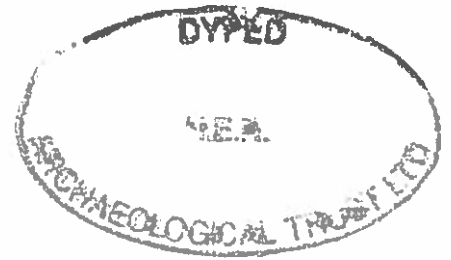


StCleGSR



St. Clears Mound and Bailey Castle,

Geophysical Survey Report

by

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Report Reference: 0201

January 2003

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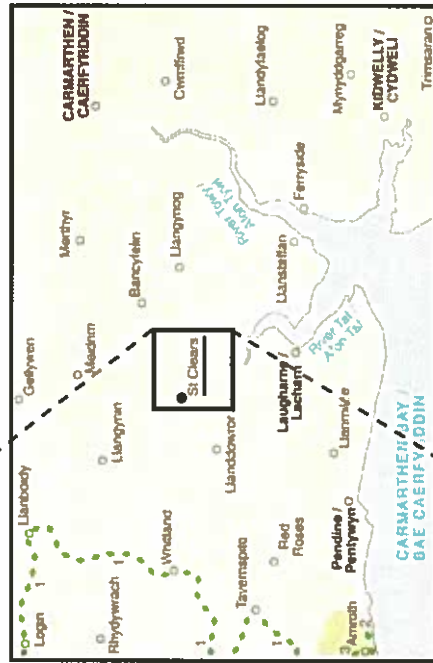


Figure 1: Site Location Map
Ordnance Survey, Explorer 177, Carmarthen & Kidwelly, 1:25,000

1. Abstract

A geophysical survey of a large part of the bailey area of St. Clears castle (Banc y Beili) was carried-out in late August 2002. The origin of this motte and bailey castle is uncertain although it is believed to be Norman. It was hoped that the geophysical work would provide some degree of additional evidence on the subject of origin, and would possibly provide evidence of the remains of some masonry structures in the subsurface to augment the micro-topographic observations of D.C. Evans as reported in 1906-7.

In fact the geophysics revealed a set of quite unexpected anomalies of different orientation from the north-south and east-west inferred Norman layout reported by D.C. Evans. This discovery of a set of rectilinear northwest-southeast by northeast-southwest anomalies appear to be pre-Norman, apparently extending beneath the motte beyond the survey area. They may represent a Roman fort controlling trade and for defence against possible attack at this strategic river confluence at the head of navigable waters from the Bristol Channel.

2. Introduction

This report has been laid-out along the lines of the English Heritage Society's Research & Professional Services Guideline No.1, Geophysical survey in archaeological field evaluation by Andrew David, Ancient Monuments Laboratory, 1995. However, some modifications were made to suit the present situation.

2.1 Site Location (Figures 1 and 2)

The survey area is located at St. Clears, Carmarthenshire, South Wales. It covers part of what is known locally as Banc y Beili; believed to be a Norman motte and bailey castle which was scheduled as an Ancient Monument in 1950 (No. CM 095) and which is administered by CADW, the Welsh Historic Monuments authority.

National Grid Reference: SN/281:154.

2.2 Site History

Banc y Beili is considered by a consensus of authorities to be the site of St. Clears Castle of Norman origin. However, its building is of unknown date, and the identity of its founder is also unknown. Clearly it is sited at a geographical point of strategic importance on the higher ground at the confluence of the River Cynin with the River Taf, at the head of their navigable waters in medieval and earlier times. The importance of this site in the control and administration of water borne transport from the Bristol Channel into the hinterland would have been appreciated by all early seagoing peoples, whether for purposes of invasion/settlement or for trade/supply.

Throughout the medieval period and into the early part of the last century, St. Clears continued to be a busy local port, the activities of which on the quays along the Cynin and Taf would have been overlooked from Banc y Beili. In the middle of the last century the ground was acquired by the Town of St. Clears and its usage was

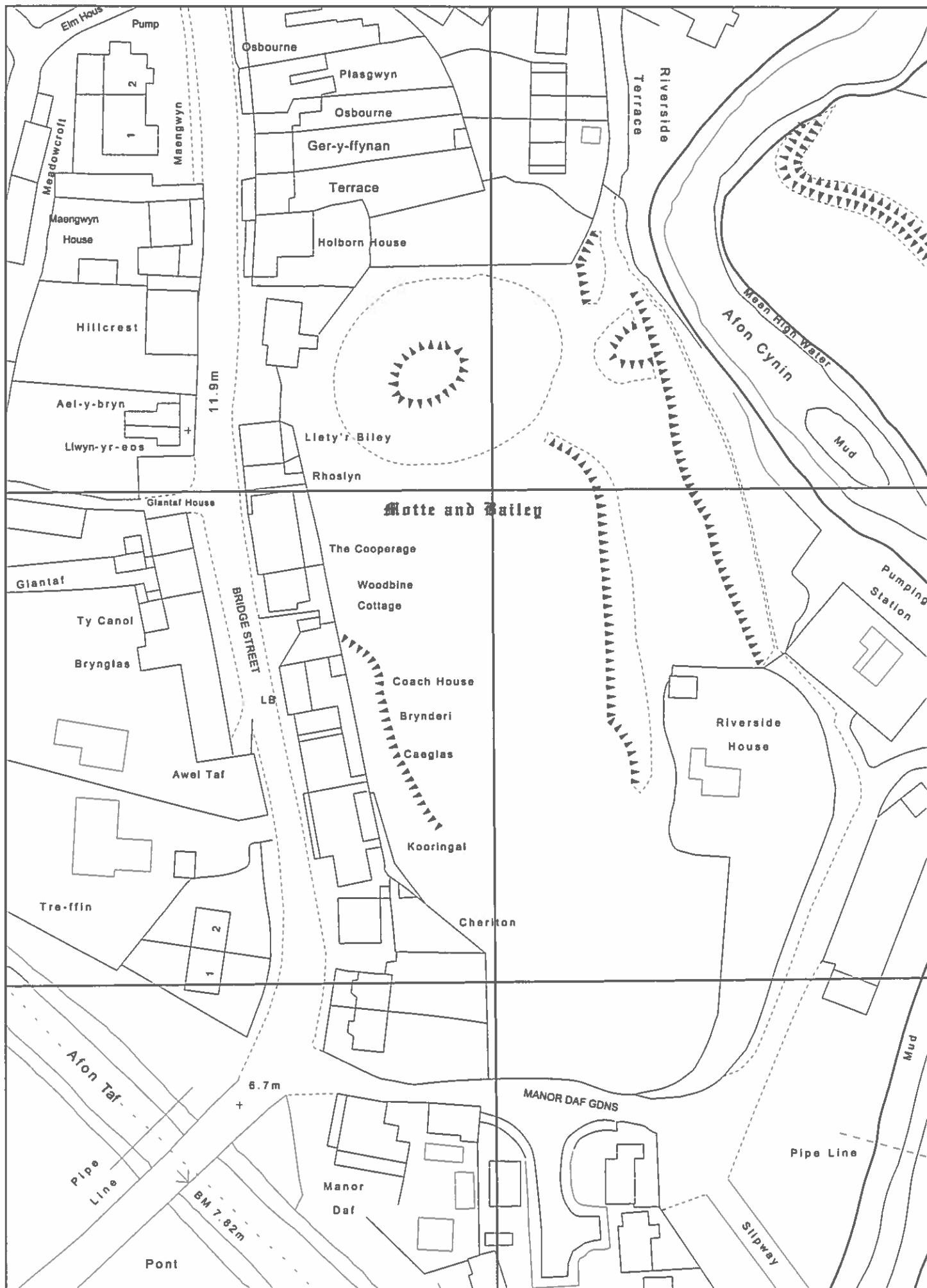


Figure 2: Ordnance Survey Suplerplan (07.07.02)
Mapping of Banc y Beili

Scale 1:1000

changed from agricultural to that of a town field under the control of the St. Clears Juvenile Sports Committee.

