Liss Archaeology
East Hampshire
Community Archaeology

Hammer Wood Hill Fort, Chithurst, West Sussex.

Report on a Geophysical Resistance survey, December 4th to 6th 2015.

Ref: HW-1215

SAM-1015878

Carl Raven (Liss Archaeology)

Summary of results:

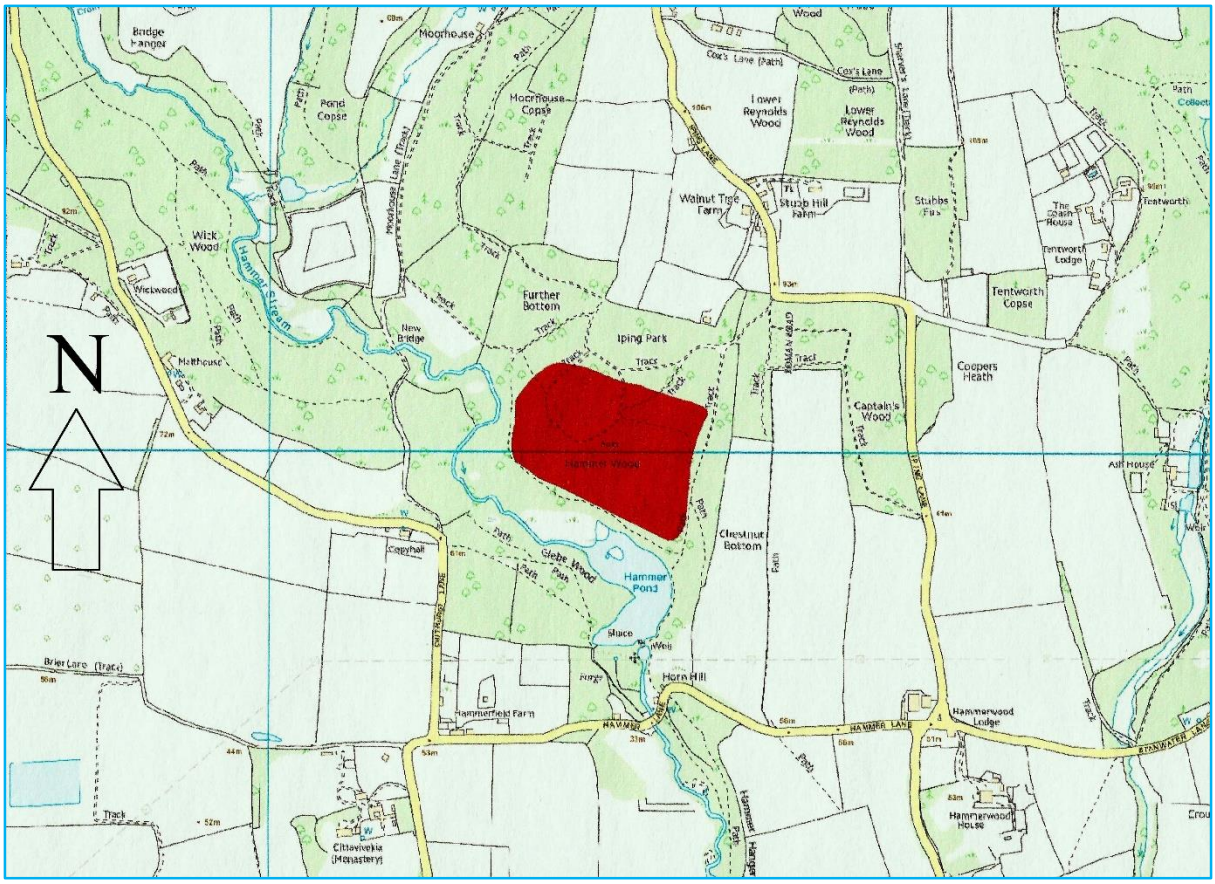
The results show a number of previously unknown buried features as geophysical anomalies, notably a possible redesign of the original entrance into the enclosure and a linear feature bisecting the inner enclosure in the East/West direction as well as backing up some of the findings from a previous excavation by J R Boyden in 1957.

Introduction:

Location.

NGR: SU 84603 24015.

The site is located about 1 mile NW of the village of Iping near Midhurst West Sussex on a spur of lower greensand forming a promontory protected on three sides by a scarp slope dropping down 30 metres or so into the valley below, the site can only be accessed easily from the North where it is protected by the ramparts of the monument.

