



Ballycarry fort, County Antrim

Geophysical investigations at the site of a 16th-17th century fortification at

Ballycarry southwest, Co. Antrim

SMR No.: ANT 047:068

Grid Ref: J 4477 9353

On behalf of

Televisionary Ltd

Sapphire Mussen

CAF GSR 22

Date: 12th November 2012

Licence No.:AE/12/115

Contents

List of Figures	2
1 Summary	3
2 Cartographic Evidence	4
3 The Survey Site.....	5
4 Survey Specific Information	5
5 Earth Resistance Survey Results	7
6 Discussion of Survey Results	9
7 Conclusion	10
The Figures	11

List of Figures

- Figure 1 Map showing the approximate location of ANT 047:068 at Ballycarry southwest
- Figure 2 Extracts from 6-inch Ordnance Survey maps of Ballycarry southwest
- Figure 3 Map showing the location of the 2012 gridded survey area
- Figure 4 Shade plot of raw resistance data
- Figure 5 Shade plot of resistance data following the application of High Pass Filter
- Figure 6 Simplified interpretations of resistance survey data

1.0 Summary

1.1 Site Specific Information

<i>Site Name:</i>	Ballycarry
<i>Townland:</i>	Ballycarry southwest
<i>SMR No.:</i>	ANT 047:068 (scheduled)
<i>Grid Ref.:</i>	J 4477 9353
<i>County:</i>	Antrim
<i>Dates of Survey:</i>	27 th -29 th August 2012
<i>Surveyors:</i>	Sapphire Mussen and Dermot Redmond, Centre for Archaeological Fieldwork, Queens University Belfast
<i>Size of area surveyed:</i>	0.36 hectares
<i>Weather conditions:</i>	Inclement, saturating conditions
<i>Geology:</i>	Bedrock geology of basalt
<i>Current land use:</i>	Grazing fields
<i>Survey type:</i>	Electrical earth resistance

1.2 Abstract

A limited geophysical survey was carried out in August 2012 prior to commencement of excavation at the site of a 16th-17th century fort (ANT 047:068) in Ballycarry southwest (figure 1). The survey grid was situated over the approximate location of the fort (known from the results of a magnetometry survey carried out at the site in 2008), with the aim of clarifying the exact positioning of any walls, ditches or other archaeological features in order to more accurately place excavation trenches for further investigation. The closeness of the basaltic bedrock to the ground surface of the site compromised interpretation of the results by producing a number of readings which could be falsely interpreted as archaeological features. A large part of the survey area was also compromised due to poor drainage conditions. Despite this, a number of interesting results were revealed, some of which certainly appear consistent with the placement of the fort as found during the 2008 magnetometry survey. As extensive surveying has been carried out over this area and anomalies investigated through excavation, it is not recommended that further survey work be carried out.

2.0 Cartographic evidence

The first and second edition OS maps show evidence of changes to the site at Ballycarry and its surrounding area. The first edition map of 1835 shows the site as a whole without major divisions (figure 2a). The only enclosed area of the site is that of the geophysical survey area which is seen to contain a number of structures, possibly animal holdings, outhouses and sheds associated with a cottage, the remains of which still stand just north of the survey. It can be seen from the second edition Ordnance Survey map that a number of changes have taken place by 1904 (figure 2b). By this time, the entire site had been divided into a number of sections by what appear to be planted hedgerows and trees. A new church had been built adjacent to the old church ruins immediately north of the survey area. Changes in the layout of boundaries and buildings are to be noted in the area targeted by the geophysical survey. The layout of the area at this stage seems more formalised. Only one building is depicted along with tree lined boundaries giving the impression that it may have been part of a private residential area. No traces of these divisions or buildings now exist within the survey area and no major changes are observed from Ordnance Survey maps post dating 1957. From this time the site at Ballycarry retains its current form of grazing land divided into four sections (figure 2c-d).

3.0 The Survey Site

The survey area lies approximately 0.1km south of Templecorran church in the southern half of a scheduled enclosure in Ballycarry southwest (ANT 047:068), on the eastern side of the main Bentra road (figure 3). The grazing land of this area is located is divided into four sections by a series of rough tumbled stone walls and hedgerows with no fencing or gateways. The survey grid covered 0.36 hectares and was set up in the south-eastern section over the location of the 16th-17th century fort discovered during geophysical investigations in 2008. The land in this area slopes gradually uphill towards the south and at the northernmost end, in the grid location, the land was undulating with rock outcropping in places and sloping off towards the north and east. There were no clearly defined features in the surface. Along the western edge of the site the ground was extremely waterlogged and trampled by livestock which made conditions difficult underfoot.

