3 Results

3.1 Topography

LiDAR could provide a clear and detailed topography of the whole of Lansdown, and the two barrows could be identified. Problems arose, however, in transferring Lidar data to a plot as small as the Twin Barrow site, given the hand-held GPs locator used was only accurate to ±2m, which gave much too high uncertainty in comparing the barrows with the geophysics results.

A plot was made using the Electronic Distance Meter (EDM), which used the same arbitrary grid as the geophysics, so that the two could be overlaid. The contour plot is shown as figure 3.1.

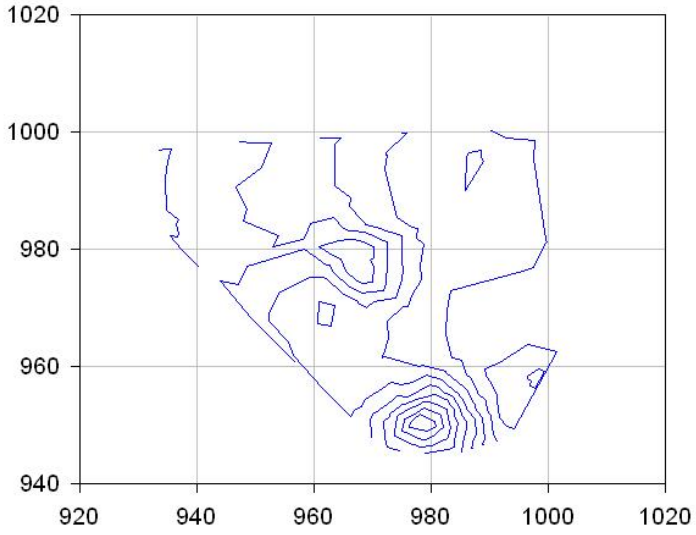

Figure 3.1. Contour plot derived from EDM. Contours are at 0.25m intervals. Northings and Eastings based on local grid.

Note that the contours are at quarter metre intervals, based on the spot height at 1020,1000, the initial point at set-up. The southern barrow is evident by its steepness, the central barrow is visible but is less precipitous. The ground rises very gently to the west.

3.2 Magnetometry

The magnetometer plot is shown first in figure 3.2. It is then shown in figure 3.3 with the contour plot overlaid on it.

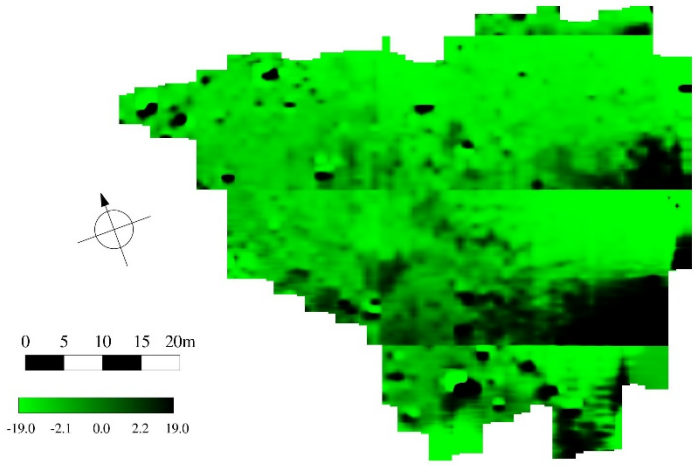

Figure 3.2. Magnetometer plot.

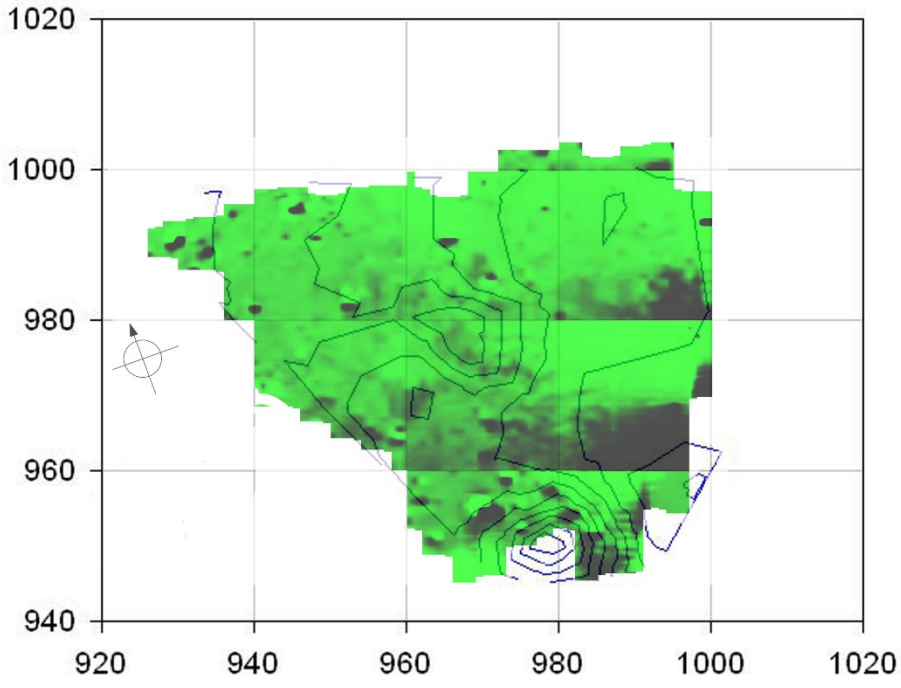

Figure 3.3. Magnetometer plot with grid and contours overlaid.