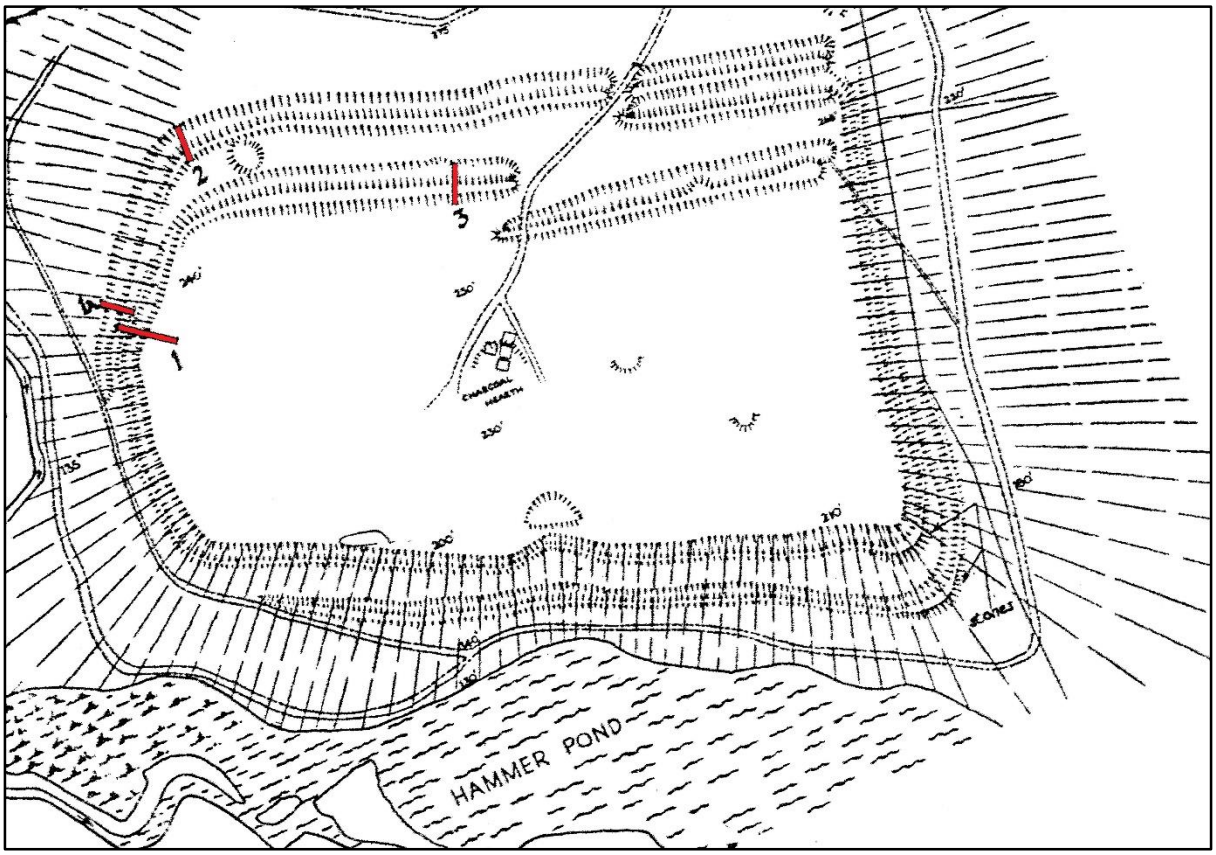


Hammer Wood hillfort highlighted in red. SAM-1015878 Fig:1

History.

The monument was first noticed during a routine examination of aerial photographs by a worker at the archaeological branch of the Ordnance Survey in 1956.

The following year (1957) an excavation with the permission of the then land owners Wealden Woodlands Ltd took place led by J. R. Boyden, a total of four trenches were excavated across the ramparts and ditches (fig:2) which produced a small quantity of pottery dating to the late Iron Age.



The locations of the four 1957 Boyden trenches highlighted in red. Fig:2

Survey Objectives.

The objective for the survey was to further our knowledge of this relatively unknown Promontory hillfort and perhaps help to identify the original purpose and use of the interior workings close to the entrance where it had been cleared of trees and undergrowth.

Survey Methods.

Resistivity was the chosen method for surveying this site.

Although well drained and dry due to the underlying sand, an electrical resistance reading could still be reliably recorded by adjusting the instruments settings to account for the greater range and variation in electrical resistance of the soil.

Past experience tells us that Magnetometry is inefficient on this type of geology with sub-surface iron pan deposits adversely interfering with the natural magnetic field and affecting the results dramatically, therefore a magnetic survey was ruled out.

Methods:

Dates of fieldwork.

The survey took place over the three days of the 4th / 5th / 6th December 2015, although the night previous to the beginning of the survey heavy rain was experienced at the site the weather was fair with initial sunshine turning to overcast with high winds throughout and light rain as we completed the survey on the final day.

Grid Location.

