Cranfield UNIVERSITY

GRADIOMETER SURVEY OF LAND TO THE NORTH OF NOBOTTLE, NORTHAMPTONSHIRE

Grid ref removed to protect site

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Peter Masters

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ABSTRACT

A fluxgate gradiometer survey was undertaken on 4 hectares of land to the north of Nobottle, Northamptonshire. A palimpsest of linear, curvilinear, and rectilinear anomalies was detected denoting the remains of Romano-British settlement remains. The majority of the anomalies appear to resolve as a series of enclosures and possible building remains, including aspects of a villa complex, which was partially excavated by Rev Cavalier in the 1920's. Remains of ridge and furrow ploughing were also detected as a series of regularly spaced linear anomalies.

1.0 INTRODUCTION

Stephen Young acting on behalf of the Community Landscape and Archaeology Survey Project (CLASP), commissioned Centre for Archaeological and Forensic Analysis, Cranfield University to undertake a fluxgate gradiometer survey on land to the north of Nobottle, Brington, Northamptonshire.

The survey was undertaken in order to locate a known Roman villa and to determine the extent of its associated settlement. The work was carried out between the 27th and 28th September 2006.

The survey methodology described in this report was based upon guidelines set out in the English Heritage document *'Geophysical Survey in Archaeological Field Evaluation'* (David, 1995).

2.0 LOCATION AND DESCRIPTION

The site is located to the northeast of Nobottle Village, to the immediate east of Nobottle and to the west of Duston, Northamptonshire (Fig 1: grid ref. removed)

The site is currently under arable cultivation on a gently south facing slope. The geology of the area is comprised of Boulder and Upper Lias Clays (British Geological Survey sheet 185, published 1980). The magnetic susceptibility of these types of geologies is usually very good.

3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

A field known as 'Sharoah' at Nobottle, is where remains of a Romano-British building was partially excavated between 1927 and 1928 by Rev. H.O. Cavalier (AASRP 1930-1, 299-308). It was first discovered following a coin being handed to Rev. Cavalier who also noted that land drains and extensive plough damage had removed or dislocated much of the buildings stone foundations.

At the end of the 1928 season of excavations, a hoard of 814 late Roman coins were discovered within the wall remains of the Roman villa (O'Neil 1933, 282-305). Most of the coins dated from the Constantine period (3rd-4th centuries).

The 1886-7 First Edition Ordnance Survey map depicts the survey area as two fields, which has in recent times been enlarged as one field (Fig. 2).

To the south of the study area, the road from Bannaventa (White Lodge/Norton) on Watling Street (present A5) to Duston Roman town, Northampton has been historically accepted as a Roman Road and is shown as such on Ordnance Survey maps.

Previous geophysical surveys have been undertaken in the locality over the past few years. Three sites were surveyed by the author in 2004 immediately to the east of the present site (Masters 2005). Two of the sites produced results that revealed extensive remains from the late Iron Age and Roman periods. These remains may be related to those detected in 'Sharoah Field' that may form part of the extensive Roman landscape in this region.

Recent work carried out by Stephen Young and CLASP recovered 4,095 sherds of pottery and 6,000 tile fragments alone from fieldwalking. In addition, 7 coins were recovered from metal detecting of the site. All artetacts collected from the site date from the 1st to 4th centuries A.D. These finds further enhance the probability that the site contains Roman Settlement remains, such as a villa complex.

4.0 METHODOLOGY

Gradiometry is a non-intrusive scientific prospecting technique used to determine the presence/absence of some classes of sub-surface archaeological features (eg pits, ditches, kilns, and occasionally stone walls). By scanning the soil surface, geophysicists identify areas of varying magnetic susceptibility and can interpret such variation by presenting data in various graphical formats and identifying images that share morphological affinities with diagnostic archaeological remains (Clark 1990).

The use of gradiometry is used to establish the presence/absence of buried magnetic anomalies, which may reflect sub-surface archaeological features.

The area survey was conducted using a Bartington Grad 601 dual fluxgate gradiometer with DL601 data logger set to take 4 readings per metre (a sample interval of 0.25m). The zigzag traverse method of survey was used, with 1m wide traverses across 30m x 30m grids. The sensitivity of the machine was set to detect magnetic variation in the order of 0.1 nanoTesla.

