

GEOPHYSICAL SURVEY

Land at Former Belmont Care Home, Monk Bretton



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Geophysical Survey of land between Garden House Close and Back Lane, Monk Bretton

ARS LTD REPORT 22-23



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Local Authority: Barnsley Metropolitan Borough
Council
Site central NGR: SE 36246 08032
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EXECUTIVE SUMMARY

| | |
|-----------------------------|--|
| Project Name: | Belmont Care Home, Monk Bretton, Barnsley |
| Site Code: | BEL22 |
| Planning Authority: | Barnsley Metropolitan Borough Council |
| Planning Reference: | 2019/0991 |
| Location: | 1-6 Walkers Terrace & Garden House Farm, Monk Bretton, Barnsley, S71 2DY |
| Parish: | Barnsley |
| Hard Geology: | Sedimentary bedrock - Oaks Rock - Sandstone |
| Superficial Geology: | None recorded (BGS 2022) |
| Soil Type: | Slowly permeable, acid loamy and clayey soils |
| NGR: | SE 36246 08032 |
| Date of Fieldwork: | 14/6/2022 |
| Date of Report: | 30/6/2022 |

This report presents the results of a geophysical survey undertaken on land between Garden House Close and Back Lane, Monk Bretton. The survey was commissioned ahead of the demolition of former Belmont Care Home and surrounding buildings. The aim of the programme of works is, in line with the *National Planning Policy Framework (NPPF)* paragraph 194 (MHCLG 2021), to require an applicant to describe any significance of any heritage or archaeological assets affected including any contribution made by their setting.

The evaluation was undertaken on the 14/6/2022 in accordance with a written scheme of works agreed with the Barnsley Metropolitan Borough Council.

A single linear anomaly was identified as possible archaeology. This anomaly is suspected to align with a previous field boundary visible on historic maps. The survey area was dominated by magnetic signatures associated with modern disturbance, as well as small ferrous anomalies often associated with green waste. The survey area was reduced significantly due to much of the site given over to dense overgrowth of vegetation and the presence of asbestos-containing debris arising from nearby dilapidated buildings.

I INTRODUCTION

1.1 Project and Planning Background

1.1.1 Archaeological Research Services Ltd (ARS Ltd) was commissioned by Mr Nathan Green, ASGF Construction Limited, (the client) to undertake a geophysical survey on land at the former Belmont Care Home and Garden House Farm on the land between Garden House Close and Back Lane, Monk Bretton, Cudworth, S71 2DY.

1.1.2 Works were undertaken in compliance with the Written Scheme of Investigation (WSI) approved by Dr Roger Doonan and took place on the 14th June 2022.

1.2 Site Location & Description

1.2.1 The proposed development area (PDA) is indicated in red on Figure 1. The site is located c. 2.5 km from Barnsley. The PDA is bounded to the north by Garden House Close, to the east by Well Lane, to the south by residences and the west by Lamb Lane. The site is located within a residential area, roughly centred on NGR SE 36246 08032.

1.2.2 The 'red line boundary' of the proposed development is depicted by a red polygon on Figure 1 and covers a total area of c. 1.96ha in area, centred on NGR SE 36246 08032.

1.2.3 The site comprises the former Belmont Care Home, 1-6 Walkers Terrace and Garden House Farm, which is level ground at c.100–108m above Ordnance Datum. The site is situated c.2km to the northeast of Barnsley town centre but is situated upon a promontory ridgeline overlooking the River Dearne to the west and a smaller tributary valley to the east.

1.3 Geology and Soils

1.3.1 The underlying solid geology of the site comprises Oaks Rock - Sandstone. Sedimentary Bedrock formed approximately 315 to 318 million years ago in the Carboniferous Period in a local environment previously dominated by rivers. No superficial geology has been recorded for this area (BGS 2022).

1.3.2 The soils are characterised by the Cranfield Soil and Agrifood Institute as Soilscape 17, which are slowly permeable seasonally wet acid loamy and clayey soils (Cranfield University 2022).

1.3.1 The geology exerts an impact on the response to magnetometer survey. As the underlying geology consists of primarily sandstone, response to survey is expected to be classed as average (Gaffney & Gater, 2003).

