Hautville's Quoit

and other archaeological investigations at Stanton Drew, 2012

John Richards, John Oswin and Vince Simmonds
with a contribution by Lynn Amadio

Foreword by Roger Mercer

Bath and Camerton Archaeological Society
in collaboration with Bath & North East Somerset Council

Report compiled by Jude Harris
The surveys were carried out under English Heritage licence SL00022765

Foreword

When John Richards wrote to me telling me of the work at Hautville Quoit, I was immediately reminded of a very pleasant week in the clement summer warmth of North Somerset, spent as a very young Inspector of Ancient Monuments, Ministry of Public Building and Works, in 1969, in an endeavour to prove that a minor irregularity detected by resistivity in the hands of the late Tony Clark was (or was not) a socket within which this two tonne stone had originally stood vertically. The work was hard but my stay was made very pleasant by the splendid hospitality and comfort offered by the farm.

In brief, the result of a week's very hard work was a rectilinear cutting with no trace whatever of any such dug feature or of its differentiated filling. In a sense this was a perfect result for the Office. No further commitment was required and no further expenditure!

So it was very satisfying to see the work carried forward by John and his colleagues in a wider context, with more penetrating questions, and with enhanced and improved techniques. So much more is now known about the Stanton Drew complex as a whole, largely due to the sheer professionalism of this group. I can only hope that my early enquiry in 1969 didn't do any damage that has denied information to this very exciting project.

Roger Mercer
Edinburgh
August 2012

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Preface

Members of the Bath and Camerton Archaeological Society (BACAS), in collaboration with Richard Sermon, the Bath and North East Somerset (BANES) senior archaeological officer, first carried out research at Stanton Drew over one week in July 2009. The results were well-received and it was decided to do sixteen days of follow-up work in 2010. The results from these two seasons have been reported in Oswin et al (2009; 2011) and Richards and Oswin (2010; 2011).

We had carried out detailed surveys of the stone circles and the Cove but we had not looked at the outliers: the Tyning Stones and Hautville's Quoit. Thanks to the agreement and interest of the owners of Quoit Farm, we were able to get access to the latter in 2012.

The research aims and objectives were:

- To seek to identify whether there is any evidence for the Quoit having been moved since its installation
- To identify using various geophysics techniques whether any other archaeological features exist in the vicinity and how these relate to the Quoit
- To survey the area and link the spatial data to that already gathered for the Stanton Drew site.

The survey was carried out over the following dates: Friday 24th February to Monday 27th February and Friday 2nd March to Monday 5th March 2012.

Acknowledgements

Bob Whitaker was project director and Robin Holley deputy project director. The operation was facilitated and advised by Richard Sermon, senior archaeological officer for BANES.

The geophysical survey was conducted by BACAS volunteers, led by John Richards, who was assisted by John Oswin. The BACAS team included: Vince Simmonds, Lynn Amadio, Roger Kergozou, John Knapper, Susie Coggles, Wendy Russ, Denise Hillier, Helen Hobson, Fiona Medland, Sue Pickering, Janet Pryke, Christine Jones, Peter Watkins, Roger Wilkes, Julie Bassett, Steve Tofts, Rick Buettner, and Robin Holley. Keith Turner took overhead photographs of the Quoit. This, and previous work at Stanton Drew, has been undertaken with no external financial or logistical support.

Hautville's Quoit (ST 6017 6381) is a scheduled ancient monument (Monument No: BA44) and the survey was executed under a section 42 licence issued to the BANES Archaeological Officer by English Heritage (Licence No: SL00022765).

This report describes the results of the 2012 survey and combines this with further work on the Stanton Drew landscape.

Appendix A is a transcript of Roger Mercer's notes from a geophysical survey and excavation in 1969, published here for the first time.

Appendix C on the archaeological features in the field known as Bridge Ground was written by Lynn Amadio.

The landscape studies are centred on the stone circles of Stanton Drew but also including Hautville's Quoit. Rick Buettner, Steve Tofts, Roger Wilkes and Jane Oosthuizen assisted in this work and supplied photographs. Karen Wallis produced the drawings.

Finally, this work was made possible by the landowners, Mr and Mrs Mark Tibbs, who gave permission and put up with us so nicely, and to whom we extend our thanks.

1 Background to the Quoit

1.1 Location and sites

The village of Stanton Drew lies in northern Somerset, within the unitary authority of Bath and North East Somerset (BANES), approximately 10 km south of Bristol city centre and 15 km west of Bath, on the south bank of the River Chew. Within and to the east of the village are three stone circles, two avenues, and a 'cove'. There are also outliers: the Tyning Stones and the main subject of this report, Hautville's Quoit (ST 6017 6381).

The principal site at Stanton Drew is the Great Circle, which has an avenue leading eastwards from it. Nearby is the North-East Circle, which has an avenue leading south-east from it. The two avenues meet at a short distance from the North-East Circle. The two circles and their avenues are all in one field, which is called 'Stone Close'. In a separate field is the South-South-West Circle. West of this, in the pub garden of the Druids Arms, are the three stones known as the Cove. Well to the west of the monument, 700 m away, there are two stones, the Tyning Stones.

To the north-east of the monument, 500 m away across the River Chew, near the Pensford to Chew Magna road is Hautville's Quoit, a stone that lies very nearly on an alignment through the centres of the Great Circle and the South-South-West Circle (Figure 1-1). Its location is shown in Figure 1-2.

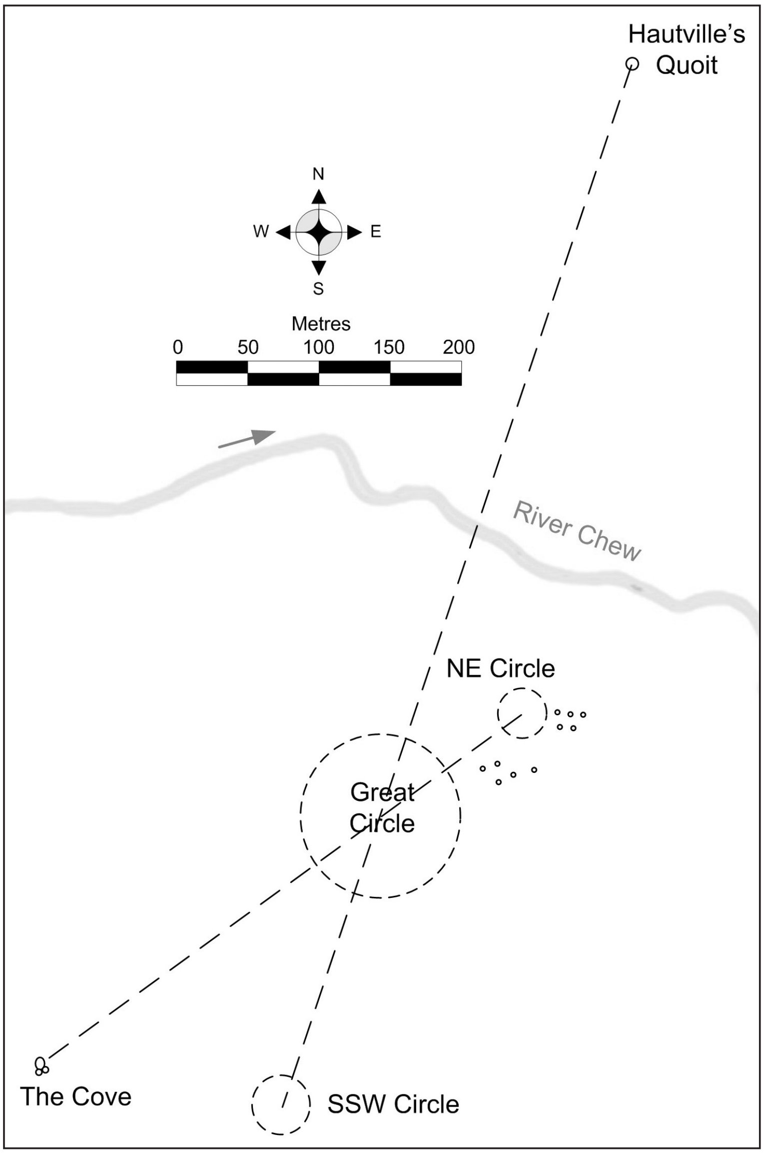


Figure 1.1 **Alignments of the Stanton Drew circles and stones**

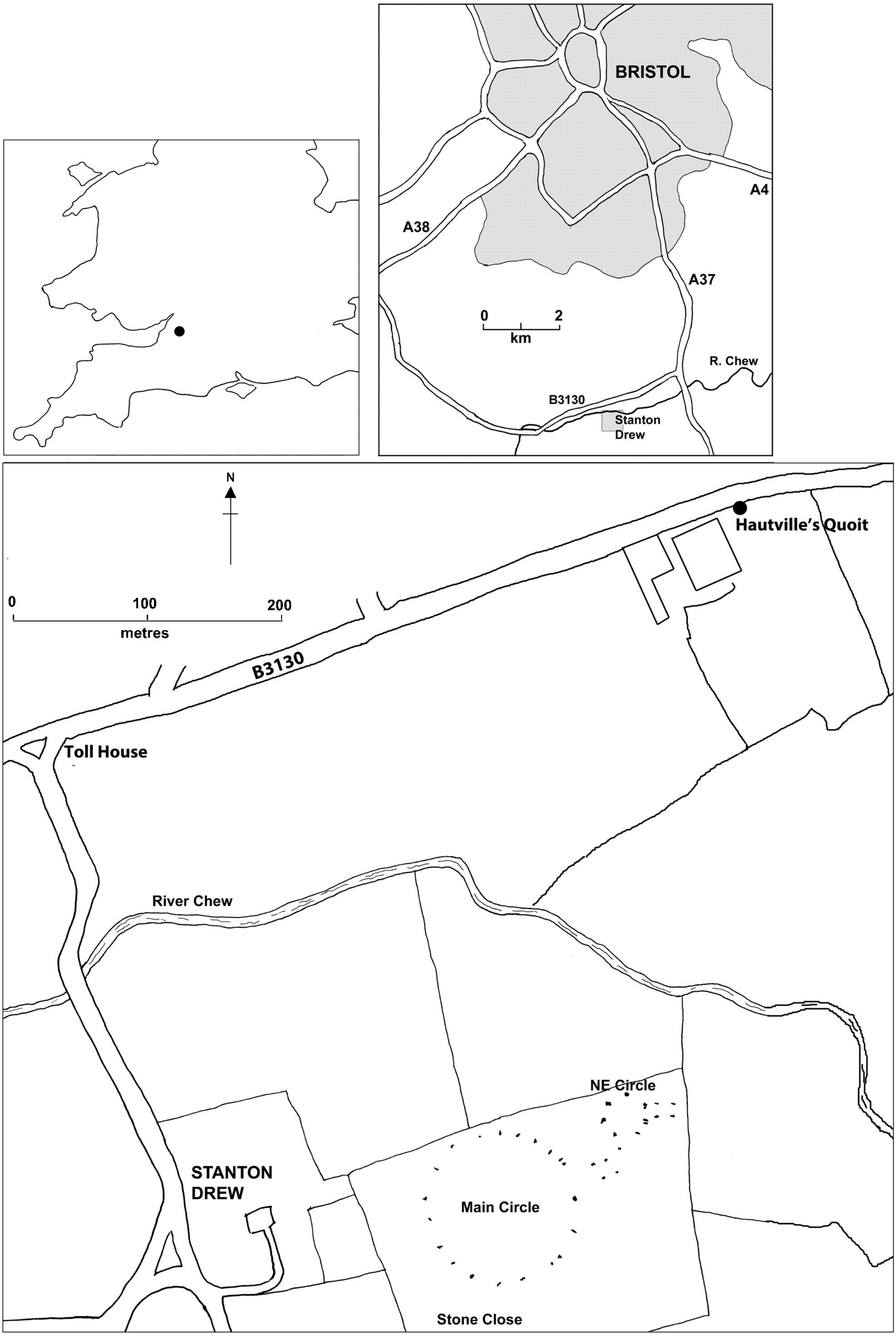


Figure 1.2 Hautville's Quoit – location map

The underlying geology comprises Mercia Mudstone strata of Triassic age; this in turn overlies, unconformably, strata of Supra-Pennant Measures which form part of the Upper Coal Measures of Carboniferous age.

1.2 History of Hautville's Quoit

John Aubrey mentioned the Quoit in his 1664 description of Stanton Drew (Aubrey et al 1980). He refers to it as Hakewell's Coyte and gives the size of the stone as 'length of it 10 foot 16 (sic) inches Broad 6 foot 6 inches thick 1 foot 10 inches and lies flatt'. Aubrey first visited Stanton Drew in his childhood (late 1630s) when staying with his grandmother at Burnett, near Keynsham (Burl 2010).

Musgrave (1719) included the Quoit in his plan of Stanton Drew (see Figure 7-1), showing it lying in the middle of the road. William Stukeley went there soon after, in 1723, though his account was not published until fifty three years later. Stukeley (1776) showed the Quoit lying on the southern side of the road in an illustration (Figures 1-3 and 7-2) and also described it as lying flat on the ground by the road side, but that it was said to have been once standing. He gave its measurements as 13 x 8 x 4 feet and said it was once much larger, but that bits had been knocked off.

The Bath architect, John Wood (1765), visited in August 1740. He described a large flat stone called Hakills, or Hakims, Coit, on the brow of a hill, greatly dilapidated but still measuring 10 feet x 6 feet x near 2 feet. He seems to have been the first to notice the alignment between the Quoit and the centres of the Great Circle and the SSW Circle.

The Reverend John Collinson (1791) wrote that an immense stone called Hautville's Coit lay in the road. A farmhouse had been erected nearby in the recent past known as Hautville's Coit Farm. The Quoit was believed to have been over 30 tons at one time, but waggonloads of fragments had been broken off for road-mending. Another reverend, Samuel Seyer (1821), described the very large stone lying by the side of the road, called Hackell's Quoit, or Hackham's, Ackam's, or Hakim's Quoit.

Long (1858) merely summarised the work of previous commentators. Fergusson (1872: 150) referred to a very large stone by the road side, called the King Stone. This is probably a typographical error – he also described the King Stone at Stennis as being its equivalent of Hautville's Quoit (p.257). There is also a King Stone that is an outlier of the Rollright Stones on the Oxfordshire/Warwickshire border.

Lloyd Morgan (1887) thought the Quoit was of a close, fine-grained, cherty sandstone but was unsure of its origin. Dymond (1896) said Lloyd Morgan later took a sample for microscopic examination and pronounced it to be Palaeozoic sandstone, presumably of 'old Red' age and from a Mendip source. Dymond gave the size of the Quoit as 7 x 6.5 x 2 feet, which is very close to its size today.

Leslie Grinsell (1956) quoted the measurements of the Quoit given by Aubrey, Stukeley and Dymond. He was convinced the stone must originally have been upright. Later, Grinsell (1992; 1994) said the Quoit had been twice its present length until 1836, but it has not been possible to trace where he obtained this specific date.

Roger Mercer conducted excavations and geophysical survey on the Quoit in 1969. His previously unpublished notes are reproduced here in Appendix A.

1.3 The Folklore of Hautville's Quoit

The local story of how a giant, Sir John Hautville, threw the stone from a nearby hill has been related by many sources.

John Aubrey was the first to describe how Sir John had thrown the Quoit from Norton Hill half a mile away, and he had got the story from John Locke who lived in nearby Belluton. Stukeley (1776) moved the pitching point to the Iron Age hill fort of Maes Knoll, just over 2 km distant. Wood (1765) added the story that Maes Knoll was created by one spadeful of earth dropped there by Sir John.

In reality, Sir John Hautville is said to have been granted the manor of Norton by Edward I as a reward for his services in the Holy Land (Wood 1903). Sir John felt this was insufficient recompense and named it Norton Malreward; the reaction of the king to this ingratitude is not known. Aubrey said that Hautville was buried in Chew church and had a monument there. The recumbent oak effigy attributed to Hautville in St Andrew's Church in Chew Magna is now believed to be that of John Wych (died 1346), who acquired Norton Hautville from Geoffrey Hautville in 1328 (Grinsell 1992). The effigy was moved there from the Norton Hautville chapel at the time of the

Reformation, and the people moving it decided to attribute it to Sir John, who must already have been a semi-legendary figure in the neighbourhood. The effigy was restored by instruction of Rawden W. Hautville, who believed it was of his ancestor. Subsequently, Fryer (1921) has pointed out the figure is inconsistent with an earlier date than the mid-fourteenth century. Pevsner (1958) agrees that the armour is fourteenth century, but thinks it is a later imitation, probably late sixteenth century.

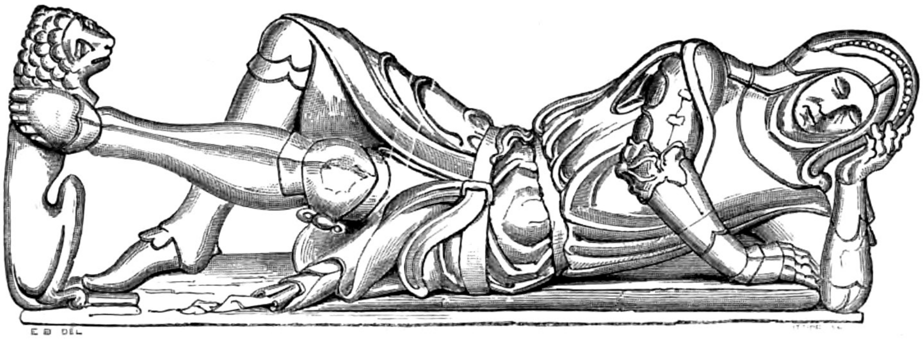


Figure 1-3 **Effigy attributed as Sir John Hautville in Chew Magna church (source: Walford 1857)**

Stories of giants are quite commonly associated with large stones and monuments, with beliefs that giants were responsible for their construction. It seems likely that an early legend of a giant throwing the Quoit has later been associated with a man who made such an impression on the local population that they substituted him in the story.

1.4 The Second Quoit

William Stukeley described a second 'coyt', also of large size and also lying beside the road but half a mile above the bridge whereas the first one was half a mile below. Collinson (1791:107) also reported the existence of a second quoit, but it is uncertain whether he was reporting first-hand, or merely copying Stukeley whose work had been published just fifteen years earlier. No other writers claim to have seen a second quoit, and its existence was doubted by Charles Dymond (1896), who wondered whether Stukeley was referring to the Tyning Stones, though noting that these did not fit the description of lying beside the road.

What Dymond and others missed was that Stukeley had included the second quoit in one of his drawings of Stanton Drew (Figure 1-4), clearly labelled 'another coyt' and lying on the north side of the Chew Magna–Pensford road. Apparently the first to notice this, or at least to mention it in print, after over 200 years, were the English Heritage geophysics team (David et al 2004) and Jodie Lewis (2005:94). Lewis gives the second quoit the name of the Tollhouse Stone and says no trace of it now remains, it having been broken up for road mending long ago.

Figure 1-5 shows an enlarged view of the second quoit. The modern field boundaries are not dissimilar from those that Stukeley drew so it is possible to estimate where the quoit would have lain. However, it is very unlikely that anything remains to be seen today.

Unlike Hautville's Quoit the estimated stone position does not have any obvious alignment with the rest of the monument. It would have lain about 250 metres to the north-west of the Tyning Stones in the vicinity of OS grid reference ST 588 636.

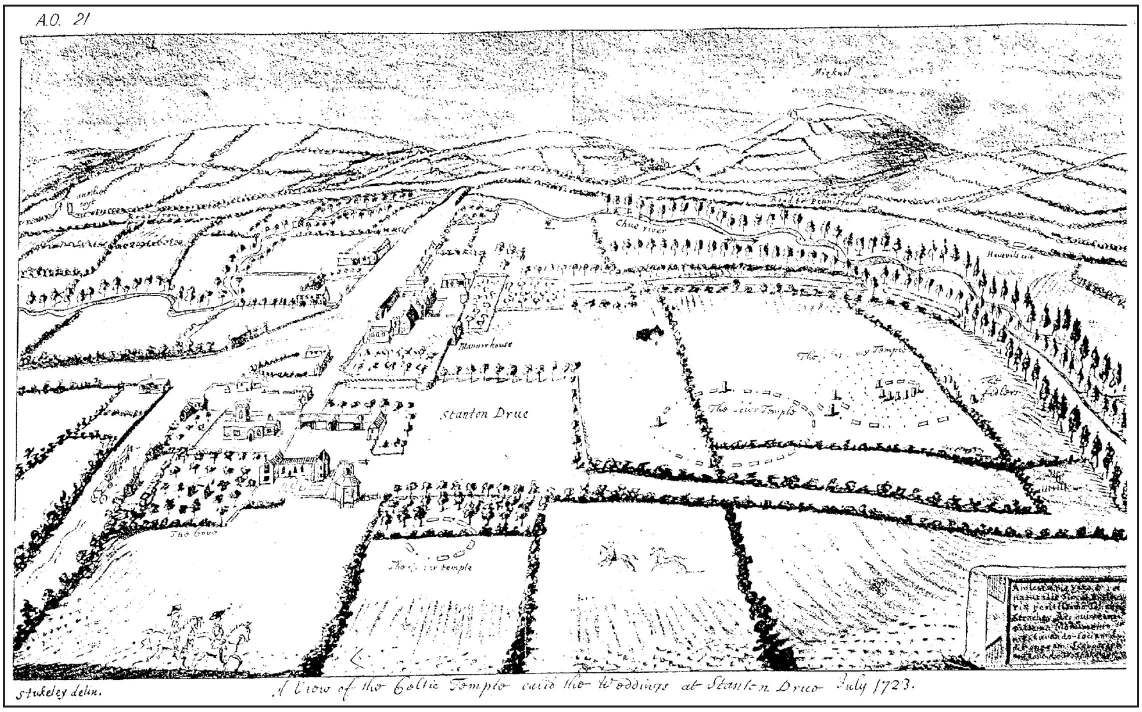


Figure 1-4 **A View of the Celtic Temple called The Weddings at Stanton Drew July 1723, by William Stukeley**

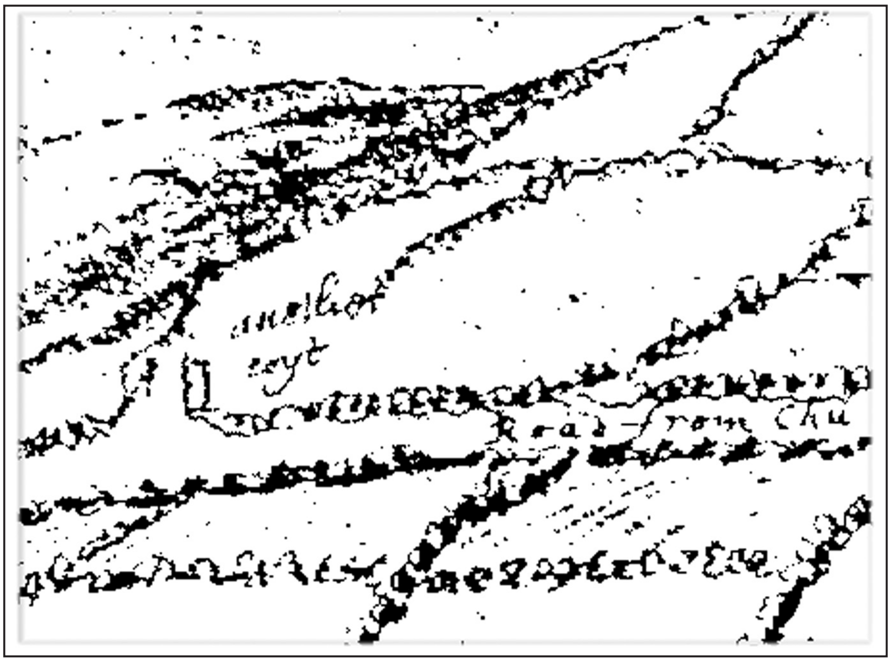


Figure 1-5 **'Another coyt', detail from Stukeley's illustration of Stanton Drew**

2 Method

2.1 Gridding

The survey extended over parts of three fields, all private land on Quoit Farm: Home Ground, Bridge Ground and Big Ground. The area is shown in Figure 2-1.

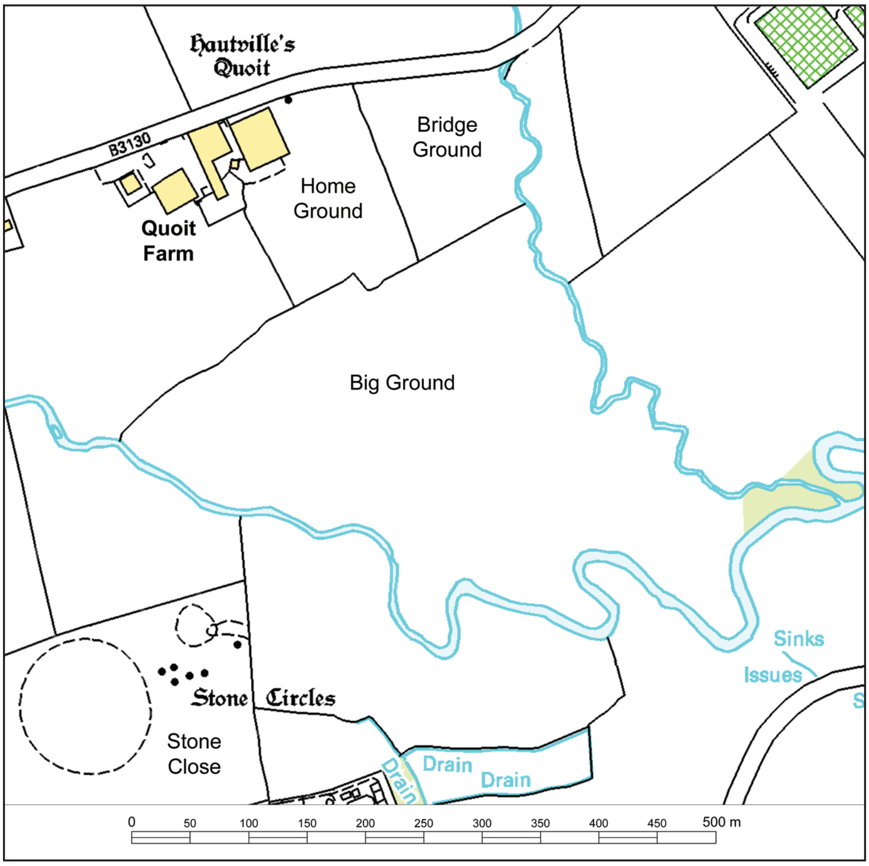


Figure 2-1 The survey area

A grid was set up in the field that contains Hautville's Quoit, Home Ground, and later extended into the neighbouring field, Bridge Ground. There is a gate on the east side of Home Ground and the grid was started from the south-west corner of the northernmost gate post (Figure 2-2). A baseline was laid out from this point, approximately east-west, to the south-east corner of the southernmost barn (Figure 2-3). A point along this line, 40 metres from the field gatepost, was given an arbitrary grid reference of 1000, 1000. The gatepost was labelled 1000, 1040. A right angle was constructed at 1000, 1000 to form a north-south line. All subsequent grids were derived from these lines. This resulted in a line of grid north at bearing 335° to true north. The construction of the grid is illustrated in Figure 2-4 and the grid is shown in Figure 2-5.