There is some magnetic signature associated with the central barrow, but it shows no defining characteristics. The southern barrow shows only spots of high readings, possibly pits, on the

sides, with a stronger signal on its east side. The top and southern edge of the barrow had too much tree cover to allow magnetometry.

Note the area of very high magnetic readings to the north-east of the southern barrow. This was so high that it was not possible to adjust the plot to have matching grids at this point. This seemed to indicate a buried surface, possibly a hard core entrance to the Fair Field in its heyday. It would appear to be probably of a fired material such as brick.

The remaining scatter of magnetic signals are most likely from discarded metal objects.

3.3 Magnetic Susceptibility

Due to the nature of its location recording, the magnetic susceptibility (magsus) plot is shown in National Grid coordinates. However, locations relative to the magnetometer plot can be deduced from the shape of the plot, which covers the same ground as the geophysics grid. The plot is shown in figure 3.4.

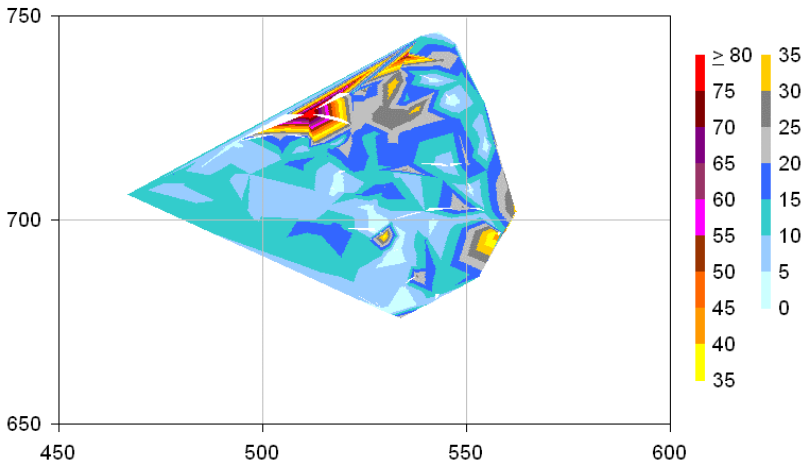

Figure 3.4. MAGSUS plot, in abbreviated National Grid coordinates.

The high reading patch in the north-west is most likely a false reading from nearby metal Note that the area of very high magnetometry readings shown in figure 3.2 and 3.3. do not show here, suggesting that the large feature is buried below 200mm of soil and beyond the range of the magsus coil.

3.4 Twin-Probe Resistance

The twin-probe resistance plot is shown in figure 3.5, and figure 3.6 shows the same plot but with the topography overlain.

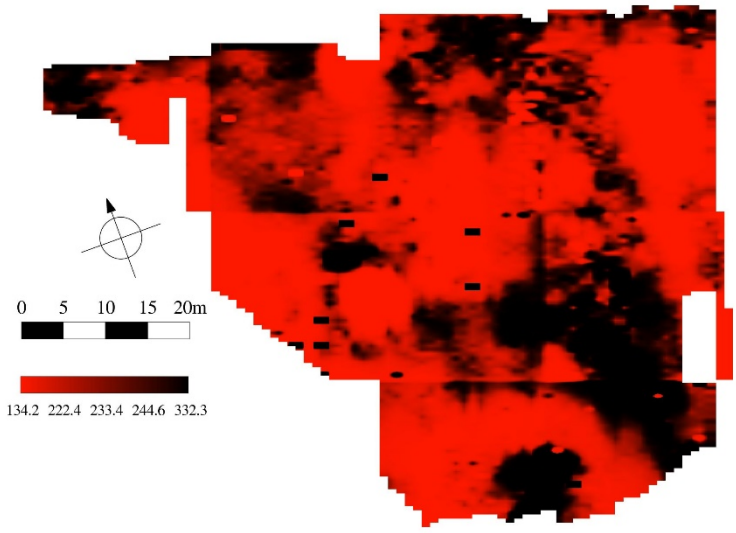

Figure 3.5. Twin probe resistance plot. Blank patch is a large stone pile.

