STRATASCAN

Geophysical Survey Report

Swans Nest, Brandon Road, Swaffham

for

Archaeological Solutions Ltd

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Job ref. 2932

Bryony P Marsh BA

Document Title: **Geophysical Survey Report**
Swans Nest, Brandon Road, Swaffham, Norfolk

Client: **Archaeological Solutions Ltd**

Stratascan Job No: **J2932**

Techniques: **Detailed magnetic survey (gradiometry)**

National Grid Ref: **TF 823 7SG**

Plate 1: Survey Area 1 (North-west of site) viewed from the south looking north.

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LIST OF FIGURES

1 SUMMARY OF RESULTS

A detailed gradiometry survey was conducted over approximately 19.6 hectares of agricultural land to the south of Swaffham in Norfolk. This survey has identified a series of positive linear anomalies indicative of a rectilinear double ditch feature of probable archaeological origin. Further positive linear anomalies have been identified in close proximity to this response and may also be of archaeological interest. Responses likely to be associated with historic field boundaries have also been identified as have anomalies indicative of agricultural activity. Further weak positive and negative responses are identified across the site and are of possible archaeological origin.

A single possible thermoremanent anomaly is seen in the north west of the site, alongside a moderate strength anomaly of uncertain origin. Magnetic disturbance and debris is apparent across the site, predominantly around the field boundaries, however an area of disturbance possibly associated with a former quarry site is evident.

2 INTRODUCTION

2.1 Background synopsis

Stratascan were commissioned to undertake a geophysical survey of an area outlined for development. This survey forms part of an archaeological investigation being undertaken by Archaeological Solutions Ltd.

2.2 Site location

The site is located to the south of Swaffham in Norfolk at OS ref. TF 823 075.

2.3 Description of site

The survey area consists of approximately 19.6ha of arable land divided across three fields. Each field had been harvested shortly before the commencement of the survey. In field 2 (located in the north east of the site) a large hollow feature is present which appears to be a former pond which is evident on historic cartographic sources dating back to at least 1887.

Plate 2: Survey area 2, viewed from the south west, showing the probable former pond.

2.4 Geology and soils

The underlying geology is chalk – specifically Lewes Nodular Chalk Formation, Seaford Chalk Formation, Newhaven Chalk Formation and Culver Chalk Formation (British Geological Survey website). The drift geology is Lowestoft Formation - Diamicton (British Geological Survey South Sheet, First Edition Quaternary, 1977).

The site appears to be located across two differing types of soils – the first, identified in the west of the area, are known as Worlington which are typical argillic brown earth soils. These consist of deep well drained sandy soils, in places very acidic with subsurface pan. Widespread small scale polygonal soil patterns. Risk of wind erosion (Soil Survey of England and Wales, Sheet 4 Eastern England). The second type of soils, identified in the east of the area, are known as Newmarket 1 which are typical brown rendzina soils. These consist of shallow well drained calcareous sandy and course loamy soils over chalk or chalk rubble. Some similar deeper sandy soils often in an intricate striped pattern. Risk of wind erosion (Soil Survey of England and Wales, Sheet 4 Eastern England).

2.5 Site history and archaeological potential

The following is taken from the: *Updated Brief for Archaeological Evaluation by Geophysical and Field Walking Survey at Land off Brandon Road and Watton Road, Swaffham, Norfolk.* Written by Ken Hamilton, Senior Archaeologist, Norfolk Historic Environment Service.

The proposed development lies on the site of a number of finds of Roman and medieval date, including Roman jewellery and a number of Roman and medieval coins.

In addition, excavations immediately to the south of the site identified Roman enclosure or field boundary ditches, some of which appear to continue into the proposed development site, as well as a number of prehistoric features.

2.6 Survey objectives

The objective of the survey was to locate any features of possible archaeological significance in order that they may be assessed prior to development.

2.7 Survey methods

Detailed magnetic survey (gradiometry) was used as an efficient and effective method of locating archaeological anomalies. More information regarding this technique is included in the Methodology section below.

3 METHODOLOGY

3.1 Date of fieldwork

The fieldwork was carried out over five days from the 17th October 2011. Weather conditions during the survey were generally fine with occasional showers.

3.2 Grid locations

The location of the survey grids has been plotted in Figure 1 together with the referencing information. Grids were set out using a Leica Smart Rover RTK GPS.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. A SmartNet RTK GPS uses Ordnance Survey's network of over 100 fixed base stations to give an accuracy of around 0.01m.

3.3 Survey equipment and gradiometer configuration

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTeslas (nT) in an overall field strength of 48,000nT, can be accurately detected using an appropriate instrument.

The mapping of the anomaly in a systematic manner will allow an estimate of the type of material present beneath the surface. Strong magnetic anomalies will be generated by buried iron-based objects or by kilns or hearths. More subtle anomalies such as pits and ditches can be seen if they contain more humic material which is normally rich in magnetic iron oxides when compared with the subsoil.

To illustrate this point, the cutting and subsequent silting or backfilling of a ditch may result in a larger volume of weakly magnetic material being accumulated in the trench compared to the undisturbed subsoil. A weak magnetic anomaly should therefore appear in plan along the line of the ditch.