The BACAS standard grid is 20 m square. Normally, it starts in the south-west corner with the instrument heading north. Resistance measurements are taken at half metre intervals on lines one metre apart. North and south baselines are made from coloured polypropylene 'washing' lines with markings every metre. Marked ropes are used to guide measurements. The operator walks north along a rope and back south between ropes. The first line is 1 m east of the grid corner, the last line is between grid corners. The first measurement point is ½ m north of the south baseline, the last is on the north baseline; thus all grids fit together without overlap, as shown in Oswin (2009: 115, figure 5.8(c)).

The same grid pattern is used for magnetometry, but the ropes are replaced by small 'flags' placed on the north baseline, five per grid, and tall plastic pegs on the south baseline. The operator has to set his pace right to cover the distance in the right time. Heading north, he aims either himself or the left tube of the magnetometer at a flag or the gap between them, and south either at a peg or the gap between. The layout of flags and pegs depends on the instrument used and the number of lines walked.

Figure 2-2 **Gatepost at east end of baseline**

Figure 2-3 **Barn corner used for west end of baseline**

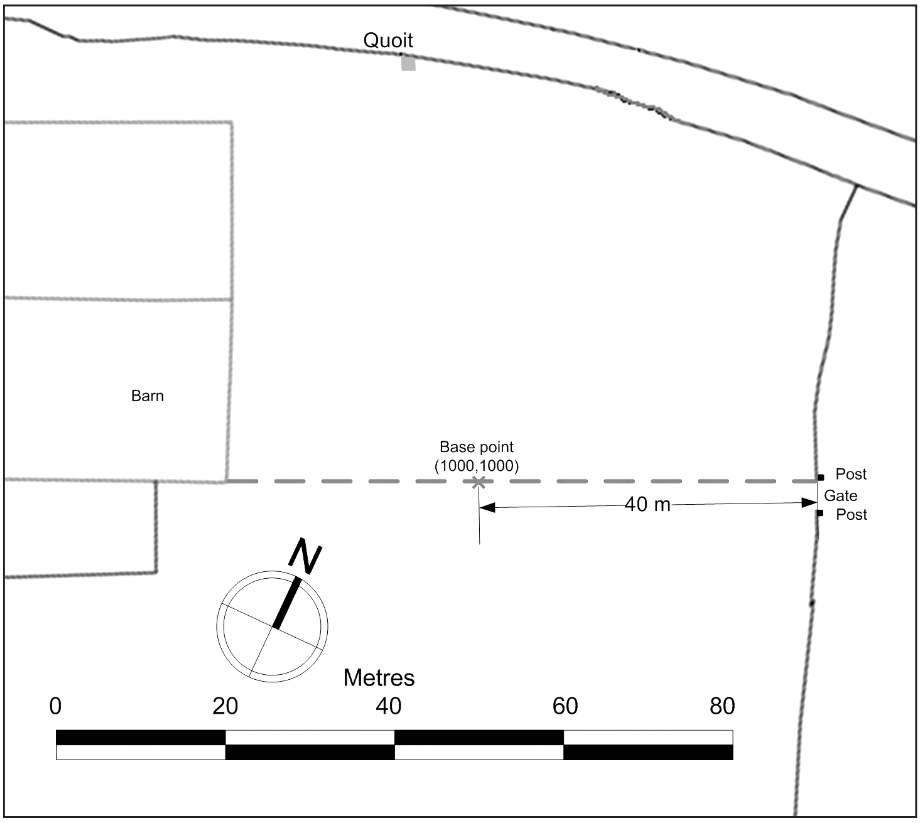
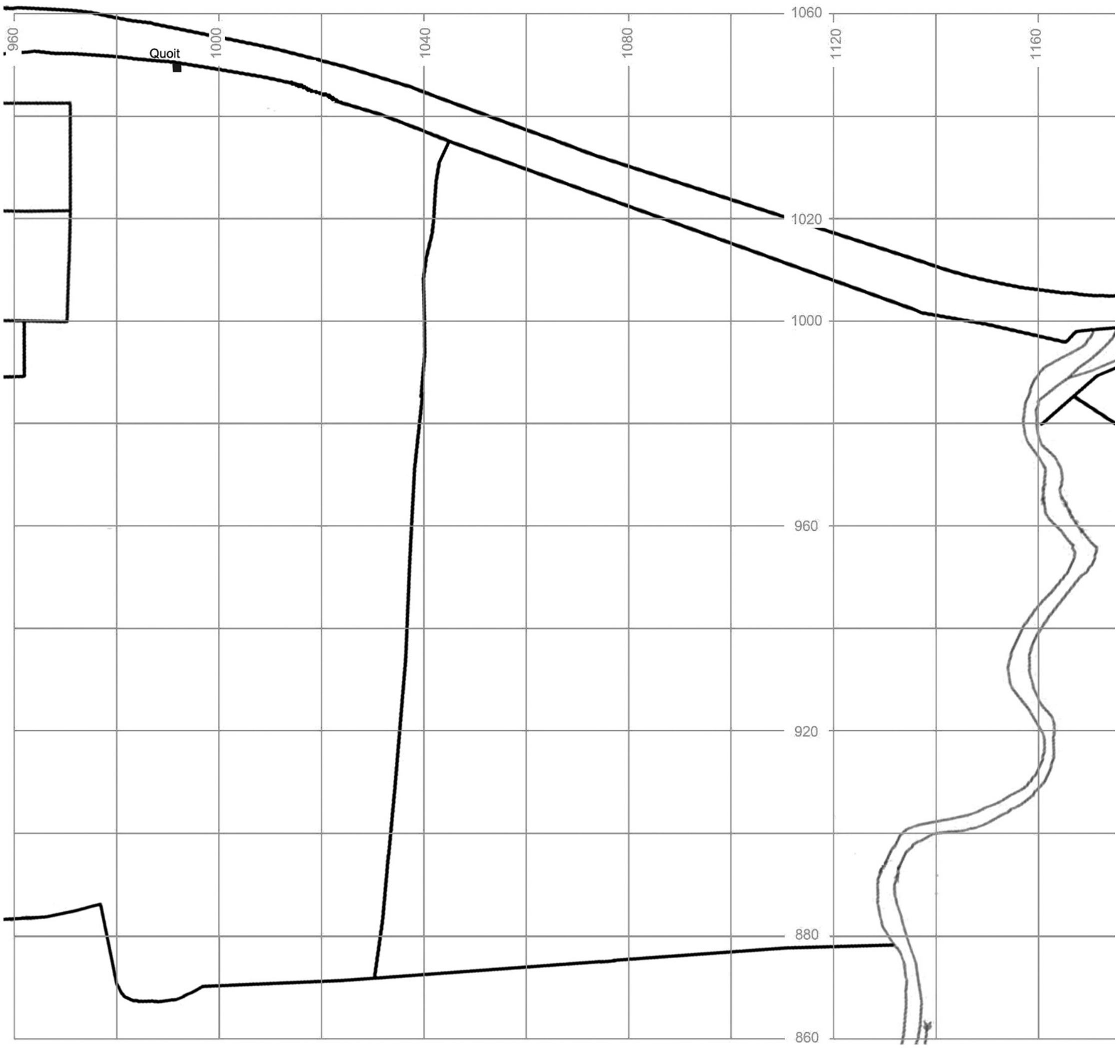


Figure2.4
Construction of grid in Home Ground

Figure 2-5
Overlay of grid in Home Ground and Bridge Ground



Note that the traverse direction for the magnetometer was changed from north-south to west-east, starting in the south-east corner. This was to enable the de-striping software to provide the best enhancement of the data, particularly close to the road. Details of these and all grids are given in appendix B.

In the case of resistance, a few grids were surveyed in reverse direction, starting at the north-east corner, heading south, so that those parts of the grid immediately over the metalled track (which gave very high readings) could be omitted by completing grids with lines of blanks.

As a result of patterns in the magnetometer survey, it was decided to re-survey a number of grids at high data density in resistance. The grids between 1000, 1000 and 1040, 1040 were sub-divided into 10 m squares and readings were taken every 0.25 m along lines 0.5 m apart; this enabled greater data density to be achieved. These 10 m grid squares could then be plotted as a separate entity in INSITE.

2.2 EDM survey

Height above Ordnance Datum was taken from a benchmark of height 50.72 metres OD on a farm building at ST 6008 6377 (source: OS 1:2500 map, 1962). From this, the height of the grid point 1000, 1000 was calculated as 48.91 metres.

EDM readings were taken from the Stone Close grid used in 2009 and 2010 (Oswin *et al* 2011), and also of the north-east corner of the field and the barn corner. This data, plus the OS grid references of the latter two points, were used to construct transformations between the Stone Close grid (SC), the Home Field grid (HQ), and the Ordnance Survey (OS).

If (x_j, y_j) in grid A maps to (x_k, y_k) in grid B, and grid B is rotated θ° clockwise from grid A, then to calculate the mapping of (x_a, y_a) in grid A to (x_b, y_b) in grid B:

$$(x_b, y_b) = ((x_a - x_j) \cos\theta - (y_a - y_j) \sin\theta + x_k\ ,\ (y_a - y_j) \cos\theta + (x_a - x_j) \sin\theta + y_k)$$

To convert from HQ grid to SC grid:

$$x_j = 1000,\ y_j = 1000,\ x_k = 1276.94,\ y_k = 1424.09,\ \theta = 9.404°$$

To convert from HQ grid to OS grid (10 digit reference preceded by 'ST'):

$$x_j = 1041.77,\ y_j = 1034.63,\ x_k = 60223,\ y_k = 63814,\ \theta = 25.485°$$

For example, Hautville's Quoit is at (992, 1050) in the HQ grid; (1261, 1472) in the SC grid; and on the OS grid, ST 60171 63806.

2.3 Instruments and settings

Instruments used were:

- RM15 twin probe resistance meter
- TR/CIA resistance meter and profiler
- Bartington 601/2 twin fluxgate gradiometer
- Bartington MS2 magnetic susceptibility meter
- MALA X3M Ground-penetrating Radar.
- Sokkia SET5W EDM

For details of these instruments see Oswin *et al* (2011). Note, however, that there were a number of differences in their operation. Additionally, BACAS' old EDM, Wild Distomat 1600, was used for measuring skyline panoramas.

The radar was operated principally with its 250 MHz head in 2012, but the area over the quoit was surveyed with both 250 MHz and 500 MHz heads.

The MS2 magnetic susceptibility meter was used to survey a small grid immediately around and over the quoit at 0.5 m intervals. Additionally, it was used to take random measurements in conjunction with a hand-held GPS device. The latter gave five-figure national grid references, equivalent to 1 m precision, but only at 5 m accuracy. This is sufficiently good for plotting over large areas, as was done here.

The principle of random measurement is to take readings at random, but note the position of each measurement with the GPS. If the reading is found to differ significantly from the last taken, then extra measurements are taken around that differing reading to find the extent of the anomalous readings. Results can then be plotted as a contour map. Random readings are taken typically 10 to 25 paces apart, except where anomalous readings are investigated. This may mean that patches of high readings are missed altogether, but the method has been found to be effective in plotting archaeologically interesting sites rapidly.

Good results were obtained from data sets on Home Ground and Bridge Ground, but data taken in Big Ground were too localised and too sparse to produce worthwhile results.

2.4 Software

BACAS uses INSITE version 3 (1994) as its principal analysis software. This is now obsolete, but still preferred as visual, adaptable and simple. As it no longer talks to modern instruments, BACAS has produced in-house software to download data from the instruments to a folder in the computer and then import the grids into INSITE.

The TR/CIA resistance own software is used for downloading pseudosection profiles from the meter, and these are then processed on RES2DINV software (free 'demo' version).

The Bartington magnetometer has its own download software which leaves data sorted to parallel lines. These are then put through the de-striper before being mapped in INSITE.

BACAS has devised its own zero-median de-stripe software which will accept downloaded files from the Bartington or from Geoscan FM256. Once files have been through the de-stripe software, they are labelled with a prefix 'd'. The de-stripe software will function with grids of any dimensions. De-striped grids are imported into INSITE, which acts as a mapping program. The data usually needs very little extra processing.

Handwritten data from the EDM and from magnetic susceptibility measurements are transcribed into a Microsoft Excel spreadsheet. If the pattern is regular, contour plots can be drawn in Excel. If spacings are irregular, DPlot software is used to obtain contour plots.

Excel can also be used to display resistance and magnetometer data, but practically is limited to four grids at a time, and for half metre spacings on lines at one metre. It does have the advantage of allowing as many gradations as the colours permit, and of providing a linear scale, which, with a suppressed zero, can allow features to be presented and studied in much greater detail. The sets of four grids can be assembled into a large area composite.

Radar data were analysed using REFLEXW software. Output is normally presented in its 'Rainbow1' format, extending from red for very high positive return, through yellow as 'normal' to purple. This can be presented as a three-dimensional cube or as a two-dimensional slice at a nominal depth. A nominal wave speed of 0.06 m/ns has been assumed but the software has the facility to estimate wave speed from parabola shape given a strong return signal.

2.5 Constraints

The project work had to be carried out in early spring before the cattle were out in the fields. Two long weekends of four days each were used, between 24 and 27 February, and 2 and 5 March 2012. Fortunately, the weather was generally benign, apart from one morning on which heavy rain delayed the start.

The quality of the data is only as good as the precision in setting up the grids. These were generally within 20 cm, 1%, of true. However, it also depended on the operator setting out straight baselines and walking accurately between markers at the right pace.

The main constraints on the magnetometer were the presence of metal in fences and hedges around the fields, the metal-clad buildings nearby, farm detritus, and the traffic passing along the adjacent road. Grids were done traversing east-west so that the de-stripe software could be most effective in removing its effects, but given the small size of magnetic anomaly, this still distorted the results.

Resistance survey was also subject to a very large range of readings, which was difficult to contain in one plot with any detail. Home Ground in particular had some very wet patches (in some cases too muddy to enter) giving very low readings, while the tractor way built around the large barn generated very high readings. Where it could reasonably be done, the tractor way was left off the survey to help reduce the dynamic range of readings.

The work at Stanton Drew received no funding, so all that is reported here and in earlier documents has been generated within the Bath and Camerton Archaeological Society, with no recourse to external academic expertise.

In general, the best view of the data output is on the computer screen and there is some loss of definition in the printing process, even when the document is printed at a high resolution.

3 Hautville's Quoit

3.1 The Quoit

Hautville's Quoit (Figure 3-1) is located at Quoit Farm, near Stanton Drew, NGR ST 60173 63811 (plotted using hand-held Garmin etrex GPS accuracy +/- 5 metres). It is situated on the northern edge of a field bordering the B3130 Chew Magna-Pensford road. The Quoit lies slightly over the brow of a ridge in a landscape which faces away from the stone circles, looking north towards the promontory of Maes Knoll.

It is now known that Robert Mercer dug around the stone in 1969 with the (unfulfilled) intention of lifting it if the original site could be discovered. This area of disturbed soil showed in resistance, magnetic susceptibility, radar and profiling surveys.

Figure 3-1 **Overhead view of Hautville's Quoit (50 cm divisions on scale)**

Part of the stone lies hidden beneath the field boundary hedge, but the visible portion is about 2.1 metres by 1.4 metres. Dymond (1896) gives the size of the Quoit as 2.1 metres by 2.0 metres by 0.6 metres. It is quite possible that the portion of the stone under the hedge extends by 0.6 metres as it just reaches to the road bank, which would mean that the stone is still the same size as seen by Dymond. In Figure 3-2 the hedge lies to the right-hand side of the drawing.

3.2 Geology

The underlying geology comprises Mercia Mudstone strata of Triassic age; this in turn overlies, unconformably, strata of Supra - Pennant Measures which form part of the Upper Coal Measures of Carboniferous age, below at an unspecified depth (BGS 1:50 000 Map (Sheet 264)). To the east and south of the site is alluvium of Pleistocene and Recent age; also to the east of the site and below at unspecified depth is the Pensford No.2 Coal Seam.

The soil found at Quoit Farm is likely to be derived from the erosion and subsequent transport of material from the Lias strata of Jurassic age that forms the high ground to the north of the site. In particular, from a layer consisting of mainly clay and shale, there is a substantial area of landslip on the slopes of Maes Knoll (East Dundry) and around the village of Norton Malreward. The strata

Figure 3-2 Hautville's Quoit (1:10)

that comprise the landslip are described as mainly clay with White and Blue Lias, mainly limestone, also of Jurassic age. The clay content of these soils is likely to retain higher moisture content than the sandy soils of the stone circle site on the south side of the River Chew. Something that can be confirmed from experience on the current fieldwork: on a day when the conditions in Home Ground were those of very sticky mud, the soil in Stone Close was bone dry.

Hautville's Quoit consists of a pale brown to grey sandstone. The sandstone can be described as comprising subrounded to rounded (high sphericity), fine to medium (250 - 375 microns), well to medium sorted, shiny, polished, mostly translucent grains of quartz, that appear matrix supported in a siliceous cement. There are numerous small clam-like (bivalve) fossil shells measuring up to 10mm x 6mm in an area of exposed bedding surfaces; these fossils are possibly a marker bed and might be useful in determining the origin of the rock type but they have not yet been identified. A white scaly appearance on some parts of the stone is likely to be due to lichen growth or as a result of weathering. The pock-marked surface (Figure 3-3) might be the consequence of a number of factors, including the effect of roots or solution.

There are a number of lines of cleavage and other surface features visible on the stone (Figure 3-4); these factors are the subject of on-going research. The Quoit was examined using an illuminated field microscope with x30 magnification and hand lens with x8/x15 magnification, natural light conditions were good at times; the stone had been cleared of debris.

3.3 Discussion and follow-up fieldwork

The rock type that comprises Hautville's Quoit is not one that is recognised by the author either locally, or in the broader surrounding area. There are a number of features of the stone that require further consideration. Some subsequent fieldwork in the Mendip area has been carried out in the Ebbor Gorge area to look at exposures of the Quartzitic Sandstone Group (QSG) associated with the Ebbor Thrust. However, it is thought unlikely that this particular exposure provided the source for Hautville's Quoit.

Lloyd-Morgan (1887) described the rock type that comprises the Quoit as fine-grained sandstone. He hesitates to offer any opinion as to the source of sandstones found at Stanton Drew, either that of the Quoit or the stones found in the stone circle close by and states 'of the source, geological and local I am doubtful'; he does, however go on to ask the question 'Is it possible that one or more of the sandstone monoliths may be sarsen – but whence?'

Mercer in 1969 also attributed the stone as of 'Wiltshire sarsen stone' origin (see Appendix A).

Hardy (1999: 176-181) describes a 'tough silica-cemented sandstone found as loose masses in the surface of softer rocks'. A number of these 'sarsen' stones were uncovered during the construction of the M5 motorway in the Blackdown Hills area close to Taunton but many of these appear to have been 'lost'.

The writings of Lloyd-Morgan and Mercer prompted a field trip to Fyfield Down in Wiltshire, an area that is renowned for the sarsen stones, also called 'grey wethers', that are found there and many have been used in monument sites such as Avebury and Stonehenge.

There are a number of similarities between the stones at Fyfield Down and Hautville's Quoit (Figure 3-5 and Figure 3-6).

The 'grey wethers' can generally be described as sandstone that comprises grey, fine to medium (250 - 375 microns), sub-rounded to rounded (high sphericity), well sorted, shiny, polished, mostly translucent grains of quartz; the clasts are contained in a matrix comprising siliceous cement. Occasional stones were also noted to have variable colour from a pale grey-brown to more orange, possibly a result of iron content. Some of the stones contained rare flint nodules and very occasional fine to medium, sub-rounded to rounded gravel of quartz. The shape of the 'grey wethers' was also variable from rounded and spherical to more sub-angular blocks, with sizes ranging from less than 1 cubic metre to several cubic metres. It should be noted that no occurrences of fossils were noted in any of the stones observed at Fyfield Down.

3.4 Some further rock-types to be considered

The chert from the Upper Greensand that occurs in the Blackdown Hills near Taunton was formed as silica solution in the ground water filled the voids within the sandstone to convert it to

Figure 3-3 The pock-marked surface of the Quoit is clearly visible

Figure 3-4 Surface features visible on the stone

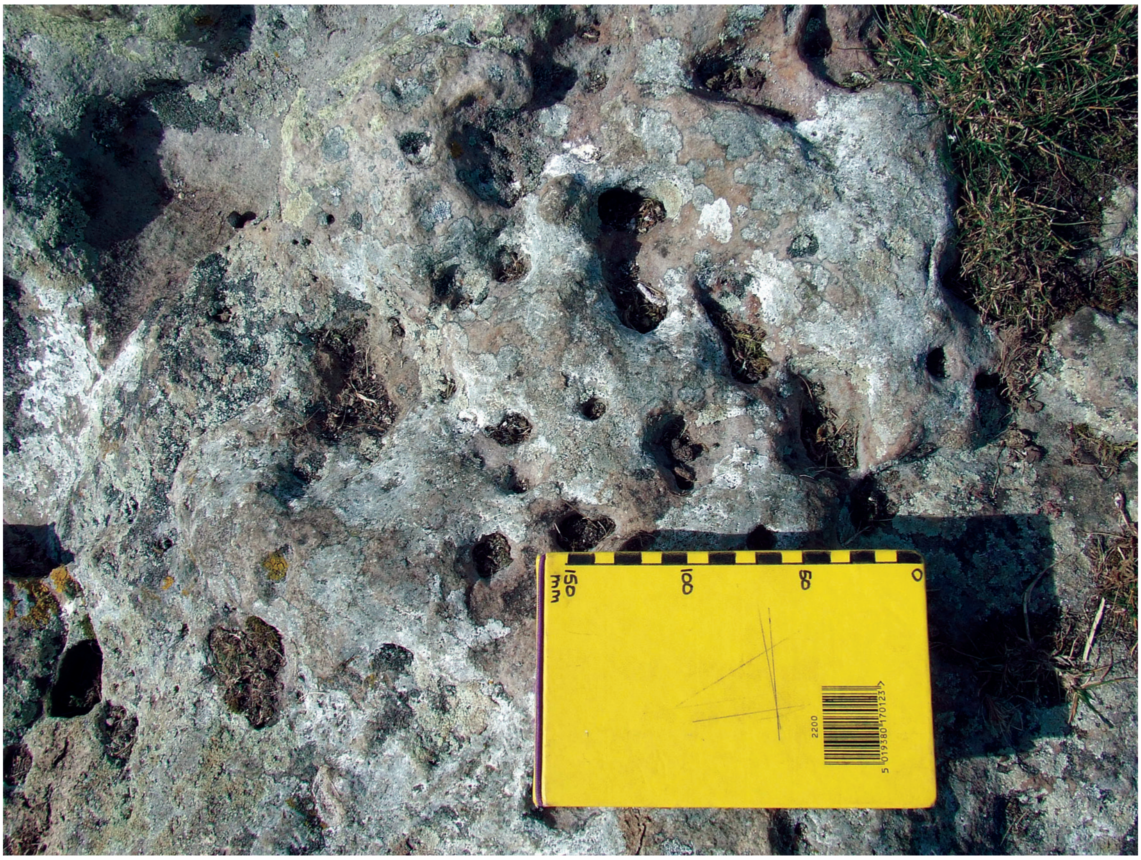


Figure 3-5 Pock-marked surface of a 'sarsen' stone seen on Fyfield Down

Figure 3-6 More of the various surface features that were noted on stones found at Fyfield Down

quartzite or chert; this rock-type is of Cretaceous age. Fossils found in these sandy sediments are preserved in a similar process as silica replaced the calcium carbonate content of the shells (Hardy 1999: 176–181). A field trip to this area to examine any outcrops or older buildings might provide further evidence.

Ganister is hard, fine-grained quartzose sandstone cemented with secondary silica and typically has a characteristic splintery fracture. Cornish miners originally coined this term for hard, chemically and physically inert silica-cemented quartzose sandstones, commonly, but not always found as seatearths within English Carboniferous coal measures. Where a ganister underlies coal as a seatearth, it typically is penetrated by numerous root traces consisting of carbonaceous material. Ganisters that contain an abundance of fossil roots, which appear as fine carbonaceous, pencil-like streaks or markings, are called 'pencil ganisters'. In other cases, the root traces consist of fine, branching nodules, called 'rhizoliths', which formed around the roots before they decayed (Klappa 1980). It is feasible that this rock-type was found within the Coal Measures in the Pensford area but no reference to it has, so far, been found in publications accessed.

Subsequent field trips were undertaken to examine the rock types used in the sites and monuments around Avebury in Wiltshire. A number of stones in the West Kennet Avenue were noted to have similar features to those seen on Hautville's Quoit, in particular striations (Figure 3-7); other similarities included similar colour and rhizoliths.

Figure 3-7. Striations can clearly be seen on a number of stones within the West Kennet Avenue, Wiltshire.

The evidence noted in the field suggest the likely source for Hautville's Quoit rock type as being sarsen and, perhaps to have originated from the Wiltshire region, possibly from the Fyfield Down area.

4 Geophysics results

4.1 Magnetometer

The survey was conducted using a Bartington 601–2 dual fluxgate gradiometer, collecting data at high density: 8 readings per metre along lines half a metre apart. Traverses were arranged east-west instead of the normal BACAS arrangement of north-south, in order to have maximum control over the influence of the road and its traffic on magnetic interference. Even so, it was not possible to use the magnetometer anywhere near the Quoit itself. Large steel-framed and clad farm buildings and an assortment of nearby farm implements limited the westward extent of the survey.

The survey started on the plateau region at the north end of Home Ground and proceeded south, down the slope of the field. The grids in Bridge Ground were surveyed afterwards, when plots of Home Ground appeared to show a significant anomaly heading under its eastern hedge. Only the top part of Bridge Ground was surveyed, just to the point where it started to slope steeply down eastwards towards the stream.

