Geophysical Survey of Whitcombe Bottom at the confluence with Bramshott Bottom

Harting, West Sussex

Report to the National Trust

Following submission of a Written Scheme of Investigation, permission was granted for the People of the Heath team to undertake geophysical surveys on and around a suspected round barrow at the base of Whitcombe Bottom (People of the Heath Regional Barrow Survey no 8017/3; National Trust no MNA192986; SU 8007 1755).

The site, in rough chalk grassland which is regularly grazed, is a low but fairly neat regular mound *c*. 8m in diameter and 0.2m high (**Fig 1**). It was tentatively interpreted as a Bronze Age round barrow and graded 3 ('less certain') in the PotH grading system largely due to its low elevation. While Bronze Age barrows vary enormously in size, both in height and diameter, such a low rise may have other explanations. Nevertheless, it was considered highly probable that this is a man-made feature and it is unlikely to be dumped material from the pond 30m to the south since this has its own apparent dump just beyond (a much larger mound than the possible barrow and somewhat irregular). The small mound, if a barrow, can be linked to the North Marden barrow group as a north-westerly outlier (**Fig 2**). Twenty barrows and possible barrows occupy an area spanning 1.6km NW-SE.

Other features are visible on the ground in the near vicinity. A few metres south-east of the mound is a small circular depression or hollow about 2m across (**Fig 3**). To the west is a low north-south bank with hints of slight hollowing on its west side. It runs northwards curving a little to the east before butting up to a crisper contour-aligned bank and ditch around the southern end of Round Down (**Fig 1**). The latter earthwork then turns a right-angle to cross Bramshott Bottom, this stretch again being indistinct. On the east flank it turns another right-angle to run southwards approximately along the contour, this being another relatively crisp stretch. These crisper earthwork stretches do not look particularly old but neither they nor the pond are shown on any OS maps. The north-south bank within the survey area seems however to be very weathered and may be older.

An uneven patch of ground lies a little north-east of the mound apparently including a ragged linear depression WNW-ESE towards its northern edge. Further to the north-east and just within the above described bank crossing Bramshott Bottom is a quarry on the east flank with a heap of spoil to its south-west – these interrupt a narrow terrace running along that valley side, possibly a cultivation terrace at one stage. A few years ago one of the authors (SN) picked up four small blocks of sandstone from an area of disturbed soil in the vicinity of the northern edge of the survey reported on here.

The survey took place on 2 May 2022 and covered 3540m^2 by magnetometry, using a Geoscan RM85 + FAB 1 + Sensys FGM650/3, and 1710m^2 by earth resistance (or 'resistivity'), using a Geoscan RM85 configured in Multiplexed 3-probe array with 0.5m probe spacing. The centre of a block of four initial 30 x 30m grids was set in the middle of the mound visible at ground surface. This point is calculated to be at SU 80070 17545 from Lidar images (High Woods data), but could not be refined on the ground due to inadequate satellite access. For the same reason it was not possible to undertake the high-resolution contouring originally intended. The grid was aligned on magnetic north (currently *c.* 0.5° west of OS Grid North in this location).

Prior to the survey there had been very little rain for over 6 weeks. The data from both surveys showed significant density variations suggesting buried features and/or differences in soil thickness or composition (**Figs 4 & 5**).

Results

Interpretation is based on the informal density boundary analyses shown in **Figure 6**. Not all the 'signatures' thus defined will necessarily be interpretable in terms of archaeology or geology.

Mound

The roughly circular mound was picked out well in the magnetometry and more subtly in the resistivity (**Figs 4–6**). In the former it is a little oval, *c*. 9.5 (N-S) x 9m, with an apparent indent on the south-east side. There is also an internal difference suggesting two (or more) construction materials – a darker band forms a penannular circuit open to the south-east and in line with the indent. This has an external diameter of *c*. 6–7m and an internal one of 3–3.5m.

The south-eastern indent must be an illusion due to the abutment of a pale feature on that side (**Fig 5**) since on the ground the mound describes a complete circle with no disturbance evident (**Fig 1**). It is possible therefore that the same interference is giving rise to the apparent gap in the darker annulus. The mid-grey signature of the centre of the mound, comparable to that around its periphery, is most likely to be due to original mound material as there is no sign of an antiquarian hole having been dug into the top.

There are indications in the resistivity of a band of lower resistance around the mound at least 2m wide and possibly grading out for as much as 4m. This suggests a greater depth of soil which might due to the presence of a shallow ditch now completely filled.

Hollow and ?upcast

The small hollow in the ground surface south-east of the mound shows as a pale patch in the magnetometry and slightly darker (more moisture retentive) in the earth resistance. To its north is the pale feature already mentioned next to the mound; however, this is also pale in the earth resistance plot implying dryness. Since there is no evidence that this is material ejected at some point from the mound, it is more likely to be upcast from the hollow and to include a higher proportion of rubble (chalk/flint) than is present in the surrounding soil. This feature-pair may not be particularly ancient, but is at least old enough for the upcast to have been absorbed into the soil profile through worm action since there is no sign of a rise in the land surface here.

