

An archaeological resistance survey

**Land at Bradninch Cricket Club,
Bradninch, Exeter, Devon**

Centred on NGR (E/N): 300000,103600 (point)

Report: 1704BRA-R-1

Ross Dean BSc MSc MA MCifA

16 December 2017

Substrata Ltd
Office 1, 5 Mill Street
Bideford
Devon EX39 2JT
Tel: 01273 273599
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

Client
AC Archaeology Ltd
4 Halthaies Workshops
Bradninch
Nr Exeter
Devon EX5 4QL
Tel: 01392 882410

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Project archive

| | |
|--|---------------------------------------|
| Report | Adobe PDF format |
| Copies of report figures | Adobe PDF format |
| Raw and processed grid & composite files..... | DW Consulting TerraSurveyor 3 formats |
| Minimal processing data plots and metadata..... | DW Consulting TerraSurveyor 3 formats |
| Final data processing data plots and metadata..... | DW Consulting TerraSurveyor 3 formats |
| GIS project, shape files and classification schema | |
| GIS project..... | Manifold 8 'map' file |
| GIS shape files..... | ESRI standard |
| GIS classification schema..... | Adobe PDF format |
| AutoCAD version of the survey interpretation..... | AutoCAD DXF |

Website: substrata.co.uk

For an overview of Substrata, our archaeological geophysical surveying techniques and the results we obtain.

1 Survey description and summary

1.1 Survey

Type: resistance
Date: 19 and 20 October 2017
Area: 0.81ha
Lead surveyor: Mark Edwards BA
Author: Ross Dean BSc MSc MA MifA with contributions from John Valentin of AC Archaeology Ltd (Section 6)

1.2 Clients

AC Archaeology Ltd, 4 Halthaies Workshops, Bradninch Nr Exeter, Devon EX5 4QL

1.3 Location

Site: Land at Bradninch Cricket Club
Town: Bradninch
District: Mid Devon
County: Devon
Nearest Postcode: EX5 4ND
NGR: ST 00000 03600 (point)
NGR (E/N): 300000,103600 (point)

1.4 Archive

OASIS number: substrat1-303683
Archive: At the time of writing, the archive of this survey will be held by Substrata. Depending on local authority policy, an archive of the unprocessed data may be deposited with the Archaeological Data Service

1.5 Introduction

This report presents the results of an archaeological earth resistance survey at the above site. It has been prepared for AC Archaeology Ltd as part of a Bradninch community research project. The survey area location is shown in Figure 1.

The area covering the current cricket and its immediate surroundings was an American army temporary camp constructed prior to the D-Day invasion of Normandy in World War 2. The camp was subsequently used as a POW camp for German soldiers (Devon County Council Historic Environment Entry MDV80418, summarised in Section 6 below). This survey was designed to help assess the state of beneath-ground preservation of the camp and contribute to the understanding of its history.

The survey was conducted around the edges of the cricket pitch as shown in Figure 2. The survey area included some of the military huts and infrastructure recorded on an aerial photograph (Royal Airforce, 1946).

1.6 Summary

The resistance responses across the survey area were sufficient to be able to differentiate between anomalies representing possible archaeological features and background resistance responses.

Forty-six resistance anomaly groups were mapped as representing possible archaeological deposits or features. One group is likely to represent a former field boundary recorded on the 1839 Bradninch tithe map but not on later Ordnance Survey historic maps. Fifteen of the groups appear to be associated with structures and paths of the former army camp recorded on an RAF aerial photograph taken in 1946. A further eleven groups are probably associated with the below-surface remains of the camp but cannot be characterised further. Six groups may be associated with the camp but other origins, such as ploughing disturbance or separate archaeological deposits, cannot be ruled out. Three groups do not appear to relate to

structures associated with the army camp and may have different archaeological origins. A cluster of ten anomaly groups have a north-south or east-west orientation which does not correspond with any of the army camp structures visible on the 1946 aerial photograph. It is possible that these anomaly groups relate to land drainage or an archaeological structure not recorded on the 1946 image.

2 Survey aims and objectives

2.1 Aims

To establish the presence or absence, extent and character of any archaeological features and deposits within the survey area.

2.2 Survey objectives

1. Complete a earth resistance survey across agreed parts of the survey area.
2. Identify any resistance anomalies that may be related to archaeological deposits, structures or artefacts.
3. Within the limits of the techniques and dataset, archaeologically characterise any such anomalies or patterns of anomalies.
4. Accurately record the location of the identified anomalies.
5. Produce a report based on the survey that is sufficiently detailed to inform any subsequent development on the survey area about the location and possible archaeological character of the recorded anomalies.

3 Methodology

The work was undertaken in accordance with the survey methodology statement (Dean, 2017).

The survey grid location information and grid plan were recorded as part of the project in a suitable GIS system (Table 3).

Data processing was undertaken using appropriate software (Table 3), with all anomalies being digitised and geo-referenced. The final report (this document) includes a graphical and textual account of the techniques undertaken, the data obtained and an archaeological interpretation of that data and conclusions about any likely archaeology.

4 Standards

The standards used to complete this survey are defined by the Chartered Institute for Archaeologists (2014a) and Historic England (2010). The codes of approved practice that were followed are those of the Chartered Institute for Archaeologists (2014b) and Archaeology Data Service (undated).

5 Site description

5.1 Landscape and land use

The survey area surrounded the cricket pitch as shown in Figure 2. The topography of the site is relatively flat and lies at approximately 80m AOD.

5.2 Geology

The bedrock across the site comprises breccia of the Permian Cadbury Breccia Formation. Generically these rocks are brown to reddish-brown unbedded to very roughly bedded breccia, consisting of angular to subrounded pebbles and cobbles of Culm Sandstone in a very poorly sorted gritty, clayey, sandy, silt. The clasts are mainly locally derived Culm Sandstone generally not exceeding 0.3m diameter; other clasts include vein quartz, chert and fossiliferous sandstone of Pilton Beds type (British Geological Survey, undated).

The superficial deposits for the site are not recorded in the source used (ibid).

6 Archaeological background

6.1 Historic landscape characterisation

‘Modern enclosures’

Modern enclosures that have been created by adapting earlier fields of probable post-medieval date. These are likely to have been ‘Barton Fields’ which are relatively large, regular enclosures which are likely to have been laid out between C15th-C18th. Some curving boundaries may be following earlier divisions in the pre-existing medieval fields (Devon County Council, undated a).

6.2 Summary of archaeological background

The cricket ground is located where an American army temporary camp was constructed prior to the D-Day invasion of Normandy in World War 2. The camp was subsequently used as a POW camp for German soldiers. The Devon County Council Historic Environment Record (HER) entry for the site (HER ref. MDV 80418) describes that a military camp of Second World War date was visible on aerial photographs of 1946 as a series of Nissen Hut type structures and a smaller number of larger buildings arranged around the perimeter of a trapezoidal shaped field to the south-west of Kensham Avenue, Bradninch. The huts are connected by a number of tracks or footpaths. A larger structure in the northwest corner of the camp and a second larger structure between the body of the camp and the road probably have housed communal facilities, such as the mess and washhouse. Two open rectangular spaces on the north and northeast sides of the camp, closest to the road, might have been used for exercise. All structures have since been removed and no traces are visible.

Other recorded archaeology nearby includes a possible prehistoric ditch recorded during a trench evaluation immediately to the north (MDV 102417), while a curvilinear ditched enclosure of probable prehistoric to Roman date is visible on aerial photographs as a cropmark on the south-east facing slopes overlooking the Culm valley, approximately 600m to the southwest (MDV 39865).

