Geophysical surveys at East Pinford, Swap Hill and Parracombe Common in Exmoor National Park

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This fieldwork formed part of the author's AHRC Collaborative Doctoral Award Project:

'Life with the stones: monuments, fields, settlement and social practice. Revealing the hidden Later Neolithic-Early Bronze Age Landscapes of Exmoor, SW Britain.'

Supervised by the University of Leicester and Exmoor National Park Authority

Funded by the Arts and Humanities Research Council (AHRC) and Exmoor National Park Authority

Overview

As part of ongoing doctoral research a series of geophysical and DGPS surveys were conducted on Stone Settings at Swap Hill and East Pinford (area A), along with a circular enclosure on Parracombe Common (area B) (figures 1 and 2) Magnetometry and earth resistance surveys were carried out at all of the sites by a team of volunteers from the University of Leicester. In addition DGPS survey was undertaken to record features in the vicinity of the stone settings at East Pinford and Swap Hill. This report details the results of the work.

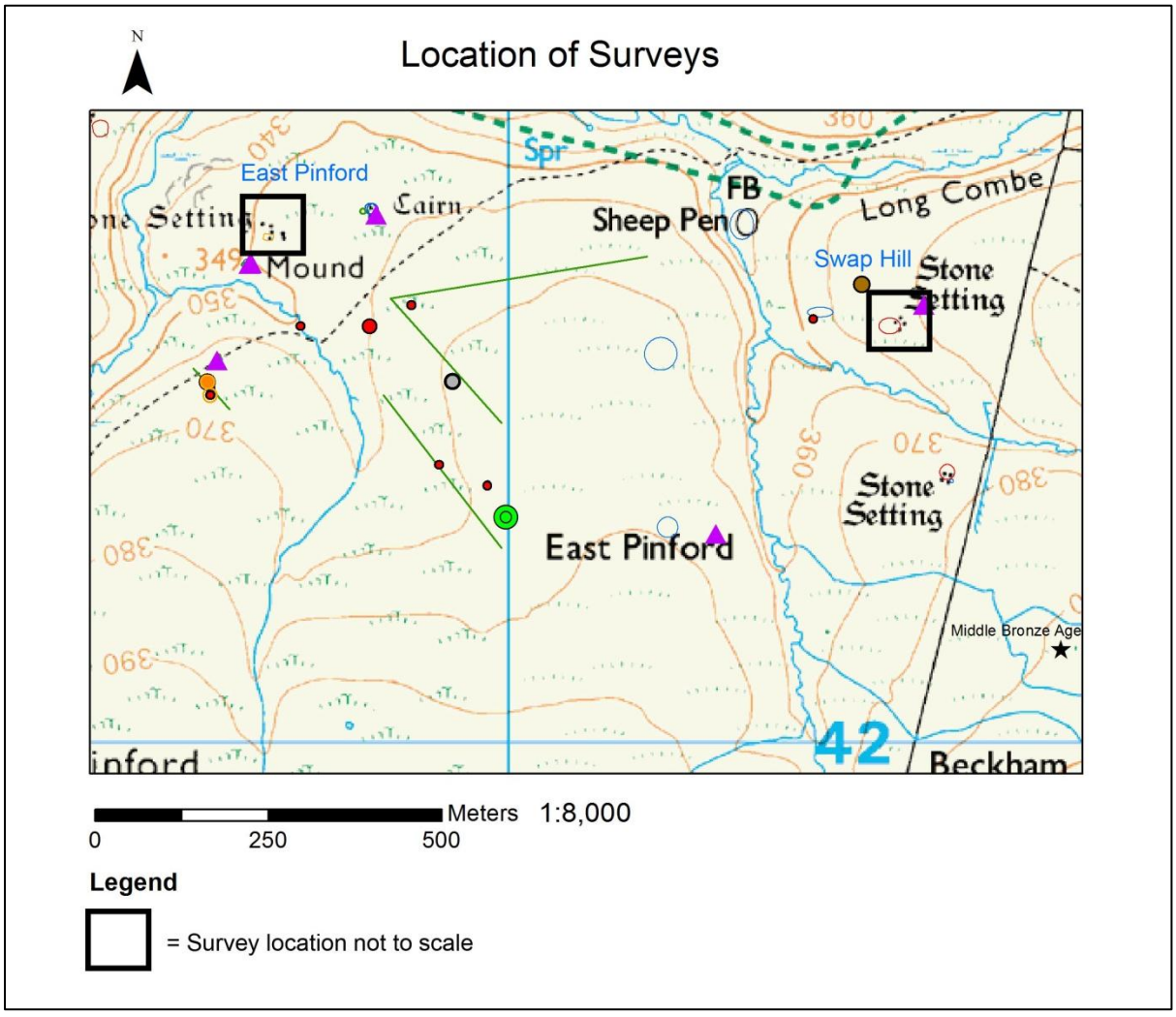


Figure 1: Location of surveys at East Pinford and Swap Hill stone settings (area A). Produced by the author using data from ENPA HER and Ordnance Survey. (© Crown Copyright/database right 2013. An Ordnance Survey/EDINA supplied service.)

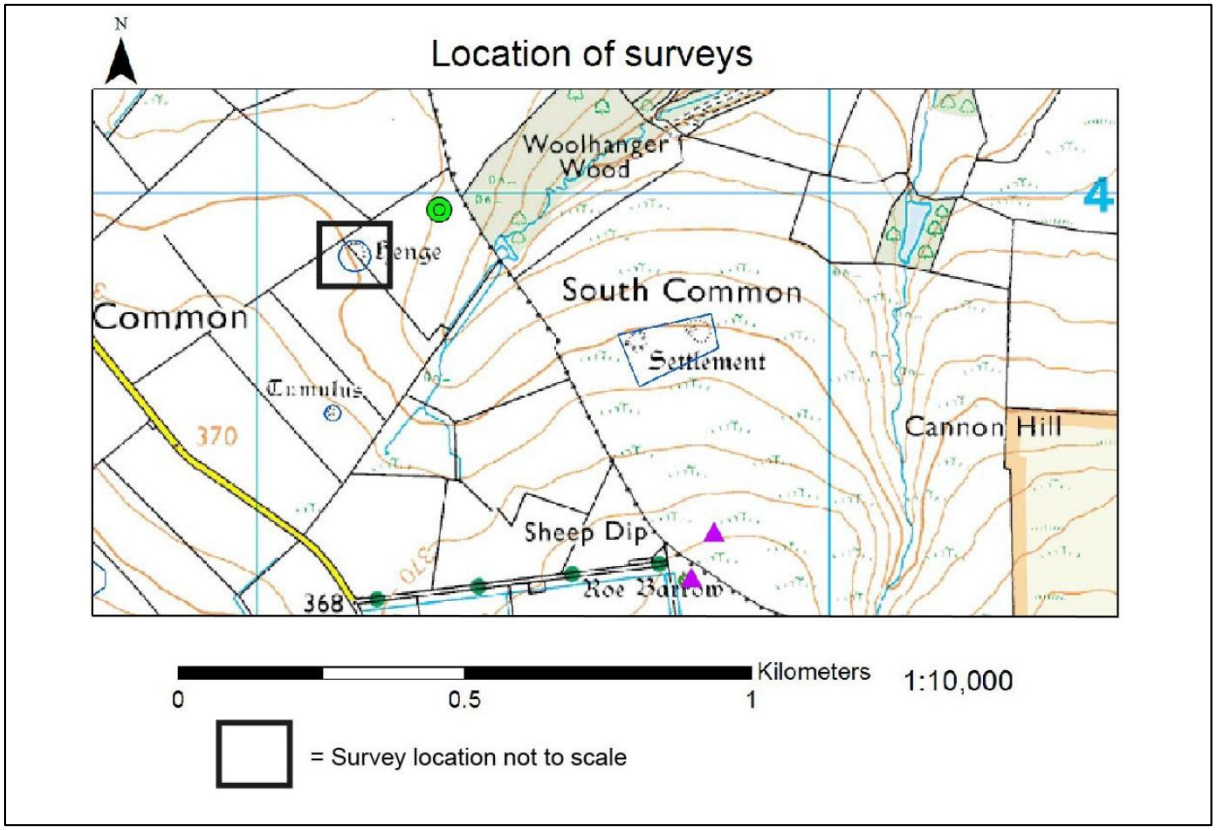


Figure 2: Location of survey at circular enclosure on Parracombe Common, Woolhanger Farm (area B). Produced by the author using data from ENPA HER and Ordnance Survey.

Introduction and Background

The geophysical survey targeted three monuments, two in a remote area of central Exmoor north west of Simonsbath (A), and a third on Parracombe Common in the western half of Exmoor National Park in Devon (B) (table 1: figures 1 & 2). The survey areas are shown in table 2. The full rationale behind this work will be briefly summarised here, but the full details are stated in the project designs (Mitcham 2013a and 2013b). The fieldwork is part of the authors PhD project, with the overall aim to enhance understanding of the character and context of Exmoor's Later Neolithic and Early Bronze Age landscapes. This will focus on their landscape context and relationships to topography and other monuments, as well as their role in the social world of the communities who created them. The intention behind the surveys of the two stone settings was to look for any activity associated with the settings, or taking place nearby. At East Pinford the work built on a previous geophysical survey undertaken in 2005 (Gillings *et al.* 2010). Here a 40m x 60m block of geophysical survey extended and re-covered the area previously surveyed. The previous geophysical

survey plot contained a lot of noise due to the density of the vegetation (Gillings *et al.* 2010: 305). It was hoped a new survey with better equipment, and potentially more favourable ground conditions, might produce a clearer result. At Swap Hill a 40m x 60m block of geophysical survey was used to look at the context of the stone setting, and its relationship to a possible field bank and standing stone. The survey area incorporated the setting itself and its immediate surroundings. This intended to establish if further features are present which are not visible on the surface. The proposed geophysical survey of the stone setting on Beckham Hill was not undertaken due to time constraints.

Table 1: Monument details (Data from ENPA HER)

	Swap Hill Stone Setting	East Pinford Stone Setting	Circular enclosure, Parracombe Common
List entry number	1014282	1014263	1002578
Parish, District and County	Exmoor, West Somerset, Somerset, Exmoor National Park	Exmoor, West Somerset, Somerset, Exmoor National Park	Parracombe, North Devon, Devon, Exmoor National Park
NMR number	SS84 SW39	SS74 SE7	SS 64 SE 22
ENPHER number	MSO6873	MSO6820	MDE1064
NGR	SS 8054 4261	SS 7965 4272	SS 6918 4489

Table 2: Location and area of surveys

Location/site	Grid size (m)	Area (ha)	Reason
Circular enclosure	60x60	0.36	Clarify identity of the site and subsurface survival of destroyed half
Swap Hill, stone setting	40x60	0.024	Look at area of setting, towards bank and cairn
East Pinford, stone setting	40x60	0.024	Extend existing survey, to clarify context

The geophysics undertaken at the circular enclosure on Parracombe Common had a more specific set of aims, with the main intention to reveal any new information which might help clarify the ongoing uncertainty about the identity of the site. The survey intended to:

1.) To reveal the true extent of surviving subsurface features, inside and outside the monument
2.) To examine if the bank and ditch of the southern half survive as subsurface features.
3.) To see if any potential entrances could be detected.
4.) To help clarify the identification of the site, and if it would be suitable for subsequent field investigation.

