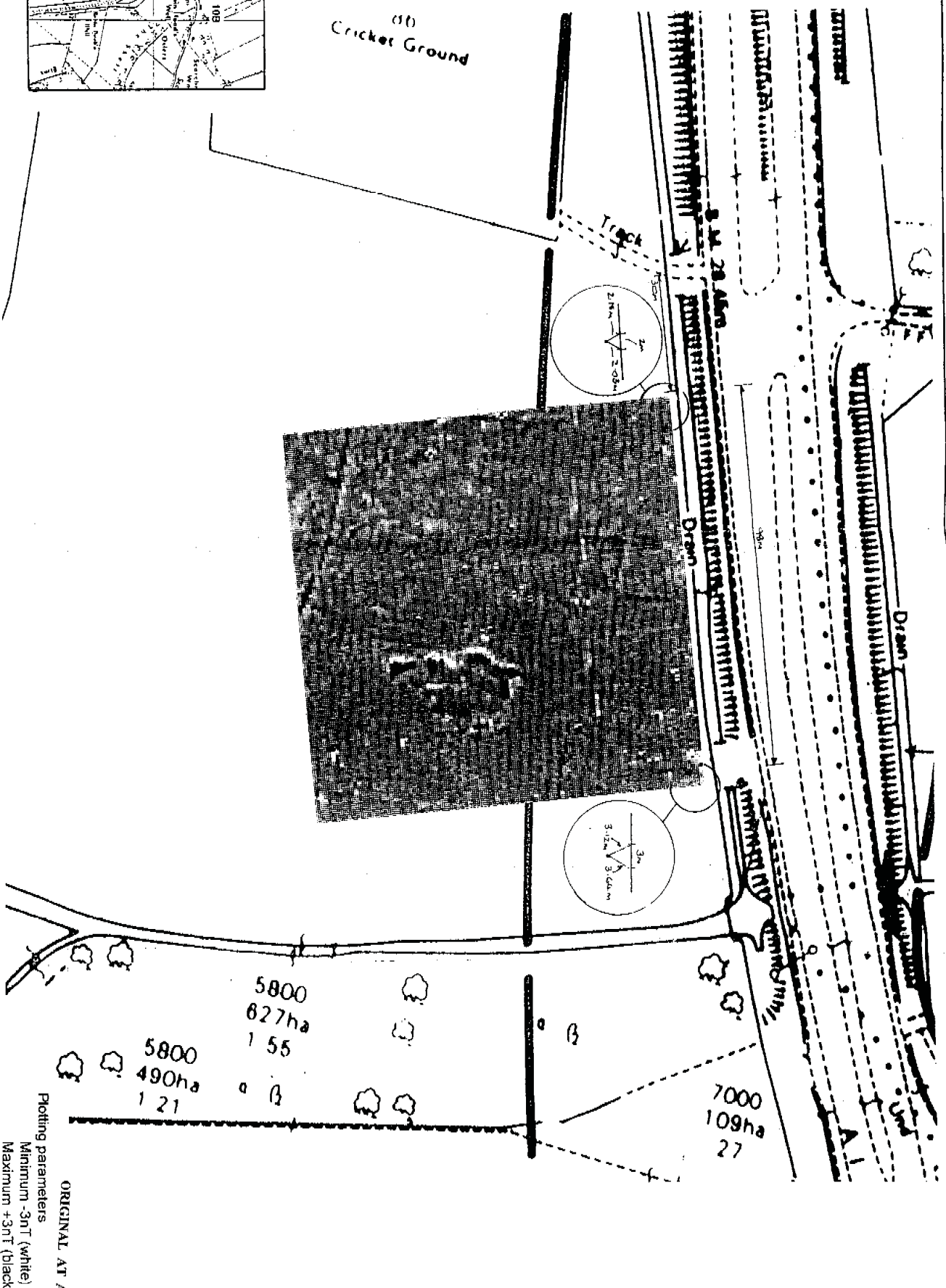
ORIGINAL, AT A3

Date	May 1994	Client	RPS CLOUSTON	Figure	14
Scale	1:1000	Subject	Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements Abstraction of Anomalies / Interpretation - Site 10A		

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Cricket Ground



ORIGINAL AT A3

Plotting parameters  
 Minimum -3nT (white)  
 Maximum +3nT (black)

Date May 1994

Scale 1:1000

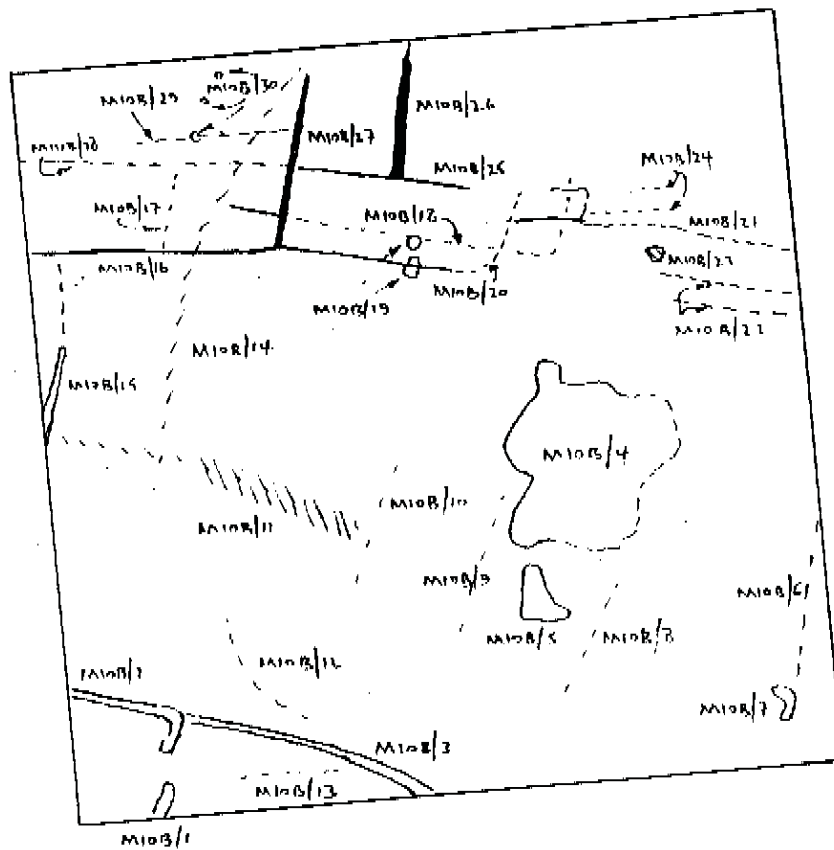
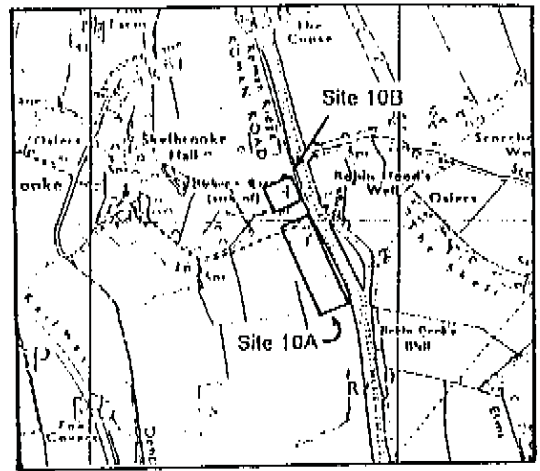
Client RPS CLOUSTON

Subject Geophysical Survey - A (M) Redhouse to Ferrybridge Improvements  
 Plot of processed magnetometer data - Site 10B

Figure 17

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Date May 1994

Client RPS CLOUSTON

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Scale 1:1000

Subject

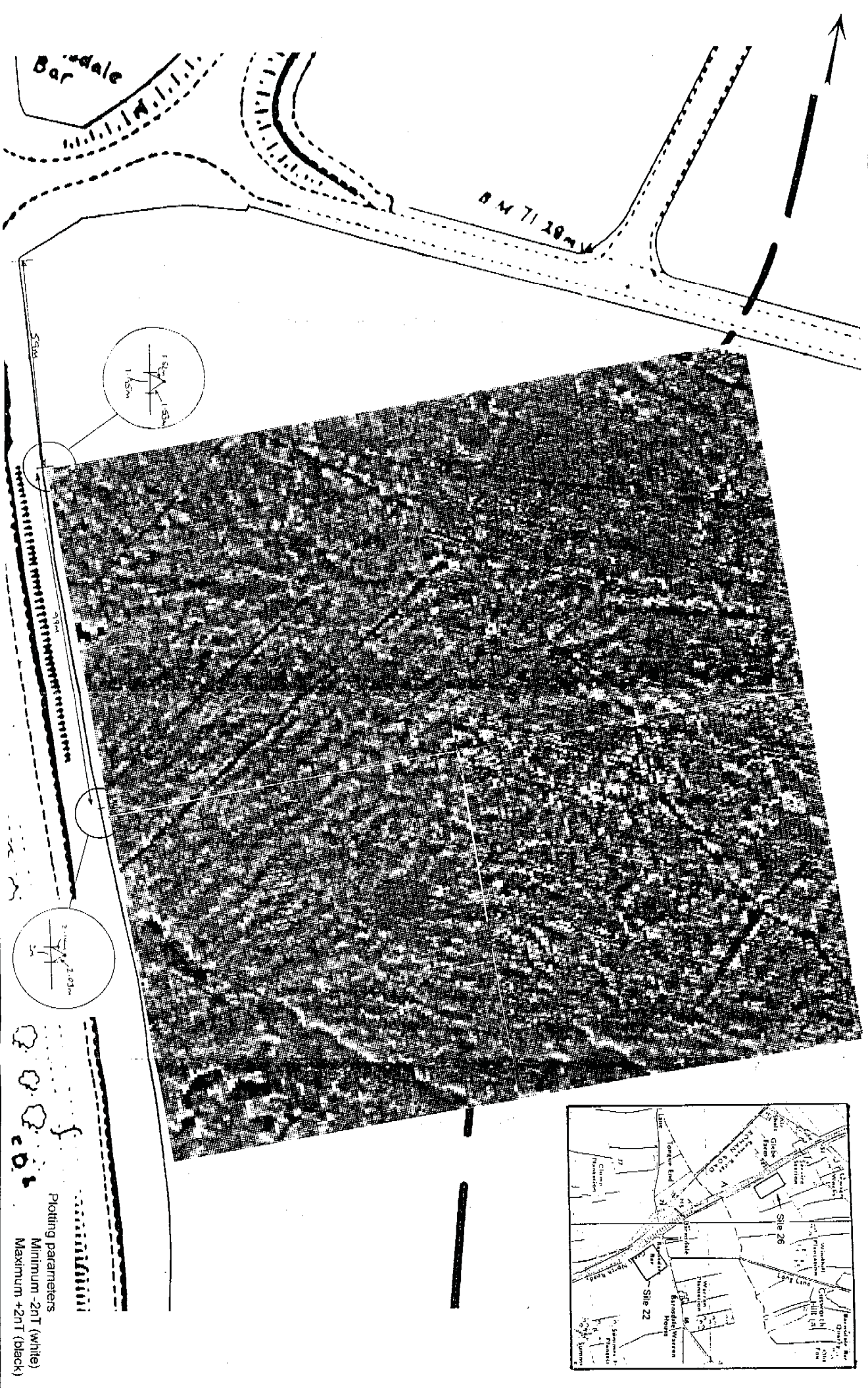
Geophysical Survey  
A1(M) Redhouse to Ferrybridge Improvements  
Abstraction of Anomalies / Interpretation - Site 10B

