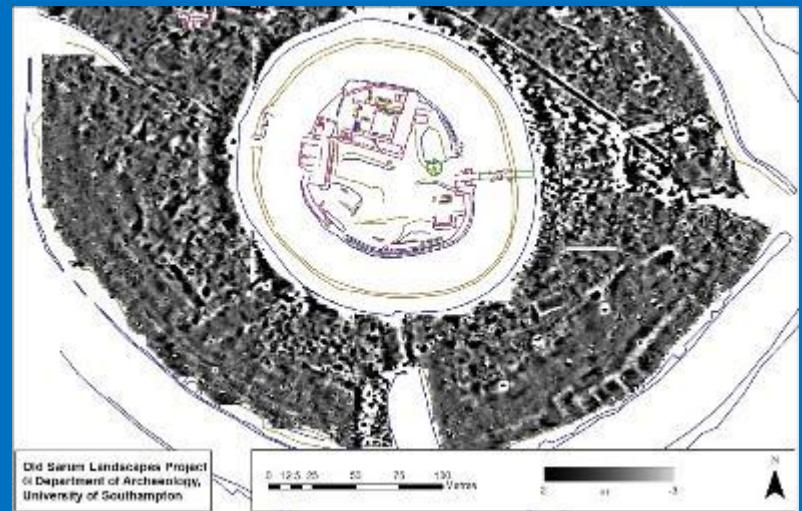
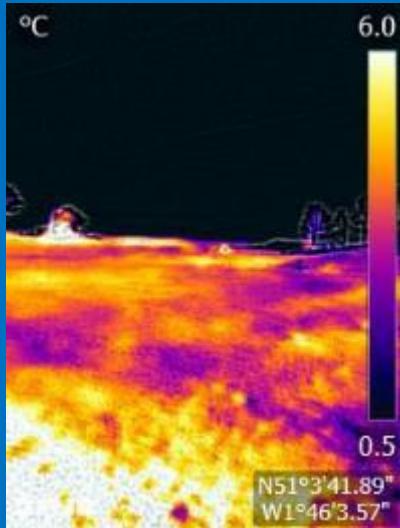


Old Sarum and its Environs. New Field Research in an Ancient Landscape



SOCIETY OF
ANTIQUARIES
OF LONDON



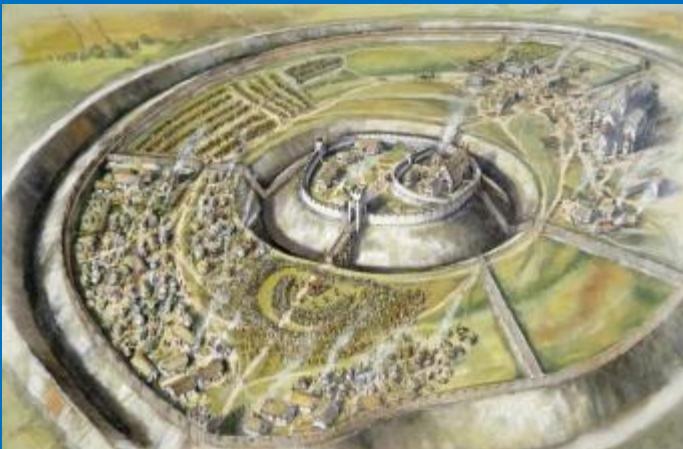
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Prifysgol Abertawe

UNIVERSITY OF
Southampton

EPSRC

Engineering and Physical Sciences
Research Council

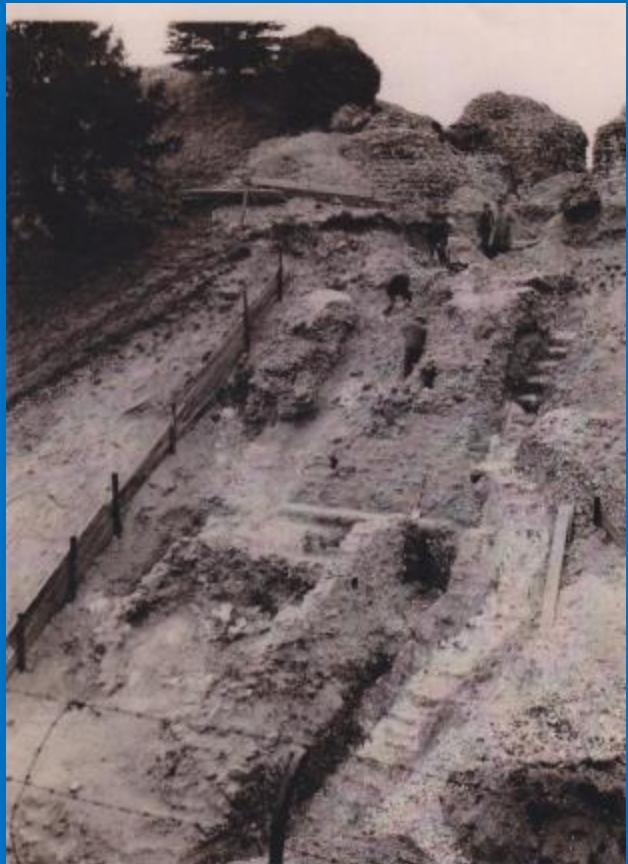
Site Background



Images: English Heritage

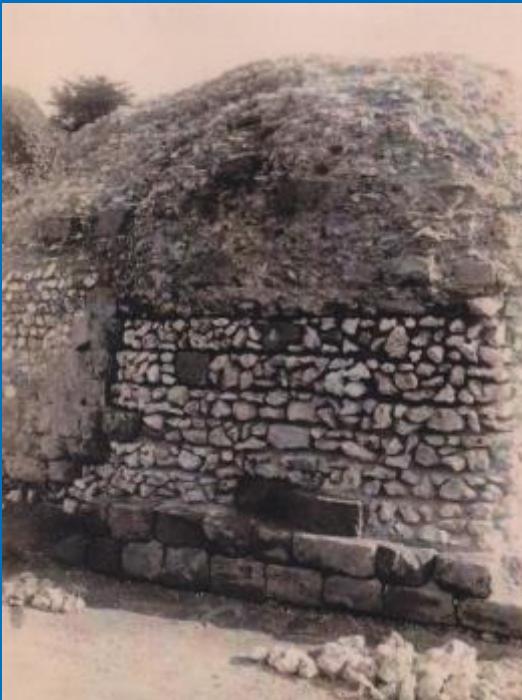
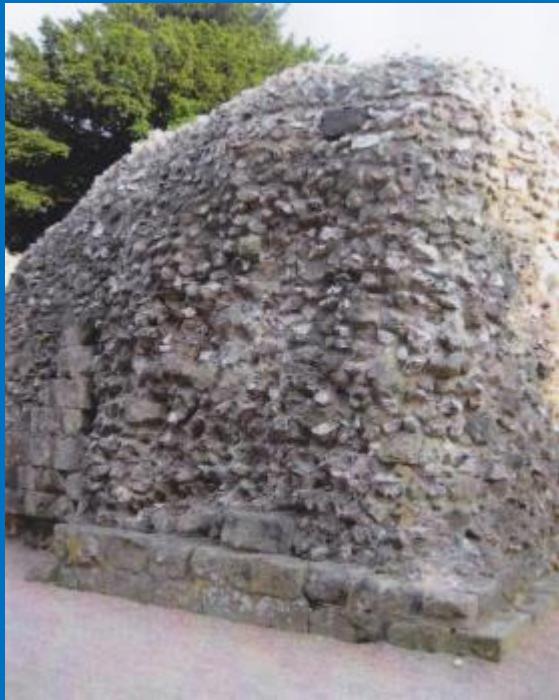
- The monument, number 1015675, includes a univallate Iron Age hillfort with evidence of Romano-British occupation and documentary evidence of a Saxon burh and mint. The hillfort is roughly oval in shape, enclosing an area of c.12ha, with entrances at the east and west ends.
- The site was rebuilt as a royal motte and bailey castle including a cathedral and bishop's palace and extra-mural settlement
- The site is the focus for a number of major Roman roads and the Roman town of Sorviodunum has been suggested as lying within the hillfort.
- The first cathedral was built in 1078,, and consisted of a nave separated from two side aisles by eight great arches on each side. At the apsidal east end, the main altar and two side chapels in the transepts were also enclosed by semicircular apses
- Rebuilding in the Norman style commenced in 1130 under Bishop Roger and involved the large scale levelling of this part of the hillfort interior

Previous Excavation and Survey

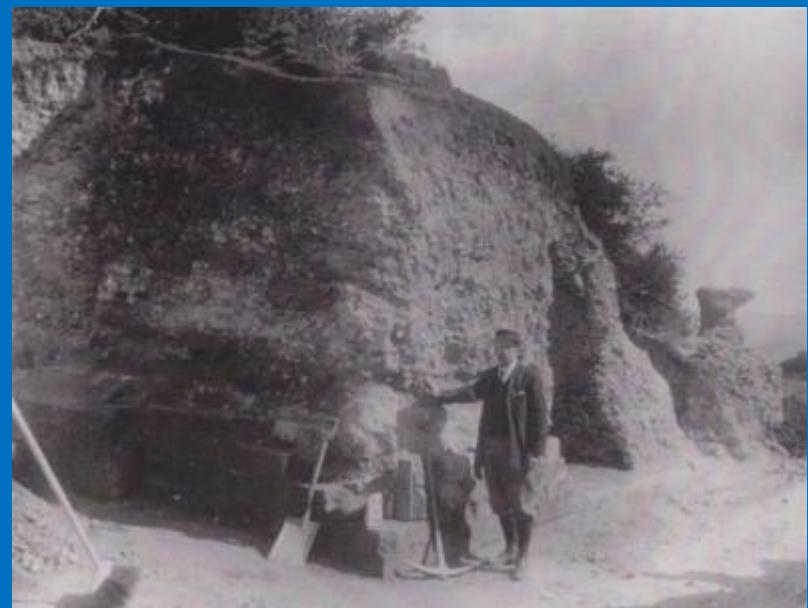


- Excavation has been conducted at the site in the 20th century, including Hope's work in the earlier part of the century (Hope 1911; 1914; 1916; 1917) and a number of trial excavations and archaeological mitigations prior to development in the area (for instance excavations on the trunk main replacement).
- Previous geophysical survey has been conducted at the site, with a survey of the supposed chapel site being conducted in 2003 (http://archaeologydataservice.ac.uk/archives/view/ehgsdb_eh_2011/fullrecord.cfm?id=2664), and resistivity survey of part of the monument in 2005 (http://archaeologydataservice.ac.uk/archives/view/ehgsdb_eh_2011/fullrecord.cfm?id=2804).

Old Sarum Then and Now



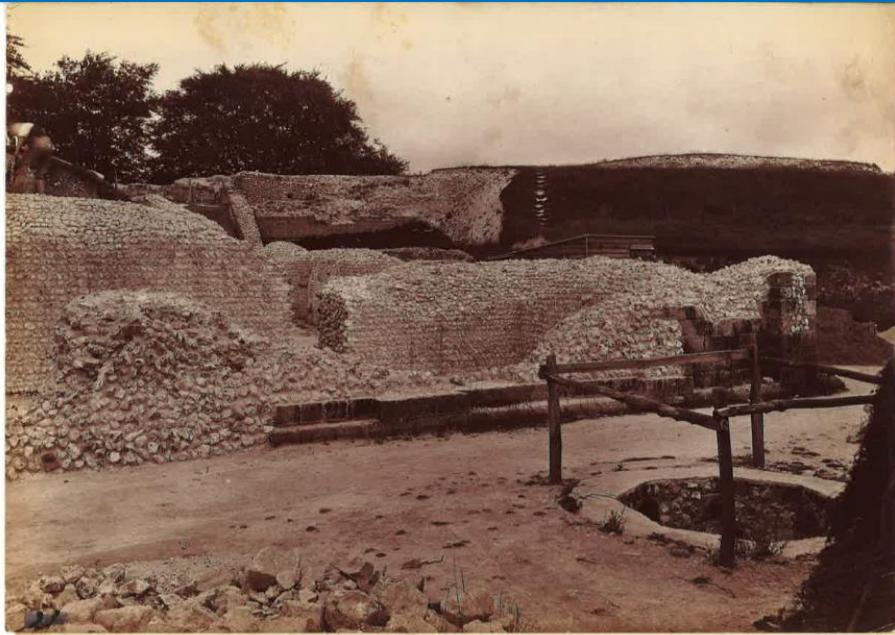
Photos: English Heritage

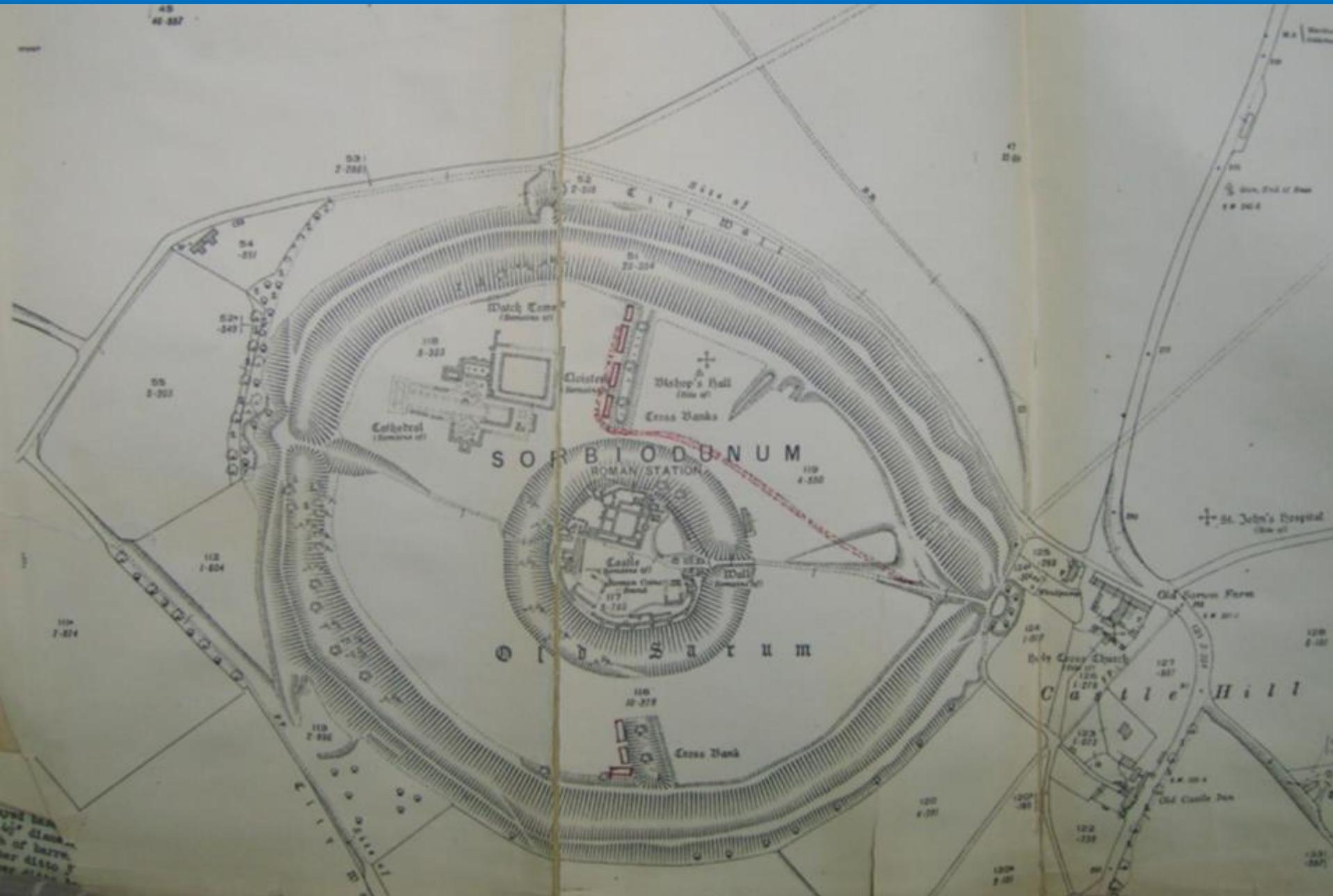




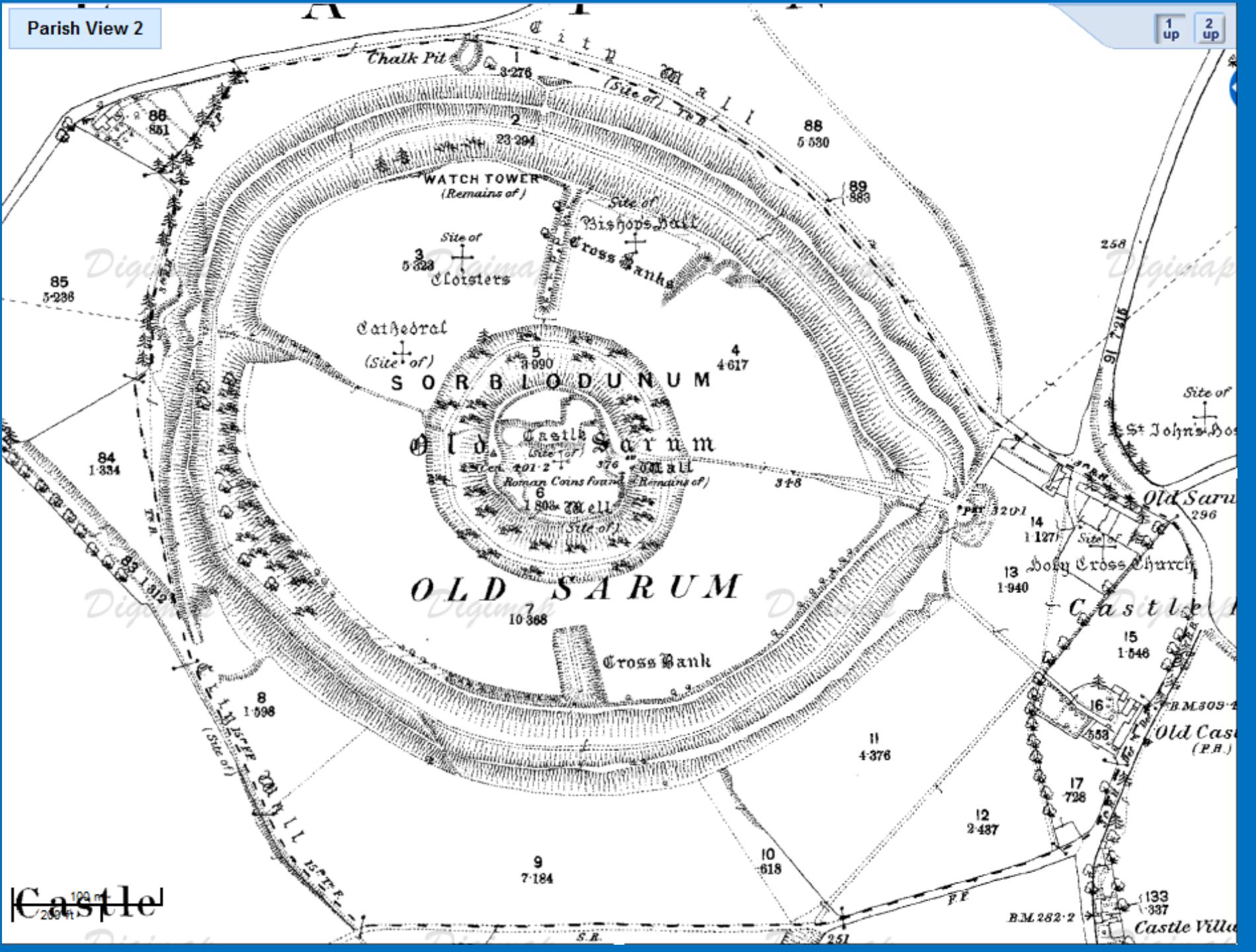
St Joseph 1945

Phot. G. W. G. Allen





Ministry of Works Map 1944



Areas of Interest

- The scheduled area of Old Sarum Castle contains multi-period evidence that would benefit from geophysical investigation. The exact layout of the medieval castle plan, and the Saxon Burg would merit attention.
- The area immediately to the south of Old Sarum contains the remains of a Romano-British settlement, and medieval remains, that require investigation
- The north-west contains the medieval settlement associated with the castle.

Some General Themes

- Visibility of archaeology
- Nature and depth of deposits
- Types and forms of archaeology/geology
- Scale or extent of deposits across the site

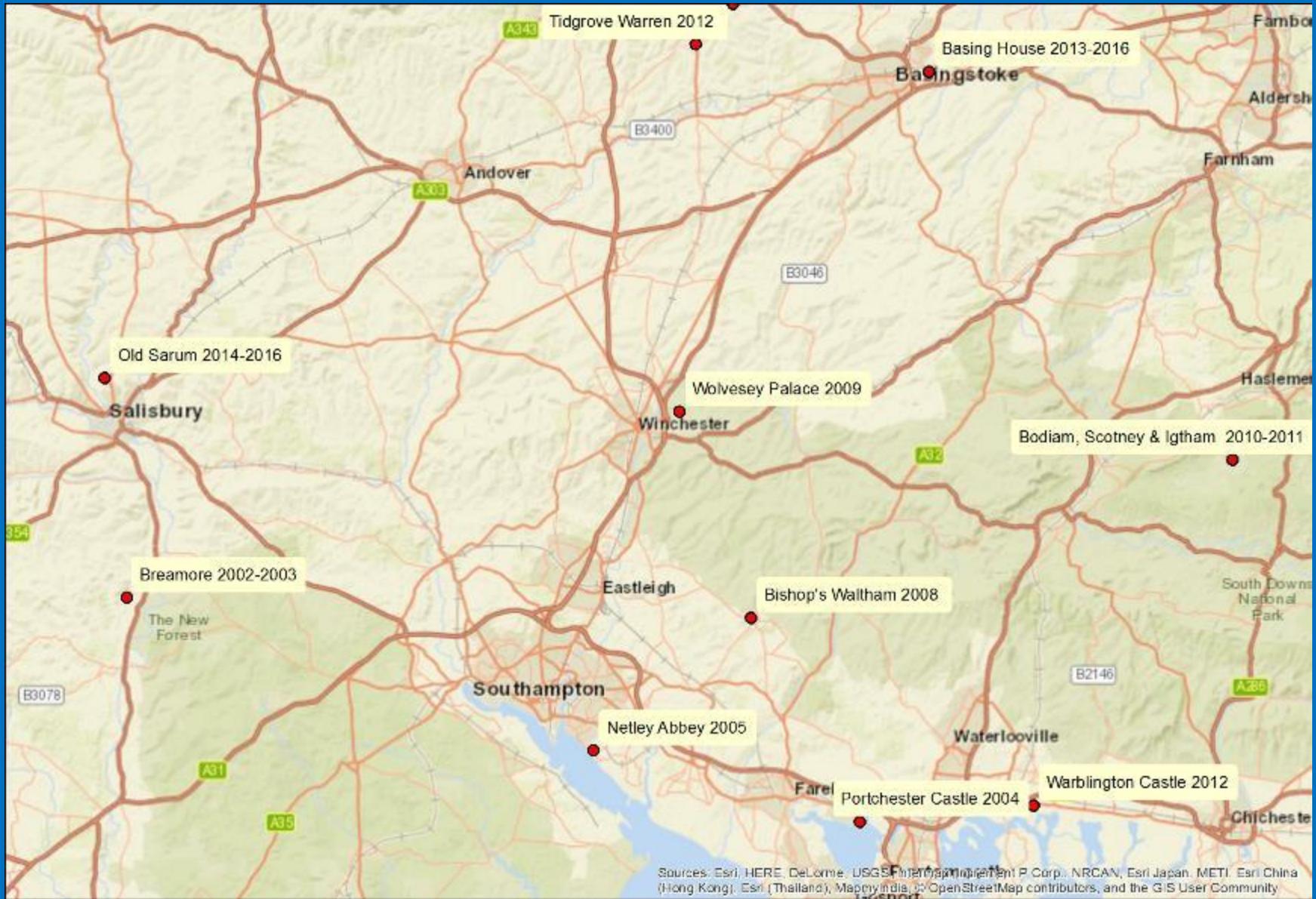
Survey Methodology

- Total station building survey
- GPS survey and gridding out
- Magnetometer (fluxgate gradiometer) survey
- Earth resistance survey
- Ground Penetrating Radar (GPR) survey
- Electrical Resistivity Tomography (ERT) survey



Photo: D. Barker

Surveys 2002-2013



Topographic survey was limited to detail on buildings and standing building survey because good quality LiDAR data was available free from the Environment Agency.