This circular feature visible on aerial photography has been variously interpreted as a hengiform monument or disc barrow (Grinsell 1970: 25-26; Wilmot 1983: 28) or tree ring enclosure of 19th century date (Riley and Wilson North 2001: 34). One half of the monument survives as an upstanding earthwork bisected by a field boundary, whilst the other half has been destroyed by ploughing (HER record, MDE1064). The form of the surviving half, which comprises a circular bank enclosing an internal ditch are suggestive of a hengiform monument (HER record, MDE1064). The feature could also potentially be a platform or disc barrow. Despite much discussion outlined in the HER record (MDE1064) it has not to date been possible to determine the true identity of the feature.

Geology and soils

The bedrock at all the sites is the Hangman sandstones formation (BGS; http://mapapps.bgs.ac.uk/geologyofbritain/home.html). Head deposits and alluvium exist along the coombe which the enclosure on Parracombe Common overlooks to the east (BGS; ibid). The soils at the Parracombe enclosure and East Pinford are described as very acidic and loamy, with a peaty surface (Soilscape 16; http://www.landis.org.uk/soilscapes/index.cfm). No detailed mapping information is available for superficial geological deposits at East Pinford or Swap Hill. But deposits of alluvium and peat occur in the wider area (BGS; ibid). Swap Hill has freely draining, very acidic, sandy and loamy soils (Soilscape 14: http://www.landis.org.uk/soilscapes/index.cfm).

Methods

All the surveys were based on a 20m grid laid out using trilateration with fabric tapes, from ranged base lines established in respect to the monuments themselves. The equipment used to undertake the soil resistance was a Geoscan RM85 multiplexed Resistance meter. A Bartington Grad 601 Fluxgate Gradiometer was used for the magnetometry. A sample interval of 0.5 x 1 m was used for the resistance survey, and magnetometer readings were

taken at 0.25 x 1m intervals. In common with all work carried out on Exmoor by the University of Leicester the grids and surface features were geo-referenced using a survey grade Topcon GPS+ (DGPS) system. The survey data is therefore fully transformed and fixed onto the OS National Grid. The grid and feature survey at East Pinford was kindly undertaken by Hazel Riley using Leica DGPS equipment. The project also used a hand held Garmin 62s navigation grade GPS for recording initial point locations of features. The photographic recording was done using a Fujifilm AC650 16 megapixel digital camera, set on automatic scene detection mode. Finally the processing of the geophysical survey data was done using the Geoplot and Archaeosurveyer software tools. The interpolate and despike functions were applied to the resistance data. The clip and destripe functions were used on the magnetometry data. Interpretation drawings were generated using Adobe Illustrator CS5.1, after the survey data was processed and georeferenced using ArcGIS 10 GIS software.

Geophysical survey results

Area A – Swap Hill stone setting

The most obvious activity is disturbance associated with military training, specifically the use of the area as an artillery range during World War Two. The magnetometer survey is peppered with a dense spread of small dipoles, which indicate fragments of iron shrapnel from this activity (figures 3 and 4). Frequent small craters were visible across the survey area when undertaking the work, which appeared to be mostly small features which could relate to mortar fire, and a few larger calibre shell blasts. Amongst the data clear lines of dipoles suggest continued firing and are what one would expect to see as a result of gradually adjusting the range. Given how much shrapnel is present in the survey plot, it is extremely difficult to define anything of archaeological interest in the magnetometer data. The stronger dipole in the central part of the survey (close to the setting) is also most likely a result of shrapnel. A few very weak trends are also present (shown in orange) and none of these are likely to be archaeological in origin; most are likely to be geological.

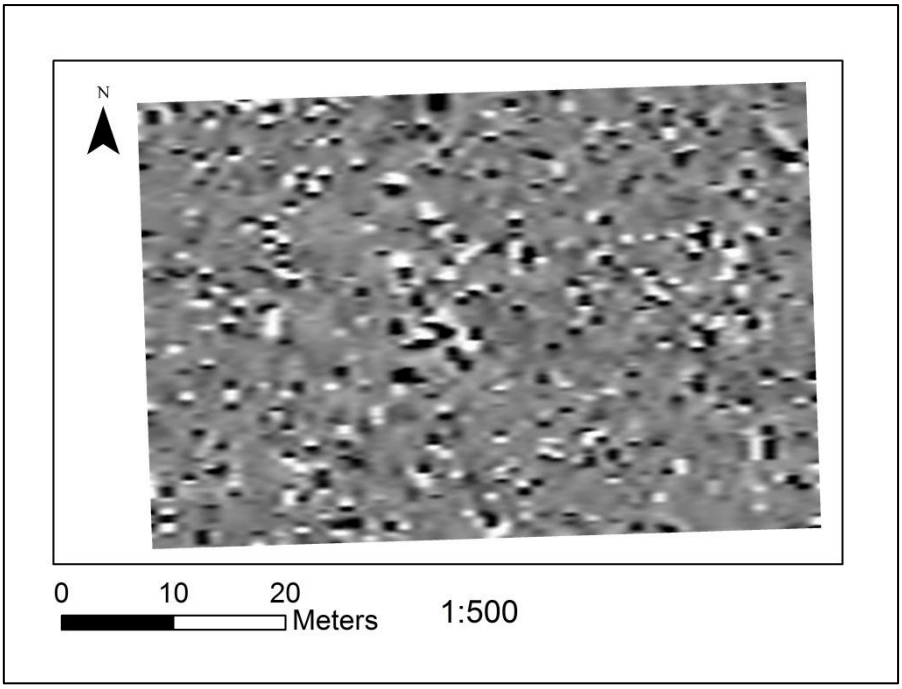


Figure 3: Magnetometry survey of Swap Hill stone setting. Produced by the author.

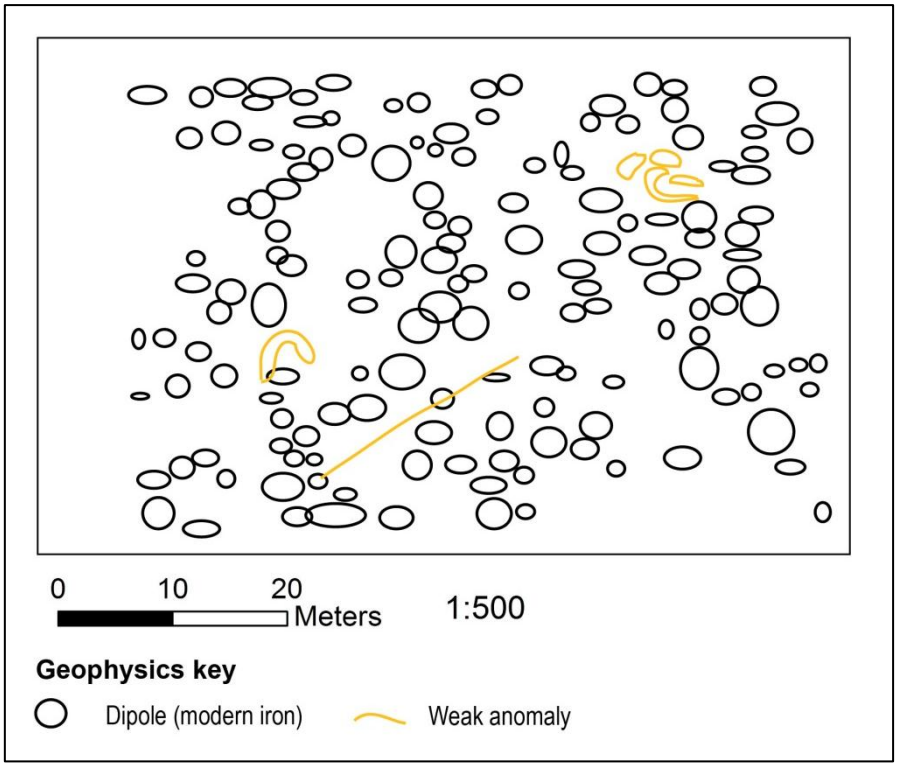


Figure 4: Interpretation drawing of Swap Hill magnetometry survey. Produced by the author.

Given the intense shelling of the site visible on the magnetometry, the resistance results are very difficult to interpret with any confidence. The vegetation in the survey area was mostly open short cropped grass, but some patches of reeds and rushes have caused noise and contact problems in the results. There are however some high and low responses which require explanation (figures 5 and 6). The one low resistance anomaly in the central area of the survey might represent a pit, scoop or erosion hollow. This may be the result of animals using the stones as rubbing posts. The response is around 4-5m across, with stone A sitting just in its edge. Whilst one might expect an erosion hollow to focus more centrally on the upright stone, it could also represent a former stone location. If this was the case, any upright could have been re-set elsewhere or left recumbent nearby. This practice has been demonstrated in recent work at other sites on Exmoor (Gillings and Taylor 2011: 3-5; Gillings 2013:10-11). Whilst this is a somewhat tenuous suggestion based only on the geophysics (and given the shelling) it demonstrates the difficulty in interpreting these sites based on their surviving plan.

There are frequent small high resistance responses scattered across the survey area, some of which seem to run in lines. Many of these have a subtle low resistance halo, suggesting soil re-deposited from impacts, leaving underlying rock more exposed in the centre (Gillings *et al.* 2010: 301). This is likely the result of ordnance impacts. Nothing in the resistance can obviously be interpreted as related to activity in prehistory. Whilst there is a diffuse high resistance response just north of the centre, this is more likely to reflect a concentrated area of impacts on a high resistance area of underlying rock than a concentration of stone caused by activity in prehistory. Although it is possible that some of the high to medium resistance responses may be of archaeological origin, it is not possible to define any due to the military disturbance. Finally there is a subtle low resistance linear, which has a slightly uneven shape. This is interpreted as an uncertain archaeological feature, it could represent a shallow slot or ditch. It is more likely it represents an eroded hollow, which has silted up, possibly caused by a path or route used by animals, although interestingly it appears to stop at the stone setting. The resistance survey does demonstrate the setting here is again located on a high resistance band of underlying rock, with frequent small pieces of stone clitter in the area. One large natural outcropping stone slab is present a short distance north of the central area of the stone setting. This could be further evidence of a potential link between stone settings, and natural rock outcrops as suggested for East Pinford (Gillings *et al.* 2010). This situation occurs at only these two sites at present, and should not be assumed as a more widespread pattern.

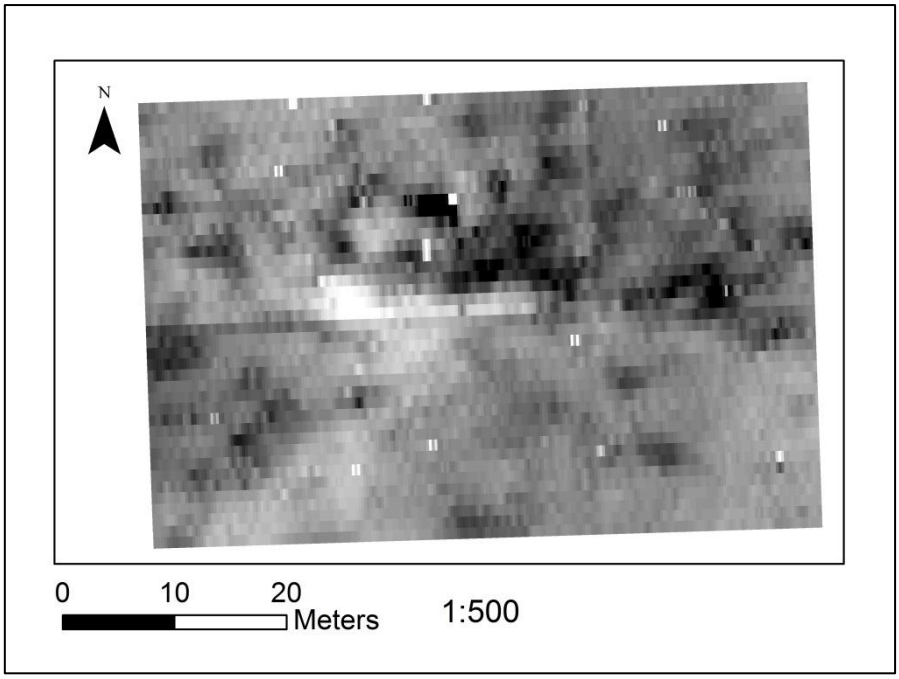


Figure 5: Resistance survey of Swap Hill stone setting. Produced by the author.

