

Castle Hills

A Medieval Motte and Bailey Castle

National Monument No. 1020991

Geophysical Survey

May 2015



Castle Hills

Report Editors: Stephen Eastmead & Mike Walton

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Introduction

Exercise Marne Explore 15 is part of Operation Nightingale, a project to develop and enhance the composite physical and social capabilities of Tri-Service injured military personnel through the delivery of a diverse and fascinating outreach program, utilising heritage and archaeological excavation. The Defence Archaeology Group in partnership with Historic England and Carillion is managing the project.

The objective of Exercise Marne Explore 15 is to explore the area around Marne Barracks at Catterick Village, North Yorkshire. Marne Barracks is located on the World War II airfield of RAF Catterick, and close to the Roman Fort of Cataractonium. It is adjacent to the A1 which locally follows the approximate path of Roman Dere Street. The current widening of the A1 beside the airfield has revealed a wealth of archaeology.

The airfield was subjected to a geophysical survey in 2002 followed by some evaluation trenches conducted by Archaeology Services Durham University (ASDU). A number of features were identified by the geophysics and the finds from the evaluation excavations indicated they were from the late Iron Age and the Romano-British periods.

Castle Hills is a scheduled medieval motte and bailey castle (built: c. 1120 – c. 1125) lying on the eastern edge of the airfield. It has not been subjected to a previous geophysical survey.

Philip Abramson, Archaeologist, Environmental Support & Compliance, Defence Infrastructure Organisation Building, 18 Piave Lines, Catterick Garrison, requested if the *Swaledale and Arkengarthdale Archaeology Group* (SWAAG) could re-survey part of the airfield that ASDU surveyed in 2002, and to survey the Castle Hills site in preparation for Exercise Marne 15 scheduled for July 2015. Philip Abramson obtained a license from Historic England for the Castle Hills site survey.

The survey was completed on May 28th 2015.

Methodology

Instrumentation

The survey instruments used included:

- ProMark 120 GPS & GLONASS GNSS receiver
- Bartington Grad601-2 gradiometer
- GeoScan RM85 resistivity meter & PA20 probe array.

Settings & Methods

- ProMark 120. Professional grade GNSS receiver operated as a single rover with external antenna. The data was processed using GNSS Solutions software with corrections made using OSNet 1 minute Rinex data from Richmond reference station. The instrument was used for surveying both landscape and survey grids, with large grids being staked out by uploading suitable grid co-ordinates. Typical accuracy <30cm.
- Bartington Grad601-2. Sensors 2, Traverses 1m, Readings/m 4, Range 100nT, Resolution 0.03nT. Grid size usually 30m, Pattern zig-zag.
- GeoScan RM85 & PA20 twin parallel probe array. Traverses 1m, Readings/m 2, Grids usually 30m, Pattern zig-zag, Gain x10, Frequency 122.5Hz, Output 45V.

Processing of geophysical data

The geophysical data was processed using TerraSurveyor Version 3.0.25. Where possible processing was kept to a minimum. The data was just destriped and clipped to optimise the greyscale for interpretation. The Bartington magnetic data for the airfield site was further processed using a 2D-FFT filter to reduce the strong ridge and furrow signals and improve the definition of the underlying archaeological features.