TILFRIDGE FARM  
UPPER HOOK ROAD  
OFTON UPON SEVERN  
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Figure 18

TELEPHONE (0684) 592266



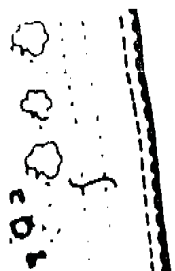
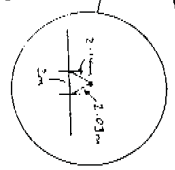


Date May 1994  
 Scale 1:1000

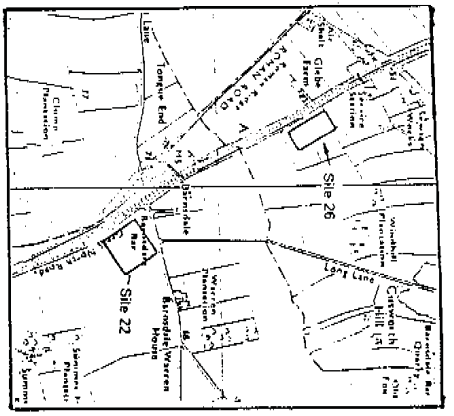
Client RPS CLOUSTON  
 ORIGINAL AT A3  
 Subject Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
 Plot of processed magnetometer data - Site 22

Figure 21

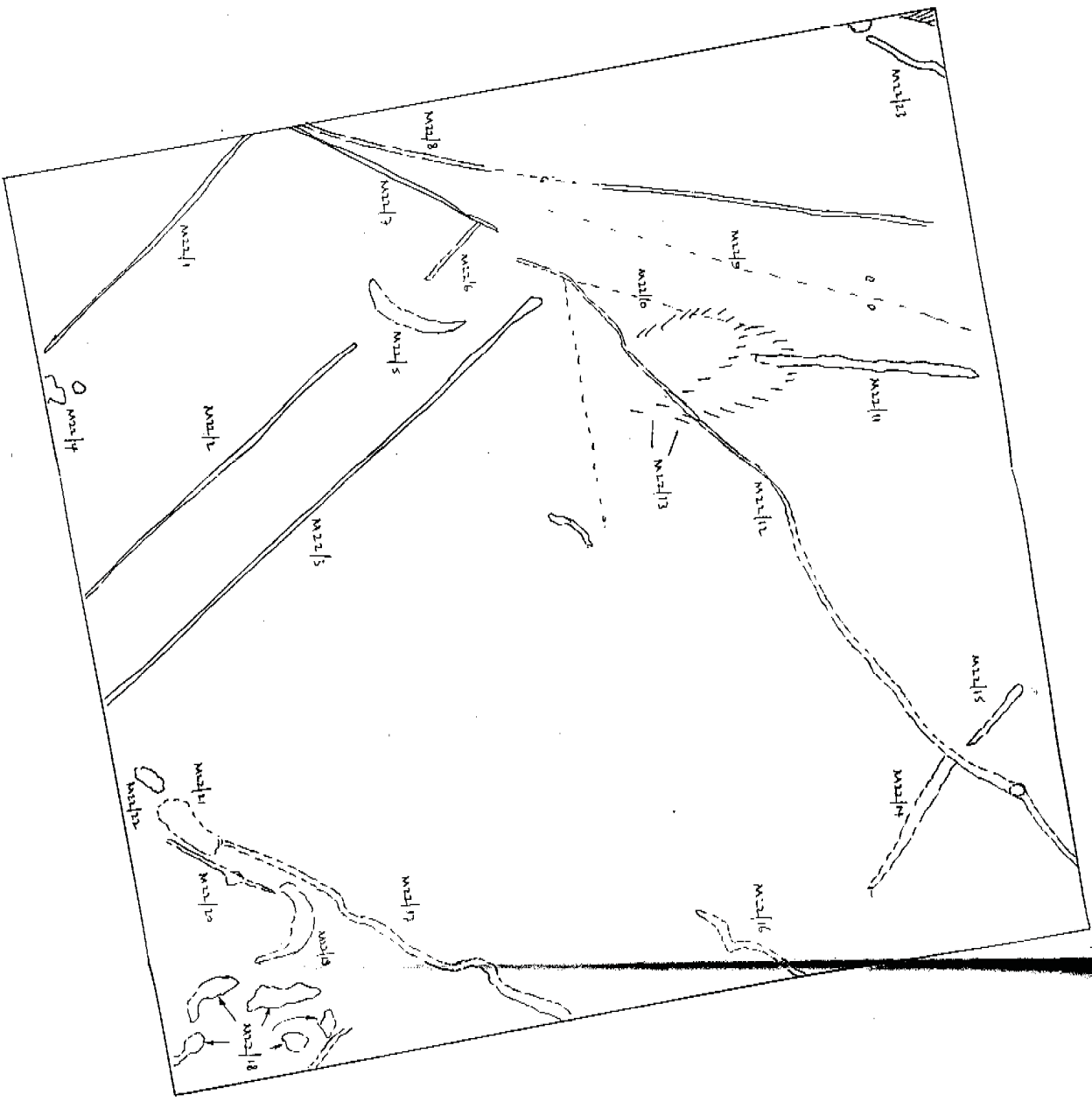
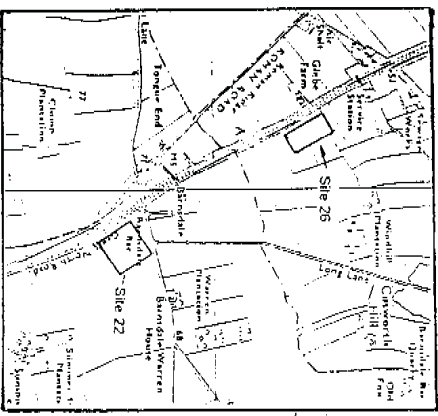
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Plotting parameters  
 Minimum -2nT (white)  
 Maximum +2nT (black)







ORIGINAL, A1 A3

Date May 1994

Client RPS CLOUSTON

Figure 22

Scale 1:1000

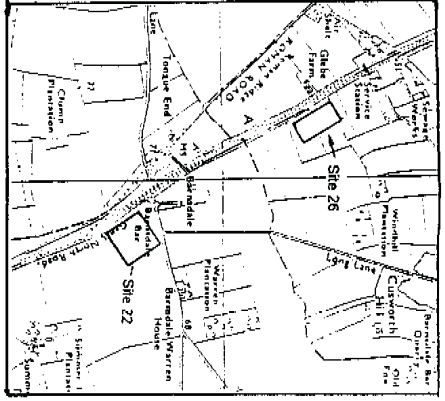
Subject Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
Abstraction of Anomalies / Interpretation - Site 22

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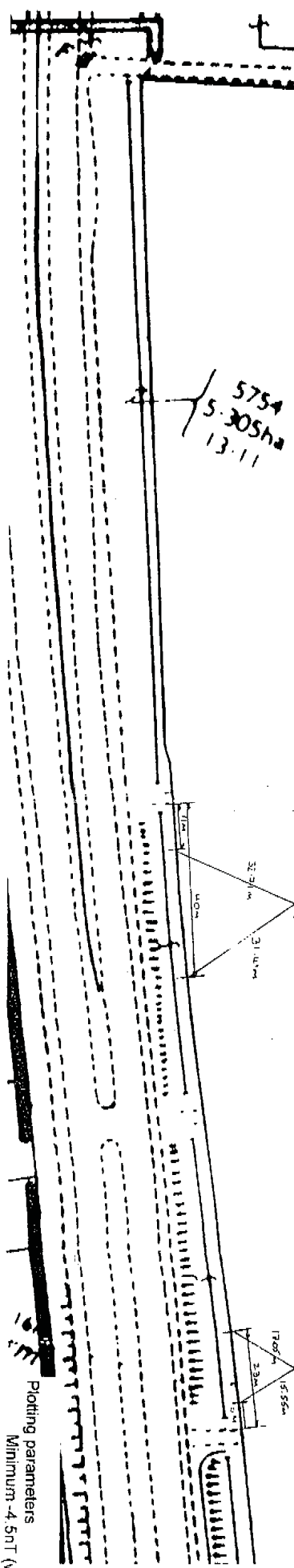
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UPPER HOOK ROAD  
UPTON UPON SEVERN  
WORCESTERSHIRE WR8 0SA UK  
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FAX (0684) 594142



CRAB TREE LANE



575A  
5.305ha  
13.11



Plotting parameters  
Minimum -4.5nT (white)  
Maximum +4.5nT (black)

