Archaeological Services
University of Durham

# Robin Hood Airport Access Route, Doncaster, South Yorkshire

# geophysical surveys

*for*
**Scott Wilson**

*on behalf of*
**Peel Investments (North) Ltd**

**Report 1448**
April 2006

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# Robin Hood Airport Access Route, Doncaster South Yorkshire

## geophysical surveys

***Report 1448***

April 2006


***Archaeological Services Durham University***

for

***Scott Wilson***

*The Design Innovation Centre, 46 The Calls, Leeds, LS2 7EY*

on behalf of

***Peel Investments (North) Ltd***

*C/o Peel Holdings, Peel Dome, The Trafford Centre, Manchester, M17 8PL*


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## Contents

# 1. Summary


### *The project*

1.1 This report presents the results of geophysical surveys conducted in advance of a proposed development at Robin Hood Airport, near Doncaster, South Yorkshire. The works comprised five geophysical surveys along the proposed route of a new access road to the airport.

1.2 The works were commissioned by Scott Wilson on behalf of Peel Investments (North) Ltd, and conducted by Archaeological Services in accordance with a specification provided by Scott Wilson.

### *Results*

1.3 Anomalies detected in Areas A and B are likely to reflect traces of ridge and furrow cultivation.

1.4 Anomalies detected in Areas C are most likely to reflect features of natural origin such as sink-holes or tree-boles, together with possible land drains. However, some of these features might be of archaeological significance and may warrant further investigation.

1.5 Area E shows signs of intense modern disturbance. No features of archaeological significance have been identified in Areas D and E.

# 2. Project background

### *Location (Figure 1)*

2.1 The proposed development area is centred on NGR: SK 6490 9895 and incorporates a road corridor through agricultural land to the west of Robin Hood Airport, near Doncaster, South Yorkshire. The new road will link the Airport car park circulatory road to Hurst Lane at a new priority junction to the north of Poplars Farm.

### *Development proposal*

2.2 The proposed Airport Access Route will be a 1km long dual carriageway road incorporating a footpath and cycleway route. The footpath and cycleway will be detached from the road for most of its length, with a scheme of woodland and damp acid grassland mitigation planting and general landscaping on the intervening land.

### *Objective*

2.3 The principal aim of the surveys was to determine the nature and extent of any sub-surface features of potential archaeological significance so that an informed decision may be made regarding the nature, and scope of, any further scheme of archaeological works that may be required in advance of development.

### *Methods statement*

2.4 The surveys have been undertaken in accordance with a specification provided by Scott Wilson (Appendix II).

### *Dates*

2.5 Fieldwork was undertaken between 24th and 25th April 2006. This report was prepared between the 25th and 27th April 2006.

### *Personnel*

2.6 Fieldwork was conducted by Bryan Atkinson, Edward Davies and supervised by Sam Roberts. This report was prepared by Sam Roberts with illustrations by David Graham. The Project Manager was Duncan Hale.

### *Archive/OASIS*

2.7 The site code is **RHY06**, for **R**obin **H**ood Airport, Doncaster, South **Y**orkshire 20**06**. The survey archive will be transferred to the County SMR. Archaeological Services Durham University is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (OASIS). The OASIS ID number for this project is **archaeol3-14497**.

# 3. Archaeological and historical background

3.1 The cultural heritage resources along the proposed access route were assessed and their importance graded by two previous Environmental Statements (Scott

Wilson 1999; Golder 2005). A summary of archaeological records identified in these reports can be found in Table 1, Appendix II. On this basis, no further cultural heritage resources would be identified by further assessment for this small section of road. The information summarised below is taken from the survey specification prepared by Scott Wilson (Scott Wilson 2006 – Appendix II)

3.2 The wider area has produced a number of prehistoric finds. Mesolithic artefacts associated with or in close proximity to rivers and streams appear to be the earliest human activity in the wider landscape, and reveal exploitation of these resources. There is some evidence for Neolithic monumental building close to the River Torne as well as Bronze Age activity at a considerable distance to the west of the route.

3.3 Growth of the wetland mires as a result of climatic deterioration in the later Bronze Age may have resulted in the area being less intensively exploited. By the late Iron Age, however, a series of dispersed farmsteads had been established within a brick field system, *c.*1km+ to the west and southwest of the access route. This brick field system is of regional importance and may extend into the access route area. The Romans exploited this agricultural landscape and a Scheduled vexillation fort, Roman pottery kilns and Roman road network lie at a considerable distance (*c.*1.6km) to the west of the access route.

3.4 The access route lies in the vicinity of a large medieval deer park. The land was enclosed for agricultural purposes in the 18th century and in the 19th and 20th centuries land improvements were made. The Finningley Airport area, which lies to the east of the Scheme, was first utilised in World War I and was used extensively during World War II.

## 4. Landuse, topography and geology

4.1 The area within the immediate vicinity of the Airport Access Route is relatively flat agricultural land and mostly comprises a number of large regular fields of either grassland or those that have recently been sown with arable crops (cereal or fodder crops). The exception to this is Area E, which is situated at the eastern end of the road corridor and consists of rough grass scrubland on the edge of the airport. A gas main substation is located in this area together with disused lighting, and a large amount of ferrous contamination such as fencing wire and metal posts was observed during survey.

4.2 The underlying geological conditions are complex superficial deposits above Permo-Triassic and Carboniferous deposits. The superficial deposits comprise older river gravels, glacial sands and gravels and glacial boulder clay.

# 5. Geophysical survey

### *Standards*

5.1 The surveys and reporting were conducted in accordance with English Heritage Research and Professional Services Guideline No.1, *Geophysical survey in archaeological field evaluation* (David 1995); the Institute of Field Archaeologists Technical Paper No.6, *The use of geophysical techniques in archaeological evaluations* (Gaffney, Gater & Ovenden 2002); and the Archaeology Data Service *Geophysical Data in Archaeology: A Guide to Good Practice* (Schmidt 2001).

### *Technique selection*

5.2 Geophysical surveying enables the relatively rapid and non-invasive identification of potential archaeological features within landscapes and can involve a variety of complementary techniques such as magnetometry, electrical resistivity, ground-penetrating radar and electromagnetic survey. Some techniques are more suitable than others in particular situations, depending on a variety of site-specific factors including the nature of likely targets; depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.

5.3 In this instance, based on a desktop assessment, it was considered a possibility that cut features, such as ditches and pits, may be present on the site, and that other types of feature such as trackways, wall foundations and fired structures (for example kilns and hearths) might also be present.

5.4 Given the anticipated shallowness of the targets and the non-igneous geological environment of the study area a geomagnetic technique, fluxgate gradiometry, was considered appropriate for detecting each of the types of feature mentioned above. This technique involves the use of hand-held magnetometers to detect and record minute anomalies in the vertical component of the Earth's magnetic field caused by variations in soil magnetic susceptibility or permanent magnetisation; such anomalies can reflect archaeological features.

### *Field methods*

5.5 A 20m grid was established across each survey area, located directly onto the ground using OS coordinates (as supplied by Scott Wilson) by means of a Leica GS50 Global Positioning System (GPS).

5.6 Measurements of vertical geomagnetic field gradient were determined using a Bartington Grad 601-2 fluxgate gradiometer with automatic datalogging facilities. A zig-zag traverse scheme was employed and data were logged in 20m grid units. The instrument sensitivity was set to 0.1nT, the sample interval to 0.25m and the traverse interval to 1.0m, thus providing 1600 sample measurements per 20m grid unit.

5.7 Data were downloaded on-site into a laptop computer for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

5.8 The northeastern corner of Area C was obscured by a wide hedgerow and could not be surveyed fully.

5.9 A wide area of woodland and scrubland at the western end of Area E impeded survey, and only 100m of the eastern part of the road corridor could be surveyed. Area D was therefore extended by 20m to reach the western boundary of the woodland.

