

**A46 NEWARK TO WIDMERPOOL IMPROVEMENT
GEOPHYSICAL SURVEY, FIELDWALKING AND
LANDSCAPE INTERPRETATION AT
MARGIDUNUM, NOTTINGHAMSHIRE**

TRENT & PEAK
ARCHAEOLOGICAL UNIT

The logo consists of a stylized landscape. On the left, a river flows downwards, represented by several horizontal wavy lines. On the right, a mountain peak rises, also represented by several horizontal wavy lines. A small ampersand (&) is positioned between the river and the peak, connecting them.

Received from T&PA at
Lingfield No 3. 22nd July 04.
wb

**A46 NEWARK TO WIDMERPOOL IMPROVEMENT
GEOPHYSICAL SURVEY, FIELDWALKING AND
LANDSCAPE INTERPRETATION AT
MARGIDUNUM, NOTTINGHAMSHIRE**

Authors: E. Appleton, J. Brown, G. Kinsley, D. Knight and R. Leary, Trent & Peak Archaeological Unit

T. Johnson, Oxford Archaeotechnics

16th July 2004

T&PAU Project Codes: MAR.2, MAR.3

Filename: Mar2RepRevB.doc

© Trent & Peak Archaeological Unit 2004

Trent & Peak Archaeological Unit
University Park
Nottingham NG7 2RD
Tel (0115) 9514823
Fax (0115) 9514824
email gavin.kinsley@nottingham.ac.uk

Contents

Summary	4
1 Project background, site location and brief description of the proposed scheme	5
2 Landscape history: historic map evidence and walkover survey	5
3 Cropmarks	7
4 Fieldwalking	8
Scope	8
The Finds	8
<i>Prehistoric</i>	8
<i>Romano-British artefacts</i>	10
<i>Medieval and post-Medieval</i>	11
5 Geophysical survey methods	11
6 Topsoil Magnetic Susceptibility Survey: Results	11
7 Detailed Magnetometry Survey: Results	12
Field 4437.....	12
Fields 6100/3908.....	12
Field 7111.....	12
8 The villa: general discussion.....	12
9 General conclusions.....	13
10 References	13
11 Acknowledgements.....	13

Figures

- 1 Off-line road route in relation to areas designated for fieldwalking and magnetic susceptibility scanning, showing OS parcel numbers and areas completed
- 2 Existing boundaries
- 3 Off-line road route in relation to existing boundaries, in relation to all mapped boundaries in East Bridgford, and late-18th/early 19th-century boundaries in Newton
- 4 Off-line road route in relation to existing boundaries, and in relation Sanderson's map of 1835
- 5 Off-line road route in relation to existing boundaries, and in relation to 1883 mapping
- 6 Off-line road route in relation to 1883 mapping and existing boundaries
- 7 Off-line road route in relation to distribution of all finds from fieldwalking
- 8 Off-line road route in relation to distribution of hand made pottery, flint and fire-cracked pebbles from fieldwalking
- 9 Off-line road route in relation to Romano-British pottery and brick/tile from fieldwalking
- 10 Details of field 4437b showing off-line road route in relation to distribution of Romano-British building debris from fieldwalking
- 11 Details of field 4437b showing off-line road route in relation to detailed magnetometry
- 12 Details of field 4437b showing off-line road route in relation to detailed magnetometry with superimposed distribution of Romano-British building debris from fieldwalking
- 13 Off-line road route in relation to distribution of medieval pottery and post-Roman brick/tile from fieldwalking
- 14 Off-line road route in relation to topsoil magnetic susceptibility
- 15 Off-line road route in relation to detailed magnetometry in fields 3908 to 4437b
- 16 Field 8949 showing topsoil magnetic susceptibility and surveyed cropmarks
- 17 Off-line road route in relation to detailed magnetometry in field 7111

Summary

- This survey was carried out by Trent & Peak Archaeological Unit on behalf of Kellogg, Brown and Root Ltd, to a design by Place Archaeological Consultants Ltd.
- The fieldwork took place between April and December 2003, and comprised a walkover survey (field inspection and interpretation), collation of historic mapping, fieldwalking, and geophysical survey.
- The study area falls in two parishes divided by the A6097 road: East Bridgford and Shelford-and-Newton.
- Due to the cropping regimes, two of the originally-designated fields remote from the route were inaccessible for fieldwalking, and will not be walked; all the designated geophysical survey was completed.
- In East Bridgford, hedged boundaries formed during early enclosure in 1605 were largely retained until the post-war period when most were removed.
- On the north-east side of the A6097, a stretch of an old road, The Street Way, is preserved in paddocks adjacent to the study area, and as a low bank within the study area. It is possibly of Roman origin, though it could alternatively be a medieval plough headland, or both. A plough headland and related boundaries are preserved in the existing hedgerows adjacent to Springfield Lane on the north edge of the study area.
- In Newton, the boundaries are probably of 18th or early 19th-century date.
- Fieldwalking produced a background scatter of flint of Mesolithic to Early Bronze Age date. The flint from field 4437b is the most significant: compared with the main background distribution, this group may represent more concentrated activity over a more restricted period; the date range falls in the Mesolithic or Early Neolithic periods for which there is little data in this region.
- Small quantities of handmade pottery might be of prehistoric date, though other dates cannot be ruled out: One cluster was associated with fire-cracked pebbles in fields 0018/7111, and a second with the villa remains in field 4437b.
- Significant Roman occupation in fields 9300, 0002, 7111 and 0018 is indicated by dense to moderately-dense pottery scatters. An apparent enclosure and trackway complex was revealed by a sample geophysical survey in field 7111. It is orthogonal to the A6097 and may be of Roman date.
- A very large masonry building of Roman date has been identified in field 4437b through surface scatters of Roman pottery and building materials and by magnetometer survey. Some erosion has occurred from ploughing but areas may remain well-preserved, and the full plan has yet to be recovered.
- In fields 3908 and 6100, rectilinear features revealed by magnetometer survey appear to be enclosures abutting the Fosse Way; they may be of Roman date.
- In field 8949 a significant magnetic susceptibility anomaly corresponded with linear features showing in the crop, suggesting the presence of a robbed building. A Roman date is suspected from the proximity to the Fosse Way.
- Medieval pottery is distributed widely but evenly over the area; this is consistent with manuring and there is nothing to indicate any focus of activity.

1 Project background, site location and brief description of the proposed scheme

This survey was commissioned by Kellogg, Brown and Root in relation to the proposed upgrading of the A46 near Bingham in Nottinghamshire. Its purpose was to investigate potential archaeological sites on the off-line route, and was carried out according to a design by Place Archaeological Consultants Ltd. The work reported on here was carried out between April and December 2003. The extent of work is shown in Fig. 1.

The walkover and landscape history was compiled by David Knight and Gavin Kinsley. The flintwork was reported on by Jenny Brown and the medieval and post-medieval pottery identified by Eileen Appleton and Gavin Kinsley. All other finds are described by Ruth Leary. The geophysics fieldwork was carried out on a sub-contract to Oxford Archaeotechnics, whose plots are included as Figs. 14 - 17. Comments on the significance of the geophysics plots are by Gavin Kinsley, following discussion with Ann Johnson and Tony Johnson of Oxford Archaeotechnics.

The proposed off-line route, shown in most figures, shows the extent of engineering works only and excludes landscaping.

Ordnance Survey land parcel numbers have been used to identify individual fields. Bracketed numbers indicate parcels which have now been amalgamated and are omitted from the referencing used in this report. A number of subsequent sub-divisions have been accommodated with 'a' and 'b' suffixes.

The archive is intended for deposition at Brewhouse Yard Museum, Castle Boulevard, Nottingham NG1 2FB.

2 Landscape history: historic map evidence and walkover survey

A summary of the traceable history of the landscape within the study area follows, based on a walkover survey and consideration of the available history and historic maps.

The walkover survey was carried out by David Knight and Gavin Kinsley on 2nd April 2003. All visible landscape features, structures and landuse were noted. Cropmark features showing in regrowth in the set-aside crop were photographed by Gavin Kinsley and surveyed by Oxford Archaeotechnics.

Most of the field boundaries are now demarcated by hawthorn hedges, many of which are intermittent. A few are demarcated by recent trees or hedges.

The surviving boundaries are mapped in Fig. 2, and other visible features of note are described, in conjunction with the evidence of early maps, below. The earthworks at Margidunum are rounded by plough-erosion but still clearly visible in the south-west corner of field 1700. In the same field, there is no surface sign of *The Hump*, a possible early course of the Fosse Way (Kinsley and Knight 1992, 10).

Searches for references to Shelford, Newton and East Bridgford were made in the index for the *Transactions of the Thoroton Society of Nottinghamshire* volumes 1-100, and the recently-published Nottinghamshire bibliography (Brook 2002). In addition, searches were made in Nottinghamshire County Library and Nottinghamshire Archives for early mapping of the parishes of Shelford-and-Newton, and East Bridgford.

East Bridgford, Shelford and Newton are individually listed in Domesday Book, where the tenurial situation is complex, though not untypical. Shelford contained a manor with sokeland in Newton and elsewhere, and also sokeland relating to a manor in Bingham. Sokeland is land with tenurial obligations relating to jurisdiction. Bridgford contained a single manor and a triple manor.

The following early maps were identified. * indicates Trent & Peak Archaeological Unit have a copy.

East Bridgford

<i>Date</i>	<i>Description</i>
1612	Survey of the parish of East Bridgford [NA EB2L]*
1614	fair copy of 1612 survey, reproduced in Ashikaga & Henstock 1996, [NA has copy]
1796	enclosure map [NA map cabinet]*
1835	Map of the Country Twenty Miles Round Mansfield, Geo. Sanderson*
1891	Ordnance Survey 39SE and 43NE 6in, surveyed 1883*
1901	Ordnance Survey 39SE and 43NE 6in*
1901	Brunts Charity Land College Lane (probably outside the study area and not seen)
1914	Sketch map marking features

remembered by compiler Charles Newbound in his youth [NA]

1915 Ordnance Survey 39SE and 43NE 6in*

1950 Ordnance Survey 39SE and 43NE 6in*

The land in East Bridgford within the study area formed part of the medieval open field called the 'Burrow field', and was enclosed into a series of small parcels in 1605 (Fig. 3; Ashikaga & Henstock 1996). The grazing rights were replaced by a single common field called The Burrow in the extreme south corner of the parish in the angle between the road to Gunthorpe and the Fosse Way. 'Burrow' is derived from OE *burh* (Gover, Mawer & Stenton 1979, 222) and reflects the presence in its south corner of the still-visible Roman earthworks of *Margidunum*. A few additional sub-divisions of the 1612 closes appear on the 1796 Tithe Award map, and a few more on the 1835 map by Sanderson. However, the way most of these inter-relate with boundaries mapped in 1612 suggests that they are new demarcations of existing boundaries rather than new physical sub-divisions. The layout then remained substantially unchanged until the mid-20th century. The subsequent hedgerow removals date almost entirely from after 1950.

Castle Hill (OS 1891; Fig. 5) presumably refers to the Roman earthworks and possibly indicates an early recognition of surface indications of buildings.

Although no ridge-and-furrow is detectable on the ground, some is visible in fields 9300 and 1700 on aerial photographs (eg Oswald 1939). A number of apparent fragments of the medieval and earlier layout are visible, described below.