1.4 Archaeological and Historical Background

1.4.1 A full and detailed archaeological and historical background is provided by the accompanying written scheme of investigation (WSI). Refer to Section 2 of the WSI in Appendix 2.

1.4.2 Furthermore, an in depth archaeological and historical background and detailed information see the Heritage Impact Assessment of the site (Raper, 2020).

1.4.3 To briefly summarise, the village of Monk Bretton is thought to have originated in the Anglo-Saxon period. Archaeological features attributed to the Iron Age/Roman period have been identified in the vicinity of the proposed development area. Much of the proposed development area is thought to have constituted arable fields surrounding the village up until the 19th century.

2 METHOD STATEMENT

2.1 Introduction

2.1.1 Magnetometry is a non-intrusive scientific prospecting technique that is the preferred geophysical technique used to determine the presence or absence of buried archaeological features when site and geological conditions are favourable. It is an efficient and effective method for locating anomalies corresponding with archaeological features. The instrument chosen for this survey was a Bartington Grad 601 dual sensor fluxgate gradiometer which can detect weak changes in the Earth's magnetic field caused by buried features.

2.1.2 All fieldwork and reporting was undertaken following Historic England's (2008) Geophysical Survey in Archaeological Field Evaluation and The Chartered Institute for Archaeologists (CifA) Code of Conduct (CifA 2014a) and Standards and Guidance for Archaeological Geophysical Survey (CifA 2014b).

2.1.3 The 30m by 30m survey grids were located to cover each field in turn and aligned as shown in Figure 2. In total 10 survey grids (2 full, 8 partial) were set out and accurately positioned using a Leica GNSS field controller with GS05 antenna cap which was connected to Leica Viva to receive corrections resulting in an accuracy of typically 0.1m. Each grid was then surveyed at 1m traverse intervals with the sampling at 0.25m (4 readings per metre) intervals. The survey was carried out in 'zig-zag' mode with each alternate traverse walked in opposite directions. The range of the instrument was set at 100nT (0.01nT resolution).

2.1.4 The survey was carried out by ARS Ltd on 14th June 2022. The weather was clement, sunny and dry.

2.1.5 Prior to commencing the survey the gradiometer was balanced and calibrated to the local conditions and this was repeated regularly throughout the day. At the end of the day, the data was downloaded into a computer, checked and archived on the ARS Ltd server. The data was downloaded using Bartington Instruments' Grad 601 Communication Application.

3 GEOPHYSICAL SURVEY RESULTS

3.1 Introduction

3.1.1 The data was minimally processed using Geoplot v4.0 software. The data was "clipped" (clipping parameters selected on the mean and standard deviation data values), and the striping that can often appear in gradiometer data was removed by utilising the "zero mean traverse" function with thresholds applied. To enhance the visibility of subtle features the data was viewed under a number of different clip plotting parameters.

3.1.2 Occasionally processing the data to compensate for directional sensitivity or to remove iron spikes caused by miscellaneous ferrous objects can also inadvertently disguise anomalies that may be of archaeological origin, particularly long linear features in the direction of the traverses. The data has therefore been analysed in a number of different formats and at each stage of processing.

3.1.3 Not all anomalies have been included in the results and discussion. Dipolar anomalies with no clustering or pattern to their distribution are common on most sites and almost certainly relate to natural variations in the soils and geology, agricultural disturbance and miscellaneous ferrous litter on the surface of the field. These anomalies have not been analysed further.

3.1.4 The data analysis is presented graphically in Figures 4, 5 and 6. A greyscale shade plot of the processed gradiometer data is presented in Figure 4. Trace plots of the survey area is presented in Figure 6, and an interpretative plan in Figure 5.

3.2 Anomalies

3.2.1 The data obtained from the survey area is characterised by magnetic and modern disturbance, primarily along its north-eastern extent. It is likely this spread of magnetic disturbance can be attributed to the metal fence which constitutes the site boundary in this area. Additionally, this ground surface had visible signs of considerable modern ground disturbance where soil had appeared to have been overturned and re-laid.