Date May 1994

Scale 1:1000

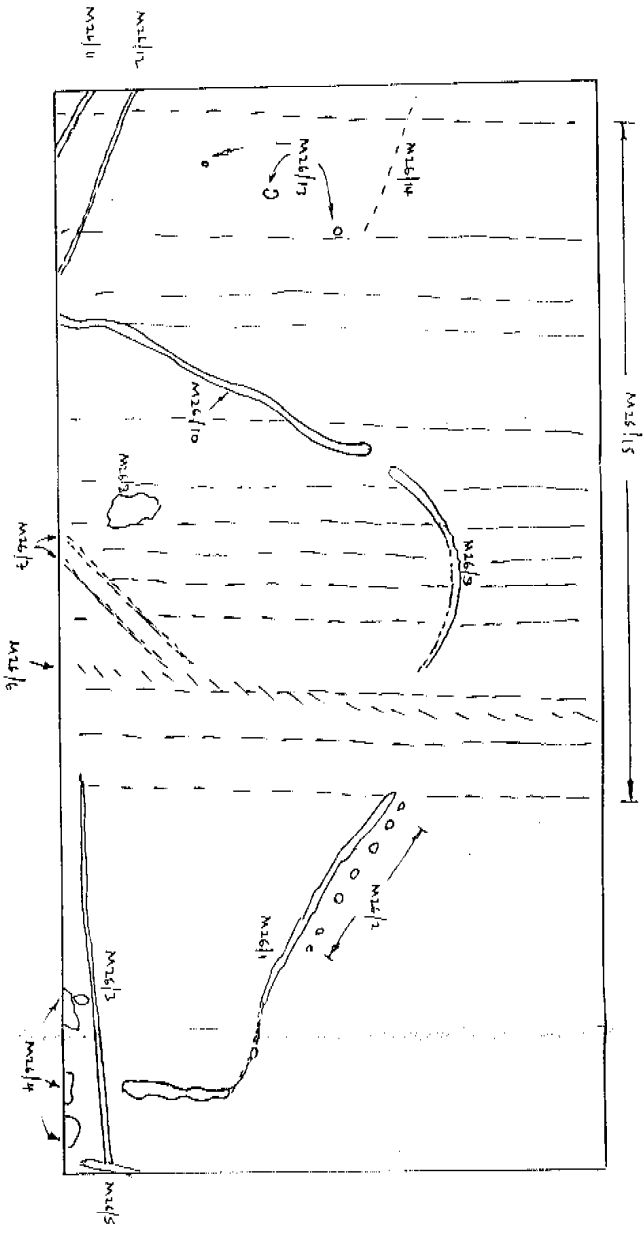
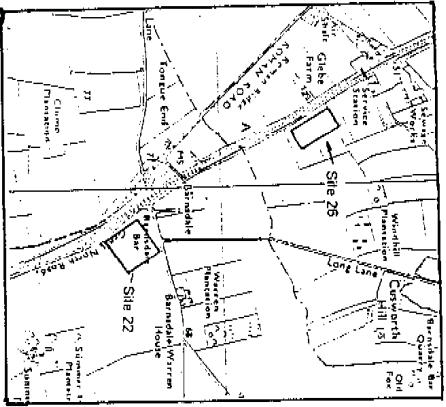
Client RPS CLOUSTON

Subject Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
Plot of processed magnetometer data - Site 26

Figure 25

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ORIGINAL AT A3

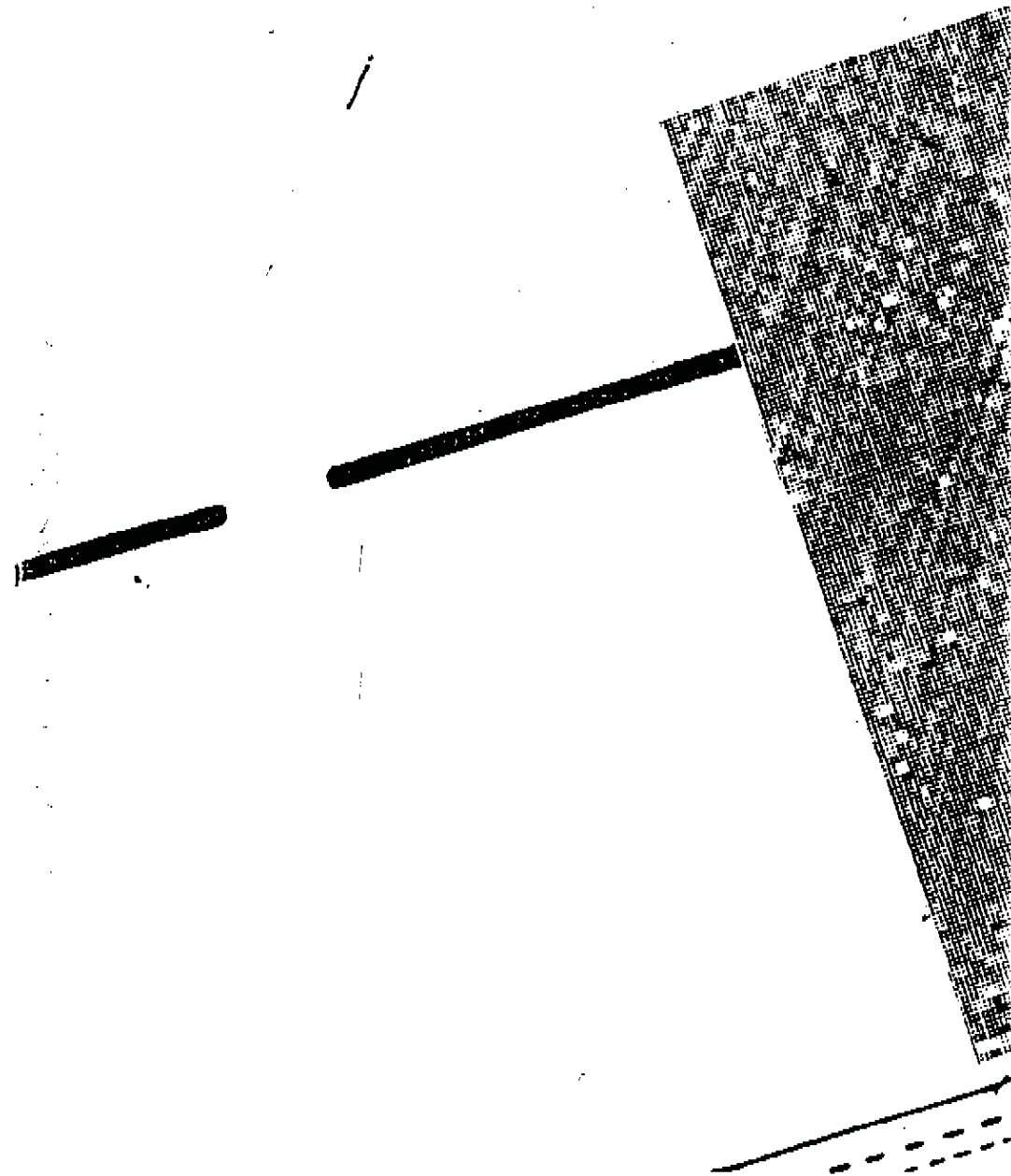
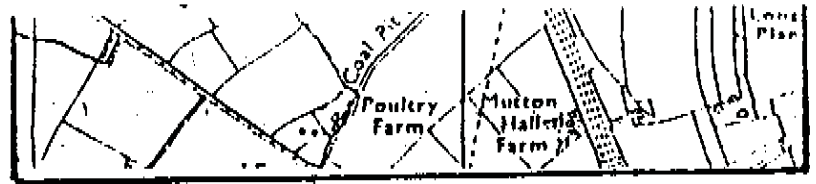
Date May 1994  
Scale 1:1000

Client RPS CLOUSTON  
Subject Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
Abstraction of Anomalies / Interpretation - Site 26

Figure 26

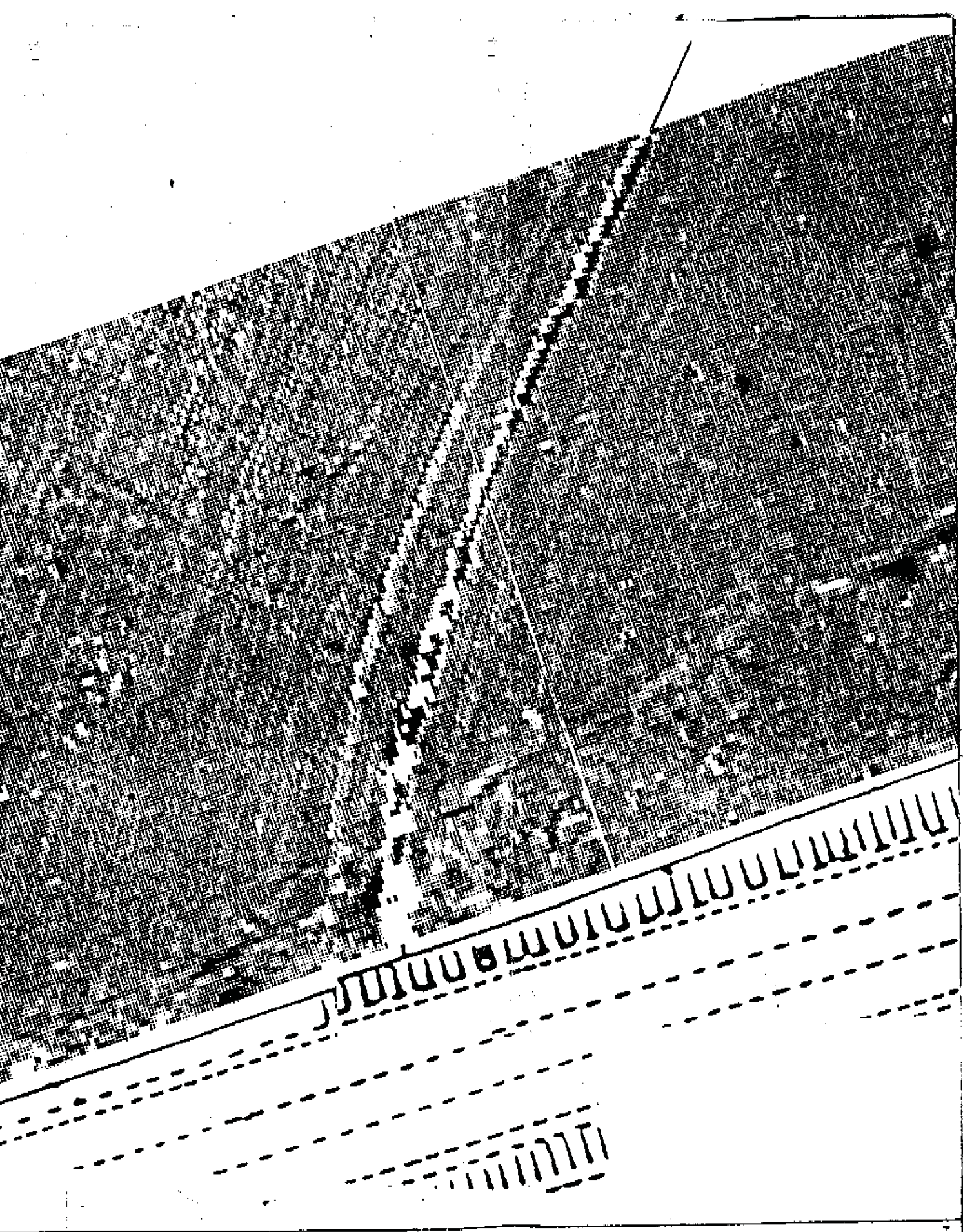
**SCM**  
GEOPHYSICAL & SPECIALIST  
SURVEY SERVICES

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WORCESTERSHIRE WR8 0SA UK  
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FAX (06941) 594142

