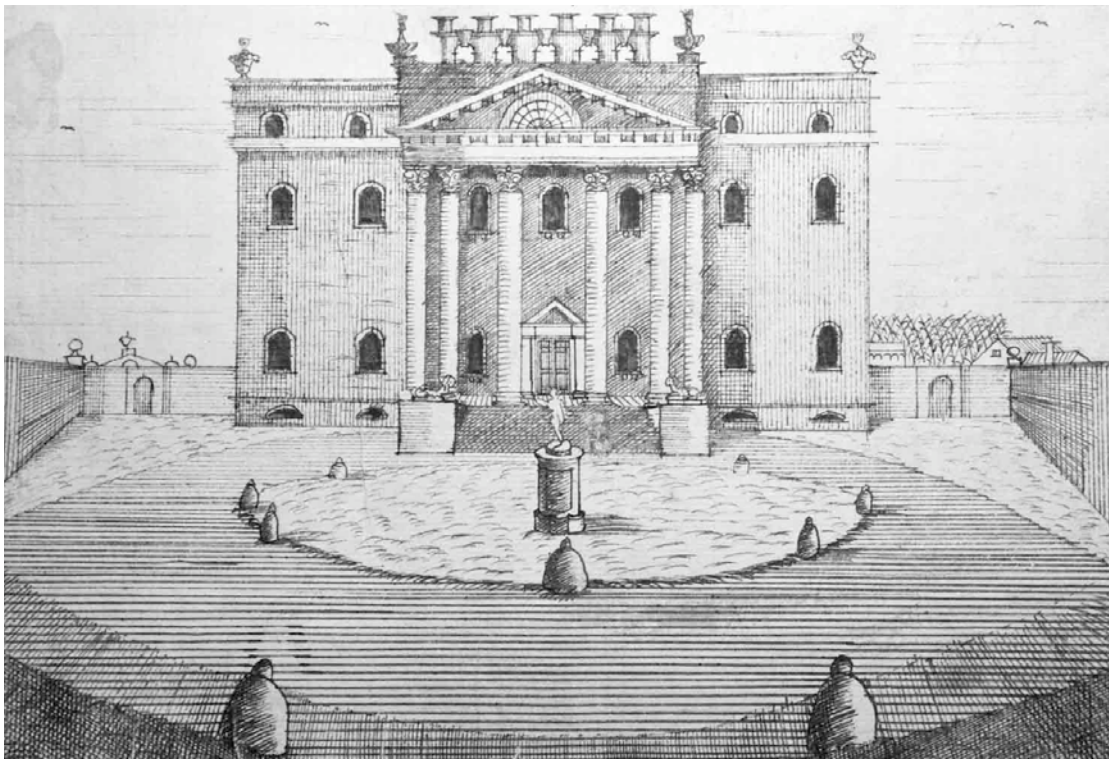
KINGS WESTON HOUSE, BRISTOL: A PRELIMINARY GEOPHYSICAL SURVEY



Conducted on the Behalf of the

Kings Weston Action Group

January 2012

P. Wright

SUMMARY

A preliminary geophysical resistance survey was conducted on behalf of the Kings Weston Action Group (KWAG) within the grounds of Kingsweston House on the 30th and 31st of January 2012. The survey intended to assess the evidence for sub-surface archaeological features within the gardens of house. Although no evidence was found for the for the late seventeenth and early eighteenth century formal landscaping to the southeast of the house, the surveys have revealed some tentative evidence for early eighteenth century structures to the southwest of the house, which are discussed in this report.

ACKNOWLEDGEMENTS

The following survey was arranged by David Martyn, chairman of the Kings Weston Action Group, who provided much information about the history of the estate in addition to many images included in this report. Tim Denning, also of KWAG, kindly sent images of maps in various formats for georeferencing. I am also grateful to Phil Rowe, who provided the equipment and gave advice on both the survey and the downloading of data. Peter Insole of Bristol City Council kindly provided relevant information from the Historic Environment Record.

Thanks are also due particularly to all of those who conducted the survey at various points over the two days; Colin Morse, Chris Bloor, Terry Heathcote, Christine Heathcote, Andy Thorpe, Jean Marsh, Ian McMullan, Tash Allen, David Martyn, Jo Rees-Howell and Fred Neville-Jones.

1. INTRODUCTION

1.1 Site Location

1.1.1 Kings Weston Estate, NGR ST 541 773, is located in the parish of Henbury, about five miles northwest of Bristol city centre. It occupies a prominent position on a steep-sided spur of land at the end of Kings Weston Down, overlooking the Bristol Channel to the west. The area of the estate surveyed is located over sandstone bedrock[1].

1.3 Historical Background

1.3.1 The manor of Kings Weston formed part of the Berkeley Hundred and is recorded in the Domesday Book and referred to by Atkyns (1712) as a 'considerable manor' (cit. Nicholas Pearson Associates 1994, 13).

1.3.2 Henry VII granted the hundred of Berkeley to Robert Fitzharding, who later gave the manor to his second son, also Robert. The estate was inherited by William Berkeley, who then sold it to William Wintour. Wintour is thought to have been responsible for the construction of the Elizabethan house by 1588 (Kingsley 1989). The house was later purchased by Sir Humphrey Hooke, whose son sold the estate to the Southwell family (Nicholas Pearson Associates 1994, 13).

1.3.3 There is no documentary evidence for the layout of the manor during the tenures of the Berkeley, Wintour and Hook families although it is likely that formal gardens would have adjoined the Elizabethan house. These might have formed the basis for the extensive landscape laid out by Sir Robert Southwell in the late seventeenth and early eighteenth centuries (Nicholas Pearson Associates 1994, 13).

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[1] Farrington Member and Barren Red Member (undifferentiated) (FABR) (source: British Geological Survey).

1.3.4 In 1679 Sir Robert Southwell purchased the Manor of Kings Weston from Sir Humphrey Hooke, which he held until his death in 1702. Robert Southwell is thought to have been largely responsible for the formal layout of the gardens illustrated in an engraving of c.1709 by Johannes Kip (*figure1*), which was published in Sir Robert Atkyns' *Ancient and Present State of Gloucestershire* in 1712. Although Edward Southwell succeeded his father Robert in 1702, it is likely that the landscape drawn by Kip largely represents that laid out previously by his father (Nicholas Pearson Associates 1994, 14). The Kip engraving depicts two formal *parterre* gardens to the southwest of the house and a large double avenue of trees leading away from the house to the southeast to join further avenues.

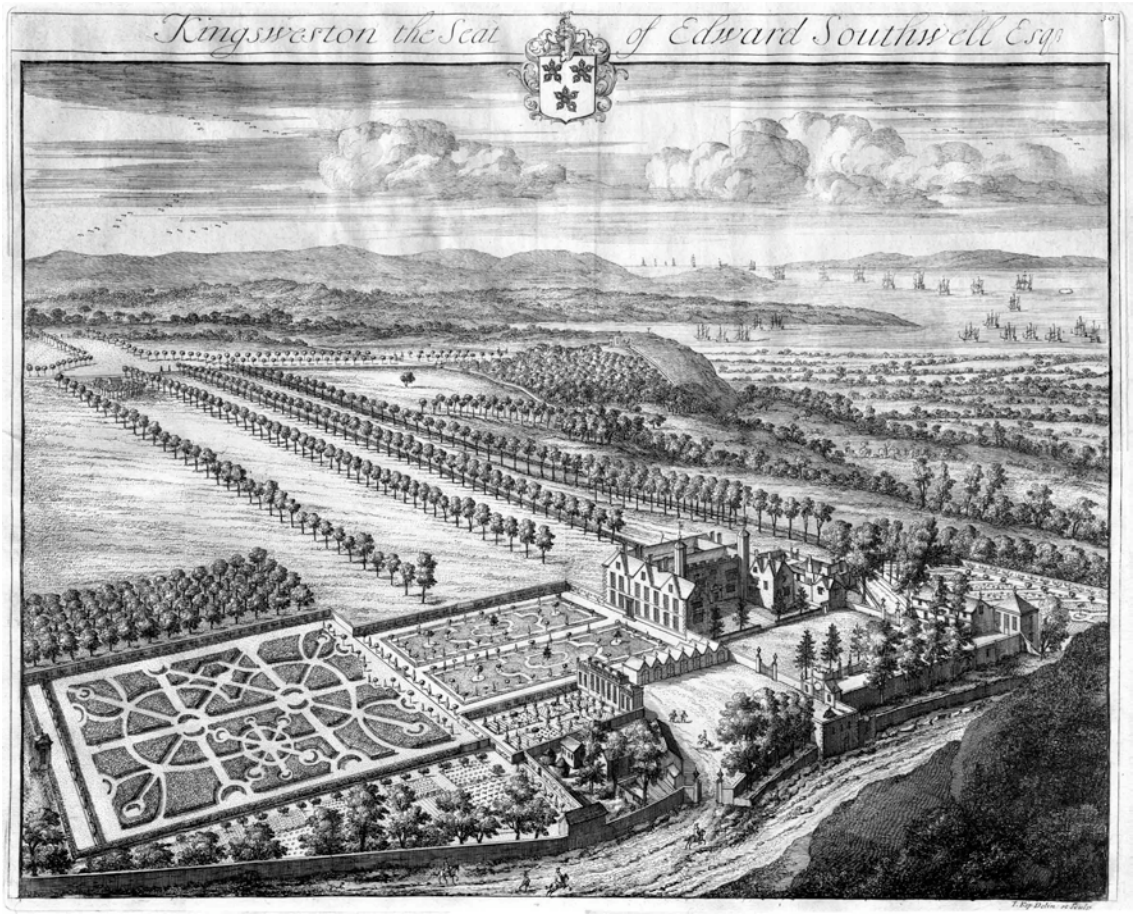

Figure 1: *Kip's view of Kingsweston, published in 1712.*

1.3.5 In c.1710 work began on the present house designed by Sir John Vanbrugh for Edward Southwell, following the demolition of the Elizabethan manor. The house was probably completed in 1719 (Foyle 2004, 291). Vanbrugh also designed a number of garden buildings including the Echo (c.1715), the Brewhouse (c.1718) the Loggia (c.1718), and Penpole Gate (c.1725). With the exception of the Brewhouse, all of these buildings were located adjacent to or over the sites of structures depicted in the Kip engraving (Nicholas Pearson Associates 1994, 16).