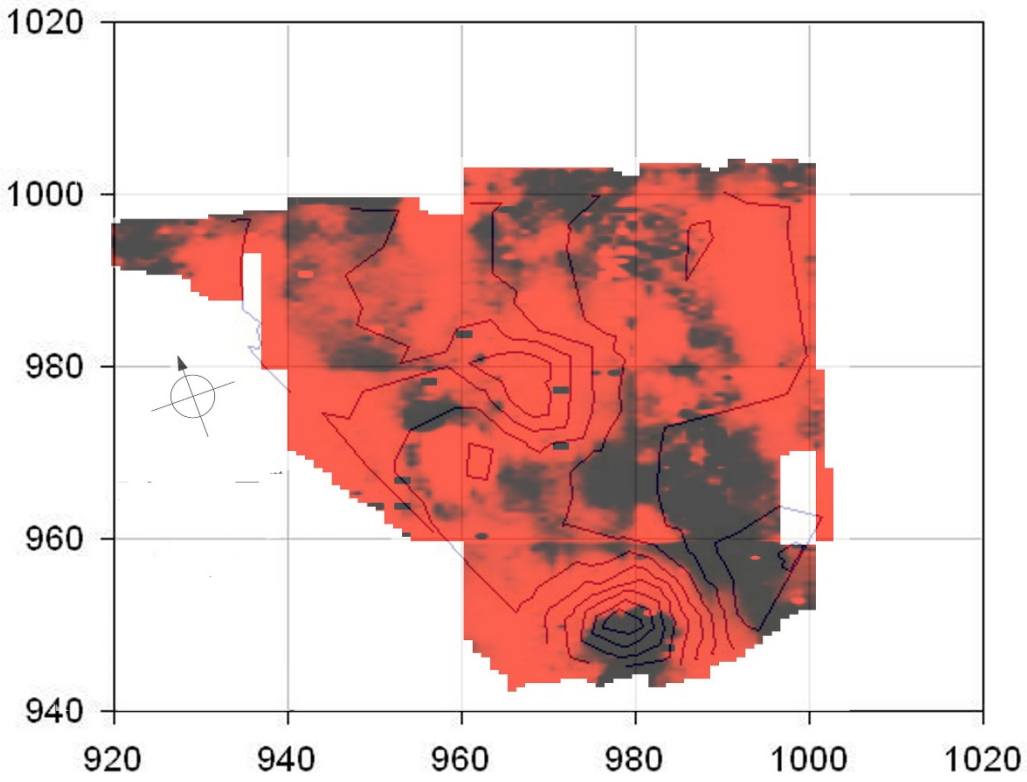

Figure 3.6. Twin probe resistance plot with contours overlain.

The southern half of the southern barrow appears very stony, but that portion has been cut away by the previous excavations. The top shows much stonework, but there is sufficient depth of soil over the northern slope of the barrow that stone is not visible. The barrow at the centre of the plot is essentially invisible to resistance, showing only in its contours. Just to the south of the central barrow is a circular patch of low resistance, more easily visible in figure 3.5, suggesting a filled-in pit of some sort, although its depth cannot be determined from this plot.

Just to the north-east of the southern barrow, a large area of high resistance corresponds with the highly magnetic area shown in figure 3.2. This again suggests some form of hard surface, underlying the surface. This plot extends down to about 0.5m, suggesting that this layer is no more than 0.5m in depth.

Other features do not seem to represent structures and may just be the underlying natural stone coming shallow.

3.5 Resistivity profiles

Five profiles were done during the course of the main survey, with a sixth added later to take in the circular low resistance patch. Up to 40 probes were available. The cable distribution box used was that belonging to J Samways, and results were taken using his Frobisher TAR3 device. One-metre probe spacing was used, allowing profile lengths up to 39m and depths to 4.5m.

Heights of positions along each of the five initial lines were measured relative to the height at 1020, 1000, the gate post, our local bench mark. The supplementary profile took a 'flat' course between south and central barrows, so no topography was added. It should be noted that there was a gradual rise of about 0.5m from 0 to 40m along its length.

The profile locations are shown in figure 3.7, with arrows in direction of increasing probe number to show direction along line. The profiles are overlaid on contours to indicate their relevance to features.

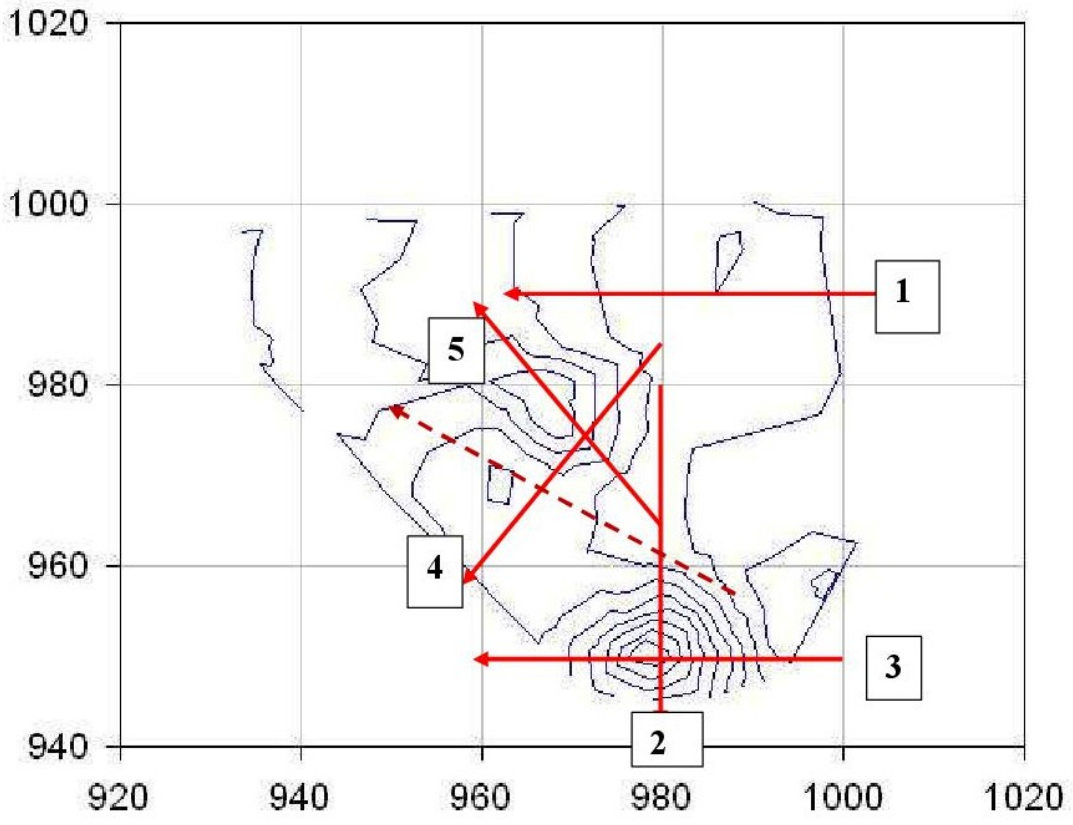

Figure 3.7. Five profile locations overlaid on the contour plan. Supplementary profile shown as a dashed line. Arrows indicate direction of increasing probe numbers.

