BATH & COUNTIES ARCHAEOLOGICAL SOCIETY

High Common, Bath (the Approach Golf Course)

A report on geophysical surveys during 2022

Janet Pryke and John Oswin

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Summary

A series of geophysics surveys has been completed over the past year in High (Great or Upper) Common, Bath. This area has been in use as an Approach Golf Course, but was out of action at that time. It had been part of the historical Common lands of Bath and much of the Commons was developed to become the Royal Victoria Park in 1830. We know of early settlements including from Bronze Age through to Roman in areas near this work. In this part of the Commons a Romano-British building was detected, surveyed and partially excavated during irrigation works in 2004. The results described in this project indicate the limits of the area immediately around this building. They also show the remains of a long sequence of agricultural activity over the wider Common, including rectangular and strip field enclosures, many of these fields including evidence of patterns of (ridge and furrow) plough lines. There are four springs in the Common, the water from which has been used in the past, including to supply the Pond built in Royal Victoria Park, making part of a complex scheme of water relations in the Common. Our results have added to the information about these. Many of our results have been complicated by the effect of the golf course arrangements, but enough has remained apparent to add to the history of the area.

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Acknowledgement for their publicly available information goes to the Environment Agency, the British Geological Survey, Google Earth and Bathintime (where permission has been given for the use of the images shown in the report). For the LiDAR geographic information system (GIS) processing we acknowledge our use of the QGIS project website (qgis.org).

1 Introduction

The Bathscape scheme, of which this project has become a component, was launched in October 2018 to promote better management and use of the Bathscape. This scheme ensures Bath and its setting are better recognised, managed and experienced as a landscape city with its surrounding hills and valleys to enhance the World Heritage Site and to be actively enjoyed by all.

1.1 Location

The area surveyed here, High, also known as Great or Upper, Common is positioned to the northwest of the city of Bath. Bath was established in the valley made by the River Avon at the southern end of the Cotswold hill range. Bath and High Common are shown in Figure 1.1 arrowed. The central Ordnance Survey grid reference is ST 741 658.

a

b

Figure 1.1. Location showing arrowed positions of (a) Bath and (b) High Common to the north west of the Bath city area

An overhead view is shown in Figure 1.2, courtesy Google Earth. It is to the north of the Royal Victoria Park area, which we surveyed between 2016-19,[1] to the north of the Weston Road, to the west of Cavendish Road and to the south of Sion Hill. The Cotswold Way footpath crosses it from northwest/southeast by the golf course ticket office, and two other footpaths lead to the Cavendish Road entrance.

Figure 1.2. General area of the parks west of Bath from Google Earth

Figure 1.3 shows part of the earliest map we know of the area, that of Walcot Parish drawn by Thomas Thorpe for John Gay in 1740.[2]

Figure 1.3 Map drawn by Thomas Thorpe for John Gay in 1740.2 It shows the Common Fields of Bath next to the Barton Fields to the east.

The project used electrical resistance and magnetometry surveys as shown in Figure 1.4, with the dotted lines separating the four successive areas (A-D) surveyed during 2022. This figure also includes the areas of previous short pieces of survey work: in red that completed in 2004[3] and in green that in 2012[4]. A short project measuring a few resistivity profiles was completed across the southern area in 2019.

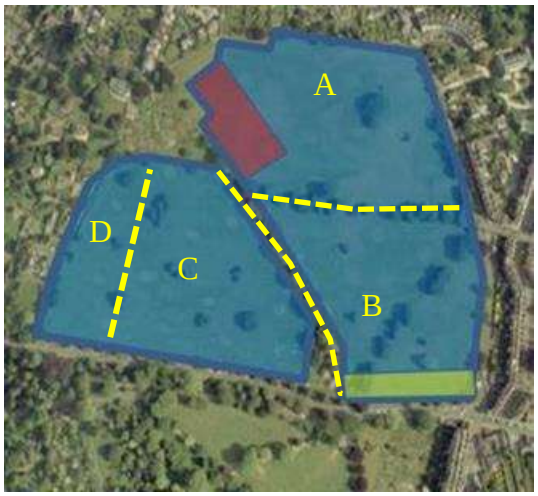


Figure 1.4 The area surveyed here marked in blue with yellow borders on the Google image. Previously surveyed areas are shown in mauve (2004) and in green (2012).

1.2 Background

1.2.1 Physical environment

The Common is on the north slope of the Avon river valley. The slope towards the river averages about 1 in 20 but can be much steeper. The geological map is shown in Figure 1.5.

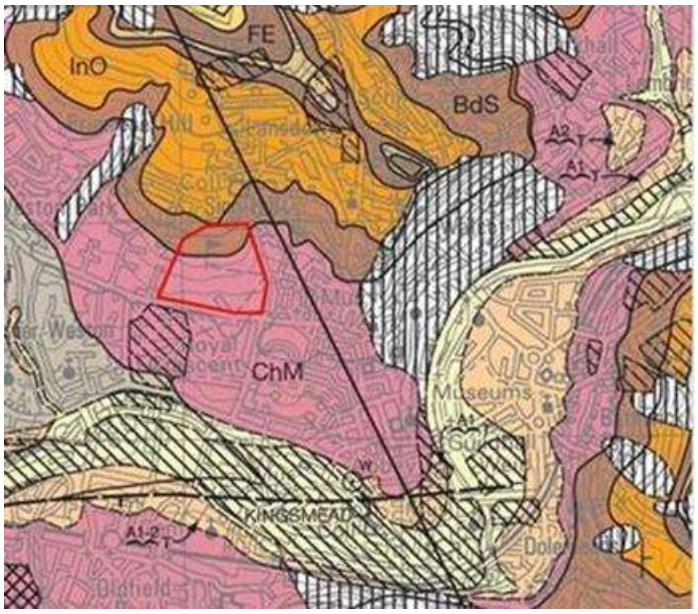
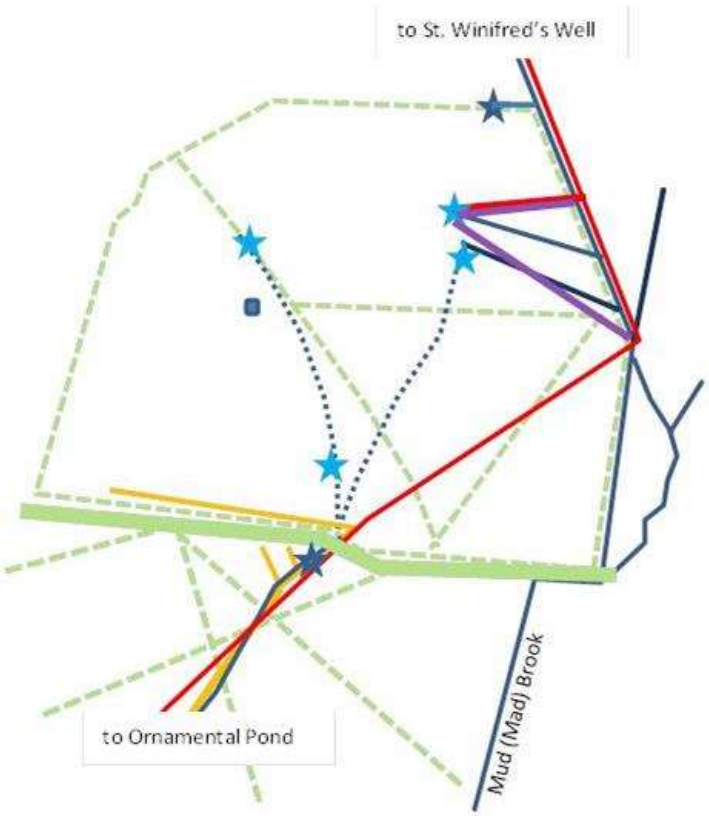


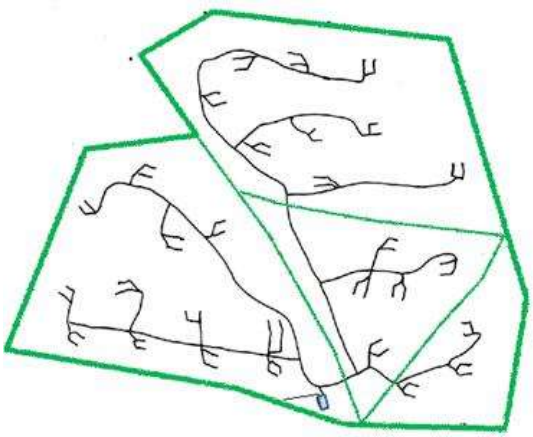
Figure 1.5 Geological map of the area with High Common outlined in red. England and Wales sheet 265, Bath. Bedrock and Superficial deposits, contains British Geological Survey materials © UKRI 2011

The floor of the valley is formed of lower lias clay, obscured by river soil and alluvium. The geological map in Figure 1.5 shows that above this valley there is a geological layer of Charmouth Mudstone (ChM), which covers most of High Common (marked in red). In the Common's northern part is a Bridport Sand (BdS) layer. Further up the slopes the surface geological layers become Inferior Oolite (InO) then Fullers Earth (FE).

Information about the water relations of the Common from various sources is summarised in Figure 1.6. Figure 1.6a shows the combination of information about water courses crossing the Common and Figure 1.6b shows a drawing of the irrigation system that was installed in 2004.



a



b

Figure 1.6a Diagrams of water courses across the area, outlined with paths and road marked in green, with information from the Thorpe map 1740[2] (light blue), "Lost Streams of Bath" [5](blue), Wessex Water and courtesy of B&NES Council Parks Dept. (yellow: drainage map, red: Spring water supply to the Pond, purple: routes of historical spring mains routes) with Figure 1.6b showing a drawing of the irrigation system installed in 2004.[3,6]

In the Thorpe map[2], the positions of four springs are shown in the Common, which are marked by the light blue asterisks in Figure 1.6a. One further spring is at the northern boundary and another to the south across the Weston Road at the top of Royal Victoria Park.[5] This latter spring is part of a complex area, with the water supply including a reservoir tank. A culvert carries water under the Weston Road from High Common to this area. In the drainage map from Wessex Water a water course running from this spring area runs diagonally from here towards the lowest branch of the Ornamental Pond. From the Pond the water drains down towards the river. A second Wessex Water map shows the spring water supply from Mud Brook to the Pond area as is shown in red in Figure 1.6a. Mud Brook originates from the watercourses running down from St. Winifred's well to the north and other springs to the northeast and runs to the River Avon.[5] It is joined by water from the springs in High Common. Lower down the slope a pipe from it crosses the Common and the Weston Road and progresses to the upper branch of the Ornamental Pond. The Lost Streams of Bath[5] shows water from the northern spring in High Common next to the Cotswold Way arriving at the lower spring area and then crossing under the road and progressing on the Ornamental Pond. The OS map of 1888 marks a tank (blue) to the east of the Cotswold Way south of the spring supply and the allotments. It is not known if this could relate to a reported planned but undocumented reservoir in the 1790s.[3] Figure 1.6b shows the pattern of the new irrigation scheme of 2004 taken from the report made at the time.[3] A tank was made in these irrigation works next to the Golf course ticket offices and is shown in light blue. We also have information on a partial upstream pipeline survey in the northeast. These descriptions of irrigation and watercourse schemes provide a complicated historical picture of these arrangements in the Common.

1.2.2 The Commons of Bath

High (also Great or Upper) Common makes up part of the Common lands of Bath which included Middle (Ring) Common, Lower Common, Further Common and Quarry Common as shown in the map in Figure 1.3. "Medieval Bath Uncovered"[6] describes how this land was part of an area, including the Barton, that had alternated between being land that was royal or granted to the Church from the 7th century onwards. Its Common usage became part of its history and according to Keevil,[7] the freemen of Bath had the right of common pasturage after harvest on the West and East Fields of the Barton dating from probably long before an agreement made in 1260 (over 50 years after the Priory had been granted this area by King John). It would then have been a cooperative open field system with a mix of arable and pasture with rights to commons by the free citizens of Bath. A Commons agreement was made in 1617 in which the Recorder of Bath stated that "the citizens ought to have and enjoy the common as claimed", and it referred to the west field (92 acres including this area). These common fields were to be "for the use and enjoyment of the free burgesses inhabiting the city and should remain for ever." Over time this land had become a commercial agricultural operation, with the freemen benefitting from the rents from leasing it.

The Royal Victoria Park was created in 1830[8] from land then controlled by the Corporation and came to include much of these common lands shown in Figure 1.7. High Common had been proposed as part of the development of this new Park but it was not eventually included.

Further plans were made for it over time, e.g. there is an image of planned housing on it made in 1827.[9] Then High Common was developed to be the Approach Golf Course in the 1930s, and has continued this recreational use up to the present time.

Figure 1.7 A map of the area from 1856 showing Royal Victoria Park © Bath and North East Somerset Council, www.bathintime.co.uk

During WWII, along with other parts of Royal Victoria Park, areas of High Common were used as allotments as part of the "Dig for Victory" campaign. These areas are shown in green and blue in Figure 1.8.[10] The blue area to the northwest has continued since then to be used as an allotment area and so was not accessible to us for survey.

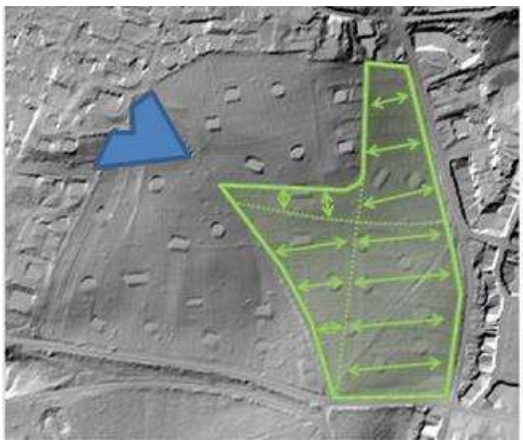


Figure 1.8 The WWII allotment areas marked in green (plot border orientations by arrows) with the area used as allotments at that time and now marked in blue.

1.2.3 Historical developments in this area

This western part of Bath has been important to people of the area since prehistoric times. To the east of the top of High Common, by the Lansdown road, John Wood the Elder described the presence of a group of three large stones, considered by him to date from prehistoric times, known as Sols Rocks.[12] He measured and described them but they have since disappeared.[13] Other single stones are shown on local maps. In the 25 inch OS map of 1873-88 seven such stones are shown in High Common, as marked in Figure 1.9. By the 25 inch map of 1892-1914 these had mostly disappeared from the OS map, and none are visible now. One of the stones from these times remains across Cavendish Road, next to a garage door. It extends to just 30cm above the ground (though presumably extending down into the cellar levels), and is pictured in Figure 1.8.

