M8/15

STRATASCAN

Geophysical Survey Report

LINCOLN EASTERN BYPASS

for

ARCHAEOLOGICAL PROJECT SERVICES

NOVEMBER 2008

J2538

RICHARD SMALLEY BA (HONS) AIFA

REGISTERED IFA ORGANISATION

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Document Title: **Geophysical Survey Report**

Client: **Archaeological Project Services**

Stratascan Job No: **J2538**

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

National Grid Ref: **SK 990 664**

Field Team: **Dave Miller, Alec Phillips, Allen Wright and Mike Hartwell**

Project Manager: **Simon Stowe BSc. (Hons)**

Report written by: **Richard Smalley BA (Hons) AIFA**

CAD illustration by: **Richard Smalley BA (Hons) AIFA**

Checked by: **Peter Barker CEng MICE MCIWEM MIFA**

Stratascan Ltd.

Vineyard House
Upper Hook Road
Upton upon Severn
WR8 0SA

Tel: 01684 592266
Fax: 01684 594142
Email: ppb@stratascan.co.uk

www.stratascan.co.uk

LIST OF FIGURES

1 SUMMARY OF RESULTS

The geophysical survey undertaken east of Lincoln has identified a number of features of a possible archaeological origin. Positive anomalies indicate the presence of cut features such as ditches and negative anomalies represent possible former earthworks. Discrete positive anomalies have been interpreted as being related to pits of a possible archaeological origin.

2 INTRODUCTION

2.1 Background synopsis

Stratascan were commissioned to undertake a geophysical survey of an area outlined for development as a bypass east of Lincoln. This survey forms part of an archaeological investigation being undertaken by Archaeological Project Services.

2.2 Site location

The site is located east of Lincoln between the A15 and the A158 Wragby Road at OS ref. SK 990 664.

2.3 Description of site

The survey area consists of approximately 27.8ha of agricultural arable land to the east of Lincoln.

2.4 Geology and soils

The underlying geology is Inferior Oolite (British Geological Survey South Sheet, Fourth Edition Solid, 2001). The drift geology for the survey area includes sand, mud, silt and clay (British Geological Survey South Sheet, First Edition Quaternary 1977).

The overlying soils are known as Marcham which are typical brown rendzina soils. These consist of shallow well drained calcareous coarse and fine loamy soils over limestone associated with similar deeper soils (Soil Survey of England and Wales, Sheet 4 Eastern England).

2.5 Site history and archaeological potential

A desk based assessment provided by the client indicates that sites of a medieval and Roman origin have been identified within or in close proximity to the footprint of the new road alignment. These sites have been identified through aerial photography, trial trenching and consultation of the HER. Fifty sites of cultural heritage importance are located within 200m of the site. These factors all contribute to the potential for the identification of anomalies of an archaeological origin within the gradiometer data.

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 13 days from 27th October 2008. Weather conditions during the survey were cold but dry.

3.2 Grid locations

The location of the survey grids has been plotted in Figures 2 and 3 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

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTesla (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 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. The collection of data at 0.5m 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 job, 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*. 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. *Despike* (useful for display and allows further processing functions to be carried out more effectively by removing extreme data values)

   Geoplot parameters:
   X radius = 1, y radius = 1, threshold = 3 std. dev.
   Spike replacement = mean

2. *Zero mean traverse* (sets the background mean of each traverse within a grid to zero and is useful for removing striping effects)

   Geoplot parameters:
   Least mean square fit = off

A de-stagger has been carried out on a number of grids to correct the displacement of anomalies caused by alternate zigzag traverses which are sometimes observable in gradiometer data.

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 greyscale (Figures 4 and 5) and trace plots (Figures 6, 7, 8 and 9), together with a greyscale plot of the processed data (Figures 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42 and 44). Magnetic anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site (Figures 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45).

4 RESULTS

The abstracted anomalies have been divided into varying types. The types have then been tabulated and assessed as to the level of activity in each area according to the following table.

Level of activity	
-	None
*	Minimal
**	Moderate
***	Significant

Blue cells indicate anomalies of archaeological potential

Anomaly Type	Description	PARCEL A	PARCEL J	PARCEL K	PARCEL L
1	Discrete positive anomaly – possible pit	**	***	**	**
2	Positive anomaly with associated negative response – ferrous object	***	**	**	*
3	Magnetic disturbance – associated with pipe/cable	**	-	-	-
4	Positive linear anomaly – agricultural mark	**	**	***	***
5	Linear debris – unknown origin	-	-	-	-
6	Positive linear anomaly – cut feature of possible archaeological origin	*	***	**	**
7	Negative Linear anomaly – possible bank or earthwork of archaeological origin	-	-	*	-
8	Linear anomaly – possibly related to land drains	-	-	-	-
9	Positive area anomaly – cut feature of possible archaeological origin	-	***	-	**
10	Negative area anomaly – possible bank or earthwork of archaeological origin	-	*	-	-
11	Weak positive area anomaly	-	-	-	-
12	Weak negative area anomaly	-	-	-	-
13	Magnetic disturbance associated with nearby field boundary	**	-	*	-
14	Magnetic disturbance associated with nearby metallic objects	**	*	-	-
15	Magnetic debris	**	**	-	-
16	Area of magnetic variation – possible geological/pedological response	-	**	**	*
17	Thermoremnant anomaly – possible former area of burning such as a bonfire or kiln.	-	-	-	-
18	Strong magnetic debris – probably associated with made or disturbed ground.	-	-	-	-

Anomaly Type	Description	PARCEL M	PARCEL N	PARCEL O	PARCEL P
1	Discrete positive anomaly – possible pit	-	*	*	*
2	Positive anomaly with associated negative response – ferrous object	-	*	*	*
3	Magnetic disturbance – associated with pipe/cable	-	**	-	**
4	Positive linear anomaly – agricultural mark	***	**	-	-
5	Linear debris – unknown origin	-	-	-	-
6	Positive linear anomaly – cut feature of possible archaeological origin	-	*	-	**
7	Negative Linear anomaly – possible bank or earthwork of archaeological origin	-	-	-	-
8	Linear anomaly – possibly related to land drains	-	-	-	-
9	Positive area anomaly – cut feature of possible archaeological origin	*	*	-	*
10	Negative area anomaly – possible bank or earthwork of archaeological origin	-	-	-	-
11	Weak positive area anomaly	-	-	-	-
12	Weak negative area anomaly	-	-	-	-
13	Magnetic disturbance associated with nearby field boundary	-	*	**	*
14	Magnetic disturbance associated with nearby metallic objects	-	*	-	-
15	Magnetic debris	-	-	-	-
16	Area of magnetic variation – possible geological/pedological response	-	**	***	-
17	Thermoremnant anomaly – possible former area of burning such as a bonfire or kiln.	-	-	-	-
18	Strong magnetic debris – probably associated with made or disturbed ground.	*	-	-	-

Anomaly Type	Description	PARCEL Q	PARCEL R	PARCEL S	PARCEL T
1	Discrete positive anomaly – possible pit	**	**	**	*
2	Positive anomaly with associated negative response – ferrous object	*	*	**	*
3	Magnetic disturbance – associated with pipe/cable	-	-	-	-
4	Positive linear anomaly – agricultural mark	**	*	***	***
5	Linear debris – unknown origin	-	-	-	-
6	Positive linear anomaly – cut feature of possible archaeological origin	**	***	***	*
7	Negative Linear anomaly – possible bank or earthwork of archaeological origin	-	-	-	*
8	Linear anomaly – possibly related to land drains	-	-	-	-
9	Positive area anomaly – cut feature of possible archaeological origin	-	**	*	*
10	Negative area anomaly – possible bank or earthwork of archaeological origin	-	-	-	-
11	Weak positive area anomaly	-	-	-	-
12	Weak negative area anomaly	-	-	-	-
13	Magnetic disturbance associated with nearby field boundary	-	-	-	*
14	Magnetic disturbance associated with nearby metallic objects	-	-	-	-
15	Magnetic debris	-	-	-	-
16	Area of magnetic variation – possible geological/pedological response	-	-	-	-
17	Thermoremnant anomaly – possible former area of burning such as a bonfire or kiln.	-	-	-	-
18	Strong magnetic debris – probably associated with made or disturbed ground.	-	-	-	-

Anomaly Type	Description	PARCEL U	PARCEL V	PARCEL W	
1	Discrete positive anomaly – possible pit	*	**	**	
2	Positive anomaly with associated negative response – ferrous object	*	*	**	
3	Magnetic disturbance – associated with pipe/cable	**	-	-	
4	Positive linear anomaly – agricultural mark	***	**	*	
5	Linear debris – unknown origin	-	-	-	
6	Positive linear anomaly – cut feature of possible archaeological origin	**	**	-	
7	Negative Linear anomaly – possible bank or earthwork of archaeological origin	-	-	-	
8	Linear anomaly – possibly related to land drains	-	-	-	
9	Positive area anomaly – cut feature of possible archaeological origin	*	-	-	
10	Negative area anomaly – possible bank or earthwork of archaeological origin	-	-	-	
11	Weak positive area anomaly	-	-	-	
12	Weak negative area anomaly	-	-	-	
13	Magnetic disturbance associated with nearby field boundary	-	-	*	
14	Magnetic disturbance associated with nearby metallic objects	*	-	-	
15	Magnetic debris	-	-	-	
16	Area of magnetic variation – possible geological/pedological response	-	-	-	
17	Thermoremnant anomaly – possible former area of burning such as a bonfire or kiln.	-	-	-	
18	Strong magnetic debris – probably associated with made or disturbed ground.	-	-	-	

5 DISCUSSION

The gradiometer survey undertaken over the footprint of the proposed Lincoln bypass has identified a number of anomalies of a possible archaeological origin. The data collected is of good quality and only a small number of areas have been affected by magnetic disturbance.

From the above tables it is possible to identify which parcels have the most potential for archaeological deposits. The areas identified to have the most potential include Parcels J, L, Q, R and S.

Parcel J contains a large number of positive anomalies indicating the presence of cut features such as ditches. These anomalies seem to represent former field boundaries; however rectilinear features may indicate the presence of enclosures. A large number of discrete positive anomalies have also been identified in this parcel. These anomalies have been interpreted as pits of a possible archaeological origin.

Parcel L contains two large parallel positive linear anomalies and a number of discrete positive anomalies. These anomalies indicate the presence of cut features such as ditches and pits of a possible archaeological origin.

A number of complex cut features indicating ditches of a possible archaeological origin are evident in Parcels Q and R. These anomalies have been interpreted as being of an archaeological nature however it may be that they are related to geological features such as those identified in other parcels.

A large cut feature is evident in the southern limits of Parcel S. It is interesting to note a small rectilinear enclosure annexed to the south western limits of this anomaly. The majority of anomalies of an archaeological origin in Parcel S are located in its southern most region. This may indicate a centre of activity in this area.

From Parcel O northwards a number of complex patterns of positive linear anomalies can be noted. These anomalies are likely to be of a geological origin such as periglacial cracking. However, it is difficult to differentiate between these cracking patterns and anomalies that may be of an archaeological origin. Therefore it may be prudent to investigate a number of these anomalies further.

6 CONCLUSION

The geophysical survey undertaken east of Lincoln has identified a number of anomalies of a possible archaeological origin. The majority of the archaeological features identified within the survey are evident in the central and northern regions of the main survey area suggesting centres of activity in these particular zones, namely Parcels J, L, Q, R and S.

7 REFERENCES

British Geological Survey, 2001. *Geological Survey Ten Mile Map, South Sheet, Fourth Edition (Solid)*. British Geological Society.

Soil Survey of England and Wales, 1983. *Soils of England and Wales, Sheet 5 Southwest England.*

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 *thermoremnant* 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.

Thermoremnance 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. Thermoremnant archaeological features can include hearths and kilns and material such as brick and tile may be magnetised through the same process.

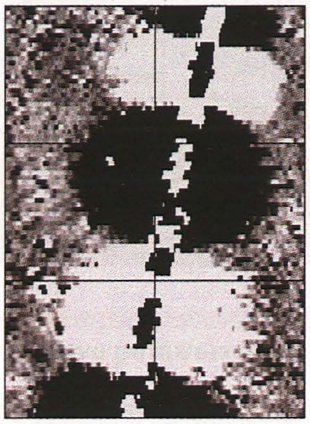
Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement 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.

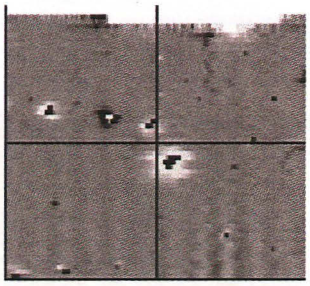
APPENDIX B – Glossary of magnetic anomalies

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

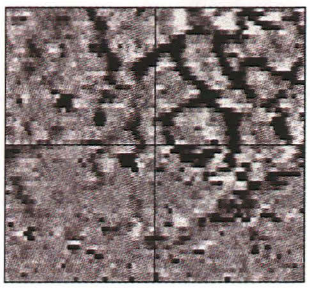


This consists of a single positive anomaly with an associated negative response. There should be no separation between the two polarities of response. These responses will be created by a single feature. The interpretation of the anomaly will depend on the magnitude of the magnetic measurements. A very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

Positive anomaly with associated negative response

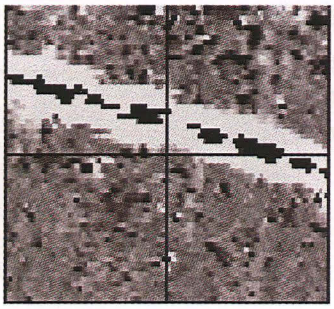
See bipolar and dipolar.

Positive linear



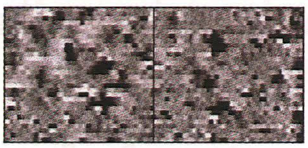
A linear response which is entirely positive in polarity. These are usually related to infilled cut features where the fill material is magnetically enhanced compared to the surrounding matrix. They can be caused by ditches of an archaeological origin, but also former field boundaries, ploughing activity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

Positive linear anomaly with associated negative response



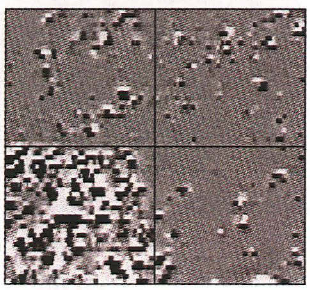
A positive linear anomaly which has a negative anomaly located adjacently. This will be caused by a single feature. In the example shown this is likely to be a single length of wire/cable probably relating to a modern service. Magnetically weaker responses may relate to earthwork style features and field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

Positive point/area



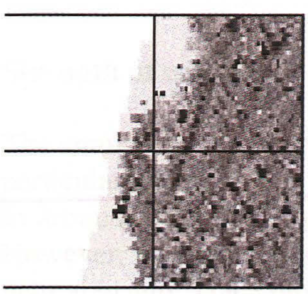
These are generally spatially small responses, perhaps covering just 3 or 4 reading nodes. They are entirely positive in polarity. Similar to positive linear anomalies they are generally caused by infilled cut features. These include pits of an archaeological origin, possible tree bowls or other naturally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

Magnetic debris



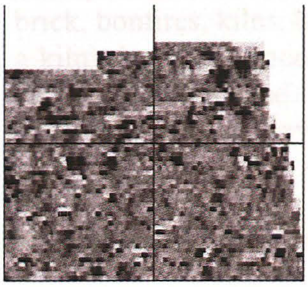
Magnetic debris consists of numerous dipolar responses spread over an area. If the amplitude of response is low (+/-3nT) then the origin is likely to represent general ground disturbance with no clear cause, it may be related to something as simple as an area of dug or mixed earth. A stronger anomaly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

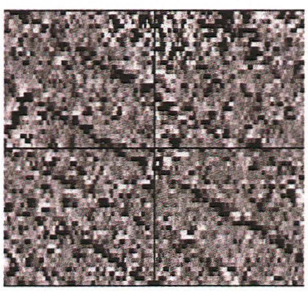


A linear response which is entirely negative in polarity. These are generally caused by earthen banks where material with a lower magnetic magnitude relative the background top soil is built up. See also ploughing activity.

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).

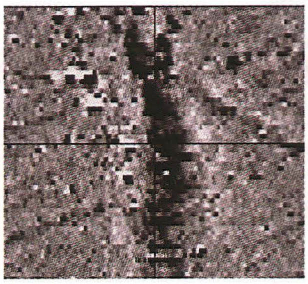
Strength of response

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. Trace plots are used to show the amplitude of response.

Thermoremnant response

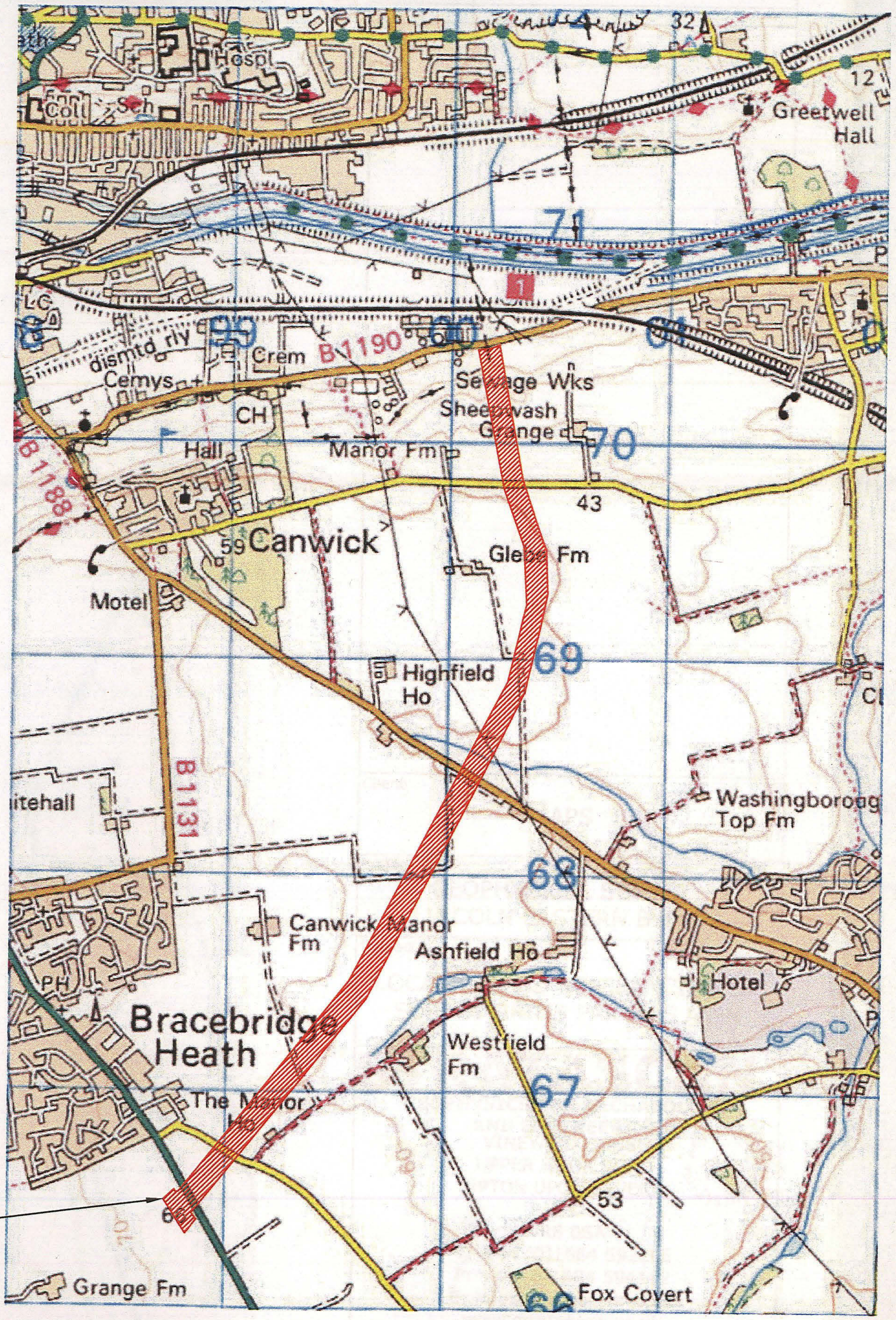
A feature which has been subject to heat may result in it acquiring a magnetic field. This can be anything up to approximately +/-100 nT in value. These features include clay fired drains, brick, bonfires, kilns, hearths and even pottery. If the heat application has occurred insitu (e.g. a kiln) then 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).

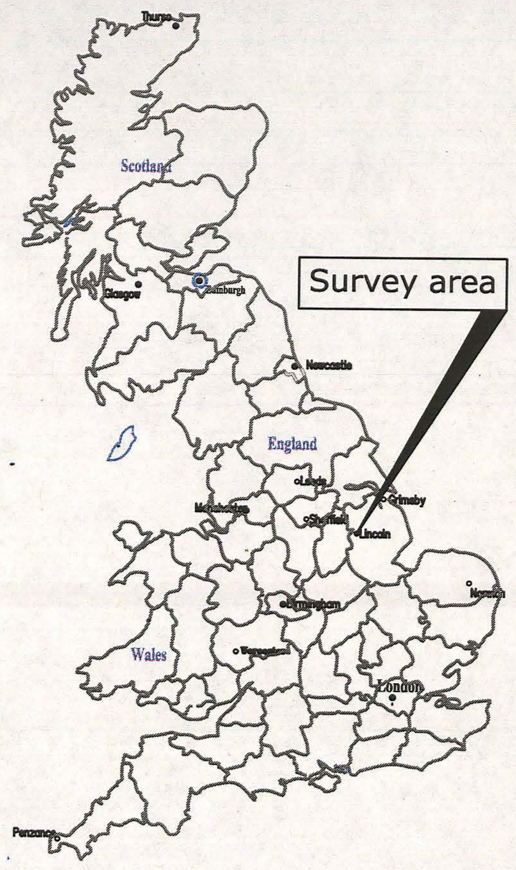
Weak background variations



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.

OS 100km square = SK





Amendments

Issue No.	Date	Description
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Site centred on NGR: SK 990 664

Client: APS

Project Title: GEOPHYSICAL SURVEY - LINCOLN EASTERN BYPASS

Job No. 2538

Subject: LOCATION PLAN OF SURVEY AREA

STRATASCAN™

GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING

VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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Scale: 1:25 000 (0m 500 1000m)

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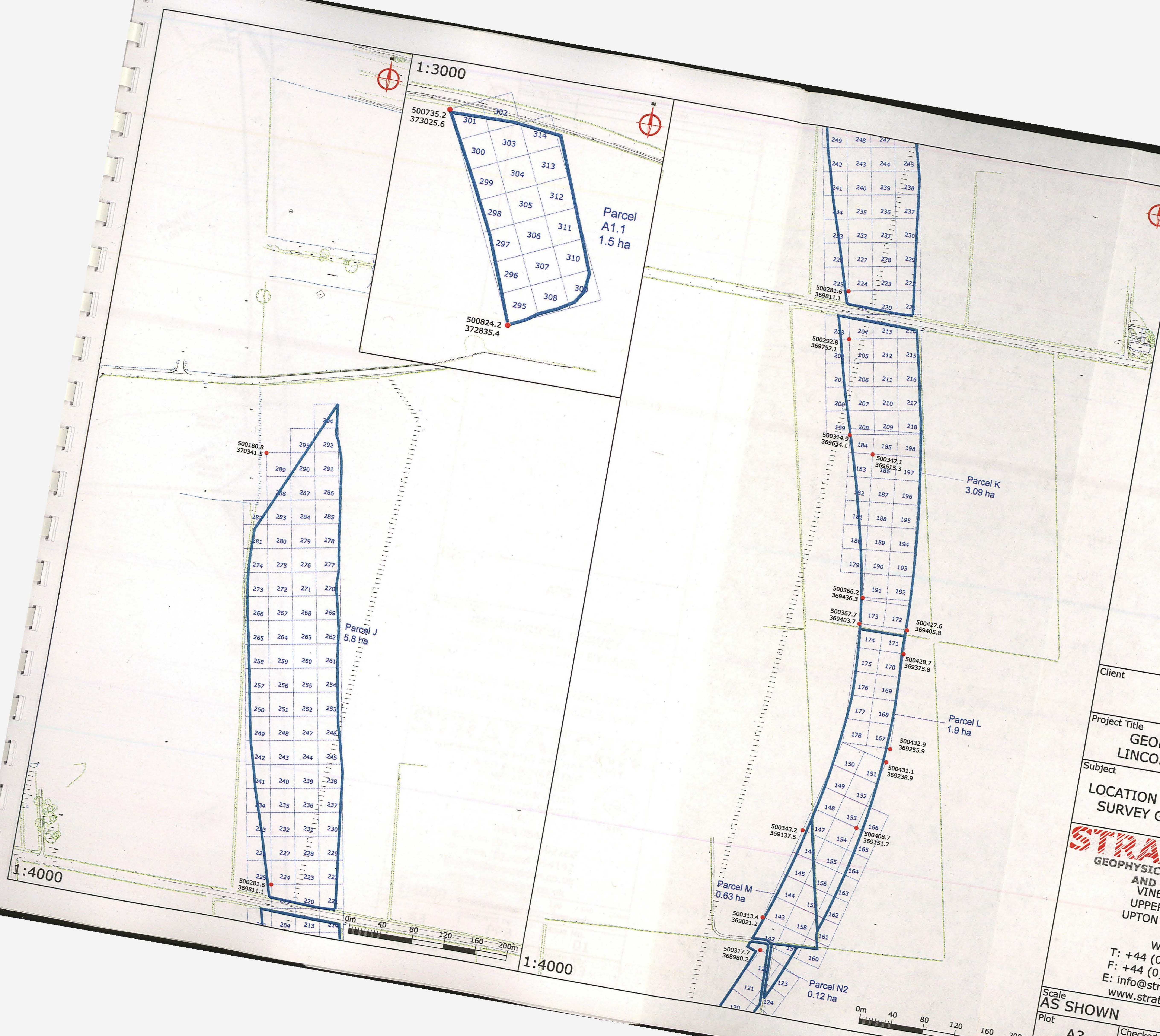

Issue No.	Date	Amendments Description
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Client

APS

Project Title

Job No. 2538

GEOPHYSICAL SURVEY - LINCOLN EASTERN BYPASS

Subject

LOCATION AND REFERENCING OF SURVEY GRIDS PARCELS A1-N

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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Scale
AS SHOWN