3.2.2 Although obscured by magnetic and modern disturbance, a linear feature can be detected and is aligned north-south along the eastern extent of the survey area (Feature A, Figure 5). Reference to historic maps indicates this may anomaly is likely associated with a former field boundary (National Library of Scotland, 2022; Figure 7). Small dipolar anomalies scattered throughout the data represent probable ferrous materials relating to ground disturbance. Given the magnitude of noise within the data set, these anomalies may consequently be insignificant.

4 DISCUSSION AND CONCLUSION

4.1.1 The survey area exhibited weak, indiscernible and largely indeterminate data with the exception of a linear anomaly and a small scatter of dipolar anomalies. These small dipolar anomalies are most likely derivatives of modern ground disturbance and waste materials that were scattered throughout site. These anomalies are unlikely to be of archaeological origin.

4.1.2 The linear feature visible at the eastern extent of the survey area coincides with a field boundary depicted on historic Ordnance Survey maps (National Library of Scotland, 2022; Figure 7). Ground disturbance, residual ferrous material and the presence of metal fencing has resulted in considerable magnetic disturbance that may mask the presence of further archaeological features.

4.1.3 It should be noted that ground conditions on site were not conducive to survey, with tall and dense vegetation covering much of the site and ground disturbance impeding the surveyor and subsequent data collection; potentially impacting data quality.

5 PUBLICITY, CONFIDENTIALITY AND COPYRIGHT

5.1.1 Any publicity will be handled by the client.

5.1.2 ARS Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

6 STATEMENT OF INDEMNITY

6.1.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

7 ARCHIVE

7.1.1 One bound copy of the final report with an attached digital PDF/A copy on disc will be deposited with the South Yorkshire Archaeology Service. The disc will also include a digital archive, consisting of relevant ESRI shapefiles or CAD files, for use of updating the HER database.

8 ACKNOWLEDGEMENTS

8.1.1 ARS Ltd would like to thank to thank Nathan Green, ASGF Construction Limited, for commissioning the project. We would also like to South Yorkshire Archaeology Service for their assistance with the project.