The grid was laid down to best suit the restricted space in which we would be working and also to cover the maximum amount of the permissible survey area with the least amount of partial grid squares.

Our datum point was at the North East corner of the grid SU-84627/24087 with a base line of 80m being then measured westward along the outer bank of the inner rampart ditch on a magnetic bearing of 5240 mils.

Marker canes were then placed along this base line at 20m intervals forming the basis of the grid pattern, the rest of the grid was then generated southward from the base line using Pythagoras Theorem and tape measures, extending out to 60m forming a grid pattern of twelve 20m x 20m grid squares (Fig:3)

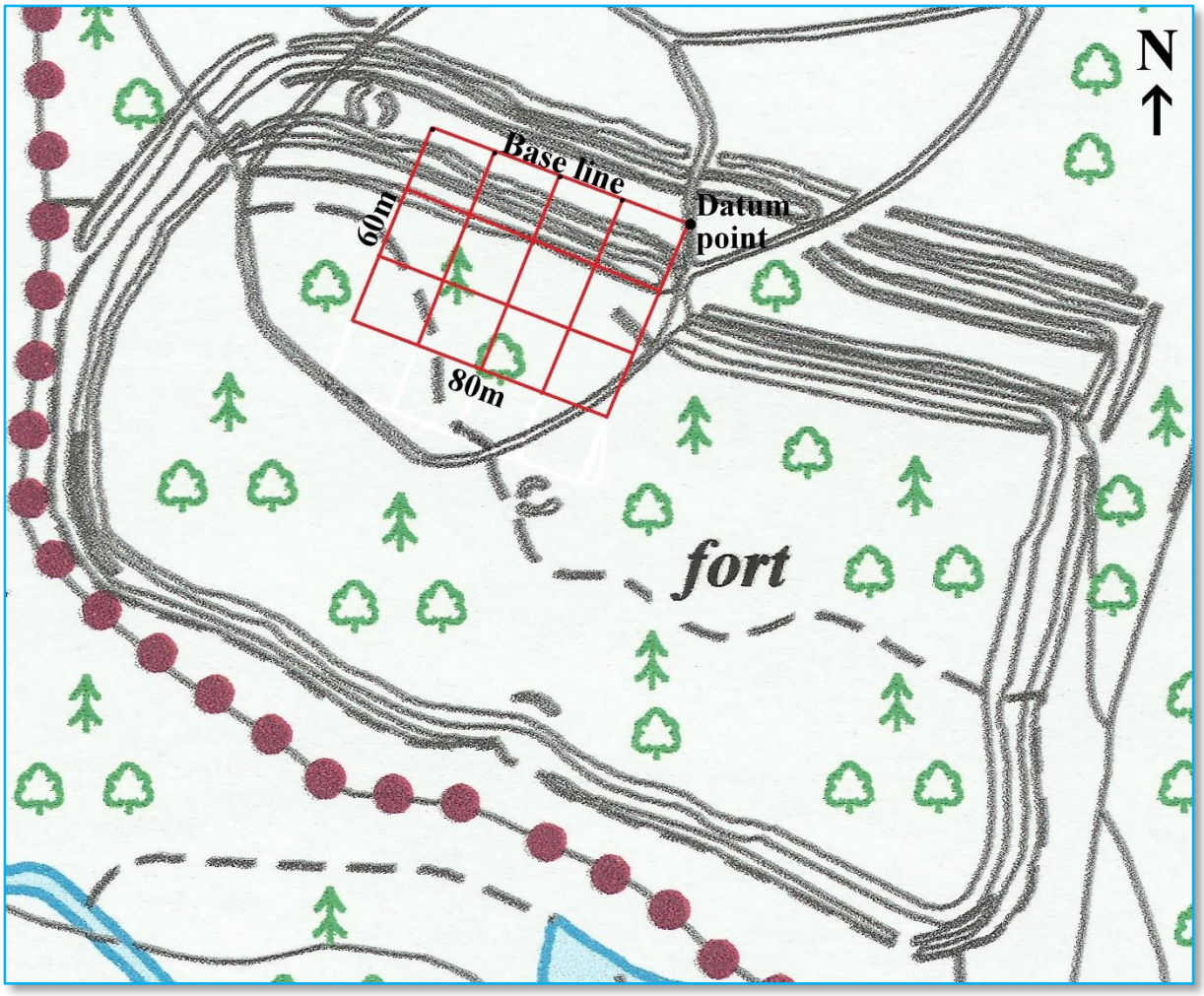


Fig:3

Geophysical instruments used.

The survey was completed using the Liss Archaeology owned Geoscan RM-85 basic resistance meter.

Sampling Intervals.

The total area within the survey was sampled in high resolution with a 0.5m interval as well as a 0.5m traverse totalling 1600 readings taken per complete 20m x 20m grid square.