Profile 1

Profile 1 is shown in figure 3.8. Note that the zero point is at the east, with the profile heading west. A section of rough ground along the east edge of the site had been considered to be the route of a possible agger. This is parallel to the modern road, which is considered to be on the orientation of a Roman road. However, the plot showed no signs of metaling in its first eight metres, indeed, values were lower than on the grass area to the west, so the agger hypothesis cannot be supported. Bedrock was reached approximately one metre below the surface.

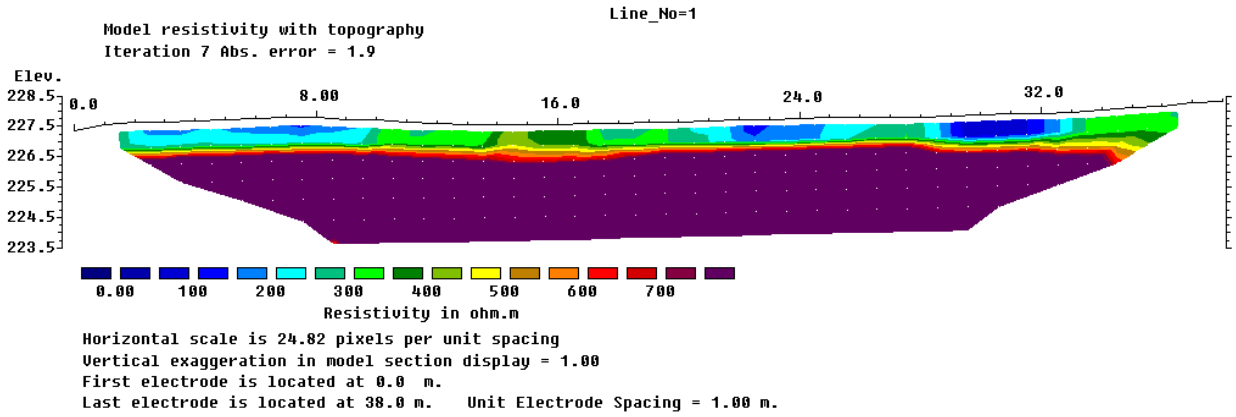

Figure 3.8. Profile 1. East to left.

Profiles 2 and 3

Profile 2 is shown in figure 3.9. This starts in the north on the grass land to the west of the central barrow and heads (grid) south over the top of the southern barrow and on as far as the southern boundary of the site. The barrow is seen to be of stony structure. There appears to be a ditch at its base, which is much wetter, and which has spread moisture within the barrow at its base and also downwards into the bedrock. The stony structure of the north face of the barrow is also masked by the moisture.

Profile 3 is shown in figure 3.10. This also crosses the top of the barrow, but from (grid) east to west. Its eastern end had to avoid crossing the footpath, as this would have been a dangerous trip hazard to the public, and its western end terminated in high undergrowth, thus limiting the available length. It nonetheless started and ended on low resistance grassland, while passing over the stony structure of the barrow. Note that the barrow had had an excavation in it from top southwards down its flank, and this had left a trench some 30cm deep.

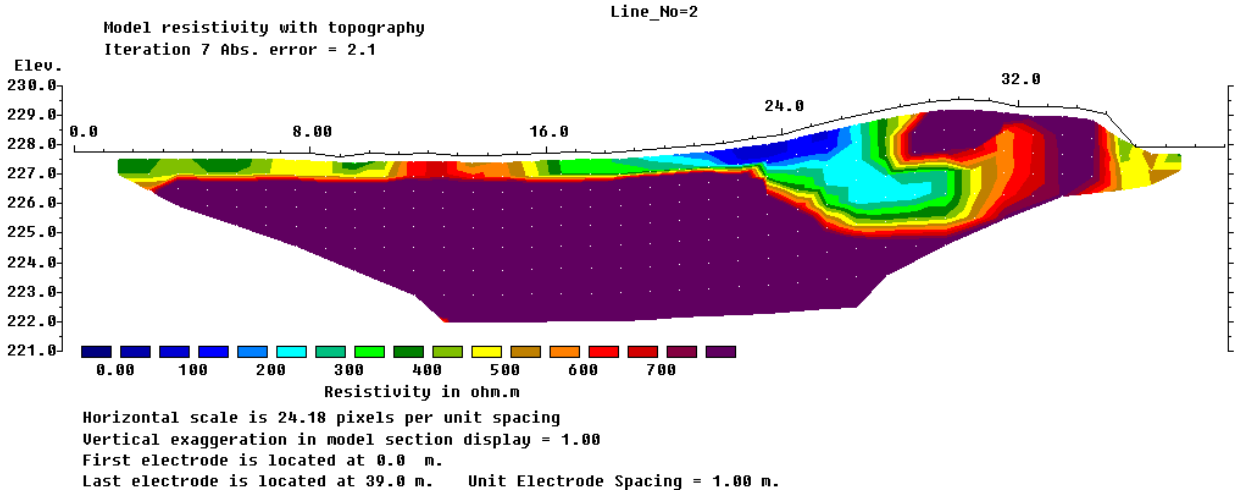

Figure 3.9. Profile 2, crossing the southern barrow. North to left.