7 Results, discussion and conclusions

7.1 Scope and definitions

This survey was designed to record resistance anomalies. A resistance anomaly is a local variation in the electrical resistance of a soil and is related to its porosity, permeability, saturation, and chemical nature of entrapped fluids (Heimmer and De Vore, 1995:30), all of which can be altered by past human activities. Higher concentrations of ions allow electrical current to pass more easily through the soil, creating a lower electrical resistance.

The terms ‘archaeological deposit’, ‘structure’ and ‘feature’ refer to any artefacts, material deposits or disturbance of natural deposits thought to be the result of human activity, excluding recent land maintenance and farming.

Resistance anomalies cannot be regarded as physical archaeological deposits, structures or features and the dimensions of the anomalies shown do not represent the dimensions of any associated archaeology. The anomalies express resistance properties of sub-surface deposits and bedrock that, as appropriate, can be interpreted as representing archaeological deposits and features.

The analysis presented below identifies and characterises anomalies and anomaly groups that may relate to archaeological deposits, structures and features.

The reader is referred to Section 8.

7.2 Results

Figure 2 shows the interpretation of the survey data. It includes the anomaly groups identified as possibly relating to archaeological deposits along with their identifying numbers. Table 1 is an extract of the detailed analysis of the survey data sourced from the attribute tables of the GIS project provided in the project archive. Figure 8 shows the interpretation of the survey data over an approximately georeferenced aerial photograph of the camp taken in 1946.

Figures 2 and Table 1 comprise the analysis of the survey data.

Figures 3 and 4 are plots of processed data as specified in Tables 3 and 4. Figures 5 to 7 are plots of the unprocessed data along with its metadata.

7.3 Discussion

7.3.1 General points

Discussion scope

Not all anomalies or anomaly groups identified in Table 1 are necessarily discussed below. All identified anomaly groups are recorded in the GIS project held the survey archive.

Data collection

The survey was conducted around the edges of the cricket pitch as shown in Figure 2. The survey area included some of the ground shown as being associated with the military huts recorded on an aerial photograph Royal Airforce, 1946).

Anomaly characterisation and mapping

There are a number of anomaly groups that could be interpreted as relating to large postholes or pits although most will have natural origins. Anomalies of this sort are only mapped as potential archaeology if they are clustered in groups or otherwise form recognisable patterns.

Anomalies thought to relate to natural features and modern man-made objects such as manholes, water management equipment, drains, cables and other services were only mapped where they comprised significant resistance responses across the dataset that needed clarification.

Data trends

Some of the parallel, linear trends visible in the data are likely to represent ploughing disturbance or similar cultivation traces of unknown periods. These are plotted in Figure 2.

7.3.2 Data relating to historic maps and other records

Resistance anomaly group **r23** coincides with and is likely to represent a former field boundary recorded on the 1839 Bradninch tithe map (Devon County Council, undated b) but not on later Ordnance Survey historic maps.

The anomaly groups recorded as 'likely' in Figure 2 and Table 1 correspond to features recorded on an aerial photograph taken in 1946 (Royal Airforce, 1946) and shown in Figure 8. Groups **r1**, **r6**, **r13**, **r14**, **r16**, **r19** and **r27**, and possibly **r26**, **r28**, **r42**, **r43** and **r45**, are most likely to represent the remains of former paths that crisscrossed the camp. Groups **r11**, **r27** and **r30** are most likely to be associated with former huts.

Groups **r4**, **r5**, **r17**, **r20**, **r21**, **r22**, **r24**, **r25**, **r29**, **r31** and **r44** are more likely than not associated with the camp paths, structures and infrastructure but have a less certain relationship than those anomalies listed above.

7.3.3 Data with no previous archaeological provenance

Resistance anomaly groups **r2** and **r3** may relate to a footpath associated with the army camp but may equally well relate to an earlier archaeological deposit.

Groups **r7**, **r8**, **r9** and **r10** lie outwith the area of structures shown the 1946 aerial photograph (Figure 8) but have a similar orientation to those more likely to be associated with the camp and may relate to the camp or cultivation traces or, indeed, have a different archaeological origin.

Groups **r12**, **r15** and **r18** do not appear to relate to structures associated with the army camp and may have different archaeological origins.

Groups **r32 to r41** have a north-south or east-west orientation which does not correspond with any of the army camp structures visible on the 1946 aerial photograph (Figure 8). It is possible that these anomaly groups relate to land drainage or a structure not recorded on the 1946 image.

7.4 Conclusions

The resistance responses across the survey area were sufficient to be able to differentiate between anomalies representing possible archaeological features and background resistance responses.

Forty-six resistance anomaly groups were mapped as representing possible archaeological deposits or features. One group (**r23**) is likely to represent a former field boundary recorded on the 1839 Bradninch tithe map but not on later Ordnance Survey historic maps. Fifteen of the groups appear to be associated with structures (**r11**, **r27** and **r30**) and paths (**r1**, **r6**, **r13**, **r14**, **r16**, **r19** and **r27**, and possibly **r26**, **r28**, **r42**, **r43** and **r45**) of the former army camp recorded on an RAF aerial photograph taken in 1946. A further eleven groups are probably associated with the below-surface remains of the camp but cannot be characterised further (**r4**, **r5**, **r17**, **r20**, **r21**, **r22**, **r24**, **r25**, **r29**, **r31** and **r44**). Six groups (**r2**, **r3**, **r7**, **r8**, **r9**, **r10** and **r46**) may be associated with the camp but other origins, such as ploughing disturbance or separate archaeological deposits, cannot be ruled out. Three groups (**r12**, **r15** and **r18**) do not appear to relate to structures associated with the army camp and may have different archaeological origins. A cluster of ten anomaly groups (**r32 to r41**) have a north-south or east-west orientation which does not correspond with any of the army camp structures visible on the 1946 aerial photograph. It is possible that these anomaly groups relate to land drainage or an archaeological structure not recorded on the 1946 image.

8 Disclaimer and copyright

The description and discussion of the results presented in this report are the authors, based on his interpretation of the survey data. Every effort has been made to provide accurate descriptions and interpretations of the geophysical data set. The nature of archaeological geophysical surveying is such that interpretations based on geophysical data, while informative, can only be provisional. Geophysical surveys are a cost-effective early step in the multi-phase process that is archaeology. The evaluation programme of which this survey is part may also be informed by other archaeological assessment work and analysis. It must be presumed that more archaeological features will be evaluated than those specified in this report.

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9 Acknowledgements

Substrata would like to thank John Valentin of AC Archaeology Ltd for commissioning us to complete this survey.