The results of the survey are shown in Figure 4-2. The most obvious feature is, unfortunately, the high degree of magnetic interference in the northern grid squares, on the plateau close to the Quoit. The plot is also pockmarked with magnetic anomalies, and many of these are likely to be interference from buried iron. A number of them, however, are possibly post holes although they do not form obvious patterns which could be interpreted as structures. A line heading to the south-east corner is believed to be a water pipe, probably a modern insertion using plastic pipe. A darker mark between it and the east hedge of Home Ground gave the impression of an arc of a circular feature, and it was this which caused the survey to be extended into Bridge Ground. There was a small curved feature in Bridge Ground, but this did not correspond well with the apparent feature in Home Ground, so the possibility of these forming a henge is lessened. Doubt is also raised because there are strong ferrous signals in the hedge where the curve meets it. It is still possible the curves in Home Ground and also in Bridge Ground do represent an ovoid feature of archaeological relevance but it is not wise to lay great store by it.

On the plateau, there were relatively fewer magnetic anomalies, but there did appear to be a sub-circular ring of post holes. This is also dominated unfortunately by a large ferrous spike, and the area is shown expanded in Figure 4-1. This does not add further detail in the area to Figure 4-2. The presence of a post circle is unlikely. However, there are a number of responses which individually may represent post holes, even if they are not part of a coherent pattern.

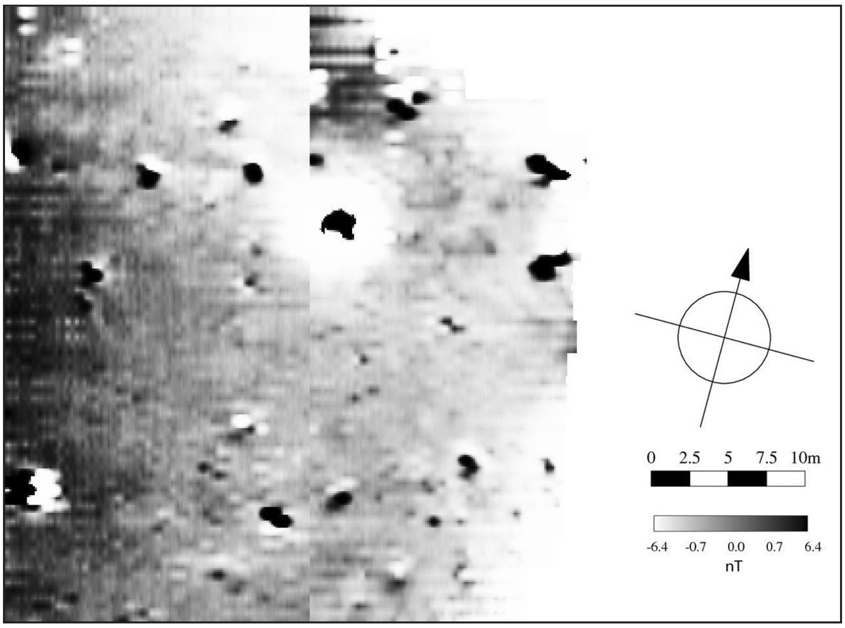


Figure 4-1 **Quoit Farm magnetometry. Detail of possible post circle.**

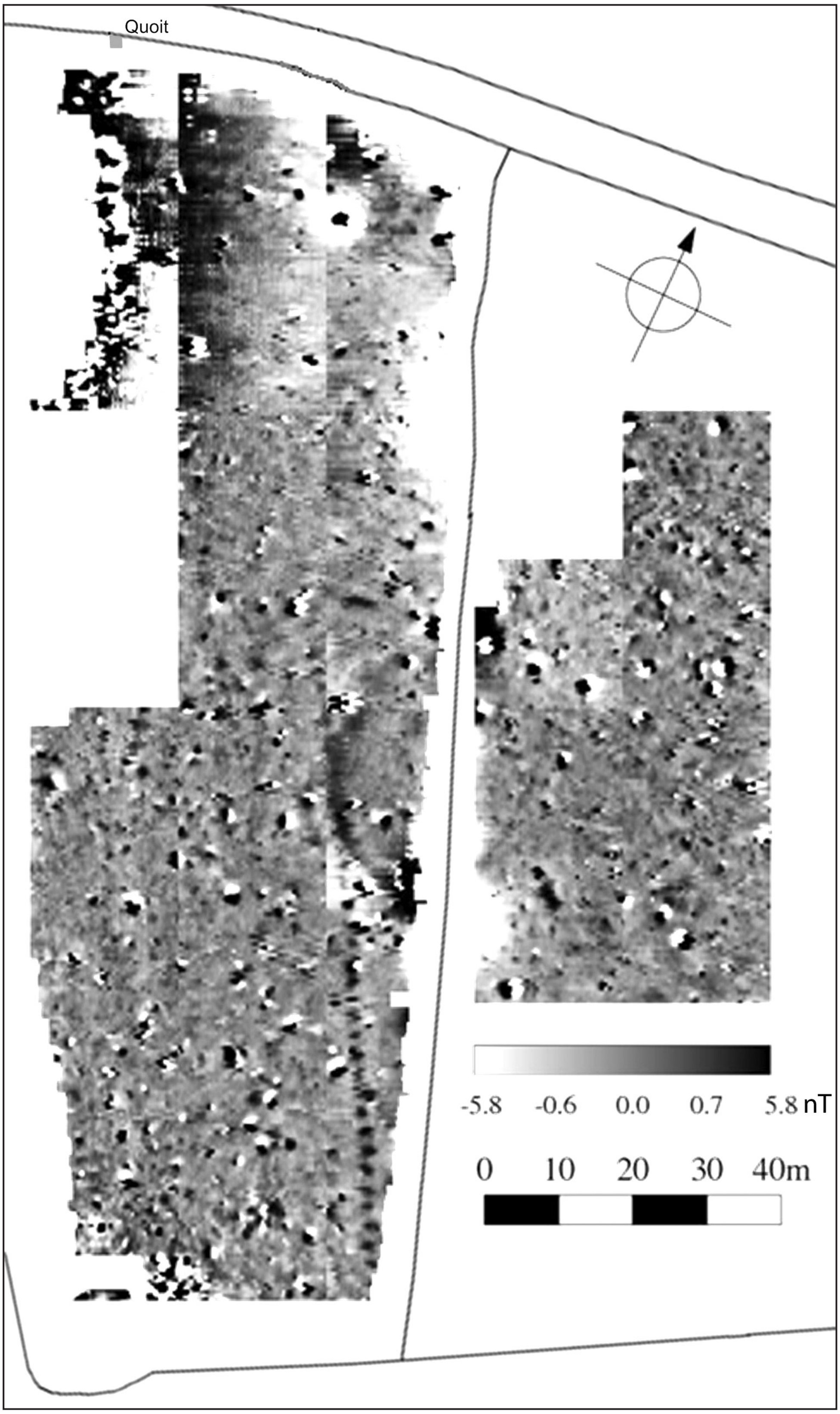


Figure 4-2 **Quoit Farm magnetometry survey**

The mound at the bottom of Big Ground (see chapter 5) was investigated informally with the magnetometer. Scanning its flat top produced a few small anomalies, but no regular effects. A 20 m grid square was laid out as best fitted the hilltop. This square and half squares to the east and west were fully surveyed at high data density. The result is shown in Figure 4-3. Although there was some activity, there was no good pattern of anomalies which could be attributed to structures ancient or modern, so this was an inconclusive exercise.

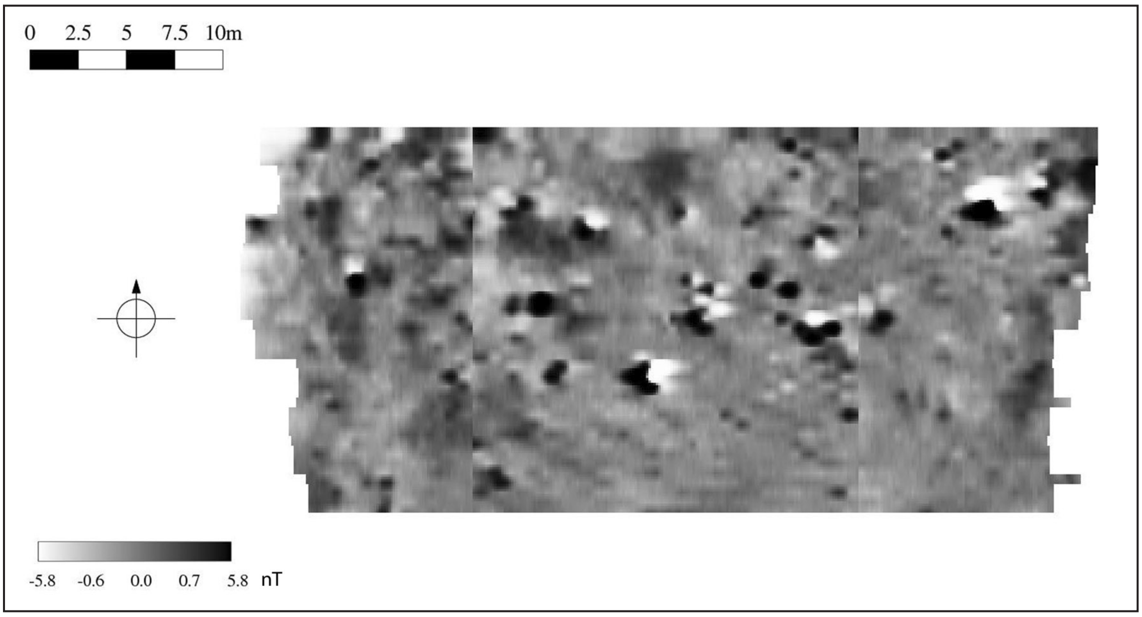


Figure 4-3 **Magnetometry on Big Ground Mound**

4.2 Magnetic susceptibility

BACAS' magnetic susceptibility surveys are carried out with an elderly device generously donated to the Society. It has no data logger, so data have to be entered on paper for later transcription on to spreadsheet. The instrument is very useful for operators of little experience, but there is some inevitable delay between taking readings and seeing a printout of results.

A magnetic susceptibility survey was undertaken over the Quoit itself, on a grid 7 m approximately east-west by a maximum of 5 m north-south. The corner grid coordinates were (986, 1050.5), (992.9, 1049.3), (985.1, 1045.5), (992, 1044.3). Measurements were taken along east-west lines every 0.5 m, lines 0.5 m apart. The output is shown in Figure 4-4. The Quoit itself gave very low readings, suggesting low iron content in the stone. The area immediately around it also gave low readings, probably indicating the backfill of Mercer's 1969 trench. Very high readings were obtained over the edge of the possible roadway heading eastwards down the field.

The magnetic susceptibility was also used in a random survey, which allows a large area to be covered rapidly, but with the risk of missing areas of high reading altogether. Locations are recorded as national grid coordinates on a hand-held GPS device. This is only accurate to 5 m, but is sufficient for plotting results on a map for comparison with other methods such as magnetometry. A reading is taken every 10 to 25 paces across each field. Where high readings are obtained, several other readings are taken close by to determine the extent of the high readings. Results can then be plotted as a contour map, as shown in Figure 4-5.

Readings in Home Ground and Bridge Ground were generally low, apart from a line of high readings at the north edge of Bridge Ground, representing a possible earlier course of the road, and in a patch towards the south, corresponding with possible mediaeval or later activity (see Appendix C).

In Big Ground the area on and around the mound was subject to random survey, but there was no differentiation between mound and surroundings in readings. Otherwise only paths down to the mound and back were subject to readings, leaving such a large area blank that no useful plot could be made.

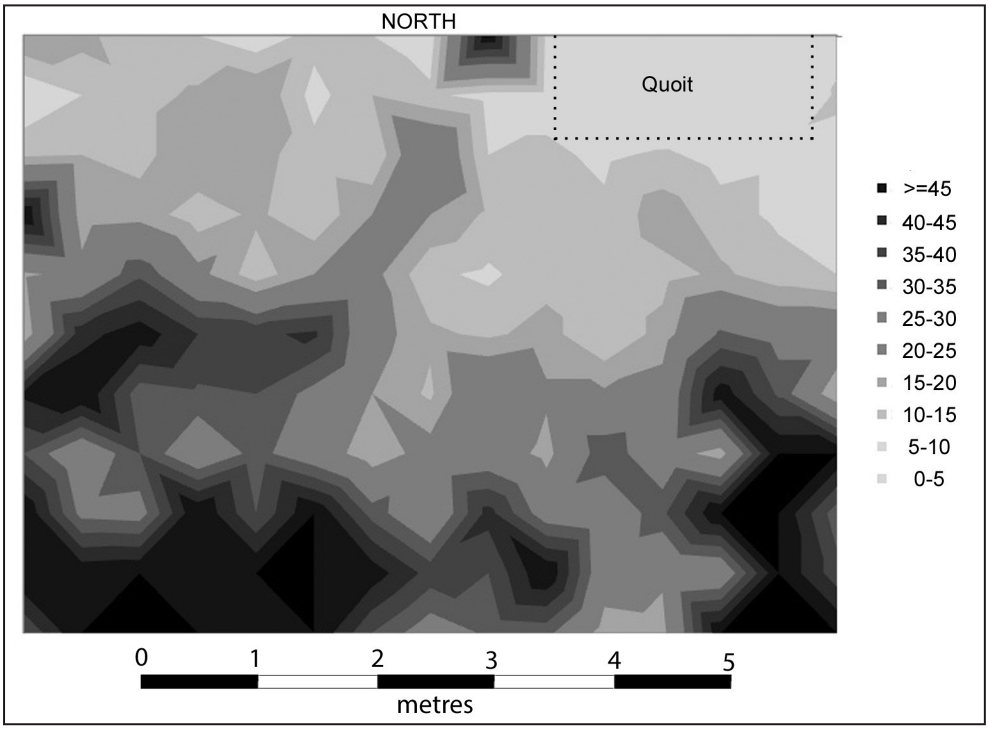


Figure 4-4: Magnetic susceptibility survey over the Quoit

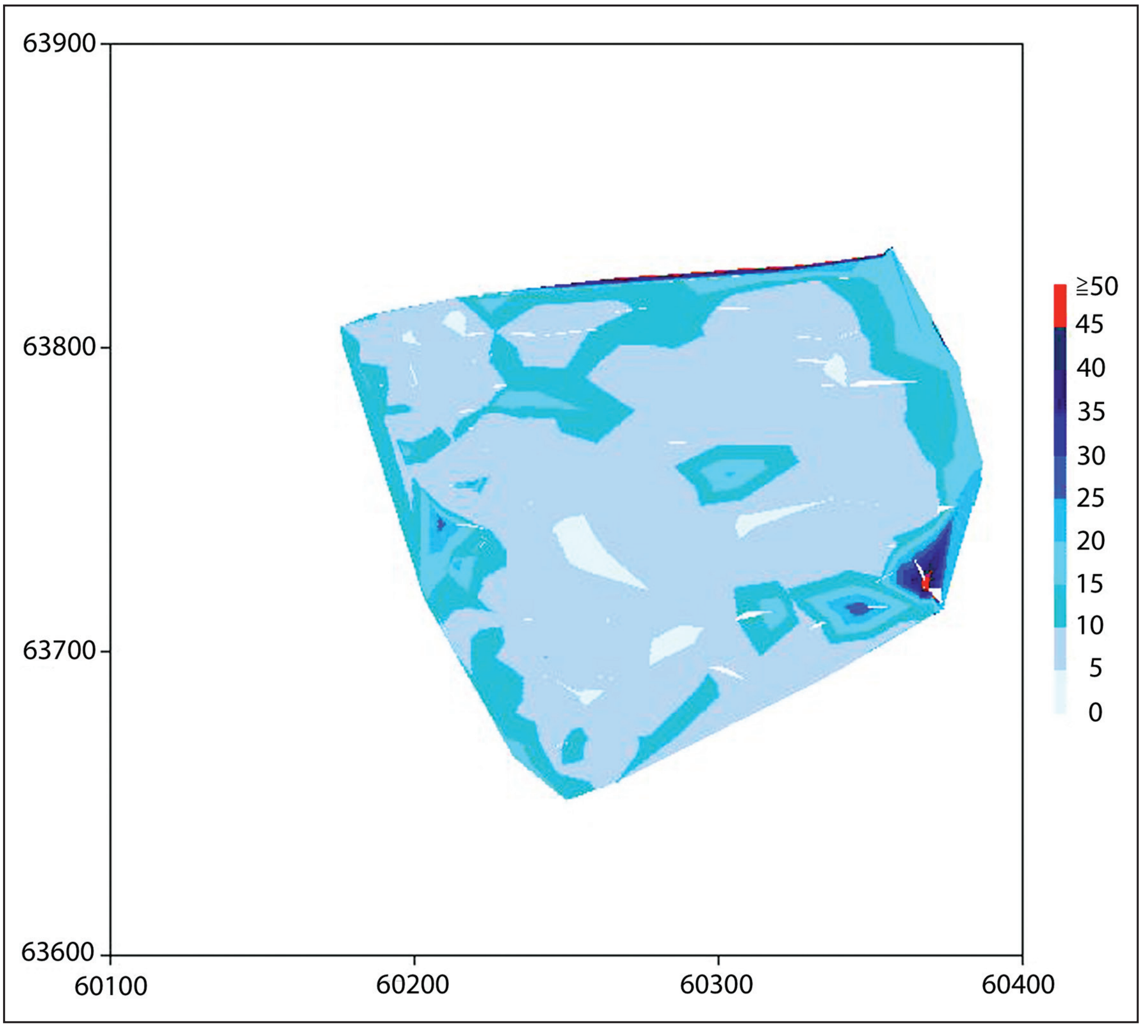


Figure 4-5 Magnetic susceptibility survey of Home Ground and Bridge Ground (OS grid coordinates)

4.3 Ground-penetrating radar (GPR)

The principal use of the radar was an attempt to verify presence of a post circle, and the device was towed over the area 1000, 1000 to 1040, 1040 in lines 1 m apart. The 250 MHz head was used to get sufficient penetration given the wet nature of the soil. Processing of the radar data showed no features at any depth within this square, so the presence of the circle was not corroborated.

The radar was also towed over the Quoit itself, using the small grid also used for magnetic susceptibility and twin-probe resistance. Both 250 MHz and 500 MHz heads were used. The 500 MHz head was found to give more definition, and there was less of a problem of moisture in this corner of the field.

Results of the 500 MHz scan are shown in Figure 4-6. Note that a grey scale has been used instead of the usual 'rainbow1' spectrum as it gave just as good definition. The two plots shown are (a) at 0.55 m nominal depth (assuming 0.06 m/ns wave speed) and (b) at 0.75 m nominal depth. The roadway appears as white at the bottom of the view in both cases. The Quoit appears as white blocks in the top right of the picture at 0.55 m, but has gone by 0.75 m, suggesting a thickness of about 0.6 m, corroborating other measurements.

4.4 Twin-probe resistance

The RM15 was used for surveying Home Ground and the same part of Bridge Ground that was subject to magnetometer survey. It was operated with the standard 0.5 m frame probe separation, with grid squares set to take readings at 0.5 m intervals along lines, lines 1 m apart; 800 readings per grid square. Grids were generally started from the usual south-west corner, heading north, but a few on the western edge were reversed, starting in the north-east corner, heading south. This meant that the useful part of the grid could be surveyed in the first ten lines, while that which gave very high readings over the tractor way could be omitted by finishing the grids with lines of blanks.

The results are shown in Figure 4-7. There is some indication of differentiation of the very wet areas and of firmer ground, and of the tractor way where it was surveyed, but the principal feature was a band of high resistance running close to the northern field edge, approximately 8 m wide. This corresponded with a slight ridge before the field sloped down to the modern road. This ridge had been noticed on the first visit to the field in March 2011 and it was thought then, rather fancifully, that it might represent a long barrow associated with the Quoit. This survey refuted that suggestion, and indicated that this was most likely an earlier course of the road. Footings of a bridge in the stream at the bottom of Bridge Ground just south of the present bridge supported this argument (see Appendix C). Although the bank has been reduced in Bridge Ground, the ridge remained in section in the hedge-line. Figure 4-8 shows the section seen from the east.

The possible post circle shown in the magnetometer survey required intensive resistance survey to see if the idea could be supported. The resistance survey shown in Figure 4-7 indicates a very narrow circular low resistance anomaly in this area but little else which could corroborate the post circle. The square 1000, 1000 to 1040, 1040, was sub-divided into sixteen 10 metre grid squares, although only fifteen were surveyed. The far north-east square was much truncated by hedgeline so was omitted. The settings were left the same on the RM15, so this required readings at 0.25 m intervals along lines 0.5 metres apart. The plot is shown in Figure 4-9. The roadway dominated the top of this plot, so no post holes would be seen through it. The faint circular trace was not evident in this plot. Although the lower part of the plot showed 'holes' among the underlying rock, which might correspond with magnetic anomalies, the result was not sufficient to support the idea of a post circle, and as the radar plot also produced negative results, a post circle on the plateau on Home Ground now seems unlikely, even if one would have been well sited there.

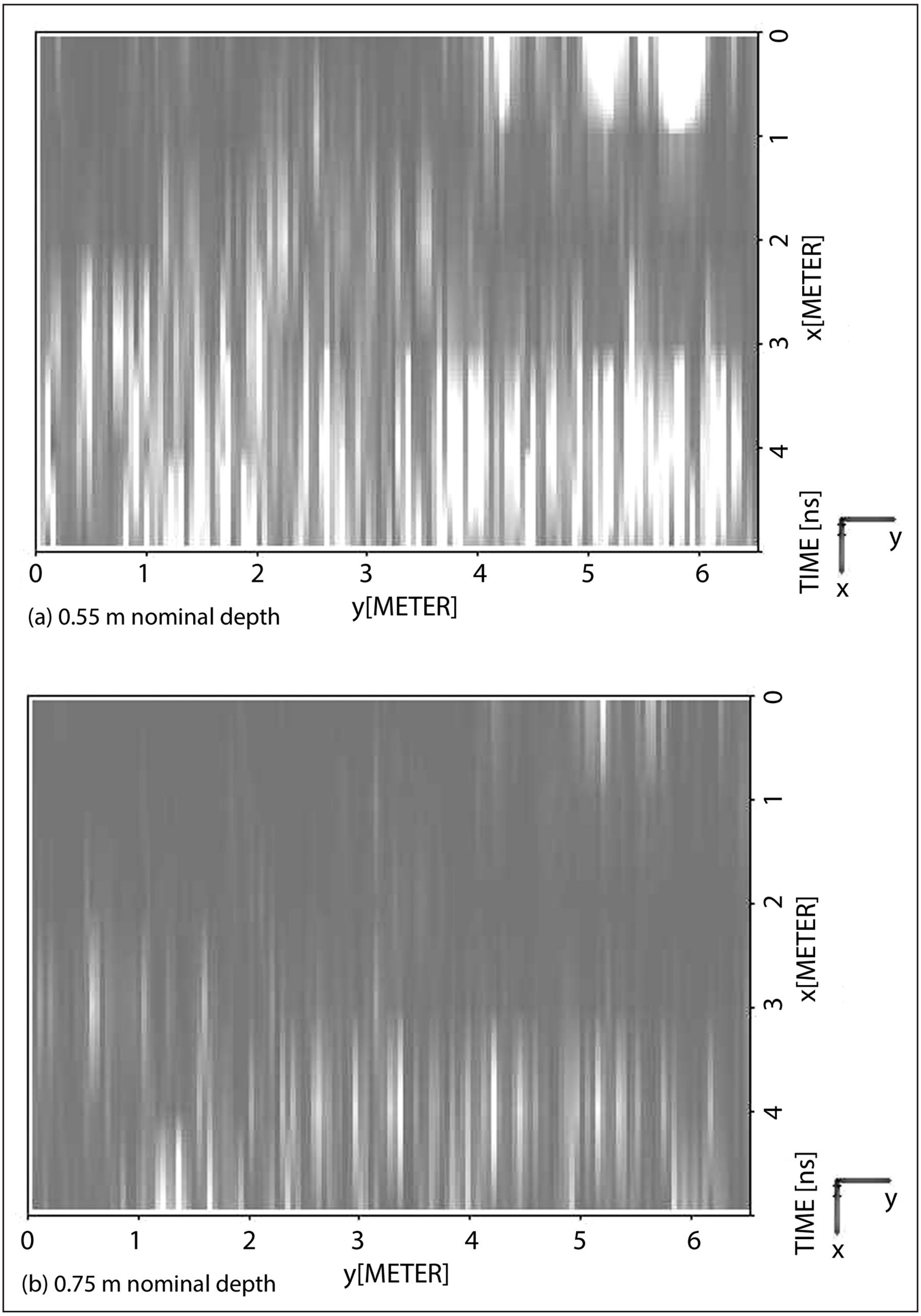


Figure 4-6 Radar survey over the Quoit, 500 MHz.