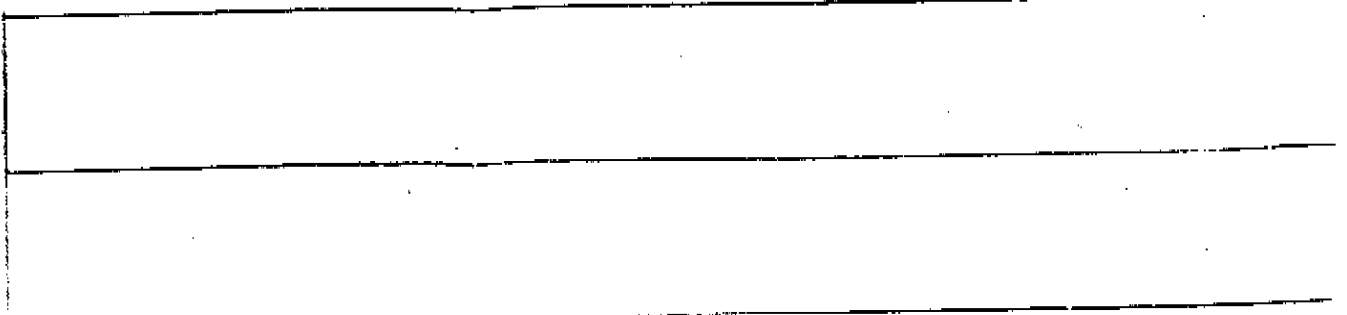
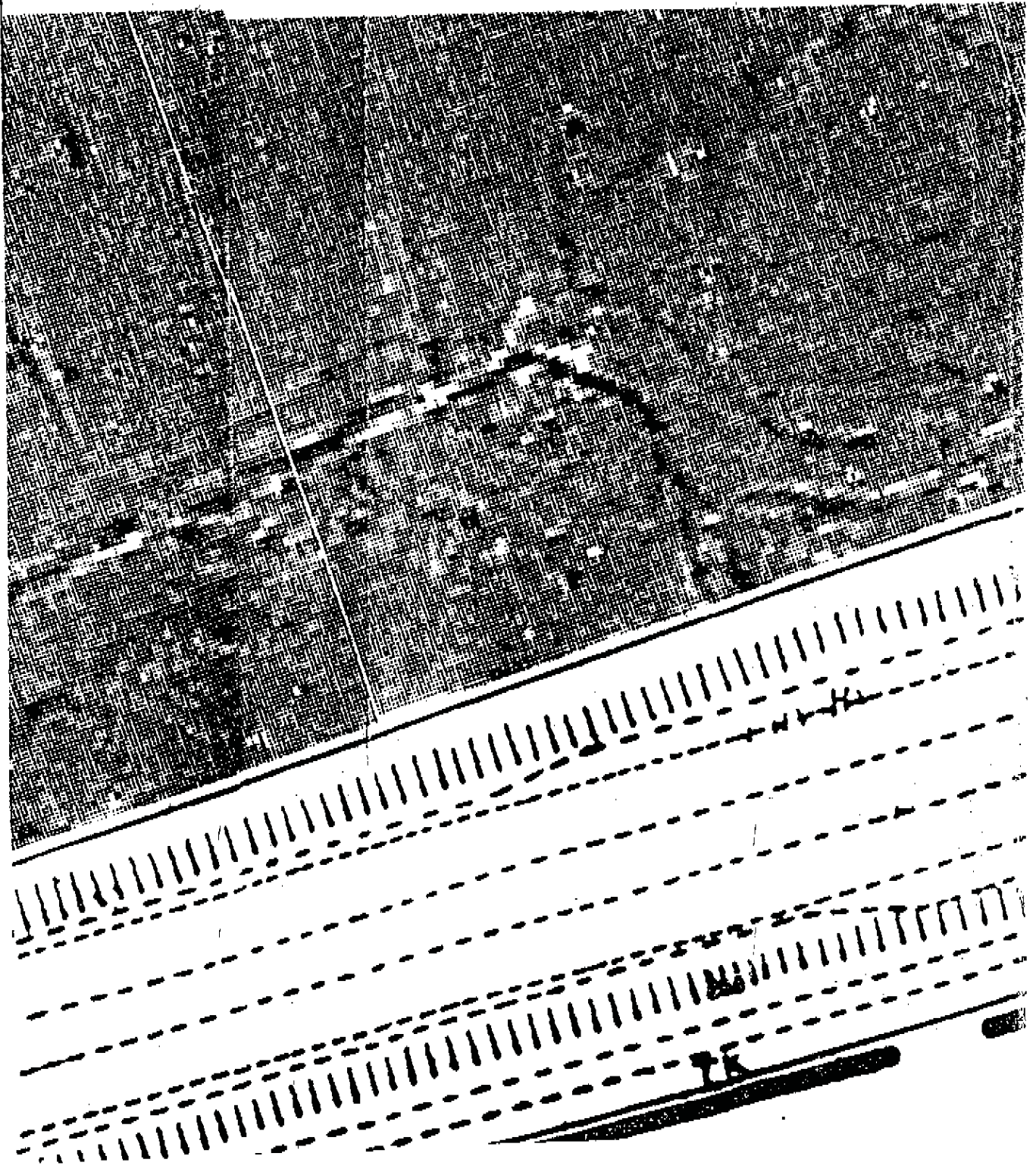


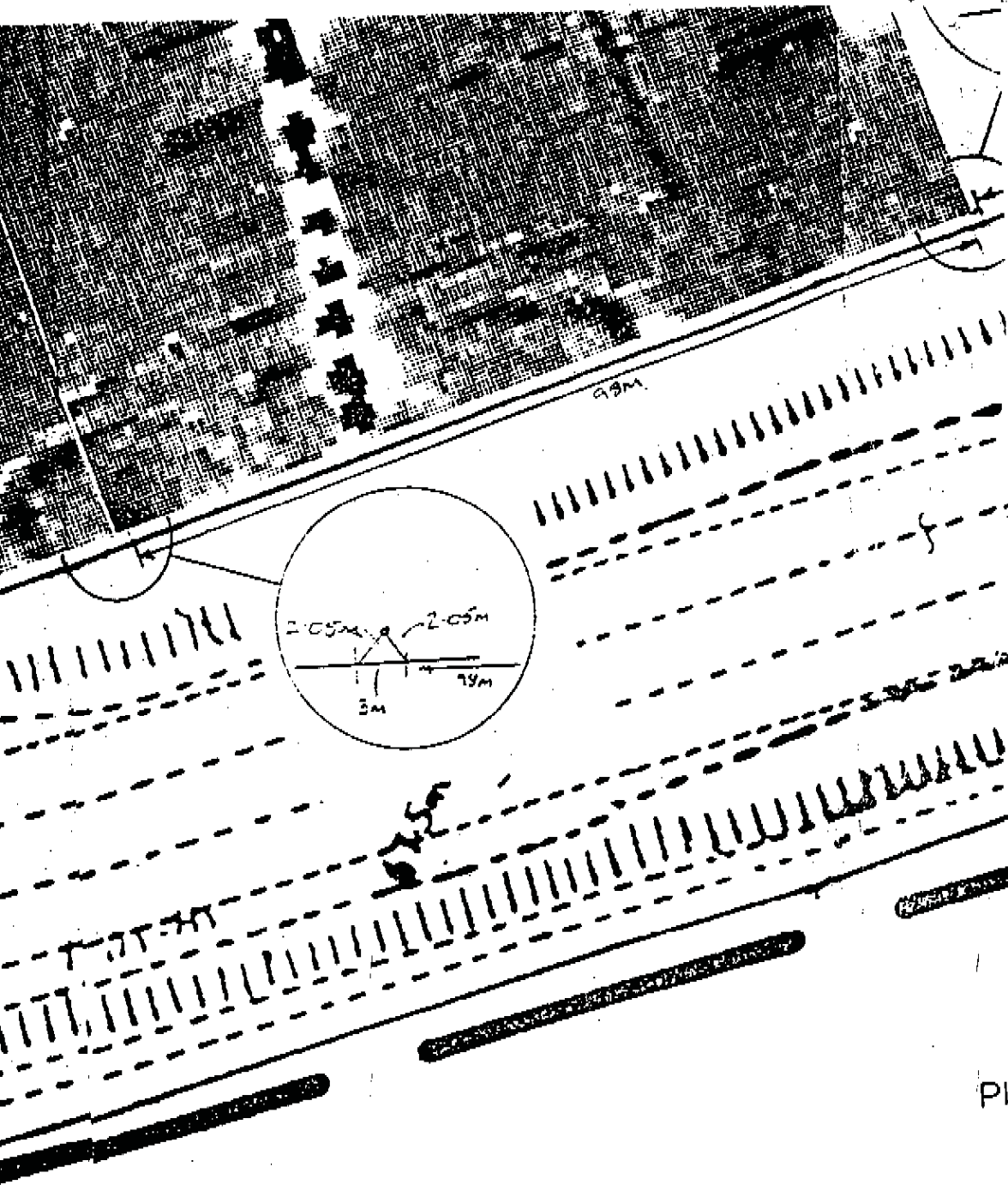
Date	May 1994	Client	RPS CLOUSTC
Scale	1:1000	Subject	Geophysical S Plot of process





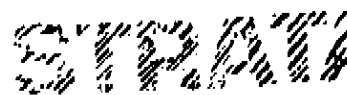
Survey - A1(M) Redhouse to Ferrybridge Improvements  
Aerial magnetometer data - Site 36