The magnetic survey was carried out using a dual sensor Grad601-2 Magnetic Gradiometer manufactured by Bartington Instruments Ltd. The instrument consists of two fluxgates very accurately aligned to nullify the effects of the Earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background. The Grad601-2 consists of two high stability fluxgate gradiometers suspended on a single frame. Each gradiometer has a 1m separation between the sensing elements so enhancing the response to weak anomalies.

3.4 Sampling interval, depth of scan, resolution and data capture

3.4.1 Sampling interval

Readings were taken at 0.25m centres along traverses 1m apart. This equates to 3600 sampling points in a full 30m x 30m grid.

3.4.2 Depth of scan and resolution

The Grad 601-2 has a typical depth of penetration of 0.5m to 1.0m, though strongly magnetic objects may be visible at greater depths. The collection of data at 0.25m centres provides an optimum methodology for the task balancing cost and time with resolution.

3.4.3 Data capture

The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

3.5 Processing, presentation of results and interpretation

3.5.1 Processing

Processing is performed using specialist software known as *Geoplot 3* and in-house software. This can emphasise various aspects contained within the data but which are often not easily seen in the raw data. Basic processing of the magnetic data involves 'flattening' the background levels with respect to adjacent traverses and adjacent grids. 'Despiking' is also performed to remove the anomalies resulting from small iron objects often found on agricultural land. Once the basic processing has flattened the background it is then possible to carry out further processing which may include low pass filtering to reduce 'noise' in the data and hence emphasise the archaeological or man-made anomalies.

The following schedule shows the basic processing carried out on all processed gradiometer data used in this report:

1. *Destripe* (Removes striping effects caused by zero-point discrepancies between different sensors and walking directions)

2. *Destagger* (Removes zigzag effects caused by inconsistent walking speeds on sloping, uneven or overgrown terrain)

3.5.2 Presentation of results and interpretation

The presentation of the data for each site involves a print-out of the raw data both as a greyscale plot (Figure 2) and a colour plot showing extreme magnetic values (Figure 3), together with a greyscale plot of the processed data (Figure 4). Magnetic anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site (Figure 5).

4 RESULTS

The following list of numbered anomalies refers to numerical labels on the interpretation plots (Figure 5).

Probable Archaeology

1. A series of positive linear anomalies indicative of former cut features have been identified in the east of the site, transecting both fields 2 & 3 therefore predating the current field boundary which is evident on cartographic sources dating back as far as 1884. These anomalies appear as a double ditch formation with rounded corners in the south and are likely to be of archaeological origin.

Possible Archaeology

2. In addition to the structured positive linear anomalies noted above, a series of further linear responses are seen across the site, but predominantly in the eastern and central regions of the survey area. These anomalies are also commonly associated with in-filled cut features and may be of archaeological origin.

3. A scattering of discrete positive anomalies are identified in the east of the site and may indicate the presence of former pits which may be of archaeological interest.

4. A number of weak positive area anomalies have also been identified across the south and east of the site and may also indicate former cut features.

5. In addition to the positive anomalies listed above, four negative responses are seen, which are typically associated with former ploughed out banks or earthworks of possible archaeological origin.

6. In the north west of the site, a single anomaly consisting of both positive and negative responses of moderate strength has been identified which is possibly indicative of a thermoremanent anomaly.

7. A number of magnetic 'spikes' (strong focussed values with associated antipolar response) indicate ferrous metal objects. Although most of these are likely to be modern rubbish, some may be of archaeological interest. Particular attention may be paid to those found in association with other potentially archaeological anomalies.

8. A large response consisting of both positive and negative responses has been identified in the north of the site. This anomaly is located in close proximity to a negative linear response, probable former field boundaries and magnetic spikes but is of uncertain origin.

Other Anomalies

9. A series of positive linear anomalies have been identified across the site, which when compared to historic cartographic sources appear to correlate with recorded field boundaries present on the 1887 mapping of the site (Anomaly 9A). Further linear anomalies of similar character and orientation are also seen (Anomaly 9B), however these are not shown on the 1887 plan or any subsequent site mapping. We therefore feel that these anomalies are likely to be former field boundaries predating the 1887 plan, however as no earlier plan of the site was available to us, we cannot corroborate this by documentary sources.

10. Three small areas of closely spaces linear anomalies have been identified in the east of the site and are indicative of former agricultural activity such as ploughing.

11. Areas of magnetic disturbance are the result of substantial nearby ferrous metal objects such as fences and underground services. These effects can mask weaker archaeological anomalies, but on this site the majority of magnetic disturbance is present around the current field boundaries. However, a single large magnetic response is seen in the south of the site (Anomaly 11). This anomaly appears on the 1887 plan of the site and may be associated with a former quarry or pit. Patches of magnetic debris likely to be of modern origin are also identified across the site.

12. Areas of weak amorphous magnetic variation have also been identified in the north west of the site and are of probable geological or pedological origin.

5 CONCLUSION

The detailed magnetic gradiometer survey carried out over 19.6 hectares of agricultural land to the south of Swaffham has identified a series of positive linear anomalies which appear to take the form of a double ditch feature of probable archaeological origin. These responses are in close proximity to further positive anomalies indicative of former cut features of possible archaeological origin. It is interesting to note that these anomalies appear to cross the current field boundary which is shown on the earliest map of the site available to us, dating 1887.