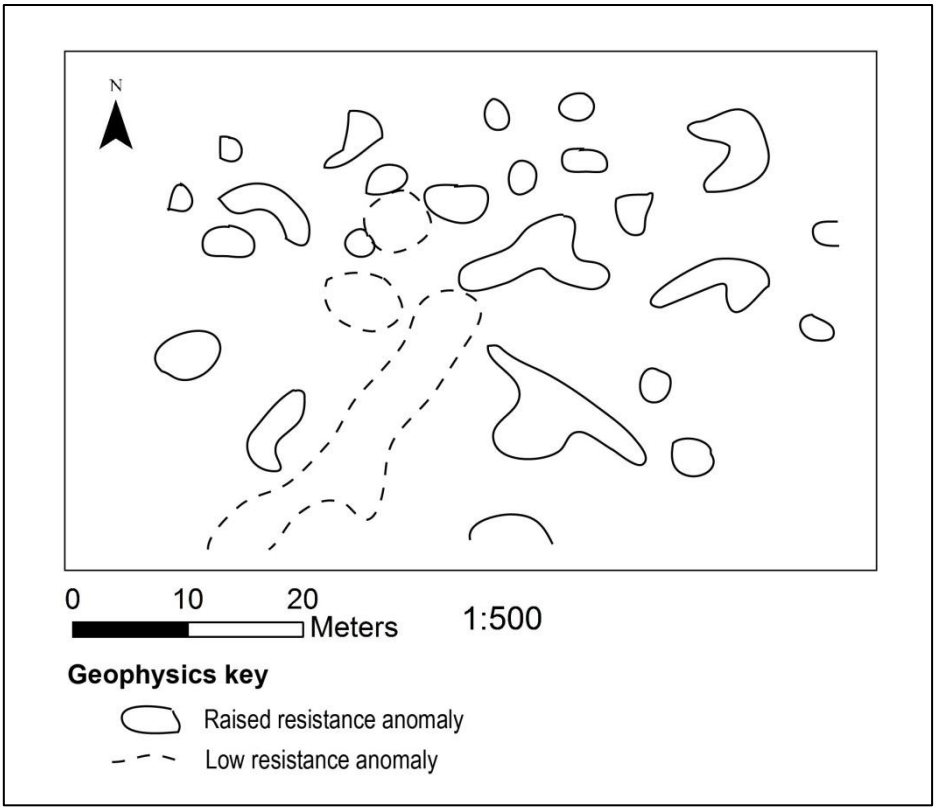


Figure 6: Interpretation drawing of Swap Hill resistance plot. Produced by the author.

Area A – East Pinford stone setting

The results here revealed little in the way of potential archaeological features, but have helped to elucidate the geological surroundings of the stone setting and clarify the pattern identified in earlier work at the site (Gillings *et al.* 2010). Figures 7-9 show a better definition of the underlying geological trends due to a slightly expanded survey area. The magnetometry shows the area has a lot of iron disturbance, fragments of shrapnel and shell casings from military training in the area shown by frequent dipoles. Several broad linear trends are visible which are a result of the underlying geology incorporating a transition from an area of clitter and outcropping surface stone to an area of differing geological signature. This pattern is more clearly shown by the resistance plot which shows that the stone setting sits within a broad high resistance band of outcropping stone, running through the grid. A clear transition can be seen to an area of low resistance in the south western half of the survey plot. This area has a much greater soil build up and moisture content, and might be explained by an underlying geological change to clay, perhaps underneath peat. There is not anything in either plot with is obviously archaeological in origin. Although some of the high resistance patches around the setting stones, are detecting small concentrations of stones in hollows around the uprights. These hollows are probably to do with animal rubbing, but the concentration of small stones within them was particularly noticeable during the survey which was undertaken in May 2014 (a dryer part of the year). Some of this may be evidence of the over use of excessively large packing stones argued for by Gillings (forthcoming: 10-11). It is interesting to note that when visiting East Pinford during the wetter winter months, when the soils swell up with moisture, much of this is not visible on the surface.

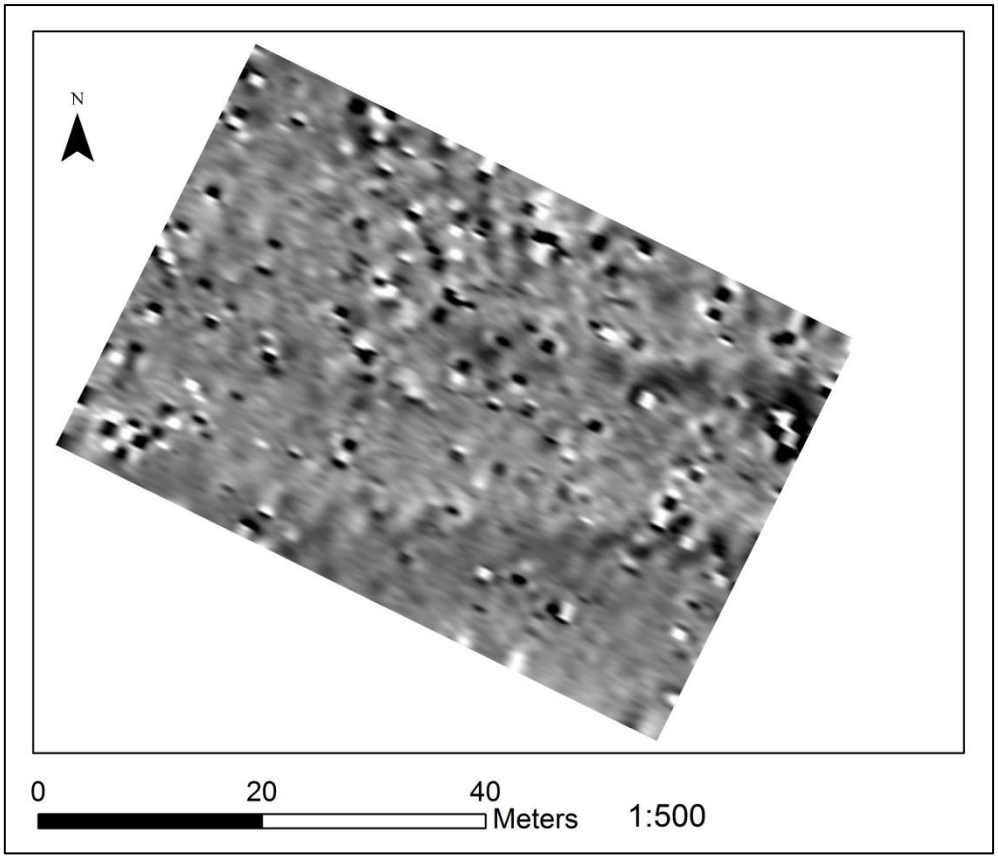


Figure 7: Magnetometry survey of East Pinford stone setting. Produced by the author.

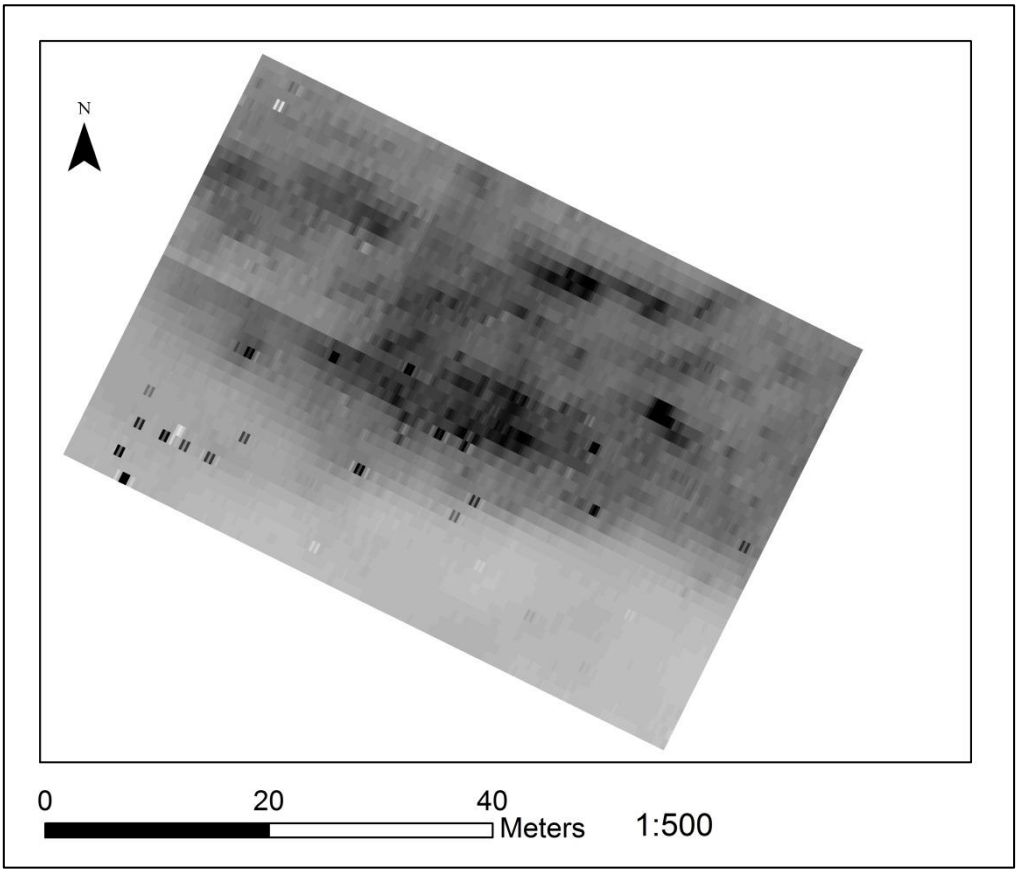


Figure 8: Resistance survey of East Pinford stone setting. Produced by the author.