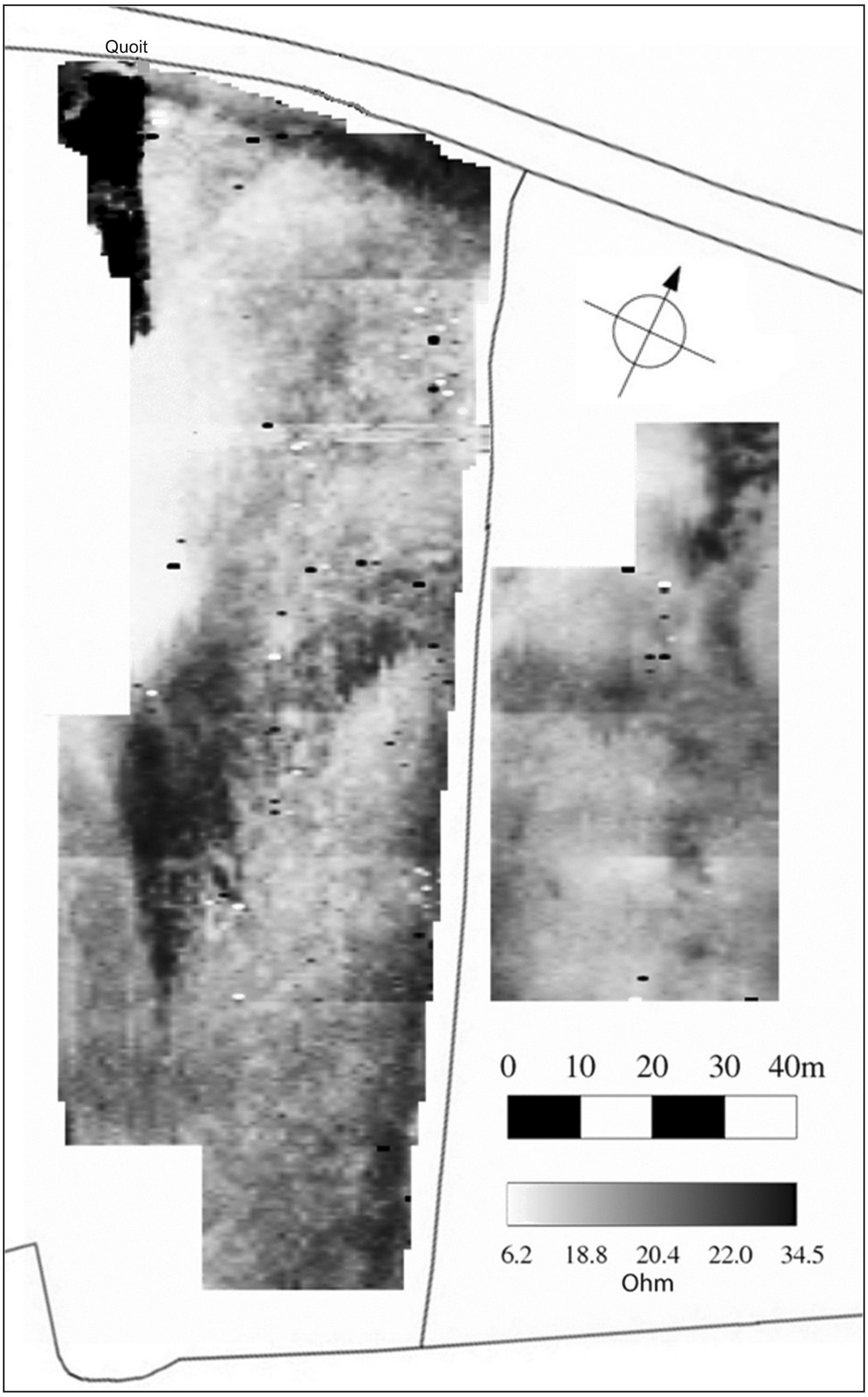


Figure 4-7: Quoit Farm resistance survey

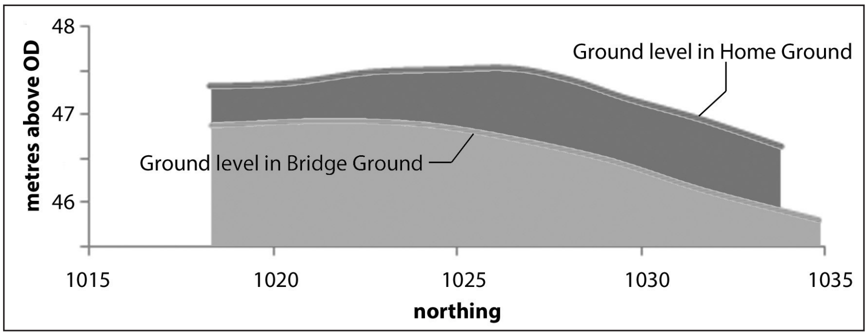


Figure 4-8 **Section through field at Home Ground and Bridge Ground boundary, looking west**

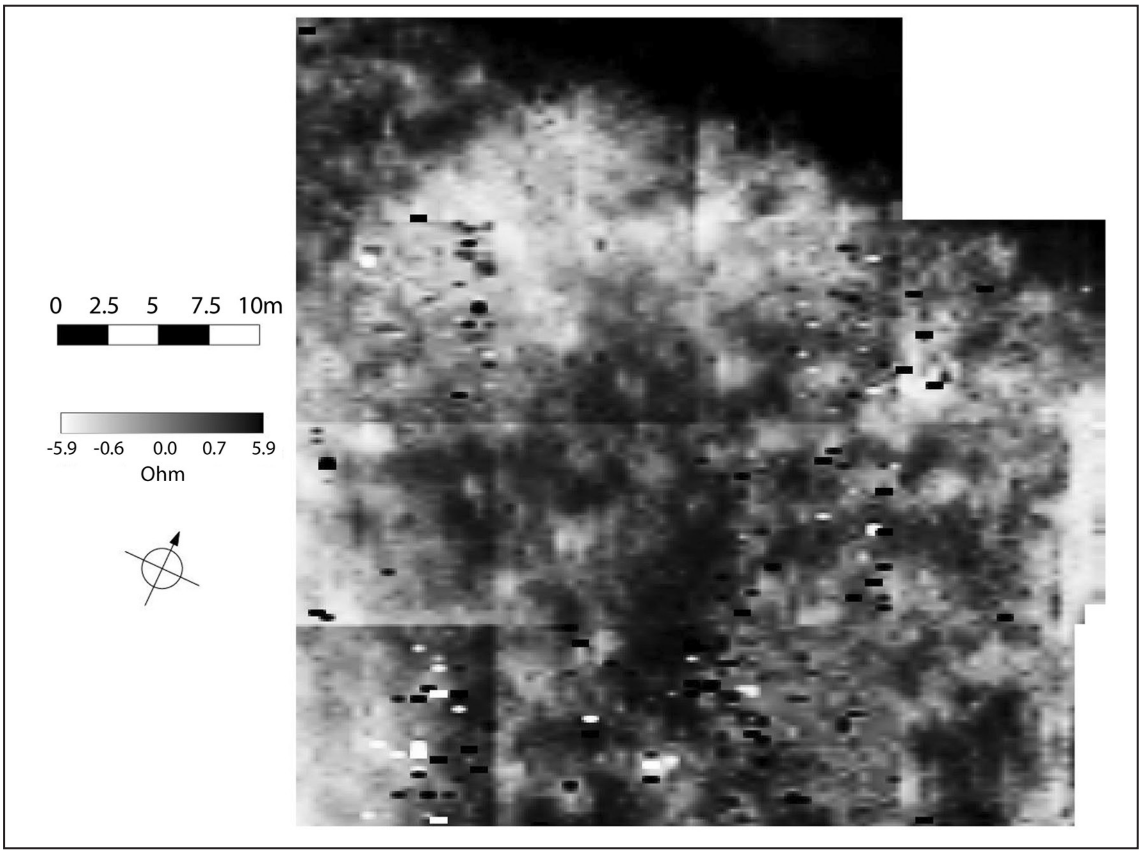


Figure 4-9 **High definition resistance survey of possible post circle area**

The area around the Quoit was included in the main resistance survey, but the high readings from the former road and tractor way so dominated the plot that no detail was evident. The small area set up for radar and magnetic susceptibility was also subject to twin-probe resistance survey. Indeed, an even smaller area was surveyed with measurement stopping before readings became too high over the old roadway. Readings were taken at 0.25 m east-west on lines spaced 0.5 m north-south. Blanks were put in on the Quoit itself. The plot is shown in Figure 4-10. The very high readings on the roadway can be seen at the bottom of the plot, with very low readings around the Quoit, apart from a few higher readings just around the edge of the stone. Radar, magnetic susceptibility and resistance plots correspond well with each other, but may show only the infill of Mercer's excavation.

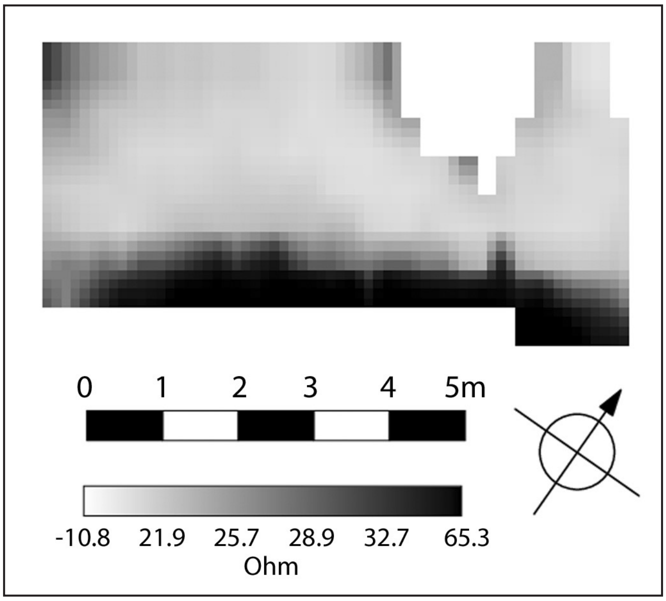


Figure 4-10 **High definition resistance survey over the Quoit**

4.5 Electrical pseudosection profiling

The Quoit and the locations of the oval anomaly and the northern part of Home Ground were subject to resistivity profiling to provide depth information. A list of all the profiles with their start and end grid points, number of probes and spacing, together with a plan of their locations and the outputs, are in Appendix D.

Profiles q5 through q10 were arranged close to the Quoit. In all of them the Quoit shows up as a high resistance feature to a depth of 50 to 60 cms, with a low resistance area beneath. Low resistance is evident for a couple of metres on all sides of the stone away from the hedge-line, which almost certainly is revealing Mercer's excavation trench; this shows particularly well on q10 (Figure 4-11).

Profiles q11 (Figure 4-12) and q12 were oriented north-south across the lynchet, starting close to the hedge-line. The intention was to investigate the possibility that the road originally lay further south. Both the profiles seem to provide evidence that this was indeed the case, with high resistance near the surface for the first 8 or 9 metres.

4.6 Contour survey

Once the grid was laid out, spot heights were taken at all grid corners using the EDM, and other points representing field edge and break of slope were also included. The survey was also continued in Bridge Ground and down to the Big Ground Mound. The survey also covered the whole of Big Ground, although a little sparsely. The small portion of Home Ground which slopes steeply down to the valley bottom was also subject to EDM survey, although no other instruments were used on this portion of the field. This enabled a contour map to be drawn using DPlot software.

The point 1000, 1000 was also surveyed in from the point 1000, 1000 on the Stone Close grid, established in 2009. Measurement of relative easting, northing, bearing and height meant that the Quoit grid could then be related to the Stone Close grid and all plotted on a unified grid.

This had a further advantage in that it provided fixed points over 500 m apart which could be compared with national grid data derived from maps. A further transformation, explained in chapter 2, enabled all unified grid data to be expressed in national grid references, so that maps produced by BACAS could be compared directly with the Ordnance Survey.

The results were checked by plotting the stones from BACAS EDM survey on Stone Close and the Quoit in national coordinates and comparing them with the results quoted in chapter 7 of Oswin et al (2011). The match was excellent in all cases except the Quoit itself, but that derived from BACAS' EDM survey is considered more plausible, and will be used in future work. The contour map produced is shown in Figure 4-13 for both Quoit Farm and Stone Close, related to national coordinates, with the stones of the circles, avenues and Quoit overlaid. DPlot tends to extrapolate in regions where there are no data, but in this figure, all areas not covered by adequate data have been omitted.

This gives BACAS a detailed map of the terrain down to 1 m contours for the area covered, which is very useful in GIS studies. Beyond this area, only the 5 m contour data of the Ordnance Survey are available. Extending the area of contour survey would be beneficial in future, although care must be taken not to survey in ground known to have been altered by machinery in modern times.

4.7 Comment

Although the larger area geophysical surveys were relatively uninformative, intensive study around the Quoit yielded useful data. However, even this was limited to confirming the outcomes of Mercer's excavations (although his material was not available to us at the time of the survey).

There were a large number of magnetic anomalies around the farm: many were undoubtedly modern, being buried iron signals; others may have been ancient. There are the possibilities of there being a post circle near the Quoit and of an ovoid enclosure, but these are regarded as being low. Resistance surveys yielded useful data on post-mediaeval features which are of some archaeological interest in themselves, but tell us little of the origins of the Quoit.

One major benefit was gained from the EDM survey: the ability to link up the Stone Close and Quoit Farm grids, and also the ability to convert references in either to national grid coordinates. With this tool available, it would be useful to extend the EDM survey over as large an area as possible around both banks of the river in order to provide one-metre contour data for intensive landscape study of the immediate area.

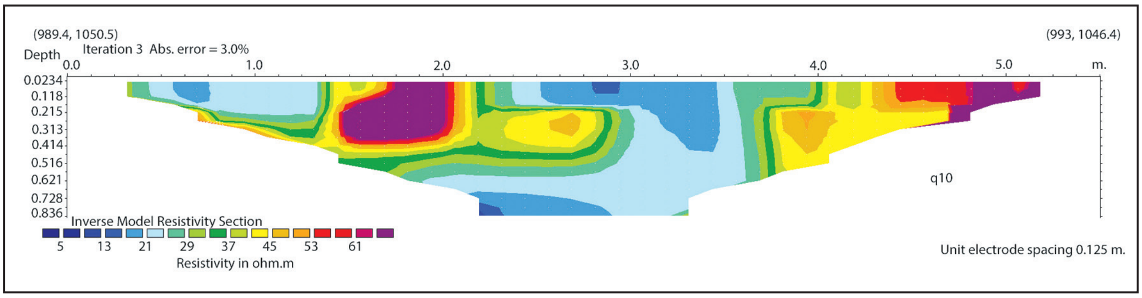


Figure 4-11 Resistance profile near Quoit, q10

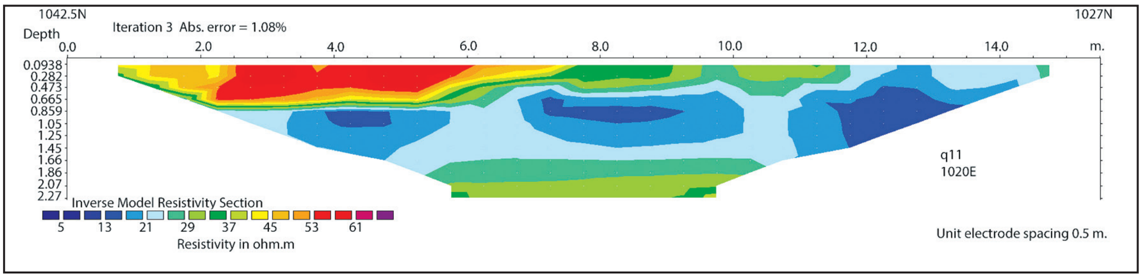


Figure 4-12 Resistance profile q11

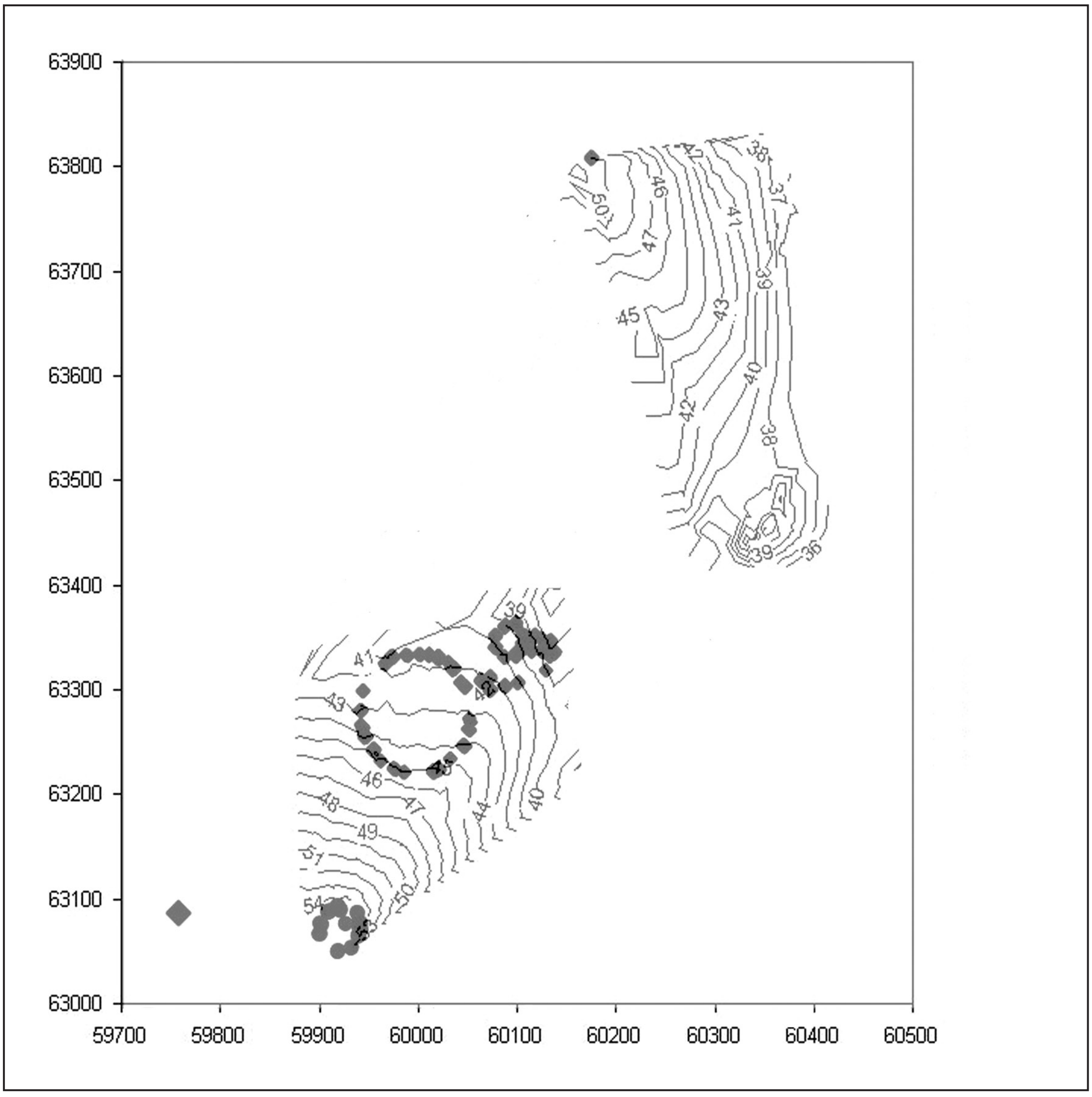


Figure 4-13: Contour plot of Quoit Farm and Stanton Drew monument, with stone locations overlaid

5 The Big Ground Mound

The large field of approximately 10 hectares known as Big Ground lies immediately to the south of Home Ground and Bridge Ground and runs gently downhill to the River Chew. Three-quarters of the way down the field, a long low mound-like hill sits with its long axis across the slope.

Figure 5-1: The mound in Big Ground, looking northwards

The mound has a striking appearance. It is elliptical in shape, 125 metres by 90 metres, with its elliptical flat top measuring 40 metres by 25 metres, at a height of 40 metres OD. When approaching on the downhill slope in Big Ground it rises 2 metres, and then falls 4 metres on the far side to re-join the slope running down to the river. The long axis is oriented WSW-ENE, 65° from true north.

***Figure 5-2* The mound in Big Ground, looking southwards**

From the top of the mound, there would be a fine view of the stone circles 200 metres away in Stone Close if it were not for the line of trees bordering the River Chew. This led to consideration of whether the hill could have had some significance in the Neolithic landscape.

Investigation of the mound was not included in the original project design, so little time was available. However, it was decided that an EDM survey would be carried out to establish its size and position, and geophysical surveys would be executed as time allowed.

Spot heights were taken in a line from the top of the field, across the long axis of the mound, down to the river, to produce Figure 5-3. This shows the mound appears to rest upon the natural slope.

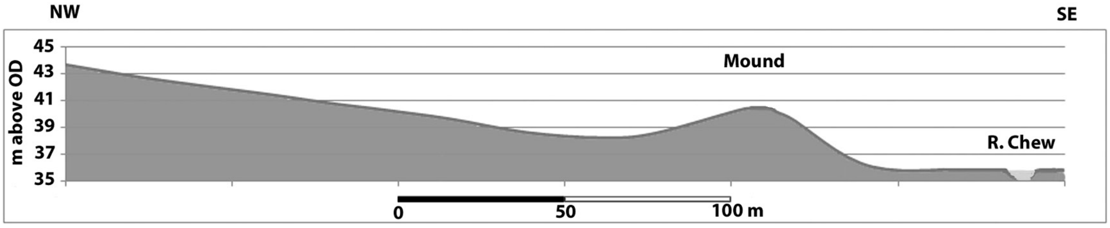


***Figure 5-3* Transect from top of Big Ground down to the River Chew**

As can be seen in Figure 5-4, the mound is situated just over 200 metres away from the NE Circle, and approximately in line with both the NE and Great Circles. The well-known alignment between the Cove and the centres of the two circles would pass to the north of the mound. However, the mound does lie aligned with the large gap in the Great Circle's ditch (see Figure 7-5). Indeed, the view from the mound would have been right through the large gap in the henge, directly into the centre of the main circle.

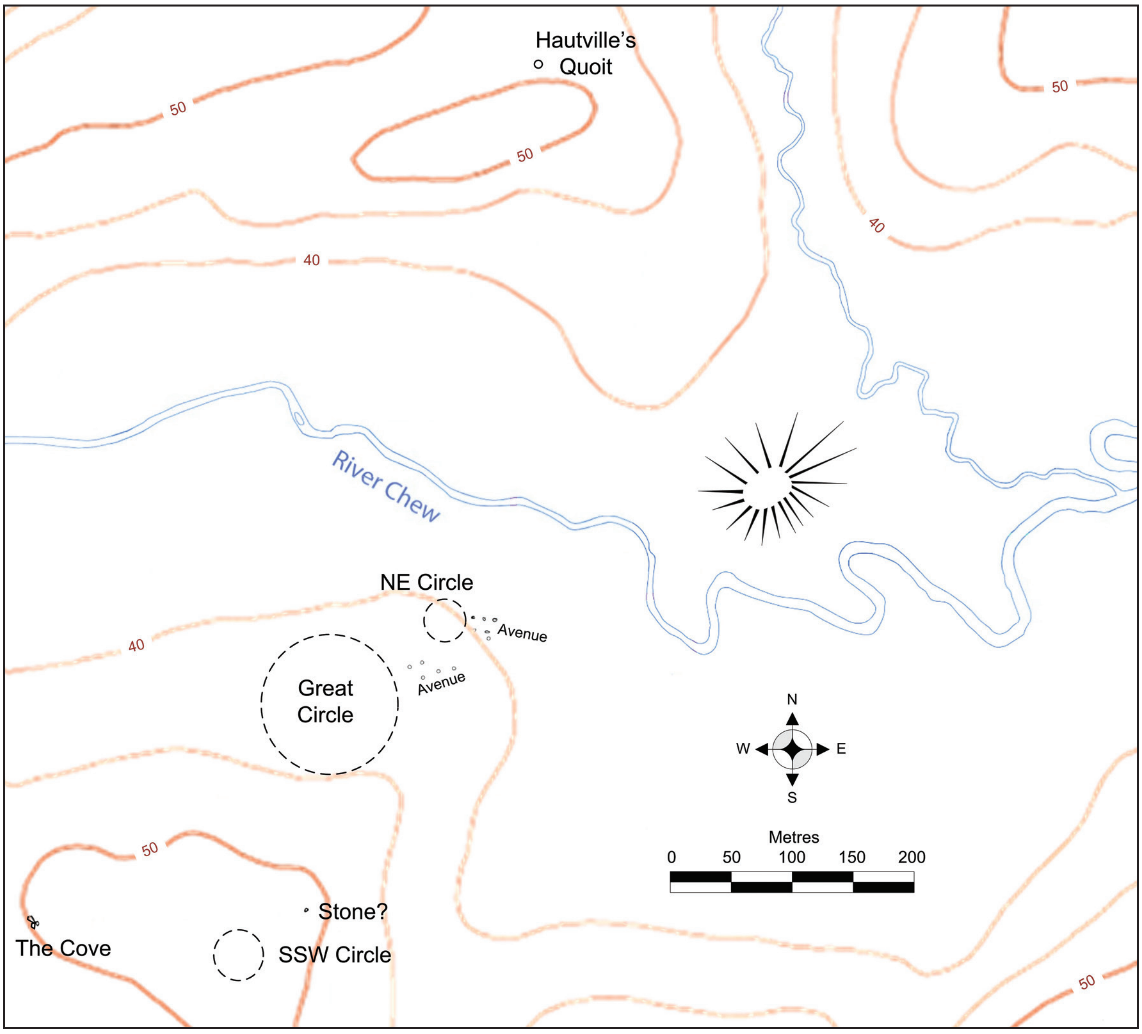


Figure 5-4 **Stanton Drew Neolithic landscape**

There was insufficient time to carry out a full geophysical survey, but an investigation with the magnetometer was carried out. A grid square was improvised on top of the mound and an area approximately 20 m N-S, 40 m E-W was surveyed. The results are shown in Figure 4-3. There were a few small features, but they did not form a coherent pattern.

Further work needs to be done on the mound to establish whether it is man-made, man-enhanced or entirely natural. This would include a number of geophysical techniques, but most important is to extend the survey over the whole mound including sides and base. Any signs of artificial structure are most likely to show at the base of the mound.

6 Stanton Drew and its setting in the landscape

6.1 Methods

This is a first approach to looking at the setting of the Stanton Drew monuments in the local landscape. It is not intended to approach this from a phenomenological (see, for instance, Tilley (1994)) or theoretical standpoint, but to consider visual aspects in a format which can be included in a document.

Firstly, the setting must be understood in terms of physical geography. The stone circles sit on a terrace just above the floodplain of the River Chew. The valley itself here is about 5 kilometres wide, the river heading in an easterly direction. This is midway in its length from where it rises near Chewton Mendip, descends in a north-westerly direction, then heads north as it enters the lower land (this area is now under Chew Valley Lake), before turning east to flow past Chew Magna down to a narrow pinch point at Bye Mills Farm, 1 kilometre east of Stanton Drew. It then enters a narrower valley, almost a gorge, to flow on down via Pensford and Publow before heading north to enter the Avon at Keynsham.

The river passing Stanton Drew is just under 40 metres above OD. To the south, the immediate Mendip ridge rises above 160 metres OD, and to the north, the valley is bounded by a ridge rising to nearly 200 metres OD at Maes Knoll. Hills to the west are more distant, some 6 kilometres away, and are lower, rising to typically 130 metres OD. The valley to the east is also enclosed by hills rising to 100 metres with just a narrow gap for the river to flow through.

Figure 6-1 shows a transect of the valley from north (Maes Knoll) to south (Round Hill) and indicates the position of the Stanton Drew circles, right at the base of the valley. Vertical scale has been exaggerated for clarity.

