CgMs CONSULTING

ARCHAEOLOGICAL DESK BASED ASSESSMENT

PROPOSED MOTORWAY SERVICE AREA KIRBY HILL NORTH YORKSHIRE

SALLY DICKS BA MIFA &
PAUL CHADWICK BA MIFA FSA

AUGUST 2010

ARCHAEOLOGICAL DESK BASED ASSESSMENT

PROPOSED MOTORWAY SERVICE AREA KIRBY HILL NORTH YORKSHIRE

LOCAL PLANNING AUTHORITY: HARROGATE BOROUGH COUNCIL

NORTHBOUND SITE CENTRED AT: SE 383 691 SOUTHBOUND SITE CENTRED AT: SE 386 692

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EXECUTIVE SUMMARY

This archaeological desk-based assessment considers land to the east and west of the A1(M) at Kirby Hill where a planning application proposes the development of a Motorway Service Area (MSA).

As a result of a previous planning application for a MSA at Kirby Hill, detailed desk and field studies have been undertaken on the site. In addition, archaeological evaluation and investigation associated with the A1 upgrade occurred on parts of the MSA application site. As a result, there is an unusually high level of information to enable an informed planning decision on the archaeological implications of the proposed development and to enable an assessment of the significance of heritage assets to be undertaken.

This assessment therefore provides an up to date summary of archaeological evidence on and near the proposed MSA and considers the potential impact of the proposed development on the site's archaeological interest in accordance with policy set out in Planning Policy Statement 5: 'Planning for the Historic Environment' (PPS5).

Evidence from the North Yorkshire Historic Environment Record (HER) and other published and unpublished sources has been used to give an updated view of the archaeological potential of the site and the significance of heritage assets within the site.

The assessment concludes that the site has a moderate-high potential for plough-damaged sub-surface features evidencing small-scale Neolithic/early Bronze Age occupation activity. The significance of these features lies in their archaeological interest and this interest would be realised by archaeological investigation phased ahead of and during development.

Accordingly, in the absence of designated heritage assets on the site, it is considered that archaeological issues can be accommodated by an appropriately worded planning condition which secures a programme of archaeological work phased ahead of and during groundworks for the development. This programme of investigation and recording would secure the archaeological significance of the undesignated heritage assets in full accordance with policy in PPS5.

1.0 INTRODUCTION AND SCOPE OF STUDY

1.1 This archaeological desk-based assessment has been researched and prepared by Sally Dicks and Paul Chadwick of CgMs Consulting on behalf of Heather Ives Associates.

1.2 The subject of the assessment is land to the east and west of the A1(M) at Kirby Hill, North Yorkshire. In this assessment the land to the west of the A1(M) is referred to as the Northbound site and land to the east is referred to as the Southbound site. Together, these sites are referred to as the study sites. The Northbound site is centred at National Grid Reference SE 383 691 and the Southbound site is centred at National Grid Reference SE 386 692 (Figs 1 & 2). The sites lie within the administrative area of Harrogate Borough Council.

1.3 In accordance with government guidance on archaeology and heritage (PPS5), this assessment draws together the available archaeological, historic, topographic and land-use information in order to clarify the archaeological potential of the site.

1.4 The assessment comprises an examination of evidence in the North Yorkshire Historic Environment Record (HER), incorporates published and unpublished material, considers the results of archaeological investigations undertaken on the site and nearby and charts historic land-use through a map regression exercise. A site visit was undertaken during August 2010.

1.5 This assessment enables relevant parties to assess the archaeological potential of the site and to consider the need for design, civil engineering, and/or archaeological solutions to the potential identified.

2.0 PLANNING BACKGROUND AND DEVELOPMENT PLAN FRAMEWORK

2.1 In March 2010, the Government published *Planning Policy Statement 5: Planning for the Historic Environment*, providing guidance for planning authorities, property owners, developers and others on the conservation and investigation of Heritage Assets.

2.2 PPS5 is supported by guidance in a document called 'Historic Environment Planning Practice Guide' (HEPPG), also issued in March 2010.

2.3 PPS5 sets out the Government's objectives in paragraph 7 as being (in summary) to:

- Deliver sustainable development
- Conserve England's heritage assets in a manner appropriate to their significance
- Contribute to our knowledge and understanding of our past (this applies in particular to excavation of archaeological sites and to demolition of buildings).

Paragraph 7 of PPS5 recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. The same paragraph also ensures that decisions are based on the significance of the heritage asset - significance now being a key factor in the assessment of impacts on the historic environment.

2.4 Development management is addressed in Policies HE6 to HE12 of PPS5, beginning with the information requirements for applications for consent affecting heritage assets in Policy HE6. Paragraph HE6.1 indicates that in describing the significance of a heritage asset, the level of detail supplied by an applicant should be subject to two considerations:

i it should be proportionate to the importance of the heritage asset, and

ii it should be no more than is sufficient to understand the potential impact on the significance of the heritage asset.

2.5 Heritage Assets are defined in Annexe 2 of PPS5 as: a *building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. They include designated heritage assets (as defined in the PPS) and assets identified by the local planning authority during the process of decision-making or through the plan-making process.*

Annex 2 defines Archaeological Interest as: *an interest in carrying out an expert investigation at some point in the future into the evidence a heritage asset may hold of past human activity*. *Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them. These heritage asset are part of a record of the past that begins with traces of early human and continues to be created and destroyed.*

A Designated Heritage Asset comprises a: *World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area.*

Significance is defined as: *The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic.*

2.6 In short, government policy provides a framework which:

- Has a presumption in favour of the conservation of designated heritage assets
- Protects the settings of designated heritage assets
- Takes into account the desirability of sustaining and enhancing the significance of heritage assets
- Requires applicants to provide proportionate information on heritage assets affected by their proposals and an assessment of the impact of the proposed development on the significance of those heritage assets
- Accepts that where the loss of whole or part of a heritage asset's significance is justified, provision must be made for the recording of assets and publication of the resulting evidence.

2.7 In considering any proposal for development, the planning authority will be mindful of the framework set by government policy, in this instance PPS5, by current Development Plan policy and by other material considerations.

2.4 In this instance, the development plan policy framework is provided by the 'saved' policies in the Harrogate Borough Council Local Plan (adopted 2001). Policies relating to Battlefields, World Heritage Sites and Parks and Gardens of Historic Interest have been 'saved', but are not relevant to this assessment. However, Local Plan Policies relating to development affecting archaeological sites and archaeological investigations have been deleted.

2.5 The policies within the LDF Core Strategy are now operational for all planning applications submitted from 12 February 2009. However, there are no policies in the Core Strategy relating to the Historic Environment and Archaeology. The Development Control Policies in the LDF Development Plan Document (DPD) are currently out to public consultation and are expected to be adopted by the end of 2012.

2.6 Accordingly, the planning policy framework is currently provided by Planning Policy Statement 5 (Planning for the Historic Environment).

2.7 It is understood that in connection with a previous application and appeal for a MSA on the site, the Secretary of State concluded that archaeological issues could be dealt with by an appropriately worded planning condition. In the intervening period, despite the replacement of PPG16 by PPS5 and several episodes of archaeological work on the site, there appear to be no changes in circumstances which suggest that a condition-based approach to archaeology does not remain an appropriate response to the current proposal.

3.0 GEOLOGY AND TOPOGRAPHY

3.1 Geology

3.1.1 The underlying solid geology of the study sites is shown by the British Geological Survey (BGS 1:50,000 Map Sheet 52) comprising glaciofluvial sands and gravels or river terrace drift deposits.

3.1.2 Archaeological investigations on the site and elsewhere locally indicate that soils are brown forest soils (either typical brown-earths or argillic brown-earths) over a fairly thin Glacial Till, comprising watersorted or reworked clayey sands which in turn overlie a highly permeable sand, derived from Bunter Sandstone (Tavener 1996).

3.2 Topography

3.2.1 The study sites lies within an undulating lowland landscape, known as the Swale-Ure Washlands, within the Vale of Mowbray.

3.2.2 Levels within the Northbound site undulate between 36m to 41m Above Ordnance Datum (AOD) and generally fall from west to east. Levels within the Southbound site undulate between 31m to 38m AOD and generally fall from west to east.

3.2.3 There are no natural watercourses on the site. Locally, the area drains south into the River Ure c.1.9km south of the study sites.

3.2.4 Historically, the Northbound and much of the Southbound study sites occupied an area known as 'Kirby Moor', suggesting rough common pasture. However, the current intensive arable agricultural regime and the high quality brown-earth soils are not normally associated with areas of poorer quality common land. In addition, the absence of later prehistoric, Roman and Medieval evidence from archaeological investigations locally on the A1 widening led the excavators to suggest that the area was farmed in the Neolithic leading to severely impoverished soils by the late Neolithic, and an abandonment of arable agriculture in the area until the early 1800's, when land improvement and the inception of modern farming practices occurred (Tavener 1996).

4.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND Including Map Regression Exercise.

4.1 Timescales used in this report.

Prehistoric			
Palaeolithic	450,000	-	12,000 BC
Mesolithic	12,000	-	4,000 BC
Neolithic	4,000	-	1,800 BC
Bronze Age	1,800	-	600 BC
Iron Age	600	-	AD 43

Historic			
Roman	AD 43	-	410
Saxon/Early Medieval	AD 410	-	1066
Medieval	AD 1066	-	1485
Post Medieval	AD 1486	-	1800
Modern	AD 1801	-	Present

4.2 Introduction

4.2.1 Examination of data in the English Heritage National Monuments Record (NMR), the North Yorkshire Historic Environment Record (HER) for the study sites and a 1km radius around (the study area), and published and unpublished material indicates that the sites lies within the Swale-Ure Washlands, a landscape well known for its late Neolithic and early Bronze Age ceremonial and burial monuments. In this instance, site specific data in the form of a fieldwalking survey and archaeological monitoring and excavation undertaken for the construction of the A1(M) enables a detailed assessment of the archaeological potential of the study sites.

4.2.2 A map showing the location of HER sites and finds can be found at Appendix 1 and a map showing HER 'events' is shown at Appendix 2.

4.3 Palaeolithic and Mesolithic

4.3.1 The melting of the Devensian Ice Sheets is the dominating influence on the geology, topography and landscape of the Swale-Ure Washlands. Glacial melting deposited clays, gravels and other sediments in an undulating topography punctuated by

moraines of fluvio-glacial sands and gravels across the wide floor of the Vale of Mowbray.

4.3.2 Following climatic warming, melting of ice sheets and a natural succession of increasingly warm-loving fauna and flora, palaeoenvironmental studies indicate that a largely wooded environment saw occasional episodes of woodland clearance by Mesolithic hunter-gatherers. However, nationally and locally, the density of Mesolithic lithic (worked and waste flint) across the landscape is sparse, and since no Mesolithic material was identified by fieldwalking on the study site, it is concluded that there is a low/nil potential for material of this period within the MSA site.

4.4 **Neolithic**

4.4.1 During the Neolithic, the Vale of Mowbray appears to have supported a significant density of population, and the area developed into one of the largest centres of Neolithic ceremonial monument building in the UK. Evidence for the ceremonial monuments, (cursus, henges and burial monuments) have survived as earthwork monuments or as sub-surface features recorded on aerial photographs. However, evidence for associated settlements, fields and paddocks was probably fairly insubstantial to begin with, and is now confined to plough-damaged pits and lithic artefacts in the ploughsoil.

4.4.2 Within the Vale of Mowbray, monuments are distributed from the River Swale near Catterick (40km north of the study site) where a 2.1km long cursus monument and a large oval cairn are recorded, to a unique concentration of monuments along the River Ure, comprising a cursus and three henges at Thornborough, a henge at Cana (3.4km north-west of the study site), another henge at Hutton Moor, a sixth henge at Nunwick and a double posted pit alignment near the Cana henge. To the south of the study site, a number of standing stones (known as Devil's Arrows) occur next to the Rive Ure at Boroughbridge and a further post alignment was recorded during A1 widening works nearby.

4.4.3 Within the study area, a programme fieldwalking was undertaken in advance of the construction of the A1 upgrade (Appendix 4). The rapid fieldwalking survey recovered worked and waste flints within the northern half of the Northbound site (see Appendix 4: Field 89). The intensive fieldwalking survey along the route corridor of the A1(M) recorded a total of 72 flints and a single sherd of prehistoric pottery. Almost all the finds were from the southern-most 200m of the route corridor within Field 89, immediately east of the Northbound site.

4.4.4 During the construction of the A1(M), archaeological monitoring of topsoil stripping (HER Ref. ENY1376: Appendix 5). Along the eastern edge of the Northbound site, between the B6265 and Moor Lane, the work recorded 16 Neolithic pits (see Appendix 5: Field No's 88 and 89). Two groups of pits, comprising a total of 10 pits, were recorded in Field 88 and three groups of pits, comprising 6 pits, were recorded in Field 89. The majority of the pits contained Late Neolithic pottery sherds, waste flint, fire shattered stones and carbonized food residue. A number of pits contained large quantities of pottery sherds. A pit close to the boundary between Field 88 and 89 contained 75 sherds of Grimston Ware (representing more than 4 vessels) and the most northerly pit within Field 89 produced 104 sherds of Woodlands-style Grooved Ware (representing at least 13 vessels). Burnt and fire shattered stone was a common component of many of the pits fills, although there was no evidence of in-situ burning. The material had presumably been dumped into the pits from fires possibly associated with cooking. Carbon-dating of charred hazelnuts from two of the pits in Field 89 produced a date of between 3950-3520 BC (Manby 2003).

4.4.5 Geophysical survey undertaken on parts of the Northbound and Southbound sites recorded a small number isolated anomalies which might evidence further Neolithic pit features (see Appendix 6).

4.4.6 In view of the site specific and wider evidence, whilst a high potential is identified for Neolithic pits within the Northbound and Southbound sites, there is no evidence to suggest the presence of ceremonial monuments (which would merit in-situ preservation) within the sites.

4.5 **Bronze Age**

4.5.1 Regional studies of the distribution of round barrows have identified concentrations of burial monuments along the ridge that divides the Ure from the Swale (Manby 2003). Within the study area, the HER records two ring-ditches, one c.500m north-west of the Northbound site (HER Ref. MNY19526) and a second, immediately north-west of the Northbound site (HER Ref. MNY19561).

4.5.2 The archaeological monitoring of machine stripping for the A1(M) north of the study sites recovered a small quantity of decorated pottery sherds from five pits dated to the Beaker period (Appendix 5: Field 90).

4.5.3 In view of the proximity of HER MNY 19561 and other sub-surface features, a moderate potential is identified for a small number of isolated Bronze Age sub-surface features within the MSA sites.

4.6 Iron Age and Roman

4.6.1 Within the study area there are no Iron Age sites or finds recorded on the HER. The results of fieldwalking, geophysical survey and archaeological investigations for the A1(M) within the study sites did not record any evidence to suggest Iron Age activity and, as suggested above, it is thought that Neolithic farming activity resulted in the exhaustion of soils and the use of this area for rough pasture throughout the later prehistoric and Roman periods.

4.6.2 During the Roman period the Southbound site lay c.40m west of Dere Street, a major Roman road route from York to Scotland (HER Ref. MNY19563). Within the Vale of Mowbray, civil settlements developed along Dere Street around a number of military bases, notably at Aldborough (c.3km south of the study sites) and at Catterick (c 40km north).

4.6.3 The Roman road alignment to the east of the Southbound site, is the only Roman entry on the HER for the study area. In addition, only a single sherd of Roman pottery was recovered during the watching brief on machine stripping for the A1 motorway upgrade. In addition, the geophysical survey undertaken within parts of the Northbound and Southbound sites identified no evidence suggestive of Roman settlement activity (Appendix 6).

4.6.4 Overall, a low potential is identified for sub-surface remains evidencing Iron Age or Roman settlement or related activity.

4.7 Anglian and Medieval

4.7.1 Little is known of the character, extent and location of Post-Roman/Anglian settlement in the area. The settlement and communication pattern that replaced the Roman one remains obscure.

4.7.2 Kirby Hill, also known as Kirby-on-the-Moor is recorded in the Domesday Book in 1086. Within the parish, the survey mentions the manor of *Gospatric* together with land held by the King. The Church of All Saints is thought to have 8th century origins suggesting a pre-Norman settlement at Kirby Hill.

4.7.3 During the Medieval period the study sites lay c. 100m north-west of the settlement at Kirby Hill. No sub-surface Medieval features were discovered during the watching brief for the A1 upgrade and only 4 sherds of Medieval pottery were recovered during fieldwalking on the Northbound site.

4.7.4 From the available evidence it would appear that the study sites lay within an area of rough common pasture, known as Kirby Moor during the Anglian and Medieval periods. The potential of the study sites for these periods is therefore identified as low.

4.8 Post-Medieval and Modern

4.8.1 There are no tithe or estate maps that show the study sites. The only Parliamentary Act for enclosure in the parish is dated 1812 and involves fields around the hamlet of Longthorpe and common land at Kirby Hill. The regular field pattern across parts of the study sites evidence this parliamentary enclosure.

4.8.2 The earliest maps that show the study area are the 1675 Oligby's Road Map of England and Wales (Fig. 3) and the 1775 Jeffery's Map of Yorkshire (Fig. 4). The 1775 Jeffery's Map shows the Northbound site on the edge of Kirby Moor and the Southbound site bisected by Leeming Lane.

4.8.3 The 1893 Ordnance Survey (Fig. 5) shows the Northbound site occupying parts of 3 fields and the Southbound site occupying parts of 6 fields to the east and west of Leeming Lane.