2.3 Site Description

Banc y Beili is an area accessible to the public, measuring a maximum of 170 m. north-south by 85 m. east-west. The northern end is dominated by the impressive motte, rising by some 8 m. above the central and southern parts which form the continuous near flat and open grassland area of the bailey. There are a number of children's playground swings in the northeastern part of the bailey area which was the subject of a dump, fill and level operation in the latter part of the last century. The southern part of the bailey area was also subjected to a significant dump, fill and level operation at that time.

The motte is now unused, except for a flagpole, although it had been used previously as the site for a children's playground slide down its southeastern side. When previously under agricultural use the slopes of the motte were kept grazed down by cattle, whose contour following paths still give the motte a definite tiered appearance despite it being currently overgrown with grasses, weeds and brambles. It is oval in plan, its long axis being oriented NE-SW, although there is evidence that the southwestern end has been abbreviated by cuttings probably associated with developments along Bridge Street to the west.

A local man, David C. Evans, F.G.S., of Ardwyn, St. Clears, has provided the most detailed description and survey of what might be called the micro-topography of St. Clears Castle before any modern modifications took place. It was published in 1906-7, (*Carm. Ant. Socy.*, ii, p.163 and plate III), and his mapping is shown herein as Figure 3. He gave no scale for his mapping, but actual measurements taken from the text of his paper are shown in Figure 3. Attempted reconciliation of his mapping with the modern O.S. map has revealed that the former is very much a sketch map, containing scale variations and angular distortions. Nevertheless, with the aid of computer drafting technology, certain elements of D. C. Evans's mapping are shown on the O.S. base in Figure 4.

D. C. Evans's mention of "a ditch of 8 to 10 yards wide" between the northern linear mound of the bailey and the base of the motte, has given rise to some speculation of an original misprint for 8 to 10 yards wide, but D. C. Evans's dimensions for the base of the motte of "44 yards in length by 39 yards wide" would not be consistent with a ditch of 8 to 10 yards wide, and it is suspected that his impression of a ditch was unjustified, merely representing the convergence of slopes, that off the southern side of the motte with the tangential northern slope of the linear mound along the north side of the bailey.

2.4 Survey Objectives

In the situation of uncertainty as to the founder and date of founding of St. Clears Castle, it was felt that a geophysical survey of the bailey area would provide some additional information, of a kind never before obtained there, which might indicate the layout of structures including possible inter-bailey buildings of various

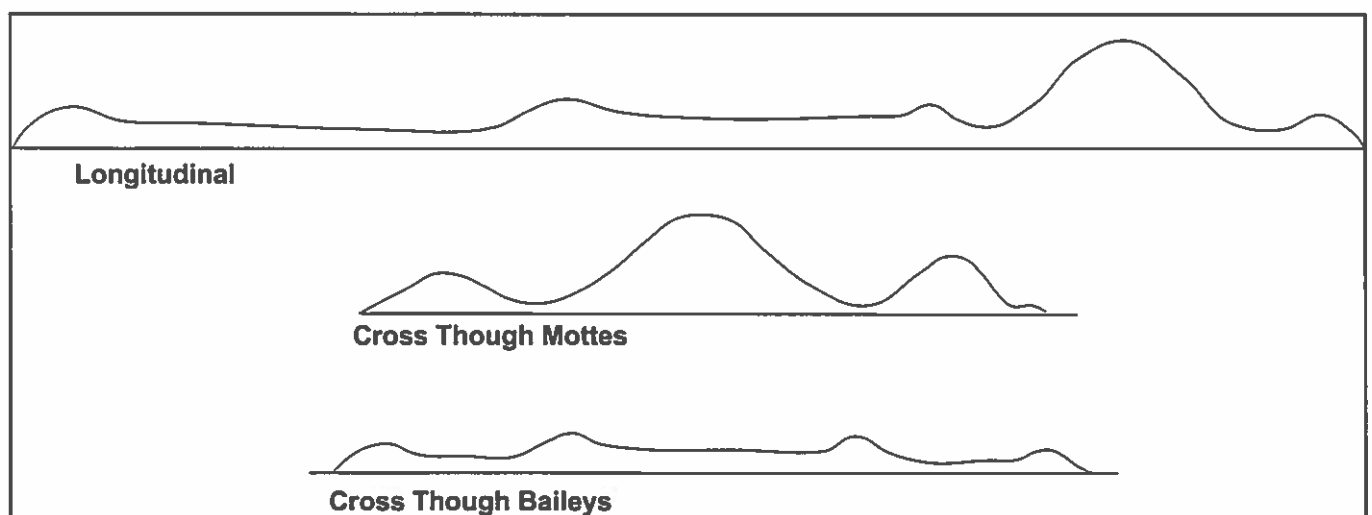
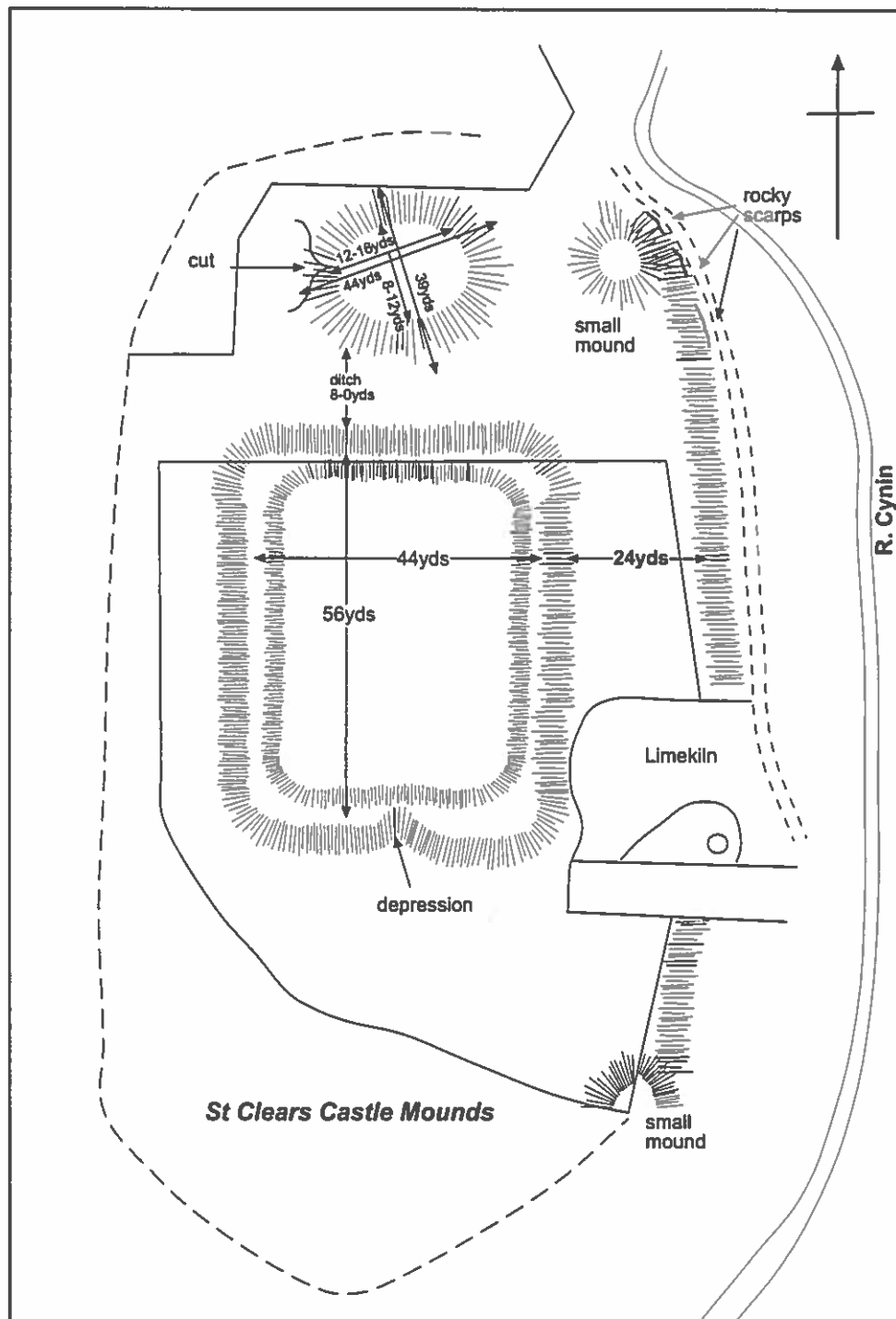