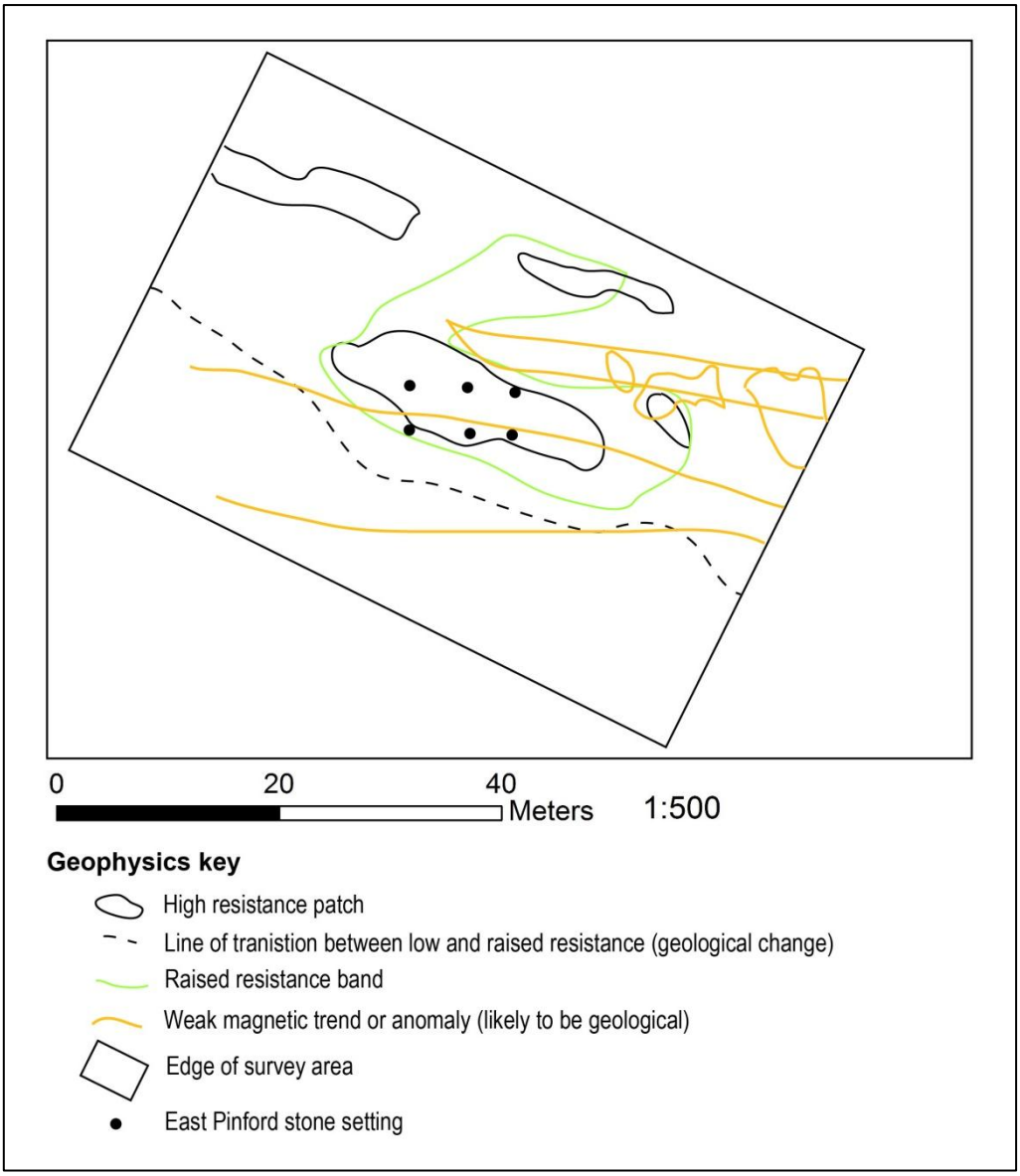


Figure 9: Interpretation drawing of East Pinford magnetometry and resistance survey. Produced by the author.

Area B – A circular enclosure on Parracombe Common

The results of the survey of the enclosure are interesting for a number of reasons. The bank and ditch are clearly represented in the resistance plot to the east of the field wall which bisects the site (pale blue area) in figure 10. The bank is represented by a high and medium resistance signature. The ditch is less clear, but is nonetheless visible as a broad and diffuse low resistance anomaly which follows the curving arc of the bank. The diffuse nature of the banks resistance signature suggests that its matrix is predominantly made up of earth; there are no very high resistance areas which might suggest a high quantity of stone. Of course a significant amount of material has been removed from the bank by ploughing, but there are not any obvious linear high resistance signatures which might suggest dragging out of stone

from the bank. It is therefore likely that the bank was constructed predominantly of earth dug from the ditch. This finding is interesting in itself, because it suggests there was a significant depth of soil on the site when the monument was constructed, and therefore could have been an important area for agricultural production. Also of interest on the eastern half of the site is a diffuse low resistance band which seems to partially surround the outside of the bank. It is less clear what this may represent, but it could be evidence of a second ditch at the site. This is by no means clear, but it could have been a shallower feature, which has now disappeared through infilling by plough action. There is no surviving earthwork evidence of a second ditch.

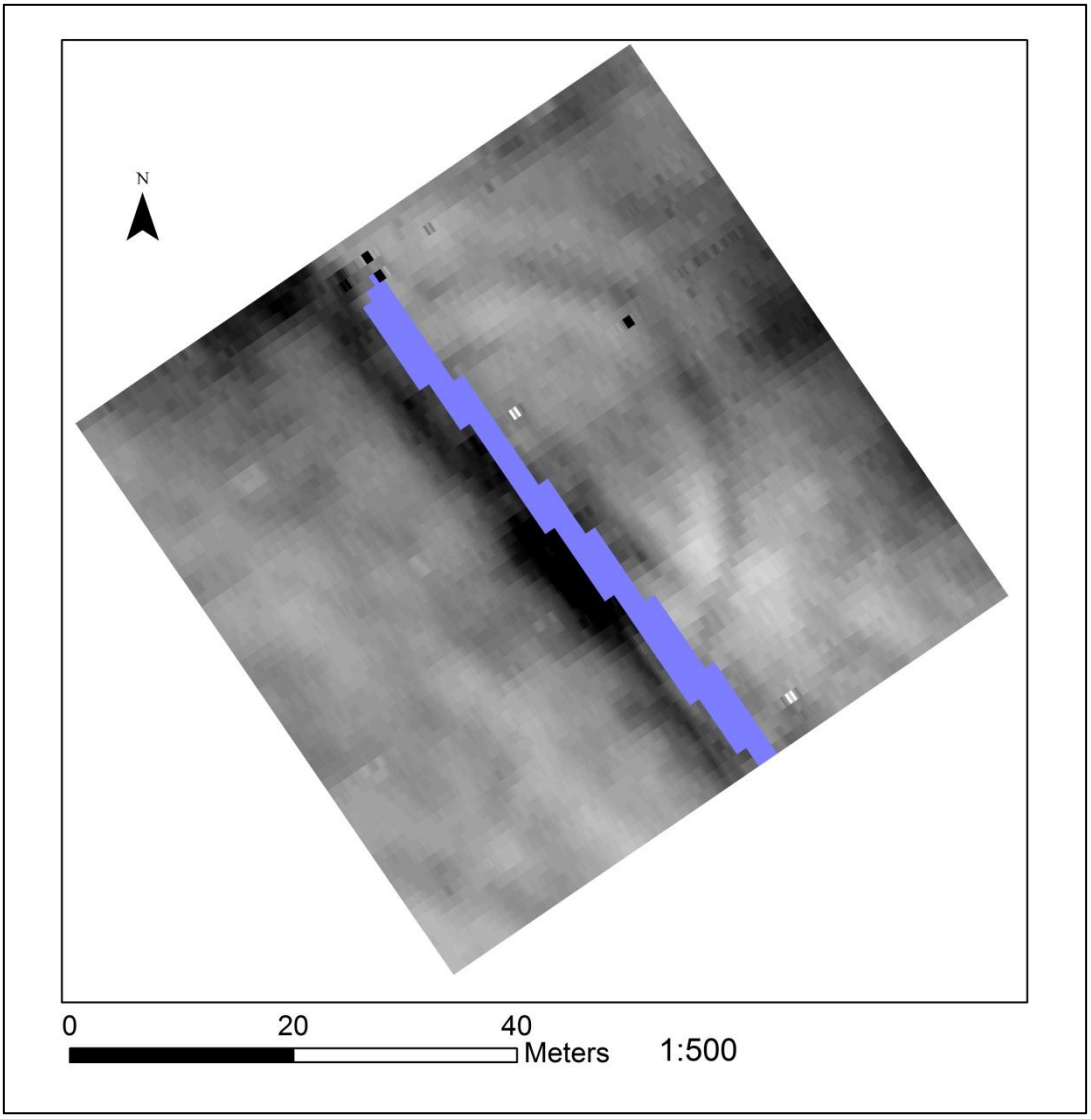


Figure 10: Resistance survey of circular enclosure. Produced by the author.

Turning to the western half of the site, the resistance does suggest the site is heavily disturbed by agricultural activity. Several deep plough furrows (visible on the surface) run on the same alignment as the boundary which bisects the site, and are probably best described as subtle linear trends in the data rather than distinct features. These features do seem to have destroyed a significant portion of the site, especially in the north western area, immediately west of the boundary line. The south western area reveals more, despite its truncation by the plough furrows. A subtle low resistance anomaly follows the same arc as the ditch on the opposite of the boundary, and suggests a portion of the ditch survives for about one third of the western half of the site. It also appears to be disturbed and truncated (cut by the plough furrows), suggested by the widening of the signature and lack of a clear edge. Whilst it is difficult to say for sure, there are a few potential sections of surviving bank material (figure 13). It is difficult to interpret these as certain, but the fact some of them are at slight angles to the ploughing suggests it might well be the case. The concentrated area of high resistance close to the boundary line in the central portion of the site is most likely the effect of the trees in the boundary wall. It is also a result of some areas of stone tumble from the boundary wall itself. The high resistance linear in the northern half immediately west of the boundary wall is also likely to be a combination of tree roots and collapsed stone. Alternatively it might suggest the boundary wall has been rebuilt, in a slightly different place at the NW edge of the survey area. The high resistance anomaly on the western side of the gap in the end of the wall might well be collapsed stonework from the wall, or roots from the substantial hedge along the north western edge of the survey. This field entrance may have been created by pushing the end of the wall down, given the lack of any signs of gate posts. There is a noticeable erosion hollow running through this gap in the field wall, but it is not clearly picked up on the geophysics.

Two very subtle raised resistance linear's appear to be running on a roughly east west alignment into the western half of the site, and their close spacing and discordance with the field pattern make it unlikely they are field drains. The magnetometry shows geological trending on a similar alignment, so these may not be of archaeological interest (although this cannot be ruled out). However these do seem different from the underlying geological trending. It also possible this might be a feature which seems to head towards a possible entrance to the site. There are also several subtle medium and faint resistance anomalies which are uncertain, but possible archaeological features. A broad and diffuse curvilinear in the south east corner of the survey is similar in form to anomalies detected around Porlock stone circle (Gillings and Taylor: 2012), although it is not possible to see its full extent in the current data. A small circular discontinuous raised resistance anomaly in the north western part of the grid, could be archaeological in origin, a small cairn might explain it. Certainly satellite cairns around bigger barrows are common in many landscapes (including Exmoor) and some henges do have barrows inserted close to them, such as at Arbor Low in Derbyshire (Harding 2003: 10 fig 4). Whilst the results are not clear in the area because of

the plough truncation, it looks likely this was just outside the extent of the enclosure. Again given the truncation it is far from certain, but if there was an entrance into the earthwork it might have been located in this area. Of course this is difficult to say with any certainty based on the results here, but it could potentially be tested with excavation in the future.

The magnetometry results (figure 11) on the site demonstrate a lot of disturbance from modern iron, the band of disturbance along the northern edge of the grid being from a metal wire fence located within the hedge. There is also a spread of small iron dipoles across the survey area, these represent modern iron fragments. This is not surprising on farmland and some large fragments of iron most likely from farm machinery where noted in the area. Whilst most of these are not of interest here, a couple are larger. These could be of archaeological interest but it is difficult to say for certain, they are more likely to be intrusive iron. The most distinct feature is the enclosure itself, although this has only a weak signature. A slightly raised circular area of magnetic disturbance represents the enclosure, and it can be seem in both halves of the site. There is a possibility of a break in the circuit matching the resistance survey, but it is difficult to tell as this area is obscured by a dipole. The western half of the internal area is pretty quiet, probably explained by the truncation of the site. The other half does show some subtle traces which might be caused by either ring ditches, fence lines or internal divisions, but these are very difficult to interpret with confidence. The latter are inpterpreted as possible but uncertain archaeological features.