The data was processed using *Archeosurveyor v.1.3.2.8*. It was clipped to reduce the distorting effect of extremely high or low readings caused by discrete pieces of ferrous metal on the site. The results are plotted as greyscale and trace plot images (Figs. 3-4).

5.0 INTERPRETATION AND ANALYSIS OF RESULTS (Figs. 3-6)

A fluxgate gradiometer survey covering a total area of 4ha produced extremely good results showing an extensive Roman settlement comprising of enclosures, trackways, pits and possible building remains.

A curvilinear anomaly (Fig.5, **1**, yellow line) denotes the ploughed out remains of a former field boundary as depicted on the First Edition Ordnance Survey map (Fig. 2).

Evidence of truncated ridge and furrow was detected over the entire area surveyed. The furrows appear as a series of parallel linear lines (Fig. 5, green dashed lines). The examples to the south of anomaly **1** align north-south, whilst those to the north extend in a north-west to south-east orientation. Both groups appear to respect the former field boundary suggesting that this may have also formed a headland.

Three diffuse linear anomalies (Fig.5, orange lines) detected in the southern half of the survey area aligned approximately north-south appear to traverse and truncate the underlying features possibly indicating modern plough scores/striations. Alternatively, they could represent ditches associated with an earlier phase of activity on the site.

Other anomalies detected of an isolated dipolar nature (Fig. 6, examples circled pink) probably indicate modern ferrous-like remains such as horse-shoes and other modern ferrous debris.

A palimpsest of linear, curvilinear and rectilinear anomalies (Fig.6, red lines) were detected for which these almost certainly represent traces of Romano-British settlement remains, such as a villa complex, incorporating the remains or outlines of masonry structures.

The results, however, indicate that there is more than one phase of activity as some of the anomalies appear to be of an ephemeral nature (shown as yellow), which could represent the earliest phase of occupation. In particular, two parallel linear anomalies (Fig. 6, **2**) set 8-10m apart at the southern end of the survey area probably indicates the remains of side ditches of a former road/trackway, which appears to be of an earlier phase than the sub-rectangular enclosure that overlies it (Fig.6, **3**). At its eastern end, there appears to be a possible junction with a north-south roadway.

A number of linear and sub-rectangular shaped anomalies possibly represent remains of enclosure ditches of varying sizes, which can be distinguished within the resultant image (Fig.6, **3**). Some of these, however, have become truncated by later activity such as the ridge and furrow cultivation lines leading to a fragmented picture of the settlement remains.

Two diffuse linear negative magnetic anomalies (Fig.6, **4**), may indicate the remains of *in-situ* wall foundations possibly the building discovered and recorded by Rev. Cavalier in 1927/28.

However, the excavation plan of Cavaliers (fig. 6, black lines) when superimposed onto the modern Ordnance Survey map does not exactly match with the anomalies

shown in the greyscale image and the interpretation plan. This is likely to be due to the method of recording by pacing in the approximate location in the first season of excavations. Therefore, the accuracy of the plan cannot be fully relied upon, only to give a best-fit scenario.

A square shaped negative anomaly (Fig. 6, **5**) situated part way along the former field boundary may indicate the remains of a structure. Its relationship to the other remains is unknown although it could represent a small outbuilding associated with the villa located to the west.

Two individual dipolar anomalies were detected (Fig. 6, **6**) possibly indicating kiln-like structures or areas of burning. The magnetic signatures denote two double peaks as shown in the trace plot (Fig.3, red circle), which is typical of such features.

Other individual anomalies shown in the resultant plot (Fig. 6, examples shown as red dots) are more likely to indicate the remains of pit-like features or areas of burning.

6.0 CONCLUSIONS

The survey has identified significant archaeological remains associated with the Roman villa site at Upper Harlestone. The majority of the anomalies appear to reflect a palimpsest of Romano-British activities, incorporating enclosures and possible *in-situ* stone walls of at least two structures, one of which may indicate a villa. The survey results suggest that the earliest remains lie towards the southern end of the settlement complex. These may have originated in the late Iron/ early Roman period.