4.8.4 Little changes to the layout of the study sites between the late 1890's and the early 1960's (Figs 5, 6 and 7).

4.8.5 During the 1960's the A1 Boroughbridge Bypass was constructed (see Fig 8) and more recently, in the late 1990's, the A1 was upgraded to a motorway.

4.8.6 The North Yorkshire HER records two aircraft crash sites within the study area. A Tomahawk crashed close to the north-western corner of the Northbound site in 1942 (HER Ref. MNY26740) and a Jet Provost crashed immediately west of the Southbound site in 1961 (HER Ref. MNY30751). The wreckage from the crash sites was removed after the incidents and therefore, these HER entries are not considered relevant to an assessment of the sites archaeological potential.

4.7.5 The North Yorkshire Historic Landscape Character Assessment (see Appendix 3) identifies Historic Landscape Character Areas by Type. The Northbound site lies within the HLC Area Type described as **Modern Improved Fields** and described as 'a large area centred on the A1 which has seen a high degree of boundary loss to create large irregular fields defined by erratic hedgerows' (HLC Area: HNY4415). The Southbound site occupies 3 HLC Areas. The northern part of the Southbound site occupies HLC Type **Modern Improved Fields** which is described as 'a very large area of large irregular fields defined by erratic hedgerows both internally and externally' and that 'this area has fragmentary legibility due to the degree of boundary loss and dates to the modern period' (HLC Area: HNY5734). The south-western part of the Southbound site occupies HLC Type **Road Junction (Motorway)** and is described as 'modern road junction on the A1 and was previously characterised as Medieval strip fields which were Medieval in character' (HLC Area HNY24309). The south-eastern part of the Southbound site occupies HLC Type **Strip Fields** described as 'an area of strip fields which lie to the north and west of Kirby Hill, this area consists of medium sized semi-irregular fields defined by the s curved hedges' and that 'this has a partial legibility due to the degree of boundary loss'. Overall, there is little to suggest that the study sites lie within an important historic landscape.

4.7.6 The map regression exercise demonstrates that the study sites lay within agricultural land, initially rough common pasture, known as Kirby Moor, throughout the Post-Medieval period. The area was enclosed in the early 1800's and has been in increasingly intensive arable agricultural use ever since. As a result, a low-nil potential is identified for Post-Medieval and modern remains of historic interest within the study sites.

4.8 Assessment of Significance

4.8.1 There are no designated heritage assets within the study sites and no undesignated assets are recorded on the HER within the sites. However, it is evident from the results of investigations along the A1(M) that there is a high potential for prehistoric lithics in the ploughsoil and for a small number of as yet to be discovered Neolithic pits. The significance of these pits is their archaeological interest, and this interest would be realised by archaeological investigation phased ahead of and during groundworks for the proposed development.

5.0 SITE CONDITIONS AND THE PROPOSED DEVELOPMENT

5.1 Site Conditions

5.1.1 The site was visited in August 2010 (Plates 1-11). The site currently comprises fields under arable cultivation.

5.1.2 It is evident from archaeological and cartographic evidence, that the study sites have been ploughed regularly, and probably since the early 1800's with more intensive ploughing since the 1950's. As a result, it can be reasonably predicted that any archaeological evidence will be in a plough-damaged condition.

5.2 The Proposed Development

5.2.1 The proposed development comprises the construction of a Northbound and Southbound MSA with associated parking and access. Figure 9 shows the proposed development.

5.2.2 The proposed development will require extensive heavy plant movement and mass excavations for the construction of the MSA and related landscaping. Machine stripping for access roads, parking, and excavations for building foundations and service trenches will cause severe and widespread below ground disturbance. In addition, tree planting for screening will result in moderate, but widespread, below ground disturbance.

5.2.3 This assessment has established that the application site has a moderate-high potential for Neolithic sub-surface features, a moderate potential for Bronze Age sub-surface features and a nil-low potential for other evidence.

5.2.4 In view of the findings of this assessment, there is little evidence to suggest that the site has a potential for archaeological remains of sufficient importance to justify in-situ preservation. In these circumstances, it is considered that any archaeological mitigation could follow planning consent, secured by the inclusion of an appropriately worded planning condition.

6.0 SUMMARY AND CONCLUSIONS

6.1 This archaeological desk-based assessment considers land at Kirby Hill, North Yorkshire which is the subject of an application for a MSA.

6.2 In accordance with central government planning policy, set out in PPS5 "Planning for the Historic Environment", this desk-based assessment has been undertaken to clarify the archaeological potential of the application site and enable an assessment of the significance of any heritage assets on the site.

6.3 There are no designated heritage assets (Scheduled Ancient Monuments, Registered Parks and Gardens, Registered Battlefields, listed buildings or conservation areas on or particularly close to the application site.

6.4 This assessment has established that the study sites have a moderate-high potential for Neolithic sub-surface features, a moderate potential for Bronze Age sub-surface features and a low/no potential for other archaeological evidence.

6.5 The proposed development will cause widespread below ground disturbance through machine movements and excavations for MSA buildings, parking and landscaping.

6.6 The assessment concludes that there is no evidence to suggest that the site contains any significant archaeological monuments. In these circumstances, and in accordance with PPS5, it is considered that archaeological mitigation could follow planning consent, secured by the inclusion of an appropriately worded planning condition which provides for a programme of archaeological investigation and recording phased in parallel with the groundworks phase of the proposed development, with subsequent publication of the results.

SOURCES CONSULTED

1. General

English Heritage - National Monuments Record (NMR)

North Yorkshire Historic Environment Record

North Yorkshire Historic Environment Record Officer - Mel Partlett

Northern Archaeological Associates - Director Richard Fraser

www.geography.dur.ac.uk

www.magic.gov.uk

2. Bibliographic

Speed, G. Forthcoming. Excavation within a Neolithic and Early Bronze Age Landscape between Boroughbridge and Marton-Le-Moor, North Yorkshire Manby &1993-1995 (Extract from draft publication courtesy of NAA)

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Moorhouse, S 21st Century
& Ottoway, P

Tavener N. 1996 Evidence of Neolithic Activity near Marton-le-Moor, North Yorkshire (in Neolithic Studies in No-Man's Land, Northern Archaeology vols 13/14)l

3. Cartographic

1675 Ogilby's Road map of England and Wales

1775 Extract from Jeffery's map of Yorkshire

1893 Ordnance Survey

1910 Ordnance Survey

1956 Ordnance Survey

1967 Ordnance Survey

1978 Ordnance Survey

Site Location

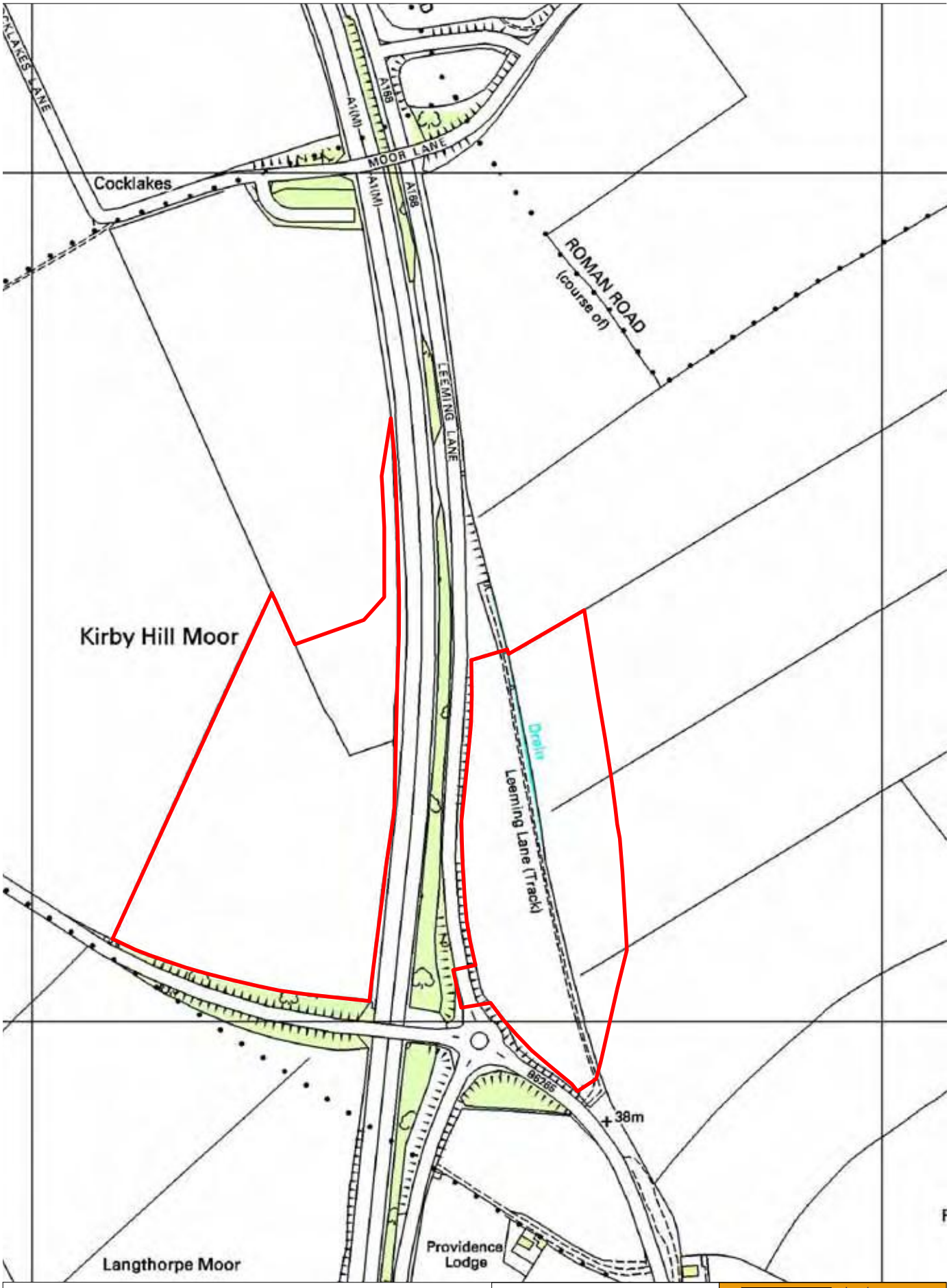
CgMs Consulting
London
Cheltenham
Kettering
Newark
Birmingham
www.cgms.co.uk
Planning & Development
Archaeology & Historic Buildings

Project title:
Proposed Moto Service Area
Kirby Hill, North Yorkshire

Not to Scale:
Illustrative Only

Date printed:	Drawn by: LW
Aug 13, 2010	Checked by: SD

Figure 1: Site Location



Site Boundary

N

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Figure 2: Site Details

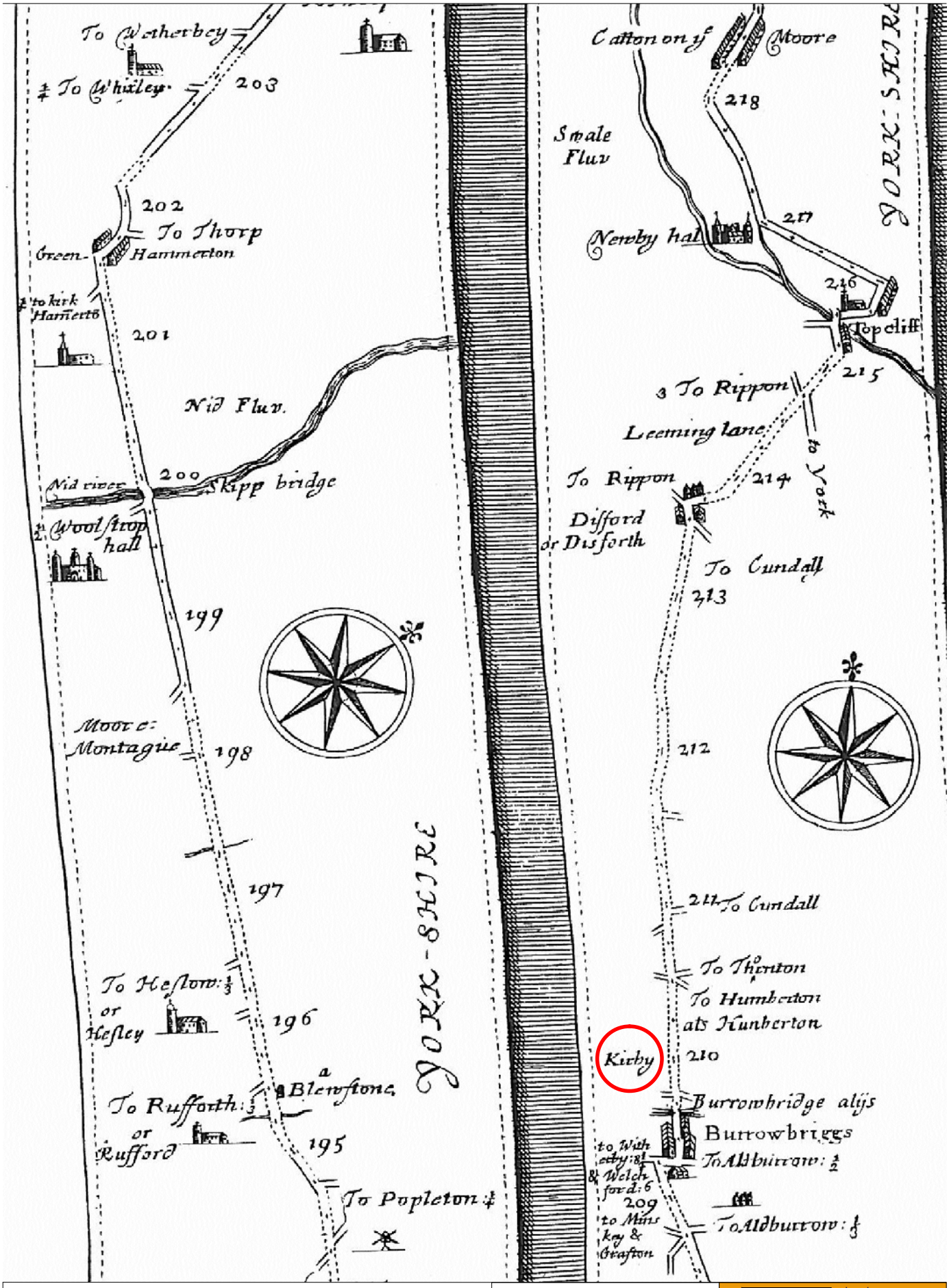

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Figure 3: 1675 Ogilby's Road Map of England and Wales

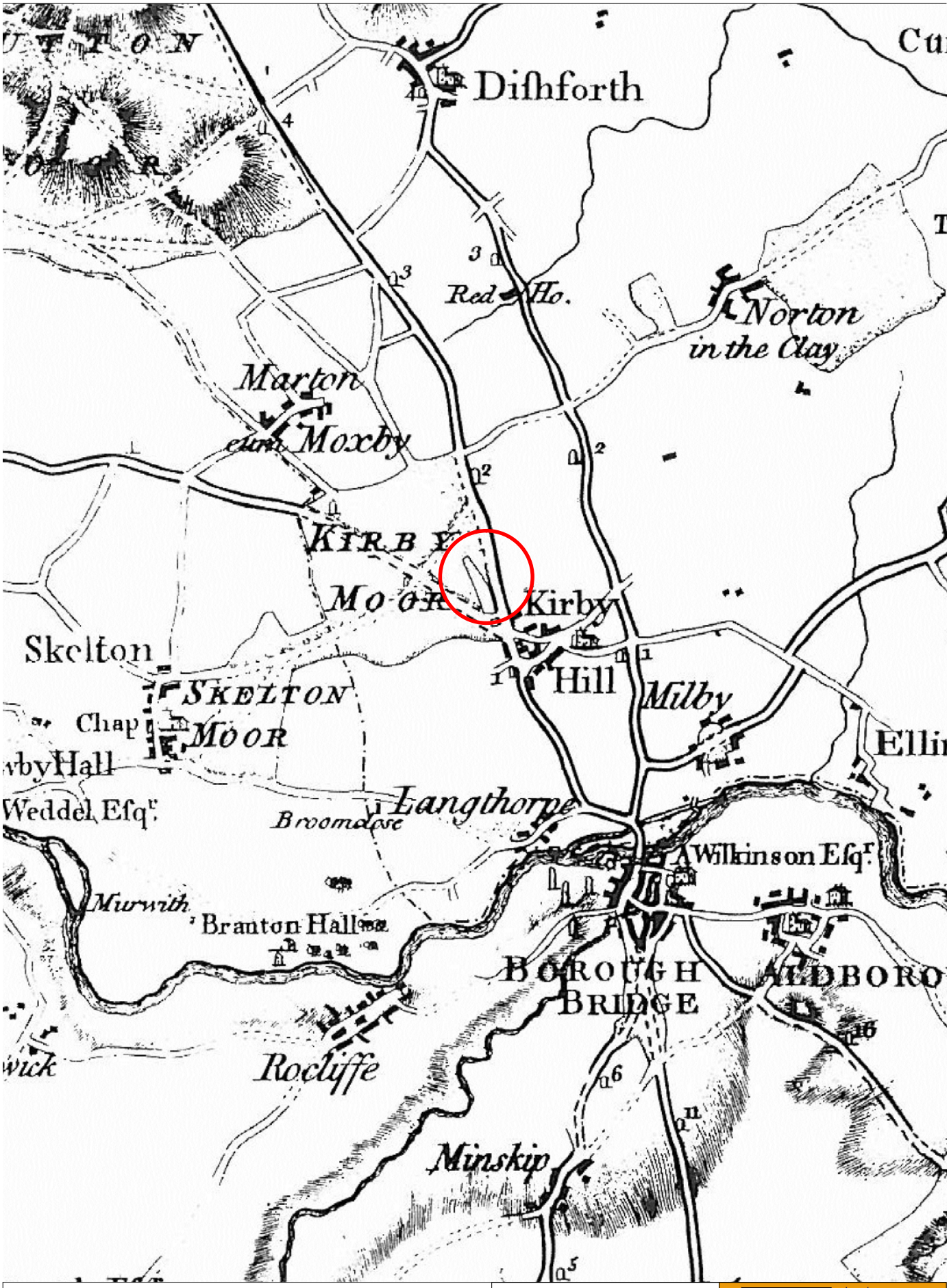

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Figure 4: 1775 Extract from Jeffery's Map of Yorkshire