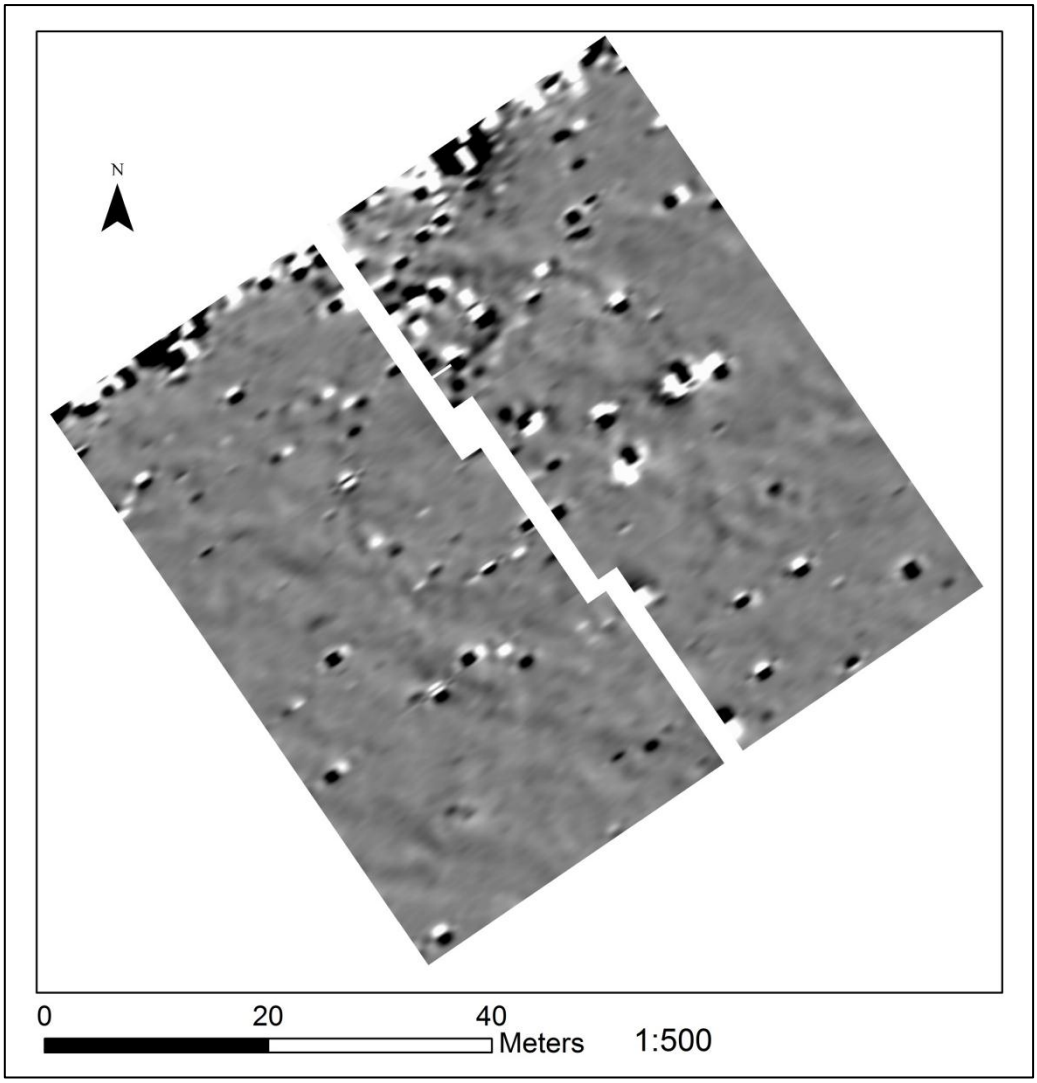


Figure 11: Magnetometry survey of circular enclosure.

Geological trending is also evident in the results, in a series of weak linear anomalies spread across the survey on a WNW-ESE alignment. There are a further series of weak rectilinear anomalies in several areas of the survey, which might be archaeological in origin. Some of these seem to have small high magnetic anomalies in their corners (different to the dipoles, high magnetic core with slight low halo) but their small size makes them difficult to interpret as archaeological features. It is very difficult to interpret this pattern as archaeological in origin for certain, but it is reminiscent of the square plots with small cairns in the corners suggested adjacent to Porlock stone row (Gillings and Taylor 2013). A small number of subtle rectangular shapes might be a result of geology, but they appear quite different to the linear geological trends. It cannot be ruled out that these are archaeological features, perhaps small square plots or structures. This could only be established by excavation and extending the survey to see if the pattern continues over a larger area. It is similar to patterns detected in results nearby, but again the survey area was not big enough to see if it was geological or whether the survey hit a particularly busy area of archaeology.

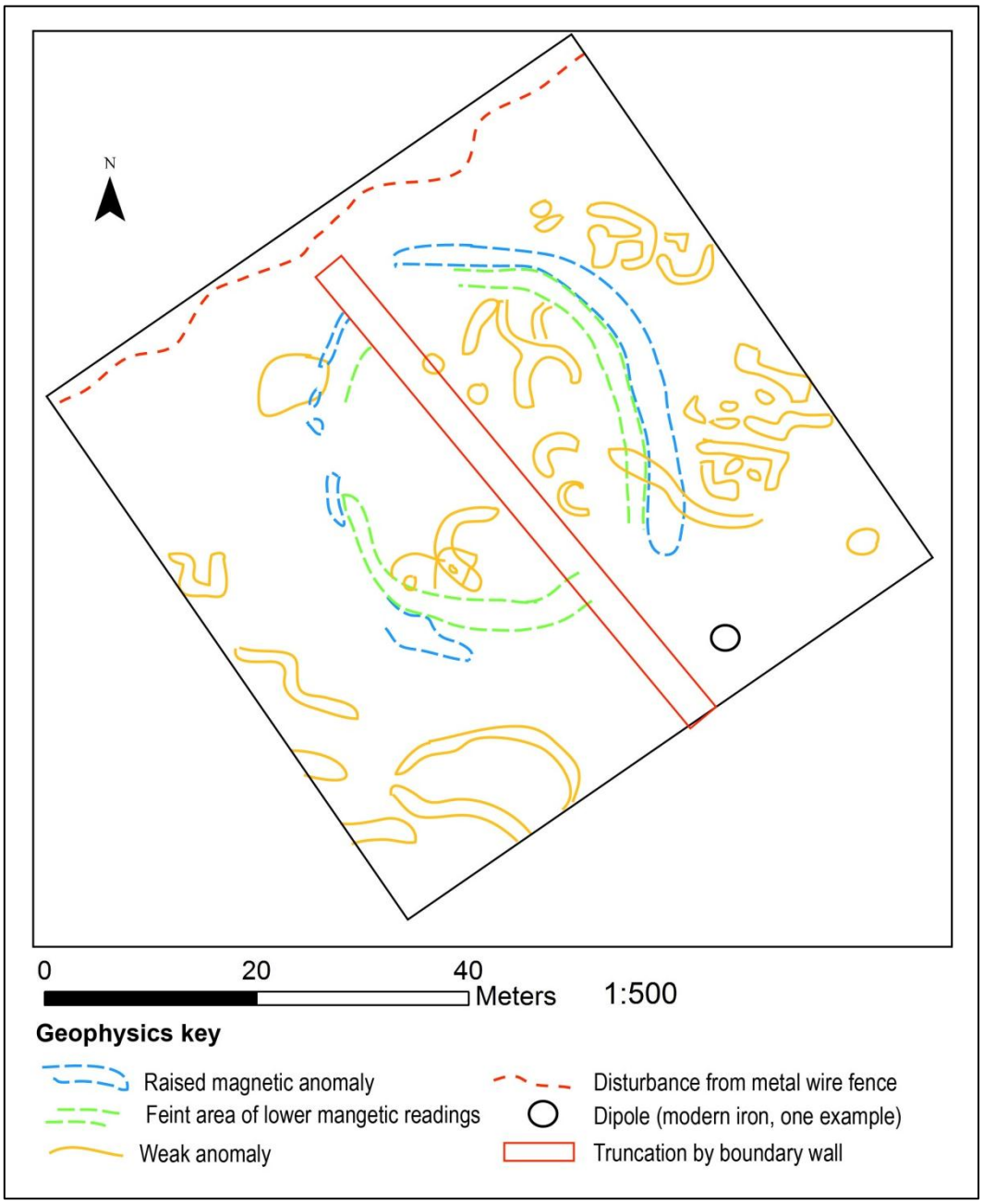


Figure 12: Interpretation drawing of magnetometry survey of circular enclosure. Produced by the author.

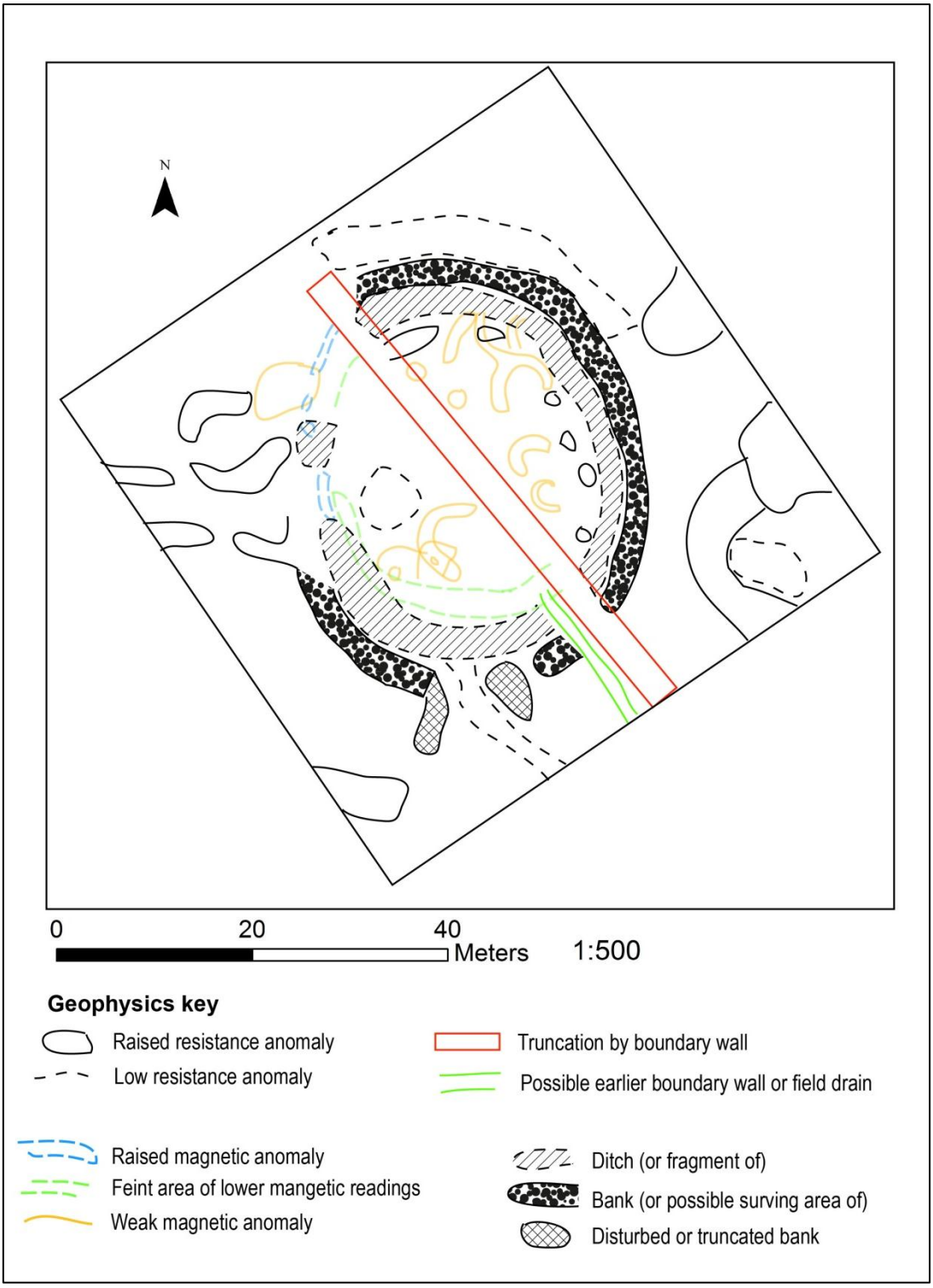


Figure 13: Interpretation drawing of survey of circular enclosure. Produced by the author.