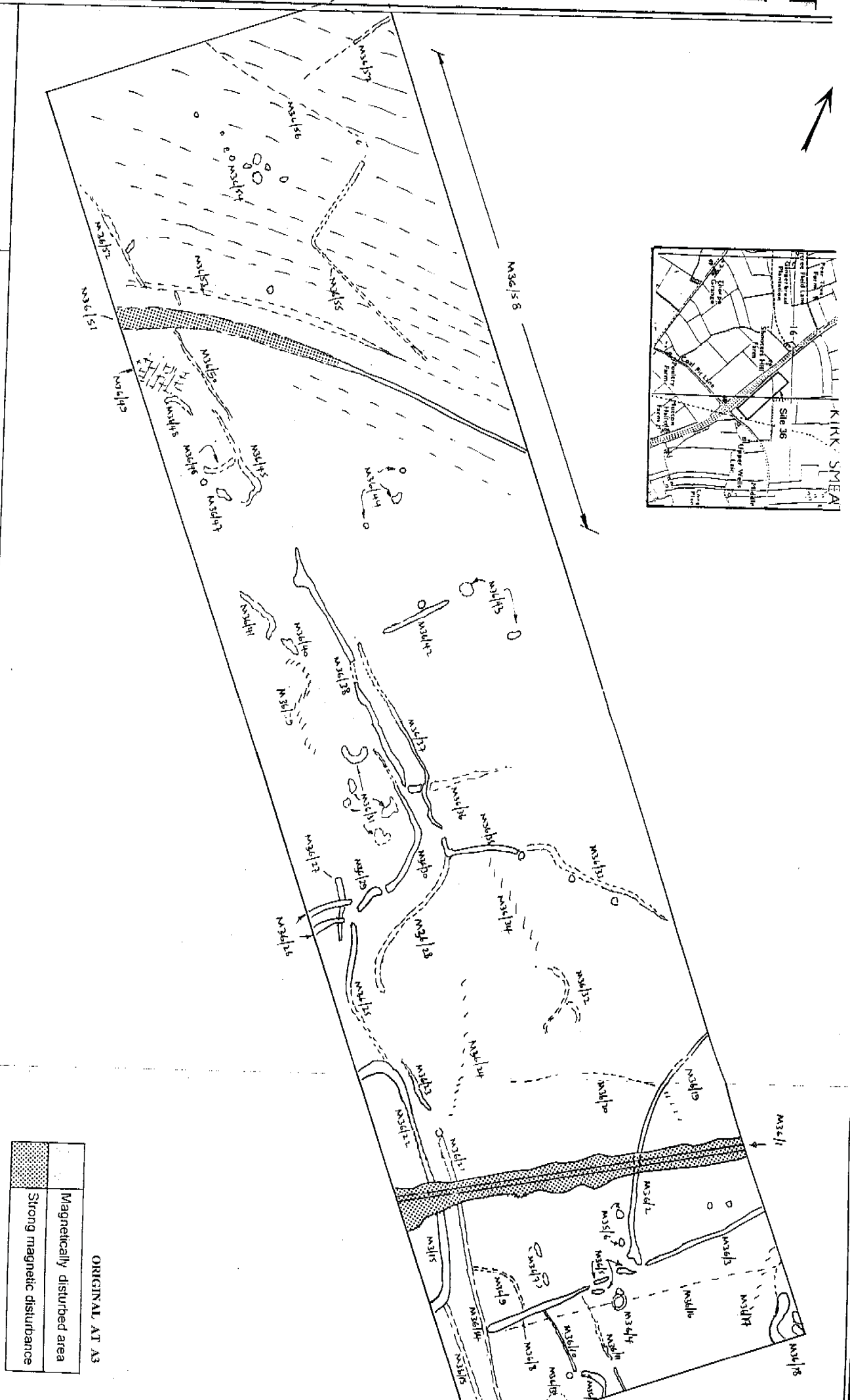
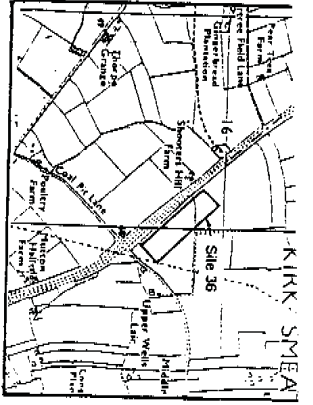
Pl

Figure 29



**GEOPHYSICAL  
SURVEY**





Date May 1994

Client RPS CLOUSTON

Figure 30

Scale 1:1000

Subject Geophysical Survey - AT(M) Redhouse to Ferrybridge Improvements  
Abstraction of Anomalies / Interpretation - Site 36

	Magnetically disturbed area
	Strong magnetic disturbance

ORIGINAL AT A3

**WILLIS TOWERS WOOD**  
**GEOPHYSICAL & SPECIALIST**  
**SURVEY SERVICES**

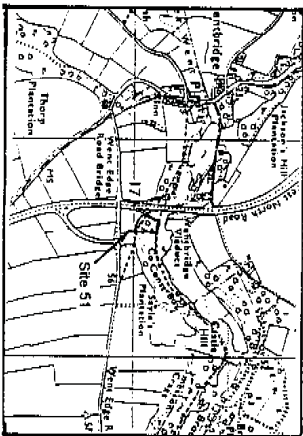
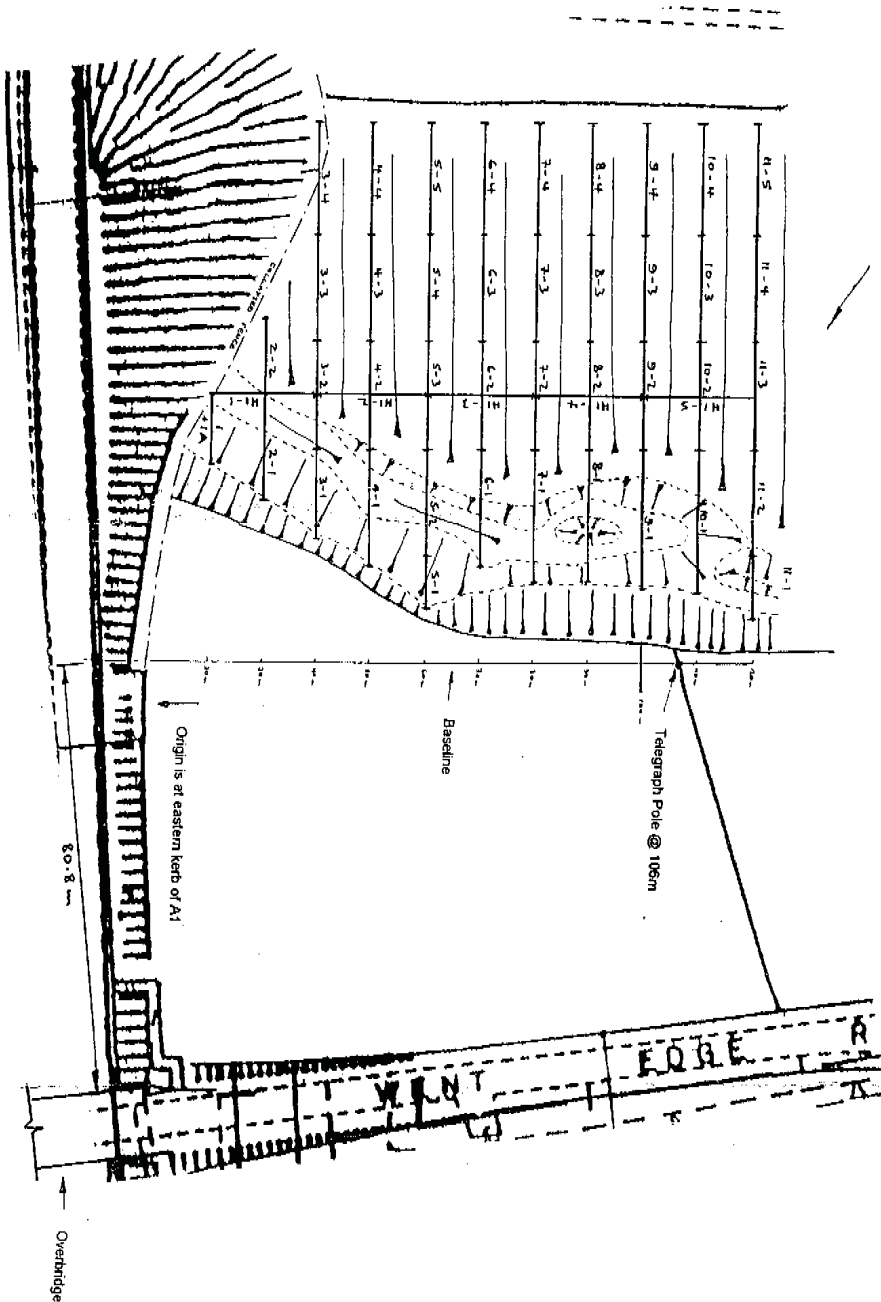
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Survey Directions

Sayle's Plantation



Date May 1994

Client RPS CLOUSTON

Figure 32

Scale 1:1000

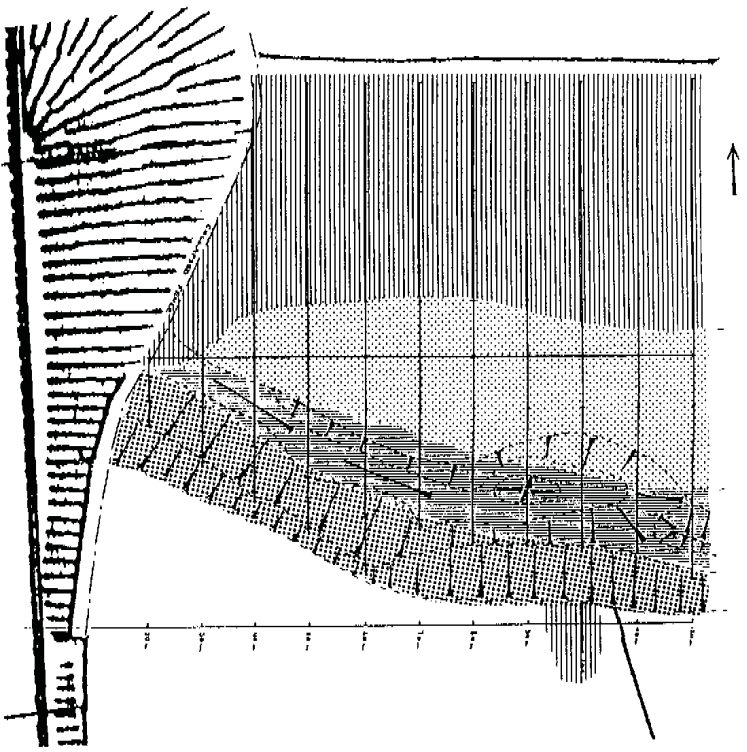
Subject

Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements  
Ground Probing Radar Survey - Site 51 (Sayle's Plantation)  
General layout of survey and setting details