Across the wider site, a number of weak positive and negative responses have been identified which may be of archaeological interest and linear responses probably associated with former field boundaries are seen. A large area of magnetic disturbance has also been identified which correlates with a possible quarry feature shown on the 1887 map.

6 REFERENCES

British Geological Survey, n.d., *website* (http://maps.bgs.ac.uk/geologyviewer_google/googleviewer.html)

Soil Survey of England and Wales, 1983. *Soils of England and Wales, Sheet 4 Eastern England*.

Hamilton, K. *Updated Brief for Archaeological Evaluation by Geophysical and Field Walking Survey at Land off Brandon Road and Watton Road, Swaffham, Norfolk.* Norfolk Historic Environment Service. 2011.

APPENDIX A – Basic principles of magnetic survey

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns and material such as brick and tile may be magnetised through the same process.

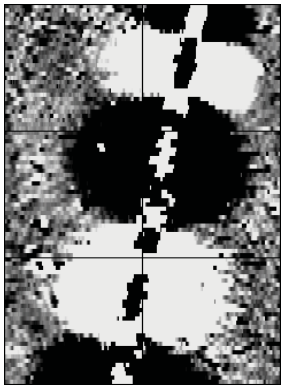
Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically either 0.5 or 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried field. The difference between the two sensors will relate to the strength of a magnetic field created by a buried feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity, disturbance from modern services etc.

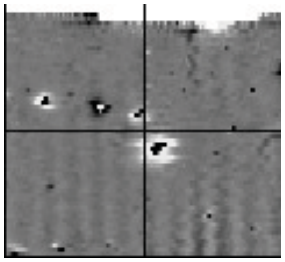
APPENDIX B – Glossary of magnetic anomalies

Bipolar



A bipolar anomaly is one that is composed of both a positive response and a negative response. It can be made up of any number of positive responses and negative responses. For example a pipeline consisting of alternating positive and negative anomalies is said to be bipolar. See also dipolar which has only one area of each polarity. The interpretation of the anomaly will depend on the magnitude of the magnetic field strength. A weak response may be caused by a clay field drain while a strong response will probably be caused by a metallic service.

Dipolar

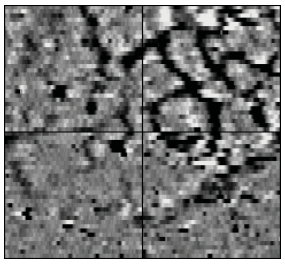


This consists of a single positive anomaly with an associated negative response. There should be no separation between the two polarities of response. These responses will be created by a single feature. The interpretation of the anomaly will depend on the magnitude of the magnetic measurements. A very strong anomaly is likely to be caused by a ferrous object.

Positive anomaly with associated negative response

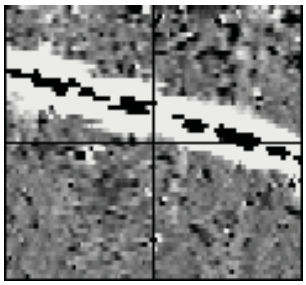
See bipolar and dipolar.

Positive linear



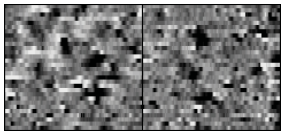
A linear response which is entirely positive in polarity. These are usually related to in-filled cut features where the fill material is magnetically enhanced compared to the surrounding matrix. They can be caused by ditches of an archaeological origin, but also former field boundaries, ploughing activity and some may even have a natural origin.

Positive linear anomaly with associated negative response



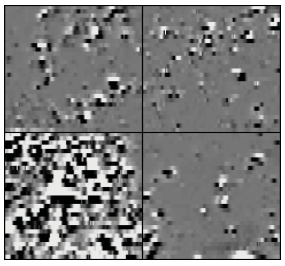
A positive linear anomaly which has a negative anomaly located adjacently. This will be caused by a single feature. In the example shown this is likely to be a single length of wire/cable probably relating to a modern service. Magnetically weaker responses may relate to earthwork style features and field boundaries.

Positive point/area



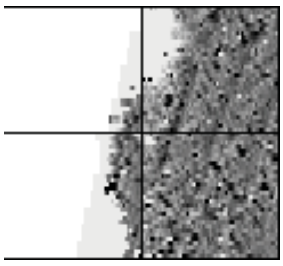
These are generally spatially small responses, perhaps covering just 3 or 4 reading nodes. They are entirely positive in polarity. Similar to positive linear anomalies they are generally caused by in-filled cut features. These include pits of an archaeological origin, possible tree bowls or other naturally occurring depressions in the ground.

Magnetic debris



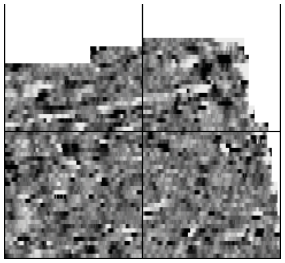
Magnetic debris consists of numerous dipolar responses spread over an area. If the amplitude of response is low (+/-3nT) then the origin is likely to represent general ground disturbance with no clear cause, it may be related to something as simple as an area of dug or mixed earth. A stronger anomaly (+/-250nT) is more indicative of a spread of ferrous debris. Moderately strong anomalies may be the result of a spread of thermoremanent material such as bricks or ash.