Figure 3: D.C. Evans's 1906-7 Micro-Topographical Mapping of Banc y Beili

kinds. We had been informed by various sources that some amount of "levelling" of the bailey as well as filling of the northeastern and southern parts had taken place. It was felt that geophysical survey methods could help to discriminate the ancient from the modern human activities on this site, and perhaps go further towards providing a better knowledge of the likely early divisions and contents of the bailey than those provided by D. C. Evans 1906-7.

2.5 Survey Methods Used

Since it was not known what the effects might be of the recent activities on the site, nor in what part of the site any geophysical evidence of ancient structures might be found, it was decided that the initial geophysical survey programme should be of a somewhat broad semi-reconnaissance nature. Consequently, it was decided to run both magnetometer and resistivity surveys concurrently over the same survey grids. A group of six contiguous 20 metre grids were surveyed on a 1 metre line spacing. It was felt that any areas containing features of interest could then subsequently be resurveyed in more detail or, if required followed beyond the limits of the initial survey area.

3. Geophysical Data Acquisition

3.1 Date of the Fieldwork

The fieldwork took place over the one continuous period from Tuesday, 27th August to Friday, 30th August, 2002.

3.2 Daily Log of Fieldwork

Tuesday, 27th August, 2002

a.m:- Mobilised geophysical equipment and travelled to St. Clears from Maidenhead.

p.m:- Arrived St. Clears, checked-in at The Forge Motel and met-up with Mr. David McCabe of the St. Clears Juvenile Sports Committee, at the Banc y Beili site. Purchased bamboo canes for survey grid corner posts and pegs. Positioned "base peg" at the northeast corner of the survey area, and laid "base line" down the west side. Surveyed-in 20 m. grid squares 1 and 2 immediately to the south of the motte. Spray painted grid corner positions.

Pegged out 1 m. spacing along north and south sides of Grid 1 and along its E-W central line, and laid-out the 10 m. marked guide ropes. Surveyed Grid 1 with gradiometer, followed by resistivity meter. Gradiometer operator, Mr. G. G. Deakin, resistivity meter operator, Mr. W. E. Evans. Downloaded data to laptop computer. Weather good, ground dry. Removed grid corner post canes for safekeeping overnight. Rained overnight.

Wednesday, 28th August, 2002

a.m:- Carried-out geophysical surveys of Grid 2 as above.

Surveyed-in Grid 3 and Grid 4 to the south.

p.m:- Carried-out geophysical surveying as before, and downloaded data to laptop at the end of each grid. Removed all corner posts, pegs and ropes for safekeeping overnight. Weather good all day after early rain.

Thursday, 29th August 2002

a.m:- Surveyed-in Grid 5 and Grid 6 to the south, during a light drizzle of rain. Carried-out geophysical surveying of Grid 5 and downloaded data despite wet conditions.

p.m:- In greatly improved weather condition geophysically surveyed Grid 6. Removed all posts, pegs, ropes and equipment for safekeeping overnight.

Friday, 30th August, 2002

a.m:- Weather wet and very windy. Not suitable for fieldwork. Carried-out preliminary creation of grid composites of data at Forge Motel, awaiting improvement in weather. Visited Eglwys Cynin Church, but no improvement in weather conditions.

p.m:- Abandoned further surveying and returned to Maidenhead.

3.3 Grid Location (Figure 4)

Six 20m. by 20m. grids were surveyed in a total survey area of 40 m. east-west by 60 m. north-south. The northwestern grid was the first surveyed and the