***Data processing***

5.10 Geoplot v.3 software was used to process the geophysical data and to produce both continuous tone greyscale images and trace plots of the raw data. The greyscale images and interpretations are presented in Figures 2-10; the trace plots are provided in Appendix I. In the greyscale images, positive magnetic anomalies are displayed as dark grey and negative magnetic anomalies as light grey. A palette bar relates the greyscale intensities to anomaly values in nanoTesla.

5.11 The following basic processing functions have been applied to each dataset:

*Clip* – clips, or limits data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic.

*Zero mean traverse* – sets the background mean of each traverse within a grid to zero; for removing striping effects in the traverse direction and removing grid edge discontinuities.

*Destagger* – corrects for displacement of anomalies caused by alternate zig-zag traverses.

*Despike* – locates and suppresses random iron spikes in gradiometer data.

*Low pass filter* – is useful for smoothing data or for enhancing larger weak features.

*Interpolate* – increases the number of data points in a survey; to match sample and traverse intervals. In this instance the gradiometer data have been interpolated to 0.25m intervals.

***Interpretation: anomaly types***

5.12 Colour-coded geophysical interpretation plans are provided for each survey area. Three types of geomagnetic anomaly have been distinguished in the data:

| | |
|---|---|
| *positive magnetic* | regions of anomalously high or positive magnetic field gradient, which may be associated with high magnetic susceptibility soil-filled structures such as pits and ditches. |
| *negative magnetic* | regions of anomalously low or negative magnetic field gradient, which may correspond to features of low magnetic susceptibility such as wall footings and other concentrations of sedimentary rock or voids. |
| *dipolar magnetic* | paired positive-negative magnetic anomalies, which typically reflect ferrous or fired materials (including fences and service pipes) and/or fired structures such as kilns or hearths. |

***Interpretation: features (Figures 2-16)***

5.13 Colour-coded archaeological interpretation plans are provided for each survey area.

5.14 Low concentrations of discrete dipolar magnetic anomalies have been detected across Areas A to D, these almost certainly reflect small items of near-surface ferrous and/or fired debris. Much higher concentrations observed in Area E correspond to modern disturbance and the presence of ferrous contaminants such as fencing wire and metal posts noted during survey.

**Area A** (Figs 2-4)

5.15 Weak positive and negative linear magnetic anomalies detected in the western part of Area A, spaced at intervals of 7-10m and aligned northeast - southwest, are likely to reflect traces of ridge and furrow cultivation.

5.16 Stronger dipolar magnetic anomalies on southern periphery of the survey reflect the presence of brick walls.

**Area B** (Figs 2-4)

5.17 Extremely weak parallel, linear positive magnetic anomalies aligned north-south may reflect traces of ridge and furrow cultivation.

5.18 A dipolar anomaly on the southern boundary reflects a metal post within the hedgerow.

**Area C** (Figs 5-7)

5.19 An area of diffuse positive and negative magnetic anomalies has been detected in the northwest part of this area. These anomalies cover an area approximately 15m in diameter and are of uncertain origin, although they may possibly reflect natural features such as sinkholes or tree-boles.

5.20 Very weak positive magnetic linear anomalies detected in this area may indicate soil-filled features such as ditches or gullies. Small discrete positive anomalies, *c.*2m in diameter, could reflect soil-filled pits.

**Area D** (Figs 5-7)

5.21 No features of archaeological potential were identified in this area.

**Area E** (Figs 8-10)

5.22 No features of archaeological potential were identified in this area.

5.23 Concentrations of intense dipolar magnetic anomalies indicate a large amount of modern disturbance in this area, and a large amount of ferrous material such as fencing wire and metal objects was noted on the ground during survey.

5.24 A wide, well-defined linear band of intense dipolar magnetic anomalies crossing the middle of the survey area from the northeast to southwest may reflect deposits similar to rubble hardcore. A gas main sub-station is situated to the north of the survey transect, and these anomalies may be associated with these services.

5.25 A disused trackway bordered with lampposts is located directly to the east of the survey transect. Dipolar magnetic anomalies in this area are likely to reflect electrical cables for lampposts as well as general disturbance associated with the trackway's construction.

5.26 The western end of the survey area exhibits a concentration of dipolar magnetic anomalies. These may reflect rubble hardcore or similar deposits.

## 6. Conclusions

6.1 Geophysical surveys have been carried out along the route of a proposed access road to Robin Hood Airport, Doncaster, South Yorkshire.

6.2 Anomalies detected in Areas A and B are likely to reflect remains of ridge and furrow cultivation.

6.3 Anomalies detected in Areas C and D are most likely to reflect features of natural origin such as sink-holes or tree-boles, together with the traces of land drains. However, some of these features might be of archaeological significance and may warrant further investigation.

6.4 Area E shows signs of intense modern disturbance. No features of archaeological significance have been detected.

## 7. Sources

David, A 1995 *Geophysical survey in archaeological field evaluation*, Research and Professional Services Guideline **1**, English Heritage

Gaffney, C, Gater, J & Ovenden, S 2002 *The use of geophysical techniques in archaeological evaluations*, Technical Paper **6**, Institute of Field Archaeologists

Mouchel Parkman/ Golder Associates, 2005 *Finningley and Rossington Regeneration Route Scheme: Stage 2 Environmental Assessment Volumes 1 and 2 (September 2005)*

Schmidt, A 2001 *Geophysical Data in Archaeology: A Guide to Good Practice,* Archaeology Data Service

Scott Wilson 1999 *Doncaster Finningley Airport: Environmental Statement Volumes 1 and 2 (October 1999)*

Archaeological Services
University of Durham

*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 100m
*scale 1:2500 - for A3 plot*

outline of survey area

proposed access route

7.00
5.83
4.67
3.50
2.33
1.17
0.00
-1.17
-2.33
-3.50
-4.67
-5.83
-7.00 nT

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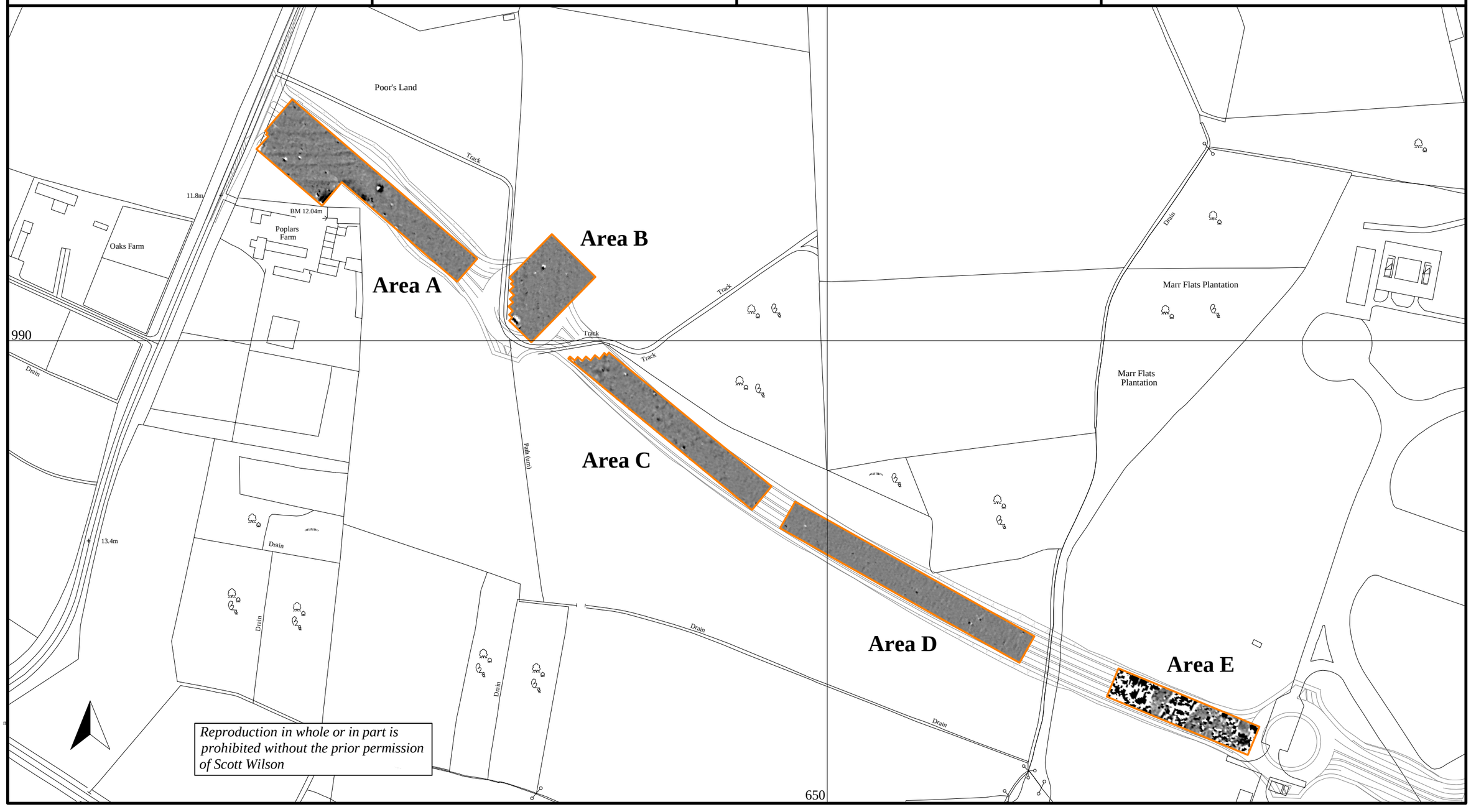
Figure 1
*Location of the geophysical surveys*