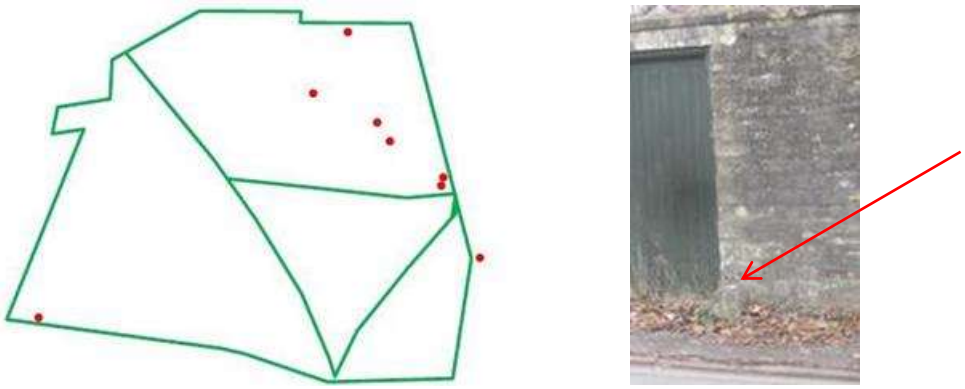


Figure 1.9 Positions of stones marked on the 25 inch OS map of 1873-88 and photograph of the stone across Cavendish Road to the west

Just to the southeast of High Common, excavation showed there was buried a group of standing stones under the land of the Ring Common allotments west of Marlborough Buildings. Here a group of four large buried stones was detected in 1985,[14] towards the northern end of the allotment area. Two of them were described as "large blocks of rough limestone set deep into the clay and bearing marks on their surface to suggest that an original 'standing' portion of each was broken deliberately, some time in their past". The section at the south end of [grid] showed that the stones pre-date the 17th century depositions." Nothing further is known about the date and origin of these.

Burial and other evidence from prehistoric times onwards is known from this western area of Bath.[15] To the southeast of this survey they include the Mesolithic and Bronze Age remains near the Royal Crescent reported following the 2002 Time Team investigation.[16] There were Iron Age settlements to the south of this area, where, under the Lower Common allotments, remains of Iron Age round houses were excavated below the remains of significant later Roman developments.[17,18] Just up to the north are the remains of a large Iron Age settlement near the Sion Hill Bath Spa University site, following Bronze Age remains, and succeeded by later Roman developments including a large Roman cemetery.[19] There is the Roman *via julia* between Bath and Sea Mills which is thought to follow the Weston Road and the northeast/southwest Fosse Way route crossing the current Royal Crescent position.[16,18,20]

Roman remains were found in the High Common when irrigation work was carried out in 2004.[3] In its northern area remains including a column drum were unearthed and a Roman building was partially excavated. Geophysics contributed to this information (see Figure 1.10), with the building's outline showing two separated approximately 5m square room areas as seen in the expanded electrical resistance survey image in the figure.

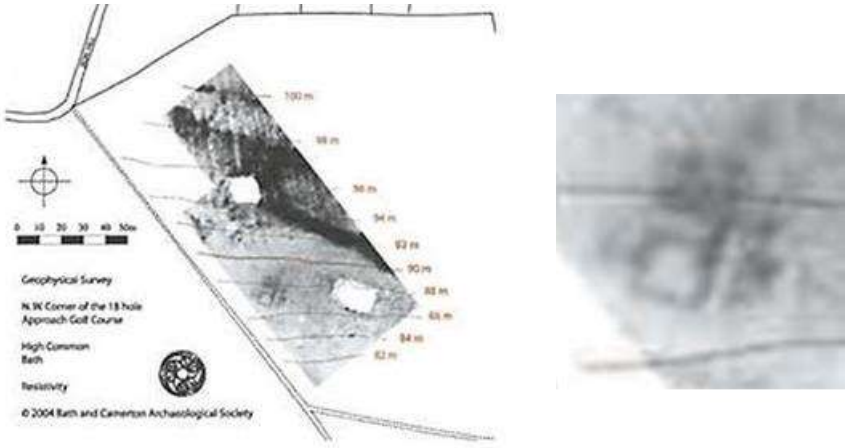


Figure 1.10 The survey done on the site of the Roman remains 2004.[3] The higher resistant image indicating the building outline is shown in the inset.

This building was described in the report as probably a Romano-British farmstead with surrounding areas which also included possible Iron Age or Roman round house remains. In this work it was hoped we would be able to help to add to these results by describing more of the area around the building as well as adding to the other information already known about the whole of High Common.

1.3 Programme

The geophysics survey work was completed by the volunteers from BACAS in four 3-4 week sections during 2022. The four areas were sections to the east of the Cotswold Way path: the northeastern section north of the west-east path (A) and the southeast section south of this path (B), then the western section was completed in two sessions (C&D), as marked in Figure 1.4.

1.4 Scope

This survey followed our previous geophysics projects to the south of the Royal Crescent and in the southern areas of Royal Victoria Park to contribute to increasing the knowledge of the history of this part of Bath. The techniques we used are non-invasive and non-destructive and provide no direct dating evidence. The results we obtained continue to require cautious interpretation, but hopefully this report will help towards the continued description of the western section of Bath's history in the future. Details of earlier surveys were given in individual interim reports. The purpose of this report is to synthesise those into a complete analysis.

2 Method

2.1 Gridding

The survey area was laid out in 20 m grid squares, as is standard BACAS practice. Starting points (0) were set up, as described in Appendix 1 and delineated along the pathways as shown. Subsequent grid squares in all except the last sectors were set up using tapes and Pythagorean triangles based on this. Instruments were walked in (grid) north-south traverses working across the field. Stake positions were marked with temporary line paint so that their positions could be reinstated after they were removed at the end of the previous day.

2.2 LiDAR

LiDAR data for this area was obtained from the Environment Agency database and processed using QGIS 3.14. The LiDAR data from the 2020 set came in 5 km squares. Digital Terrain Modelling (DTM) was used to provide ground surface details rather than vegetation. These were at 1 m resolution.

2.3 Magnetometry

The survey was carried out using a Bartington 601-2 dual fluxgate gradiometer set to take readings at 0.25 m intervals along lines 1 m apart, giving 1600 readings per full grid square.

2.4 Twin-probe Resistance

The electrical resistance survey was conducted using the two new Frobisher TAR-3 resistance meters kindly provided by Bathscape. The machines were operated simultaneously but kept separated by at least 60 m so as to reduce the risk of crosstalk. They were set to take 2 readings per metre along lines 1 m apart, thus giving 800 readings per full grid square. Data were downloaded as a text file and converted using spreadsheets, providing the equivalent of zig-zag data for import into INSITE analysis software.

2.5 Resistivity Profiles

Profiles were taken using a Frobisher TAR-3 resistance meter with 32 probes available. Heights were obtained by interrogating LiDAR data using QGIS, and these were added along the length of the profiles to provide topographical data.

2.6 Software

At the time of the survey the new computers supplied by Bathscape were still being prepared, so all fieldwork here was downloaded and analysed using BACAS' Windows XP computer.

The magnetometer was downloaded using Bartington proprietary software v3.16, which rendered the data as parallel lines. The raw data was then passed through BACAS proprietary zero-median de-stripe software prior to analysis using INSITE.

The twin-probe devices were downloaded to a folder and then the text file was used to extract each grid in turn, taking just the final column and copying this to a text file and converting it to dat file ready for use in INSITE as a zig-zag file.

The profiler data were downloaded from the Frobisher which also converted the data to resistivity values and locations prior to processing in Geotomo RES2DINV 32-bit software v 3.71.112 full version for analysis. Relative height data were added to provide topographic as well as electrical profiling.

2.7 Constraints

The work carried out at the western end of the Common (Project C) was preceded by a period of very hot, dry weather, and the resistance results in this area and also B & C show the effects of dry weather on the consistency of the resistance reading values.

Access was sometimes restricted by landscaping and structural developments due to the golf course arrangements in the Common.

3. Results

3.1 LiDAR data analysis of the area

An image derived from LiDAR data showing this Park area is shown in Figure 3.1a&b and features referred to in the text are marked in the insets. The data used in this is from the Environment Agency Digital Terrain Model (DTM) surveyed at 1m resolution.

a

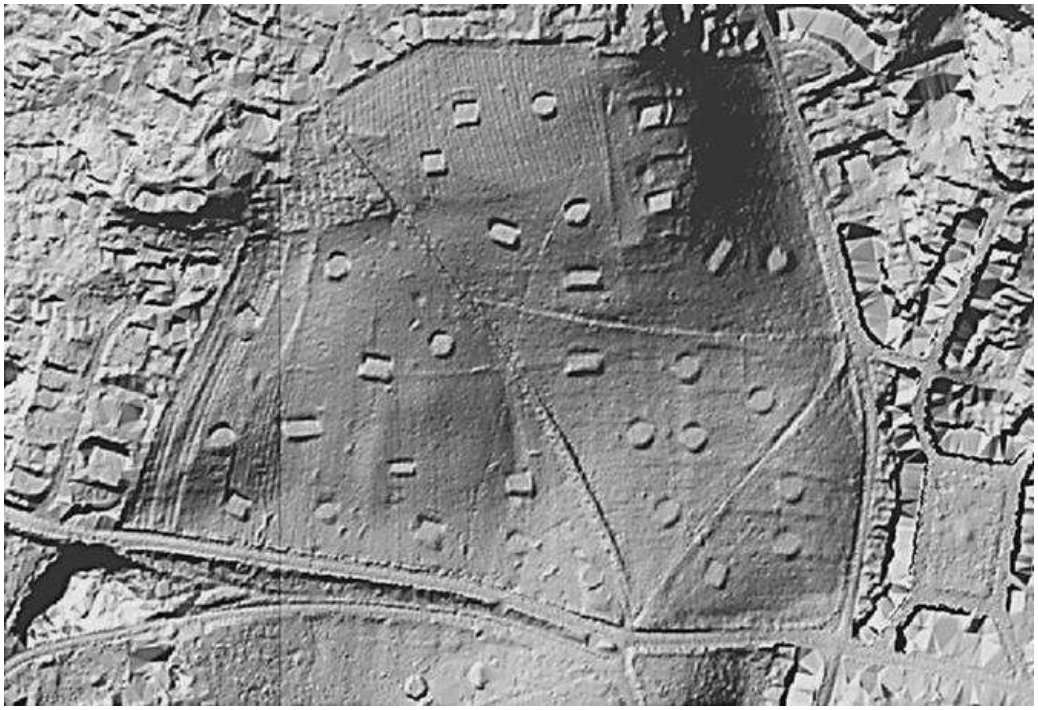
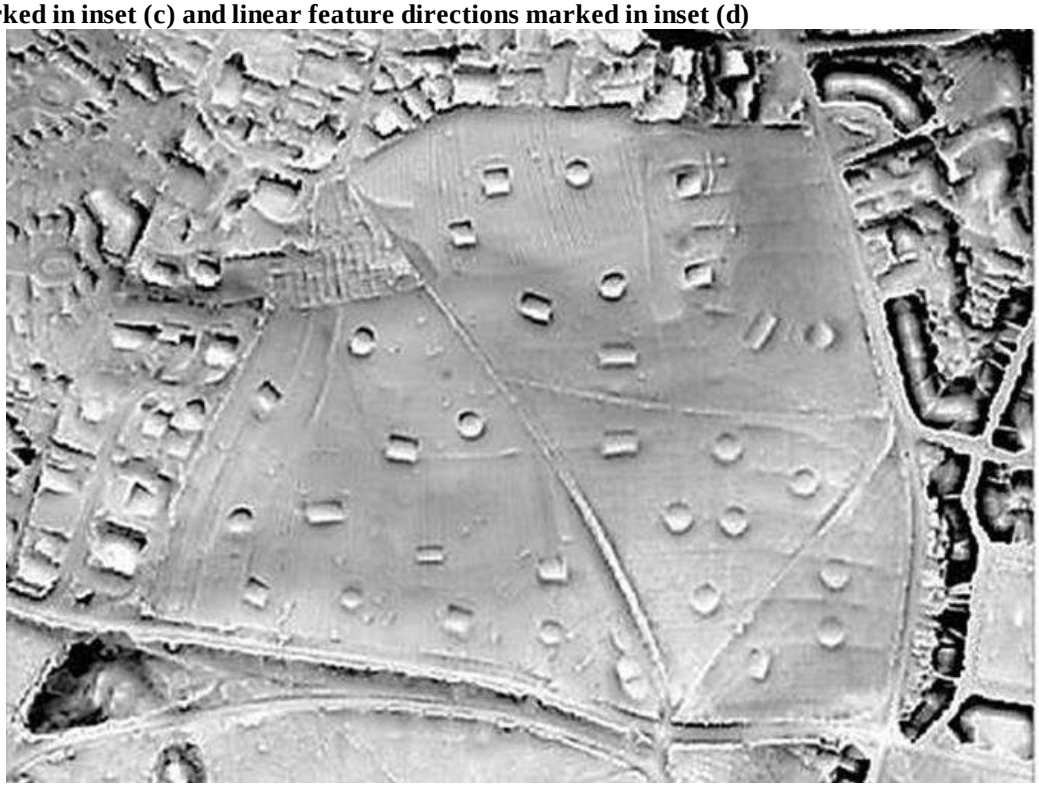
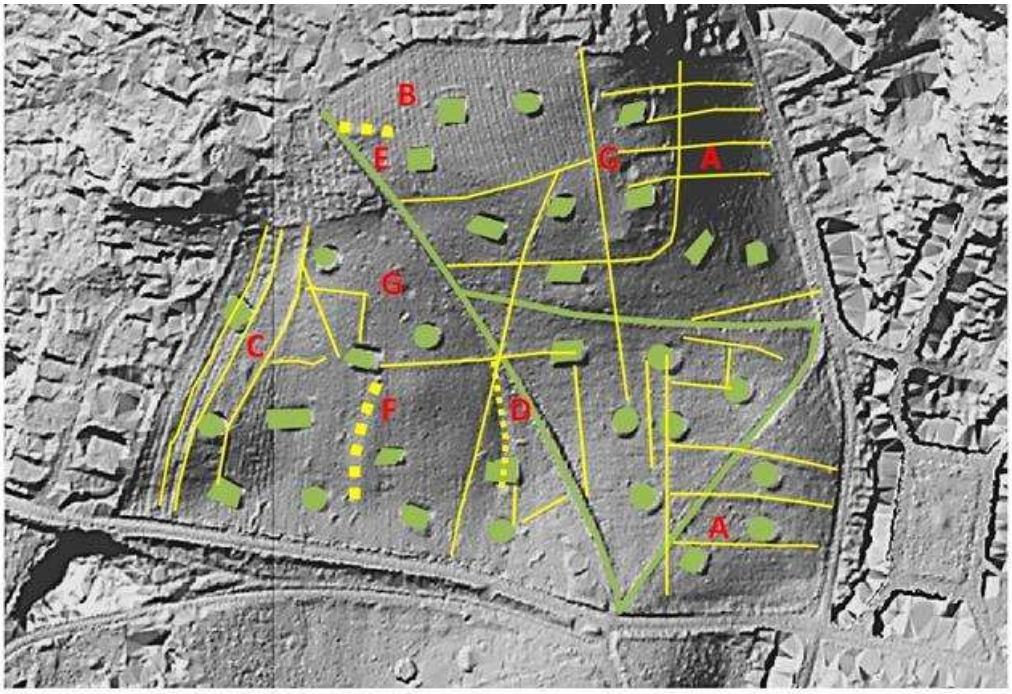


