LAND ADJACENT TO LADYEWELL SHRINE, FERNYHALGH, PRESTON

Lancashire

Magnetometer Survey

Oxford Archaeology North

July 2004

Corpus Christi Catholic High School

Issue No: 2004-5/273
OA North Job No: L9412
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SUMMARY

Corpus Christi Catholic High School, Fulwood, Preston, Lancashire in conjunction with the Ladyewell Shrine, will be running an archaeological summer school for the high school students during the 2004 school summer break. They will be carrying out fieldwork in the form of excavations at the site believed to contain the remains of the earliest church associated with the Ladyewell Shrine, Fernyhalgh, Preston (NGR 5553 3356). The site is located within the field immediately to the west of the Shrine and is situated in a rural location approximately 2.5km north-east of Preston city centre and 200m west of the M6 motorway. Aerial photography has revealed cropmarks in the field which appear to indicate a rectangular structure.

Corpus Christi High School commissioned Oxford Archaeology North to evaluate the site in the form of a magnetometer survey in July 2004. It is intended that the results will help in targeting trenches for the summer school excavation.

The fieldwork was conducted on Friday 9th July 2004. A Geoscan Research FM36 fluxgate gradiometer was employed and the survey area was divided into 30m x 30m grids within which data collection was taken. Sampling was at 0.5m intervals with inter-transect distances of 1m, equating to 1800 sample readings per grid. The survey was carried out in 'zig-zag' mode.

The magnetometer survey has provided some evidence for possible agricultural and/or archaeological activity within the field to the west of Ladyewell Shrine, in the form of infilled cut-features. These features may be associated with ridge and furrow, which may be further reinforced by the shape of the field, reminiscent of the reverse S-shaped fields resulting from the medieval open field system. However, it would appear that there are no obvious features associated with the remains of a church in the survey data or features relating to the crop marks observed from aerial photographs, but there is the possibility that the removal of stone foundations would leave evidence in the form of a robber trench. The lack of evidence does not preclude that the remains of a structure are not present within the field. A number of ferrous spikes due to metallic debris were also present in the data, which may relate to general debris from agricultural activity such as manuring, or may be of archaeological significance.

ACKNOWLEDGEMENTS

Oxford Archaeology North (OA North) would like to thank Simon Hornshaw, Deputy Headteacher at Corpus Christi High School, for commissioning the survey and the staff at Ladyewell Shrine for their assistance. Thanks also are extended to the landowner for granting access to the site and to the tenant farmers for their co-operation. OA North would also like to thank Arthur Batty of Ingleborough Archaeological Group for the use of his equipment.

The fieldwork was undertaken by Karl Taylor. The drawings were complied by Karl Taylor who also wrote the report. Emily Mercer managed the project, and also edited the report, together with Alan Lupton.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 Corpus Christi Catholic High School (hereafter the client), in conjunction with the Ladyewell Shrine, will be running an archaeological summer school for the students during the 2004 school summer break. They will be carrying out fieldwork in the form of excavations at the site believed to contain the remains of the earliest church associated with the Ladyewell Shrine, Fernyhalgh, Preston (NGR 5553 3356). Aerial photography has revealed cropmarks located in the field immediately to the west of the Shrine which appear to indicate a rectangular structure.

1.1.2 Consequently, Corpus Christi High School commissioned Oxford Archaeology North (OA North) to evaluate the site in the form of a magnetometer survey. It is intended that the results will help in targeting trenches for the summer school excavation. Following the submission of a project design (*Appendix 1*), OA North was commissioned to undertake this program of work in July 2004.

1.1.3 The fieldwork was conducted on Friday 9th July 2004 when the weather was fine, dry and warm. This report sets out the results of the geophysical survey and is followed with summary conclusions and a statement of the archaeological potential of the site with recommendations for further work.

1.2 SITE LOCATION AND TOPOGRAPHY

1.2.1 The site is located within the field immediately to the west of Ladyewell Shrine, Fernyhalgh Lane, Preston Lancashire (SD 5553 3356; Fig 1). Ladyewell Shrine is situated in a rural location approximately 2.5km north-east of Preston city centre and 200m west of the M6 motorway.

1.2.2 The survey area is mostly flat with a slight ridge running east/west through the centre of the site. At the time of survey the field was laid down to silage which was approximately knee high and hindered survey progress.

1.3 GEOLOGY

1.3.1 The solid geology consists Permian and Triassic rocks (British Geological Survey 1979) which are overlain by deposits of glacial drift (Countryside Commission 1998). The soils are classified as Salop soils, which are slowly permeable, seasonally waterlogged, reddish fine-loamy over clayey, fine-loamy and clayey soils associated with fine-loamy over clayey soils with slowly permeable subsoils and slight seasonal waterlogging (Ordnance Survey 1983).

1.4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

1.4.1 Corpus Christi Catholic High School are undertaking research into the historical background of the Ladyewell Shrine followed by excavations as part of their 2004 summer school. Due to this and funding constraints, documentary research was not included as an element of the work required. As relatively little is known about the precise origins of the church, the following historical background is a synopsis of information taken from the Ladyewell Shrine website from which further background information can be obtained (www.ladyewellshrine.co.uk).

1.4.2 Ladyewell Shrine ('Our Lady of the Well') is located by a natural spring to the east of the M6 and north of the city of Preston. Its associations as a shrine can be seen in the Anglo-Saxon name of Fernyhalgh Lane which translates to 'Ancient Shrine'. However, the date of its origin is somewhat obscure but it is believed to have been a pagan shrine christianised in the seventh century and used as a baptistry for pagans received into the Church after the conversion of the King of Northumbria in AD 627. A small chapel was later built, respecting the shrine, but fell into disrepair until around 1100, when an Irish aristocrat, Fergus Maguire, is believed to have been led to the site in a dream to rebuild the chapel. Whilst the exact date is uncertain, the earliest documentary evidence relates to a license in the Chetham Society's "Chauntries of Lancashire". It is stated that "on Jan 8th 1348-49 a licence was granted by Archbishop Zouche to Thomas, son of Gilbert de Singleton to have divine service by a fit chaplain within the manors of Broughton Fernyhalgh and Farmholes for three years, without injury to the parish church of Preston in Amounderness".

1.4.3 In 1547, an act of Parliament assigned to the Crown all Chauntries and free chapels with all the monies destined for obits, anniversaries and church lights. The chapel at Ladyewell was destroyed; and its revenues, furniture and bell were confiscated. The site of the chapel is not precisely known but it is believed to be located between the well and the present M6.

1.4.4 After the reformation and the destruction of the chapel neighbouring Catholics continued to visit Ladyewell to pray. However, after the accession of James II in 1685, Ladyewell House was built to serve as a Mass centre. The outward appearance of Ladyewell House did not differ much from that of the other large dwellings in the area. The ground floor was used for the residence of a priest and the upper floor was used as a chapel. Later a wing was added on the western side to give accommodation to the Lancashire clergy.

1.4.5 Recent artefacts found within the area include numerous Roman coins and a sword of uncertain date.

2. METHODOLOGY

2.1 INTRODUCTION

2.1.1 Evaluation of the site consisted of a non-intrusive geophysical survey using magnetometry. The survey area was centred on information of the approximate location of the church provided by the client from recent research.