The A6097 to Gunthorpe was in 1612 named *The Street Way*, the *street* element being derived from OE *straet* meaning Roman road (Ekwall 1960, 449). This was taken by Oswald and Todd to indicate a road of Roman origin, extending from the Fosse Way immediately south of the earthwork enclosure to Gunthorpe bridge, and beyond: Gunthorpe bridge is believed to be the site of the crossing over the Trent mentioned in Domesday, and perpetuated in the name Bridgford (Todd 1969, 13). By 1796 the south-east end of The Street Way was no longer separated by hedges from the fields to the north, though it continued as a track (Fig. 6). This may indicate a decline in its importance relative to Springdale Lane, which (unlike the Street Way) is named on Sanderson's 1835 map (Fig. 4). Narrow closes of probable 1605 origin, and incorporating a few former arable strips, were, until the mid-20th century, preserved in the western corner of the study area adjoining Bridgford Street (Fig. 6). The most south-easterly

surviving fragment of The Street Way is still preserved west of the existing lay-by (Fig 6). This field is currently occupied by a close-cropped paddock which still contains a marked camber (OS parcel number unknown, north-west of 7111; Pl. 6), this camber continues into the arable fields to the south-east (7111), adjacent to the A6097, and within the study area (Pl. 7). It has not been inspected in a north-westerly direction as it is beyond the study area. While this feature is undoubtedly *The Street Way* of 1612, its interpretation is problematical. It could be the *agger* of the Roman road, preserved as a bank not suitable for ploughing (though no concentration of stones was noted during fieldwalking). Some support for this view comes from the recording of similar narrow paddocks adjacent to the road intermittently most of the way to the Trent crossing (Ordnance Survey map 1891). Alternatively it could have originated as a medieval plough headland, reserved in 1605 for the formation of a route to the *Street* (ie Fosse Way) when the remainder of the open field was enclosed (the headland may already have been used as a route when the open field was in operation). A combination of both features is also possible.

Close to the truncated end of The Street Way, a triangular extension to the southern boundary of the old road was mapped (Fig. 6; followed by the parish boundary) and a cottage or outbuilding on the eastern side of the field. These may have been related but their significance is unknown. A similar notch is shown on Sanderson's 1835 map in the south side of the lane to Newton (Fig. 4).

A general sinuous curve probably reflecting the strips and furlongs of the open fields can be detected in many of the mapped close boundaries orientated north-east/south-west within the study area and beyond (Fig. 6). It is therefore likely that all the surviving hedges in this area which are orientated north-east/south-west follow strip or furlong boundaries, exactly or at least approximately. In particular, a series of 'reversed-S' boundaries can be seen on the north edge of the study area, adjoining Springdale Lane, one of which is still preserved by a hedgerow. At this point there is also a slight rise to the field edge and then a marked drop to the road level. The rise and fall must represent a plough headland on the north side of the 'Burrow' field, and confirming the medieval origin of Springdale Lane, at least as a boundary and probably as a track (Plate 4). A substantial oak tree (the only one in the study area) stands on a removed boundary to fields 2365/1700 (Fig. 2); hedgerow trees can be approximately aged at 1 year per 1in of girth at five feet above ground (Rackham 1990, 13): its

140in girth suggests a date of around 1860.

Shelford and Newton

No tithe award nor enclosure maps survive for this parish.

Date Description

1786 Plan of property bounded by liberties of Saxondale, Shelford, Newton and Bingham [NA DD2075/4] *traced

Late 18th-early 19th century

'Plan and survey of the Farm at Newton': Plan of property bounded by liberties of Saxondale, Shelford, Newton and Bingham [NA DD2075/9/S] *traced

c.1833 Plan of property of the Earl of Chesterfield Plan of property bordering the liberties of Saxon dale and Shelford, and bounded by the Fosse Road and other lands of the Earl of Chesterfield [NA] seen but covers less area than 2075/9/S so not copied.

1835 Map of the Country Twenty Miles Round Mansfield, Geo. Sanderson*

1891 Ordnance Survey 39SE and 43NE 6in, surveyed 1883*

1901 Ordnance Survey 39SE and 43NE 6in*

1915 Ordnance Survey 39SE and 43NE 6in*

1950 Ordnance Survey 39SE and 43NE 6in*.

No useful accounts of the landscape-related history of Shelford and Newton have been traced. However, according to Priestland (Priestland 2000, 67, no reference quoted), 200 acres of Shelford moor were enclosed from the medieval open fields into three closes, together with another 200 acres in an unspecified area in the 1570s, and 575 acres were enclosed in 1761, which completed the enclosure of the parish. The Ordnance Survey shows a *Moor Close Plantation* 1km east of the village of Shelford (outside the study area), and it seems likely that half if not all the early enclosures were in that area. The study area therefore probably lies in the area of 18th-century Parliamentary enclosure, but this cannot be verified as no enclosure map or tithe map survives.

Cunnery Close, north of 1683, indicates a rabbit-warren of at least early post-medieval date (Fig. 3 'C').

No evidence for the medieval layout around Newton can be detected, though on the basis of a reference to Newton in Domesday it is possible that the lane from the Fosse Way to Newton might

be of medieval or earlier origin. The moderately large irregular but geometric field shapes in the study area have the appearance of Parliamentary enclosures and on this basis are likely to date to 1761. Most, however, can only be traced back with certainty to 1889 from map evidence.

The Newton Farm map of late-18th/early 19th-century date compares to some degree with Sanderson's map of 1835 (Figs. 3, 4), but there are suggestions that both are not dimensionally accurate. Field 55 ("Bridgford Close"; Fig. 3 'B') appears to represent OS field 7111 (to the south-east) rather than anything in its recorded position (cf. Fig. 5). The changes of direction in the true existing line of Newton Lane are reflected in both the Newton Farm and Sanderson maps, and there is a similar general correspondence with the true existing field boundaries, but on both the early maps there is a dimensional offset. The correspondences of error in both maps suggests that they are not independent of one another. The errors in this part of Sanderson's map contrast with his much more accurate recording north of the A6097 (Fig. 4). This variability in the accuracy of the Sanderson mapping has been also noted in north Nottinghamshire (D. Garton pers. comm.), and may indicate copying of detail from sources of variable quality.

Some boundaries were removed between 1835 and 1889. The copse in 4437b was removed between 1883 and 1889, the north-eastern field boundary dividing 4437b from (6843) was removed after 1950.

3 Cropmarks

Linear cropmarks were visible in the set-aside field 8949 adjacent to the roundabout (Fig. 16, Plates 1-3). The marks showed as lines of taller and darker cereal plants amongst a mixture of re-grown cereal plants and stubble. Each group comprised a series of parallel and perpendicular lines about 1m wide.

They appear from their form to be wall-lines and reflect damper soil, probably indicating backfilled robber-trenches (soil-filled trenches left after the removal of wall-stones for re-use). A degree of correlation with a major magnetic susceptibility anomaly (Fig. 16) further suggests building remains in this area, and magnetometer scanning of the features suggested that they were buried robber trenches.

4 Fieldwalking

Scope

Fieldwork was carried out between April and December 2003, under the supervision of Matt Hurford. Thirteen fields were walked totalling 75ha, leaving two fields (9.6ha) within the designated study area which could not be walked due to the cropping regime.

Each field was walked on transects spaced 20m apart, each walker inspecting a 2m-wide swathe of ground on each transect. Each medieval and earlier find was allocated a three-letter code (to provide a unique identifier for the artefact) and the position recorded with an EDM; the find was collected, washed, marked and logged on a MS Access database. The database contains a basic description of each find and co-ordinates on the National Grid. The database was used to create distribution plots in ArcView GIS.

In addition to the datable finds, marked surface clusters of stone were plotted, and, once the presence of the villa was recognised, some blue slate was also collected and plotted.

The surface cluster in field 1683 was formed of rounded stone, of uncertain significance.

A very marked dense concentration of rounded pebbles and small boulders in the north corner of field 4437b was plotted. The field contains a wide diversity of material derived from boulder clay, and the significance of this pebble scatter is uncertain.

The Finds

About 2,900 fragments of approximately-dateable artefacts were recovered during field walking, of which about 5% were worked flint, 87% were of Roman date, and 8% were of medieval or post-medieval date (Fig. 7).

Prehistoric

Worked flint

Fieldwalking of thirteen fields covering an area of approximately 75ha produced 181 pieces of flint (Fig. 8). Fifty pieces are considered not to have been humanly-modified: twenty-six are natural and twenty-four appear to be plough-bashed lumps. Of the remaining 131 pieces, most are plough-damaged to some degree.

The humanly-modified flint was laid out by field. Each one was examined and catalogued to include

details of material, any burning or cortication, the form of the piece, and other pertinent information such as the typology of the tool. Complete blades and flakes were measured. The small number of formal tools, or other diagnostic pieces which may be readily dated, means that it is impossible to make more than very general statements about likely periods of activity.

The fields contained the following humanly-modified pieces, most of which are undiagnostic.

Field 3908. 9 pieces in 4.9 hectares. A plough-damaged blade (CGL), which may have been used, was found in this field but cannot be dated. There is also a small burnt core (CHG) and an exhausted core (CGM), also undatable.

The size and chalky cortex of large nodule (CHB) indicate that it is not local flint; while the mortar adhering suggests that it is perhaps a Roman building import (see below and Fig. 9).

Field 6100. 3 pieces in 2.5 hectares. A small, exhausted, plough-damaged core (CIB) was among the pieces from this field. It is not possible to date it.

Field 2055. 2 pieces in 4.9 hectares. A small core (BDQ), and a small nodule used as a strike-a-light (BCJ), were recovered from this field but are not datable.

Field 4437a. 2 pieces in 7.6 hectares. Two undiagnostic flakes came from this field.

Field 4437b. 28 pieces in 10.8 hectares. An absence of flint in a 100m-wide strip in the north side of the field may be significant, as it also excludes Roman, but not medieval, pottery. This field contained eight cores and fragments, and eight blades. Of the latter, one is a large crested blade (CEC) and one other (BEY) appears to have been utilised. Almost all the flint was found within the southern part of the field providing a localised density of about 5 pieces per hectare. Although this density is considered to suggest background activity only, it is noteworthy that this field contained so many cores and blades. There is an absence of smaller knapping debris which may be genuine, but which may instead reflect the condition of the field or some other collection bias.

Crested blade CEC stands out from the rest of the flint in this field. Its size and method of production indicate a date in the Mesolithic or Early Neolithic. The other blades suggest a similar date, and some of the cores (BSX, BWA, BWC, BWD and BXV) could belong with these blades; BWD and BXV in particular are classic examples. CEN could be a discoidal core, suggesting Late Neolithic/Early Bronze Age activity. BYG could be the fragment of a core, or perhaps of a

denticulated tool.

Field 1683. 2 pieces from 1.8 hectares. Undiagnostic flakes.

Field 0005. 28 pieces in 21.3 hectares. The tools from this field are a plough-damaged edge-retouched knife (CUP), and what appears to be part of a scale-flaked implement (CXD), perhaps a knife, which has been partially thinned bifacially. Both are most likely to date to the Late Neolithic/Early Bronze Age. There is also a possible hammerstone (CYO), and a flake (CUK) which may have been used; they are undatable.

The debitage includes two possible core fragments and exhausted cores (CUV and CXK), but neither is in any way diagnostic of date.

Field 7111. 9 pieces in 3.8 hectares. This field produced a retouched fragment from an unidentifiable tool (CME), and part of a microdenticulate (CSB1) with patches of silica gloss along the saw edge. The latter is made on a small blade and is most likely to date to the Early Neolithic or Mesolithic.

Field 9300. 22 pieces in 2.4 hectares. The tools are a plough-damaged scraper (DCY), and a miscellaneous retouched fragment (DCQ), both of which could belong within a Late Neolithic/Early Bronze Age assemblage.

The flint from this field also contained five irregular blades and blade-like flakes (DAU, DBH, DCL, DDF and DER), which suggests a date in the Neolithic or even Early Bronze Age.

The density of flint in this field is relatively high at roughly 8 pieces per hectare. This could be a genuine reflection of greater prehistoric activity in this field when compared to the others in the survey. It could however, also be the result of agricultural practices, field conditions at the time of walking and many other factors, particularly as a great concentration of Roman pottery was found in almost the same part of the field (Fig. 9).

Field 0018. 9 pieces in 3.5 hectares. All are undiagnostic flakes and chunks.

Field 0002. 7 pieces in 2.4 hectares. All are undiagnostic flakes.

Field 0028. 5 pieces in 5.7 hectares. A scraper made on a primary flake (DHQ) was found in this field, its size suggesting a date in the Later Neolithic/Early Bronze Age. There is another piece (DGE) which may be a broken scraper, larger than is usually found in collections from the Trent Valley area, and perhaps of a similar date. However the freshness of the cortex and size of the piece suggest that this may be a flake from a piece of Roman building material (cf. CHB from

Field 3908).

Field 2635. 3 pieces in 3.6 hectares. What appears to be an edge-retouched knife (CJR), made on an already heavily corticated flake, was recovered from this field. The re-use of the flake to create a knife is likely to date to the Late Neolithic/Early Bronze Age, although the original flake is undatable.