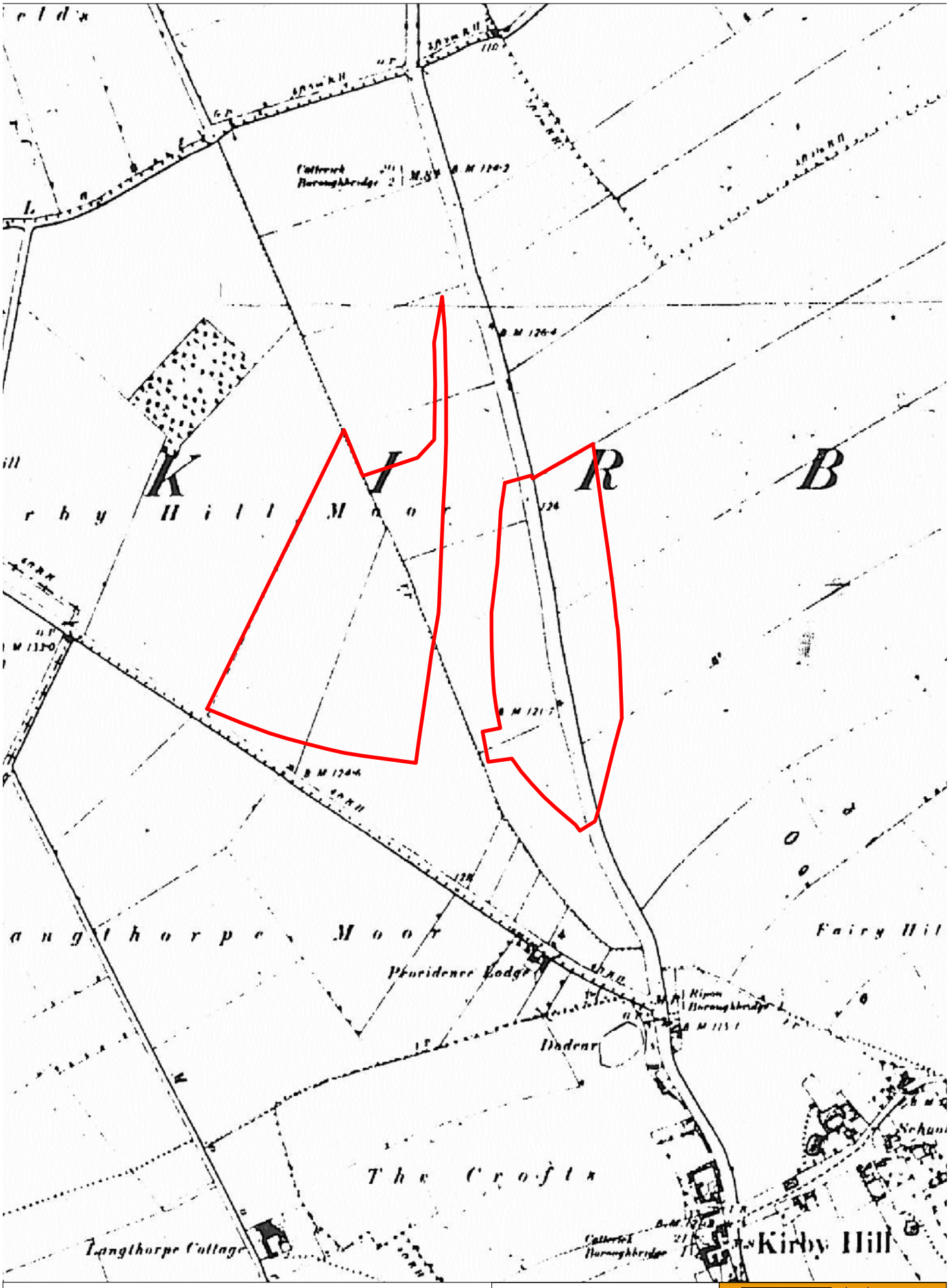

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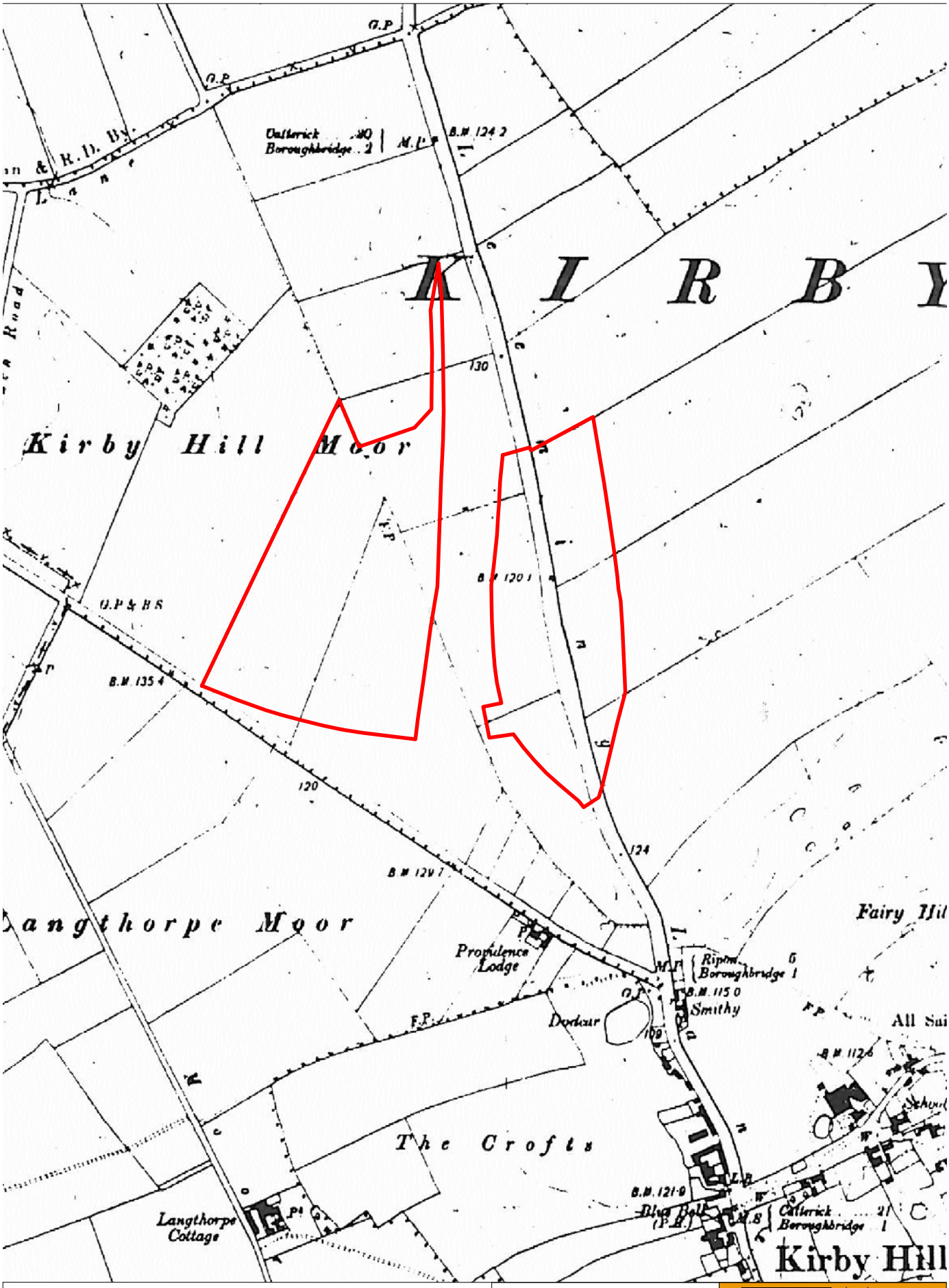
Figure 5: 1893 Ordnance Survey



Site Boundary

N

Project title:
Proposed Moto Service Area,
Kirby Hill, North Yorkshire

Not to Scale: Illustrative Only

Date printed:
Aug 13, 2010

Drawn by: LW

Checked by: SD

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Figure 6: 1910 Ordnance Survey

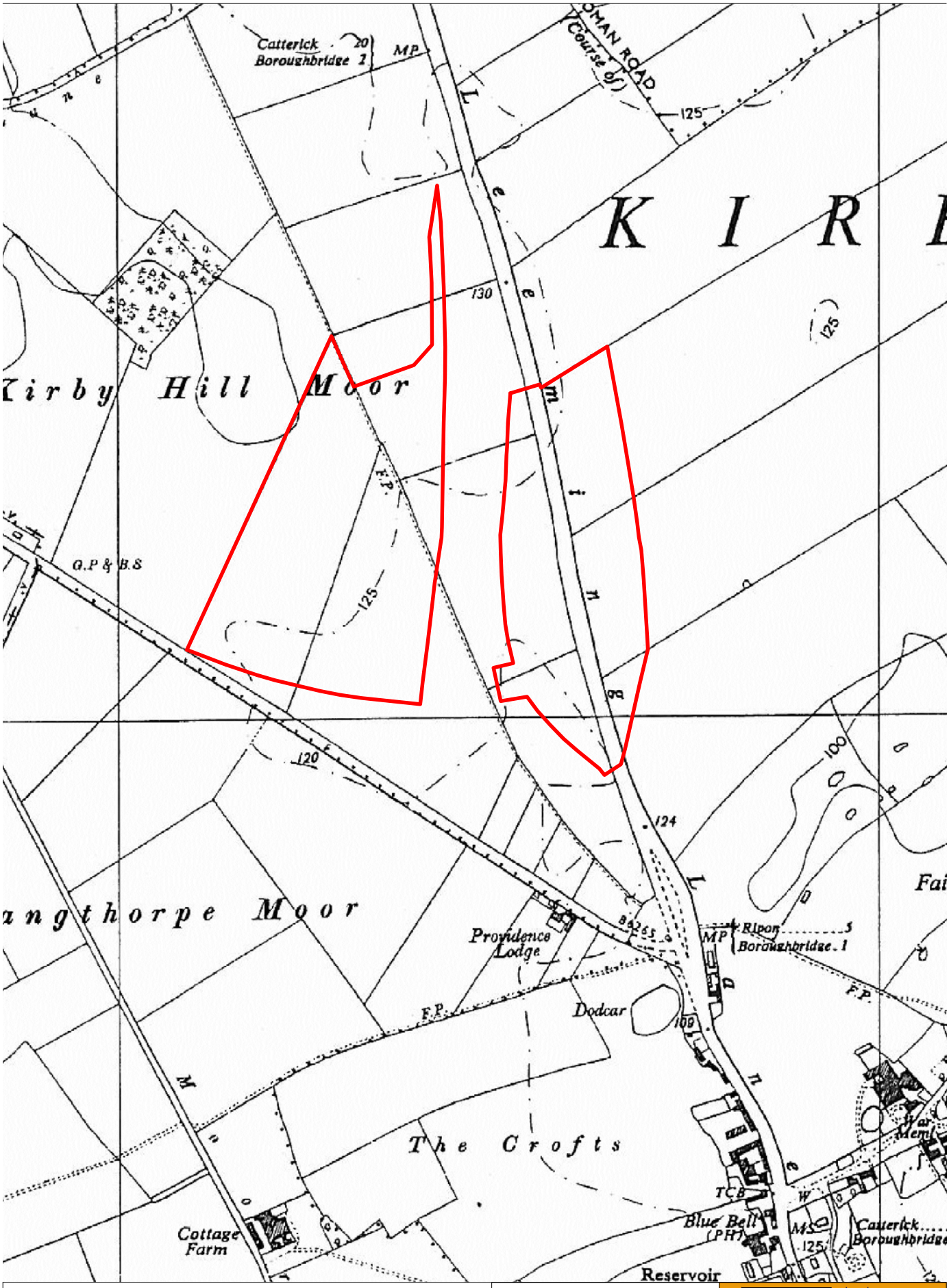

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Figure 7: 1956 Ordnance Survey

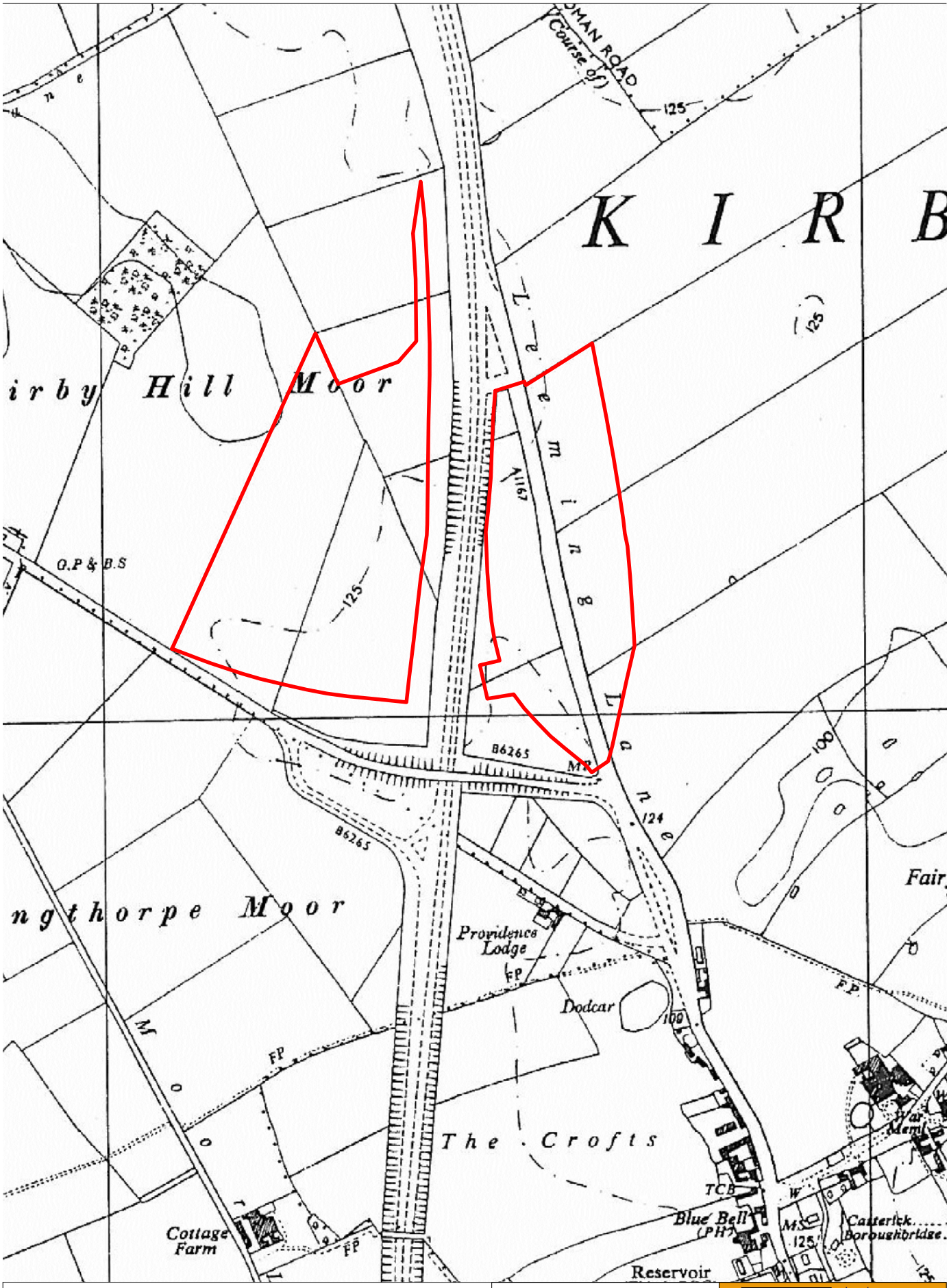

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Figure 8: 1967 Ordnance Survey