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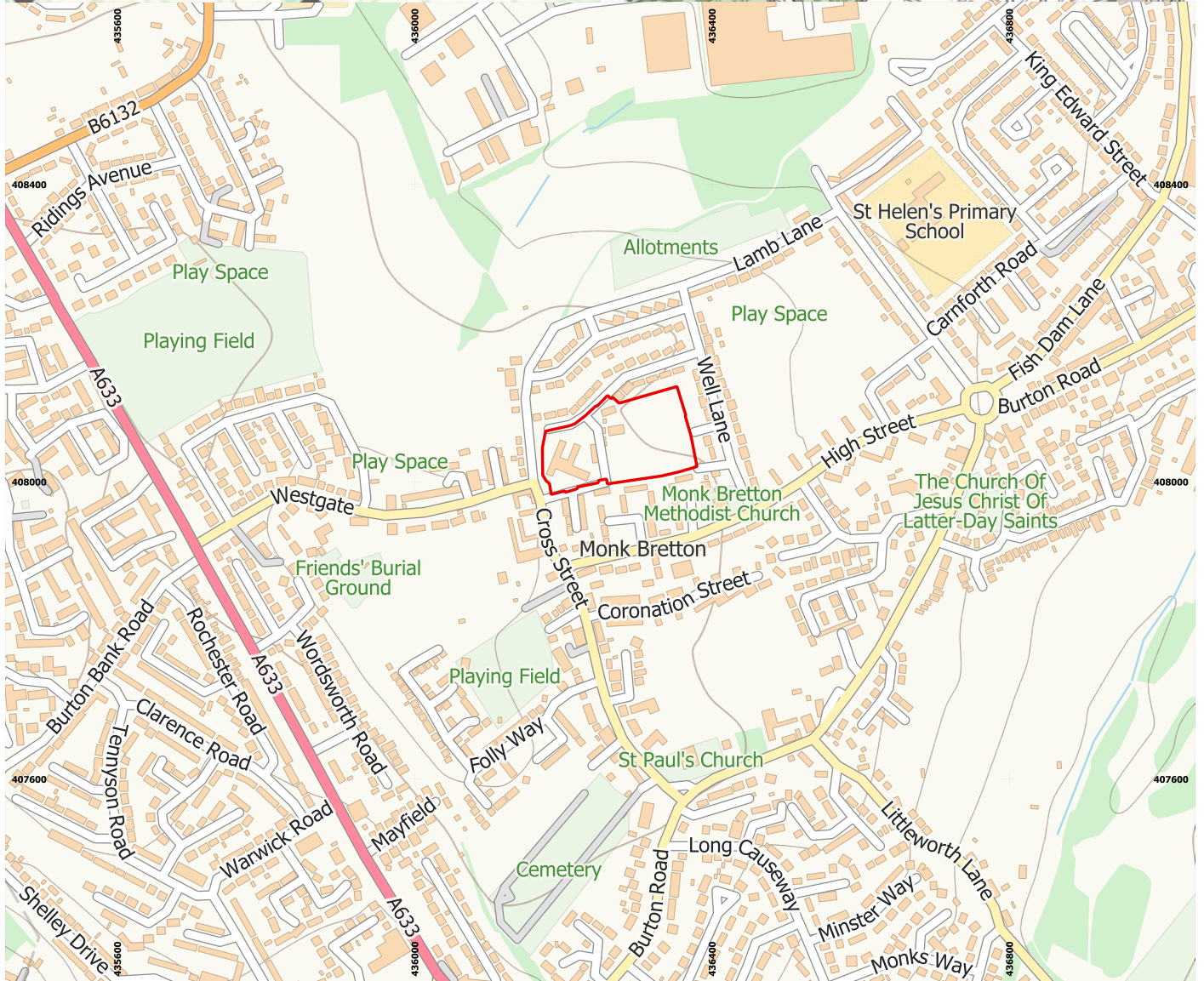
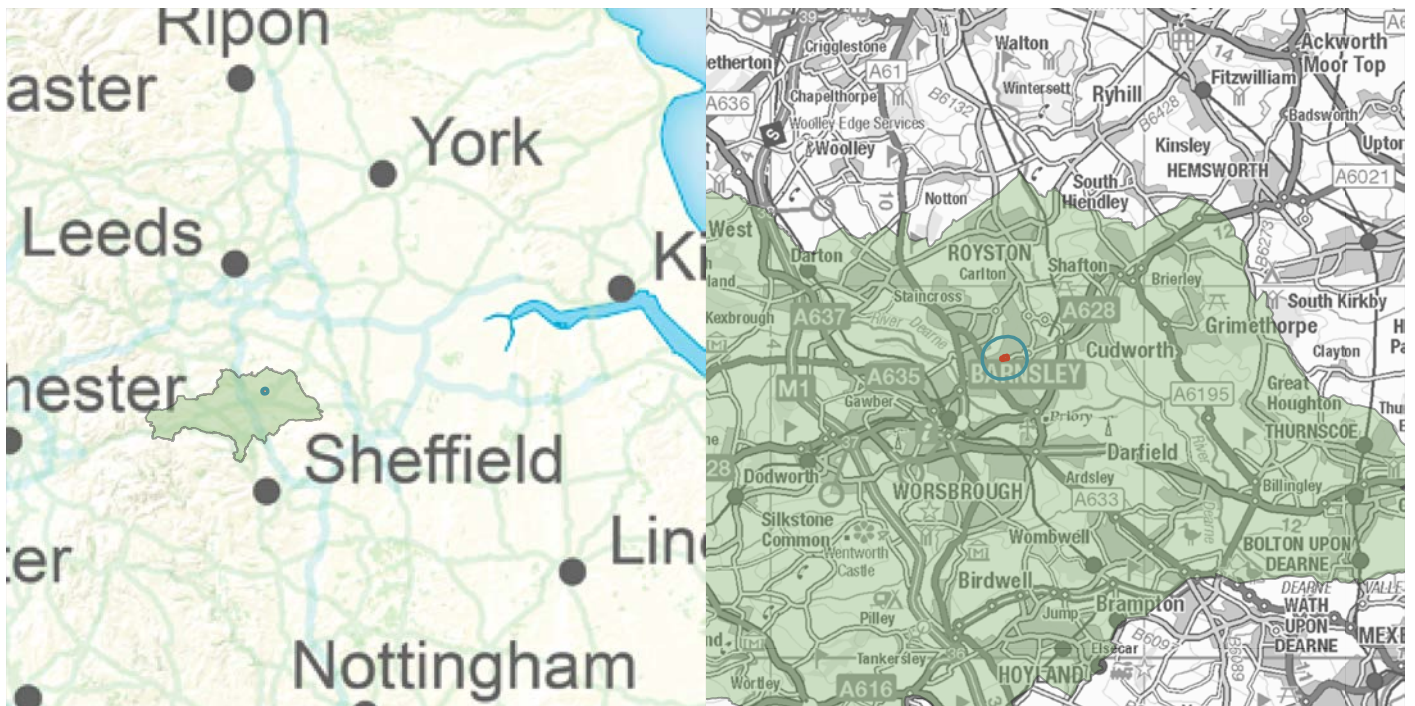
Raper, J. 2020. *Former Belmont Care Home and Garden House Farm, Monk Bretton– Heritage Statement*, id Planning.