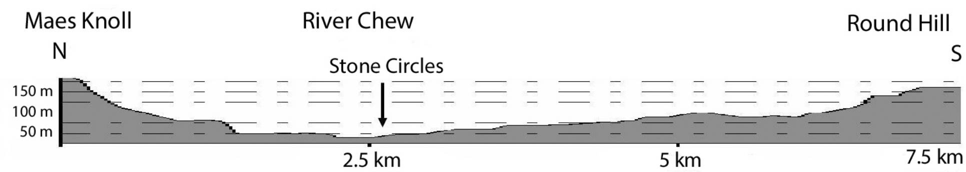


Figure 6-1 **Transect of Chew Valley**

The geology was considered in some detail in Oswin et al (2011), so will not be further elaborated here. This part of the Chew Valley is very lush and green and is given over greatly to dairy farming. It is now quite open, but could well have been heavily forested in earlier times.

The methods used in this report are based mainly on panoramas, giving a visual impression of the views around 360°, both looking out from the monument complex and looking back in. The outward panoramas are based on photography, drawing and digital measurement, the inward on photography. There are assumptions that on average, man's eyesight was similar then to the present in terms of long- and short- sightedness and that the valley was not so heavily forested that all ground features were obscured.

We have also modelled the landscape using GIS techniques to provide comparison with the practical-based methods.

6.2 Outward panoramas – photography

Panoramas were taken from the centre of the Great Circle and also from the centre of the SSW Circle. During the survey at the Quoit, a panorama was also taken from a position nearby. Some photographs were also taken from the top of the Big Ground Mound, but the view southward was much obscured by mature trees along the river.

The prime sites were the Great and SSW Circles as the views from them are very different in spite of their proximity. The SSW Circle has a much more open view, while the Great Circle is much more sequestered. A particular problem with the Great Circle was choosing the place to take the photographs. The chosen position was the mid point of the eastings and mid point of the northings. This was first calculated from values in chapter 7 of Oswin et al (2011) and then located by means of hand-held GPS (only accurate to 5 m, but that was considered sufficient for this exercise). The location was then described by means of the photographs shown in Figure 6-2 so that it could be re-visited without need for GPS. This operation is necessary as the centre cannot be discerned or estimated on the (now) open ground, this being a recognised problem when using alignments within large circles (Heggie [1981: 126]).

(a)

(b)

Figure 6-2 **Alignments for finding centre of main circle. (a) Westward: gate just peeps behind the stone. (b) Northward: tree (arrowed) immediately above stone.**

A similar exercise was also done for the SSW Circle, but it was simpler to estimate the centre (especially given its elliptical shape).

The camera used was a Nikon D700 (12 megapixel) with lens set to focal length 50 mm, to give a 'normal' perspective. Eleven photographs, each slightly overlapping the last, were taken to complete a 360° view. The camera was tripod mounted. Photographs were taken at high definition and stored in TIFF format. Panoramas were assembled in Adobe Photoshop.

6.3 Outward panoramas – drawing

Whereas the camera can give a precise record of the view in early 2012, drawing gives a less accurate record but it does have advantages. One advantage is that the artist can move around a little in order to see round small obstacles such as trees. A second is that modern features such as houses can be omitted, or at least drawn more faintly, so that the natural landscape can be emphasised. The main advantage, however, is that it is a representation and interpretation of what the human eye sees (Wallis 2012). In this sense, it has much more in common with a Neolithic perception of the landscape (although we cannot know how Neolithic people interpreted what they saw) than a photographic record.

The emphasis was on drawing the skyline, but intermediate features and ridges were also part of the brief. The artist could also emphasise features which appeared more important, however distant they were.

The drawings were prepared in quadrants, with slight overlap, and then assembled into panoramas. They were drawn by Bath artist, Dr Karen Wallis.

6.4 Outward panoramas – electronic measurement

The measurements were made using BACAS' old EDM, a Wild Distomat 1600. This had been decommissioned, and was out of calibration, but on checking it was found to be working in a satisfactory condition for this work. The target reflector was not used. The telescope crosswires were pointed at the skyline every five degrees in a clockwise direction, starting from magnetic north, and the angle of inclination recorded. It would have been possible to measure intermediate features as well, but this was not attempted.

Only the altitude of the skyline was measured, so there was no distinction between, say, a low hill close by and a distant high hill. Photographic and drawn methods give some differentiation by way of perspective, but the data gathered here were analogous to those generated for astronomical calculations, as used in chapter 7 of Oswin et al (2011). Agreement between the 2011 calculations and these 2012 measurements turned out to be very good. Figure 6-3 shows comparison between calculated and measured values at the Great Circle; Figure 6-4, that at the SSW Circle.

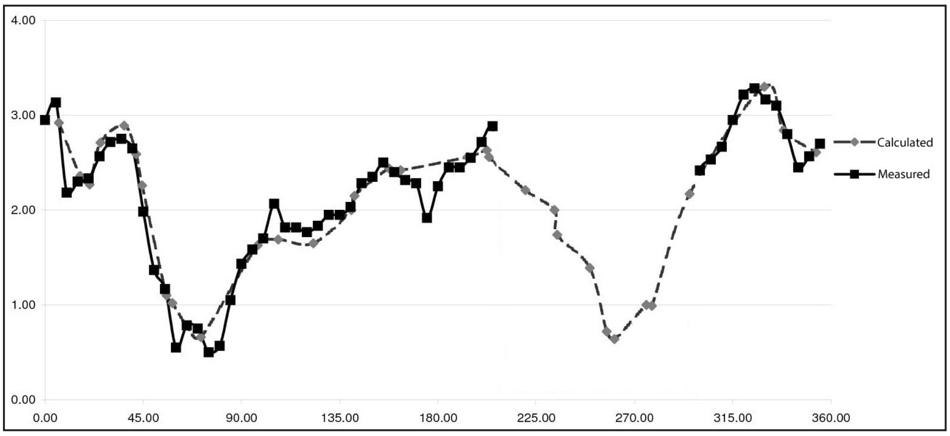


Figure 6-3 **Comparison of measured and calculated skyline values at the Great Circle**

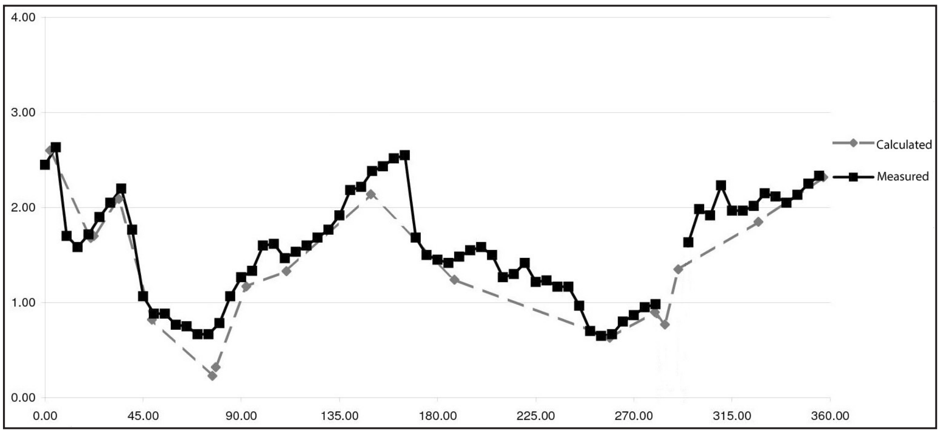


Figure 6-4 **Comparison of measured and calculated skyline values at the SSW Circle**

There are a number of ways of displaying such data, and they need a little discussion.

Apart from tabular form, there are other ways of displaying the skyline from digital measurement. The first of these is the polar plot, as shown in Figure 6-5. This produces a pattern which is complementary to a viewshed created in GIS.

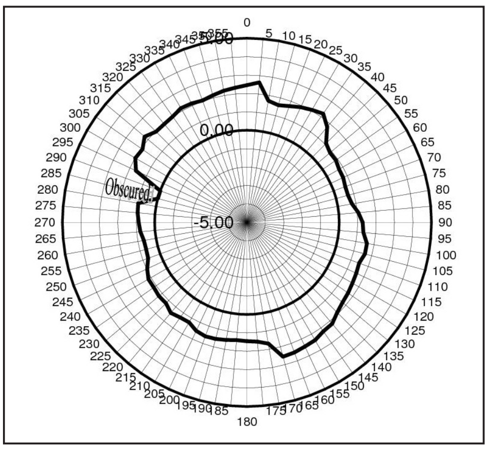


Figure 6-5 SSW Circle horizon altitude, polar plot

Alternatively, the altitudes can be drawn as a histogram, as in Figure 6-6. This is probably the easiest way to see altitudes in any direction, and the plot can be tailored to match the panorama in length, so that comparisons can be made quickly.

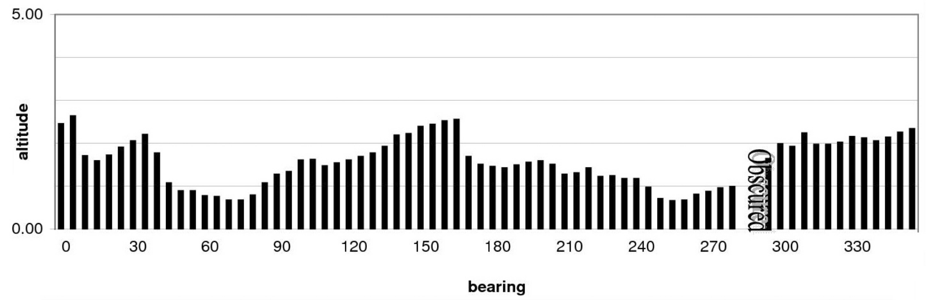


Figure 6-6 **SSW Circle horizon altitude, histogram**

A third method is to use a curved line graph to fit the data. An example is shown in Figure 6-7. This can produce a very naturalistic representation of the skyline, but there are problems of scaling. Theoretically, vertical and horizontal scales should be the same for a true representation, but as 5° is a large altitude, this makes for a very long, thin graph which spreads over 360° along the X axis. The vertical scale needs to be increased, but too large a factor produces a distorted image. In the examples given later, a vertical scale factor of 2 is used. This reasonably mimics the eye's increased perception of angles vertically.

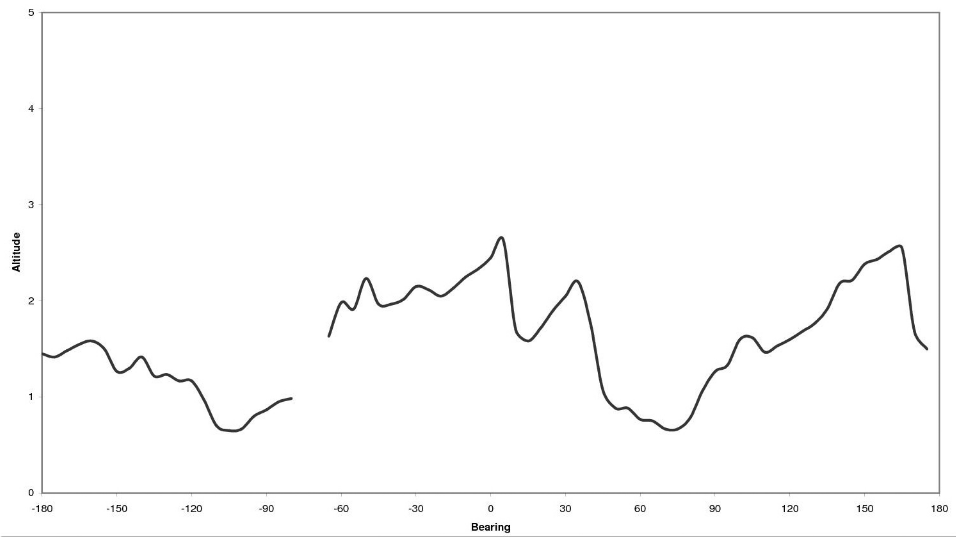


Figure 6-7 **SSW Circle horizon altitude, line graph**

6.5 Outward panoramas – GIS representation

The normal GIS representation – the viewshed – complements the skyline measurement. Where altitudes are lowest, distance of view is likely to be greatest. In order to derive the skyline from a viewshed, it is necessary to measure distance to maximum view and know the relative height of that point. This is a somewhat tedious operation. Viewsheds are useful, however, in giving a quantitative idea of how far visibility extends. They are also useful in that modern features can be ignored, so, for instance, a natural sightline of 10 kilometres is not truncated by a modern housing estate 0.5 kilometres away. Figure 6-8 shows a viewshed generated from the centre of the Great Circle (in pink) with that for the SSW Circle (in green) overlaid, showing greatly increased visibility from the smaller circle on its hilltop.

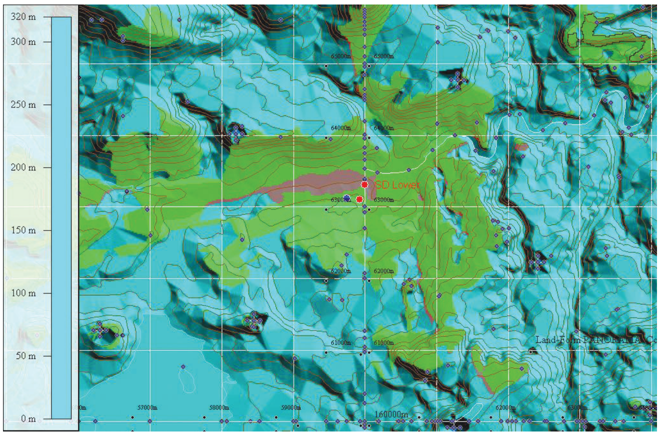


Figure 6-8 **Comparison of viewsheds from Great Circle (pink) and SSW Circle (green)**

6.6 Outward panoramas – the pictures

The problem with displaying a panorama in a document is its extreme aspect ratio. Vertically, all information is likely to be contained within five degrees (plus and minus) whereas the horizontal data must cover 360 degrees. Viewing a flat panorama can also be problematic and disorienting. Panoramas can be stacked one above another so that they can be compared: drawing; photo; digital. This produces a shape easier for the eye.

When viewing a single panorama, it can be easier to divide it into four quadrants. This not only gives it a better aspect ratio (and the four can be assembled into one figure), it also presents a pattern eye and brain can relate to. However, this form of presentation is less good for comparison. Figure 6-9 is an example of a complete panorama and one quadrant only. This is by way of demonstration: the formal figures will follow.

Figure 6-9 **Example of complete panorama (bottom) and one quadrant (top)**

Figure 6-10 (a) shows the panorama from the Great Circle in four quadrants between the cardinal points as a photograph and Figure 6-10 (b) shows the same as a drawing. The most eye-catching portions of both are Maes Knoll and Settle Hill. Maes Knoll received its Iron Age earthworks considerably later than the floruit time of the Stanton Drew monument, but even without the ramparts, it is still the highest and most dominant point. The long whaleback of Settle Hill is also very distinctive. To the south, Round Hill just peeps over the close skyline just beyond the stones of the Great Circle. The view to the south could have been obscured by timber circles and by the earthen bank, but the northward view would have been unaffected beyond the immediate foreground.

Figure 6-11 shows the photographic and drawn panoramas from the SSW Circle. Maes Knoll and Settle Hill still dominate, but the drawing eye has picked out Round Hill to the south (partly obscured by trees in the photograph) and Kelston Round Hill some kilometres away to the east. Knowle Hill to the west is rather obscured, as is the more distant ridge rising to Leigh Down, but that is hidden by the church. The distant ridge of the Mendips to the south-west is more evident in drawing than in photograph.

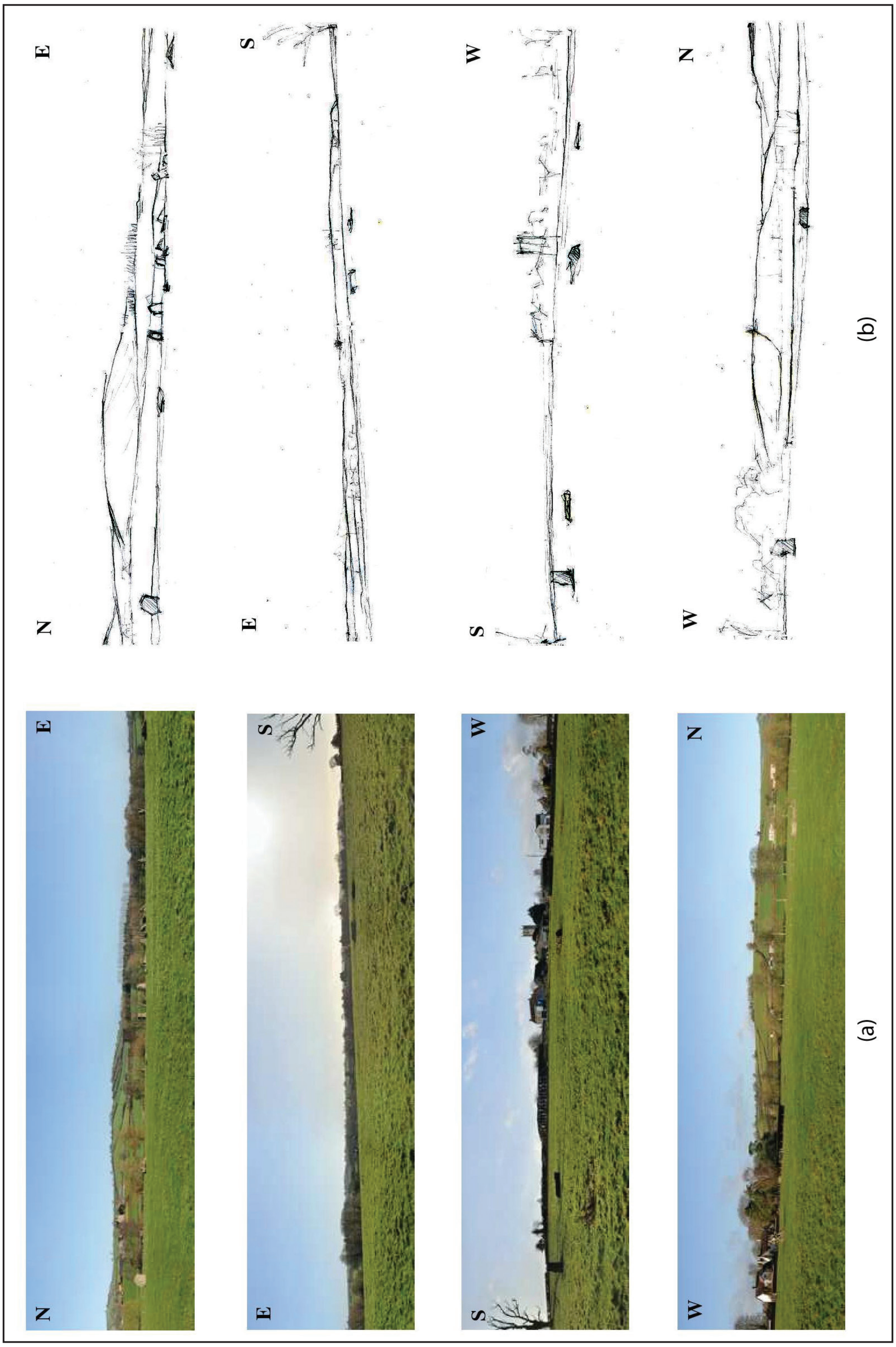


Figure 6-10: Panoramas from Great Circle as (a) photographs (b) line drawings

Figure 6-12 shows complete 360° panoramas from the Great Circle as photograph, drawing and digital elevation measurement. In the digital case, the vertical scale has been doubled. In all cases, Maes Knoll and Settle Hill dominate the view.

Figure 6-13 shows the equivalent full panoramas from the SSW Circle. Maes Knoll and Settle Hill still dominate the photographic and the digital elevation, but in the drawn version, the eye has also picked out Kelston Round Hill and Round Hill.

Panoramas were also completed on the plateau next to the Quoit, the full 360 ° panoramas from photograph, drawing and digital elevation are shown in Figure 6-14. Maes Knoll and Settle Hill become more than just dominant, almost overbearing, as they are that much closer. The near Mendip ridge and

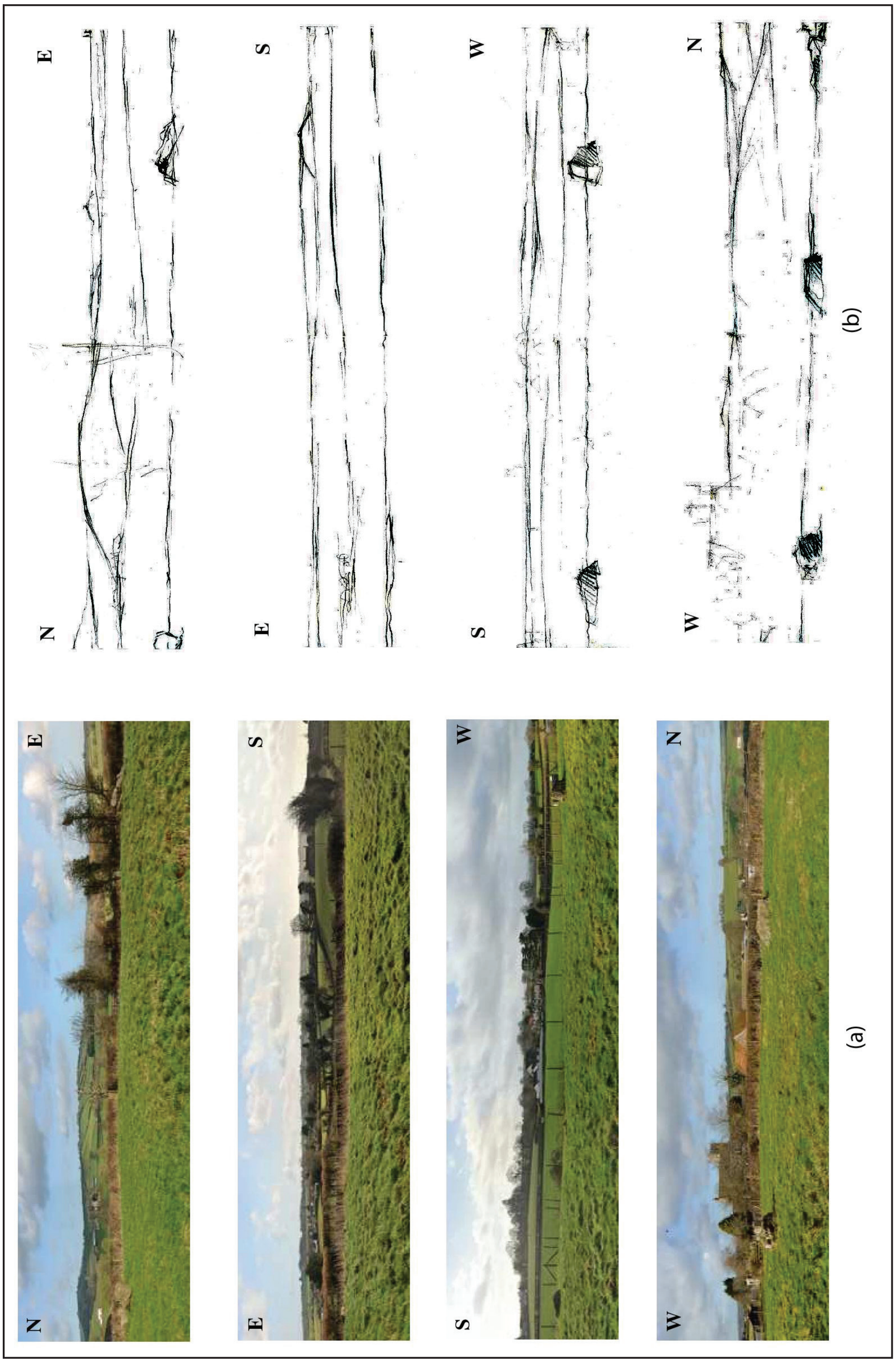


Figure 6-11: Panoramas from SSW Circle as (a) photographs (b) line drawings

Round Hill to the south also become much more evident from this side of the valley. Knowle Hill also becomes clearer to the west, particularly in drawing. The view to the west is totally obscured by close farm buildings, so some discretion was allowed in varying the viewpoint to 'see round these' a little better.

Nowhere in any of the digital elevation measurements did the altitude of the skyline become negative. This is a realistic condition, even in valleys, but not so at Stanton Drew. This is a quantitative statement of how sequestered the site is.

6.7 Inward panorama

This may sound tautologous, but is used to make the complement of the panoramas. It is based on the SSW panorama as that has the widest viewshed, and picks out visible points and then looks back towards the stone circles.