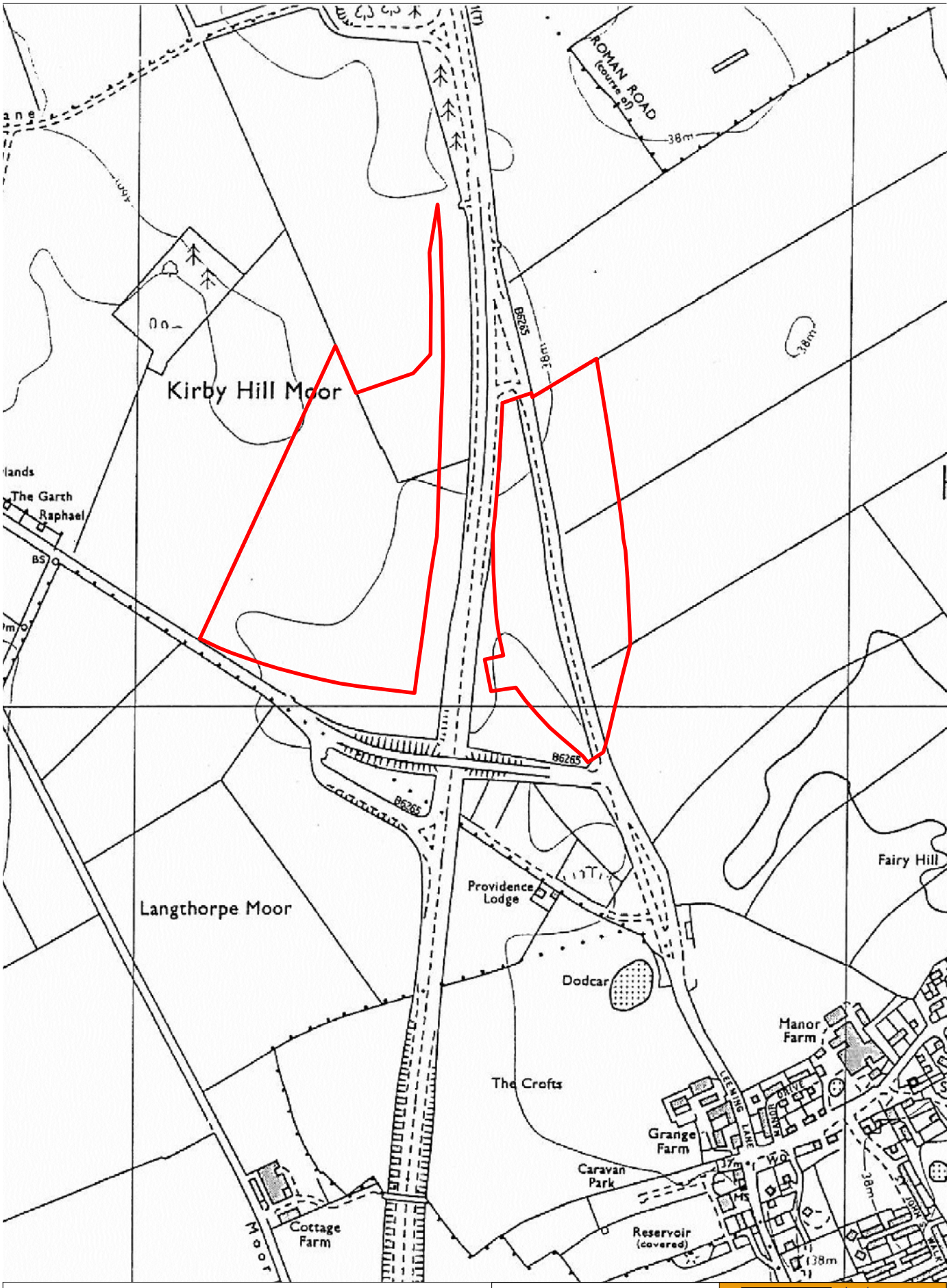

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Figure 8: 1978 Ordnance Survey

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Figure 9: Proposed Development

Plate 1: Google Earth Image 2010

Plate 2: View looking north along the western boundary of the Northbound site

Plate 3: View looking north towards the central and northern parts of the Northbound site from the B6256

Plate 4: View looking north from the B6256 towards the Northbound site

Plate 5: View looking southeast from the north-western corner of the Northbound site

Plate 6: View looking north from the centre of the Northbound site

Plate 7: View looking north from the B6265 between the A1(M) and the A168

Plate 8: View looking northeast from the Kirby Hill Roundabout towards the centre of the Southbound site

Plate 9: View looking southeast from Leeming Lane towards the Southbound site

Plate 10: View looking southwest from Leeming Lane towards the western part of the Southbound site

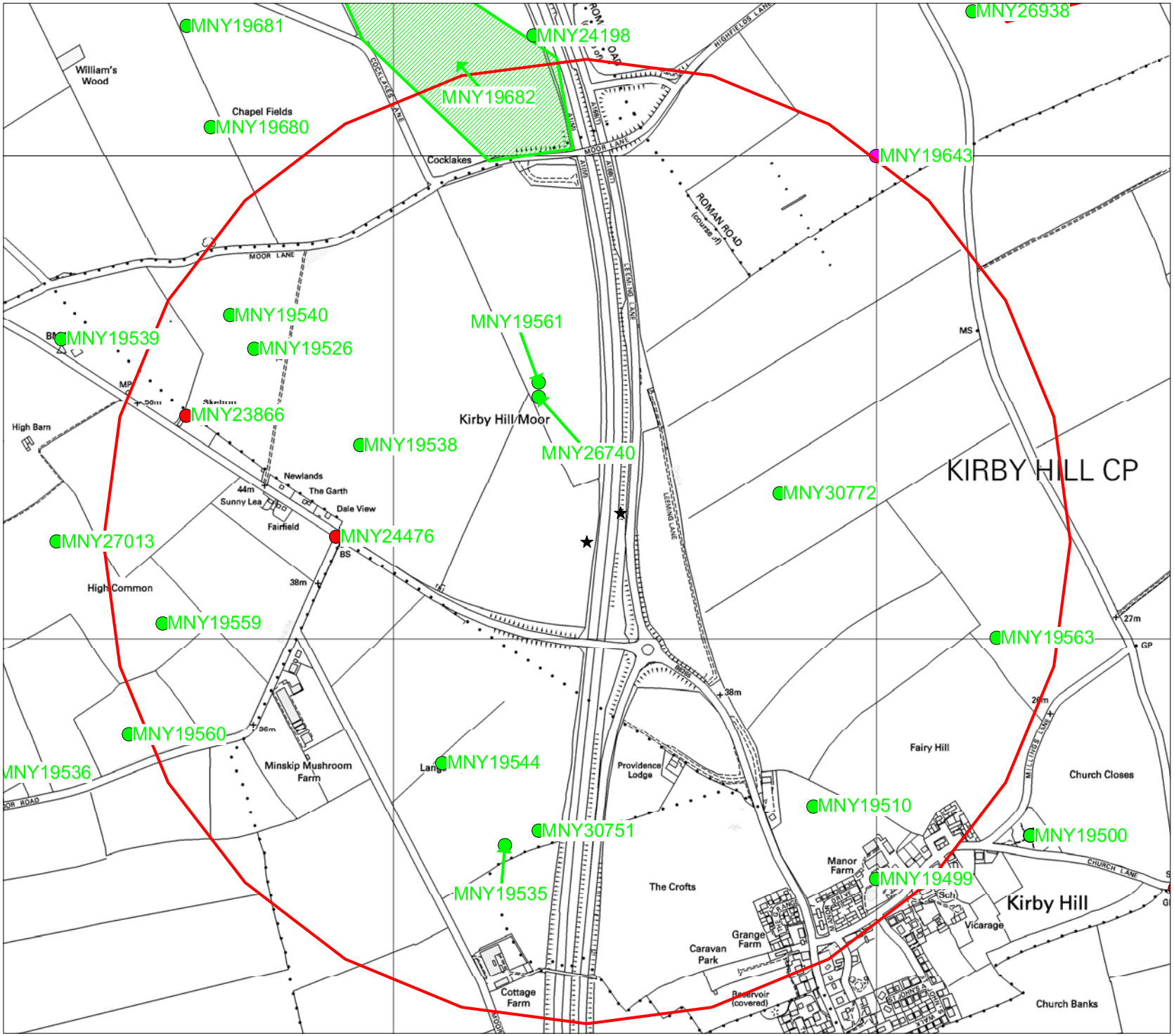
Plate 11: View looking south along Leeming Lane towards the Kirby Hill Roundabout

APPENDIX 1: Historic Environment Record Data Map (Monuments)

North Yorkshire County Council
Historic Environment Team
Economic and Rural Services
North Yorkshire County Council
County Hall
Northallerton DL7 8AH
08458 72 73 74

A1
Sally Dicks
CgMs Consulting
Scale 1:11027
Compiled by MP on 10 August 2010
Monuments Only.
All Records should be quoted in the format M12345

No active Legend.



APPENDIX 2: Historic Environment Record Data Map (Events)

North Yorkshire County Council

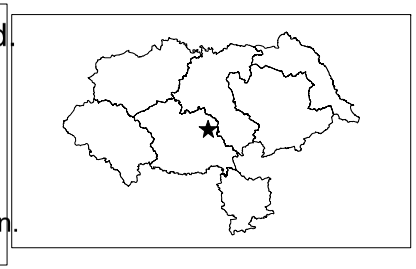
All Archaeological mapping should be regarded as indicative only.

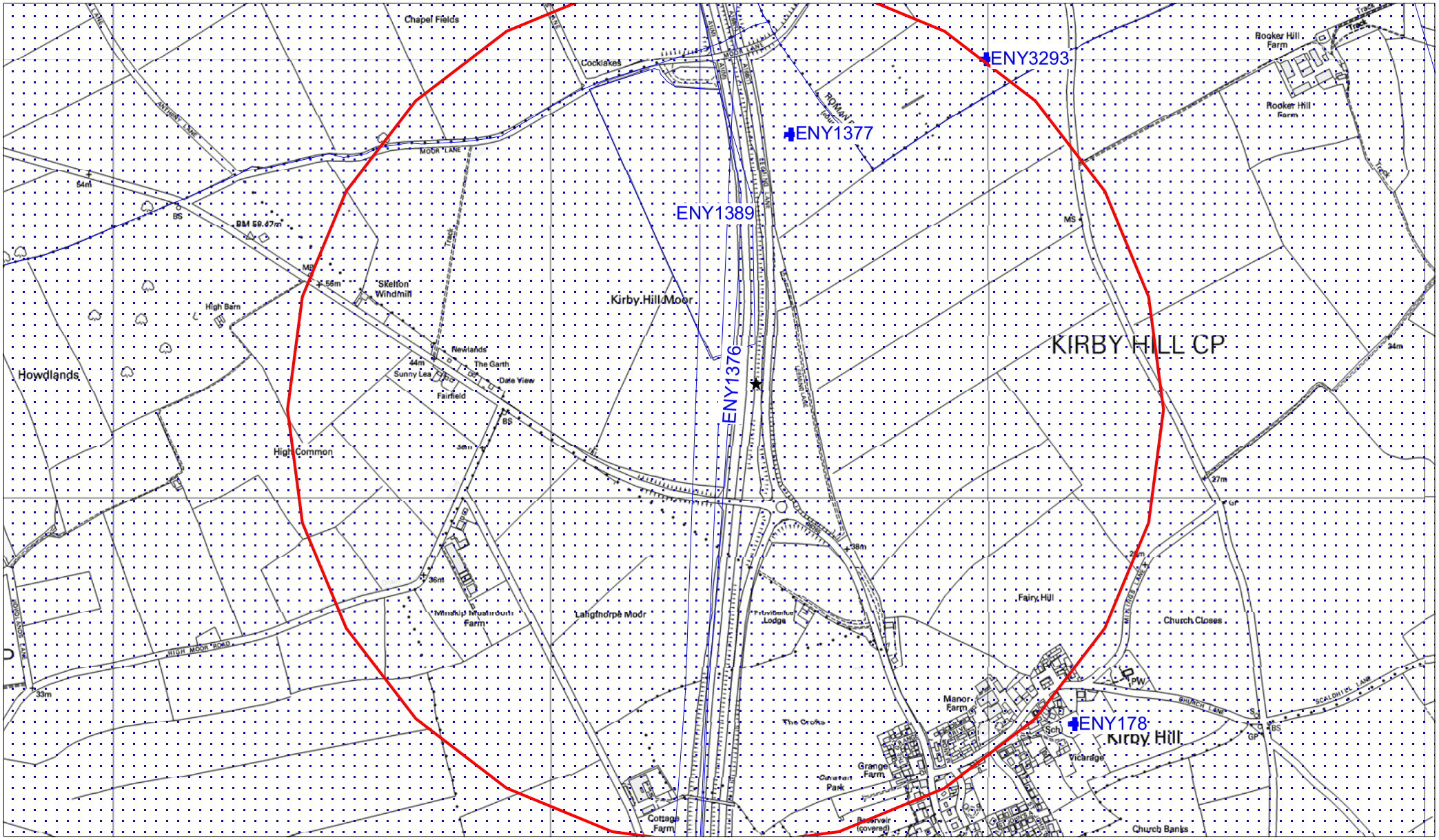
Historic Environment Team
Economic and Rural Services
North Yorkshire
County Council
County Hall
Northallerton DL7 8AH
08458 72 73 74

A1 Events
Sally Dicks
CgMS Consulting

Scale 1:11925

Compiled by MP on 10 August 2010
Events Only. All Records should be quoted in the format E12345





APPENDIX 3: Historic Environment Record Data Map (Historic Landscape Character)

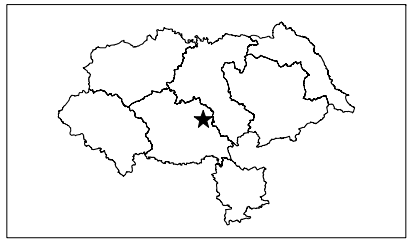
North Yorkshire County Council

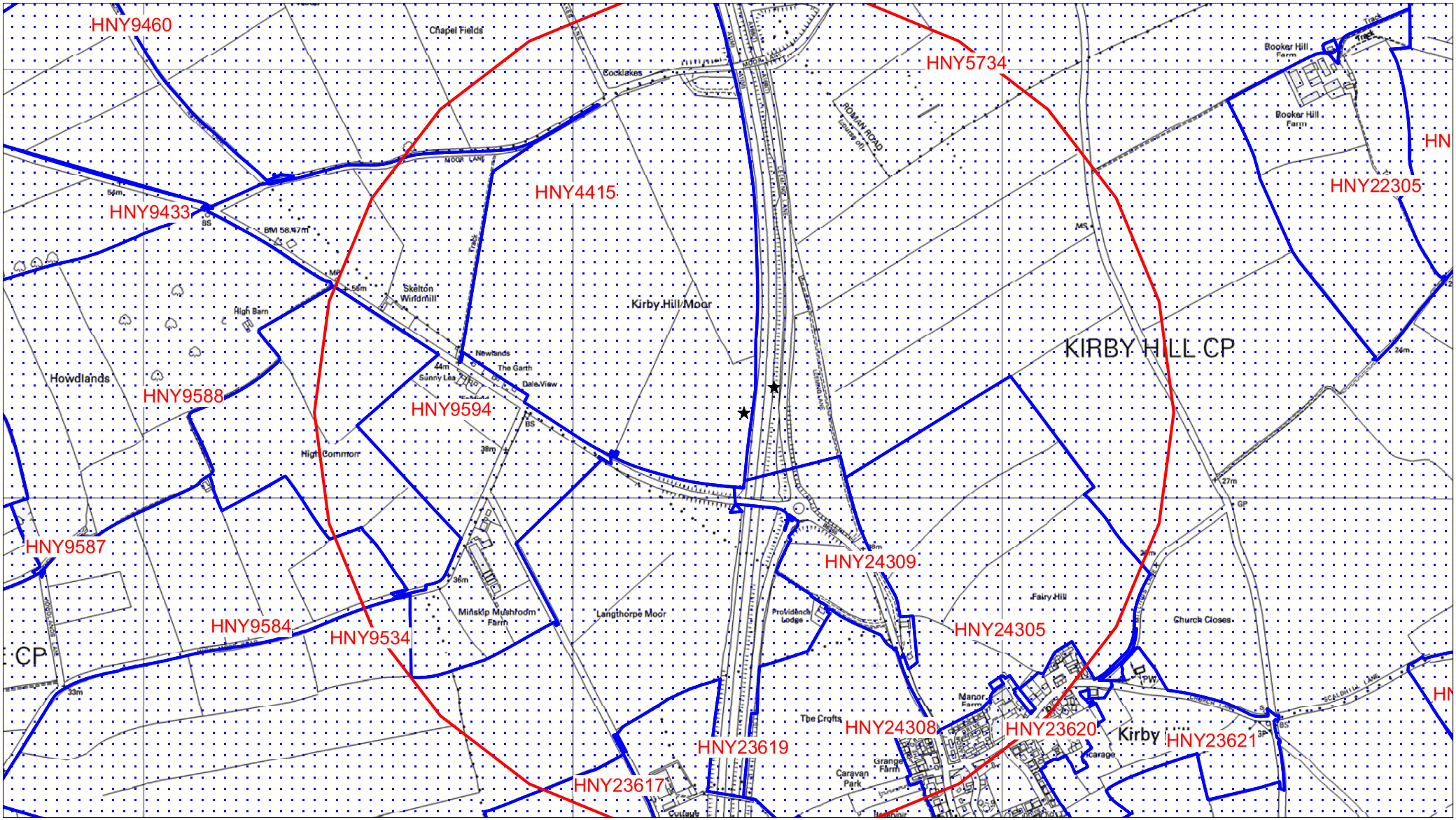
All Archaeological mapping should be regarded as indicative only.