10 Bibliography

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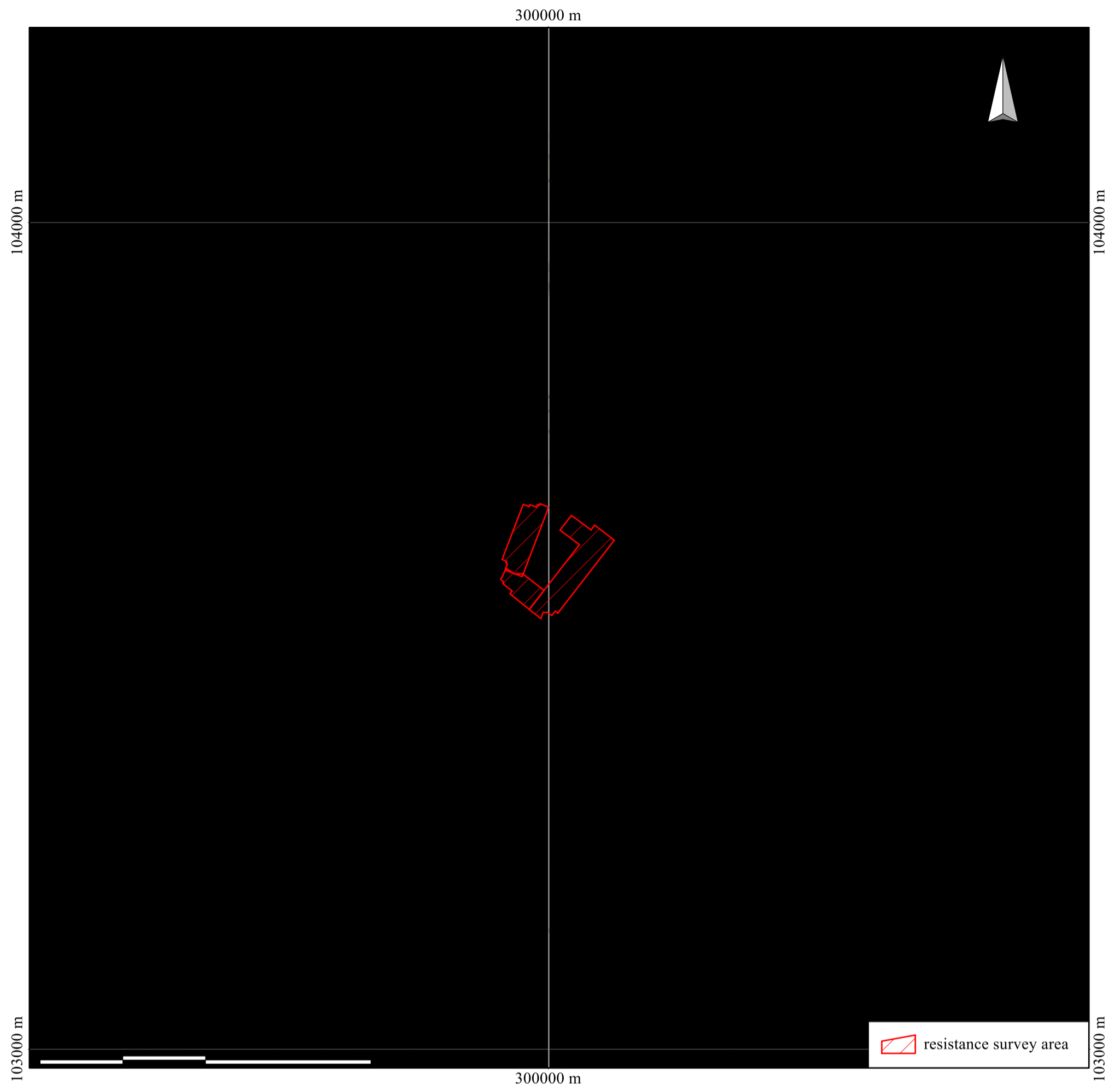
Royal Air Force (1946) RAF/CPE/UK/1823 RS, RAF/CPE/UK/1995 RS 4043-4044 04-NOV-1946 (Aerial Photograph)

Appendix 1 Figures

General Guidance

The anomalies represented in the survey plots provided in this appendix are resistance anomalies. The apparent size of such anomalies and anomaly patterns are unlikely to correspond exactly with the dimensions of any associated archaeological features.

A rough rule for interpreting resistance anomalies is that if an x-y trace is drawn of the resistance over an anomaly, then the width of an anomaly at half its maximum height is equal to the width of the buried feature. Caution must be applied when using this rule as it depends on the anomalies being clearly identifiable and distinct from adjacent anomalies and it should be noted that the relationship between change in resistance response and depth is not linear (Gaffney and Gater, 2003: 112).



British Grid
 centre X: 300013.20 m, centre Y: 103606.61 m

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 Base map: Ordnance Survey (c) Crown Copyright 2017.
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Scale: 1:5000 @ A3. Spatial Units: Meter. Do not scale off this drawing

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Substrata Limited
 Langstrath, Goodleigh
 Barnstaple, Devon EX32 7LZ
 Tel: 01271 342721
 Email: geophysics@substrata.co.uk
 Web: substrata.co.uk

Figure 1: location map



British Grid
centre X: 300010.93 m, centre Y: 103593.41 m

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Scale: 1:700 @ A3. Spatial Units: Meter. Do not scale off this drawing

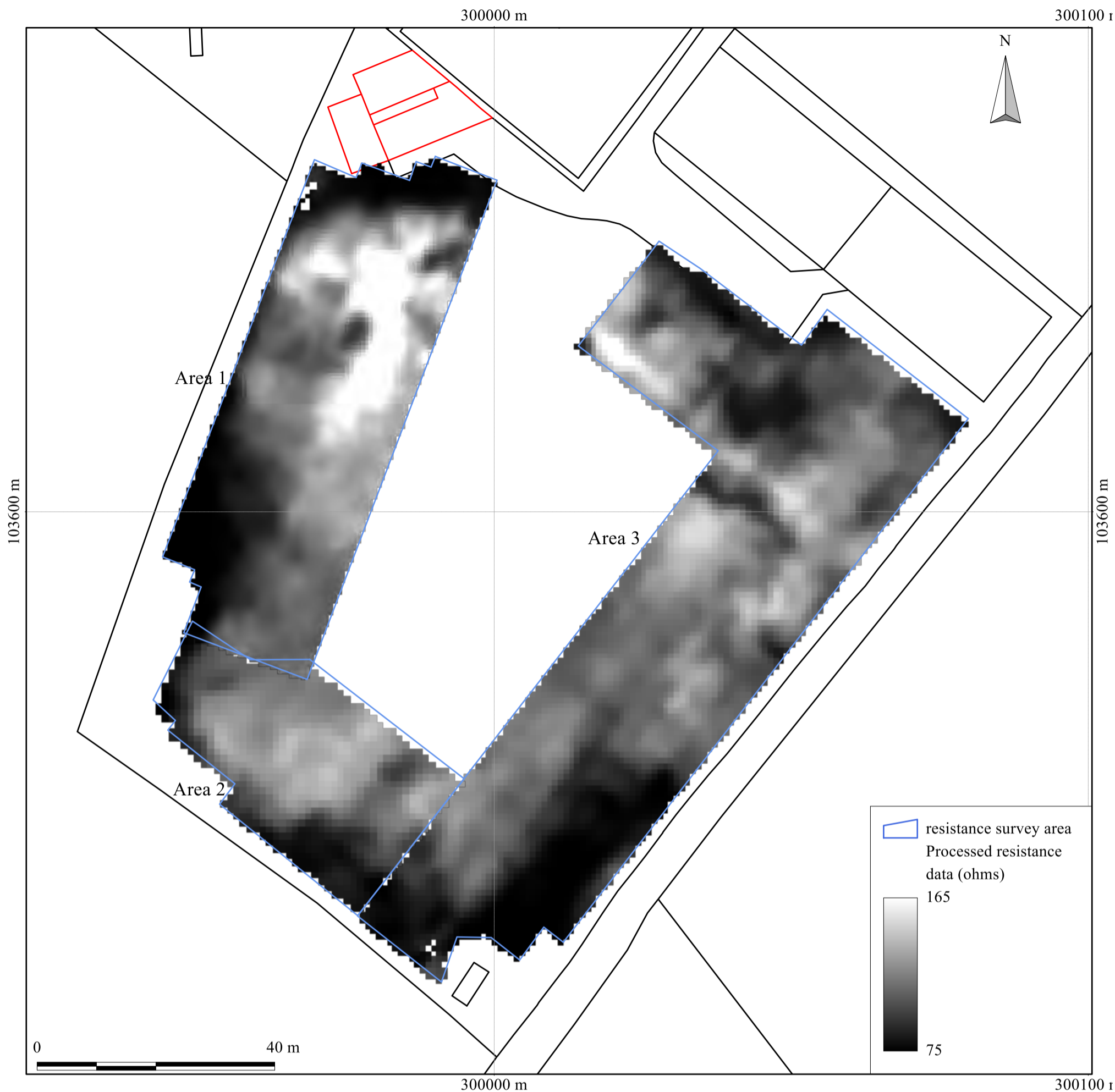
Notes:

1. All interpretations are provisional and represent potential archaeological deposits.
2. 'Anomaly type' is a description of the magnetic anomaly. See the report text or GIS for an archaeological characterisation.
3. Anomalies designated "likely archaeology" have supporting evidence e.g. historical maps and or visible earthworks.
4. Not all instances are mapped.
5. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potential archaeological events or deposits.

