
ELECTRICAL RESISTANCE SURVEY, CAUS CASTLE, WESTBURY, SHROPSHIRE

Interim Geophysical Survey Report



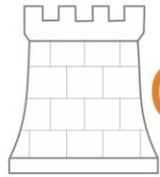
Caus Castle, from the NW, providing a view over the outer bailey area. © Shropshire Council 2007. SA 0707-170.

Site Code: CC16
NGR: SJ 337 078
Scheduled Monument:
1020147

Supported by the



Giles Carey, May 2016



Castle Studies Trust

Advancing the Understanding of Castles

The archaeological survey work described in this report has been funded by the Castle Studies Trust.

This charity is entirely reliant on donations from the public.

To help the Trust to continue funding this research, please visit

<https://mydonate.bt.com/charities/castlestudiestrust>

To find out more about the Trust please visit

www.castlestudiestrust.org

Charity Commission of England and Wales Registered Charity Number: 1148165

It should be noted that Caus Castle is on private land and there is no access to the majority of the site discussed in this report.

Contents

Contents.....	2
List of Figures	3
Summary.....	4
Summary.....	4
Acknowledgements	4
Introduction	5
Project Background.....	5
Site Location.....	5
Aims and objectives.....	5
Archaeological background	6
Geophysical survey.....	7
Standards	7
Field methods.....	7
Data processing	7
Results.....	7
Conclusions	8
Bibliography	9
Appendix 1: Technical data.....	10

List of Figures

Figure 1: Survey Location	12
Figure 2: Resistance Data Greyscale (Raw)	13
Figure 3: Resistance Data Greyscale (Processed)	14
Figure 4: Interpretation Plan.....	15
Figure 5: Initial Processing of photogrammetry across area of Resistivity Survey showing features mentioned in text.....	16
Figure 6: 1985 Aerial Photograph by Chris Musson. © Clwyd Powys Archaeological Trust. Ref 85-MB-0019.	17
Figure 7: 2008 Detail from aerial photograph by Mick Krupa. © Shropshire Council. Ref 0813_045.	18

Summary

A programme of detailed electrical resistance survey was undertaken in March 2016, within the outer bailey of Caus Castle, focused on the medieval borough associated with the castle (centred on SJ 337 078). This work was carried out as part of a wider programme of investigation at the castle, supported by a small grant from the Castle Studies Trust. This comprised a programme of nested non intrusive methodologies, comprising analytical earthwork survey and photogrammetric survey. It followed on from a programme of pilot fluxgate gradiometer survey carried out in the castle's outer bailey (Carey, 2015).

Initial analysis of the resistivity data indicates the potential of this area of the site, with areas of discrete spreads of stonework recorded. Little of it appears to relate directly to *in situ* deposits. However, some anomalies were noted at the SE of the survey area which represent the most likely location for house platforms. Anomalies related to narrow ridge and furrow were recorded, running SE-NW across the survey area, indicating that this area has been subject to post-medieval agricultural activity. This accords well with the results of photogrammetry across this area, in particular.

The detailed analysis and reporting of this survey, together with discussion of the photogrammetric and analytical earthwork survey will be the subject of a further report/article.

Acknowledgements

The resistivity survey was led by Giles Carey, with Dr, Michael Fradley conducting the earthwork survey and Adam Stanford (Aerial Cam) undertaking photogrammetry. I would especially like to thank Dr Michael Fradley for his contribution to the interpretation of the results of this survey, and preliminary discussion of the results of the earthwork survey.

Mr Bill Klemperer is again thanked for his encouragement, and for his assistance in obtaining Section 42 consent to undertake the survey across the Scheduled Area of Caus Castle. Background archaeological information was obtained from Shropshire HER.

Mervyn and Helen Roberts of Caus Castle Farm, Westbury kindly granted permission for the survey to be undertaken on their land, and (again!) greatly assisted with access to the field.

The geophysical survey would not have been possible without equipment loaned by Historic England and access to processing software; access was kindly arranged through the good offices of Andy Payne.

All conclusions/interpretations are the author's responsibility alone.

Introduction

This report presents the interim results of a small-scale programme of targeted electrical resistance survey carried out within the outer bailey of Caus Castle, focused on the medieval borough associated with the castle (centred on SJ 337 078). This built upon fluxgate gradiometer survey carried out in the outer bailey of the castle in Spring 2015 which had identified possible buried building remains/structural deposits and had suggested a number of 'targets' for further work (Carey, 2015). It was anticipated that the present survey would provide a direct comparison between the two survey methodologies, as well as contributing to the overall programme of research in the castle's outer borough.