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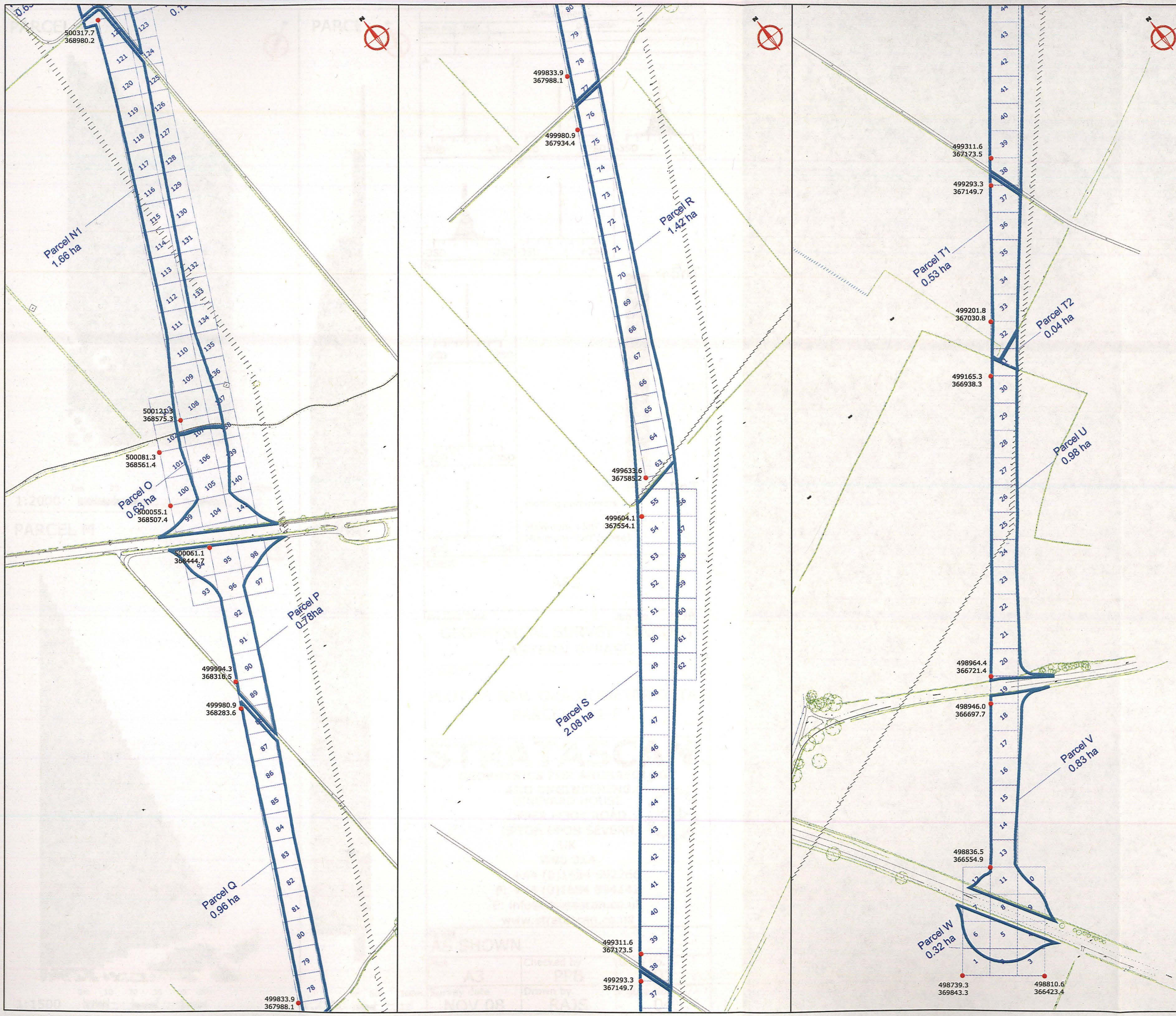

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Client

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Project Title — Job No. 2538

GEOPHYSICAL SURVEY - LINCOLN EASTERN BYPASS

Subject

LOCATION AND REFERENCING OF SURVEY GRIDS PARCELS N-W

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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Scale 1:4000 (0m 40 80 120 160 200m)

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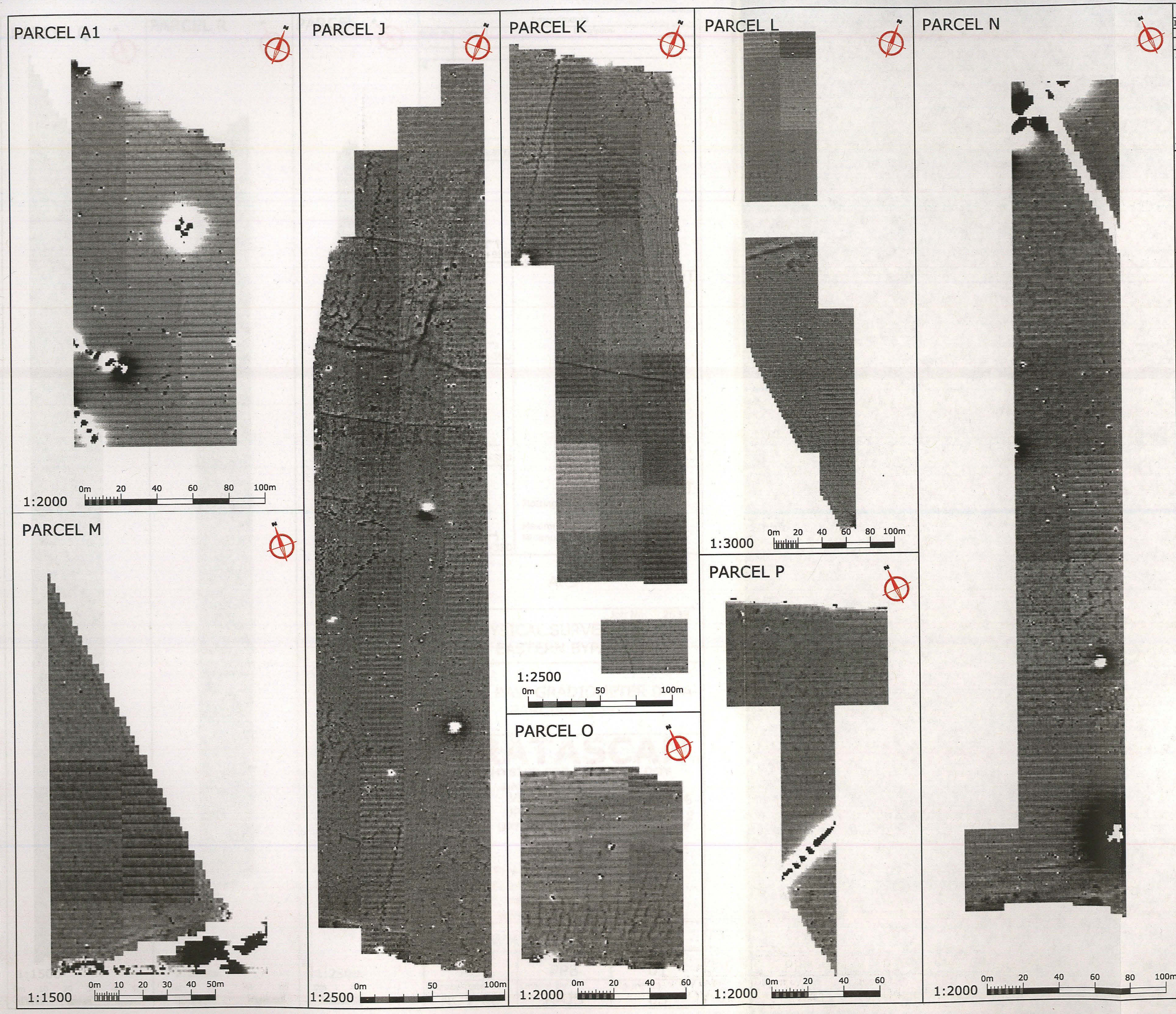
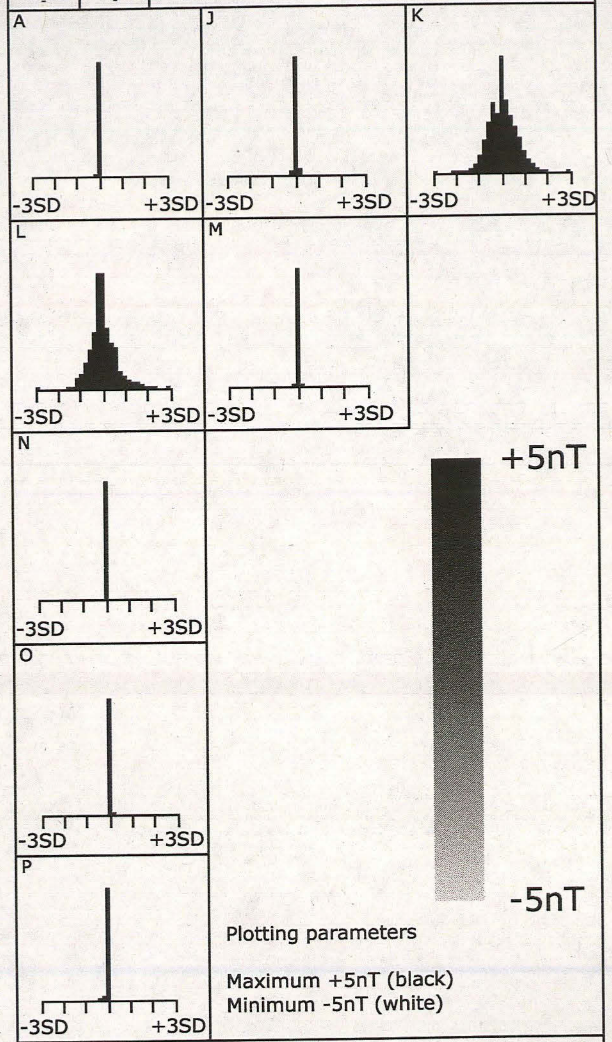
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	03



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-



Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF RAW GRADIOMETER DATA-PARCELS A1-P

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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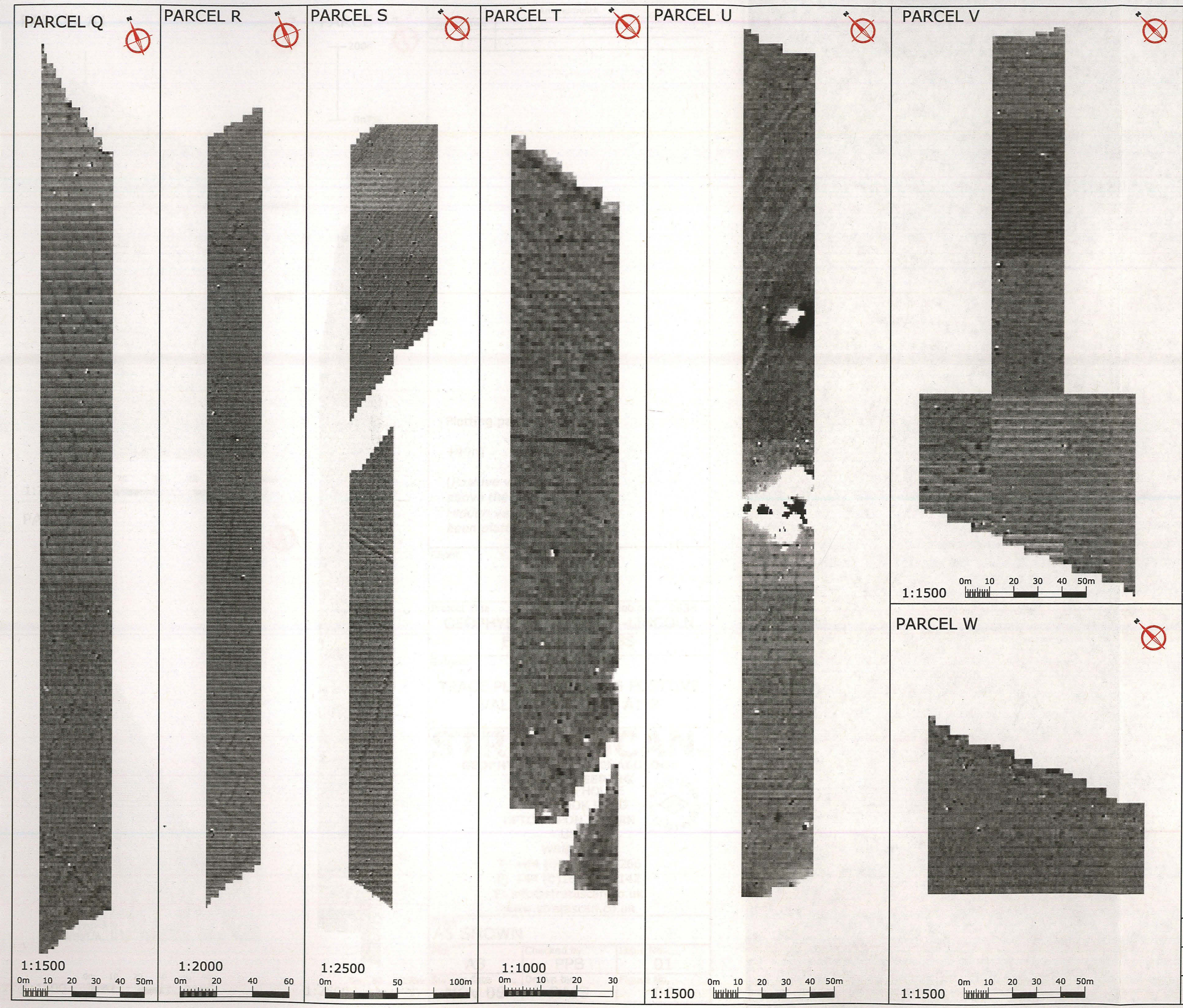
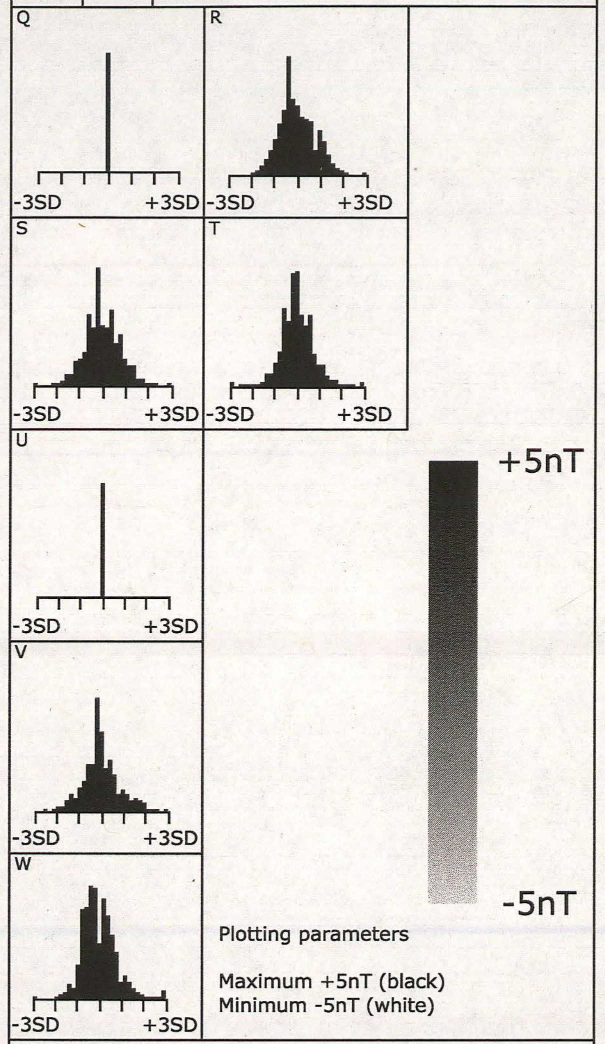
Scale		
AS SHOWN		
Plot: A3	Checked by: PPB	Issue No.: 01
Survey date: NOV 08	Drawn by: RAJS	Figure No.: 04



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-



Plotting parameters

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

Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF RAW GRADIOMETER DATA- PARCELS Q-W

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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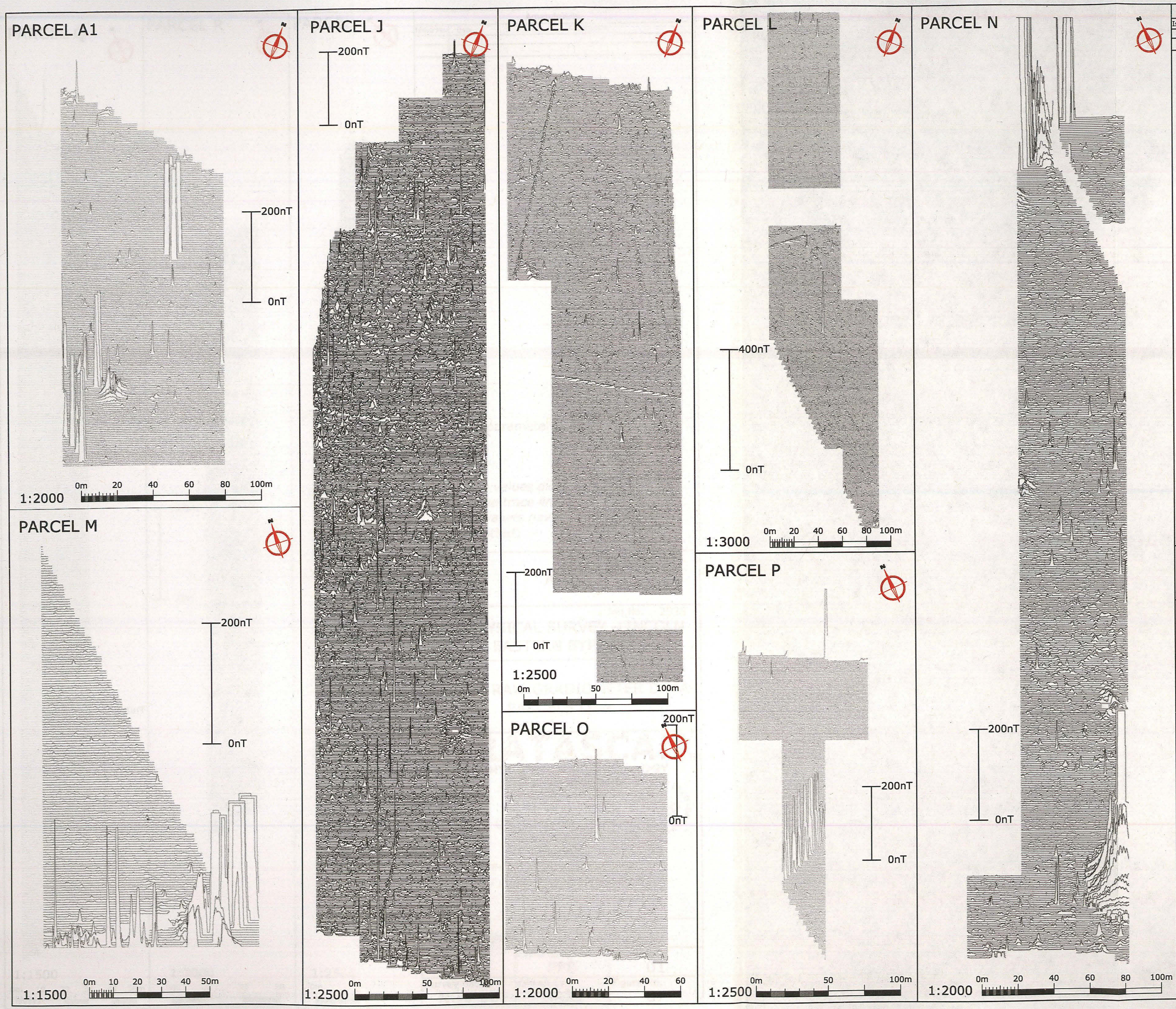
Scale		
AS SHOWN		
Plot: A3	Checked by: PPB	Issue No.: 01
Survey date: NOV 08	Drawn by: RAJS	Figure No.: 05



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

+40nT

(Positive values displace above the trace line. Hidden values have not been plotted)

Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

TRACE PLOTS SHOWING POSITIVE VALUES- PARCELS A1-P

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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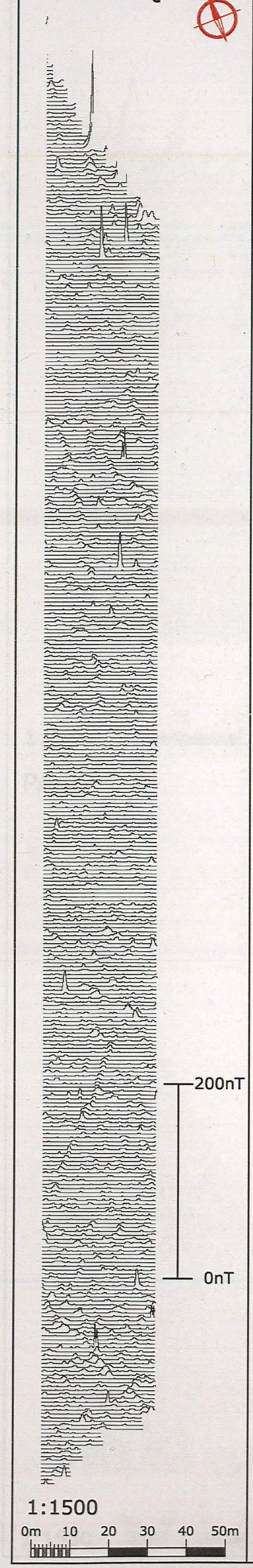
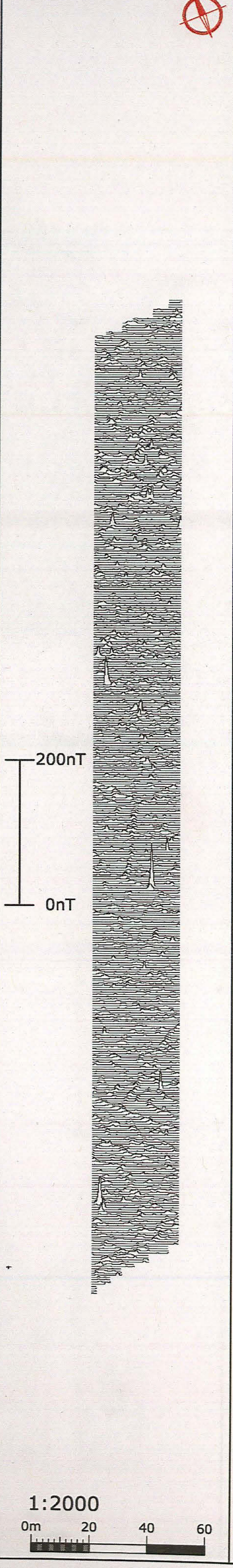
Scale		
AS SHOWN		
Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	06