Comment

With the exception of DGE and CHB, the humanly-modified pieces are all knapped from small, good quality flint: grey/brown translucent, Wolds-type or spotted grey. Where cortex is present it is water-worn and abraded, indicating a source derived from a river deposit. The size of the pieces and nature of the raw materials used is entirely consistent with other collections from the Trent Valley in Nottinghamshire. These are considered to derive from the gravels of the Trent Valley and related drift deposits (Henson, 1989, 11). Since Margidunum is within a few kilometres of the River Trent, it is assumed that the raw materials were obtained locally.

In all but one of the fields the density of humanly-modified flint was less than 3 pieces per hectare; in field 9300 the density was 8 per hectare. However the lack of pieces diagnostic of date reduces its significance as it is quite possible that low usage of this field over a protracted period is represented, rather than heavy usage over a closely defined period. Preliminary analysis of flint densities from a number of studies in Nottinghamshire and Derbyshire suggests that there are significant break points in density data at 4-5 and 10-15 per hectare. The interpretation of these figures is not yet clear, and visibility factors such as intensity of ploughing, alluviation and colluviation must be taken into account, but it would appear that a significant amount of flint, representing more than a background scatter, is present in Field 9300. In all the rest of the fields a background scatter only is indicated.

The flint from field 4437b is the most significant in this collection. Compared with the main 'background' distribution, this group may represent more concentrated activity over a more restricted period. The date range falls in the Mesolithic or Early Neolithic periods for which there is little data in this region.

Fire-cracked pebbles and hand-made pottery

Forty-four fire-cracked pebbles were found; one concentration occurred along with some handmade pottery sherds in field 7111/0018, suggesting a common origin (Fig. 8). Such finds are frequently of pre-Roman date in the east

Midlands at least, though later dates are possible. The spatial correlation with the hand made pottery suggests a connection. In field 0005 a second concentration occurs, but there is no obvious correlation with other material and the significance is uncertain.

A small number of handmade sherds have been identified, and may date to the Iron Age, although an Anglo-Saxon date cannot be ruled out for some. Two clusters are evident: one in fields 7111/0018 as noted above; the second in field 4437b on the north-east end of the concentration of material related to the villa. Magnetometer survey revealed small rectilinear linear features in this area, co-aligned with the main villa buildings, but not necessarily contemporary (see below).

Romano-British artefacts

The Romano-British finds were dominated in quantity by a major concentration of building material and pottery in field 4473b (Fig. 9). This was immediately recognised as the site of the villa identified by Todd and Oswald (Todd 1969, 13). The quantities of pottery from further north-west and south-west of this cluster were sparse to modest, indicating a marked fall-off away from the Fosse Way and the villa. Pottery was very sparse from fields 4437a and 0005, north-west and north-east of the villa. This is particularly striking in relation to the 0005 and is in sharp contrast to the frequency of finds north of the A6097. This is may be due to differences in the recovery rate from fieldwalking, but there is no matching shortage of finds of flint (Fig. 8) and medieval pottery is only slightly less dense there than in other areas walked (Fig. 13). The gap therefore may well reflect a real difference in the use of the land in the Roman period.

East of Bridgford Street, another significant concentration of pottery was noted in field 9300 with a more diffuse spread in fields 0002, 7111 and 0018. Brick and tile, so abundant at the villa site, was lacking here, and the pottery was not so densely distributed. The datable sherds belonged predominantly to the third and fourth centuries and included Nene Valley colour coated bowls and beakers, grey ware bead and flanged bowls, Mancetter-Hartshill hammerhead mortaria sherds and wide-mouthed jars of the type known as East Midlands burnished ware (Todd 1968). No first century types were identified.

A general appraisal of the Romano-British material follows.

Building debris

About 50% of the finds comprised Romano-British

brick and tile fragments, including the flanged and curved roof tiles typical of the Roman period and box flue tiles with combed keying for plaster. Three tiles had plaster still adhering. The majority of the brick and tile was in a red to orange sandy fabric, although there were some grey fired examples. The latter are not uncommon in Nottinghamshire and do not necessarily indicate wasters. Three of the box flue tiles were in a shell-tempered fabric which is very similar to tile debris from excavations at the late-Roman small town of *Crococalana* at Brough, Notts. The Brough material was vesicular, due to soil conditions. The material was also extremely fragmentary and ill-fired and was found together with fired clay and burnt material suggesting the possibility of on-site manufacture at Brough.

Three possible tesserae were identified amongst the stone fragments. Slate, probably from Charnwood, was found in association with the "villa" site. One of the slate fragments had traces of a possible perforation. As Charnwood slate tiles were identified as the roofing medium of Oswald's 'Late House' at *Margidunum*, identification as roofing tile is likely. Fragments of *opus signinum* (Roman concrete with fragments of tile or brick temper), concrete or plaster and at least two fragments of painted plaster with red, white and red-brown paint were also found around the area of the "villa". Bent nails suggested structural elements which had collapsed and/or rotted in situ.

Over 50 fragments of stone were identified, including some worked stone and other possibly structural material. A fragment of a fine-grained possible millstone was found.

A large flint nodule (CHB) was found in field 3908 (Fig. 9). The chalky cortex indicates that it is not local flint; the presence of mortar adhering to its surface shows that it had formed part of a building or structure, and the location suggests a Roman date.

Domestic debris

The next largest category of finds after brick and tile was the Romano-British pottery, comprising 26% of the total collection (771 sherds). Much of this material was abraded, contrasting with the larger and fresher fragments of brick and tile. In all areas, a wide date range of pottery was identified, with a strong bias towards the late third and fourth centuries, but with significant but lesser quantities of earlier material. Some second-century material was present including samian ware, and the Pre-Roman Iron Age / Conquest period was represented by at least two PRIA-

Conquest cordoned neck jars and some sherds of Trent Valley ware. These latter may be associated with the evidence for first century settlement recorded by Todd at the junction of Newton lane and the Fosse Way (Todd 1969, fig. 10). The pottery included a range of traded wares such as samian, amphora, Nene Valley colour-coated wares, Dales and Derbyshire ware.

The metalwork comprises largely iron nails with one possible hobnail, and one copper alloy stud or button. The small quantity of glass fragments probably came from vessels rather than windows.

Industrial waste

Six fragments of fired clay were found and seven fragments of slag. The slag includes two fragments of tapping slag and one plano-convex fragment, possibly part of a smithing-hearth bottom.

Medieval and post-Medieval

About 3% of the finds were definitely medieval and nine fragments of tile were probably of medieval or post-medieval date (Fig. 13).

A sparse scatter of slate was noted in 7111, possibly related to the outbuilding recorded on the 1883 plan (Fig. 6). The distribution is consistent with a background scatter from manuring of arable fields from middens including domestic debris.

5 Geophysical survey methods

Survey Control

The survey grid was established by EDM Total Station, and accurately tied in with the National Grid. Following the English Heritage Ancient Monuments Laboratory 1995 guidelines, the geophysical grid is internally accurate to ± 10 cm, and the grid locatable on the OS 1:2500 map to the nearest metre (AML 1995: Part I, 3.2).

Topsoil Magnetic Susceptibility Mapping

In situ topsoil magnetic susceptibility readings were taken over the entire survey area on a 10 m grid, an interval chosen to give a high probability of intersection with the magnetic signal from a wide variety of sites, to pinpoint areas of raised magnetic susceptibility attributable to archaeological activity, in conjunction with routine magnetometer scanning (the observation, by a skilled operator, of magnetic field fluctuations, without gridded logging) carried out on 25 m traverses. This approach allows both an

initial appreciation of susceptibility anomalies, and a rapid check on apparently 'blank' magnetic susceptibility areas. Topsoil magnetic susceptibility mapping was carried out using a Bartington Instruments MS2 magnetic susceptibility surface contact loop (diameter 18.5 cm). The loop is a very rapid instrument and, in the hands of an experienced operator, can be used to give consistent results with respect to pattern recognition and to provide initial screening of noise resulting from recent ferrous debris or local magnetic 'pollution'.

Magnetometer Survey: Detailed Gridded Survey

Following the above fieldwork, areas judged to require more precise characterisation (those areas showing significant topsoil susceptibility enhancement, magnetic anomalies identified by magnetometer scanning, surface concentrations of pottery and/or industrial or building debris identified by the fieldwalking team, or known archaeological sites or find-spots identified by desk-top archaeological assessment) were investigated by detailed magnetometry (using a fluxgate gradiometer) on an anisotropic grid (usually 0.25 x 1.0 m), in the sub nanotesla range, to define the extent and geometry of any underlying cut features.

6 Topsoil Magnetic Susceptibility Survey: Results

Significant areas of enhanced magnetic susceptibility were identified around the concentration of building debris in field 4437b (Fig. 14 'A'), and at two locations adjacent to the Fosse Way in fields 6100 (B) and 8949 (C). A further area of high susceptibility with two peaks lies adjacent to RAF Newton air-base (D).

C corresponds with cropmarks visible in the regrown cereal crop in the set-aside field (above, section 3, Fig. 16, Pl. 1, 2), where a rectilinear pattern of extra-long cereal plants suggested the robber trenches of a stone-walled building. Magnetometry scanning confirmed the impression of buried robber trenches.

In East Bridgford, there is marked variation in the susceptibility, but this does not appear to relate to proximity to the Fosse Way. In fact it appears to respect existing or former field-boundaries. It could therefore reflect agricultural regimes dating any time since the 17th-century enclosures, but alternatively it might indicate archaeologically-significant areas of high susceptibility which have been dispersed within fields and pushed up to but not beyond their boundaries.

7 Detailed Magnetometry Survey:

Results

A detailed magnetometry survey of about 12ha (Fig. 15) was carried out to include the villa as indicated by surface finds and the Magnetic Susceptibility survey (in order to acquire further information on its extent and character), and an area to be followed by the proposed off-line route extending to the Fosse Way which contained a modest geophysical anomaly possibly indicating an archaeological focus (Fig. 14 'E').

A further detailed magnetometry survey of about 1ha was centred on the magnetic susceptibility anomaly in field 7111 (Fig. 14 'F').

Field 4437

The villa (Fig. 11) is represented by a series of positive linear anomalies which may be interpreted as robber-trenches, indicating ranges of buildings (A) around the north-east, north-west and south-west sides of a walled courtyard (B). The complex thus 'faces' the Fosse Way and is closely - though not exactly - aligned on it. Comparison between the surface material and the magnetic anomalies suggests that the north-east range is most eroded, as floor material has been recovered, while the courtyard has less tile over it, supporting its interpretation as an open area.

To the north-east of the main buildings (C) lies an area of co-aligned rectilinear lines. The small group of handmade sherds came from over this area and may be associated.

The anomalies indicating wall-lines fade out, rather than terminating clearly, at practically all the boundaries of discernible features, which may therefore simply indicate the limit of robbing or the extent of greatest erosion and thinnest soil cover. The full extent of the existing buildings is unknown, but a core area occupied by ranges of rooms is clear, measuring 100x60m.

The main concentration of pottery and tile in field 4437b occurs at the northern end of the hotspot recorded in the topsoil magnetic susceptibility survey and just north of it (Fig. 12), and it is in this area that the box flue tiles appear to be concentrated on the evidence of the preliminary artefact sort. A concentration of slate, concrete and plaster fragments also lies in the northern part of the geophysical hotspot and just to the north suggesting there may be a difference in the nature of the underlying features between the northern and southern part of this anomaly. The metalwork, glass and bone/shell also lie in this part of the site.

Some slag, including tapping slag and a plano-convex fragment came from this general area and may possibly be associated with first century use of an area identified by Todd in 1968 at the junction of the Fosse Way and Newton Lane (Todd 1969, fig 10) and linked with the function of Margidunum at this time.

A very clear line formed by a string of ferrous anomalies crosses the buildings from north-west to south-east. This corresponds closely with a field boundary mapped in the late 19th century, and probably of 18th century date. A wooden pipe with metal collars is one possible interpretation and the date may be 18th-20th century on the basis of the correlation with the field boundary.

A single linear anomaly appears in the south-east end of the area, orientated north-east/south-west but not parallel with the Fosse Way. It coincides with the end of the 'pipe' anomaly and on this basis may be post-medieval. The point of intersection coincides with a brick well or other subterranean structure excavated by the farmer in this area. Surface fragments of brick were of 17th-early 19th century date, consistent with the later post-medieval date suggested by the correlation with the field boundary.