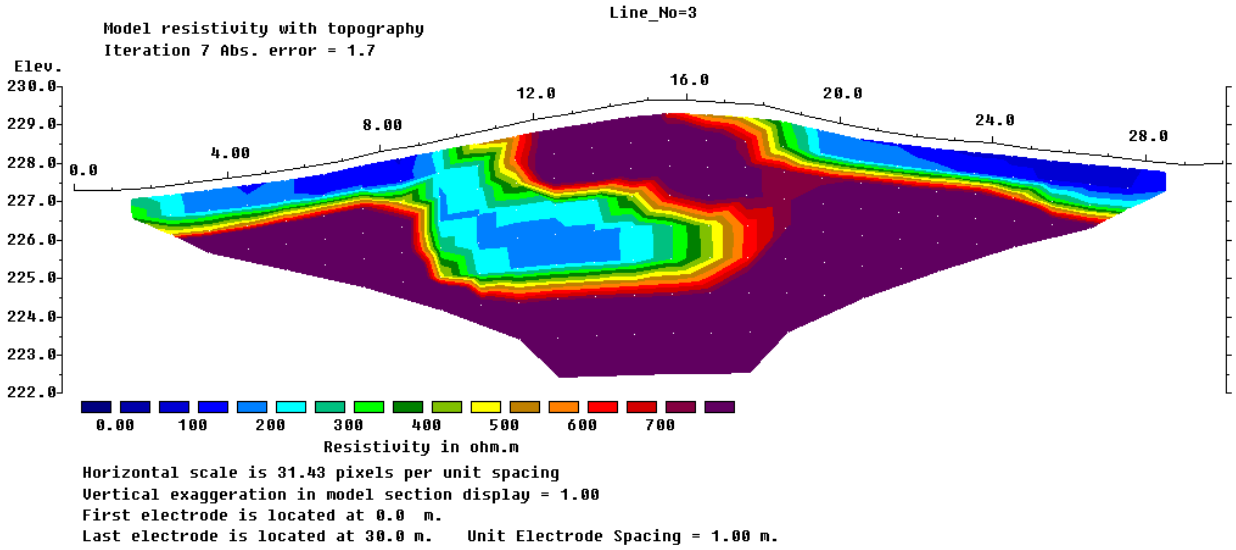

Figure 3.10. East-west cross section of southern barrow. East to left.

Profiles 4 and 5

Profile 4 across the central barrow is shown in figure 3.11. Profile 5 along the barrow is shown in figure 3.12.

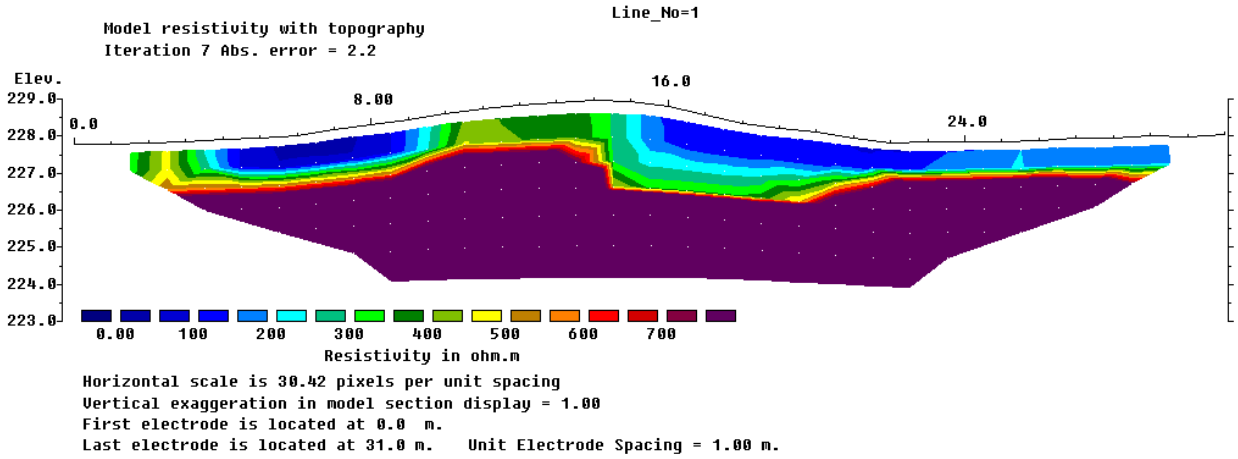

Figure 3.11. Profile across the eastern end of the central barrow, north-east to south-west. North-east to left.