1.3.6 It would appear that Vanbrugh was also responsible for the re-landscaping of the estate around the new house, the extent of which can be seen on an estate plan of 1720 (*figure 2*). The *parterre* nearest to the southeast of the house appears to have been simplified and a great court has been added to the southwest front of the house.

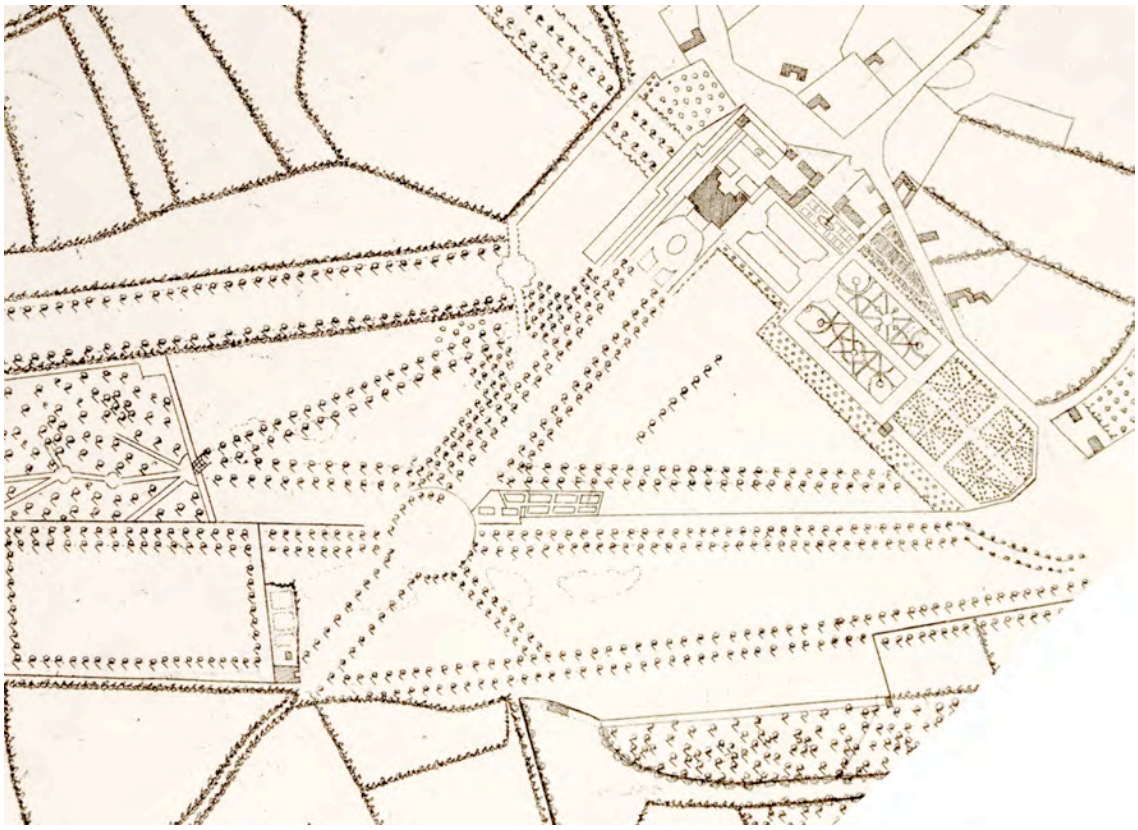

Figure 2: *1720 Estate Plan.*

1.3.7 A pen and ink drawing of 1746 by James Stuart (*figure 3*), entitled 'The Front View of Edw. Southwell Esq's Seat at Kings Weston', depicts the formal great court and corresponds well with the estate plan of 1720. It records a walled courtyard with a carriage drive surrounding a central oval of grass with a classical statue of Hercules in the middle. The statue almost certainly survives in the gardens of Goldney House in Clifton (Merritt and Greenacre 2011, 65).

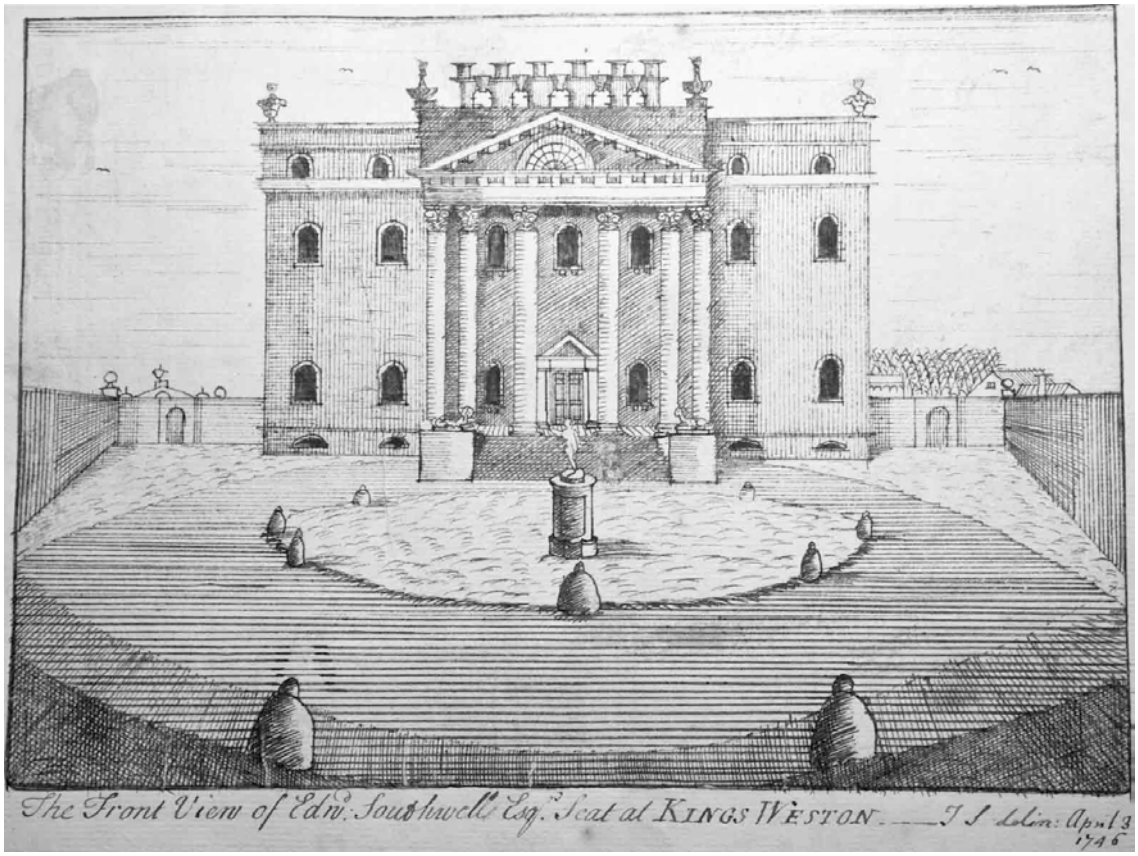

Figure 3: *James Stuart's 1746 Drawing of the Great Court.*

1.3.8 By the mid-eighteenth century the informal English landscape style was very much in favour and it is likely that Edward Southwell III may have begun the process of 'deformalising' the landscape of Kings Weston Estate after he inherited it in 1755. It is known that Lancelot Brown worked at Kings Weston, probably having been commissioned by Edward Southwell III, although his undated account for the sum of £84 suggests his work was limited to the area immediately surrounding the house. It is very possible that Brown would have recommended the removal of the walls surrounding the great court depicted on Stuart's 1746

drawing in order to afford more extensive views from the house (Nicholas Pearson Associates 1994, 19-20).

1.3.9 An estate map surveyed by Isaac Taylor in 1771 and published in 1772 shows the extent to which the formal seventeenth and early eighteenth century gardens had been 'deformalised' by the latter part of the eighteenth century, with avenues broken up and replaced with much more informal parkland (*figure 4*).