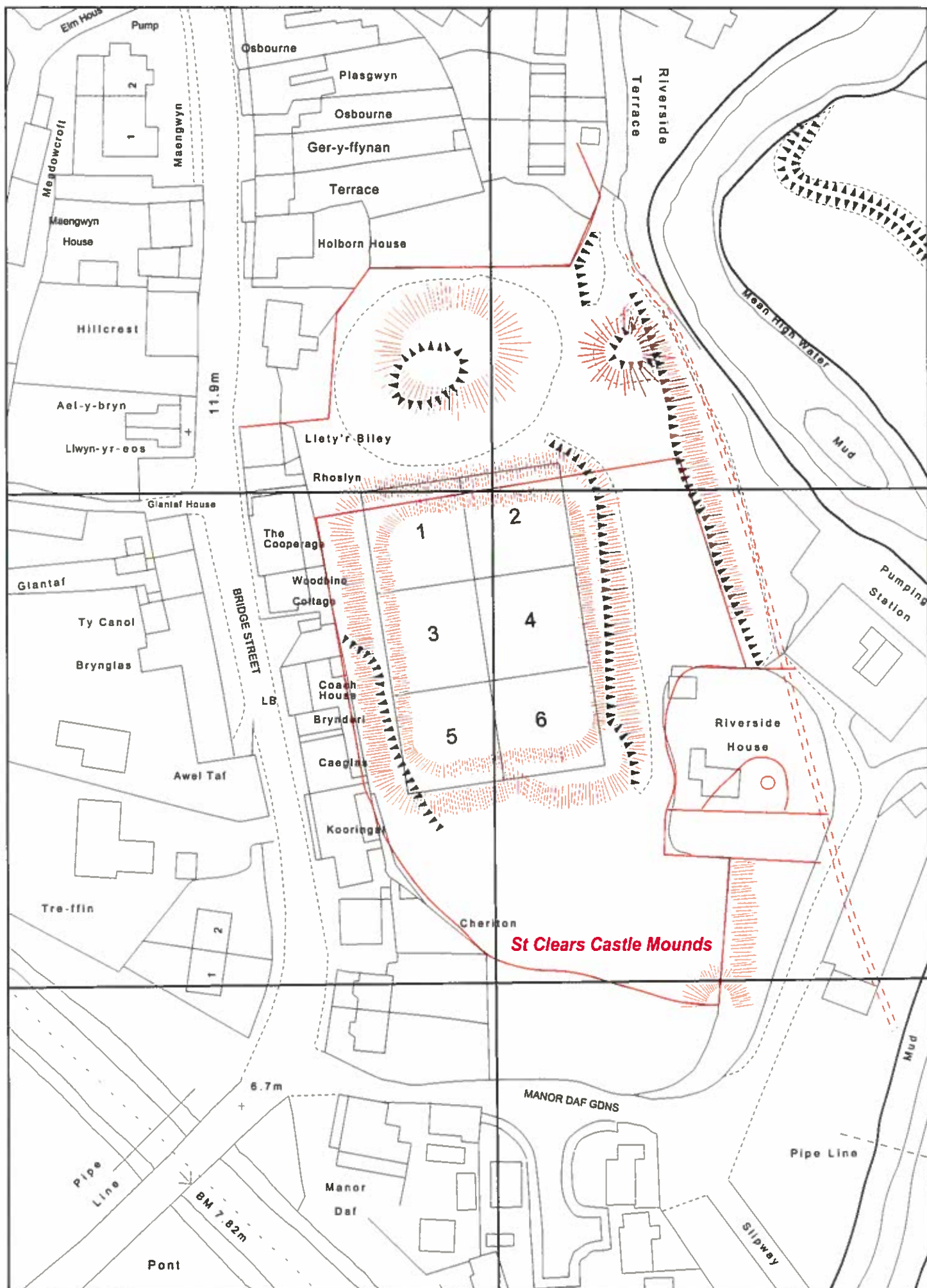


Figure 4: Position of six geophysical survey grids with survey grid numbers and adjusted elements of D.C. Evans's mapping on the O.S. map

3.5 Sampling Intervals and Equipment Configurations

	<u>Gradiometer</u>	<u>Resistivity Meter</u>
Sample Interval:	0.25m.	1m.
Traverse Interval:	1m.	1m.
Units:	1 nT	ohms
Electrode Spacing:	-	1m.
Direction 1st Traverse:	north	north

3.6 Methods of Data Capture

3.6.1 Gradiometer

The gradiometer, after careful balancing was walked at a steady pace along approximately south to north parallel lines between calibrated guide ropes. The ST1 sample trigger unit was used for automatic reading. In the parallel traverse manner recording was continuous, proceeding line by line west to east, over each 20 m. grid, before downloading to the laptop computer.

3.6.2 Resistivity Meter

After suitable repositioning of the remote electrode array and cable drum, the resistivity meter was walked, initially from south to north, and then in "zig-zag" mode, so progressing line by line from west to east across each 20 m. grid. Recording was continuous over each 20 m. grid, before downloading to the laptop computer.

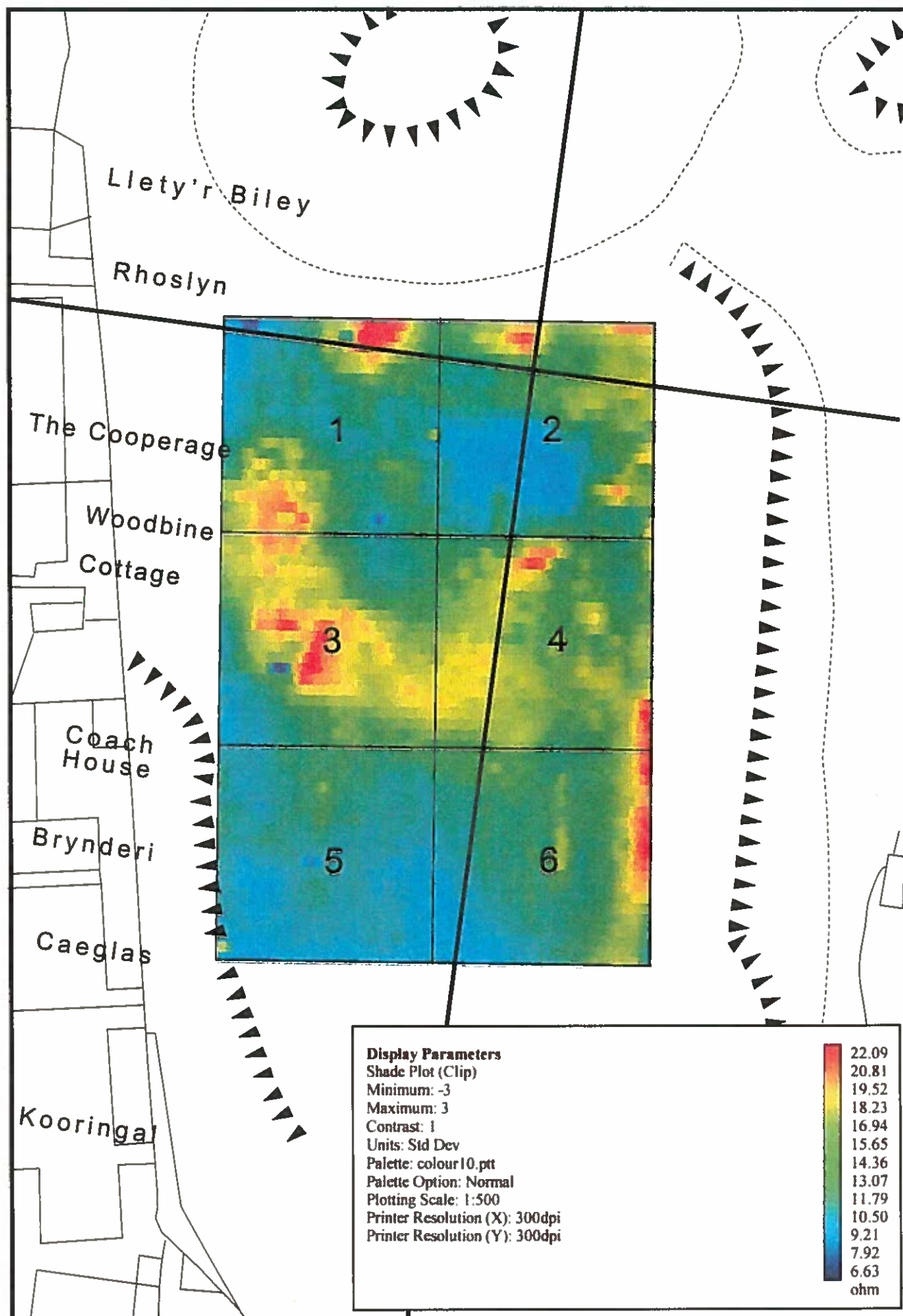


Figure 6: Resistivity Survey - Shade Plot Display - colour
 (unprocessed besides a -50hm bias applied to survey grid 1)