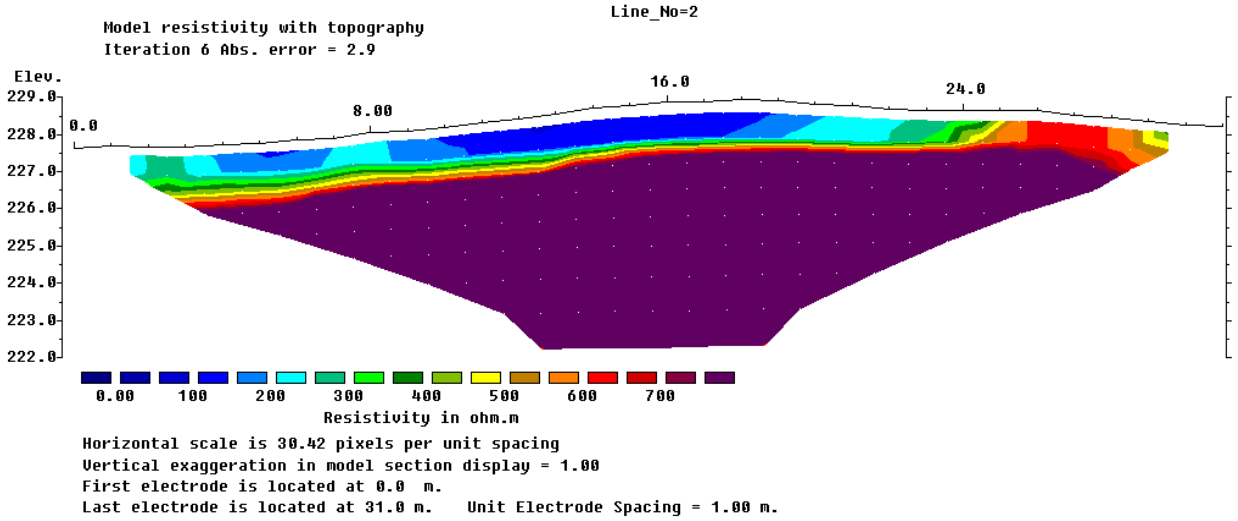

Figure 3.12. Profile along dorsum of central barrow, south-east to north-west. South-east to left.

The profile across the top of the barrow, near its eastern slope, figure 3.11, appears to show it as an earthen feature, as did the resistance plot. There has been some digging away on the southern side, and this may possibly represent a quarry ditch. It is not the circular low resistance figure seen in figure 3.6 as this was too far to the east to be picked up by this particular profile, which

was aimed specifically at the visible 'summit' of the barrow. Nonetheless, the barrow is marked by material of higher resistivity, although this may just be an indication of drier soil with moisture running off either side.

Figure 3.12 suggests slightly raised resistivity around the east end of the barrow, but not continuing along its spine. There is a raised very stony patch at the north-west end, but the appearance of the mound at this end is somewhat uneven, and this may not even be part of the original barrow construction.

The evidence suggests that, unlike the southern barrow, this is an earthen structure, albeit much denuded, possibly even a 'short long barrow'.

Supplementary profile

The profile taken later through the low resistance circular feature is shown in figure 3.13. Its location is shown in figure 3.7 by the dashed line.

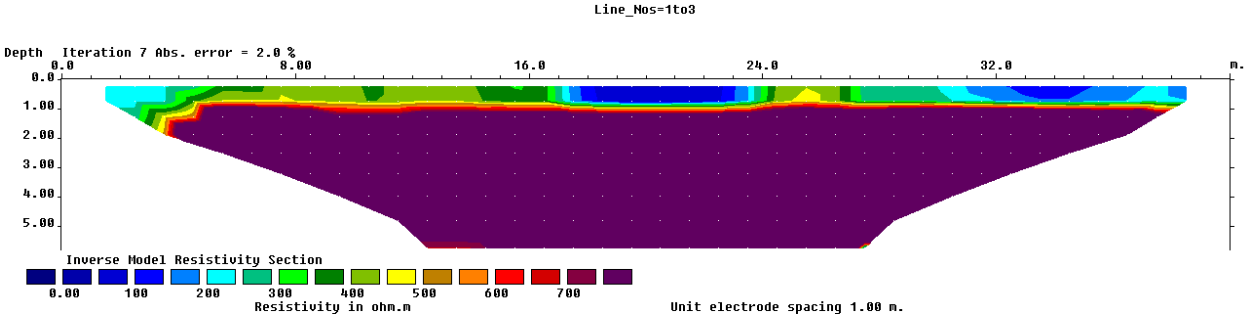

Figure 3.13. Supplementary profile through circular low resistance feature. South-east to left.

The circular feature from figure 3.6 corresponds to the low resistivity patch centred on 34 m. There is no sign of the low resistivity extending downwards into the bedrock, so the feature was more likely to be a shallow pond, perhaps dating from the site's days as the Fair Field, rather than any form of deep shaft. The low resistivity feature showing from 17 to 23m may relate to the feature in figure 3.11, 14 to 22m, which was interpreted as a possible quarry ditch related to the central barrow. No features extend below about 1m into the bedrock., although there is a possible slight deepening at 1 to 2m. This may relate to the well-trodden footpath into the field.

4 Comment and conclusion

The Geophysical results confirmed the composition of the barrows as described in the 1908 report of their excavation. The indication of a ditch at the base of the south barrow might be a trench from the 1908 dig. The south barrow is a round barrow, and the indication of pits echoes the report of pits in the field made in the 1740s. It's unclear from the geophysical survey if the other barrow is a single elongated form or two barrows which merge together.