Figure 4: *Isaac Taylor's 1772 Estate Plan.*

1.3.10 The estate continued to be held by the Southwell family until it was sold to Philip Miles in 1832. It then remained in the Miles family until Bristol Municipal Charities purchased it in 1937. In same year 104 acres of Kingsweston Downs were sold to the Bristol Corporation for £11,764 (Nicholas Pearson Accociates 1994, 24).

1.3.11 Work had begun to build a new schoolhouse in the grounds by 1939, which was halted by the war. The partly built structures of the school still remain to the southeast of the house. During the war the house and estate were occupied by troops, the extent of which can be seen in an aerial photograph of 1946 (*figure 5*). The photograph shows a large number of Nissan Huts erected around the edge of the park, for which the concrete foundations are still visible in a number of places.

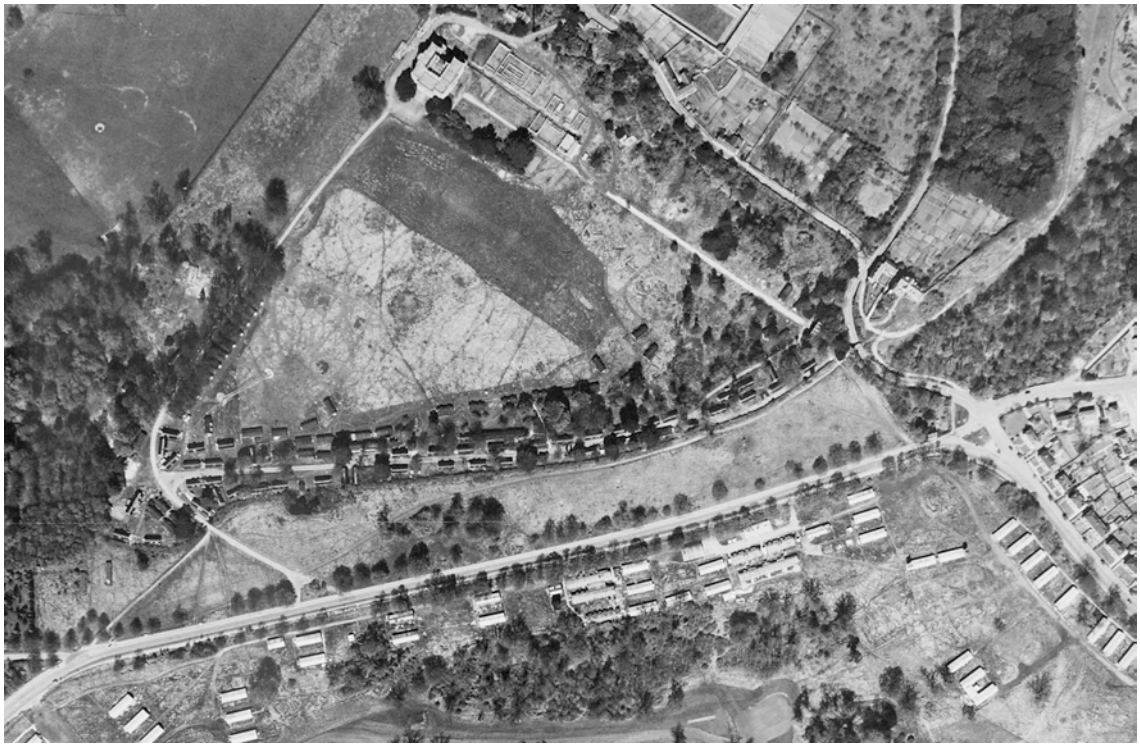

Figure 5: *1946 Aerial Photograph of Kings Weston Estate.*

1.3.12 More recently, the house was used as a police training centre between 1970 and 1995, before being sold to private hands in 2000. The house is now used as a conference centre and the grounds are a designated as park managed by the City Council.

1.4 Survey Objectives

1.4.1 The survey was focussed over two areas next to the house in order to assess any below ground features associated with the former layout of the gardens. Grid 1 was located to the southwest of the house primarily in order to assess surviving evidence for the great court visible in both the 1720 estate plan and James Stuart's 1746 drawing. Grids 2 and 3 were located to the southeast of the house principally to assess the possible surviving evidence of the gardens pre-dating Vanbrugh's alterations visible on the Kip engraving of c.1709.

1.4.2 Although many other areas of the estate have been identified as worthy of investigation by geophysical survey, due to limited time available it was decided to initially concentrate the survey in these areas.

Figure 6: *Conducting the survey on the 30th January (photograph: David Martyn)*

2. METHODOLOGY

2.1 Method of Survey

2.1.1 An earth resistance survey was selected as the most appropriate method for the project for both its relative ease of use and the nature of results it can produce. The possible features that were anticipated included walls, ditches and tree-bowls, all of which should be well detected by a resistance survey.

2.1.2 Although a magnetometer survey would have been a quicker method for an initial survey, Kingsweston Estate is a relatively busy park popular with dog walkers, which meant that conducting a survey without interference from metal would have been impractical.

2.2 Dates of Fieldwork

2.2.1 The fieldwork was conducted during the daylight hours of the 30th of January and the afternoon of the 31st of January 2012. Weather was generally clear with some light snow on the 30th of January. The ground had a relatively high moisture content but was not saturated.

2.3 Grid Location

2.3.1 The location of the survey grids can be seen on the site plan (*figure 7*). Grid 1 comprised of eight 20m x 20m grids and was located on the lawns to the southwest of the house. Grids 2 and 3 each consisted of four 10m x 10m grids located on the lawns to the southeast of the house. Grid 1 was surveyed on the 30th of January and Grids 2 and 3 were surveyed on the 31st of January. Grid 1 measured 40m x 80m and covered and area of 3,200 square metres. Grids 2 and 3 both measured 10m x 40m and each covered an area of 400 square metres. The total coverage of the survey was 4,000 square metres or 0.4 hectares. Detailed grid co-ordinates are provided in the appendix.

2.4 Description of Technique

2.4.1 An earth resistance or resistivity survey measures the ability of the soil to conduct an electrical current. Since an electrical current will find the path of least resistance, relative resistance of the soil can be measured by passing a current between two electrodes. In areas of ground that retain more moisture, such as filled-in ditches, resistance would be expected to be relatively low since the ground will generally be more conductive. Conversely, more insulating features such as buried stone walls would be expected to produce higher resistance readings since the electrical current cannot pass easily through them. These are two extreme examples and anomalies differing in conductivity will generate intermediate results.

2.5 Equipment and Configuration

2.5.1 The survey employed a Geoscan Research RM15 resistance meter with a twin-probe array. The mobile probes were separated at a fixed distance of 0.5m, which enables the detection of features up to 1m below the surface (Jones 2008, 25). The remote probes were located at a distance of at least 15m from the nearest edge of the grid in order to reduce background resistance. Care was taken to 'normalise' readings whenever it was necessary to move the remote probes.

2.6 Sampling Intervals

2.6.1 Samples were recorded at one-metre intervals along a standard 1m traverse in a 'zig-zag' manner across the grids. The first reading from each grid was taken at 0.5 metres along the base line and 0.5 metres from the edge of the grid, ensuring that the results corresponded with the grid as it was laid out. In this way 400 readings were take in each 20m x 20m grid and 100 readings were taken in each 10m x 10m grid.

2.6 Processing of Results

2.6.1 The data was downloaded using Geoscan Research's *Geoplot* software (v.3.0) and organised into individual grids. The raw data was initially 'despiked' to remove anomalously high resistance results. This data was then 'interpolated' in order to make interpretation of the results easier. Interpolation involves the creation of new data points in between the discreet survey data, which creates a smoother appearance to the plots and can increase the visibility of weak archaeological features. It should be noted that interpolation does not increase the amount of data. Both the raw and processed data plots for each grid are reproduced in the appendix.

3. RESULTS

The processed results with their relevant grid numbers are shown below (*figure 7*). The survey results are reproduced overlain onto the current Ordnance Survey master map (*figure 8*), the 1720 estate plan (*figure 9*) and Isaac Taylors 1772 survey (*figure 10*) for ease of reference and interpreted below.