4.0 Survey specific information:

4.1 Details of equipment and methodology employed;

Survey type	Electrical Earth Resistance
Instrumentation	Geoscan RM15 resistance meter and MPX15 multiplexer
Probe/sensor configuration	Parallel twin (3-probe)
Probe/sensor spacing	0.5m
Grid size	20m x 20m
Traverse interval	0.5m
Sample interval	0.5m
Traverse pattern	Zig-Zag
Spatial accuracy	Grids set out using a Leica TPS 705 series total station

4.2 The Survey

Nine survey grids measuring 20m by 20m were set out over the approximate location of the fort with the aim of clarifying its limits prior to the excavation. An earth resistance survey of this gridded area was carried out between the 27th and 29th August 2012 using a Geoscan RM15 meter and MPX15 multiplexer. All grids were surveyed using a traverse interval of 0.5m and sampling interval of 0.5m. The results of the resistance survey are graphically presented in figures 4-5 and an interpretation of these results is given in table format (section 5), which should be read in conjunction with figure 6 which gives an interpretative illustration of the resistance survey data. A brief discussion of the survey results is outlined in section 6.0.

5.0 Earth resistance survey results

Code	Description	Interpretation
r1a-d	<p>Linear low resistance anomalies running along a northeast to southwest orientation. Each measures approximately 1.5m in maximum width. r1a is rectilinear in form and encloses an area of approximately 30m by 30m. Its definition is lost at its eastern and western corners. r1b forms a 90° angle in the northernmost corner of the survey area. Its runs off the edges of the survey grid to the northwest and northeast, its maximum lengths are approximately 16m northeast to southwest and 10m northwest to southeast. r1c forms a 90° angle and appears to run parallel with r1b with a distance of about 5-6m between the two. Its maximum lengths are approximately 13m northeast to southwest and 6m northwest to southeast. r1d is rather ephemeral but appears rectilinear in form and encloses an area measuring approximately 8m by 8m and is based in the eastern corner of anomaly r1a.</p>	<p>The regular linear appearance of these relatively low resistance and uniform anomalies may present evidence of rock cut ditches associated with the 16th-17th century fort which is believed to have occupied the site. The low resistance being imaged here is suggestive of features of poor drainage such as ditches. The supposition that they may be rock cut is obtained from the surrounding readings, the nature of which is typical of surface bedrock geology. Basalt outcropping is evident in the surface of the site itself. No evident explanation for these anomalies can be obtained from examination of Ordnance Survey mapping of the area.</p>
r2a-b	<p>Linear high resistance anomalies orientated northeast-southwest, measuring less than 1m in width and set within the confines of r1a. r2a consists of a series of linear anomalies set at 90° angles to each other forming a geometric structure-like pattern, Each section of linear high resistance within this anomaly measures approximately 5m. r2b also forms a 90° angle and is set along the ad runs parallel to r2a. A distance of approximately 7m sets r2a and r2b apart.</p>	<p>The regular linear appearance of these anomalies and layout in a semi-geometric pattern lends to the suggestion that they may be imaging the remains of buildings or structures associated with a 16th-17th century fortification at this site. It is also possible that they are the ephemeral remains of robbed out stone walls of buildings or boundaries as depicted on first and second edition Ordnance Survey maps of the area. A third possibility may be that they are simply imaging geological responses and their uniform appearance purely incidental.</p>

r3	Linear Band of extremely high resistance running northwest to southeast through the survey area, approximately 21m from its northeastern edge and measuring no more than 1m in width.	It is almost certain that this anomaly is imaging the presence of underground pipe work. To the south of the survey area and in line with this anomaly can be found a stone and concrete capped opening in the ground fenced off with barbed wire, presumably a well. No spring or well at this location is marked on Ordnance Survey maps of the site.
r4	Semi-curvilinear low resistance anomaly set within the parameters of r1a, measuring approximately 16m by 14m with a width of less than 1m.	The uniformity of this feature makes it of some interest although it is most likely a result of the geological morphology of the site. There is no evidence for any such feature on Ordnance Survey maps of the area.
r5	Northwest-southeast running line marking a distinct change in readings across the site. All readings northeast of this line are imaged more clearly; those to the southwest of it are more homogenous and featureless.	This line divides the survey area into two zones. That to the southwest consists of fairly homogenous readings with no definite features. In the area northeast of this line a number of features can be seen and the bedrock geology of basalt within the ground surface is clearly imaged. Homogenous readings as found southwest of r5 are usual for extremely waterlogged sites and areas where there may be a greater depth of topsoil present. This line of r5 also corresponds well with a line shown on the 1835 first edition Ordnance Survey map representing a field boundary.
r6a-b	Two parallel faint linear mid resistance anomalies extending northeast to southwest from the south-western edge of the survey area. Approximate length of 24m and width of less than 0.5m.	The poor definition of these anomalies within a zone of very few positive resistance readings may indicate that they are simply geological responses or evidence of ploughing activity. Their position roughly corresponds with a field boundary shown on the 1904 second edition Ordnance Survey so there is the possibility that they are imaging the remnants of stone walling or a hedge line associated with this boundary.