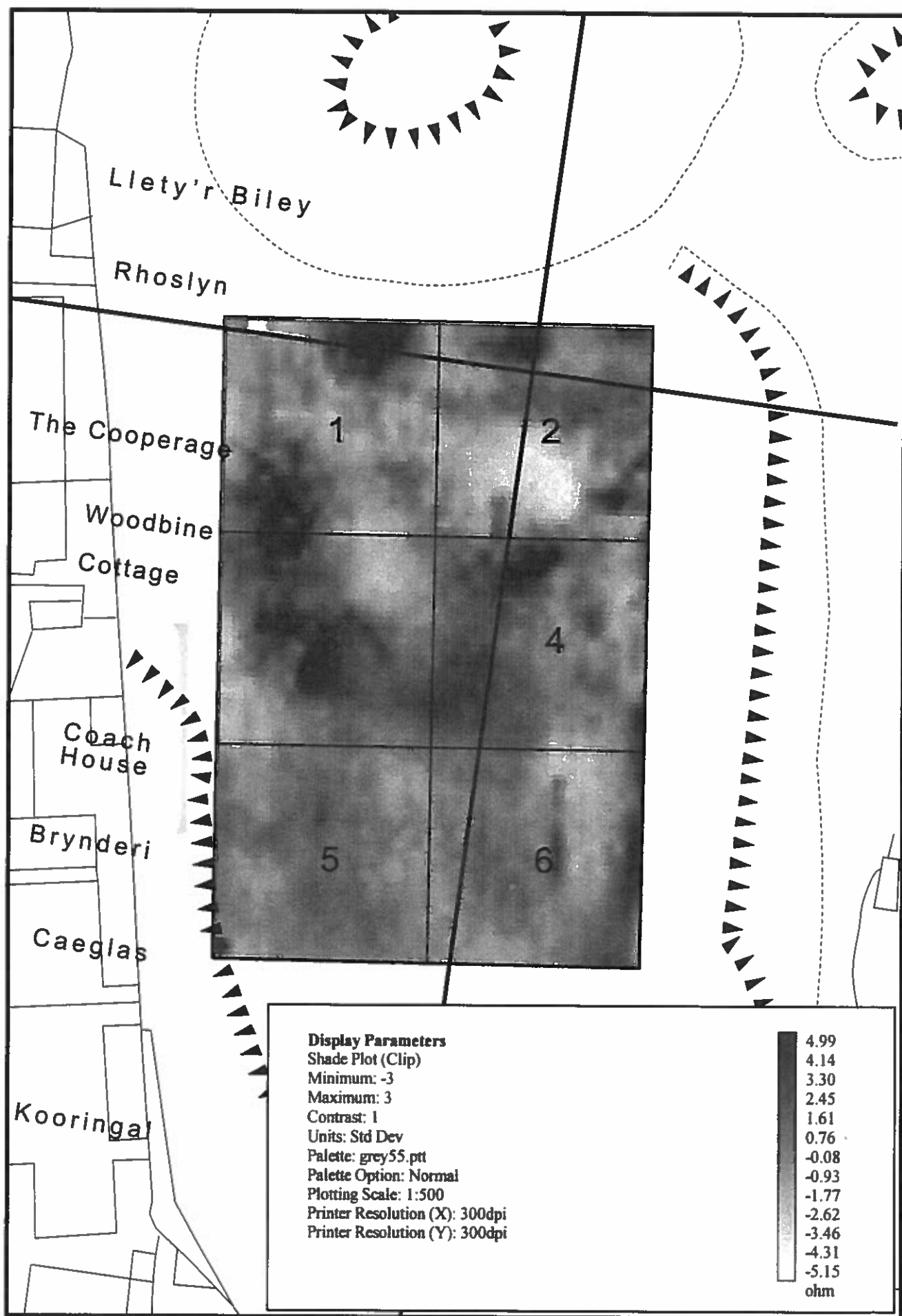


Figure 7: Resistivity Survey - Shade Plot Display -clip with despiking, XY interpolation and high pass filter