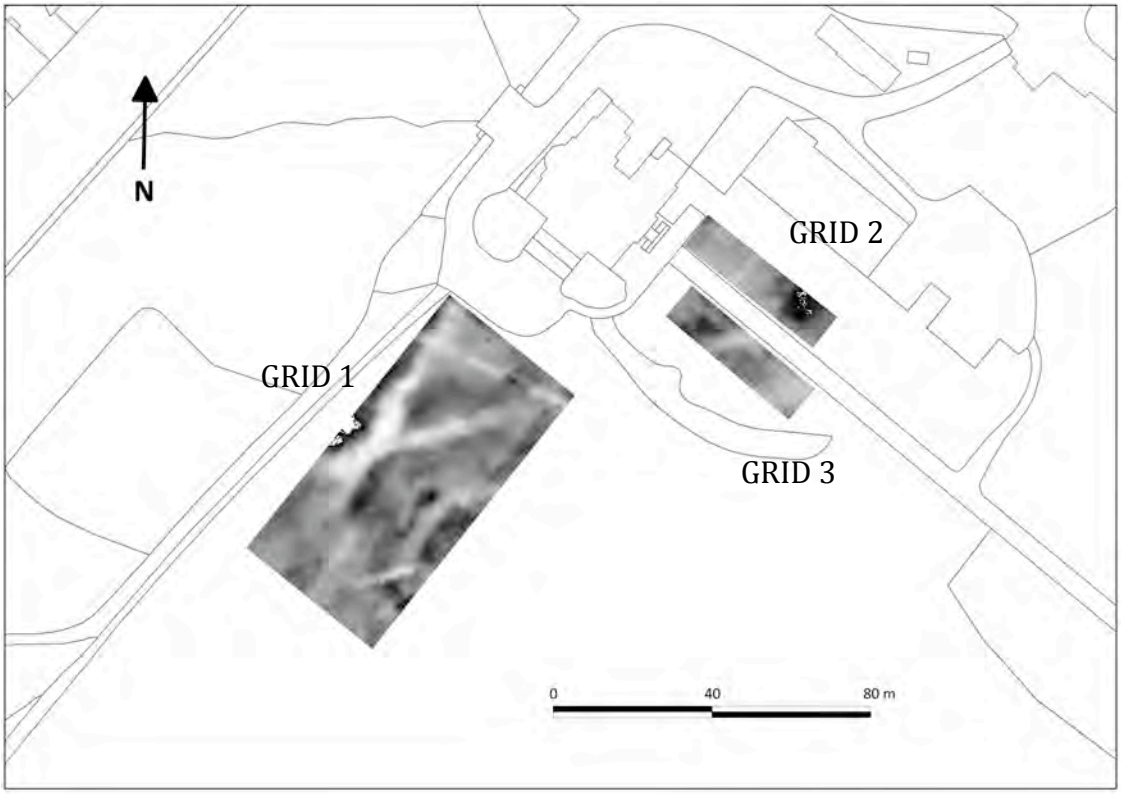

Figure 7: *Location and numbering of the survey grids.*

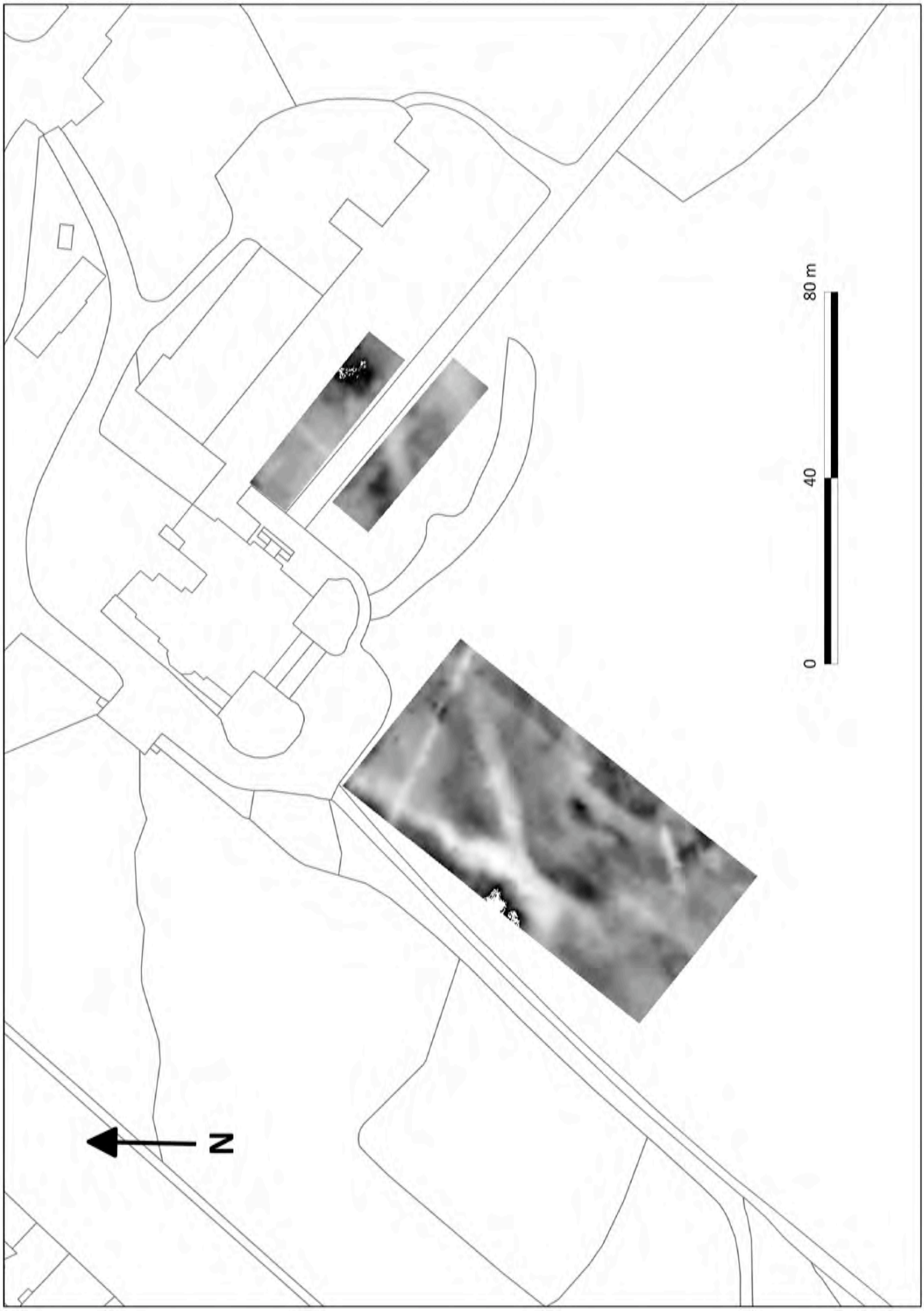

Figure 8: *Survey results overlain onto Ordnance Survey base map.*

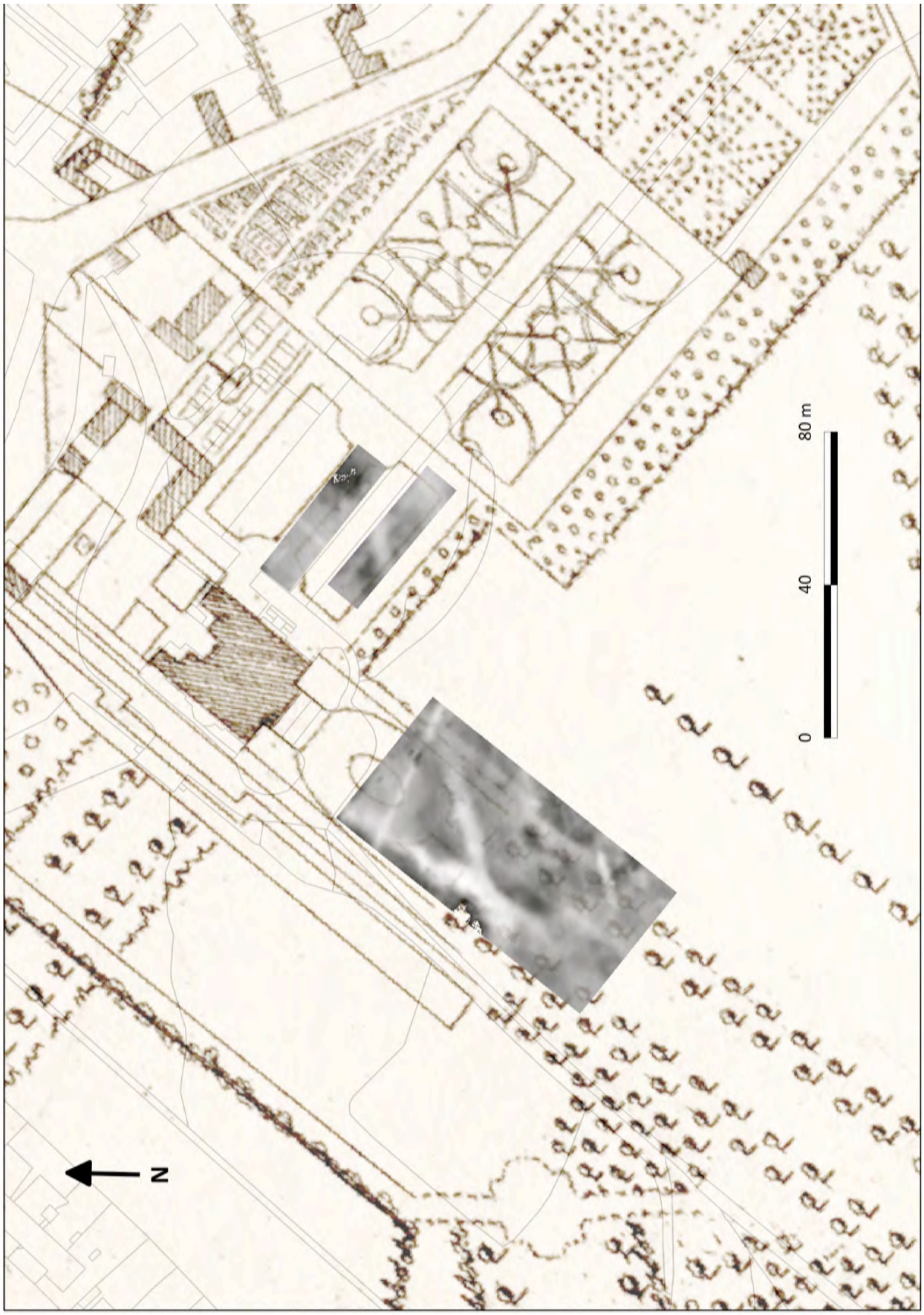

Figure 9: *Composite map showing survey results overlain onto the 1720 Estate Plan.*

Figure 10: *Composite map showing survey results overlain onto 1772 estate plan.*

3.1 Interpretation

The results from the three survey grids are discussed individually below with reference to significant anomalies (annotated in *figures 11*, *13*, and *14*). It is important to note that the results in isolation cannot indicate the exact nature of buried features. For example, although areas of low resistance (white) suggest relatively high moisture content consistent with a ditch, without further supporting documentary or archaeological evidence such an interpretation would be speculative (Gaffney and Gater 2003, 110). The results show some limited evidence that may relate to documented features discussed below. Where no such supporting evidence exists from the documentary evidence, any conclusions about the nature of anomalous features must remain extremely tentative.