Fields 6100/3908

In these two fields (Fig. 15), occasional curvilinear marks can be seen (A), together with clear linear features parallel and perpendicular to the Fosse Way in both fields (B), suggesting enclosures related to the Fosse Way, and quite possibly of Roman date.

Field 7111

Conditions were quite wet during this work, and a less clear result was obtained than on the villa, due to soft claggy soil being picked up on boots. However, linear anomalies can be made out, well-organised and rectilinear, possibly suggesting enclosures and a trackway, aligned orthogonally to the A6097. A good focus of activity occurs at the south end of the area, which may include some burning.

Although the anomalies cannot be dated without excavation, the concentration of Roman pottery in this field, and the suspected Roman origin of the road, make a Roman date the most likely. Pre-Roman or post-Roman phases are also possible.

8 The villa: general discussion

Todd concluded that villas were not common in

the territory of the Coritani, and that few were large (Todd 1991, 86). Comparison is hampered by incomplete survey / excavation on comparable sites, but the villa at Southwell, Notts. has been cited as amongst the largest: it occupies at least a 70x70m area (Daniells 1966). Despite the problems of incomplete data and lack of excavation, the *Margidunum* villa clearly belongs amongst the largest villas known in the East Midlands. A fuller discussion of the villa and its context is presented in Leary and Baker, 2004.

9 General conclusions

The work to date has contributed significantly to knowledge of the environs of the Roman town of *Margidunum*.

The Newton villa has been precisely located, and although its size is uncertain, it has been sufficiently demonstrated that it is a building complex of major significance in regional and even possibly national terms. There are clear suggestions that it was physically separate from the 'town', although close by: it was possibly the house of an important and wealthy official connected with *Margidunum*. An extension of the occupied area along Bridgford Street can be suggested, lending further support to its interpretation as a road of Roman origin. Evidence for a substantial stone building has been located adjacent to the roundabout. Evidence for a pre-Roman Iron Age or Anglo-Saxon presence at *Margidunum* and the villa is significant in importance if not quantity. The possible survival of fabric of The Street Way (the former Roman road to Gunthorpe) adjacent to the A6097 has been identified if not proven.

Finally, it should be recognised that extension of detailed magnetometry to the north-west and west of the villa site would potentially further clarify the scale and status of the settlement, if there were to be a pressing need to do so.

10 References

- Ashikaga, K., with Henstock, A., 1996. 'A Nottinghamshire village in the Jacobean period: the East Bridgford estate maps of 1612-14', *Transactions of the Thorton Society of Nottinghamshire* 100, 77-93.
- Brook, M., 2002. A Nottinghamshire bibliography: publications on Nottinghamshire history before 1998 (Thorton Society in association with the Nottingham Civic Society).
- Ekwall, E., 1960. *Dictionary of English Place-names*. Oxford.
- Gover, JEB, Mawer, A, and Stenton, Fm., 1979. *Place-names of Nottinghamshire* (English Place Name Society XVII)

- Henson, D., 1989. 'Away from the core? A Northerner's view of flint exploitation' in Brooks, I and Phillips, P (eds) *Breaking the Stony Silence. Papers from the Sheffield Lithics Conference 1988*.
- Leary, R. and Baker, S., 2004. *Margidunum Roman villa and small town*. (Unpublished report commissioned by Kellogg Brown and Root).
- Oswald, F., 1927. 'Margidunum', *Transactions of the Thorton Society of Nottinghamshire* 31, 55-84.
- Percival, J., 1976. *The Roman Villa* (London).
- Priestland, P., 2000. *A Thousand years of Shelford and Newton* (Shelford and Newton parish council).
- Rackham, O., 1990. *Trees and Woodland in the British Landscape*. Revised edition (London).
- Todd, M., 1969. 'Margidunum: Excavations 1966-8', *Transactions of the Thorton Society of Nottinghamshire* 73, 7-50.
- Todd, M., 1991. *The Coritani* revised edition (Stroud).

11 Acknowledgements

The author would like to thank the farmers for their co-operation and forbearance in giving access to the land for surveys: Mr. James Fisher, Mr. A Hammond, Mr. Pickford, and Mr. Tarbatt.

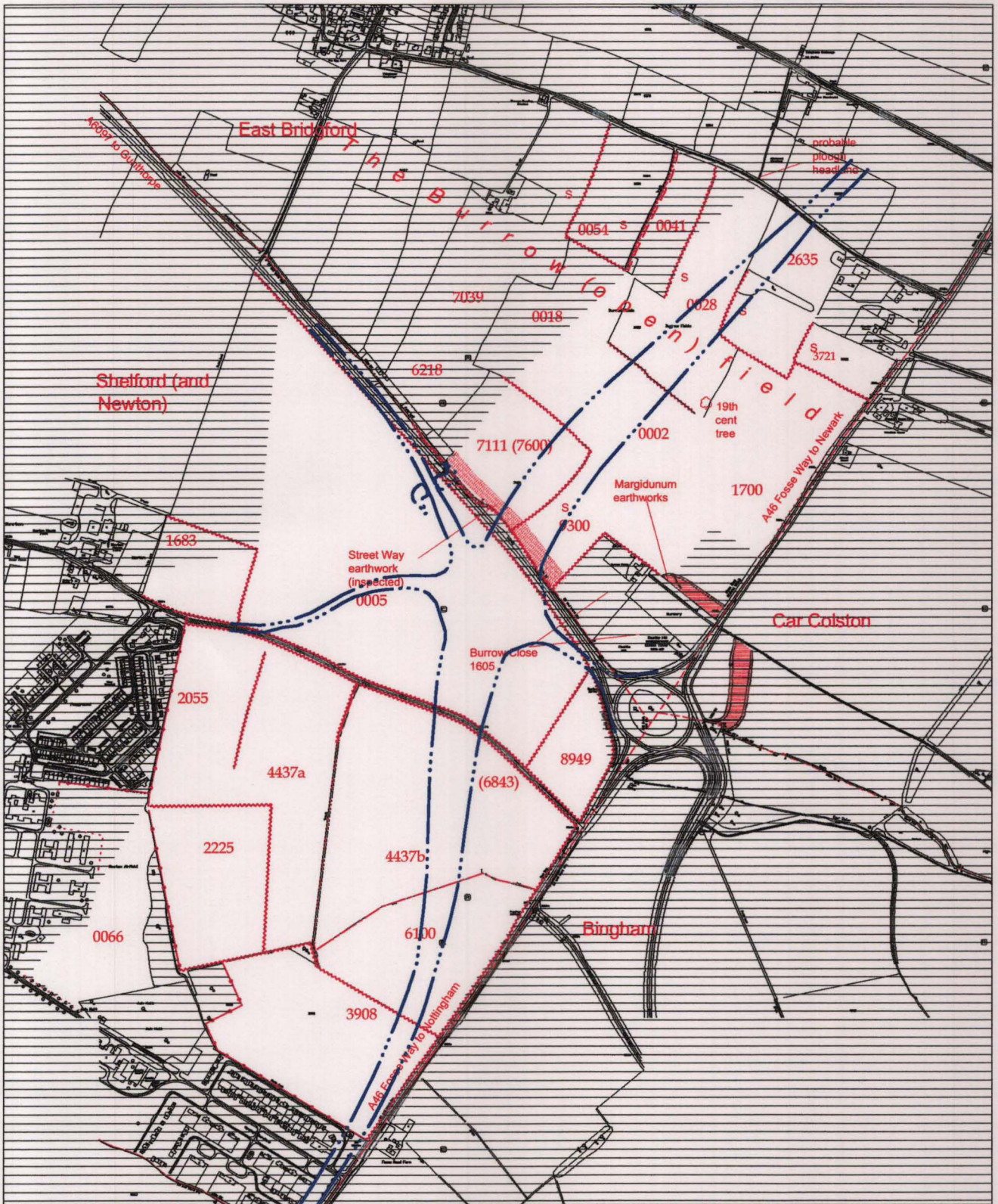


Fig. 2: existing boundaries (red broken - parish, zigzag - hedge, dot-and-line - fence, dot - trees, broken - track, dot-dash - dyke); hatched area defines border of study area; scale 1:10,000

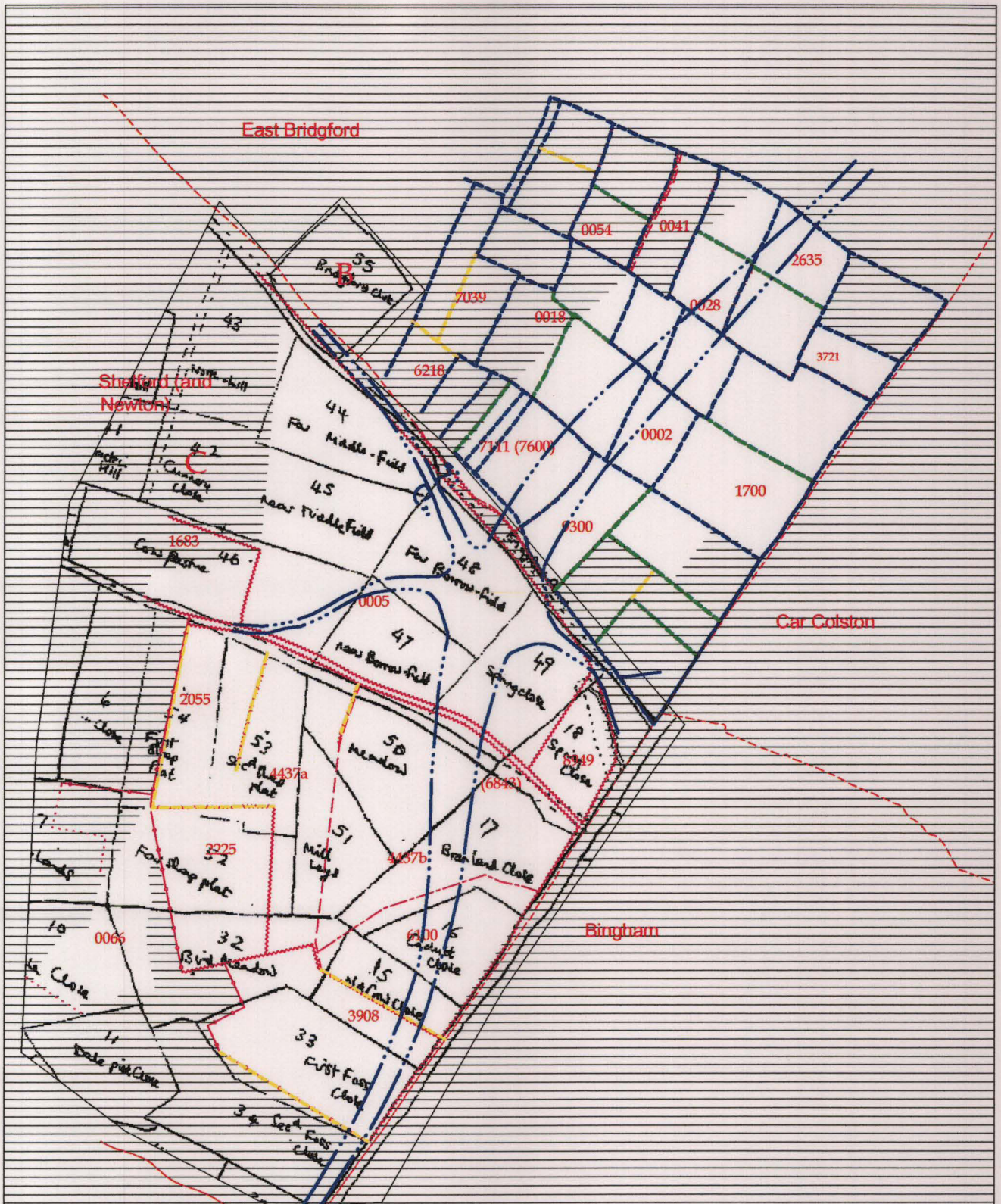


Fig. 3: off-line route (blue) in relation to existing boundaries (red: broken - parish; magenta: zigzag - hedge, circle-dash - hedge, broken - track, dot-dash - dyke, dot - trees) in relation to all mapped boundaries in East Bridgford (date of first mapping: blue- 1612, green - 1792, yellow - 1835) and late-18th/early-19th-century boundaries in Newton (black indicates tracing from original map; yellow indicates some existing hedged boundaries which may be subjectively equated with them); scale 1:10,000