Linear bank

The only other visible earthwork within the surveyed area is the low north-south bank (**Figs 1 & 3**). This appears to be represented in the magnetometry data as a slightly darker band better differentiated from soil to the west than to the east (**Figs 4 & 6**). The earth resistance survey did not reach this point.

Modern tracks

The current vehicular tracks running along the two Bottoms do not have a consistent geophysical signature throughout their lengths, although some linear features may correlate approximately in the western part of the Whitcombe Bottom track (**Fig 7**). It is of course possible that the exact line of these tracks will have wandered a little over time.

Hummocky area

Both magnetometry and resistivity variations are fairly complex in this area (**Figs 6 & 7**). The hummocks may in part be due to past animal or tree disturbance which would have complicated or obscured any earlier remains. The WNW-ESE linear depression is picked out in the magnetometry by a darker band. There is possibly a second darker band parallel and several metres to the south and perhaps also a right-angled turn at the north-west end.

Buried linear features

There are several linear trends showing as a slightly greater magnetic flux none of which correlate with anything at the surface. At least some of these may be tentatively interpreted as ancient field boundaries or other features of early cultivation (**Fig 8**). Grouping on the basis of parallel and orthogonal alignments could suggest they represent two or more phases of layout. The layouts and possible sequence will not be discussed further due to the tentative nature of the evidence, but it is noteworthy that one system (a) appears to use the mound as a nodal point, while another (b) incorporates a possible oval feature. The bank visible at the ground surface is not necessarily a part of either but would conform better to system b.

Only one of the suggested boundaries can be clearly discerned in the more limited area covered by earth resistance, that running north-west from the mound (system a; **Fig 6**). This may be because the moisture retentiveness of these features is similar to that of the soil flanking them.

At least one linear feature, that running west-east in the centre-north area, may relate to a past trackway (**Fig 3**).

Possible oval structure

South-west of the mound an apparently oval feature (12 x 11.5m externally and 7 x 7m internally) can be seen appended to boundary system b (**Figs 6 & 8**). There may be hints of this feature in the resistivity as well, although there is a lateral shift southwards. Given its size and shape this could for example indicate the footprint of a round house.

Soil thickness/constituents

Aside from the mound itself, the main variations in the resistivity plot are likely to be due to changes in the thickness of the soil overlying the chalk bedrock or combe rock. A large elongate patch in the centre north has high resistance suggesting either a higher rock component from a made platform or a thin soil above bedrock here (**Figs 6 & 8**); in most directions the resistance grades towards lower values, the lowest (darkest) abutting some of the boundaries to the south-west (system a) and south-east. The NW-SE aligned dry patch is 28–30m long and more in keeping with the alignment of boundary system a than b. Another dry patch projects from the north edge of the survey, this being approximately semi-circular and 14m across (W-E). This corresponds tolerably well with variations in the magnetic flux.

Pits and holes

There are a good number of discrete dark patches in the magnetometry plot, a few being over 3m across (**Fig 8**). Only the feature towards the north-west end of the large dry patch also shows unequivocally in the resistivity plot. These features could be ancient pits or later substantial features caused by large animals or tree-throws. Many smaller dark patches are also present and some could indicate smaller pits or post holes but the resolution is inadequate to attempt to interpret them; some might derive from fairly recent posts, for example from the timber sculpture 'River' installed here a few years ago.

Ferrous objects

The distinctive signature of iron-based metal objects is seen scattered across the magnetometry plot, a distinct concentration occurring around the pond (**Figs 4 & 5**).

Conclusions

The mound seems to be intact from surface morphology and is slightly oval. There is evidence for an internal ring structure suggesting a composite build. Both the internal ring and surrounding mound appear to be

penannular in the magnetometry plot but this is probably an illusion caused by an overlapping rubble-rich patch on the east side. The mound may also have had a shallow encircling ditch.

A series of linear boundaries are individually tentative on their empirical signatures alone. However, several conform to fairly coherent patterns allowing for the small area surveyed (**Fig 8**). They might be small ditches totally filled with soil or covered with colluvium, but had ditches cut down into bedrock or combe rock, the associated banks would include chalky upcast and be expected to show as higher resistance bands alongside. Alternatively the identified linear features were themselves low banks made of turfy soil to support hedges or fences. In some cases the more diffuse linear trends in both the magnetometry and resistivity may be due to gradually changes in soil thickness.

A slightly oval structure butting up to linear system b may well be the footprint of a house caused, for example, by the digging of a shallow drip gully or the collapse of daub from the walls during decay.

The two main trackways present today, and probably long-standing, have had no consistent effect along their lengths on the geophysical properties of the underlying soil. However, it does appear that parts of both respect interpreted boundaries (system b in particular).