**ProMark 120 GPS.
Castle Hills, Marne Barracks.**



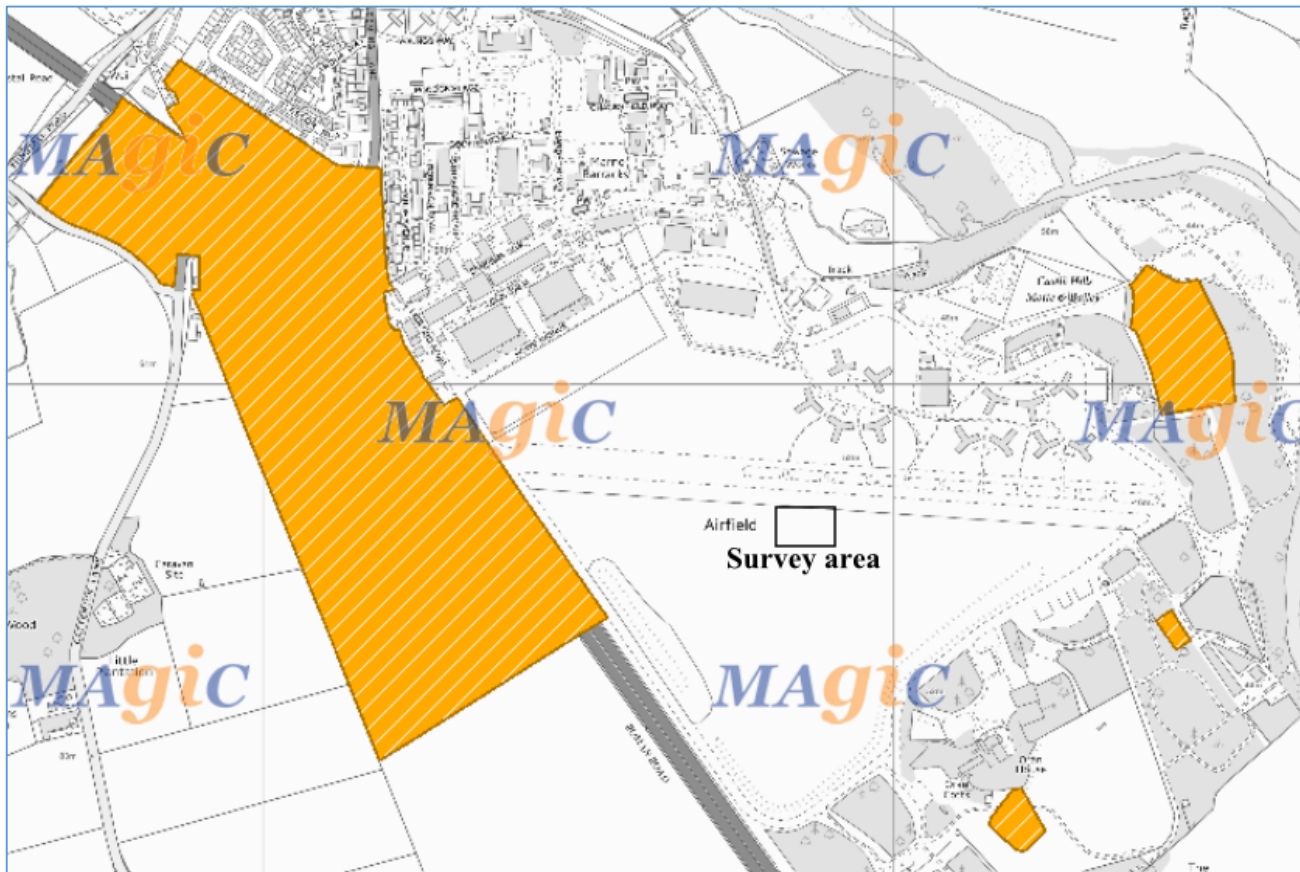
**Bartington 601-2.
Old RAF Catterick airfield at Marne Barracks.**



**GeoScan RM85 with PA20 probe array with
Castle Hill motte in the background and the
bailey in the foreground.**

Survey Sites

The main subject of this report is the survey of the Castle Hill scheduled monument. However, because the part of the old RAF Catterick airfield surveyed for Exercise Marne Explore 15 is sandwiched between other scheduled monuments at Bainesse Roman roadside settlement and Anglian cemetery (reference 1021209), and World War II fighter pens and associated defences at former RAF Catterick and 120m south and 340m north east of Oran House (reference 1020990), then these survey results have been included in Appendix 2.



Airfield survey area and scheduled monuments
(Terms of use see: magic.gov.uk website)

Google Earth view of Marne Barracks

The Castle Hills motte and bailey castle survey site is outlined in yellow and the airfield magnetic survey site is outlined in red.



Castle Hills Surveys

Introduction

The Historic England scheduled monument summary (Appendix 1) describes what is known about the 12th century motte and bailey castle and acknowledges the increasing importance of monuments from the Second World War (WWII). The motte and bailey castle site has many features from WWII period.

Two SWAAG members could remember the site from the 1950s when it was routinely driven over by vehicles including fire engines. The landscape then was relatively barren compared with the lush wild nature of the current vegetation. The earthworks surrounding the bailey are densely wooded which made access for the GPS landscape survey extremely difficult. Similarly the dense nettle and thistle beds together with the long grass hampered walking at the set pace required for the Magnetometry. A few hawthorns are now growing in the bailey. It will gradually become more wooded unless it is managed. The two major WWII concrete structures, particularly the Bofors gun emplacement, appear to be increasingly affected by tree roots and stems heaving the concrete slabs apart. See Appendix 3.