Smartnet GPS Survey



Fluxgate Gradiometer Survey



GPR Survey 200MHz antenna



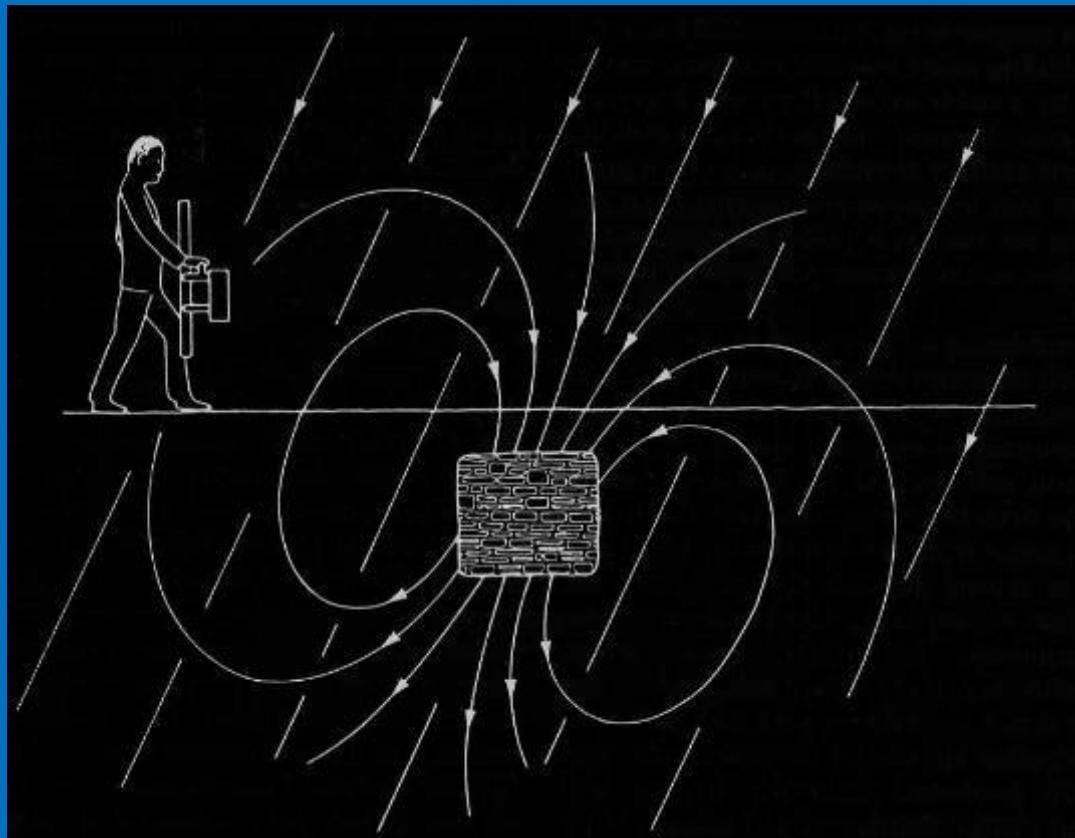
Earth Resistance Survey



ERT Survey Profile

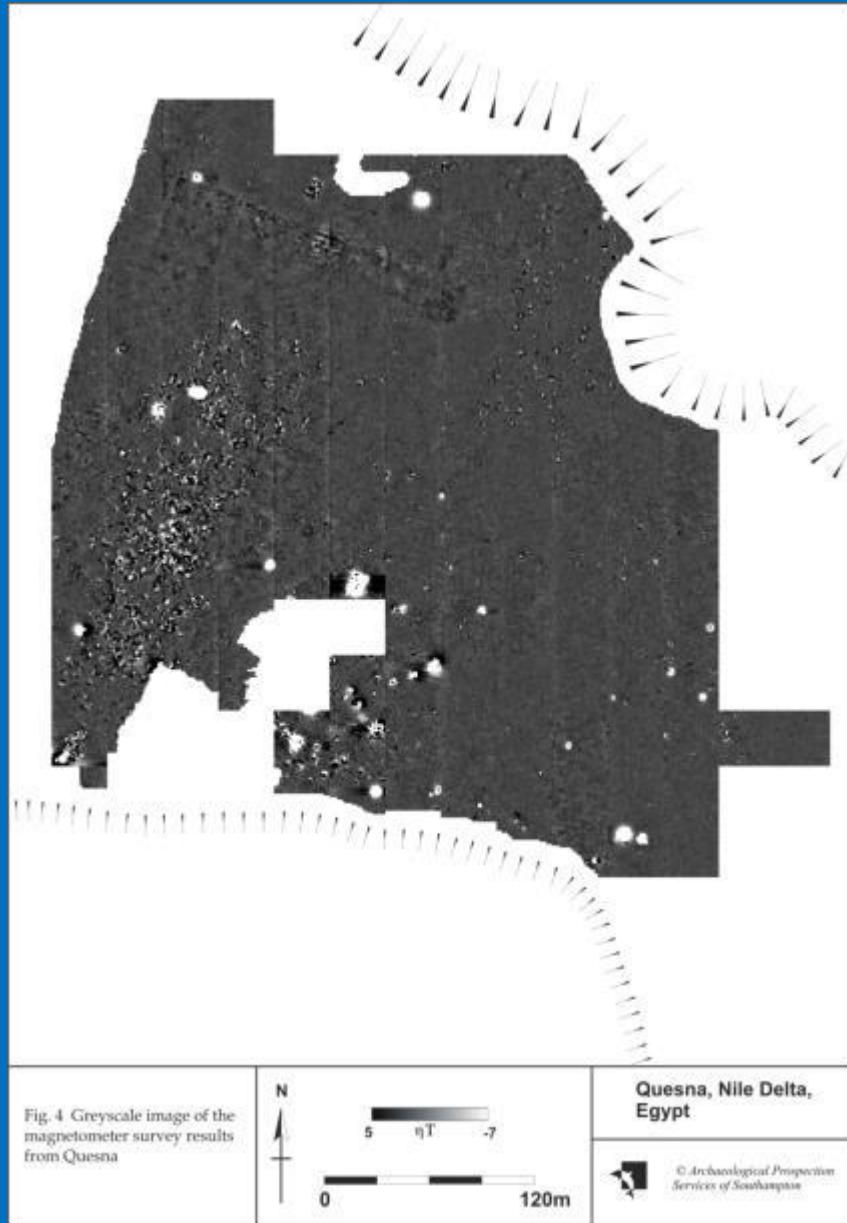


Magnetometer Survey

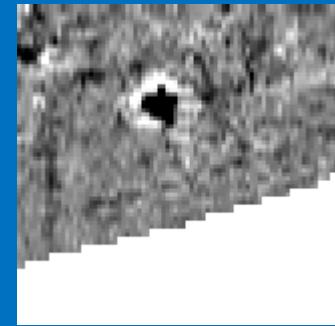


Clark 1996

Magnetic field of an archaeological feature



Magnetometry – Late Period and Roman Necropolis, Quesna, Egypt

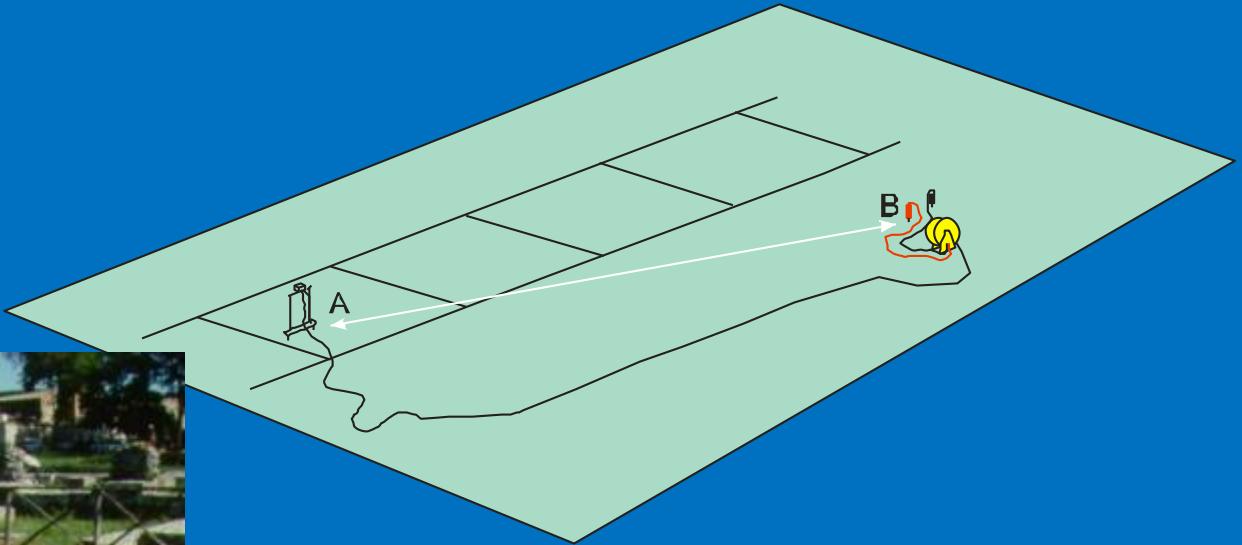


Dipolar Anomaly - Kiln



Negative and Positive anomalies – walls/ditches

Earth Resistance Twin Probe Array



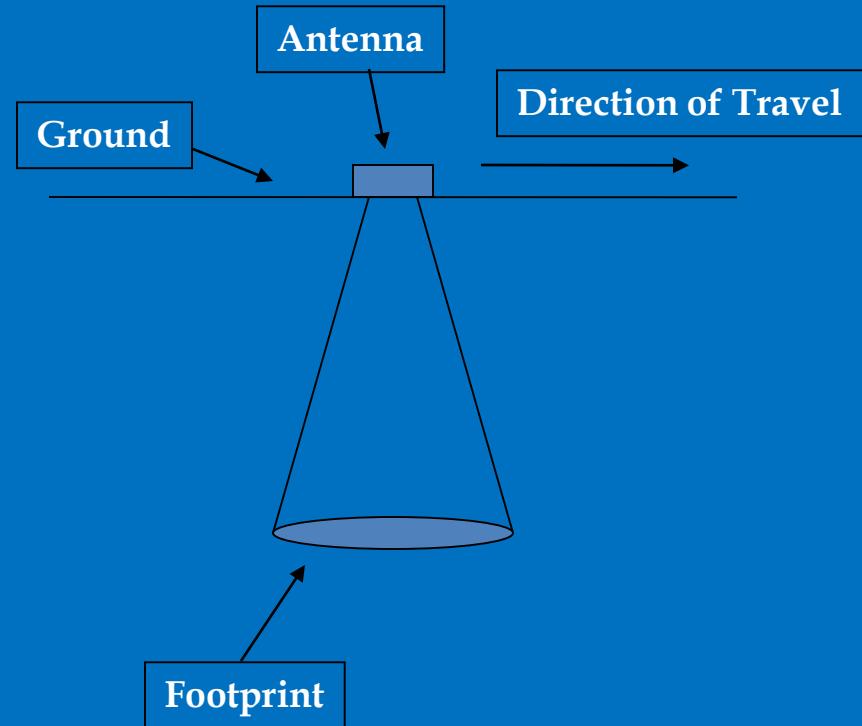
Distance between A and B should be infinity but is worked out as $30 \times$ probe spacing

Ground Penetrating Radar



Ground Penetrating Radar

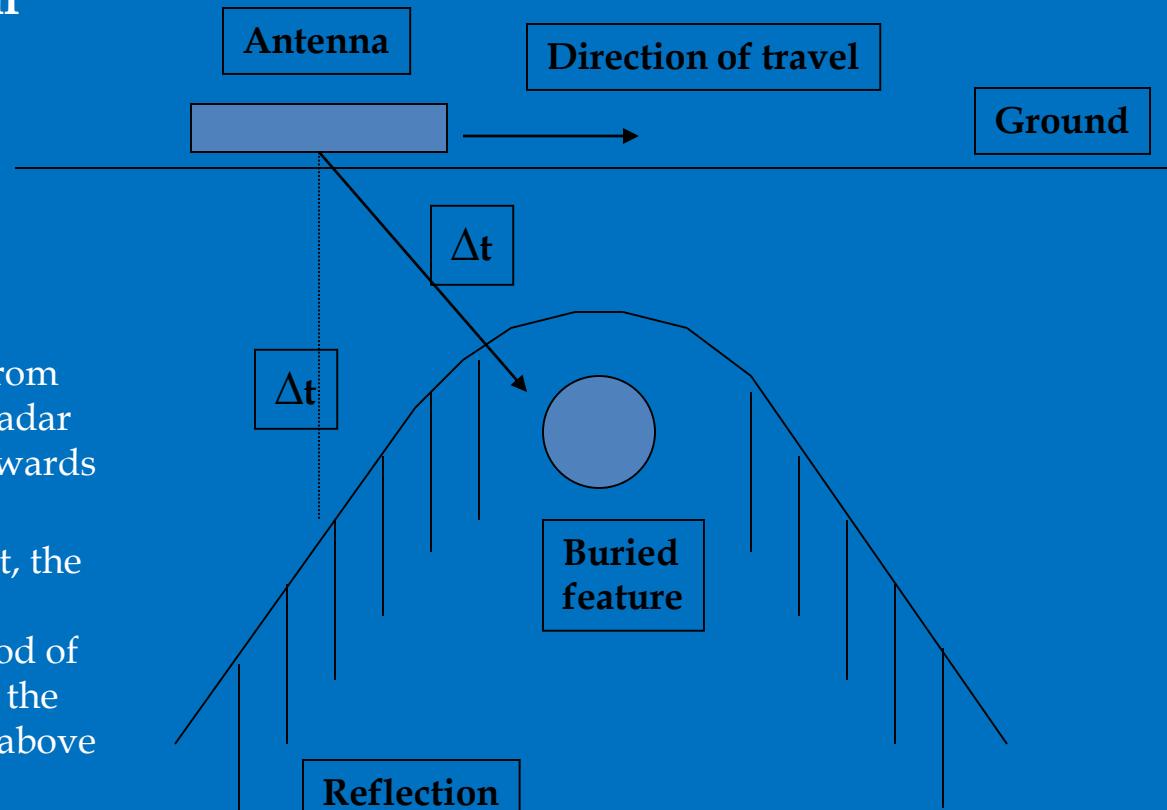
- Ground Penetrating Radar emits an electromagnetic signal at a particular frequency 250Mhz, 500Mhz etc..
- The antenna measures the time in nanoseconds for the signal to travel through the earth, and to be reflected from different buried objects.
- The antenna passes along the line of a series of traverses, with the distance travelled measured either by a manual logger, or using an odometer.
- A continuous profile of data are collected by the antenna, and can be visualised on the display console as the data is collected.
- Lowering the frequency of the antenna will increase the range of propagation for the radar wave



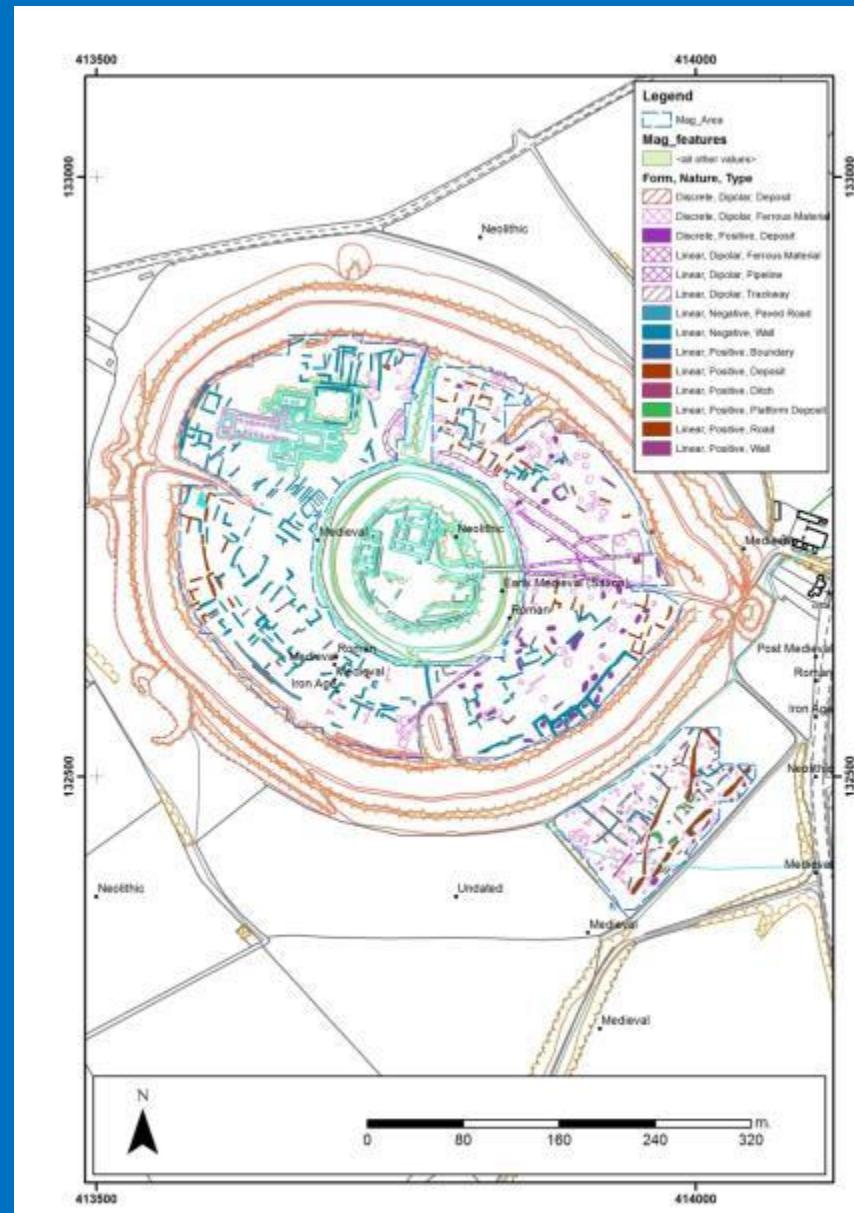
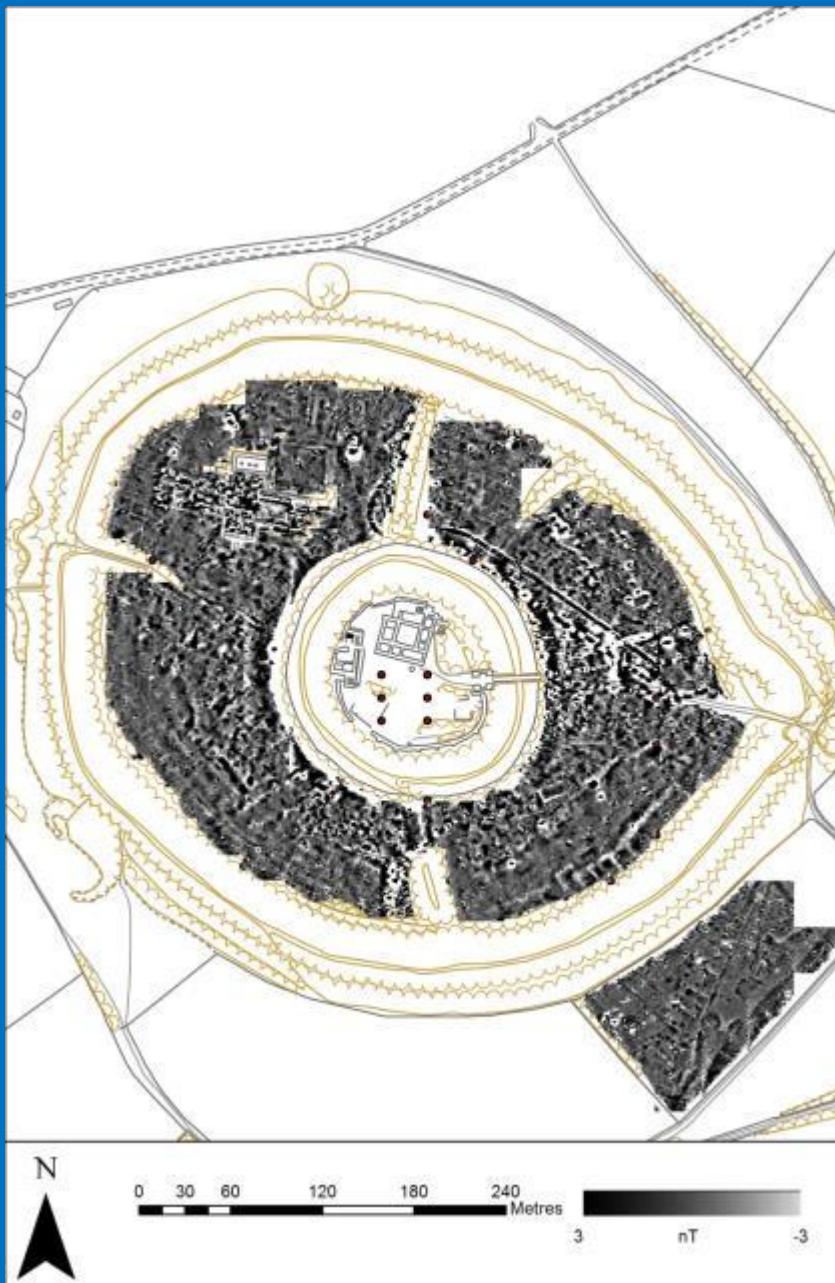
Ground Penetrating Radar

example of response to target

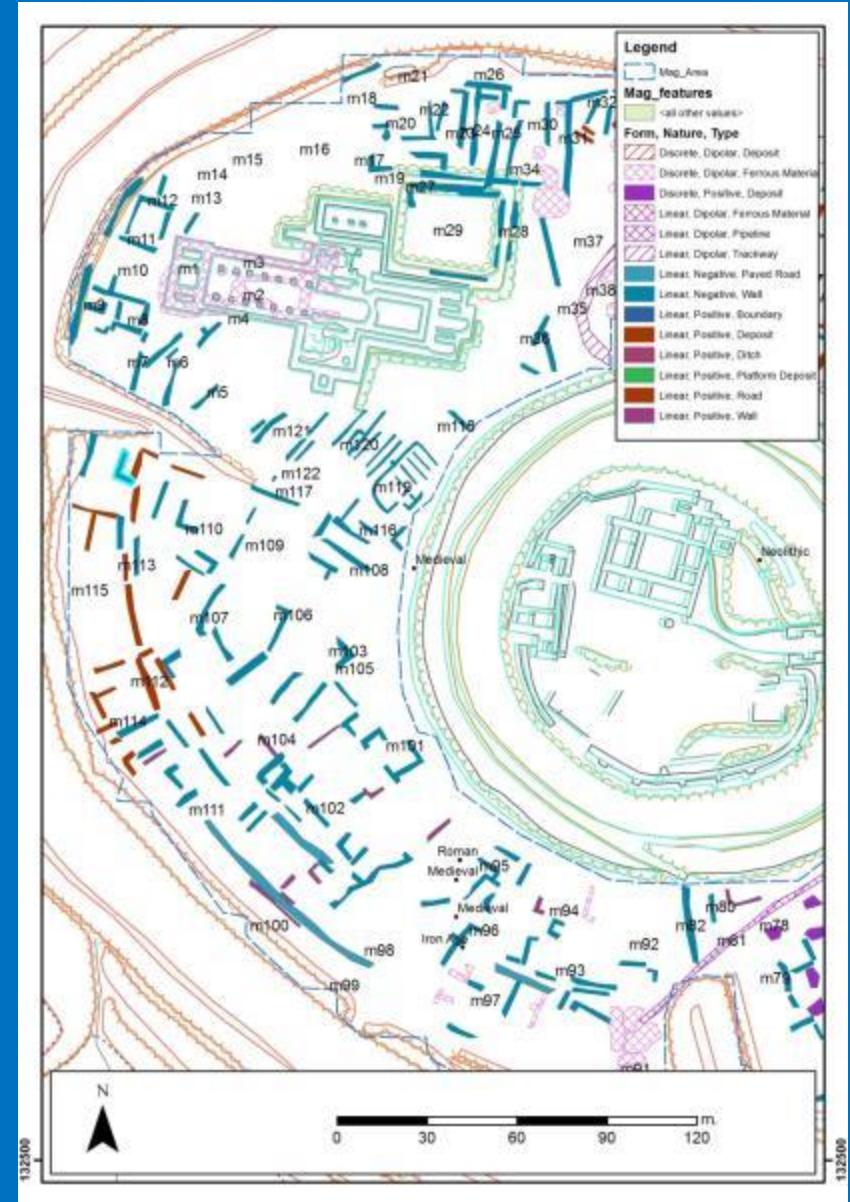
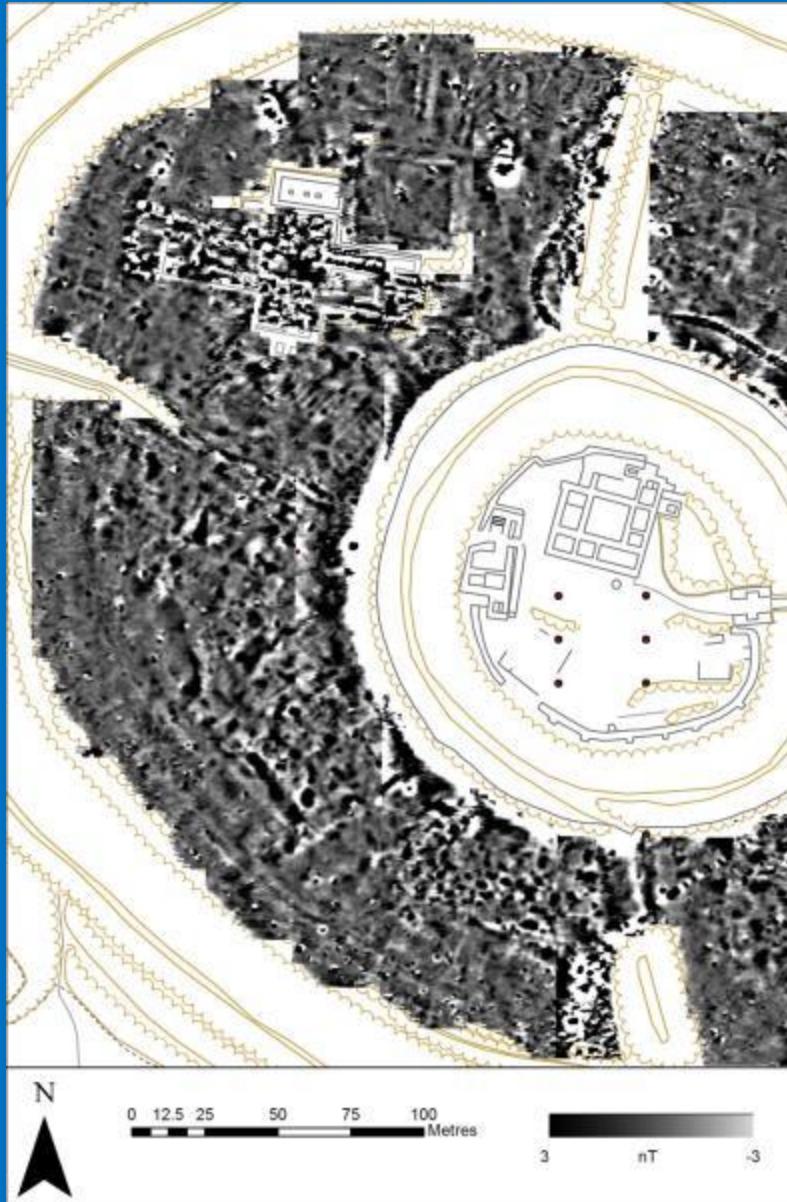
- The hyperbola effect of targets located in GPR results stems from the nature of the transmitted radar wave as the antenna moves towards and away from the object
- As the antenna nears the target, the radar signal is reflected by the feature but takes a longer period of time to be received than when the antenna is positioned directly above the object
- As the antenna moves away from the object, the effect is reversed



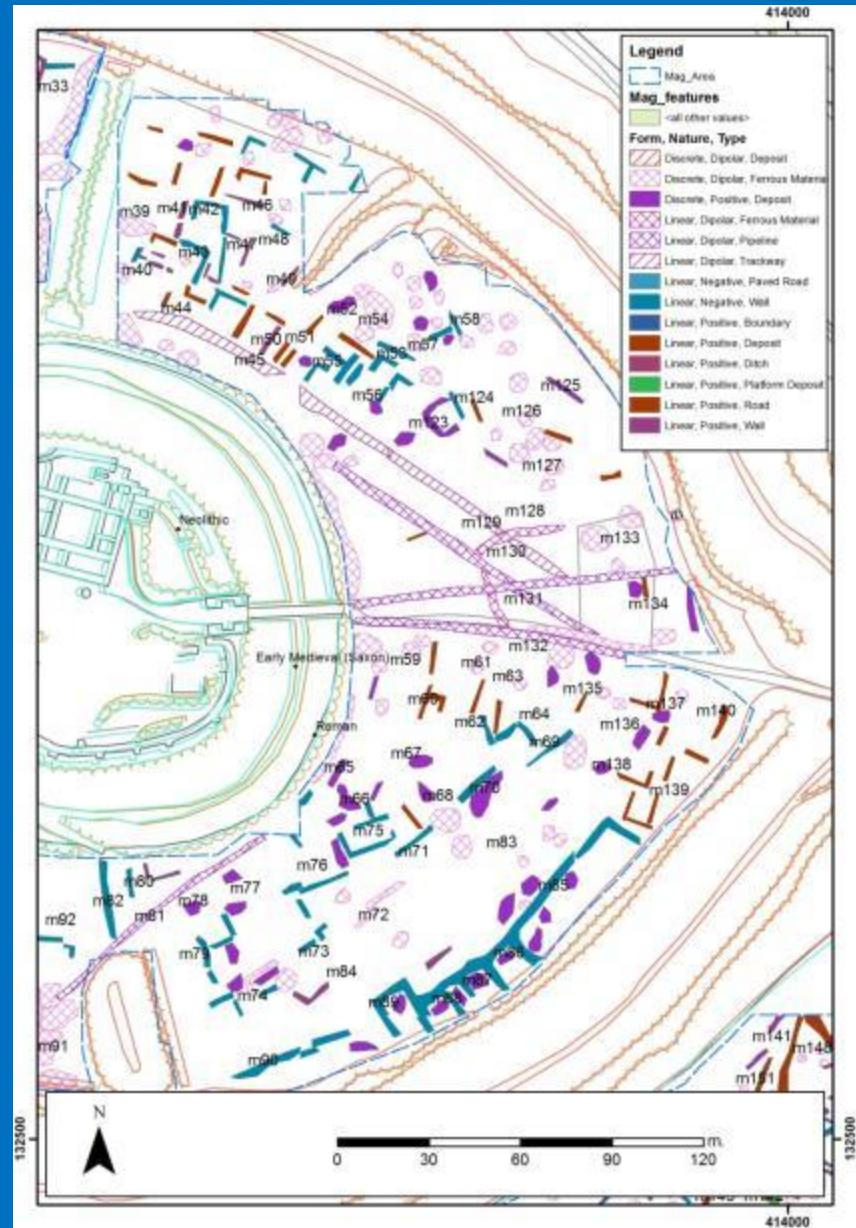
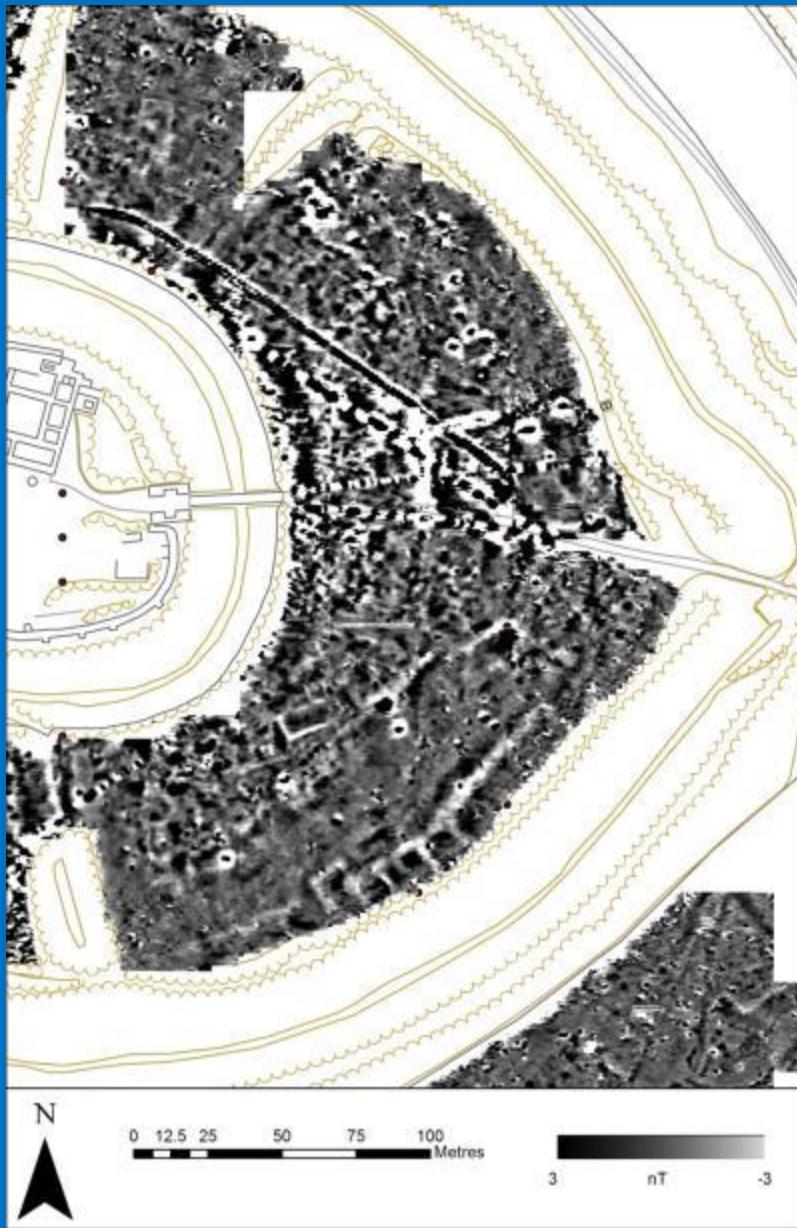
Survey Results - Magnetometry