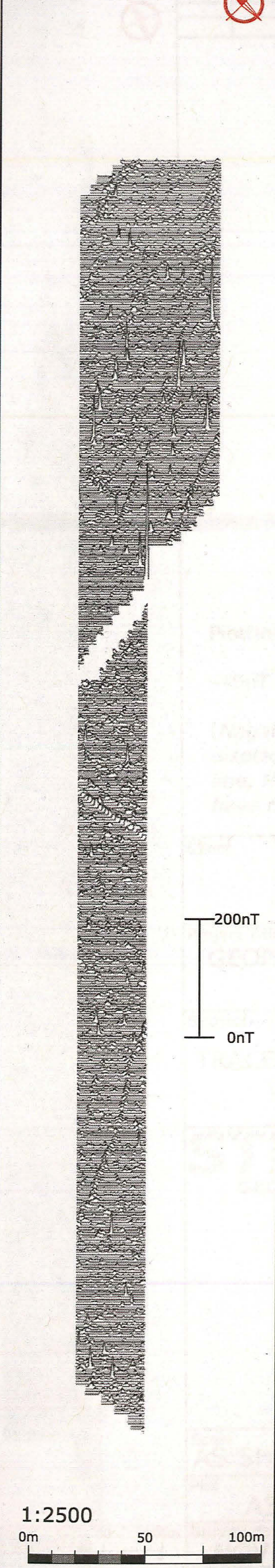
PARCEL Q



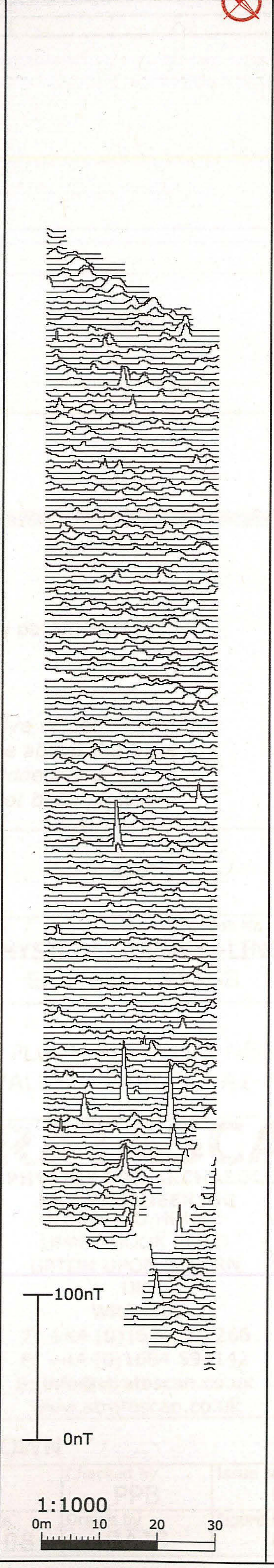
PARCEL R



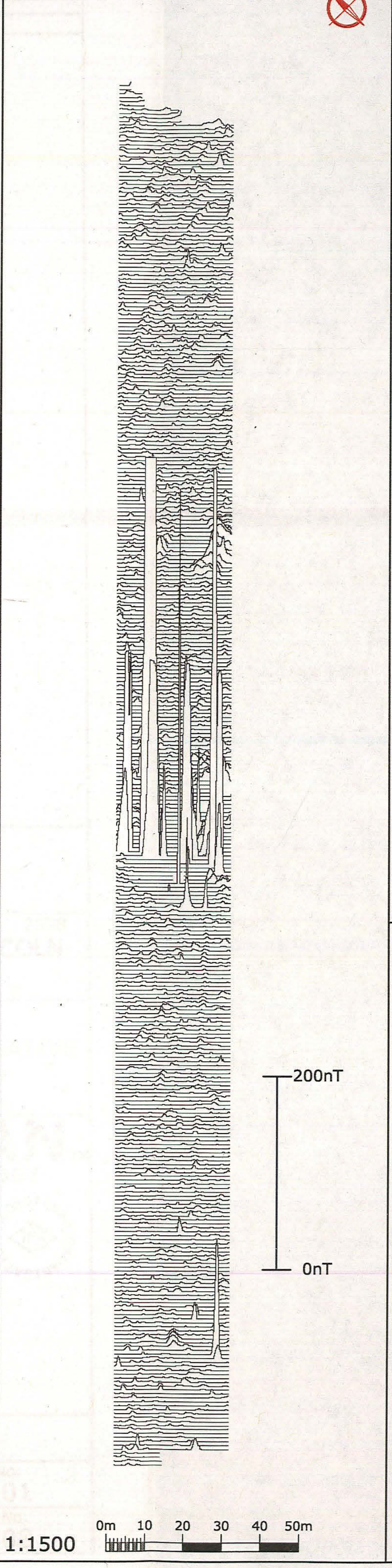
PARCEL S



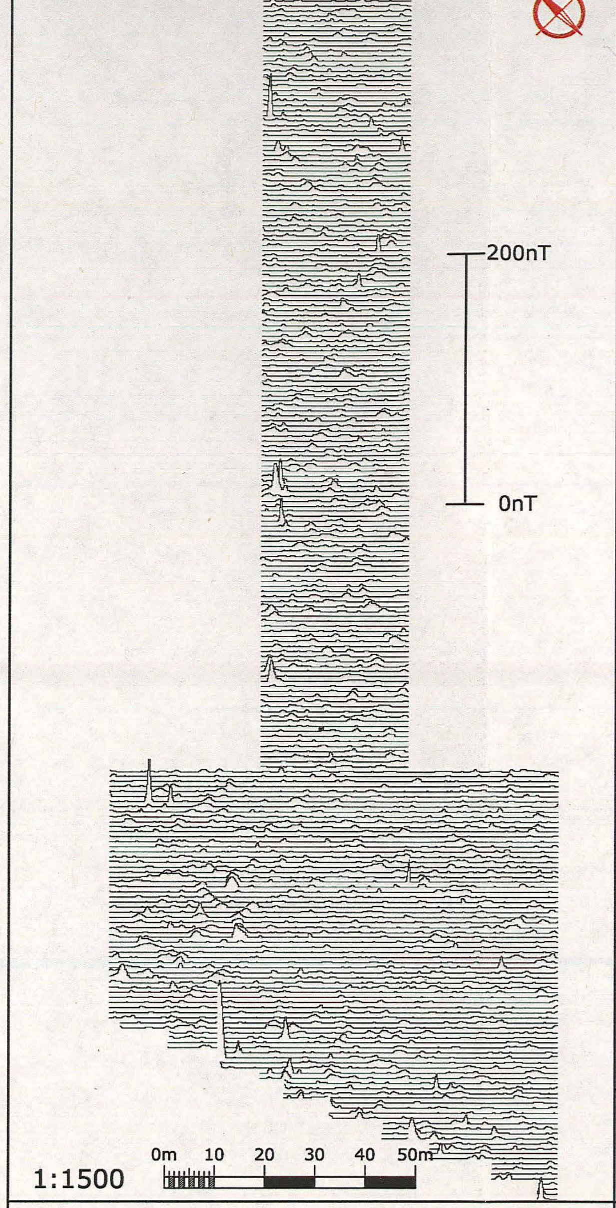
PARCEL T



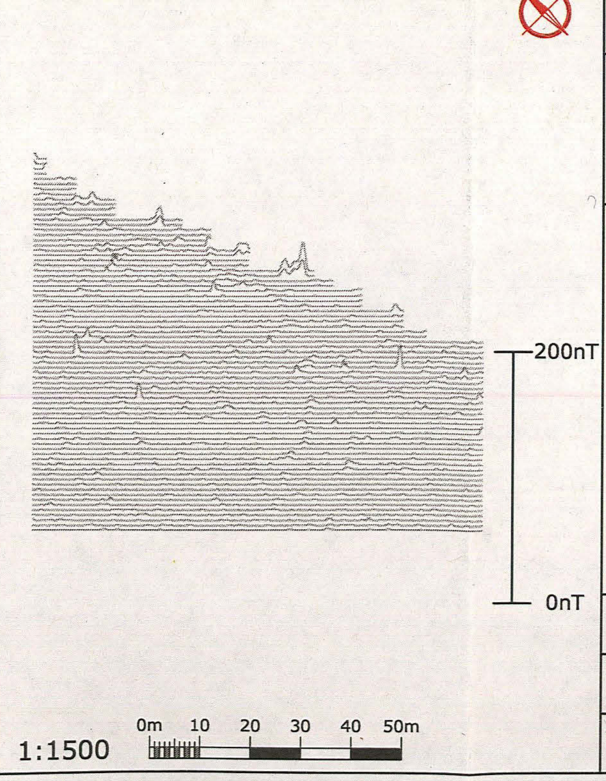
PARCEL U



PARCEL V



PARCEL W



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

+40nT

(Positive values displace above the trace line. Hidden values have not been plotted)

Client

APS

Project Title | Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF RAW GRADIOMETER DATA- PARCELS Q-W

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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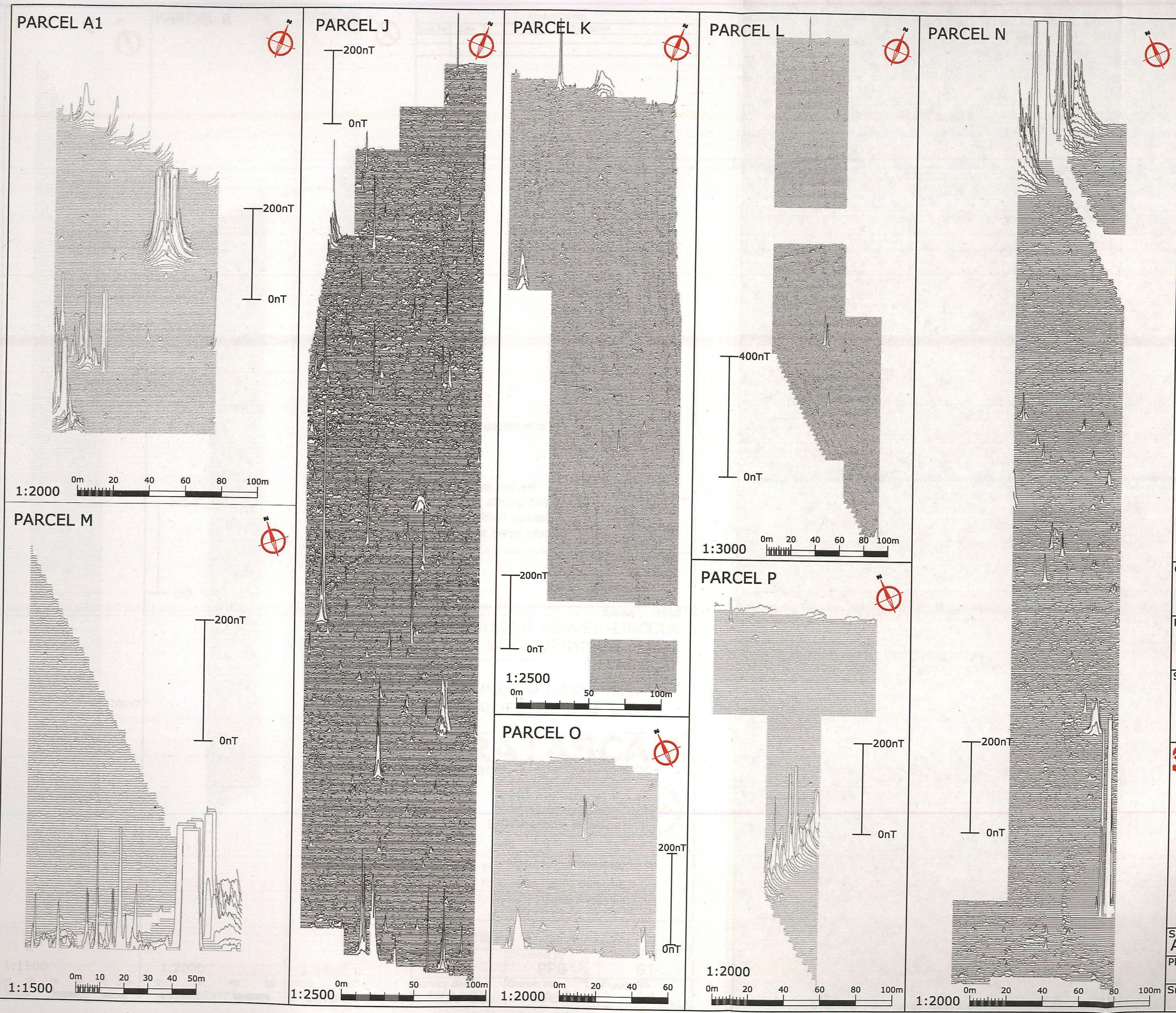
Scale		
AS SHOWN		
Plot: A3	Checked by: PPB	Issue No.: 01
Survey date: NOV 08	Drawn by: RAJS	Figure No.: 07



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

-40nT

(Negative values displace above the trace line. Hidden values have not been plotted)

Client
APS

Project Title
Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
TRACE PLOTS SHOWING NEGATIVE VALUES- PARCELS A1-P

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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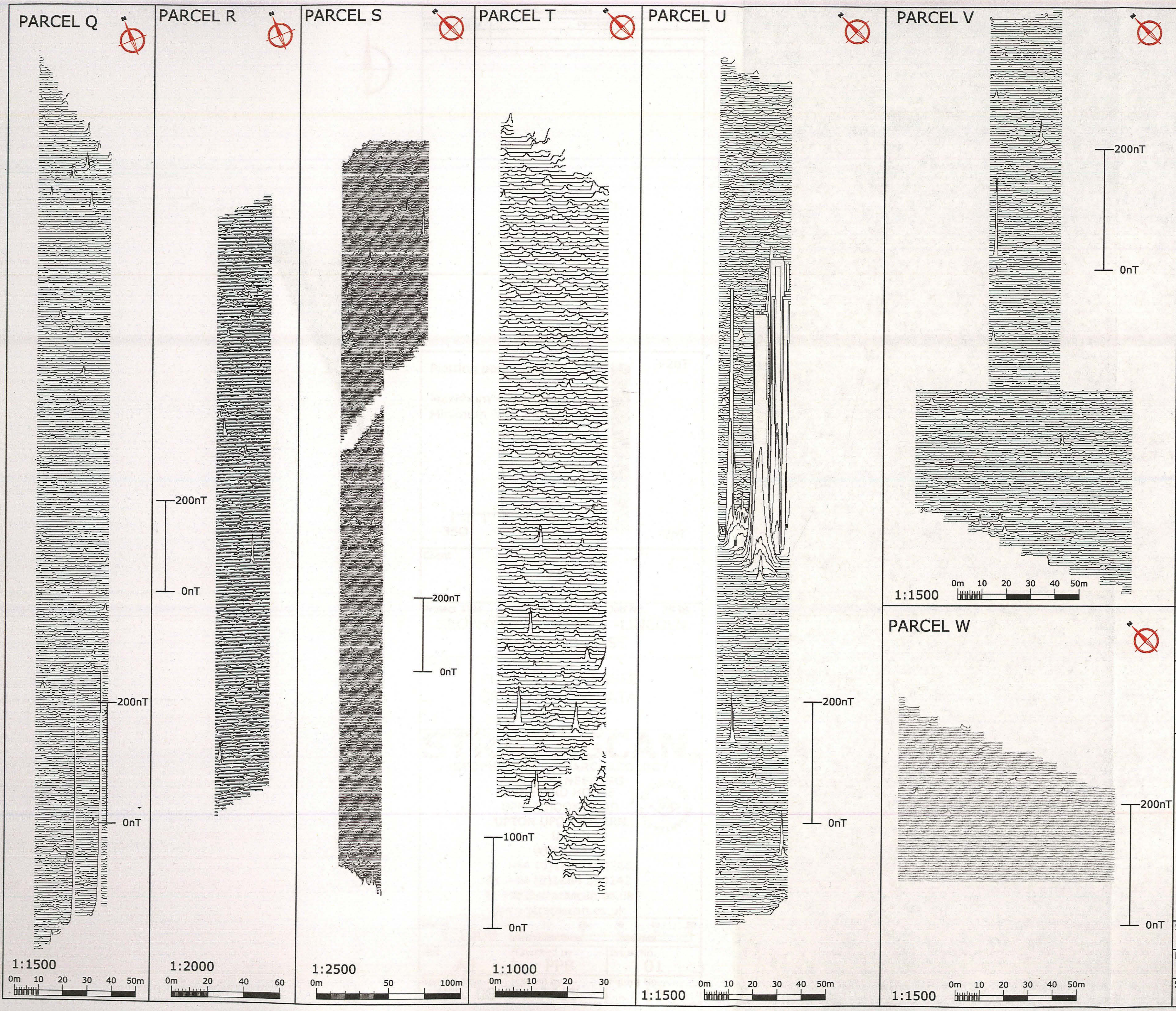
Scale		
AS SHOWN		
Plot: A3	Checked by: PPB	Issue No.: 01
Survey date: NOV 08	Drawn by: RAJS	Figure No.: 08



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

-40nT

(Negative values displace above the trace line. Hidden values have not been plotted)

Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

TRACE PLOT SHOWING NEGATIVE VALUES- PARCELS Q-W

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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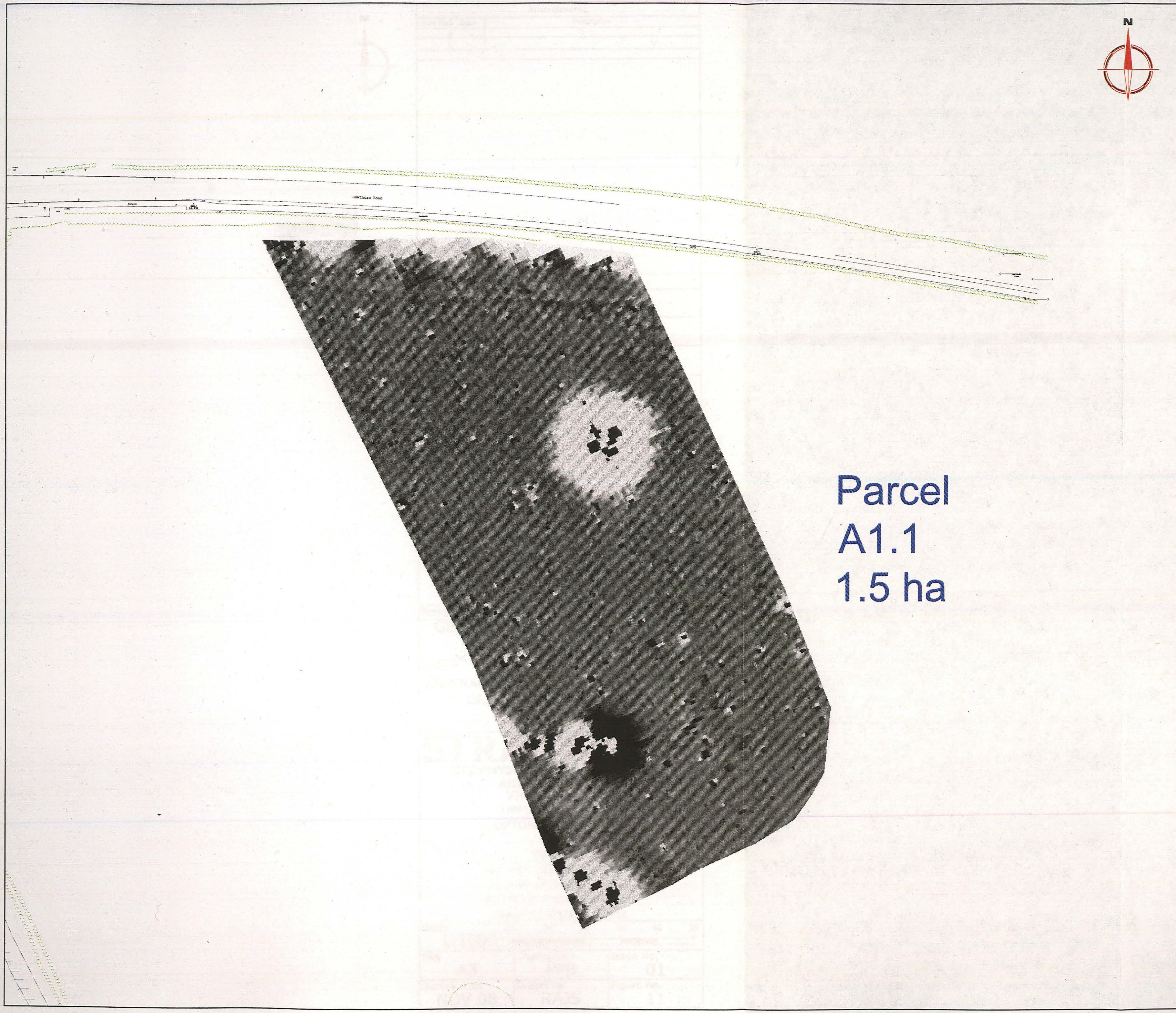
Scale		
AS SHOWN		
Plot: A3	Checked by: PPB	Issue No.: 01
Survey date: NOV 08	Drawn by: RAJS	Figure No.: 09



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA- PARCEL A1

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	10

Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Magnetic disturbance - associated with pipe/cable
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby service or field boundary
	Magnetic disturbance of uncertain origin
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL A1

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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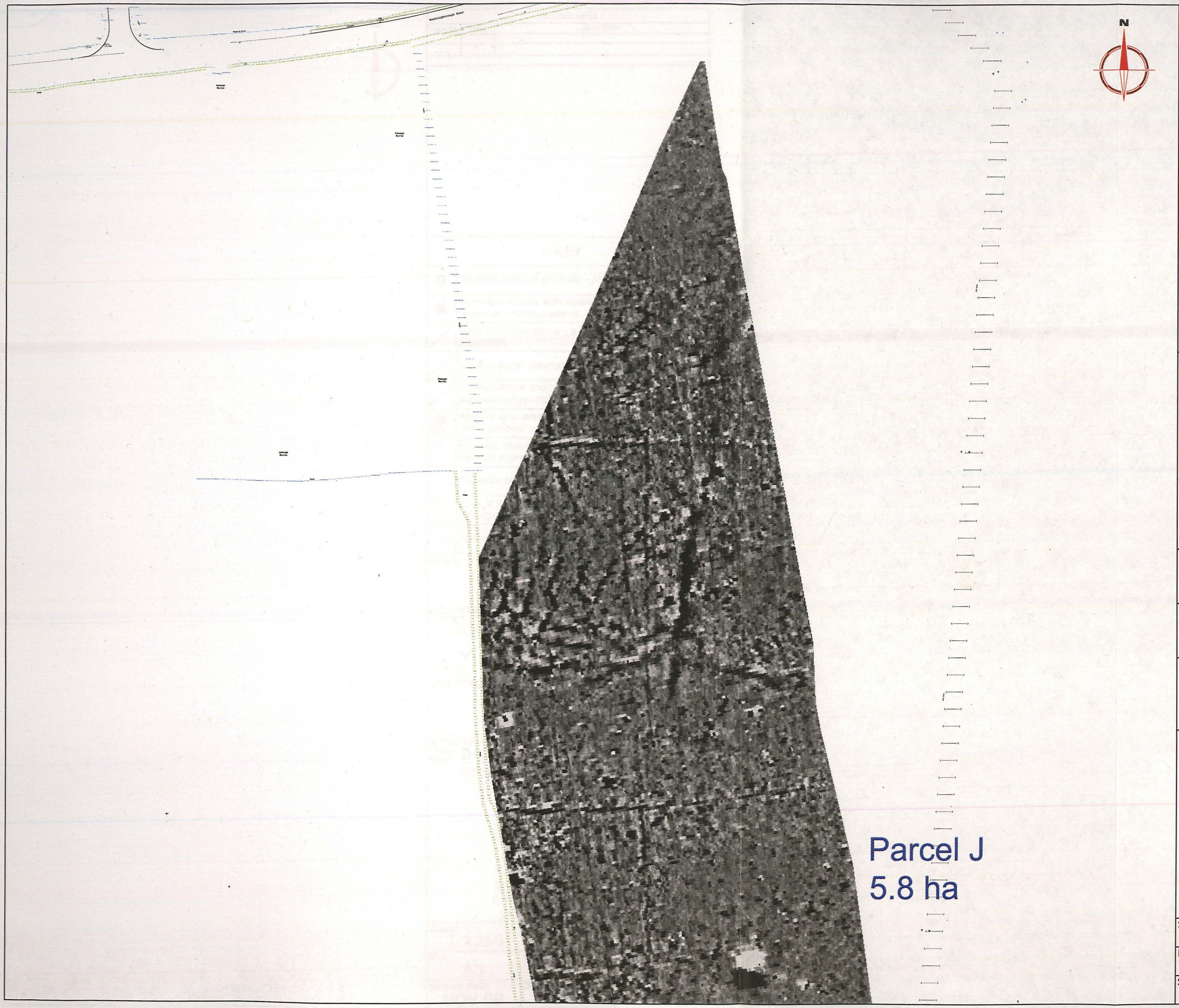
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	11



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client
APS

Project Title — Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA- PARCEL J (NORTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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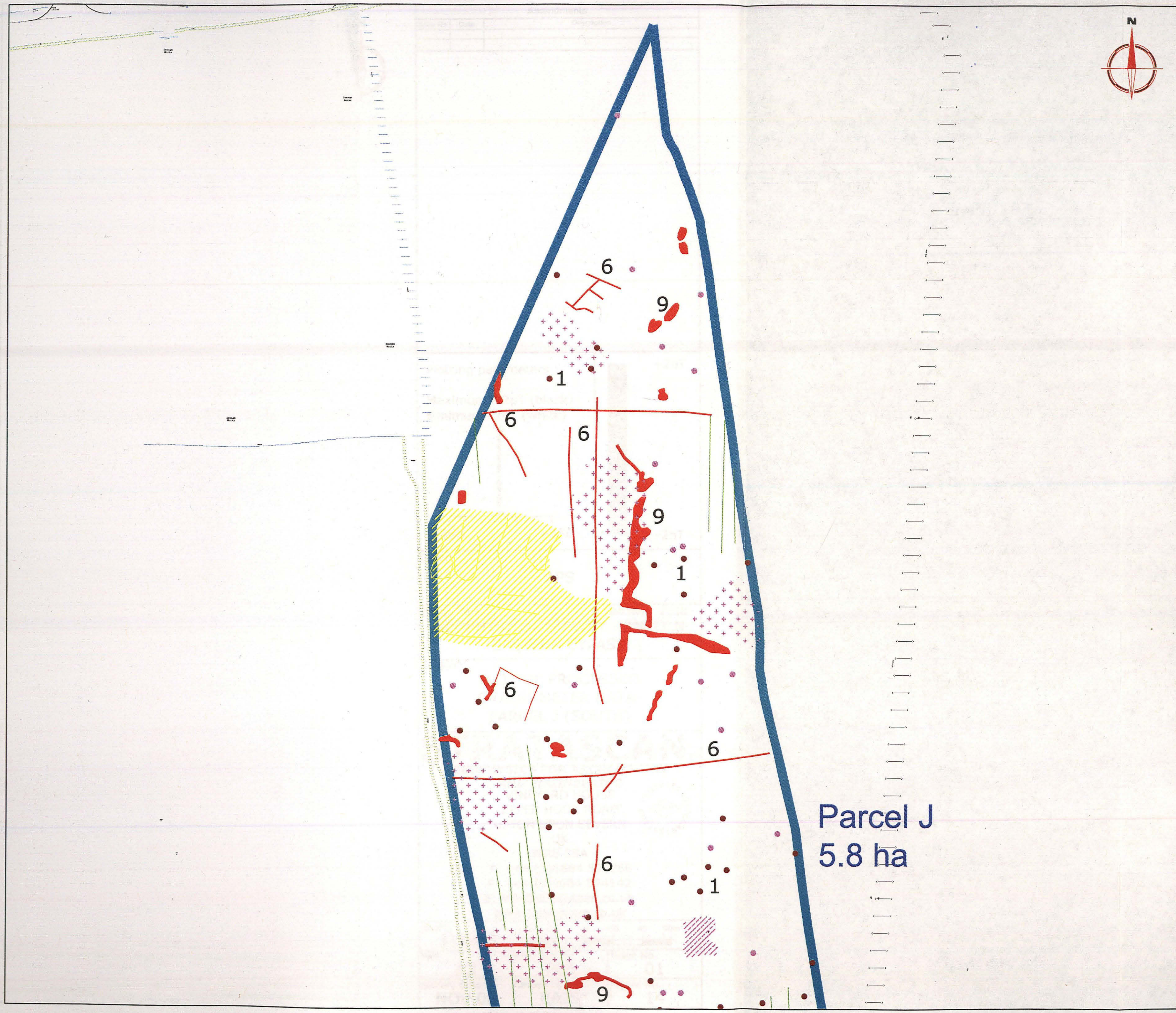
Scale 1:1250 — 0m 10 20 30 40 50m