Archaeological Services
University of Durham

*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 50m
*scale 1:1000 - for A3 plot*

outline of survey area

proposed access route

7.00
5.83
4.67
3.50
2.33
1.17
0.00
-1.17
-2.33
-3.50
-4.67
-5.83
-7.00 nT

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Figure 2
*Areas A and B, geophysical surveys*

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*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 50m
*scale 1:1000 - for A3 plot*

outline of survey area
proposed access route
positive magnetic anomalies
negative magnetic anomalies
dipolar magnetic anomalies

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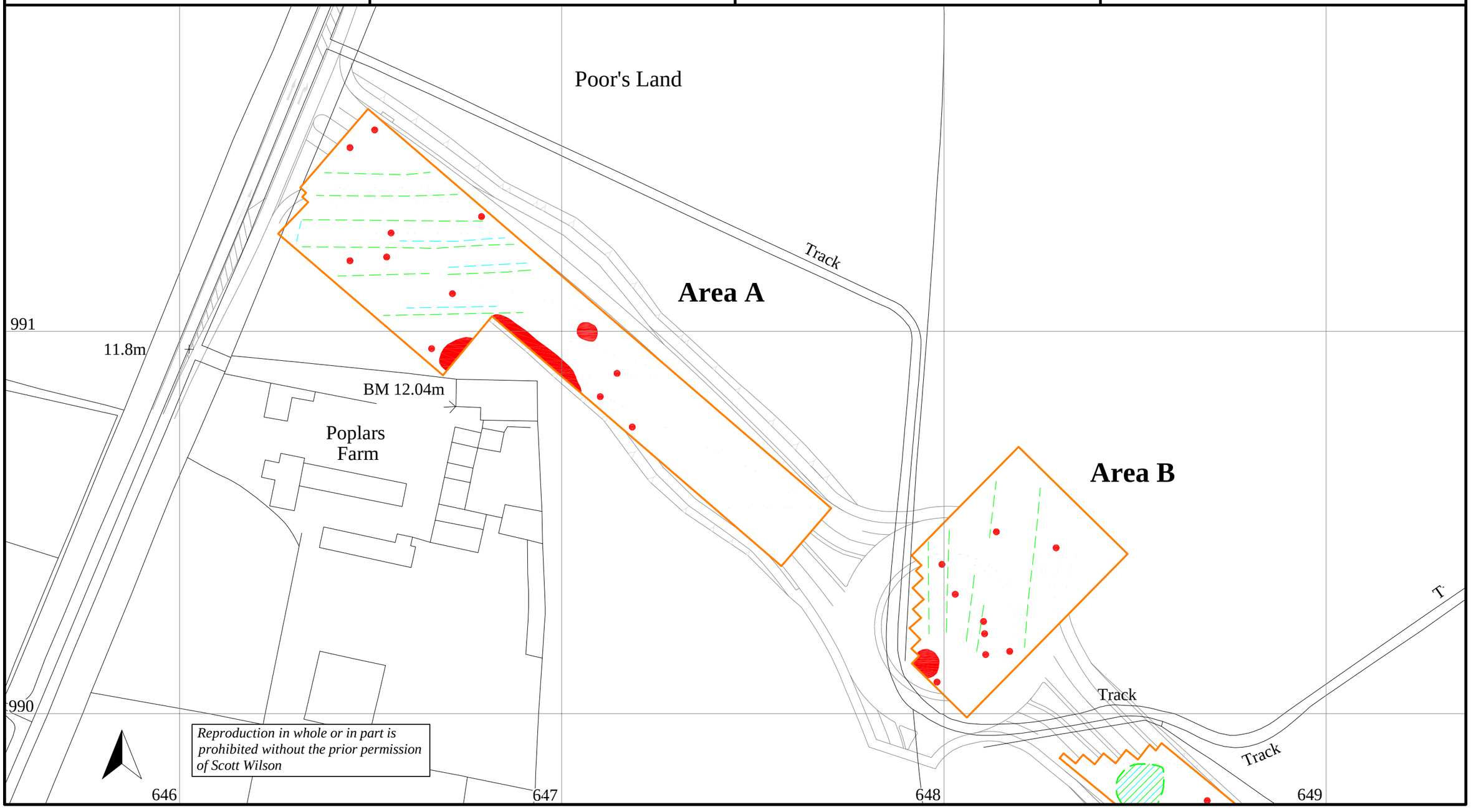
Figure 3
*Areas A and B, geophysical interpretation*



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University of Durham

*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 50m
*scale 1:1000 - for A3 plot*

outline of survey area

proposed access route

orientation of ridge and furrow

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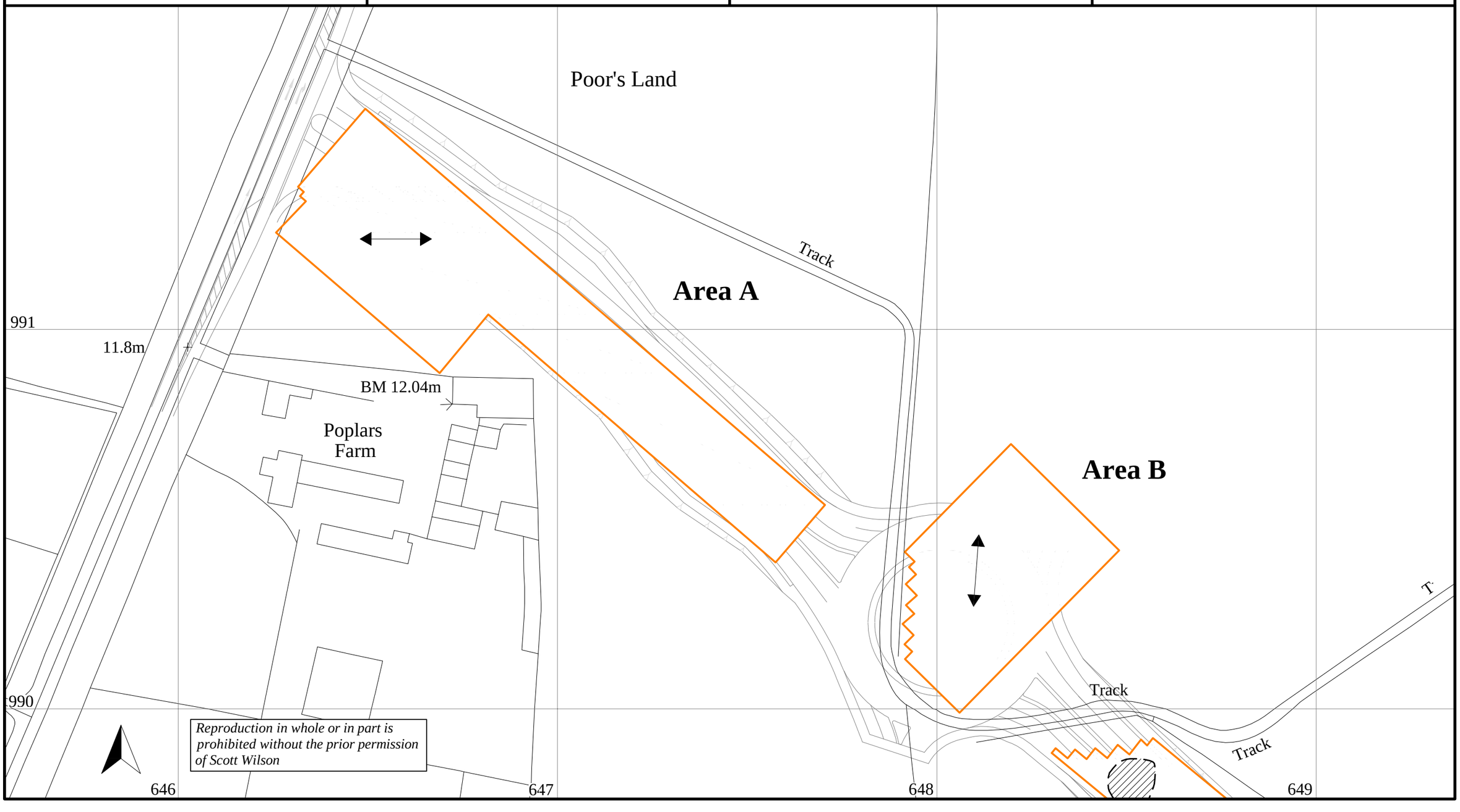
Figure 4
*Areas A and B, archaeological interpretation*