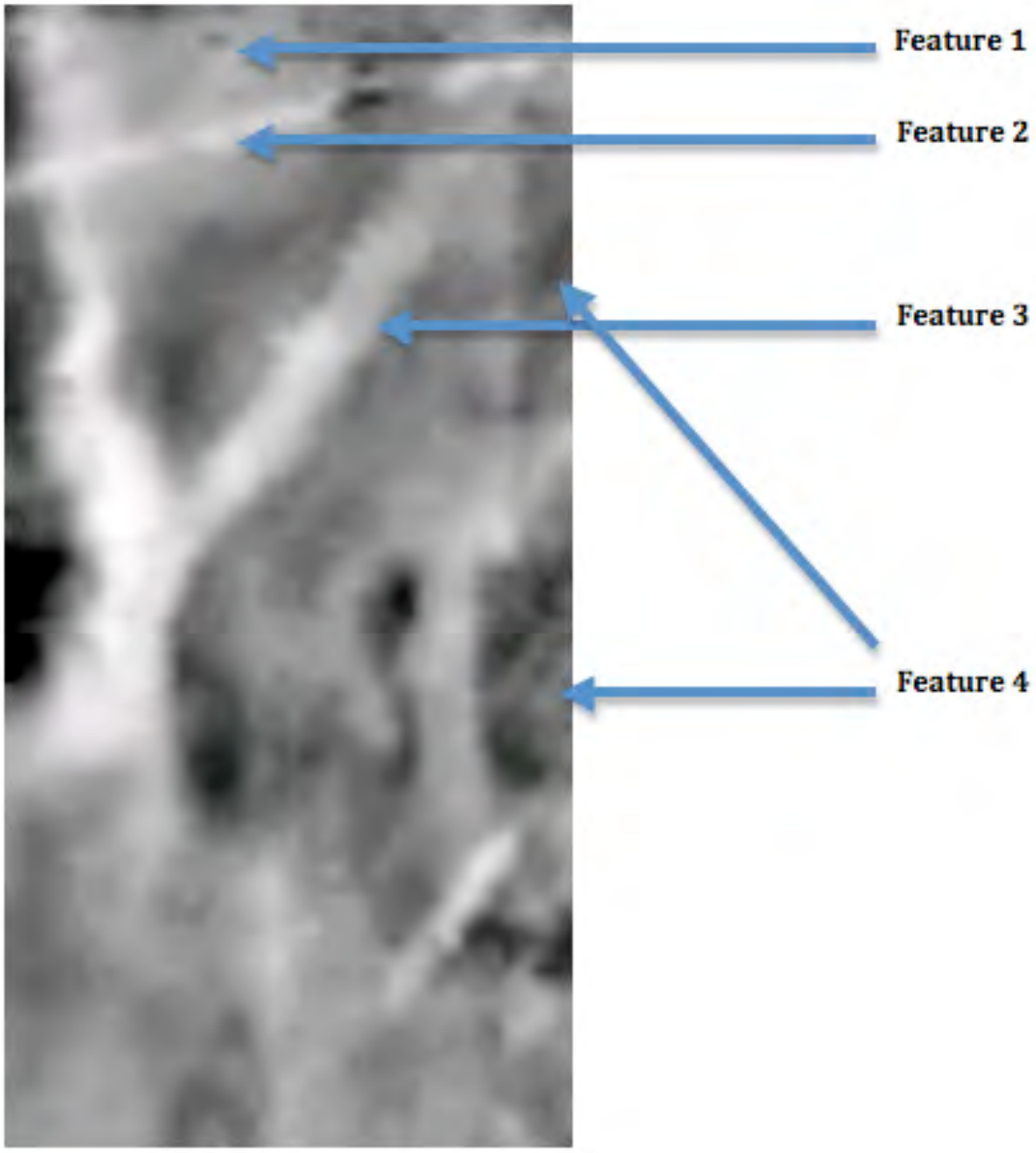

Figure 11: *Annotated data plot of Grid 1.*

Grid 1

Feature 1

3.1.1 This small area of high resistance may relate to the base of the statue of Hercules that once formed the centrepiece of the great court illustrated in James Stuart's 1746 drawing (see 1.3.7). When the grid is overlain onto the 1720 estate plan (*figure 9*), the position of the feature seems to correspond almost exactly to the centre of the court, which would have been the location of the statue as illustrated by Stuart (*figure 3*). The likely dimensions of the pedestal upon which the statue would have stood support this interpretation. The statue currently sits on a pedestal 115cm wide and 48cm deep in its present location at Goldney House in Clifton. These measurements are a close, but not precise, match to the dimensions shown in an early eighteenth century scale drawing by Vanbrugh of the 'Pedestal of Hercules at Kingsweston' (Merritt and Greenacre 2011, 64-5). The raw data plot (in appendix) reveals that the anomaly stems from two adjacent readings consistent with a small feature of this size.

Feature 2

3.1.2 This relatively regular linear feature of low resistance is suggestive of a buried pipe or electrical cable. It is unlikely to be either a natural feature or one associated with the garden.

Feature 3

3.1.3 The large 'Y' shaped area of low resistance may relate to a single feature or two intersecting ones. The irregular nature of feature 3 suggests that it predates the garden but besides this nothing can be said with certainty. The feature appears to continue for a significant distance towards the northeast and is recorded passing through Grid 3, c.40m from the edge of Grid 1. It is most likely to be a natural feature, associated with the underlying geology.

Feature 4

3.1.4 The regular shape of this large area of high resistance is suggestive of a possible archaeological feature. It may relate to large foundations associated with the southeast wall of the great court. The feature appears to roughly align with the house although it is located significantly further to the southeast than the wall shown on the 1720 estate plan. It is possible that the feature could represent evidence for the partial construction of Vanbrugh's rather more massive designs

for the great court that were abandoned in favour of the layout illustrated by the 1720 estate plan and James Stuart's 1746 drawing. Vanbrugh's original design, shown by drawings from his office dated 1718 (*figure 12*), involved the construction of large pyramid-gate forecourt set into deep fosse (Ridgeway and Williams 2000, 60). Such an interpretation should be regarded as extremely speculative, however, particularly without a further survey to the southeast of Grid 1 in order to assess the relationship of the feature to its surroundings.