Historic Environment Team
North Yorkshire
County Council
County Hall
Northallerton DL7 8AH
08458 72 73 74

A1 HLC Map
Sally Dicks
CgMS

Scale 1:12363
Compiled by MP on 10 August 2010
Historic Landscape Characterisation Mapping





APPENDIX 4: A1 Motorway: Walshford to Dishforth: Fieldwalking Survey Report (NAA 1993)

Northern Archaeological Associates

A1 MOTORWAY: WALSHFORD TO DISHFORTH

FIELDWALKING SURVEY

FOR

BULLEN AND PARTNERS

NAA 93/17

15 Redwell Court, Harmire Road, Barnard Castle, Co. Durham DL12 8BN
Tel: (0833) 690800 Fax: (0833) 690801

A1 Motorway: Walshford to Dishforth

Fieldwalking Summary Report

1. INTRODUCTION

This report summarises the results of a fieldwalking programme undertaken by Northern Archaeological Associates for Bullen and Partners (Consulting Engineers to The Department of Transport) as part of an archaeological evaluation in advance of construction of a new motorway on the western side of the existing A1 dual-carriageway between Walshford and Dishforth in North Yorkshire. The work was carried out during February 1993.

The programme of work was based upon the results of an archaeological assessment study conducted by M Griffiths & Associates [1], consisting of a desk top study and rapid field survey and upon recommendations subsequently made by the North Yorkshire County Archaeologist. The fieldwalking programme was carried out in concert with a geophysical survey conducted by Geophysical Surveys of Bradford and this latter work is reported separately [2,3].

2.0 BACKGROUND

2.1 Project background

The fieldwalking programme related to the construction of a new dual 3 lane motorway at the western side of the existing dual 2 lane all-purpose A1 between Walshford and Dishforth, with new motorway junctions with the A59 and A6055 at Allerton Moor and Boroughbridge. The programme of work was intended to refine and enhance the field survey conducted in parallel with the desk top study phase of the project [1], and included a number of fields which were unavailable for fieldwalking at that time. The specification for this stage of the evaluation was drawn up jointly by North Yorkshire County Council and English Heritage.

2.2 Rapid fieldwalking

Fields which required initial rapid fieldwalking (see fig. 1) were 3, 89, 94, 95, 96, 99, 101 and 115 (as numbered in the assessment report). Field 89 was located on the western side of the A1 immediately to the south of the Marton-le-Moor junction. Fields 94, 95 and 96 were three adjacent fields located facing Dishforth airfield across the A1, running in a line south to north between the A1 and Well Lane immediately to the north of Guy Lane. Field 101 was located to the west of the A168 eastbound sliproad from the A1, immediately to the south of the Ripon to Dishforth road. Field 115 was located at the southern end of Boroughbridge on the eastern side of the A1 immediately to the north of the Aldborough Gate road.

2.3 Intensive fieldwalking

Fields which were intensively fieldwalked were 7, 74, 76, 78 and, subsequent to the rapid fieldwalking, part of field 89. Field 7 was located on the western side of the A1 700m north of Moor lane at the northern end of Walshford. Field 74 was located on the eastern side of the A1 immediately north of Roecliffe Lane on the western side of Boroughbridge, to the south of a disused railway line. Field 76 lay on the western side of the A1 immediately north of the same disused railway line. Field 78 lay to the north of the River Ure, to the west of the A1 and to the south of Skelton Road.

2.4 Specification

The aim of intensive fieldwalking was to recover finds from the ploughed surface systematically and quantitatively to provide artefact distribution and density data, to identify finds, and to accurately locate and date plough damaged sites. The aim of the rapid fieldwalking was to identify concentrations of finds which might suggest the presence of plough damaged sites and to make recommendations for further work where necessary. Fieldwalking techniques were to be appropriate to recover information about archaeological sites down to 5-10 metres in size, and to provide information about the general background scatter of artefacts due to manuring, liming, or random disposal.

2.5 Archaeological background

An archaeological assessment study of the route, consisting of desk top study and rapid field survey was undertaken by M Griffiths & Associates. The assessment involved examination of available published and unpublished archaeological records, aerial photographs, Ordnance Survey and other cartographic evidence, as well as carrying out rapid fieldwalking for most of the fields within the route corridor, and the production of an assessment report.

The field survey involved a rapid inspection of fields within the route corridor to identify the presence or absence of earthwork features, structures or artefact scatters. Where these were located, a more detailed field survey was subsequently carried out map the location and distribution of finds or features. Finds from ploughed fields were identified and approximate locations recorded, but were not collected. The field survey provided the bulk of the archaeological information upon which the assessment based.

Although important prehistoric sites occur in the area, the assessment indicated that there was very little recorded archaeology found along or immediately adjacent to the route corridor. The field survey confirmed this general conclusion and indicated that there was likely to be no archaeological interest of sufficient importance to warrant changing the proposed route.

Of specific interest within the corridor, a set of cropmarks possibly indicative of a field system or enclosure was identified in Field 7, while about 15 fields exhibited only light scatters of lithic fragments, some utilised, composed of a flint which is not considered not to be found naturally in the subsoils or drift of the area. The flint scatters assumed

greater significance due to their geographical proximity to the Devil's Arrows, and posibly cultural association with these standing stones.

Although the assessment indicated the presence and relatively limited potential of archaeological remains along the route corridor, further archaeological work was required as part of a staged programme of investigations to evaluate the nature and importance of the cropmark site and flint scatters, and to recommend measures or further works to mitigate the effects of the road improvements on the archaeology where necessary.

Information arising out of the assessment study indicated that, out of some 120 fields affected by development, 14 warranted further evaluation. Some arable fields which were not accessible required rapid fieldwalking to establish their archaeological status in the first instance. Where archaeological remains were present, fields evaluation would be required to determine the extent and importance of the archaeology.

3.0 FIELDWALKING RESULTS

The fieldwalking results are described below running south to north. The field numbers used in the headings are those allocated as "Record Numbers" during the desk top study, and will henceforth be used throughout this report. At the time of the production of this report only the Roman pottery from Field 76 had been examined by a specialist (Appendix 2). All dating of finds is therefore provisional.

The methods used for rapid and intensive fieldwalking are described in full in Appendix 1. Appendix 2 contains a summary report on the Roman pottery from Field 76 and Appendix 3 contains a breakdown of the flint finds recovered from the intensive fieldwalking survey.

3.1 Field 3

(OS Field Nos.0064/0075/0079, centre SE 4195 5375)

The advanced state of growth of the cereal or grass crop made any meaningful fieldwalking in this field impossible.

3.2 Field 7

(OS Field No.7028, centre SE 417 543)

Rather over half of this field was intensively fieldwalked at the eastern end across the area of a series of cropmark enclosures recorded from aerial photographs (fig. 2). The area walked was generally flat, and the field surface had been ploughed and weathered. Walking conditions were fair. Extensive areas of gravel were noted lying on the surface, implying ongoing plough disturbance of the subsoil and any archaeological deposits.

An area of 4.85 hectares was intensively walked. A total of 80 objects were recovered, including 48 struck flints, 3 sherds of possibly Roman pottery, 12 sherds of possibly or definitely medieval pottery, 15 undated pottery sherds, and 2 small Cu alloy objects.

3.4 Field 76
(OS Field No.6965, centre SE 387 667)

The eastern 200m of this field was intensively fieldwalked (fig. 5). The field generally sloped gently down to the north, and slightly to the east. The field surface was generally fairly flat and weathered, with a young cereal crop. Poor light meant that the fieldwalking conditions were only fair.

Initially an area of 2.00 hectares was intensively walked in a strip 100m wide parallel to the existing A1 at the eastern side of the field. As a response to the results of the initial geophysical survey [2], a further 100m wide strip was walked to the west, with an area of 2.21 hectares, to complement additional geophysical survey over the site of a possible Roman fort [3]. The total area walked was 4.21 hectares. A total of 398 objects were recovered, including 53 stuck flints, 174 sherds of possible, probable or certain Roman pottery (see Appendix 2), 88 sherds of possible medieval pottery, 72 sherds of pottery of uncertain date, 5 glass beads (mostly Roman), a glass gaming counter (probably Roman), a glass waster fragment, 1 copper alloy object, 2 lead objects, a stone marble and a fragment of burnt clay.

The struck flint was distributed throughout the field, although with a notable increase in density on the higher area occupied by the fort, either as a result of continuing preferential use of the prominence, or due to Roman disturbance of earlier deposits. The medieval and undated pottery was distributed randomly throughout the survey area, and probably represented field manuring activity.

The Roman pottery recovered included 10 certain and 164 possible or probable Roman sherds (see Appendix 2). Apart from 2 sherds which were likely to be early 2nd century AD, the entire assemblage could have been late 1st century AD in date. The distribution was concentrated within, and immediately to the north of, the area of the fort located by the geophysical survey, with a relatively very low density distribution continuing to the east, reflecting the fieldwalking results from Field 74 immediately to the southeast (see above).

3.5 Field 78
(OS Field No.5100, centre SE 385 670)

A small area of this field was intensively fieldwalked at the eastern corner (fig. 6). The field was flat, and the surface was fairly flat with a young cereal crop. Fieldwalking conditions were good.

An area of 0.16 hectares was walked. A total of 29 objects were recovered, including 7 struck flints, 1 sherd of possible Roman pottery, 20 sherds of possibly medieval pottery and 1 undated sherd of pottery. No conclusions could be drawn from the distribution of such a small number of objects within such a small area.

3.6 Field 89
(OS Field No.3369, centre SE 3831 6971)

The whole of this field was rapidly walked (fig. 7), and the proposed motorway construction corridor along the eastern side was subsequently intensively fieldwalked (fig. 8). The field generally sloped down slightly to the east. Large quantities of gravel and stones were present on the surface, implying subsoil disturbance during ploughing, representing a threat to any archaeological deposits present. The field surface was very flattened due to harvesting of a ?pulse crop, and represented a very poor fieldwalking medium.

An area of 14.2 hectares was rapidly walked in 132 lines with a total length of c.27400m. A total of 180 objects were noted, including 168 flints (1 unworked, 3 burnt, 79 struck flakes, 36 retouched flakes and 49 tools), 2 hammer stones (1 certain, 1 probable), 6 sherds of probable or definite prehistoric pottery, and 4 sherds of medieval pottery. The flint was distributed mainly towards the northern and southern ends of the field, with a dense concentration in the north-eastern corner centred at SE 383 698, which included a large sherd of Bronze Age decorated pottery which was recovered for verification. Its presence implied active ongoing destruction of archaeological deposits by ploughing. The other prehistoric pottery was widely distributed further to the south, near the centre of the field.

As a response to the results of the rapid walking, an area of 1.02 hectares was intensively fieldwalked within the proposed construction corridor along the eastern side of the field. A total of 80 objects were recovered, including 72 flints (6 burnt, 33 struck flakes, 23 retouched flakes and 10 tools), 1 sherd of probable prehistoric pottery, 1 sherd of medieval pottery and 6 sherds of undated pottery. Almost all of the finds were recovered from the southernmost 200m, with a very rapid tail-off towards the centre of the field, which reflected the rapid fieldwalking results. This southern flint distribution could be associated with a ring ditch recorded from APs (NYCC SMR No.8019). Note however that a re-examination of the APs during the Desk Top Study [1] failed to identify the feature.

The north-eastern side of the field was bounded by a hedge/clearance bank and a wooded linear hollow continuing the line of the B.6265 road from Boroughbridge northwards, and apparently represented the old line of the A.1 before construction of the existing Boroughbridge bypass. The age of the trees appeared consistent with this. It did not continue to the north of the Marton-le-Moor A.1 junction at the northern end of Field 89. A milestone was recorded at SE 38406 69879 on top of the bank on the western side of the hollow way. It was a quadrant in plan, with the two straight sides facing the relict roadway. The top was a quarter dome. The two flat faces were 0.32m wide, and the visible height was 0.61m. Vague traces of incised characters could be discerned on all three faces, but were too weathered to be legible. Two benchmarks survived on the west-facing (curved) face, and one on the northeast-facing side.

3.7 Field 94
(OS Field No.3961, centre SE 374 716)

The whole of this field was rapidly walked (fig. 9). It sloped gradually down to the east. The field surface was fairly flat and weathered with a very young cereal crop. Walking conditions were only fair (poor light).

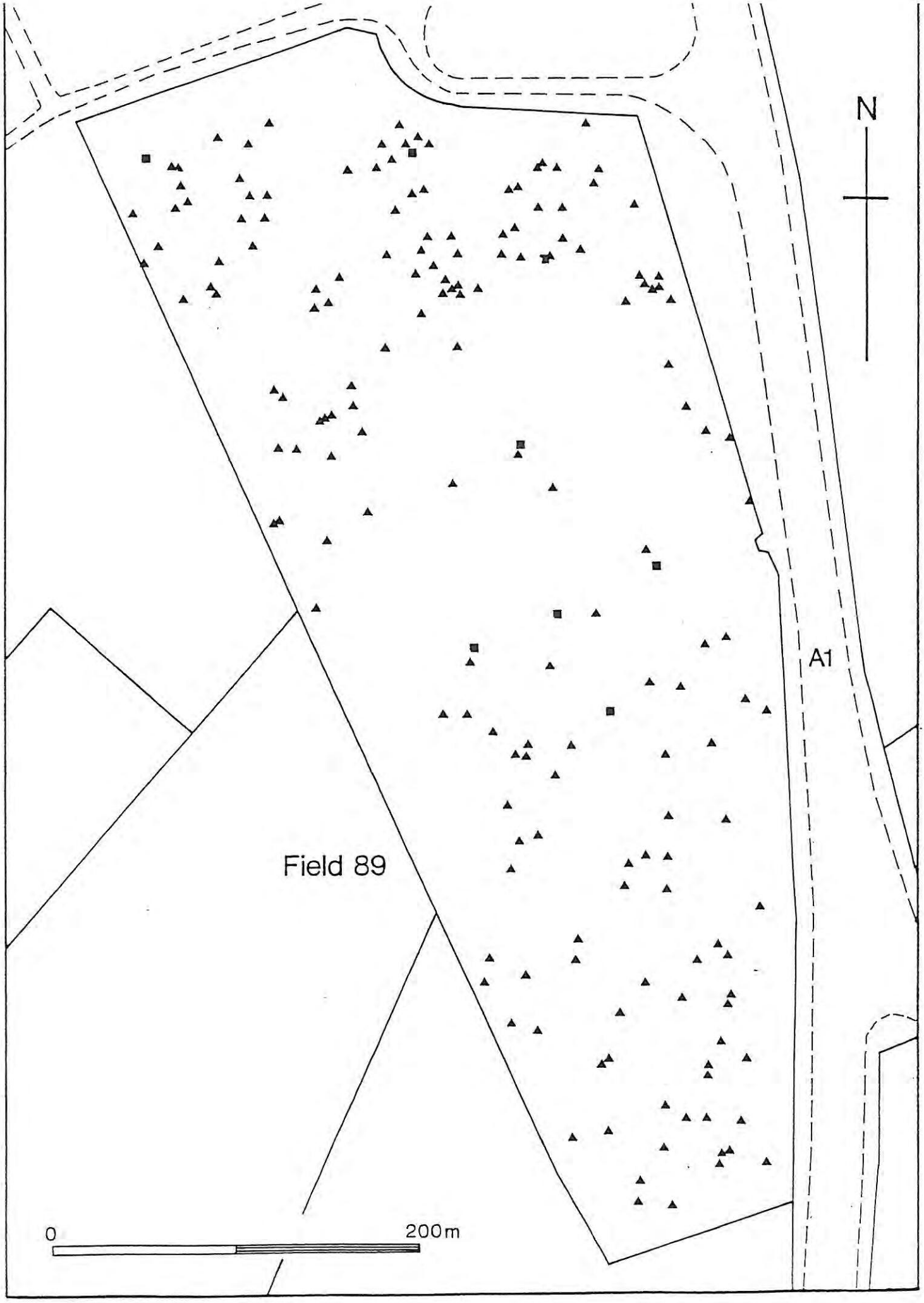


Fig. 7: Field 89 - rapid fieldwalking finds distribution

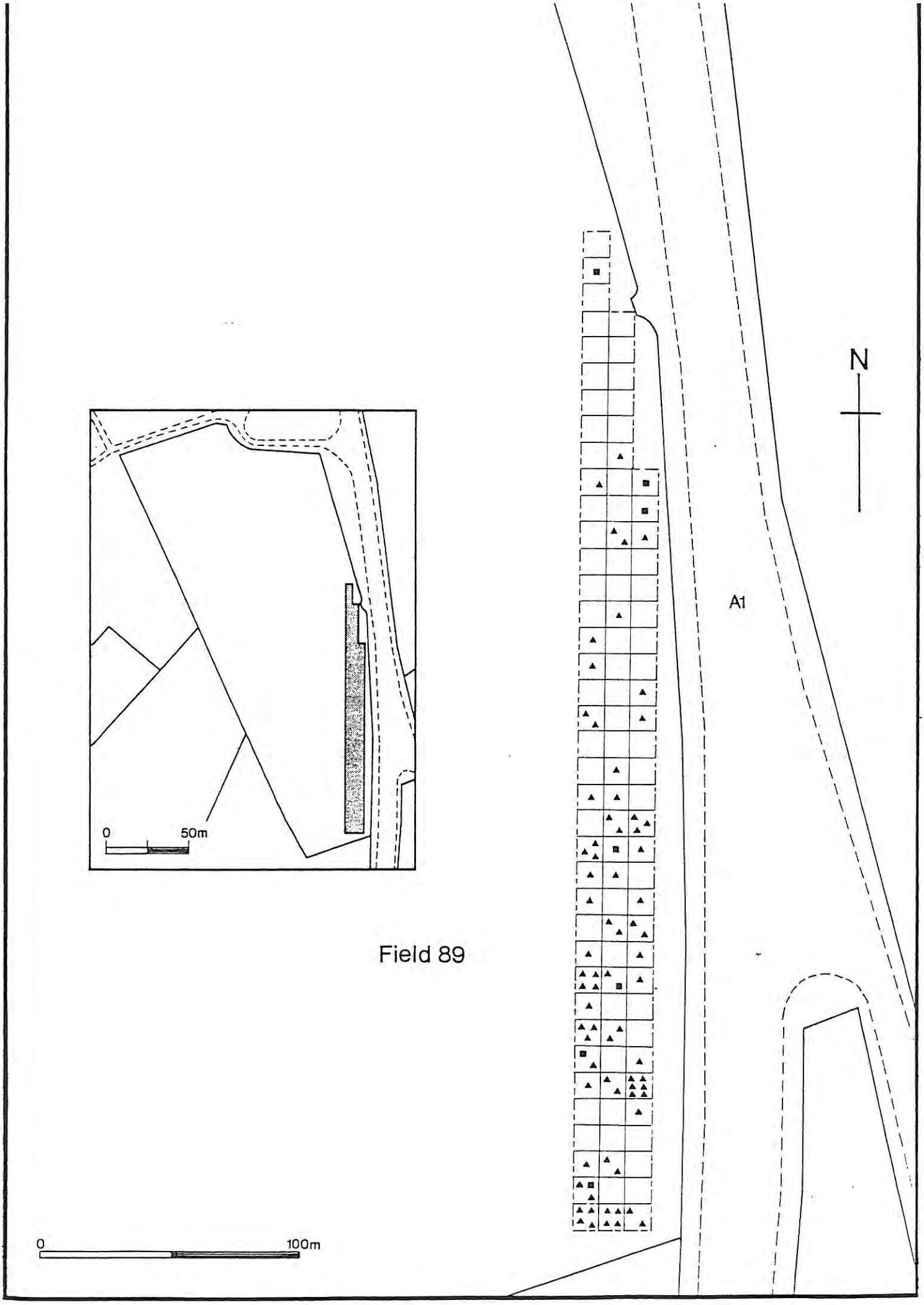


Fig. 8: Field 89 - intensive fieldwalking finds distribution

APPENDIX 5: A1 Motorway: Walshford to Dishforth: Extract from Publication: Watching Brief in Fields 84-107.