**SPRINT**  
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ORIGINAL AT A3

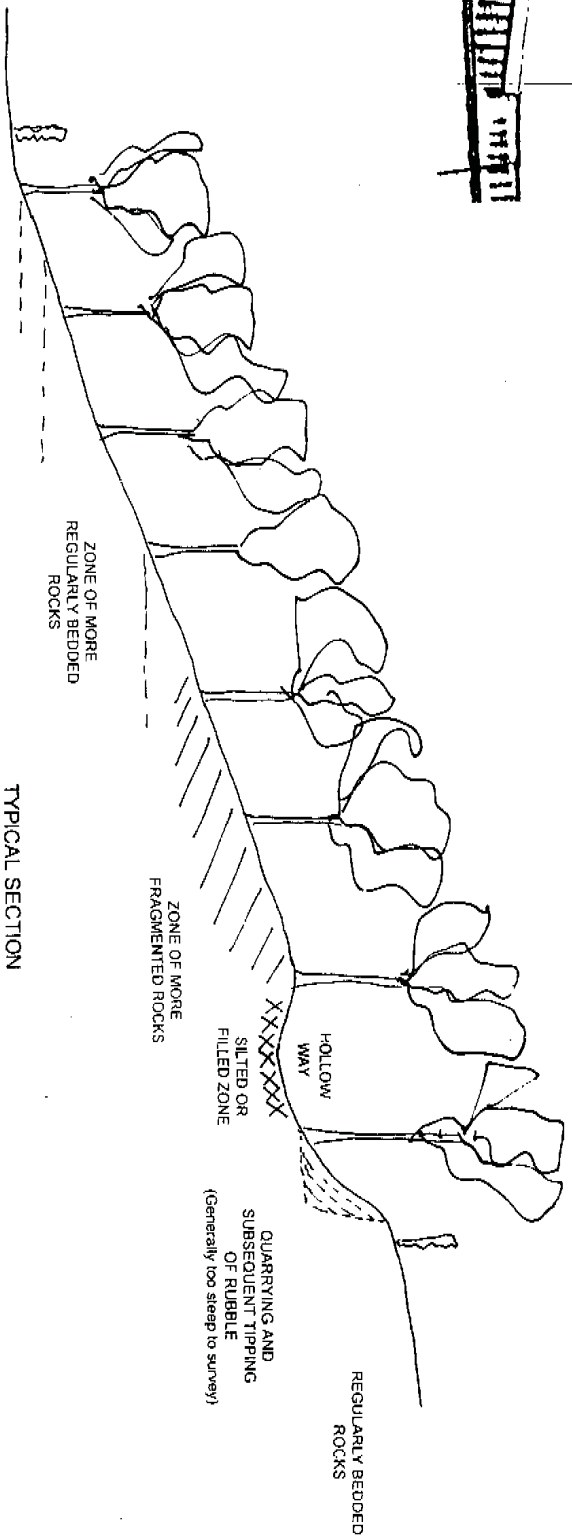
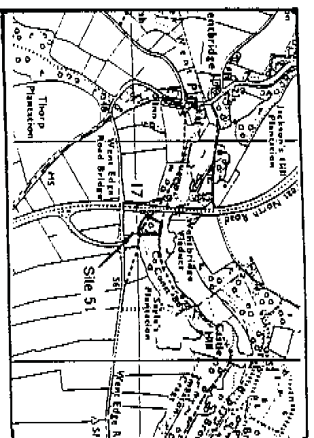


RATIONALISED  
INTERPRETATION PLAN

1:1000

KEY

	ZONE OF MORE REGULARLY BEDDED ROCKS
	ZONE OF MORE FRAGMENTED ROCKS
	SILTED OR FILLED HOLLOW WAY
	QUARRYING AND SUBSEQUENT TIPPING OF RUBBLE



TYPICAL SECTION

1:500

ORIGINAL AT A3

Date	May 1994	Client	RPS CLOUSTON	Figure 34
Scale	As shown	Subject	Geophysical Survey - A1(M) Redhouse to Ferrybridge Improvements Ground Probing Radar Survey - Site 51 (Sayle's Plantation) Interpretation	

**SPRINT**  
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*Appendix 4*

*Gazetteer of Sites in the Study Area*

---

*Appendix 4: Gazetteer of Sites in the Study Area*

Map No	RPS No (in black)	SVR/County Reference No *	Description	Affected by Route
2	1	0041 (South Yorks)	Enclosures and field boundaries (seen from AP) (IA/R-B)	No
2	2	0042 (South Yorks)	Enclosure (seen from AP) (IA/R-B)	No
2	3	3039 (South Yorks)	Roman road, "Roman Ridge" (Roman) earthwork. SM 1179	No
2	4	2510 (South Yorks)	Cropmark (seen from AP) (IA/R-B)	Yes
2	5	0043 (South Yorks)	Enclosure (seen from AP) (IA/R-B)	No
2	6	2509 (South Yorks)	Cropmark (seen from AP) (IA/R-B)	No
2	7	0044 (South Yorks)	Field system (seen from AP) (IA/R-B)	No
2 & 3	8	0051 (South Yorks)	Enclosure and field boundaries (seen from AP) (IA/R-B)	No
2 & 3	9	2525 (South Yorks)	Cropmark, AP (IA/R-B)	No
2 & 3	10	0046 (South Yorks)	Roman fort, with coins, brooch, pottery finds. SM 1222	No
3	11	0302 (South Yorks)	"Bishops Tree" site of oak (Medieval)	No
3	12	0032 (South Yorks)	Enclosure (seen from AP) (IA/R-B)	No
3	13	2910 (South Yorks)	Site of Deserted Medieval Village	No
3	14	0035 (South Yorks)	Enclosure (seen from AP) (IA/R-B)	No
3	15	0045 (South Yorks)	Hut circle (seen from AP) (IA/R-B)	No

Map No	RPS No (in black)	SMR/Clouon Reference No	Description	Affected by Route
3	16	0252 (South Yorks)	Cropmark (IA/R-B)	No
3	17	1804 (South Yorks)	Earthwork long mound (U/D)	No
3	18	2522 (South Yorks)	Cropmark (IA/R-B)	No
3	19	0037 (South Yorks)	Enclosure (AP) (IA/R-B)	No
3	20	0036 (South Yorks)	Enclosure (AP) (IA/R-B)	No
3	21	0038 (South Yorks)	Enclosure (AP) (IA)	No
3 & 4	22	0048 (South Yorks)	Enclosure (AP) (IA/R-B)	Yes
3 & 4	23	0049 (South Yorks)	Enclosure (AP) (IA/R-B)	No
3 & 4	24	0047 (South Yorks)	Enclosure (AP) (IA/R-B)	No
4	25	9169 (North Yorks)	Trackway and enclosures (AP)	No
4	26	9172 (North Yorks)	Ditched field boundaries (AP)	Yes
4	27	9170 (North Yorks)	Round barrow cemetery(?), cropmarks (AP)	?
4	28	0040 (North Yorks)	Disused railway	Yes
4	29	9168 (North Yorks)	Enclosures, field boundaries, cropmarks (AP)	No
4	30	9173 (North Yorks)	Enclosures? cropmarks (AP)	No
4	31	9188 (North Yorks)	ring ditch and track (AP)	No
4	32	(North Yorks)	[to be completed]	No
4	33	9171 (North Yorks)	Enclosure, field system? cropmarks (AP)	No

Map No.	RPS No. (in black)	SMR/County Reference No.	Description	Affected by Route
4	34	9189 (North Yorks)	Enclosures, field boundary, cropmarks (AP)	No
4	35	9190 (North Yorks)	Enclosure, trackway, cropmarks (AP)	No
4	36	9191 (North Yorks)	Extensive enclosure complex with enclosures, trackways and ditched field systems, cropmarks (AP)	Yes
4	37	(North Yorks)	Enclosure, field boundaries, cropmarks (AP)	No
4	38	(North Yorks)	[to be completed]	No
4	39	9192 (North Yorks)	Trackway, cropmarks (AP)	No
4	40	9167 (North Yorks)	enclosure? (AP)	No
4	41	9193 (North Yorks)	complex of enclosures, trackways, field boundaries (AP)	No
4	42	9164 (North Yorks)	double curved ditch, enclosure? Cropmark (AP)	No
5	43	0029 (West Yorks)	Sub-rectangular enclosure, AP (? IA/R-B)	No
5	44	0038 (West Yorks)	Plough lynchets of uncertain date on hillside generally south east of Wentbridge Lane	No
2	45	(South Yorks)	Castle Hill, Hampole. SAM	No
2	46	(South Yorks)	Cromwells Battery, medieval motte & bailey castle. SAM	No
2	47	(South Yorks)	Robin Hoods Well. 18th Century structure	No
5	48	9194 (North Yorks)	Complex and extensive cropmarks	No
2	49	(South Yorks)	Roman road, Barnsdale Bar	Yes
5	50	9164/5000	Castle Hill enclosure.	No
5	51	-	Magnesian Limestone gorge, poss. palaeolithic sites	Yes

Map No	RPS No (in black)	SMR/County Reference No	Description	Affected By Route
5	52	0037 (West Yorks)	Site of Wentbridge Mill and associated waterworks (dam, leat, etc) documented from 13th century	No
5	53	0036 (West Yorks)	Site of former chapel of Wentbridge	No

*Appendix 5*

*Owen Williams Aerial Photographs in Study Area*

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*Appendix 5: Owen Williams Aerial Photographs in Study Area*

Map No	OW AP Site No. (in red)	Description	Affected by Route
2	104 *	Linear ditches	No
2	100	Linear ditch	?No
2	160	Rectilinear enclosures	No
2	168	Linear ditches	No
2	169	Linear ditches	No
2	170	Enclosure	?No
2	099	Linear features [see RPSs 4 and 5]	Yes
2	009	Linear ditch	No
2	172/3	Enclosures [see RPS 6]	No
2	114	Linear features	Yes
2	115	Enclosures [see RPS 7]	No
2	116	Ridge and furrow	?Yes
2	117	Linear feature [see RPS 45]	No
2	120	Linear feature (?geological)	No
3	148	?Trackway and enclosures [see RPS 8]	?No
3	147	Roman Fort [see RPS 10]	?No
3	123	?Trackway/enclosure	No
3	125	Deserted medieval village [see RPS 13]	No
3	126	Enclosures, ridge and furrow [see RPS 19]	No
3	143	Linear features [see RPS 15]	Yes
3	141	Trackways and enclosures [see RPS 22]	Yes
3	127	Enclosure	No

Map No	QW AP Site No (in red)	Description	Affected by Route
3	128	Enclosure	No
3	129	?Geological feature	No
4	140	Enclosure (IA/R-B) [see RPS 22]	Yes
4	139	?Pit alignment	No
4	131	Enclosures [see RPS 26]	Yes
4	132	Linear features [see RPS 27]	Yes
4	076	Enclosures [see RPS 33]	No
4	074	?Trackway	No
4	072	?Trackway	No
4	071	Enclosures and field system [see RPS 36]	No
4	069	?Field system	No
5	023	Rectilinear enclosures, field boundaries	Yes
5	038	Trackway, field boundaries	No
5	040	Field boundaries, rectangular and circular enclosure	No
5	018	Rectilinear boundary ?enclosure, circular enclosure, ridge and furrow	No
5	042	Field boundaries, small square enclosure	No
5	043	Trackways, field boundaries, enclosures (round and irregular)	No

*Appendix 6*

*Abbreviations*

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## Appendix 6: Abbreviations