Fig. 4: off-line route (blue) in relation to existing boundaries (red broken - parish, magenta zigzag - hedge, circle-dash - hedge, broken - track, dot-dash - dyke, dot - trees) in relation to Sanderson's map of 1835; scale 1:10,000

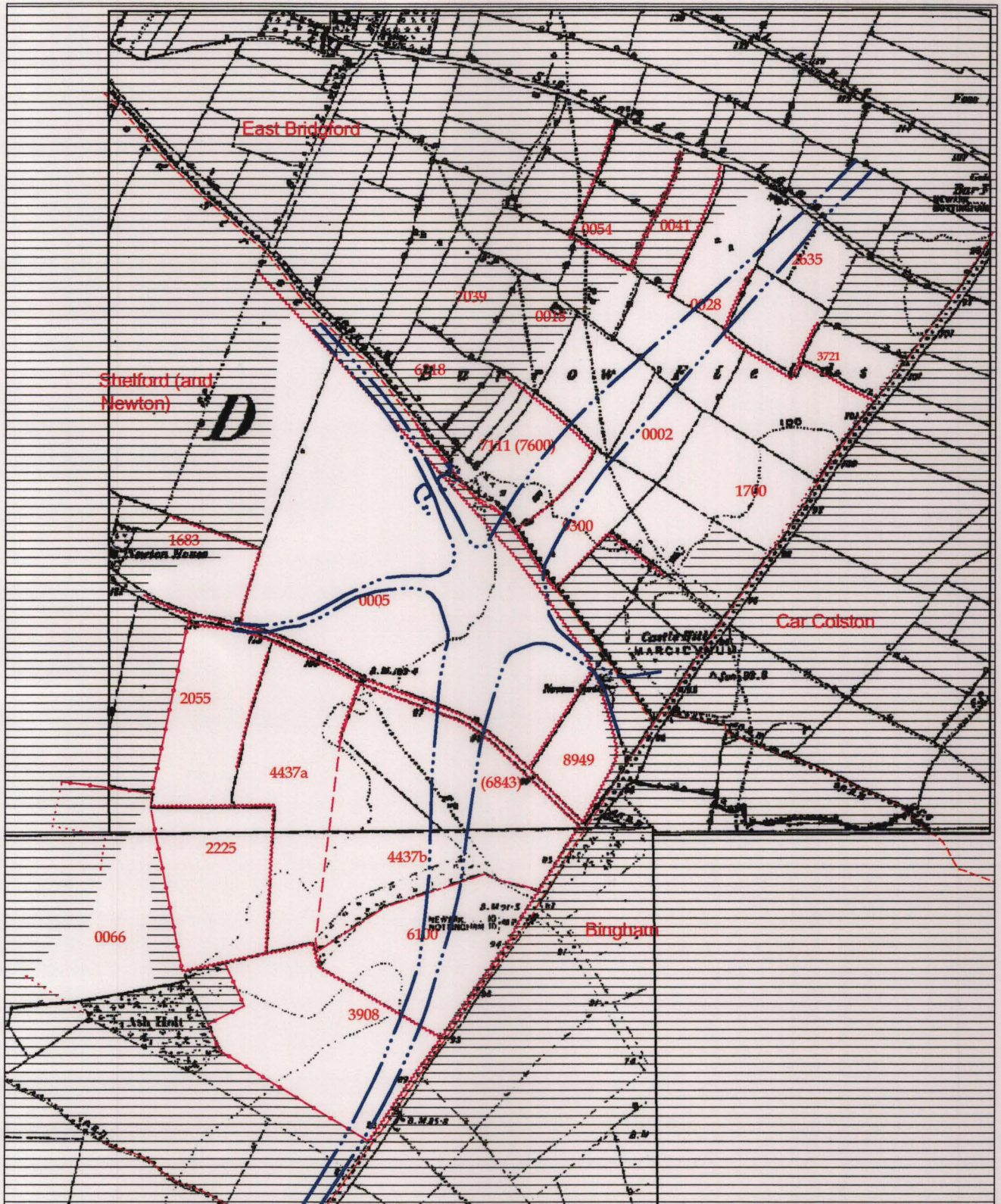


Fig. 5: off-line route (blue) in relation to existing boundaries (red broken - parish, hedge - magenta zigzag, circle-dash - fence, broken - track, dot-dash - dyke, dot - trees) in relation to 1883 mapping; scale 1:10,000

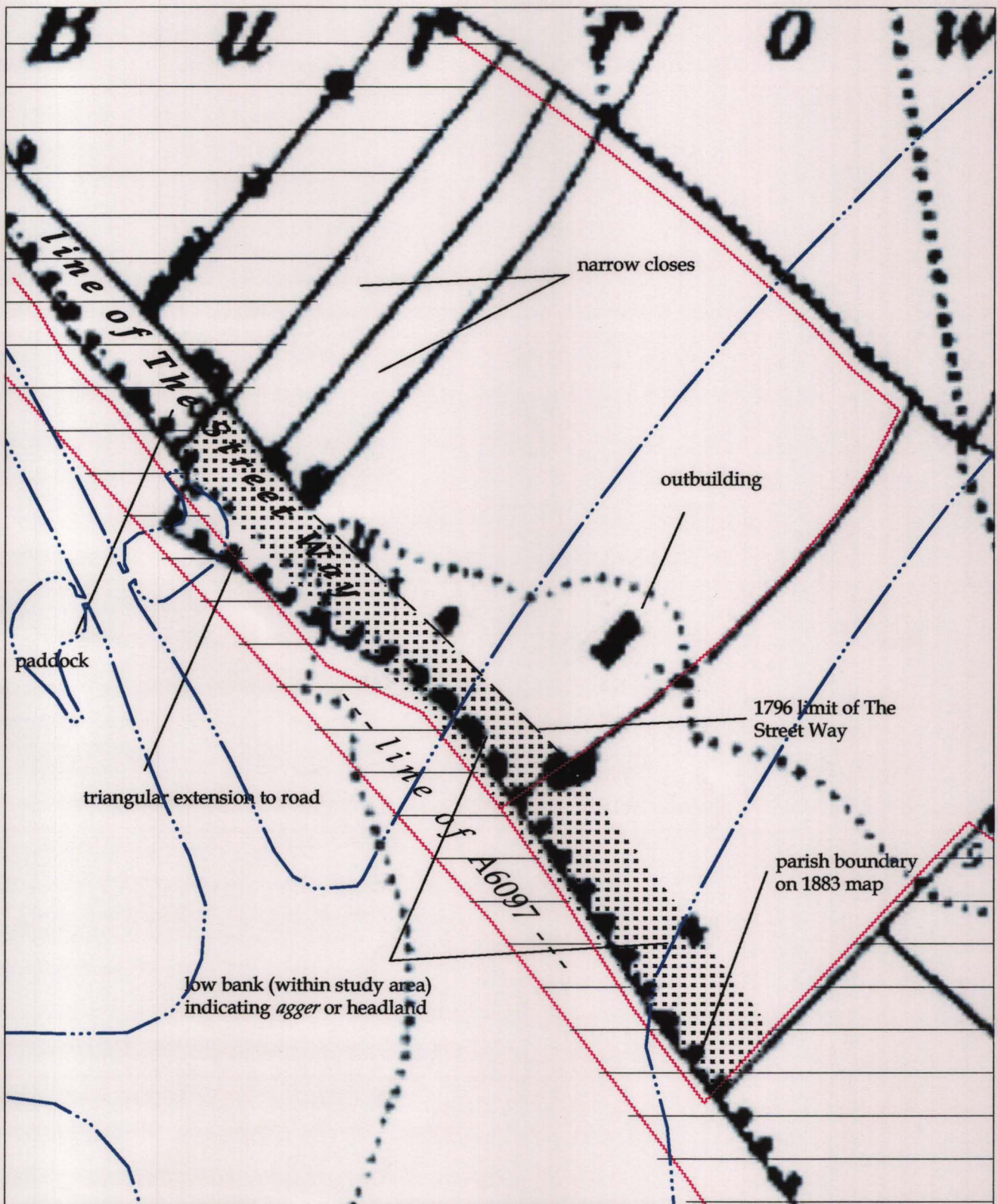


Fig. 6: off-line route (blue) in relation to 1883 mapping (black) and existing boundaries (magenta); scale 1:2,000

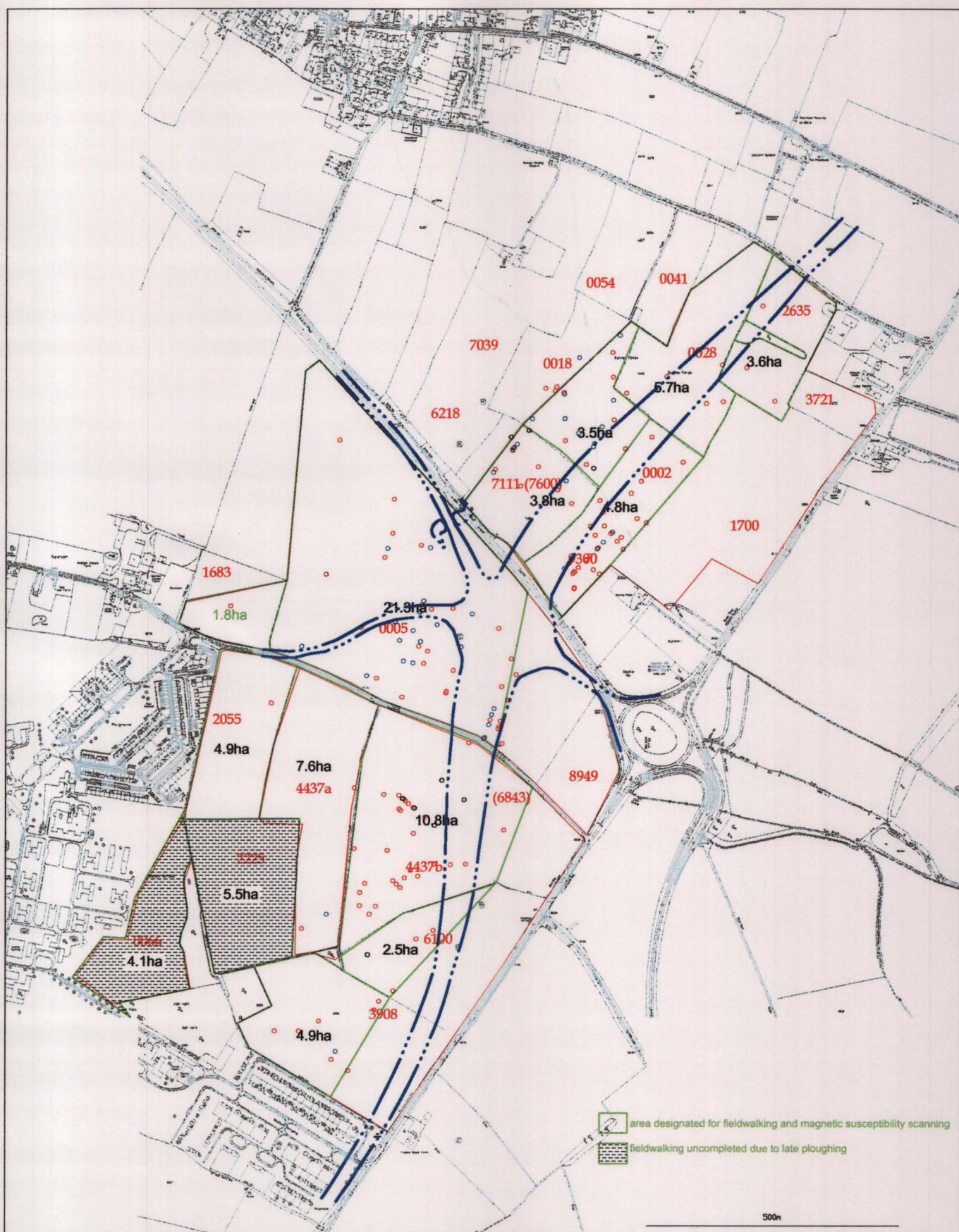


Fig. 8: Off-line route (blue) in relation to distribution of handmade pottery (black) worked flint (red) and fire-cracked pebbles (blue) from fieldwalking; scale 1:10,000