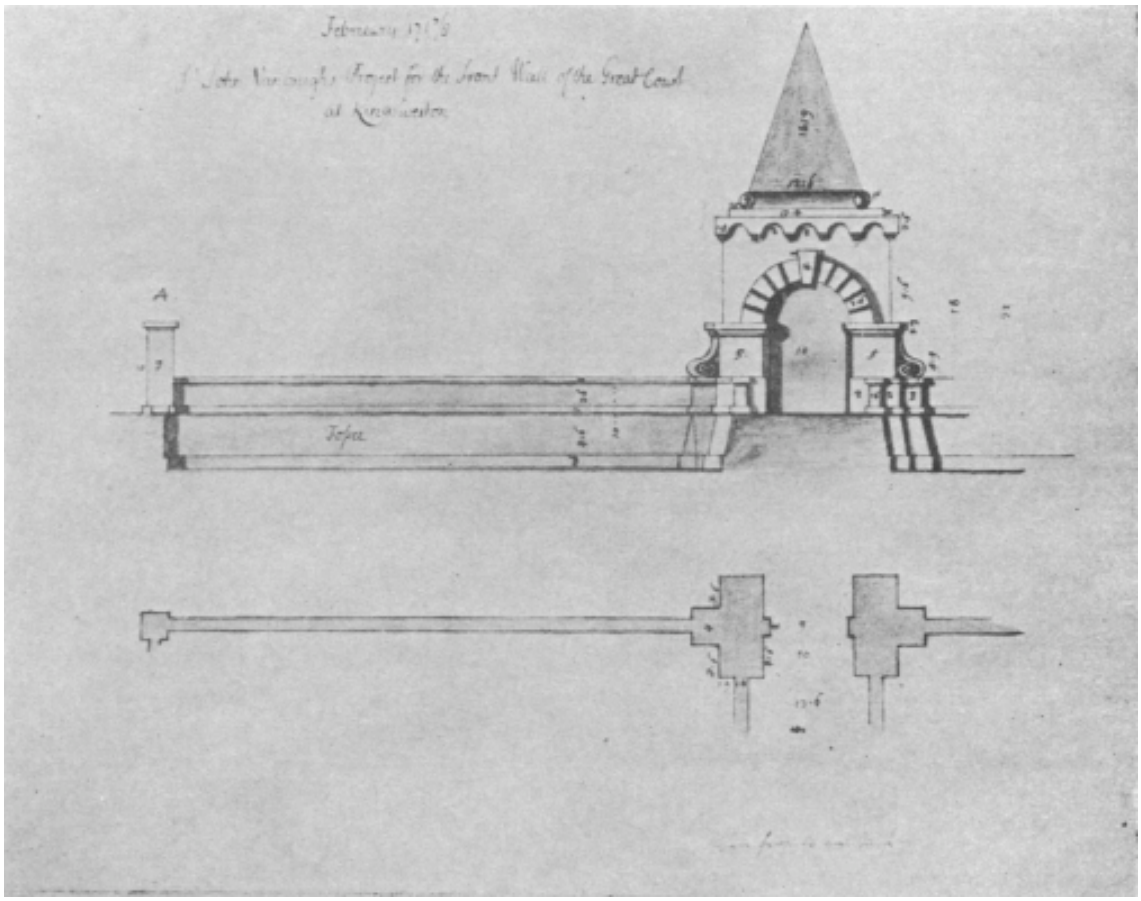

Figure 12: *Vanburgh's 1718 plan and elevation of forecourt gate for Kings Weston (from Downes 1967, 48).*

3.1.5 It is also possible that the corresponding lower resistance immediately to the northwest of *feature 4* may represent disturbance relating to the Great Court that was eventually constructed. Although the area of low resistance occurs further to the southeast than the edge of the Great Court as shown on the 1720 estate plan (see *figure 9*), Stuart's 1746 drawing suggests that the Great Court may have been a little wider. In Stuart's drawing (*figure 3*) the width of the court relative to the

façade of the house appears greater and may be more consistent with the results of the survey. If this is the case than the northwest wall may be located outside the area surveyed, perhaps under the present path. As above, the relationship of the result is difficult to interpret without a wider survey to the southeast.

Grid 2

Figure 13: *Annotated data plot of Grid 2.*

Feature 5

3.1.5 Feature 5 represents a relatively regular linear feature of lower resistance running parallel to the house, which does not continue to the southwest of the path

in to Grid 3. It may relate to the removal of the structure visible in the same place on the 1946 aerial photograph (*figure 5*). It is difficult to tell what the nature of the structure is from the aerial photograph although it is likely to be related to the military use of the grounds during the war.

Feature 6

3.1.6 Feature 6 represents an area of very high resistance although does not correspond with any documented structures.

Grid 3

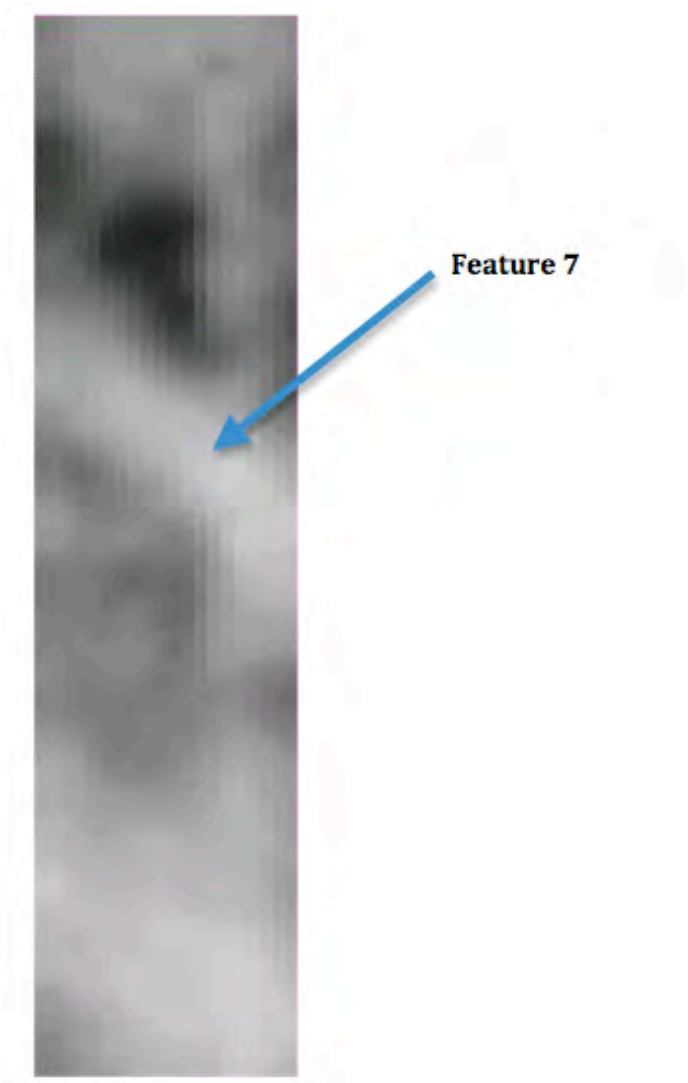

Figure 14: *Annotated data plot of Grid 3.*

Feature 7

3.1.7 The most significant feature recorded in Grid 3 is the apparent continuation of the significant area of lower resistance also visible in Grid 1. This is likely to represent a natural geological feature.

3.2 Summary

3.2.1 No evidence was found for the formal layout of the gardens to the southeast of the house in either Grid 2 or 3. In Grid 1, however, there may be some tentative evidence remaining for some of the formal structures lost in the mid-eighteenth century, including the statue plinth and the suggestion of wall foundations possibly relating to the Great Court. Perhaps most interesting is the possibility that Vanbrugh's early eighteenth century design for the great forecourt to the southwest of the house may have been partly realised, although without further work this remains very speculative.

3.2.2 Although this survey has been fairly limited in scope, the potential for future geophysical surveys at Kings Weston is great and it may prove to be a very valuable technique in the study of the historic landscape at Kings Weston.