2.2 PROJECT DESIGN

2.2.1 A project design (*Appendix 1*) was submitted by OA North, and was adhered to in full. The work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists (Gaffney *et al* 2002), and generally accepted best practice.

2.3 MAGNETOMETER SURVEY

2.3.1 ***Magnetometry:*** the preferred geophysical technique in the location of many archaeological remains is magnetometry, which will usually locate 'positively magnetic' material such as iron-based features and objects, or those subjected to firing such as kilns, hearths, and even the buried remains of brick walls. This technique is also widely used to locate the more subtle magnetic features associated with settlement and funerary remains, such as boundary or enclosure ditches and pits or postholes, which have been gradually infilled with more humic material. The breakdown of organic matter through microbiotic activity leads to the humic material becoming rich in magnetic iron oxides when compared with the subsoil, allowing the features to be identified. In addition, variations in magnetic susceptibility between the topsoil, subsoil and bedrock have a localised effect on the Earth's magnetic field. This enables the detection of features, such as silted up or backfilled pits due to the fact that the topsoil has more magnetic properties than the subsoil or bedrock, resulting in a positive magnetic anomaly. Conversely, earthwork or embankment remains can also be identified with magnetometry as a 'negative' feature due to the action in creating the earthwork of turning the relatively low magnetic subsoil on top of the more magnetic topsoil. In this way, magnetometry is a very efficient technique and is recommended in the first instance by the English Heritage Guidelines (1995) for such investigations.

2.3.2 ***Equipment:*** the strength of the present geomagnetic field in Britain is approximately 50,000nT (nanotesla). Most buried archaeological features usually result in very weak changes of less than 1nT to the magnetic field (Clark 1990, 65) However, changes as low as 0.1nT can be detected by using a fluxgate gradiometer such as the Geoscan FM36/FM256.

2.3.3 A Geoscan Research FM36 fluxgate gradiometer was employed in this survey which has a typical depth of penetration of approximately 0.5m-1.0m. However, this would increase with stronger magnetic anomalies. The Geoscan Research FM36 and the recently updated version known as the FM256 (so

called due to its greater memory capacity) consists of two fluxgates held vertically at a distance of 0.5m apart. These are accurately aligned to nullify the effect of the earth's magnetic field and other potential effects such as diurnal variations in order to take readings relating only to the difference in localised magnetic anomalies compared with the general magnetic background.

2.3.4 ***Sampling interval:*** the survey area was divided into 30m x 30m grids within which data collection was taken. Sampling was at 0.5m intervals with inter-transect distances of 1m, equating to 1800 sample readings per grid. The survey was carried out in 'zig-zag' mode with precautions to minimise the heading error on site.

2.3.5 ***Data capture and processing:*** the data was captured in the internal memory of the FM36 and downloaded to a portable computer on-site. The individual grids were combined to produce an overall plan of the surveyed area or 'composite'. The results were analysed and basic processing was carried out using the Geoscan software *Geoplot 3*. Processing was undertaken in accordance with English Heritage guidelines (English Heritage 1995) to remove any instrument error or survey effects in order to enhance any more subtle anomalies associated with archaeological features:

- Zero mean grid was applied to remove grid 'edge effects'.
- The data was 'de-staggered' to remove any displacement caused by surveying in zig-zag mode.
- The data was 'de-spiked' to remove any spurious high intensity anomalies such as spikes caused through ferrous objects

2.3.6 ***Presentation of results and interpretation:*** the presentation of the data for each site involves a print-out of the raw data both as grey-scale plot (Fig 4) and trace plots (Figs 5 and 6), together with a grey scale plot of the processed data (Fig 7). Magnetic anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site (Fig 8).

2.4 ARCHIVE

2.4.1 A full archive has been prepared to a professional standard in accordance with current United Kingdom Institute for Conservation (UKIC 1990) and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited with the Lancashire County Record Office (Preston) on completion of the project. Copies of the report together with the archive will be deposited with the Lancashire SMR in Preston.

3. RESULTS

3.1 GENERAL OBSERVATIONS

3.1.1 The results of the magnetometer survey have been abstracted in Figure 8 and anomalies of significance labelled A to F for purposes of discussion. The data is generally inconclusive as there is no obvious remains of the suspected church. A number of anomalies have been abstracted but a lack of defining characteristics inhibits interpretation. These anomalies generally fall into four categories, areas of positive magnetic response (A and D; Fig 8), positive linear anomalies (B and C; Fig 8), areas of negative magnetic response (E; Fig 8) and magnetic or ferrous spikes. These will be discussed in turn below.

3.2 DISCUSSION AND INTERPRETATION

3.2.1 A general area of positive magnetic response is located across the south-western corner of the survey area (A; Fig 8). This response is likely to be due to the disturbance caused by the presence of a ferrous pipe, and the magnitude of the response can be seen on the trace plots (Figs 6 and 7). During the survey it was noted that natural gas pipe markers were present in the adjacent field to the south and the line of the pipe appeared to continue into the field immediately to the west of the survey area, thereby passing the south-west corner of the survey. Unfortunately, responses of this magnitude tend to mask any more subtle responses in the vicinity that are usually associated with archaeological features.

3.2.2 To the north of A are two general areas of negatively magnetic response highlighted in Figure 8 (E). These are likely to be due to natural variations in ground conditions.

3.2.3 The most obvious feature of possible archaeological potential is a broad positive linear anomaly running east/west (B; Fig 8), situated on the eastern side of the survey area. This can be seen to run or spread out into an area of relatively low magnetic response (D; Fig 8). To the north and almost parallel with B are two additional positive linear anomalies, although the responses are more subtle than B. From their appearance these anomalies, including B and D, are representative of infilled cut features. They may be ditches or possibly the result of agricultural or archaeological activity such as ridge and furrow cultivation. Such practice may be fossilised in the present day field boundaries around the survey area, which is reminiscent of a reverse S-shape resulting from the cultivation of medieval open-fields (Wade Martins 1995, 34) Conversely, there is a possibility that they may be natural in origin.

3.2.4 Numerous very weak positive linear anomalies are present within the survey data. These predominately lie in the western half of the survey area (C; Fig 8) and are generally aligned north/south and east/west. It is possible that these are archaeological in origin, but they are more likely to be the result of agricultural activity, such as ploughing.

3.2.5 Magnetic or ferrous spikes (Fig 8) can be seen scattered across the survey area. These are due to the presence of metallic objects such as nails and other metallic debris present within fields normally due to post-medieval agricultural practices, such as manuring or night-soiling. The trace plots (Figs 6 and 7) highlight their characteristic response of a fast-rising positive data spike accompanied by a negative data spike.

4. CONCLUSIONS

4.1 DISCUSSION

4.1.1 The anomalies seen in the results of the magnetometer survey are generally of a weak response and the survey area as a whole shows a poor magnetic contrast. This is due to the low magnetic levels of the overlying drift geology and subsequent soils.

4.1.2 The results did show some evidence of past agricultural or archaeological activity within the survey area, in the form of infilled cut-features. If these features are associated with ridge and furrow, this is then further reinforced by the shape of the field, which is reminiscent of the reverse S-shaped fields resulting from the medieval open field system. However, from analysis of the survey data it would appear that there are no obvious features associated with the remains of a church, but there is the possibility that the removal of stone foundations would leave evidence in the form of a robber trench. The lack of evidence does not preclude that the remains of a structure are not present within the field.