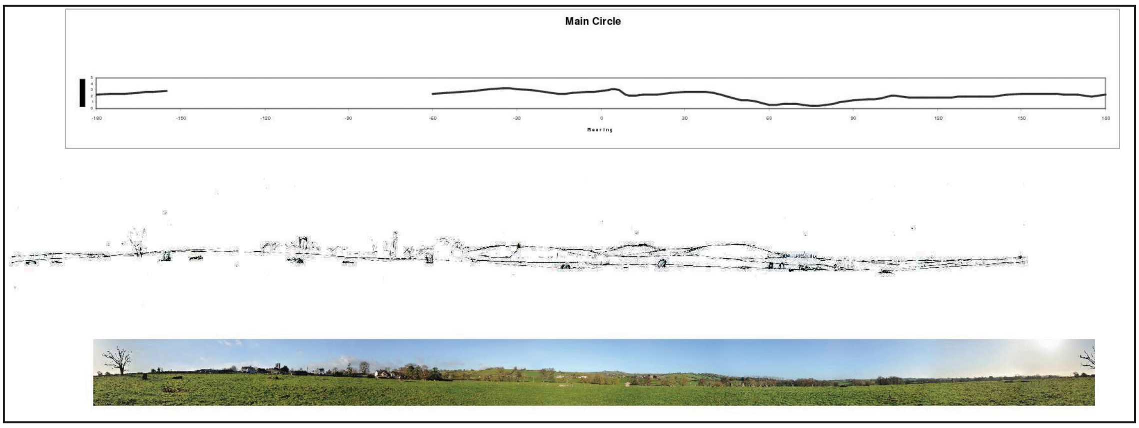


Figure 6-12: Full panoramas of Great Circle, as photo, drawn, and digital elevation

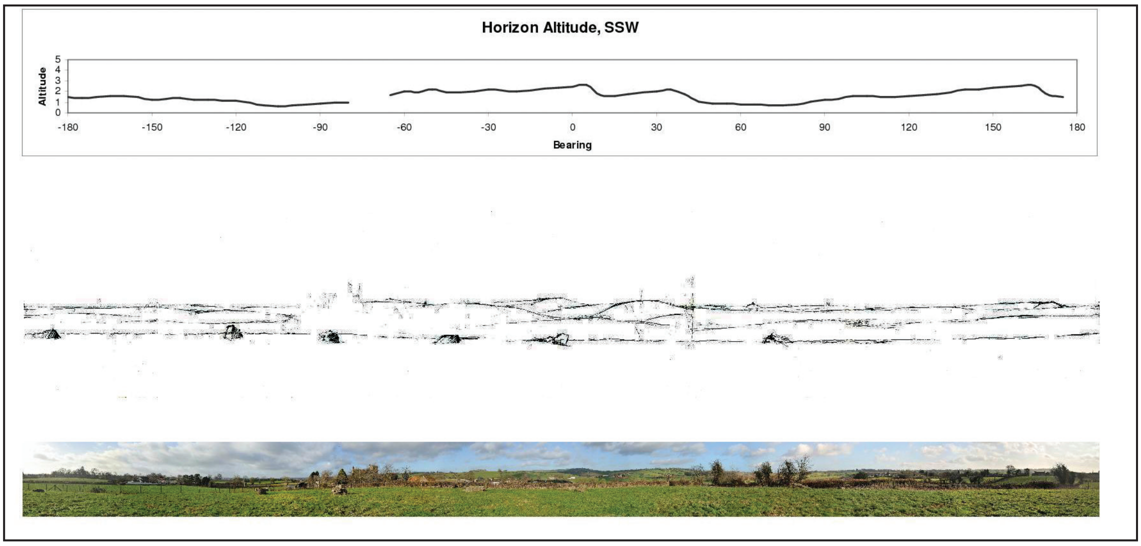


Figure 6-13: Full panoramas of SSW Circle, as photo, drawn, and digital elevation

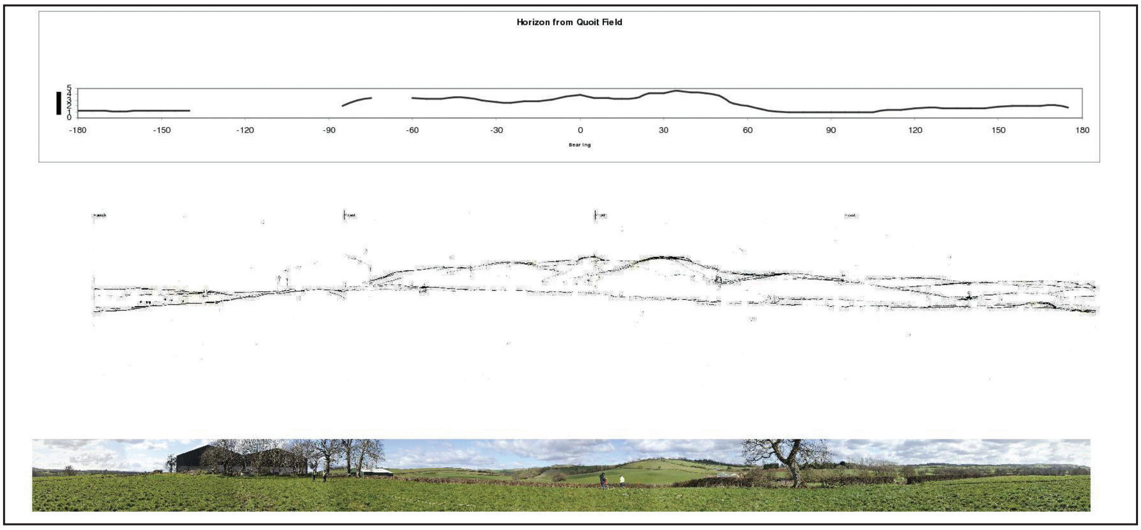


Figure 6-14: Full panoramas of plateau on Quoit Farm, as photo, drawn, and digital elevation

The stones are not easy to discern from any distance away, so a sighting on the church tower is taken to show how the site lies in the landscape from each viewpoint. Stanton Drew church has the only tower in this part of the valley and is well away from the valley sides. The tower at Chew Magna may be taller, but it is set against the hillside and is also sufficiently far away for there to be no chance of confusion.

Although the Great Circle is very difficult to pick out from any distance now, that would not have been the case when there were timber circles within the stones. Figure 6-15 illustrates this point. In Figure 6-15 (a), the stone circle becomes almost indistinguishable under conditions of low light and very low contrast (equivalent to distance, even though this photograph was taken from close to). Figure 6-15 (b) has been doctored by the addition of many posts, scaled to two to three metres tall, and then reduced to the same very low light, low contrast, as in (a). The site of the circle is much more evident. In this example, the henge bank has not even been considered. That could enhance or reduce visibility, depending on how much it obscures, and whether it has a distinctive surface or whether it is just grassed over and blends into its surroundings.

(a)

(b)

Figure 6-15 **The Great Circle (a) as is, and (b) with many tall posts 'inserted', to show how much more visible the monument becomes when post rings are present.**

Figure 6-16 shows the twelve chosen photographic sites for the inward panorama. They are placed at approximately equal angular intervals, at distances from less than 1 kilometre to over 10 kilometres. These are shown both on a terrain map for location and on the panorama from the SSW circle. The views are shown sunwise from north in Figure 6-17 and are listed below (arrows on the photographs indicate the location of the church tower).

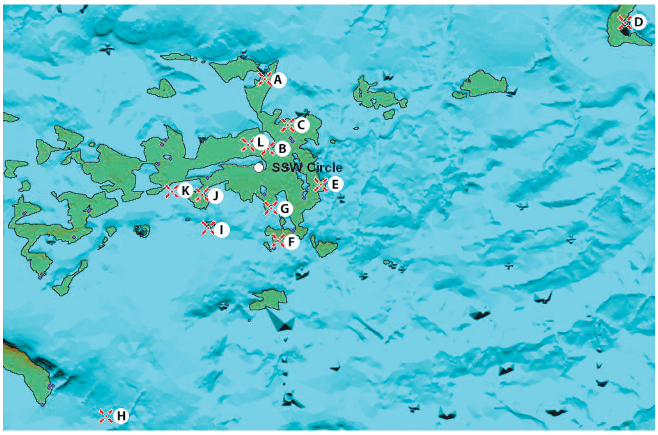


Figure 6-16 **Locations of the twelve chosen photo sites to look inwards to Stanton Drew**

6.8 Comment

The impression given by studying the landscape around the monument is that is well hidden away just above the floodplain in a lush green valley, and surrounded by higher ground. Any local may say 'we could have told you that', but the site is of international importance, and this chapter attempts to apply some sort of quantitative description to the landscape setting of the monument which might be compared with other settings, for instance in the Northern or Western Isles of Scotland. The comparison and analysis may be done also by someone who has not yet had the chance to visit Stanton Drew and see the surroundings themselves.

This is not a definitive description of the setting, nor a theory-based analysis, but it represents a first attempt to find a way of observing its setting. The method can be refined as studies progress.

We do not know whether, or to what extent, Neolithic people were influenced in the choice of site by its setting in the overall landscape. Its proximity to water or its location on firm ground just above the pinch point, as the valley opens out, may have been more important. The availability of stone close to the site was not important – some stones were brought from several kilometres away. By considering the landscape setting, however, we are making knowledge available for further detailed analysis and comparison with other analogous sites.

Fig 16-7A

Maes Knoll ST 601 658

View down on to the stone circles and vale from the dominating high point. The view is focussed by a gap in the nearer ridge to Stanton Drew.

Fig 16-7B

Quoit Farm ST 602 637

This view is from just across the valley, from the promontory below Hautville's Quoit as it heads down towards the Big Ground Mound. The view from the mound itself is much obscured by trees. The stone circles and avenues in Stone Close are easily visible, no more than half a kilometre away.

Fig 16-7C

Guy's Hill ST 608 644

Guy's Hill is the nearer end of Settle Hill, which forms a long whaleback extending away from Stanton Drew, and which is a very distinctive feature of the panoramas.

Fig 16-7D

Kelston Round Hill ST 710 675

This is a distant view from over 10 kilometres away, but from a point which the eye picks out easily. Looking back towards Stanton Drew, even on a clear day, the village and church are obscure, in amongst the dark greenery of the valley, which forms its background. The Mendip ridge shows dramatically beyond it, and Maes Knoll can be seen as the nearest indicator of position.

Fig 16-7E

Disused Colliery ST 618 624

The old colliery dominates the skyline on the ridge which encloses the Chew Valley on the east side. The river escapes through a narrow gap at Byemills Farm. The view is already distant; the site can be located by the church tower and housing estate.

Fig 16-7F

Round Hill ST 605 609

Round Hill juts out from the high ridge above it and is a very distinctive point in the landscape, particularly from the SSW Circle. The site is too distant to pick out clearly, and the Great Circle lies over the ridge, pointing away from here.

Fig 6-17 (and over page) **Inward-looking photographs to Stanton Drew. Church tower marked with arrow where not clearly visible.**

Fig 16-7G

Higher terraces above Upper Stanton Drew ST 603 624

Only if the stones of the SSW circle, or any structures there, were standing, would the monument be easy to pick out from even here, only 1 kilometre or so to the south, on the higher terraces of the Chew valley.

Fig 16-7H

Above Garrow ST 555 553

The site is too distant to see and obscured by a low ridge, but its whereabouts is evident. Garrow is probably the source of the silicious conglomerate stones of the circles.

Fig 16-7I

(I) Knowle Hill ST 584 613

Knowle Hill is a distinctive landmark from close by, but is difficult to pick out from Stanton Drew, partly as trees partly obscure it, and also because it does not stand out on the skyline from there, but has higher ground behind it.

Fig 16-7J

Above Moorledge ST 582 623

Stanton Drew church tower is just visible through the woods, through a gap in the hillside opposite. This site is not clearly visible from Stanton Drew, but it is important because flints have been found in profusion close to here, and there is a large mound towards the bottom of the field which has similarities with the Big Ground Mound.

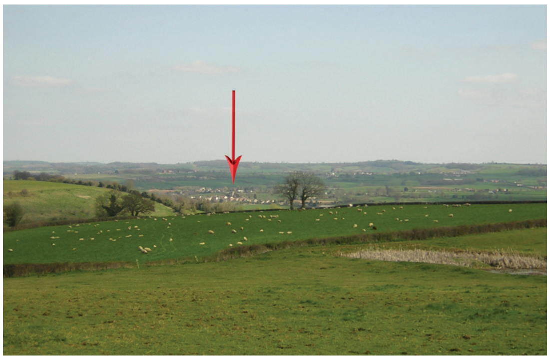


Fig 16-7K

Chew Magna water tower ST 585 639

This is high above the Chew Valley, part way up Dundry Ridge. The church tower can be picked out from here. The monument is now obscure at this distance.

Fig 16-7L

Above the Toll House ST 596 638

Looking down from across the valley, from close by. The stones are visible easily.

7 Discussion and Recommendations

7.1 The Quoit

Roger Mercer failed to find any trace of a stone socket in his excavation in 1969 (see Appendix A). He concluded that if the stone had toppled from its original position it must have stood on the site of the present road, where any trace of a socket would have been destroyed. Alternatively, it could have been taken down from some other location and dragged to the side of the field, for ploughing clearance perhaps. He comments that it would be a remarkable coincidence if the stone had been dragged to a point in exact alignment with other parts of the Stanton Drew site.

The alignment may be leading us to look in the wrong direction. The Quoit lies slightly over the brow of the ridge and is in a landscape which faces north towards Maes Knoll and away from the stone circles. Hence, it may make more sense to investigate towards the north in the field across the road.

Musgrave's (1719) sketch plan of Stanton Drew appears to show Hautville's Quoit, (Figure 7-1 top right), lying in the middle of the Chew Magna-Pensford road. Stukeley (1776) describes the Quoit in 1723 as lying 'flat upon the ground by the road side' which seems more likely, and in a plan (Figure 7-2) shows the Quoit as being on the southern side of the road. Mercer (1969) came to a similar conclusion that the Quoit's 'relationship to an abutting lynchet and the documentary history of the site would seem to indicate its original position to be at the side of the B3130 Pensford – Chew Magna road.'

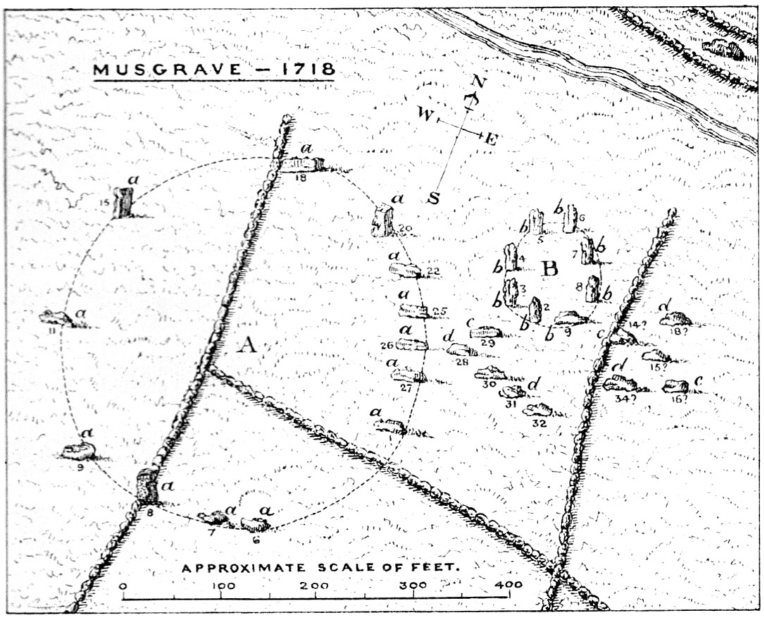


Figure 7-1 **Musgrave's 1718 plan as reproduced by Dymond (1896)**

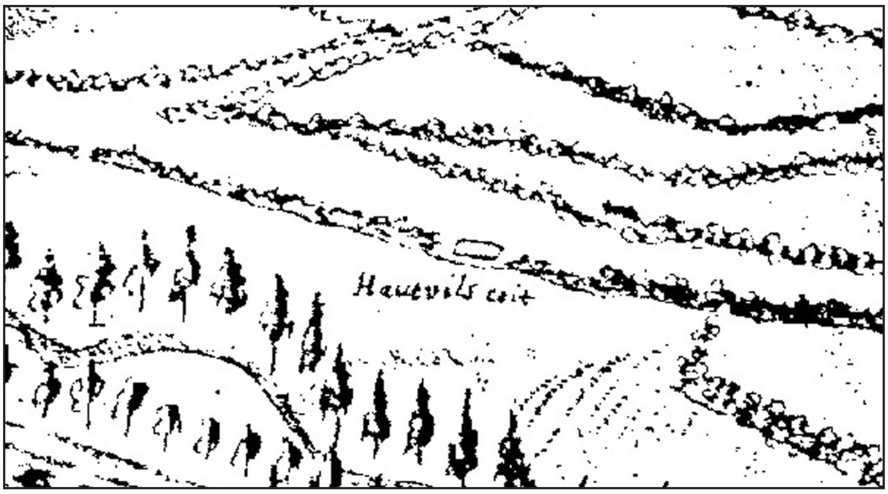


Figure 7-2: Extract from Stukeley's 1723 plan of Stanton Drew (Stukeley 1776)

The Quoit is now on the field side of the roadside hedge (part of it lies under the hedge) so either the Quoit or the field boundary have moved, but it also seems likely that the course of the road itself has changed since the early eighteenth century. The resistance survey (Figure 4-7) shows a band of high resistance about ten metres wide running parallel and adjacent to the road. This band of high resistance is also seen near the surface in two of the profiles (e.g. Figure 4-13). The band corresponds to the northern side of the 'abutting lynchet' described by Mercer and it is likely that this is the original course of the road and the lynchet is the original road side.

The lynchet continues into Bridge Ground, though diminished, and runs down towards the stream, where there is a possible earlier bridge site alongside the current bridge: stone footings are visible on the far bank (see Appendix C).

The most likely time for the road to have been diverted is after 1814 when an Act of Parliament (54 George III c. 28) added the road to those controlled by the West Harptry (sic) Turnpike Trust. A new road and bridge could have been constructed alongside the old. The dogleg in the field boundary by the bridge suggests that the new road used the old bridge for a time until the new bridge was built.

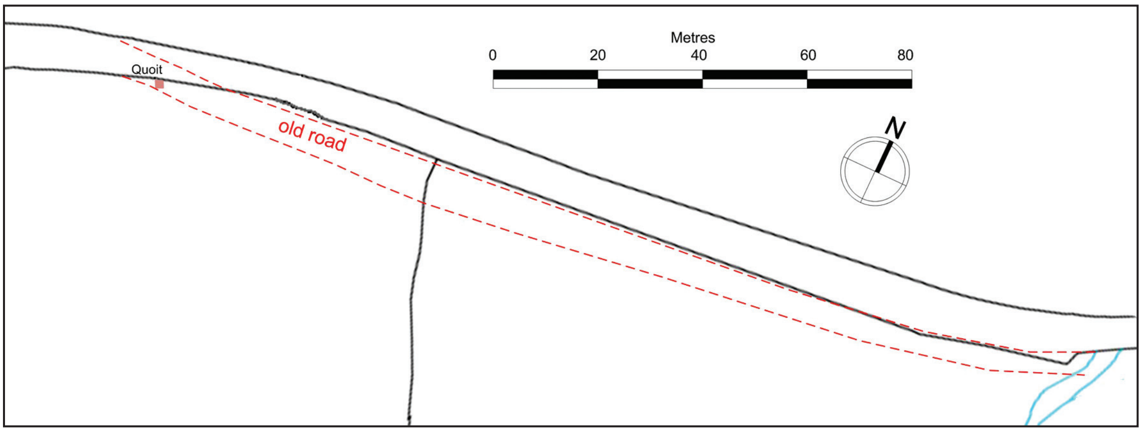


Figure 7-3 **Possible original course of road**

As the area near to the Quoit had been disturbed by the earlier excavation, and by the metalling of the current farm track, it was not possible to determine precisely where the old road lay in the vicinity of the Quoit.

7.2 Home Field and Bridge Field

An interpretation of the magnetometry is given in Figure 7-4.

There is a pattern of what could be large and small post holes just south-east of the Quoit. The area within this feature is spoilt by a large spurious ferrous signal but is otherwise free of the small features which litter the rest of the field. The 'post holes' are as much as 2 or 3 metres in diameter and could be for timber posts, or sockets for stones. However, no definite geometric pattern can be identified and no corroboration for these anomalies can be detected in any of the other surveys: twin-probe resistance, resistance profiling, magnetic susceptibility, or radar.

Halfway down the field, a curved anomaly extending from the east hedge suggests part of a circle, some 40 m in diameter, which could be a ditch. The survey was extended beyond the hedge into Bridge Ground, but there was no sign of the circle continuing. There is a slight curved feature and a continuing scatter of individual signals. The straight line extending southwards from the curved anomaly is a non-ferrous water pipe crossing Home Ground heading to the south-east corner of the field.

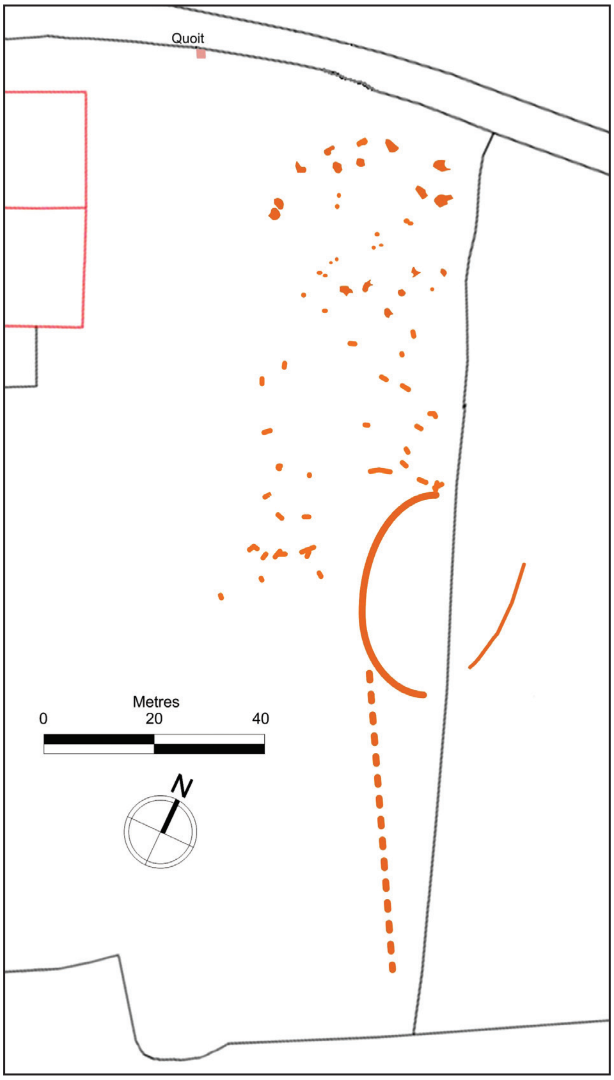


Figure 7-4 **Interpretation of the magnetometry survey in Home Ground and Bridge Ground**

7.3 The Big Ground mound

The mound-like hill in Big Ground occupies an interesting place in the landscape. It is situated just over 200 metres away from the NE Circle, and approximately in line with both the NE and Great Circles. Note no alignment is being claimed here; in particular, the well-known alignment between the Cove and the centres of the two circles would pass to the north of the hill. The hill is so large that any number of alignments could be concocted.

The regular shape and flat top lead to the question whether the mound is just a natural outcrop, or if any or all of it is man-made and whether any structures were once placed on it, or if there is any evidence for an encircling ditch. The small magnetometry survey was inconclusive and a fuller survey is desirable. The transect in Figure 5-3 shows how the mound appears to rest on the slope. It is possible that some or all of it is of artificial construction, but the proximity of the River Chew suggests that fluvial processes are perhaps more likely.

Whether natural or artificial, the mound would have been known to the people of the Stanton Drew monument. This mound's position in the landscape, proximity to the river, and its view across the two stone circles make it plausible that it is of archaeological significance and deserves further investigation.[1]

The symbolism of water in proximity to Neolithic monuments, particularly henges and stone avenues, and links to purification or fertility rituals, has been commented on by various authors (e.g. Brophy 2000; Burl 1993: 72; Leary and Field 2011; Richards 1996). Another, not mutually exclusive, theory is that henges were placed close to navigable rivers and so were important for

[1]There is also another possible mound near Moorledge, within a couple of kilometres of Stanton Drew. This may not be relevant but it should be subject to at least cursory inspection.

communication purposes and networks of exchange (Bradley 2007: 134). Henges are a class of monument with a circular space surrounded by an enclosing inner ditch and outer bank with one or more entrances. The Great Circle has been thought to be a henge since the English Heritage magnetometry surveys of 1997 and 2000 (David et al 2004), confirmed by the BACAS surveys of 2009 and 2010 (Oswin et al 2009; 2011), revealed that the Great Circle had an encircling ditch of 5 to 7 metres wide with an outer diameter of 136 metres. There is a large entrance of 50 metres to the north-east, and the BACAS survey showed a second entrance of about 10 metres in width towards the south-west. There is no physical evidence for the encircling bank (banks rarely show up as magnetic anomalies) and it is assumed that it must have been deliberately levelled or the sandy soil degraded with time and cultivation. Although the bank remains a hypothesis, the site shares other characteristics with henges. They are nearly all in low-lying situations, on valley floors and close to water (cf. Chapter 6). Some henges have stone avenues linking them with rivers.

The north-east entrance of 50 metres is large (it is about 12% of the ditch's length). Jodie Lewis (2005: 99) comments that the north-east entrance disregards Maes Knoll and 'instead looks towards the River Chew and the low ridge behind it'. The 'low ridge' is the Big Ground mound. The ditch entrance seems to point directly at the mound (Figure 7-5), and from the centre of the Great Circle the mound would have been framed by the gap in the conjectured bank. However, the more important line of sight may be in the reverse direction; from the mound there would have been a view straight into the interior of the Great Circle and its rings of posts.

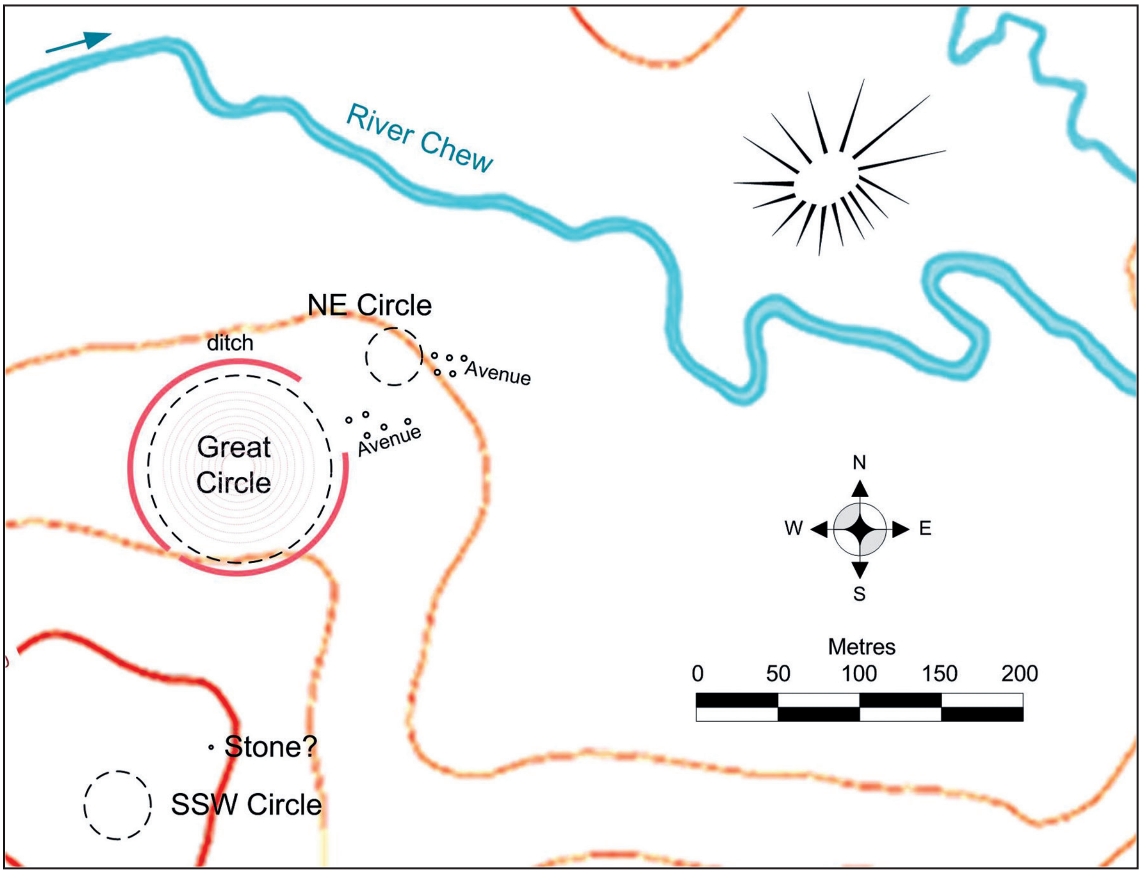


Figure 7-5 **The Great Circle ditch in relation to the mound**

Large (though admittedly circular) mounds occur in the Neolithic landscape at a number of places, including the best-known at Avebury (Silbury Hill), the Hatfield Mound at Marden, the Conquer Barrow at Mount Pleasant, and the Great Barrow at Knowlton, and all of these have proximity to water (Leary and Field 2011). Silbury Hill has a ditch that often fills with water. The Marden henge sits in a loop of a stream and its ditch regularly contains water; the Hatfield Mound also had a large moat-like ditch which was filled by springs. The Conquer Barrow sits above the floodplain of the River Frome and the Knowlton site lies by the River Allen. A mound of similar proportions has recently been discovered below the present surface of Stenness Loch in

Orkney (Bates et al 2012). This would have been on dry land at the time the Ring of Brodgar was in use.