Results – DGPS survey of archaeological features

Any potential new features identified during the geophysics were recorded and surveyed with DGPS where possible, and a feature gazetteer is reproduced in appendix 1. At East Pinford, a small mound (EPFN4) which measures 3.4 x 2.6m was identified to the west of the stone setting (figure 14). The feature is subtle, a slight rise in the ground which felt solid and potentially stony underfoot. Given the known relationship between small cairns and stone settings on Exmoor, it is potentially of significance. The geophysical signature of the small mound however is slight, represented by only a few points of high resistance, the rest of its shape being only slightly raised resistance, similar to the surrounding background readings. This could be a small cairn, but as the background readings suggest it is in a stony area, it is not very distinct in the results. The feature certainly felt stony under foot. There is however no magnetic anomaly at this point. Although if such a small cairn was entirely made of earth it is unlikely to show clearly on a geophysical survey unless it contained a cist or evidence of burning. As additional work at East Pinford, photographic recording was undertaken at a nearby rock outcrop, to record marks first identified by Gillings *et al.* (2010). In addition to the panel identified by Gillings *et al.*, hollows on a second rock panel were also recorded. It was noticeable that when dry, that these depressions had a distinct pinkish colour, clearly different from the grey surface of the rock. There were no obvious signs of pecking, the hollows likely a result of erosion. The distinctive colour however may well have noticeable to people in the past. Unfortunately these could not be surveyed with DGPS, and were only located with a handheld GPS. Gillings *et al*. argued that the first set of scoop marks, most likely natural to the rock formation or caused by erosion, matched one of the component stones of the setting to the outcrop (Gillings *et al*. 2010). Such a distinctive and extensive area of outcropping rock is unusual for Exmoor, and a slight band of clitter is present which runs through the setting towards the former. Given work in other landscapes such as at Leskernick on Bodmin Moor (Tilley *et al*. 2000; Bender *et al.* 2007) identifying what can best be described as engagement with natural rocky features, the outcrop at East Pinford may well have held significance for people in the Later Neolithic/Early Bronze Age period. The extent of large flat rock slabs around the outcrop may well have attracted people's attention, although at present no work has been done to look for human activity in this area in terms of geophysical survey or test excavation.

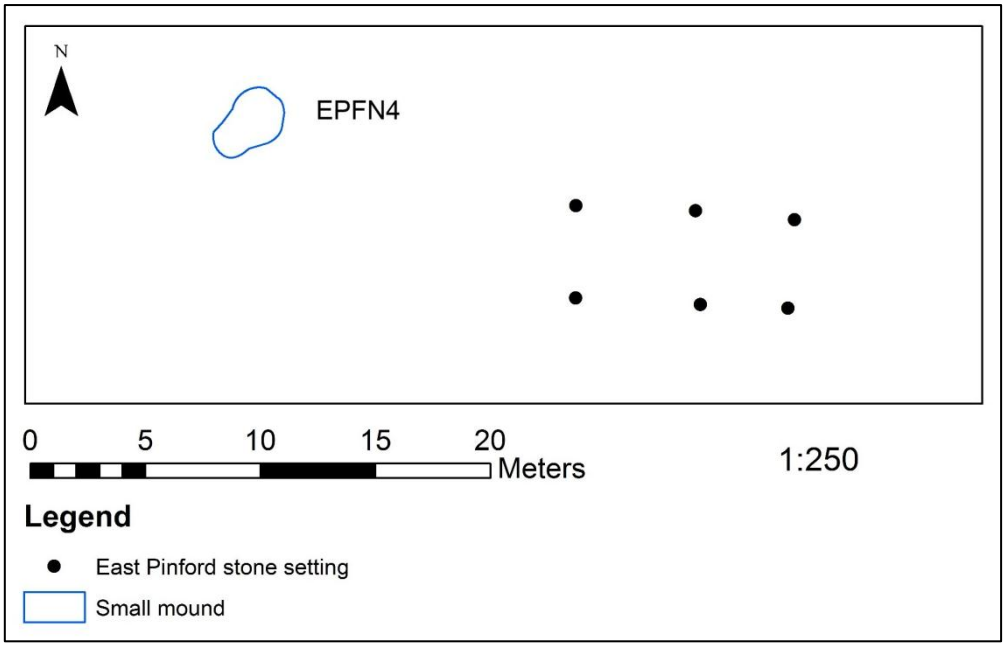


Figure 14: East Pinford survey plan. Produced by the author using data collected by Hazel Riley.

At the Swap Hill site several features were also located (figure 15 & appendix 1). As part of the strategy reconnaissance was undertaken of known features on the hillside, with the intention of surveying them with DGPS and undertaking photographic recording to enhance understanding of the features. Despite an extensive search by the project team a small standing stone (HER MSO7150) could not be located. Given the density of the molinia vegetation in the area, it was most likely obscured from view. However a section of field bank (HER MSO6872) was found and surveyed with DGPS. The HER entry described this as a 25m length of stony bank with a right angled curve, possibly part of an irregular enclosure or clearance feature, noting some edge set stones (HERMSO6872). The survey has added further detail in understanding the site. The feature consists of two lengths of low upstanding stony bank, and an adjacent mound, along with a potentially unrecorded standing stone (figure 16). It would appear that the two sections of the bank may once have been connected, and that the bank has been truncated by later activity. The identified mound is close to this apparent truncation, and it is irregular in its profile form. This is interpreted as a spoil heap, the result of the deliberate removal of an area of the bank. The newly identified standing stone is a small slab c.20cm in height, located circa 1m from the end of the eastern extent of the L shaped section of bank. Whilst this is close to the recorded height of standing stone MSO7150, these are not thought to be the same feature. The recorded location of MSO7150 is roughly 75m north west of the field bank. Despite the small size of the stone, there is no natural stone clitter in the immediate surrounding area, and it is comparable to some component stones of settings in its size. What may be of

greater significance is that the L shaped section of bank appears to be aligned on the upright stone. A more detailed metric survey of the site is required to accurately record the finer details of the features, and to clarify the nature of the possible truncation or gap in the bank. Whilst a very quick search was made to identify any other nearby banks, none were located. The area requires an extensive and close spaced walkover survey to identify if the field bank is part of a larger system. If the field bank was originally a single feature as suspected, its shape suggested it may have formed a corner, suggesting it might be part of a larger boundary system, field plot or enclosure. In subsequent processing of LiDAR data two potential scoops with slight raised areas within are present circa 56m north west of the field bank remains, in an area with a different surface texture to the surrounding hillside (figure 17). There is a very slight suggestion of upstanding fragments of a discontinuous boundary which may delineate the area containing the scoops. The signature in the LiDAR is extremely faint and needs to be checked on the ground to see if these features are likely to be archaeological, or simply noise. Whilst this remains unestablished at the time of writing, it is possible that the scoops may be slight house platforms, set within some kind of fragmentary enclosure, or cleared area.

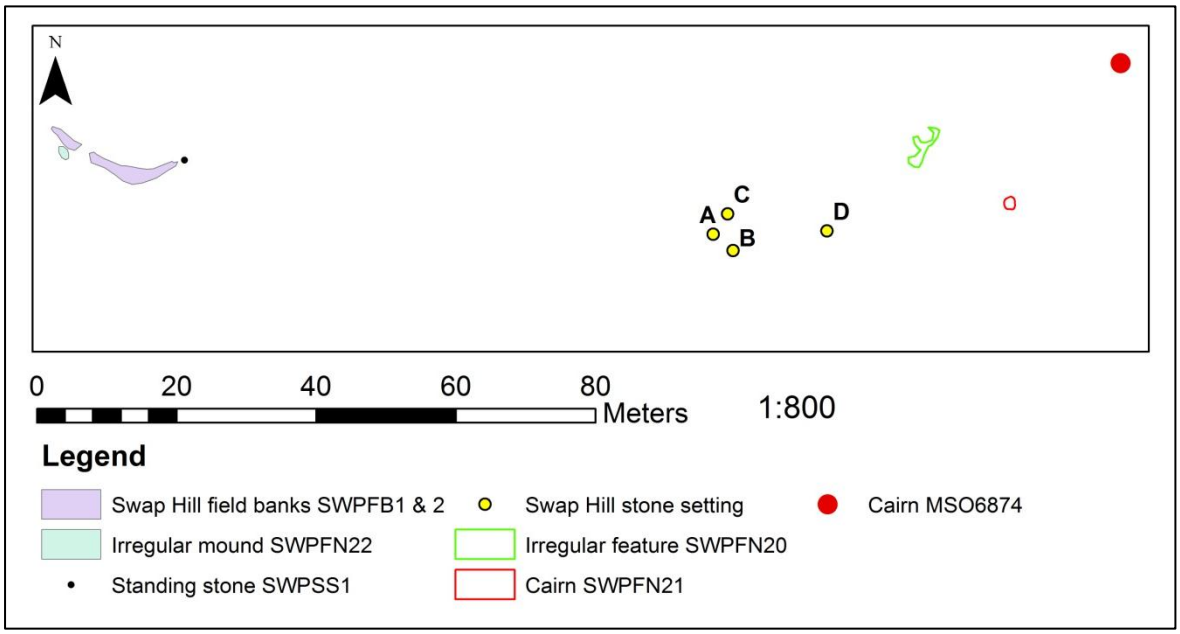


Figure 15: Survey plan of features around Swap Hill stone setting. Produced by the author using some data from ENPA HER.

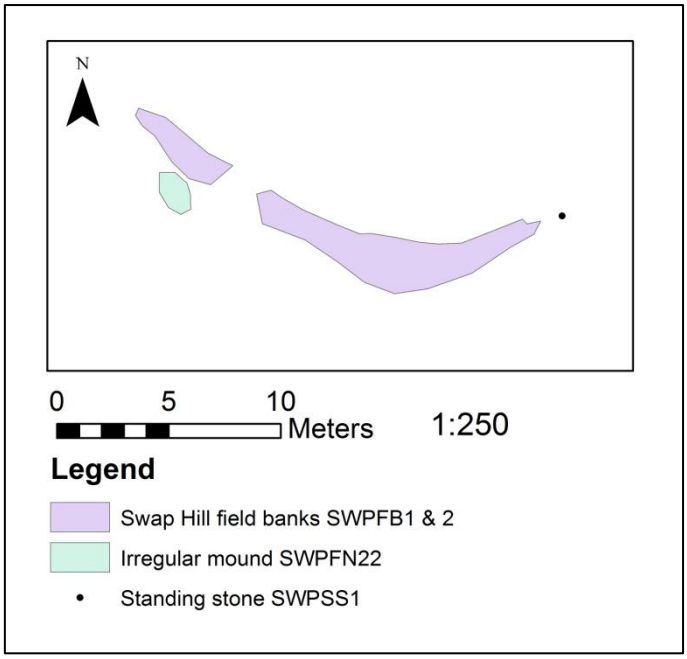


Figure 16: 1:250 plan of field banks and nearby features on Swap Hill. Produced by the author.