Archaeological Services
University of Durham

*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 50m
*scale 1:1000 - for A3 plot*

outline of survey area

proposed access route

7.00
5.83
4.67
3.50
2.33
1.17
0.00
-1.17
-2.33
-3.50
-4.67
-5.83
-7.00 nT

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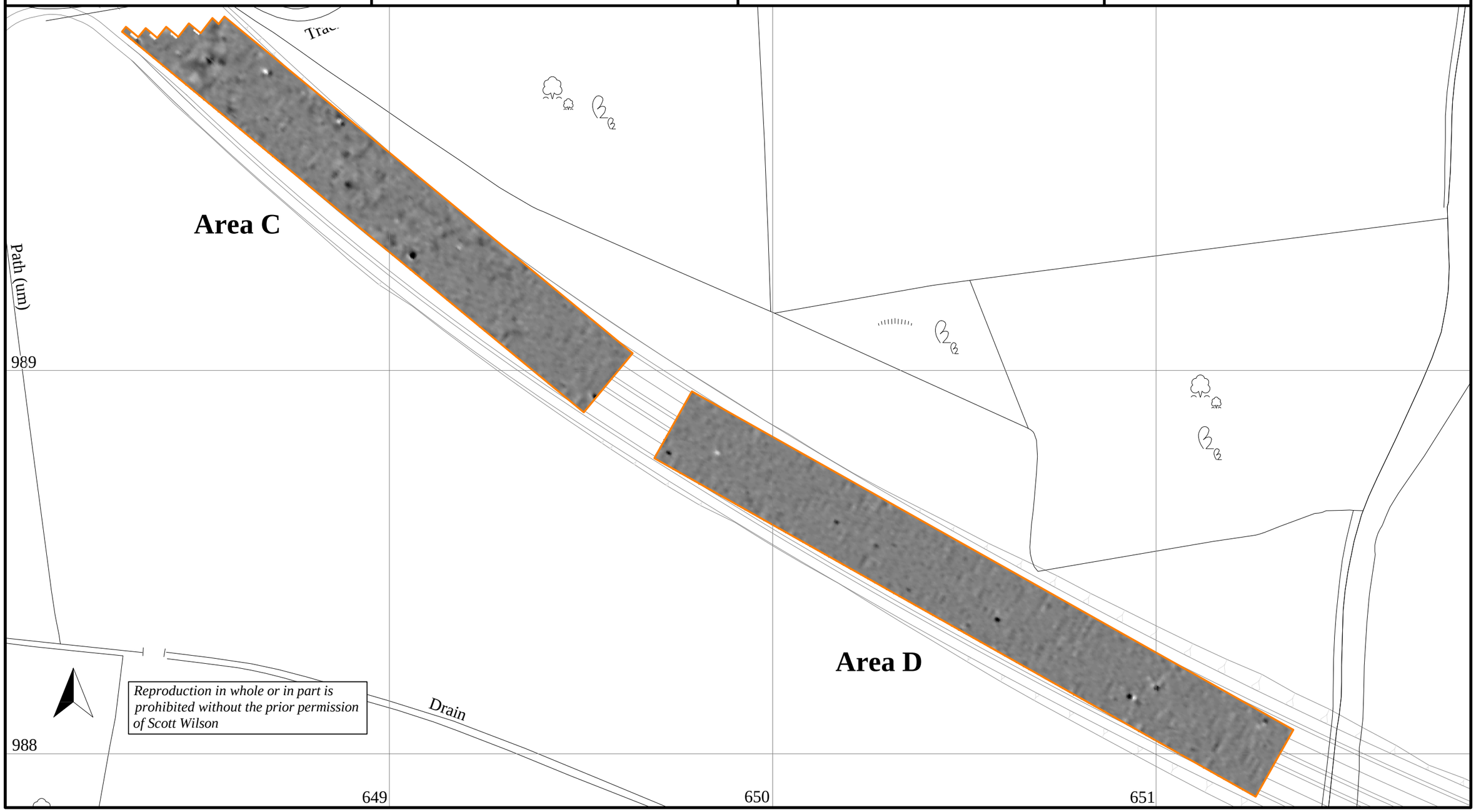
Figure 5
*Areas C and D, geophysical surveys*



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*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 50m
*scale 1:1000 - for A3 plot*

outline of survey area
proposed access route
positive magnetic anomalies
negative magnetic anomalies
dipolar magnetic anomalies