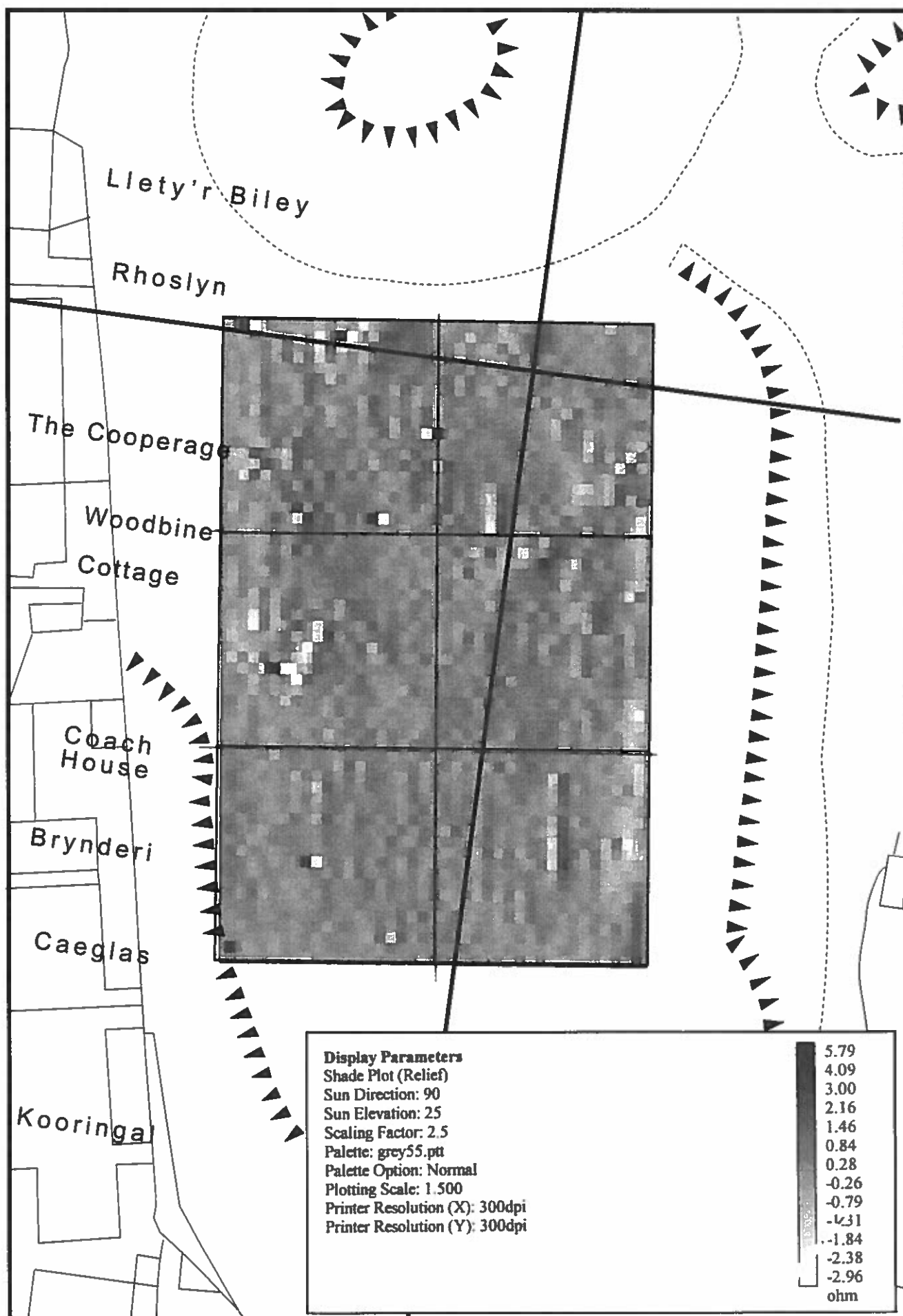


Figure 8: Resistivity Survey - Shade Plot Display - Relief with Y interpolation

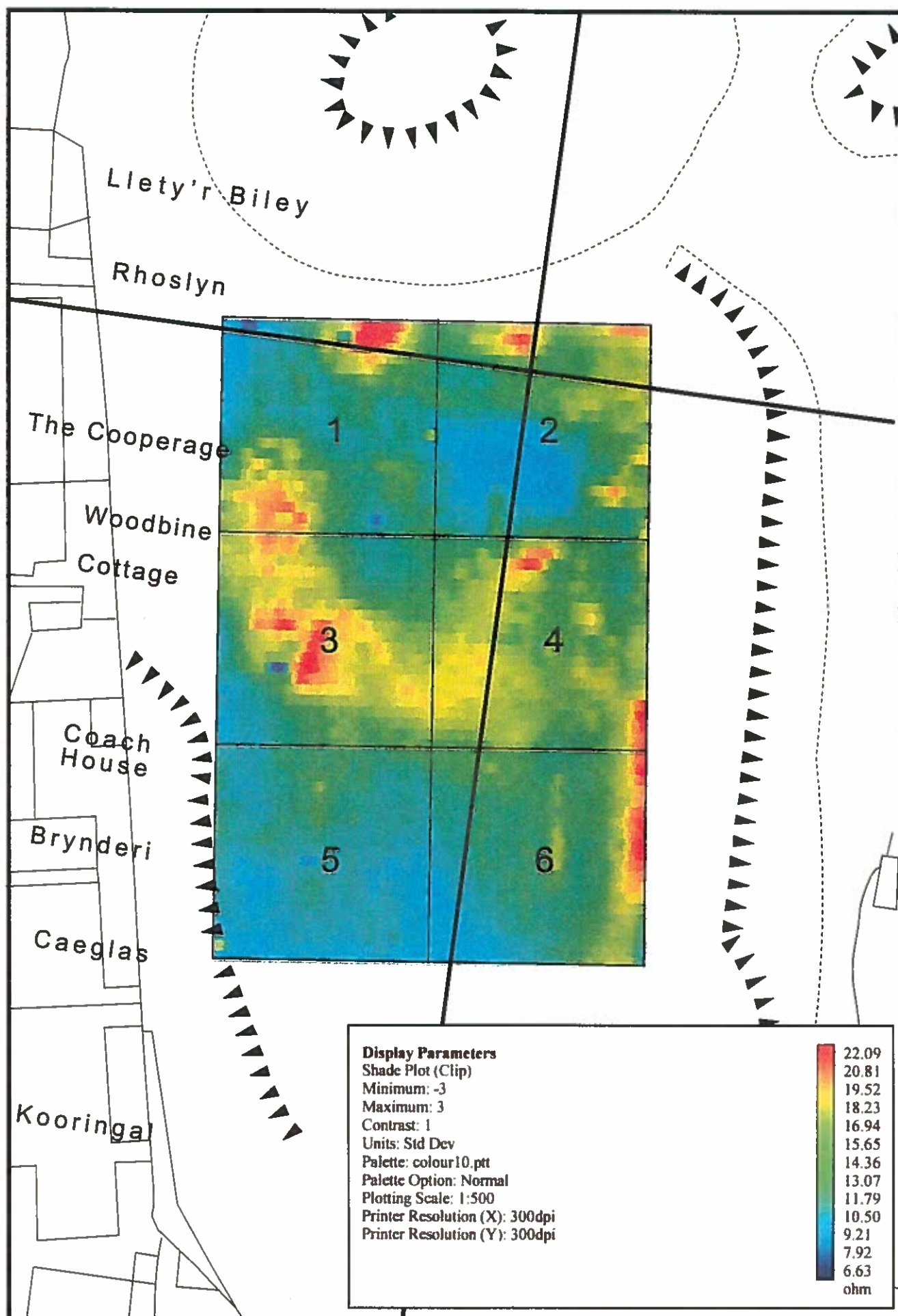


Figure 6: Resistivity Survey - Shade Plot Display - colour
 (unprocessed besides a -5ohm bias applied to survey grid 1)