Soil Survey of England and Wales. 1983a. Sheet 3: Soils of Central England.

Soil Survey of England and Wales. 1983b. Legend for the 1:250,000 Soil Map of England and Wales.

APPENDIX I FIGURES





Site name: Former Belmont Care Home,
Monk Bretton, Barnsley
Date: February 2022
Drawn by: JL
Scale: Varies

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**Figure 1:
Site location**

 Site Boundary

 Barnsley Metropolitan Borough Council



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Figure 1: Map showing location of proposed development area. (red line boundary)



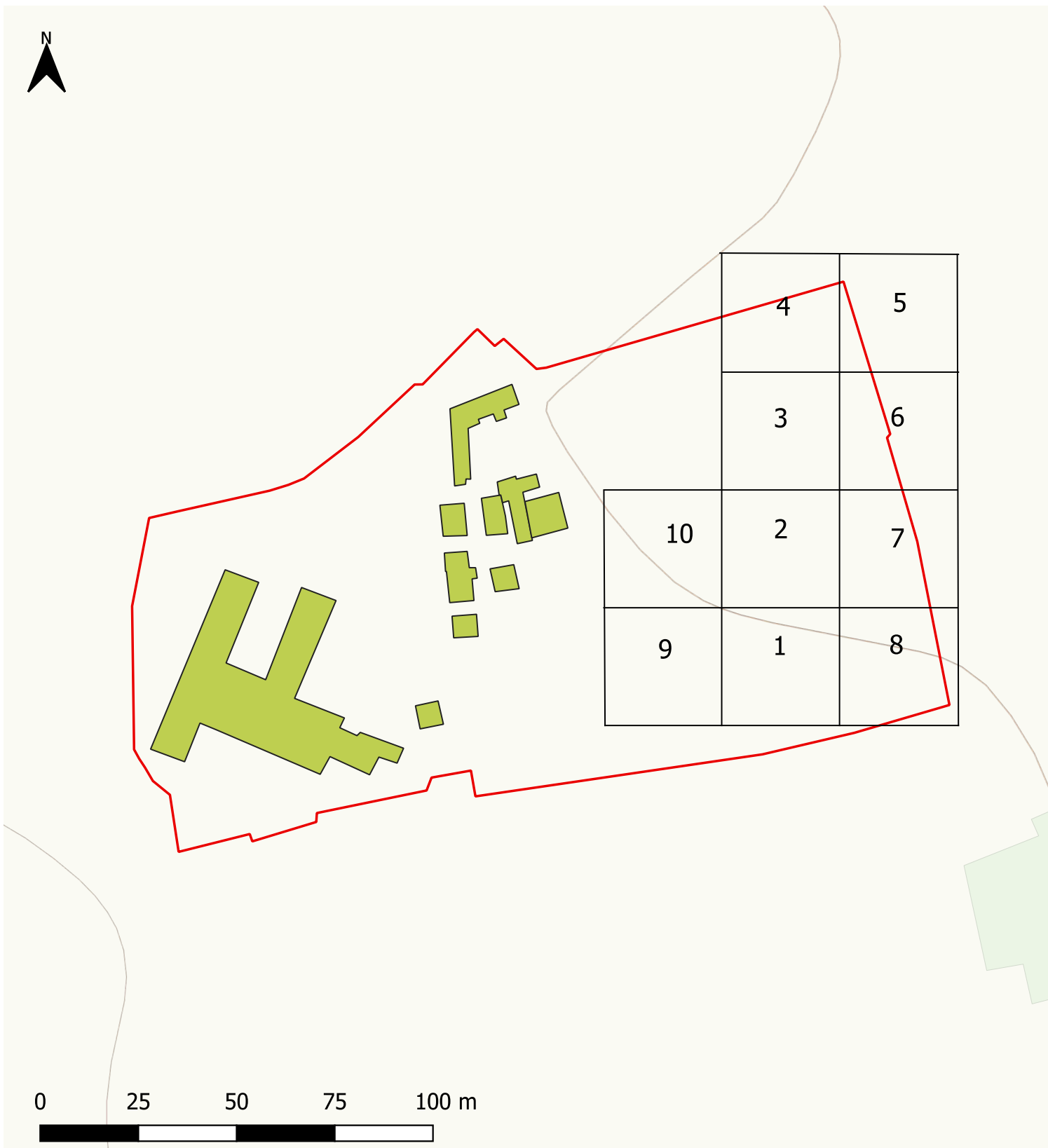
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Figure 2
Proposed Development Area