Extract from publication draft

EXCAVATION WITHIN A NEOLITHIC AND EARLY BRONZE AGE LANDSCAPE BETWEEN BOROUGHBRIDGE AND MARTON-LE-MOOR, NORTH YORKSHIRE

1993-1995

edited by Greg Speed with contributions from Jacqueline P. Huntley, Peter Makey, T. G. Manby and Nick Tavener,

Field 87

The walkover survey identified a moderate number of flints lying on the surface in this area, mainly concentrated towards the centre of the corridor with a few to the south and north (see accompanying M. Griffiths Associates Fieldwalking plot).

A possible large ring ditch is visible on a single oblique aerial photograph centred at SE 3822 6877 within Field 87 (MoT 1990, Frame 34). Its position roughly corresponds to the 45m contour shown on the OS 1:25000 survey. It should be noted that the summit of a similar small raised hillock at Bainesse, Catterick has recently been shown to be encircled by a probable ring-ditch which produced a quantity of Peterborough Ware of middle Neolithic date (Speed 2010).

Pit group 6034 (not illustrated)

A small group of eight pits [6034] were found around a large natural hollow at the south end of the field, c.25-50m north of the field boundary (Figure 20). Three of the pits [6023, 6025 and 6027] were clustered together on the south side of the hollow with a further four pits [6009, 6015, 6019 and 6021] in a line along the north side. The other pit [6017] lay some 5m to the north-east. The pits were characterised by very loose ashy fills comprising *c.*50% burnt and heat shattered stones. Despite similarities between these fills and those of Neolithic pits to the north, none contained any datable finds.

Field 88 (Figure 21)

Two groups, [6230] and [6237], comprising a total of 10 pits, were found at the western side of the corridor close to the hedgerow between Fields 88 and 89 (Figure 21). Group [6237] was rather dispersed and included pits containing both early and late Neolithic pottery, suggesting that the apparent grouping might be coincidental.

Pit group 6237

This group of seven small pits was located *c.*25m to the south of group [6230] (see below) and was concentrated within an area *c.*10m square. The group could be seen as two clusters, one to the east and one to the west. There were three pits on the east side of this group, [6241, 6243 and 6247], and four pits on the west side, [6245, 6249, 6253 and 6259]. All of the features were reasonably circular but shallow and four contained pottery.

Of the pits to the east, pit [6241] was fairly large, measuring 1.20m in diameter and 0.32m deep, and contained a considerable quantity of Late Neolithic pottery including later Peterborough Ware and Durrington Walls style Grooved Ware as well as flint debitage, fire shattered stones, carbonised hazelnut shells and crab apples. Pit [6247] also contained late Neolithic pottery, flint debitage, fire shattered stone, carbonized hazelnut and crab apples and may well have been associated with [6241]. Pit [6243] was smaller, measuring up to 0.91m in diameter and 0.11m deep, and contained three flint flakes but no pottery.

The western grouping seemed to form a rough line, but one of the features [6253] produced no finds and may have been natural in origin. The other pits were oval or sub-rectangular in plan, measuring up to1.08m across and up to 0.26m deep. Pit [6259] contained eight sherds of earlier Neolithic pottery and a single flint flake. Pit [6245] contained a single piece of undiagnostic prehistoric pottery, whilst [6249] contained 38 sherds of earlier Neolithic pottery, 9 pieces of flint debitage, some fire shattered stones and carbonised hazelnut shells.

Pit group 6230

This group consisted of three small, closely spaced pits [6232, 6234 and 6235] located almost under the boundary to Field 89 at the western side of the corridor. Any degree of enhanced protection offered by the greater depth of the overlying topsoil and absence of modern ploughing had been largely offset by considerable root disturbance from the overlying hedgerow.

The pits were all roughly circular, varying between 0.65m and 1m in diameter and 0.12m to 0.23m deep, and were filled with uniform deposits of mid brown silty sand loam. Although there were no finds, two of the pits yielded carbonised evidence for foodstuffs and fire shattered stones similar in nature to the Neolithic features encountered elsewhere.

Field 89

Rapid fieldwalking of the whole of Field 89, an area of 14.2 ha centred at SE 383 697, was undertaken in advance of motorway construction (Figure 22). This non-recovery survey observed a total of 168 worked flints, distributed mainly towards the southern and northern ends of the field including a concentration at the north-eastern corner of the field centred at SE 3835 6985 (Figure 22). Prehistoric pottery was observed amongst

this group and further sherds were observed across the central part of the field between the two main flint groupings. Subsequently, a strip comprising 1.02 ha was intensively fieldwalked along the eastern side of the field within the proposed motorway construction corridor (accompanying unnumbered figure). This produced 10 flint tools, 62 flakes and a sherd of prehistoric pottery, mainly concentrated within the southern *c.*150m of the corridor. Subsequent topsoil stripping within this field revealed a number of prehistoric features mainly concentrated within this southern end of the corridor (Figure 23).

A group [6238] of two pits was found virtually under the field hedgerow at the south end of the field. Some 10m to the north, an extensive stone scatter [6219] was investigated but could not be dated or interpreted. A second group of three pits, group [6260], was found some 40m to the north of group [6238]; and two further features, [6210] and [6217] were located 20m north of this group. The field was largely devoid of archaeological features to the north of these features, 5 widely scattered pits at its northern end being given a 'group' number [6239].

Pit group 6238

Two pits, [6200] and [6202], were found close together immediately to the north of the southern field boundary. Although shallow, they were very neatly cut and circular. Both contained deposits of intensely sooty soil with numerous heat-shattered stones, possibly 'pot boilers'. Pit [6200] yielded 75 sherds of Grimston ware (more than 4 vessels represented) and 21 pieces of flint, and carbonised hazelnut shell from the fill gave a radiocarbon date of 3710-3350 cal BC (98%) at 2σ (OxA-5580). Pit [6202] yielded 2 pieces of Grimston Ware and 4 pieces of flint. Both features contained small quantities of carbonised hazelnut shell.

Pit group 6260

This group consisted of three small, shallow, closely spaced pits, [6204], [6206] and [6208]. They were all fairly circular, 0.30-0.70m in diameter and 0.07-0.20m deep, and had loamy fills. Pit [6204] contained 126 sherds of Grimston Ware, representing at least 6 vessels, 22 worked flints and carbonised foodstuffs and was the only feature in the group that contained heat shattered or burnt stones. Hazelnut shell from this pit produced a radiocarbon date of 3820-3610 cal BC (78%) at 2σ (OxA-5581). Pit [6206] produced a crumb of prehistoric pottery, 3 flints of later Neolithic or early Bronze Age style and carbonised foodstuffs. No finds were recovered from pit [6208].

A larger pit [6210], up to 1.40m wide and 0.45m deep, was located 20m to the north of group [6260]. It produced 104 sherds of Woodlands style Grooved Ware representing at least 13 vessels and a very large assemblage of 170 worked flints including a wide range of tool types including a fragment of a polished flint axe. Carbonised hazelnuts were also present and radiocarbon assay of a sample of these gave a date of 3100-2870 cal BC (90%) at 2σ (OxA-5569). Part of a curvilinear feature [6217] immediately to the north was observed for 3m but could not be traced either to the east or the west. It was 0.40m wide and cut 0.20m into the subsoil. No dating

evidence for this feature was recovered and its proximity to pit [6210] might have been coincidental.

Pit group 6239 (no illustration)

The most northerly group in Field 89 consisted of 5 widely scattered, isolated, features at the northern end of the field. A pair of pits, [6215] and [6227] were located *c.*100m to the north of group [6260], pit [6223] was 220m to the north of pit [6227], and pits [6221] and [6225] lay 45m to the north of [6223]. Of these features, pits [6215], [6221] and [6223] produced no dating evidence although [6221] contained heat-shattered stone. Pit [6225] was circular, 0.86m in diameter and 0.32m deep, and produced 29 sherds of Woodlands style Grooved Ware and 2 flints. Carbonised hazelnut shell from this feature produced a radiocarbon date of 3350-2650 cal BC at 2σ (OxA-5573). Pit [6227] included a possibly Neolithic flint arrowhead.

References

Ministry of Transport (1990) *Oblique Aerial Photographs, July 1990, A1 Walshford to Dishforth*

Speed, G. (2010) 'Three New Prehistoric Sites near Catterick, North Yorkshire'. *Prehistory Research Section Bulletin of the Yorkshire Archaeological Society* 47, 77-86