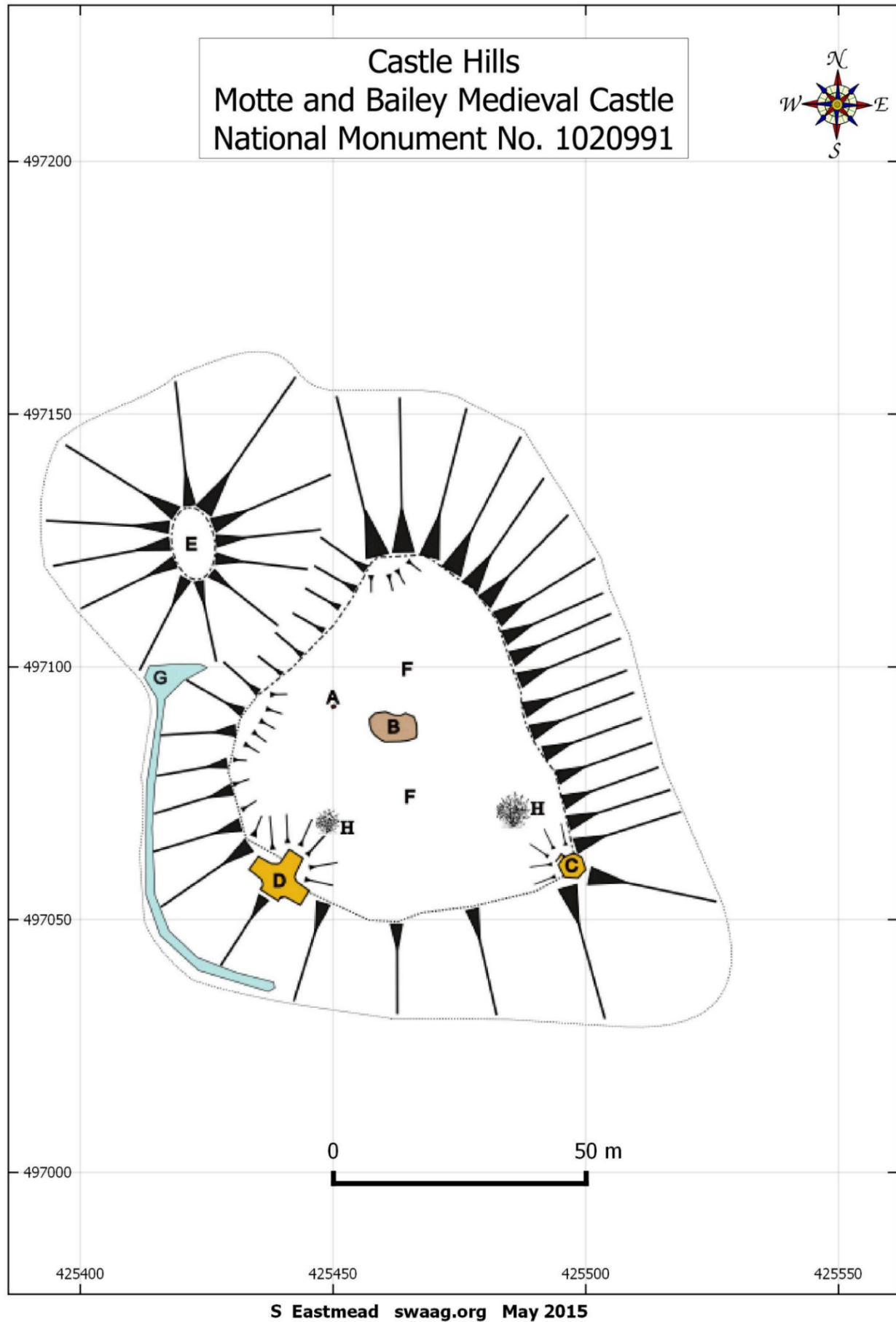
GPS Landscape Survey

SWAAG does not have access to the large scale *Ordnance Survey Mastermap* products and the *Ordnance Survey OpenData Streetview* 1:10,000 map lacks detail, so a GPS survey was made to indicate the rim of the bailey, and the top of the motte and the base of the earthworks. The dense nature of the woodland made this a difficult task in places. There are further outer earthworks that were just too dense to survey.



**©Google earth outlining the Castle Hills earthwork including the WW2 features.
The small discrepancy may be due to the differing datums.**

Castle Hills GPS Map



Castle Hills Map Index

A = small manhole without a cover that shows underground pipes passing through this access point roughly in a north – south direction. The pipes are shallow which possibly indicate that it is not a drainage system.

B = a raised mound that appears to be made from concrete slabs and earth. Probably a bulldozed clearance mound.