SITE BUILDINGS
 Site Boundary

Date: June 2022
 Drawn: KP
 Scale: As shown

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Figure 3
Grid Layout

- SITE_BUILDINGS
- GRIDLINES
- Site Boundary

Date: June 2022
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Site Code: BEL22
Date: June 2022
Drawn by: KP
Scale: As shown

Figure 4
Greyscale shadeplot
of gradiometer data

Key:

SHADEPLOT

 SITE_BUILDINGS

 Site Boundary



0 15 30 45 60 m



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Site Code: BEL22
Date: June 2022
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Figure 5 Interpretive plan

Key

ANOMALIES

-  FERROUS
-  POSSIBLE_ARCH
-  MODERN/MAG_DISTURBANCE
-  SITE_BUILDINGS
-  Survey_Area
-  Site Boundary

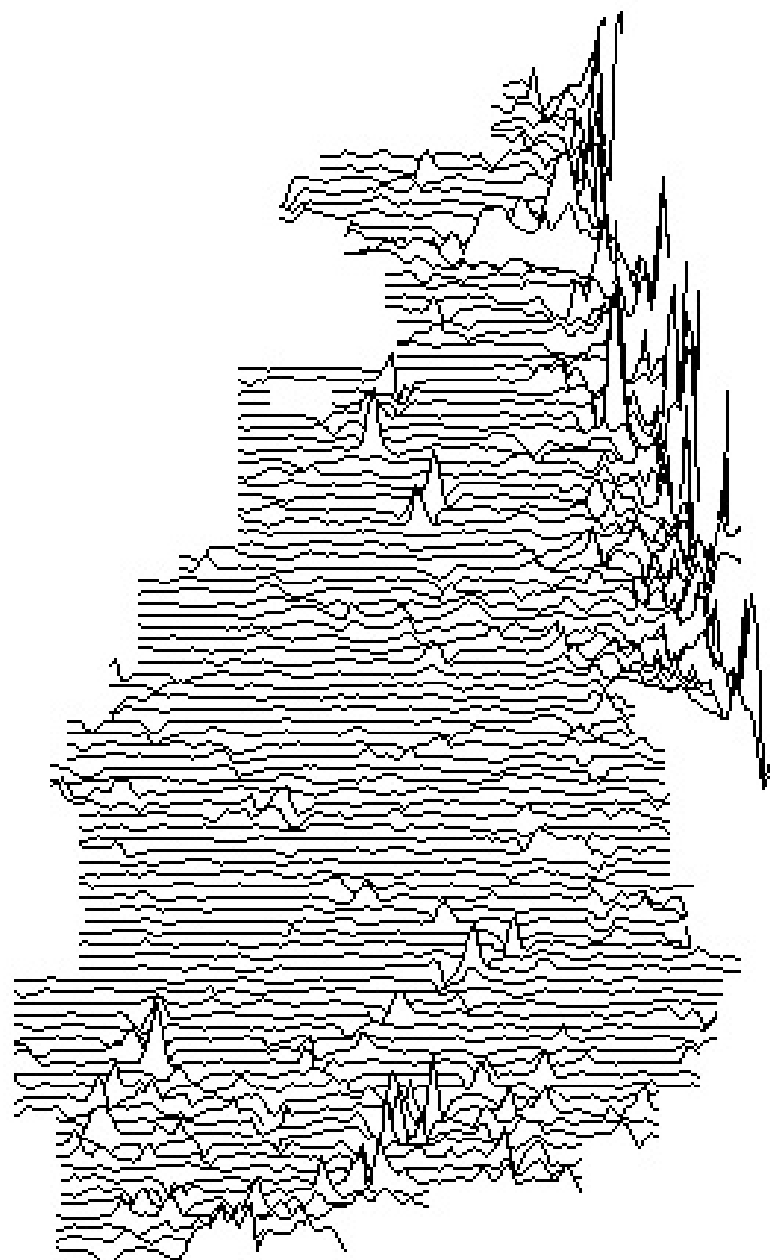
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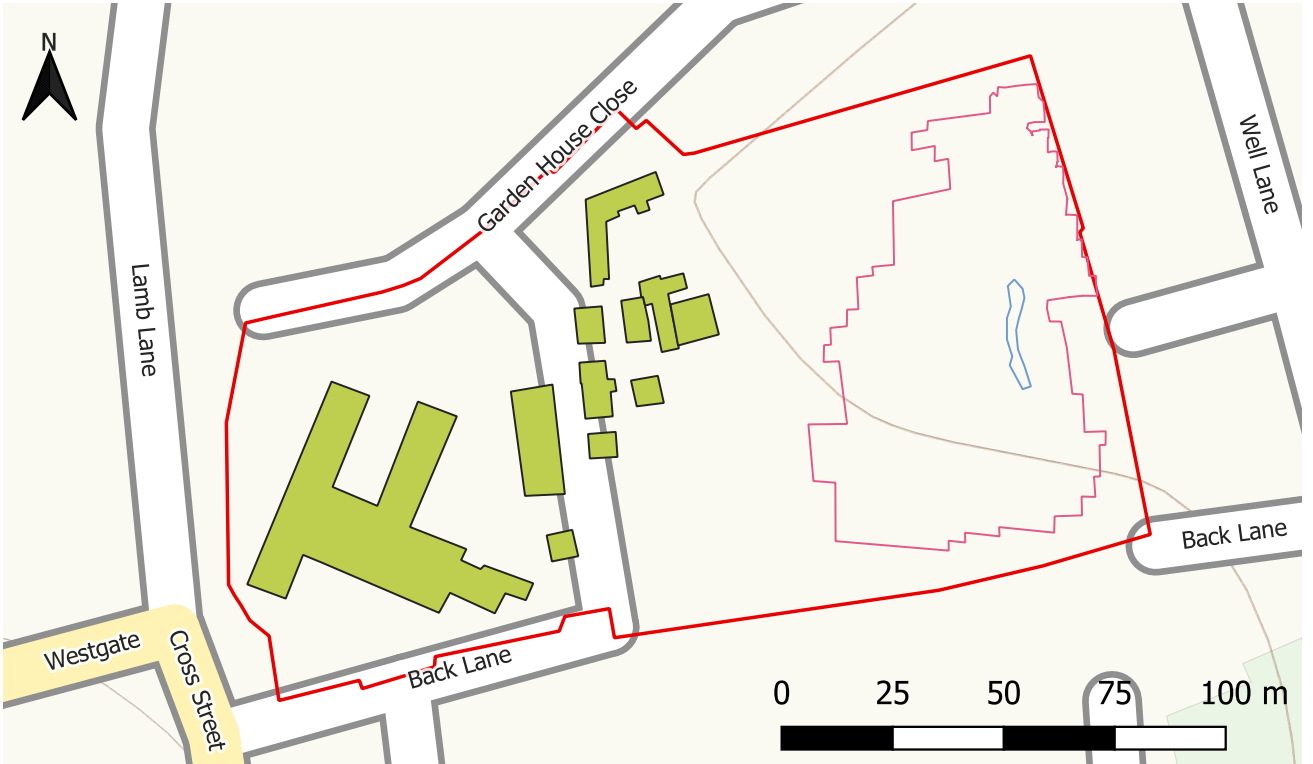
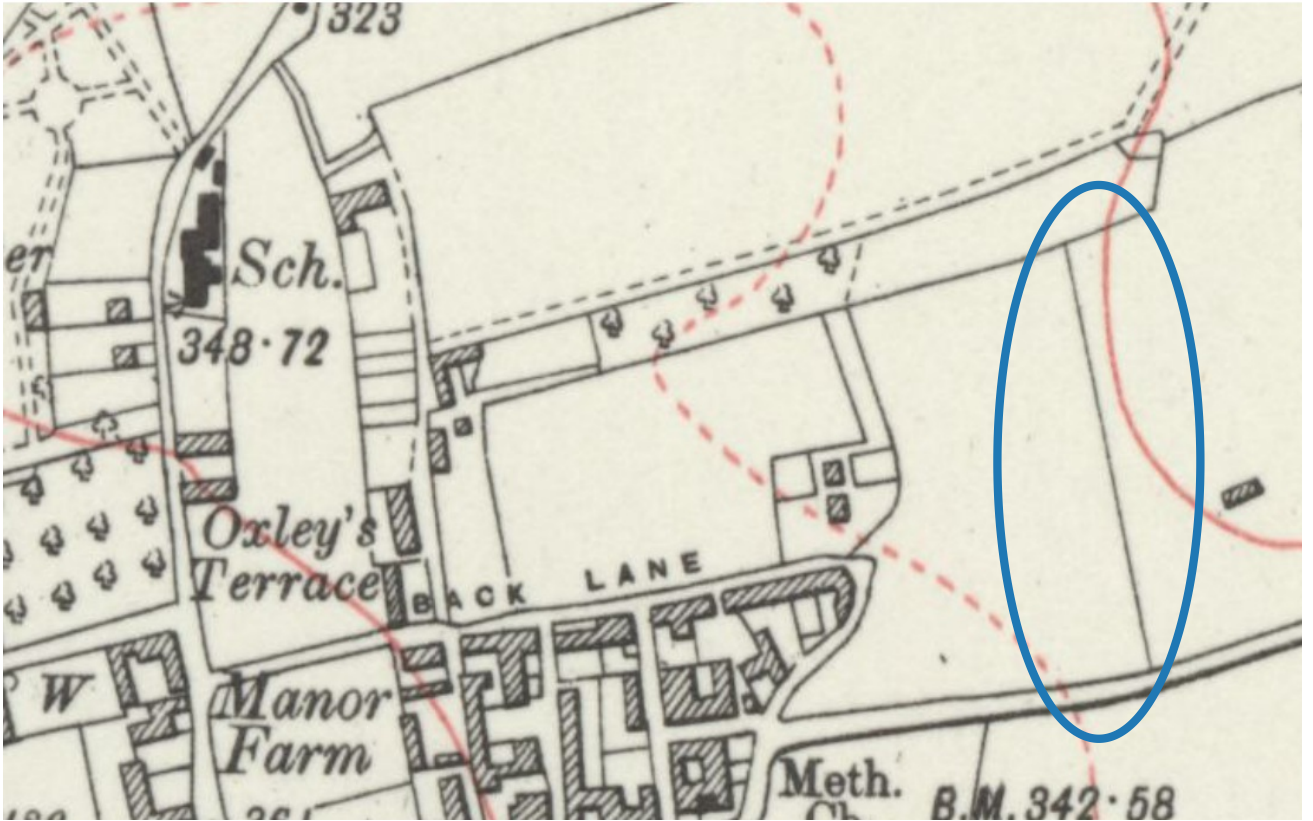


I 40nT

Figure 6
Traceplot of
processed
gradiometer data

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Site Code: BEL22
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Figure 7
 Historical map (c.1929) site comparison

Key

- POSSIBLE_ARCH
- Survey Area
- Site Boundary

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