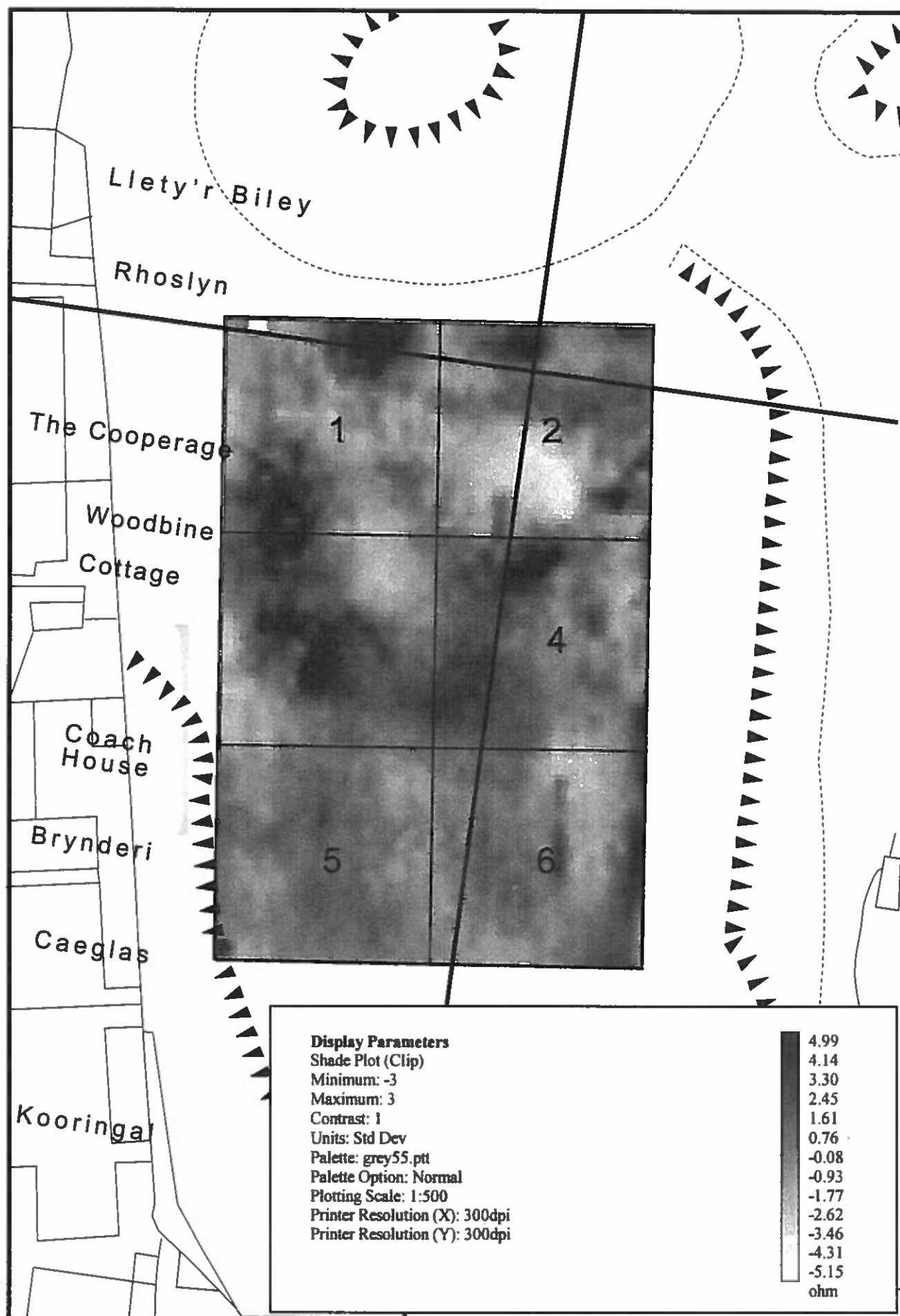


Figure 7: Resistivity Survey - Shade Plot Display -clip with despike, XY interpolation and high pass filter

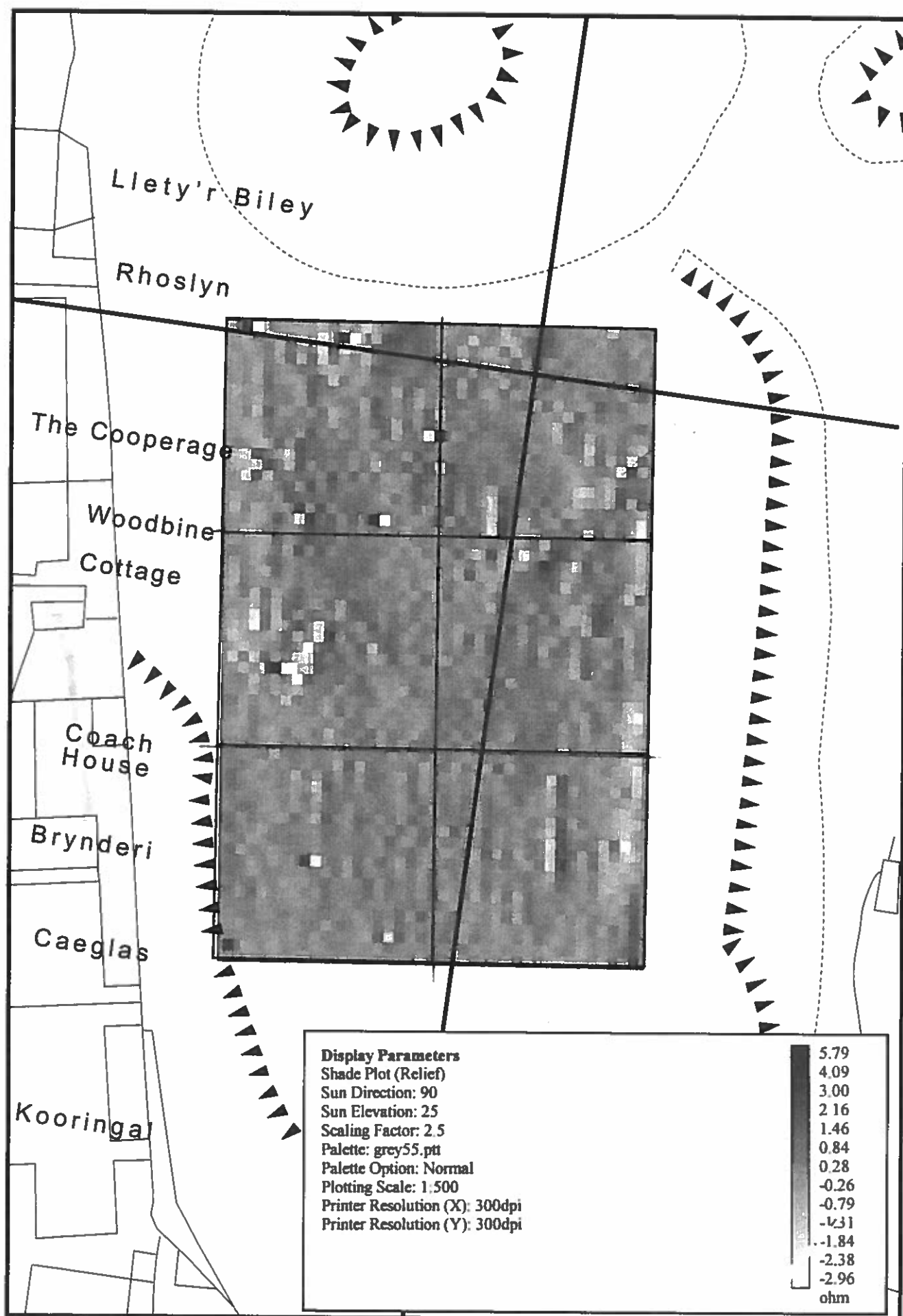


Figure 8: Resistivity Survey - Shade Plot Display - Relief with Y interpolation

5. Interpretation of Results

5.1 Gradiometer (Figure 5)

In general the gradiometer results display a far quieter field than that shown by the resistivity survey. The cause of this disparity is thought to be the depth of burial of the prominent NE-SW and NW-SE resistivity anomalies. If such anomalies arise from features at almost 2 metres depth of burial, then they would be beyond the range of the gradiometer, although within the range of investigation of the resistivity meter at the 1 metre electrode spacing used.

However, there are four features of interest displayed by the gradiometer data. They are:-

- a) An area of abundant spikes in Grids 5 and 6, which is consistent with received information on the metallic nature of some of the recent fill material which is believed to increase southward over the bailey area.
- b) The faint east-west feature displayed by Figure 5 in the northern parts of Grids 1 and 2. This feature is coincident with northern linear mound of the Norman bailey area as indicated by D. C. Evans 1906-07.
- c) The strong anomaly in the southeastern corner of Grid 2 corresponds with the resistivity survey evidence of a northerly aligned feature of probably Norman origin extending along the eastern side of the processing composite. This anomaly could represent a hearth belonging to a hall which abutted the outer curtain wall confining what may have been a series of masonry structures of the inner bailey.
- d) The strong anomaly in the centre of Grid 4 may represent a major hearth or furnace possibly associated with strong resistivity anomalies thought to be of pre-Norman origin.