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	12



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Magnetic disturbance - associated with pipe/cable
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby metallic objects
	Magnetic debris
	Area of magnetic variation - possible geological/pedological response
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL J (NORTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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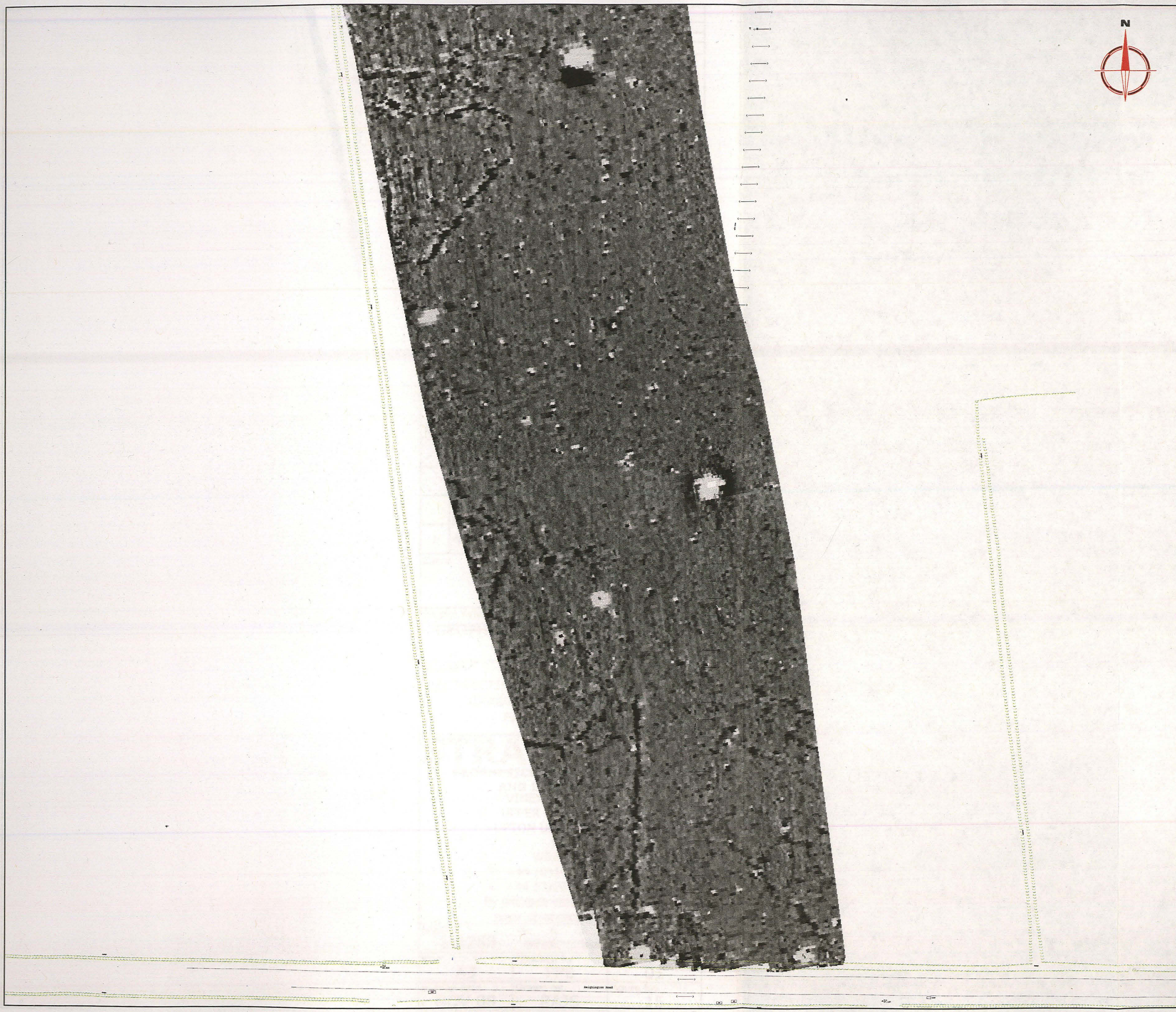
Scale		
1:1250	0m 10 20 30 40 50m	
Plot A3	Checked by PPB	Issue No. 01
Survey date NOV 08	Drawn by RAJS	Figure No. 13



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA- PARCEL J (SOUTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
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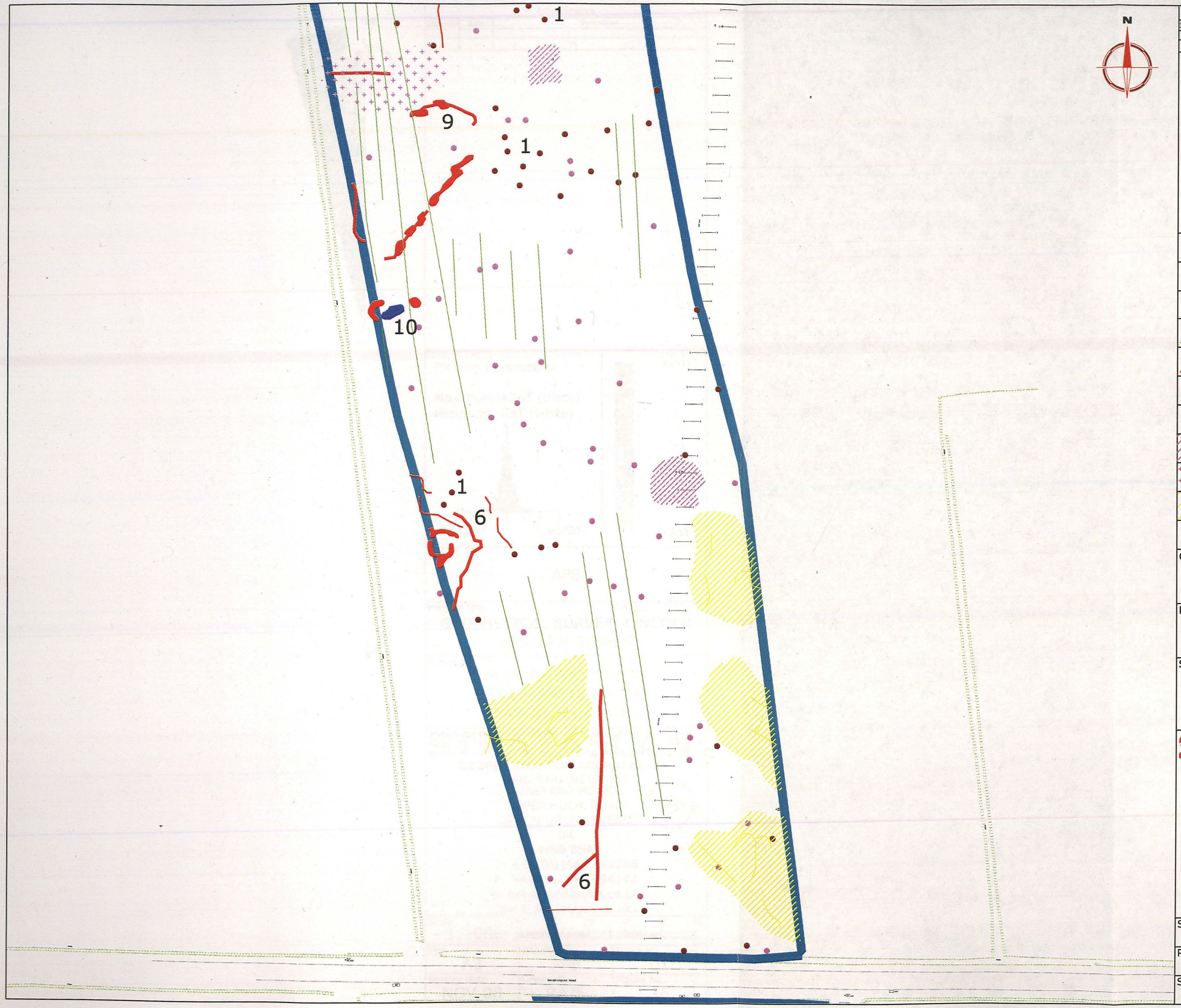
Scale 1:1250 — 0m 10 20 30 40 50m

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	14



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
	Negative area anomaly - bank or earthwork of possible archaeological origin
	Magnetic disturbance associated with nearby metallic objects
	Magnetic debris
	Area of magnetic variation - possible geological/pedological response
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL J (SOUTH)

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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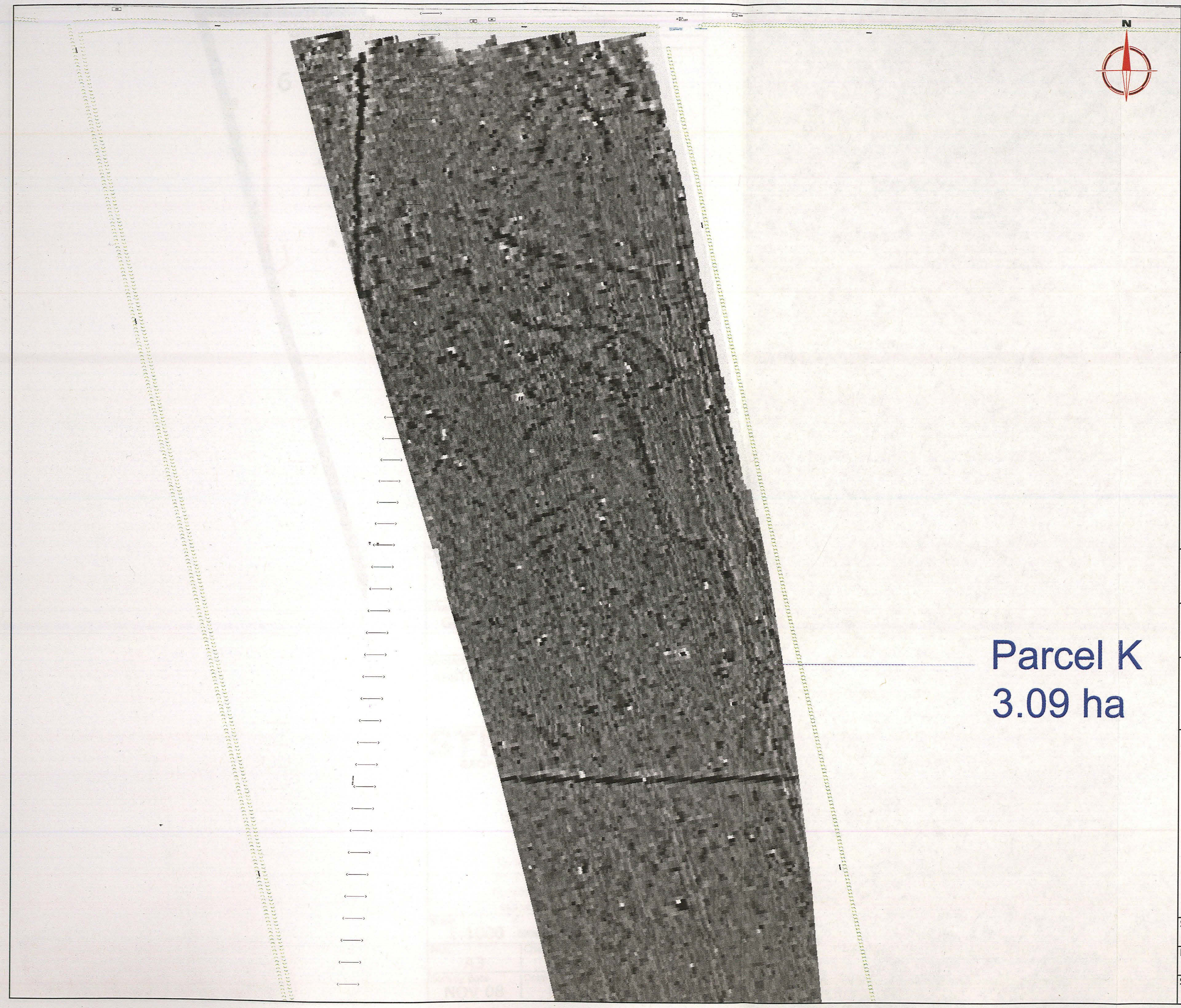
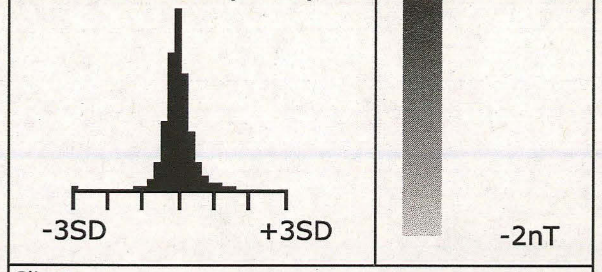
Scale 1:1250	0m 10 20 30 40 50m	
Plot A3	Checked by PPB	Issue No. 01
Survey date NOV 08	Drawn by RAJS	Figure No. 15



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)



Client
APS

Project Title — Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA- PARCEL K (NORTH)

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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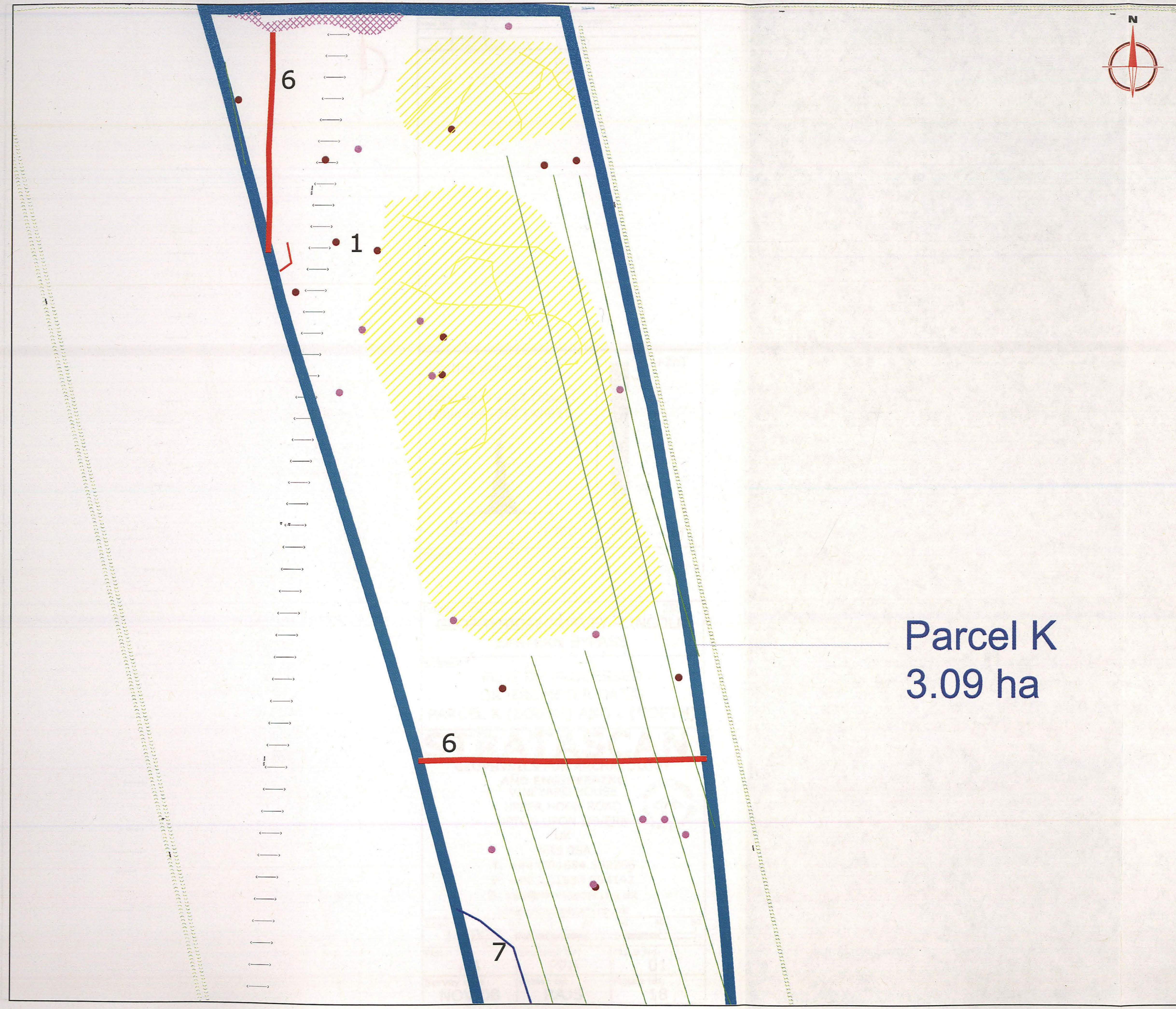
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	16



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
/	Negative linear anomaly - bank or earthwork of possible archaeological origin
	Magnetic disturbance associated with nearby service or field boundary
	Area of magnetic variation - possible geological/pedological response
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL K (NORTH)

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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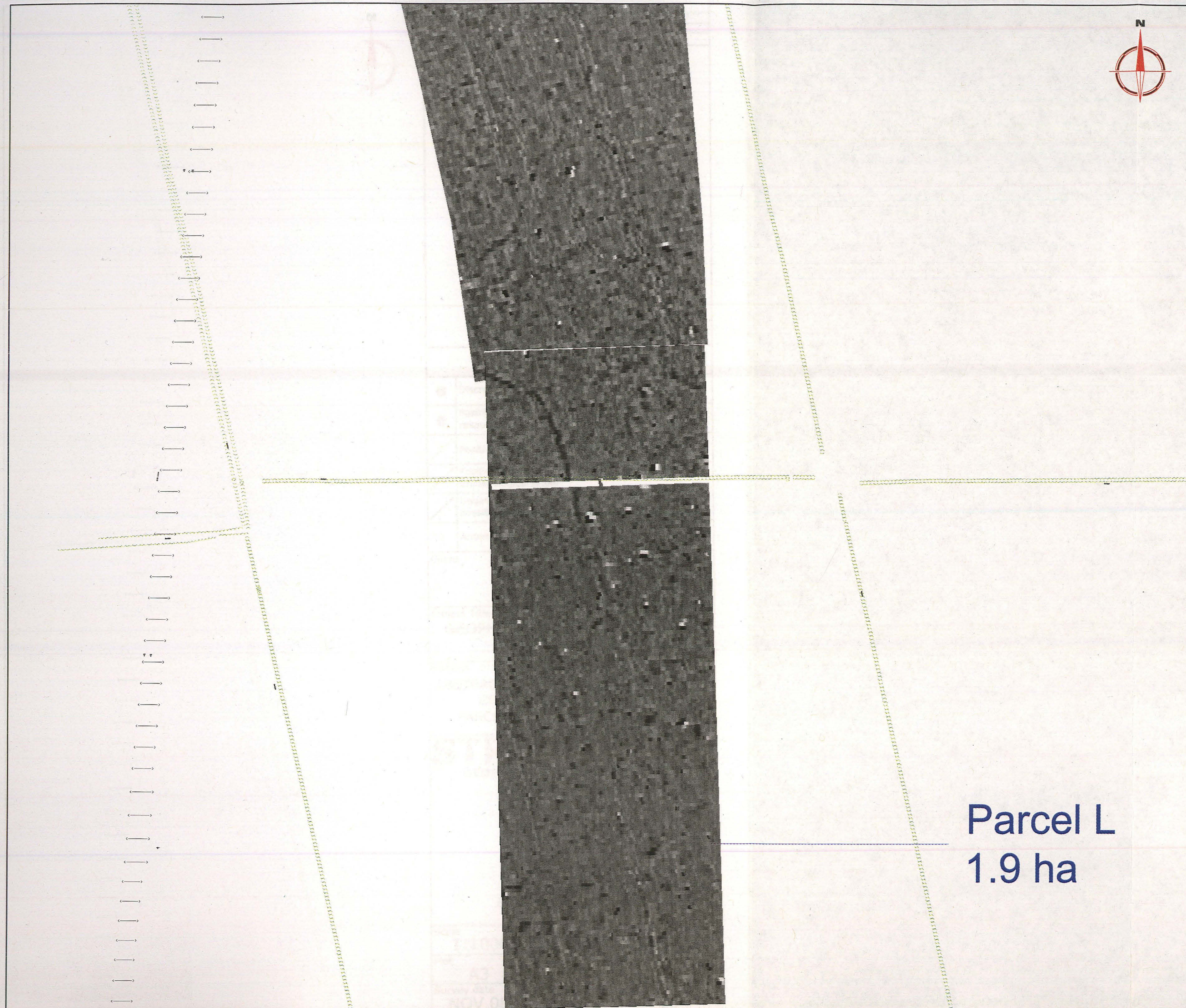
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	17

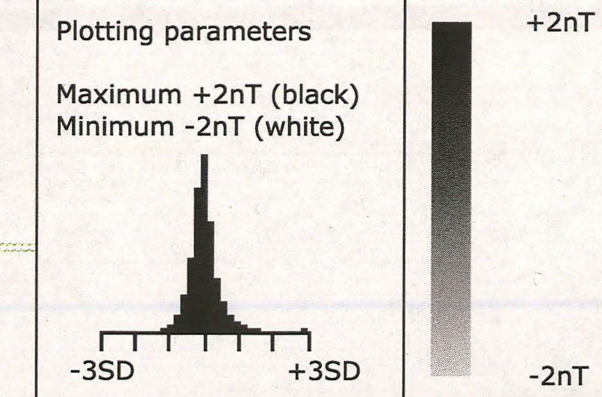


Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)



Client
APS

Project Title — Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA- PARCEL K (SOUTH) AND L (NORTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
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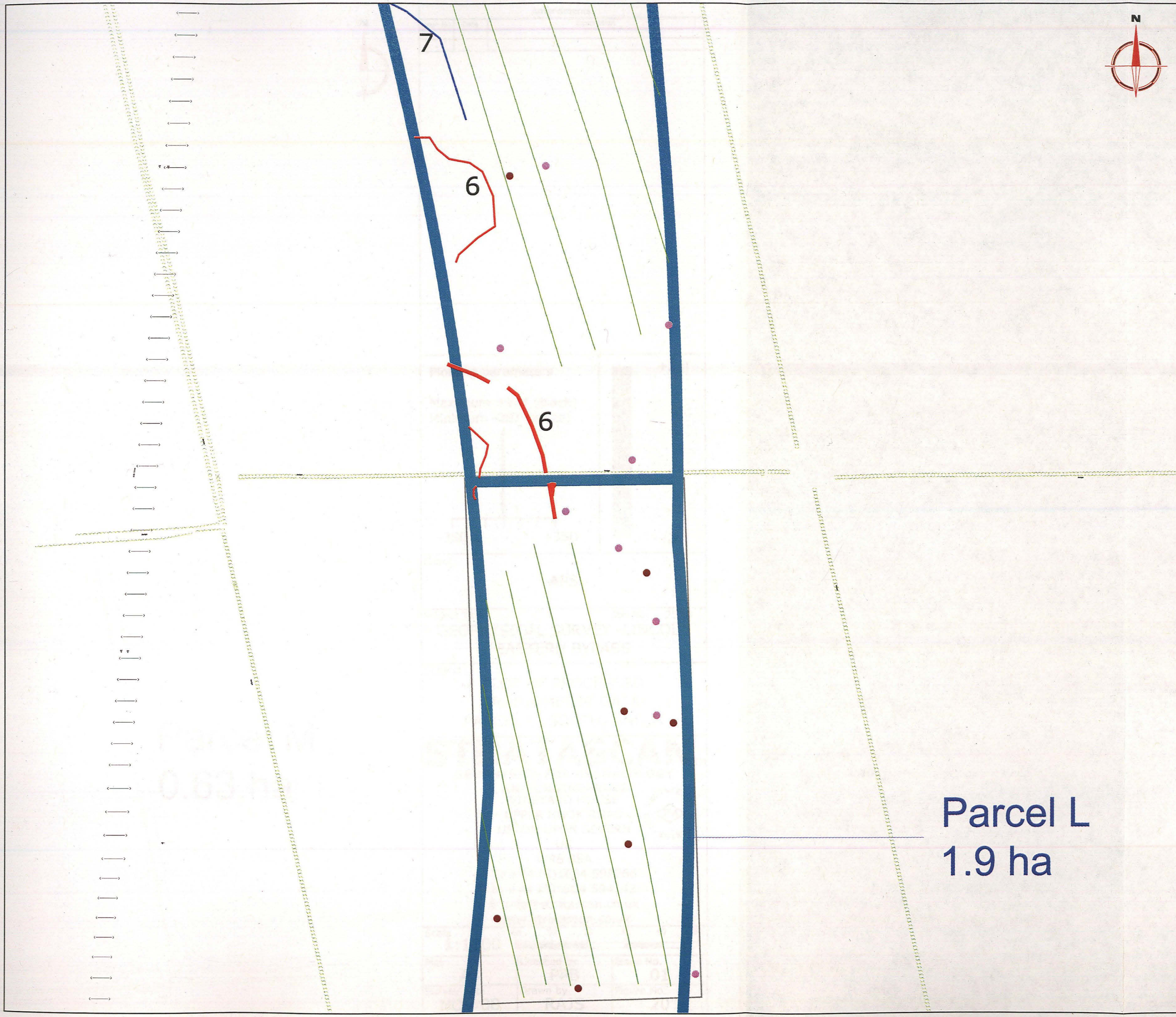
Scale 1:1000	0m 10 20 30 40 50	
Plot: A3	Checked by: PPB	Issue No.: 01
Survey date: NOV 08	Drawn by: RAJS	Figure No.: 18



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

- Discrete positive anomaly - possible pit
- Positive anomaly with associated negative response - ferrous object
- Positive linear anomaly - agricultural mark
- Positive linear anomaly - cut feature of possible archaeological origin
- Negative linear anomaly - bank or earthwork of possible archaeological origin
- 1 Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL K (SOUTH) AND L (NORTH)