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Barnstaple, Devon EX32 7LZ
Tel: 01271 342721
Email: geophysics@substrata.co.uk
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Figure 2: survey interpretation



British Grid
 centre X: 300010.93 m, centre Y: 103593.41 m

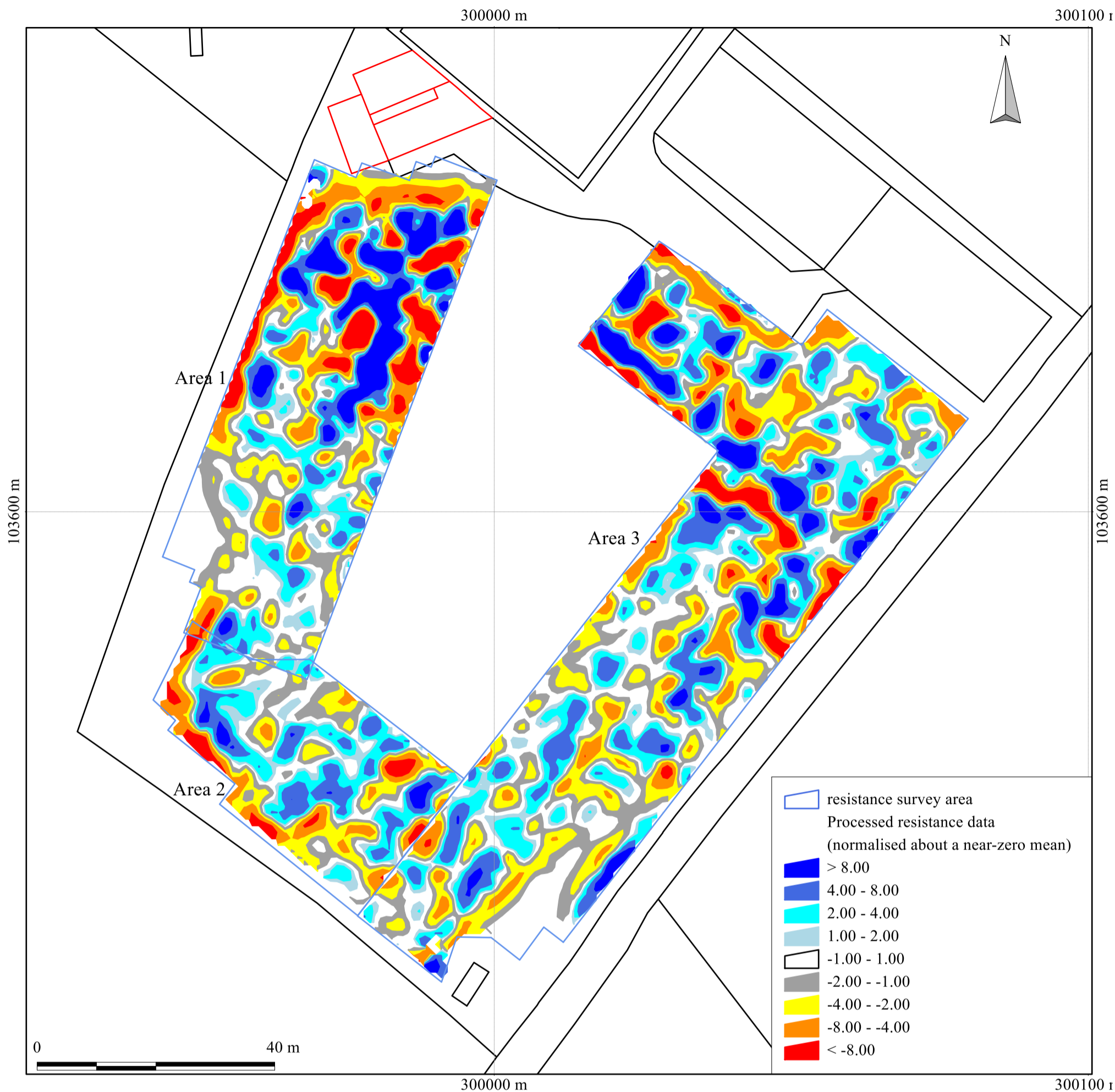
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 Barnstaple, Devon EX32 7LZ
 Tel: 01271 342721
 Email: geophysics@substrata.co.uk
 Web: substrata.co.uk

Figure 3: shade plot of processed resistance data



British Grid
centre X: 300010.93 m, centre Y: 103593.41 m

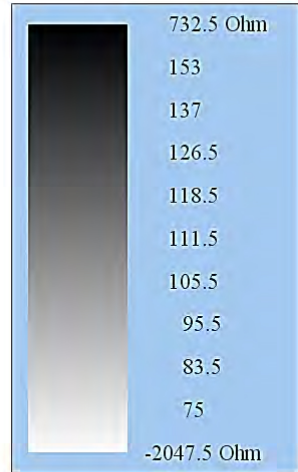
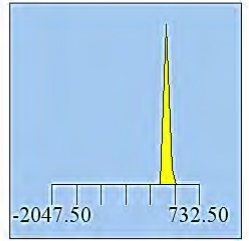
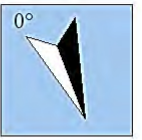
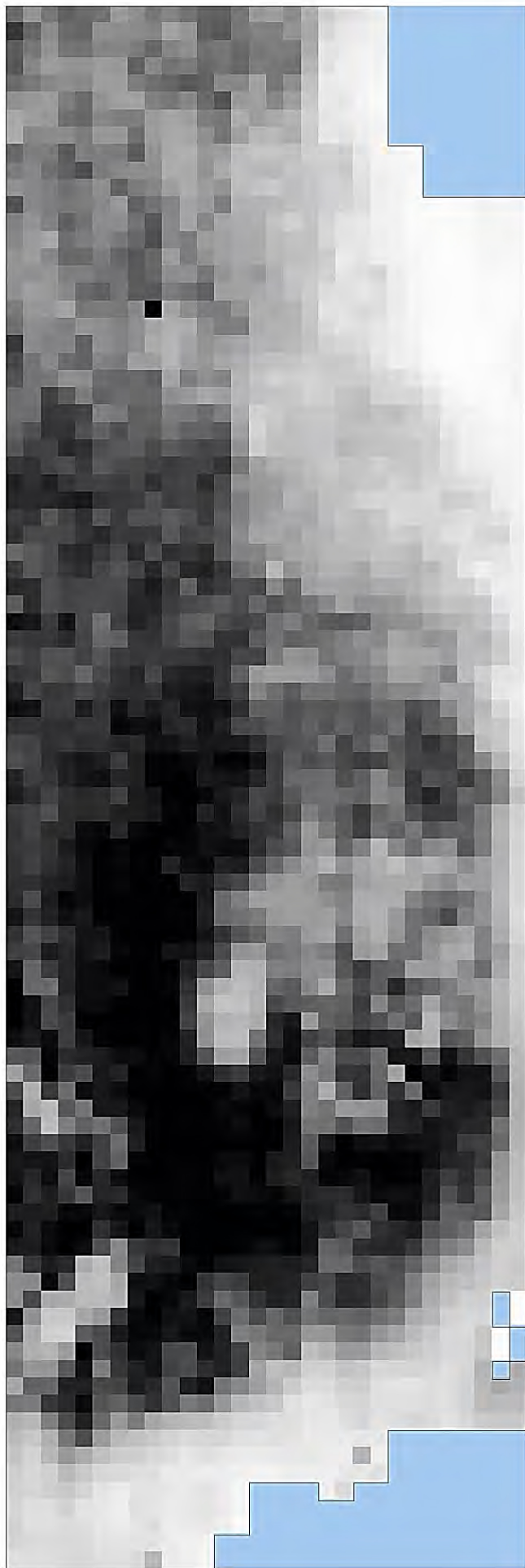
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Substrata Limited
Langstrath, Goodleigh
Barnstaple, Devon EX32 7LZ
Tel: 01271 342721
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