The linear, curvilinear and rectilinear anomalies detected, for the most part probably represent the remains of a Romano-British farmstead with an associated villa. Several phases of activity have been recorded
Two groups of linear anomalies resolve as probable remnants of medieval ploughing.

A number of discrete anomalies may indicate the sites of kilns or areas of burning. Others resolve as possible pits.

Based on the survey results, it is concluded that the site possesses great archaeological potential with extensive remains extending to the north and east of the area surveyed. These results have further enhanced our understanding of a Roman rural landscape and how populated this area was during Roman times.

7.0 ACKNOWLEDGEMENTS

Cranfield University, Centre for Archaeological and forensic analysis would like to thank Stephen Young and CLASP for this commission.

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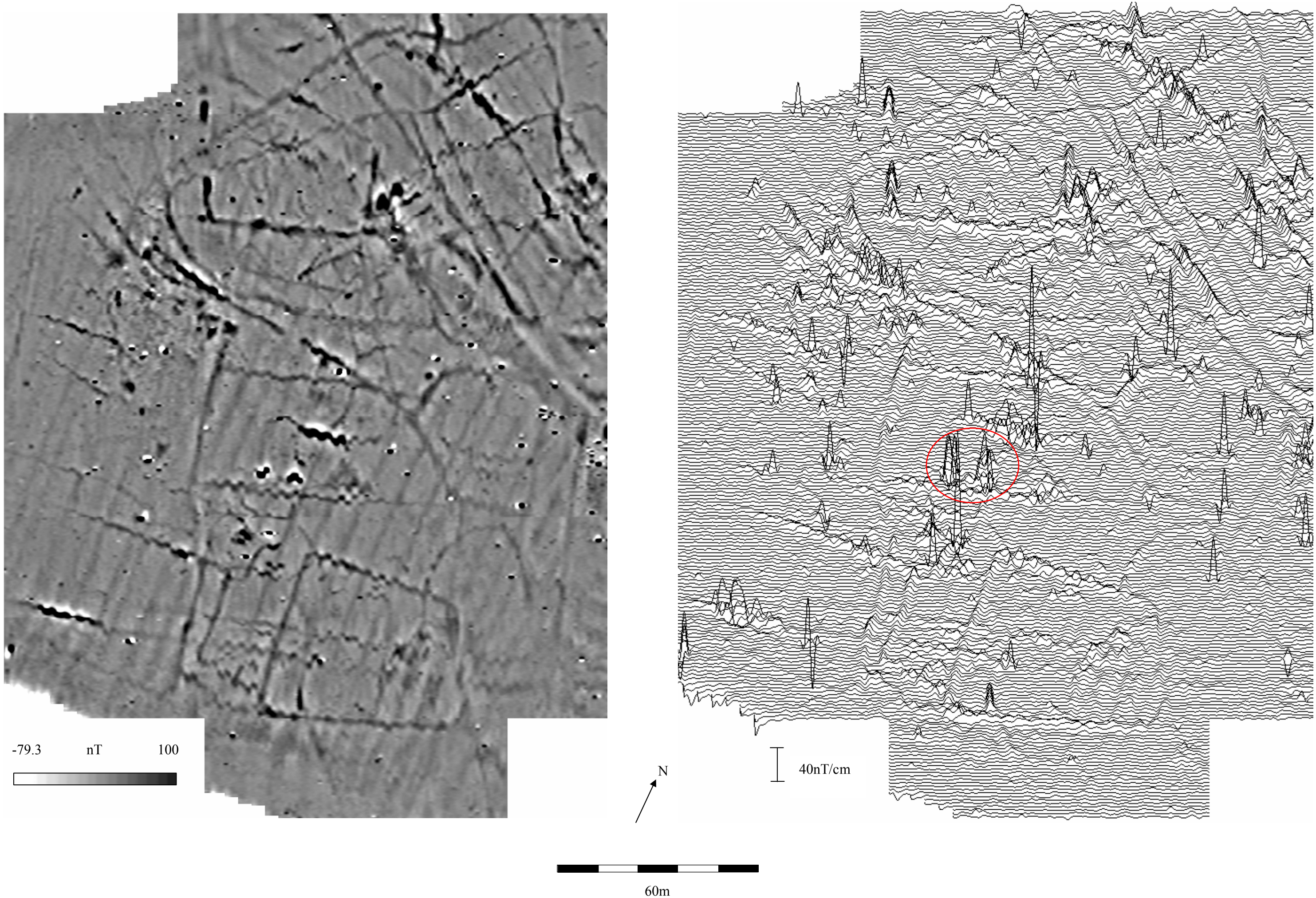