STRATASCAN TM
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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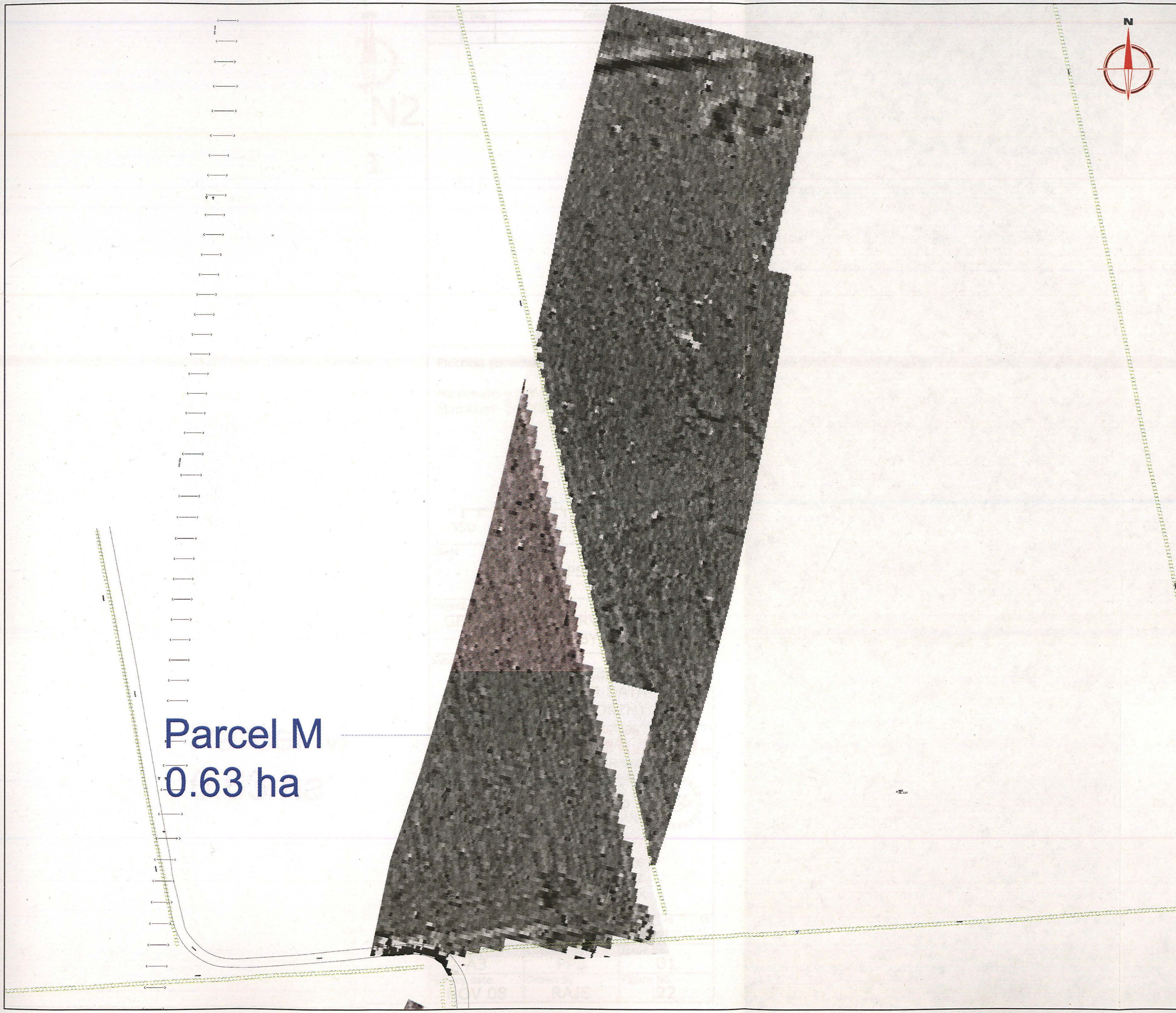
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	19



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA- PARCEL L (SOUTH) AND M

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
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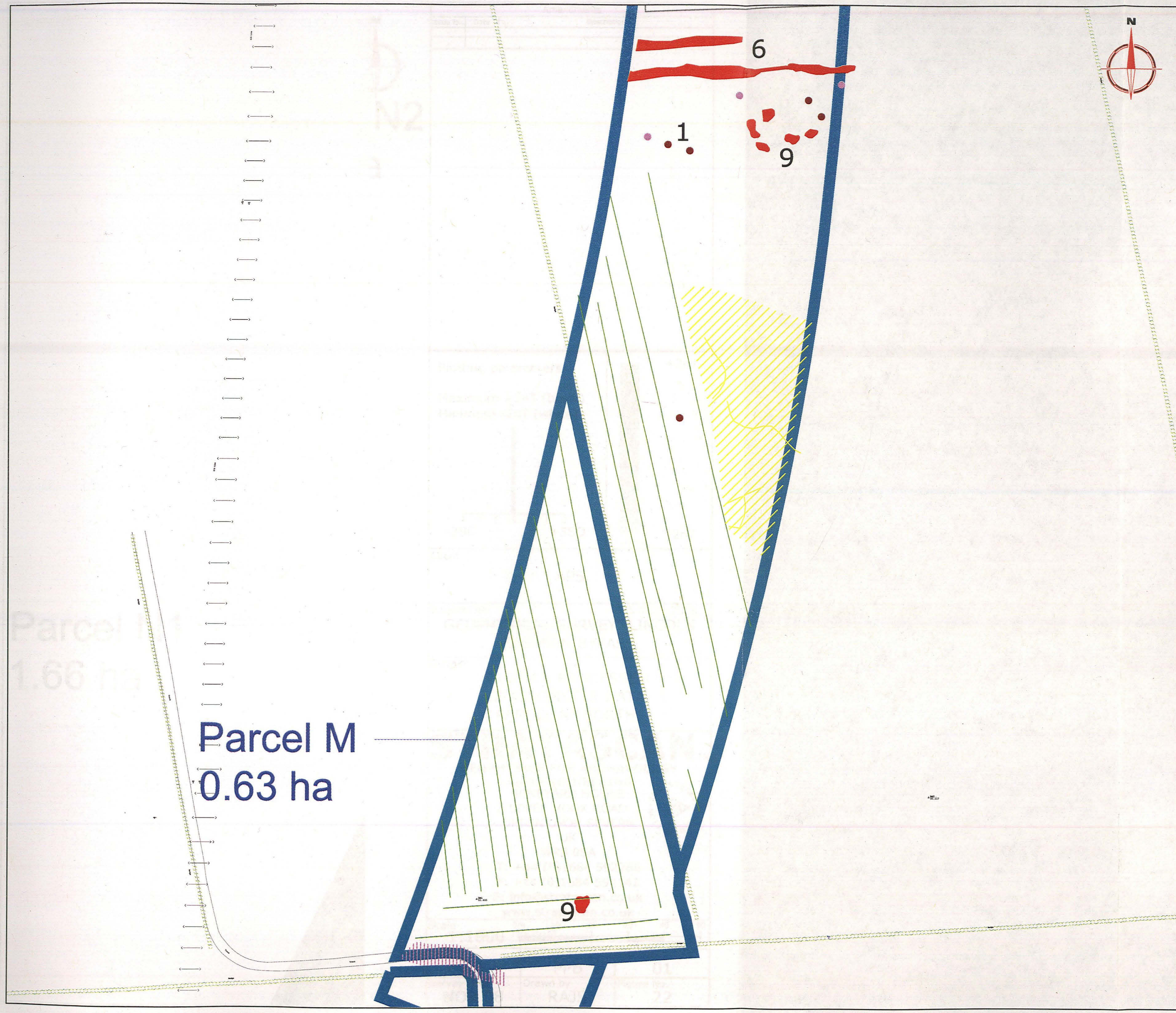
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	20



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

- Discrete positive anomaly - possible pit
- Positive anomaly with associated negative response - ferrous object
- Positive linear anomaly - agricultural mark
- Positive linear anomaly - cut feature of possible archaeological origin
- Positive area anomaly - cut feature of possible archaeological origin
- Magnetic disturbance related to track
- Area of magnetic variation - possible geological/pedological response
- 1 Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL L (SOUTH) AND M

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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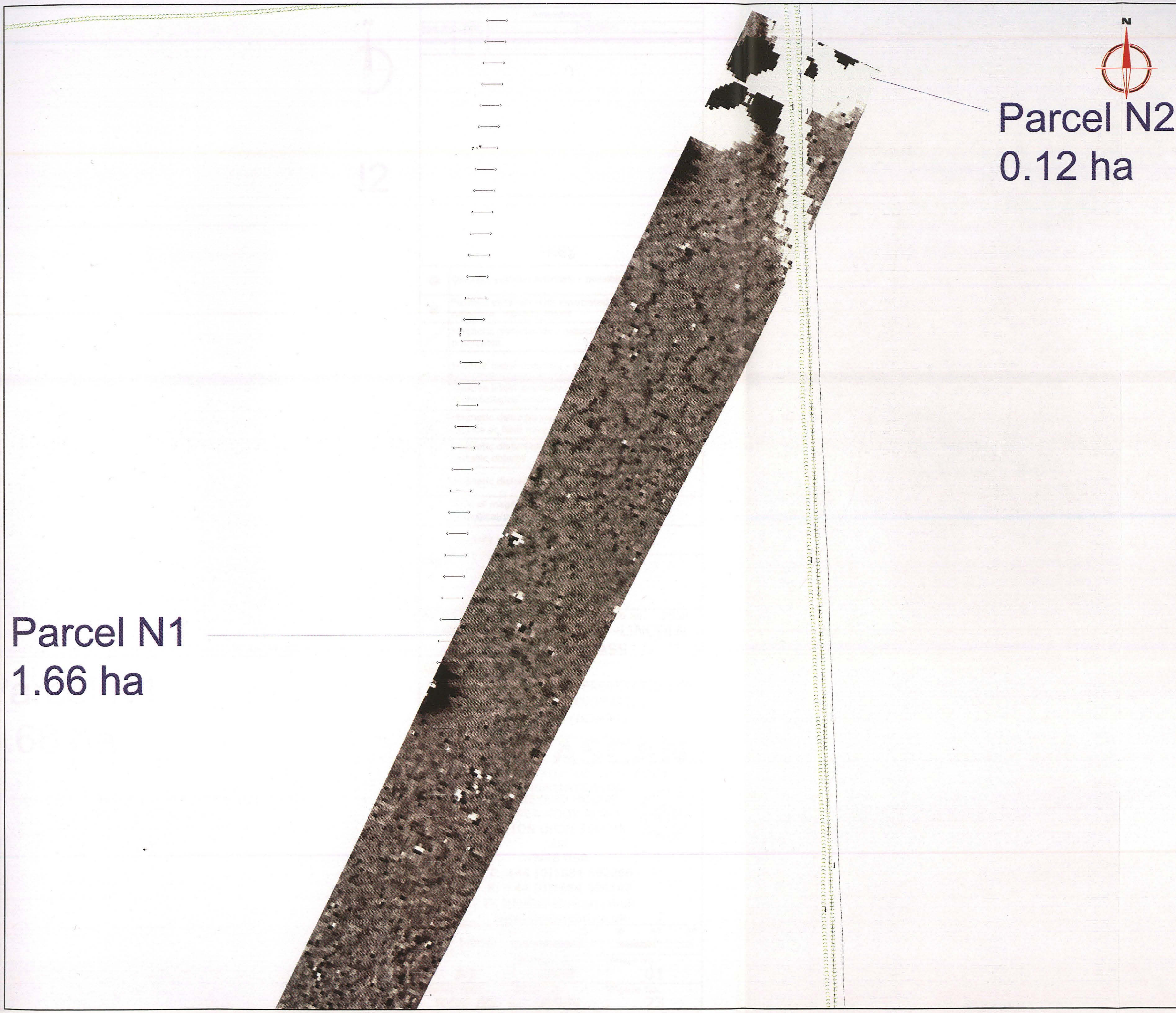
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	21



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client: APS

Project Title: GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Job No. 2538

Subject: PLOT OF PROCESSED GRADIOMETER DATA- PARCEL N (NORTH)

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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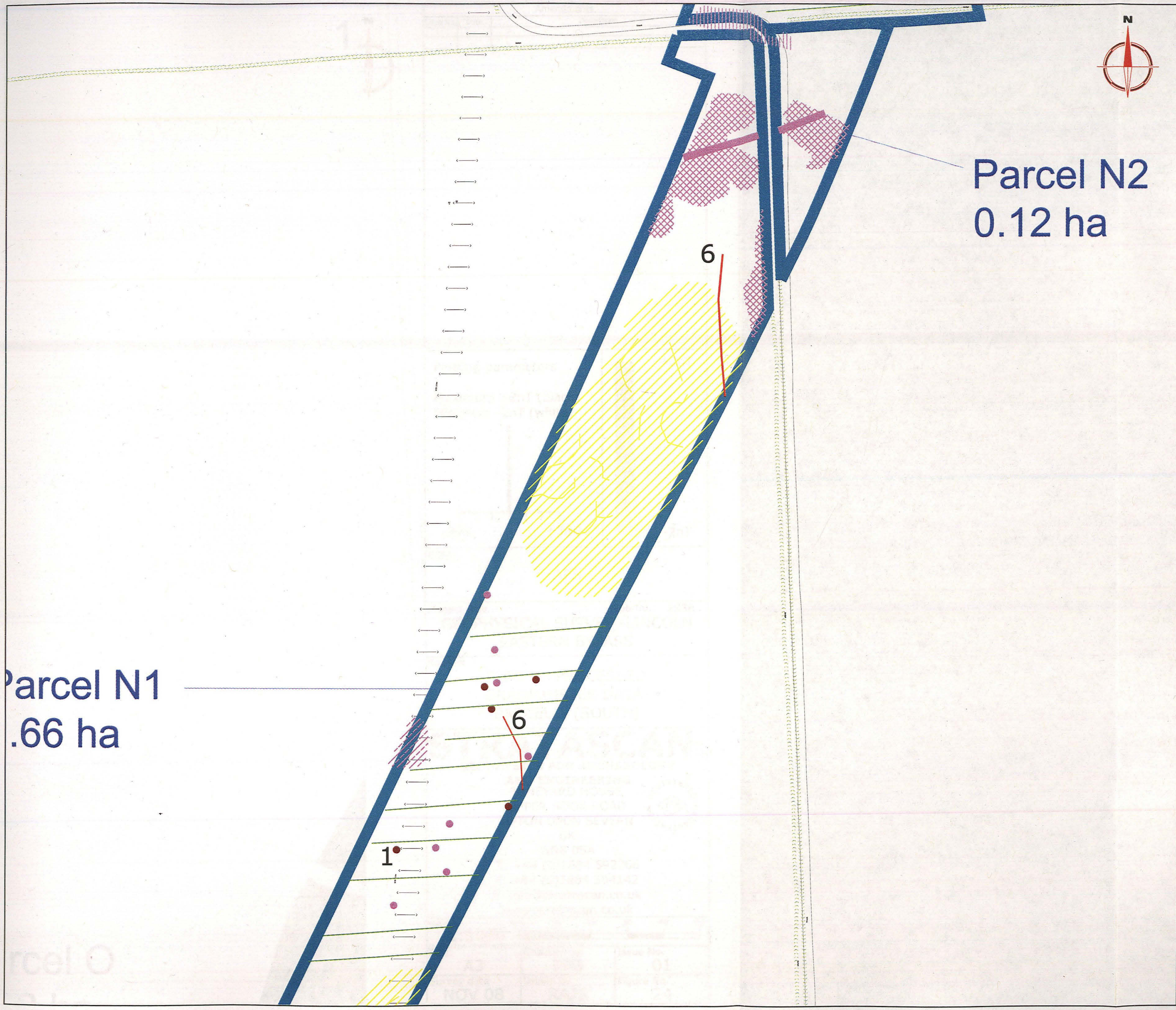
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	22



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Magnetic disturbance - associated with pipe/cable
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby service or field boundary
	Magnetic disturbance associated with nearby metallic objects
	Magnetic disturbance related to track
	Area of magnetic variation - possible geological/pedological response
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL N (NORTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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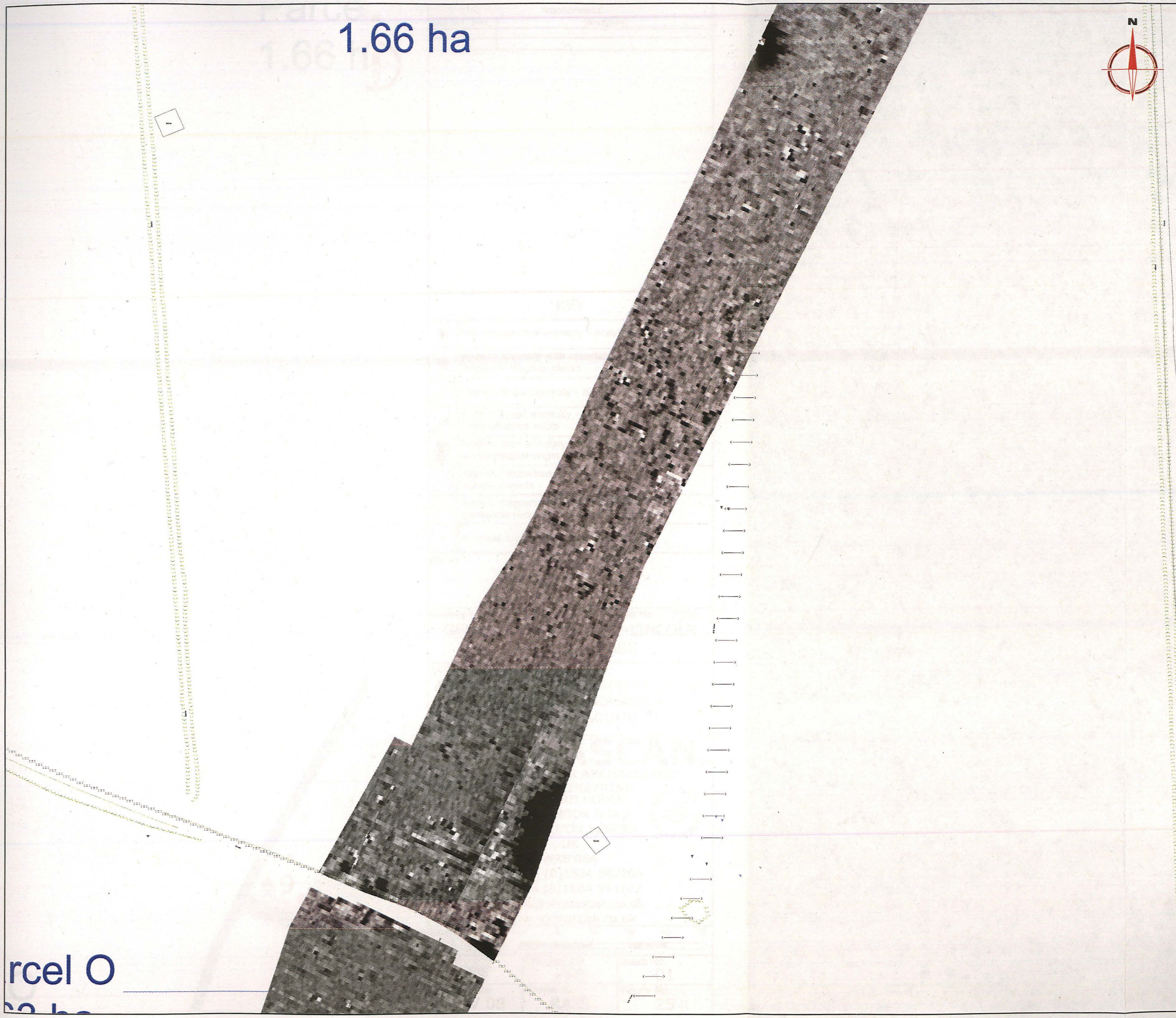
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	23



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA- PARCEL N (SOUTH)

STRATASCAN TM
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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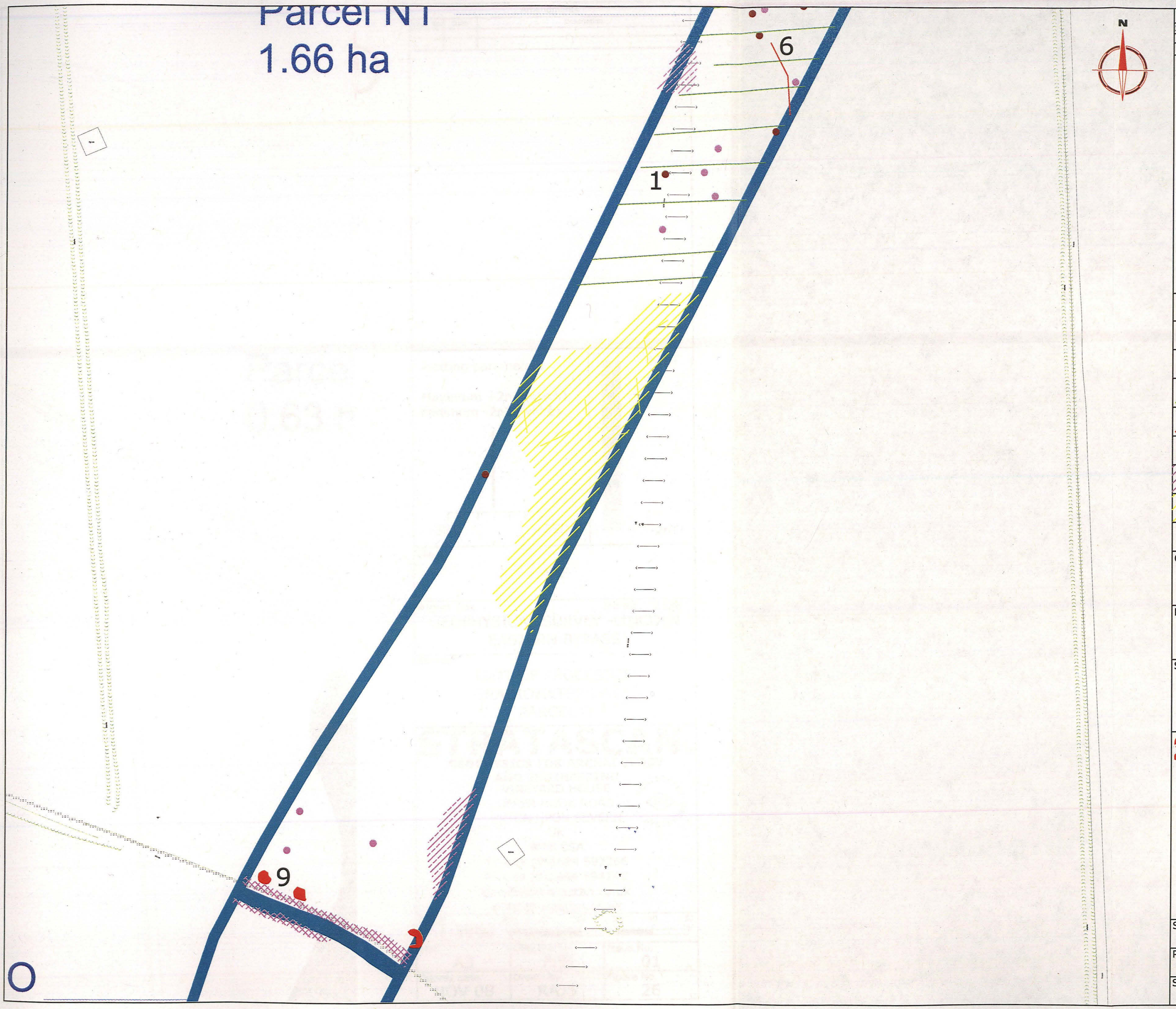
Scale 1:1000 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	24



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby metallic objects
	Area of magnetic variation - possible geological/pedological response
1	Anomaly type identification number

Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL N (SOUTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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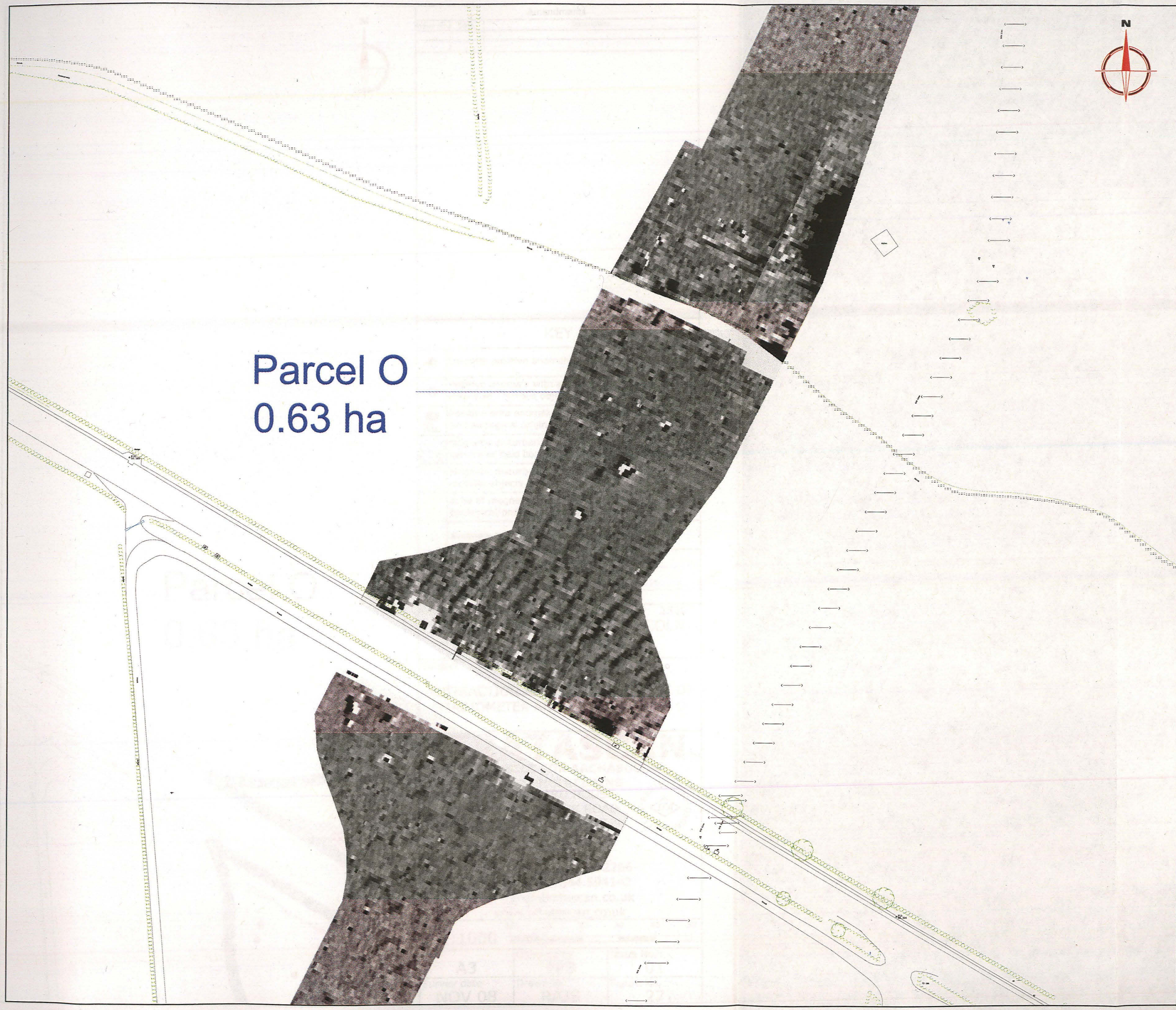
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	25



Issue No.	Date	Description
-	-	-
-	-	-

Amendments

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client: APS

Project Title: GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Job No. 2538