4.2 RECOMMENDATIONS

4.2.1 It is unlikely that further magnetometry within the field would locate any evidence for the church. Should further geophysical survey be necessary it is recommended that resistivity may be a more suitable technique. When allied with the magnetometer data and the ability to locate stone features and ditches, resistivity may provide additional information.

4.2.2 In the absence of further survey and for the purposes of the summer school excavation, it is recommended that evaluation trenches should be located across the probable infilled cut features B and D (Fig 8) in order to determine their true nature.

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ILLUSTRATIONS

LIST OF FIGURES

LIST OF PLATES

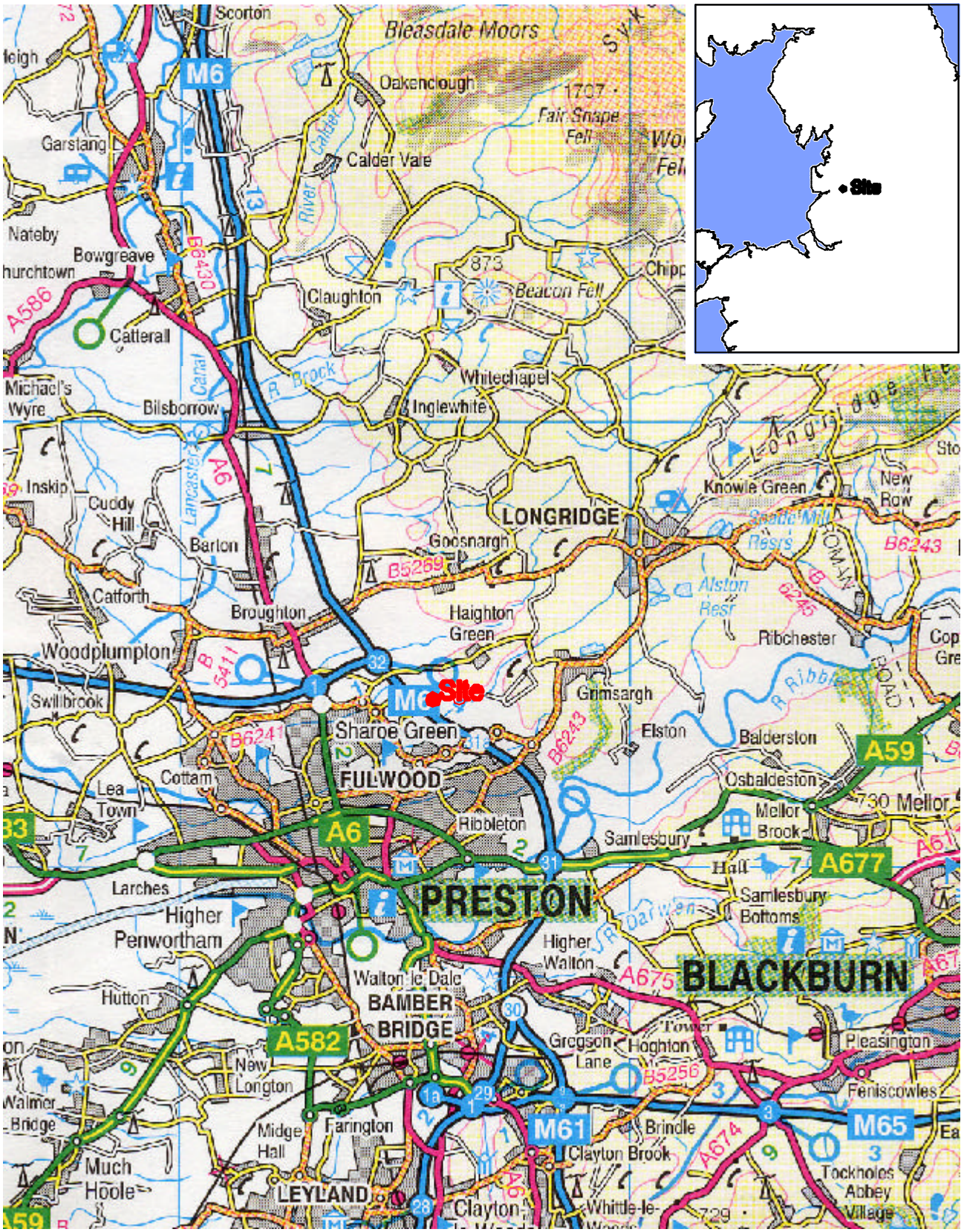

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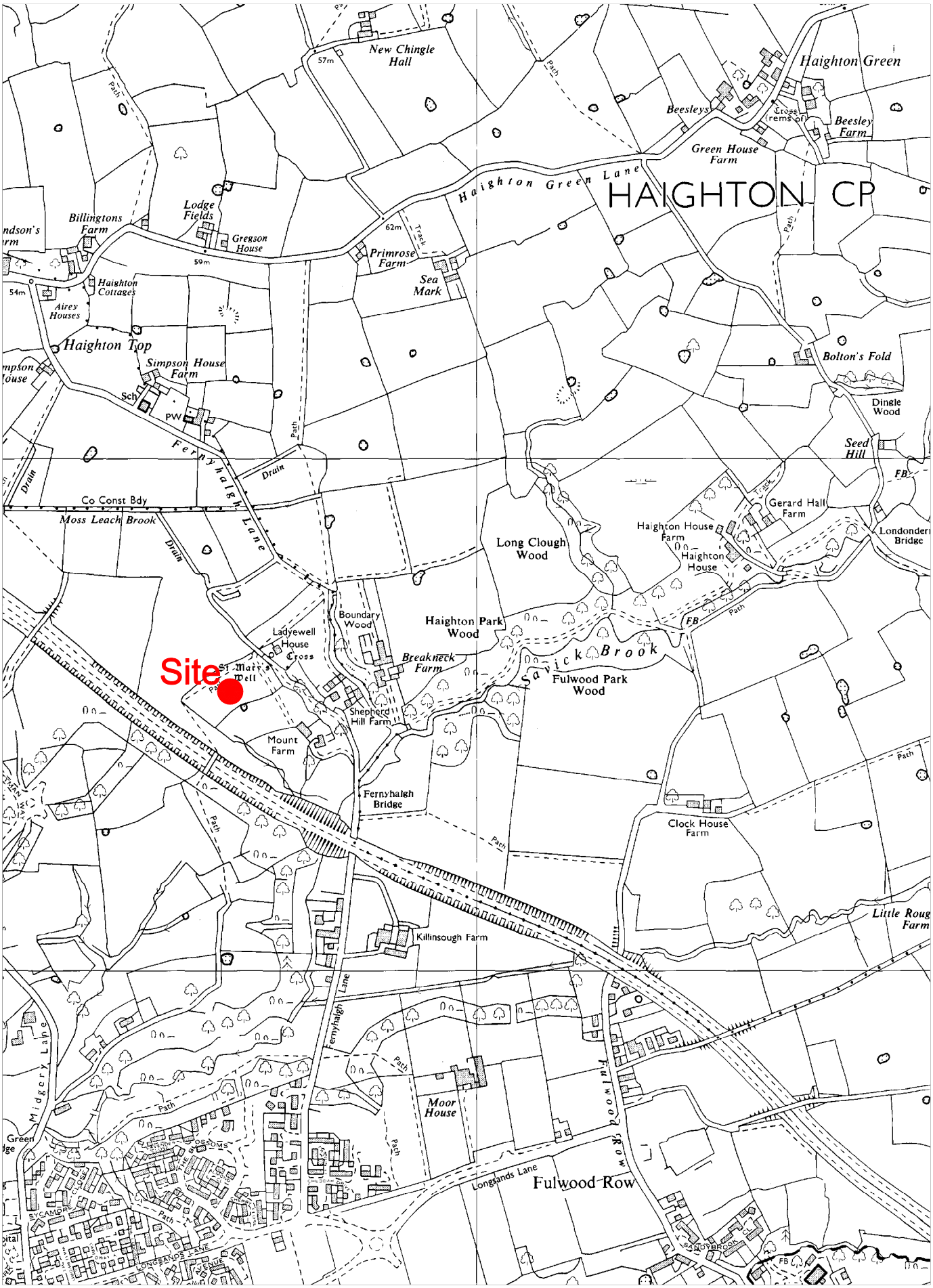
Figure 1: Location Map