Overall, the survey suggests that not only is a prehistoric burial mound present, but that this area at the meeting point of two dry valleys was also the scene of agricultural activity and residence with probable shifts of layout over time.

Stuart Needham & Dom Escott

On behalf of the People of the Heath Regional Barrow Survey Team

7 May 2022

Reference

Needham, S. & Anelay, G. 2021. *Barrows at the Core of Bronze Age Communities: Petersfield Heath Excavations 2014–18 in their Regional Context*. Leiden: Sidestone.

Acknowledgements

We are grateful to National Trust staff members James Brown, David Elliott and Sarah Fisk for facilitating the survey. Survey Team members on the day were Jane King, Ineke Allez and Sabine Stevenson.

Figure 1: Lidar images of the junction of Whitcombe and Bramshott Bottoms lit from north-east (left) and north-west (right); the mound is at the centre just north of the pond. Image: processed by Sabine Stevenson using High Woods Lidar data, courtesy of Fugro Geospatial & South Downs National Park Authority.

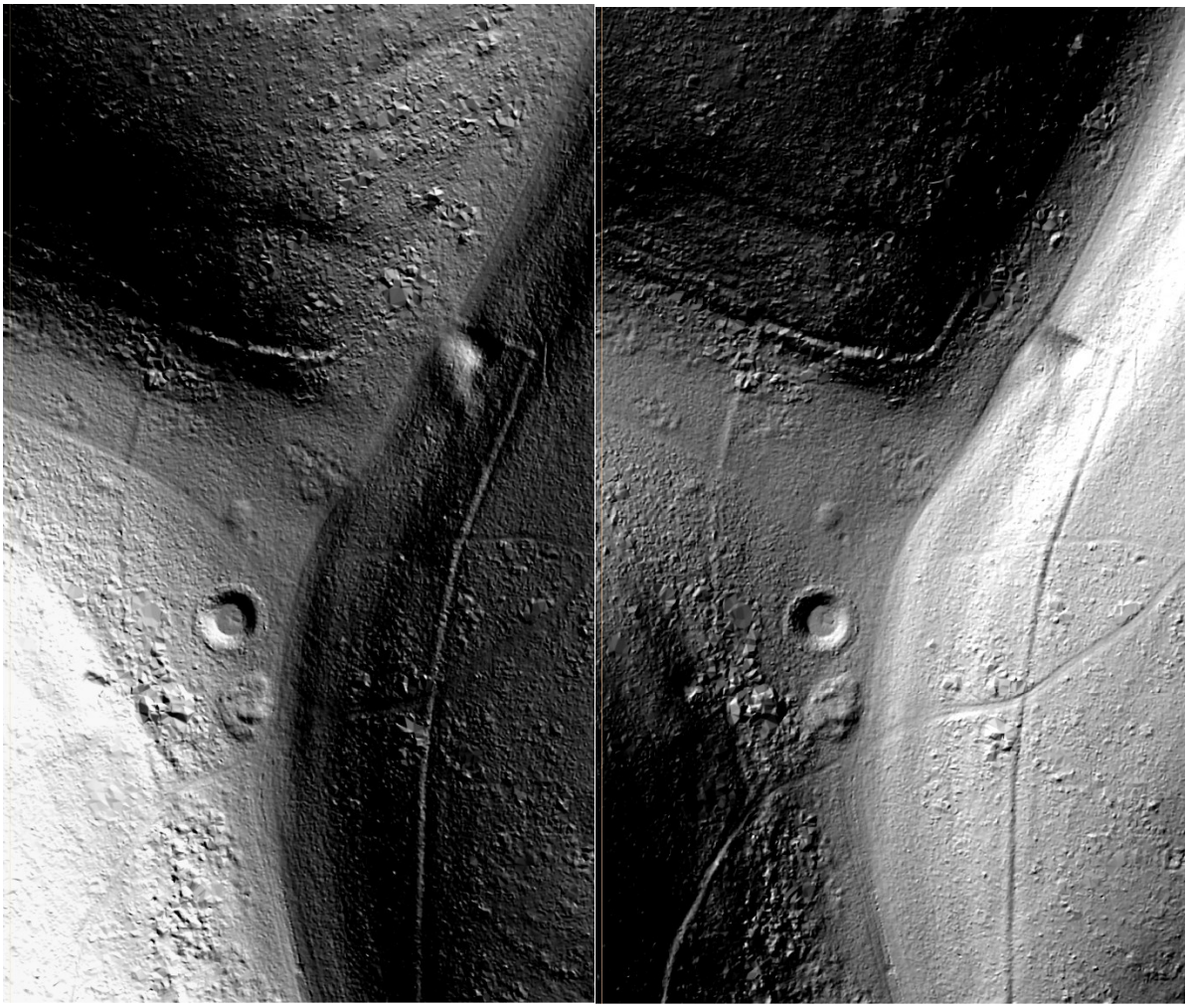
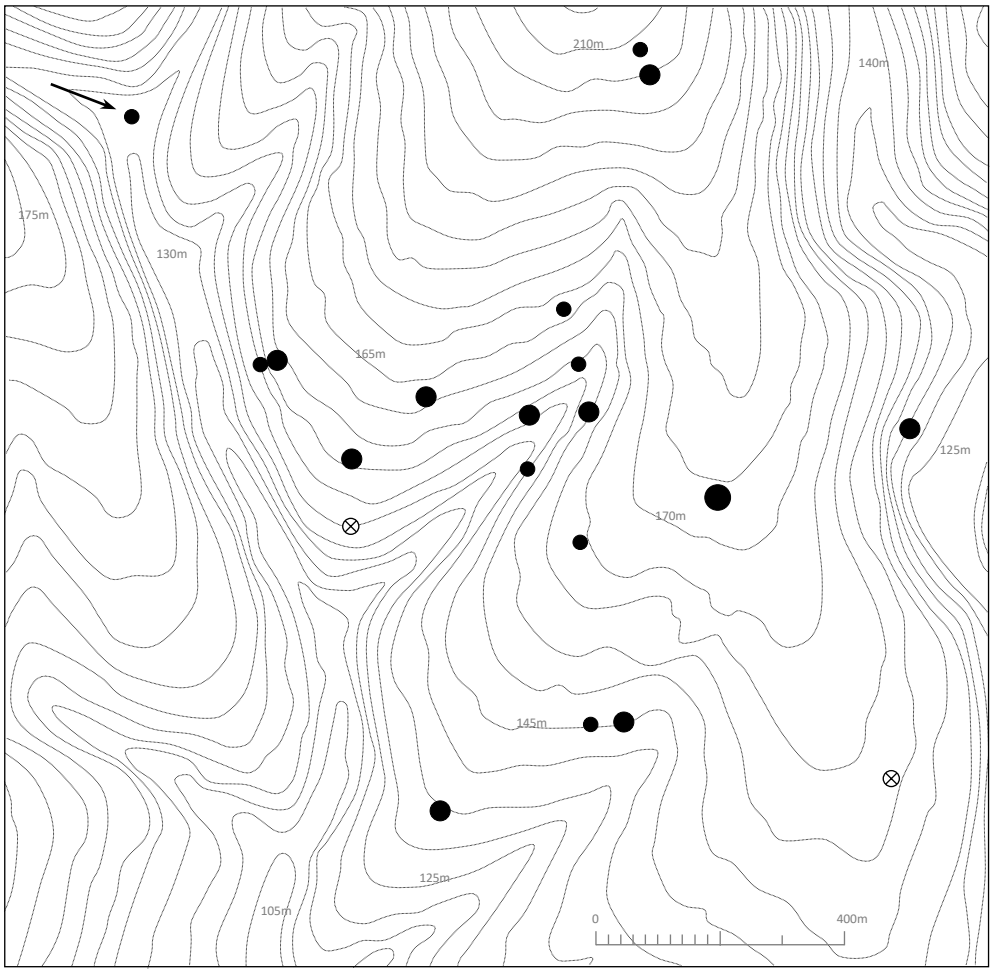