5. References

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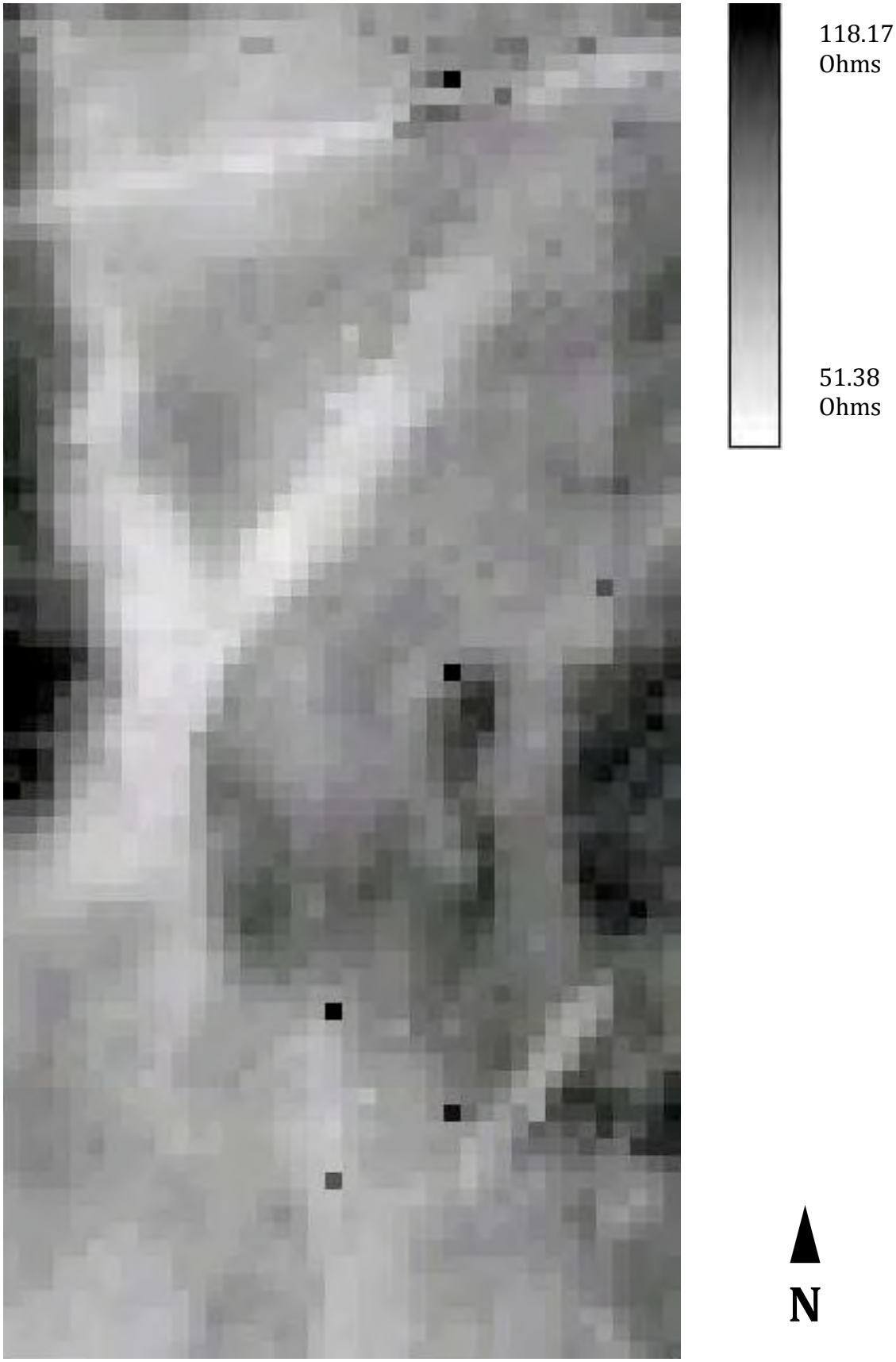
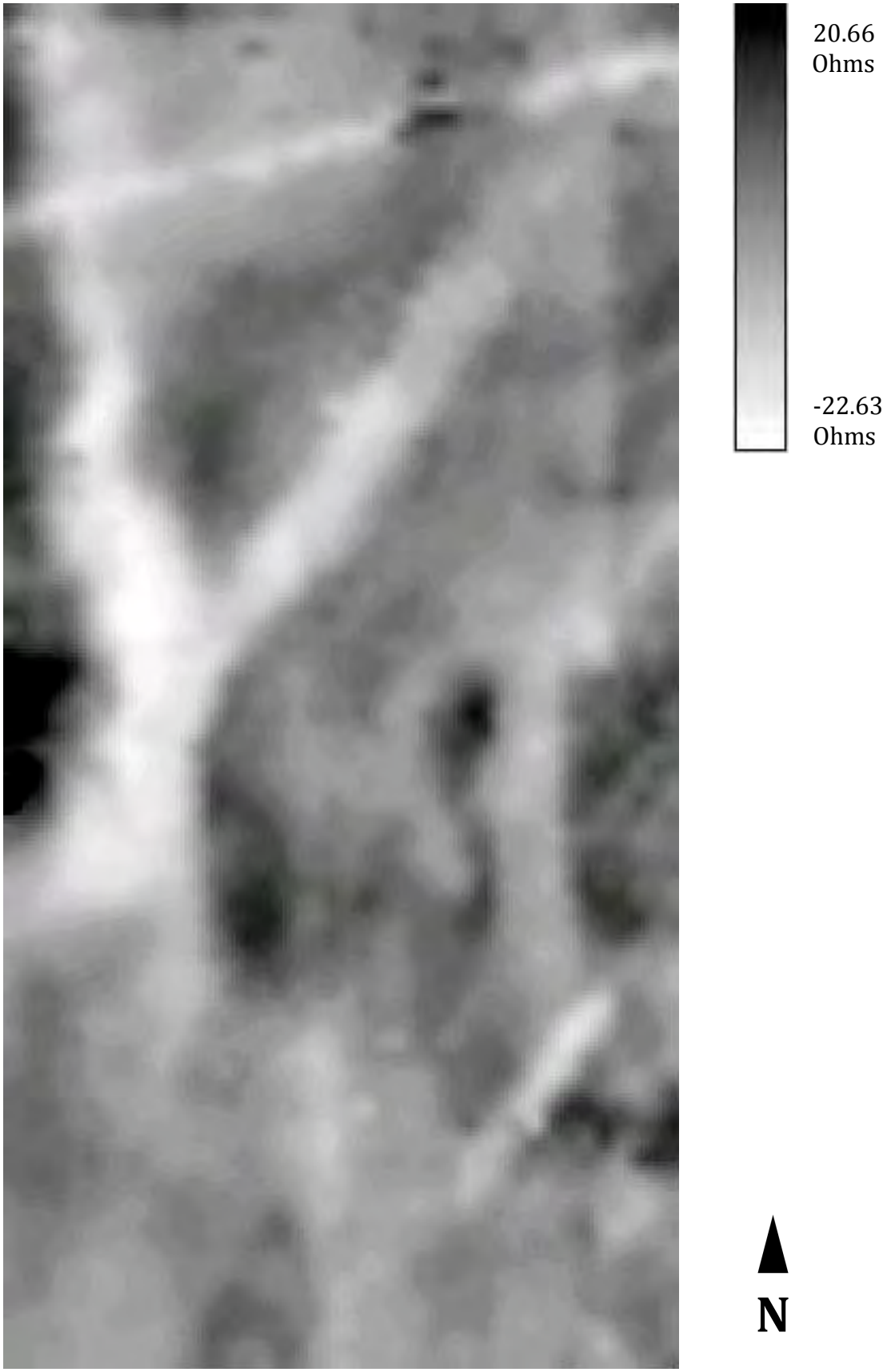
APPENDIX

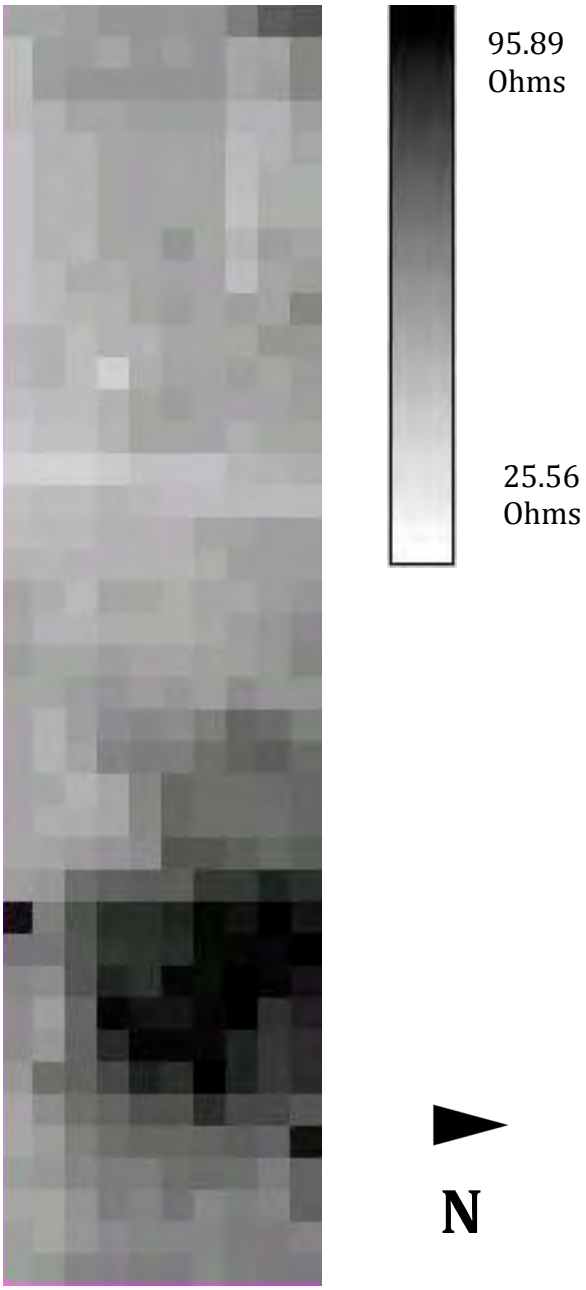
Grid 1: raw data (40m x 80m)



Grid 1: processed data (40m x 80m)



Grid 2: raw data (10m x 40m)



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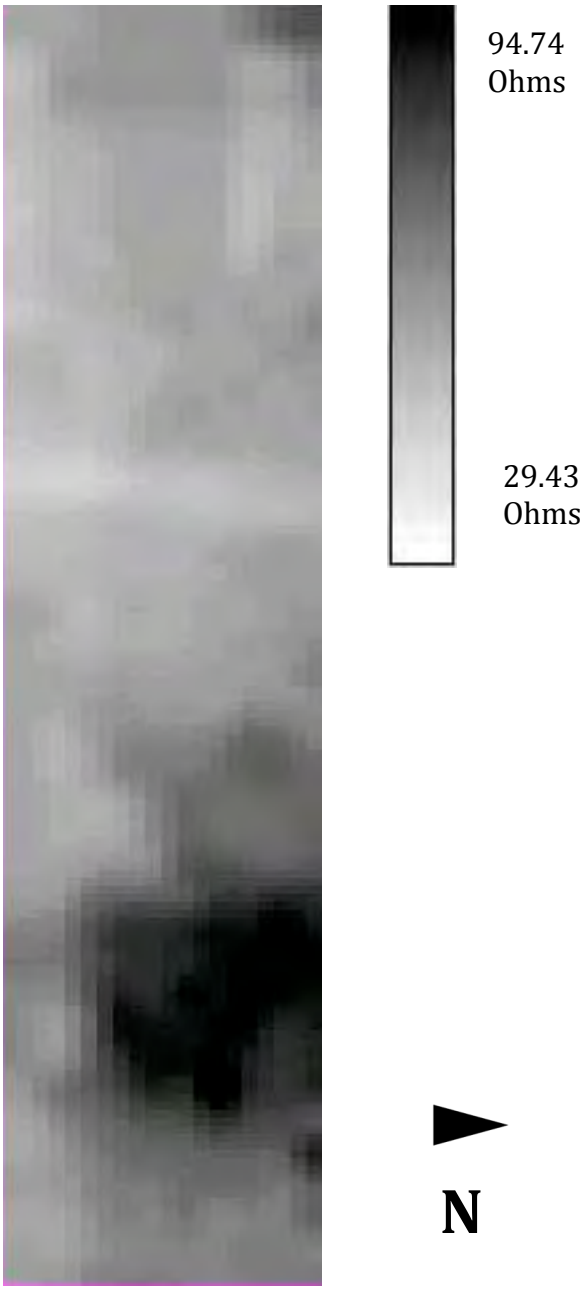