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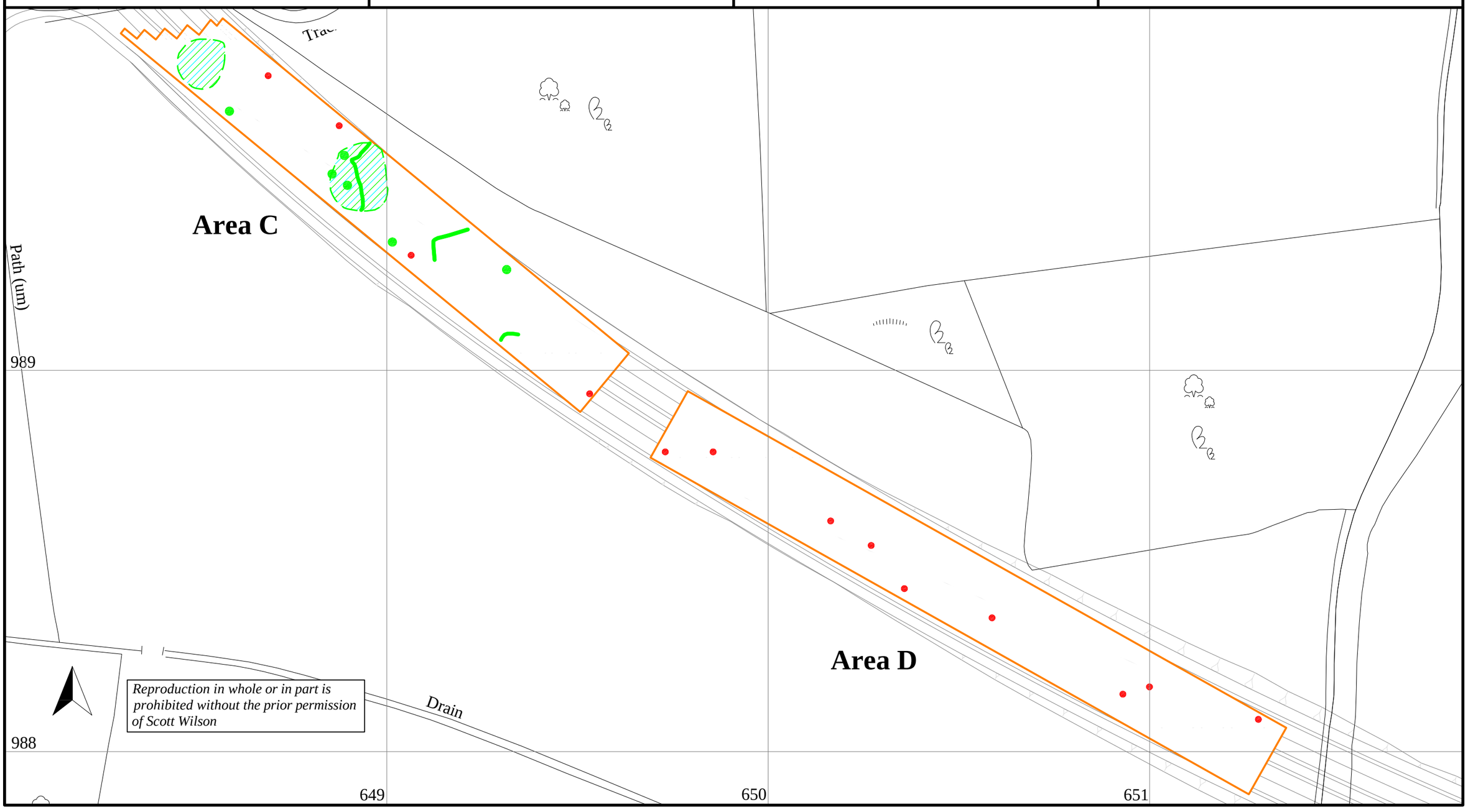
Figure 6
*Areas C and D, geophysical interpretation*



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University of Durham

*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 50m
*scale 1:1000 - for A3 plot*

outline of survey area
proposed access route
soil-filled features
disturbed area

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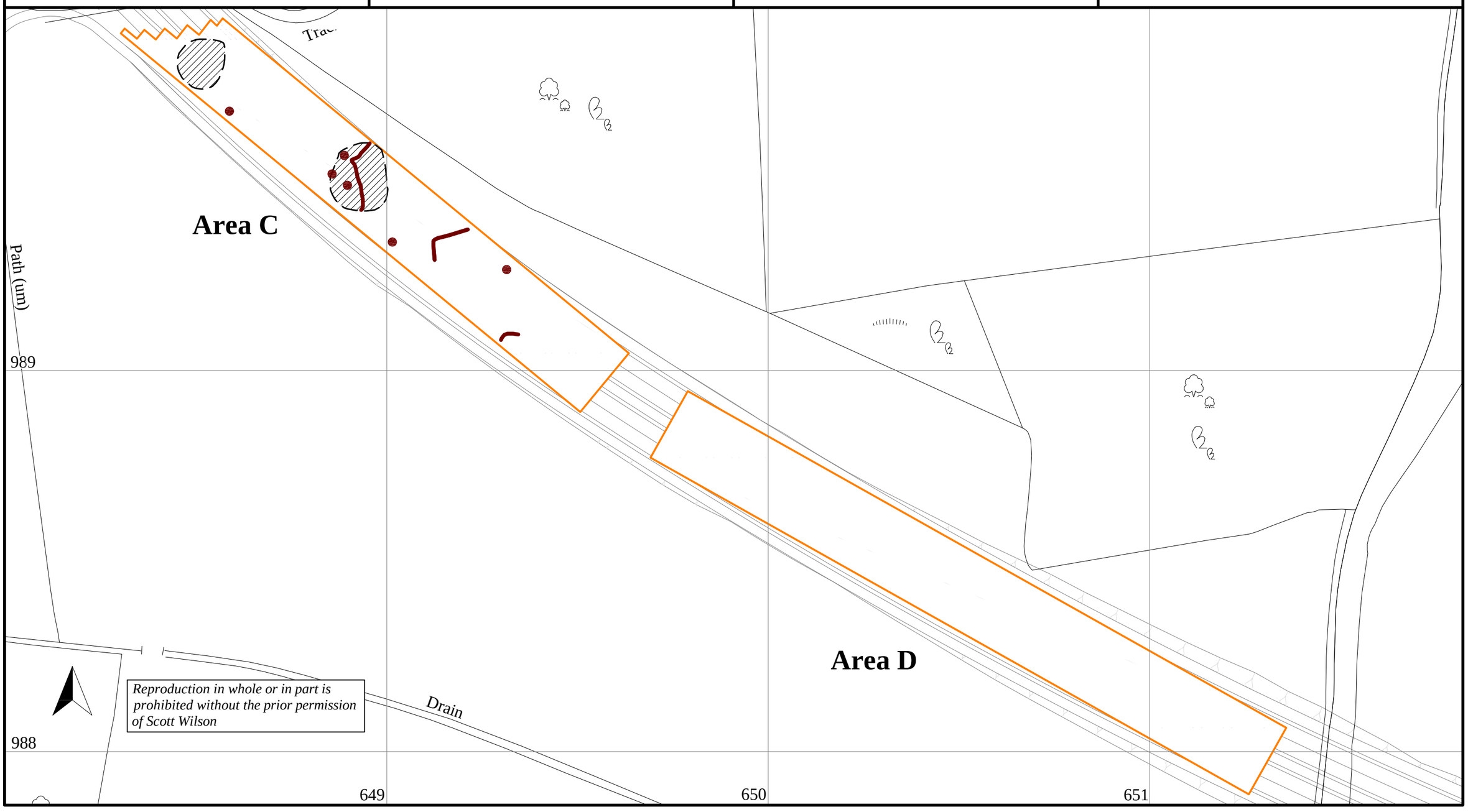
Figure 7
*Areas C and D, archaeological interpretation*



Archaeological Services
University of Durham

*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 25m
*scale 1:500 - for A3 plot*

outline of survey area

proposed access route

7.00
5.83
4.67
3.50
2.33
1.17
0.00
-1.17
-2.33
-3.50
-4.67
-5.83
-7.00 nT

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Figure 8
*Area E, geophysical survey*

998

**Area E**

652

653

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*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 25m
*scale 1:500 - for A3 plot*

outline of survey area

proposed access route

positive magnetic anomalies

negative magnetic anomalies

dipolar magnetic anomalies

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Figure 9
*Area E, geophysical interpretation*