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AD	Anno Domini
AP	Aerial Photography
BC	Before Christ
DoE	Department of the Environment
DOT	Department of Transport
EH	English Heritage (Historic Buildings & Monuments Commission)
ES	Environmental Statement
IA	Iron Age
NYCC	North Yorkshire County Council
PPG16	DoE <i>Planning Policy Guidance no. 16 on Planning and Archaeology</i> November 1990
R-B	Romano-British
RCHM(E)	Royal Commission on Historical Monuments (England)
SDC	Selby District Council
SM	Scheduled Monument
SMR	Sites and Monuments Record
SYAS	South Yorkshire Archaeology Service
TP	Trial Pit
WYAS	West Yorkshire Archaeology Service

*PLANS*

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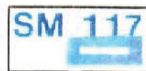
# A1(M) REDHOUSE TO FERRYBRIDGE IMPROVEMENT

## ARCHAEOLOGICAL FEATURES

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### KEY

ORIGINAL IN  
COLOUR



Scheduled Monuments



Trial Pits



Aerial Photograph Sites



Sites and Monuments Record Sites



Geophysical Survey



Fieldwalking

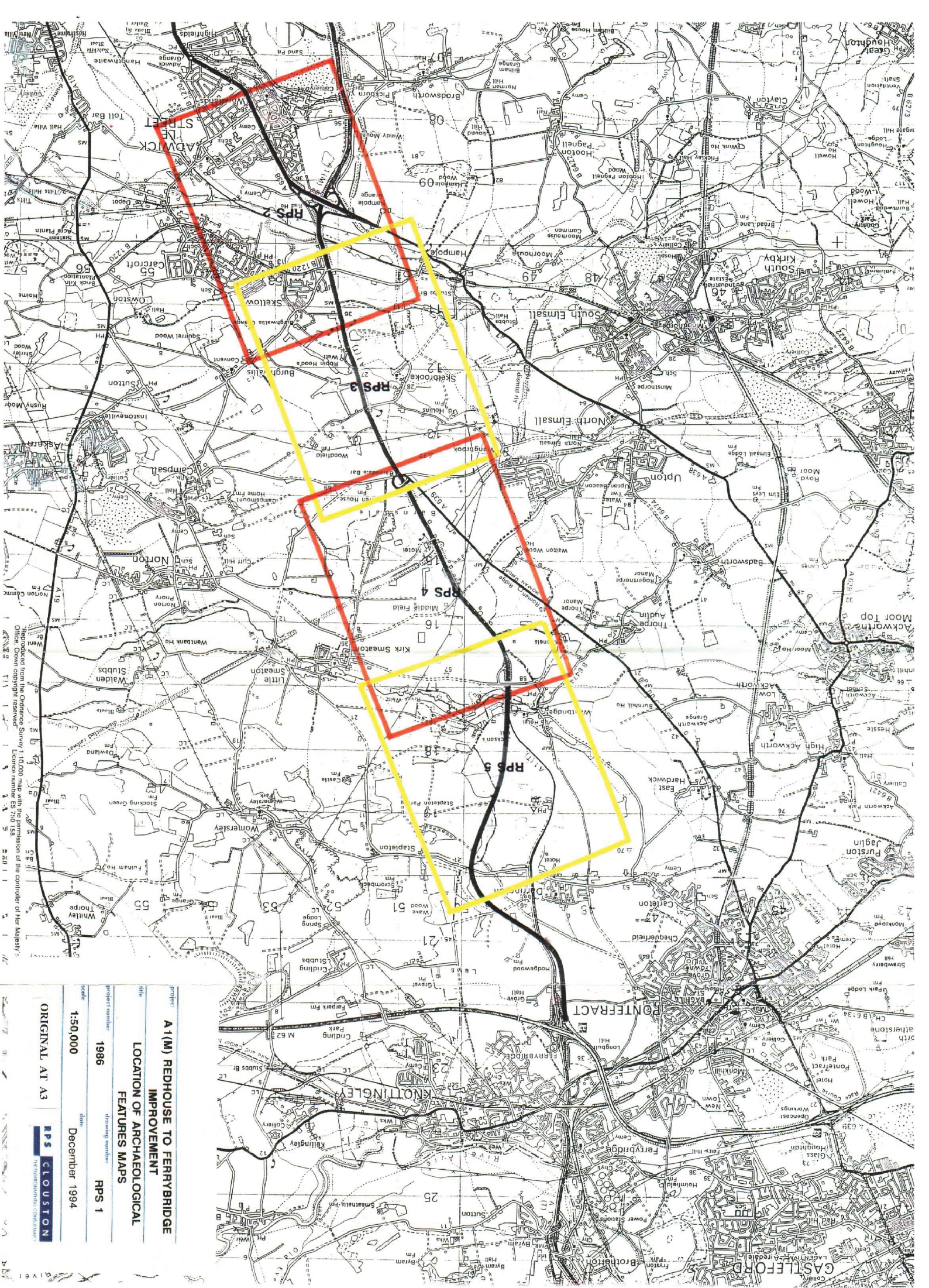


Geophysical Survey and Fieldwalking



Sites where further work is required  
(see Sections 5 and 6)

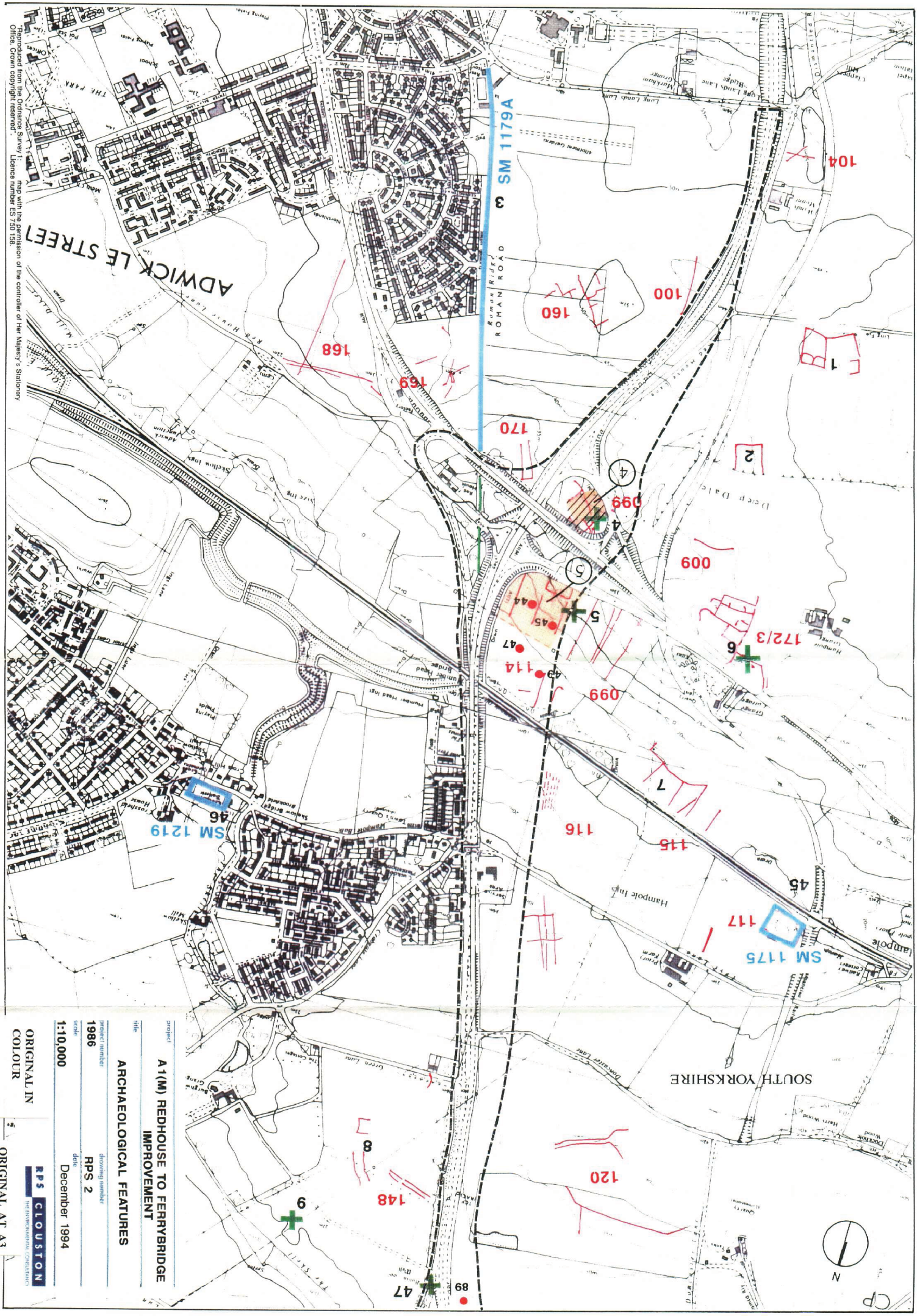




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 title: **LOCATION OF ARCHAEOLOGICAL FEATURES MAPS**  
 project number: **1986**  
 drawing number: **RPS 1**  
 scale: **1:50,000**  
 date: **December 1994**  
**RPS CLOUSTON**  
THE ARCHAEOLOGICAL CONSULTANTS