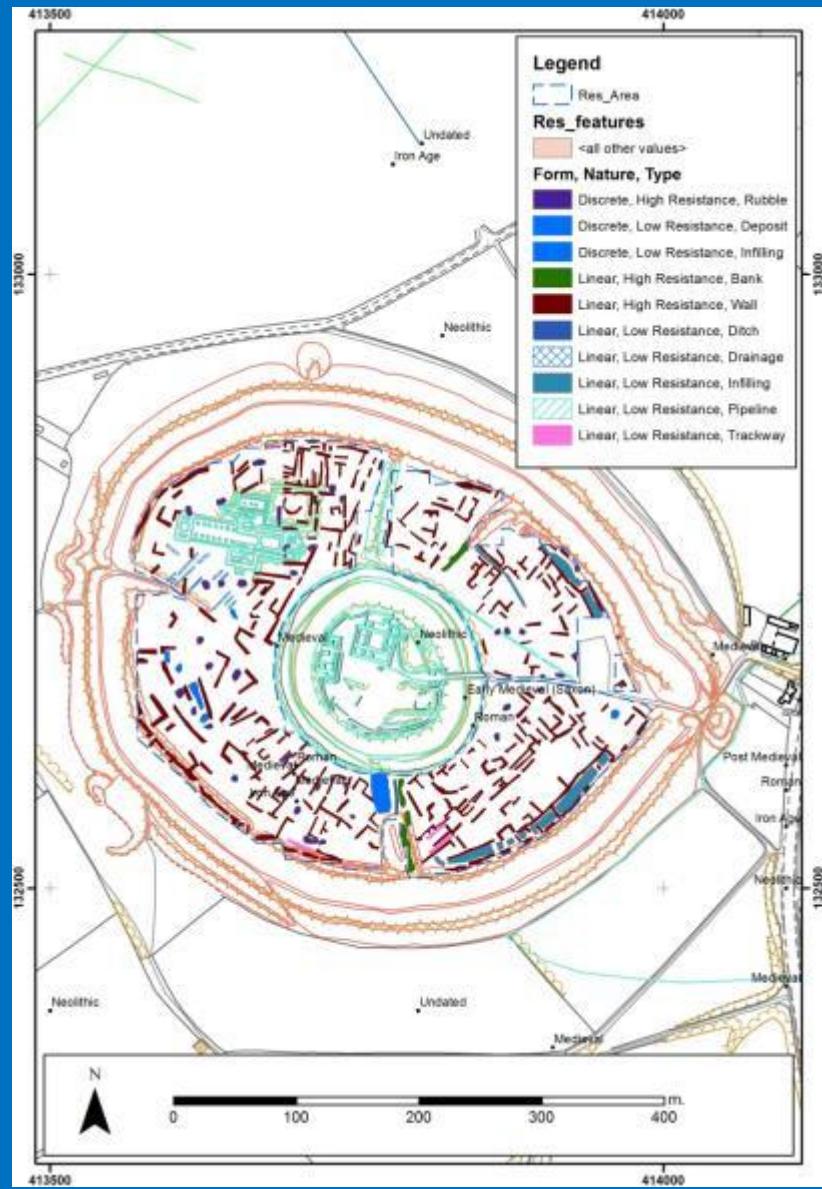
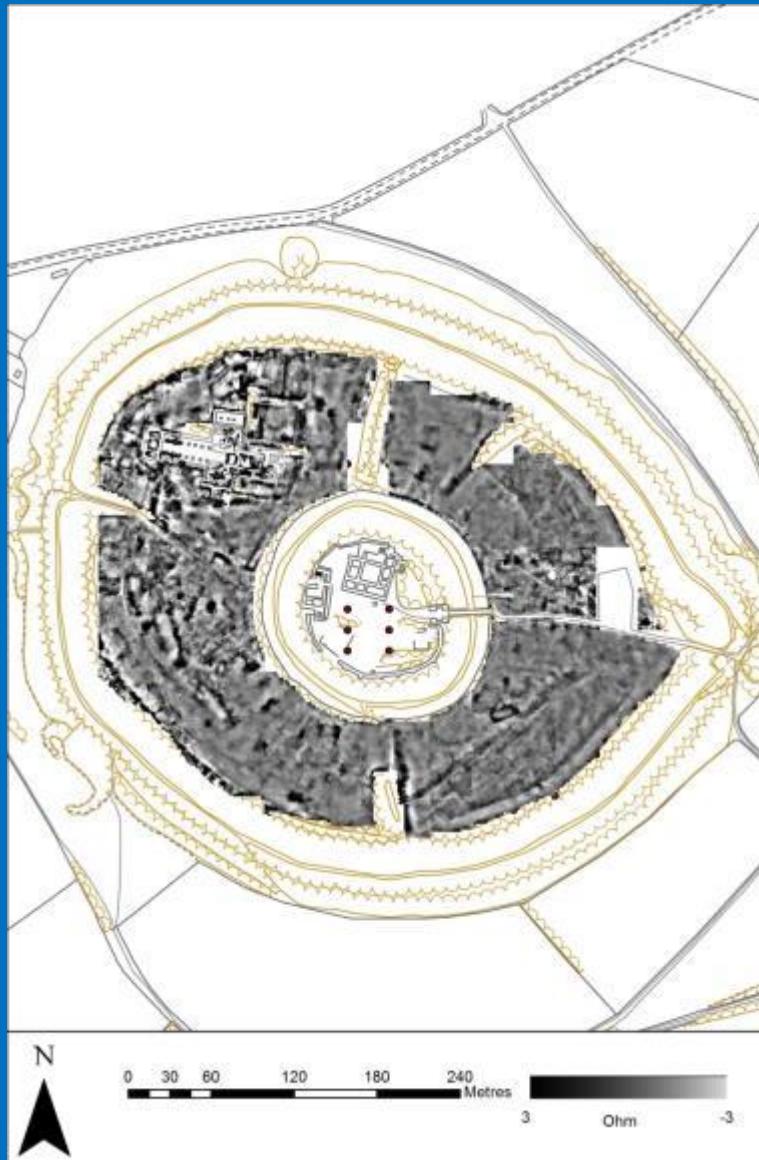
Survey Results - Magnetometry



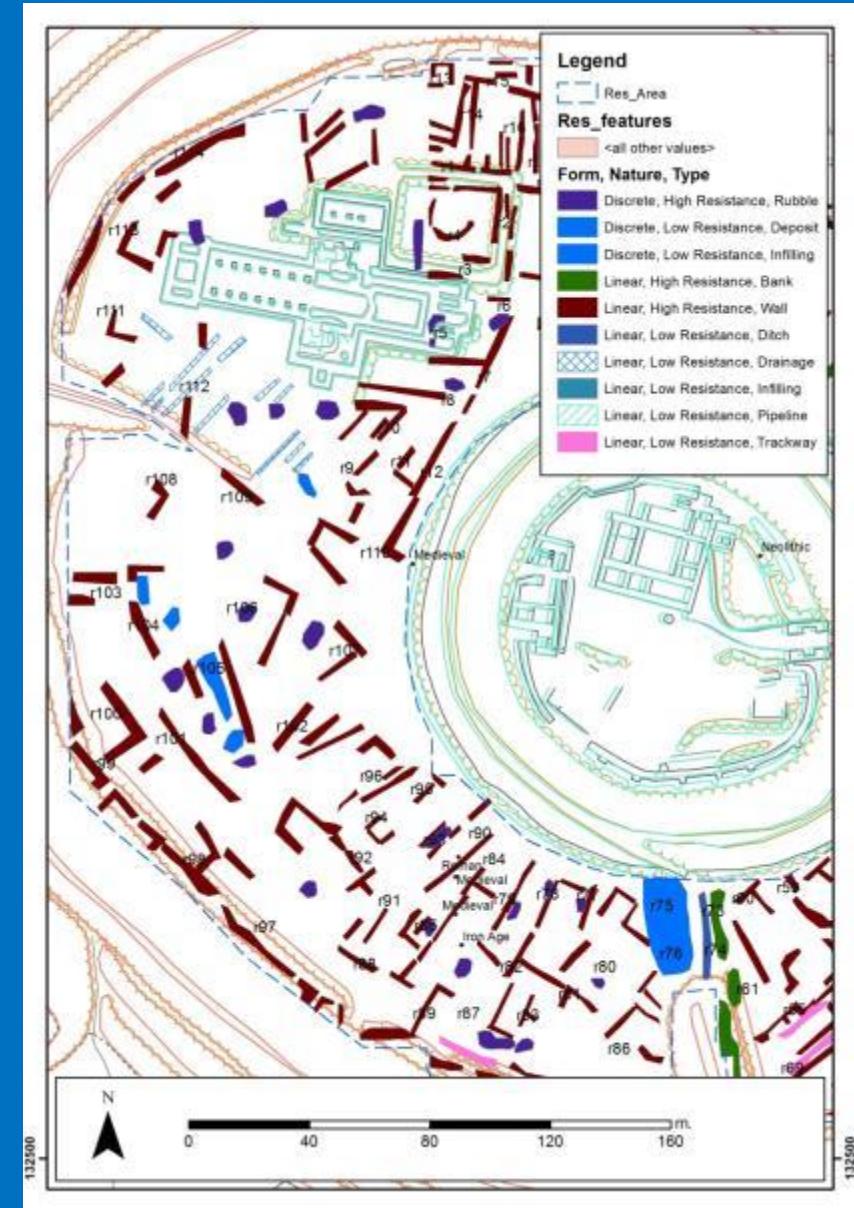
Survey Results - Magnetometry



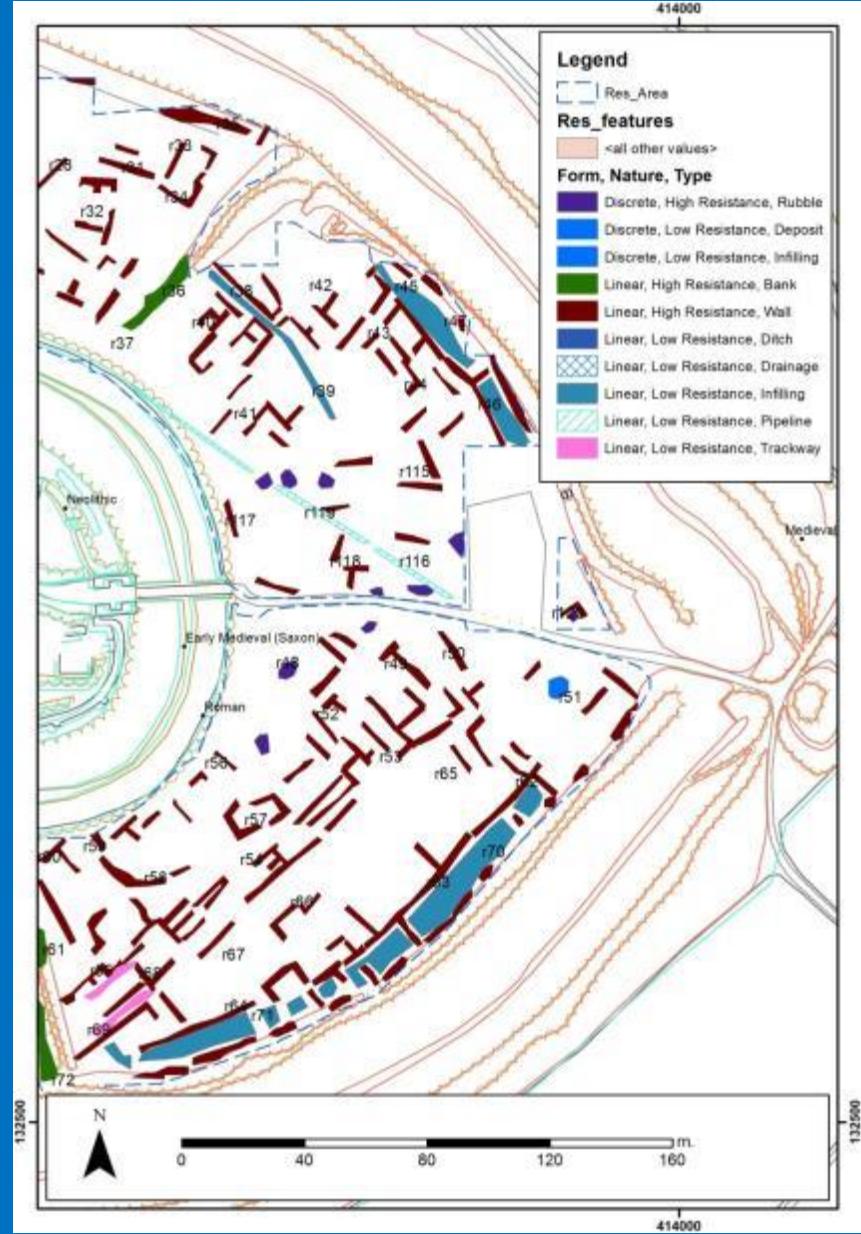
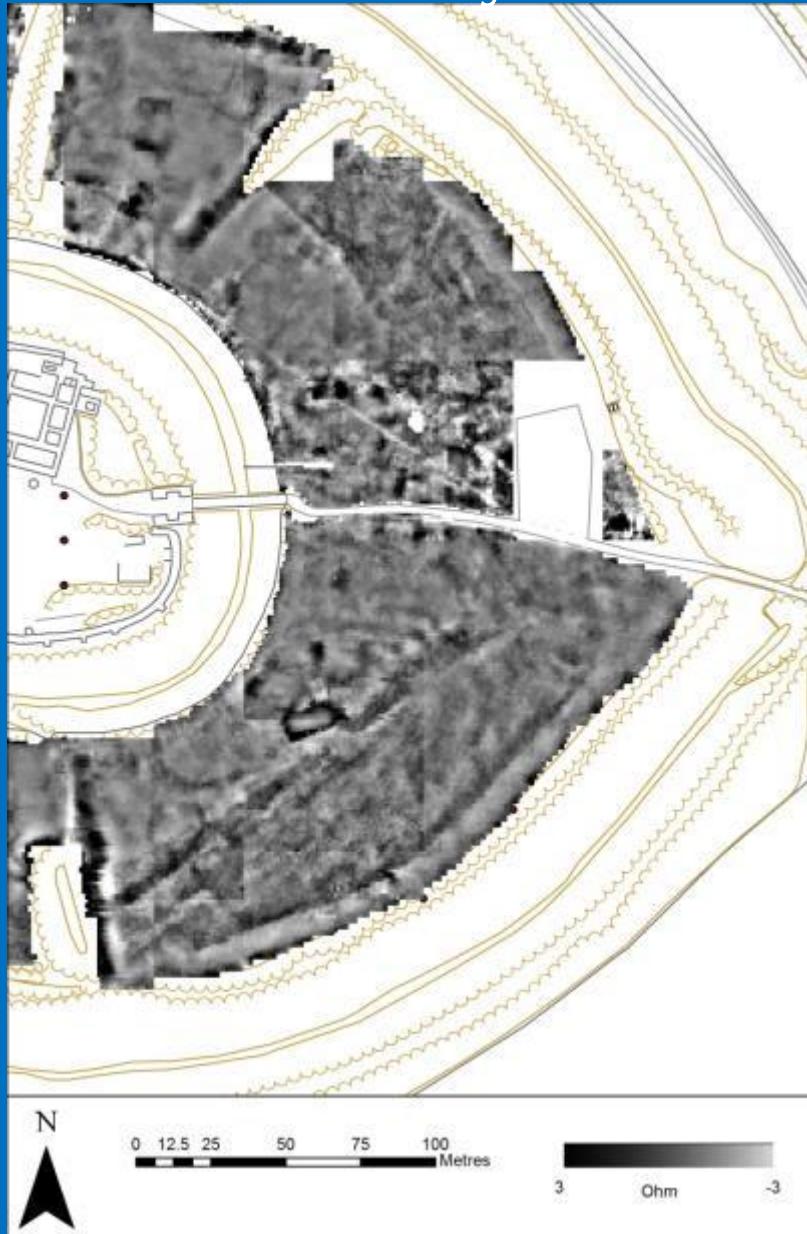
Survey Results – Earth Resistance



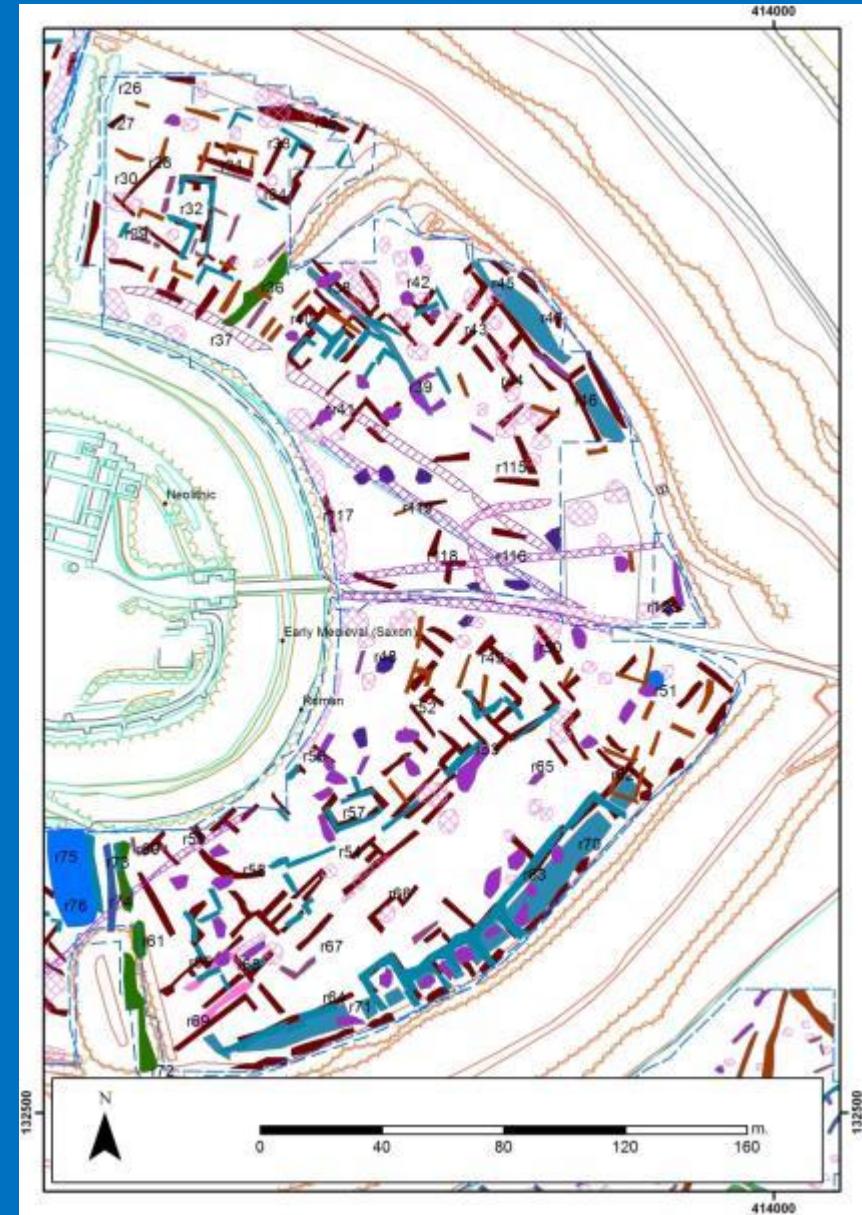
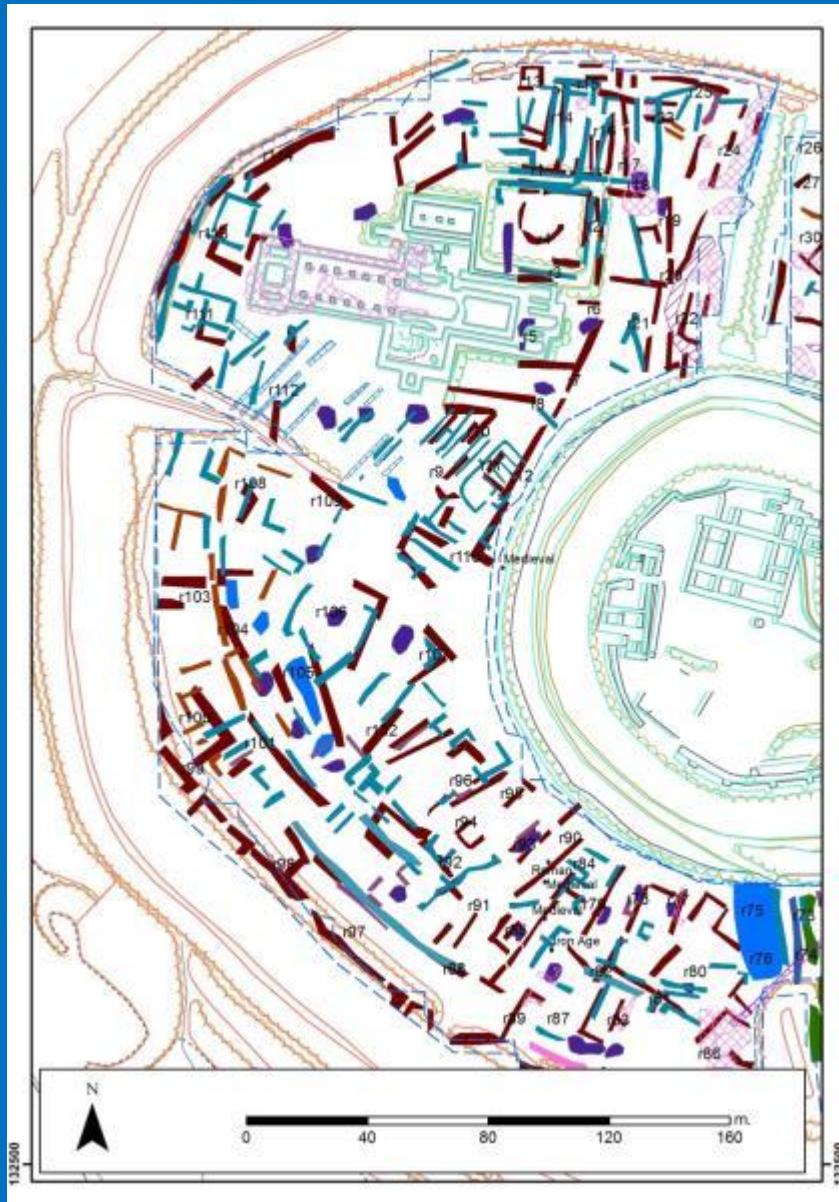
Survey Results – Earth Resistance



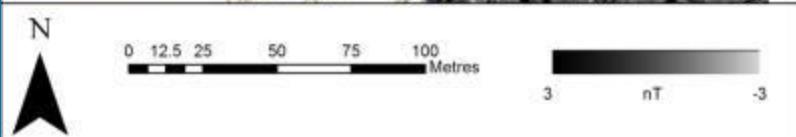
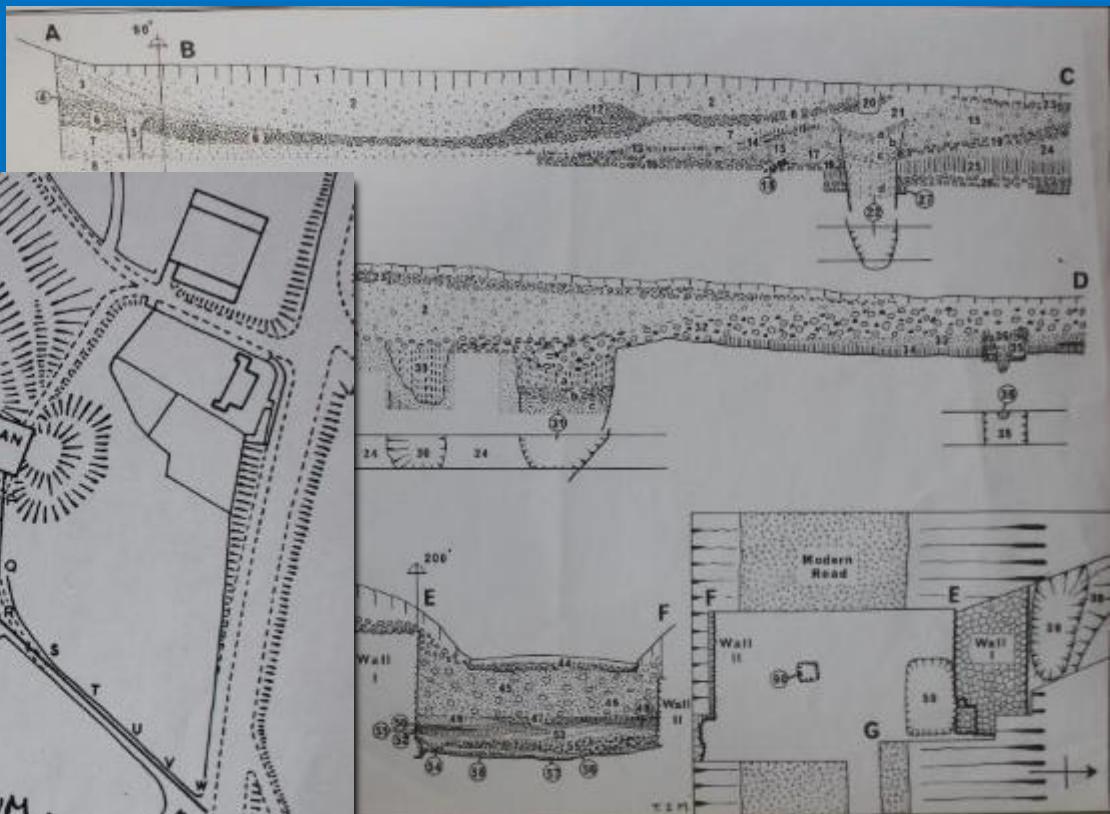
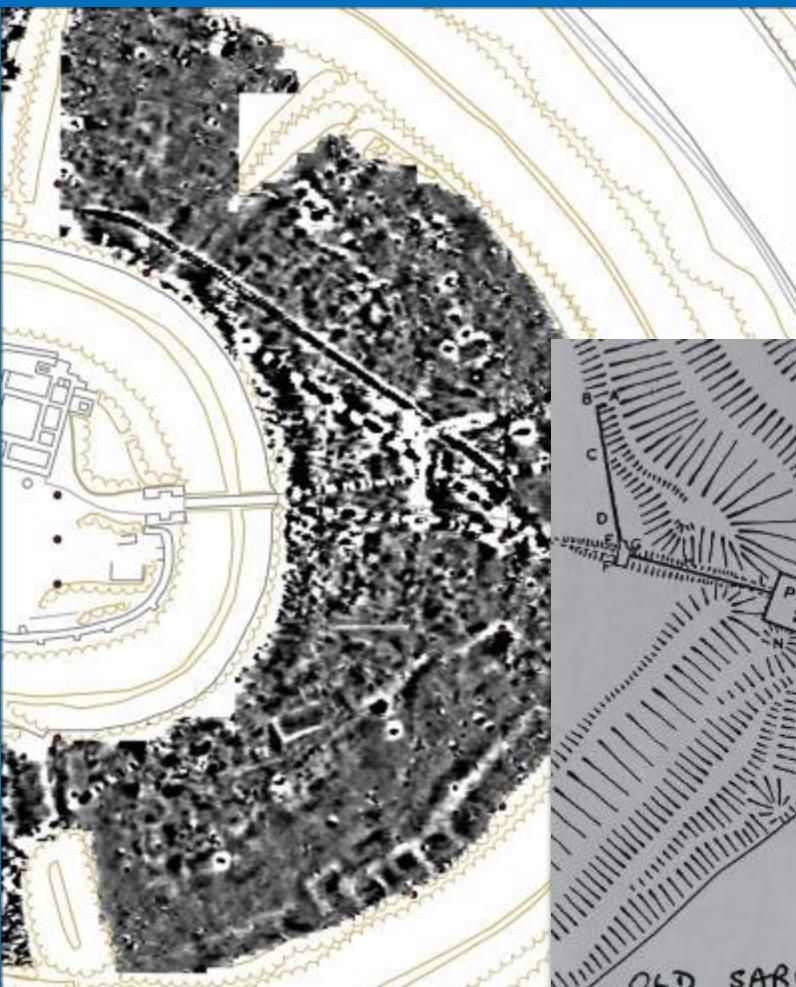
Survey Results – Earth Resistance