Magnetic disturbance



Magnetic disturbance is high amplitude and can be composed of either a bipolar anomaly, or a single polarity response. It is essentially associated with magnetic interference from modern ferrous structures such as fencing, vehicles or buildings, and as a result is commonly found around the perimeter of a site near to boundary fences.

Negative linear

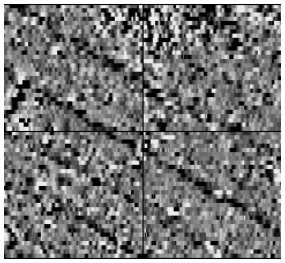


A linear response which is entirely negative in polarity. These are generally caused by earthen banks where material with a lower magnetic magnitude relative the background top soil is built up. See also ploughing activity.

Negative point/area

Opposite to positive point anomalies these responses may be caused by raised areas or earthen banks. These could be of an archaeological origin or may have a natural origin.

Ploughing activity



Ploughing activity can often be visualised by a series of parallel linear anomalies. These can be of either positive polarity or negative polarity depending on site specifics. It can be difficult to distinguish between ancient ploughing and more modern ploughing, clues such as the separation of each linear, straightness, strength of response and cross cutting relationships can be used to aid this, although none of these can be guaranteed to differentiate between different phases of activity.

Polarity

Term used to describe the measurement of the magnetic response. An anomaly can have a positive polarity (values above 0nT) and/or a negative polarity (values below 0nT).

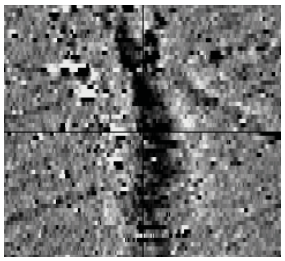
Strength of response

The amplitude of a magnetic response is an important factor in assigning an interpretation to a particular anomaly. For example a positive anomaly covering a $10m^2$ area may have values up to around 3000nT, in which case it is likely to be caused by modern magnetic interference. However, the same size and shaped anomaly but with values up to only 4nT may have a natural origin. Colour plots are used to show the amplitude of response.

Thermoremanent response

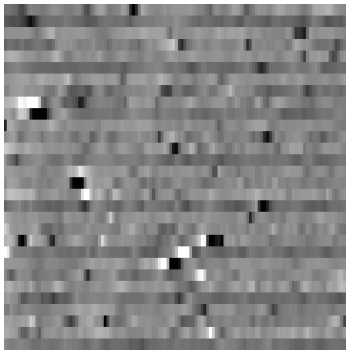
A feature which has been subject to heat may result in it acquiring a magnetic field. This can be anything up to approximately +/-100 nT in value. These features include clay fired drains, brick, bonfires, kilns, hearths and even pottery. If the heat application has occurred in situ (e.g. a kiln) then the response is likely to be bipolar compared to if the heated objects have been disturbed and moved relative to each other, in which case they are more likely to take an irregular form and may display a debris style response (e.g. ash).

Weak background variations

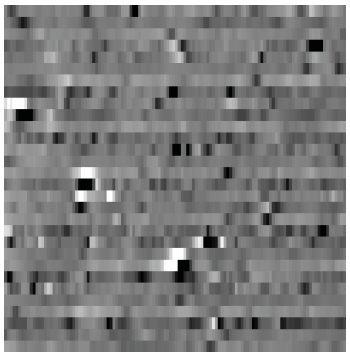


Weakly magnetic wide scale variations within the data can sometimes be seen within sites. These usually have no specific structure but can often appear curvy and sinuous in form. They are likely to be the result of natural features, such as soil creep, dried up (or seasonal) streams. They can also be caused by changes in the underlying geology or soil type which may contain unpredictable distributions of magnetic minerals, and are usually apparent in several locations across a site.

APPENDIX C- Gradiometer Data Recollection



Grid 10 (Original).
+/- 5nT
Surveyed AM 17th October 2011
30m x 30m
1m x 0.25m
Data Collected by Alex Portch
Using Stratascan Bartington Grad 601-2 No. 5



Grid 10 (Re-collect).
+/- 5nT
Surveyed PM 17th October 2011
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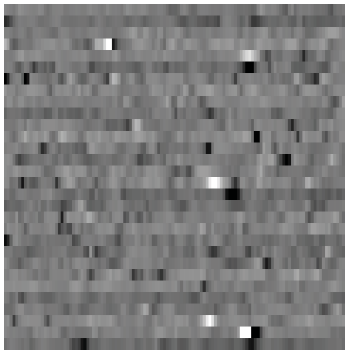
Data Collected by Alex Portch
Using Stratascan Bartington Grad 601-2 No. 5



Grid 46 (Original).
+/- 7nT
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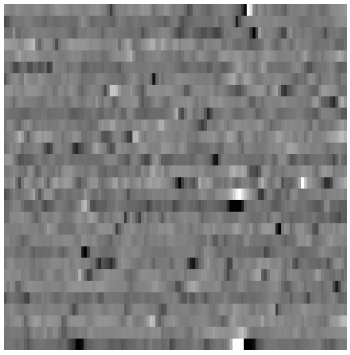
1m x 0.25m
Data Collected by Alex Portch
Using Stratascan Bartington Grad 601-2 No. 6