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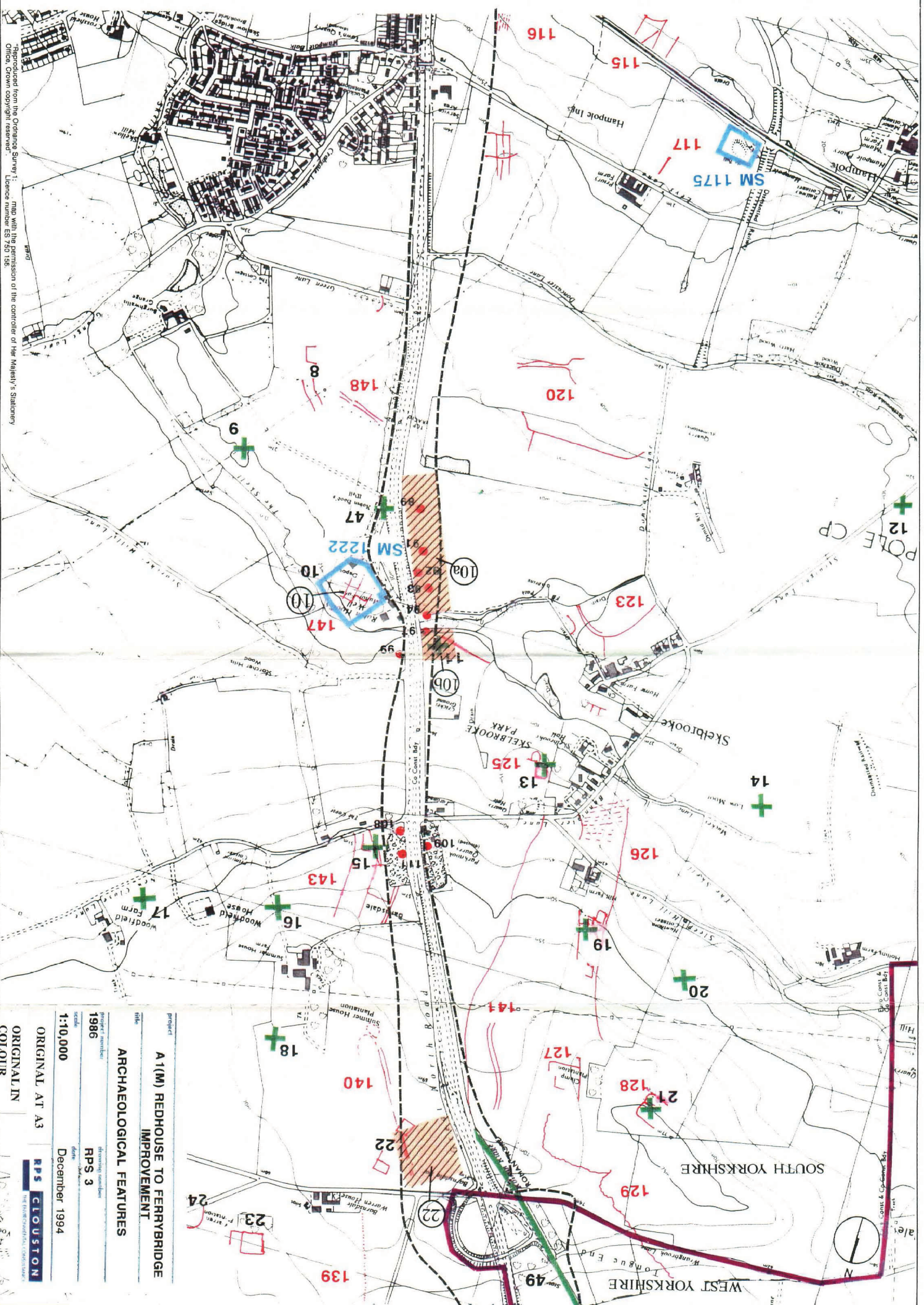
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 date: **December 1994**

**RPS CLOUSTON**  
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 A1(M) REDHOUSE TO FERRYBRIDGE  
 IMPROVEMENT

**Archaeological Features**

**Project Number**  
 1986

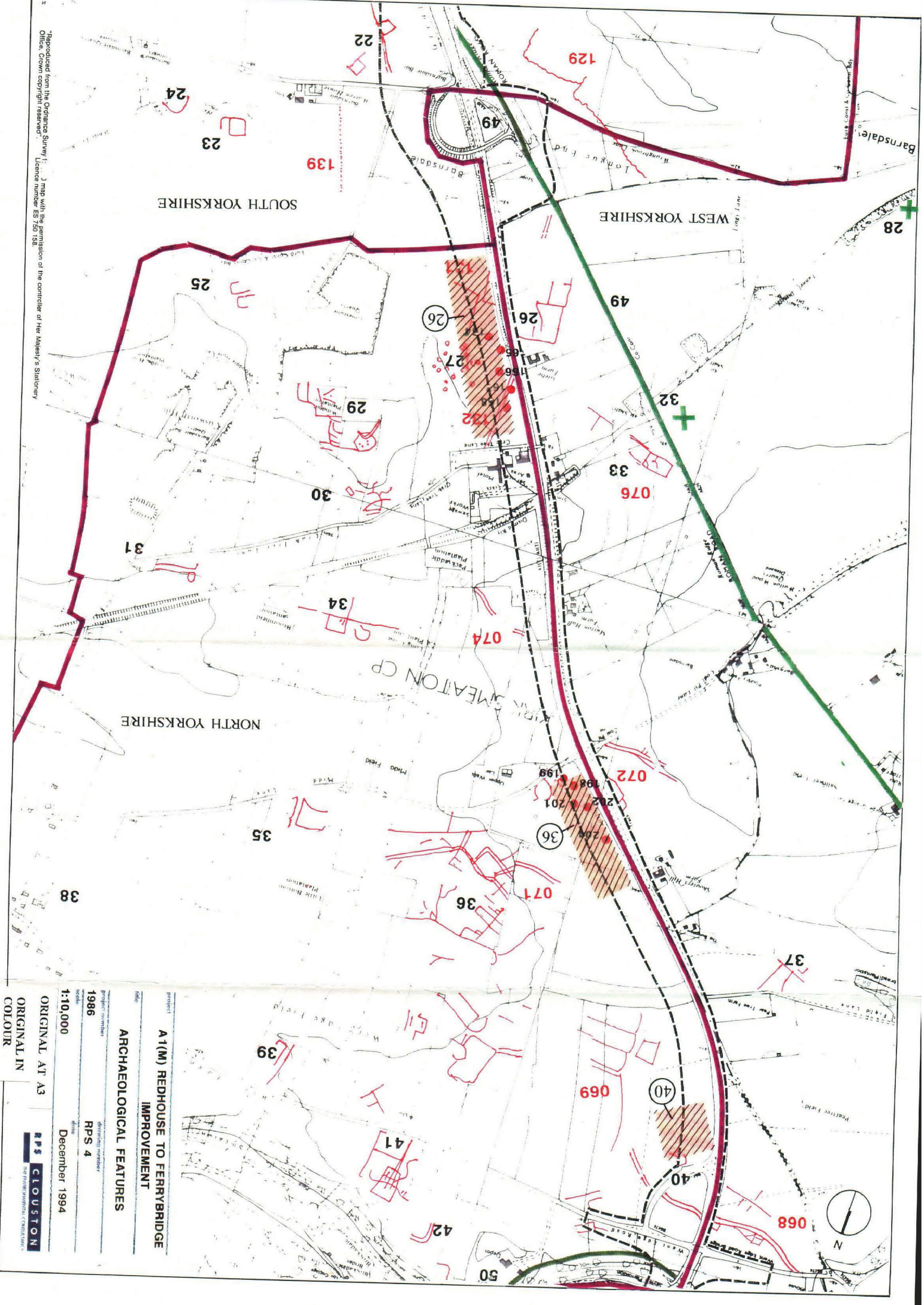
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**Original Colour**  
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THE PROJECT NUMBER IS 1986





project  
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 IMPROVEMENT**  
 title  
**ARCHAEOLOGICAL FEATURES**  
 drawing number  
**RPS 4**  
 project number  
**1986**  
 scale  
**1:10,000**  
 date  
**December 1994**  
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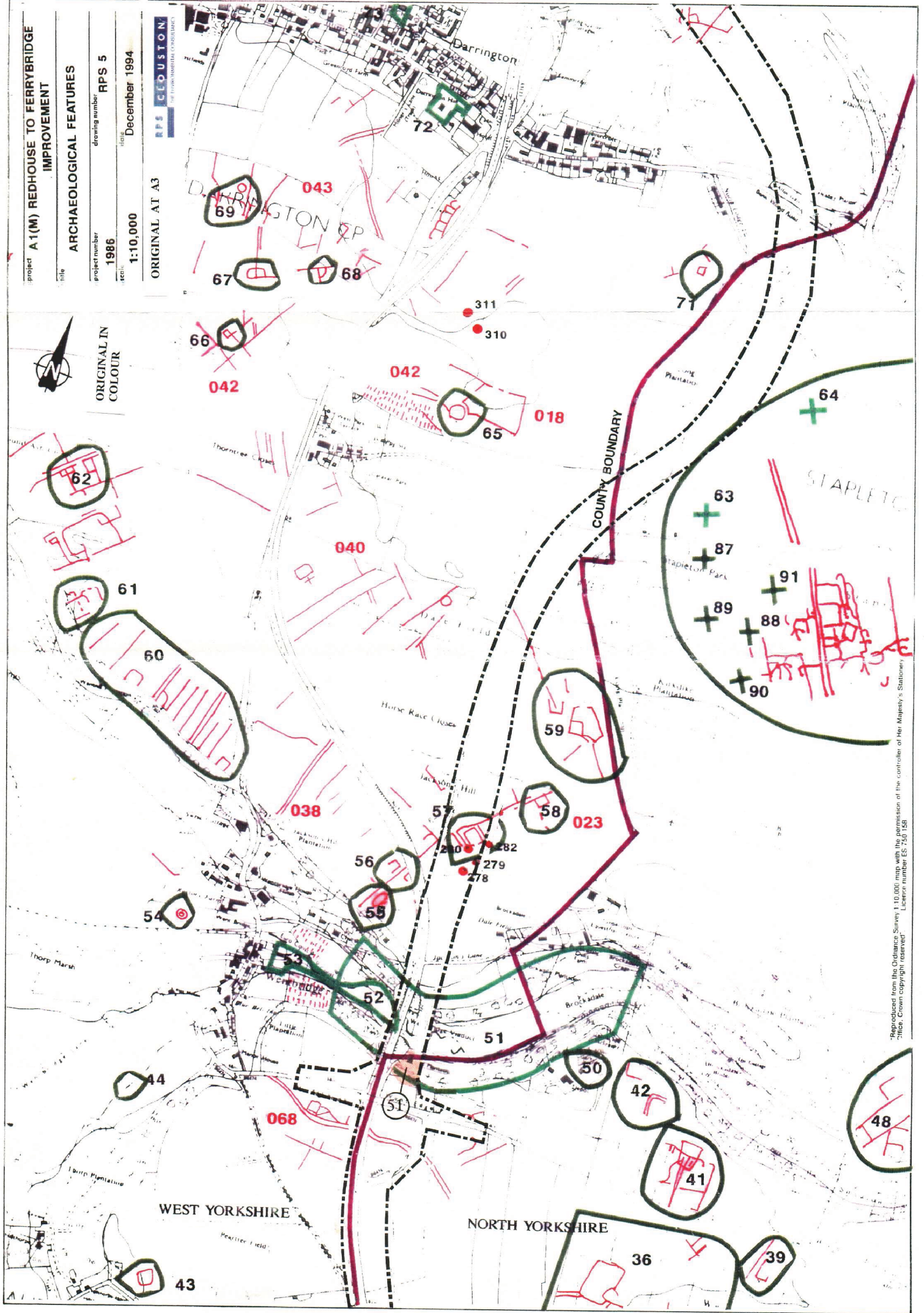
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 date **December 1994**

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