Figure 3.1 Processed LiDAR images (a) ST7365&7465_DTM_1m_HS_A20_H15 and (b) DTM_ST7065_P_10631_20190117_20190117_SVF_R10_D16 with features discussed in the text marked in inset (c) and linear feature directions marked in inset (d)

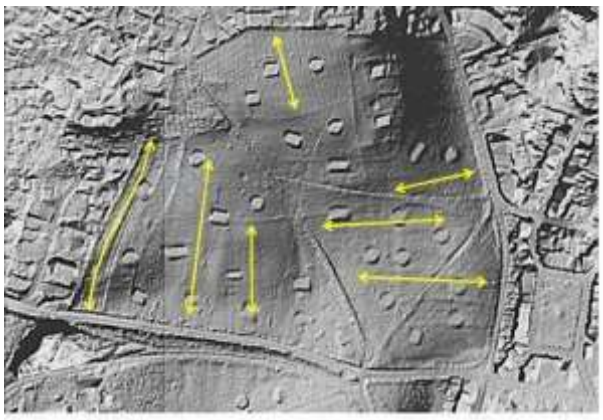
b



c



d



Both the hill shading (HS) (a) and the sky view factor (SVF) (b) analyses from these Geographic Information Systems processing methods considerably enhance the emphasis of very small differences in height in the ground. In Figure 3.1c green lines mark the pathways across the Common and green shapes the golf course greens and as shown in this inset there appear to be many features that have left an effect on the landscape to indicate past activities.

The major part of the area seems to have been used for agriculture, and linear features appear to show possible boundaries for what could have been field areas over different times. In the central area there are those indicating possibly approximately rectangular areas. Down the eastern side is what looks like a series of approximately rectangular fields (A). These extend eastward down the slope toward the road and the course of the now culverted Mud Brook. Their western boundary pattern is not clearly apparent to the south. A large field with strong linear features is shown in the northern section of the Common to the west of these rectangular fields (B). There appear to be elongated “strip” field patterns to the west (C).

Past cultivation of these areas is shown in the ridge and furrow lines across many areas of their images, the ridges being about 4-5m apart. The directions of this ridging are shown in

inset (d). In this analysis the central area shows approximately north-south ridging, while in the elongated field areas to the west, ridging follows the curve, while to the east the indications of ridges appear to run east west. However, it should be noted that in the east the east/west allotment plot boundaries shown in Figure 1.8 might also have contributed to this result. These results will be considered further alongside information gained from the geophysics survey results.

Linear feature D marks the "Holloway",[21] a known elongated valleyed area running north-south. The contours in the Common in Figure 3.2 show this (arrowed). It descends the steeper middle section. The image shows the Common's less steep northern area with more level areas to its south and the southeast. The steepest slopes extend down from the northwest spring area towards Mud Brook to the east.

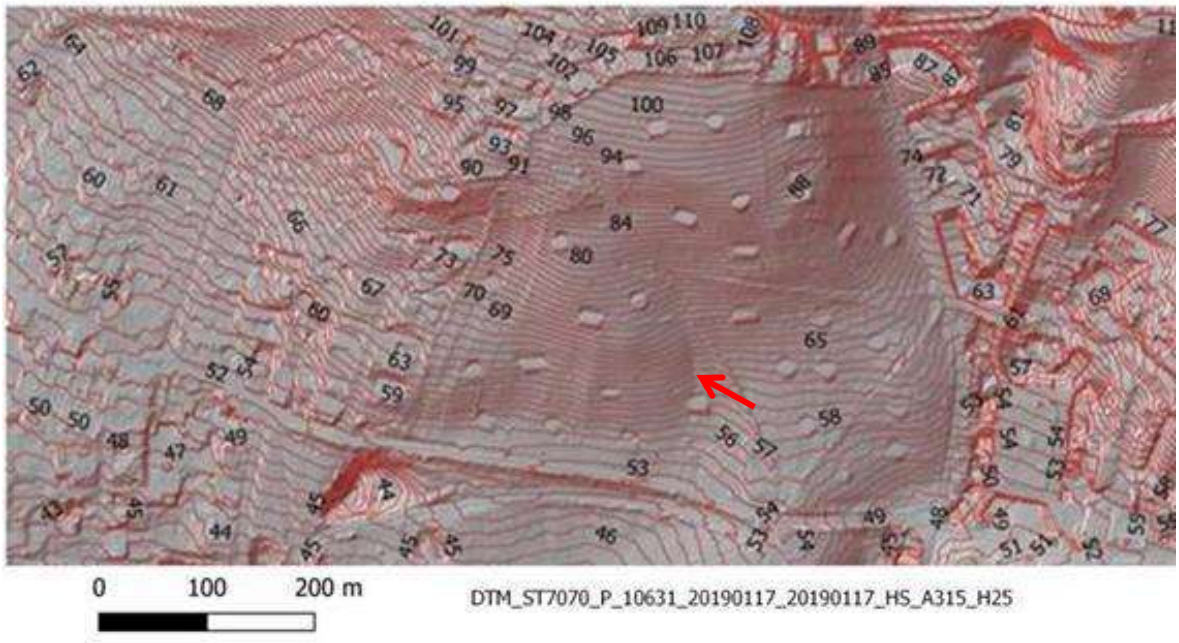


Figure 3.2 Contours across the Common on LiDAR image from Figure 3.1

In Figure 3.1, F to the west of the holloway and also apparent in Figure 3.2 is a long mound heading north-south. The ground is slightly higher between this and the holloway. To the east of it a slight circular mound can be distinguished with what might be seen as a dimple in the top. Along the west/east linear feature immediately to the north of this is another elongated mound length which appears to have been respected by what is a possible boundary feature passing through it. (It is not marked as a golf bunker on the course map).

There are two visible-to-the-walker WWII bomb craters shown in this image marked as G. These are slight dips in the landscape following their clearing and refilling.

Not very apparent in the LiDAR imaging is detail relating to the Roman remains described earlier and shown in Figure 1.10[3] except possibly along a northern boundary, and the banking patterns to its north described in the report can be seen at (E).

3.2 Magnetometry survey

Figure 3.3 shows the composite magnetometry survey carried out over the Common. The inset shows the areas commented on in the text. Images of the areas are in Appendix 2.

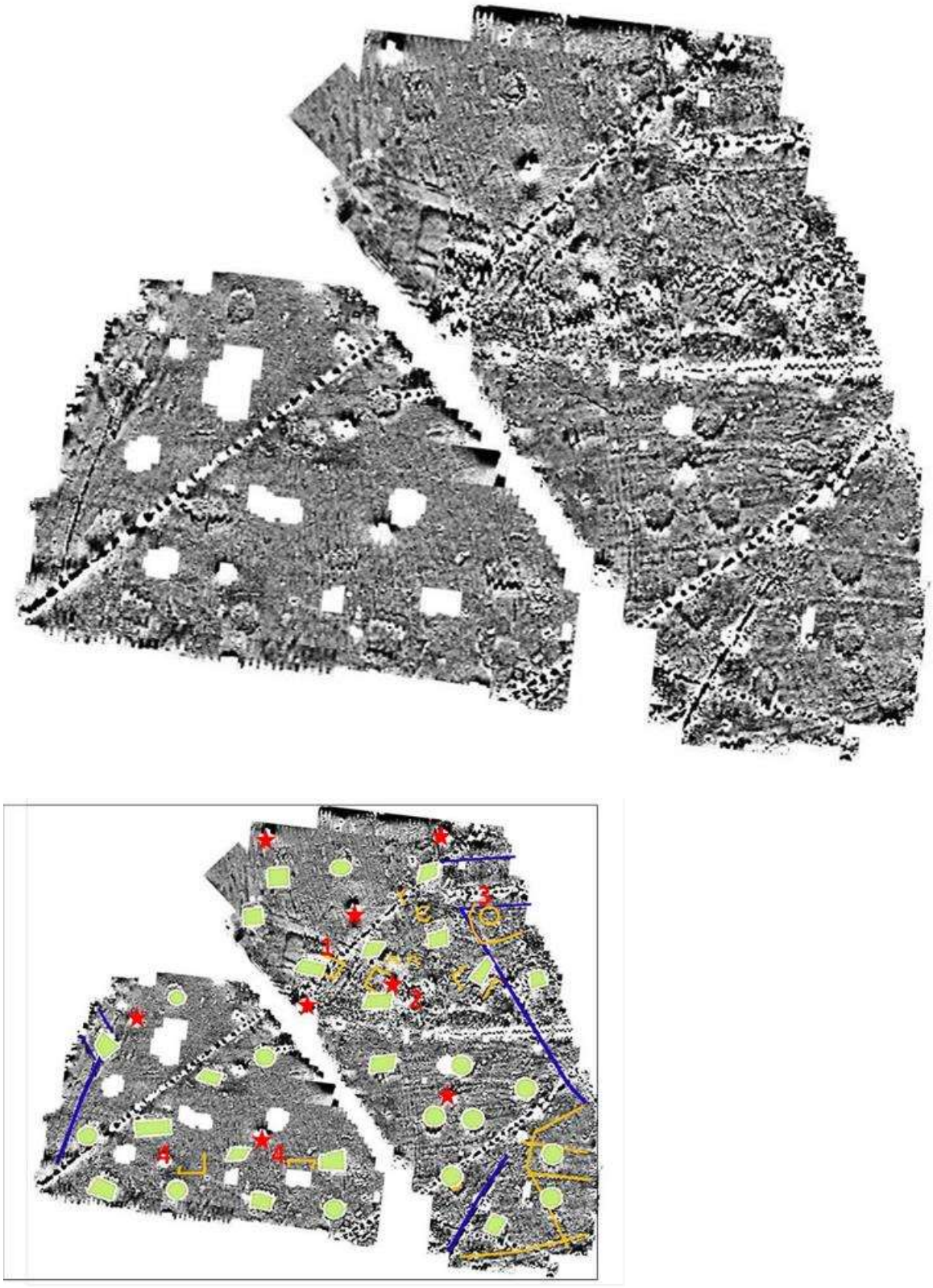


Figure 3.3 Magnetometry of the area, with areas mentioned in the text marked in the inset, the greens shown in green.

The complete magnetometer survey, joined from the eastern portion of the common and from the western portion, with the 2004 results added is shown in figure 3.3. Note that there was a small portion not surveyed in the northeast corner as the ground was too steep for safe operation. There are a large number of features visible, but a number of these relate to the golf courses, either in their present or previous layout. The main features, as shown in the inset, figure 3.3 b, are the greens, but also a number of the smaller blank spaces are the teeing off points, small iron platforms. The larger blank spaces are thickets or copses, too dense to allow instrument passage.

The blank line between the two halves is the line of the main pathway, which forms part of the Cotswold Way. The grids on either side of this path were laid out separately and are not in conformity. The 2004 survey covers the northwest part of the eastern portion, next to the path. The blank space on the opposite side of the path, at the north of the western portion, is occupied by allotments and not accessible.

The black-and-white lines crossing from northeast to southwest are iron water pipes.

The strong white-fringed line traversing the eastern portion is the course of an asphalt footpath. A second asphalt footpath leaves this at its eastern end and heads southwest to the Cotswold Way. This follows the iron water pipe for a while and then branches off and is visible as a continuous dark line.

Stretching across much of the site are slightly curving north-south lines which appear to represent ridge and furrow ploughing, though it should be noted that ridge-to-ridge spacing is very small, only about 5 m. This generally suggests a later date, possibly even post-mediaeval. The lower part of the eastern portion (below the footpath) also seems to show east-west furrows. This appears to lie under the north-south furrowing so is probably earlier, although that cannot be said definitely.

On the far west of the common, there appears to be a small area intruding of north-south furrowing of a wider pitch. This may belong to mediaeval agriculture extending outside the common to the west. The area to the west is now under housing.

Along the east side, strong lines head westward uphill on to the common. These may be remnants from modern allotments, but their form and separation do not follow their expected pattern. The northern ones are also very steep. Another explanation is that they are laid out property boundaries, possibly dating from the era of the build of Cavendish Terrace opposite. Alternatively there is the possibility that these boundaries may date from more historic field systems.

A circular arc in the far southeast is probably an earlier version of the Upper Common boundary.

The area marked [1] in Figure 3.3 is the site of the probable Iron-Age settlement near the villa (that is visible only in the resistance plot). This appears to extend a little further to the southeast as well as to continue on a similar alignment north of the known settlement. There is significant activity in the extended area shown as [2] but that is not well defined, except for

patterns of irregular linear features which can be observed above and below the path. These possible ditch- or channel-like features are mostly less than about 20m long and are not regularly aligned. One area of them is shown in red in Figure 3.4.