Figure 2: The North Marden Down barrow group, the Whitcombe Bottom site arrowed; after Needham & Anelay 2021, 497, fig 17.20b. Image: Stuart Needham.



Key to Figures 17.13–17.26 (Needham & Anelay 2021)

40m contours at 5m intervals, based on Ordnance Survey mapping

S spring (including intermittent)

ponds (not garden features)

Enclosure barrows:	**Mound barrows:**
small	very small, 0–50m³
modal	small, 51–160m³
large	medium, 161–370m³
	large, 371–600m³
Ring ditches	very large and super-large, >600m³
Grade 5 sites	volume not calculated

Figure 3: Transcription of features showing in Lidar and on the ground. Grid references for the corners of the geophysical plot are given. Image: Stuart Needham.

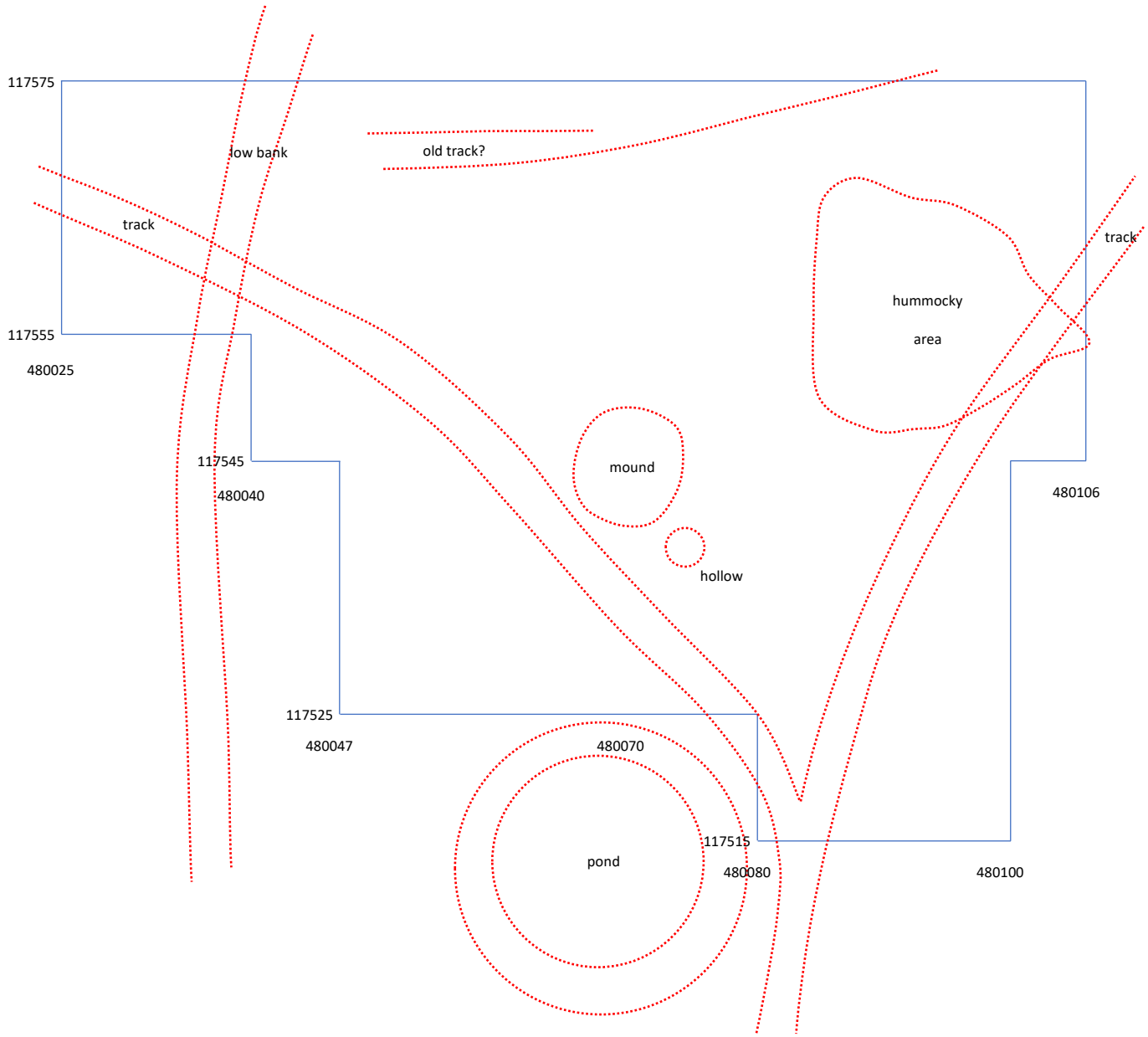


Figure 4: Magnetometry plot of the junction of Whitcombe and Bramshott Bottoms. Image: Dom Escott.