There was some indication of solid material on the path that aligns with the road alignment to the South East, suggesting the Roman road might have continued in a northwesterly direction. There was no indication of an agger alongside the route of the current road after it turns in a more northerly direction, so these results do not add to the description of the Roman road network in the area.

Finds from this site are in the Roman Baths Museum and further investigation of these would lead towards dating of the activities in this area.

The barrows have become overgrown when compared to earlier photographs of the site. Regular maintenance is required to minimise deterioration of the monument, and consequently a plan should be agreed with the landowner.

Appendix A

A1 Gridding.

The initial point of the grid was by the gatepost at the southern end of the gate from the site to the modern road, in the eastern wall. The corner of the opening was taken as the point. This is shown in figure A1.

Figure A1. Initial point for starting the grid.

The tape was stretched in a line to where the wall demarcating the club house turns northward to the car park and then extended westwards along the wall for about 1m until 40m was reached on the tape. This is shown in figure A2.

Figure A2 point along wall demarcating club house, at 40m from gate post grid start.

With the tape stretched between these two points, a central post was put in at 20m, in the grass some 6m south of the car park. This point was taken as the grid origin, point 1000, 1000 and the grid was built up in 20m squares using Pythagorean triangles from this line. When optical sighting was needed, either by dumpy level or by EDM, they could be set up 20m south, at point 1000, 980, which was central and allowed good survey viewing over the whole site.

The grid was approximately 20 ° west of true north.

A2 Magnetometry

The instrument used was a Bartington 601-2 dual gradiometer set to take 4 readings per metre along traverses 1m apart, giving 1600 readings per full grid square. All grids were started 1m east of the south-west corner of the grid, heading north on the first traverse. See figure A3.

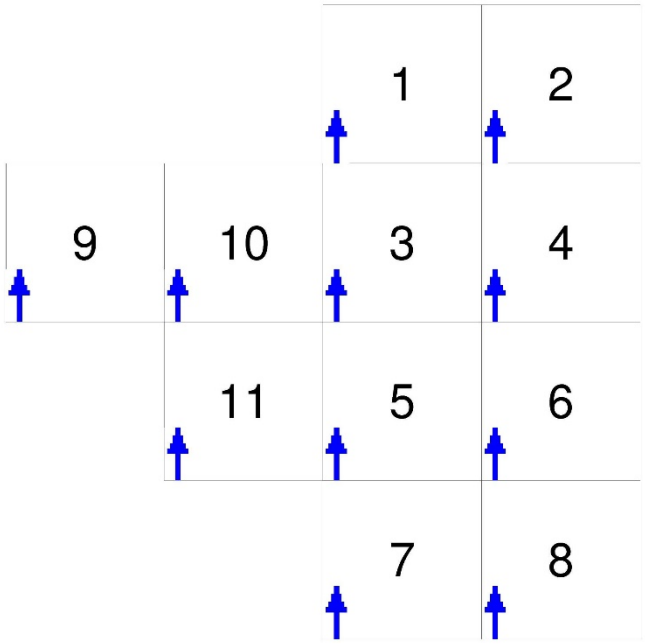

Figure A3. Magnetometry grid.

The blue arrows in figure A3 show the start point and initial direction, and that the data were in parallel format. Eleven grids were surveyed in all. Data were downloaded via Bartington proprietary download software, which sorted the data to parallel. The grids were then de-striped using BACAS proprietary zero-median software before being processed in INSITE v3.

A3 Magsus

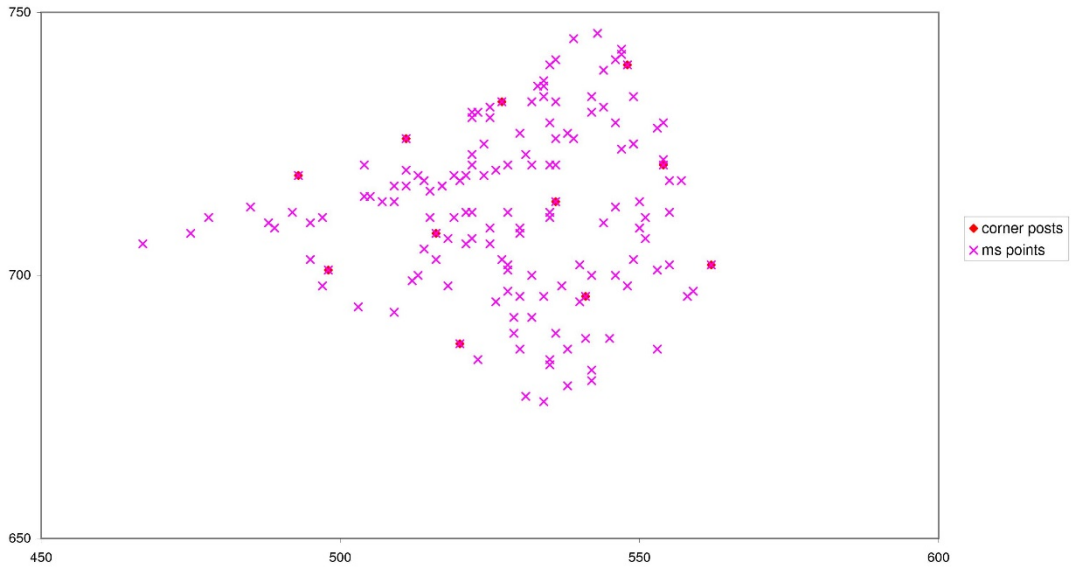

Figure A4. Locations of Magsus readings (purple crosses) and grid corner posts (red squares) in National Grid coordinates.