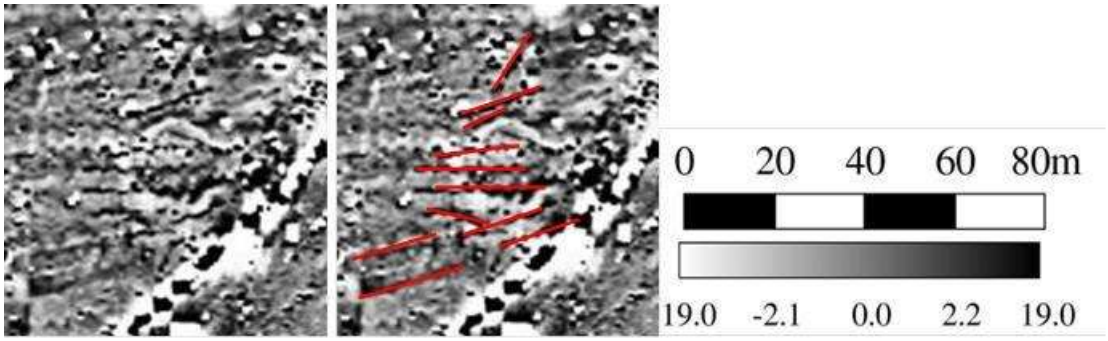


Figure 3.4 Linear features observed in magnetometry shown in area around grid number 203 (see Appendix 1.2)

To the north there is a possible enclosure with a round house [3], but this is not clearly enough defined to be certain.

A number of sub-rectangular features [4], complete or partially obscured, are visible at various points on the common. These may represent structures but they are not well enough defined for definite statement. They are not associated with other features.

Other “busy” areas can be made out in areas of the survey shown in Figure 3.3 including north of the northeast spring area, but again give clear no indications of any structural remains.

In the inset in Figure 3.3 are asterisks marking the positions of high results in magnetometry which from their black and white structure appear to indicate strong ferrous (iron) signals. There are eight of these spread across the Common. There are no indications of any golf or other infrastructure that could be the source of these responses

3.2 Electrical resistance survey

The most obvious contrast in the resistance plot (figure 3.5) is a natural effect, between the constant mid greys and the light grey with speckling. This is just a reflection of the varying weather conditions over the period of the survey, from spring through high summer to autumn. Ideally, there would be a uniform mid grey representing moist soil, with features picked out in black or white against these. In high summer, the ground was so dry that levels had to be turned down, but mis-triggerings and cracked soil caused by excessive dryness resulted in random high resistance readings, the black speckles.

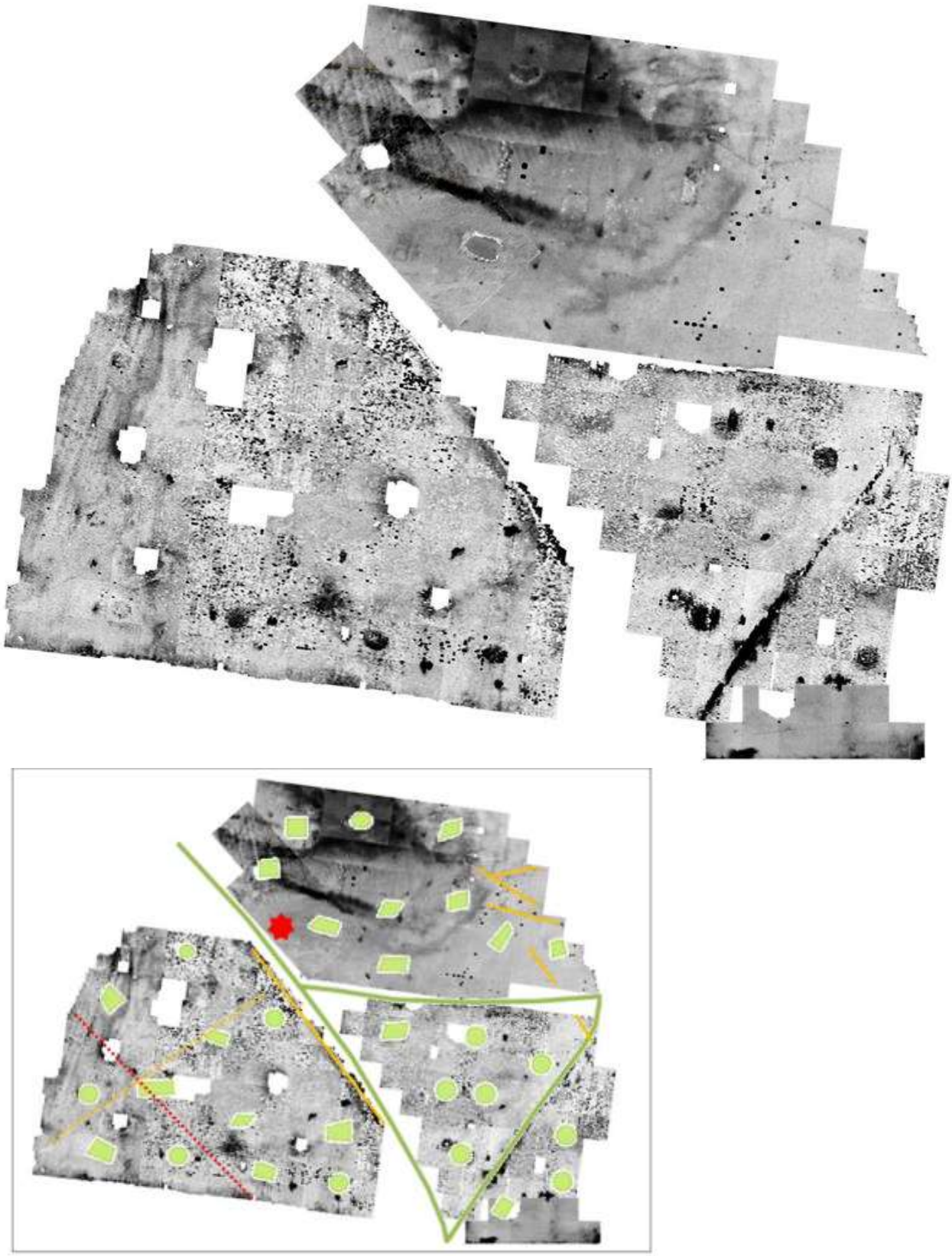


Figure 3.5 Electrical resistance survey of the area with areas mentioned in the text marked in the inset, the greens shown in green.

There is a patch of high resistance, a darker area, at the north of the common which is most likely geological, a patch of sandy soil (corresponding to Bridport Sand) on top of the hill. The black bands to the south of this are also geological, and may be at breaks of slope where

the soil has eroded away leaving the underlying rock much closer to the surface. The band of intermediate grey to the south and east of these probably also represents an area of thinner soil on the steep slopes here.

The diagonal dark band from mid-east to south central is the course of an asphalt path, where it was easier to attempt a reading than insert a blank reading value.

The villa can be seen just to the east of the main (blank) pathway and opposite the northern edge of the western survey, as marked by the star in figure 3.5a. None of the possible boundary ditches show in resistance.

There are some pale lines in the far northeast, which mark stream courses from the springs running east down the steep slope towards the Mud Brook under Cavendish Road.

A dark line following the northeastern edge of the western survey below the main pathway appears to represent an earlier version of this track slightly offset to the west. A pair of small incomplete rectangular features may be the remains of earlier structures, but there is not enough to be sure.

Ripple effects from ridge and furrow ploughing also show at the far north and the far west. These support the evidence given by the magnetometer survey but do not provide extra data.

A wide high resistance area is observed to the south of the northwest/southeast Cotswold Way path. This may at least in part be related to the rooting of trees. Inside this is a white linear feature, which might indicate a possible past ditch or water course. As such, it may have originated from the spring shown in Figure 1.6 to pass down the slope to the southeast. This feature was investigated in cross section by resistivity profiling and is described in the next section.

At an angle to the path visible in the southwest section is a yellow dotted low resistance line corresponding with the course of the modern pipeline (faintly observed in the northeast section) and shown in the magnetometry results in Figure 3.3. Other orange linear indications originating from the spring area are observed to the northwest heading towards the eastern side of the Common.

In the western area are other linear features, with one, northwest/southeast, being shown as a red dotted line. It had been postulated in our earlier work[1] that there could be a continuation of a route way from the lower part of the Commons extended from the current pathway in Royal Victoria Park from Cow Lane into this corner of the Common. This line runs well to the north of this route and there are no results from this project that that would be consistent with such a road continuation over the lower part of the Common.

There are areas in the survey that as in the magnetometry imaging are considered to look “busier” in image. As noted in the previous section such activity could be consistent with other past activities, such as settlement. No clear outlines of stone building or other structures were seen in these surveys.

3.4 Resistivity profiles in different areas of High Common

3.4.1 The resistivity profiles

Two of the areas described were investigated further to see if some of the previous survey results could be enhanced by looking at depth under the ground using the technique of electrical resistivity pseudosection profiling.

In the past, a short profiling project in 2019 had investigated the possibility of the presence of a routeway across the lower part of the Commons extended from the current northwest/southeast pathway in Royal Victoria Park and from Cow Lane.[1] The profiles completed then showed no obvious road pattern across this area up to 5m depth. The results shown in the present survey do not add to this information. The profiles describing these are shown in Appendix 3a.

Another group of profiles in 2019 had investigated a possible continuation of linear features from the lower part of Royal Victoria Park observed in 2018 into the southeastern High Common section. Those did not show any significant results and our results provide no information to support the suggestion that any of those linear features extend from the lower part of the Park into this area.

One previous profile investigation was extended into results obtained in this project, described below

3.4.2 Resistivity profiles south of the southern Spring

In comparisons with the area in "The Lost Springs of Bath"[5] and the Thorpe map,[2] the spring in the southern part of the area provided a stream to the south which passed to the west of the first green in the course. No low resistance linear feature to indicate any past course was observed in the resistance survey described in the previous section. However, there are slight high resistance lines running southerly from the green. The culvert under the road is at 8m from the easterly end of its grid as observed in the resistance survey. The area was investigated with two resistivity profiles at 8m and at 15m north of the 0 line. The results were difficult to reconcile with the previous work from 2019. The area is complicated as indicated in Figure 1.6, with the past and current organisation of the water supplies. It is also a damp area and results may be responsive to wet/dry conditions. More informative investigation would need a more detailed and consistent approach. The results and the two profiles from the 2019 work are shown in Appendix 3b.

3.4.3 Profile across the low resistance feature by the Cotswold Way pathway

The low resistance line seen running alongside to the south of the Cotswold Way path is described in the previous section and is shown in Figure 3.6a. We were able to carry out a resistivity survey across this feature at X which, though limited by the path, managed to catch its profile at the end of a 45° southwest/northeast diagonal across the 5th grid north of 0. The profile finishes at the path edge. It is shown in Figure 3.6b.

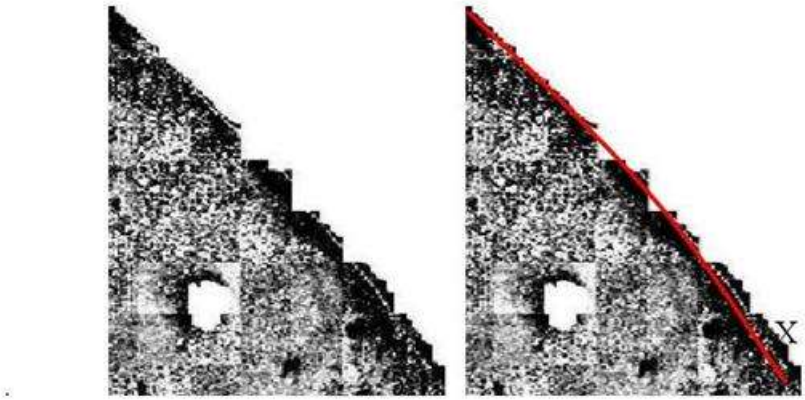


Figure 3.6a The low resistance lines observed next to the path observed in Section 3

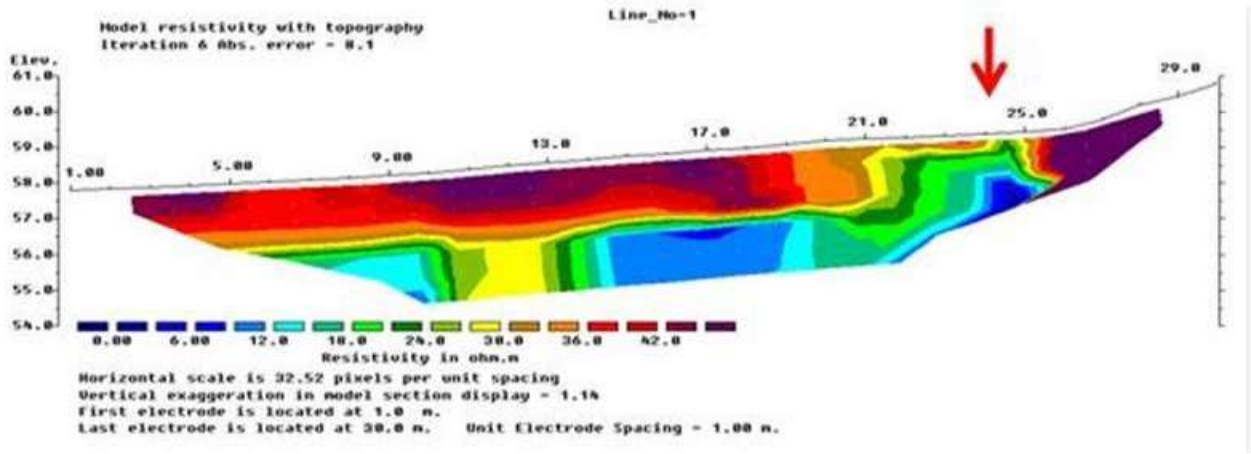


Figure 3.6b The resistivity profile crossing the low resistance linear feature seen in Figure 3.6a at X

The low resistivity dark blue feature in the position of the line shown in Figure 3.6a is marked (arrowed). Possibly only the top section of a feature could be observed here, and it is part of the profile edge, which reduces any precise accuracy of results. It may be part of a rectilinear cross-sectional volume, but any possible structure is not well defined in our restricted profile. However it appears to be an interesting continuous feature and hopefully further investigation in the future will reveal more information about it.

4 Landscape synthesis

The results indicate that this area has been a focus of largely agricultural activity, and aspects of this work add information that may be useful in interpreting this discussed as follows.

4.1 The field patterns

As part of its history the evidence shows this area has been cultivated over time, and it shows more than one pattern of field shapes as indicated in Figure 4.1.