Equipment Configuration.

The RM-85 was configured in the PA-20 mode with twin probe array.

The current was set at 1ma with the gain set to x1, the grid squares were traversed in zig-zag formation beginning at the NE corner of each square and advancing to the South.

Data Processing.

The collected data was processed on an Acer Aspire XC600 desktop computer running Windows 8.

The data was downloaded and processed using Snuffler geophysical data processing software.

Results:

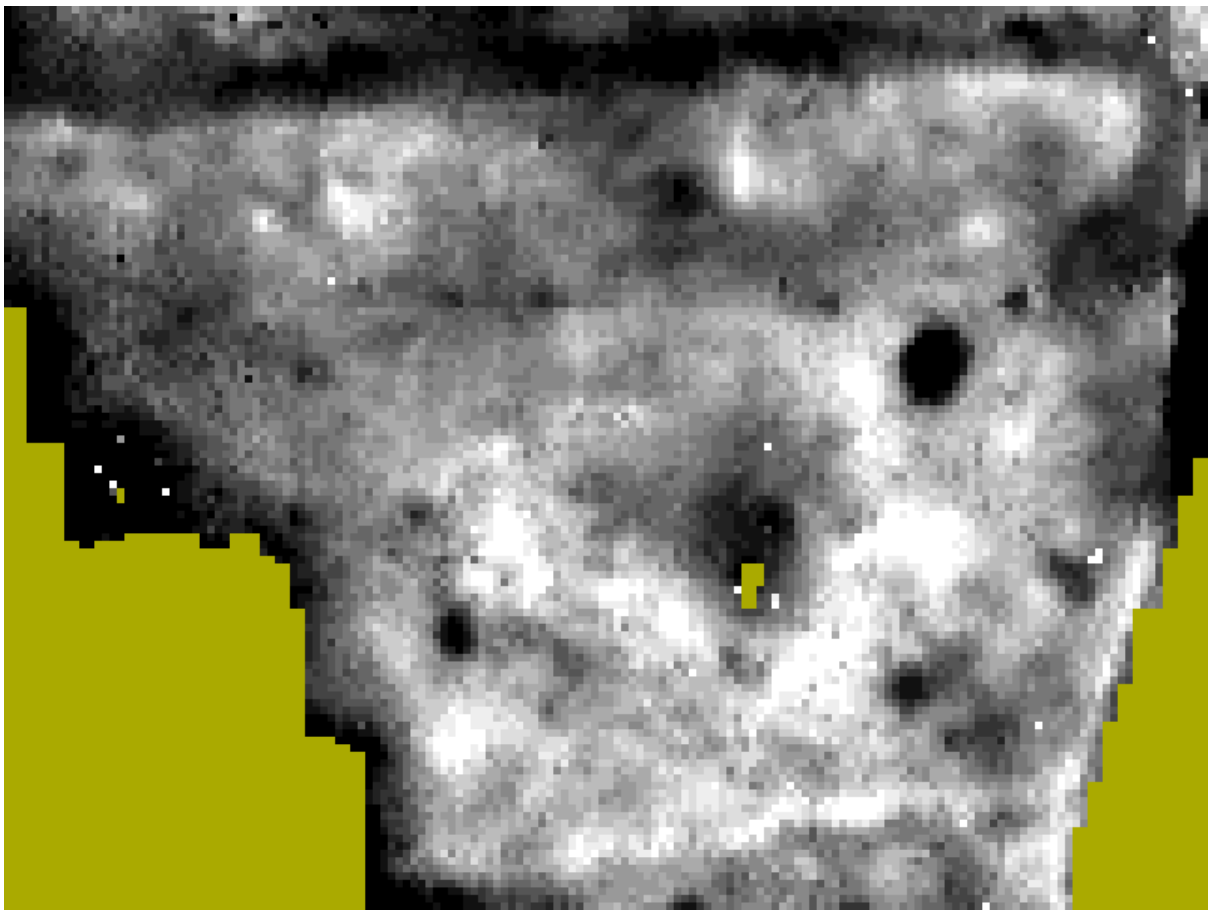


Fig:4

535.0 Ohms 849.0

The above plot (fig:4) is the Raw un-processed and un-filtered data presented in linear plot format.