This resistance survey was carried out as part of a wider programme of investigation at the castle, funded by a grant from the Castle Studies Trust, including analytical earthwork survey and photogrammetric survey. It is anticipated that this work will be comprehensively reported on in a forthcoming journal article. This report, therefore, represents an interim statement on the results of the resistance survey only, ahead of more detailed analysis alongside the other data collected during investigation in 2016.

Project Background

Site Location

The survey area was an area of pasture within the large outer bailey of the castle. Caus lies at a height of between 200m and 220m OD. The massive earthworks which contained the castle and borough are situated on a high ridge at the east end of the Long Mountain and command the valley road from Shrewsbury to Montgomery.

The topography of the survey area sharply declined from NE-SW, with the area to the immediate north of the inner bailey representing the highest part of the site, and the area to the west of the castle representing the lowest part of the site. This latter area of the outer bailey largely forms a narrow but flat-topped plateau, perhaps extending 60m across at its widest point.

The underlying soils of the area are recorded as well drained brown earths of the Barton association (Soil Survey of England and Wales, Ragg et al 1984) overlying Downtonian Sandstone (BGS, nd). Although magnetic survey results have been recorded as poor over some such Old Red Sandstones, it is clear that results are variable.

Aims and objectives

The purpose of any geophysical survey is to “as far as reasonably possible, determine the nature of the detectable archaeological resource within a specified area using appropriate methods and practices” (English Heritage, 2008: 3).

The key aim of the survey was to build on the work of the 2015 magnetic survey, to provide a directly comparable geophysical dataset of an area at the eastern end of the outer bailey of the castle. The magnetic survey results had indicated the survival of disturbed building remains in this area (Carey, 2015); high resolution resistance survey was considered to be the most appropriate tool to determine whether any of this related to *in situ* settlement evidence.

Archaeological background

Caus was the site of a small multivallate hillfort, situated on a prominent hill at the south eastern end of the Long Mountain (Scheduled Monument NHLE 1020147). The castle developed in the southeastern corner of the hillfort.

It has been suggested, from placename evidence, that Caus Castle superseded the ringwork of Hawcocks Mount, 1.2 km to the east (ibid.)

Caus Castle is thought to have been built by Roger fitz Corbet in the late 11th or early 12th century taking the name from his ancestral home in Normandy, but the first documentary reference to the castle is in 1140 (Buteux, 1996: 2). The focus of the present survey was the borough of Caus, a town which developed within a rampart to the north and west of the castle site. Some documentary evidence survives for the borough, effectively summarised by the Central Marches Historic Towns Survey (CMHTS). King John granted a market charter on 10 April 1200, to Robert Corbet, with the charter for a fair granted in 1248 (Letters, nd). The town expanded through the 13th and 14th centuries, with 28 burgages recorded in 1274, 34 in 1300 and 58 in 1349 (Buteux, 1996: 2). Caus began to decline in the second half of the 14th and 15th centuries. The last recorded house is mentioned in 1614. The borough was surrendered to Parliament in 1645 (Shropshire HER PRN 00249).

Documentary evidence makes reference to a number of buildings known with the borough. These include the chapel of St. Nicholas, founded in the 12th or 13th century, still furnished in 1612 and probably used as a domestic chapel until the destruction of the castle (Shropshire HER PRN 05106). This has traditionally been located as opposite the inner gate of the castle. In addition, the chapel of St. Margaret has been recorded from documentary sources as founded in 1272 and last recorded in 1447, although its location is unclear (Shropshire HER PRN 05107).

The main interior street, running between East Gate and Wallop Gate was recorded as still in use as part of a field road in 1816 (VCH 1968, 310). It survives, in part on site, as a discontinuous earthwork.

Overall, the archaeological potential of the borough was considered to be high by the CMHTS, with substantial buried archaeological deposits unlikely to have been extensively disturbed by later occupation or development (Buteux, 1996: 1), although some earthwork remains of later medieval ploughing have been noted from aerial survey to the north end of the bailey (Shropshire HER PRN 28306). The site was therefore considered ideally suited to non-invasive survey. Pilot work carried out to date indicated the potential of the site for buried archaeological deposits that respond well to geophysical survey (Carey, 2015). Results of magnetic survey in 2015 indicated that a fair amount of stonework survived across the site, with some of it of high ferromagnetic composition. Particular concentrations of possible buried stonework were targeted in the current survey to examine whether any of them related to *in situ* deposits.

In the course of the 2015 pilot work on the site, it had become apparent that any understanding of the development of the borough would be predicated on a detailed understanding of the earthworks on the site. The 2016 survey, therefore, formed part of a nested programme of non-intrusive exploration of the site, including photogrammetric and analytical earthwork survey, the results of which will be fully reported on in due course.