Grid 46 (Re-collect).
+/- 7nT
Surveyed PM 18th October 2011
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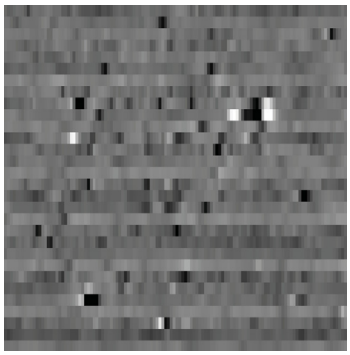
1m x 0.25m
Data Collected by Alex Portch
Using Stratascan Bartington Grad 601-2 No. 6



Grid 21 (Original).
+/- 7nT
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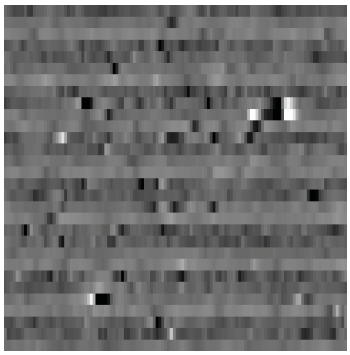
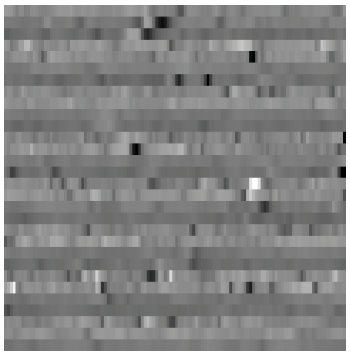
1m x 0.25m
Data Collected by Glenn Rose
Using Stratascan Bartington Grad 601-2 No. 4



Grid 21 (Re-collect).
+/- 7nT
Surveyed PM 18th October 2011
30m x 30m
1m x 0.25m
Data Collected by Glenn Rose
Using Stratascan Bartington Grad 601-2 No. 4



Grid 205 (Original).
+/- 10nT
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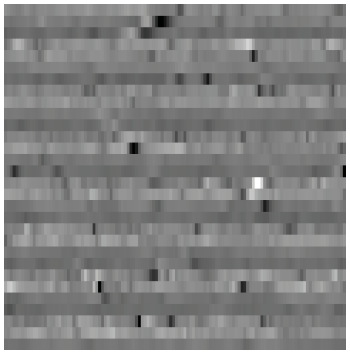
1m x 0.25m
Data Collected by Tom DeSalle
Using Stratascan Bartington Grad 601-2 No. 4



Grid 205 (Re-collect).
+/- 10nT
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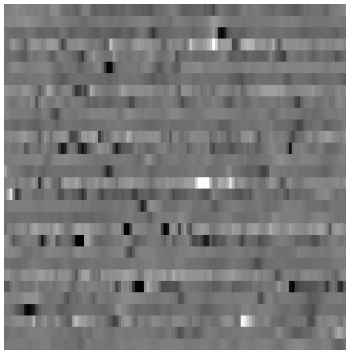
Using Stratascan Bartington Grad 601-2 No. 4



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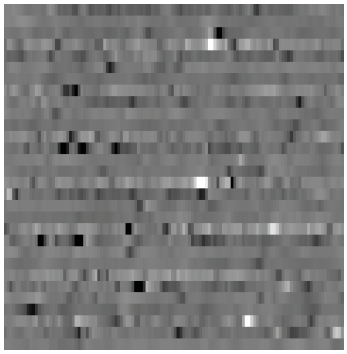
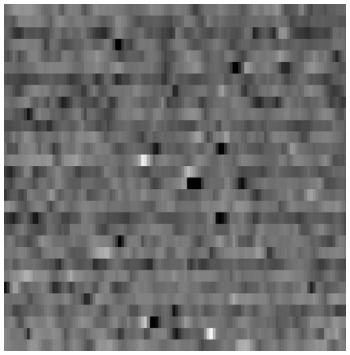
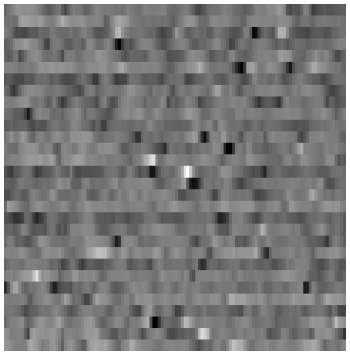
1m x 0.25m
Data Collected by Glenn Rose
Using Stratascan Bartington Grad 601-2 No. 5