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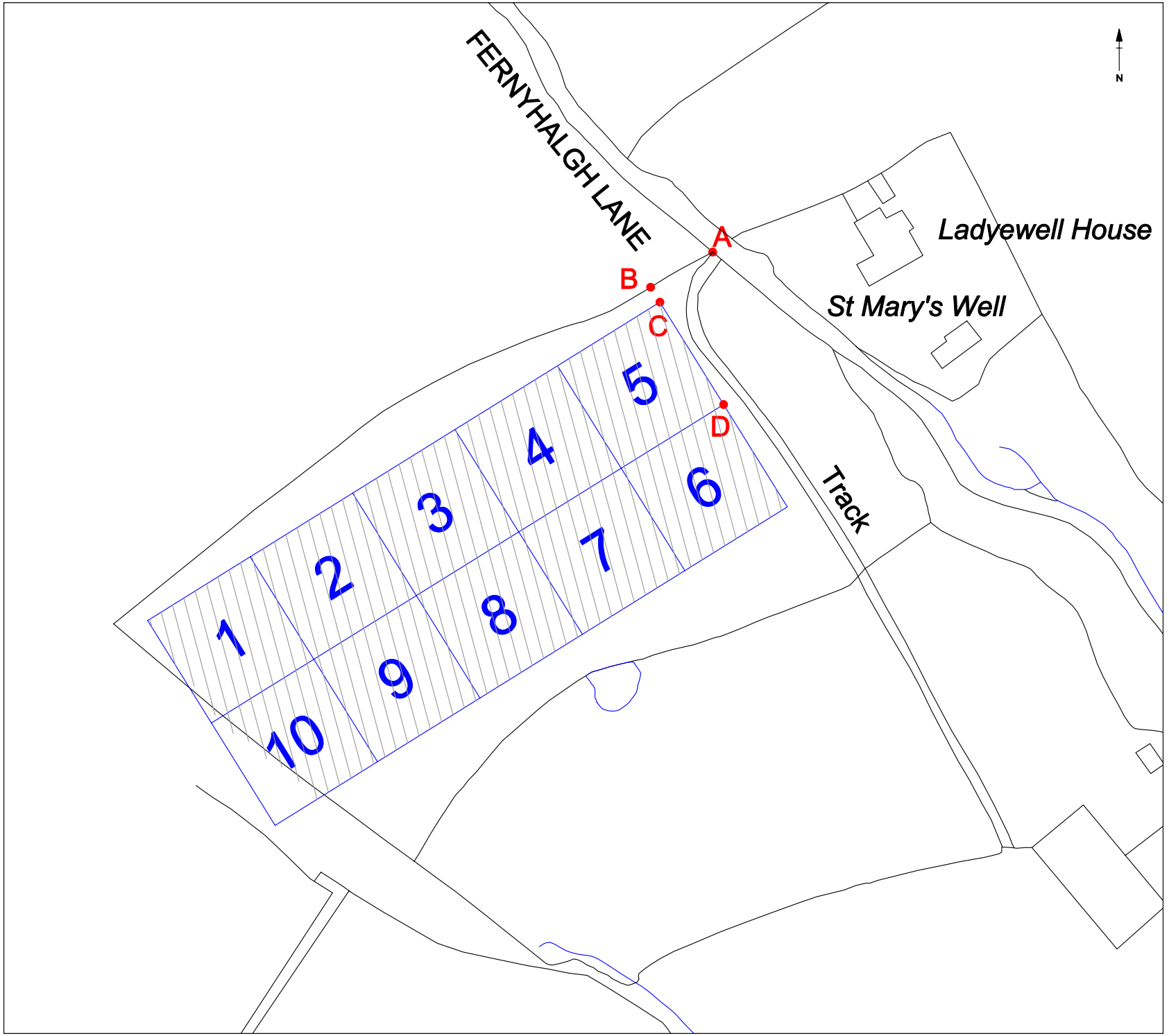
0 200m

Figure 2 : Detailed location plan



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PROJECT:

Magnetometer Survey
Ladyewell Chapel,
Fernyhalgh Lane, Preston

0 25m

	AREA SURVEYED WITHIN GRID				
1	GRID NUMBER				
A-B	17.73m	A-C	18.09m	B-C	4.37m
A-D	38.03m	B-D	34.37m	C-D	30.00m
A & B	REFERENCE POINTS ON FIELD BOUNDARY				
C & D	GRID NODE PEGS				

TITLE:

Figure 3: Location of Survey Grids and Referencing

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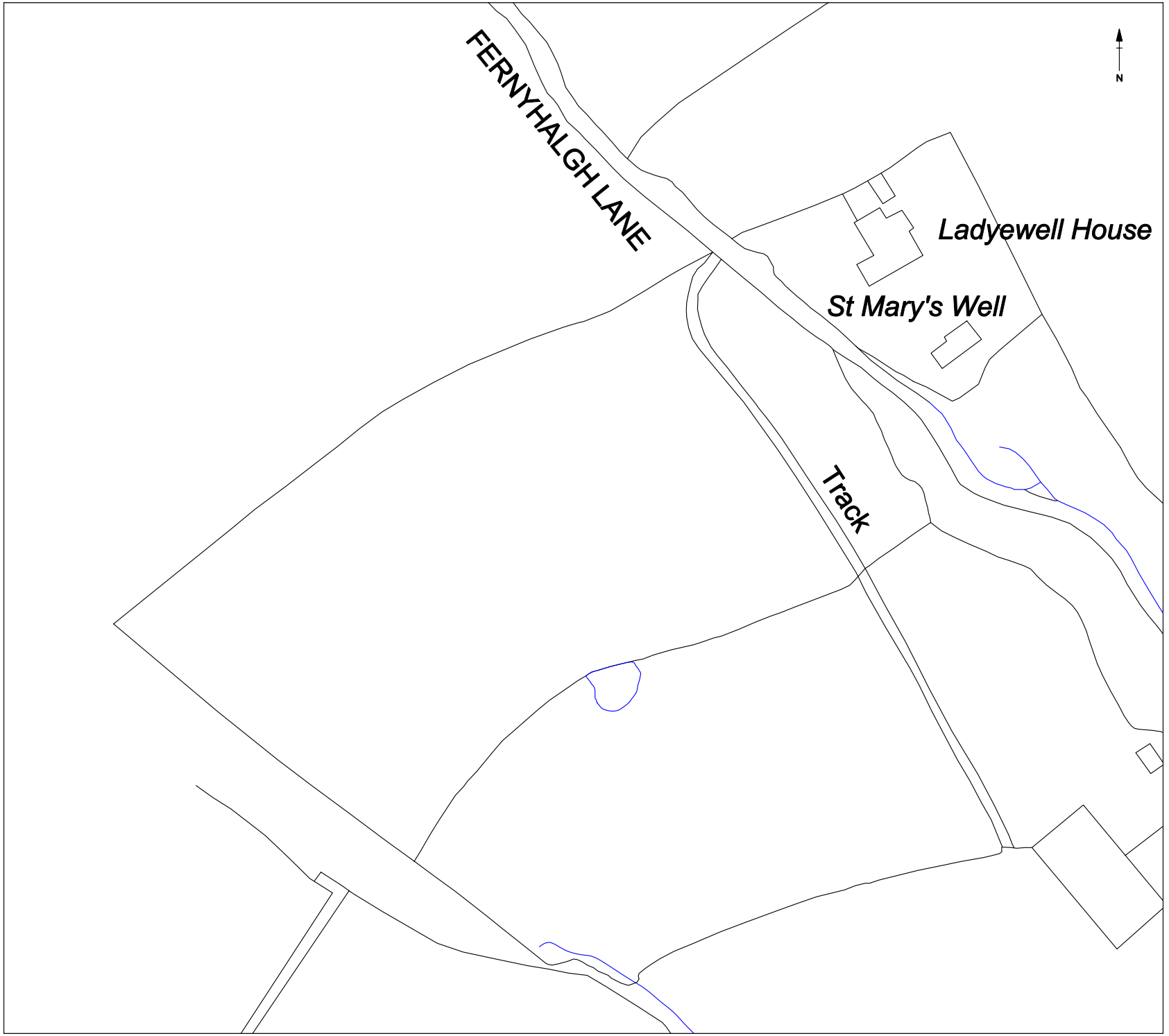

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0 25m

+4.4nT

Black = positive
White = negative

-0.6nT

TITLE:

Figure 4: Plot of Raw Magnetometer Data

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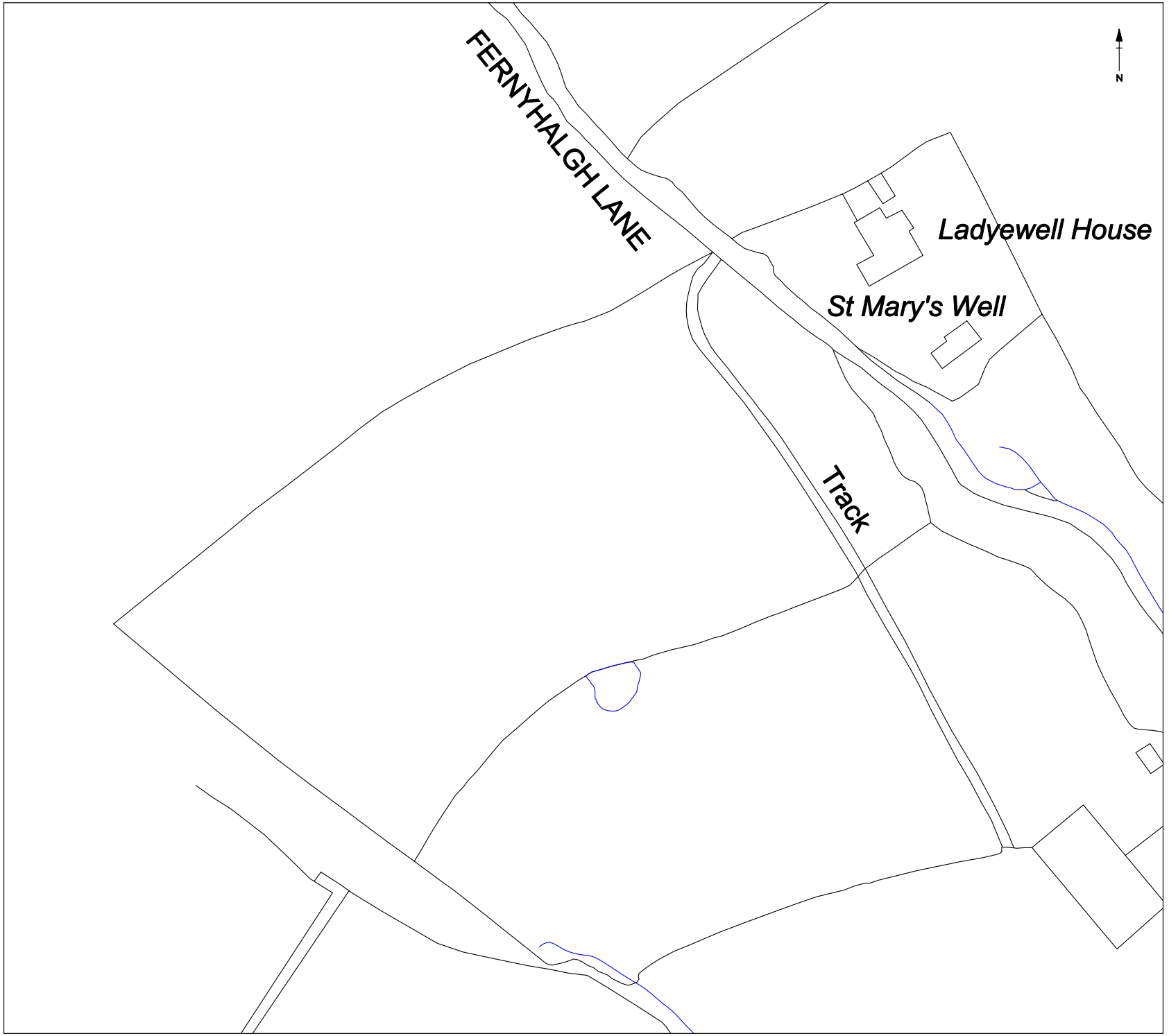

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PROJECT:

**Magnetometer Survey
Ladyewell Chapel,
Fernyhalgh Lane, Preston**

0 25m

Plotting Parameters 40nT/cm

**Positive values are
displaced above the line**

TITLE:

