

GSB Survey No. 2009/49

Bedford Purlieus, Northamptonshire

NGR	Centred on TL 041 995
Location	The site is bounded to the North by the A47 and to the south by a Roman Road, which connects Wandsford with Ermine Street. It lies approximately 12km west of Peterborough and 2 km west of Wandsford
County	Northamptonshire
District	City of Peterborough
Parish	Thornhaugh CP
Topography	The survey areas were small and hence generally level
Current land-use	Woodland
Soils	Shallow Calcareous fine loamy soils of the Elnton 1 association (343a) and Calcareous clayey soils of the Evesham 1 association (411a): (<i>Soils of England and Wales. Sheet 4, Eastern England. Soil Survey of England and Wales. 1983</i>)
Geology	Limestone and Sandstone of the Lower Jurassic
Archaeology	Bedford Purlieus is situated within an area of extensive industrial activity of Roman origin; including clay extraction, pottery making and iron working. The first archaeological investigations of these industries consisted of the mapping of the remains and were undertaken by Edmund Tyrell Artis in the early 19 th Century. Work to record some of the features identified by Artis, as well as further sites identified subsequently, was undertaken by Northamptonshire Archaeology in 2005 and 2008. These works included recording of the upstanding remains, targeted geophysical survey and test pitting (Simmonds: 2005, 2008)
Survey Methods	Detailed Magnetometry, Magnetic Susceptibility and GPR

Aims

To locate and characterise any anomalies of possible archaeological interest in areas pre-determined by **Time Team** (see Mower 2009). The work forms part of a wider archaeological assessment carried out by the **Time Team** on behalf of **Channel 4**.

Summary of Results

Ground conditions were far from ideal; in fact only very small areas were suitable for detailed survey and magnetic scanning was severely restricted by modern ferrous debris scattered throughout the woods. While resistance survey, immediately adjacent to the trench in Area 1, succeeded in defining the line of some of the walls identified in the excavation, it wasn't possible to survey a larger area. Magnetic survey in Areas 2 and 5 identified ferrous material and some responses of archaeological potential. Magnetic Susceptibility survey in Area 5 provided the best results: a very clear plot of a spread of metal-working slags and debris, thought to be associated with a small furnace or an ore roasting area.

Project Information

Project Co-ordinator: Dr J Gater
Project Assistants: J Adcock, J Green and E Wood
Date of Fieldwork: 13th -15th October 2009
Date of Report: 20th November 2009

Survey Specifications

Method

The survey grid was set out using tapes and tied in to the Ordnance Survey (OS) grid by Dr Henry Chapman using a Trimble Total Station. A copy of the georeferenced results in AutoCad format is included on the Archive CD.

Technique	Traverse Separation	Reading Interval	Instrument
Magnetometer - Scanning (Appendix 1)	-	-	Bartington Grad 601-2
Magnetometer – Detailed (Appendix 1)	1.0m	0.25m	Bartington Grad 601-2
Magnetic Susceptibility	1.0m	1.0m	Bartington MS2 Coil
Resistance – Twin Probe (Appendix 1)	-	-	Geoscan RM15
Ground Penetrating Radar (GPR) (Appendix 1)	-	-	Noggin SmartCart ^{plus}

Data Processing

	Magnetic	Resistance	GPR
Zero Mean Traverse	Y	-	-
Step Correction	Y	-	-
Interpolate	Y	Y	-
Filter	N	-	-

Presentation of Results

Report Figures (Printed & Archive CD): Location, data plots and interpretation diagram on base map (see List of Figures).
 Plot Formats: See Appendix 1: Technical Information, at end of report.

General Considerations

Conditions for survey were not good; in fact only very small areas could be surveyed successfully due to the trees and undergrowth.

Smaller scale ferrous anomalies ("iron spikes") are present in the magnetic data, their form best illustrated in the XY trace plots. These responses are characteristic of small pieces of ferrous debris in the topsoil and are commonly assigned a modern origin. While the most prominent of these are highlighted on the interpretation diagram, they are not discussed in the text below unless considered relevant.

Results of Survey

The area numbers referred to are those adopted by *Time Team*.

Area 1

- 1.1 Resistance survey immediately adjacent to the *Time Team* trench identified some of the walls unearthed in the excavation and other potential foundations. Unfortunately, due to the dense undergrowth, it was not possible to survey a larger area and provide a wider context for the archaeological remains. As such, the ground plan of the Roman building has not been resolved.