Figure 4: contour plot of processed resistance data



Instrument Type: GeoScan (Resistance)
 Units: Ohm
 Direction of 1st Traverse: 201 deg
 Collection Method: ZigZag
 Sensors: 1
 Dummy Value: 2047.5
 Dimensions
 Grid Size: 30 m x 30 m
 X Interval: 1 m
 Y Interval: 1 m
 Stats
 Max: 732.50
 Min: -2047.50
 Std Dev: 93.88
 Mean: 113.98
 Median: 113.00
 Surveyed Area: 0.2507 ha
 PROGRAM
 Name: TerraSurveyor
 Version: 3.0.33.6

Processes: 1
 1 Base Layer

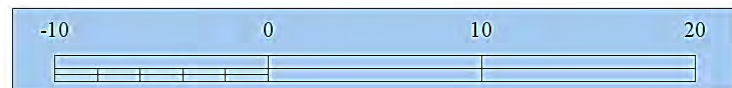
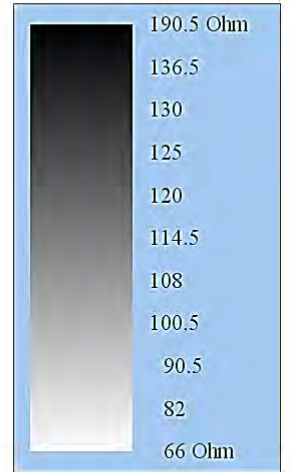
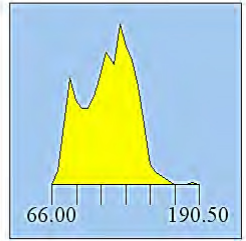
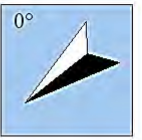
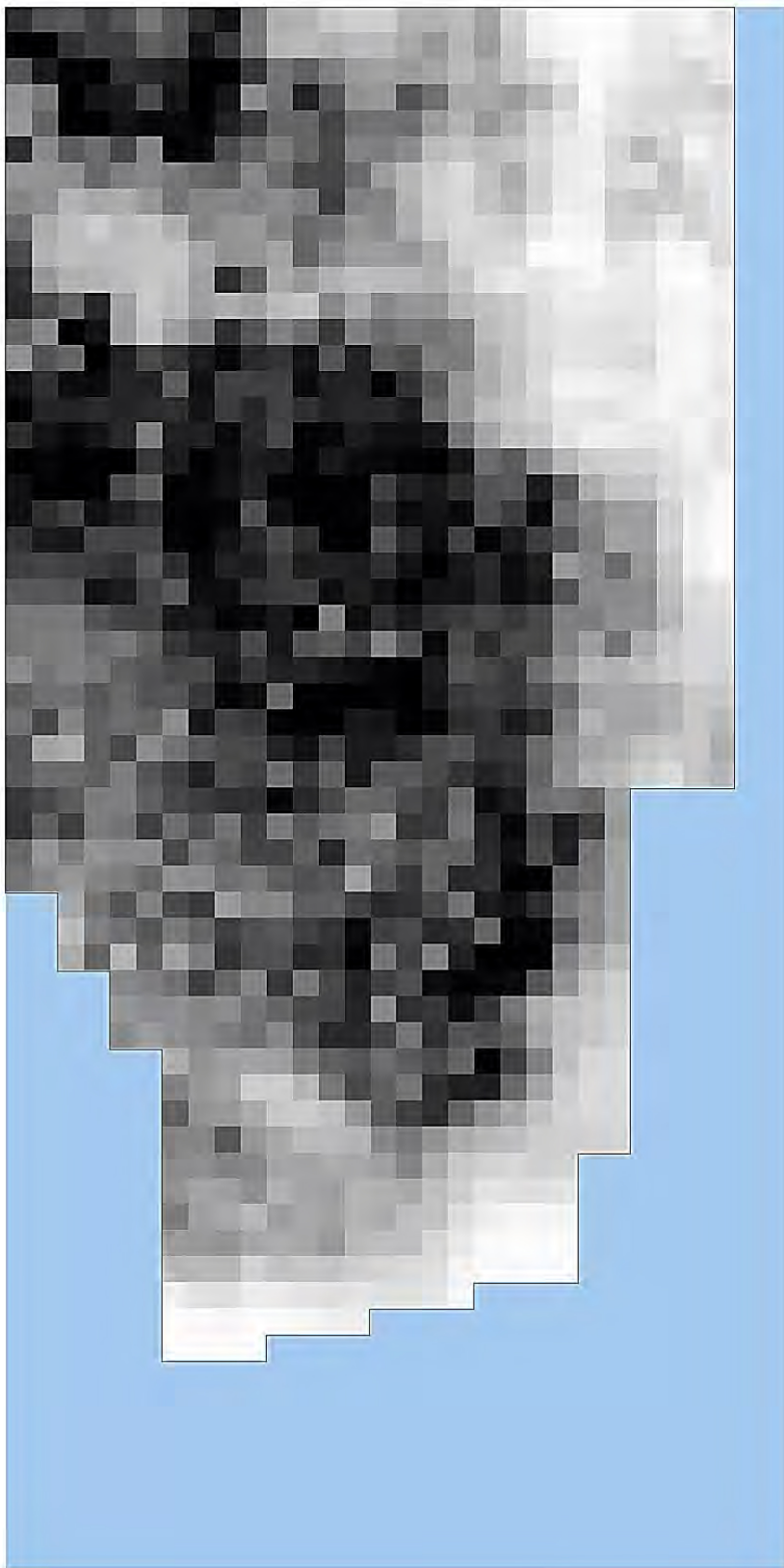


Figure 5: shade plot of unprocessed resistance data, Area 1



Instrument Type: GeoScan (Resistance)
 Units: Ohm
 Direction of 1st Traverse: 128 deg
 Collection Method: ZigZag
 Sensors: 1
 Dummy Value: 2047.5
 Dimensions
 Grid Size: 30 m x 30 m
 X Interval: 1 m
 Y Interval: 1 m
 Stats
 Max: 190.50
 Min: 66.00
 Std Dev: 21.02
 Mean: 112.91
 Median: 115.00
 Surveyed Area: 0.1238 ha
 PROGRAM
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 Version: 3.0.33.6