C = WWII Type 22 pill box for five machine guns and a light anti-aircraft gun on the roof.

D = Thought to be for a 40mm Bofors light anti-aircraft gun emplacement.

E = Motte

F = Bailey

G = Surface water

H = Colonising hawthorn trees

GPS Survey Comment

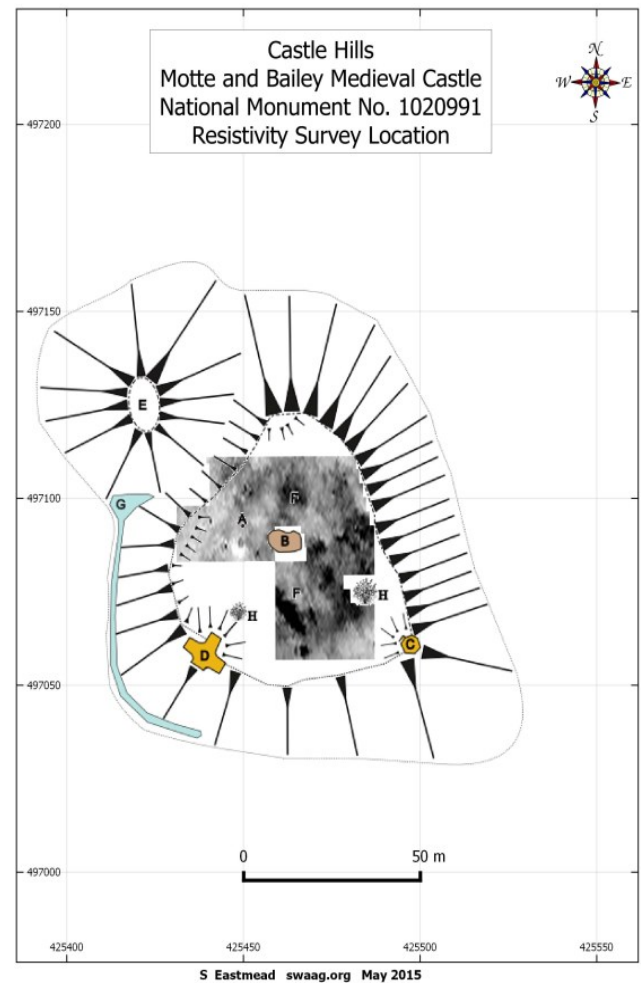
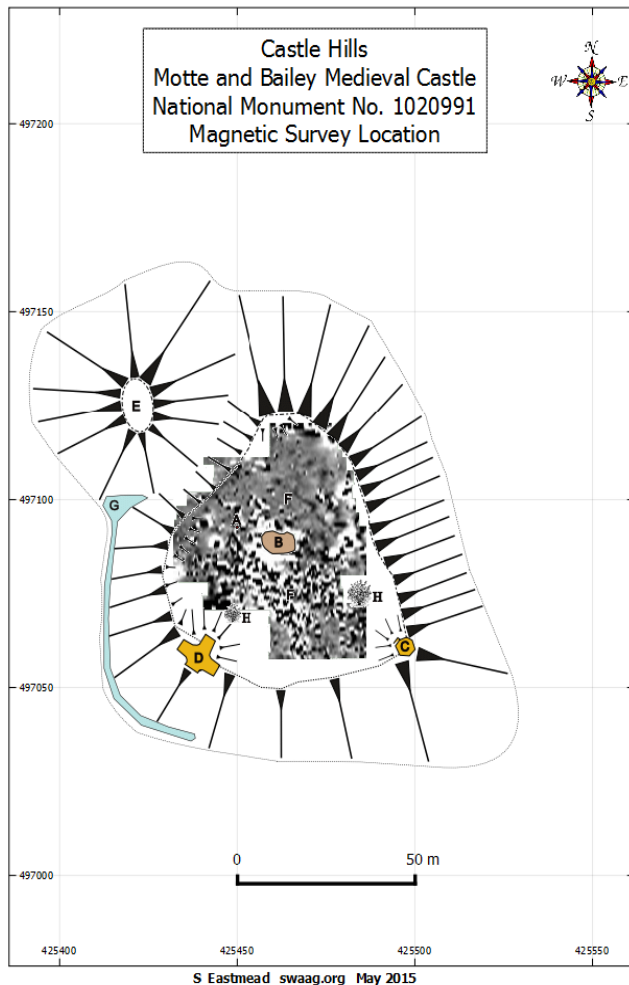
The earthworks are substantial on three sides and very shallow in the middle of the southern section. Surface water was present towards the south west. The slit trenches described in Appendix 1 were still present. It was not possible to access the extended earthworks towards the west of the site due to the density of the vegetation. The ProMark120 GPS appeared to cope quite well with the tree canopy. Accuracy was generally in the range of 30-60cm but in the very dense low lying areas 61-150cm.