Geophysical survey

Standards

The surveys and subsequent reporting were carried out in accordance with English Heritage's guide to *Geophysical Survey in Archaeological Field Evaluation* (2008), the IfA's *Standard and Guidance for Archaeological Geophysical Survey (Draft)* (IfA, 2010) and the ADS' *Geophysical Data in Archaeology: A Guide to Good Practice* (Schmidt, 2001).

Field methods

An overall survey grid was established using tapes, with reference to known points on Ordnance Survey mapping. The grid was subsequently located using survey grade dGPS. The entire survey area was also covered by the analytical field survey and by photogrammetry.

All grids measured 20, by 20m. Data collection was carried out using a standard methodology, with all grids walked in the same direction (E-W).

A Geoscan RM15 resistance meter was used to conduct the magnetic survey; the sample interval used was 1.0m with a traverse interval of 1.0m. This amounted to 400 readings per 20m² grid. All grids were walked in a zig-zag traverse scheme.

Data processing

Geoplot software (version 3) was used to download and process the magnetic survey data. Greyscale plots of both raw and processed data were produced in Geoplot. Raw data, processed data and interpretation diagrams, which have been georectified in AutoCAD Map 3D and ArcView GIS are presented in this report, with plain text data stored in the project digital archive.

The 'raw' data has been subject to minimal editing to remove operator error, with data subsequently processed to remove geological and background biases and interpolated to aid interpretation (see appendix 1).

Results

An interpretative diagram is presented in figure 4, with some anomalies annotated for ease of reference.

The survey has generally been successful in recording variance in resistivity across the site, with sufficient contrast evident to observe anomalies of possible archaeological origin.

At the north-western extreme of the survey area, the low resistivity recorded (**A**) is associated with the area surrounding a mature beech tree. This tree provides shelter for the cows within the field and therefore this area retains a considerable amount of moisture and was noted as being considerably wet during the survey. Water collects here from surface run-off, at the break of slope which runs roughly E-W across this area.

The rest of the survey area is marked by anomalous trends representing narrow ridge and furrow running NW-SE across the survey grid (**B**). This agricultural activity appears to have disturbed any *in situ* features in this area. Of note is a discrete spread of high resistance anomalies towards the centre of the survey area (**C**), although no clear plan form can be determined.

Towards the SE of this area of ridge and furrow, a number of areas of high resistance are visible **(D)**. These tend to run perpendicular to the ridge and furrow; their lack of form perhaps suggests a deposit of dislocated stonework at the edge of the plough zone.

Beyond this, to the SE, are a set of low contrast anomalies **(E)** which provide perhaps the most convincing possible features of *in situ* stonework, although their low magnitude suggest that they have been extensively robbed. They are characterised by a defined high resistance response surrounded by a 'spread' of low resistance material, possibly representing drainage around walling. These features coincide with a wide plateau which flanks the substantial hollow way which leads from the NE entrance of the outer bailey to the heavily defended NE entrance of the inner bailey.

A quick comparison with the initial processing of the photogrammetric survey data in this area has confirmed the presence of the survival of ridge and furrow as very insubstantial earthworks (not identifiable on the ground) (figure 5). This ridge and furrow is also identifiable on aerial photographs of this area, including from 1985 (figure 6) and from 2008 (figure 7). Both the photogrammetry and aerial photographs also indicate the presence of a substantial robbed-out building on a platform at the E end of the hollow way running NE in this area. Although this feature is outwith the area of resistivity survey, it is possible to suggest that this supports the existence of settlement evidence along this broad plateau flanking the western side of the hollow way, as suggested by anomalies **E**. These anomalies are not identifiable directly with any particular earthwork evidence.

Conclusions

The interim results of this survey have proved promising, and have built upon the 2015 magnetic survey results. A full discussion of the results alongside the results of earthwork and photogrammetric survey will form the basis for discussion in a forthcoming report/article.

The survey has recorded few anomalies that appear to directly relate to *in situ* stonework. The features of most interest align along the SE of the survey area, coinciding with a plateau running to the immediate W of the pronounced hollow way which links the NE entrance of the outer bailey to the NE entrance to the inner bailey. It is possible that these features relate to small scale settlement evidence in this area, although this remains a tentative conclusion.

Overall, this evidence accords with the interpretation of the documentary evidence that the borough of Caus did not represent a 'classic' medieval settlement pattern of burgages arranged on a toft and croft basis (pers. comm. M. Fradley). The survey results also clearly demonstrate that this area was subject to continued agricultural use in the post-medieval period which has limited the survival of *in situ* occupation evidence in this area of the outer bailey.