Subject: PLOT OF PROCESSED GRADIOMETER DATA- PARCEL O

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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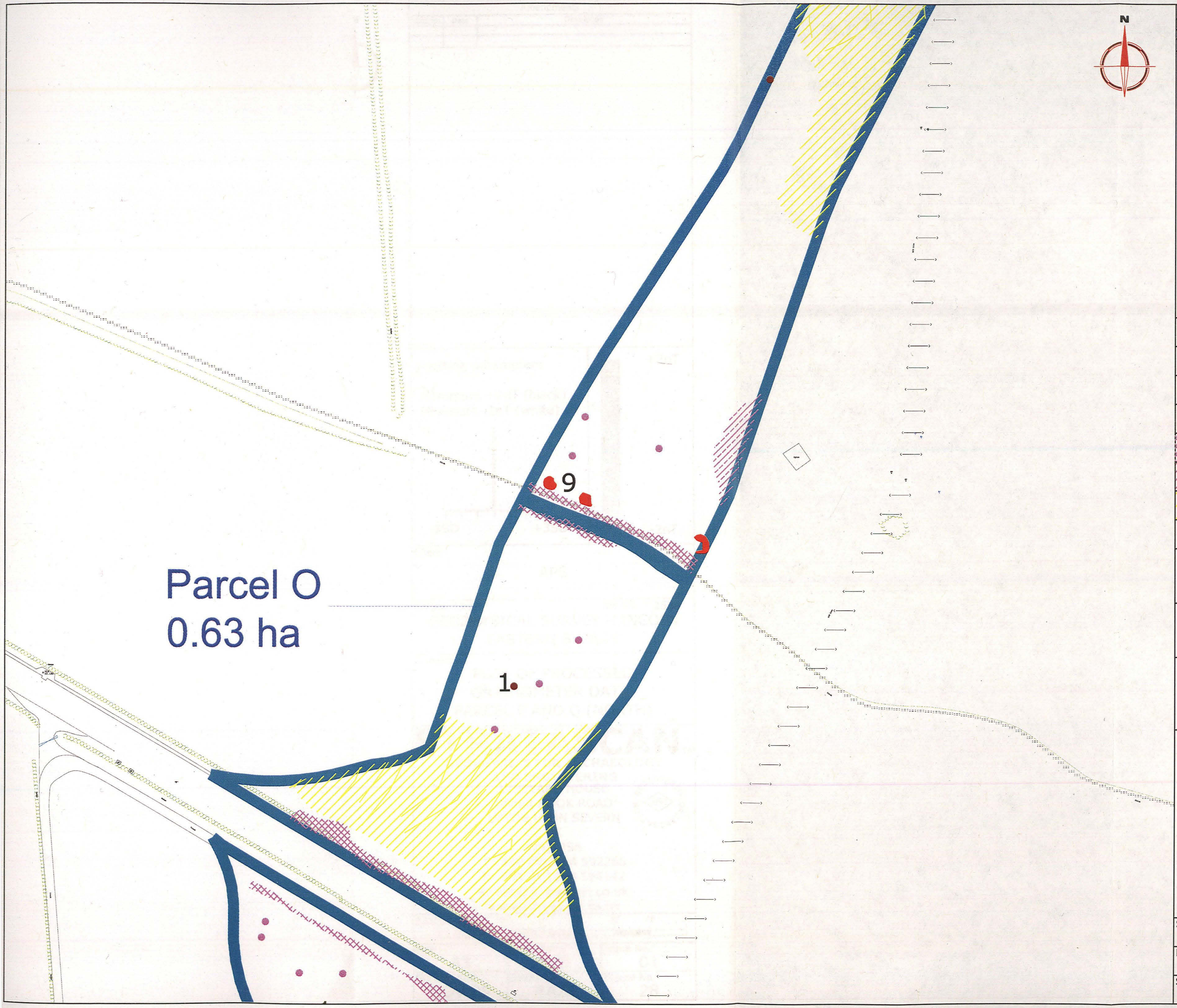
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	26



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
	Positive area anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby service or field boundary
	Magnetic disturbance associated with nearby metallic objects
	Area of magnetic variation - possible geological/pedological response
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL O

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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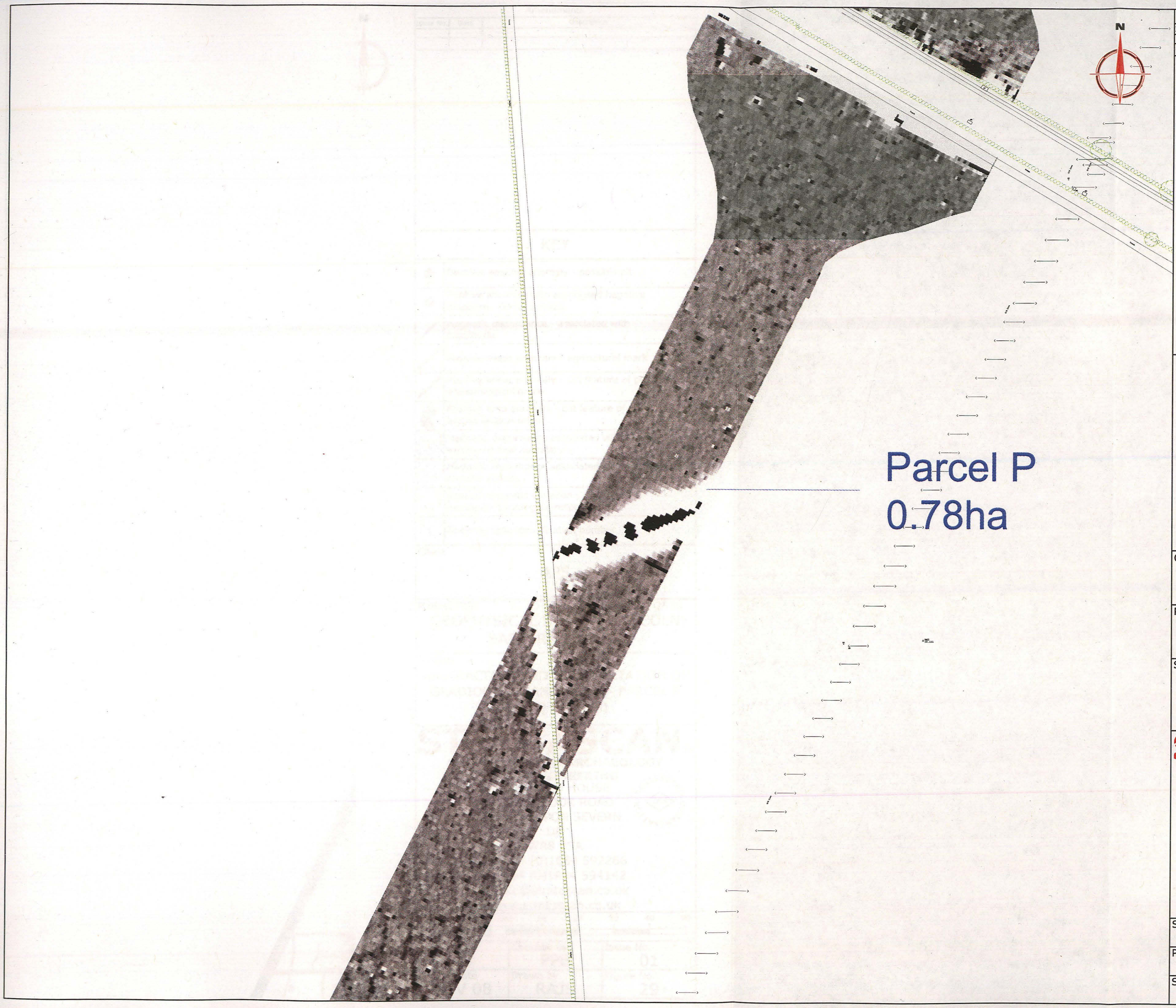
Scale 1:1000 (0m 10 20 30 40 50)		
Plot A3	Checked by PPB	Issue No. 01
Survey date NOV 08	Drawn by RAJS	Figure No. 27



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA- PARCEL P AND Q (NORTH)

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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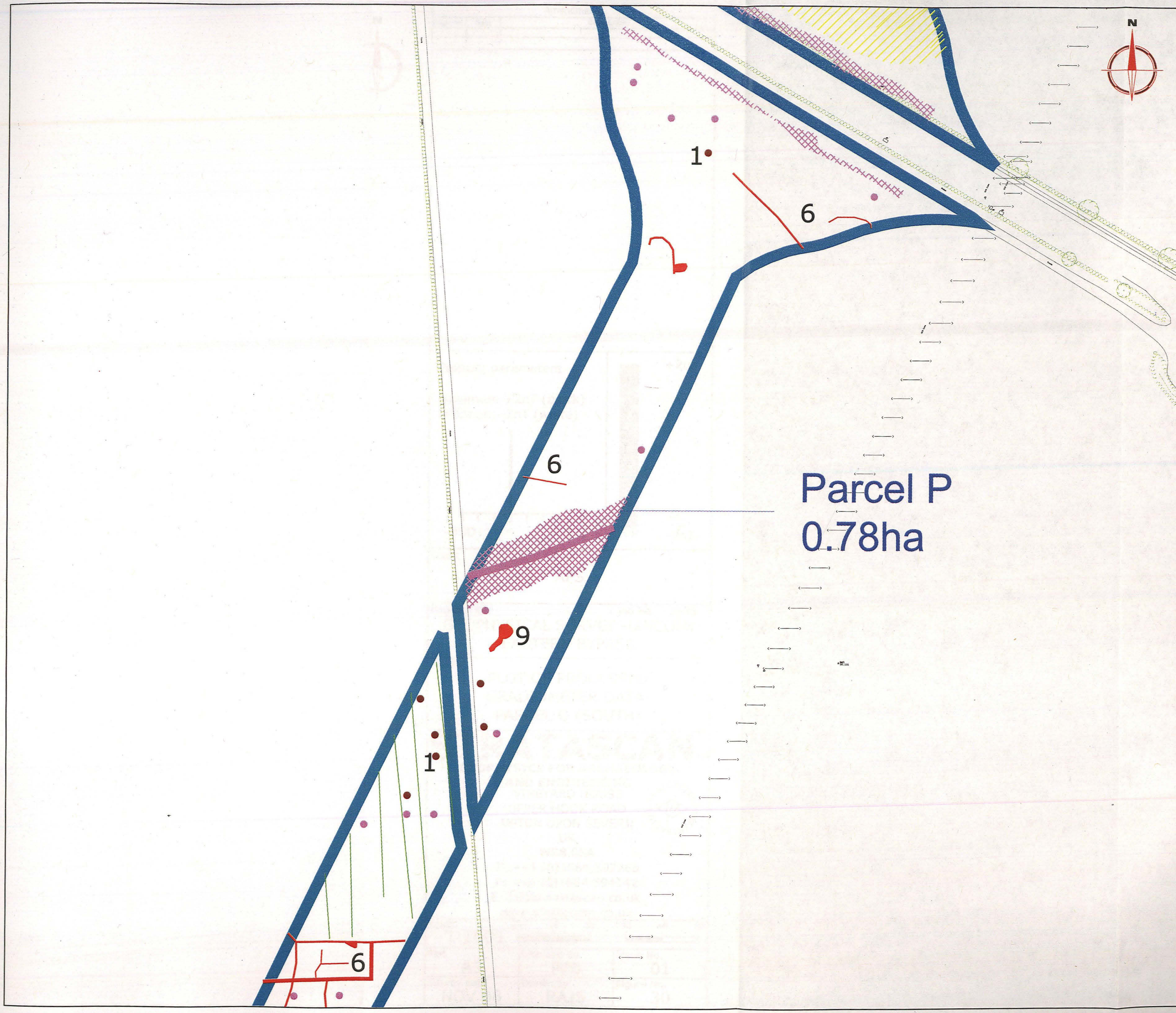
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	28



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Magnetic disturbance - associated with pipe/cable
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby service or field boundary
	Magnetic disturbance associated with nearby metallic objects
	Area of magnetic variation - possible geological/pedological response
1	Anomaly type identification number

Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL P AND Q (NORTH)

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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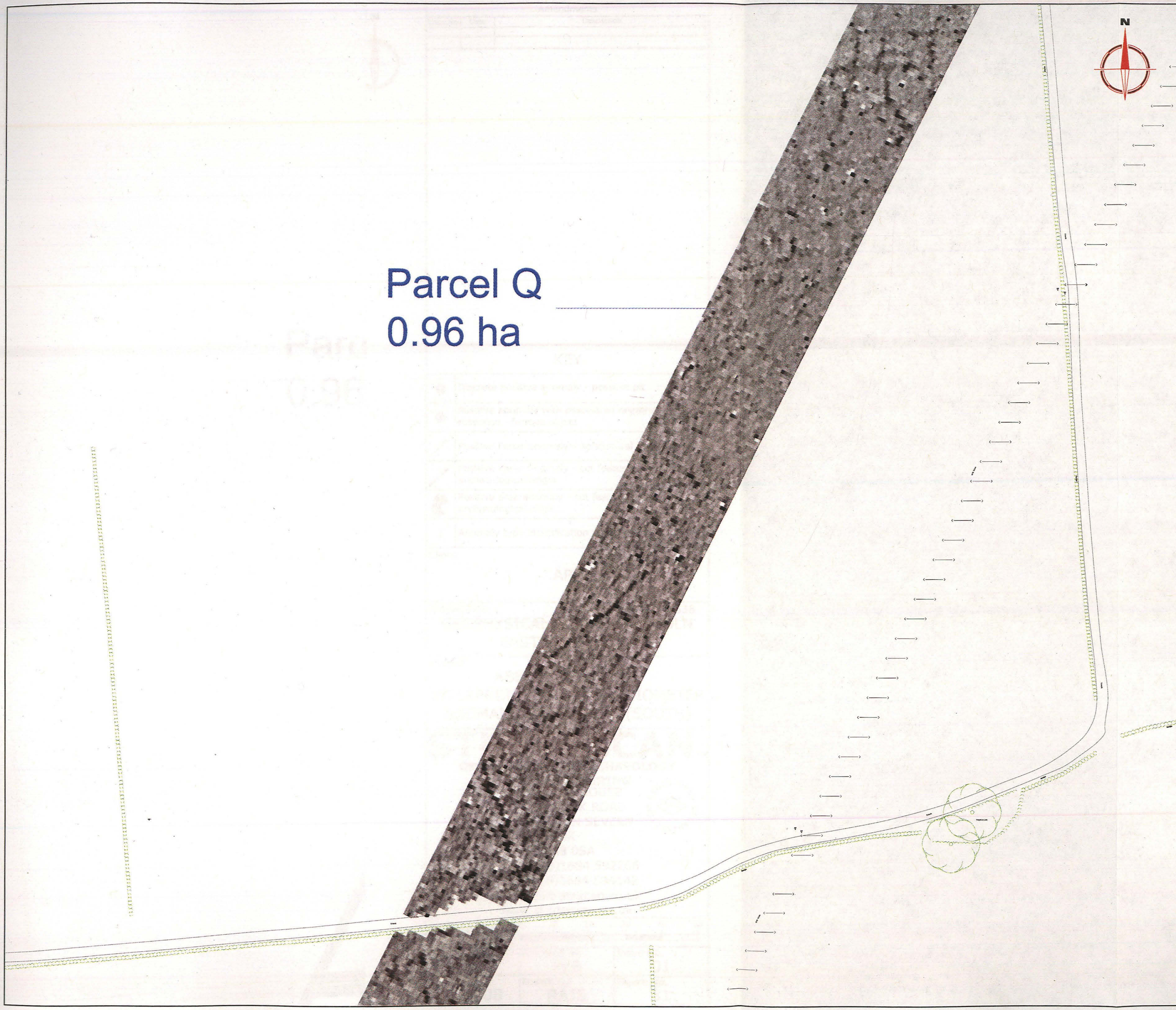
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	29



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT -2nT

Client
APS

Project Title Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA-PARCEL Q (SOUTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
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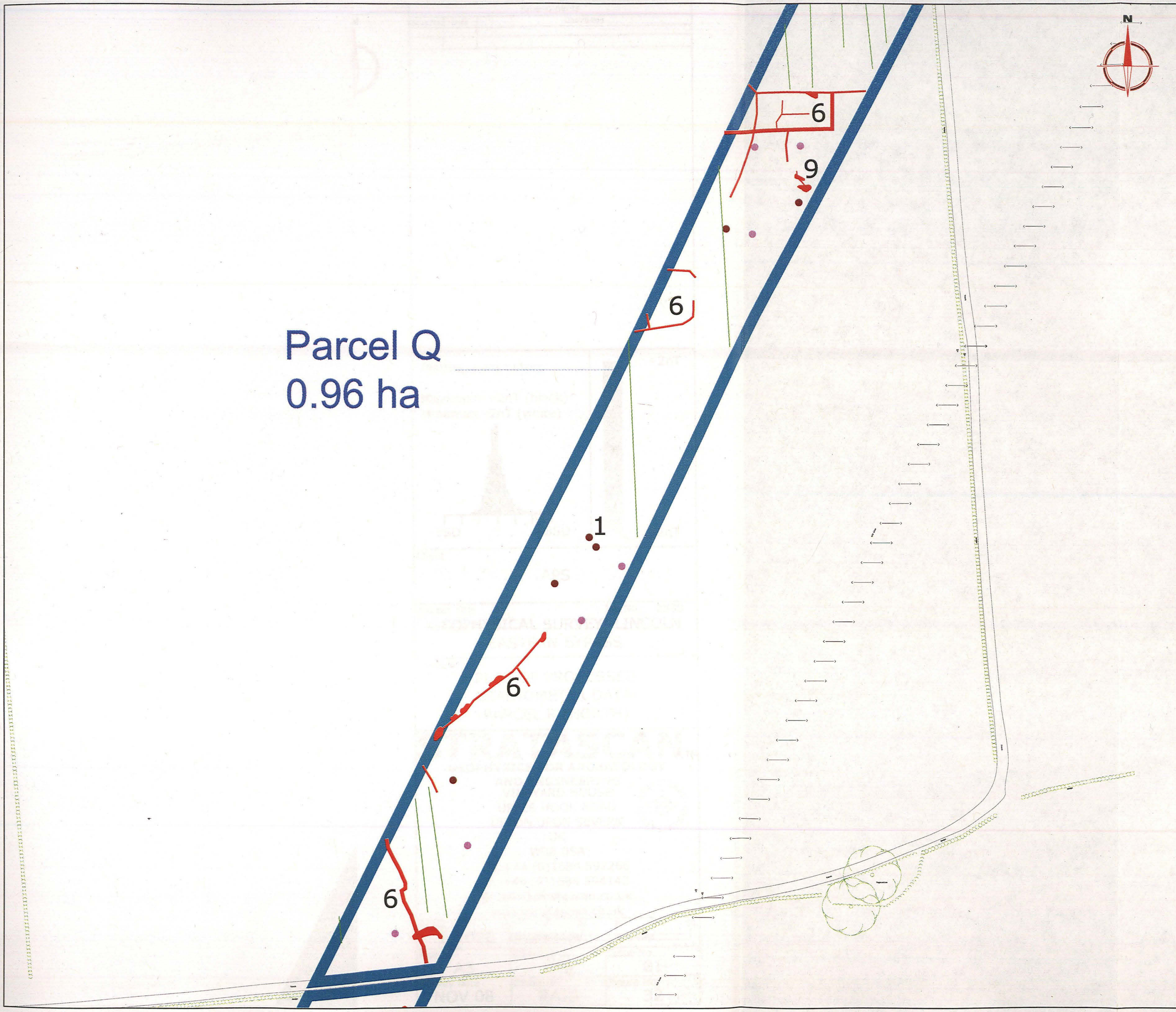
Scale 1:1000 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	30



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
■	Positive area anomaly - cut feature of possible archaeological origin
1	Anomaly type identification number

Client
APS

Project Title — Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL Q (SOUTH)

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
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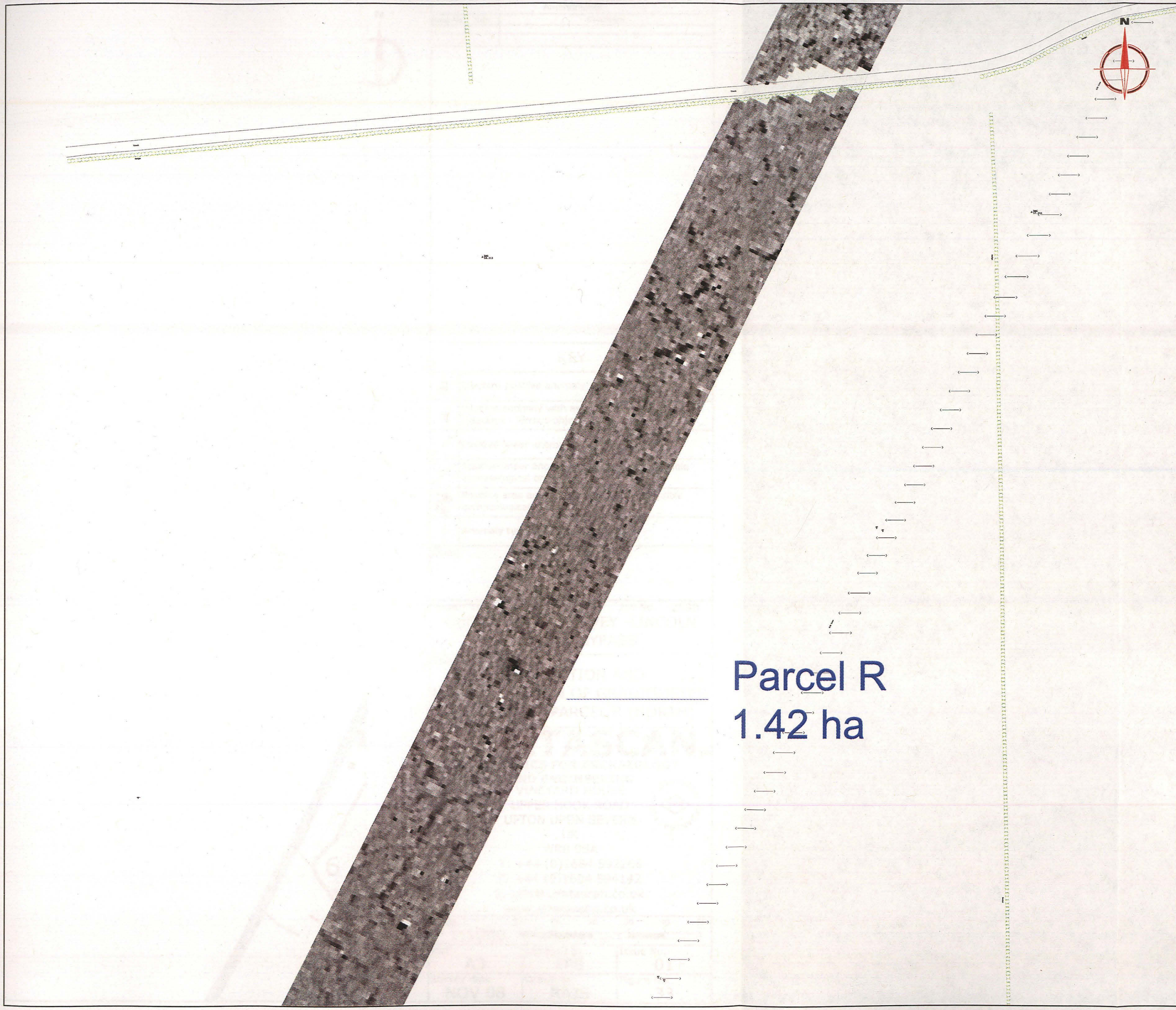
Scale 1:1000 (0m 10 20 30 40 50)

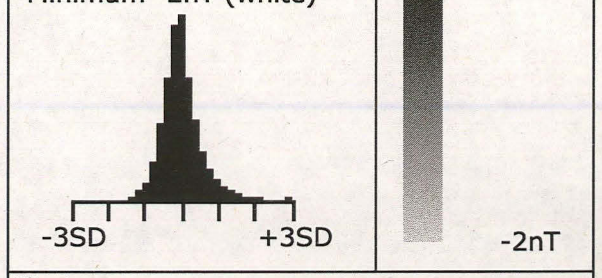
Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	31



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)



Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA-PARCEL R (NORTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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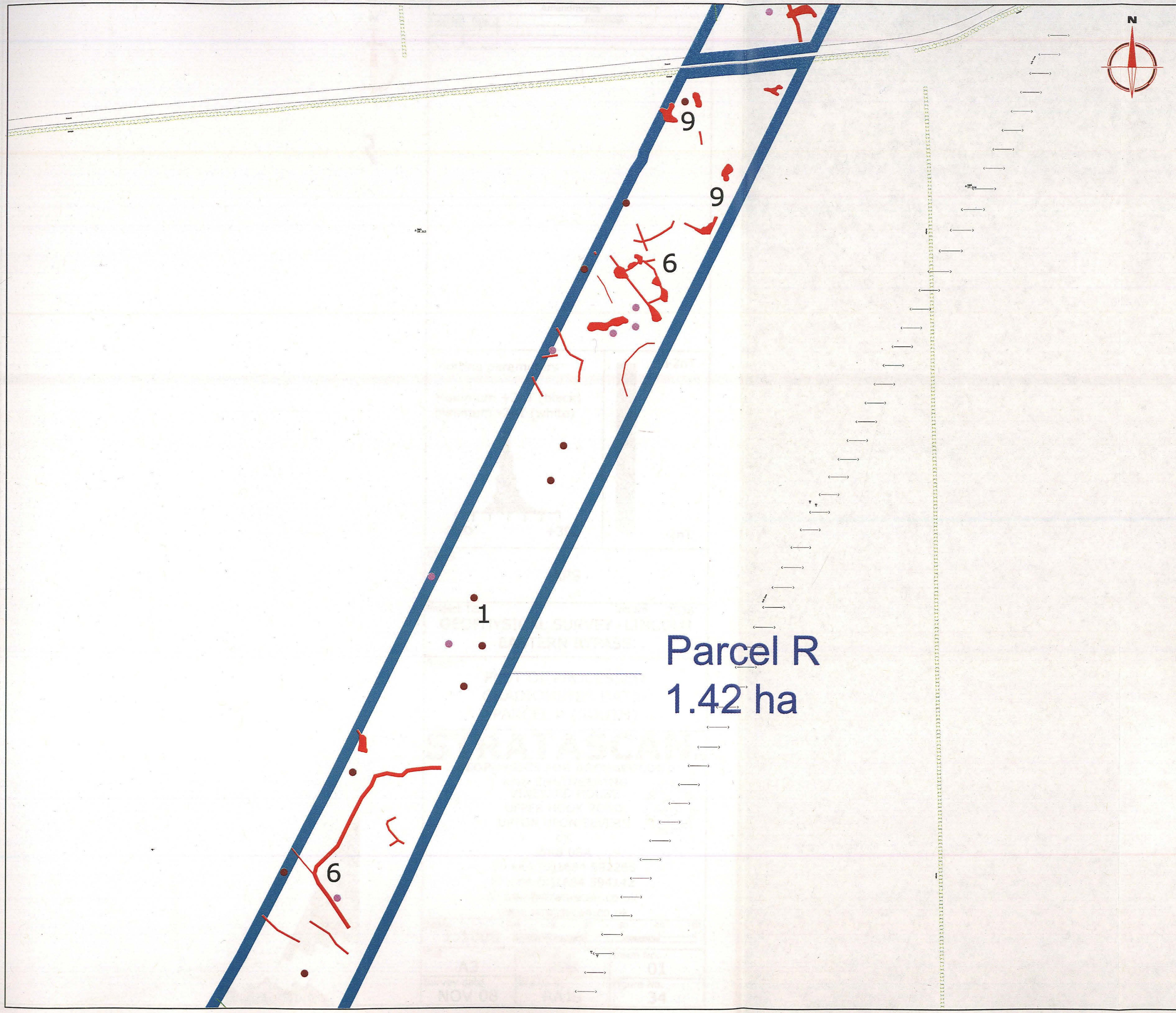
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	32