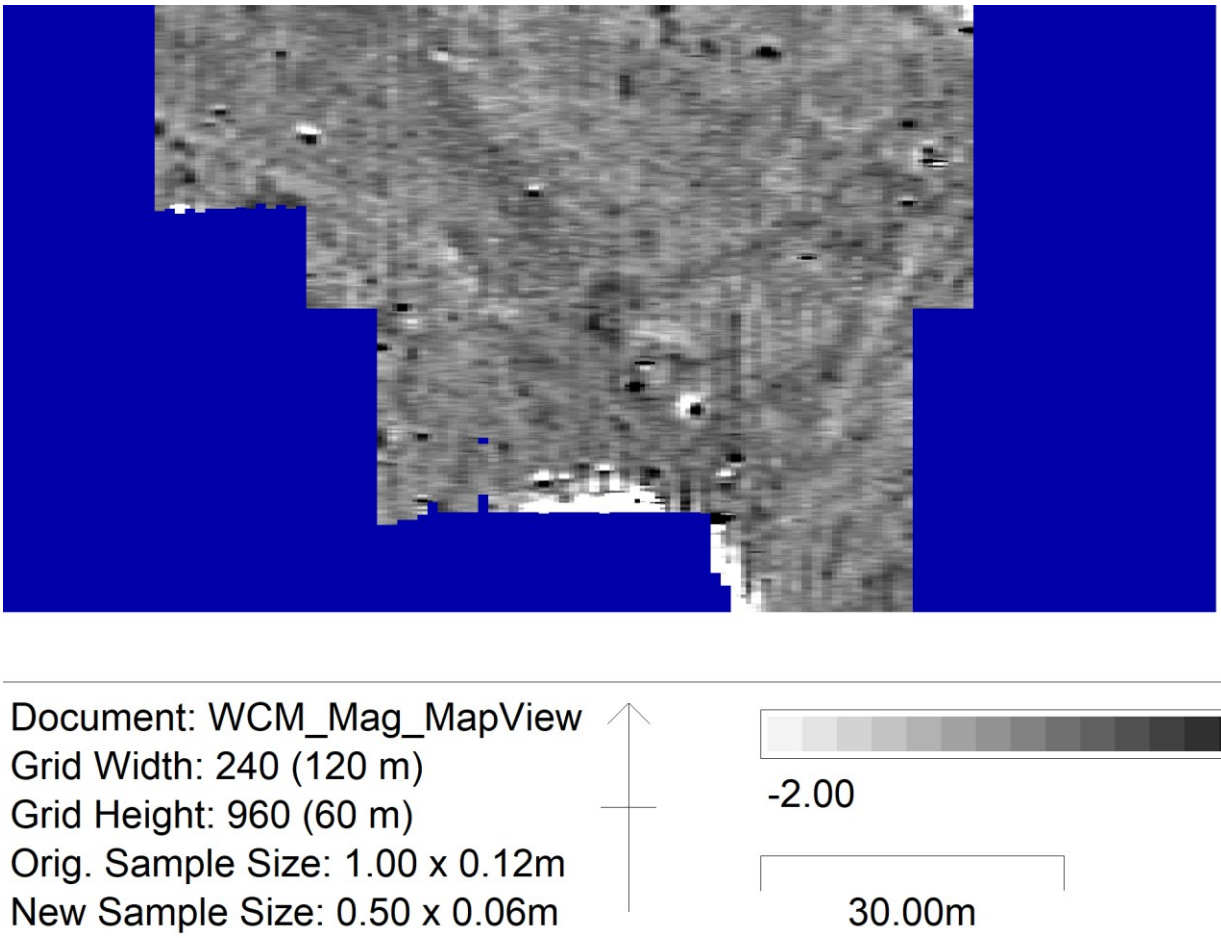


Figure 5: Earth resistance plot of the junction of Whitcombe and Bramshott Bottoms; a and b data combined. The grid squares are 30 x 30m. Image: Dom Escott.