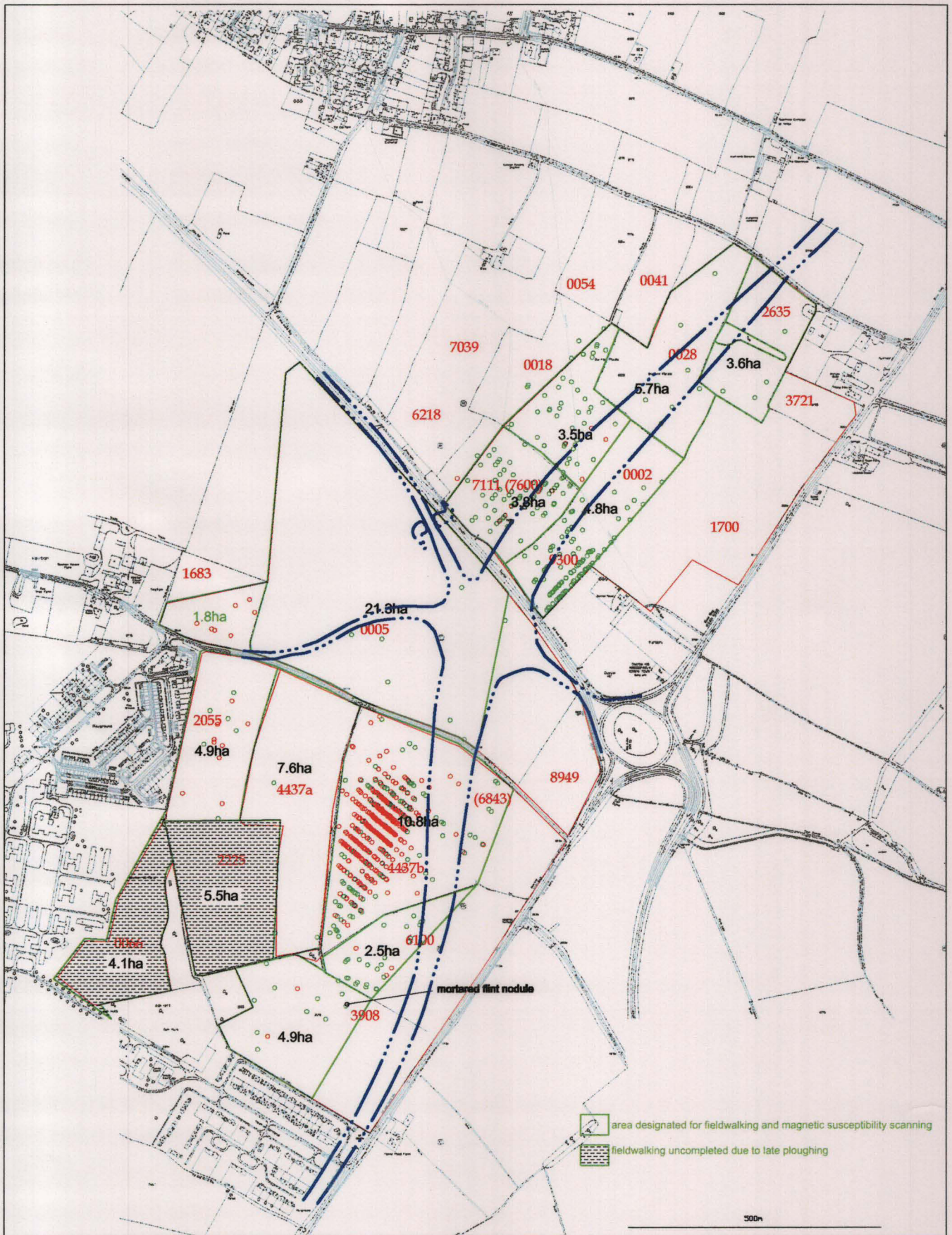


Fig. 9: Off-line route (blue) in relation to distribution of Romano-British pottery (green) and brick/tile (brown); scale 1:10,000



Fig. 10: Details of field 4437b showing off-line route (blue) in relation to distribution of Romano-British brick/tile (brown), concrete (yellow) opus signinum (pink) plaster (black) and slate (blue) scale 1:2,000

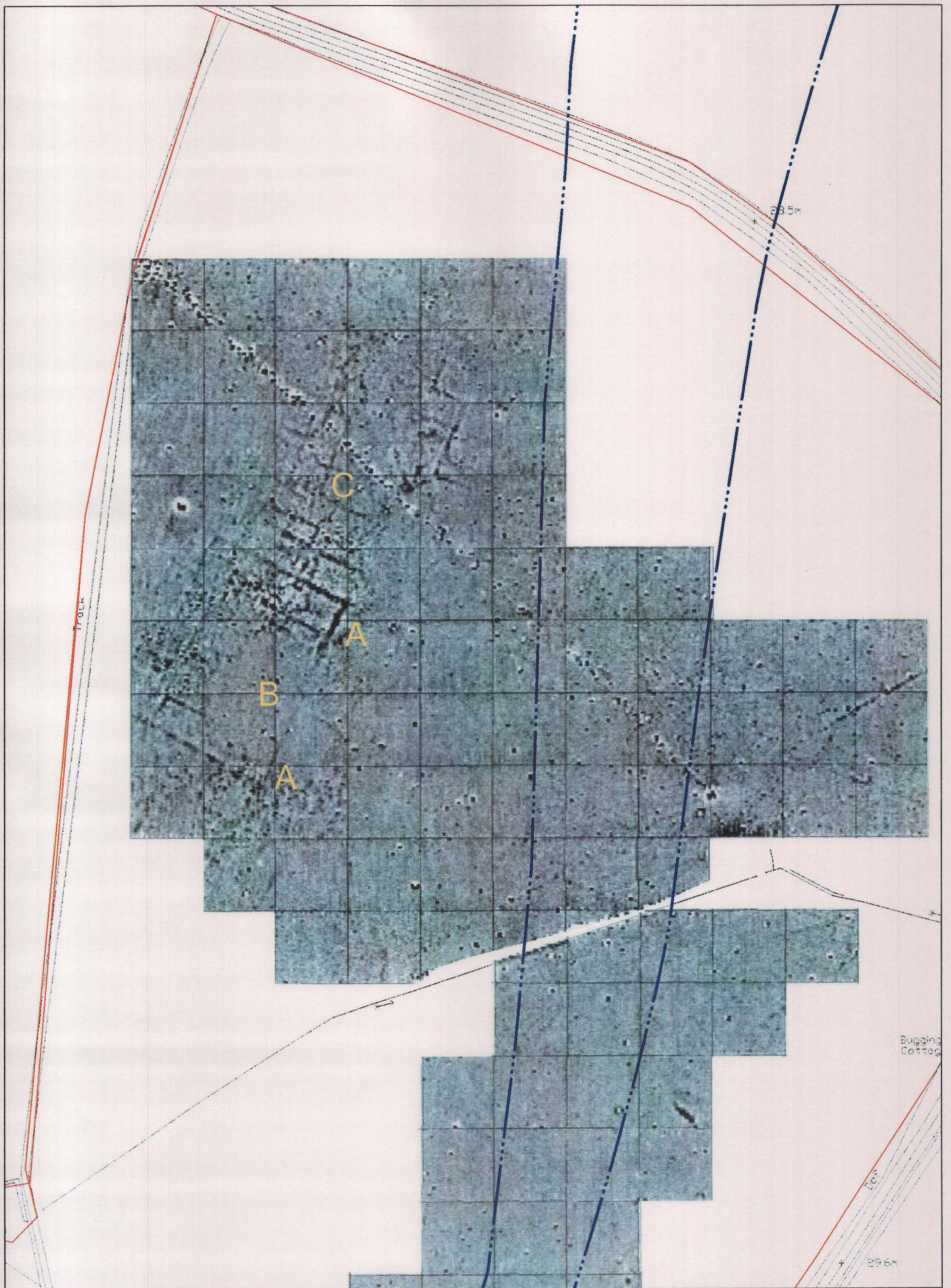


Fig. 11: Details of field 4437b showing off-line route (blue) in relation to detailed magnetometry; scale 1:2,000

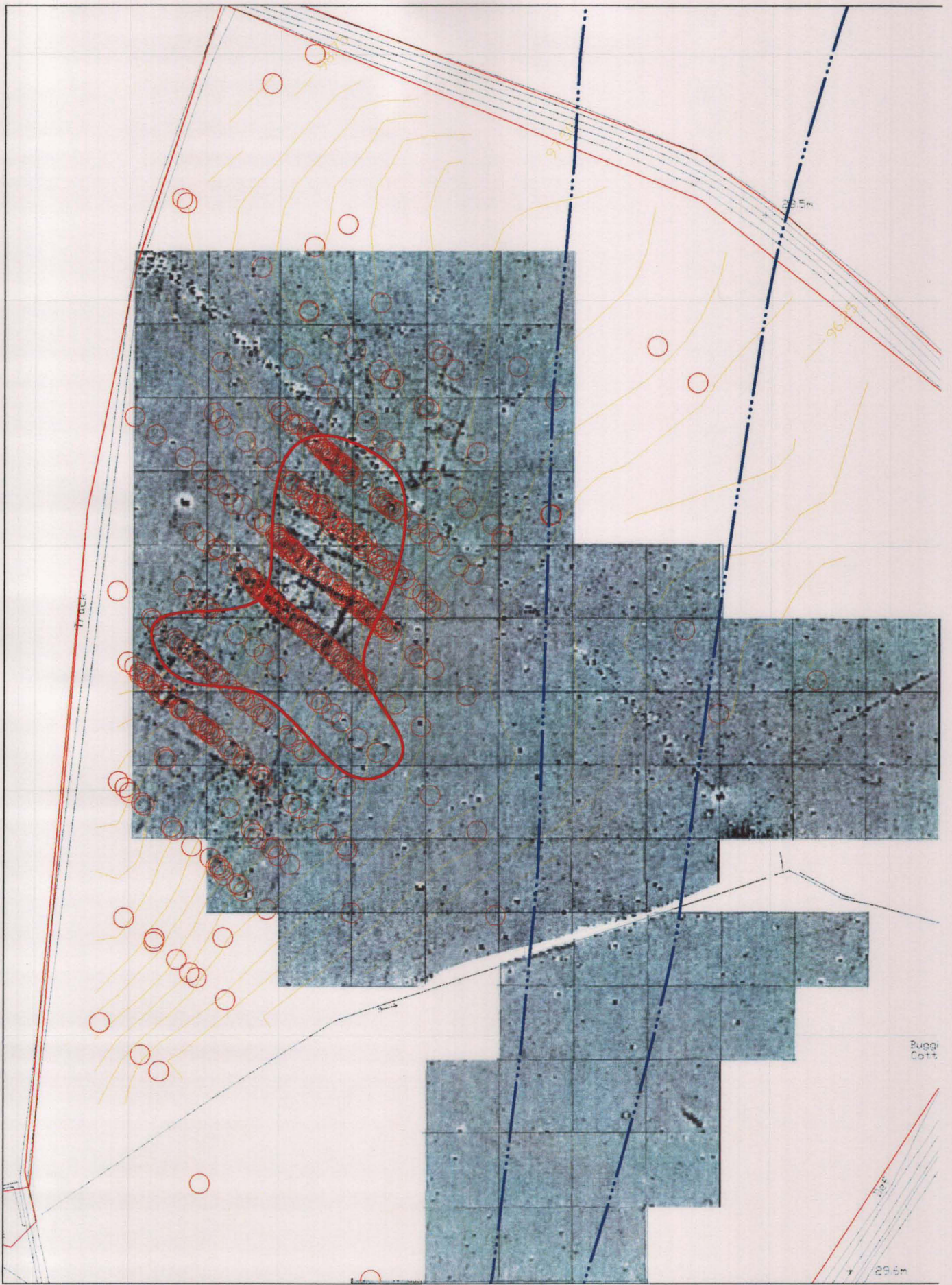


Fig. 12: Details of field 4437b showing off-line route (blue) in relation to detailed magnetometry with superimposed distribution of Romano-British brick/tile (brown), and red outline showing concrete, opus signinum, plaster, and slate scale 1:2,000