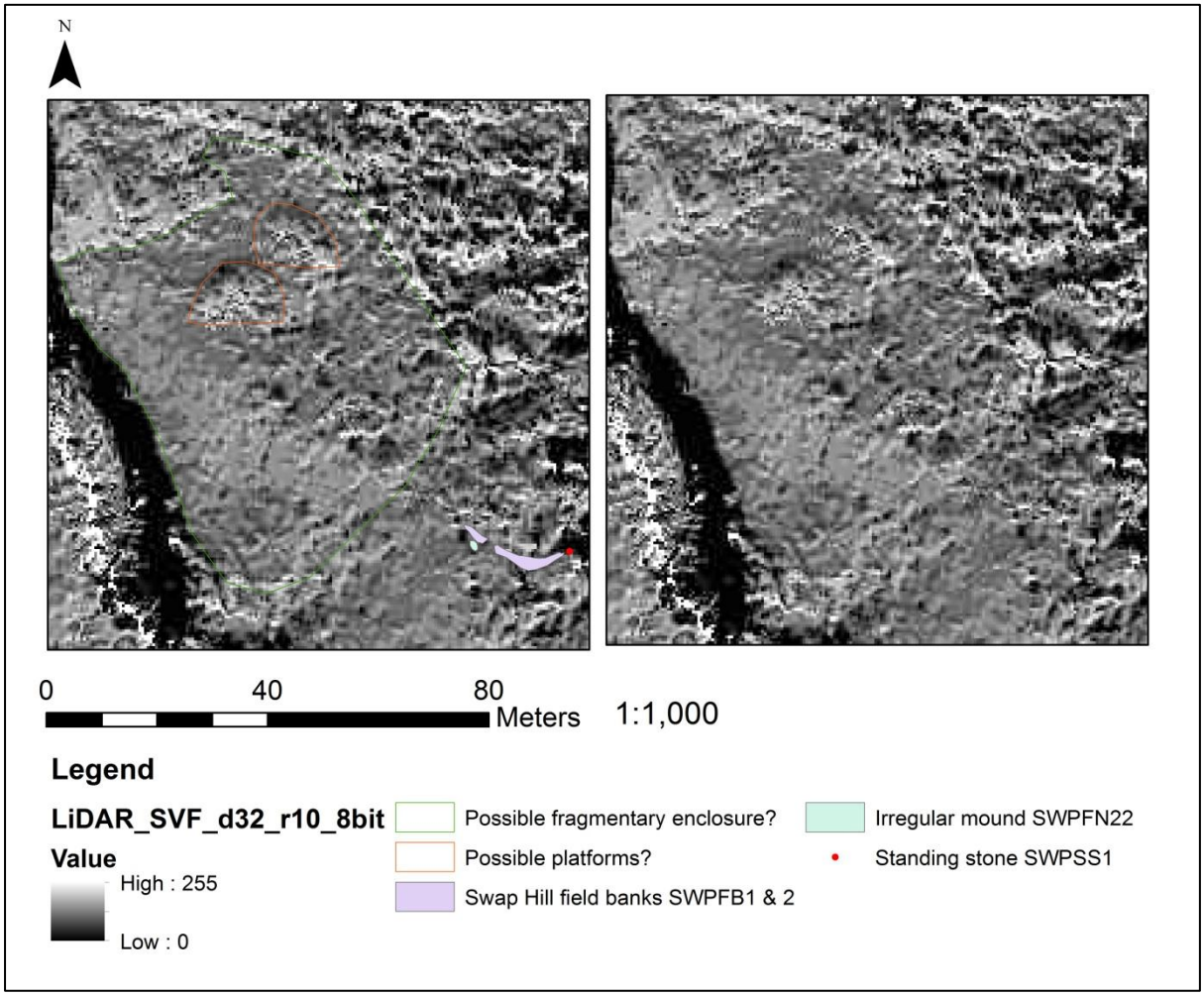


Figure 17: Possible features detected in LiDAR data after Sky View Factor analysis. Produced by the author using LiDAR data from the Environment Agency (© Geomatics).

Several potential features were identified east and north east of Swap Hill stone setting itself, whilst the setting stones positions were also surveyed. SWPFN20 consists of a slightly raised area denoted by a change from short cropped grass, to brown mossy turf with clumps of rushes. The feature felt stony underfoot and has a slightly irregular plan shape; a c shaped half, with an additional slight curvilinear extension, forming something which resembles a partial reverse capital letter E (figure 18). The feature does not have much height to it, circa 0.2m at the most. Given the extensive shelling of the area, this is most likely a result of two adjacent ordnance impacts. Although it is possible that such impacts hit a slight stone spread. It does not have a distinct signature in the geophysics; there is only a slight area of raised resistance which is not obviously of archaeological interest. Shrapnel is also present across the entire survey grid. Immediately east of the stone setting, a small discrete round mound was noted, visible as a bump in an area of short cropped grass (figure 18). This measured 1.8m x 1.5m, and less than 0.5m in height. Probing suggested a dense concentration of stone was present throughout the feature, which stopped abruptly at the edge of the slight earthwork. All this suggests the feature is a small cairn, known to occur on Exmoor near to stone settings (Riley and Wilson North 2001: 32; Gillings 2012). Unfortunately this was just outside of the geophysical survey area, and time constraints prevented a grid extension to investigate its geophysical signature. This small cairn is about 25m south west of another known cairn (HER MSO6874).

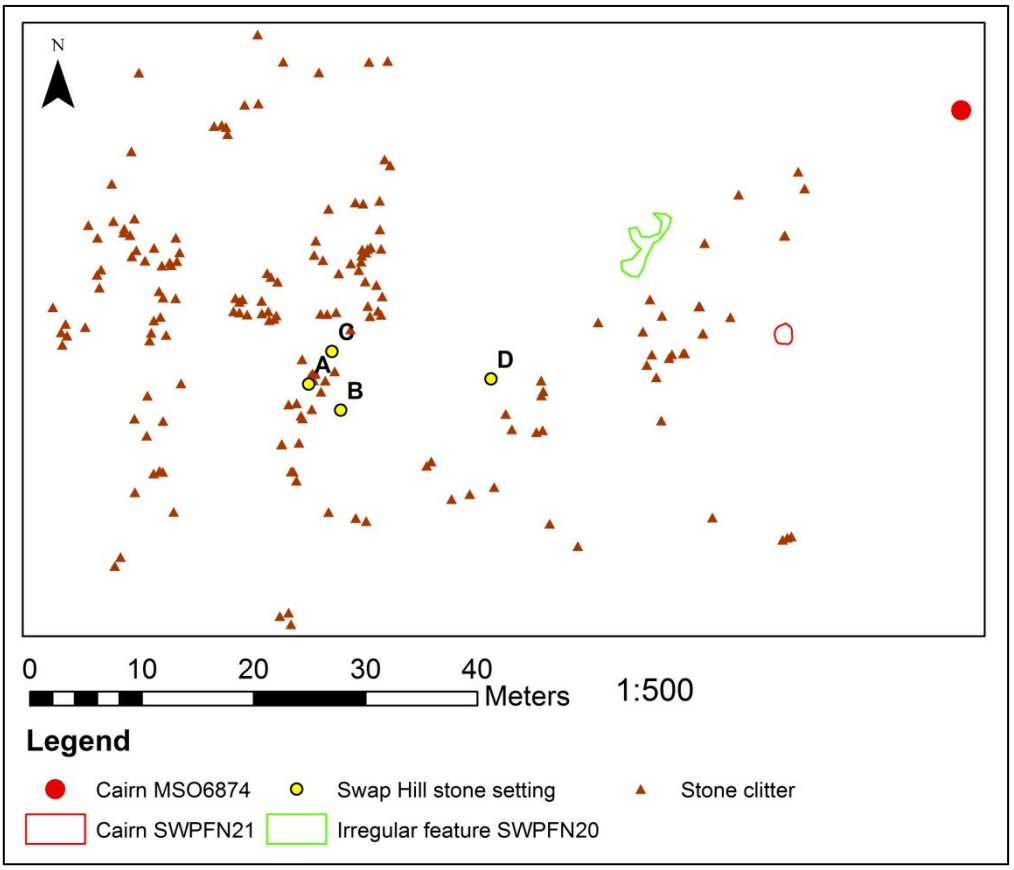


Figure 18: 1:500 plan of features near to Swap Hill Stone Setting. Produced by the author using some data from ENPA HER.