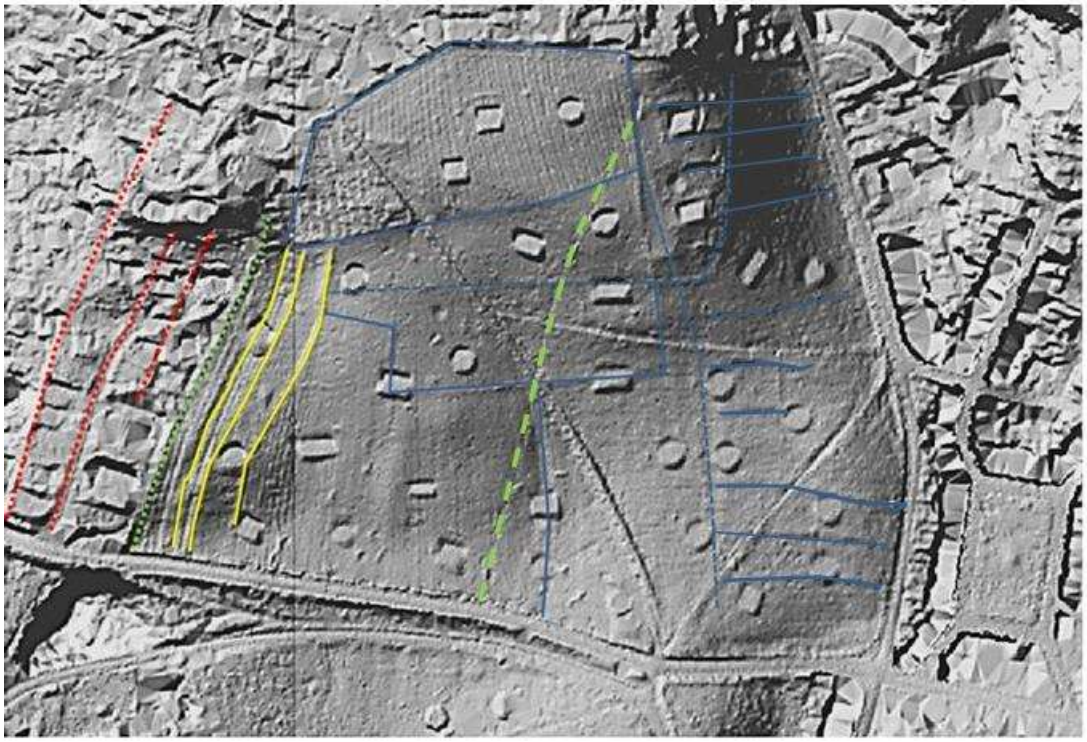


Figure 4.1 showing the possible field shapes across the Common

The first of these patterns is the approximately rectangular fields about 20x120m running down the eastern side of the Common in Figure 4.1 and marked (A) in Figure 3.1. They could date from a very wide range of times, from prehistoric onward, and could have been used over many successive periods of cultivation. This size of field is similar to those locally described as "celtic" fields, a term used for fields of unknown date, and Bath is surrounded by hillsides which include such-sized fields.[15] They could possibly date from plots related to the Cavendish Road developments though their edges do not seem to correlate with the plot edges across the road. The latest time they were cultivated here is as part of the WWII allotments but these edges do not correlate with those boundaries.[10]

There is some evidence in the Common of medieval farming. To the west are possible "reverse S" elongated strip fields. High or Great Common appears to have been in medieval times part of the three-field system of cultivation associated with the Barton fields.[7] This would have the system of strip fields allocated to the holders spread across the fields. Traditionally these were

about a furlong (220 yards) long and a rod/pole/perch (22 yards) wide and these possible fields appear to be approximately similar size to this or of half width. In examination of the LiDAR image in Figure 3.1 to the west outside the Common there appear to exist slight signs of parallel land divisions in the housing arrangements that could indicate a continuation of such linear cultivation of the land in that direction. In the Thorpe map[2] High Common does not extend along the Weston Road to the west as far as Quarry Common does to the south, but no information is known about whether the fields to the north of Quarry Common labelled "Attwood's Craniels" could have been part of this area. The east-west field array described in the previous paragraph, might also have been part of a medieval field system.

In the middle of the Common are rectangular shaped areas. The northernmost of these show very clear plough ridge and furrow lines, with others less obvious to the south, as shown in Figure 4.1. From these lines, the rectangular field to the west appears to have been overlain with the elongated field structure marked in yellow, and so may appear to have predated it. The magnetometry results added to the LiDAR images show cross-wise ploughing directions in areas indicating successive farming arrangements in the Common. These plough patterns show ridge and furrow patterns, depending on the field, of from less than 4 to 5m separation. It is considered that these narrow ridges correlate with later (which could be up to 17th/18th century) use of this technique.

There is an area in the middle without obvious plough or other lines which could indicate a different past usage. The Common is crossed by other linear features which would have been important boundary areas at various times, curved to take into account the slopes. A boundary or pathway indication (green) crosses the areas from the south to the north at a similar orientation to the strip fields to the west, but whether it has any relationship to these is not known.

This picture is complicated in that it shows this range of possible field arrangements, but the complexity and indications of their succession show the importance of the area to local people over long periods of time as they took advantage of the cultivation of the southern slopes and plentiful supply of water.

4.2 The area around the Roman building

The magnetometry results have added additional information about this. The enlarged magnetometry image is shown in Figure 4.2. The limits of the more regular ditched arrangement around the building to the southeast is indicated by the red lines, though to the east this area is complicated by the presence of a golf green. The enclosure around the building may continue further to the northwest under the allotments (an area which was not accessible to survey). There is the possibility that an area also extends just to the other side of the path, where there is a more defined area. The west-east pale line to the south of the dotted red line runs along the current pathway line.

The report on the suggested Romano-British farmstead dwelling dates this up to the 2nd century.[3] The focus of the settlement was a house, apparently of three rooms and corridor,

facing approximately southeast. There is a large rectangular area in the centre to the south of this that might be part of the land associated with this, though there is no boundary arrangement from the results that is on a similar orientation to the building. The northern ridge and furrow plough lines noted in Figure 3.1d in the northern field area and their boundary extends over this Romano-British settlement area, so that field arrangement is a later development.

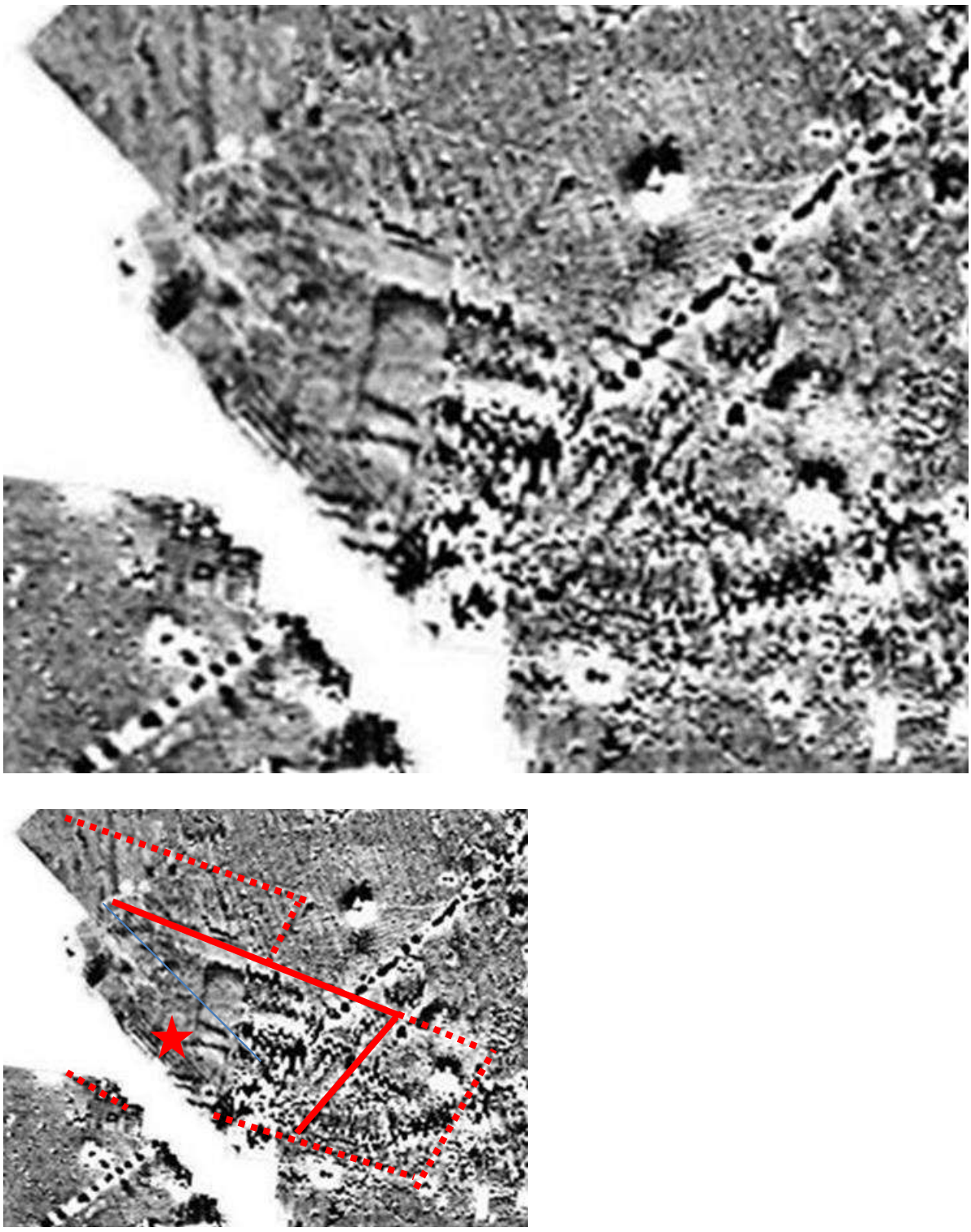


Figure 4.2. Possible northern, southern and eastern limits of the immediate enclosure to the Roman building from magnetometry. The site of the house is indicated by the asterisk.

4.3 Routeways across the area

The Thorpe map of the area[2] indicates that in 1740 there were no well-used pathways across the High Common. The current pathways were established along with those in the Royal Victoria Park in the 1800s. Our results suggest in faint linear features there may have been some past pathways to the northeast springs, and a possible (green) pathway or border across the area as shown in Figure 4.1. There is no obvious previous routeway across the area.

The Roman Road, the v*ia julia,* towards the west is presumed to be along Julian Road and the Weston Road.[18,20] The height profile shown in Figure 4.3 crossing the road from north to south shows how this road (arrowed) above the roadway along the top of Royal Victoria Park has been built up on this slope.

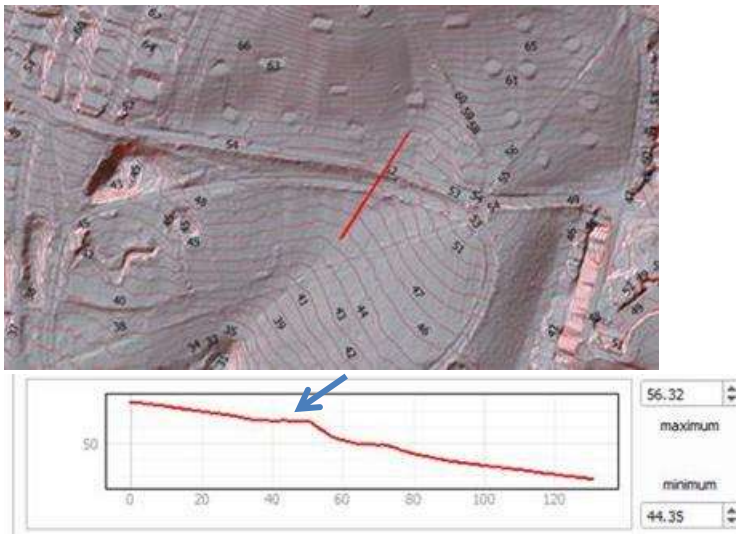


Figure 4.3 Profile across the Weston Road

The north-south holloway in the landscape (D in Figure 3.1)[21] had been thought to extend to the south from the Roman/Iron Age settlement and possibly to continue down the slope to the Roman/Iron Age settlement on the Lower Common.[3] We found no evidence for such a continuance southward into the surveyed part of the less steep part of the Park in our previous geophysics results in that area.[1]

In consideration of the wider general topography of the area as shown in the LiDAR image shown in Figure 4.4 there does appear to be a continuous valley-type feature running down from this spring towards what is now the Ornamental Pond (in blue). This might be a route-way. It can also be noted it follows the water route from the spring drawn by Mike Chapman in the Lost Streams of Bath[5] (see Figure 1.5a).

If this was a lost stream across High Common, there is no sign of remaining low resistance associated with it in our results. However any watercourse could also have been relocated. There has been significant past relocation of the water in the area including the right-angular diversion of Mud (Mad) Brook northwest of the Royal Crescent area by a possible Mill area, to

its now culverted route behind Marlborough Buildings.[5] This route predated the Common fields' boundary creation.

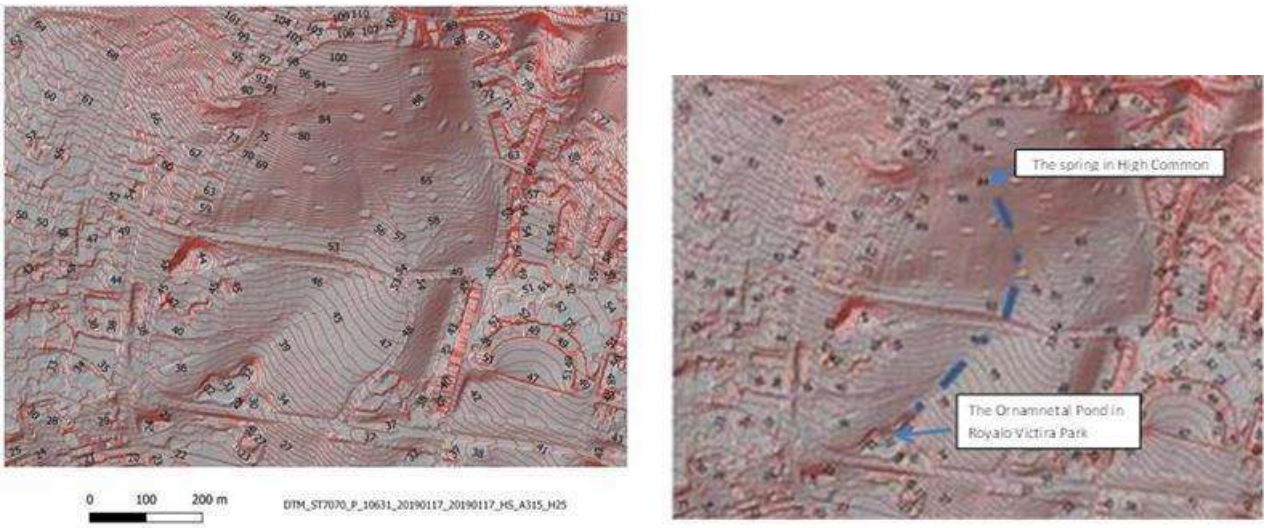


Figure 4.4 LiDAR image extended to include the Royal Victoria Park to the south of the surveyed area indicating (a) the north-south holloway (b) linear features in the ground, (c) field boundaries ST7365&7465_DTM_1m_HS_A20_H15_8bit

4.4 The watercourses across the Common

The border between the Charmouth mudstone and the Bridport Sands shown in Figure 1.5 correlates with the positions of the spring areas in the northern part of the Common, with the water supply accumulating over the clay layering. The spring to the south lies 100 m north of the spring area at the top of the Royal Victoria Park, as shown in Figure 1.6a.