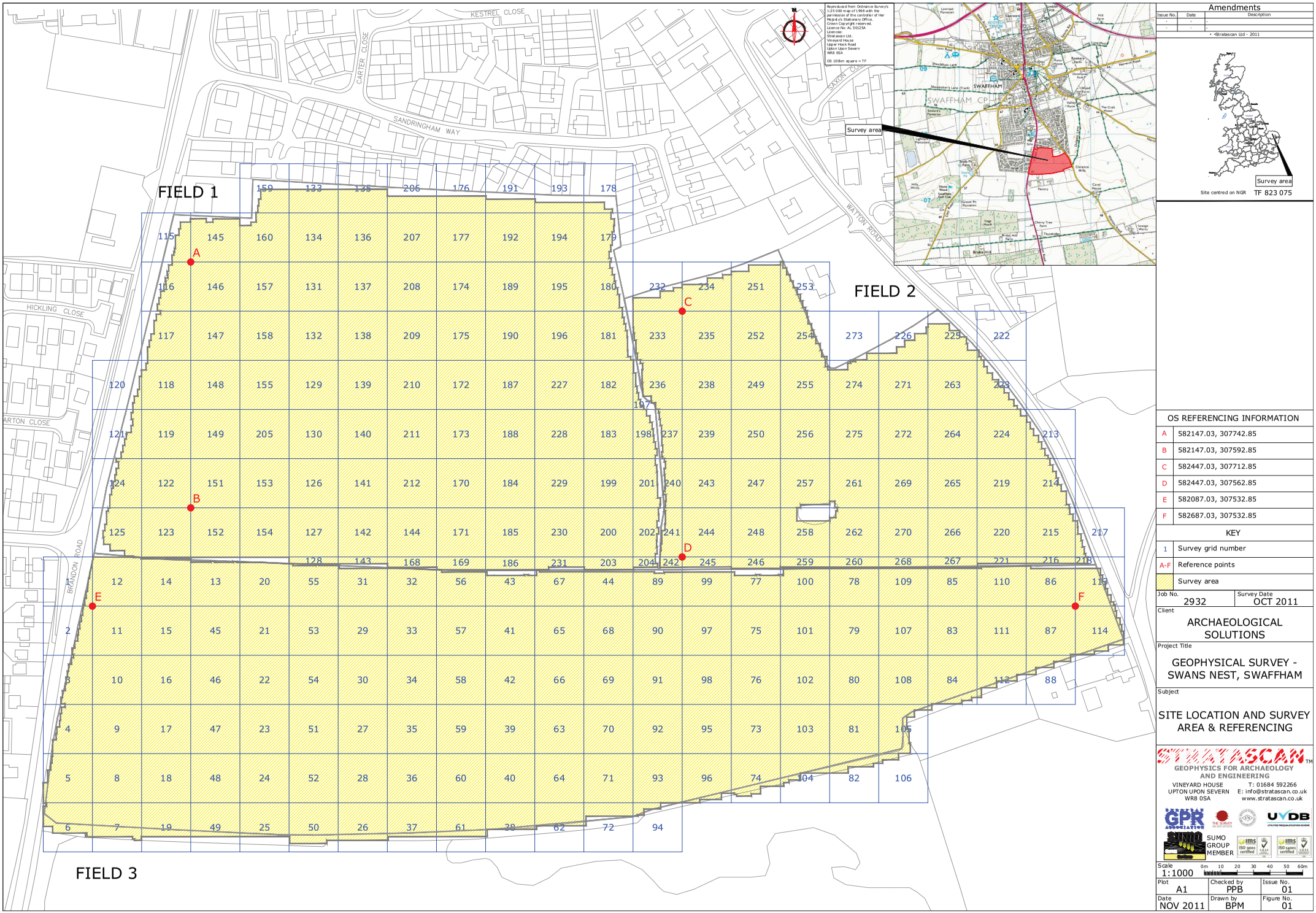
Grid 122 (Re-collect).
+/- 7nT
Surveyed PM 19th October 2011
30m x 30m
1m x 0.25m
Data Collected by Glenn Rose
Using Stratascan Bartington Grad 601-2 No. 5



Grid 235 (Original).
+/- 5nT
Surveyed AM 20th October 2011
30m x 30m
1m x 0.25m
Data Collected by Alex Portch
Using Stratascan Bartington Grad 601-2 No. 4



Grid 235 (Re-collect).
+/- 5nT
Surveyed PM 20th October 2011
30m x 30m
1m x 0.25m
Data Collected by Alex Portch
Using Stratascan Bartington Grad 601-2 No. 4



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

OS REFERENCING INFORMATION	
A	582147.03, 307742.85
B	582147.03, 307592.85
C	582447.03, 307712.85
D	582447.03, 307562.85
E	582087.03, 307532.85
F	582687.03, 307532.85

KEY	
1	Survey grid number
A-F	Reference points
	Survey area

Job No.	Survey Date
2932	OCT 2011

Client

ARCHAEOLOGICAL SOLUTIONS

Project Title

GEOPHYSICAL SURVEY - SWANS NEST, SWAFFHAM

Subject

SITE LOCATION AND SURVEY AREA & REFERENCING

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
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SUMO GROUP MEMBER

Scale	Plot	Checked by	Issue No.
1:1000	A1	PPB	01
	Date	Drawn by	Figure No.
	NOV 2011	BPM	01

Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +5nT (black)
Minimum -5nT (white)