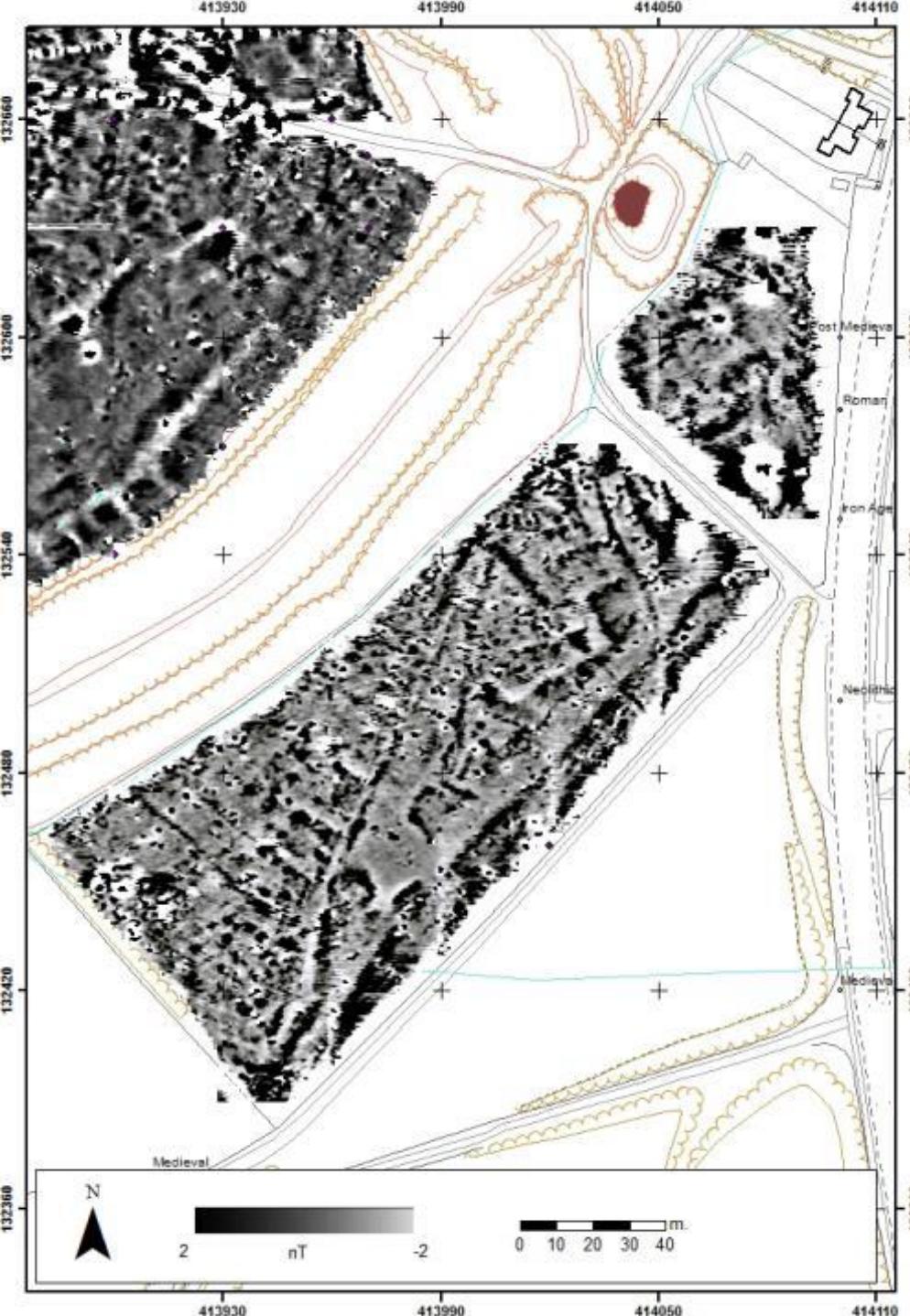


Survey Results – Integrated Interpretation



Ground Truthing with David Algar's plans





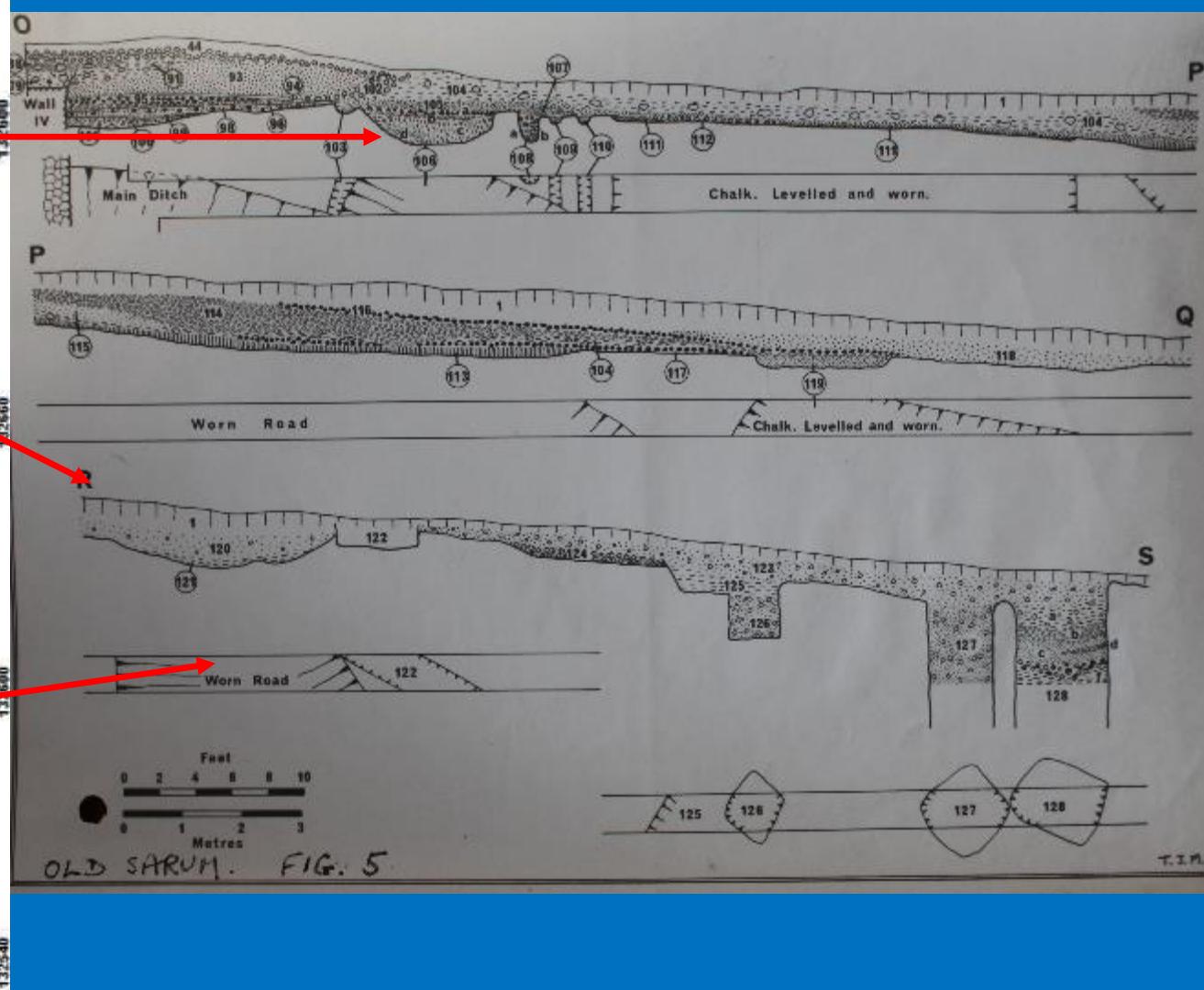
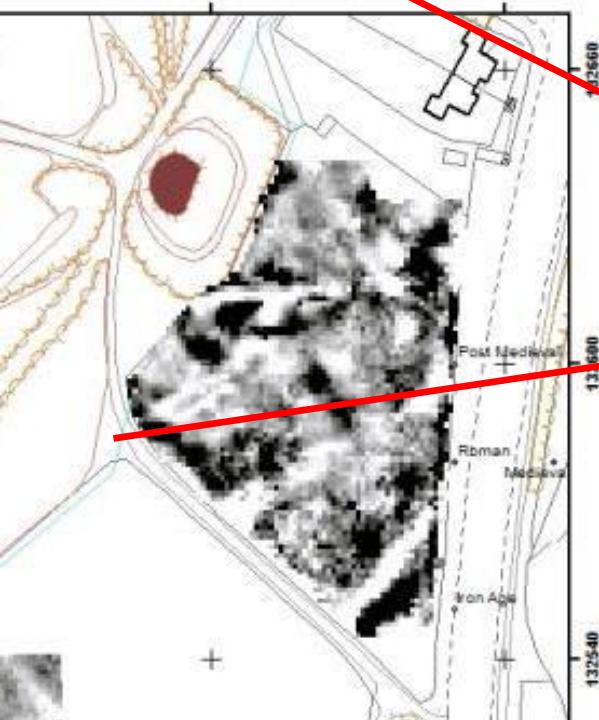
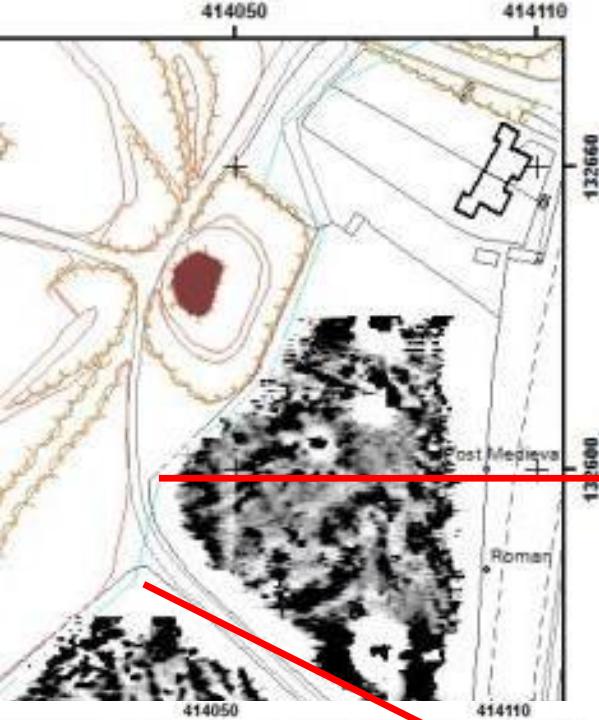
Survey Results

April 2016

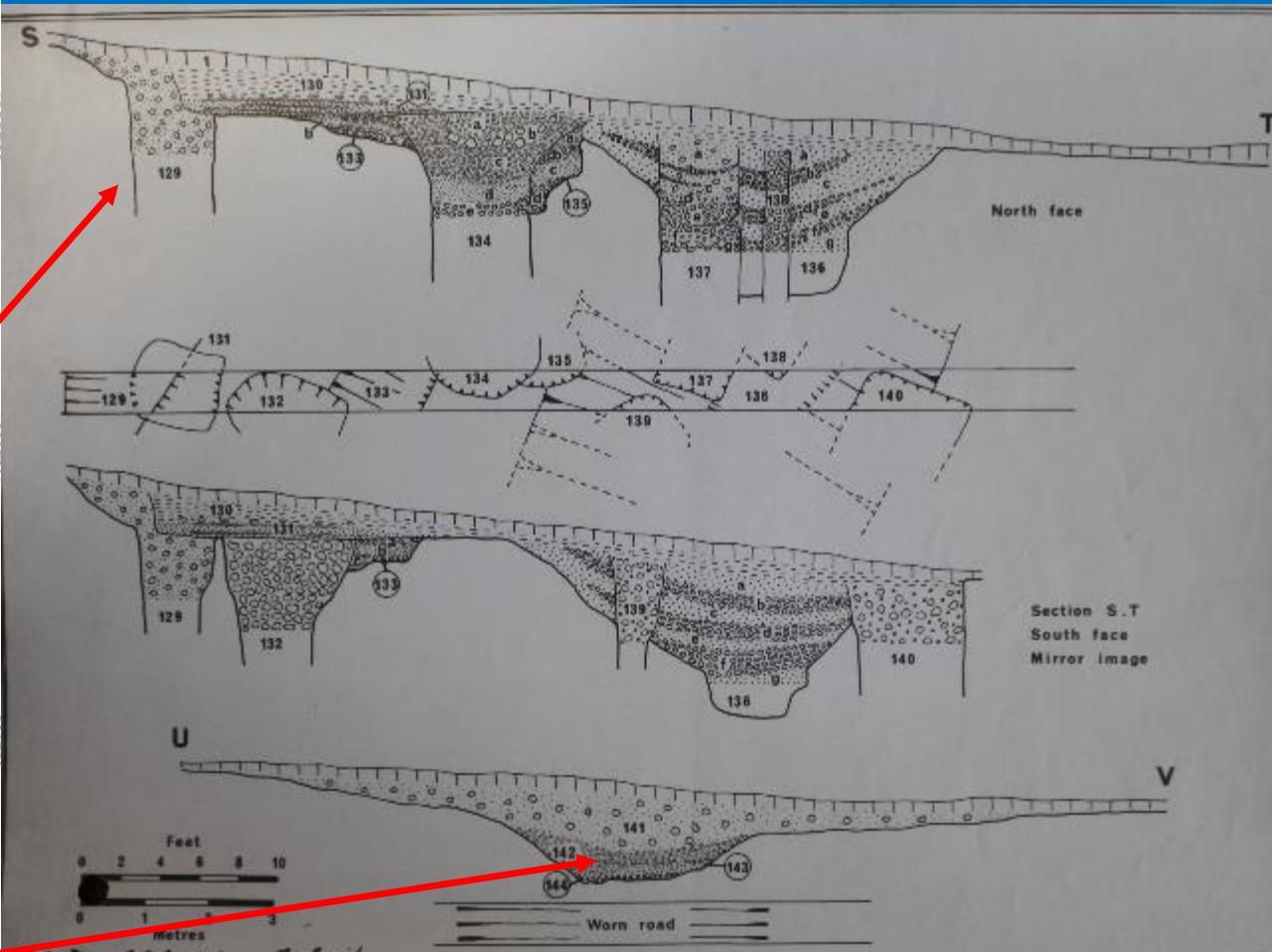
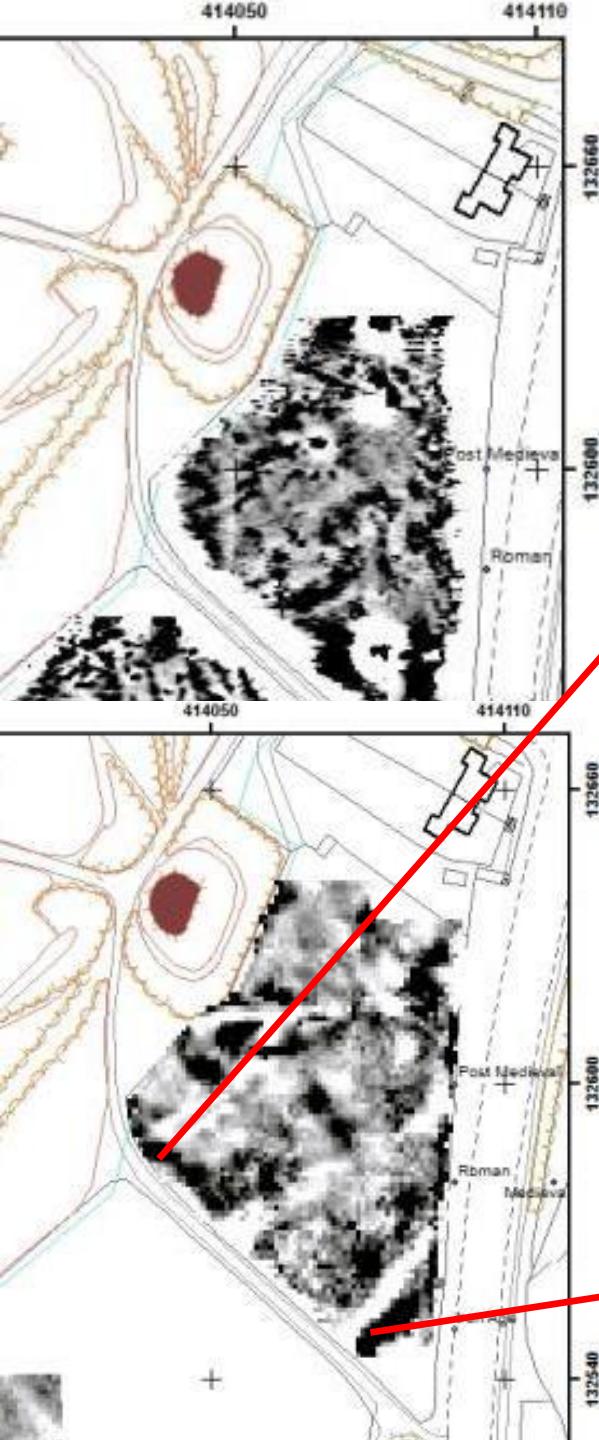
Magnetometry



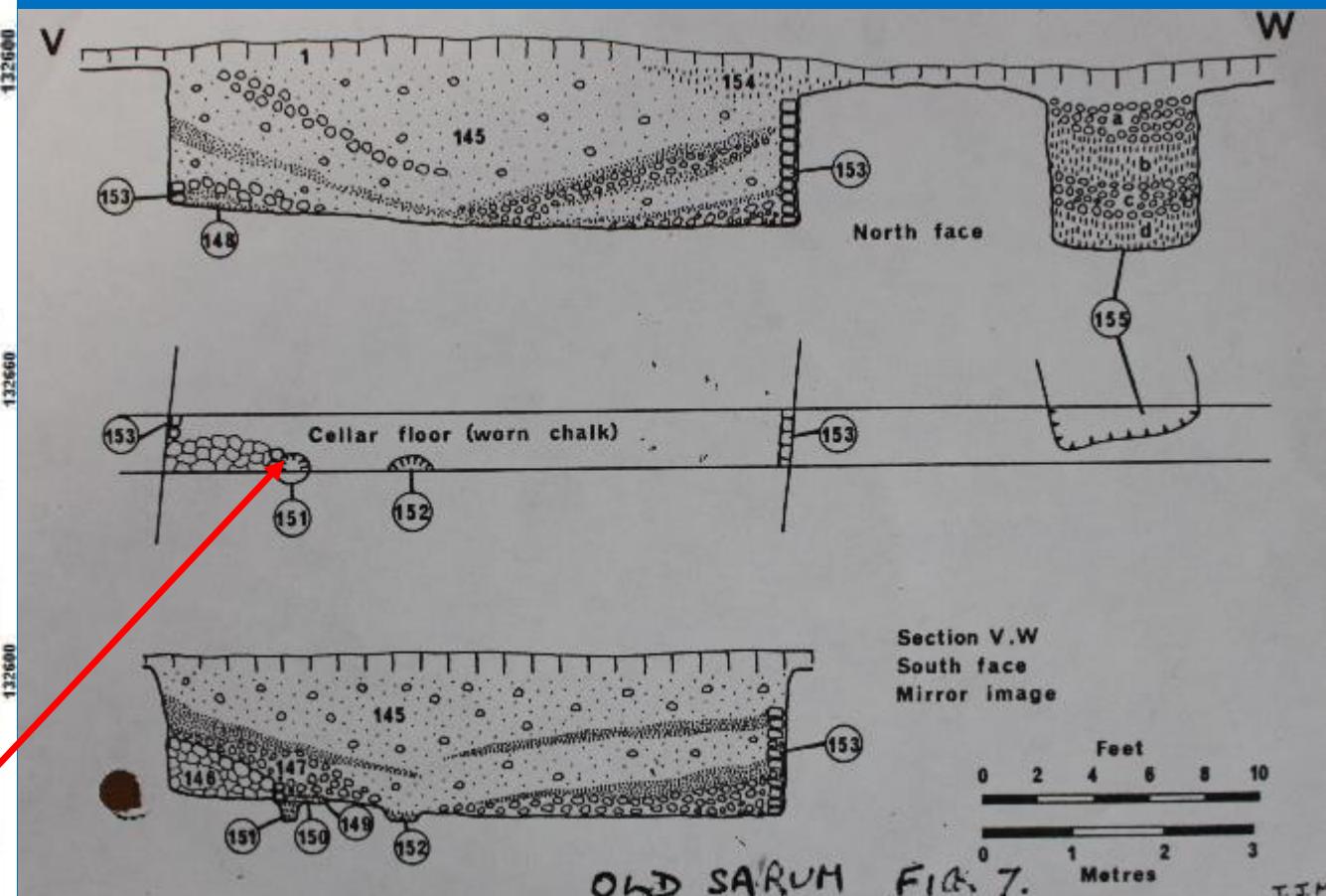
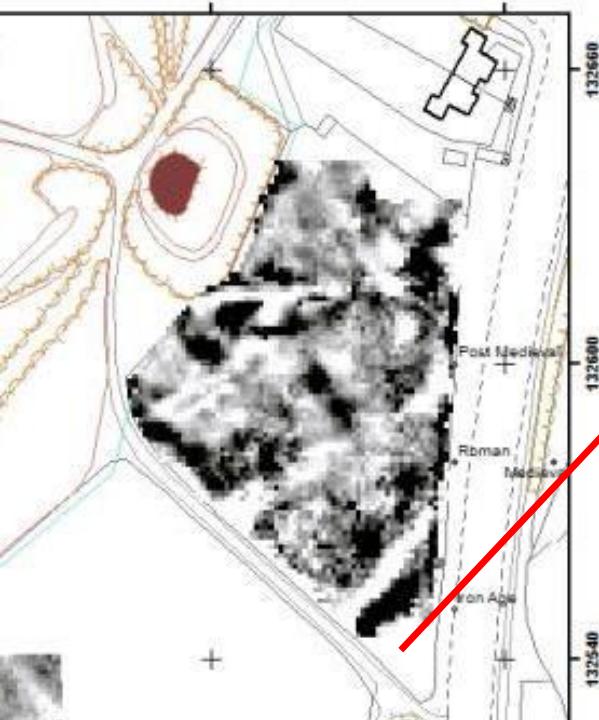
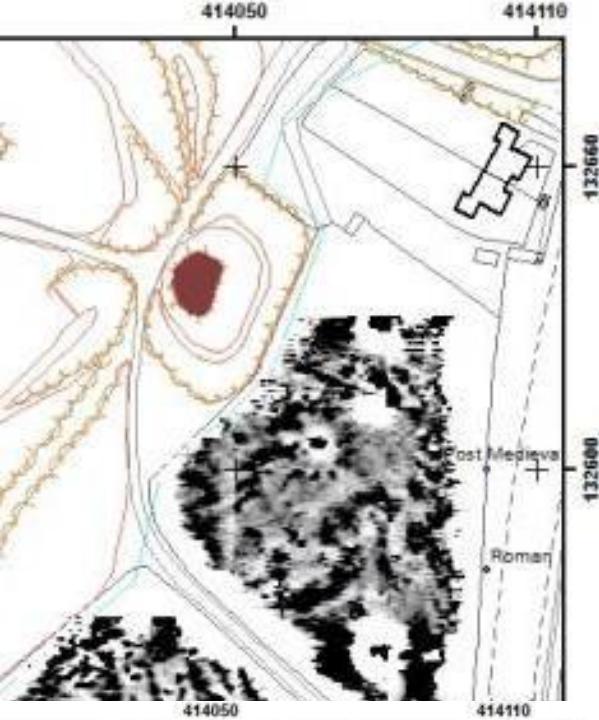
Ground Truthing with David Algar's plans