Mud (Mad) Brook is the main watercourse in the area, running down the slope from the spring area to the north at St Winifred's well and from other springs to the northeast.[5] Water from the northeast springs in High Common then goes into Mud Brook, and indications of this are seen in both our surveys, including by a modern pipe observed running eastward from that area observed in the magnetometry image in Figure 3.7. Further down the slope water was sent from Mud Brook towards the Pond area in Royal Victoria Park along the pipeline line seen in Figure 3.7. The watercourse running from the northern spring area has been described in "Lost Streams of Bath".[5] We did a small investigation of the area south of the southern spring but our results did not add any further information relating to this area. The information shown in Figure 1.6 indicates the historical complexity of the watercourses across the Common.

Our results did show what may appear to be or have been a possible linear ditch or other watercourse running south-eastward along the southern side of the Cotswold Way pathway. This of course could be another drainage or irrigation arrangement for the golf course to that described in Figure 1.6b or for example it could convey water from the spring towards the Ring Common allotments. It does not coincide with the position of the tank noted earlier in Figure 1.6a, a feature for which our results showed no indication. The Romans are thought to have used water from the springs to the north as a supply for the city and there remains the possible

alternative that this could have been from the High Common Springs along an aqueduct. If this watercourse continued on a straight line further it could have gone across the Royal Crescent area and down to the walled city. No evidence for such a feature of this type was seen in our geophysics work completed in 2012 and 2020 in the lawn in front of the Royal Crescent Ha-ha.[22,23] Further investigation would be a possibility for extending knowledge about this possible watercourse.

A second water course to the southeast is indicated by the northwest/southeast orange linear feature from the northeast springs (Figure 3.3). The results from this are not an obvious as the above one, but it is seen in both resistance and magnetometry surveys. It follows the route of the historic Spring main shown in Figure 1.6a.

4.5 Possible non-agricultural activities

This area of land is south-facing with a good spring water supply and a not too abrupt slope at the higher and lower levels. As described it sits between the known settlement developments in the areas around. Our evidence adds to the description of its main use as agricultural with the presence of the Roman, possibly a farmstead, building.

Faint and imprecise indications such as those noted in Figures 3.3 and 3.5 may indicate the presence of prehistoric activities, but these are not strong. We note the standing stones in the Common in the past (see Figure 1.9), but we have no further information about these. They may have had a range of origins. We know the Romans used standing stones. Stones may also have been used as field markings (though except possibly for one possible corner stone, not of the field patterns suggested above). The existence of what might be a dimple shape on top of what might have been a round mound (Figures 3.1 and 3.3) is reminiscent of a pattern seen in the robbed Bronze Age barrows up on Lansdown, many of which are now ploughed out.[15] A preliminary comparison of the golf bunkers across the area showed different resistance patterns between them, some showing high resistance, others containing localised higher resistance areas, while others looking just like the ground around. This may well indicate their time or manner of being built for the golf course, and we have no record of what was done before or for this. However further examination and comparison of these and the other mounds noted in the common might indicate characteristics that might prove to be interesting historically.

Apart from around the Roman building, where the angular enclosure ditching patterns are similar to those seen elsewhere including in our work up on Lansdown,[24] no obvious settlement sites have been revealed in the geophysics surveys. Prehistoric habitations that were used for all or part of the year by ordinary people in earlier times may well not have left survey-responsive materials. The pattern of linear about 20m long ditch-like features observed in the magnetometry and described in Figure 3.4 appears somewhat similar to a group observed in Monument Field up on Lansdown,[25] and others on Bathampton Down.[26] Gardner describes excavations at Sion Hill, just to the north of an Iron Age site where the only features were a small number of shallow channels or gullies.[27] Whether these might be similar to the ones seen here, and if so, what their possible function might have been is not

known. The channels on Sion Hill were described as being similar to the channels seen at Maiden Castle, thought to have a drainage/catchment function.[28,29]

The upper more level part of High Common could be seen to be suitable for building with its excellent views of the hills and the River Avon valley with the hot spring area, but there are no signs in our results of any habitation there, except some "busy"-ness around and north of the northwest spring area. In this consideration of the whole of the High Common area there is a continuity of this landscape between the prehistoric and Roman remains to the north around Sion Hill and St Winifred's well to those to the south towards the river and the results from this area are part of a description of the whole area.

4.6 WWII bombing of the area

The area was bombed in WWII in 1940 and 1942 as analysed by Marek Lewcun, including description of further research into the bombs dropped.[11] It is thought there was at least one unexploded bomb in High Common.

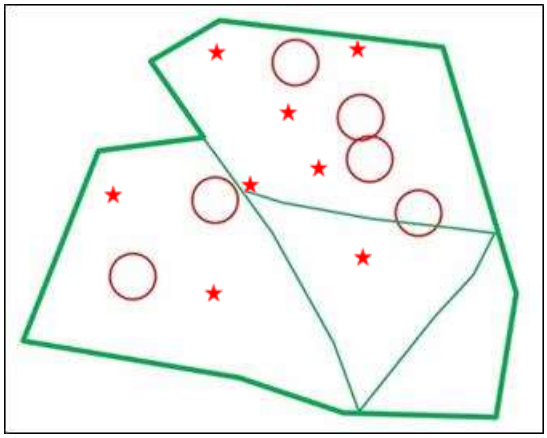


Figure 4.5 Sites of bombs dropped on High Common (circles) taken from reference 11 and asterisks showing high metal areas from Figure 3.3

The pattern of bombs taken from the analysis is shown in Figure 4.5. This supplements the information from the Bath Records Office.[30,31] This pattern does not coordinate with our analysis of high metal positions from magnetometry, as the eight maximum response ferric-type signals (asterisked and as shown in Figure 3.3) do not coincide with any of these. We have no information on the source(s) of our observed responses. The circled sites shown in Figure 4.2 show anomaly levels within the more average levels seen elsewhere. Any questions to add to what is known after the bombing will need further and other clarification.

5 Comment and Conclusions

Our results show the main use of this area was in agriculture over long periods of time, including being part of the Common lands of Bath. The Royal Victoria Park sections previously surveyed to the south of Weston Road may have had a similar past agricultural use, as they did show very faint indications in part of ridge and furrow.[1] However with that area's different nature and/or usage over time, it does not show the excellent indications of historic agricultural use we have been able to observe here in the results for High Common. They have given us valuable information to make available for the consideration of the significance of its history.

This geophysics work has covered a large area comprising 400x400 m, more than 13 ha, of High Common. It has added to the previous work done in the Royal Victoria Park (6.5 ha) to the south and on the lawns in front of the Royal Crescent Ha-ha work (2.5 ha) to make a total of 23 ha of geophysical coverage in this area. It extended almost 800 m north-south and ranged over 80 m in height with very steep slopes in part.

As part of High Common's agricultural use it may have included a Roman farmed area around the building discovered in 2004. We have provided additional information on the immediate surrounding area of the Roman developments. The results have also added to knowledge of the successive usage over the whole High Common area. With the results from the other surveys in the Royal Victoria Park, there will now be consideration of individual locations for further investigation. We hope that the work described here will be helpful in the continued description of the importance of this western area of Bath.

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31 Bath Blitz (2005) Bath Blitz memorial project

Appendix 1

A1.1 Gridding 0 point

The 0 POINT (a,b) is in the eastern section of the Common, at the start of the inner iron railings next to the Cotswold Way path and the start of the west-east pathway.

a b c d

Section A

0 line along the tree line as shown (c), with at 100m point 8.4m from the next tree trunk. 140m 1.0m from tree (in line with it) with 20m to north in clump of trees, 1.1m (W) and 2.6m (E) to trees. This line ends near the far road edge of the Common, 2.5m (S) to gate post, 0.8m from railings, then on other side of pathway at 20m to south, 9.1m from 4th strut on railings. To the north, the line from 0 point approaches the building end, as above, (d) the last grid ending at 18.3m. Grid end point 60 m to east is beyond the wall corner (4.1m from the corner, 1.5m from the wall

Section B

The 0 Point was, as before, at the start of the inner iron railings north of the EW path, next to the Cotswold Way path, and the line was measured as described and the area was surveyed down from this north line.

At the bottom the south eastern stake between the large trees is shown in the angle between the paths to the east of the ticket office area in the Figure. Measured from the tree trunks, distances are A= 8.2m, B = 19.75m, C = 17.2m. 80m to the N of this point is a thicket around a red leaved ornamental tree, where the grid corner stake is 1.0m W of its western trunk.

Section C

This was measured southward from an extended line to the west from the 0 point. At the south, the closest grid corner to the golf course ticket office is set just west of the first teeing off point, 1.24m from its W corner and 1.5m from its E corner, and 9.7m from the closest railings post corner. The southern line of grids runs just inside the railings stone base line.

Section D This continued from the previous section. GPS was used as follows

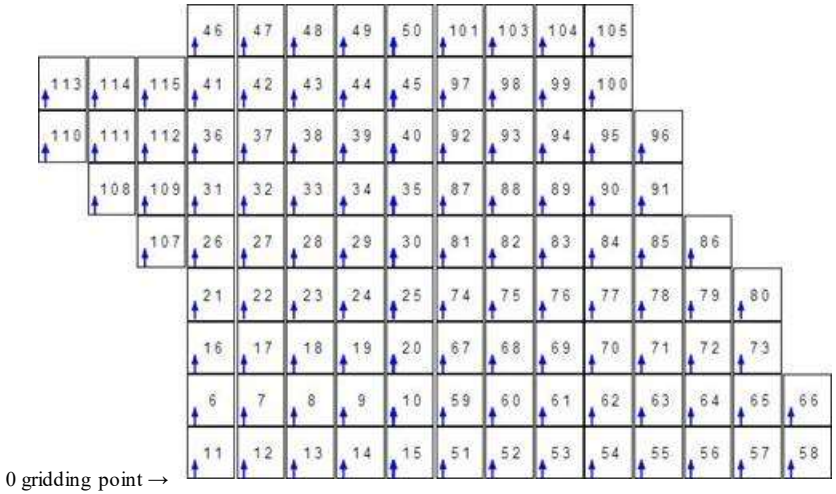
Localisation using GPS

We had the opportunity to used GPS localisation for the end of the project, thanks to John Samways. The following points are for the westernmost line of Section C and the easternmost section of Section D.

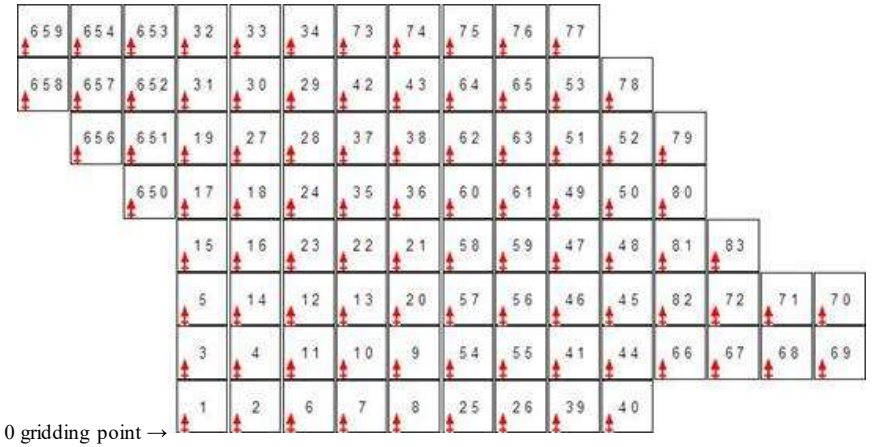
(grey estimated)

Latitude °.min. sec.			**Longitude** °.min. sec			**Eastings**	**Northings**
51	*23*	*20.237*	*-2*	*22*	*30.311*	373997	165612
51	23	20.856	-2	22	30.148	374000	165632
51	23	21.467	-2	22	29.966	374004	165651
51	23	22.094	-2	22	29.791	374007	165670
51	23	22.733	-2	22	29.634	374010	165690
51	23	23.365	-2	22	29.477	374013	165709
51	23	23.998	-2	22	29.313	374017	165729
51	23	24.631	-2	22	29.169	374020	165748
51	*23*	*25.201*	*-2*	*22*	*28.989*	374023	165766
51	23	25.771	-2	22	28.808	374027	165783
51	23	26.402	-2	22	28.654	374030	165803
51	23	27.038	-2	22	28.512	374050	165824