Processes: 1
 1 Base Layer

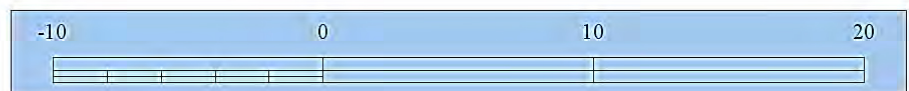
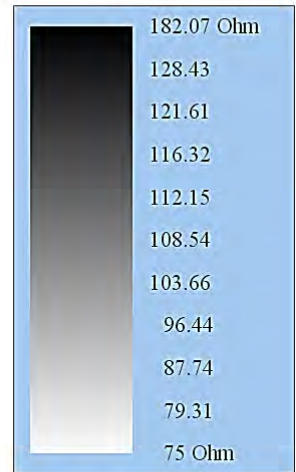
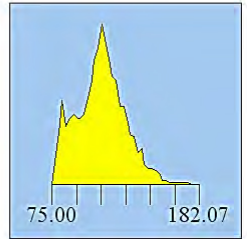
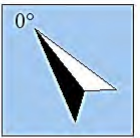
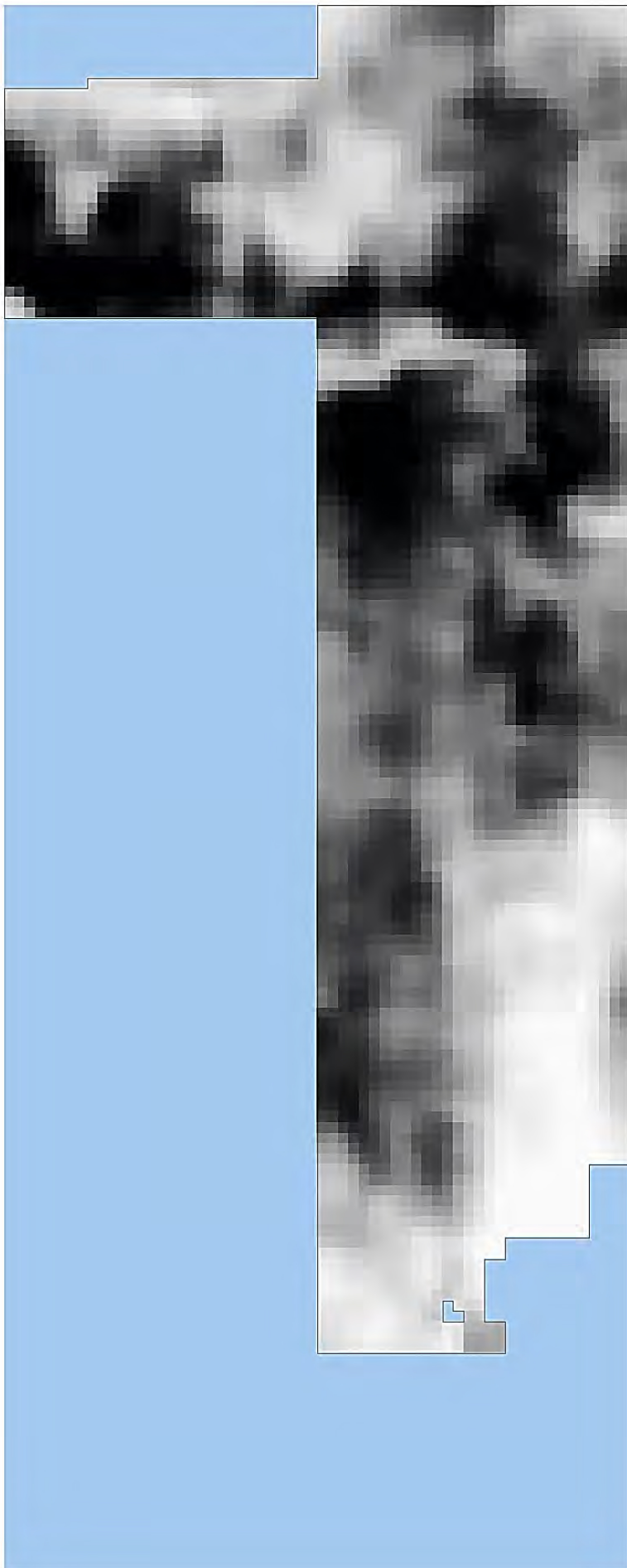


Figure 6: shade plot of unprocessed resistance data, Area 2



Instrument Type: GeoScan (Resistance)
 Units: Ohm
 Direction of 1st Traverse: 38 deg
 Collection Method: ZigZag
 Sensors: 1
 Dummy Value: 2047.5
 Dimensions
 Grid Size: 30 m x 30 m
 X Interval: 1 m
 Y Interval: 1 m
 Stats
 Max: 182.07
 Min: 75.00
 Std Dev: 19.44
 Mean: 107.96
 Median: 109.36
 Surveyed Area: 0.4377 ha
 PROGRAM
 Name: TerraSurveyor
 Version: 3.0.33.6

Processes: 1
 1 Base Layer

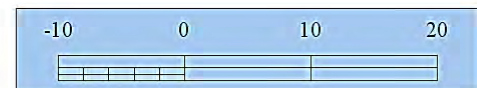
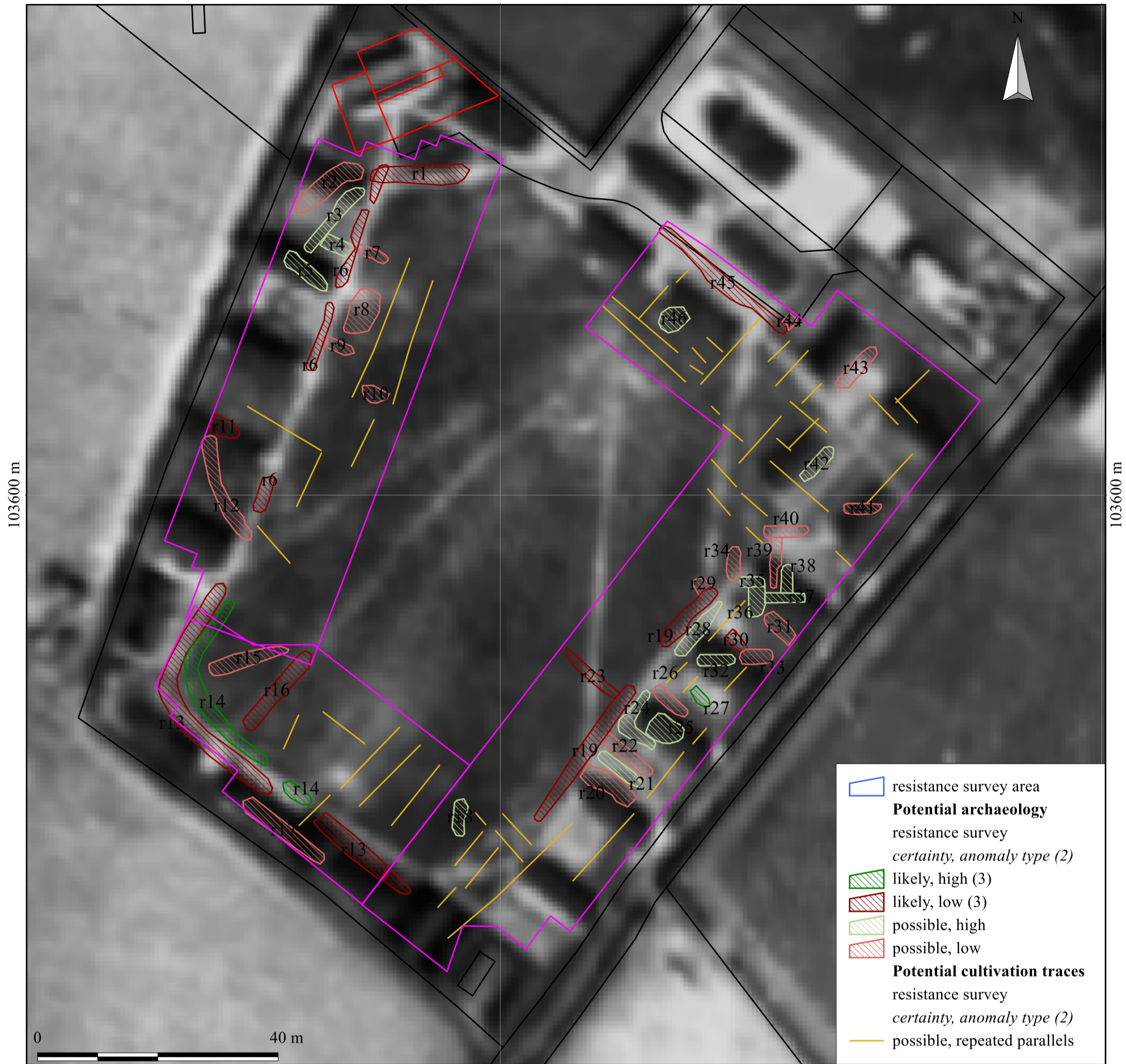