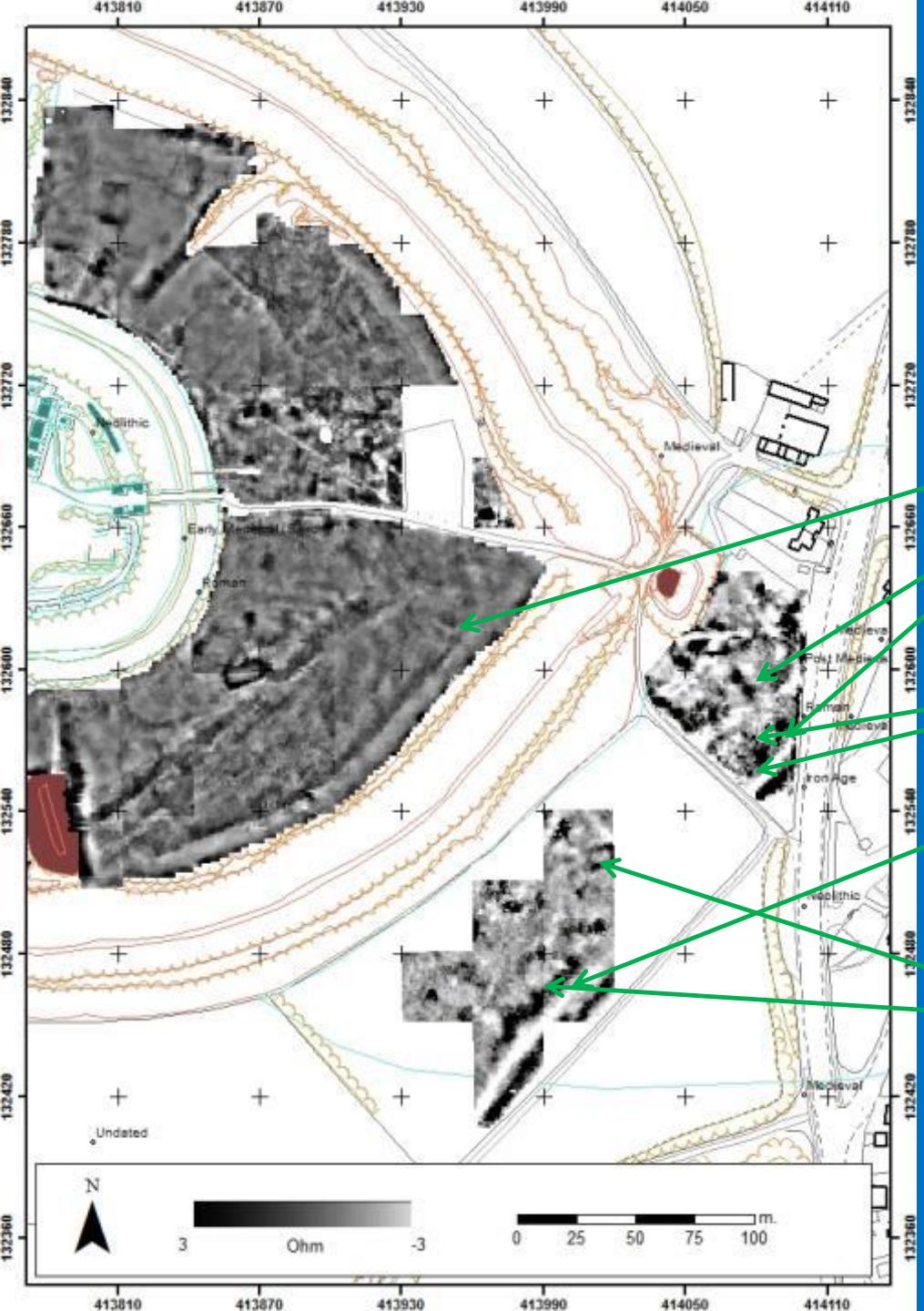
Ground Truthing with David Algar's plans



Ground Truthing with David Algar's plans



Survey Results April 2016 Earth Resistance

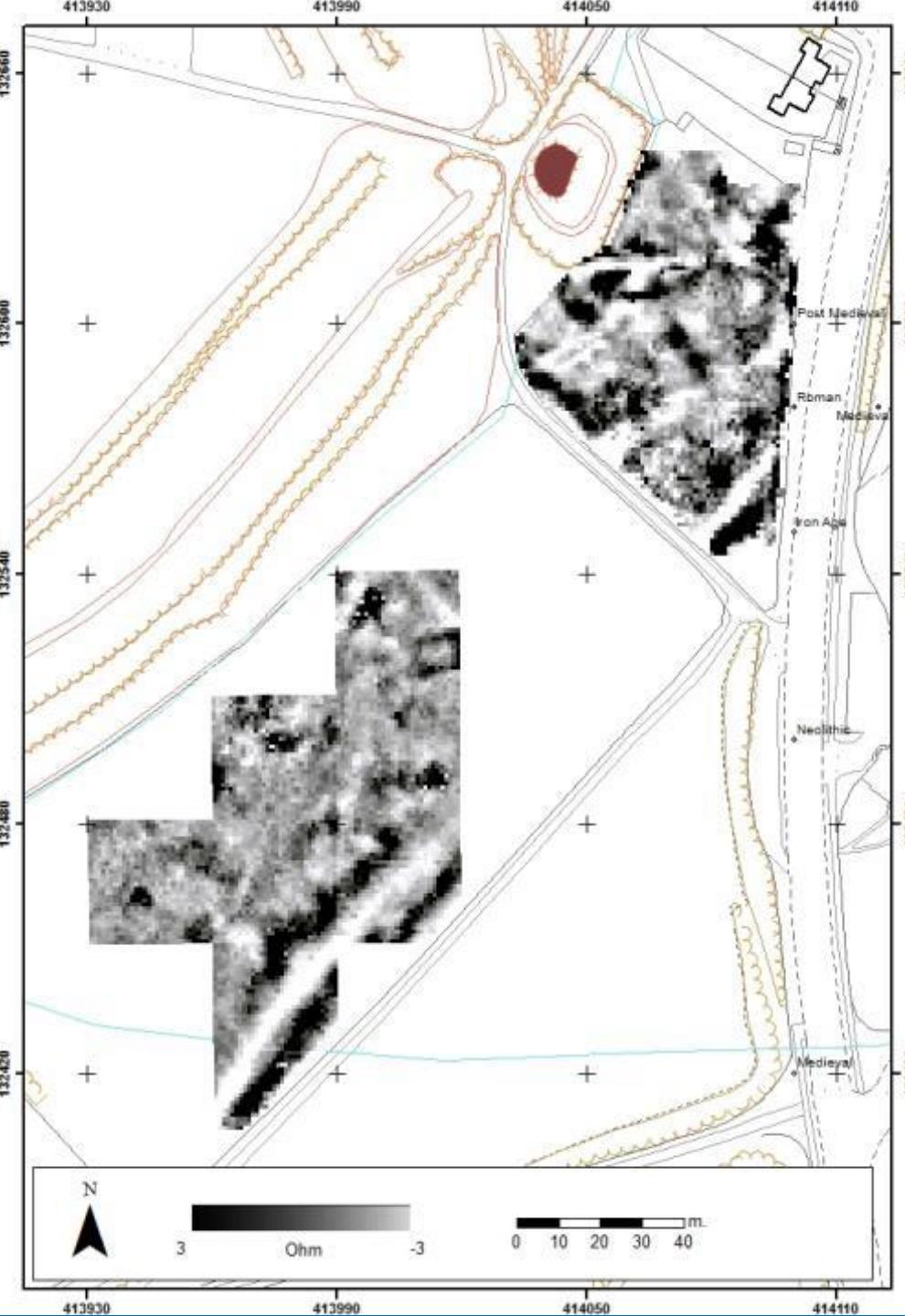


Buildings

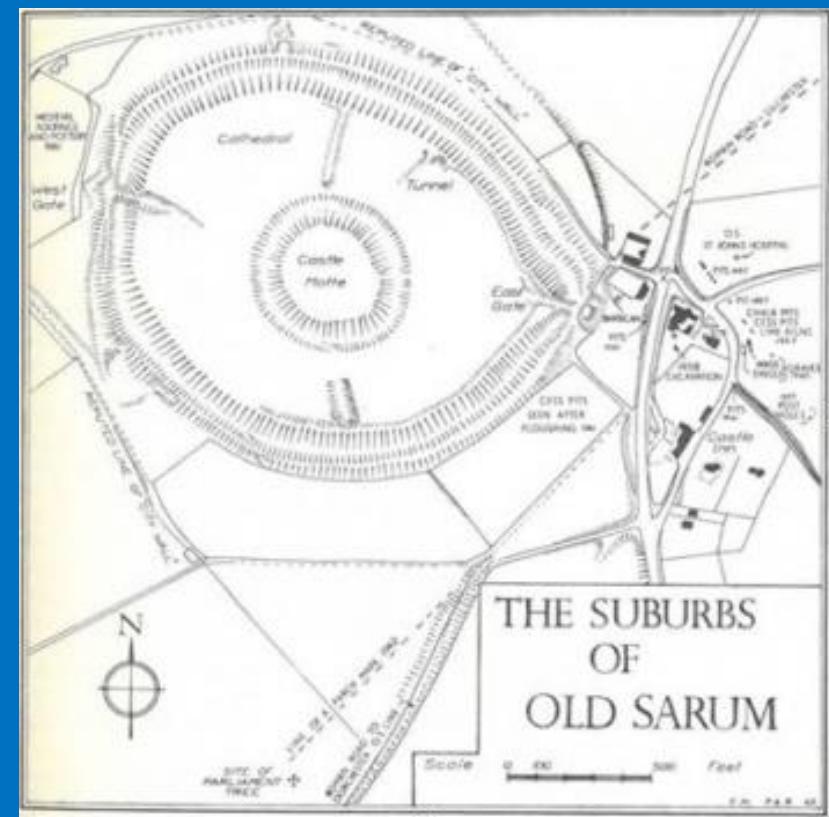
Roads

Roman/Medieval Road

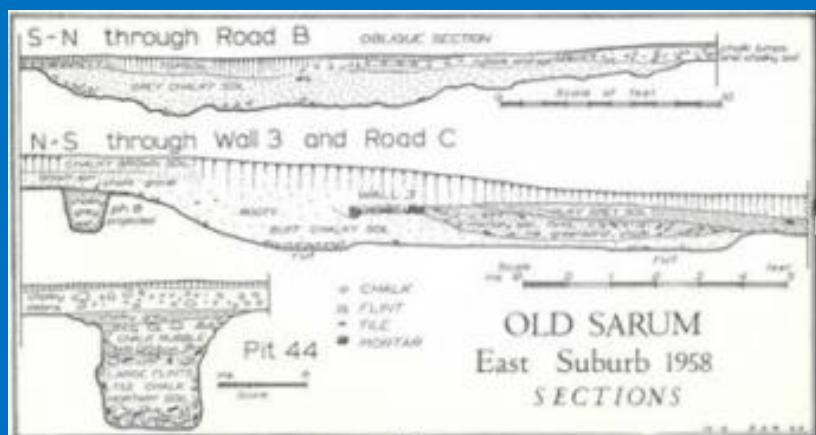
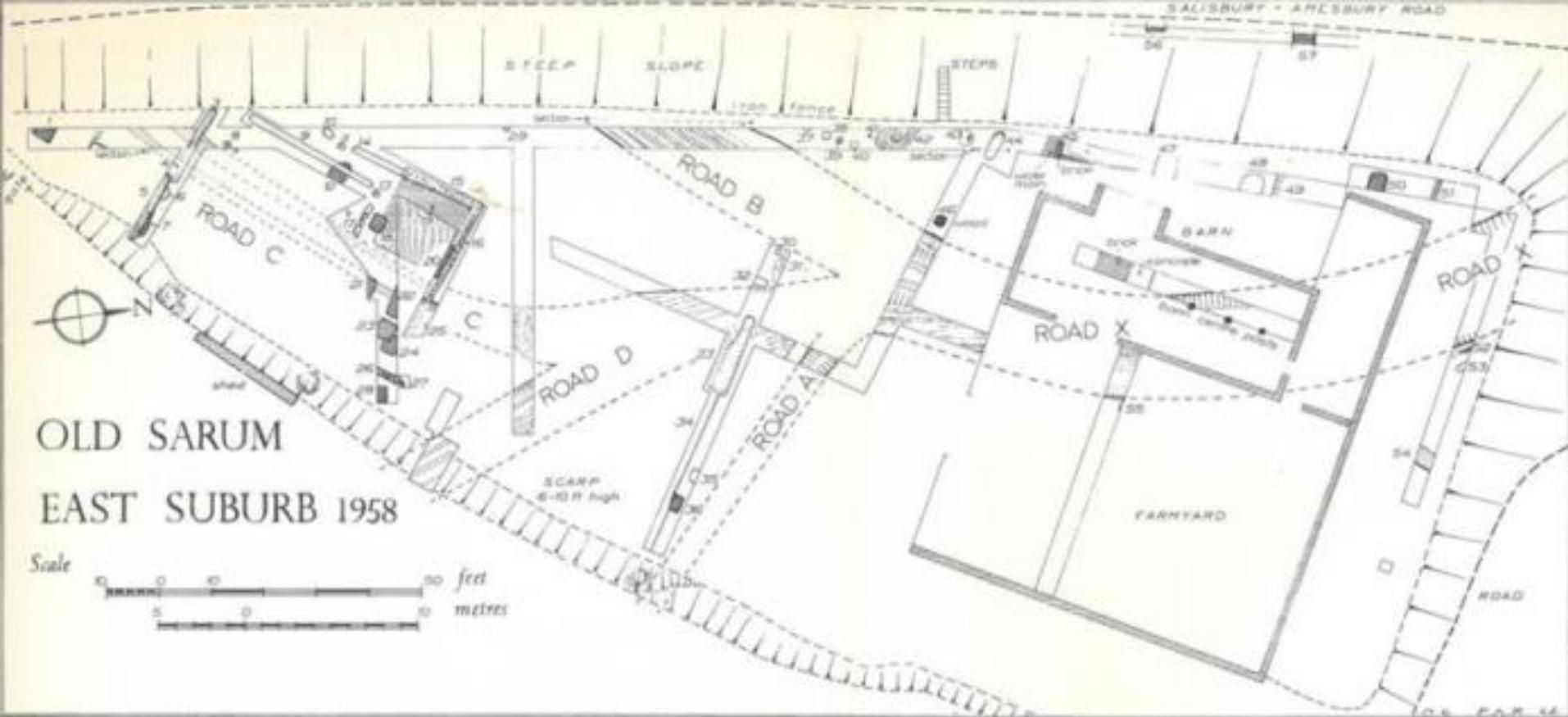
Buildings



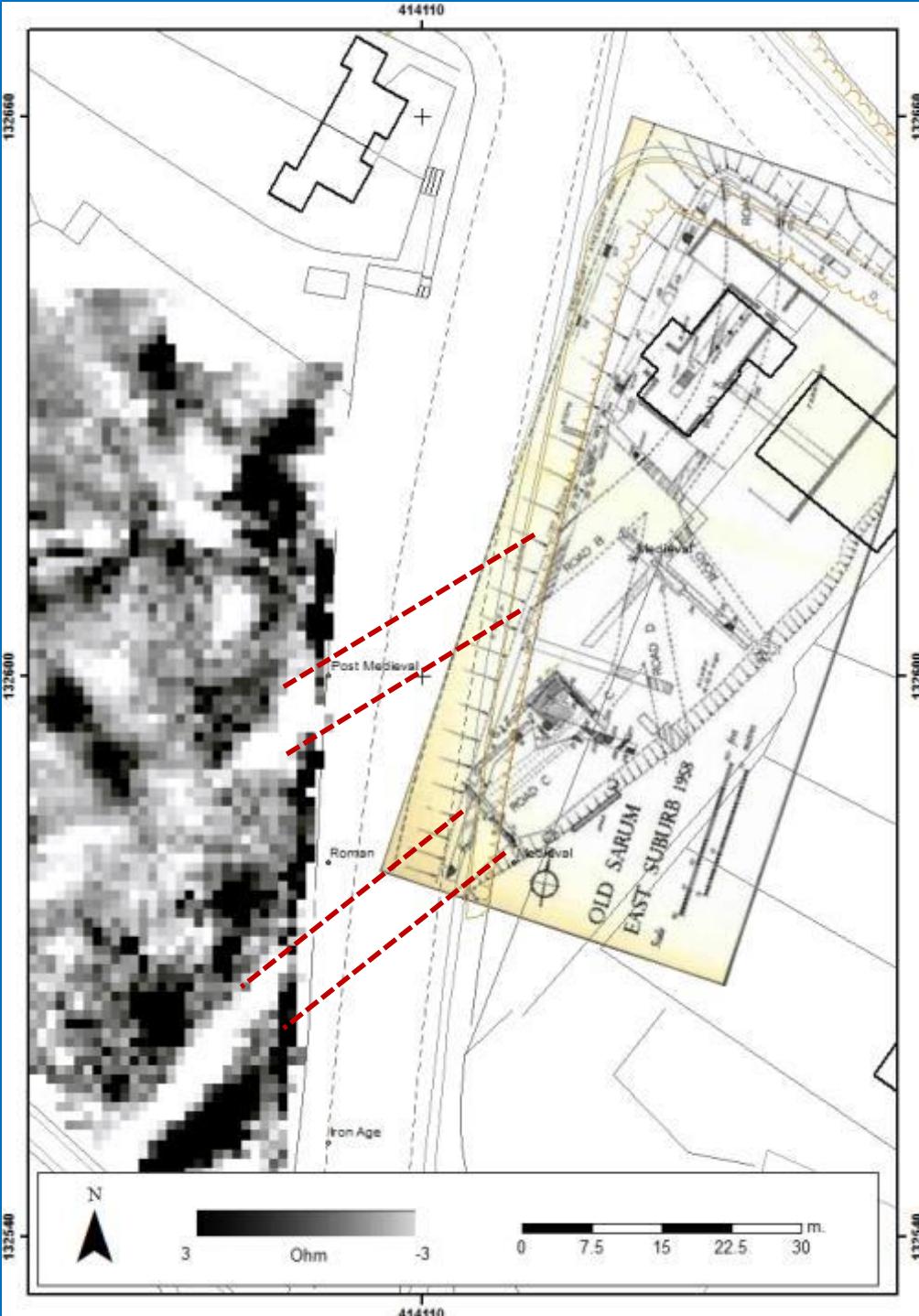
Survey Results April 2016 Earth Resistance



Musty and Rahtz 1964

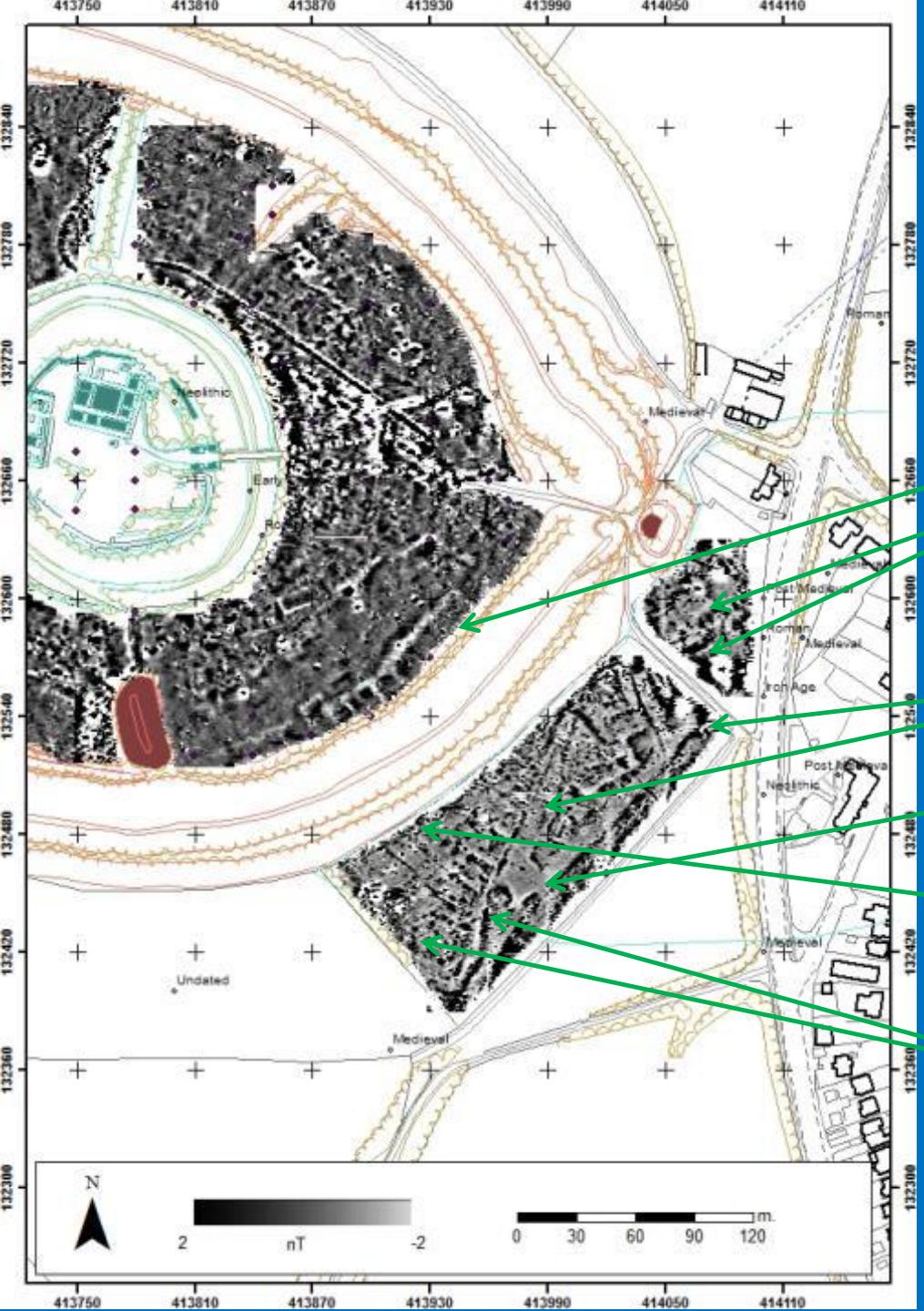


Musty and Rahtz 1964



Survey Results April 2016 and Musty and Rahtz 1964 Plan Overlay

Survey Results April 2016 Magnetometry



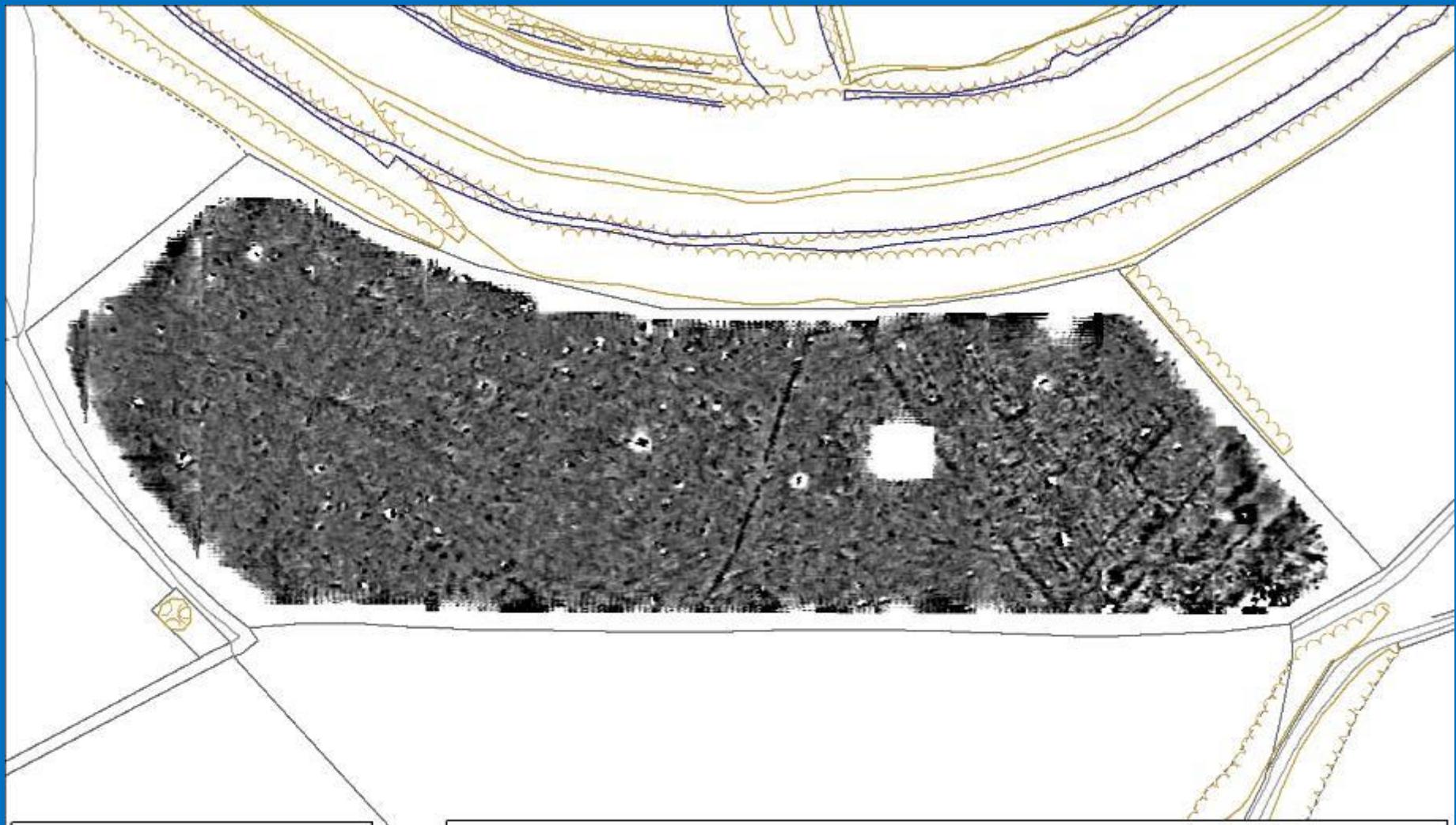
Buildings

Roads

Roman/Medieval Road

Burgage Plots?