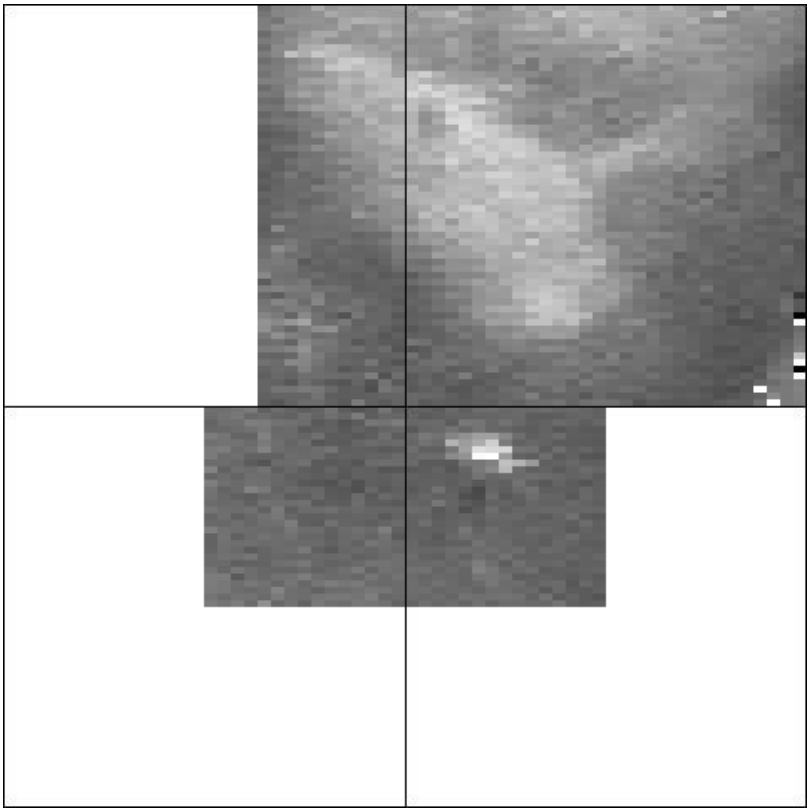
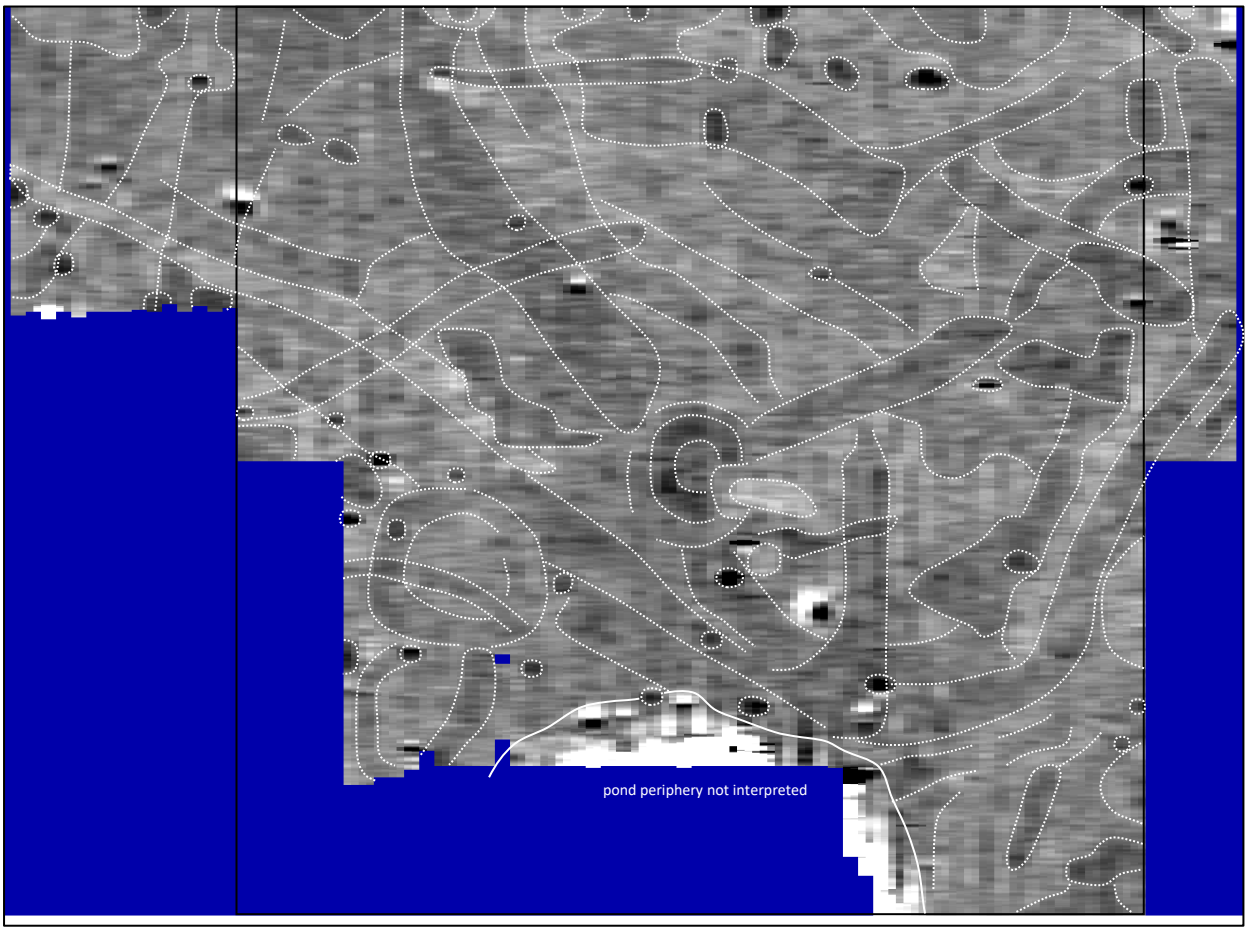


Figure 6: Density boundary analyses for the magnetometry and resistivity plots.