998

**Area E**

652

653

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University of Durham

*for*
**Scott Wilson**
*on behalf of*
**Peel Investments (North) Ltd**

0 25m
*scale 1:500 - for A3 plot*

outline of survey area

proposed access route

modern disturbance

**Robin Hood Airport Access Route, South Yorkshire geophysical surveys**

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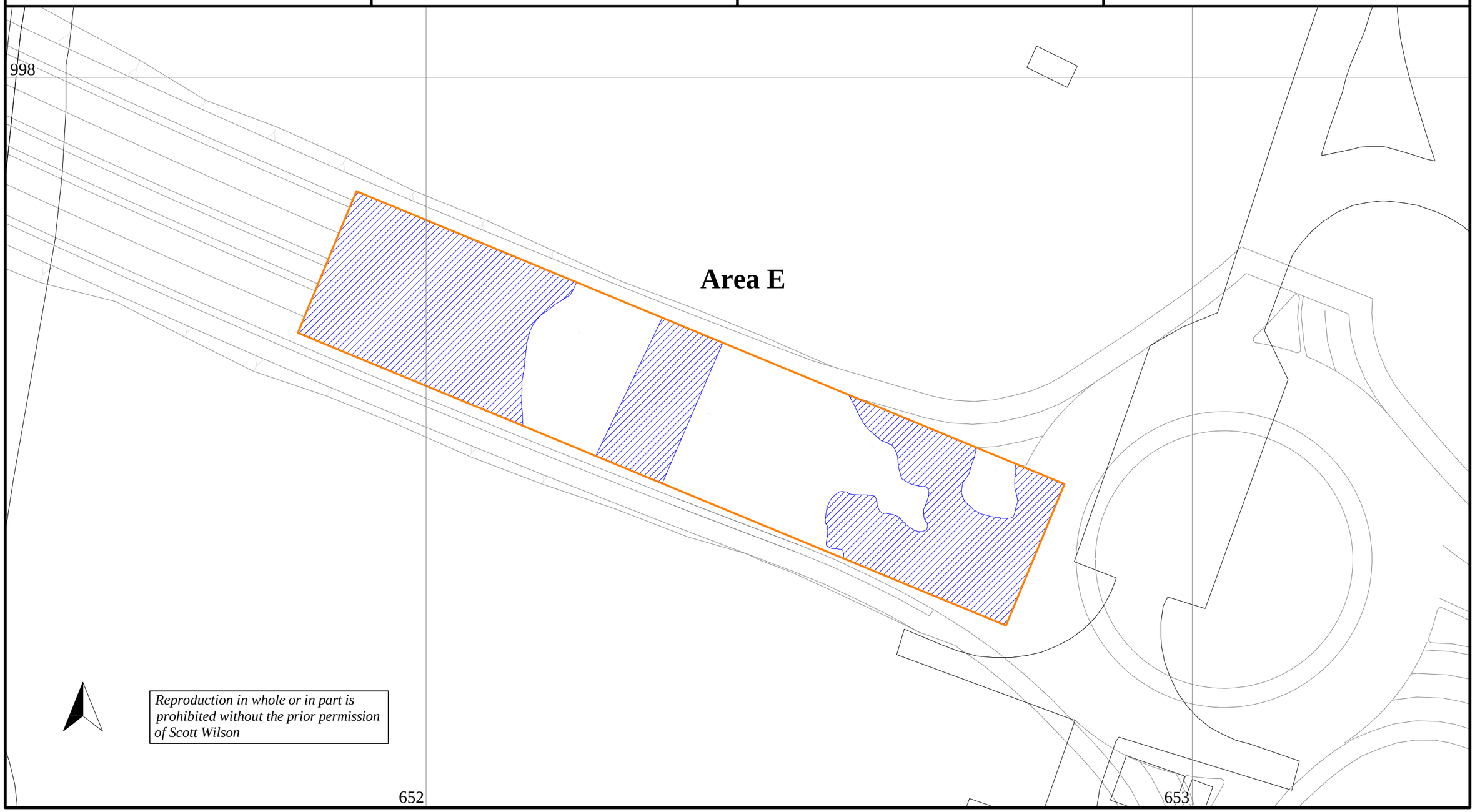
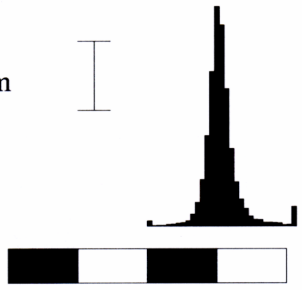
Figure 10
*Area E, archaeological interpretation*



## Appendix 1: Trace plots of geophysical data

20nT/cm

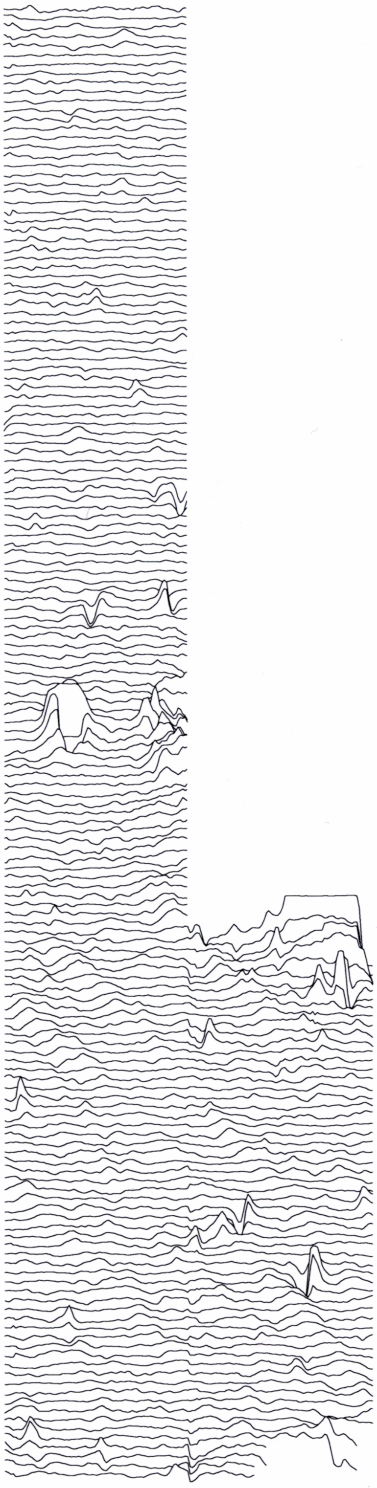


30m

Robin Hood Airport Access Route, South Yorkshire

Area A Geomagnetic Data

1:750 @ A4



Robin Hood Airport Access Route, South Yorkshire

Area B Geomagnetic Data

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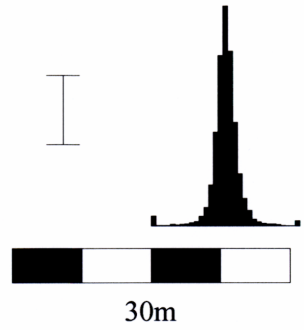


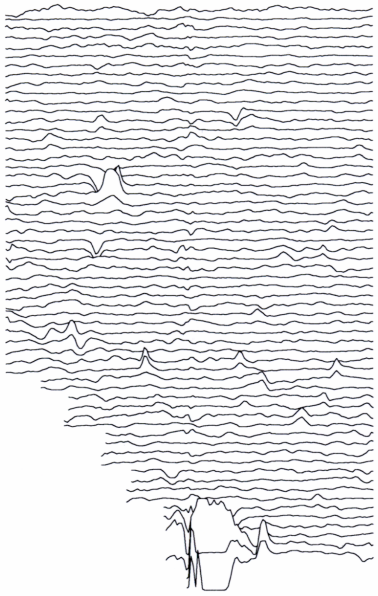

Robin Hood Airport Access Route, South Yorkshire

Area C Geomagnetic Data

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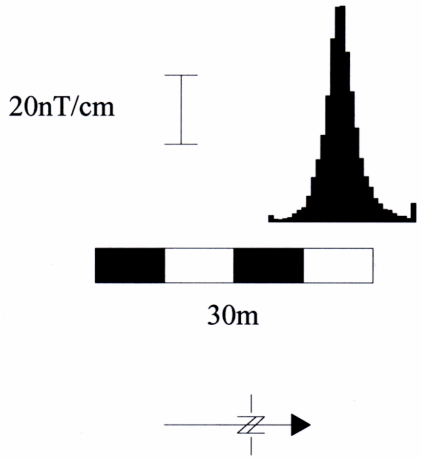