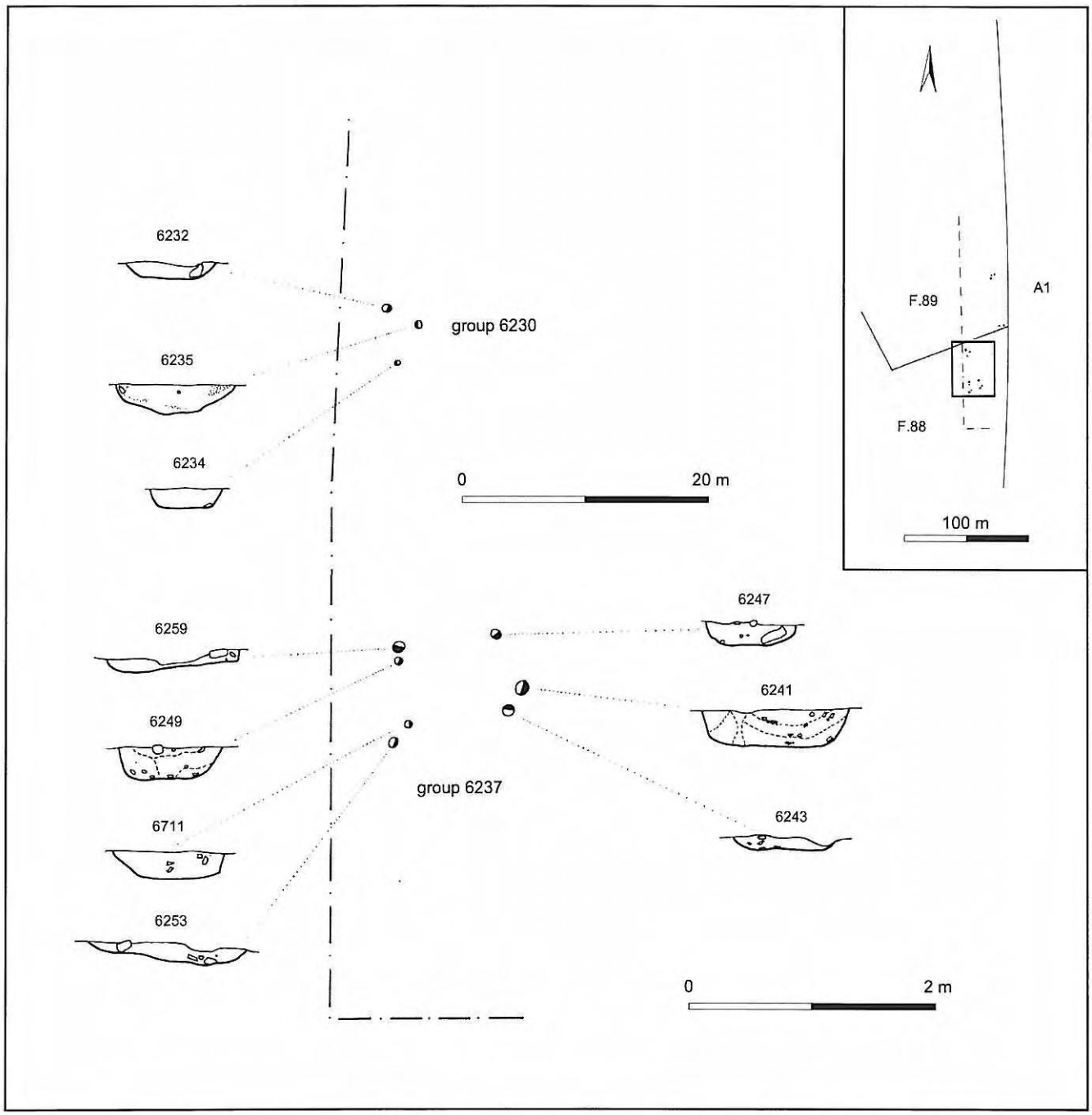


Figure 21 Walshford to Dishforth: Field 88, pit groups 6230 and 6237

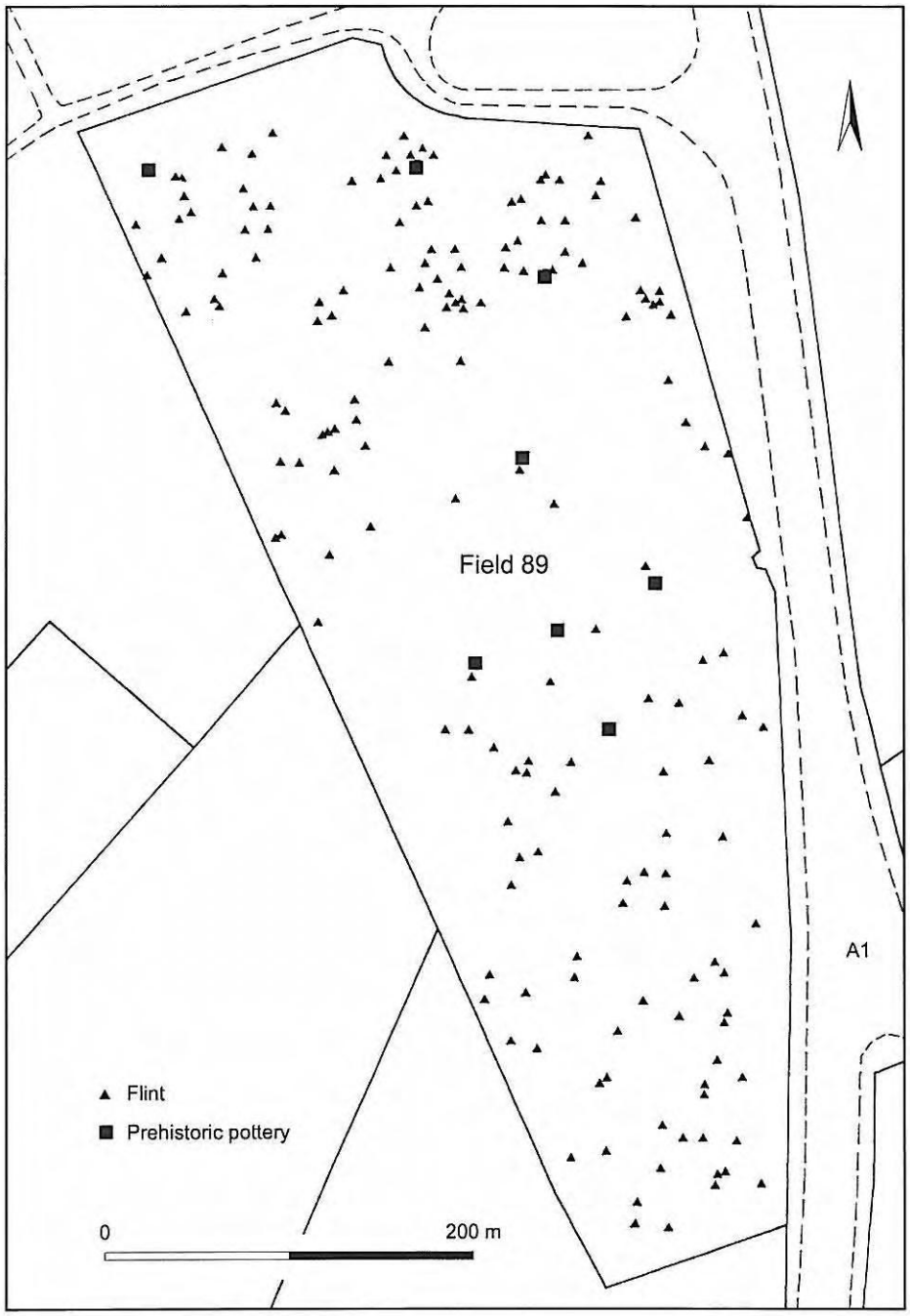


Figure 22 Walshford to Dishforth: Field 89, results of rapid field walking

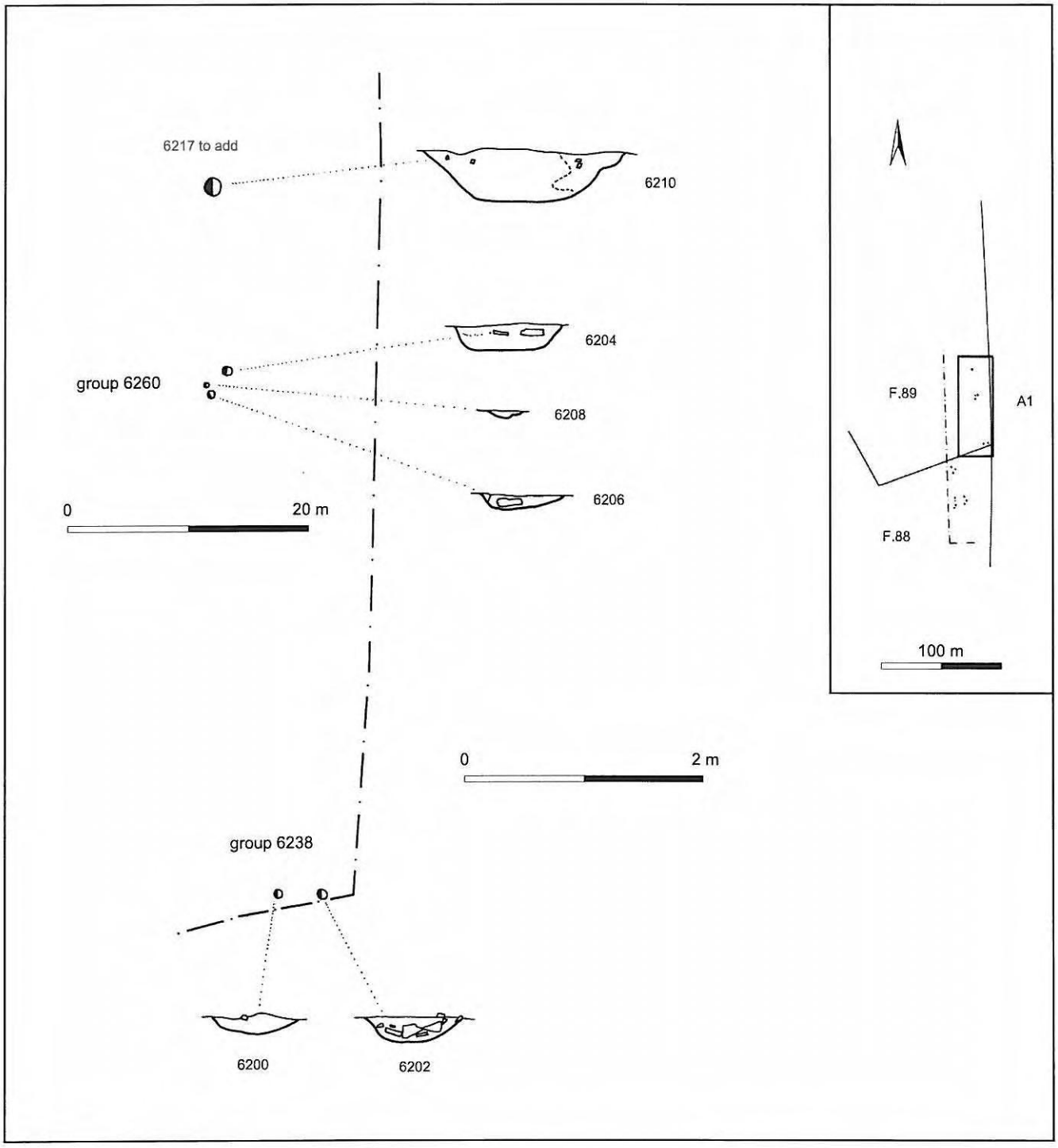


Figure 23 Walshford to Dishforth: Field 89, excavated features in south of field

APPENDIX 6: Geophysical Survey Report: Kirby Hill MSA (GSB 1997)

JSAC 278 (cabinet)

SITE SUMMARY SHEET

97 / 85 Kirby Hill, North Yorkshire

NGR: SE 39 69

Location, topography and geology

Two areas were investigated adjacent to the A1(M), just north west of Boroughbridge. The fields are reasonably flat with low vegetation. One field on the western side of the A1(M) was unsuitable for survey due to the height of the vegetation. The soils are deep well drained coarse loams and sands formed from glaciofluvial or river terrace drift. They are characteristic of the Wick 1 (541r) and Escrick 2 (571q) associations (SSEW, 1983).

Archaeology

The general area around the potential development is known to be rich in archaeological sites. The Devil's Arrows and a Roman fort are located west of Boroughbridge, while a probable Roman Road lies to the east of the site. During the evaluation for the widening of the A1(M) a number of sites were identified near to the proposed service station. A flint scatter has been noted within the western area of the GSB Prospection survey, along the western edge of the A1(M) road. This is the only suggestion of archaeology within the area of the proposed service station.

Aims of Survey

The geophysical survey forms part of an archaeological assessment being carried out by **John Samuels Archaeological Consultants.** It was hoped that geophysical survey would be of assistance in determining the presence, or otherwise, of buried archaeological remains within the survey area. It is believed that a gradiometer survey would also give information on the nature and extent of archaeological deposits located within the survey area.

Summary of Results *

The gradiometer survey consisted of a scan of the two areas followed by detailed survey over anomalies of interest. In general, the scan suggested a low background of magnetic variation and few anomalies were noted. The detailed survey confirmed the low background. In the eastern part of the survey there are no anomalies of clear archaeological potential. The anomalies found in the western survey area are likely to reflect relatively recent use of the land.

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

SURVEY RESULTS

97 / 85 Kirby Hill, North Yorkshire

1. Survey Areas

1.1 The extent of the scanned areas and the position of the two detailed survey areas, A and B, are shown in Figure 1 at a scale of 1:5000. Two areas were chosen for detailed survey and their location is shown also on Figure 1.

1.2 The survey grid was established and tied-in by **Geophysical Surveys of Bradford** using an EDM. Detailed tie-in information has been lodged with the client. Wooden stakes were left on the baseline at field edges to facilitate easier relocation of the grid.

2. Display

2.1 The data from the detailed recorded survey areas are displayed as XY traces and dot density plots at a scale of 1:625. Interpretation diagrams are also provided at the same scale.

2.2 The display formats referred to above are discussed in the *Technical Information* section, at the end of the text.

3. General Considerations - Complicating factors

3.1 Ground conditions were variable. The fields in the eastern part of the survey all contained low vegetation. Within the western part of the survey the main field was bare earth, while the small field to the north contained unsuitable survey conditions. The areas are marked on Figure 1.

3.2 The soil types prevailing at the site are likely to produce a moderate to weak magnetic response unless remains of intensive settlement/industrial activity are present.

4. Results

Both areas were scanned at 10m intervals using fluxgate gradiometers. In this method of prospection the traverse interval is decreased when potential anomalies are noted on the instruments LCD. If on closer scanning the anomaly is considered to have archaeological potential then its position is marked with a cane and detailed survey is undertaken at this point.

Area A - The Eastern Area

4.1 The Scan

4.1.1 The scan found very few anomalies of archaeological potential. A zone of increased noise was noted towards the southern end of the main field. A 40m wide traverse was therefore surveyed in detail in this area.

4.2 Detailed Survey

4.2.1 The detailed survey confirmed the initial findings of the scan. The magnetic background was very low, although a number of 'iron spikes' are evident within the data set.

4.2.2 The most obvious anomalies are due to the debris surrounding the former A1 road that is now grassed covered.

4.2.3 There is a hint of some linear anomalies at the southern end of the survey area. They are very weak and are likely to be natural or the result of agricultural activity at the site. These anomalies in fact lie just beyond the proposed area of the services.

4.2.4 Several pit type anomalies were detected, particularly in the northern part of the survey area. However, given the scatter of ferrous debris also recorded the interpretation of the pit anomalies is tentative.

Area B - The Western Area

4.3 The Scan

4.3.1 While the major part of this area was bare earth / stubble, the northernmost part of the area was unsuitable for survey due to the height of the vegetation. As in the eastern scan, the background was found to be magnetically low with few targets for detailed survey. Those that were noted were again in the southern part of the scanned area. Detailed survey was undertaken in this zone.

4.4 Detailed Survey

4.4.1 The detailed survey again confirmed the results of the scan. The data set was found to be magnetically quiet, although by comparison with the detailed survey from Area A there were fewer ferrous type anomalies within the data.

4.4.2 The clearest anomalies are due to ferrous type anomalies and general variation due to the road and large vehicles passing along it.

4.4.3 While there are some linear anomalies they are very weak and it is again believed that they are likely to be natural in origin or the result of recent agricultural practices.

4.4.4 A group of possible pit type anomalies are indicated on the interpretation diagram in the northern part of the survey area. Whilst it is possible that these relate to archaeological remains, as with Area A, it is likely that they are due to ferrous debris in the topsoil.

5. Conclusions

5.1 In general, the response within the areas of the scan indicated a magnetically low background. While some zones of disturbance were recognised no anomalies of definite archaeological interest could be found. The detailed survey confirmed the results of the scan. In both areas only very weak linear anomalies could be identified. It is believed that they are likely to be the result of natural or agricultural variation. From the experience of other surveys adjacent to the A1 and to the south of this site it would seem unlikely that any of the anomalies noted here relate to settlement or similar activities.

Reference

SSEW, 1983 *Soils of England and Wales. Sheet 1, Northern England.* Soil Survey of England and Wales, 1983.

Project Co-ordinators: Dr C F Gaffney
Project Assistants: J A Gater, A Shields and C Stephens

Start of Survey: 6th October 1997
Date of Report: 10th October 1997

TECHNICAL INFORMATION

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

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

Magnetic readings are logged at 0.5m intervals along one axis in 1m traverses giving 800 readings per 20m x 20m grid, unless otherwise stated. Resistance readings are logged at 1m intervals giving 400 readings per 20m x 20m grid. The data are then transferred to portable computers and stored on 3.5" floppy discs.

Instrumentation

(a) Fluxgate Gradiometer - Geoscan FM36

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

(b) Resistance Meter - Geoscan RM4 or RM15

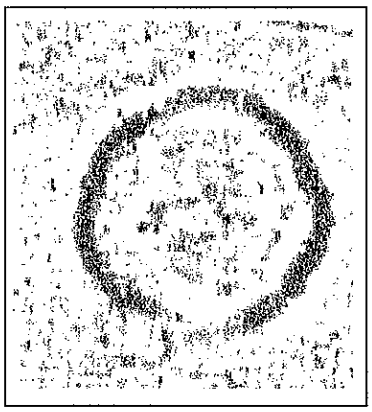
This measures the electrical resistance of the earth, using a system of four electrodes (two current and two potential.) Depending on the arrangement of these electrodes an exact measurement of a specific volume of earth may be acquired. This resistance value may then be used to calculate the earth resistivity.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

(c) Magnetic Susceptibility

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

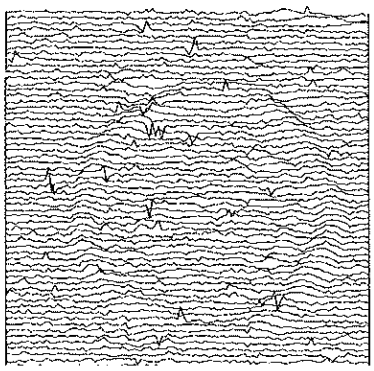
Display Options

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



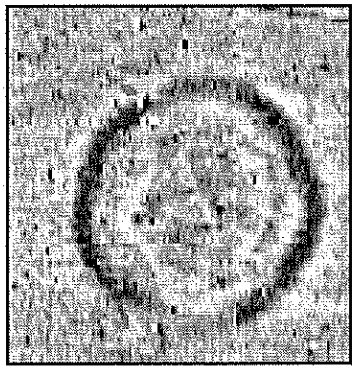
(a) Dot-Density

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



(b) X-Y Plot

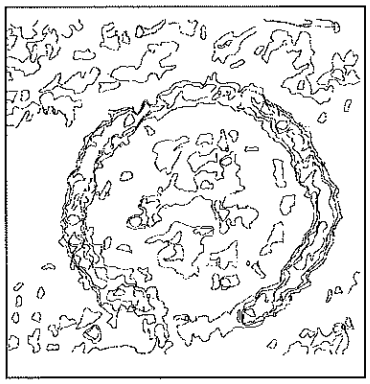
This involves a line representation of the data. Each successive row of data is equally incremented in the Y axis, to produce a stacked profile effect. This display may incorporate a hidden-line removal algorithm, which blocks out lines behind the major peaks and can aid interpretation. Advantages of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



(c) Grey-Scale

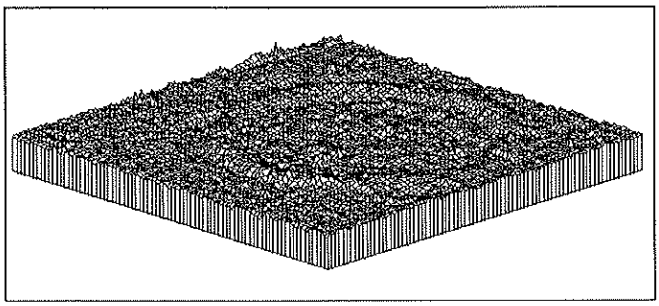
This format divides a given range of readings into a set number of classes. These classes have a predefined arrangement of dots or shade of grey, the intensity increasing with value. This gives an appearance of a toned or grey scale.

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



(d) Contour

This display format is commonly used in cartographic displays. Data points of equal value are joined by a contour line. Closely packed contours indicate a sharp gradient. The contours therefore highlight an anomalous region. The range of contours and contour interval are selected manually and the display is then generated on the computer screen or plotted directly on a flat bed plotter / inkjet printer.



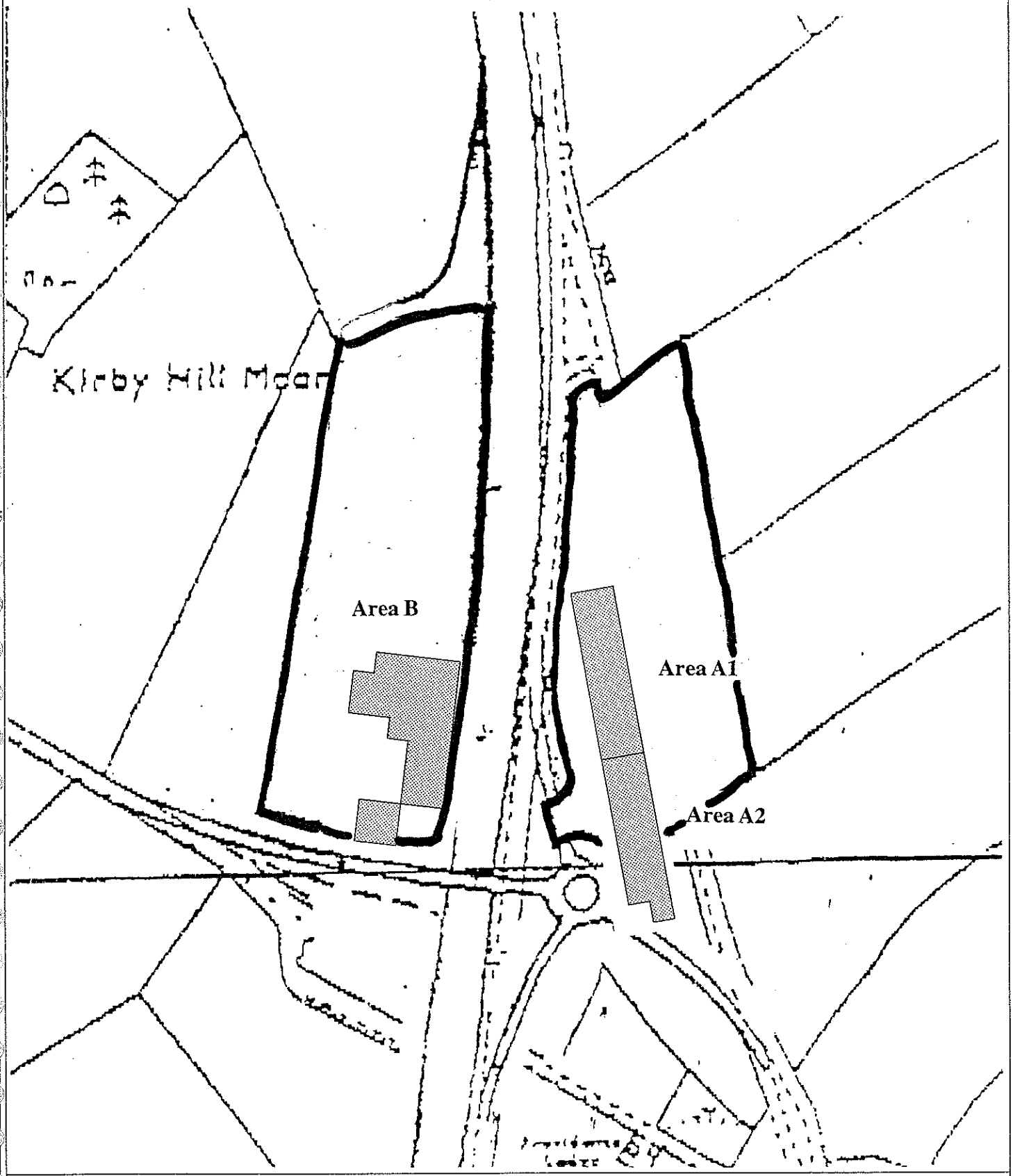
(e) 3-D Mesh

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

LIST OF FIGURES

Figure 1	Sketch Location Diagram	1:5000
Figure A1	Area A: XY trace	1:625
Figure A2	Area A: Dot density plot	1:625
Figure A3	Area A: Interpretation	1:625
Figure B1	Area B: XY trace	1:625
Figure B2	Area B: Dot density plot	1:625
Figure B3	Area B: Interpretation	1:625