Fig. 3 – Greyscale and trace plots of raw data, scale – 1:1000

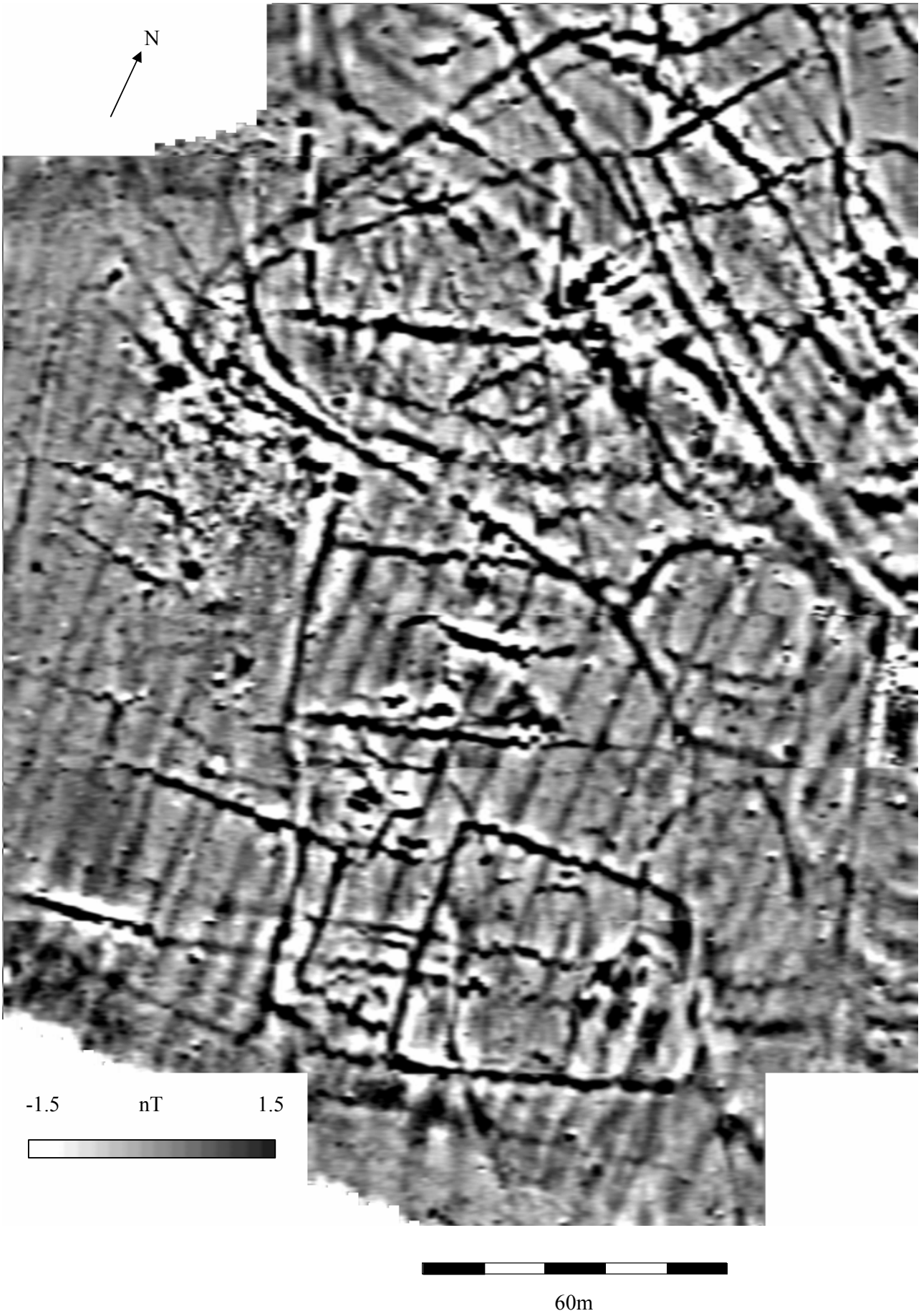

Fig. 4 – Greyscale image of