6.0 Discussion of survey results

- 6.1 At a first glance the survey area can be divided into two zones; distinguished by the dividing line r5 within the interpretative results (figure 6). The area to the northeast of this line provides more results in terms of positive readings and some features of archaeological interest are clearly being imaged amongst the background readings of bedrock geology. In contrast to this the area to the southwest of this line features homogenous low –mid range resistance readings with little or no definition and very little in terms of positive high resistance response. As the line of r5 corresponds to the line of a field boundary depicted on the first edition Ordnance Survey map of 1835 it is entirely possible that there was once such a boundary marking the division between the two zones, the area to the southwest of this division perhaps being used more for cultivation purposes than that to the northeast. Such homogenous low resistance readings as found to the southwest of this line are typical of areas of poor drainage and areas where there may be a greater depth of topsoil present. As the ground in the area is extremely boggy underfoot it could be assumed that it is fairly waterlogged and poorly drained. Rock outcropping can be observed in the ground surface to the northeast of this dividing line which may contribute to natural drainage of water from one end of the site to the other. The close proximity of the bedrock geology to the ground surface within the survey area is evident from the basaltic outcropping which can be observed. As a result of this the results of the survey were compromised due to the possibility of misinterpretation of geological responses as positive archaeological features. Despite this a number of features of obvious regularity could be discerned, mainly within the area northeast of r5, and can be interpreted as features of archaeological interest.
- 6.2 The regular linear appearance of the r1 and r2 anomalies provides the most feasible evidence for the 16th-17th century fort. The width, low resistance readings and regular linear appearance of r1a-r1c could be taken to indicate the presence of rock cut ditches. r1a is roughly square in plan and coincides with the limits of the forts as depicted in the results of the 2008 magnetometry survey. These results show the fort as square in plan with two square corner towers or bastions; one in the eastern corner and one in the west. In the eastern corner of r1a, faint traces of a rectilinear feature can be interpreted as the possible remains of one of these bastions (r1d). However, corresponding evidence for a second bastion was not detected in the western corner; here the results of the resistance survey were washed out with very little definition, probably owing to the waterlogged nature of the site in this area. r1b and r1c form what appear to be rock cut ditches of the same width and running parallel to the anomaly r1a. These may be evidence of an outer ditch and entranceway to the fort.
- 6.3 Anomalies r2a-r2b provide the only feasible evidence for the remains of upstanding structures within the survey area. Their regular linear and geometric appearance and position within the confines of r1a suggest that they may be imaging the remains of buildings or structures

associated with the 16th-17th century fort. It must be noted however that they do not lie along the exact same alignment as the r1 anomalies and may also be imaging the remains of much later, 19th century structures which occupied the site, as evidenced by Ordnance Survey mapping of the area.

- 6.4 A third possible explanation for these anomalies may simply be that they are imaging responses to the underlying geology of the site and forming incidental linear structure-like patterns within the survey results. The lack of any positive earth resistance readings imaging stone walling or similar remains of once upstanding structures could be taken as an indication that any structures that once stood on the site have been completely robbed of stone for use elsewhere. Anomaly r4 is also likely to be imaging a response to the geological conditions in the ground surface; its low resistance and curvilinear form are suggestive of a shallow natural channel within the basalt bedrock.
- 6.5 It is almost certain that anomaly r3 represents the presence of underground pipe work running across the site, likely to be of metal fabrication and for the purposes of transporting water. A shallow groove corresponding to the placement of this anomaly can be seen in the ground surface of the site and to the south of the survey area, in line with this anomaly, a stone and concrete capped opening in the ground fenced off with barbed wire can be found, presumably a well. No spring or well is marked at this location on Ordnance Survey maps of the area.
- 6.6 The poor definition of anomalies r6a and r6b may be an indication that they represent no more than the remnants of deep ploughing within the field, or trends in the background geology of the site. Their position however, corresponds with the location of a field boundary as marked on the second edition Ordnance Survey map of 1904. As a result what we are seeing here may be the remnants of stone built field boundaries or removed hedgerows.

7.0 Conclusion

Many of the earth resistance readings were overwhelmed by responses to poor drainage conditions and to the background geology of the site, both compromised interpretation of the anomalies present. Aside from a series of anomalies which appear to represent rock cut ditches there seems to be no further solid evidence for the fort within the survey area which is also void of clear remains of upstanding structures indicating that all associated stone was most likely robbed out for use elsewhere. It is unlikely that further survey work in this area will be necessary as extensive survey work has already been carried out with comparatively little result and a series of trenches have been opened across the site in order to investigate the major anomalies.