Area 2

- 1.2 Detailed magnetic survey in a small area which had been cleared of vegetation identified a number of strong magnetic responses. Given the context of known iron workings at the site, it was felt that the observed anomalies had archaeological potential even though some of the responses were ferrous-like. It was decided to investigate one of the responses near to an earthwork bank; excavation found remnants of an old barbed wire fence, although some metalworking remains, such as slags, were also recovered. The presence of the barbed wire highlighted some of the difficulties encountered when carrying out scanning in the woodland – see 1.4 below.

Area 5

- 1.3 Initially magnetic survey in this small clearing, and along an adjacent footpath, identified a concentration of anomalies close to wall foundations which had been originally noted in a trial excavation carried out by Northamptonshire Archaeology. Unfortunately the presence of trees prevented further survey with the gradiometer, so magnetic susceptibility readings were collected using the MS2 coil. These showed a very clearly defined area of enhanced readings which suggested the presence of highly burnt / fired material – the highest readings were located between two trees, so these could not be investigated for the presence of a possible small furnace. Clearance of leaves and undergrowth identified a very distinct area of burnt soil and a spread of slag material. A small excavation trench confirmed large quantities of slag material; all the evidence points towards some form of ore roasting activity.

Scanning

- 1.4 The high density of trees and thick undergrowth severely restricted the areas available for survey; the inability to establish a survey grid through the trees (due to the short time on site) prevented the use of wide-scale magnetic susceptibility sampling. Attempts were made to carry out free-ranging scanning with gradiometers, but the presence of large quantities of ferrous debris (like the barbed wire fences and stray ammunition / shrapnel from WWII activity) also rendered this approach pointless.

GPR

- 1.5 Radar transects were attempted along some of the trackways but the results were inconclusive; there are simply too many near surface nonconformities in the bedrock to be able to interpret any potential archaeological responses - without carrying out a much more extensive survey. As such, the results have not been included in this report.

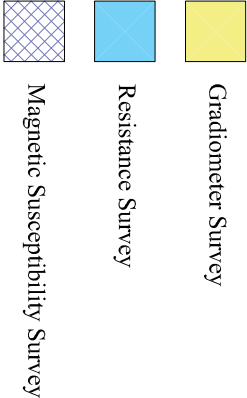
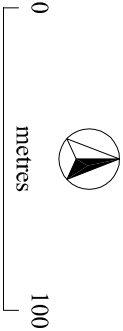
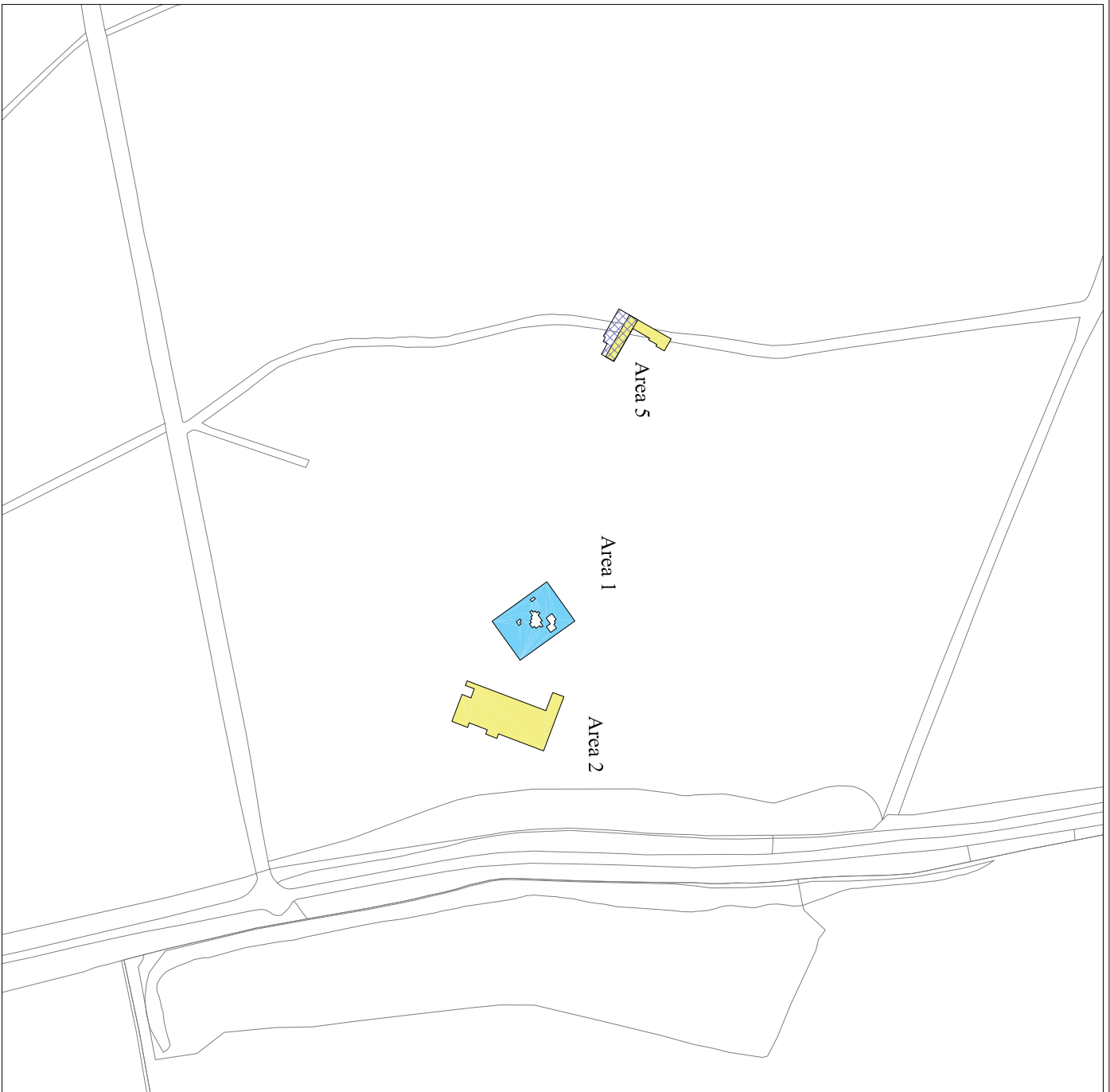
2. Conclusions