KIRKBY HILL
Location of Survey Areas



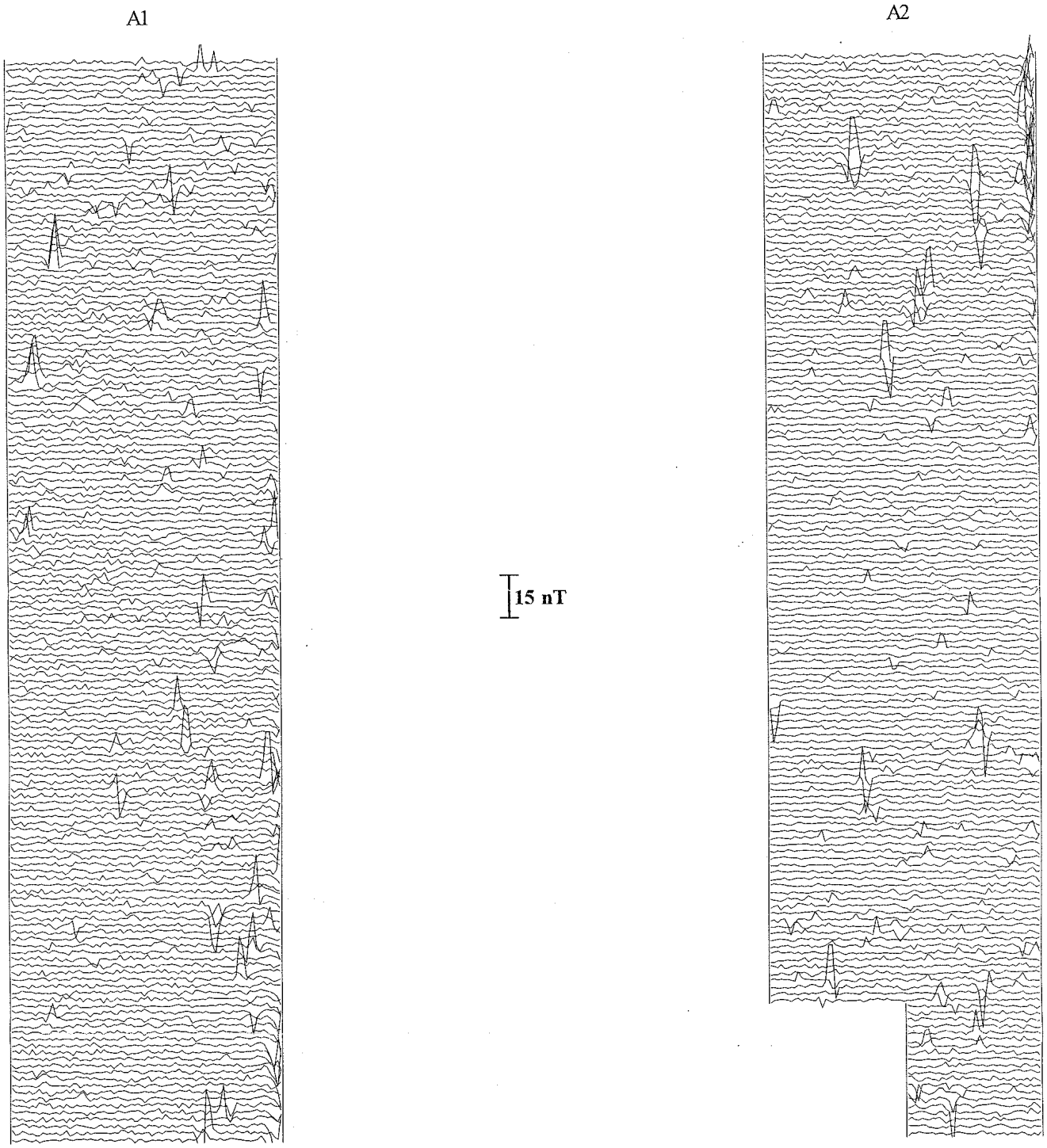
Area of Scanning

Area of Detailed Survey

1:5000

Figure 1

KIRKBY HILL
Area A



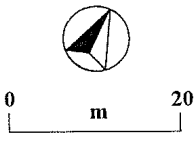
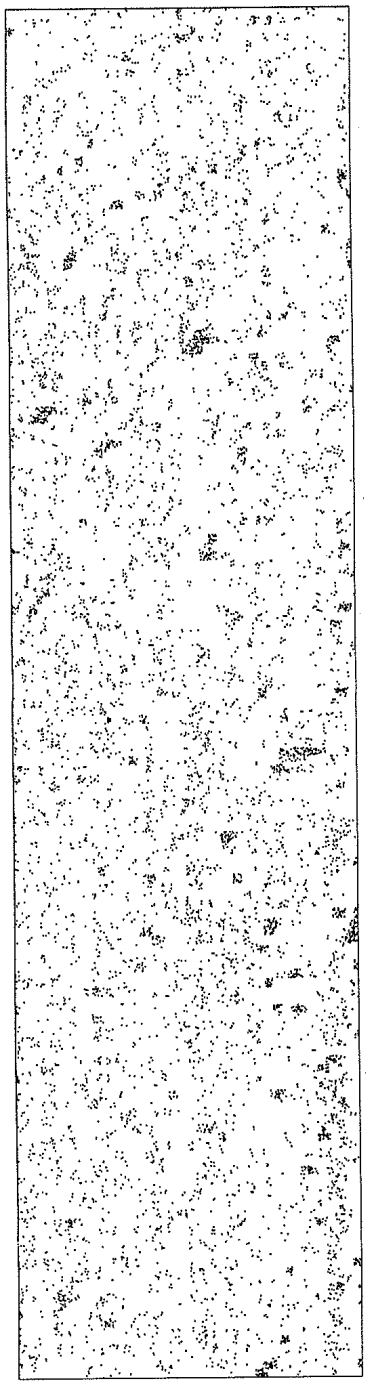


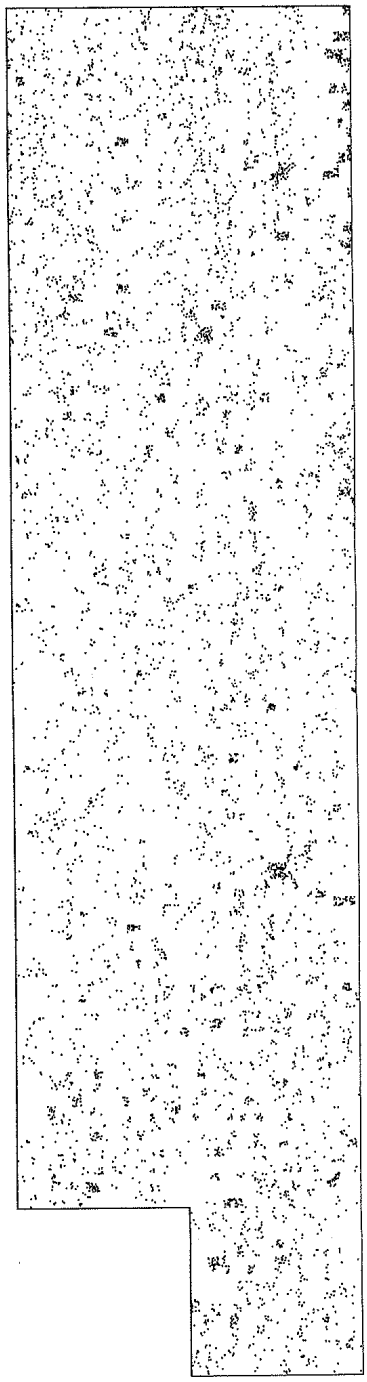
Figure A.1

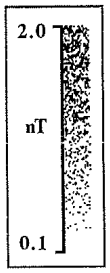
KIRKBY HILL
Area A

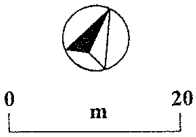
A1



A2



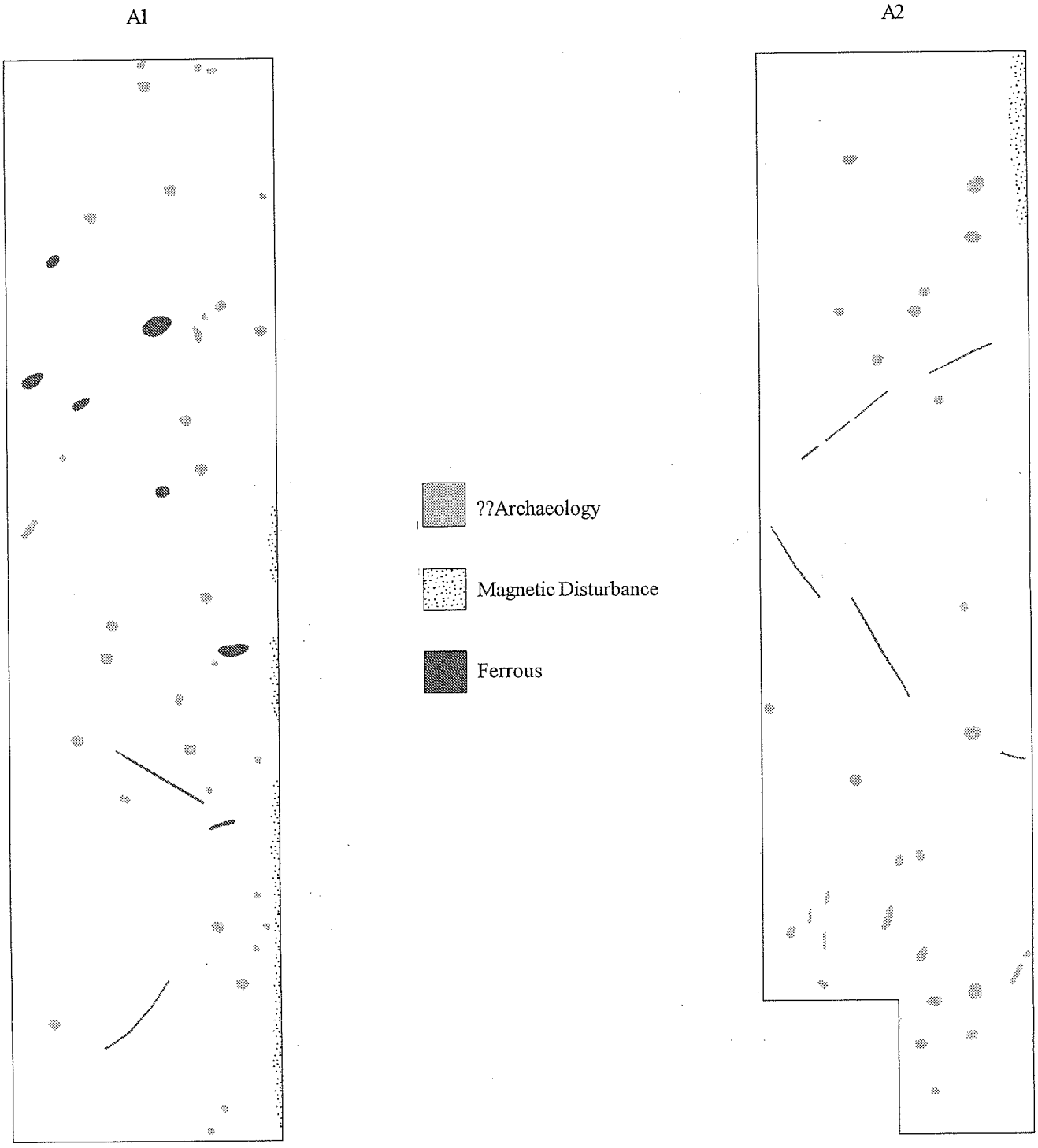


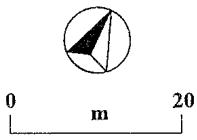


GSB Prospection 97/85

Figure A.2

KIRKBY HILL
Area A



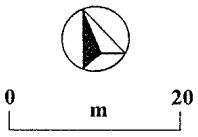


GSB Prospection 97/85

Figure A.3

KIRKBY HILL
Area B

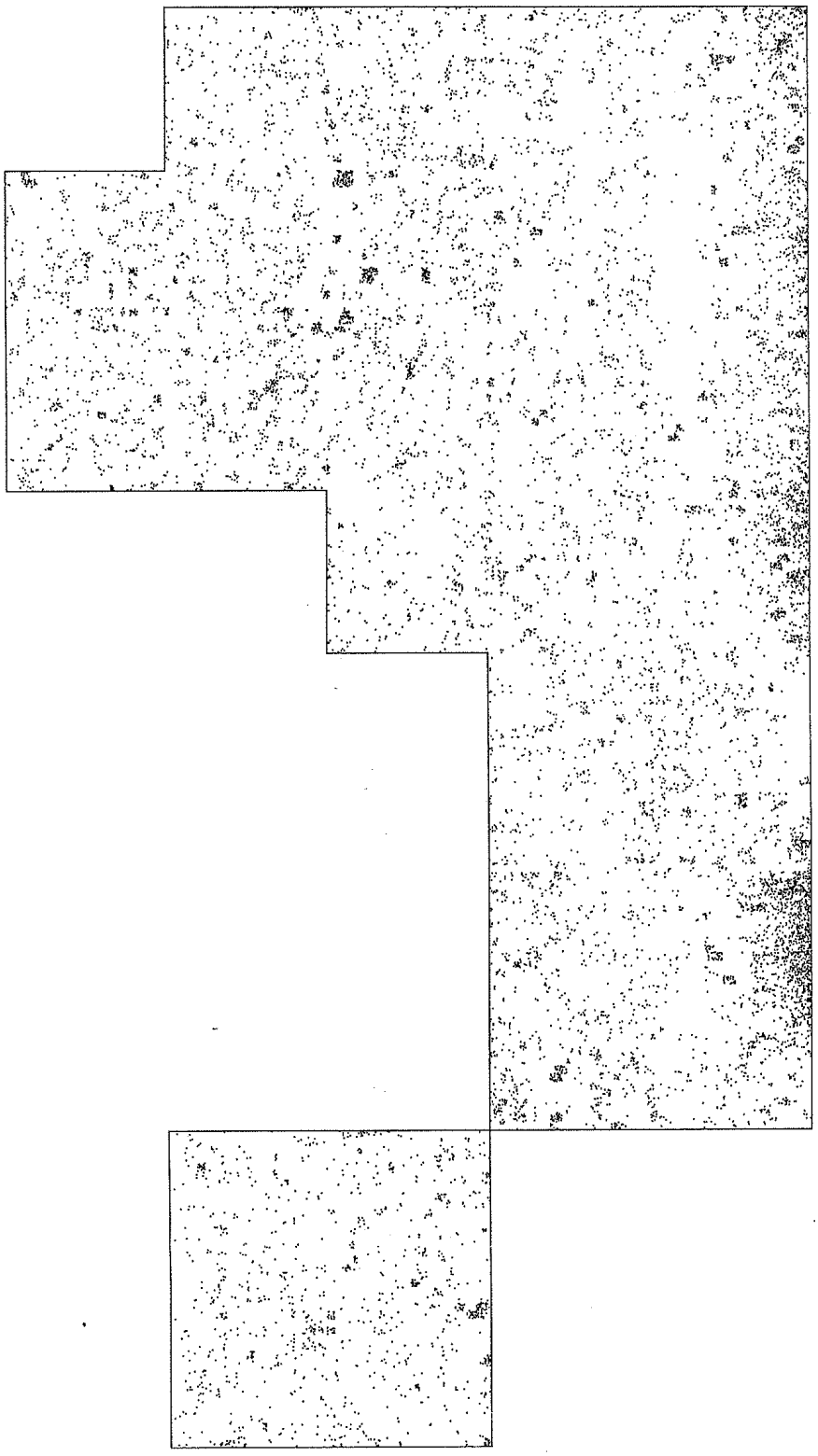
15 nT

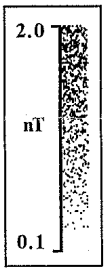


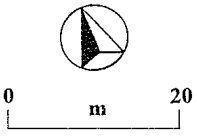
GSB Prospection 97/85

Figure B.1

KIRKBY HILL
Area B







GSB Prospection 97/85

Figure B.2

KIRKBY HILL
Area B

??Archaeology

Magnetic Disturbance

Ferrous

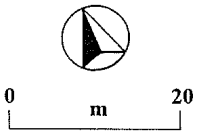


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Figure B.3

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