Figure 5: Trace Plot of Raw Magnetometer Data Showing Positive Values

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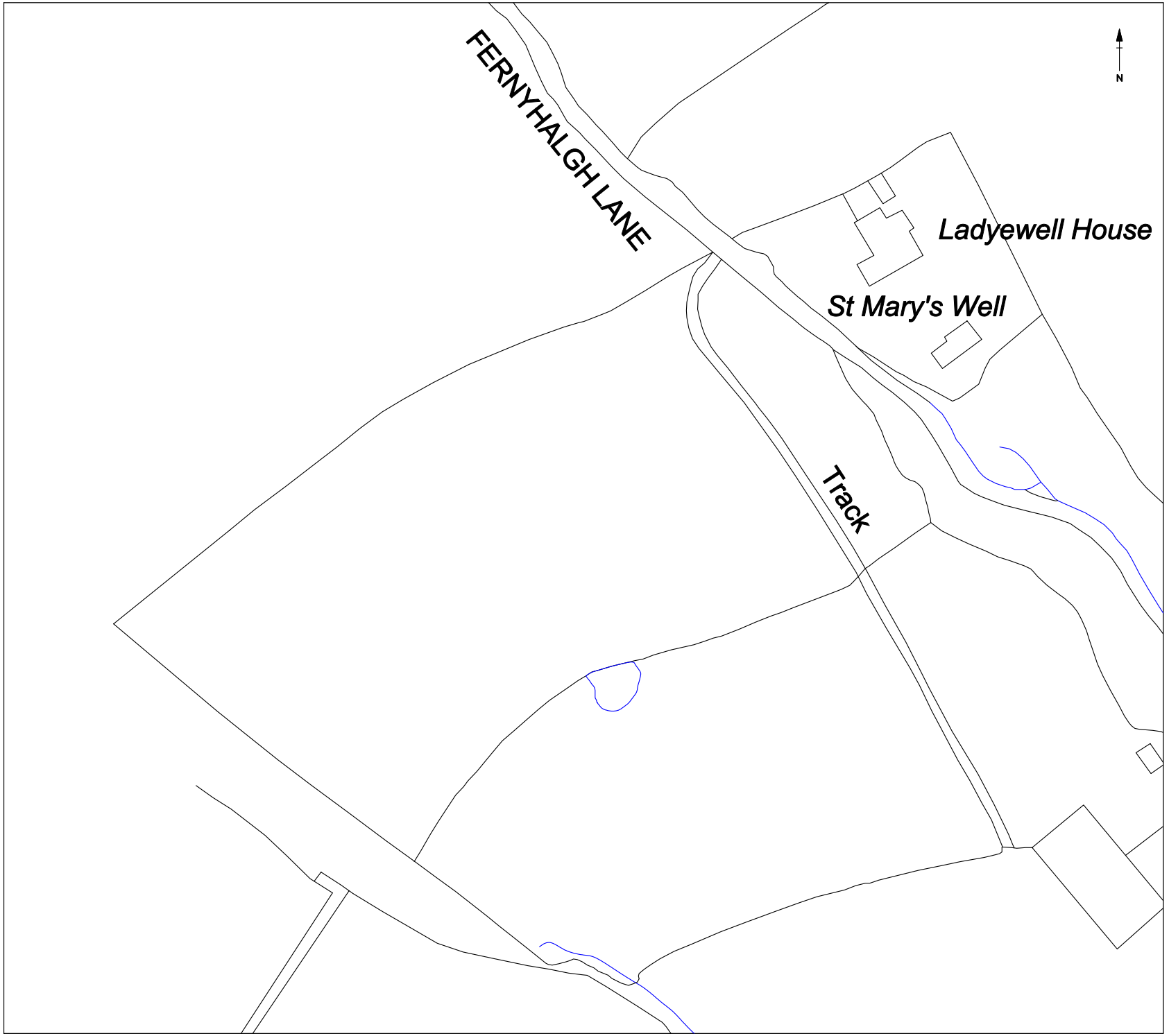

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PROJECT:

**Magnetometer Survey
Ladyewell Chapel,
Fernyhalgh Lane, Preston**

0 25m

Plotting Parameters -40nT/cm

**Negative values are
displaced above the line**

TITLE:

Figure 6: Trace Plot of Raw Magnetometer Data Showing Negative Values

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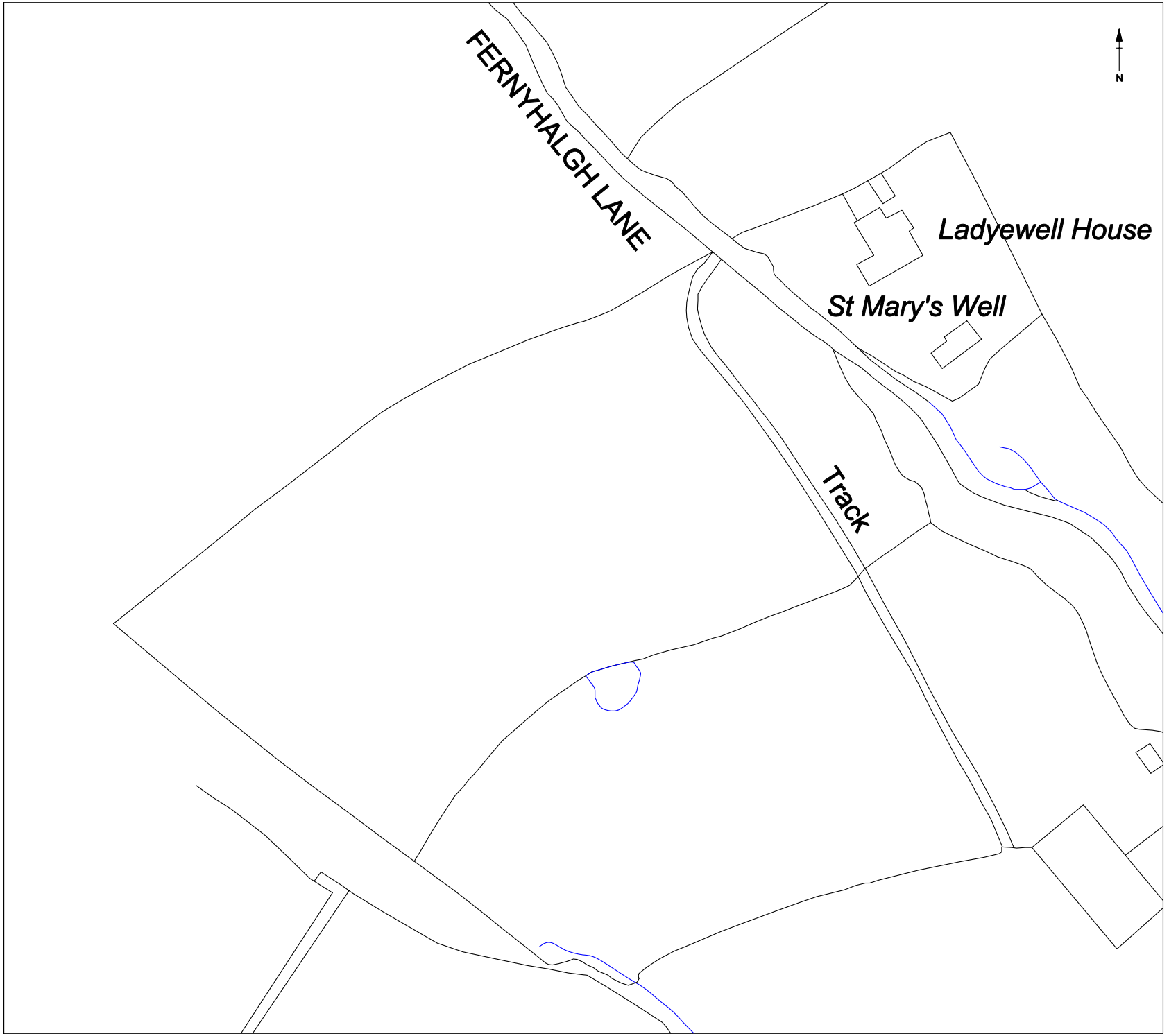