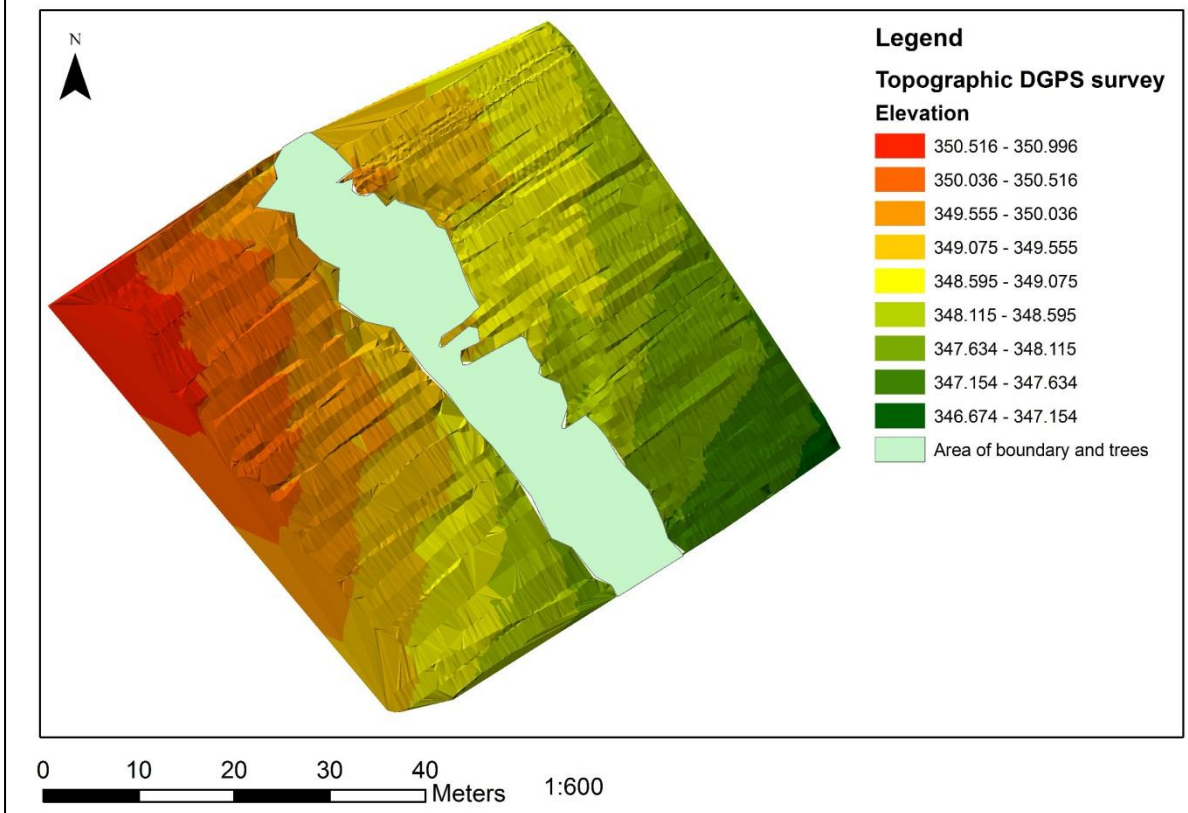
Discussion

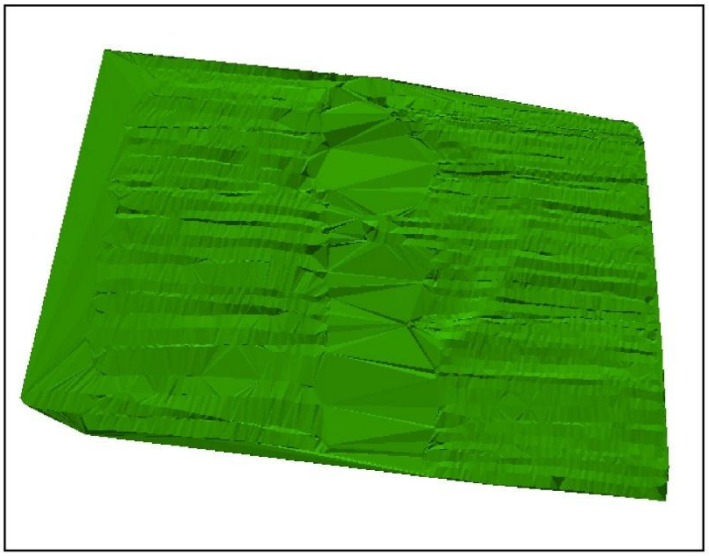
The survey work undertaken here has highlighted the intensity of military disturbance in study area A, with its use for artillery practice. The area around Swap Hill stone setting is intensively damaged by ordnance impacts and the entire site covered in shrapnel fragments. Because of this it has not been possible to identify any clear potential archaeological features within the geophysics, although it remains possible that severely damaged remnants might remain. All of this is a pertinent reminder of how problematic it is to place emphasis on the planned form of stone settings as they appear to today, without detailed scrutiny. Despite the military disturbance through shelling on Swap Hill generally, the form of the field bank remains are intriguing, with a potential relationship to a small standing stone. This is reminiscent of newly clarified evidence on nearby East Pinford, surveyed at the same time by Hazel Riley for the Exmoor Mires Project (Riley 2014). Here it is argued that an area of field bank also has a potential relationship to a small standing stone, and that this could be part of a closing down process of the feature (Riley 2014). The work here suggests a similar narrative could be the case on Swap Hill, although in this case it seems the field bank may have been aligned on a small standing stone (or the stone being placed in relation to it). This suggests that the deployment of small standing stones played a role in the layout, or potentially closing down of boundary features on Exmoor during prehistory. Whether this took place in the Middle Bronze Age, or late Early Bronze Age is unclear, as fragmentary field remnants on Exmoor are not at present specifically dated.

The geophysical survey of the circular enclosure suggests that despite the levelling of one half of the site, and its truncation by a series of plough furrows, as well as a field boundary, potential areas of surviving archaeological deposits remain. Whilst the interpretation presented here is at best tentative, slight traces of the bank, and potential surviving areas of the ditch are present. It is also possible there is a second ditch around the outside of the bank, around part of the monuments northern arc. Such an occurrence is a known feature of some henge sites with partial or discontinuous outer ditches, for example all of three of the Thornborough sites, and others such as Nunwick, Hutton Moor, Newton Kyme and Cana Barn (Harding 2003: 99 fig 71). However multiple ditches can also be a feature of some Neolithic round barrows (Harding 2003: 19). Although it is stressed that the proposed interpretation in figure 13 would need to be confirmed by excavation before any firm conclusions could be drawn. This interpretation is tentative; it is possible some of the subtle traces within the enclosure are archaeological, but this cannot be said with certainty on the basis of geophysics alone.

There are several raised resistance features which are outside the enclosure, and an expansion of the geophysics is needed to shed more light on their character. Whilst it is

difficult to say with any certainty if the proposed entrance and gap in the enclosure ditch is real without excavation, it would appear that a linear anomaly seems to be heading towards this area, perhaps delineating an access route. This needs confirmation by extending the survey to see if this is a distinct feature, as the alignment is similar to the geological trending present. Linear monuments such as a cursus or avenues/stone rows are also well known to occur either aligned on, or leading towards henge entrances as at Stonehenge (Barrett 1994: 42) or the Beckhampton and West Kennet Avenues at Avebury (Barrett 1994: 10). Linear monuments also sometimes occur nearby, for example at Maxey, Dorchester on Thames and at the Thornborough Henge sites (Harding 2003: 89 fig 64 and 91 fig 65). Although given the heavy disturbance and ephemeral nature of the traces, it remains difficult to say whether the feature is a henge or a disc barrow for certain, or whether the enclosure is associated with settlement or farming related activity. The form of the site and potential entrance location is also similar to a large platform cairn which is the most easterly of the five Barrow Group, which has an external bank and internal ditch encircling a domed mound (Riley and Wilson-North 2001: 37). This would however require explanation as to why there is no trace of a mound within the Parracombe enclosure, even in the half where bank and ditch survive as subtle earthworks. A topographic DGPS survey was undertaken of the site to investigate this, but confirmed there was no subtle trace of any mound present (figure 19). Some small scale test excavations in the future in the more damaged half of the site, is the only way to shed any further light on this issue. Given the current site location on land which has been subject to ploughing, it would appear that the surviving of archaeological features around the site is more extensive than might have been expected.





Visualisation of topographic survey data in 3D as a TIN surface model (facing NNW)

Figure 19: Topographic survey of the circular enclosure with 2D and 3D views. The large triangles in the centre of the 3D view reflect the area that could not be surveyed due to the presence of the trees and boundary wall. Produced by the author.

During the survey a tiny fragment of worked flint was spotted as a surface find, on top of the spoil from a mole hill inside the bank (Appendix 1). The piece is a tiny fragment, with visible ripples on the ventral surface and an irregular dorsal surface. The flint is semi translucent, with a dark beige brown colour. Whilst this is too small to be diagnostic, and could have been moved some distance by the mole activity, it is another clue of prehistoric activity in the vicinity. Given the lack of natural flint in the wider area of Exmoor, it cannot have reached the site without human involvement. Despite a visual check of other mole hills in the area, no more worked flint was present.

Conclusion

The project here makes another important contribution to understanding Exmoor's prehistoric landscapes, but also highlights that there is much work still to be done in the future. A small number of new features have been identified, and the understanding of existing ones clarified which provide vital data input into the authors PhD project, as well as enhancing the HER records for the area. It is also clear that the geophysical survey data can only be pushed so far in terms of interpretation, and that continued test excavations are needed to in future definitively characterise what the anomalies represent. That is especially the case on Exmoor where very little excavation work has taken place, and extremely few features have radiocarbon dates available.

Acknowledgements

The fieldwork was undertaken by the author and a team from the University of Leicester. Thanks must go to Charlotte Black, Eric Tourigny and Denis Sami for their hard work and dedication in some very trying weather conditions. Thanks must also go to Hazel Riley who very kindly surveyed the grid and features at East Pinford. I would also like to thank Rob Wilson-North, Mark Gillings and Jeremy Taylor for their advice, support and training. This work could not have taken place without their input. Thanks must also go to the Woolhanger Estate who kindly gave permission to survey the circular enclosure, and whom were very helpful in facilitating the work. Matt Harley is thanked for granting a licence to work on ENPA property, and for facilitating access and liaising with the tenant for the work in area A. Finally thanks to the tenant in area A for allowing the work to take place.

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Appendix 1 – Site gazetteer

The following table lists all the features surveyed during the project with a short description, and references the project photo archive. Some features were not surveyed with DGPS, but were located with a handheld navigation grade GPS which is shown in the table. HER numbers are indicated for features which were already known. The DGPS data for East Pinford was provided by Hazel Riley as part of work for the Exmoor Mires Project (Riley 2014). The photo numbers reference the project archive.

Feature No	Description	Nav GPS	DGPS	NGR	Easting*	Northing*	Photo No
EPFN1	Natural rock panel with two hollow marks.	-		SS79558 42813	279558	142813	0355-0359
EPFNRO1	Larger hollow in EPFN1, exposing pink internal colour of the stone.	-		As above			0350-0352
EPFNRO2	Smaller hollow in EPFN1, exposing internal pink colour of the stone.	-		As above			0353-354
EPFN2	Series of scoop marks previously identified by Gillings *et al.* 2010.	-		SS79555 42814	279555	142814	0360-363
EPFN3	Highest part of rock outcrop.	-		SS79549 42817	279549	142817	0364
EPFN4	Small mound, some stone felt under foot.		-	SS79628 42734	279627.5326	142733.7689	0390-0392
EPSTSTF	East Pinford stone setting, (comprises stones A-F), stone F, per RCMHE plan (Quinnell and Dunn 1992). ENPA HER MSO6820.		-	SS79651 42722	279650.8421	142725.6131	0370-0375
EPSSTE	East Pinford stone setting, stone E.		-	SS79647 42726	279647.0292	142725.7768	0376-0381

Feature No	Description	Nav GPS	DGPS	NGR	Easting*	Northing*	Photo No
EPSSTD	East Pinford stone setting, stone D.		-	SS79642 42726	279641.6087	142726.0625	0382-0388
EPSSTA	East Pinford stone setting, stone A.		-	SS79642 42730	279641.6222	142730.0831	0393-0401
EPSSTB	East Pinford stone setting, stone B		-	SS79647 42730	279646.8171	142729.8604	0402-0409
EPSSTC	East Pinford stone setting, stone C		-	SS79651 42730	279651.1298	142729.4633	0410-0417
SWPFB1	Short length of field bank. ENPA HER MSO6872.		-	SS80449 42619	280448.8881	142619.0378	0588-0592, 0602-0603
SWPFB2	Section of field bank, L shaped. ENPA HER MSO6872.		-	SS80459 42614	280458.63	142614.048	0592-0593, 0605-0615
SWPSS1	Small standing stone, located circa 1m from eastern end of field bank SWPFB2.		-	SS80466 42616	280465.899	142616.112	0571-0587
SWPFN22	Small mound, next to field bank section SWPFB1.		-	SS80449 42617	280448.5911	142617.2557	0594-0560 1, 0604
SWPFN20	Slightly raised double c shaped feature.		-	SS80572 42618	280571.759	142618.170	0545-0570
SWPFN21	A small cairn. Not previously recorded.		-	SS80584 42610	280584.225	142609.971	0616-0617
SWPSSTA	Swap Hill stone setting, stone A, per RCHME plan (Quinnell and Dunn 1992). Setting comprises stones A-D. ENPA HER MSO6873.		-	SS80542 42606	280541.625	142605.486	0445-0473
SWPSSTB	Swap Hill stone setting, stone B, per RCHME plan (Quinnell and Dunn 1992).		-	SS80545 42603	280544.492	142603.169	0474-0496

Feature No	Description	Nav GPS	DGPS	NGR	Easting*	Northing*	Photo No
SWPSSTC	Swap Hill stone setting, stone C.		-	SS 80544 42608	280543.702	142608.403	0497-0517
SWPSSTD	Swap Hill stone setting, stone D.		-	SS 80558 42606	280557.926	142605.961	0518-0544
PCEFIND1	Tiny fragment of worked flint, surface find from molehill.		-	SS 69180 44905	269179.7	144904.818	

*note = Co-ordinates shown are in metres in the format used by ArcGIS 10. The first digit of each column is a number code representing the letters used in a standard NGR. The NGR co-ordinates have been rounded up or down to the nearest metre from the DGPS data. The co-ordinates are centre points. The stone locations of the Swap Hill setting were taken from the centre of each stone against the east facing elevation.