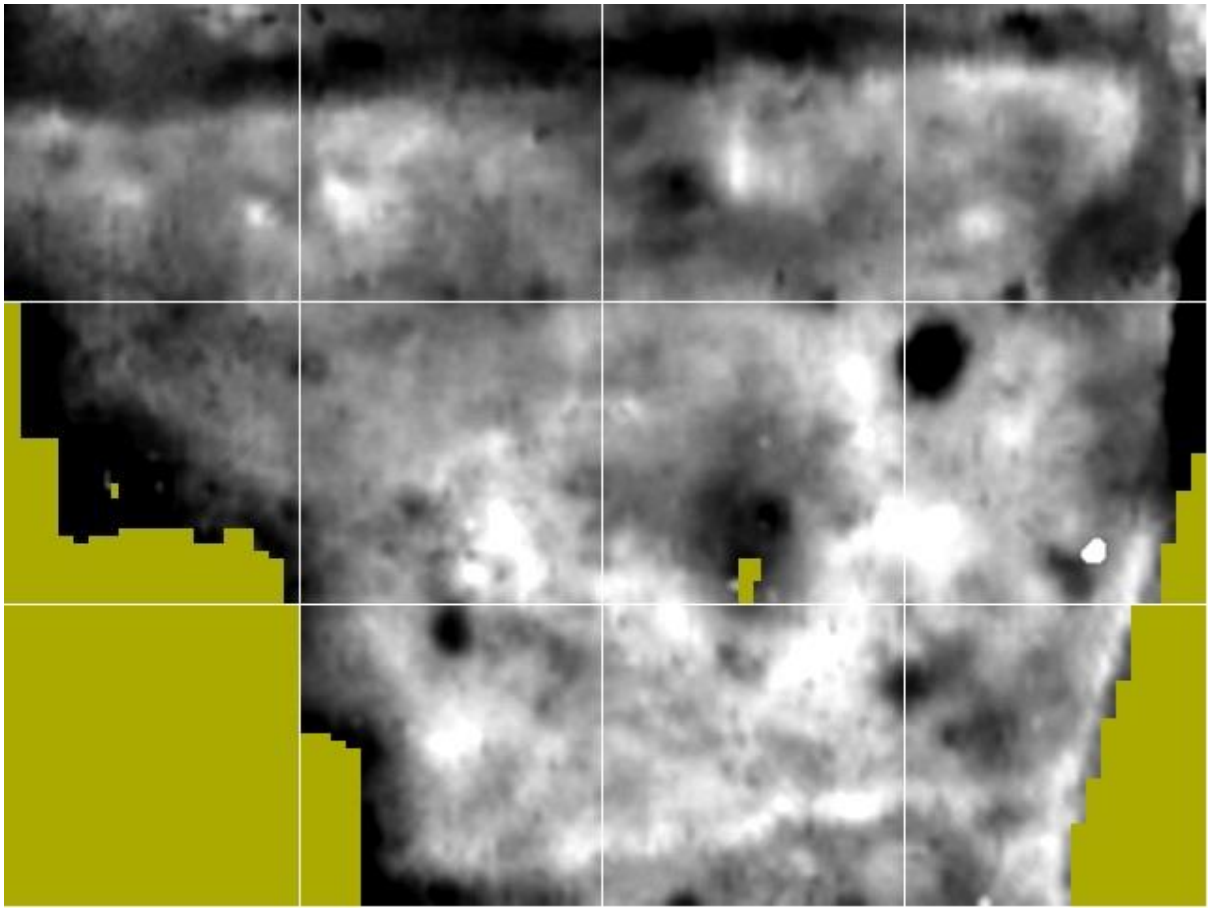


Fig:5

535.0 Ohms 849.0

The plot shown in fig:5 has been processed and filtered using Interpolation and edge match only plus the application of a 20m grid it also is presented in linear plot format.

Description.