Buildings



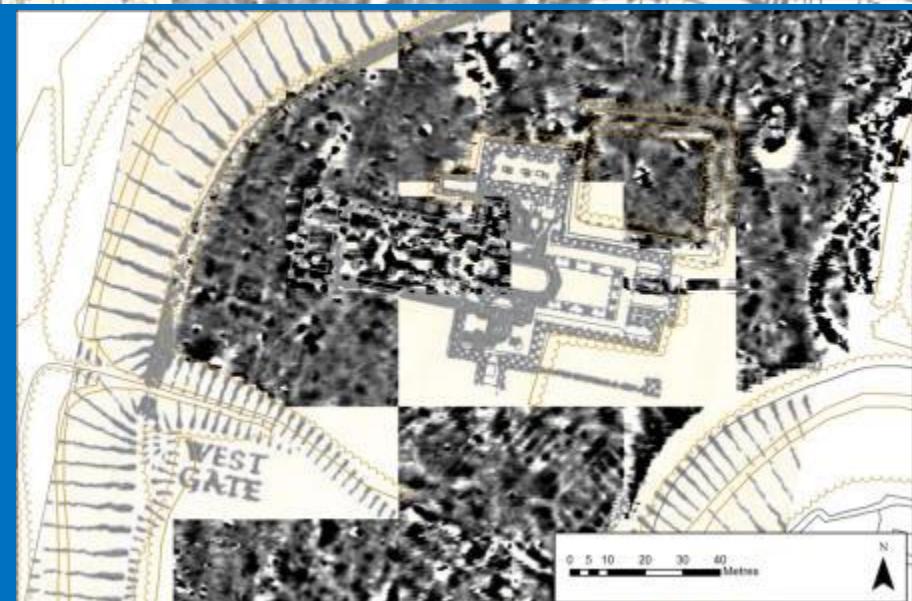
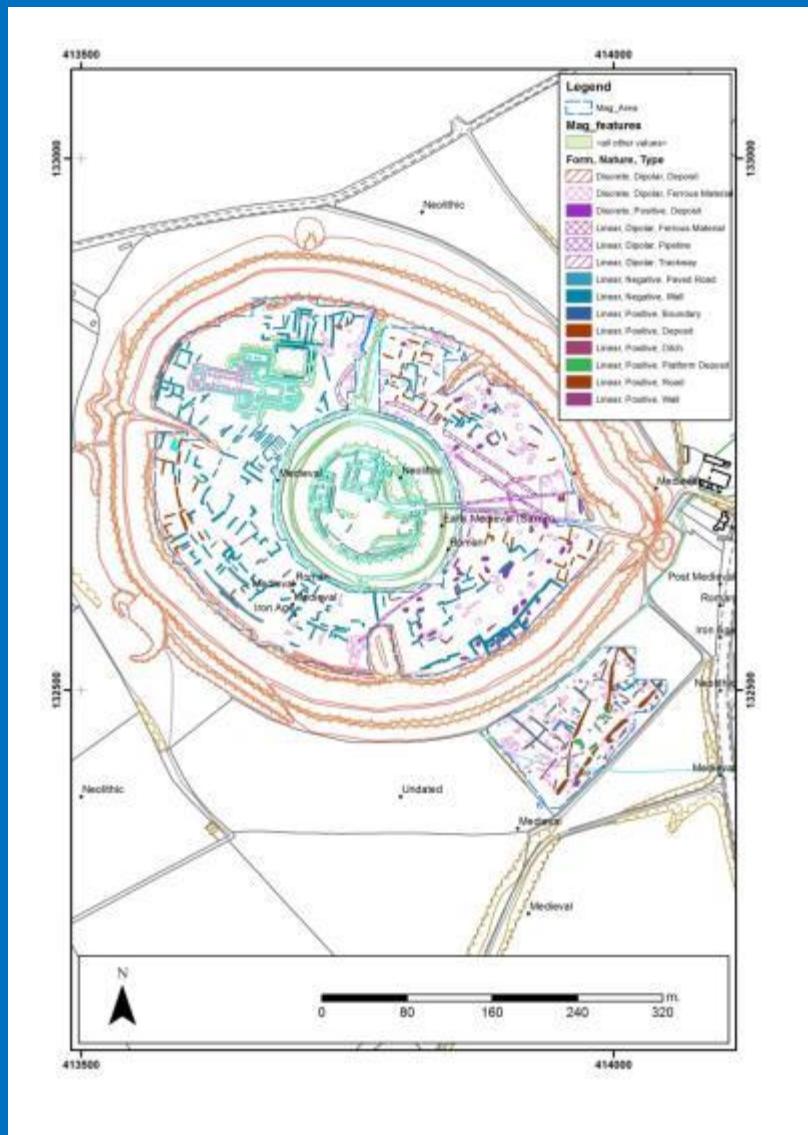
Old Sarum Landscapes Project
© Department of Archaeology,
University of Southampton

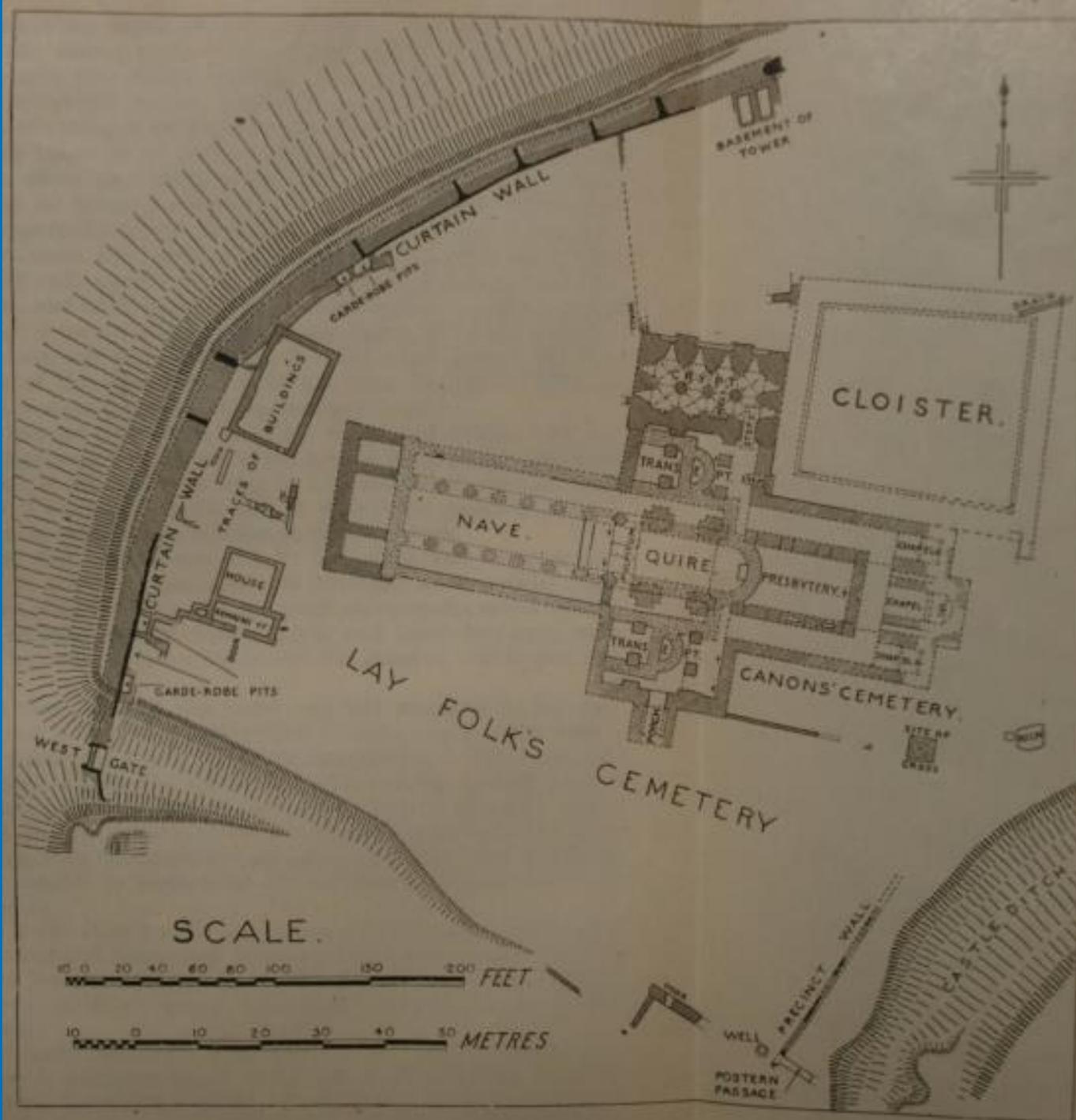
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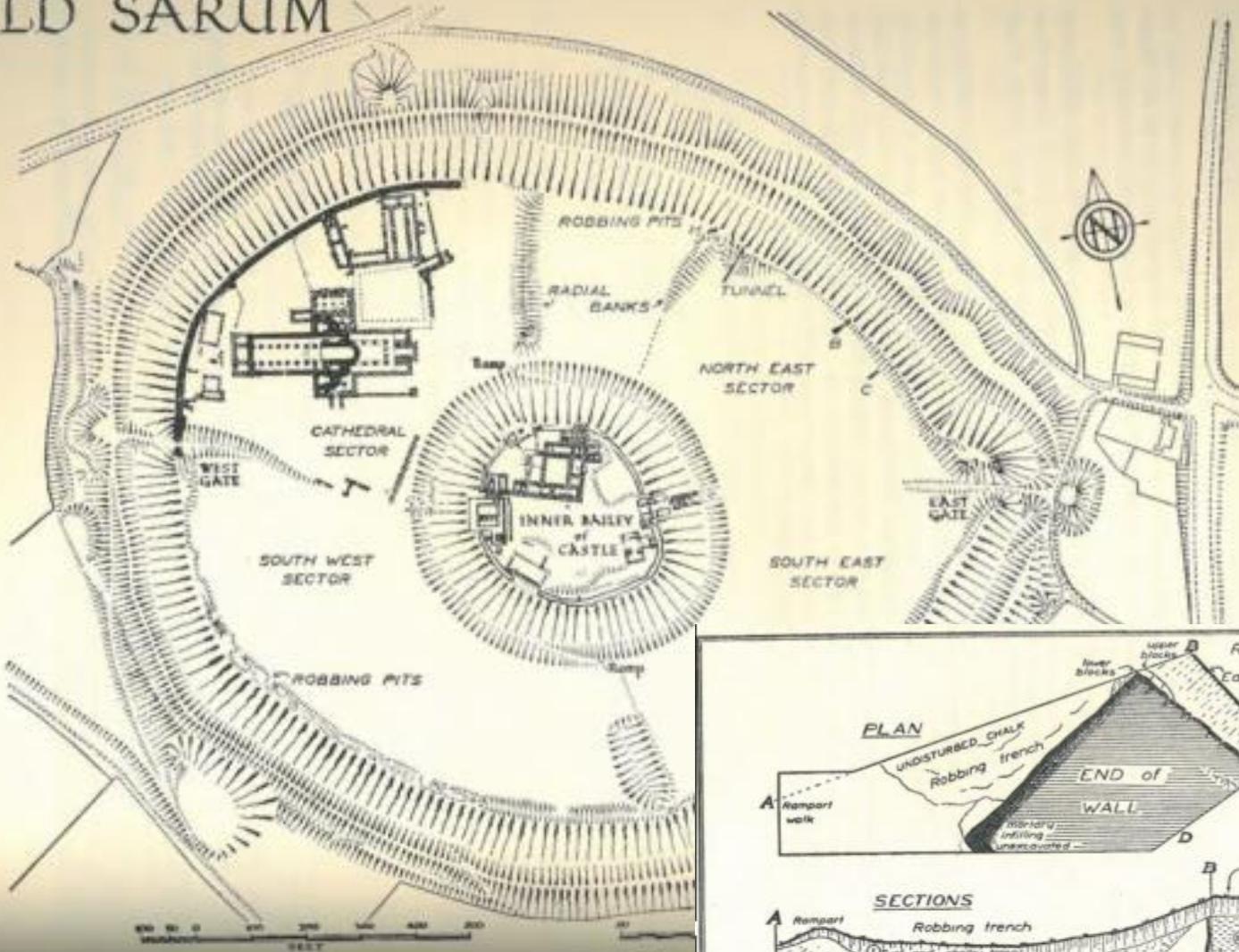
Survey Results Relating to Excavation Plans



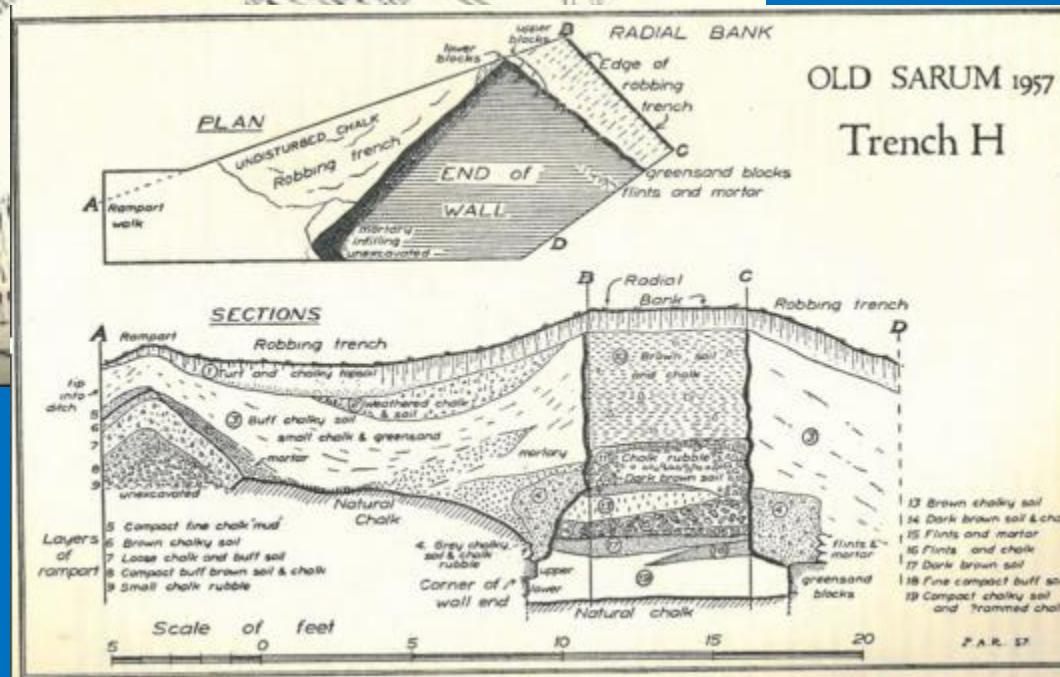


St John Hope 1914

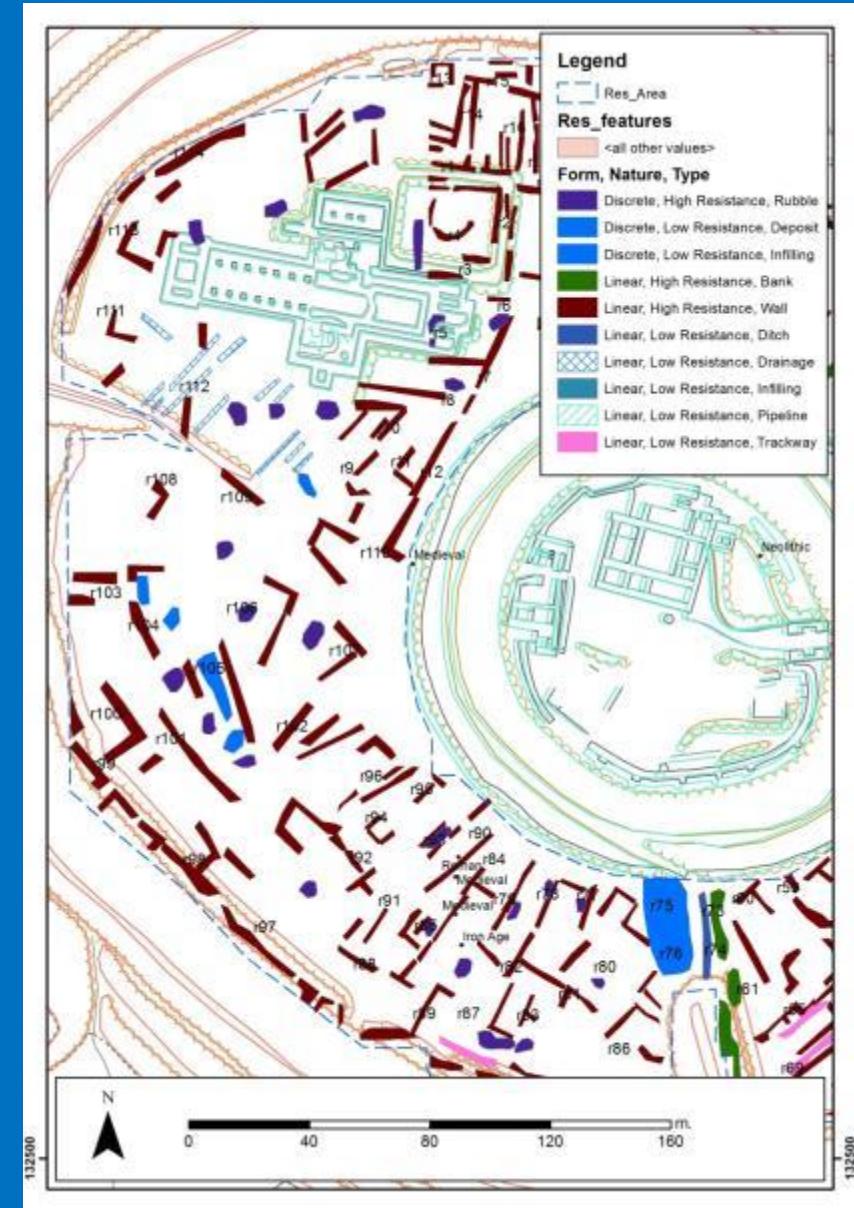
OLD SARUM



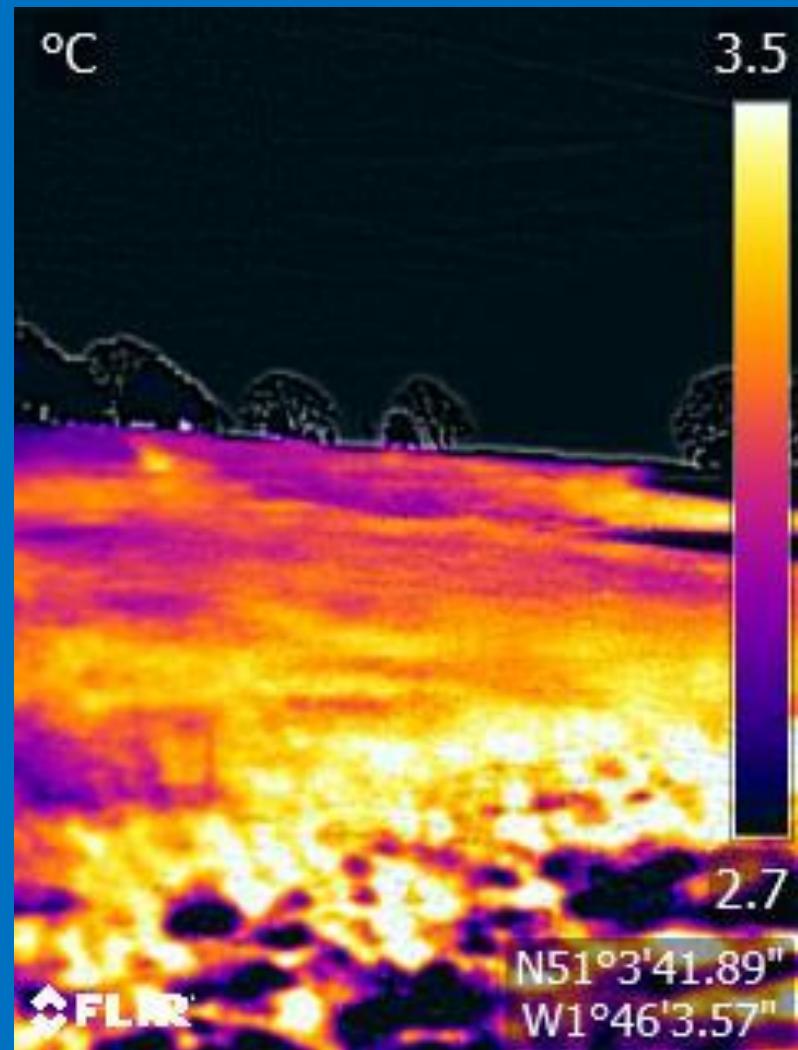
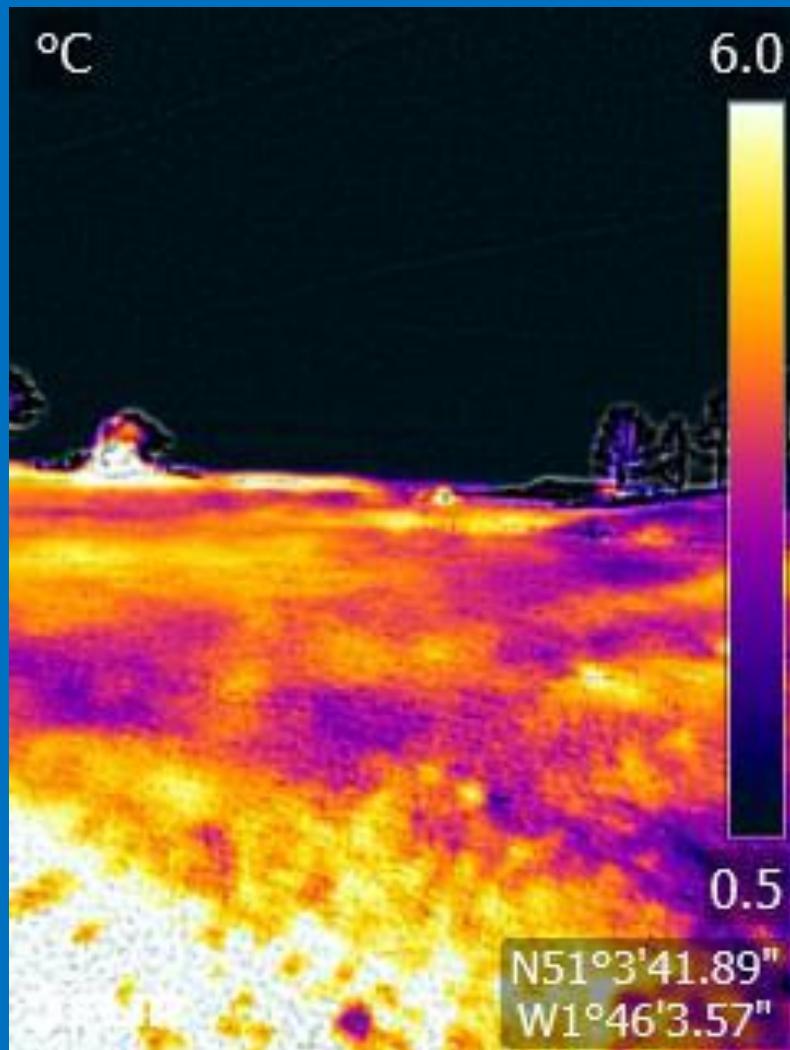
Rahtz and Musty 1960