Bibliography

- BGS, nd. *British Geological Survey Geology of Britain* <<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>> (accessed 28/04/2016).
- Buteux, V. 1996 *Archaeological assessment of Caus, Shropshire Central Marches Historic Towns Survey Report*.
- Carey, G. 2015 *Fluxgate Gradiometer Survey, Caus Castle, Westbury, Shropshire: Pilot Geophysical Survey Report* Unpublished report. Available from <http://www.academia.edu/23339840/FLUXGATE_GRADIOMETER_SURVEY_CAUS_CASTLE_WESTBURY_SHROPSHIRE_Pilot_Geophysical_Survey_Report> (accessed 28/04/2016).
- English Heritage, 2008 *Geophysical Survey in Archaeological Field Evaluation* <<http://www.english-heritage.org.uk/publications/geophysical-survey-in-archaeological-field-evaluation/geophysics-guidelines.pdf>> (accessed 28/04/2016).
- Geoscan Research 2005 *Geoplot Instruction Manual* <<http://www.geoscan-research.co.uk/Gp300Proc3.pdf>> (accessed 26/06/2016).
- IfA, 2010 *Draft Standard and Guidance for Archaeological Geophysical Survey* <<http://www.archaeologists.net/sites/default/files/node-files/geophysicsSG.pdf>> (accessed 28/04/2016).
- Letters, S. nd Online *Gazetteer of Markets and Fairs in England and Wales to 1516* <<http://www.history.ac.uk/cmh/gaz/gazweb2.html>>: [Shropshire] (accessed 28/04/2016).
- Ragg, J M, Beard, G R, George, H, Heaven, F W, Hollis, J M, Jones, R J A, Palmer, R C, Reeve, M J, Robson, J D, and Whitfield, W A D. 1984 *Soils and their use in midland and western England* Soils Survey of England and Wales, 12
- Schmidt, A. 2001 *Geophysical Data in Archaeology: A Guide to Good Practice* York: Archaeology Data Service
- VCH 1968 *The Victoria County History of Shropshire* 8 pp.295-332

Other sources

- Shropshire Historic Environment Record (HER), Shirehall, Shrewsbury
- National Heritage List For England (NHLE) <<https://www.historicengland.org.uk/listing/the-list>> (accessed 27/05/2016).

Appendix 1: Technical data

1. 'Raw' Data

Clip (limits maximum and minimum values for display and subsequent processing): -1/+1 sd.
Zero-Mean Grid (sets the background mean of each grid to zero; removes grid edge discontinuities)

2. Processed data

Despike (removes large anomalies above a certain threshold): x-radius 1; y-radius 1; threshold 2

Interpolation (smoothes greyscale appearance by adding extra data points into the dataset, calculated with reference to surrounding collected data) on both the Y and X-axis.

For more technical information on data processing, see (Geoscan Research, 2005: Chapter 6).