Figure 7: shade plot of unprocessed resistance data, Area 3

300000 m

300100 m



103600 m

103600 m

300000 m

300100 m

British Grid
centre X: 300010.93 m, centre Y: 103593.41 m

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Scale: 1:700 @ A3. Spatial Units: Meter. Do not scale off this drawing

Notes:

1. All interpretations are provisional and represent potential archaeological deposits.
2. 'Anomaly type' is a description of the magnetic anomaly. See the report text or GIS for an archaeological characterisation.
3. Anomalies designated "likely archaeology" have supporting evidence e.g. historical maps and or visible earthworks.
4. Not all instances are mapped.
5. Anomalies likely to represent geological or other natural deposits are not mapped unless relevant to potential archaeological events or deposits.

An archaeological resistance survey
Land at Bradninch Cricket Club, Bradninch, Exeter, Devon
Centred on NGR (E/N): 300000,103600 (point)
Report: 1704BRA-R-1

Substrata Limited
Langstrath, Goodleigh
Barnstaple, Devon EX32 7LZ
Tel: 01271 342721
Email: geophysics@substrata.co.uk
Web: substrata.co.uk

Figure 8: survey interpretation over an approximately georeferenced aerial photograph
(Royal Air Force, 1946, RAF/CPE/UK/1823 RS, RAF/CPE/UK/1995
RS 4043-4044 04-NOV-1946)

Appendix 2 Tables

Site: An archaeological resistance survey
Land at Bradninch Cricket Club, Bradninch, Exeter, Devon
Centred on NGR (E/N): 300000,103600 (point)
Report: 1704BRA-R-1

| anomaly group | associated anomalies | anomaly characterisation certainty & class | anomaly form | additional archaeological characterisation | comments | supporting evidence |
|---------------|-------------------------------------|--|------------------|---|---|--------------------------|
| r1 | | likely, low | linear | former path | anomaly group coincides with a footpath recorded on an aerial photograph | 1 |
| r2 | | possible, low | curvilinear | archaeological deposit or cultivation trace | | |
| r3 | | possible, high | curvilinear | archaeological deposit or cultivation trace | | |
| r4 | | possible, high | linear | | | |
| r5 | | possible, high | linear | archaeological deposit or cultivation trace | anomaly group approximately coincides with a broad linear recorded on an aerial photograph | 1 |
| r6 | | likely, low | disrupted linear | former path | anomaly group coincides with a footpath recorded on an aerial photograph | 1 |
| r7 | | possible, low | linear | | | |
| r8 | | possible, low | oval | surface, filled pit or natural hollow | | |
| r9 | | possible, low | linear | | | |
| r10 | | possible, low | linear | | | |
| r11 | | likely, low | linear | | anomaly group approximately coincides with a broad linear recorded on an aerial photograph | 1 |
| r12 | | possible, low | curvilinear | | anomaly group has an unusual form for the dataset and may relate to a different phase of archaeological deposition from the military camp | |
| r13 | r14 | likely, low | disrupted return | former path | anomaly group coincides with a footpath recorded on an aerial photograph | 1 |
| r14 | r13 | likely, high | disrupted return | former path | anomaly group coincides with a footpath recorded on an aerial photograph | 1 |
| r15 | | possible, low | linear | | | |
| r16 | | likely, low | linear | former path | anomaly group coincides with a footpath recorded on an aerial photograph | 1 |
| r17 | | possible, low | linear | archaeological deposit or former field boundary ditch | | |
| r18 | | possible, high | linear | | | |
| r19 | | likely, low | disrupted linear | former path | anomaly group coincides with a footpath recorded on an aerial photograph | 1 |
| r20 | | possible, low | linear | archaeological deposit or cultivation trace | anomaly group approximately coincides with a broad linear recorded on an aerial photograph | 1 |
| r21 | | possible, high | linear | archaeological deposit or cultivation trace | anomaly group approximately coincides with a linear recorded on an aerial photograph | 1 |
| r22 | | possible, low | linear | archaeological deposit or cultivation trace | anomaly group approximately coincides with a linear recorded on an aerial photograph | 1 |
| r23 | | likely, low | linear | field boundary | anomaly group approximately coincides with a field boundary recorded on the tithe map but not on later historical maps | 1839 Bradninch tithe map |
| r24 | | possible, high | return | | | |
| r25 | | possible, high | irregular | surface, filled pit or natural hollow | | |
| r26 | | possible, low | linear | archaeological deposit or cultivation trace | | |
| r27 | | likely, high | linear | | anomaly group approximately coincides with a linear recorded on an aerial photograph | 1 |
| r28 | | possible, high | linear | | | |
| r29 | | possible, low | linear | | | |
| r30 | | likely, low | linear | | anomaly group approximately coincides with a linear recorded on an aerial photograph | 1 |
| r31 | | possible, low | linear | | | |
| r32 | r33 r34 r35 r36 r37 r38 r39 r40 r41 | possible, high | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r33 | r32 r34 r35 r36 r37 r38 r39 r40 r41 | possible, low | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r34 | r32 r33 r35 r36 r37 r38 r39 r40 r41 | possible, low | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r35 | r32 r33 r34 r36 r37 r38 r39 r40 r41 | possible, high | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r36 | r32 r33 r34 r35 r37 r38 r39 r40 r41 | possible, high | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r37 | r32 r33 r34 r35 r36 r38 r39 r40 r41 | possible, high | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r38 | r32 r33 r34 r35 r36 r37 r39 r40 r41 | possible, high | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r39 | r32 r33 r34 r35 r36 r37 r38 r40 r41 | possible, low | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r40 | r32 r33 r34 r35 r36 r37 r38 r39 r41 | possible, low | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r41 | r32 r33 r34 r35 r36 r37 r38 r39 r40 | possible, low | linear | foundation footings? localised field drainage? | anomaly group is part of a cluster which have a N-S or E-W orientation | |
| r42 | | possible, high | linear | archaeological deposit or cultivation trace | | |
| r43 | | possible, low | linear | archaeological deposit or cultivation trace | anomaly group coincides with a straight edge recorded on an aerial photograph | 1 |
| r44 | | possible, low | linear | archaeological deposit or cultivation trace | | |
| r45 | | likely, low | linear | | anomaly group approximately coincides with a linear recorded on an aerial photograph | 1 |
| r46 | | possible, high | oval | surface, filled pit or natural hollow | | |