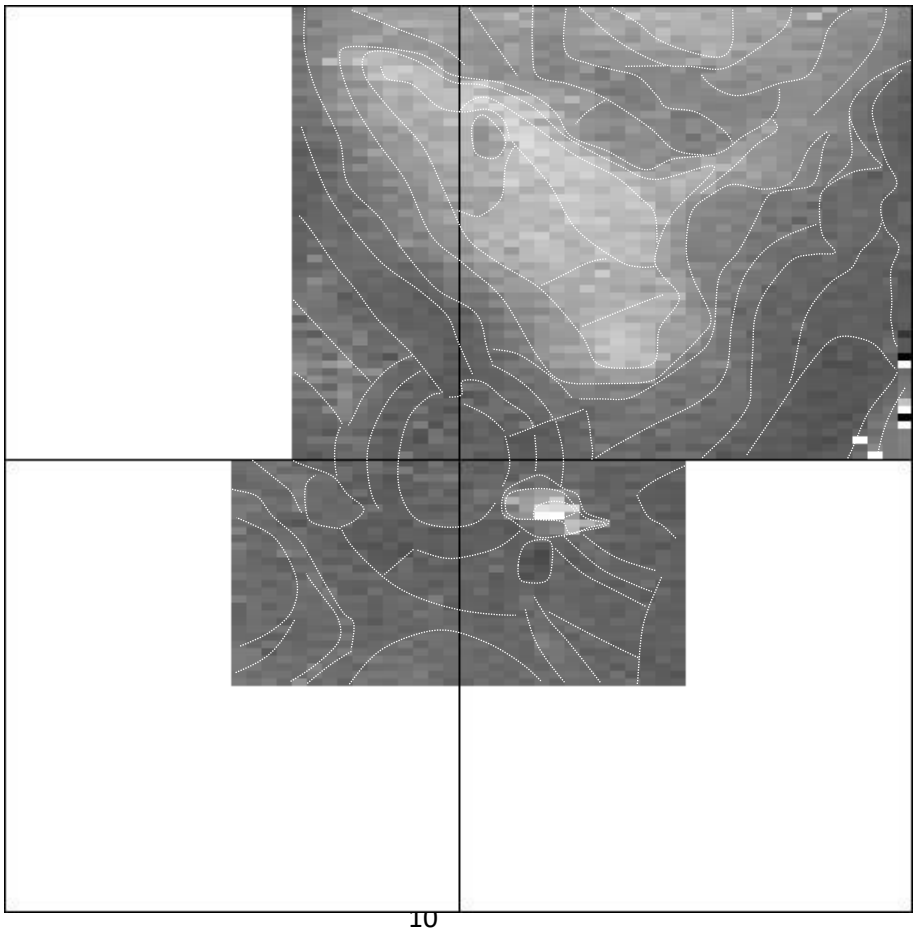


Figure 7: Surface features overlaid on magnetometry plot; compare with Figure 6. Image: Stuart Needham & Dom Escott.

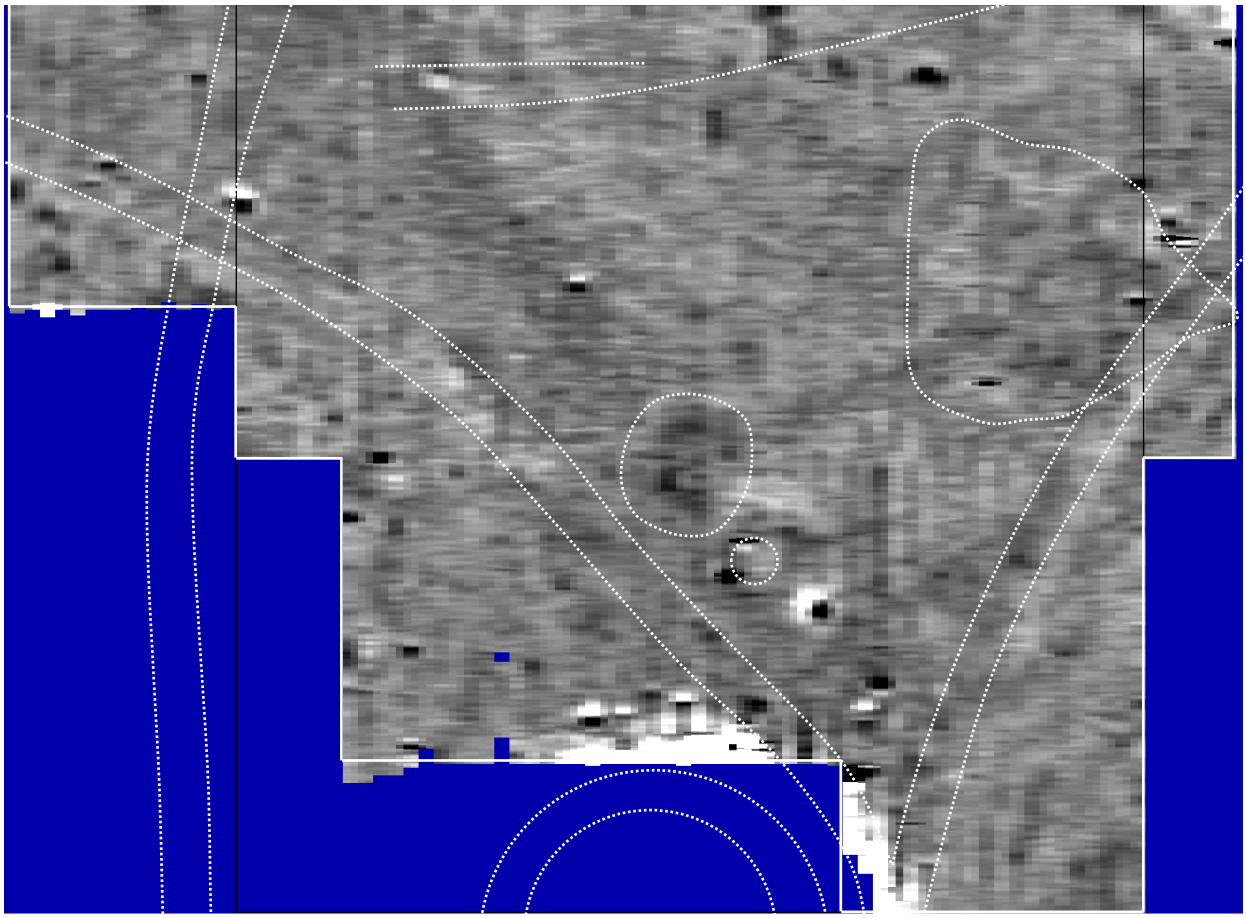


Figure 8: A possible interpretation of the main geophysical features revealed. Image: Stuart Needham.