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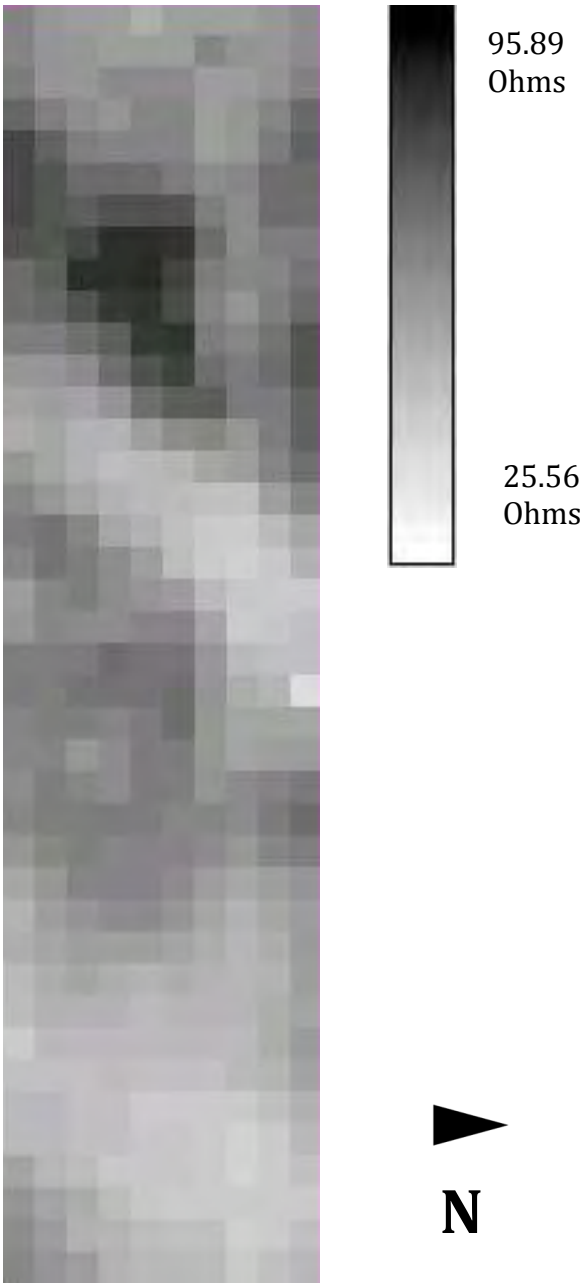

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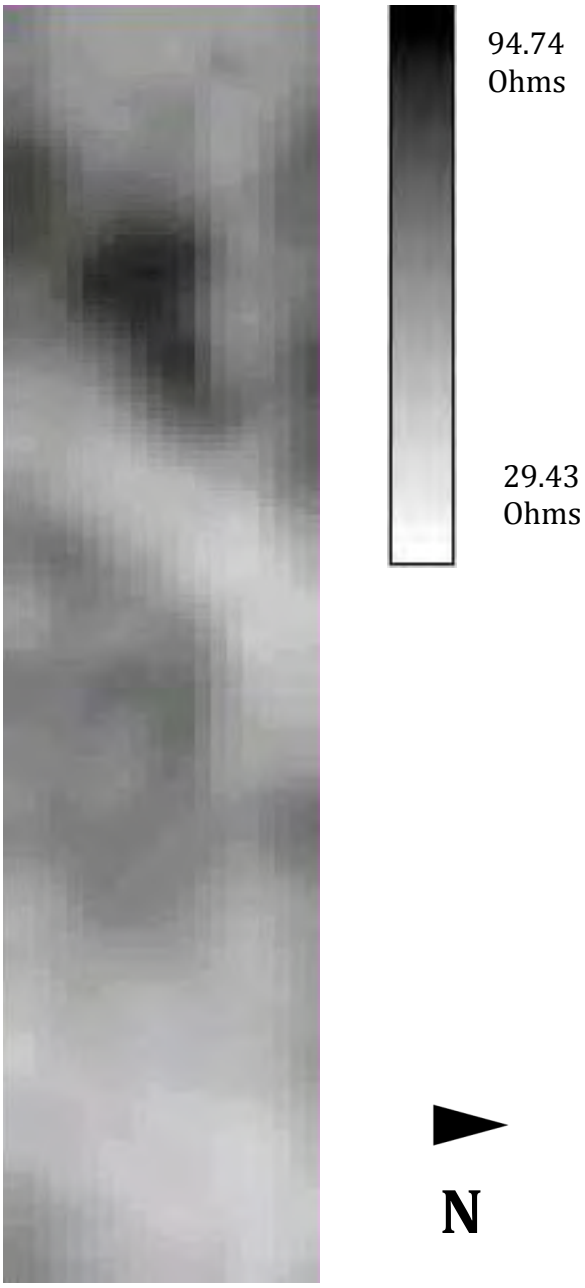
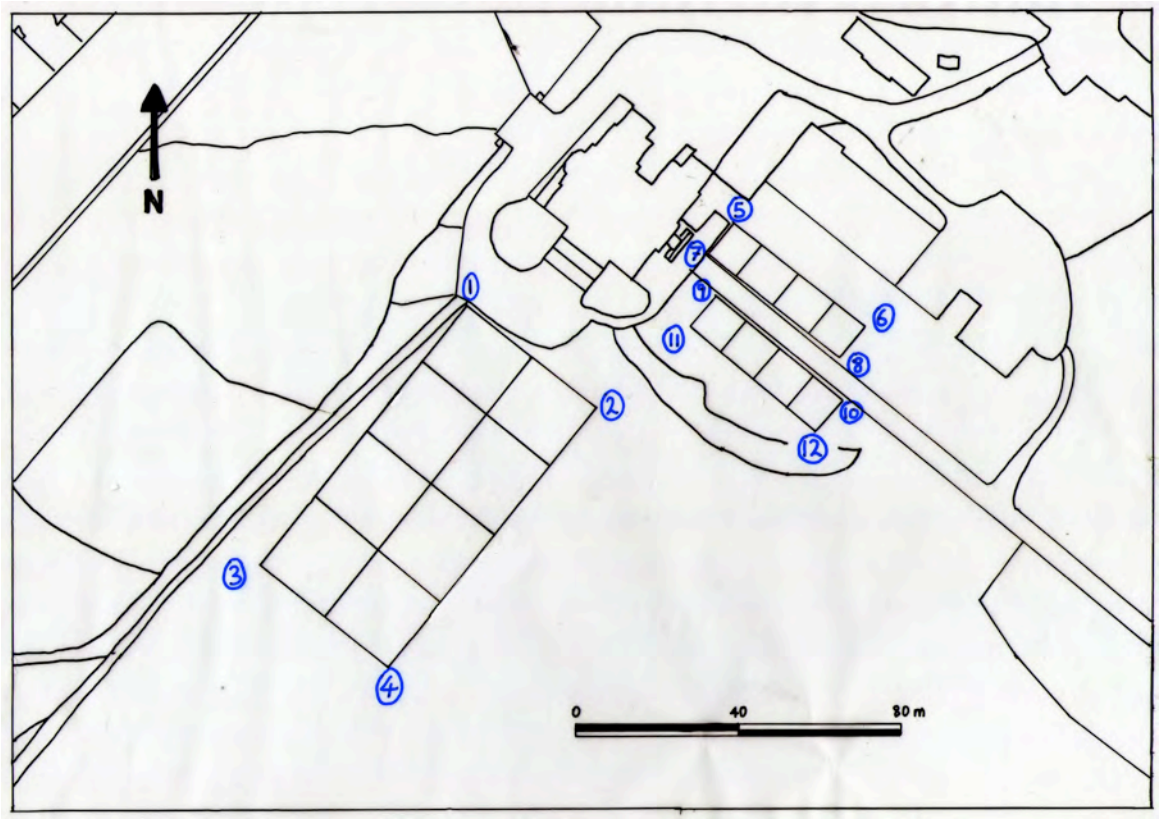


Location and grid co-ordinates (corners)



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2 354166.7, 177429.5

3 354086.7, 177390.9

4 354115.5, 177365.5

Grid 2

5 354200.2, 177474.9

6 354232.6, 177449.2

7 354194.0, 177467.1

8 354226.6, 177441.4

Grid 3

9 354196.1, 177457.1

10 354226.0, 177431.0

11 354189.6, 177449.3

12 354220.6, 177423.2