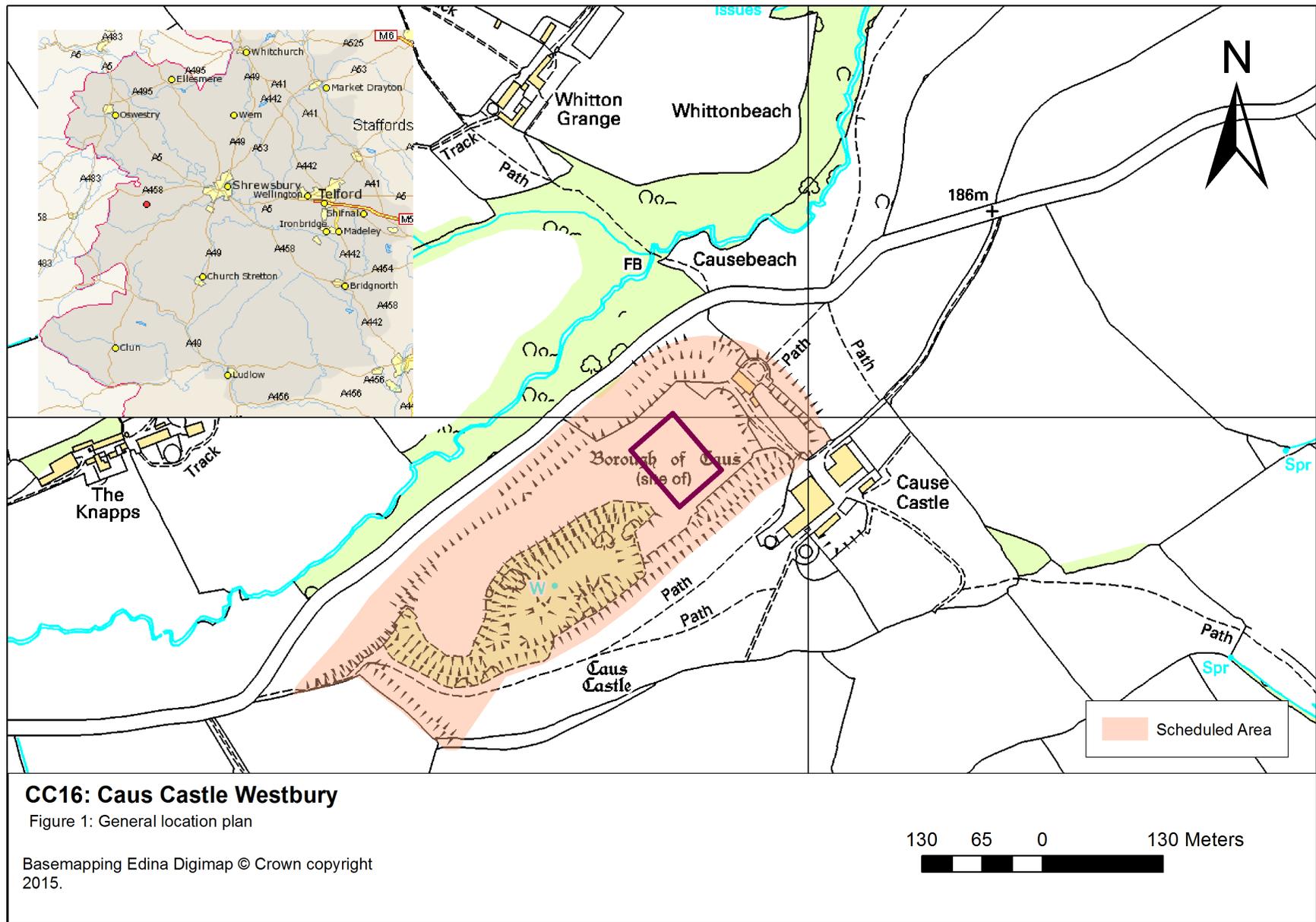
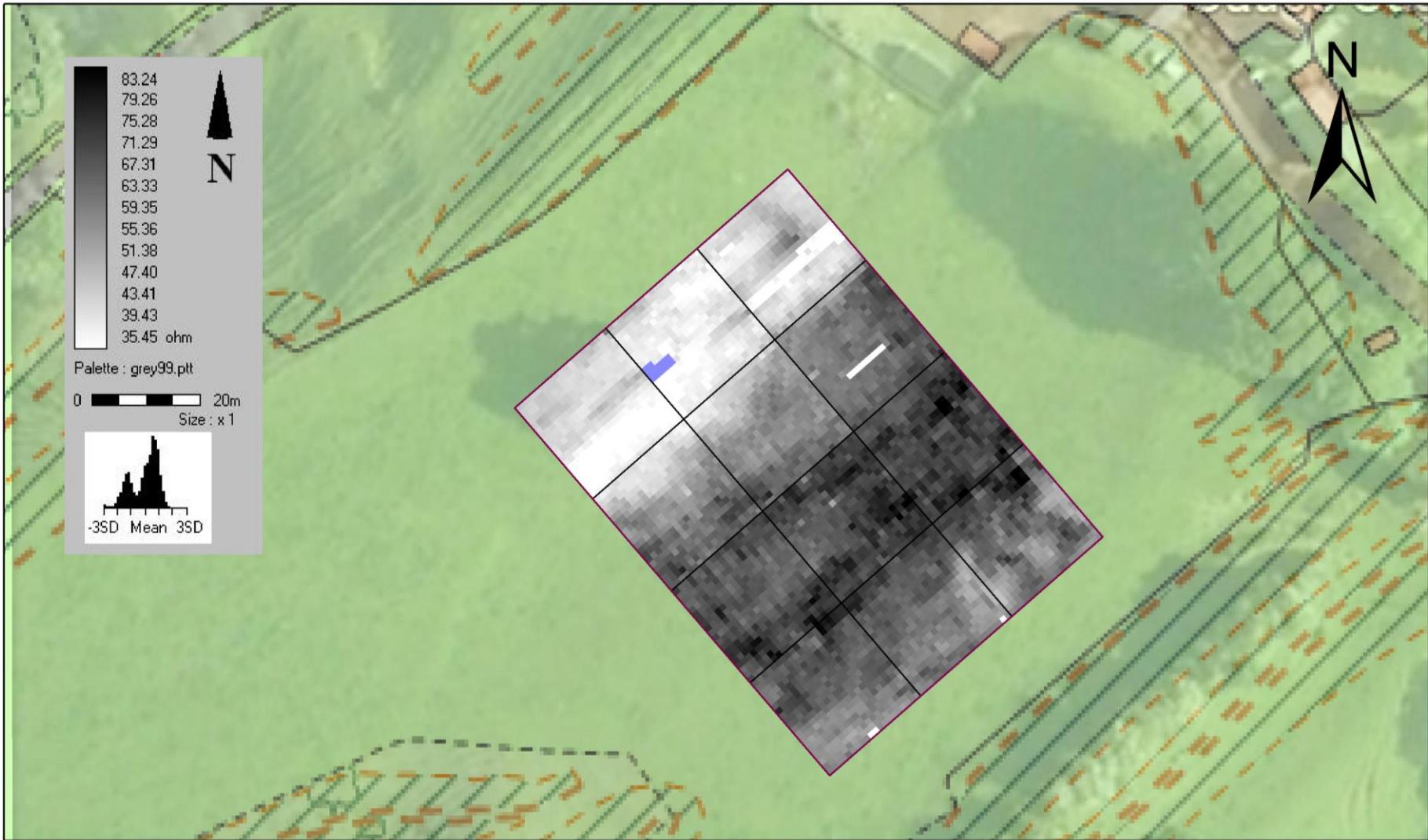