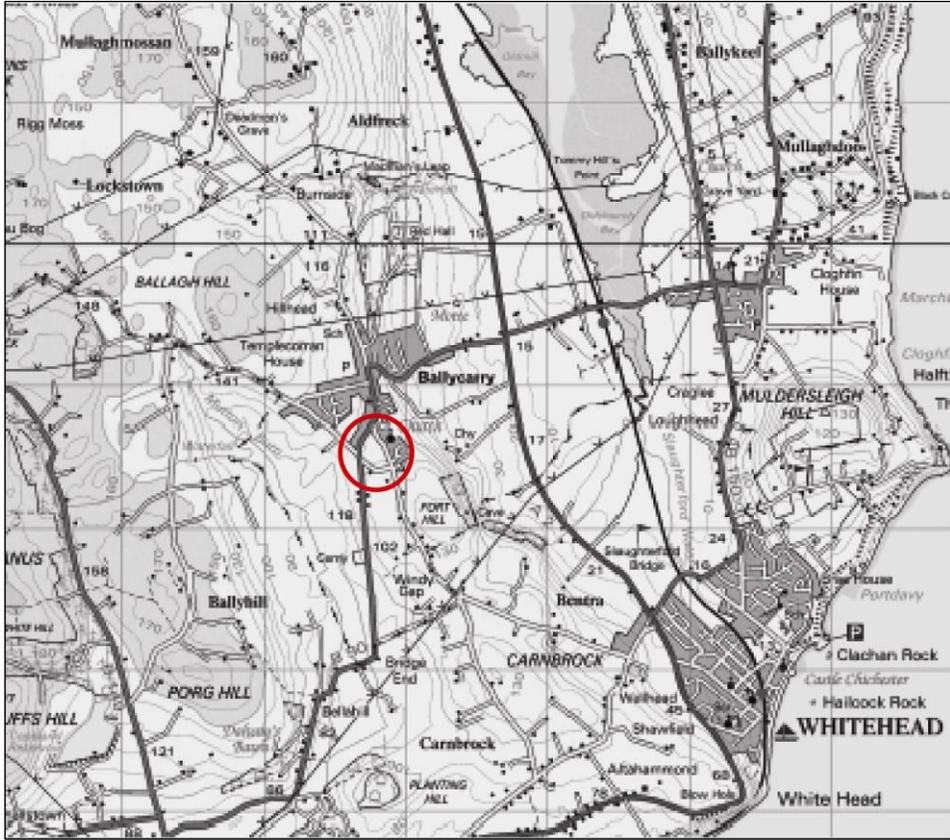


Figure 1: Map showing the location of ANT 047:068 at Ballycarry southwest

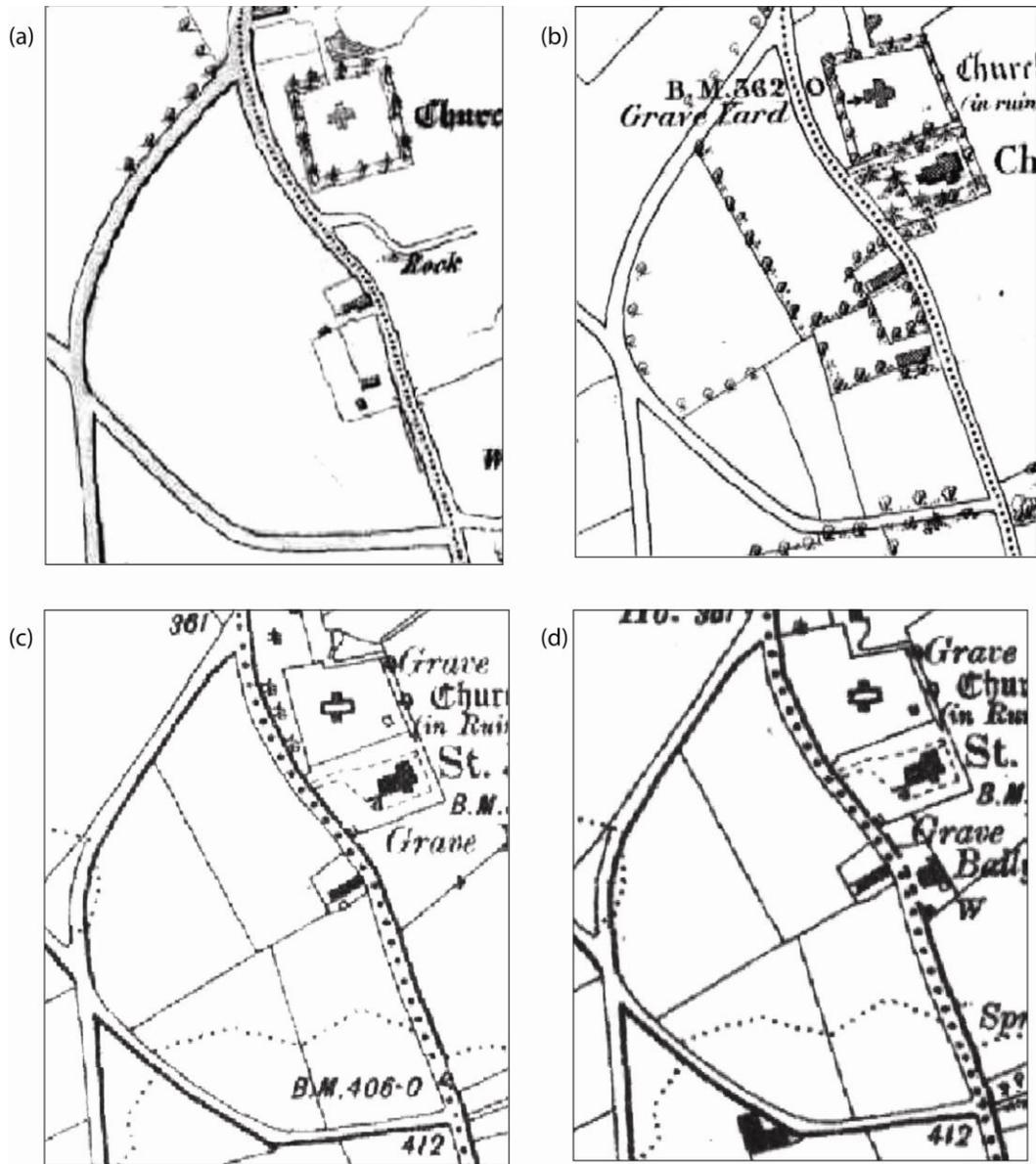


Figure 2: Comparison of cartographic representations of the survey area from 1829-1954

- (a) First edition Ordnance survey 1829-1835
- (b) Second edition Ordnance Survey 1831-1904
- (c) Fourth edition Ordnance Survey 1901-1957
- (d) Seventh edition Ordnance Survey 1921-1954