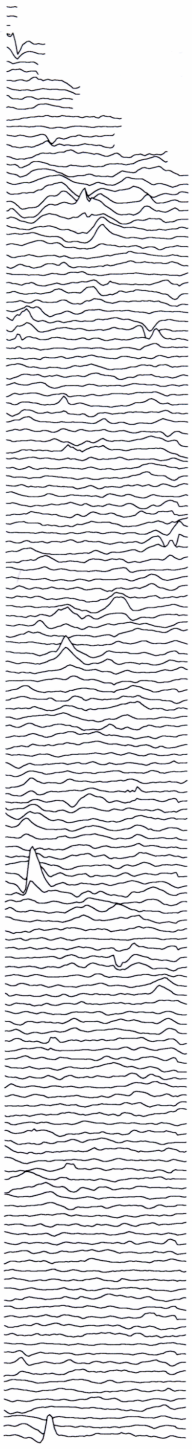

Robin Hood Airport Access Route, South Yorkshire

Area D Geomagnetic Data

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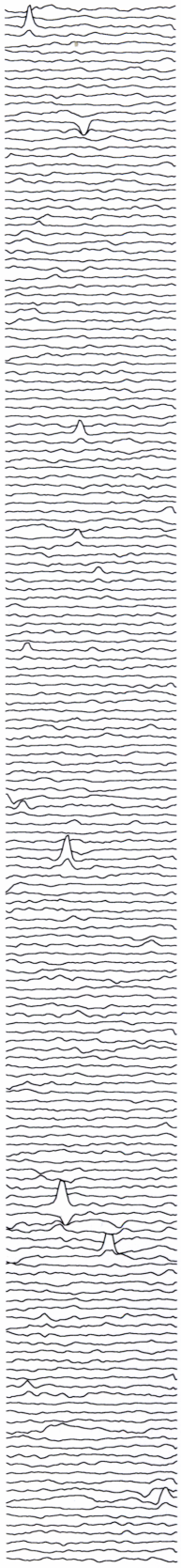

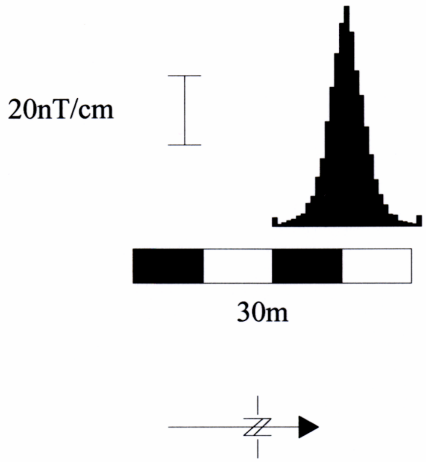

Robin Hood Airport Access Route, South Yorkshire

Area E Geomagnetic Data

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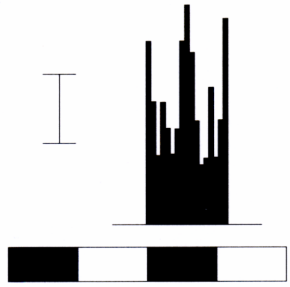


# Appendix 2: Project specification

**CONTENTS**

# 1. INTRODUCTION

Scott Wilson was commissioned by Peel Investments (North) Ltd to undertake a magnetometer survey over the area covered by the proposed Airport Access Route. The purpose of this is to provide information for the determination of a planning application (Doncaster Metropolitan Borough Council Planning Application No. 06/00460/FUL) for the new access routes construction.

Scott Wilson have previously undertaken extensive work in the area which has identified remains from the prehistoric to modern periods. The archaeological resource consists of archaeological finds, find scatters and field systems of Romano-British date in the near vicinity as well as two undated boundary stones.

An Environmental Assessment was undertaken by Mouchel Parkman/ Golder Associates (2005) for FARRRS, of which the Airport Access Route forms the eastern most portion. An Environmental Statement was also undertaken by Scott Wilson for Doncaster Finningley Airport in 1999.

This document provides a specification for a magnetometer survey of the Airport Access Route. The survey will be carried out in those areas that will be affected by construction works.

# 2. SITE DESCRIPTION

The proposed development area is centred on NGR SK 6490 9895 and incorporates a road corridor through agricultural land to the west of the airport (Fig. 1). The new road will link the Airport car park circulatory road to Hurst Lane at a new priority junction to the north of Poplars Farm.

The proposed Airport Access Route will be an approximately 1km long dual carriageway road and will be built almost entirely at grade. It will incorporate a footpath and cycleway route. The footpath and cycleway will be detached from the road for most of its length to provide a more attractive route for pedestrians and cyclists adjacent to neighbouring woodland areas. The intervening land will incorporate landscaping and woodland and damp acid grassland mitigation planting. The total landtake will therefore be approximately 6 hectares.

# 3. GEOLOGY

The underlying geological conditions are complex superficial deposits above Permo-Triassic and Carboniferous deposits. The superficial deposits comprise older river gravels, glacial sands and gravels and glacial boulder clay.

# 4. LAND USE

The area within the immediate vicinity of the Airport Access Route is relatively flat agricultural land and comprises a number of large regular fields that either consist of grassland or those that have recently been sown with arable crops (cereal or fodder crops).

# 5. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The cultural heritage resources along the proposed access route were assessed and their importance graded by two previous Environmental Statements (Scott Wilson, 1999; Golder 2005). On this basis, no further cultural heritage resources would be identified by further assessment for this small section of road. The results are summarised in Table 1 below.

The wider area has produced a number of prehistoric finds. Mesolithic artefacts associated with or in close proximity to rivers and streams appear to be the earliest human activity in the wider landscape, and reveal exploitation of these resources. There is some evidence for Neolithic monumental building, close to the River Torne as well as Bronze Age activity at a considerable distance to the west of the route.

Growth of the wetland mires as a result of climatic deterioration in the later Bronze Age may have resulted in the area being less intensively exploited. By the late Iron Age, however, a series of dispersed farmsteads had been established within a brick field system, c. 1km+ to the west and southwest of the access route. This brick field system is of regional importance and may extend into the access route area. The Romans exploited this agricultural landscape and a Scheduled vexillation fort, Roman pottery kilns and Roman road network lie at a considerably distance (c. 1.6km) to the west of the access route.

The access route lies in the vicinity of a large medieval deer park. The land was enclosed for agricultural purposes in the 18th century and in the 19$^{th}$ and 20$^{th}$ centuries land improvements were made. The Finningley Airport area, which lies to the east of the Scheme, was first utilised in World War I and was used extensively during World War II.

**Table 1 Summary of archaeological records identified in the vicinity of Airport Access Route (reproduced from Scott Wilson, 1999 and Golder Associates, 2005. Site reference numbers refer to those provided in the latter document).**

| Site Ref. | Description | Relative value |
|---|---|---|
| 129 | Boundary stones (unkown period) found to the north of the proposed Airport Access Route near the location of the proposed junction at Hurst Lane | Local |
| 128 | Site of later post-medieval (1750+) buildings to the south of Poplars Farm, and close to Hurst Lane | Not graded |
| 78 | Site of later post-medieval (1750+) building (Hirst House) to the south of Hurst Wood. | Local |
| 127 | Stray finds of Iron Age/ Romano-British (AD450 – 1066) pottery & jewellery to the west | Regional |

| | | |
|---|---|---|
| | of Hurst Lane near the proposed junction | |

## 6. PROJECT OBJECTIVES

The objectives of the magnetometer survey are:

- to establish the presence or absence of any archaeological anomalies within the areas of proposed development
- to define the extent of any such anomalies
- to characterise, if possible, any such anomalies
- to provide supporting information in order to detail the future archaeological strategy for the Airport Access Route, where appropriate and necessary.

## 7. SURVEY AREAS

The magnetometer survey will cover the length of the Airport Access Route corridor. The survey consists of a number of grided strips and block areas in order to provide the best coverage of the corridor. The total area to be surveyed measures c. 1.6 ha. For ease of reference these have been assigned a unique reference number (Fig. 2). The areas will be surveyed sequentially.

If there are any areas that cannot be surveyed the sub-contractor will inform Scott Wilson and details of these will be provided in the report.

## 8. METHODOLOGY

The specification defines the methodologies to be used and adhered to. It has been produced in consultation with Roy Sykes (Assistant Archaeologist, South Yorkshire Archaeology Service). All work shall be carried out in accordance with the *Standards and guidance for Archaeological Field Evaluation* produced by the Institute of Field Archaeologist (1999), the IFA *Code of Conduct*, the guidelines of geophysical survey in archaeological field evaluation produced by English Heritage (1995) and other current and relevant best practice and standards and guidance (Appendix 1).