- 2.1 Unfortunately, unsuitable ground conditions severely hampered the geophysical investigations at Bedford Purlieus. The very small size of the areas available for investigation also severely limited any interpretation of the data that could be collected.
- 2.2 Resistance survey helped identify some walls associated with the Roman remains found in the trench in Area 1, but could not provide a larger plan of the building due to the trees. Magnetic survey pinpointed several anomalies of potential interest – unfortunately the one chosen for investigation proved to be associated with buried barbed wire, although some slags were present. Magnetic Susceptibility measurements successfully identified a former iron-working area in Area 5.

List of Figures

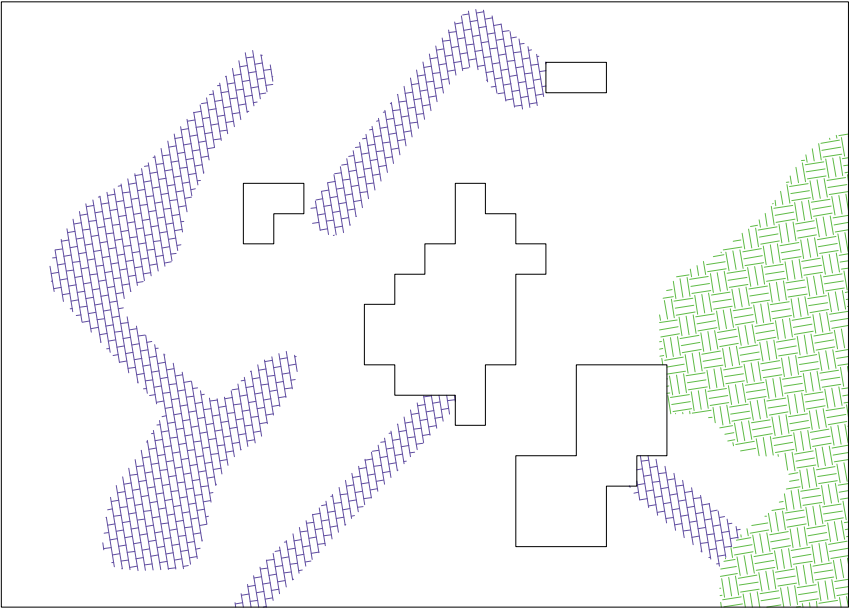
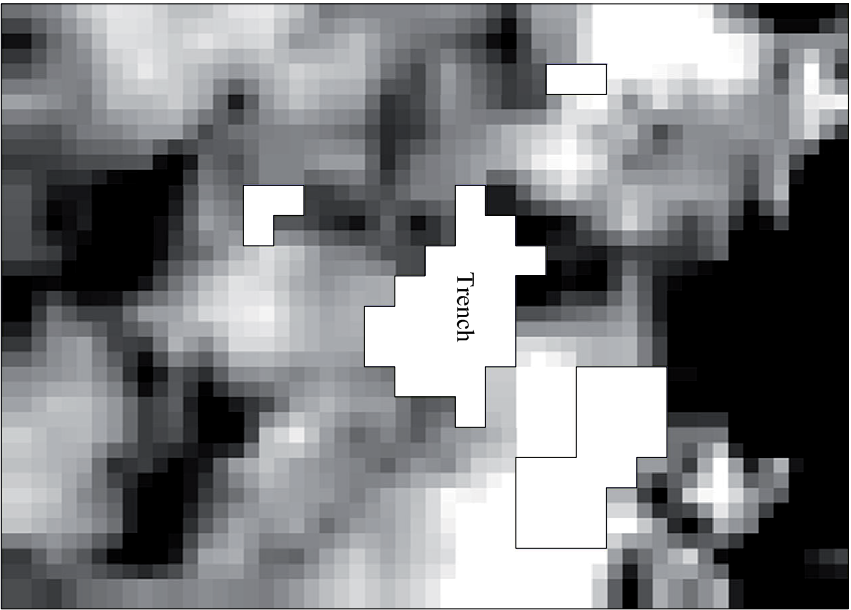
Report Figures (also on Archive CD)