Survey Results – Earth Resistance

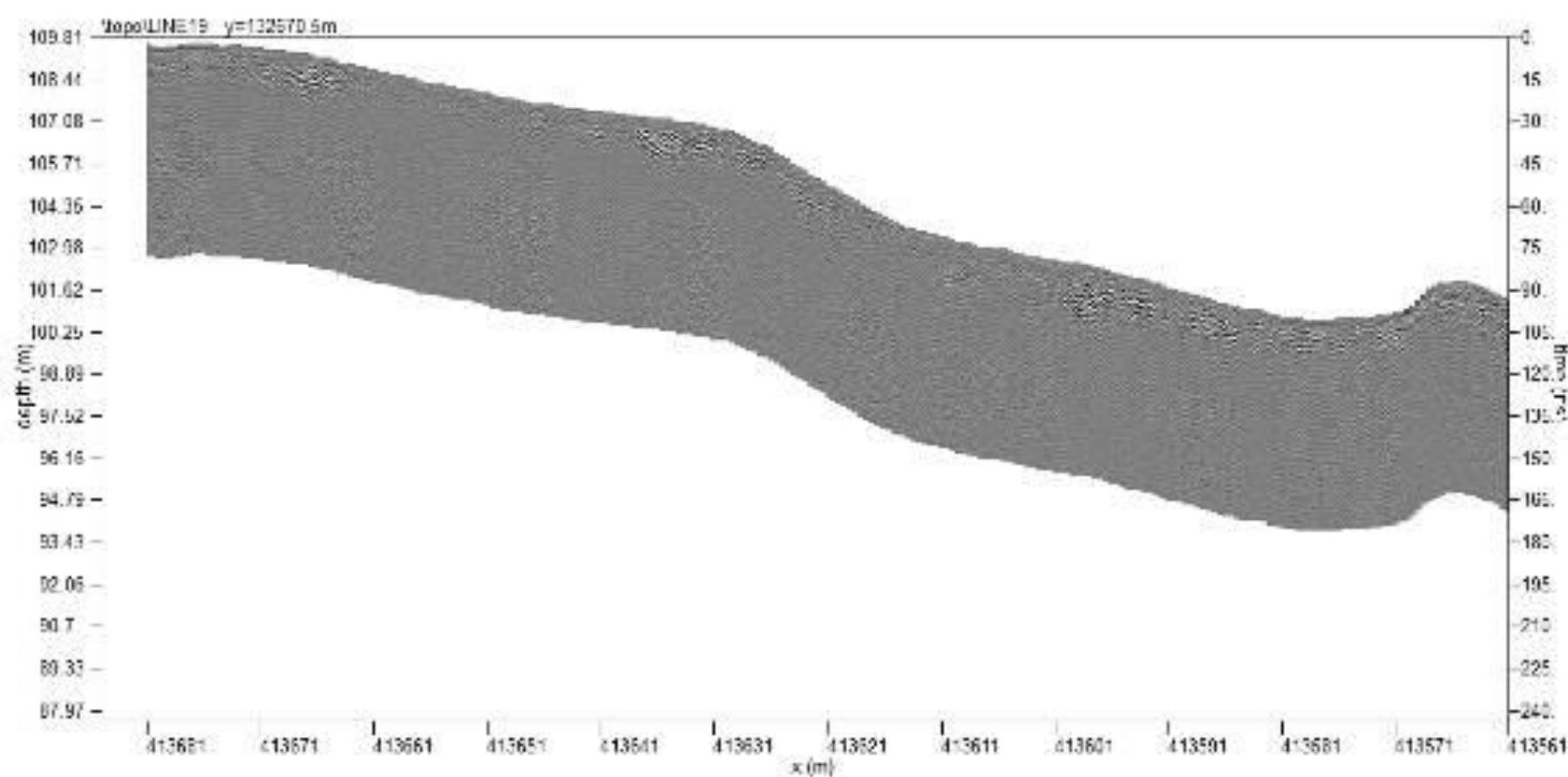


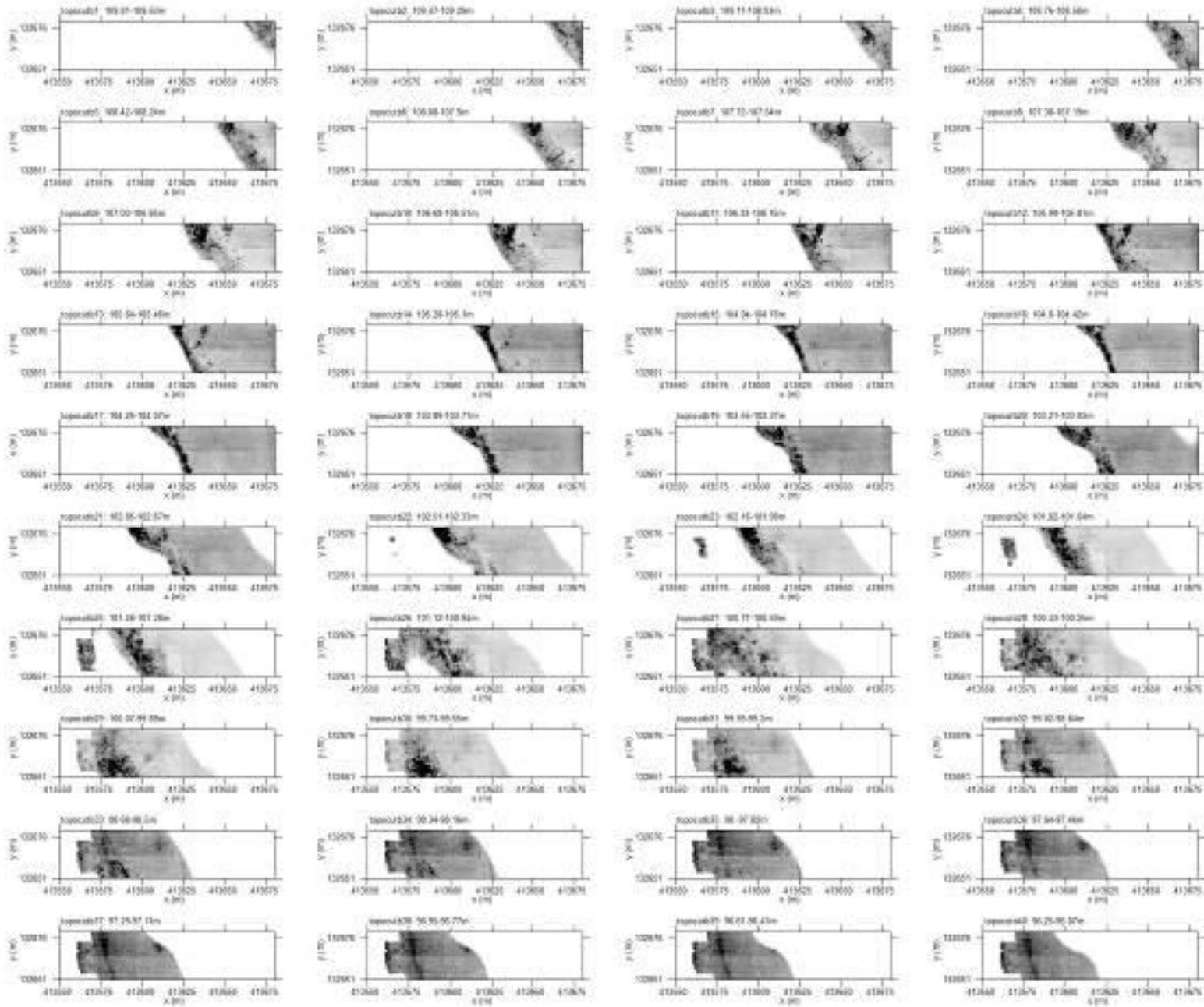
Thermal Imaging Camera – Outer Bailey

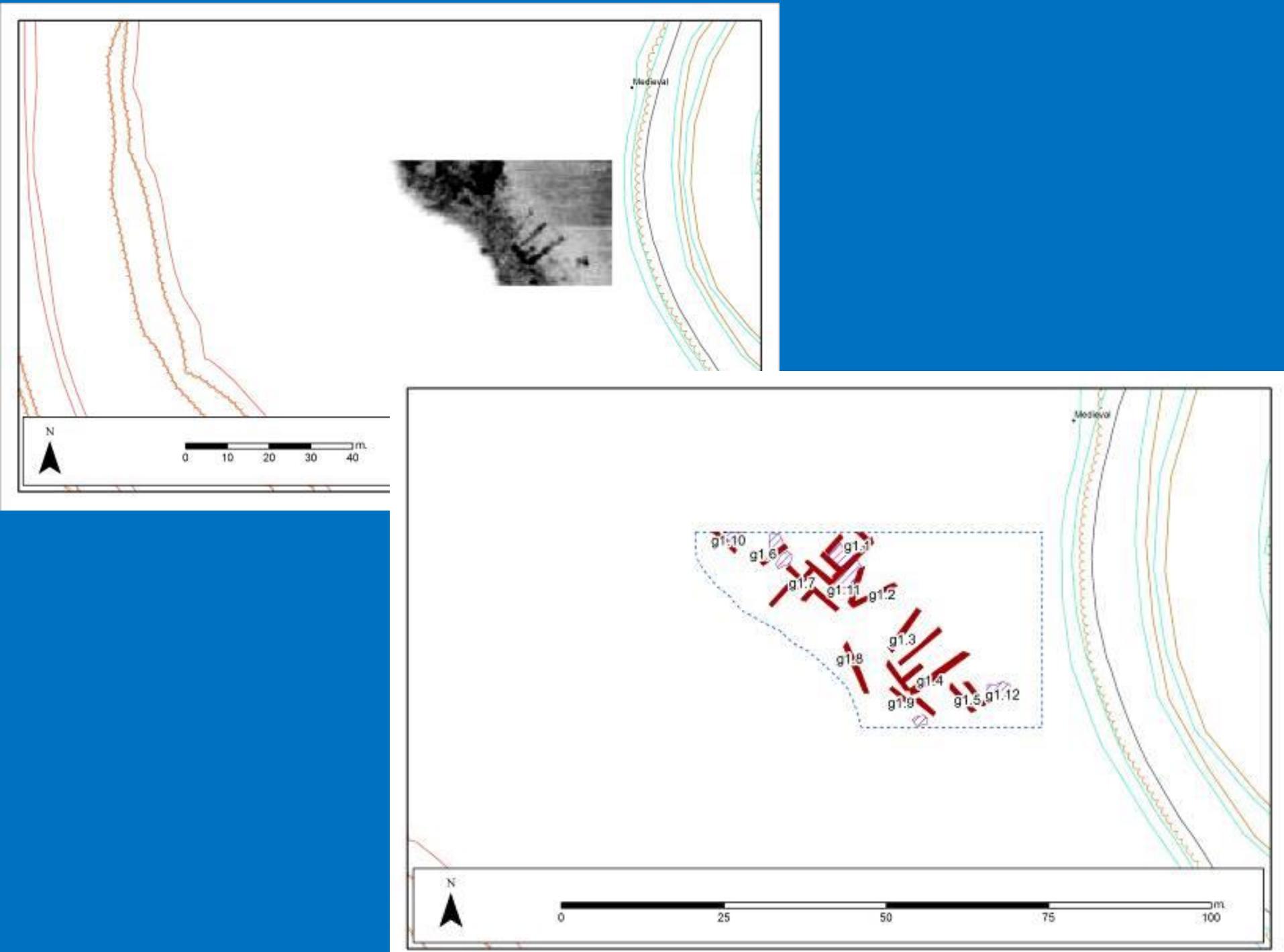


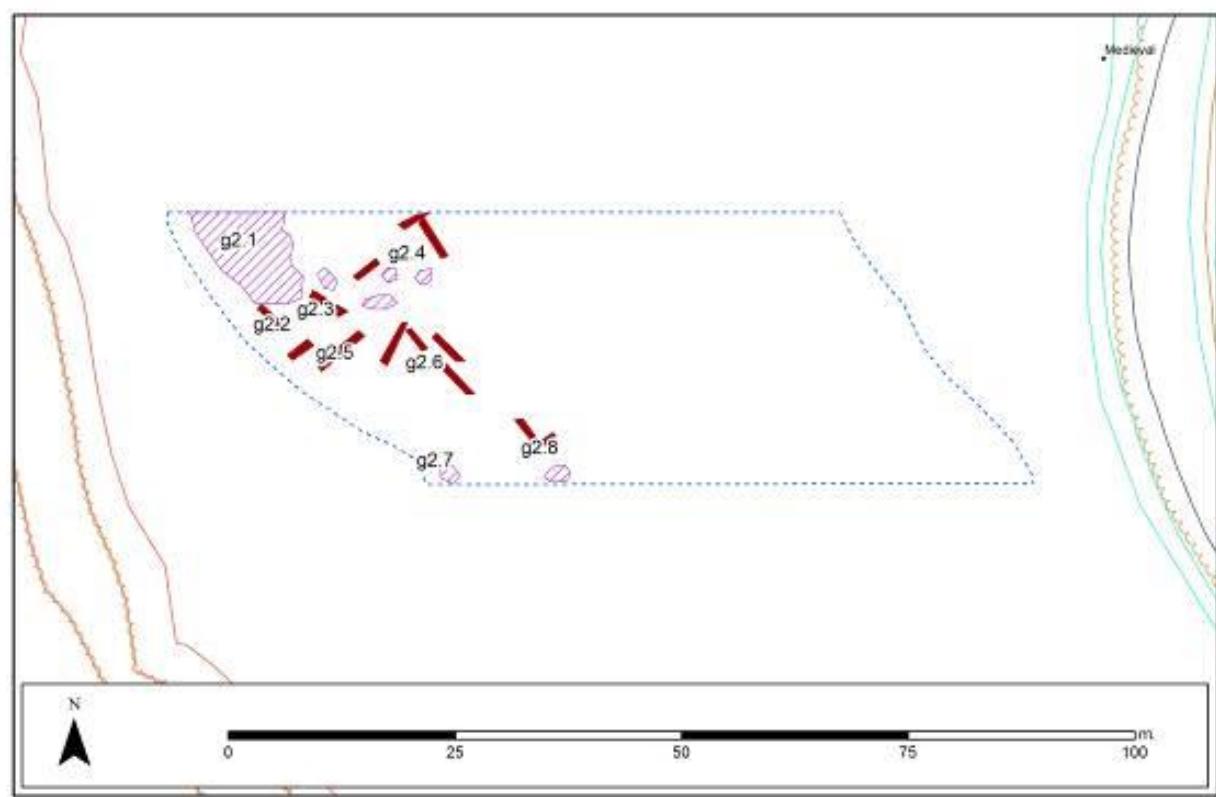
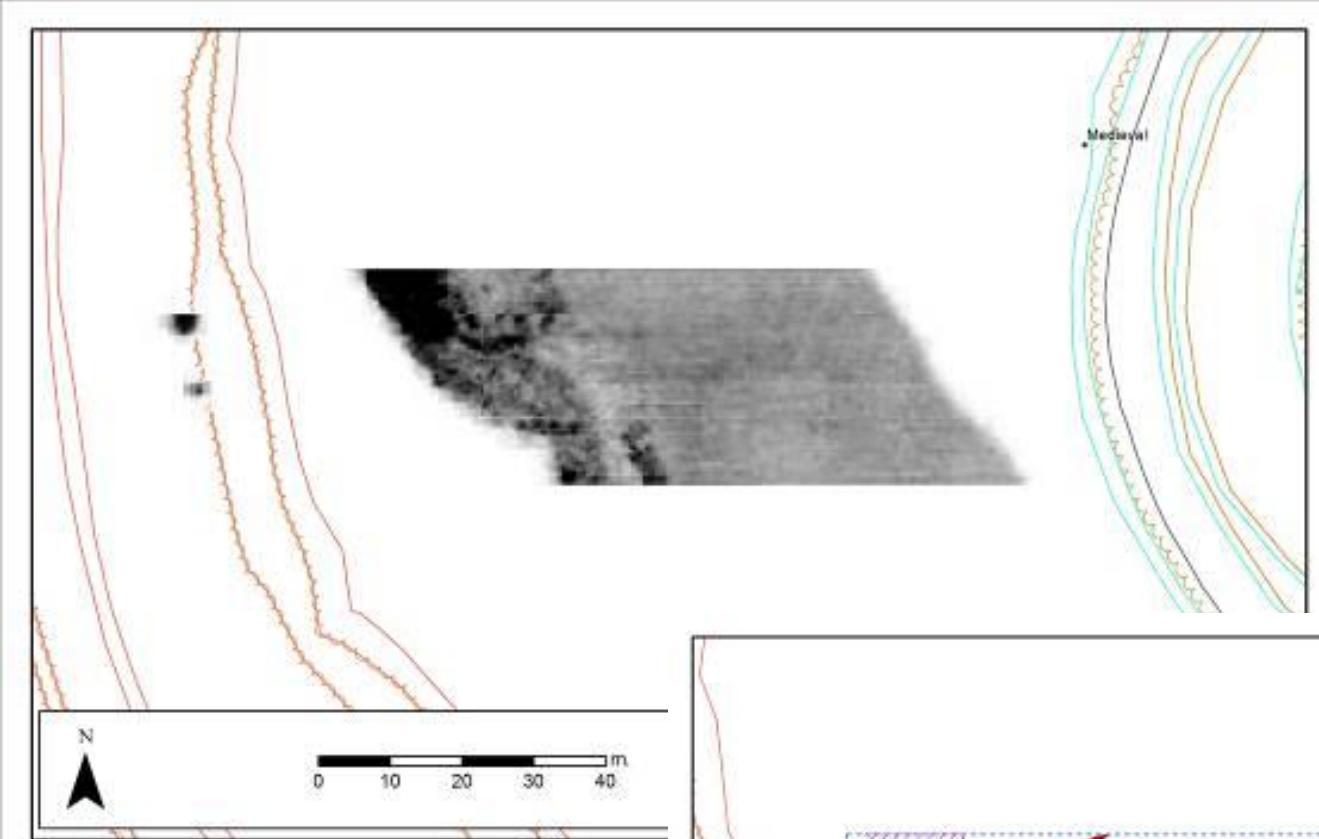


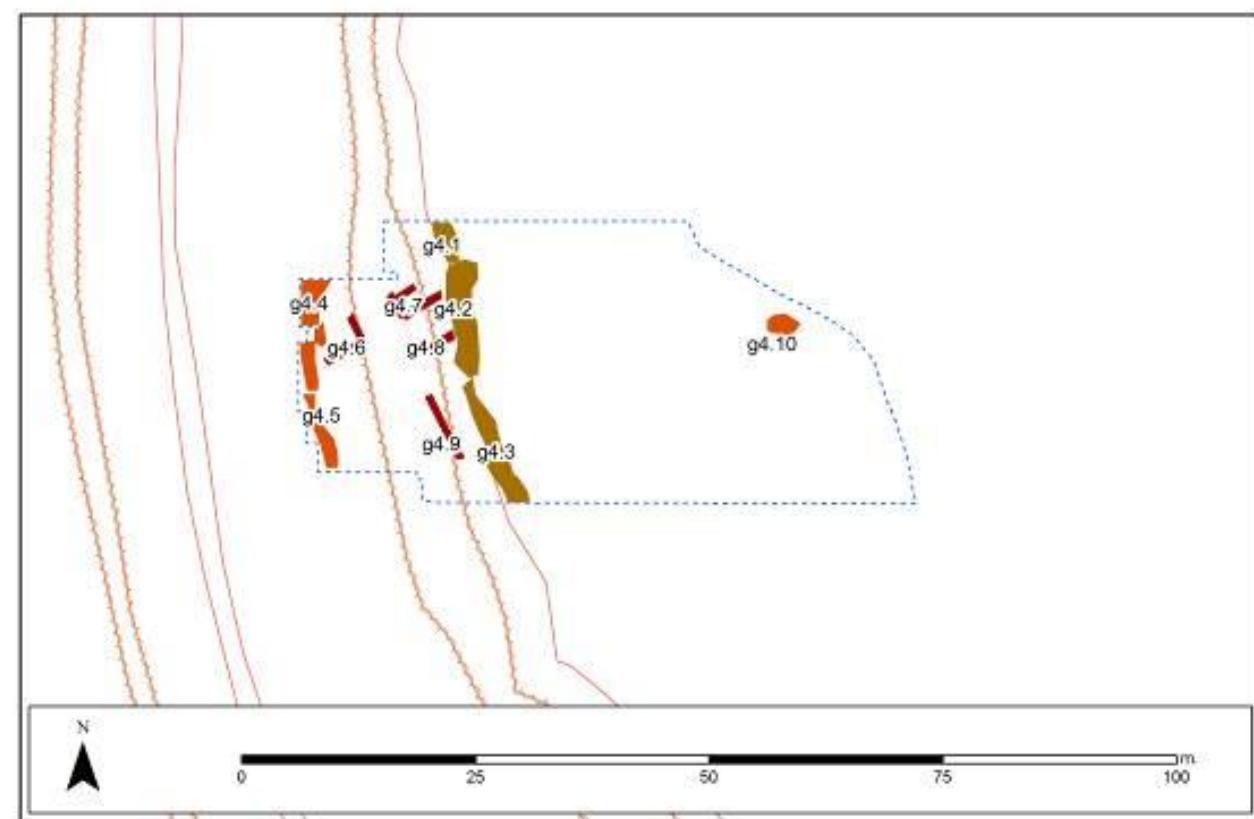
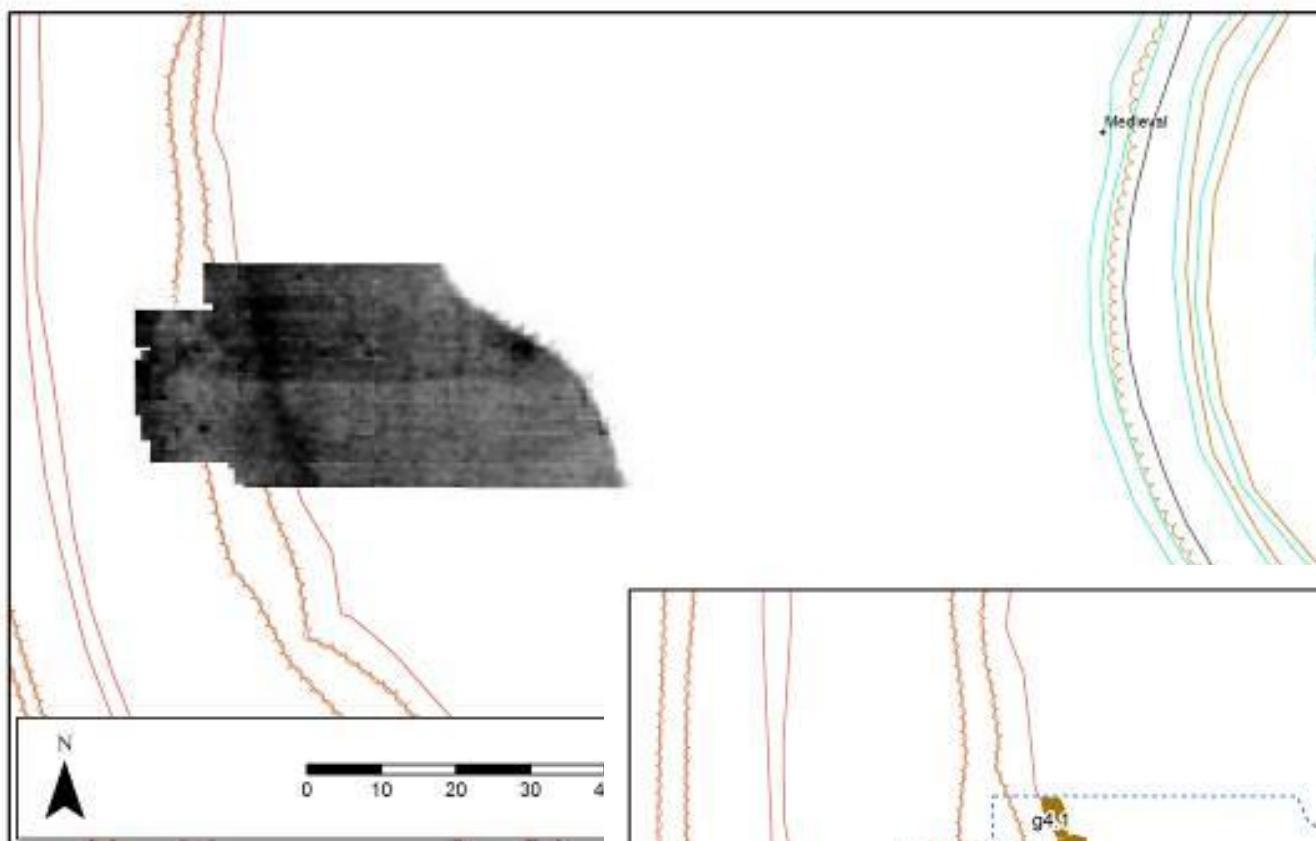
GPR Survey Results 2015 – Outer Bailey



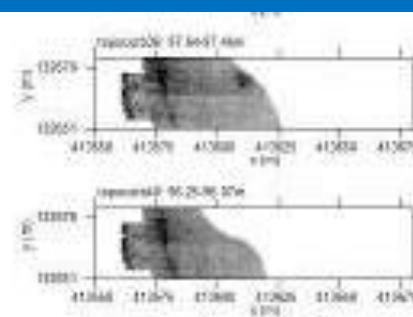
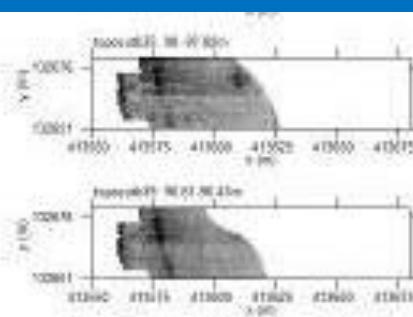
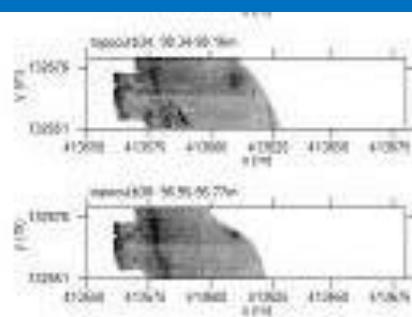
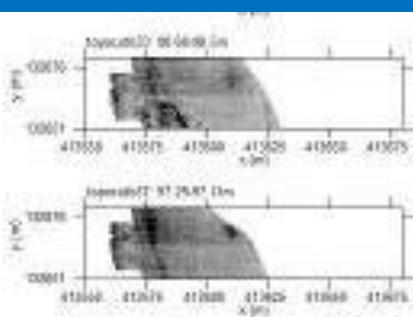








GPR Time Slices – Lower Portion

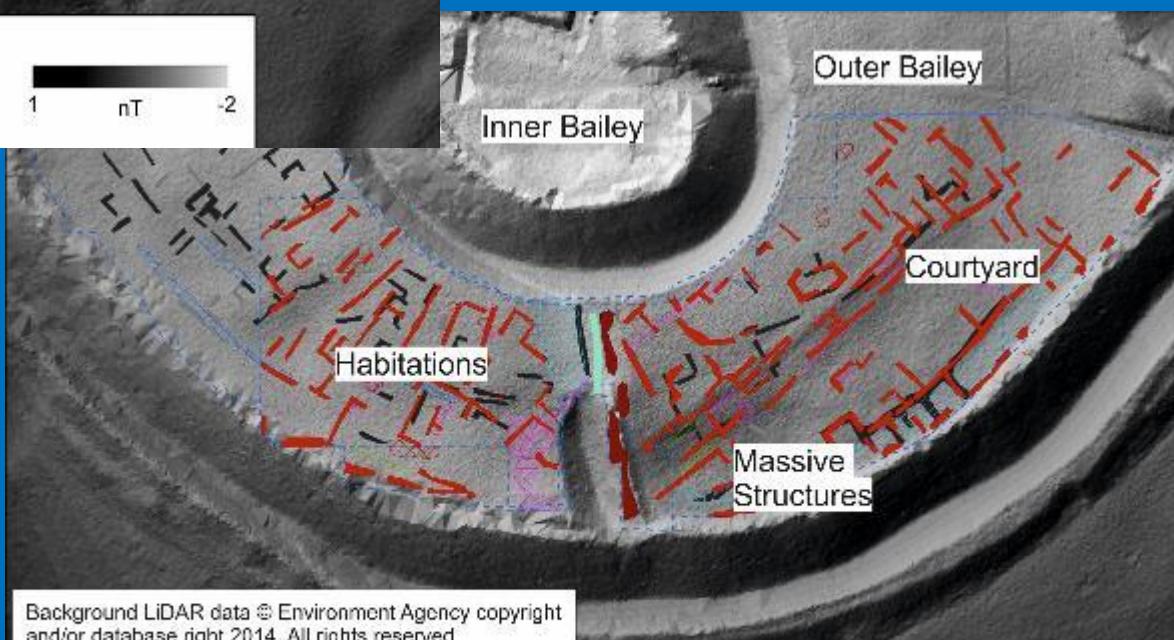


Background LiDAR data © Environment Agency copyright
and/or database right 2014. All rights reserved



Metres
0 20 40 80 120 160

1 nT -2

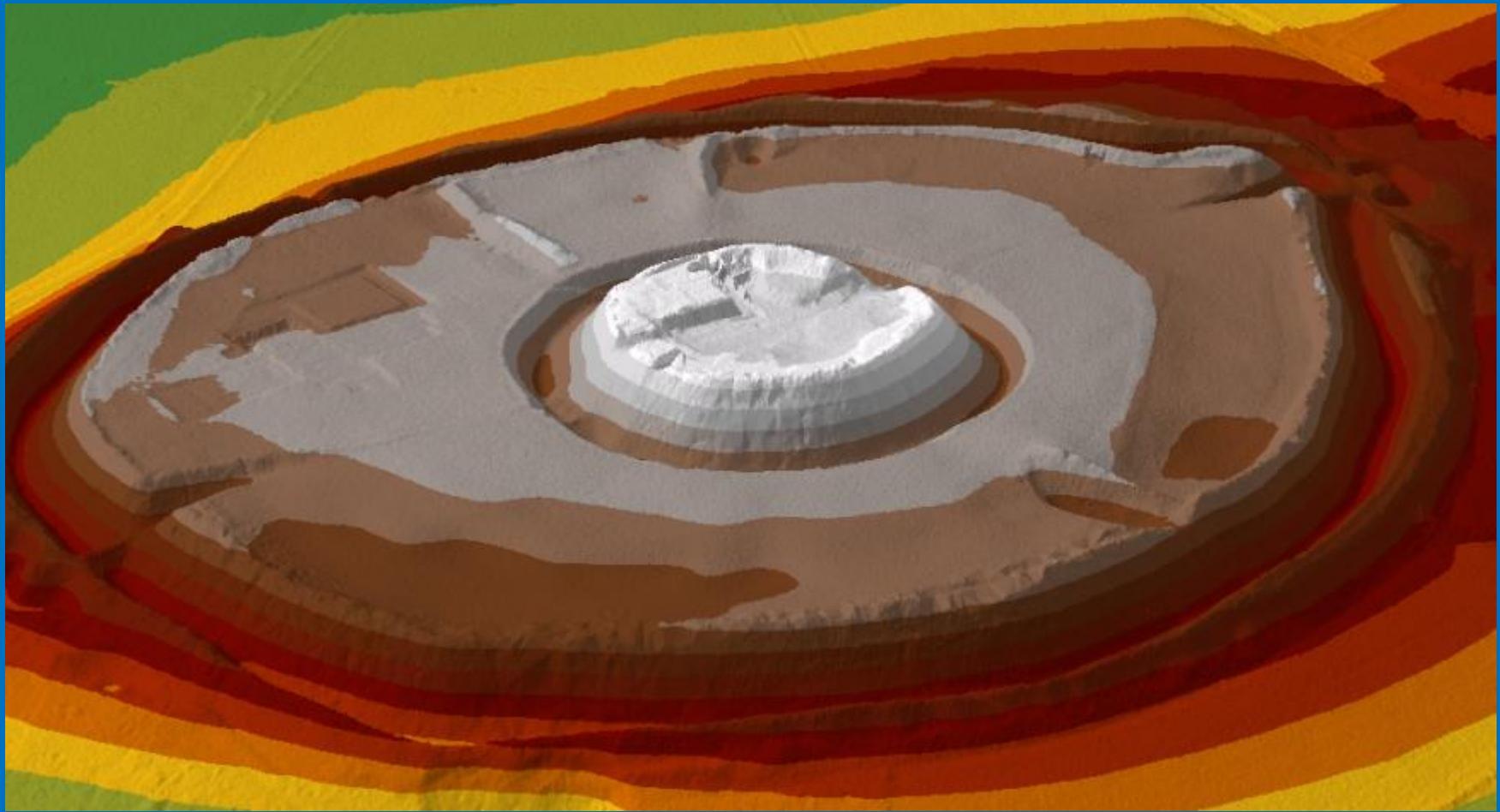


Background LiDAR data © Environment Agency copyright
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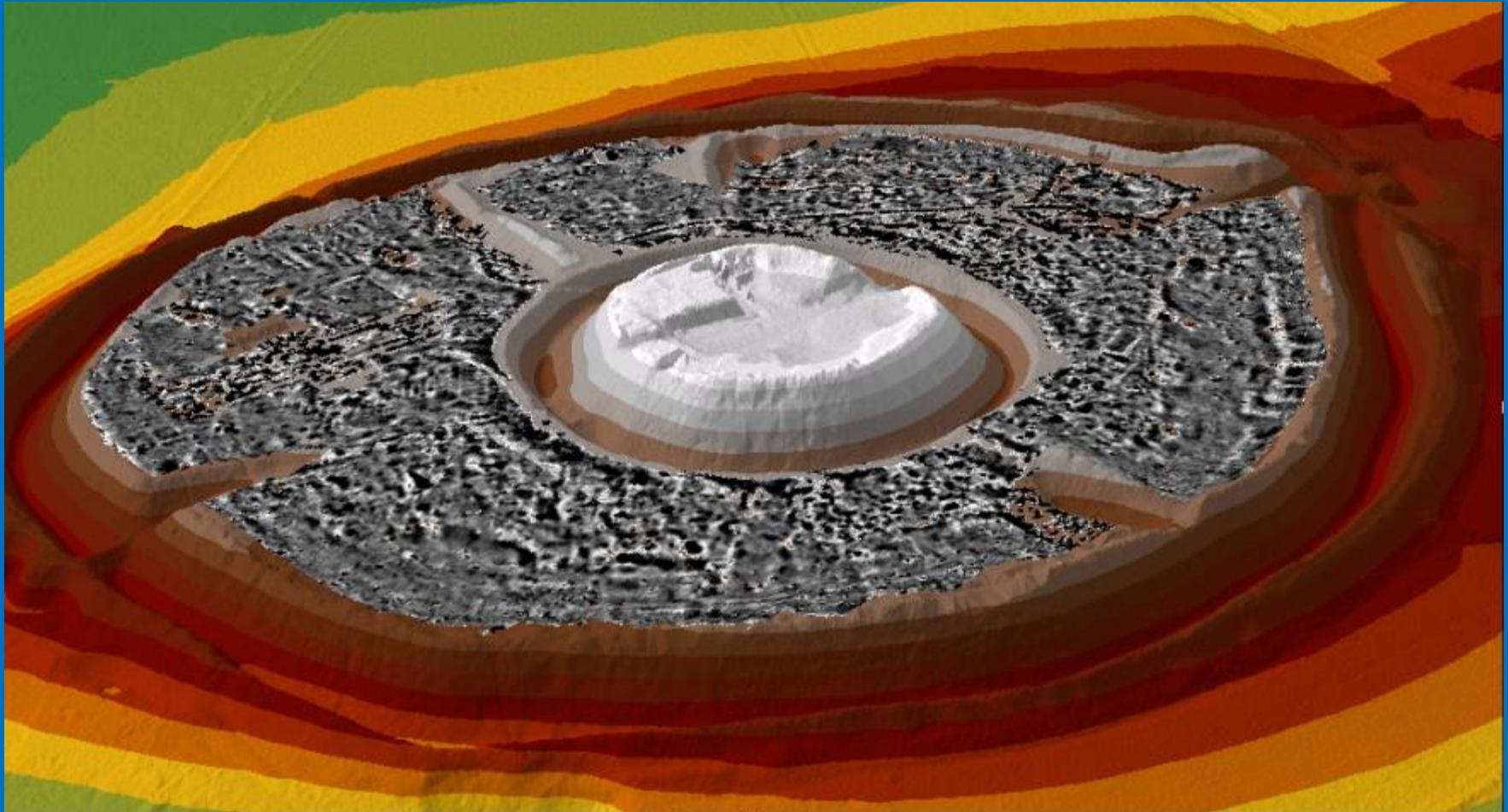