A detailed magnetometer survey will be carried out over the designated survey areas using either a Geoscan FM 36 Fluxgate Gradiometer or a Bartington GRAD 601 Fluxgate Gradiometer (or similar electronic instrument). Readings should be taken at 0.25m intervals on zig-zag traverses 1m apart within 20m by 20m grids.

The data should be downloaded at regular intervals on-site into a laptop computer for initial processing and storage. This will ultimately be transferred to a desktop computer for further processing, interpretation and archiving. Geoplot v.3 software (or comparable) will be used to interpolate the data to form an array of regularly spaced values at 0.25m x 0.25m intervals. Continuous tone greyscale images of raw data and an x/y trace plot will also be

produced. Palette bars relating the greyscale intensities to anomaly values in ohms will be included with the images.

The raw and processed data will be presented in the report. The processed drawings should be accurately located and presented in relation to the Ordnance Survey base plan for the route and the survey markers should be accurately plotted to aid in the laying out of subsequent evaluation or excavation areas, if deemed necessary. Interpretation plots will be included in the report.

The survey will be undertaken by an experienced operator to provide consistent results with regard to pattern recognition and to provide initial screening of noise resulting from recent ferrous disturbance and local magnetic pollution.

During the survey a record should be made of surface conditions and sources of modern geophysical interference that might have a bearing on subsequent interpretation of field data.

The survey grid/transects must be established by electronic means (using an EDM Total station or similar instrument). This must be accurately tied in with the National Grid. This should be internally accurate to ± 10 cm, and the grid locatable on the 1: 2500 Ordnance Survey map.

The sub-contractor will place survey markers at the site such that the location of the survey can be easily relocated.

## 9. REPORTING

Verbal progress reports will be provided to Scott Wilson on request and upon completion of the archaeological works. An interim plot and statement of results will be submitted to Scott Wilson, as soon as possible (by 12 noon – Friday 28th April 2006 at the latest). This interim report will include a brief summary of the results.

An assessment report will be submitted within 2 weeks of the completion of fieldwork. The report will include the following and will follow those guidelines set by English Heritage (1995, 5):

- a non-technical summary;
- site location;
- archaeological and historical background;
- methodology;
- aims and objectives;
- results (to include full description, assessment of condition, quality and significance of results identified);
- general and detailed plans showing the location of the surveyed areas accurately positioned on an Ordnance Survey map base (to a known scale);

- colour/grey scale plots to aid interpretation. The plots will be contoured (if appropriate) to allow trends to be shown superimposed over data without obscuring it;
- an interpretative plot;
- statement of potential with recommendations for future survey;
- conclusion.

One copy of the complete report will be submitted to Scott Wilson as a draft. In finalising the report the comments of Scott Wilson will be taken into account.

Six bound hard copies, one unbound master-copy and a digital version of the report and illustrations will be produced within one week of the receipt of comments on the draft report. The digital report shall comprise a CD containing a complete version of the report in PDF format and separate digital text (in Microsoft Word format) and CAD mapping files (in ESRI GIS or AutoCAD format) and any other illustrations or plates (in native format).

The raw and processed data will be presented in the report. The processed drawings will be accurately located and presented in relation to the Ordnance Survey base plan for the area and the survey markers should be accurately plotted to aid in the laying out of subsequent surveys.

## 10. ARCHIVE DEPOSITION

Scott Wilson will, prior to the start of fieldwork, liase with South Yorkshire Archaeology Service to obtain agreement in principle of the acceptance of the documentary archive for long term storage and curation. The archive will be produced to the standards outlined by English Heritage (1991).

## 11. MONITORING

The contractor will be subject to regular monitoring by Scott Wilson who will be given full access to site records or any other information.

Scott Wilson will liase with Roy Sykes (Assistant Archaeologist, South Yorkshire Archaeology Service) to inform him of the commencement of site works and to offer him the opportunity to visit and monitor the work in progress.

## 12. CONFIDENTIALITY AND PUBLICITY

All communication regarding this project is to be directed through Scott Wilson. The sub-contractor will refer all inquiries to Scott Wilson without making any unauthorised statements or comments.

The archaeological sub-contractor will not disseminate information or images associated with the project for publicity or information purposes without the prior written consent of Scott Wilson.

## 13. COPYRIGHT

The archaeological sub-contactor will assign copyright in all reports and documentation/images produced as part of this project to Scott Wilson. The sub-contractor retains the right to be identified as the author/originator of the material. This applies to all aspects of the project.

The archaeological sub-contractor may apply in writing to use/disseminate any of the project archive or documentation (including images). Such permission will not be unreasonably withheld.

The results of the survey will be submitted to Roy Sykes by Scott Wilson and will ultimately be made available for public access.

## 14. RESOURCES AND TIMETABLE

All archaeological personnel involved in the project should be suitably qualified and experienced professionals. The sub-contractor will provide Scott Wilson with staff details including CVs of the Project Manager, Site Supervisor and Site Assistants.

The fieldwork is to be implemented during the week commencing the 24th April 2006 and fieldwork will be completed in 4 days. The date for submission of the report will be 12th May 2006. Scott Wilson should be informed at the earliest opportunity if this is not achievable.

## 15. INSURANCES AND HEALTH AND SAFETY

The archaeological sub-contractor will provide Scott Wilson with details of public and professional indemnity insurance.

The archaeological sub-contractor will have their own Health and Safety policies compiled using national guidelines and which conform to all relevant Health and Safety legislation. A copy of the Health and Safety policy will be submitted to Scott Wilson in advance of fieldwork.

The archaeological sub-contractor will undertake a risk assessment detailing project specific Health and Safety requirements. The risk assessment shall be submitted to Scott Wilson in advance of commencement of site work. Health and Safety will take priority over archaeological issues.

## 16 ACCESS ARRANGMENTS AND SITE INFORMATION

Scott Wilson will arrange access to the survey areas, however, the sub-contractor will need to contact tenant landowners/farmers the day before the commencement of the survey. Once the contract has been awarded details of these tenants will be provided.

The sites are within open farmland under various agricultural regimes including arable and pasture.

# 17. GENERAL PROVISIONS

The archaeological sub-contractor will undertake the works to the specification issued by Scott Wilson and in any subsequent written variations. No variation from, or changes to, the specification will occur except by prior agreement with Scott Wilson who will consult with Roy Sykes.

All communications on archaeological matters will be directed through Scott Wilson.

REFERENCES

English Heritage, 1991, Management of Archaeological Projects

English Heritage, 1995, *Geophysical Survey in Archaeological Field Evaluation* (EH Research and Professional Services Guidelines No 1)

Mouchel Parkman/ Golder Associates, 2005. *Finningley and Rossington Regeneration Route Scheme: Stage 2 Environmental Assessment Volumes 1 and 2 (September 2005)*

Scott Wilson, 1999. *Doncaster Finningley Airport: Environmental Statement Volumes 1 and 2 (October 1999)*

## ARCHAEOLOGICAL STANDARDS AND GUIDLINES

Darvill, T & Atkins, M 1991 *Regulating Archaeological Works by Contract* (IFA Technical Paper No 8)

English Heritage 1991 *The Management of Archaeological Projects* Second Edition (MAP2)

English Heritage 1995 *Geophysical Survey in Archaeological Field Evaluation* (EH Research and Professional Services Guidelines No 1)

Gaffney, C & Gater, J with Ovenden, S 1991 *The Use of Geophysical Techniques in Archaeological Evaluations* (IFA Technical Paper No 9)

Garratt-Frost, S 1992 *The Law and Burial Archaeology* (IFA Technical Paper No 11)

Handley, M 1999 *Microfilming Archaeological Archives* (IFA Paper No 2)

Institute of Field Archaeologists 1997 *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* (and subsequent revisions)

Institute of Field Archaeologists 1999 *Standard and Guidance for Archaeological Field Evaluation* (and subsequent revisions)

Society of Museum Archaeologists 1995 Towards an Accessible Archaeological Archive – the Transference of Archaeological Archives to Museums: Guidelines for use in England, Northern Ireland, Scotland and Wales