5.2 Resistivity Meter

Two different sets of anomalous features are apparent in the data:-

- a) An expected north-south set of lineations thought to be of Norman origin, and consistent with the observations and recording of D. C. Evans, 1906-7. This set of lineations is shown together with D.C. Evans's observations in Figure 9. Such lineations are most strongly seen in the eastern part of Grids 4 and 6, and could be representative of the masonry foundations of a curtain wall along part of the eastern side of the Norman inner bailey. D. C. Evans described the east and west linear mounds of the bailey as being 44 yards apart, and therefore the western wall of the bailey may lie just to the west of the survey area. There are also a few other less strong northerly linear features which may represent the less substantial masonry walls of internal buildings of the inner bailey.

A weak east-west feature crosses the north-central part of Grid 2 and a stronger resistivity high lies in the northeastern corner of that grid. Both of these

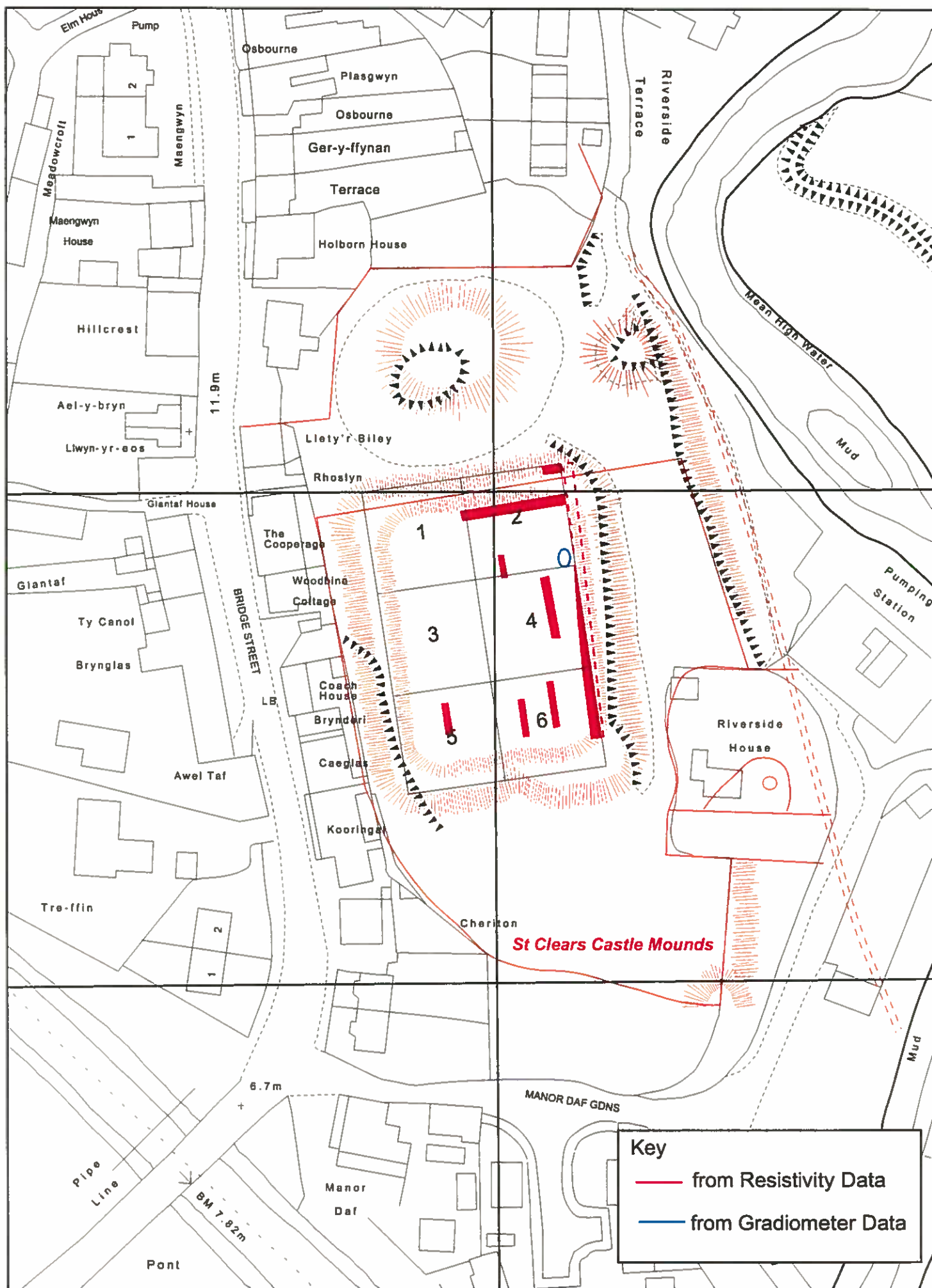


Figure 9: Interpretation of geophysical anomalies of Norman origin and orientation as montage upon D.C. Evans micro-topographical observations of 1906/7

6. Conclusions

6.1 Achievement of Objectives

The prime objective was to carry-out a geophysical survey over a previously unsurveyed castle bailey of uncertain origin. It was known beforehand that recent modifications described as "levelling" had been made to the bailey area since its designation as part of an ancient monument, but it was not known whether such levelling had been a) solely of a "fill" nature, thereby merely burying features which might still be detectable by the geophysics; or b) whether there had been in some parts of the bailey area a significant "cut and removal" element in the levelling. It was hoped and intended to clarify these issues, and to provide incentive and guidance for further work in the understanding and preservation of St. Clears castle.

Although the whole bailey area was not surveyed because of time and weather constraints, six 20 x 20 m. grids of gradiometer and resistivity meter data were recorded. It is considered that these data satisfied to a large extent the prime objective of the survey. However, further extension of the surveyed area in all directions, and more detailed higher definition surveying of the parts of greatest interest, remains to be done in future.

6.2 Summary of Results

The geophysical surveys revealed only a small part of the north-south by east-west rectilinear earthwork features, reported by D. C. Evans 1906-07, to remain in place within the surveyed area, most strongly on its southeastern side. However, another, quite unexpected, set of linear anomalies of a northwest-southeast by southwest-northeast orientation, was detected by the more deeply reading resistivity method. This latter set of anomalies appear likely to extend beyond the survey area to the north beneath the motte and therefore would be of pre-Norman origin.

6.3 Implications

Only a small part of the Norman structures which were likely to have been emplaced immediately surrounding and within the inner bailey may now remain within the surveyed area. The inferred presence of masonry foundations of a curtain wall, possibly with a fireplace, on the eastern boundary of the survey area deserves further investigation, as no reliable modern evidence of Norman masonry exists at St. Clears Castle. Norman use of this site, of obvious strategic importance, led to their construction of fit-for-purpose structures, ignoring completely the orientation of the earlier structures, which if Roman may well have been partly "robbed-out" and deeply buried or merely have been indistinct ruins or mounds by Norman times.

The Norman motte was piled-up probably using very locally dug shaly bedrock from peripheral ditches as well as possibly being augmented with more far travelled material. The Norman motte and bailey covered a set of earlier structures, and it is likely that a degree of Norman "levelling" of the bailey area took place to the detriment of those earlier structures. Clearly some further evidence is called-for to provide some idea of the age and condition of the apparently pre-Norman structures. Such further

evidence, although assisted by a further and more detailed geophysical survey, must of necessity involve at least some trial excavations.