enhanced data, scale – 1:1000

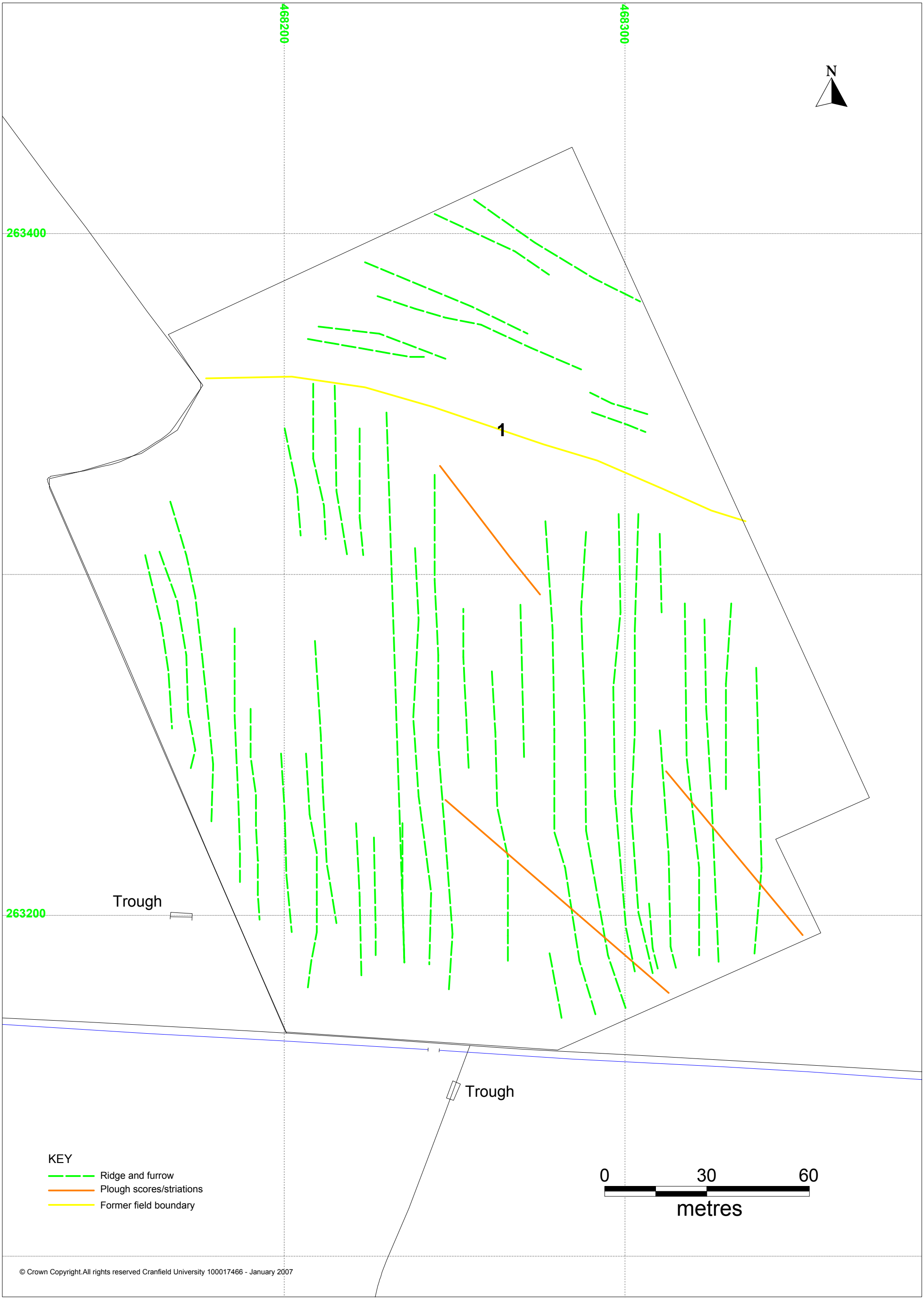

Fig. 5 - Interpretation plan of later features, scale - 1:1000