Prior to the construction of Chew Valley Lake extensive flooding was common, in particular at Stanton Drew (Rahtz and Greenfield 1977: 6). The Environment Agency's flood map (Figure 7-6) shows that the area at significant risk of flood today (a 1 in 75 chance of occurrence in any year) extends from the edge of the NE Circle across the valley to the foot of the mound. At times of flood, the mound would form a promontory surrounded on three sides by water with the NE Circle on the opposite 'bank'.

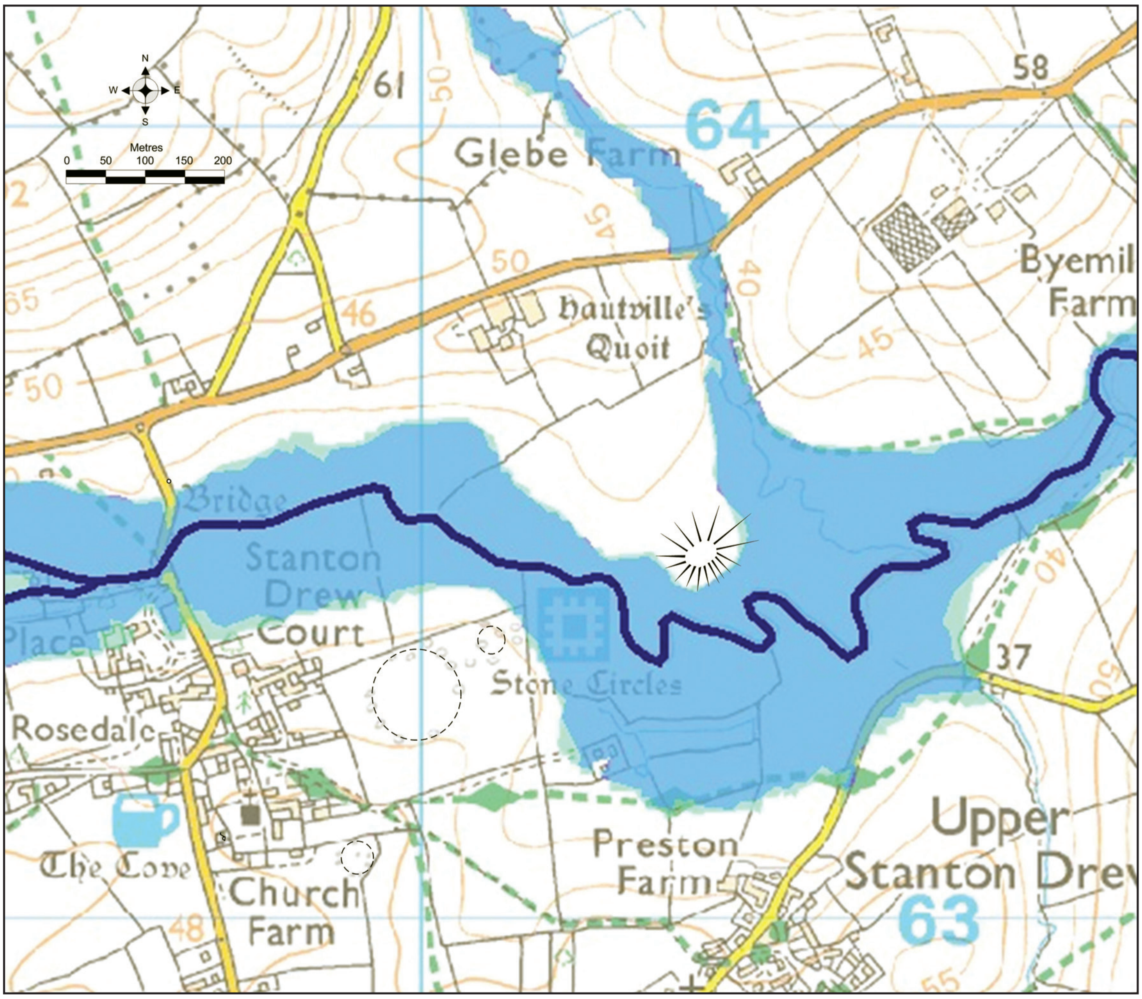


Figure 7-6 **Area at significant risk of flooding**

The 1885 Ordnance Survey map provides evidence for the frequency and extent of flooding in the nineteenth century (Figure 7-7). The field boundaries, the footpaths and tracks, especially on the north side of the river, respect the edge of the floodplain, dividing areas that would be drier from those at risk of inundation. The limits on the northern side of the floodplain are still marked in many places by a terrace.

Neolithic water tables were similar, or perhaps higher, than today (Leary and Field 2011) so it is reasonable to assume that flooding occurred periodically when the Stanton Drew monument was in use. The River Chew floodplain is at its widest at Stanton Drew until the Chew reaches the Avon at Keynsham. Floods could have created a large body of water sweeping past the stone circles, with the mound jutting out as a promontory into the waters. The stone circles stand just above the floodplain and the view from them would have been of water to the north and to the east, with the mound conspicuously standing on the far bank. The Great Circle's ditch may also have held water for some or much of the time.

It can be safely assumed the appearance of the Chew valley in the Neolithic would have been different in some respects to today, but nothing is known about changes in course of the river or floodplain or the depth of sediment through time. In southern Britain there is little evidence

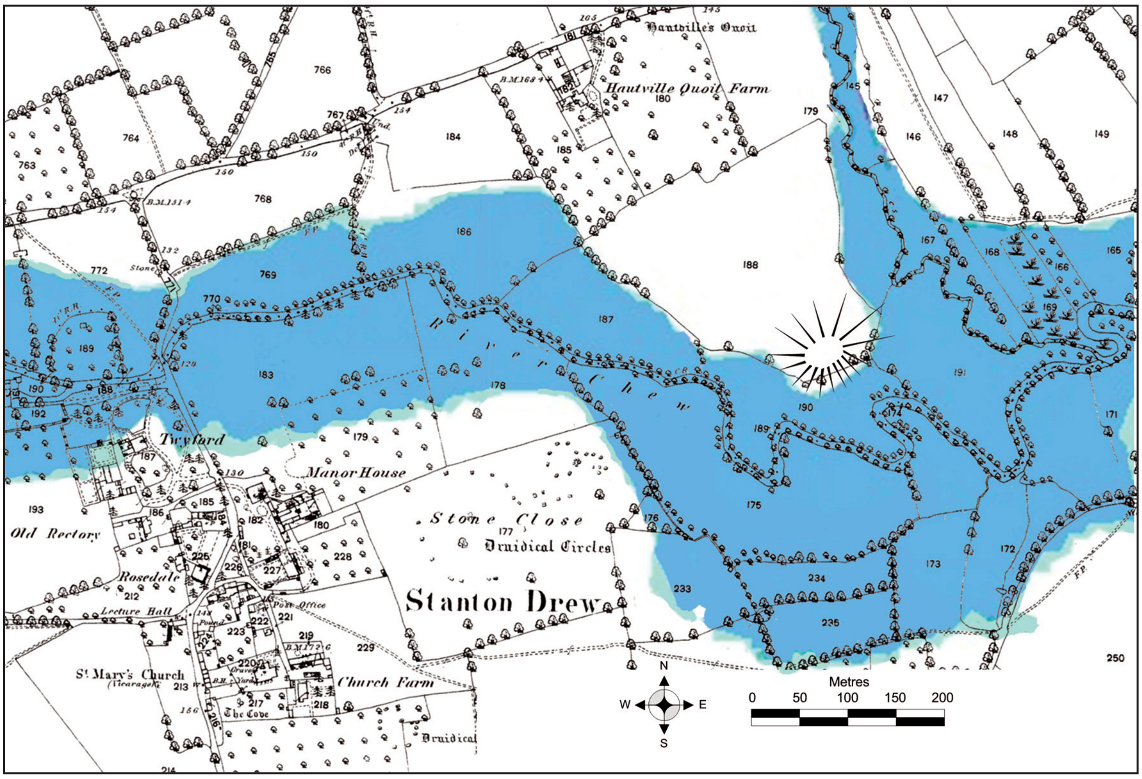


Figure 7-7 **OS 1885 1:2500 map superimposed with flood area and the Mound**

for erosion of cultivated soils in the earlier Neolithic, such as deep deposits of colluvium, but erosion increased markedly from the later Neolithic onwards as soil structure degraded with the intensification of farming (Evans and O'Connor 1999: 208-9). This led eventually to alluviation, but the date of the start of this process is not consistent across the region; for example, alluviation did not start until the later Iron Age in the Upper Thames valley, but began in the later Neolithic or Early Bronze Age in the Middle Thames and Kennet valleys (Allen et al 1997). It is possible, therefore, that alluviation had got underway when the Stanton Drew monuments were in use, but it is also possible that it had not even started. The valley floor would therefore have been lower and so the monuments and the mound would have appeared relatively higher.

The short avenues extending from the Great and North East Circles meet at a point 120 metres to the east of the Great Circle, and 60 metres from the North East Circle, a long way short of the river. The lack of an obvious destination for the avenues has led to various theories. The Rev. J. B. Deane (1833) proposed the avenues formed one single sharply-curved avenue, connecting the two circles, largely based on his theory that the site was a temple for worshipping serpents. Wilkinson (1860) showed with a carefully constructed plan that the avenues were in fact straight. Grinsell (1956) suggested that the two avenues may have continued after intersecting as one avenue towards the river, soon reaching the 'lower ground which must then have been flooded in winter'. A dowser has recently claimed that the main avenue extended across the floodplain (Oswin et al 2011, appendix B). Burl (2000: 149) also shows a line heading east across the floodplain. Attempts have been made to find an extension of the avenues but without success. English Heritage's low resolution magnetometry survey (David et al 2004) was bedevilled in this area by iron water pipes. Grinsell and Kendall (1958) note that the avenues meet at the beginning of level ground leading to the river, i.e. the edge of the floodplain, and that as this marked the limit of the area liable to winter flooding the avenues may never have proceeded any further. It is indeed possible that the avenues intentionally meet at the edge of the floodplain and this had significance for the site.

A number of features of the site can be seen to relate to the River Chew and its floodplain: the position of the Great Circle and NE Circle overlooking the river and across to the mound; the position of the ditch gap in relation to the mound; the termination of the avenues at the edge of the floodplain; and the likely surrounding of the mound by flood water. In addition, there are the similarities to other henge sites that appear to have a relationship to water. It is impossible to know what the relationship was, but a ritual purpose can be speculated. The course of the river may have wandered across the valley over the past few thousand years and its exact course when the circles and avenues were constructed is unknown. However, it is conceivable that the river in flood was the most significant event for the builders of the monument. The particular shape of the valley and the location of the mound suggest that floods could have been the trigger for rituals, perhaps to celebrate a fertility event or alternatively to appease angry water spirits. In this scenario, the mound could have been a ceremonial platform, and perhaps Hautville's Quoit serves the purpose of being a marker for the way to the mound.

Even if floods were not an important component for the monument builders, it still seems the river should be a key part of any interpretation. In order to try to establish the role of the river and the significance, if any, of the mound, then further investigation of the floodplain and the mound and its surroundings will be needed. Hardly any archaeological evidence has been found in the vicinity of the mound: the one known find is that of a lithic scatter that was found close to the stream to the east of the mound (AMIE Monument HOB UID 201228; NGR ST 60498 63502); the lithics were given to Taunton Museum, but by 1921 just one survived. Geophysical surveys across the mound and for a distance around could establish whether there is any evidence for quarry ditches or accompanying structures. Looking around the base may be more productive than looking at the top of the mound when searching for evidence of artificial construction (P. Linford, pers. comm.).

On the floodplain itself, it would be desirable to devise a programme of work to investigate the depth of alluvium across the valley, and, if possible, to discover something about previous river courses. Grinsell and Kendall (1958) carried out some augering and found soft mud two feet down in an area between the end of the avenues and the river. Jodie Lewis (pers. comm.) did some augering and excavation in the same area in the last few years; it is believed that some results will be published shortly, and hopefully these can inform a project design for further investigation of the floodplain.

7.4 Recommendations

- 7.4.1 A geophysical and EDM survey of the field to the north of the Chew Magna to Pensford road to determine if any archaeology extends in that direction.
- 7.4.2 A geophysical and EDM survey of the mound and surroundings in Big Ground to attempt to determine whether the mound is a natural outcrop and whether it had significance in the Neolithic landscape.
- 7.4.3 Investigation of the floodplain by augering to attempt to determine the history and frequency of flooding.
- 7.4.4 The whereabouts of Stukeley's 'Other Quoit' should be determined by reference to field boundaries illustrated and still extant, and the area searched for signs of this monument. This is best done in the winter months when vegetation is at its lowest.
- 7.4.5 Topographical survey using EDM should be extended over as wide an area as can be accessed in order to build up a precise model of the lie of the land.
- 7.4.6 Work should also continue where relevant at the Stanton Drew stone circles. This could include extending the area of Stone Close surveyed by resistance, and taking more profiles where they can add information.

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Appendix A: The 1969 Excavation and Survey

A.1 Hautville's Quoit Excavation

R J Mercer

Grid Ref : ST 602638
Excavation : 27-31 October 1969

The Stone of Wiltshire Sarsen origin measuring approximately 5' x 6' x 1' thick and weighing probably somewhere in the region of 2½ tons is at present lying half buried in a recumbent position next to the hedgerow at the side of the B 3130. The object of the excavation was to ascertain whether the stone had fallen into this recumbent position from a standing position in an earth fast socket near its present position. In the event of this being so it was proposed that the Ministry of Public Building and Works under guardianship arrangements should re-erect the stone in its old stone-hole.

The monument itself (Grinsell 1956) originally consisted of 2 stones – according to Stukeley (1776) – he called them 'Hautvil's Coyts' and he recorded the length as 7 feet and it seems that this discrepancy is due to lumps being broken off the stone for road building. Aubrey in 1664 confirms that the stone was prostrate at that date and presumably had been so for some time before that. There is a well known tradition that the quoit was flung by Sir John Hautville from Maes Knoll (an Iron Age earthwork on the hill to the North). Sir John was a member of the historical Hautville family who were powerful in the area during the late 13th and early 14th centuries.

Mr. A. J. Clark of this department conducted a geophysical survey of the site during May 1969; the result of this survey is attached to this paper. The survey revealed a substantial anomaly to the W of the stone which it seemed likely could have been the original stone-hole.

Cuttings were laid out across the stone in order that this anomaly would be caught in section and also that the stone itself could be seen relative to the local stratigraphy. An extension S of the easternmost cutting was made to link in the plough lynchet running near the stone.

Cutting 1 did not reveal the desired socket in section or in plan and it seems likely that the waterlogged conditions did in fact cause the anomaly shown in Mr. Clark's survey.

Stratigraphy	Layer 1	Humic Topsoil
	Layer 2	Loose brown recent plough accumulation
	Layer 3A	Red/brown plough accumulation
	3B	Turfline (?) greyish streak
	3C	Red/brown clay with charcoal/coal/ash debris
	3D	Clean brown clay
	Layer 4	Thick turfline presumably the OLS contemporary with the erection of the quoit
	Layer 5	Natural Red Clay.

Assuming that Layer 4 is the original OLS upon which the stone was erected (and into which the socket was cut) the stone must have fallen (or been dragged to the spot in a prostrate position if indeed it stood elsewhere) after Layer 3D had already accumulated. Layer 3D is superimposed by another layer of ploughsoil (?) containing substantial quantities of charcoal, ash and other burnt debris. It proved impossible to date this layer despite the presence of a fragment of RB pottery – as this kind could easily have been ploughed in from an entirely different location. The ash debris is possibly the remnant of some local industrial activity of some kind.

Apparently after the phase of activity represented by Layer 3C a period of stability ensued giving rise to the turfline 3B. This however is thin and plough accumulation again built up (3A).

The S ward extension of Trench 2 intended as a section across the lynchet revealed the lynchet to have been formed on top of 3D.

The non-appearance of any socket either in plan or section in any of the area excavated would indicate that if the stone has fallen directly it must have originally stood on the site of the present road where excavation is impossible (and furthermore where any traces of a former socket would have been destroyed). The angle at which the stone is lying would certainly agree with this hypothesis.

However it is still possible that the stone was taken down at some other nearby location and dragged [to] the side of the field for ploughing clearance for example. It is however in this latter case a remarkable coincidence that the stone should have been dragged to a spot exactly on the line of the axis of the Stanton Drew Circles. Thom has recently given us several examples of Stone Circles with out-markers presumably to facilitate some kind of observation. This is unlikely to have been the case here as there is no line of sight between the quoit and the circles.

It is possible that the quoit may be the single surviving stone from another stone circle (of which 2 stones were standing in Stukeley's day). The linear arrangement of stone circles is a common feature but again we would have to accept the coincidence that the stone surviving is one of the two or three that would be approximately on the axis line in any third circle.

The direct objective of the excavation – to ascertain the desirability of raising the stone has thus been achieved but a question mark still hangs over the question as to the original position of the quoit and the true significance of its alignment with the Stanton Drew circles.

A.2 M.P.B.W. Ancient Monuments Laboratory: Geophysical Survey

SITE: Hautville's quoit, Quoit Farm, Stanton Drew, Somerset. Fallen standing stone.

GEOLOGY: Keuper Marl at depths varying between 28ins and 36+ins, overlain by brown clayey soil and a thin topsoil cover of varying depth.

OBJECTIVE: To locate the original stonehole.

METHOD: the published resistivity values for Keuper Marl are low, so that poor results, aggravated by the wet winter conditions, could be expected from this method of surveying; but the presence of a wire fence passing over the quoit ruled out the use of magnetic detection and left no alternative to a resistivity survey. The square array (2.5ft) (SAR) was used, readings being taken at 2.5 ft intervals on a 50 ft grid, the north edge of which was arranged to lie along the fence with the stone at its centre. Permanent pegs were knocked in at 10ft and 50ft E of the NW corner of the grid.

PLOTTING: the pairs of resistance values obtained at each point were averaged in the usual way, and contours of equal resistance drawn at intervals of 0.5 ohm, an additional contour being added at 3.25 ohms to delineate better the area of minimum resistance. The exposed part of the quoit is shaded, while the approximate outline of the buried part of the stone, ascertained by probing and almost projecting from the bank of the sunken road to the north, is shown by a broken line. 'B' indicates the positions of auger borings. A small area in the NW part of the grid could not be surveyed because of the massed roots of a clump of trees. Positional references below are in feet and given in the same order as a National Grid reference.

RESULTS: The most striking feature of the relief of the site is a considerable fall in ground level from south to north, accentuated by an apparent lynchet running east from just south of the stone to the east hedge of the field, and represented by the closely packed resistance contours about the line 40.0 N. Although the lowest resistance values, most suggestive of a silted stone-hole, lay just beside the stone at 17.5/42.5, it seemed that a stone that should have been visible from the Stanton Drew circles would have been originally in a higher position, and attention was therefore paid to points 35.0/33.5 and 30.0/25.0: although the former was a resistance peak, it was thought possible that the stonehole could have a loose fill accounting for this. However, both gave similarly negative results with the auger. From similar negative results at other points (see summary below), it seemed clear that resistance variations were responding sensitively to the effect of ground relief on drainage rather than to buried features.

The different findings in the two borings at 17.5/42.5 at the centre of the area of lowest readings, suggest that the stone-hole may well be here. The quoit as it now lies could have fallen downhill from this location. However, one must bear in mind (1) the fill is not greatly different from the surrounding soil; (2) the disturbed soil and carbon may be due to root action by the adjacent trees; (3) the low resistance anomaly, as in other parts of the site, could be due to a fairly superficial effect, in this case the impeding of downhill water drainage by the stone itself.

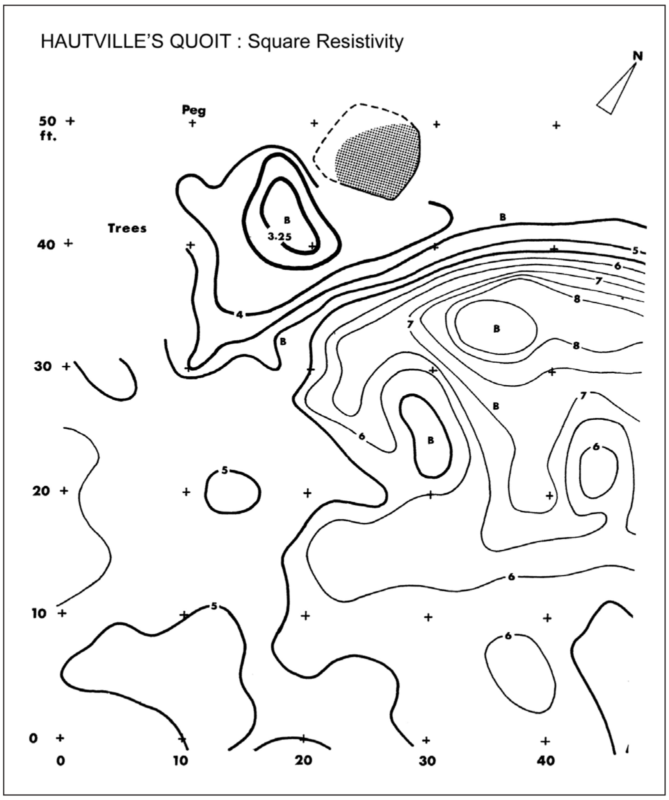

Figure A-1 **Square resistivity results**

A.3 Hautville's Quoit: Geophysical Survey

A. J. Clark, 31 May 1969

In an attempt to locate the stonehole before excavation, a geophysical survey was carried out by the M.P.B.W. Ancient Monuments Laboratory. Because of the presence of a wire fence which actually passed over the stone, electrical resistivity rather than magnetic measurement was used, although the expected low resistivity contrast between topsoil and the Keuper Marl subsoil, and the high moisture content of the soil in the winter conditions of the survey, seemed likely to provide poor conditions for the use of this method.

The stone lies in a depression, and it seemed that it might have stood a little to the south on higher ground so as to be visible from the stone circles with which it is aligned. Therefore a 50 ft square was laid out with one edge along the fence and the stone at the centre of this edge, the rest of the square extending southward. This area was surveyed by 30 ins square array resistivity (Clark 1968) at reading intervals of 30 ins. Readings varied from 3.0 to 8.8 ohms, i.e. the average resistivity was 24.5 to 71.9 ohm-metres to a depth of approximately 30 ins, the limit of detection. There were several maxima and minima, the lowest reading being adjacent to the south side of the stone, at the foot of the lynchet. It was not possible to decide whether the stone hole would have been filled with material of higher or lower resistivity than the surrounding soil; therefore two minima and a maximum close to the stone were tested with auger borings, and comparative borings were made away from them. All produced brown, clayey soil, mostly to a depth greater than 36 ins. The low resistivity area close to the stone was examined with particular care: the normal soil, here extending to a depth of 30 ins, contained a small amount of carbon and coal thought to signify disturbance. However, the auger results elsewhere and a comparison of ground relief with the readings obtained, suggested that resistance variations were responding sensitively to the effect of ground relief on drainage rather than to soil variations, and it was suspected that the low resistance adjacent to the stone could have been due to the impeding of downhill drainage by the stone itself. These reservations were confirmed by the negative results of the excavation, which showed that the disturbed material was ploughsoil accumulated over an old land surface.

Relevant to further surveys on Keuper Marl is the fact that topsoil resistivity, the main contributor to the resistivity range of 24.5 to 71.9 ohm-metres obtained from the measurements, are considerably greater than the published resistivity range for Keuper Marl, 5 to 20 ohm-metres, a reversal of the common situation in which the topsoil is lower in resistivity than the subsoil. Therefore, on more level ground of this type, and in drier weather conditions, useful surveys of sites composed of levelled earthworks should be possible.

CONCLUSION: The survey has indicated the probable position of the stone-hole, but this should be tested by excavation.

APPENDIX: summary of results of auger borings.

17.5/42.5	(a)	Mixed natural and clayey brown soil with carbon to 30 ins. Clean red clay to 30+ ins.
	(b)	As above, but with fragments, apparently of coal (?natural) lying on the red clay at 30 ins.
17.5/32.5		Clayey brown soil with apparently natural clinker-like fragments to 28 ins. Grey-green natural clay 28+ ins.
30.0/25.0		Brown clayey soil to 18+ ins.
35.0/42.5		Brown clayey soil to 36+ ins.
35.0/33.5		Brown clayey soil to 36+ ins.
35.0/27.5		Brown clayey soil to 36+ ins.

A.4 Excavation Photographs

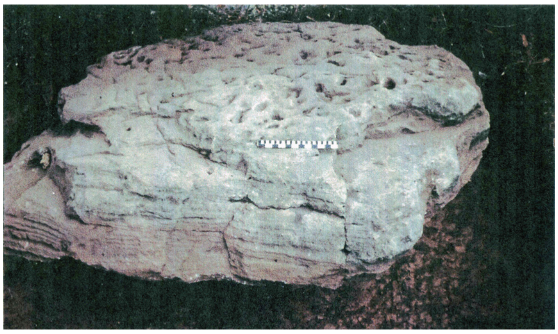

Figure A-2a **Looking north. Scale has 1" intervals with 1 cm intervals juxterposed.**

Figure A-2b **Looking north, showing trenches**

Figure A-2c **Looking east**

Figure A-2d **Looking west. Rod with 6" divisions**

Figure A-2e **Looking north-east**

Figure A-2 **photographs from the 1969 excavation**

Appendix B: Details of Gridding

B1 Magnetometry

All magnetometry was done using the Bartington 601-2 dual fluxgate gradiometer. All grids were surveyed at high data density, 8 readings per metre along lines 0.5 metres apart, giving 6400 readings per 20 metre square. Data were downloaded to computer using Bartington download software, which automatically sorted data to parallel, taking care of the zig-zag pattern walked and interleaving of traverses.