Table 1: data analysis

1: Royal Air Force, 1946, RAF/CPE/UK/1823 RS, RAF/CPE/UK/1995 RS 4043-4044 04-NOV-1946 (Aerial Photograph). SDV356902, HER MDV80418

| | |
|---|---|
| <p>Documents Survey method statement: Dean (2017)</p> | |
| <p>Methodology</p> <ol style="list-style-type: none"> 1. The work was undertaken in accordance with the survey methodology statement. The geophysical survey was undertaken with reference to standard guidance provided by the Chartered Institute for Archaeologists (2014) and Archaeology Data Service/Digital Antiquity Guides (undated). 2. The survey grid location information and grid plan was recorded as part of the project in a suitable GIS system. 3. Data processing was undertaken using appropriate software, with all anomalies being digitised and geo-referenced. The final report included a graphical and textual account of the techniques undertaken, the data obtained and an archaeological interpretation of that data and conclusions about any likely archaeology. | |
| <p>Grid <i>Method of Fixing:</i> DGPS set-out using pre-planned survey grids and Ordnance Survey coordinates. <i>Composition:</i> 30m by 30m grids <i>Recording:</i> Geo-referenced and recorded using digital map tiles. <i>DGPS used:</i> Spectra Precision PM5V2 GPS with external antenna and survey pole and DigiTerra Explorer 7 as the survey control program.</p> | |
| <p>Resistance Equipment <i>Instrument:</i> Geoscan Research RM15 multi-probe resistance meter <i>Configuration:</i> twin probe <i>Mobile probe spacing:</i> 0.5-metres</p> | <p>Resistance Data Capture <i>Sample Interval:</i> 1 metre <i>Traverse Interval:</i> 1 metre <i>Data capture:</i> automatic data logger <i>Traverse Method:</i> zigzag <i>Traverse Orientation:</i> area 1: GN201 area 2: GN128 area 3: GN38 and GN308</p> |
| <p>Data Processing, Analysis and Presentation Software QCAD Professional 3 DW Consulting TerraSurveyor3 Manifold System 8 GIS Microsoft Corp. Office Excel Microsoft Corp. Office Publisher Adobe Systems Inc Adobe Acrobat 9 Pro Extended</p> | |

Table 2: methodology summary

| | |
|----------------------------|---|
| SITE | |
| Instrument Type: | Geoscan Research RM15 |
| Units: | resistance data (ohms) |
| Direction of 1st Traverse: | varies - see Table 2 |
| Collection Method: | ZigZag |
| Sensors: | 2 @ 1.00 m spacing. |
| Dummy Value: | 32702 |
| PROGRAM | |
| Name: | TerraSurveyor |
| Version: | 3.0.33.6 |
| Area 1 | |
| Stats | |
| Max: | 220.37 |
| Min: | 75.00 |
| Std Dev: | 30.82 |
| Mean: | 116.83 |
| Median: | 113.04 |
| Surveyed Area: | 0.2507 ha |
| Processes: 5 | |
| 1 | Base Layer |
| 2 | Despik Threshold: 1 Window size: 3x3 |
| 3 | Despik Threshold: 1 Window size: 3x3 |
| 4 | Clip from 75.00 to 230.00 Ohm |
| 5 | Low pass Gaussian filter: Window: 3 x 3 |
| Area 2 | |
| Stats | |
| Max: | 145.54 |
| Min: | 75.00 |
| Std Dev: | 19.14 |
| Mean: | 112.65 |
| Median: | 116.34 |
| Surveyed Area: | 0.1238 ha |
| Processes: 6 | |
| 1 | Base Layer |
| 2 | Despik Threshold: 1 Window size: 3x3 |
| 3 | Despik Threshold: 1 Window size: 3x3 |
| 4 | Despik Threshold: 1 Window size: 3x3 |
| 5 | Clip from 75.00 to 230.00 Ohm |
| 6 | Low pass Gaussian filter: Window: 3 x 3 |
| Area 3 | |
| Stats | |
| Max: | 182.07 |
| Min: | 75.00 |
| Std Dev: | 19.44 |
| Mean: | 107.96 |
| Median: | 109.36 |
| Surveyed Area: | 0.4377 ha |
| Processes: 6 | |
| 1 | Base Layer |
| 2 | Despik Threshold: 1 Window size: 3x3 |
| 3 | Despik Threshold: 1 Window size: 3x3 |
| 4 | Despik Threshold: 1 Window size: 3x3 |
| 5 | Clip from 75.00 to 230.00 Ohm |
| 6 | Low pass Gaussian filter: Window: 3 x 3 |

Table 3: processed data metadata for Figure 3

| | |
|----------------------------|--|
| SITE | |
| Instrument Type: | Geoscan Research RM15 |
| Units: | resistance data (ohms) normalised about a near-zero mean |
| Direction of 1st Traverse: | 270 deg |
| Collection Method: | ZigZag |
| Sensors: | 2 @ 1.00 m spacing. |
| Dummy Value: | 32702 |
| PROGRAM | |
| Name: | TerraSurveyor |
| Version: | 3.0.33.6 |
| Area 1 | |
| Stats | |
| Max: | 34.51 |
| Min: | -36.04 |
| Std Dev: | 7.67 |
| Mean: | -0.43 |
| Median: | -0.64 |
| Surveyed Area: | 0.2507 ha |
| Processes: 6 | |
| 1 | Base Layer |
| 2 | Despike Threshold: 1 Window size: 3x3 |
| 3 | Despike Threshold: 1 Window size: 3x3 |
| 4 | Clip from 75.00 to 230.00 Ohm |
| 5 | High pass Gaussian filter: Window: 10 x 10 |
| 6 | Low pass Gaussian filter: Window: 3 x 3 |
| Area 2 | |
| Stats | |
| Max: | 13.86 |
| Min: | -14.60 |
| Std Dev: | 4.69 |
| Mean: | -0.51 |
| Median: | -0.35 |
| Surveyed Area: | 0.1238 ha |
| Processes: 7 | |
| 1 | Base Layer |
| 2 | Despike Threshold: 1 Window size: 3x3 |
| 3 | Despike Threshold: 1 Window size: 3x3 |
| 4 | Despike Threshold: 1 Window size: 3x3 |
| 5 | Clip from 75.00 to 230.00 Ohm |
| 6 | High pass Gaussian filter: Window: 10 x 10 |
| 7 | Low pass Gaussian filter: Window: 3 x 3 |
| Area 3 | |
| Stats | |
| Max: | 28.15 |
| Min: | -46.11 |
| Std Dev: | 5.49 |
| Mean: | -0.17 |
| Median: | -0.33 |
| Surveyed Area: | 0.4377 ha |
| Processes: 7 | |
| 1 | Base Layer |
| 2 | Despike Threshold: 1 Window size: 3x3 |
| 3 | Despike Threshold: 1 Window size: 3x3 |
| 4 | Despike Threshold: 1 Window size: 3x3 |
| 5 | Clip from 75.00 to 230.00 Ohm |
| 6 | High pass Gaussian filter: Window: 10 x 10 |
| 7 | Low pass Gaussian filter: Window: 3 x 3 |

Table 4: processed data metadata for Figure 4