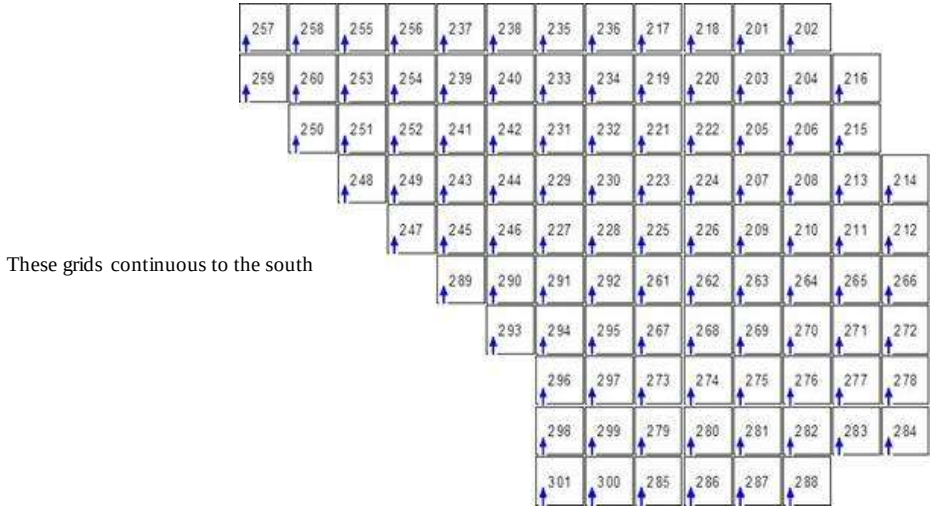
A1.2 The arrangement of grids



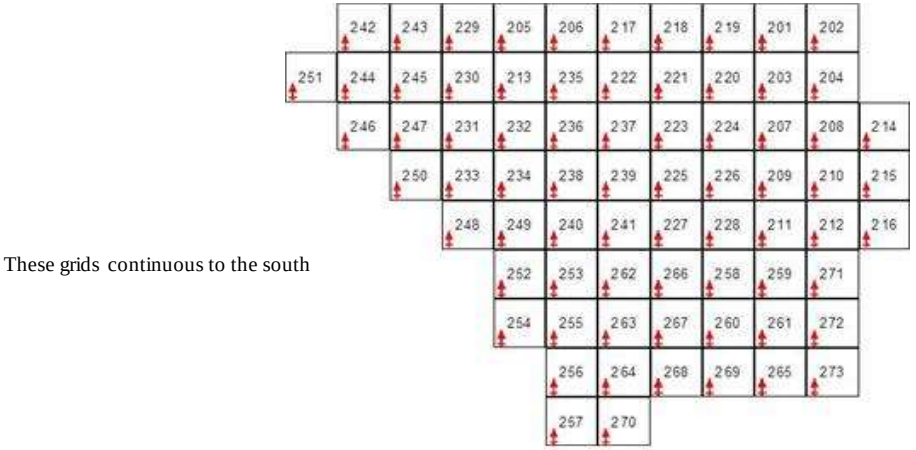
A Magnetometry



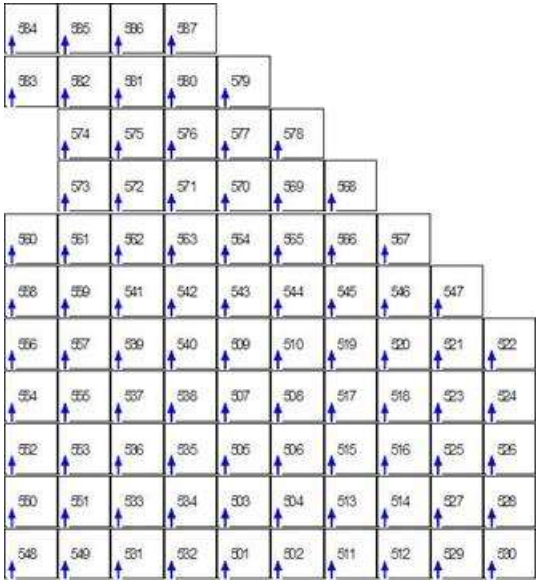
A Resistance



B Magnetometry

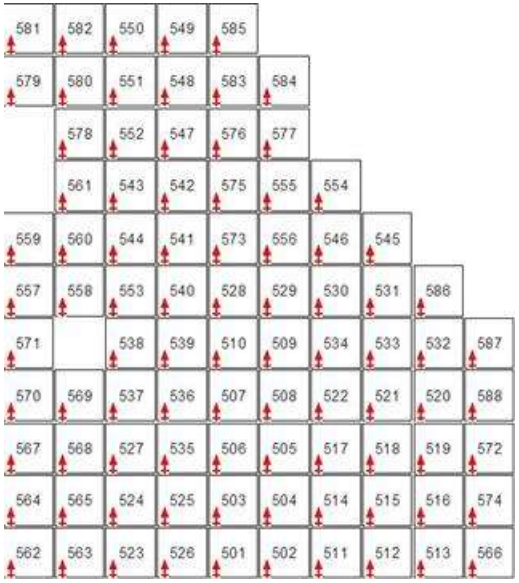


B Resistance



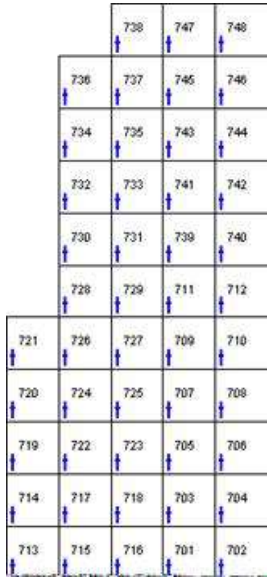
0 gridding point ↑

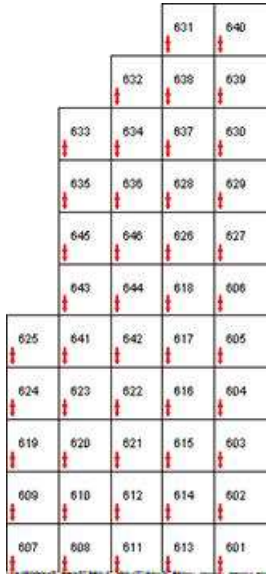
C Magnetometry



0 gridding point ↑

C Resistance





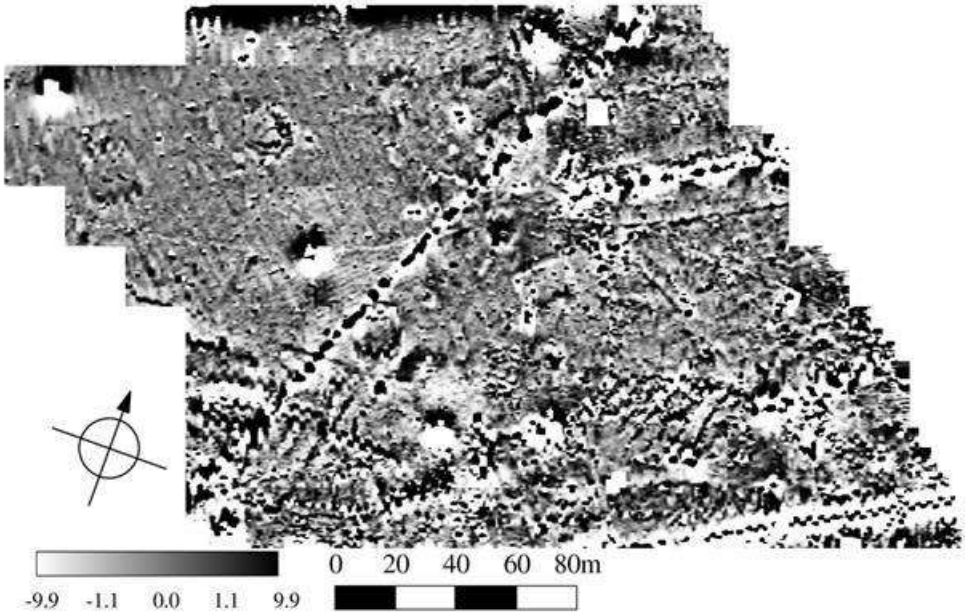
These grids continue to the west (LHS) of C grids