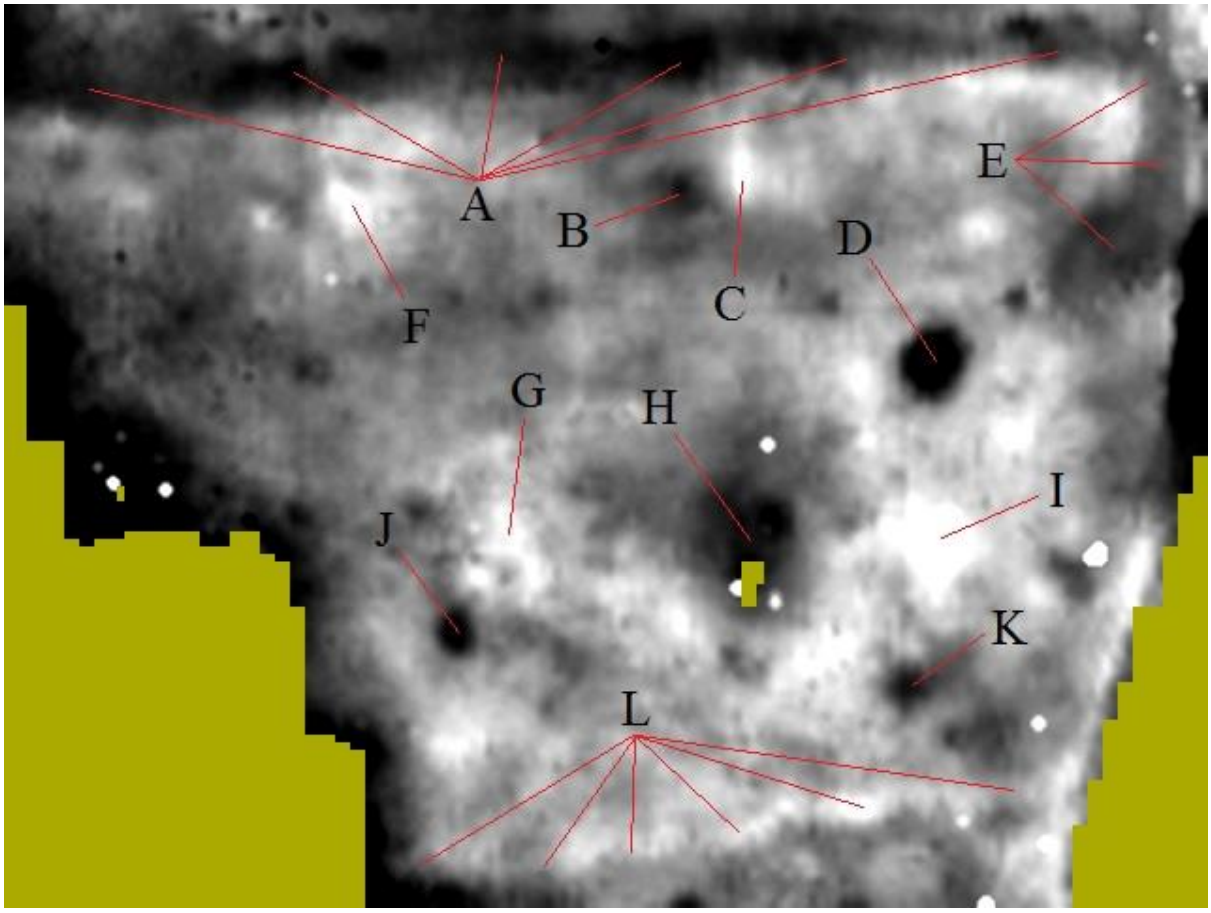


Fig:6

Numerous anomalies both high resistance (white) as well as low resistance (black) show on the resistance plot, the more prominent of which have been indicated in fig:6 above.

Interpretation.

A: Low resistance linear anomaly running full 80m width of the survey relating to the natural silting up of the inner rampart ditch of the enclosure.

B: Low resistance anomaly which may be related to C by way of residual material from Boyden's trench 3 spoil heap.

C: High resistance response located over the position of Boyden's 1957 trench 3 and displaying similar size shape and alignment to that excavation.

D: Low resistance pit like anomaly approximately 4-5 metres across positioned close to the entrance to the inner enclosure.

E: Mid resistance feature which appears to be a continuation of the inner rampart ditch turning 90 degrees to the South and running approximately 20 metres into the enclosure forming what could be a funnel type entrance.

This feature no longer shows on the ground and is likely to have been back filled in antiquity maybe for easier access into the enclosure.

Also worth noting are the high resistance readings which seem to respect the curvature of this feature located around the outer facing bank.

During our survey we were aware of stone impeding the penetration of the probes in this area, in Boyden's report he makes mention of some stone cladding reinforcements to vulnerable areas of the banks, this may be further evidence of that revetting.

F: High resistance anomaly, one of many on this survey which may be drier sandy deposits close to the surface.

G: High resistance anomaly possible drier sandy soil close to the surface.

H: Large low resistance feature caused by a standing tree.

I: High resistance anomaly, possible drier sandy soil close to the surface.

J: Low resistance pit like anomaly approximately 2.5 metres across, possible tree throw.

K: Low resistance pit like anomaly approximately 2 metres across, possible tree throw.

L: High resistance linear feature running the full width of the survey at the Southern limit.

This feature is not visible on the ground and is on the same alignment as the enclosures Northern and Southern ramparts, it does however show faintly on the Lidar image of the earthwork highlighted below (fig:7)
where it can also be seen to respect the limits of the East and West ramparts.