Zero Mean

-5nT +5nT

+5nT

-5nT

Job No.	Survey Date
2932	OCT 2011

Client

ARCHAEOLOGICAL SOLUTIONS

Project Title

GEOPHYSICAL SURVEY - SWANS NEST, SWAFFHAM

Subject

PLOT OF RAW GRADIOMETER DATA

STRATASCAN™
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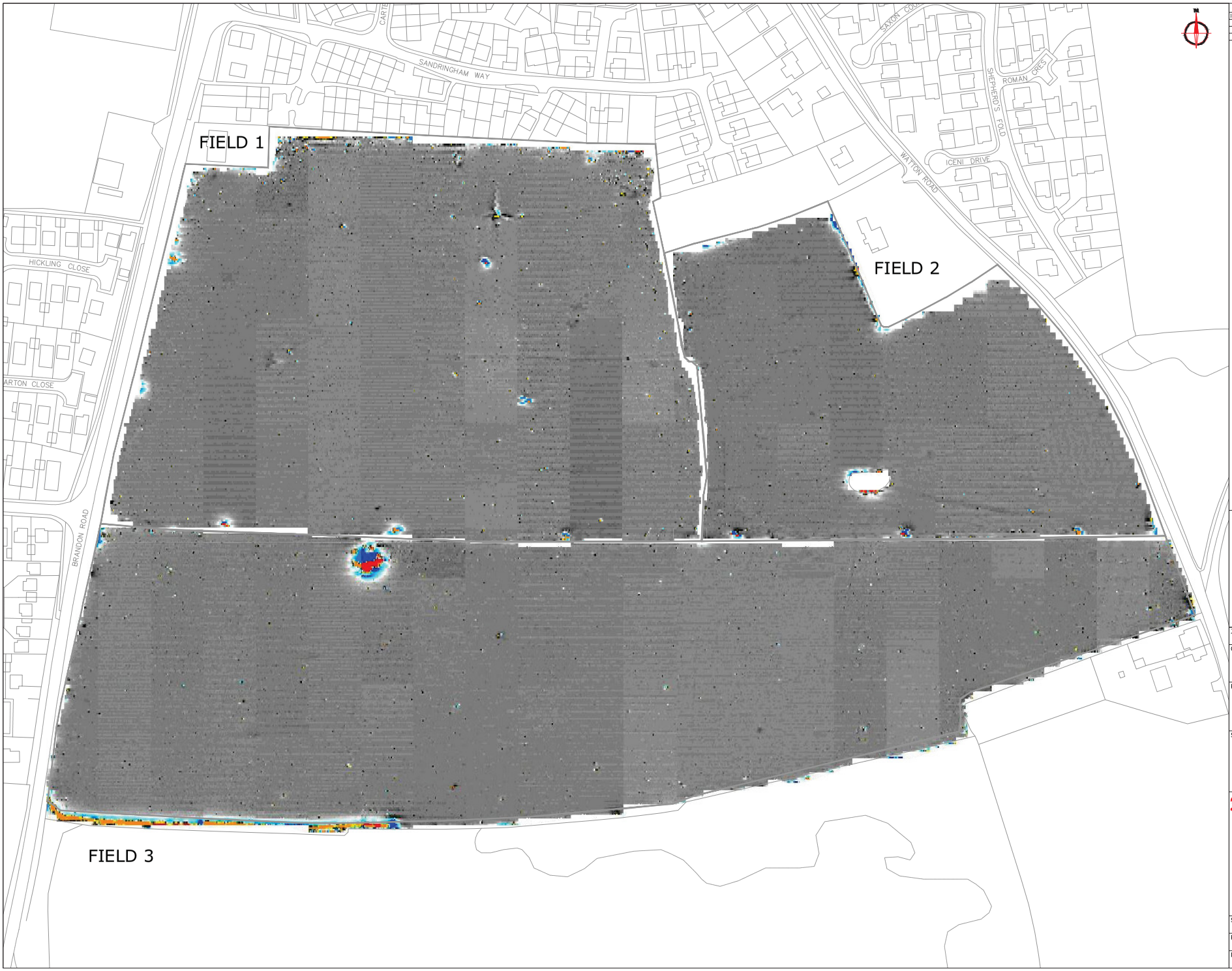
Scale 1:1000 (0m 10 20 30 40 50 60m)

Plot	Checked by	Issue No.
A1	PPB	01
Date	Drawn by	Figure No.
NOV 2011	BPM	02



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +250nT (red)
Minimum -250nT (blue)

+250nT

-250nT

Job No.	Survey Date
2932	OCT 2011

Client

ARCHAEOLOGICAL SOLUTIONS

Project Title

GEOPHYSICAL SURVEY - SWANS NEST, SWAFFHAM

Subject

COLOUR PLOT OF RAW GRADIOMETER DATA SHOWING EXTREME MAGNETIC VALUES

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SUMO GROUP MEMBER

Scale 1:1000 (0m 10 20 30 40 50 60m)

Plot	Checked by	Issue No.
A1	PPB	01
Date	Drawn by	Figure No.
NOV 2011	BPM	03

Amendments

Issue No.	Date	Description
-	-	-
-	-	-

• Stratascan Ltd - 2011

Plotting parameters

Maximum +3nT (black)
Minimum -3nT (white)