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL R (NORTH)

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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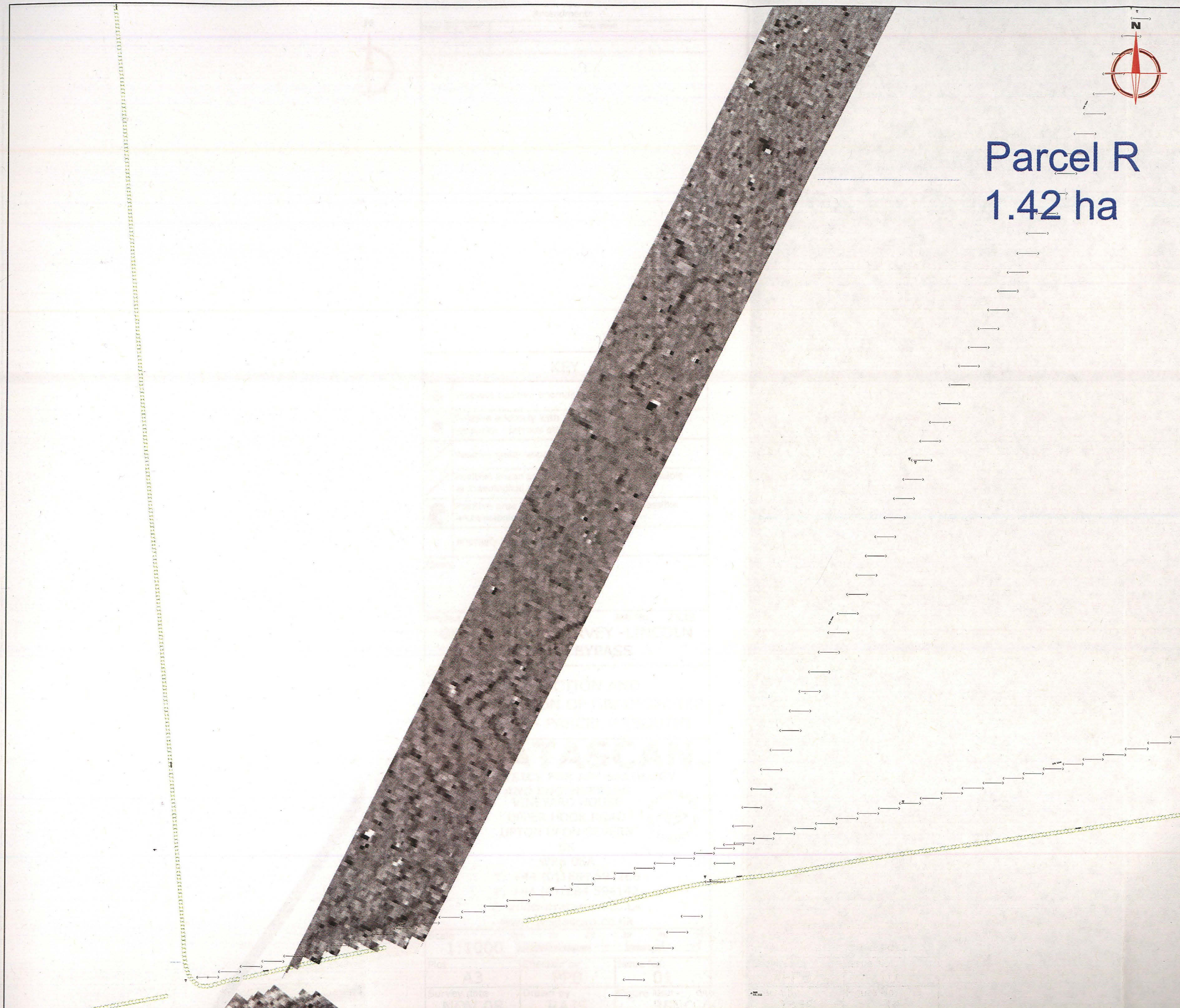
Scale 1:1000	0m 10 20 30 40 50	
Plot A3	Checked by PPB	Issue No. 01
Survey date NOV 08	Drawn by RAJS	Figure No. 33



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client
APS

Project Title Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA- PARCEL R (SOUTH)

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
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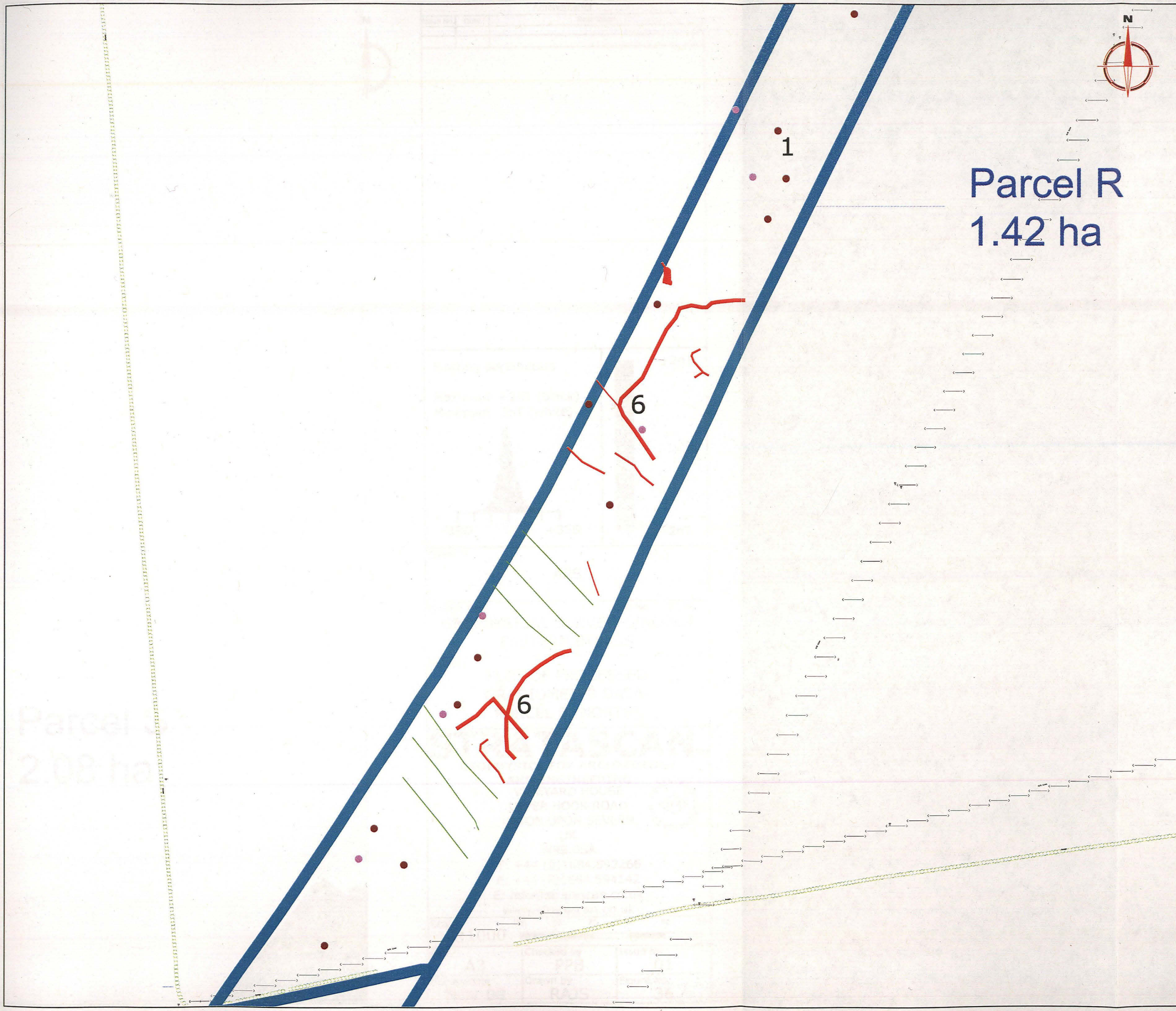
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	34



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL R (SOUTH)

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VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
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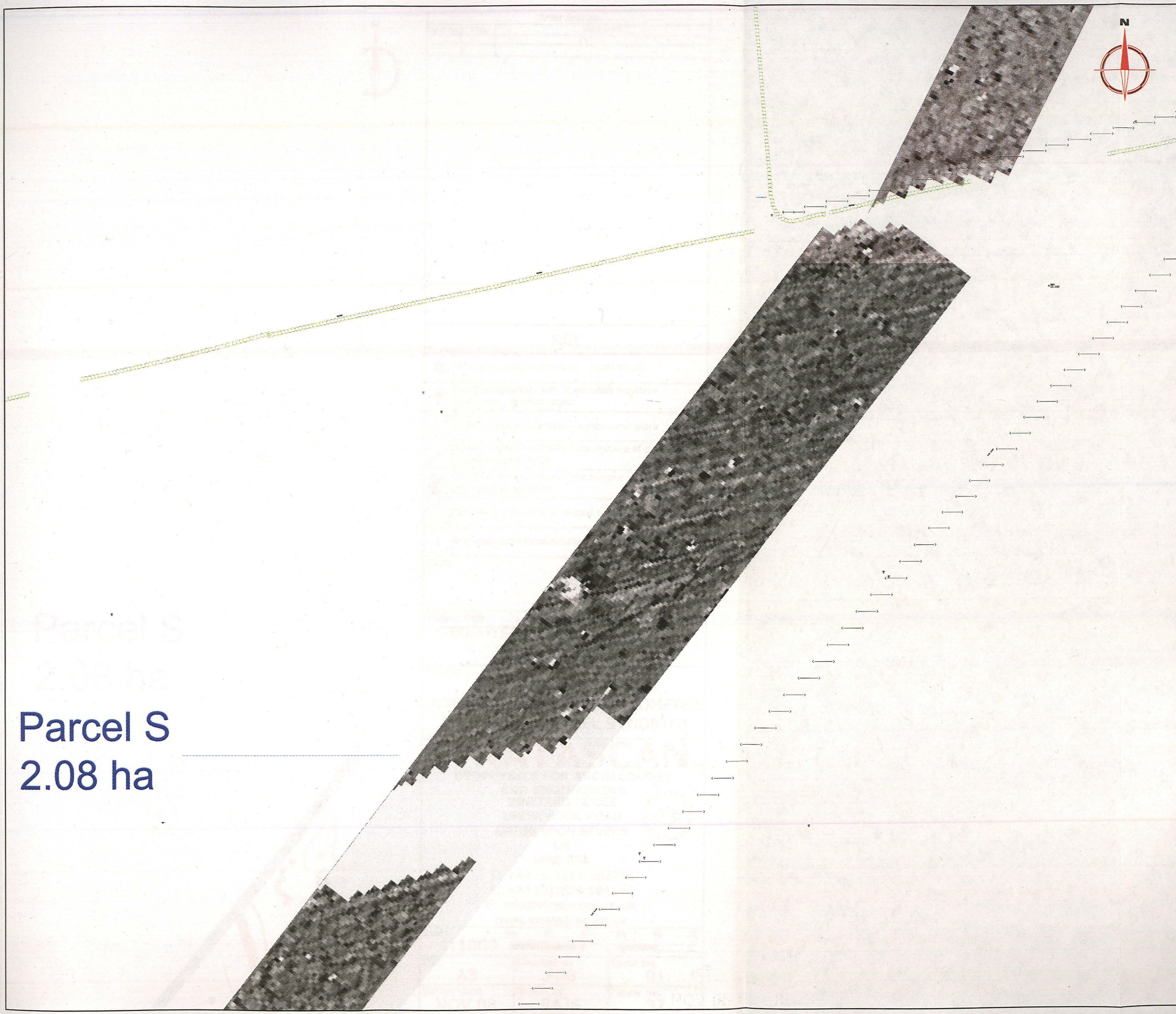
Scale 1:1000 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	35

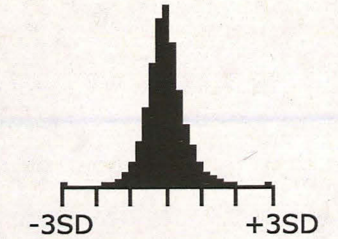


Amendments

Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)



Client
APS

Project Title — Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA-PARCEL S (NORTH)

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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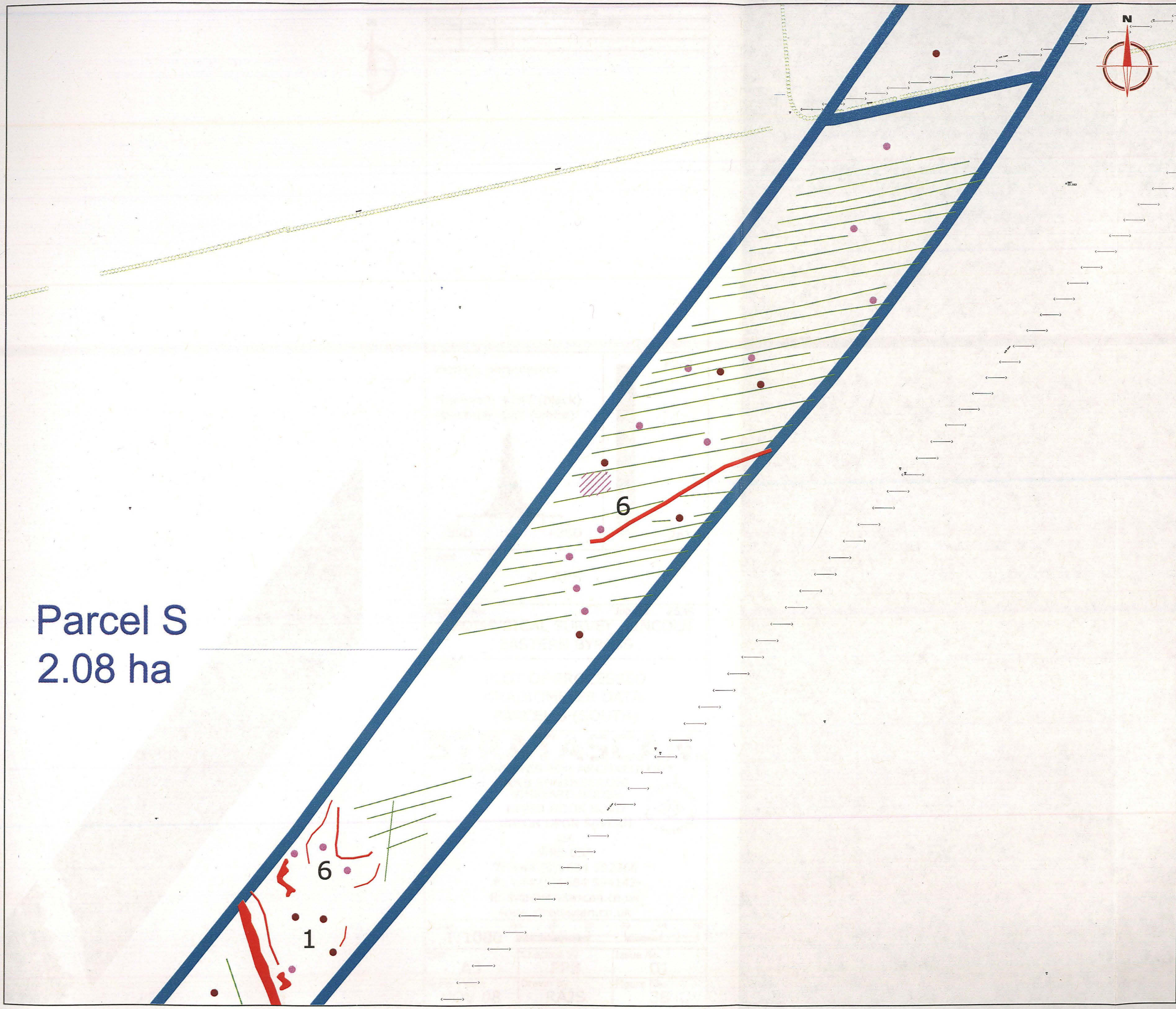
Scale		
1:1000	0m 10 20 30 40 50	
Plot: A3	Checked by: PPB	Issue No.: 01
Survey date: NOV 08	Drawn by: RAJS	Figure No.: 36



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
	Magnetic disturbance related to ground disturbance
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL S (NORTH)

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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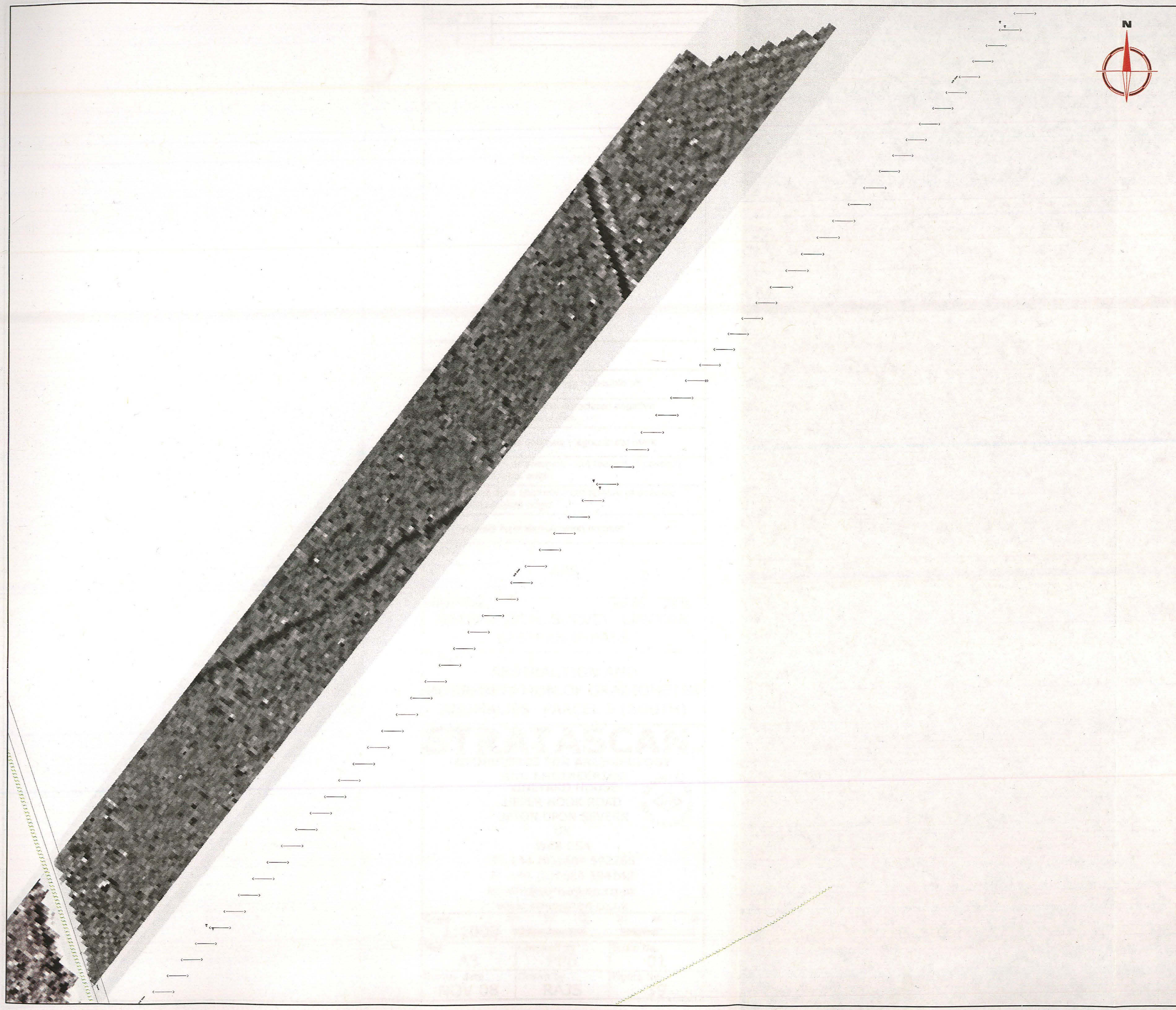
Scale 1:1000 0m 10 20 30 40 50

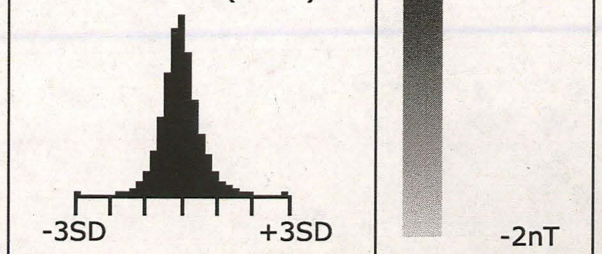
Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	37



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)



Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA- PARCEL S (SOUTH)

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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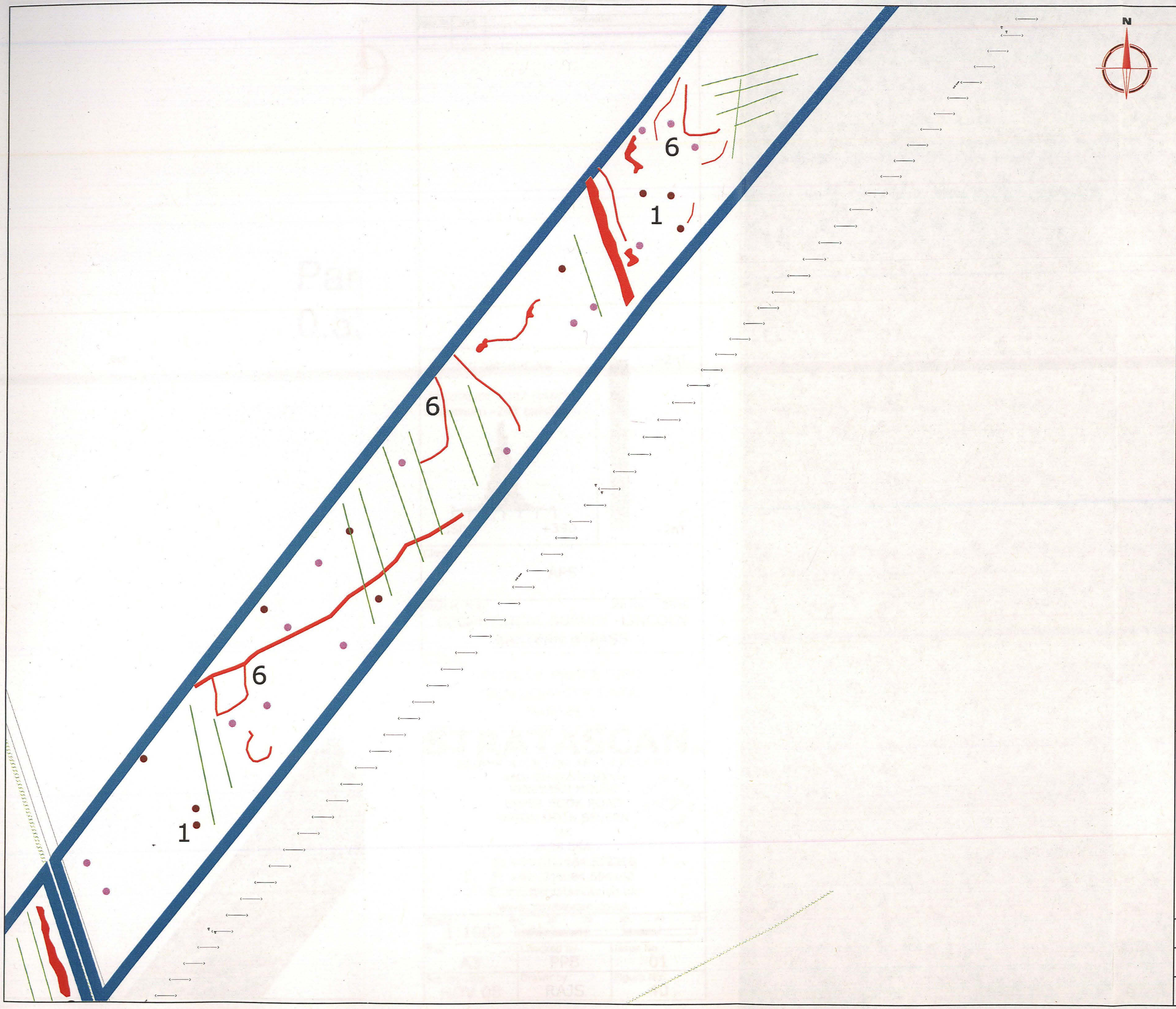
Scale 1:1000	0m 10 20 30 40 50	
Plot A3	Checked by PPB	Issue No. 01
Survey date NOV 08	Drawn by RAJS	Figure No. 38



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL S (SOUTH)