The downloaded data were fed through a BACAS proprietary zero-median destriper. The unprocessed files were also kept, and have prefix ‘m’; the destriped data have prefix ‘d’. These files can be made available if requested.

The grid squares were assembled using INSITE v4 processing software for mapping. Note that BACAS departed from its usual practice of starting in the south-west corner, heading north on the first traverse. Instead, grids were started at the south-east corner, heading west on the first traverse. Changing orientation allowed the operator to get as close as possible to the north edge of the field while obtaining maximum processing benefit from the destriper. Nonetheless, it proved impossible to survey close to the Quoit itself.

Figure B-1 shows the grid numbers and their relative locations in the map. The arrow indicates start point and direction of first traverse. Note that grid north was at a bearing of 345 ° to magnetic north. A number of grids were not fully surveyed, due to field edges or proximity to iron.

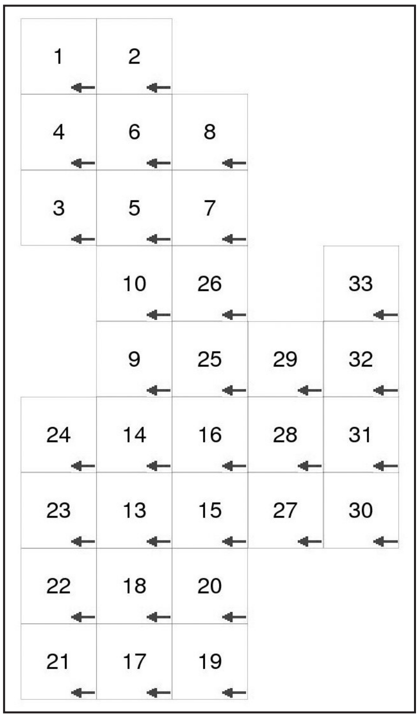

Figure B-1 **Magnetometry grid numbering**

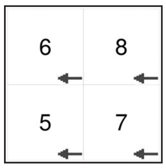

Figure B-2 **Magnetometry grids in high density resistance area**

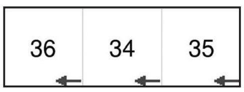

Figure B-3 **Magnetometry grid numbering on Big Ground Mound**

Figure B-2 shows the magnetometry grids equivalent to the high density resistance survey area. This is but a portion of Figure B-1, but helps to locate the high data density area. This is also the area covered by radar (250 MHz). The radar was operated in north-south traverses in a zig-zag fashion, so alternate data sets need to have their direction flipped. Readings were taken at 0.1 m intervals. Radar traverses were 1 m apart.

Figure B-3 shows the grid set up on Big Ground Mound. Fortuitously, the short axis of the Mound is very close to magnetic north in its orientation. A grid covering the centre of the mound was set up, and half grids to east and west were also surveyed, covering most of the flat top of the mound. These grids were also started at the south-east corner, first traverse to the west.

B.2 Twin – probe resistance

All twin-probe resistance work at Quoit Farm was done using the Geoscan RM15 device. It was set to take two readings per metre along traverses one metre apart. The RM15 leaves data in the zig-zag pattern walked, so it is essential to choose the zig-zag option when importing grids into INSITE. Data were downloaded first using BACAS proprietary software before importing into INSITE.

Figure B-4 shows the order of grids for the main survey. Note that grid 3 started at the opposite corner and headed south. This was deliberate as it was found that a heavily metalled tractor way produced values so high that these masked the resistance values of interest, and it was easier to stop the survey of that grid as soon as very high levels were reached. Note also that grid 10 headed south on the first line, but started on the western side. This was a case of operator error.

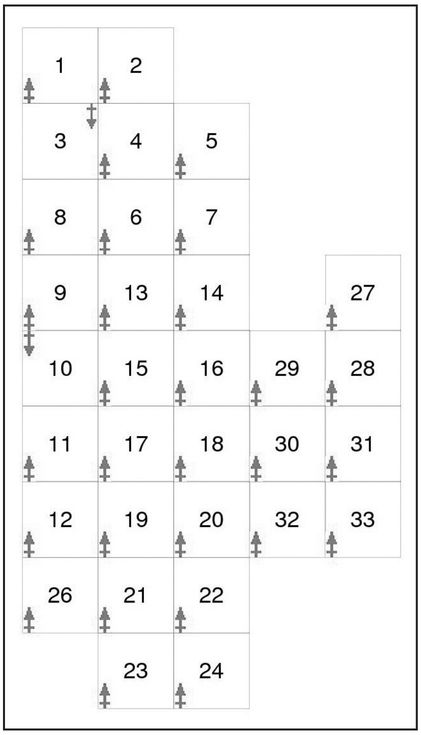

Figure B-4 **Resistance grid numbering**

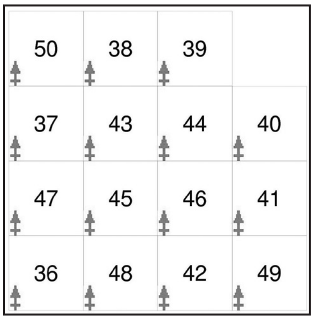

Figure B-5 **Resistance grid numbering in high density survey area**

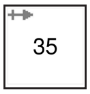

Figure B-6 **Quoit grid number**

The area of the high data density survey is shown in Figure B-5. This needs to be compared with the magnetometry of Figure B-2. The four squares of magnetometry were sub-divided into 10 metre squares, and each surveyed at 4 readings per metre, lines 0.5 metres apart, giving the same 800 readings per grid, but at half the spacing. Fifteen of the sixteen grids were surveyed, but that in the far north-east was omitted as it was beyond the area of interest. Note that the downloaded files looked identical to those obtained in 20 metre squares at normal data density. The conditions on the import panel in INSITE have to be amended to match the data collection.

In order to avoid the problem of very high readings masking features of interest, a small grid was set up over the Quoit itself. This was surveyed starting in the north-west corner, heading east. It was done at high data density as if it were a 10 metre square, but only 7 metres were covered east-west, and the survey proceeded south only to the point where very high readings from the earlier road masked detail. Blanks were put in over the Quoit itself. This one grid is shown in Figure B-6. This small grid was also subject to radar survey, both at 250 MHz and 500 MHz. The same routine of lines 0.5 metres apart, starting at the north-west corner, heading east, was used. The 250 MHz radar took readings every 0.1 metres; the 500 MHz radar took readings every 0.05 metres.

Appendix C The Archaeology of Bridge Ground

By Lynn Amadio

C.1 Summary

Bath and Camerton Archaeological Society (BACAS) was carrying out field work around Hautville's Quoit, Stanton Drew. It became apparent that there were features in the field to the east, known as Bridge Ground. These features which include the remains of an old bridge, a building, revetment of the river bank and a bank related to the course of the old road, were unrelated to the investigations around the Quoit and are reported here.

Bridge Ground is part of Quoit Farm, 12 kilometres west of Bath and 10 kilometres south of Bristol city centre and circa 0.75 kilometres NE of Stanton Drew stone circle. The field (Bridge Ground) is immediately to the east of the field known as Home Ground, the location of the Quoit (see Chapter 2, Figure 2-1).

C.2 Geology, land use and topography

The land falls by circa 14 metres to the east where a stream, a tributary of the River Chew, runs in the valley bottom. The land is used for pasture and with only one apparent variety of grass, which would indicate fairly recent ploughing and reseeding.

Alluvium by the stream is several metres deep; part of this area was a water meadow and before the construction of the Chew Valley Lake was subject to flooding.

The bedrock here is Mercia Mudstone (Oswin et al 2011).

C.3 The old road way and bridge

Initially interest in the route of the old road was stimulated by antiquarian reports of the location of Hautville's Quoit as standing in the centre of the road by Musgrave in 1718 (Dymond 1896) and reported to be on the side of the road by Stukeley in 1723 (Stukeley 1776). Figure C-1 shows the route of the old road in the northern most part of Bridge Ground; note also how the modern road has been raised above the valley floor. Ploughing has undoubtedly reduced and softened the profile of the road's southern bank.

Figure C-1 **Route of the old road in Bridge Ground, looking east**

Evidence for the site of the old road can also be seen alongside the current bridge, the new road has to turn abruptly in order to avoid the old bridge (see Figure C-2).

Figure C-2 **The wall alongside the current bridge has a kink in it created in order to avoid the old bridge, looking east**

Part of the old bridge can be seen in the stream next to the new bridge (Figure C-3).

Figure C-3 **Part of the old bridge**

The bedrock is near the surface here, providing a suitable foundation for the bridge, in Figure C-3 it is possible to see how the bedrock has been cut in order to keep the stream within the bounds of the bridge, suggesting that the firm surface created by the rock would have produced an ideal place for fording the river before the earlier bridge was constructed.

C.4 Revetment

The stream meanders through deep alluvium and it appears that attempts have been made to keep it within a prescribed course through the use of stone walling (Figure C-4).

Figure C-4 **Evidence of revetments**

C.5 Structure

Evidence for a structure can be seen in the south east corner of Bridge Ground, part of which extends into the stream, suggesting that it may have been a mill or a sluice gate. There are the remains of two walls 9.6 metres apart which run approximately east-west. The northern wall (Figure C-5) consists of at least two blocks of dressed local stone (450mm x 290mm x c140mm and 420mm x 370mm x 200mm), these formed a course; a further course seems to lie beneath and there is the possibility that further courses may lie above, no excavation was carried out.

Figure C-5: Northern wall

The southern wall appears in two sections, four courses of dressed stone can be seen in the upper section (Figure C-6) and again no excavation was carried out so it was not possible to establish the full length and depth. The blocks were of varying sizes, measuring 280mm x 160mm x 90mm and 270mm x 150mm x 130mm, and there was evidence of mortar between some of the blocks.

Figure C-6 **Part of the southern wall**

The lower section (Figure C-7) of this southern wall was seen in the river bank, a length of 1.17 metres was visible; here the wall was thicker (at least 900mm wide) with at least five courses and two bonds.

Figure C-7 **Part of the southern wall which extends into the river**

Without excavation the purpose of this structure could not be defined with any certainty, however, there are two possible purposes suggested by its proximity to water and the depth. The first is a water-driven mill, probably medieval in origin. Bye Mills lies within a kilometre to the south and east on the River Chew, but it has been suggested that this was an industrial mill, milling minerals; it would therefore not have been competition for a corn mill in Bridge Ground.

The second possible purpose is that of sluice gates to control the flow of the stream for Bye Mills, there was no visible evidence of any structure on the other side of the stream to add weight to this possibility.

On the morning of the 4th of March heavy rain fell for several hours; by the 5th of March this stream had risen by 5–10 cm and the rate of flow had increased noticeably, giving the appearance of a force strong enough to turn a water wheel.

C.6 Comment

This report is the result of field work observations alone with no research (documentary or maps) being undertaken; such research may provide definitive answers.

Appendix D: Electrical Resistivity Profiles

A total of 15 profiles were taken, with probe spacings varying from 0.25 metres to 0.5 metres. Where very small spacings were used, eight lines of data were taken. This compensated for lack of depth coverage. The profiles were performed at the locations shown in Figure D-1 (arrows indicate the direction of the profile with the zero metre point at the arrow's tail).

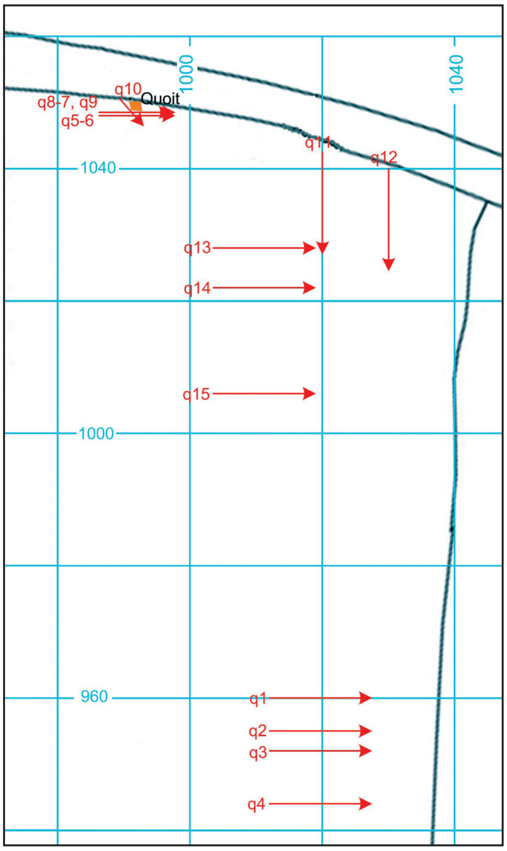

Figure D–1 **Location of resistance profiles in Home Ground**

Table D–1 lists the profiles, with their spacings (in metres), number of probes, start (probe zero) and finish points.

Id	Description	Start E	Start N	End E	End N	Probes	Spacing
q1	Home Ground at 960N	1012	960	1027.5	960	32	0.5
q2	Home Ground at 955N	1012	955	1027.5	955	32	0.5
q3	Home Ground at 952N	1012	952	1027.5	952	32	0.5
q4	Home Ground at 944N	1012	944	1027.5	944	32	0.5
q5	0.5m in front of Quoit	986.25	1048	994	1048	32	0.25
q6	0.5m in front of Quoit	990	1048	997.75	1048	32	0.25
q7	In front of Quoit	990	1048.5	997.75	1048.5	32	0.25
q8	In front of Quoit	986.25	1048.5	994	1048.5	32	0.25
q9	In front of Quoit	986.25	1048.5	997.25	1048.5	23	0.5
q10	To side of Quoit	989.4	1050.5	993	1046.4	23	0.25
q11	Across lynchet	1020	1042.5	1020	1027	32	0.5
q12	Across lynchet	1030	1040	1030	1024.5	32	0.5
q13	Home Ground at 1028N	1003.5	1028	1019	1028	32	0.5
q14	Home Ground at 1022N	1003.5	1022	1019	1022	32	0.5
q15	Home Ground at 1006N	1003.5	1006	1019	1006	32	0.5

Table D-1 **Profiles taken at Hautville's Quoit**

The profiles were processed using the RES2DINV software package.

Where profiles had been arranged to overlap, RES2DINV was used to concatenate them. Profiles q5 and q6, and profiles q8 and q7, were concatenated to give new profiles named q5-6 and q8-7, respectively.

Table D-2 lists the concatenated profiles, with their spacings (in metres), start (probe zero) and finish points.

Id	Description	Start E	Start N	End E	End N	Effective Probes	Spacing
q5-6	0.5m in front of Quoit	986.25	1048	997.75	1048	47	0.25
q8-7	In front of Quoit	986.25	1048.5	997.75	1048.5	47	0.25

Table D-2 **Concatenated profiles**

The output of profiles q10 and q11 appears in Chapter 4 (Figures 4-12 and 4-13).

Profiles q1 to q4 were placed across the semi-circular anomaly in the magnetometer results (Figure D-2). The profiles did show higher resistance values on the west side, but otherwise were not particularly enlightening. The profile at 955N (q2) did show a possible buried stone at the 7 metre mark (grid location 1019, 955).

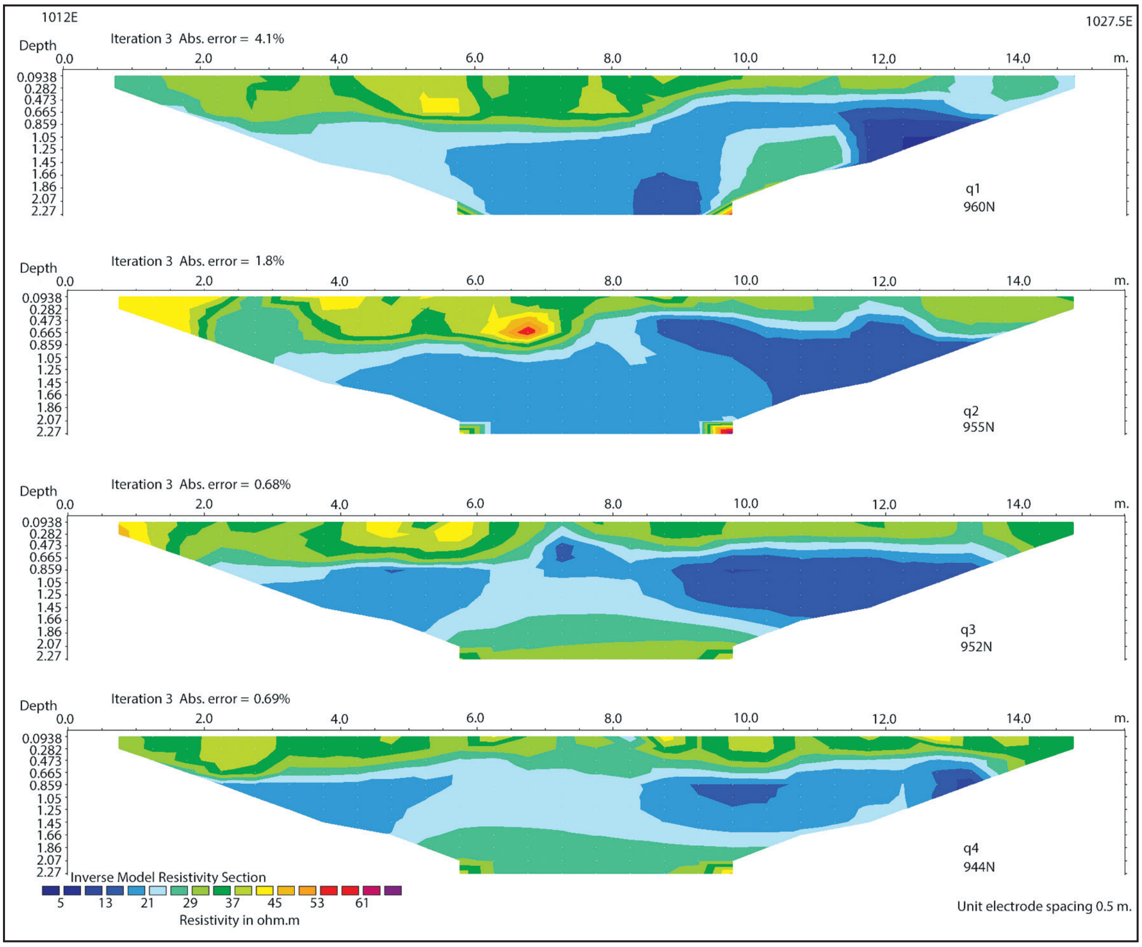

Figure D-2 **Profiles q1, q2, q3 and q4**

Profiles q5-6 and q8-7 were arranged west-east in front of the Quoit, with q8-7 at the Quoit's edge and q5-6 half a metre away (Figure D-3). In q8-7 the Quoit shows up as a high resistance feature to a depth of 50 to 60 cms, with a low resistance area beneath. Low resistance is evident for a couple of metres on all sides of the stone away from the hedge-line, which almost certainly is revealing Mercer's excavation trench. In q5-6 the Quoit is almost invisible, though the low resistance of the trench remains, and the high resistance area to the west is possibly caused by the edge of the farm track.

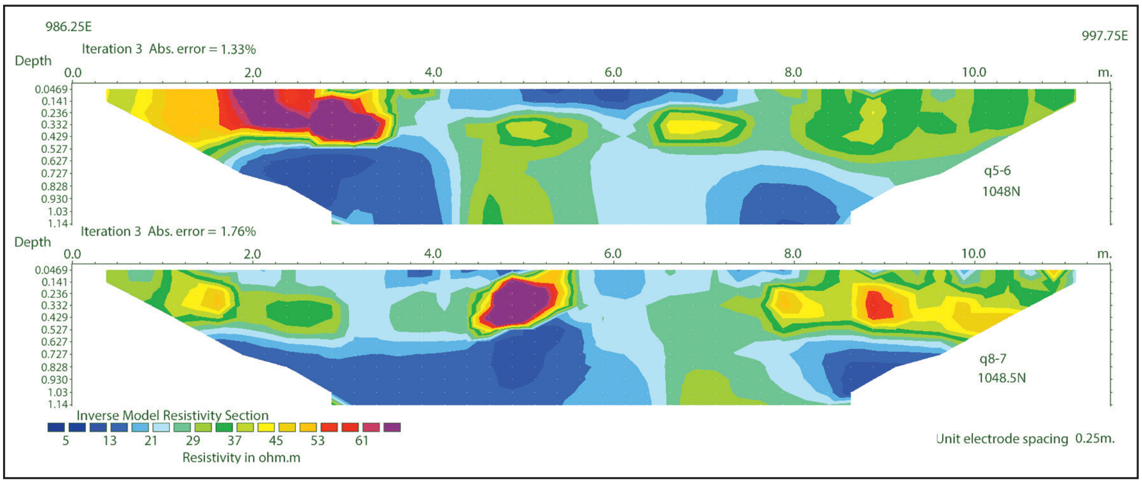

Figure D-3 **Profiles q5-6 and q8-7**

Profile q9 (Figure D-4) was on the same line as q8-7, but with 0.5 metre probe spacing instead of 0.25 metres, in order to try and get more depth. In that it was successful, but not more enlightening.

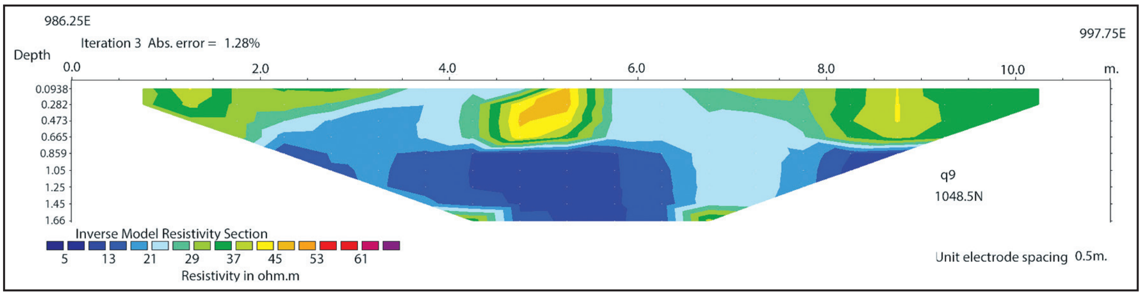

Figure D-4 **Profile q9**

Profiles q11 (Figure 4-13) and q12 (Figure D-5) were oriented north-south across the lynchet, starting close to the hedge-line. The intention was to investigate the possibility that the road originally lay further south. Both the profiles seem to provide evidence that this was indeed the case, with high resistance near the surface for the first 8 or 9 metres.

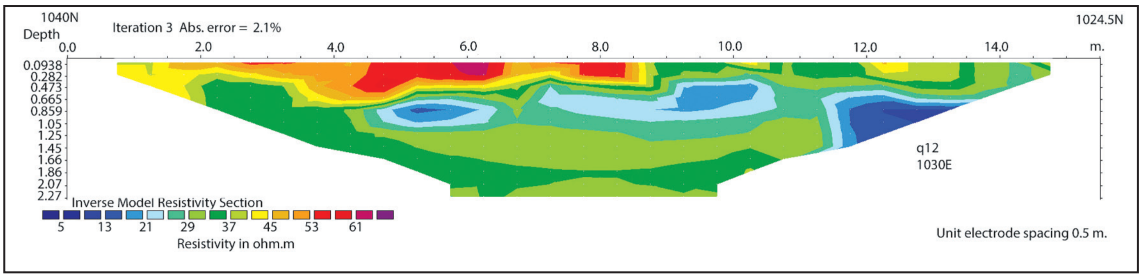

Figure D-5 **Profile q12**

The last three profiles, q13, q14, and q15 were placed across the area of possible postholes in the northern part of the field (Figure D-6). Results were inconclusive.

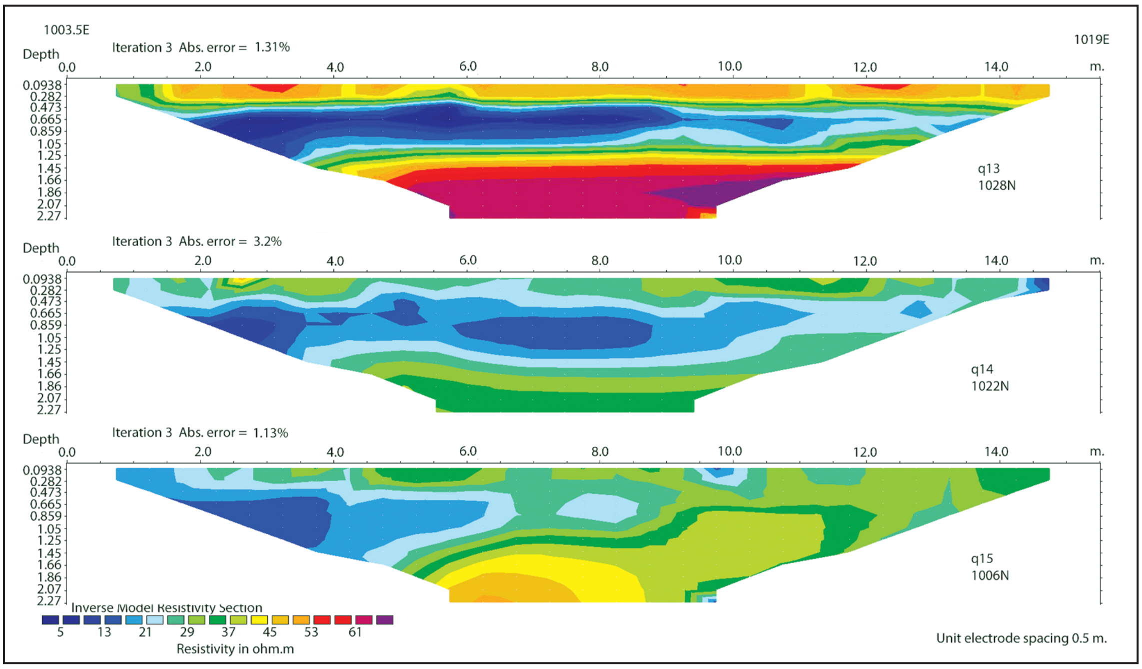

Figure D-6: Profiles q13, q14, and q15