Zero Mean

-3nT +3nT

+3nT

-3nT

Job No.	Survey Date
2932	OCT 2011

Client

ARCHAEOLOGICAL SOLUTIONS

Project Title

GEOPHYSICAL SURVEY - SWANS NEST, SWAFFHAM

Subject

PLOT OF PROCESSED GRADIOMETER DATA

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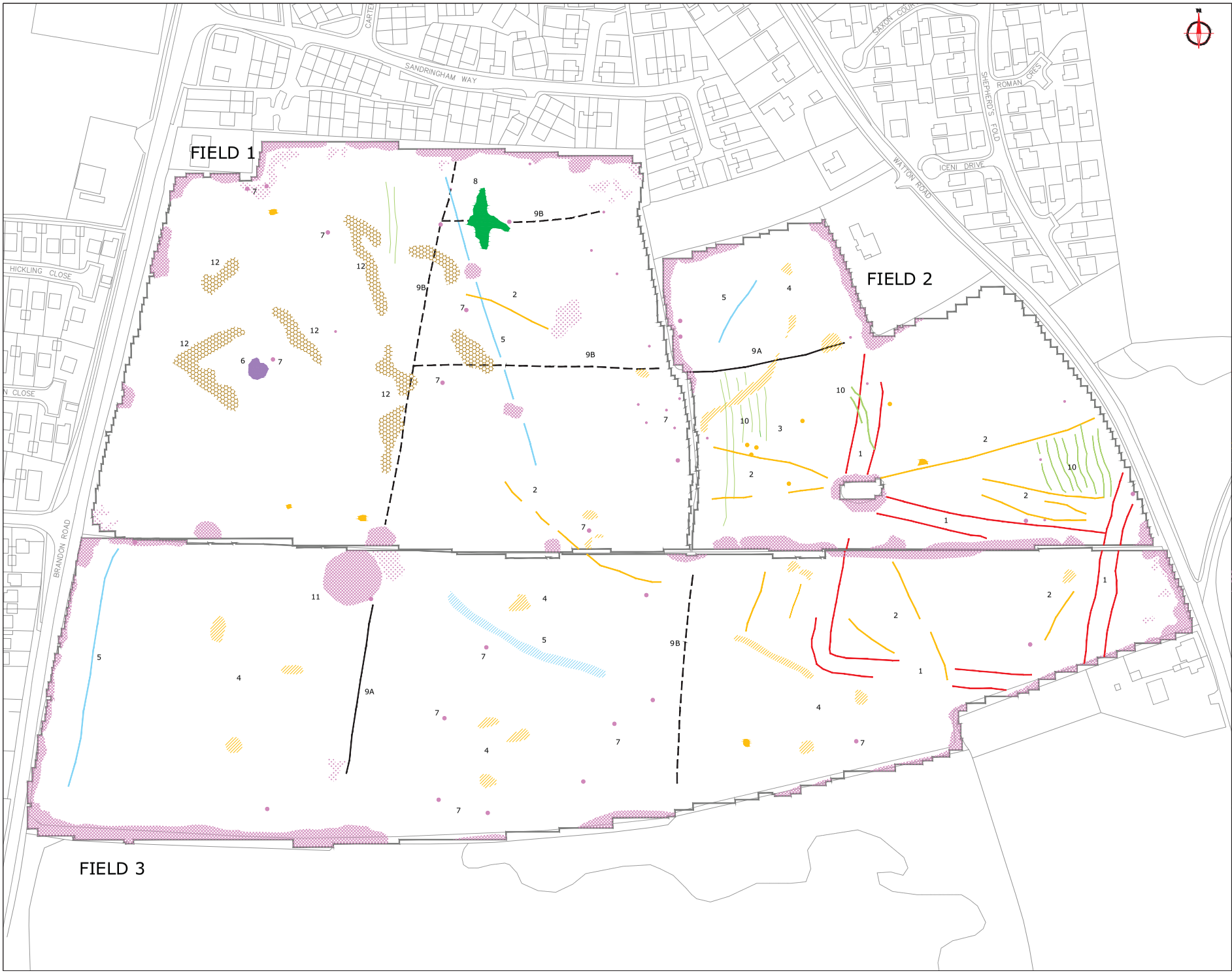
SUMO GROUP MEMBER

Scale 1:1000 0m 10 20 30 40 50 60m

Plot	Checked by	Issue No.
A1	PPB	01
Date	Drawn by	Figure No.
NOV 2011	BPM	04



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

• Stratascan Ltd - 2011

KEY

PROBABLE ARCHAEOLOGY

- Positive anomaly / weak positive anomaly - probable cut feature of archaeological origin
- Negative anomaly / weak negative anomaly - probable bank or earthwork of archaeological origin
- Moderate strength discrete anomaly - probable thermoremanent feature
- Widely spaced curving parallel linear anomalies - probably related to ridge-and-furrow

POSSIBLE ARCHAEOLOGY

- Positive anomaly / weak positive anomaly - possible cut feature of archaeological origin
- Negative anomaly / weak negative anomaly - possible bank or earthwork of archaeological origin
- Moderate strength discrete anomaly - possible thermoremanent feature
- Magnetic spike - probable ferrous object
- Moderate strength positive and negative anomaly of uncertain origin

OTHER ANOMALIES

- Linear anomaly - probable former field boundary as documented on 1887 mapping of the site
- Linear anomaly - probable former field boundary not shown on historic mapping - therefore probably predating 1887.
- Closely spaced parallel linear anomalies - probably related to agricultural activity such as ploughing
- Magnetic disturbance associated with nearby metal object such as service or field boundary
- Scattered magnetic debris
- Area of amorphous magnetic variation - probable natural (e.g. geological or pedological) origin
- 1 Anomaly identification number

Job No.	Survey Date
2932	OCT 2011

Client

ARCHAEOLOGICAL SOLUTIONS

Project Title

GEOPHYSICAL SURVEY - SWANS NEST, SWAFFHAM

Subject

ABSTRACTION & INTERPRETATION OF GRADIOMETER DATA

STRATASCAN™
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SUMO GROUP MEMBER

Scale 1:1000 (0m 10 20 30 40 50 60m)

Plot	Checked by	Issue No.
A1	PPB	01
Date	Drawn by	Figure No.
NOV 2011	BPM	05