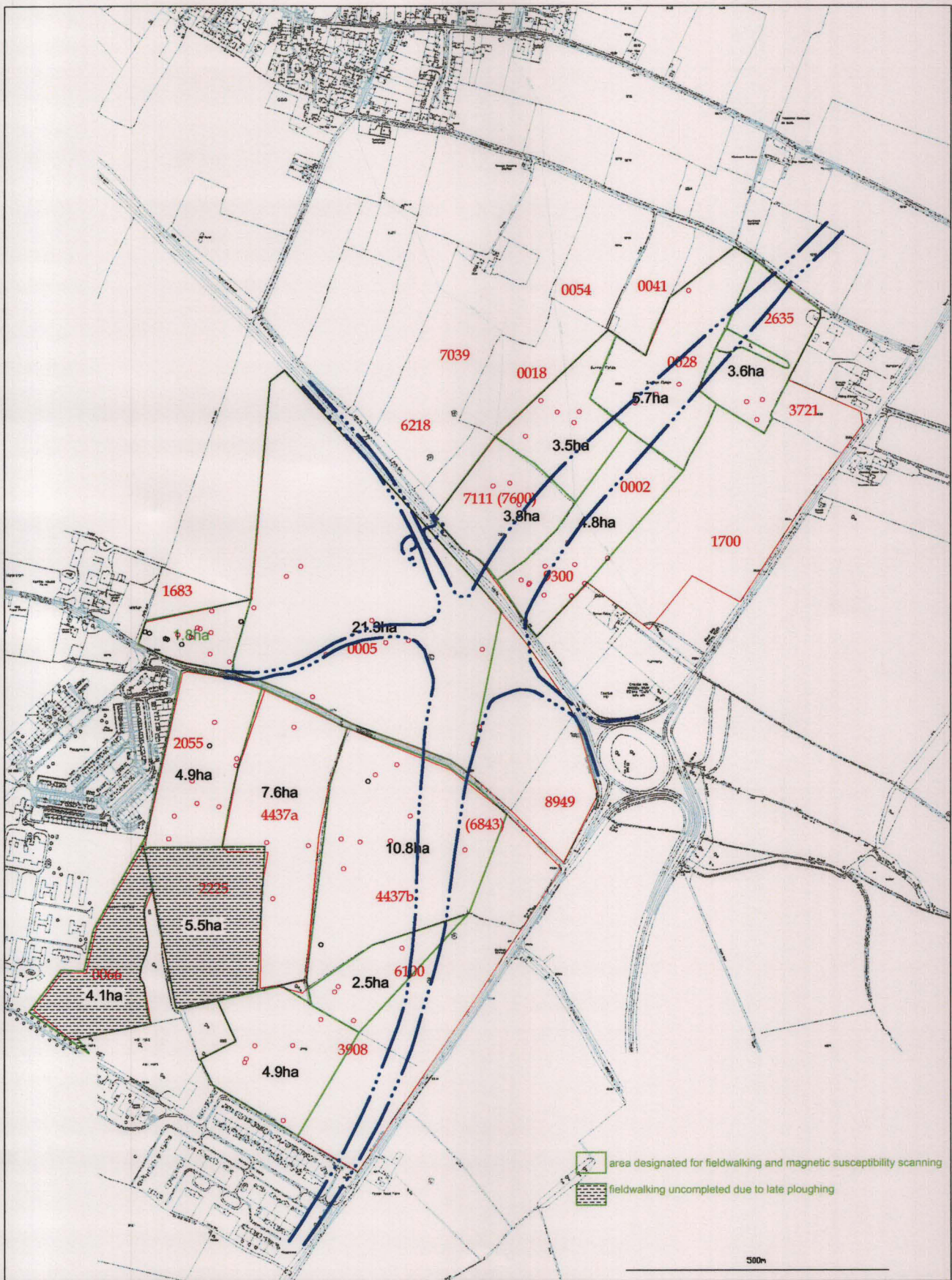


Fig. 13: Off-line route (blue) in relation to distribution of medieval (magenta) pottery, and post-Roman brick/tile (black); scale 1:10,000

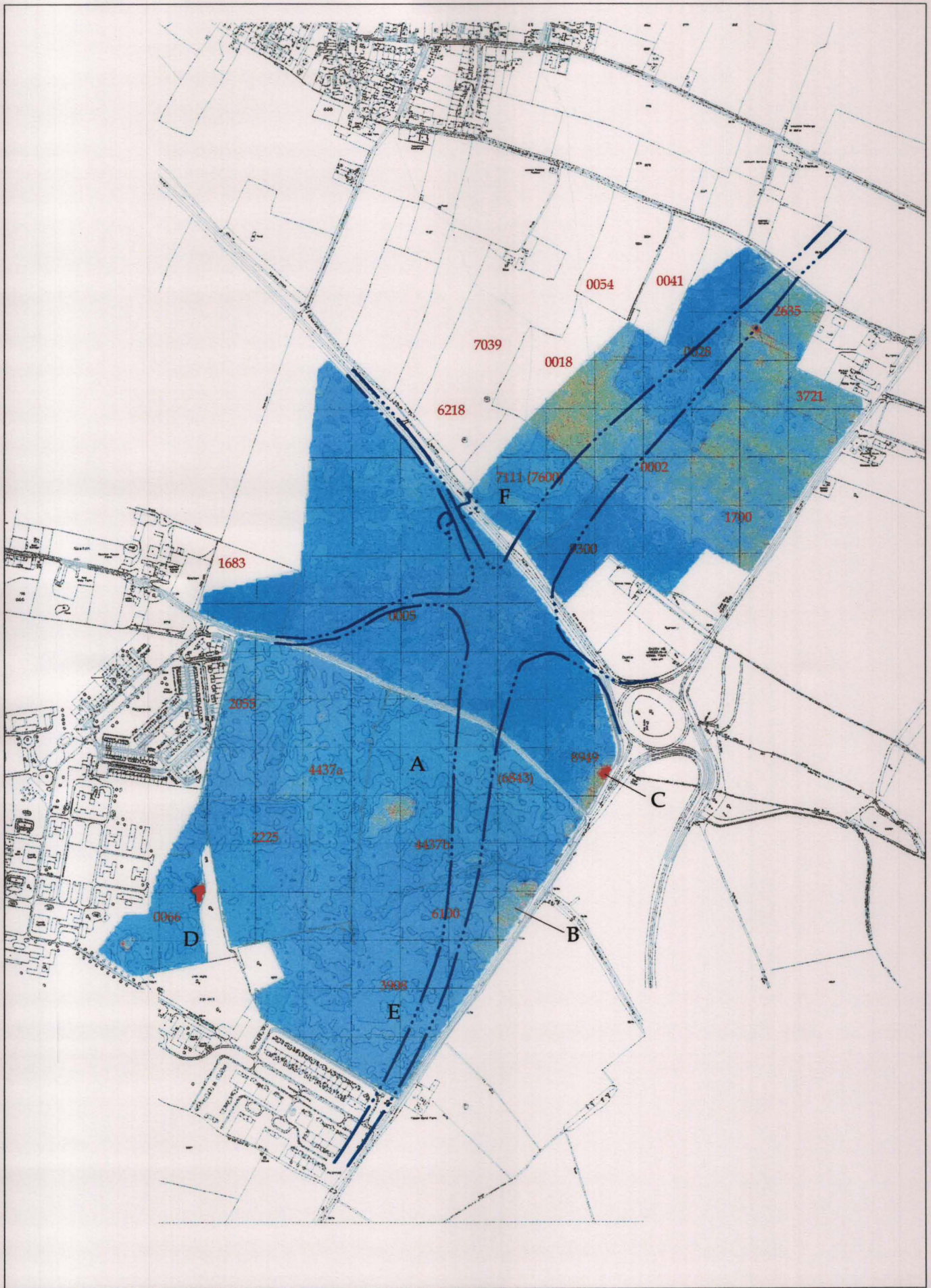


Fig. 14: Off-line route (dark blue) in relation to topsoil magnetic susceptibility; contours are low-high / blue-red at 5SI intervals (range is 5-75SI Volume Susceptibility Units); scale 1:10,000

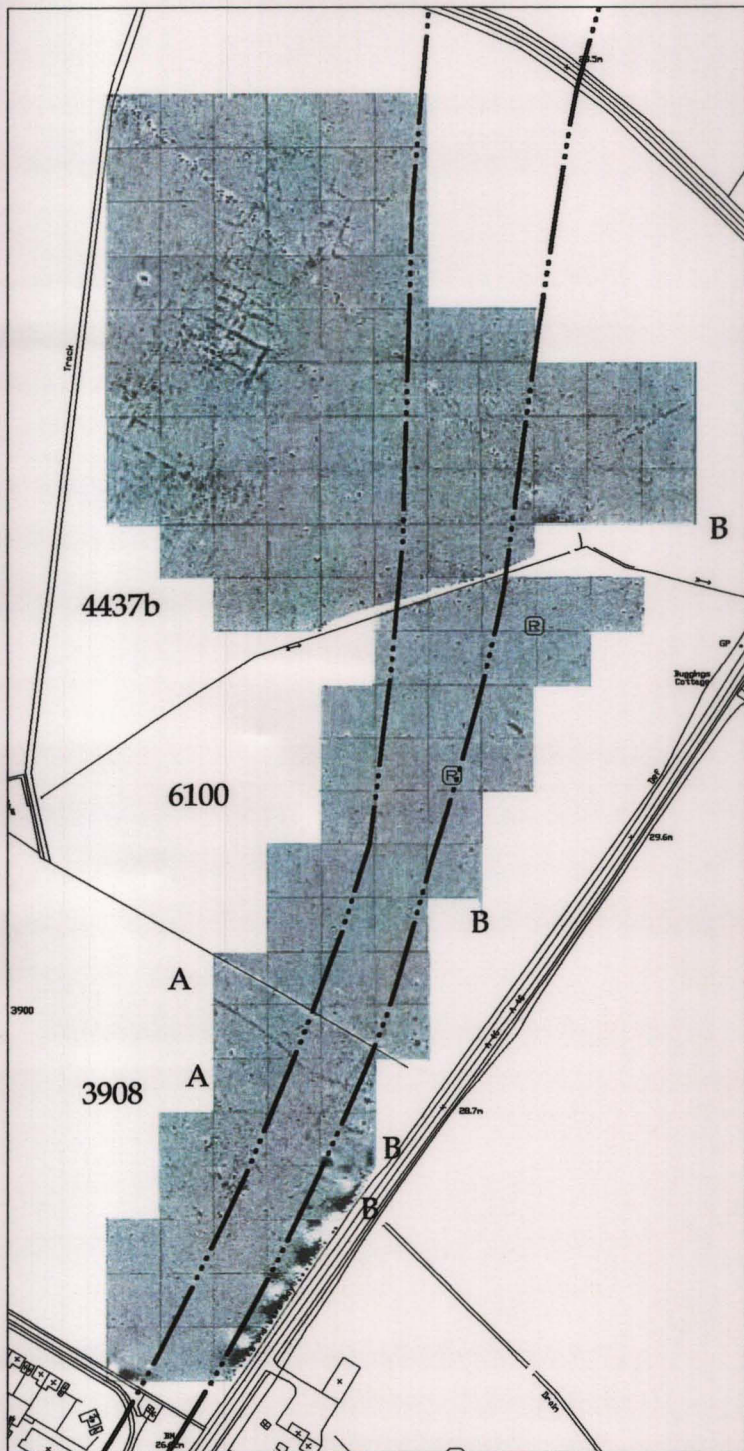


Fig. 15: Off-line route (dot-dash) in relation to detailed magnetometer survey; scale 1:4,000 (grid is 30m)