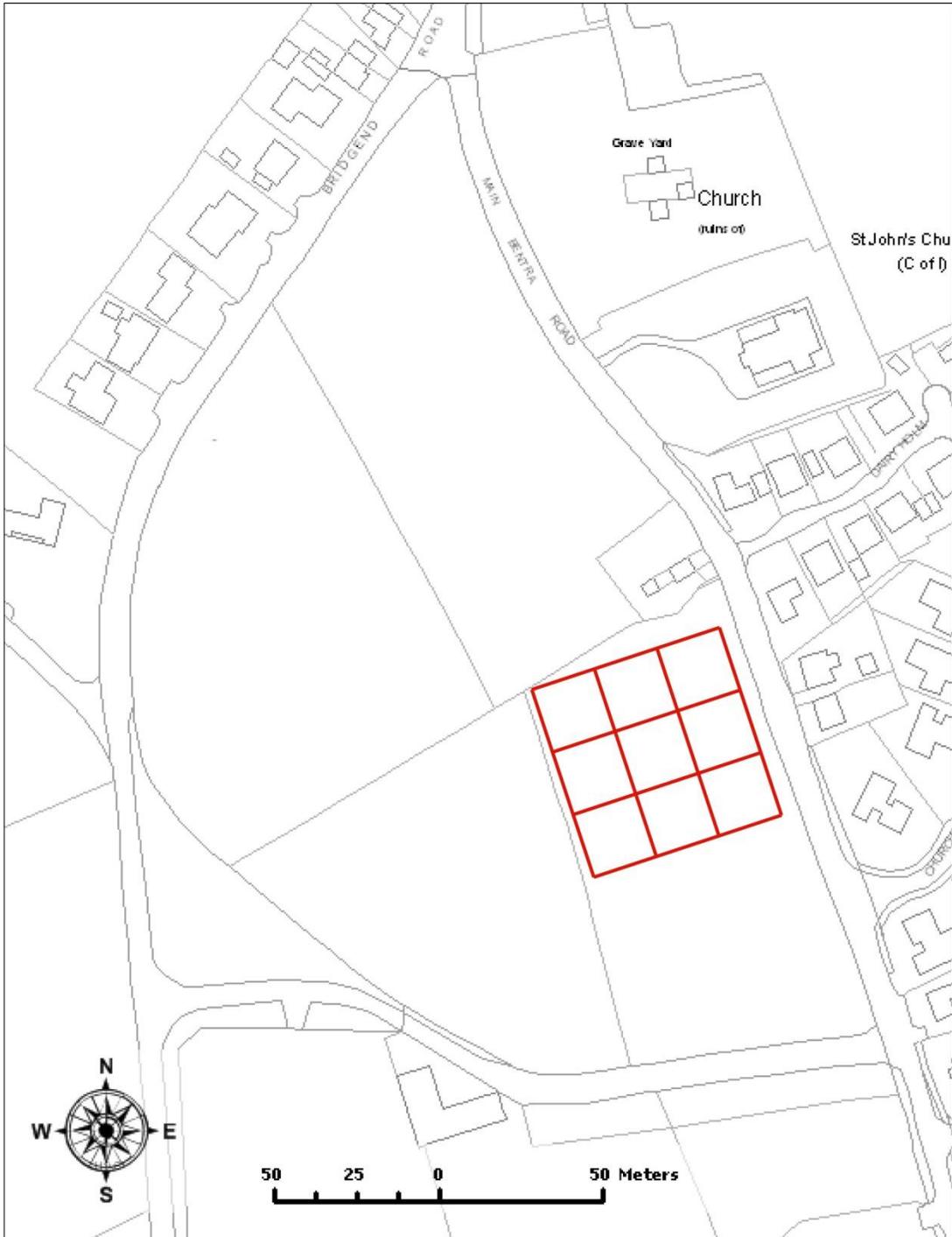


Figure 3: Location and outline of the gridded survey area

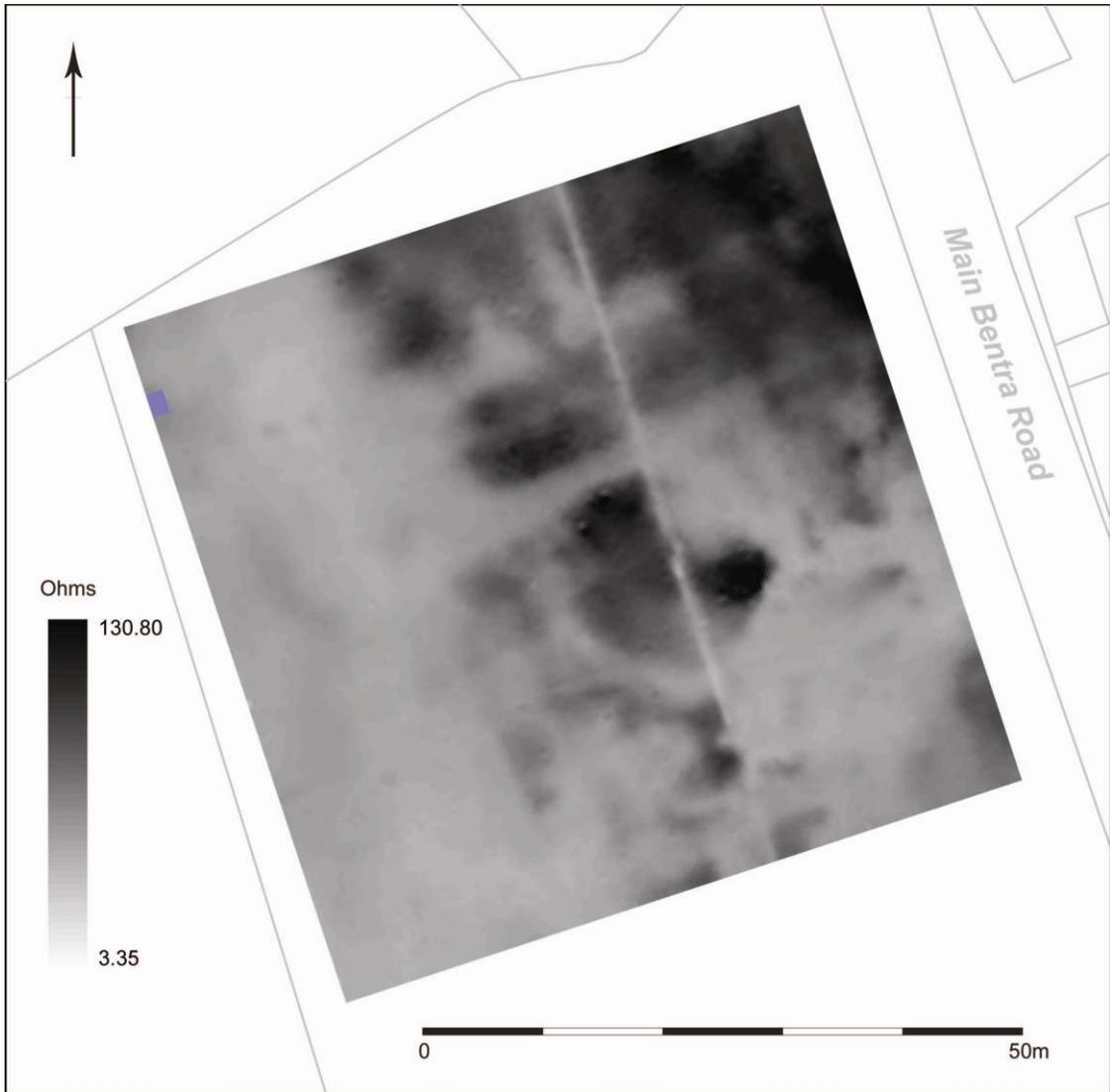


Figure 4: Shade plot of raw resistance data

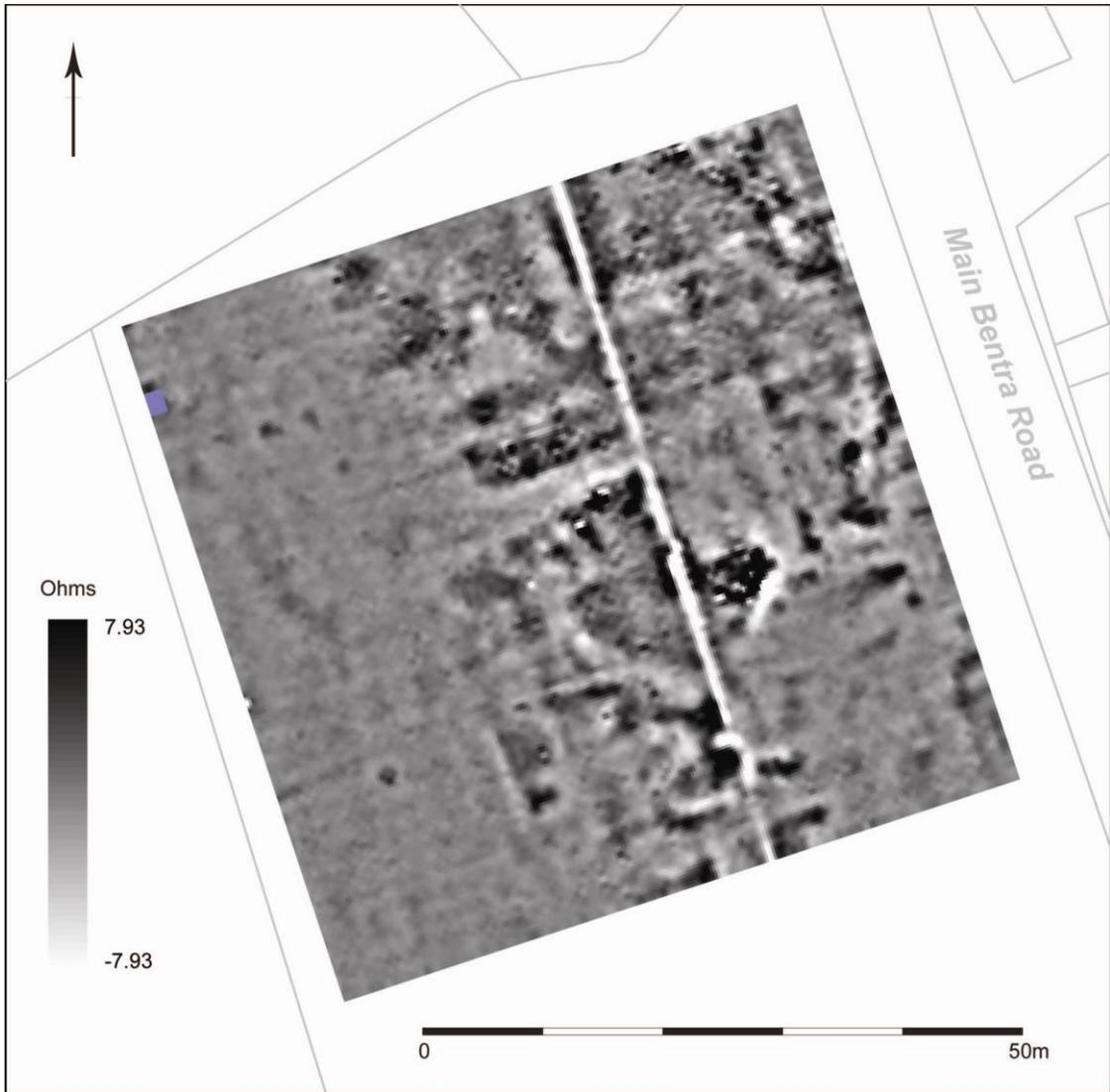
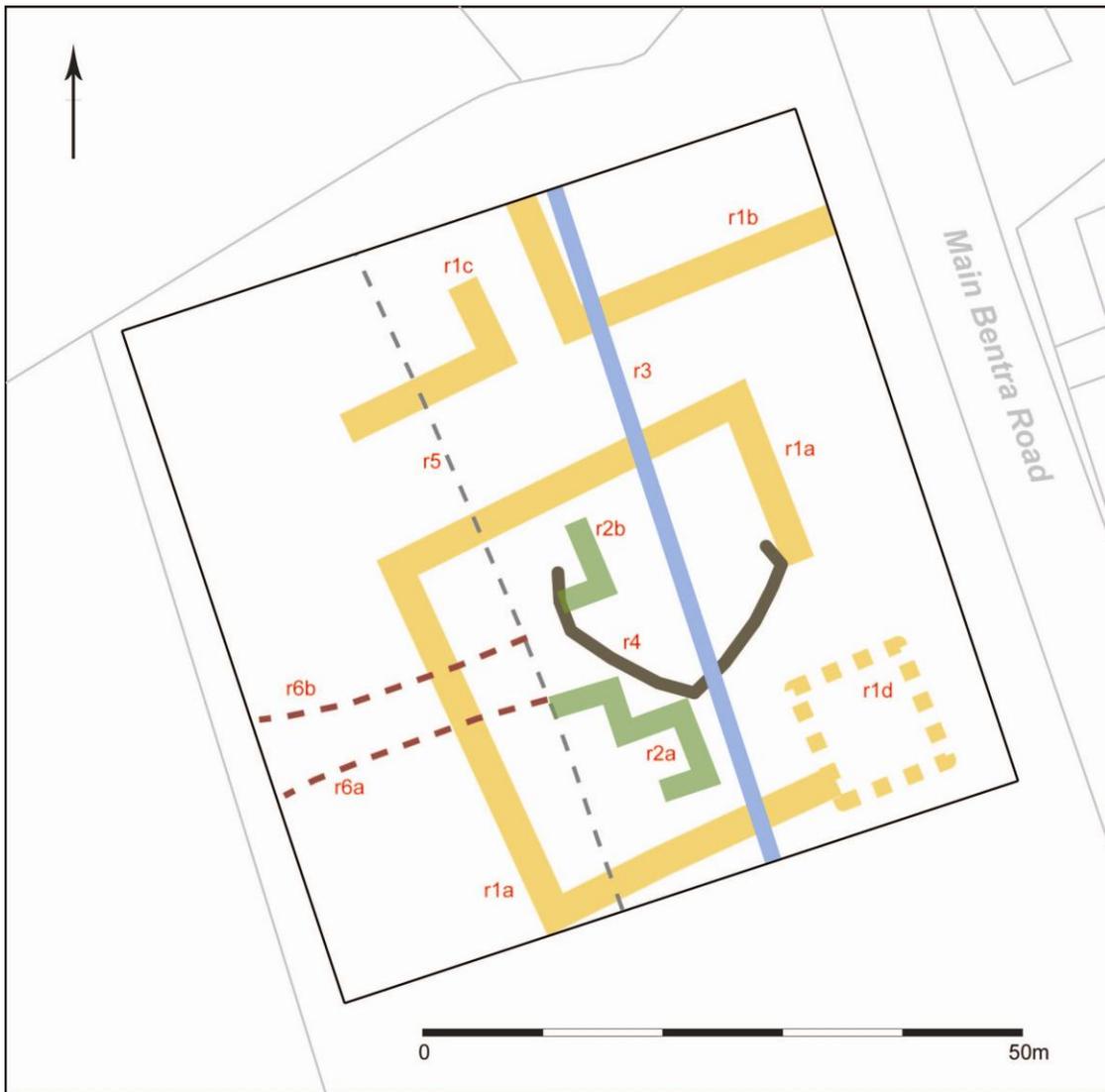


Figure 5: Shade plot of resistance data following the application of High Pass Filter which has the effect of filtering out broad trends and emphasising the detail of smaller and fainter trends



- Low resistance linear anomalies, possibly representing rock cut ditches associated with 16th-17th century fortification of the site
- High resistance linear anomalies, possibly structures associated with 16th-17th century fortification of the site, may also represent later 19th century additions to the site or underlying geology
- Very low resistance linear anomaly, most likely imaging subterranean 20th century pipe work
- Low resistance anomaly, possibly imaging a response to geological conditions of the site
- Division between two zones of readings across the site, also possible location of early 19th century field boundary
- Faint high resistance linear anomalies, possibly imaging location of 19th century field boundary, deep ploughing or underlying geology

Figure 6: Graphic summary of earth resistance anomalies; to be read in conjunction with the interpretative results given in section 5.0