The Bartington MS2 is an old instrument, donated to BACAS a number of years ago. Bathscape has recently supplied a new sensor (200mm) and handle. The device has no data logger and the sensor has a small detection radius, so all readings are discrete. Locations of readings were taken from five-figure Ordnance Survey grid readings read on an Elonex hand-held GPS meter. The five figures give a precision of 1m, but location is only accurate to ±2m at best. This is adequate for mapping data on to a site. The locations of data points are shown in figure A4. Note that these are in National Grid format, shortened to the last 3 digits. This means the plot is orientated on National Grid north rather than on the site local grid north. The plot also shows the grid corner posts as red squares. Note that these too are only accurate to ±2m.

A4 Twin probe resistance

The measurements were taken with a new Frobisher TAR3 resistance device, set to take readings every half-metre along traverses one metre apart, giving 800 readings per full 20m square. Twelve grids were measured and grid 13 replaced faulty grid 3. Grids were started 1m east of the south-west corner, heading north on the first traverse. Results were downloaded to computer via USB port as a single text file and then converted to INSITE form using Microsoft Excel to take the fourth column from each grid and convert just this to a text file and then to a .dat file. These files provided the data in zig-zag form. Figure A5 shows the layout of the grids.

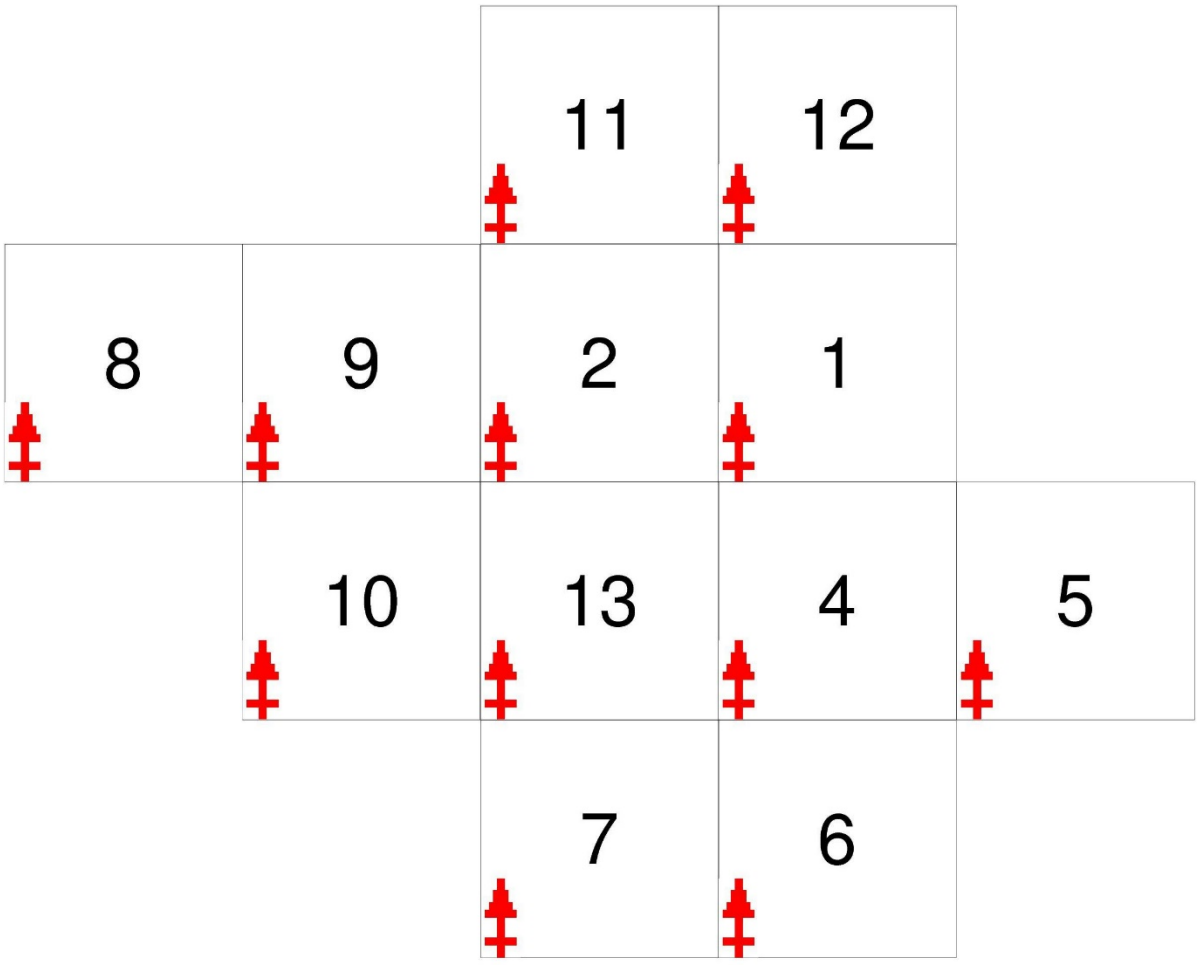

Figure A5. Order of grids in twin-probe resistance. Note grid 13 replaced faulty grid 3.