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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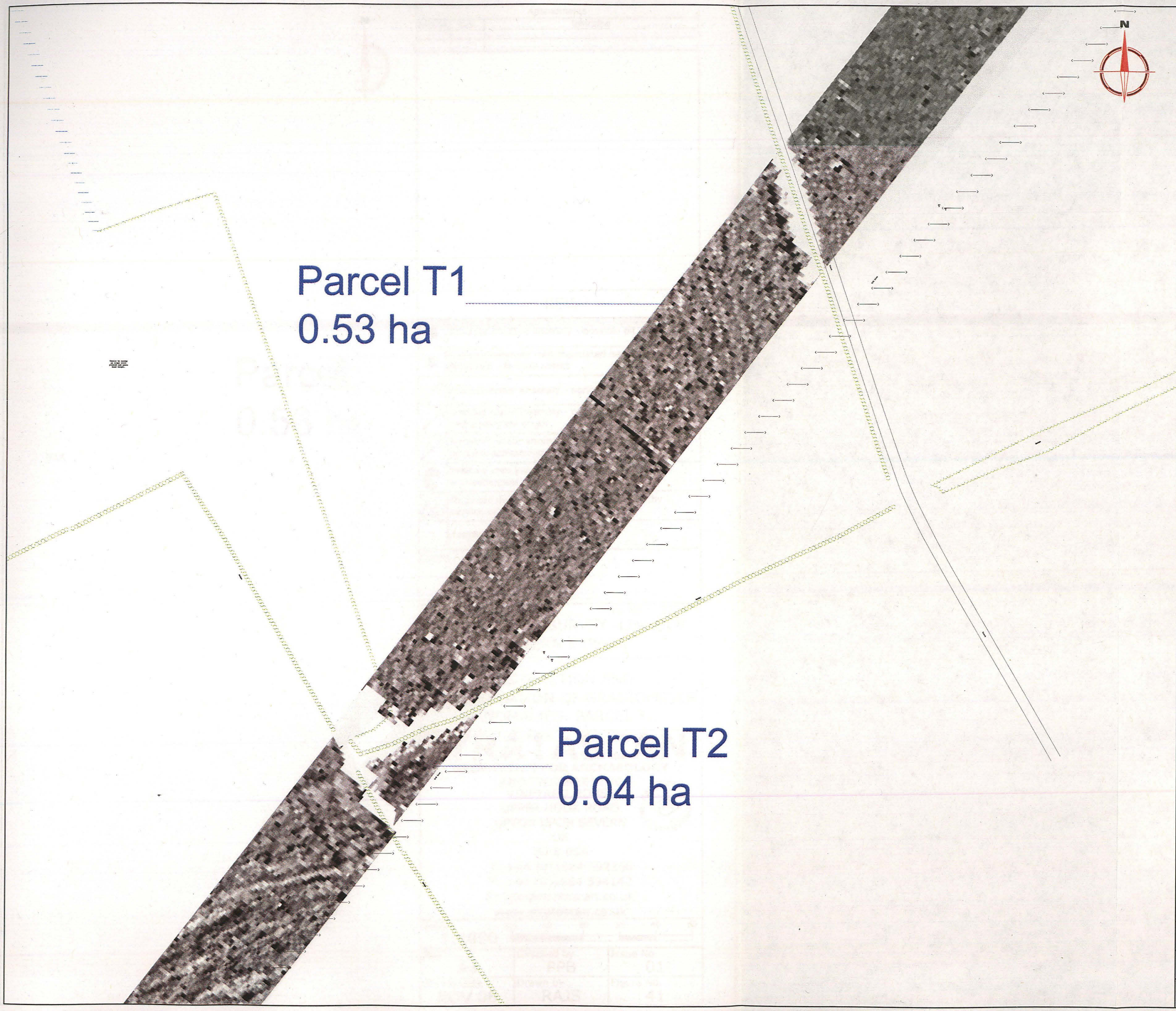
Scale 1:1000 0m 10 20 30 40 50

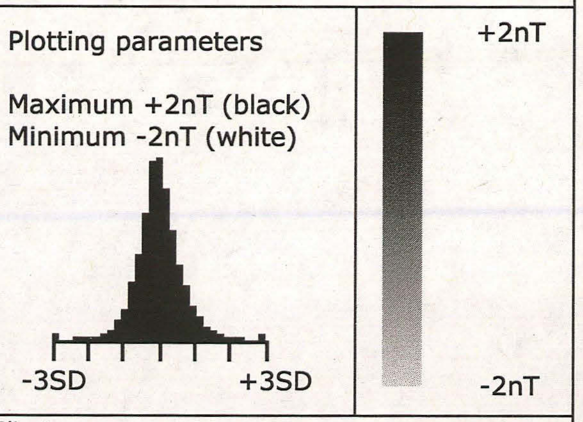
Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	39



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)



Client
APS

Project Title — Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA- PARCEL T

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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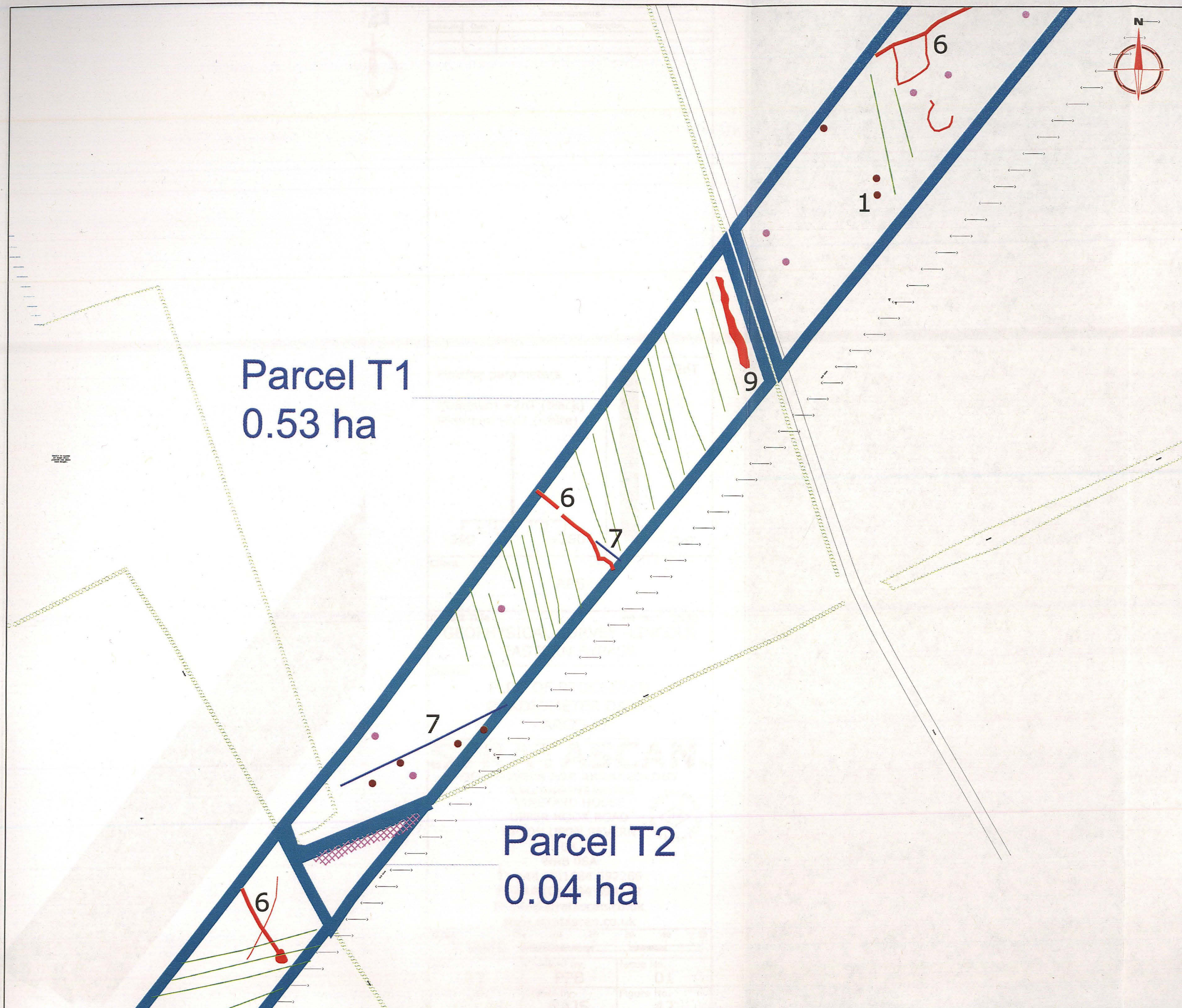
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	40



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
/	Negative linear anomaly - bank or earthwork of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby service or field boundary
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL T

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING

VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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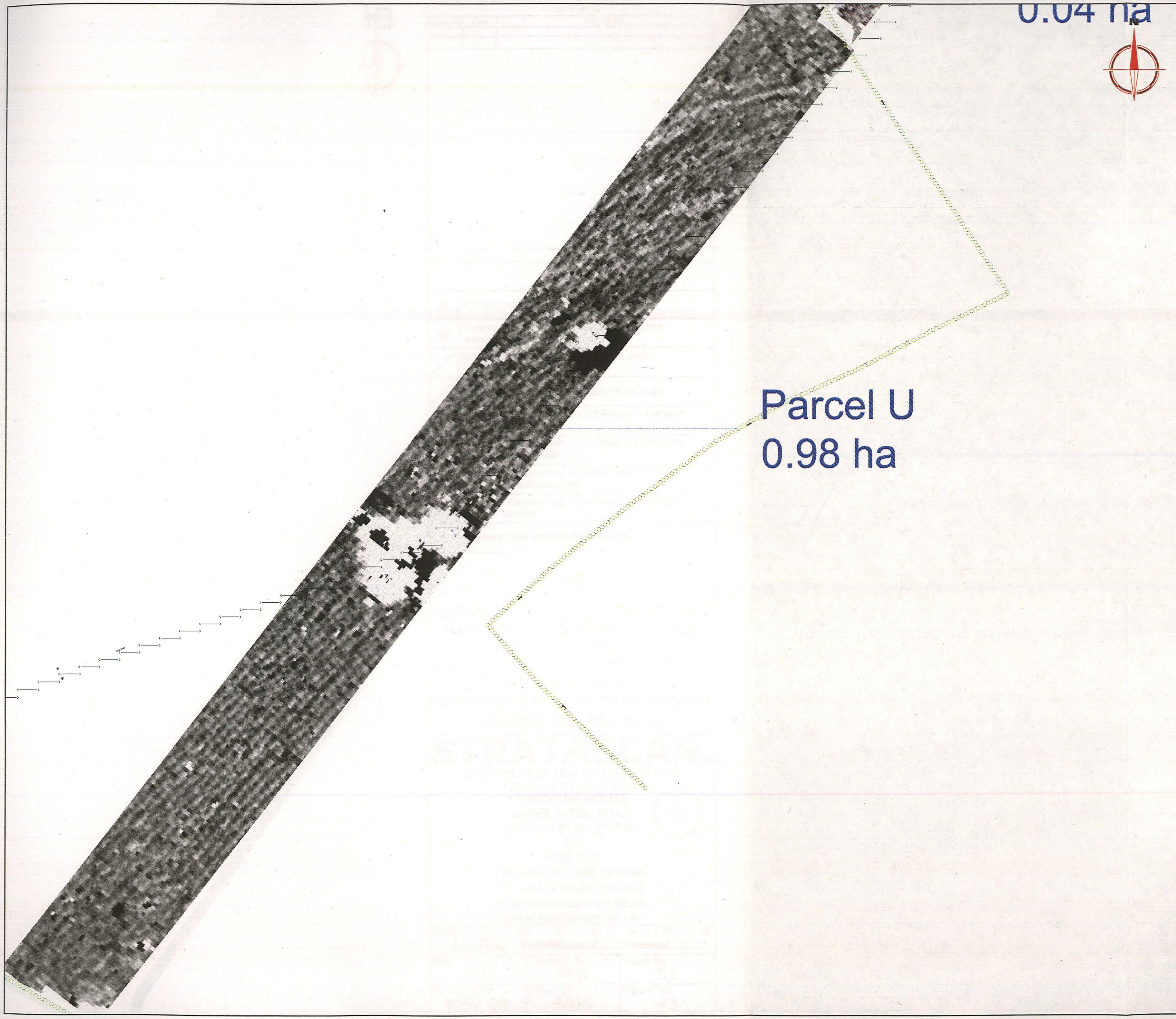
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	41



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

-3SD +3SD

+2nT
-2nT

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

PLOT OF PROCESSED GRADIOMETER DATA- PARCEL U

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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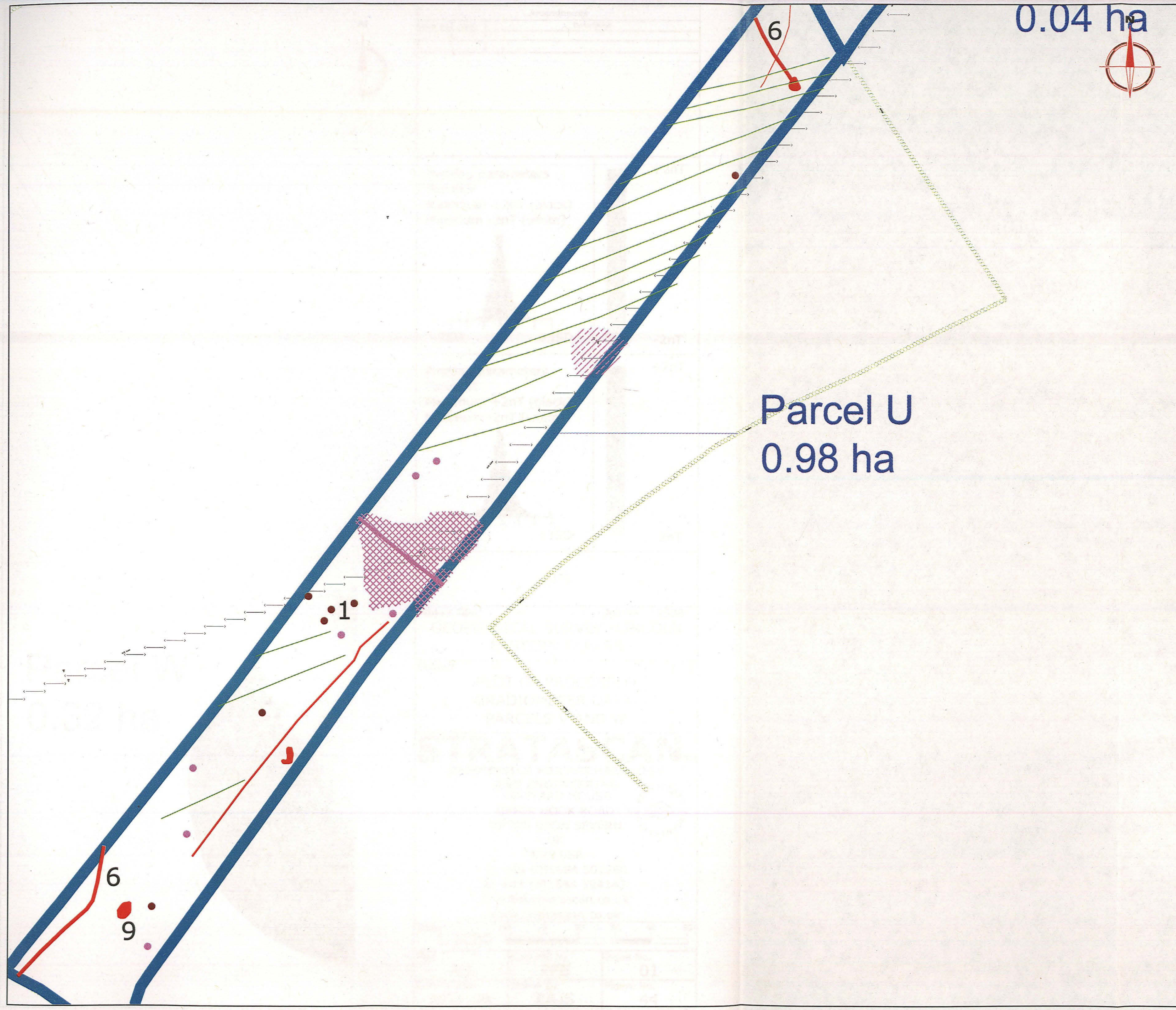
Scale 1:1000 — 0m 10 20 30 40 50

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	Drawn by	Figure No.
NOV 08	RAJS	42



Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Magnetic disturbance - associated with pipe/cable
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
	Positive area anomaly - cut feature of possible archaeological origin
	Magnetic disturbance associated with nearby service or field boundary
	Magnetic disturbance associated with nearby metallic objects
1	Anomaly type identification number

Client

APS

Project Title Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCEL U

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk
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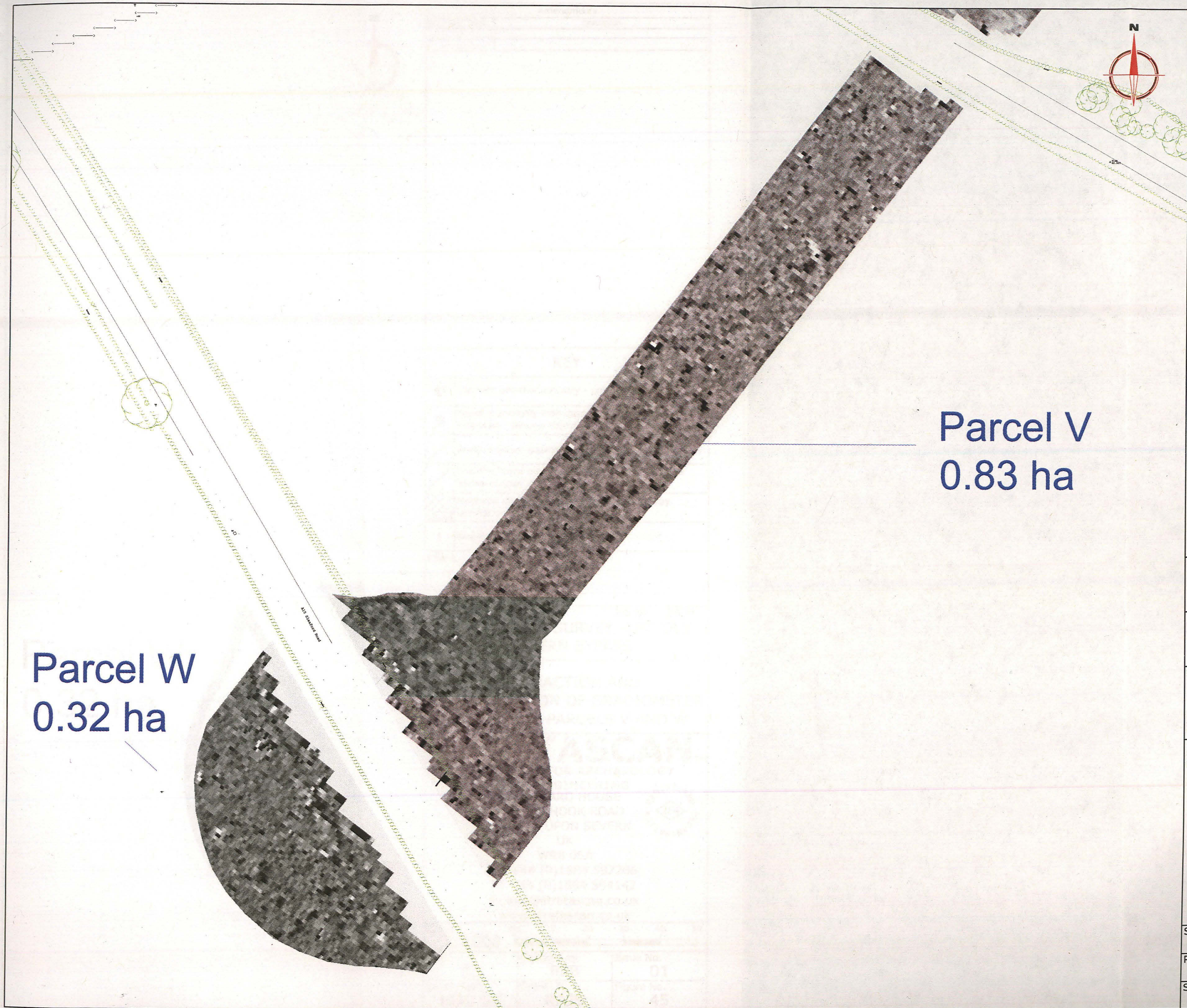
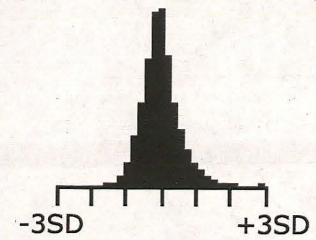
Scale 1:1000 (0m 10 20 30 40 50)

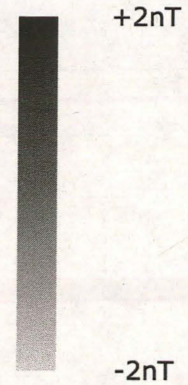
Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	43



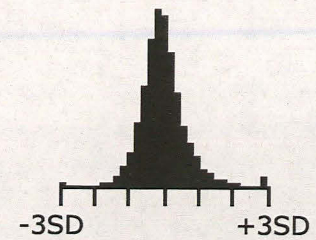
Amendments		
Issue No.	Date	Description
-	-	-
-	-	-

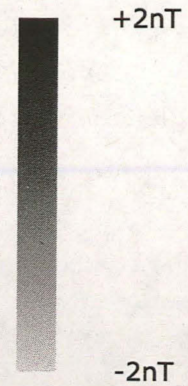
Plotting parameters
Parcel V
Maximum +2nT (black)
Minimum -2nT (white)





Plotting parameters
Parcel W
Maximum +2nT (black)
Minimum -2nT (white)





Client
APS

Project Title — Job No. 2538
GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject
PLOT OF PROCESSED GRADIOMETER DATA-PARCELS V AND W

STRATASCAN™
GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING
VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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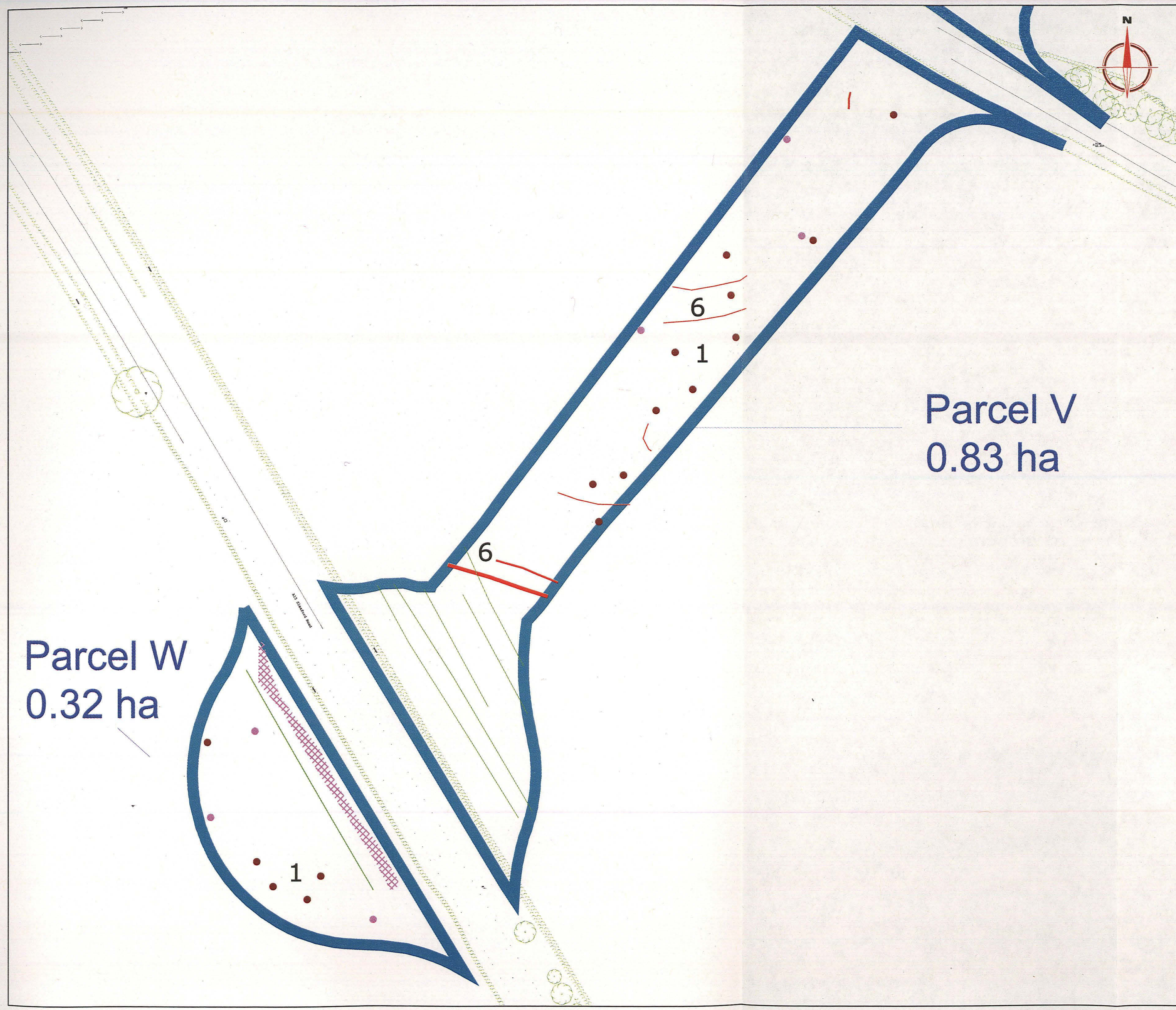
Scale 1:1000 (0m 10 20 30 40 50)

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	44



Amendments

Issue No.	Date	Description
-	-	-
-	-	-

KEY

●	Discrete positive anomaly - possible pit
●	Positive anomaly with associated negative response - ferrous object
/	Positive linear anomaly - agricultural mark
/	Positive linear anomaly - cut feature of possible archaeological origin
▩	Magnetic disturbance associated with nearby service or field boundary
1	Anomaly type identification number

Client

APS

Project Title — Job No. 2538

GEOPHYSICAL SURVEY -LINCOLN EASTERN BYPASS

Subject

ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES- PARCELS V AND W

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GEOPHYSICS FOR ARCHAEOLOGY AND ENGINEERING

VINEYARD HOUSE
UPPER HOOK ROAD
UPTON UPON SEVERN
UK
WR8 0SA
T: +44 (0)1684 592266
F: +44 (0)1684 594142
E: info@stratascan.co.uk
www.stratascan.co.uk

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

Plot	Checked by	Issue No.
A3	PPB	01
Survey date	**Drawn by**	**Figure No.**
NOV 08	RAJS	45