FIGURE 1: SURVEY LOCATION



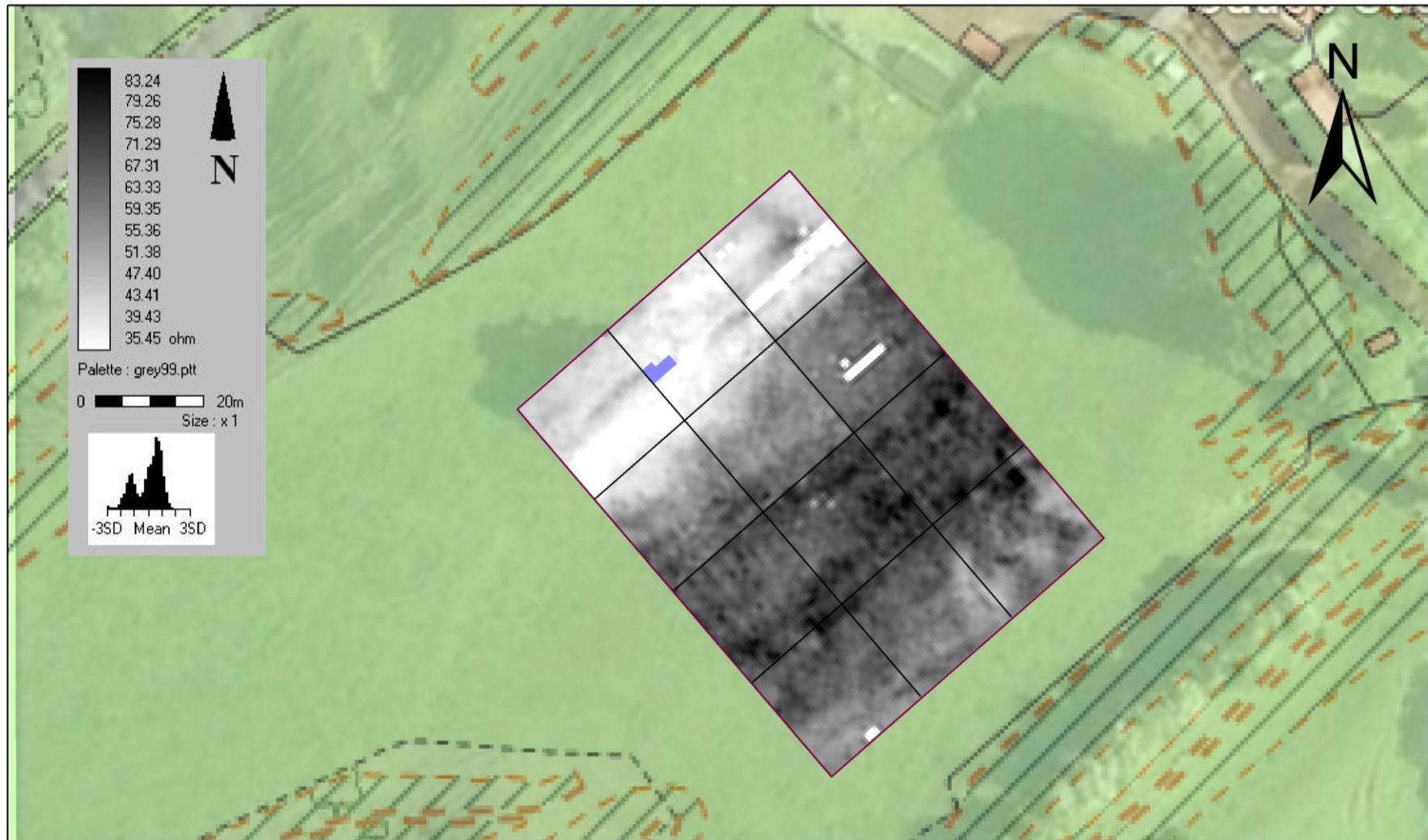
CC16: Caus Castle Westbury

Resistance Survey Greyscale (Raw)

Basemapping Edina Digimap © Crown copyright 2015.