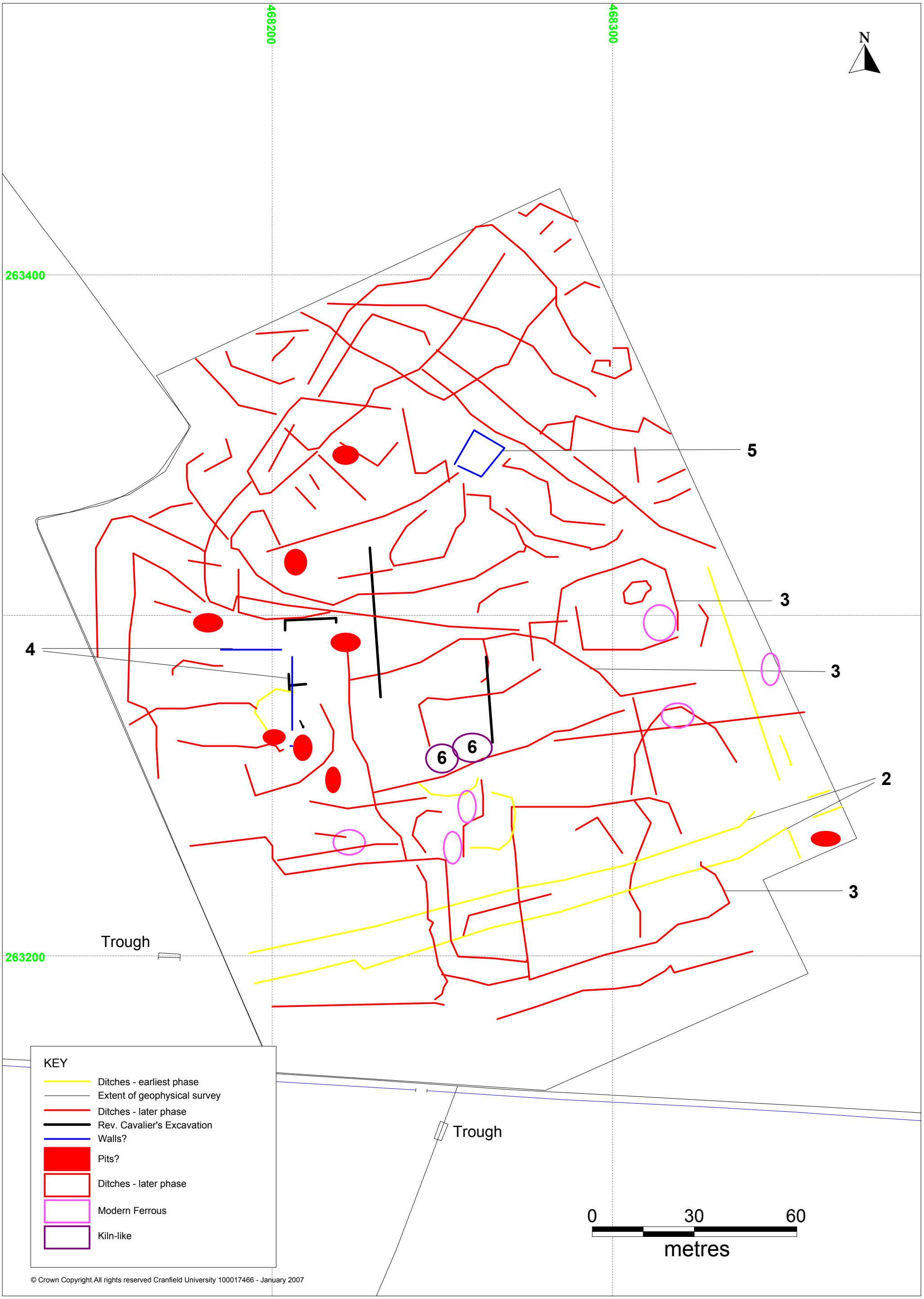

Fig. 6 - Interpretation plan of archaeological anomalies and Cavaliers excavation, scale - 1:1000