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Location of Survey Areas
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Figure 1



High Resistance -
?Wall Lines/Foundations

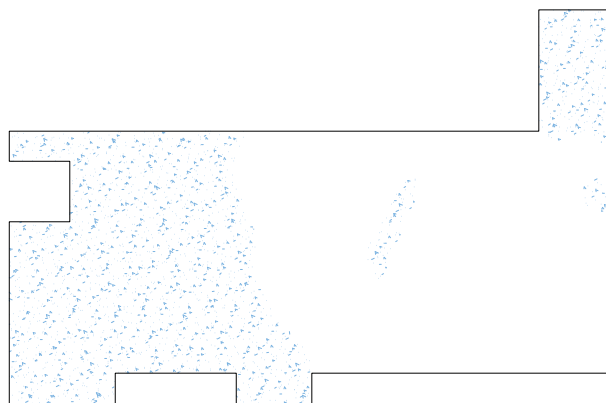
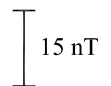
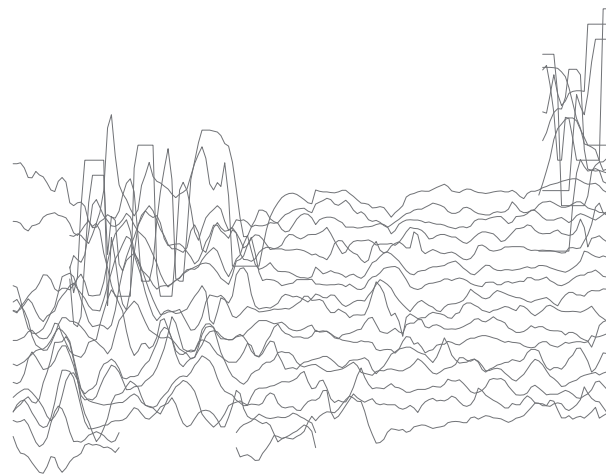
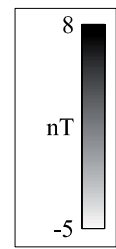
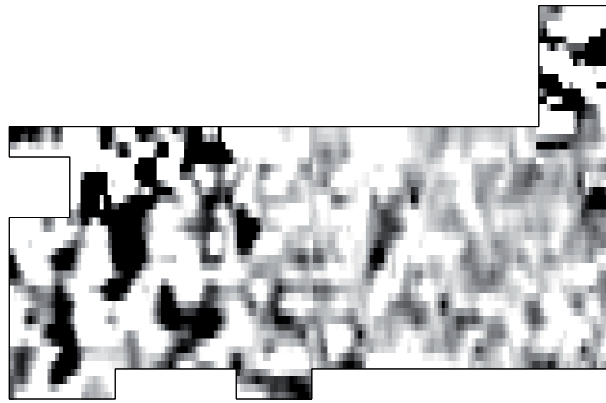
High Resistance - ?Natural