FIGURE 2: RESISTANCE DATA GREYSCALE (RAW)



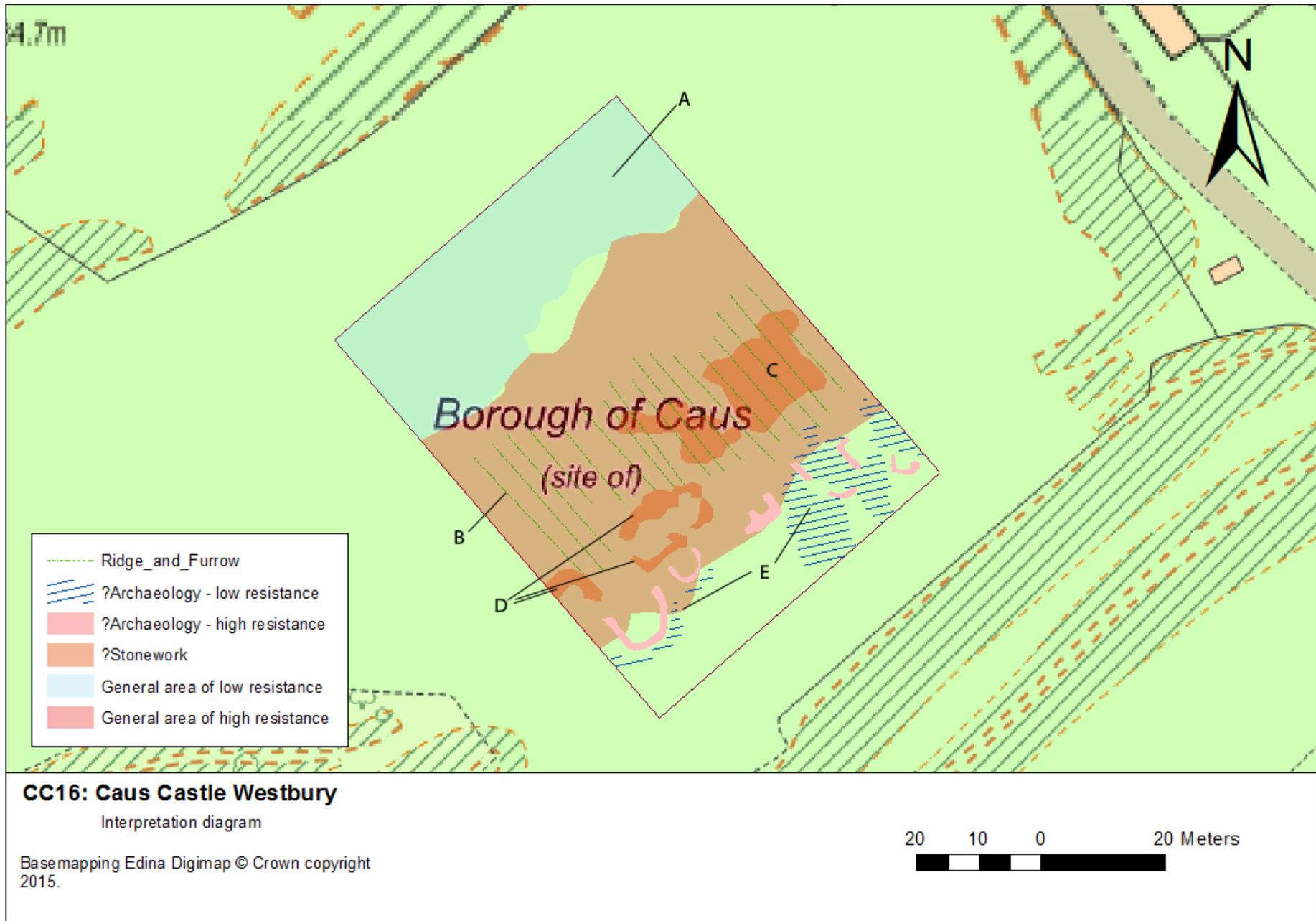
CC16: Caus Castle Westbury

Resistance Survey Greyscale (Processed)

Basemapping Edina Digimap © Crown copyright
2015.