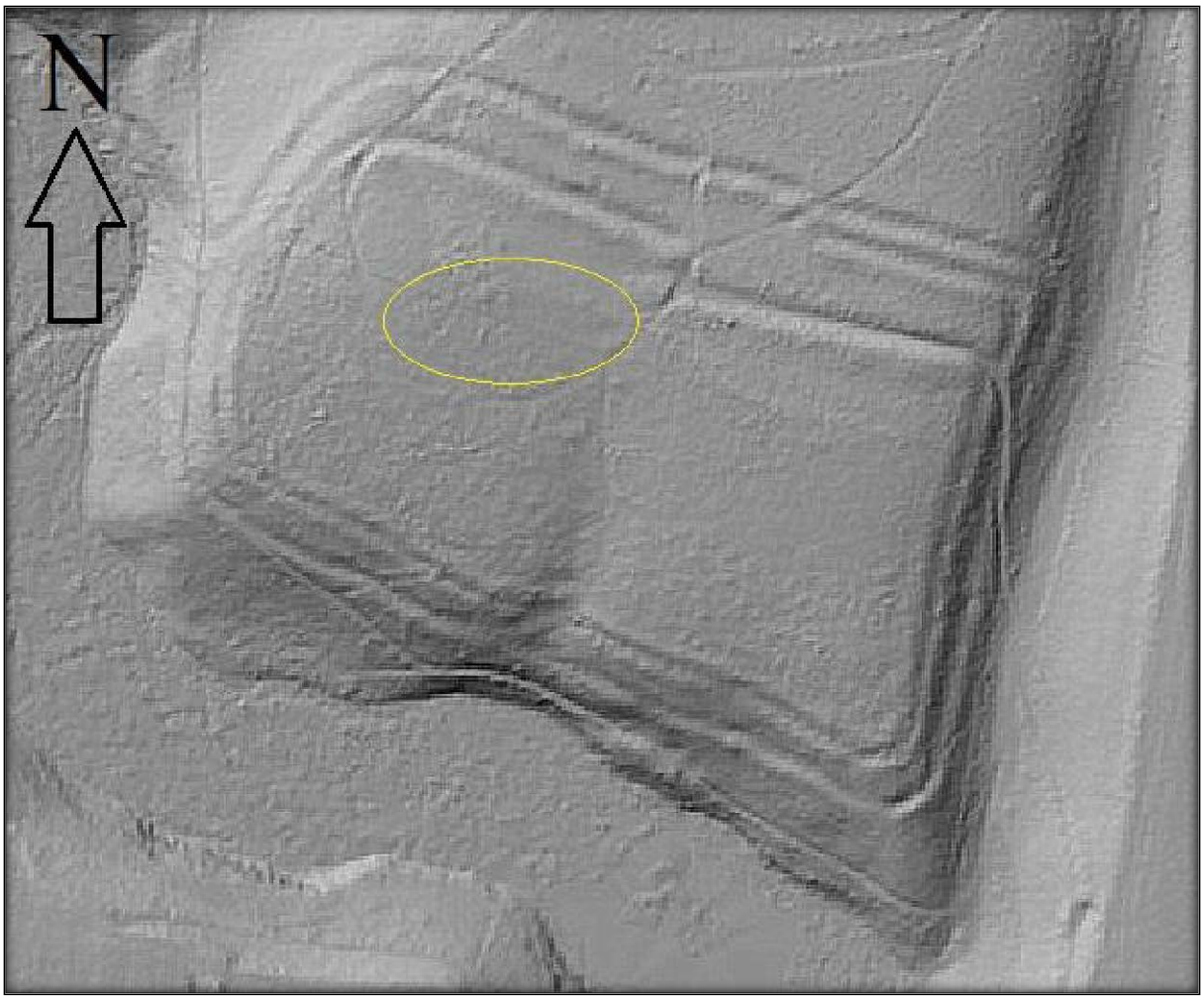


 Fig:7

Conclusion:

The geophysical survey at Hammer wood enabled us to further understand this relatively unexplored promontory hillfort, shedding new light onto features hidden within and previously unknown to archaeologists, and perhaps targets for any future exploration of the monument.

In particular, the possible alteration of the inner rampart ditch and bank entrance way from curving inwards, to the current configuration of terminating abruptly ‘Oblique’ through the offset ridge defences, as well as the significance of the linear feature which runs East West across the inner enclosure as to whether it is contemporary with the date of the monument.

Acknowledgements:

Thanks go to the current landowners Chithurst Buddhist monastery CITTAVIVEKA for granting us unrestricted access to the monument for the duration of the survey.

Also to Paul Bruce forest and property manager for his time and assistance in helping me get this survey off of the ground.

Thanks to all these volunteers from Liss Archaeology for their time and efforts over the three days,

Arthur Mills, Barry Wood, Dave Butcher, Helen Mullenger, Helen Poulter,

Jane Godden, Juliet Smith, Peter Benson, Pat Ferry, Peter Gillard.

References:

The BGS Lexicon of named rock units.

Ordnance Survey Open Data Initiative.

Boyden, J.R. 1957: Excavations at Hammer wood, Iping, 1957. SAC 96, 149-63.