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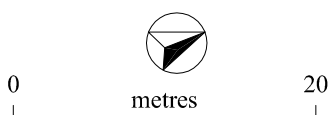
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Resistance Data - Area 1

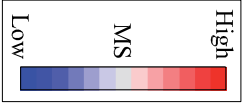
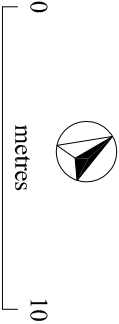
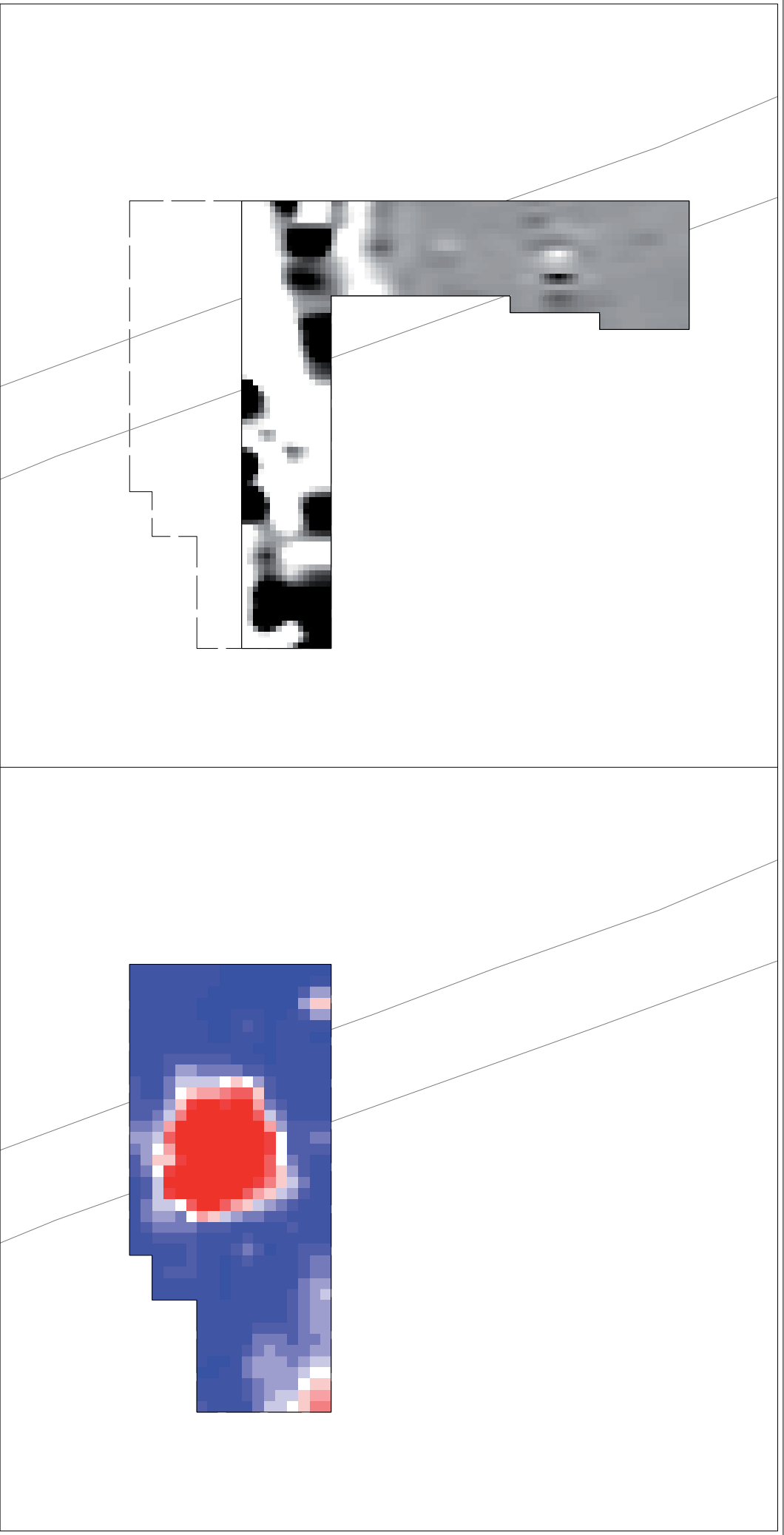
Figure 2