D Magnetometry D Resistance

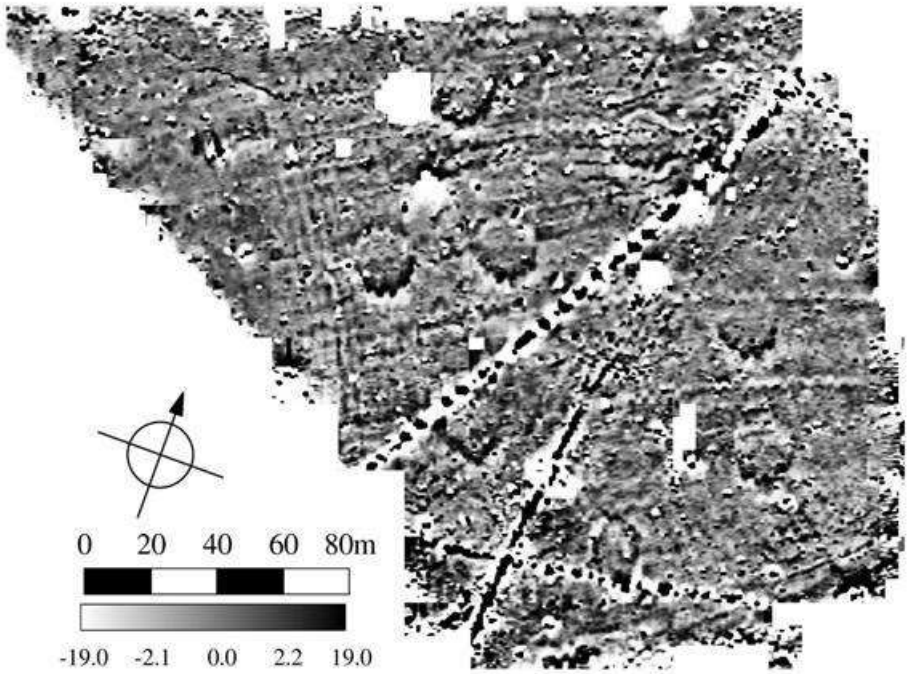
Appendix2

A2.1 Magnetometry

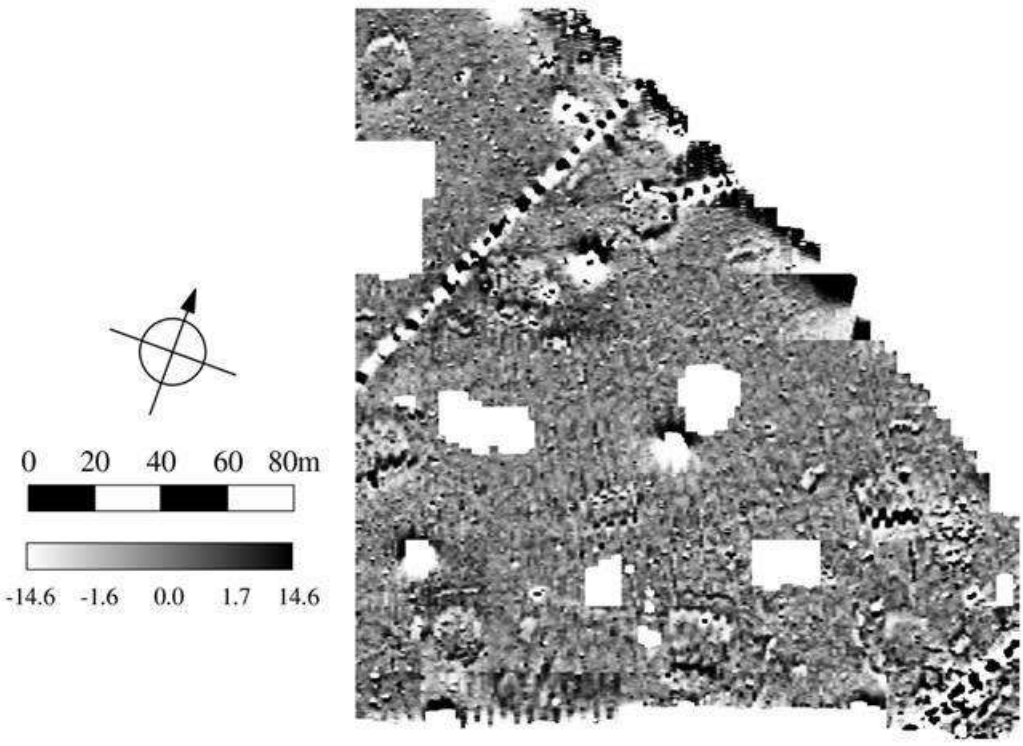
A



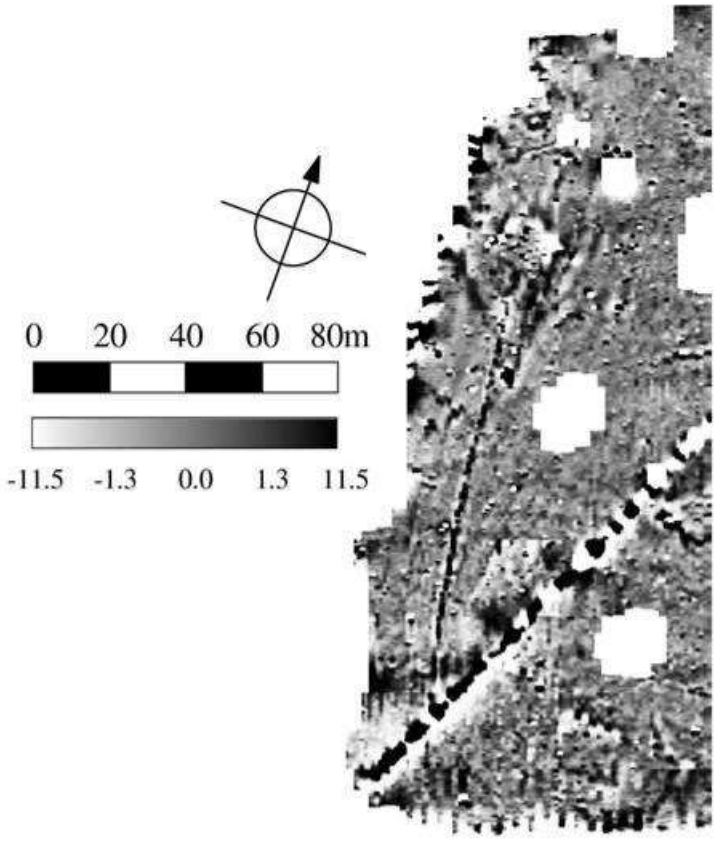
B



C

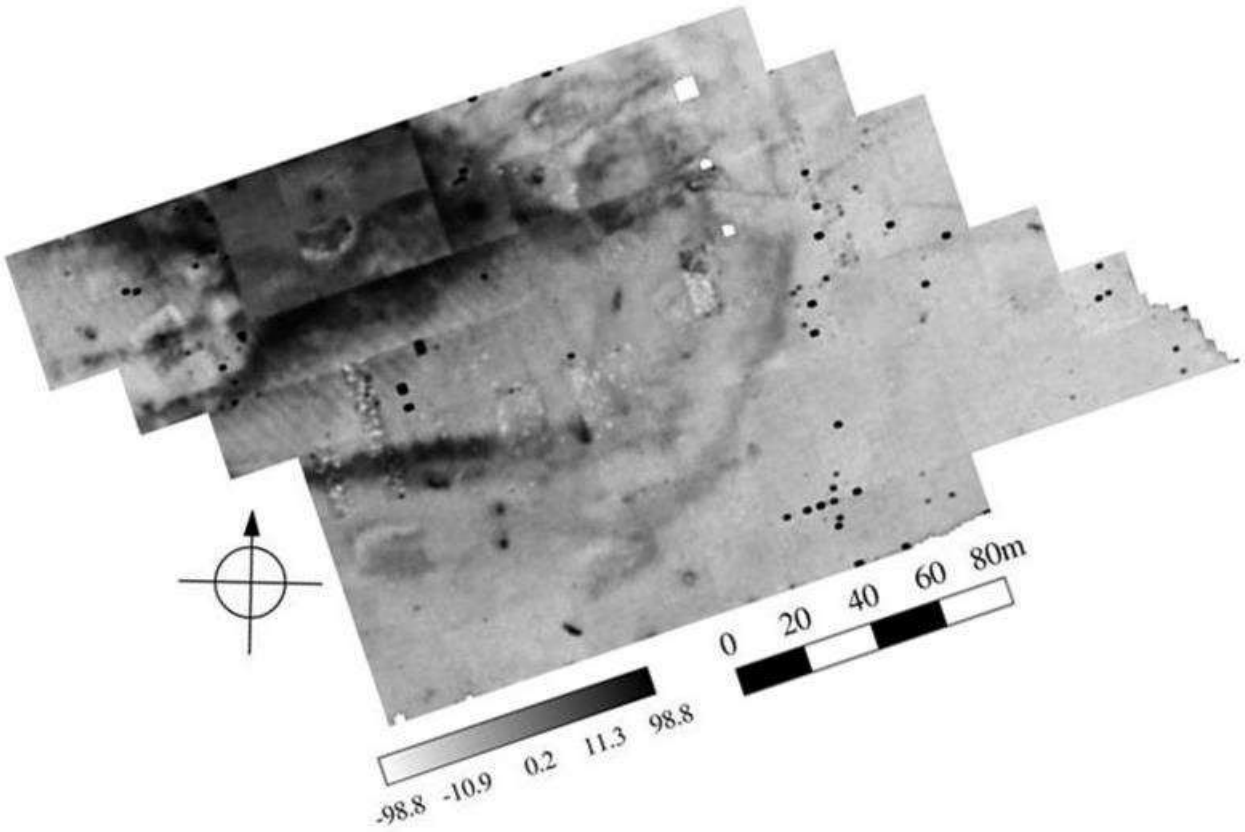


D

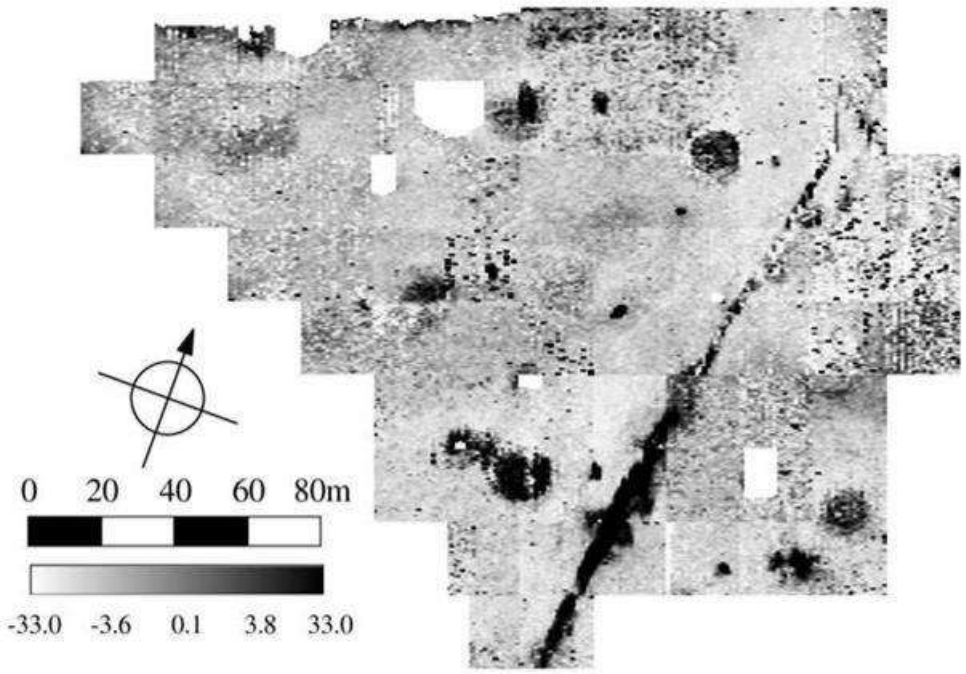


A2.2 Electrical Resistance

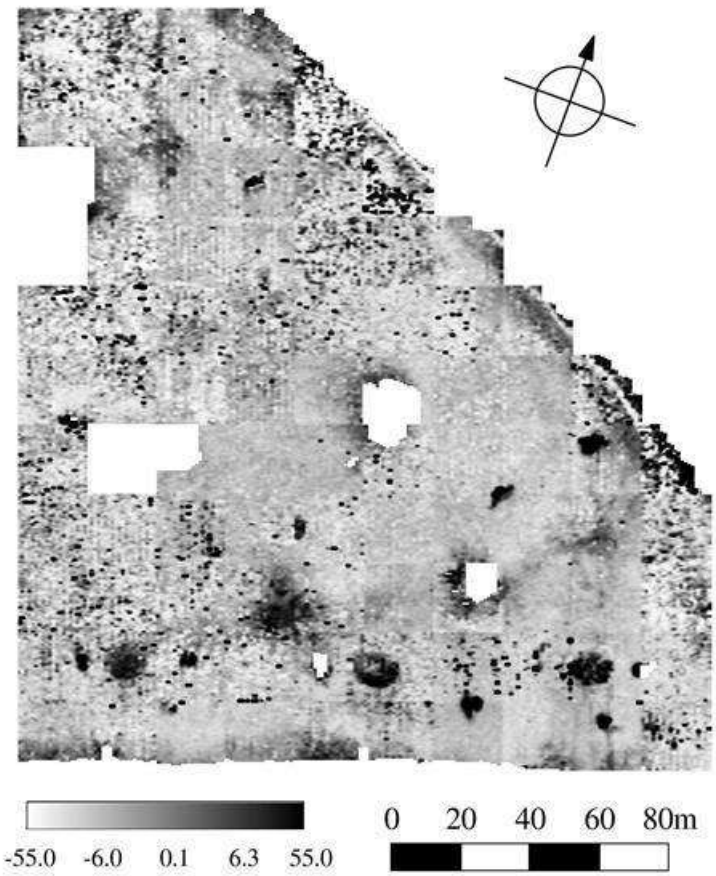
A



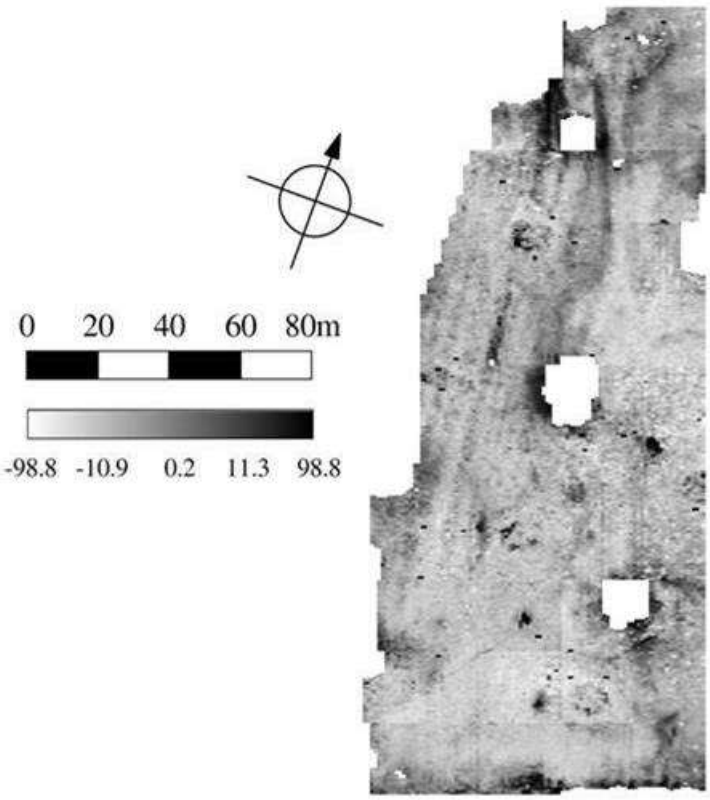
B



C



D

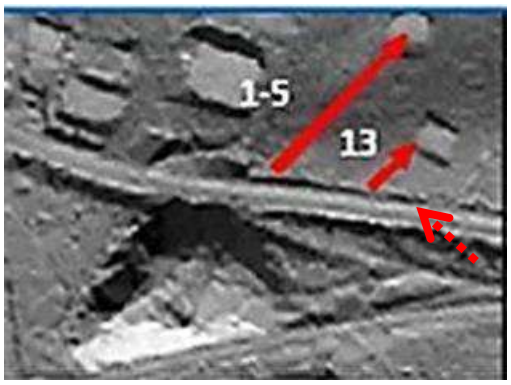


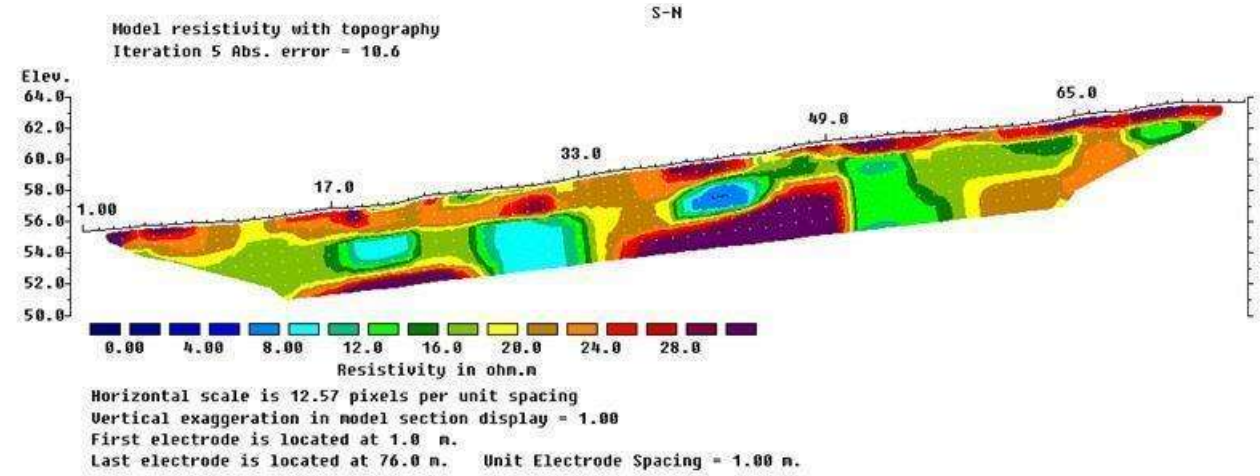
Appendix 3

A3.1 Resistivity profiles including some from previous work in High Common in 2019

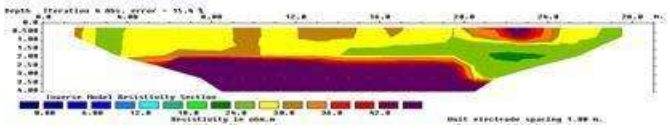
In the southwest corner of High Common, as shown in the Figure profiles were planned to cross the possible path of a road extended from Cow Lane and the continued line of a pathway in the part of Royal Victoria Park to the south of the Weston Road (dotted arrow).

Profile lines (each 31m, 1m intervals) 1-5 overlapping at 11m





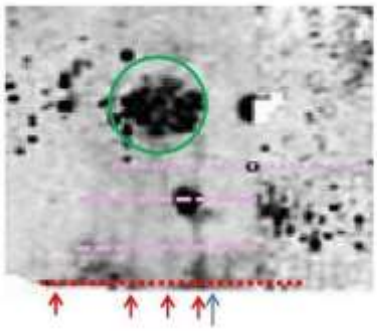
Profile 13



No clear road indications are seen in these results. This corresponded with the lack of any linear feature in this area in the resistance survey in this project.

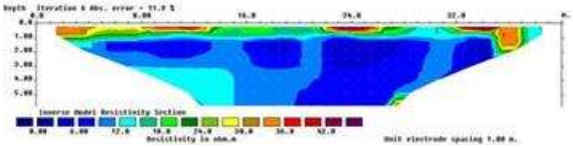
A3.2 Resistivity profiles across the grids to the south of the spring

Resistance grids 514, 515, 516, 611, 612 & 613 (See Appendix 1.2 C)

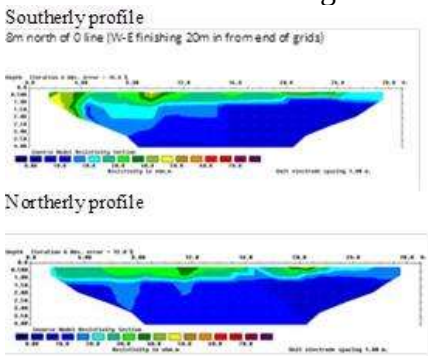


Profiles were set up in this project (pink) and red in a short project in 2019. They are assembled below in corresponding positions. The blue arrow indicates the position of the culvert under the road)

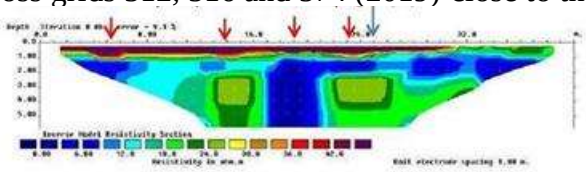
a) Northerly profile (2019) east-west



b) Profiles from this project 8m and 15m from 0 line of grid east-west



c) Resistivity profiles across grids 512, 516 and 574 (2019) close to the southern edge



The culvert is at 25m in the profile image and at 8m from the eastern end of the central grid. These results show shallow high resistivity volumes which could possibly correspond to the linear resistance results (near the surface) in the grid (red arrows). However, they are not consistent between the profiles and there is no clear imaging correlating to a culvert's position. A deep low resistance volume is seen in the southernmost profile between what could be considered as possible structural elements. Differences in resistivity could be due to differences in responses in wetter/drier seasons. To obtain more information a further investigation would needs to be set up at a single time, and planned in parallel to the past mapping of watercourses summarised in Figure 1.6.