Lidar – Open Government license v3.0.

Plans/Plots:

Grid relocation.

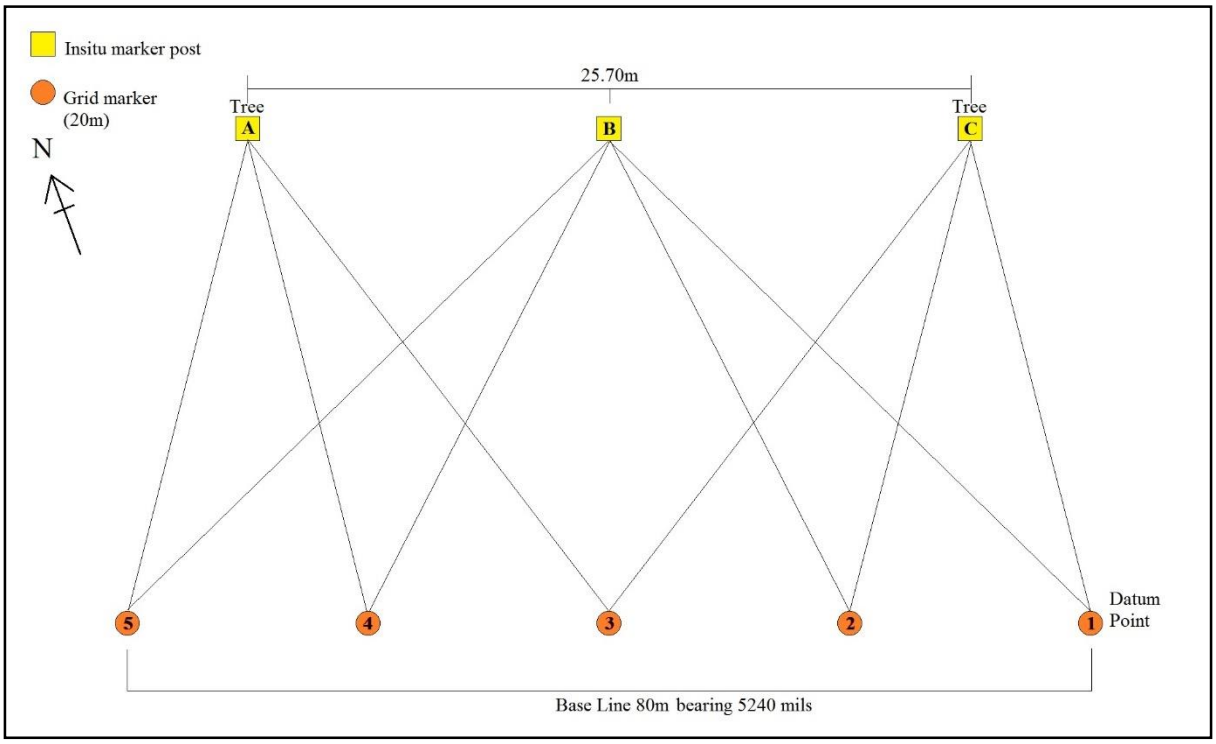


Fig:8

The base line was measured and recorded by way of fixed permanent markers left in-situ for future relocation of the grid (figs:8/9)

Yellow topped wooden stakes A and C were positioned at the bases of two Silver birch trees growing alongside the forest access track approximately 50m North of the monument (fig:9) stake B was positioned at a point midway between them.

Measurements were then taken from these fixed points to the various grid marker posts which marked out the base line from which the grid was generated 60m Southward using Pythagoras Theorem.

Ten figure grid references were also recorded of the positions of the marker posts A-B-C as well as the positions of the five grid marker poles forming the base line.

Marker post C (SU-84609/24158) fig:9

Listed below are the measurements from points A-B-C to the marker posts 1-5 which formed the base line.

A to 5= 60.40m

A to 4= 60.10m

A to 3= 66.00m

B to 5= 61.80m

B to 4= 57.20m

B to 2= 67.50m

B to 1= 80.20m

C to 3= 55.20m

C to 2= 59.80m

C to 1= 70.20m

The 10 figure grid references for all of the reference points were recorded using a Garmin Dakota 20 GPS receiver and are as follows.

Marker post A= SU 84589/24168

Marker post B= SU 84600/24165

Marker post C= SU 84609/24158

Grid marker 5= SU 84557/24121

Grid marker 4= SU 84573/24113

Grid marker 3= SU 84590/24103

Grid marker 2= SU 84609/24095

Grid marker 1= SU 84627/24087 (datum point)

Geophysical results plot.

Here in fig10 the results plot has been scaled and oriented then overlaid onto a map of the monument for comparison of scale and location.

Fig:10