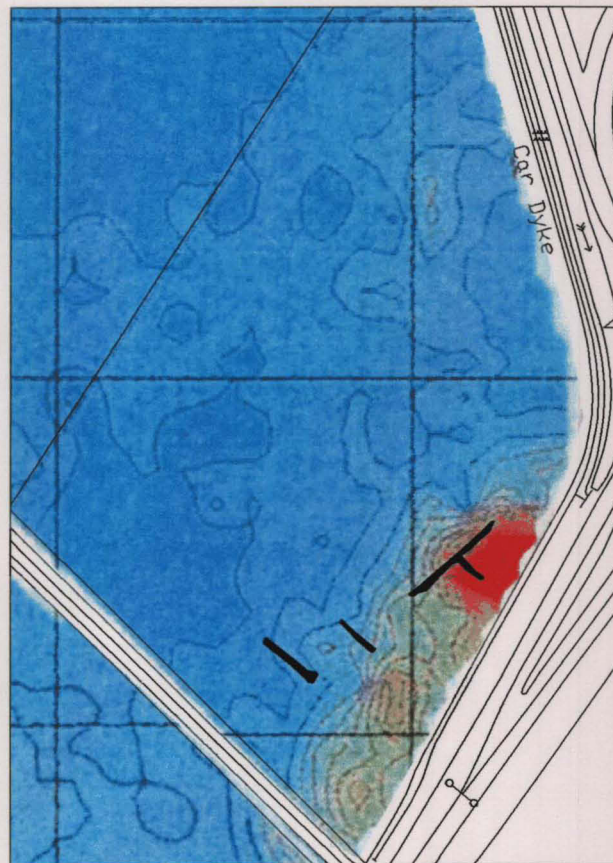


Fig. 16: Field 8949 showing topsoil magnetic susceptibility survey data and surveyed cropmarks; scale 1:2000 (grid is 100m)

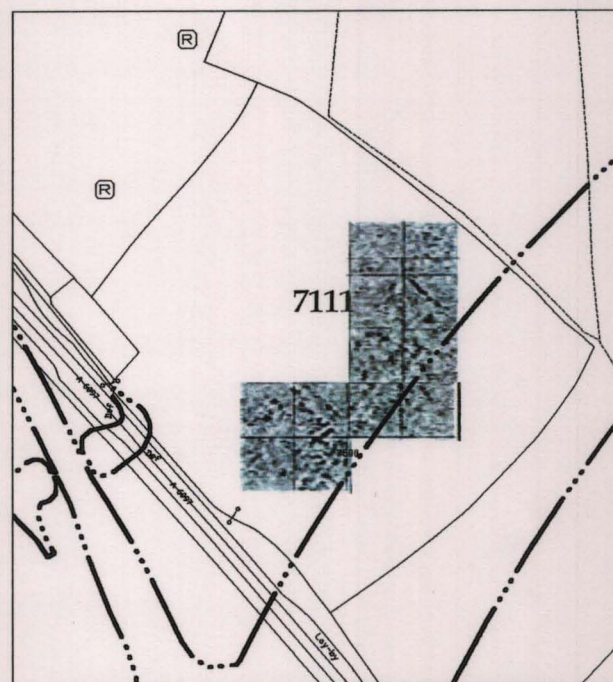


Fig. 17: Off-line route (dot-dash) in relation to detailed magnetometer survey in field 7111; scale 1:4,000 (grid is 30m)

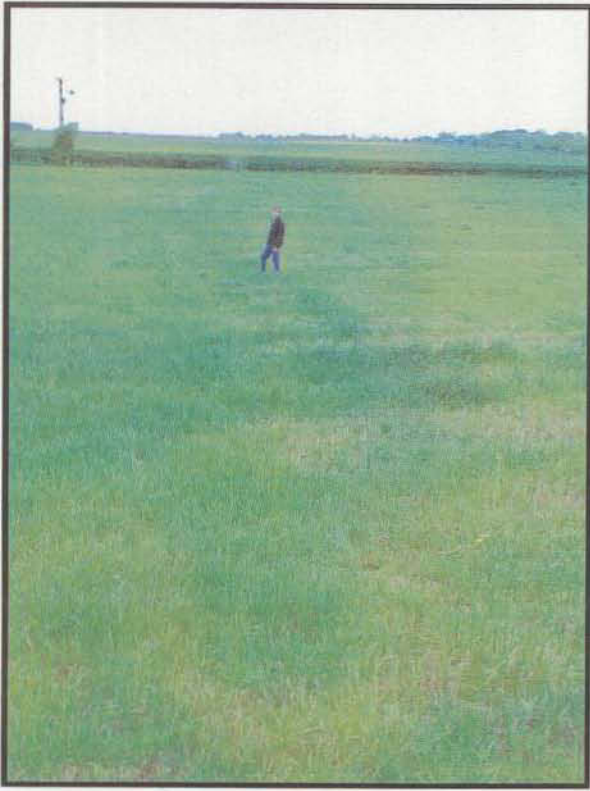


Plate 1: Cropmarks looking north-west

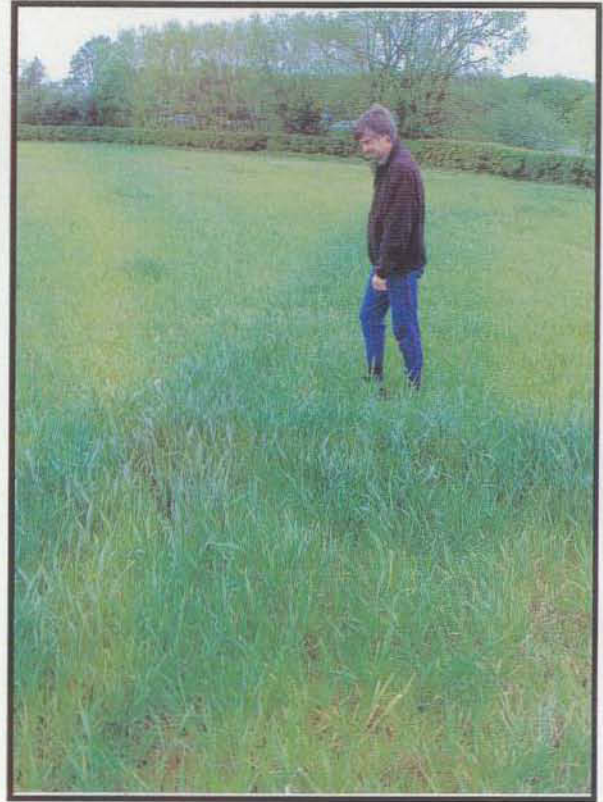


Plate 3: Detail of cromparks looking north-east

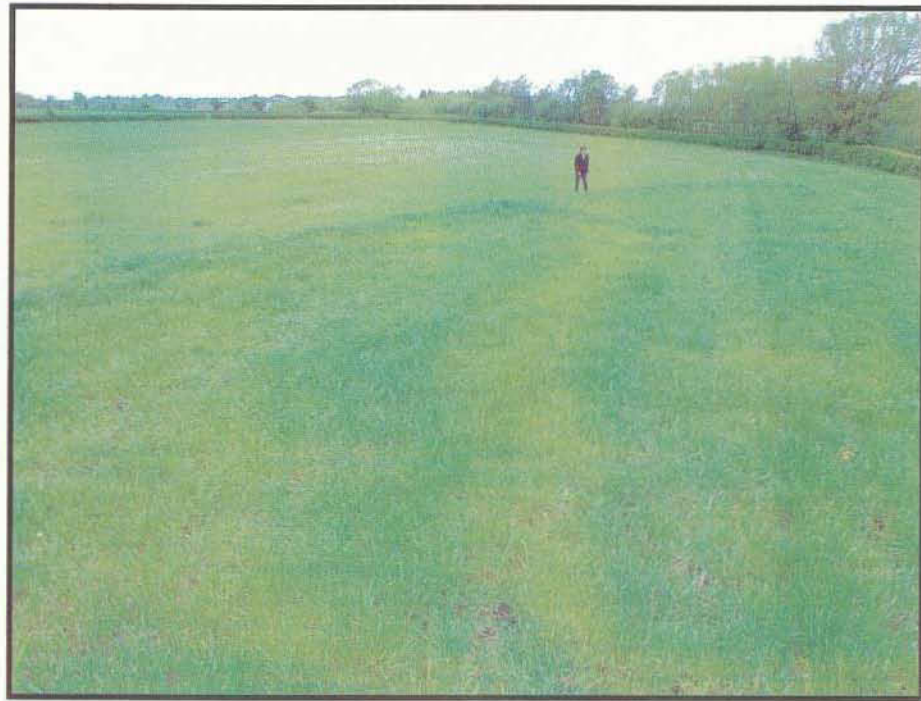


Plate 2: Cropmarks looking north-east

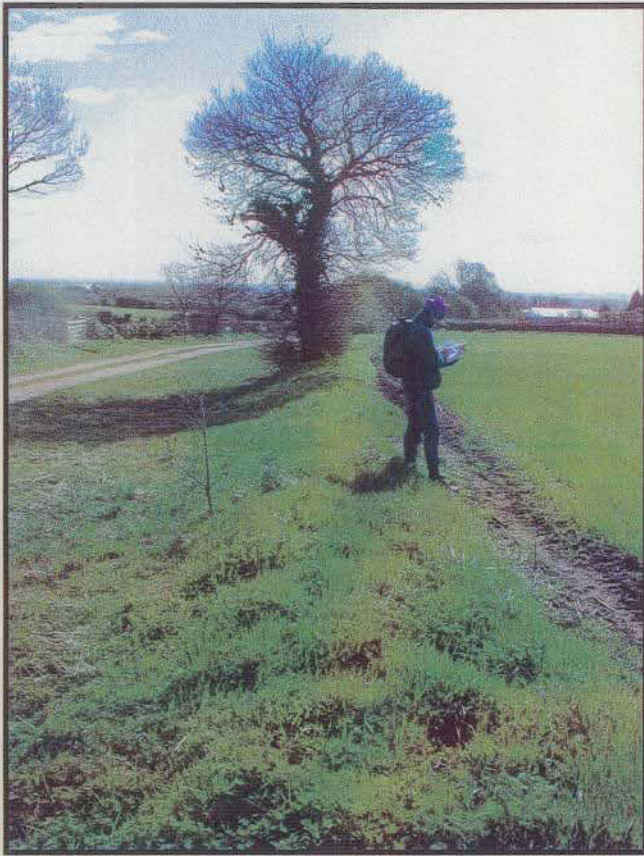


Plate 4: Springdale Lane (left) looking south-east, with the suggested plough headland (centre)

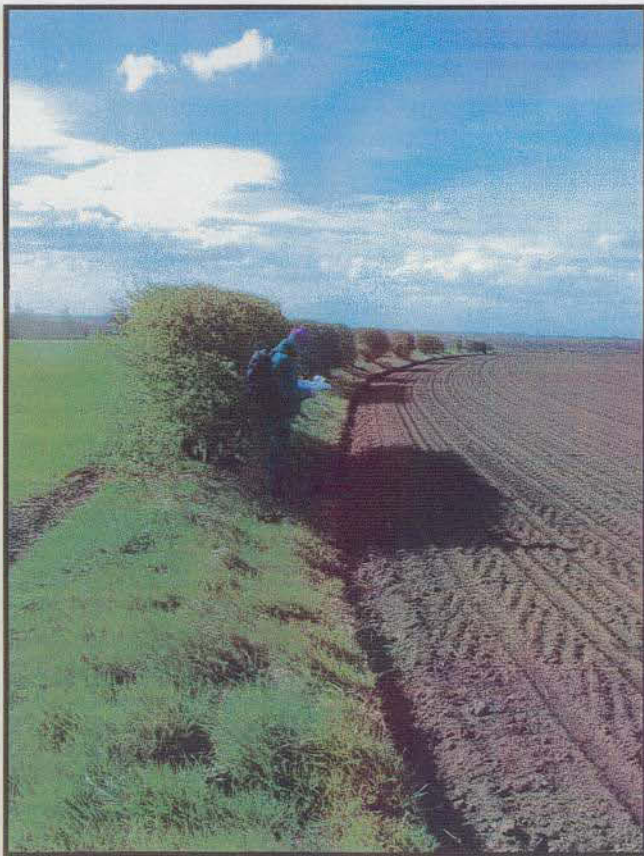


Plate 5: Field boundary at north edge of study area showing 'reversed-S' plan



Plate 6: Former course of The Street Way preserved in paddock north-west of study area, looking north-west from field 7111



Plate 7: Former course of The Street Way preserved as mound or 'agger', in field 7111, looking south-east