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PROJECT:

Magnetometer Survey
Ladyewell Chapel,
Fernyhalgh Lane, Preston

0 25m

Black = positive
White = negative

+2.0nT

-1.3nT

TITLE:

Figure 7: Plot of Processed Magnetometer Data

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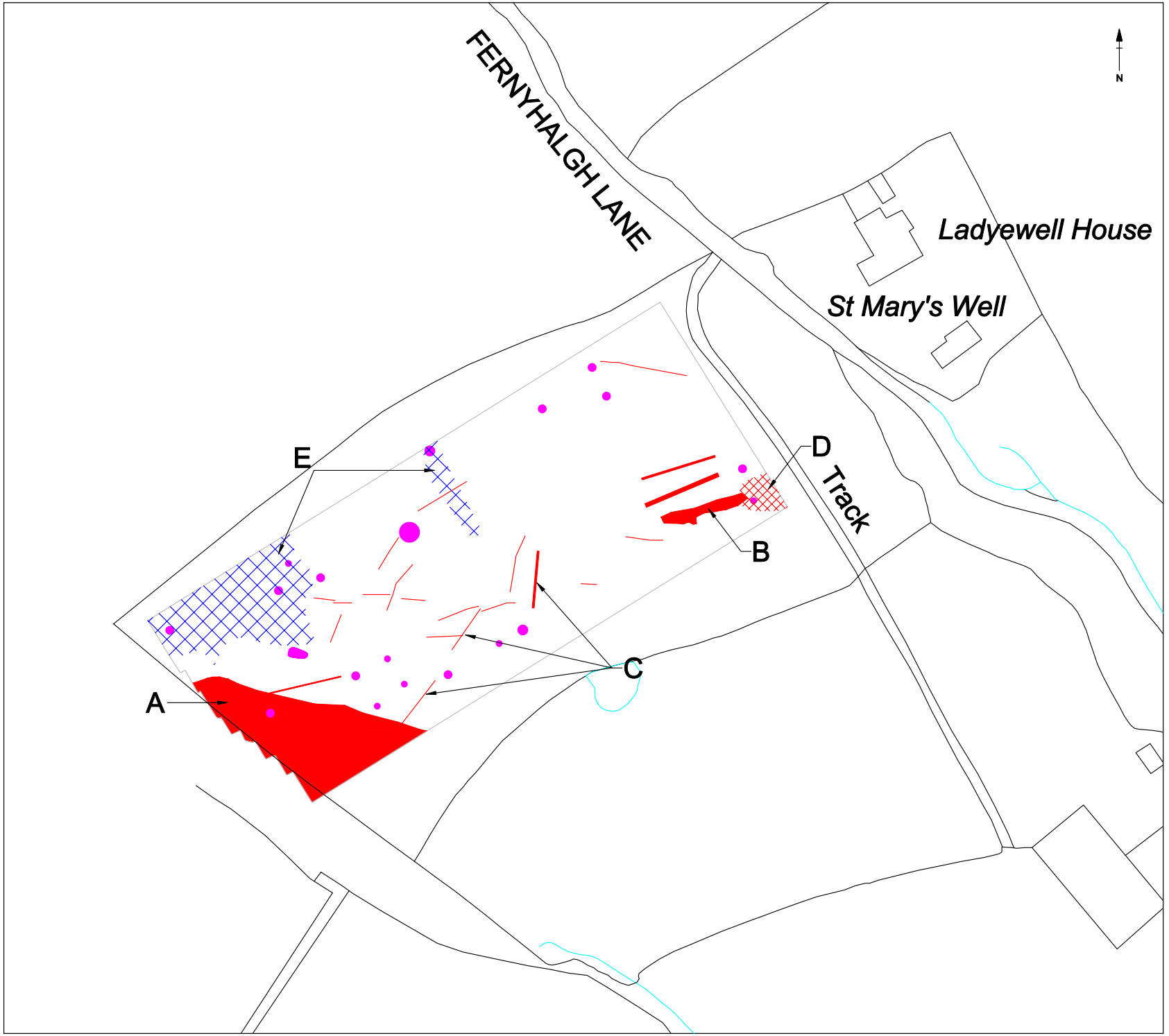

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PROJECT:

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Fernyhalgh Lane, Preston

0 25m

- General area of positive response - ?archaeological/geological origin
- Area of discrete positive response - probably related to pipeline
- Linear positive anomaly - cut feature of archaeological/agricultural origin
- Ferrous spike
- Area of negative response; associated with ground conditions

TITLE:

Figure 8: Abstraction and Interpretation of Magnetometer Data. Area 2

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Catholic High School

Plate 1: Survey Area - looking west towards the M6 motorway

Plate 2: Survey Area 1- looking south-west

APPENDIX 1: PROJECT DESIGN

Oxford
Archaeology
North

July 2004

LADYEWELL SHRINE SITE, FERNYHALGH LANE, PRESTON, LANCASHIRE

MAGNETOMETER SURVEY

Proposals

The following project design is offered in response to a request from Mr Simon Hornshaw of Corpus Christi School, Preston, for a magnetometer survey of a proposed excavation site adjacent to Ladyewell Shrine prior to an archaeological summer school.

1. INTRODUCTION

1.1 CONTRACT BACKGROUND

1.1.1 Oxford Archaeology North (OA North) has been invited by Corpus Christi High School (hereafter the client) to submit a proposal and costs for a magnetometer survey on a site of a proposed excavation for the school's archaeological summer school adjacent to and in conjunction with Ladyewell Shrine, Fernyhalgh Lane, Preston, Lancashire (centred on SD 5553 3356). The survey consists of an area of a cropmark and is believed to be the site of the earliest church associated with the shrine.

1.2 HISTORICAL BACKGROUND

1.2.1 Ladyewell Shrine ('Our Lady of the Well') is located by a natural spring to the east of the M6 and north of the city of Preston. Its associations as a shrine can be seen in the Anglo-Saxon name of Fernyhalgh Lane which translates to 'Ancient Shrine'. However, the date of its origin is somewhat obscure but it is believed to have been a pagan shrine christianised in the seventh century and used as a baptistry for pagans received into the Church after the conversion of the King of Northumbria in AD 627. A small chapel was later built, respecting the shrine, but fell into disrepair until around 1100, when an Irish aristocrat, Fergus Maguire, is believed to have been led to the site in a dream to rebuild the chapel. Whilst the exact date is uncertain, the earliest documentary evidence relates to a license in the Chetham Society's "Chauntries of Lancashire". It is stated that "on Jan.8th 1348-49 a licence was granted by Archbishop Zouche to Thomas, son of Gilbert de Singleton to have divine service by a fit chaplain within the manors of Broughton Fernyhalgh and Farmholes for three years, without injury to the parish church of Preston in Amounderness".