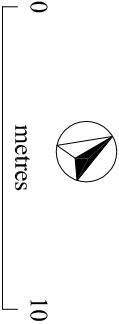
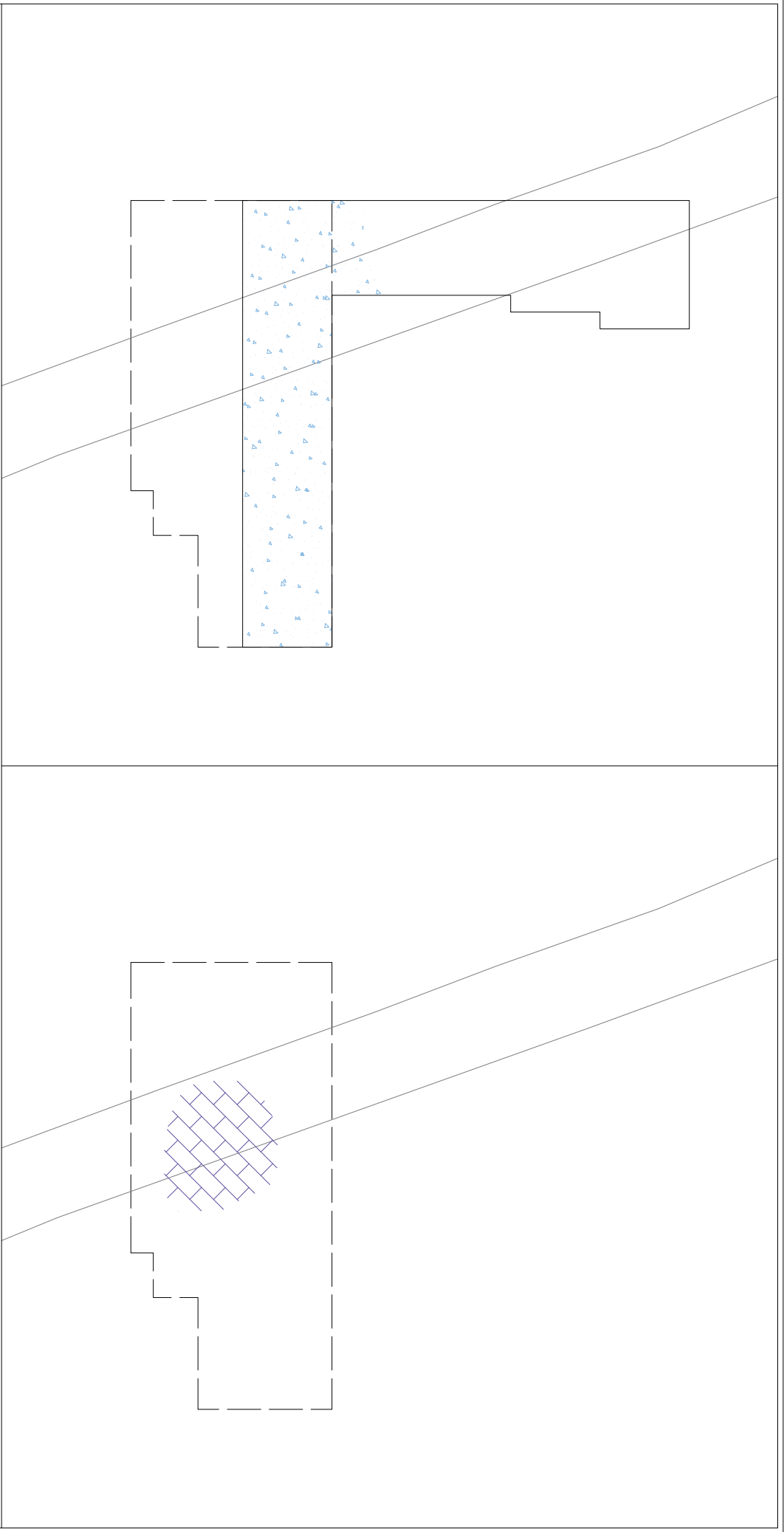
Increased Magnetic Response



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Gradiometer Data - Area 2
Figure 3



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Gradiometer/MS Data - Area 5
Figure 4



Increased Magnetic
Response



Increased Magnetic
Susceptibility - Iron Working

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Gradiometer/MS Data - Area 5
Figure 5