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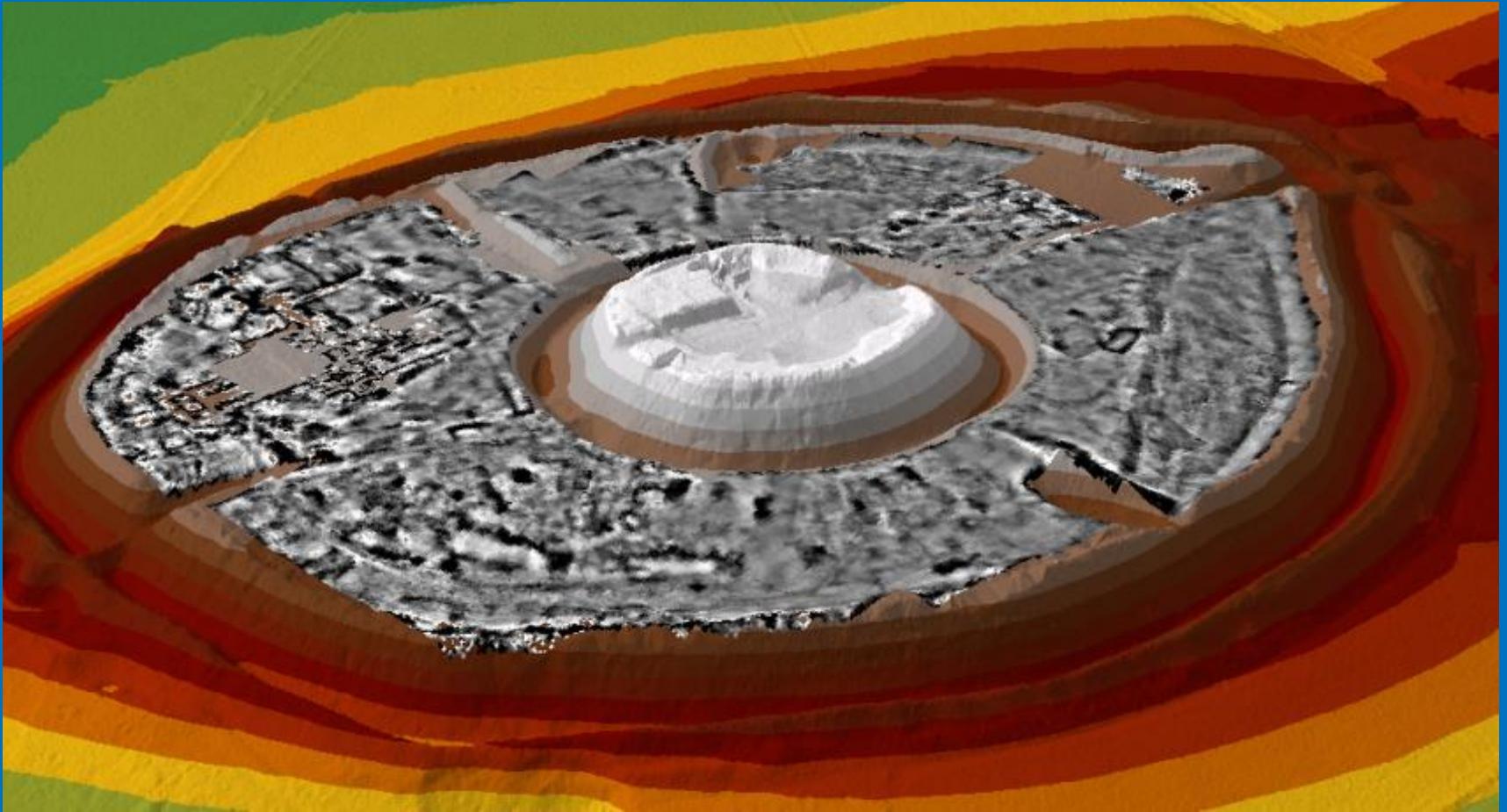
Old Sarum LiDAR Model



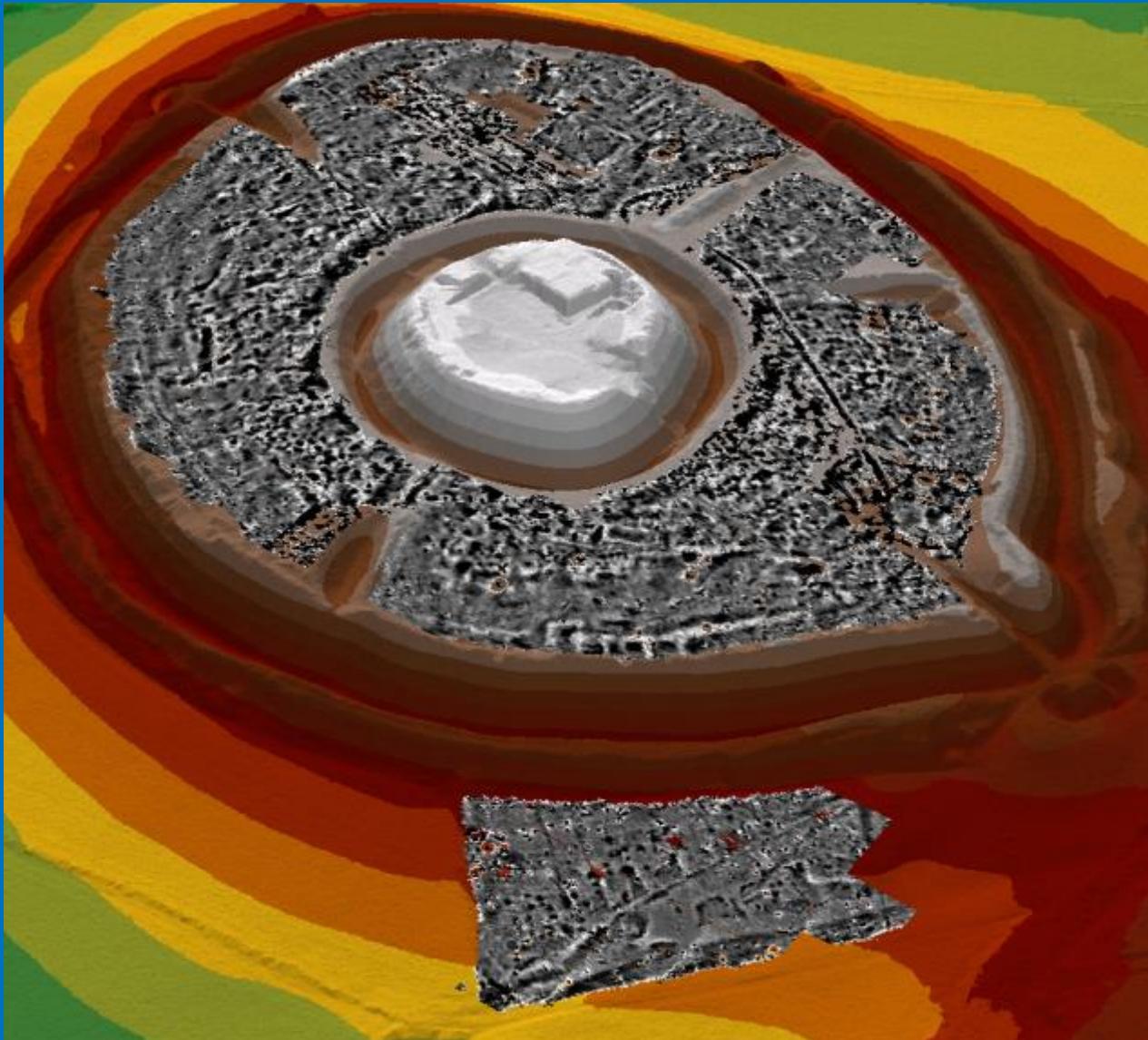
Old sarum LiDAR model with magnetometry



Old sarum LiDAR model with earth resistance



Old sarum LiDAR model with magnetometry



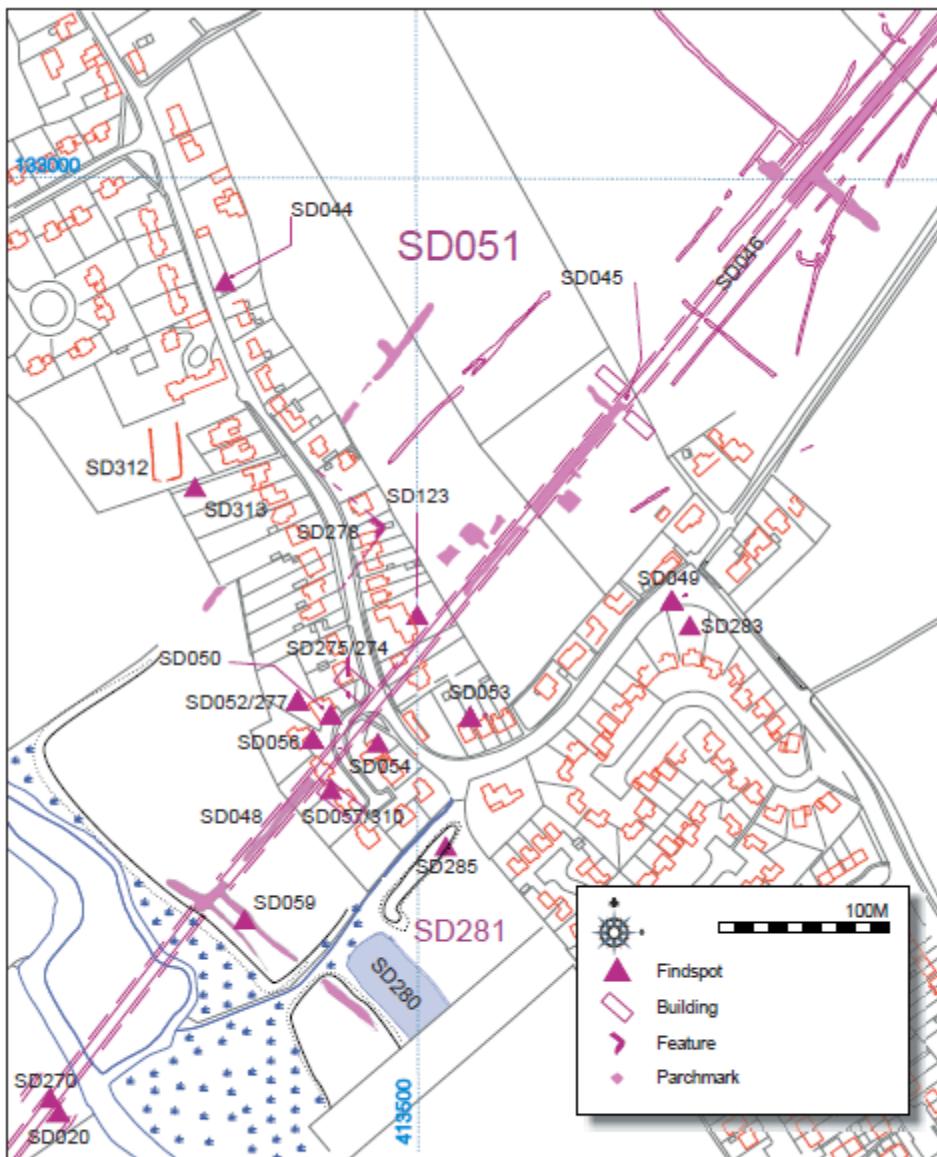


Figure 3.6: Roman urban elements in and around the village. (Features transcribed from Air Photography by Mark Corney (Corney 2002)

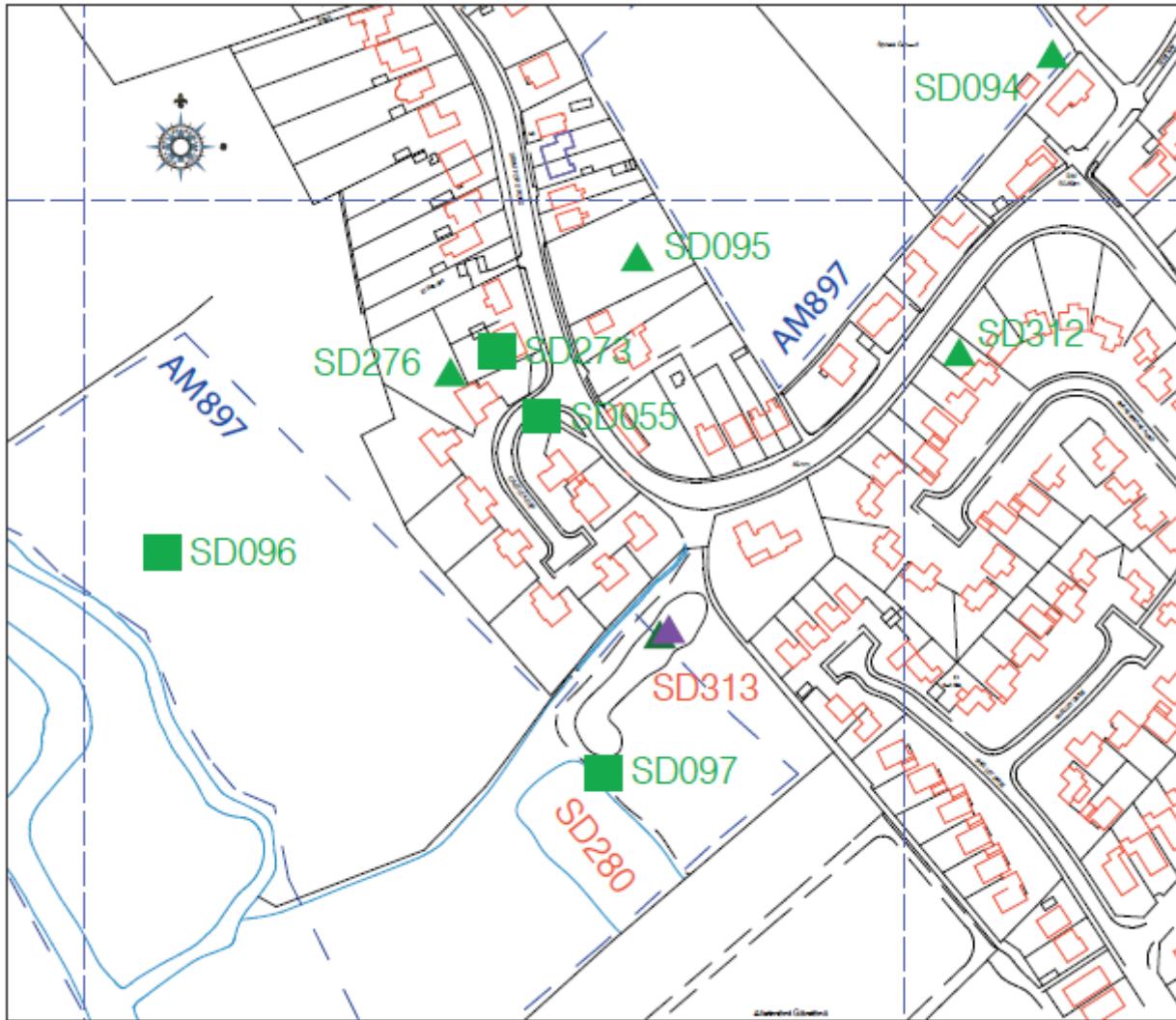


Fig 4.3: Findspots at the southern end of Stratford village. Green represents Medieval finds, with squares denoting structural remains and triangles isolated finds. Red site codes are undated.

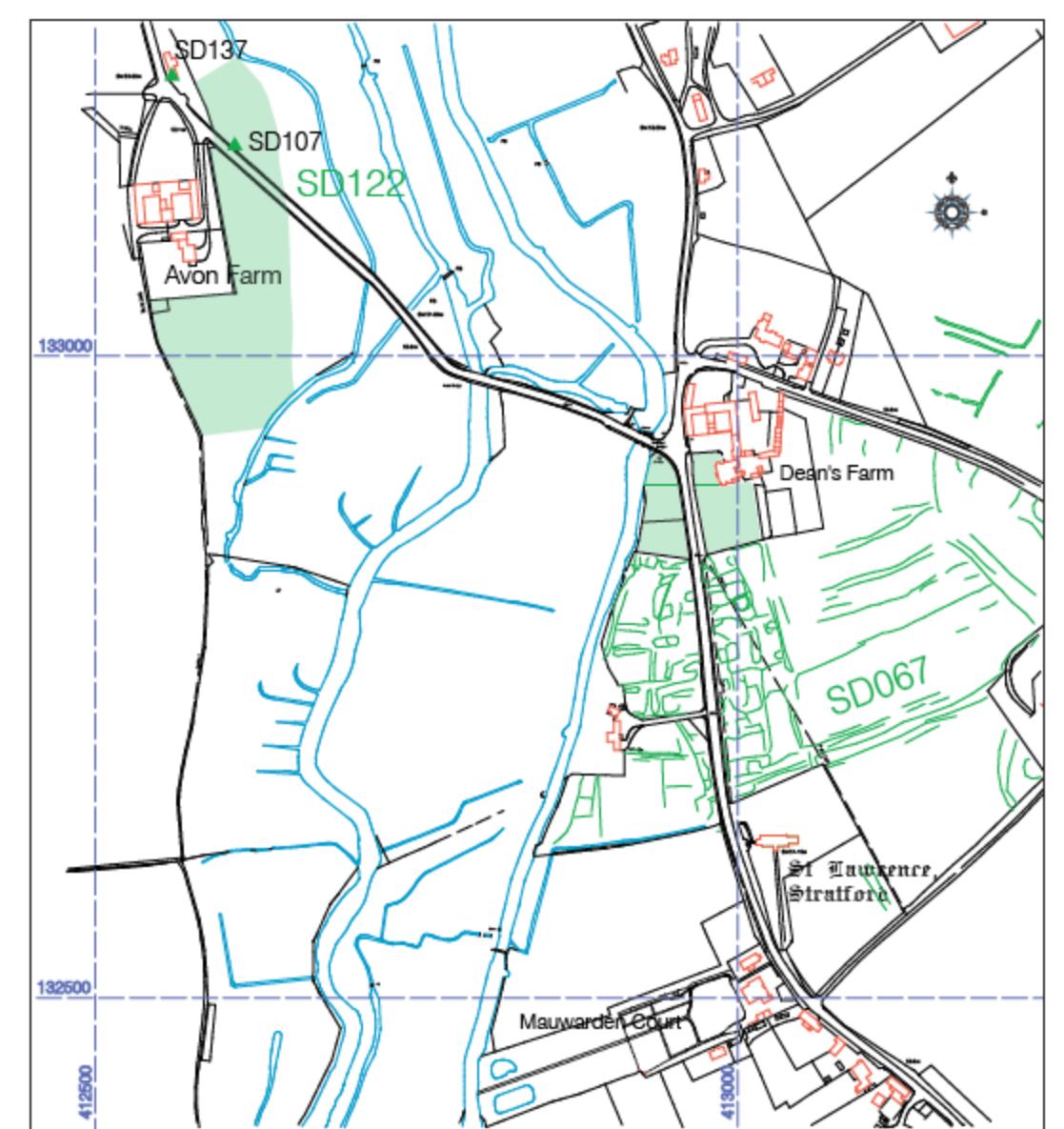


Fig 4.4: The Medieval villages of Afene and Stratforde.

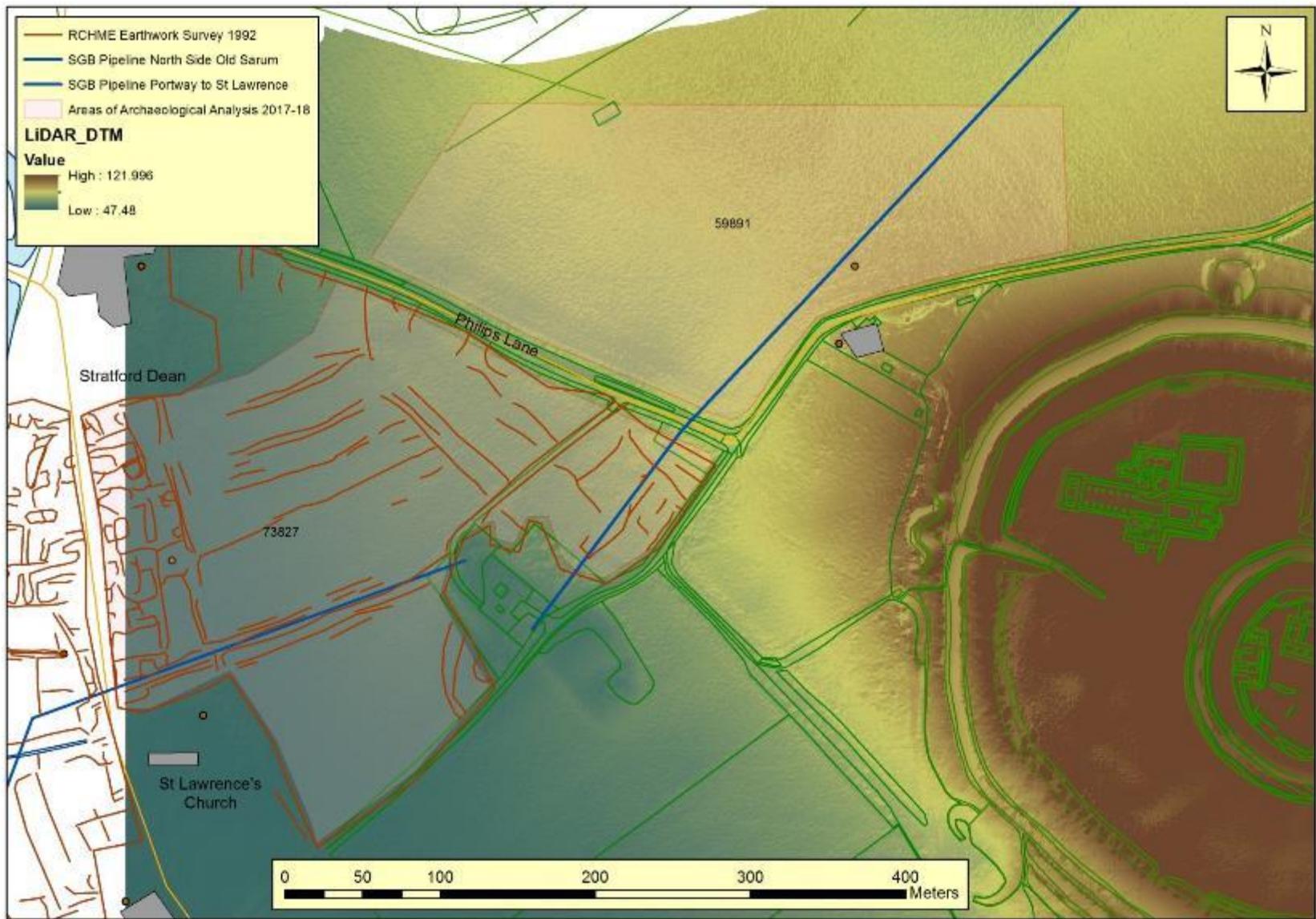
Preliminary Conclusions

- It is apparent from the results that the entire outer bailey was heavily built up in the Middle Ages. Possible evidence of earlier settlement in GPR data
- The plan of the settlement and the nature of some of the structures can be clearly identified. Among these is the presence of large structures abutting the defensive wall of the site, an open area in front of these structures with an urban residential plan surrounding the ditch to the inner bailey.
- A change is recognisable between the outer bailey in general and the area of the cathedral precinct.
- Several later structural features are visible, suggesting small scale settlement of the site in the late medieval period or post-medieval period.
- Outside of the monument curtilage evidence for Romano-British and medieval settlement, building platforms and orthogonal town planning near easter nentrance
- Clearly there remains much more work to do in terms of non-intrusive survey within Old Sarum itself, and in the surrounding hinterland.

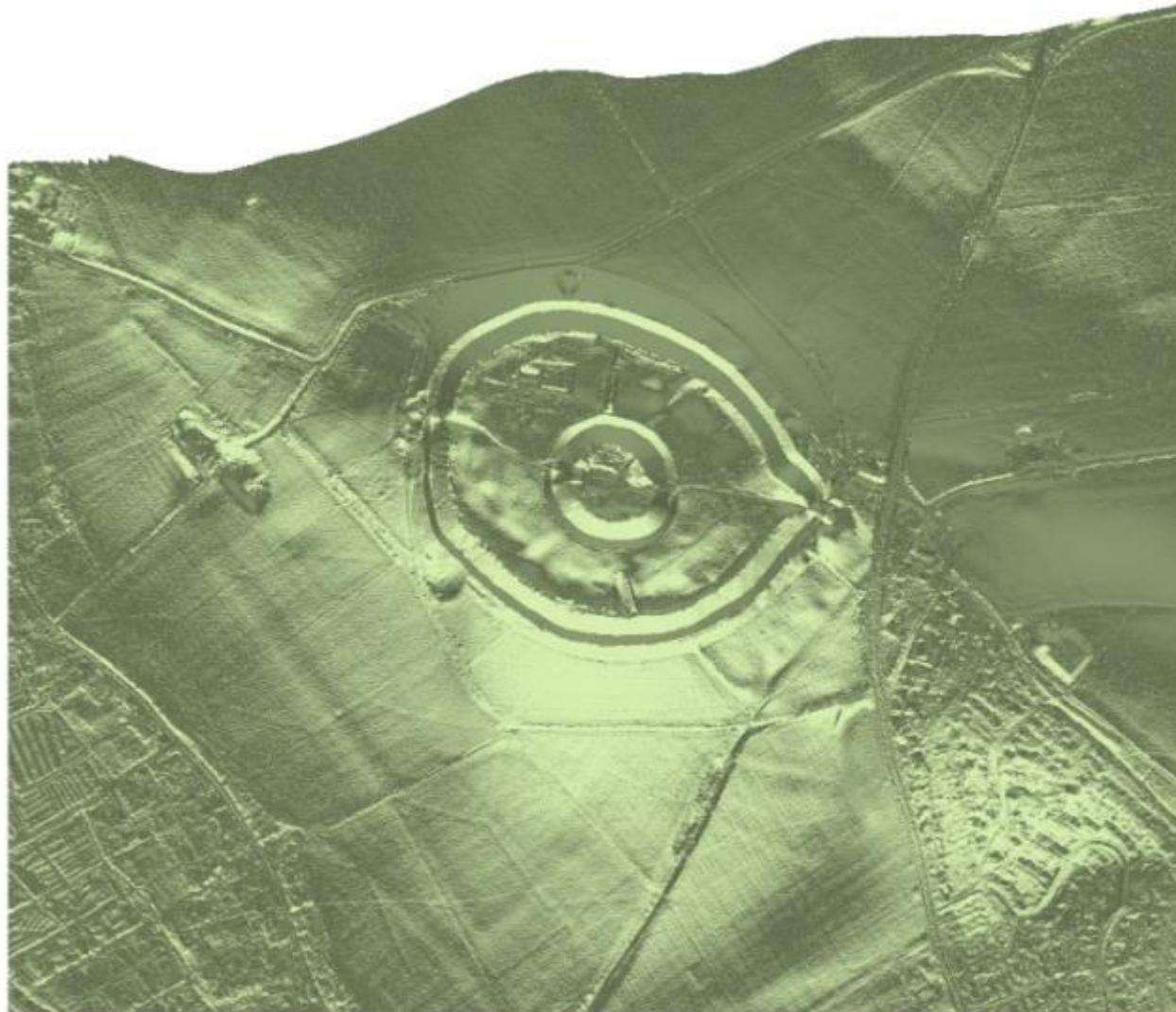
Future Work

- Plan to continue survey to extend over the hinterland of old Sarum and Stratford Sub-Castle, with geophysics, fieldwalking, laser scanning and possible excavation
- Phase of desk-based and archive assessment to incorporate material
- Project collaboration between Universities of Southampton, Swansea and local community
- Involvement of history department at University of Southampton for integration of historical records with the archaeological evidence





LIDAR data



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(Due live soon)