1.2.2 In 1547, an act of Parliament assigned to the Crown all Chauntries and free chapels with all the monies destined for obits, anniversaries and church lights. The chapel at Ladyewell was destroyed; and its revenues, furniture and bell were confiscated. The site of the chapel is not precisely known but it is believed to be located between the well and the present M6.

1.2.3 After the reformation and the destruction of the chapel neighbouring Catholics continued to visit Ladyewell to pray. However, after the accession of James II in 1685, Ladyewell House was built to serve as a Mass centre. The outward appearance of Ladyewell House did not differ much from that of the other large dwellings in the area. The ground floor was used for the residence of a priest, who would have looked like any ordinary countryman of the area, and the upper floor was used as a chapel. Later a wing was added on the western side to give accommodation to the Lancashire clergy.

1.3 OXFORD ARCHAEOLOGY NORTH

1.3.1 OA North has considerable experience of the evaluation and excavation of sites of all periods, having undertaken a great number of small and large scale projects during the past 23 years. Archaeological investigations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables.

1.3.2 OA North also has considerable experience of geophysical survey techniques having two members of staff, who formerly worked as project managers for the geophysical contractors Stratascan Ltd.

1.3.3 OA North is an **Institute of Field Archaeologists (IFA) registered organisation, registration number 17**, and all its members of staff operate subject to the IFA Code of Conduct.

2 OBJECTIVES

2.1 The following programme has been designed to provide further information on the remains of the chapel associated with Fergus Maguire. This information will be used as a basis for the

proposed Corpus Christi summer school excavation. The required stages to achieve these ends are as follows:

2.2 ***Magnetometer Survey:*** it is required that a magnetometer survey will be undertaken over as much of the area within the outlined field and over the cropmark of the chapel as is feasible within one day of fieldwork.

2.3 ***Report:*** a short written report will present the data generated by this programme and an interpretation of the findings.

3 METHOD STATEMENT

3.1 MAGNETOMETRY

3.1.1 The preferred geophysical technique in this instance is magnetometry. This is used widely for archaeological purposes and will easily locate 'positively magnetic' material such as iron-based features and objects, or those subjected to firing such as kilns, hearths, and even the buried remains of brick walls. This technique is also used to locate the more subtle magnetic features associated with settlement and funerary remains, such as boundary or enclosure ditches and pits or postholes, which have been gradually infilled with more humic material. The breakdown of organic matter through microbiotic activity leads to the humic material becoming rich in magnetic iron oxides when compared with the subsoil, allowing the features to be identified. Conversely, earthwork or embankment remains can also be identified with magnetometry as a 'negative' feature due to the action in creating the earthwork of upturning the relatively low magnetic subsoil on to the more magnetic topsoil. In this way, magnetometry is a very efficient technique and is recommended in the first instance by the English Heritage Guidelines (1995) for such investigations.

3.1.2 ***Methodology:*** the survey will be undertaken in July 2004. The survey areas will be divided into 30m x 30m grids, within which data collection is undertaken. Sampling will be at 0.25m or 0.5m intervals with inter-transect distances being 1m. The survey will be carried out in a 'zig-zag' mode with precautions to minimise the heading error on site.

3.1.3 A Geoscan Research FM36 fluxgate gradiometer will be employed which has a depth of penetration of approximately 0.5m-1.0m with subtle magnetic anomalies. However, this would increase with more strongly magnetic anomalies. The Geoscan Research FM36 consists of two fluxgates held vertically at a distance of 0.5m. These are accurately aligned to nullify the effects of the earth's magnetic field in order to take readings relating only to the difference in localised magnetic anomalies compared with the general magnetic background.

3.1.4 The data are captured in the internal memory and then downloaded to a portable computer. The individual grids are matched together to produce an overall plan of the surveyed area. The results will be analysed and any processing carried out using Geoplot (version 3). A report, including diagrams, text and interpretation on a CAD system, will then be prepared.

3.2 REPORT AND ARCHIVE

3.2.1 ***Archive:*** the results of Stage 3.1 above will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of archaeological projects*, 2nd edition, 1991). The project archive represents the collation and indexing of all the data gathered during the course of the project. The deposition of a properly quantified, ordered, and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the Institute of Field Archaeologists in that organisation's Code of Conduct. This archive will be provided in the English Heritage Central for Archaeology format, as a printed document, and a synthesis (the evaluation report and index of the archive). The archive will be deposited with English Heritage within 6 months of the end of the fieldwork.

3.2.2 The archive will be formed of all the primary documentation, including the following:

- Survey Information
- Field Drawings and digital copies of CAD data
- Written report
- Administrative records

3.2.3 ***Report:*** one bound copy and one unbound copy of the written report will be submitted to the Client. The report will present, summarise, and interpret the results of the survey detailed above. The report will consist of;

- an acknowledgements statement, list of contents,
- a non-technical summary of the results,
- an introduction summarising the brief and project design and any agreed departures,
- methodology,
- a discussion of results of the geophysical survey, together with plots of the raw and processed data (including both greyscale and trace plots),
- an interpretation of the geophysical data, both in plan and written discussion, and its archaeological significance,
- illustrative material will include a location plan of the site, a detailed location plan of the survey areas
- a complete bibliography of sources from which data has been derived,

3.3 GENERAL CONDITIONS

3.3.1 ***Access:*** it is understood that the client will arrange access with the landowner prior to the survey.

3.3.2 ***Health and Safety:*** full regard will, of course, be given to all constraints (services) during the survey, as well as to all Health and Safety considerations. The OA North Health and Safety Statement conforms to all the provisions of the SCAUM (Standing Conference of Unit Managers) Health and Safety manual. Risk assessments are undertaken as a matter of course for all projects. The Unit Safety Policy Statement will be provided to the Client, if required.

3.3.3 ***Confidentiality:*** the report is designed as a document for the specific use of the client for the particular purpose as defined in this project design, and should be treated as such. Any requirement to revise or reorder the material for submission or presentation to third parties or for any other explicit purpose can be fulfilled, but will require separate discussion and funding.

3.3.4 ***Insurance:*** the insurance in respect of claims for personal injury to or the death of any person under a contract of service with the unit and arising out of an in the course of such person's employment shall comply with the employers' liability (Compulsory Insurance) Act 1969 and any statutory orders made there under. For all other claims to cover the liability of OA North, in respect of personal injury or damage to property by negligence of OA North or any of its employees, there applies the insurance cover of £10m for any one occurrence or series of occurrences arising out of one event.

4. WORK TIMETABLE

4.1 ***Magnetometer survey:*** one day will be required to undertake the magnetometer survey on the specified area, including the setting-out of the survey grid. It is in agreement with the client that it may not be possible to survey the entire field in one day, but as much as is possible shall be undertaken.

4.2 ***Report;*** the report will be produced following the completion of the fieldwork and prior to the commencement of the summer school on July 19th 2004. The archive will be deposited within six months.

5. STAFFING

5.1 The project will be under the management of **Emily Mercer BA (Hons) MSc AIFA** (OA North Senior Project Manager) to whom all correspondence should be addressed.

5.2 The geophysical survey will be undertaken by **Karl Taylor BSc (Hons) AIFA** (OA North project supervisor). Karl has a great deal of experience of geophysical survey techniques and the logistics of survey having undertaken varied geophysical surveys nationwide and abroad.