FIGURE 3: RESISTANCE DATA GREYSCALE (PROCESSED)



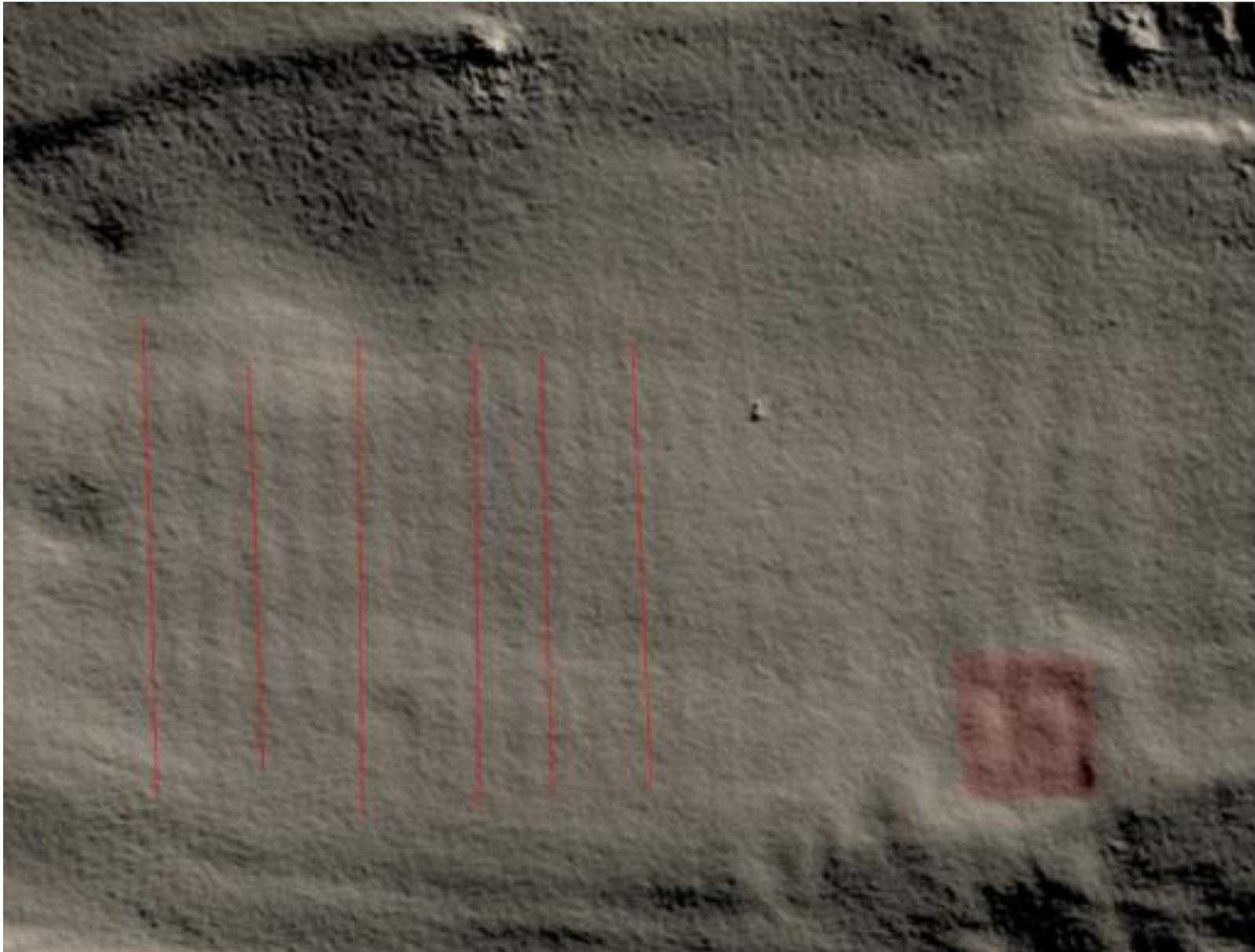


FIGURE 5: INITIAL PROCESSING OF PHOTOGRAMMETRY ACROSS AREA OF RESISTIVITY SURVEY SHOWING FEATURES MENTIONED IN TEXT.
COURTESY OF AERIAL CAM LTD. ONLY FEATURES MENTIONED IN THE TEXT HAVE BEEN IDENTIFIED - THIS WILL BE SUBJECT TO FURTHER ANALYSIS IN THE FINAL REPORT.



FIGURE 6: 1985 AERIAL PHOTOGRAPH BY CHRIS MUSSON. © CLWYD POWYS ARCHAEOLOGICAL TRUST. REF 85-MB-0019.
RIDGE AND FURROW AND PLATFORM CLEARLY VISIBLE (CF. FIGURE 5)



FIGURE 7: 2008 DETAIL FROM AERIAL PHOTOGRAPH BY MICK KRUPA. © SHROPSHIRE COUNCIL. REF 0813_045.
RIDGE AND FURROW AND PLATFORM VISIBLE AT OBLIQUE ANGLE.