LIDAR



Castle Hills motte and bailey castle nestling in a loop of the River Swale
©Environmental Agency

Geophysical Surveys Coverage Maps

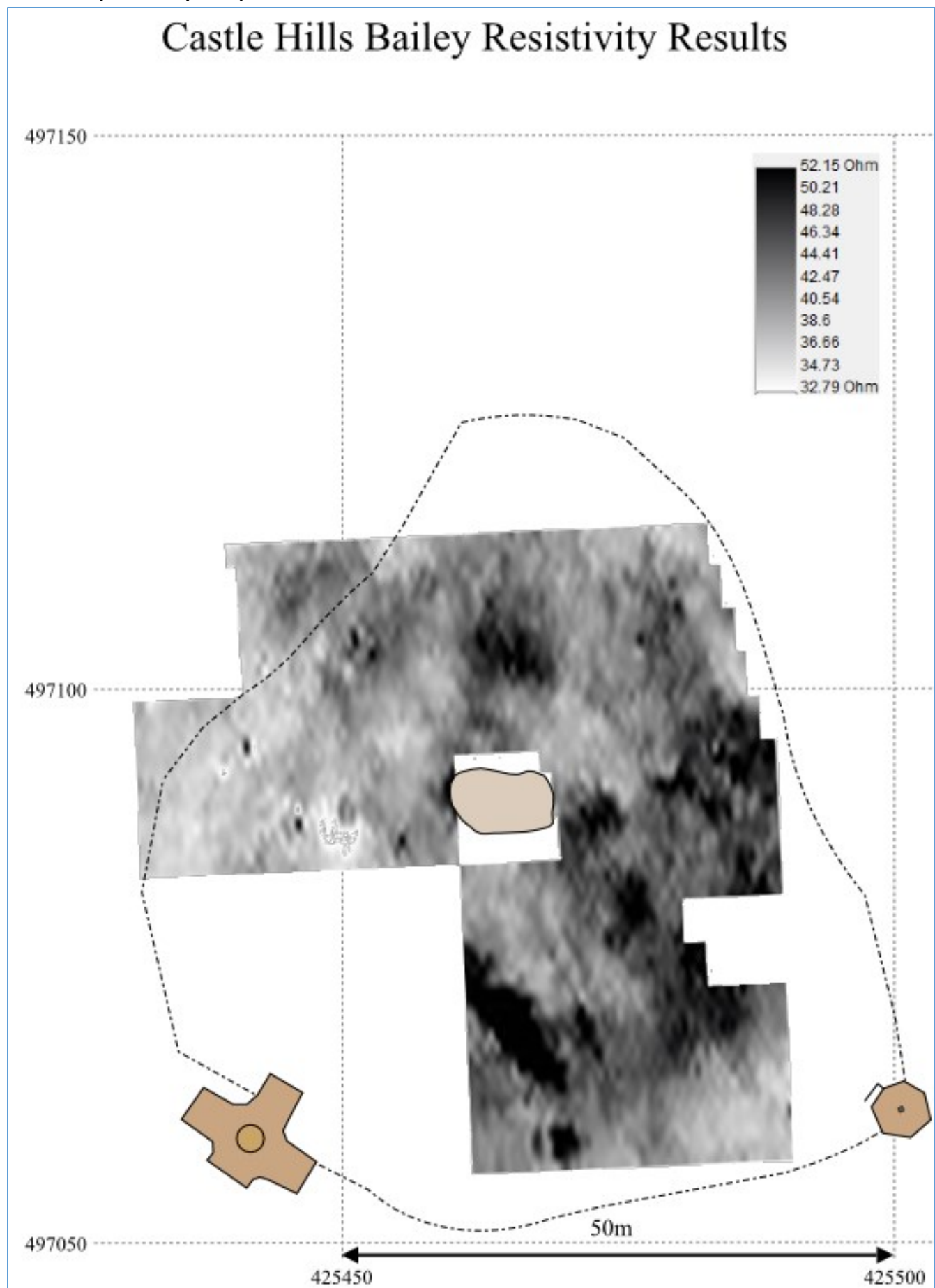


It was only feasible to survey approximately 70% of the bailey in the available time, the comparative coverage for the resistance and magnetic surveys are shown above.

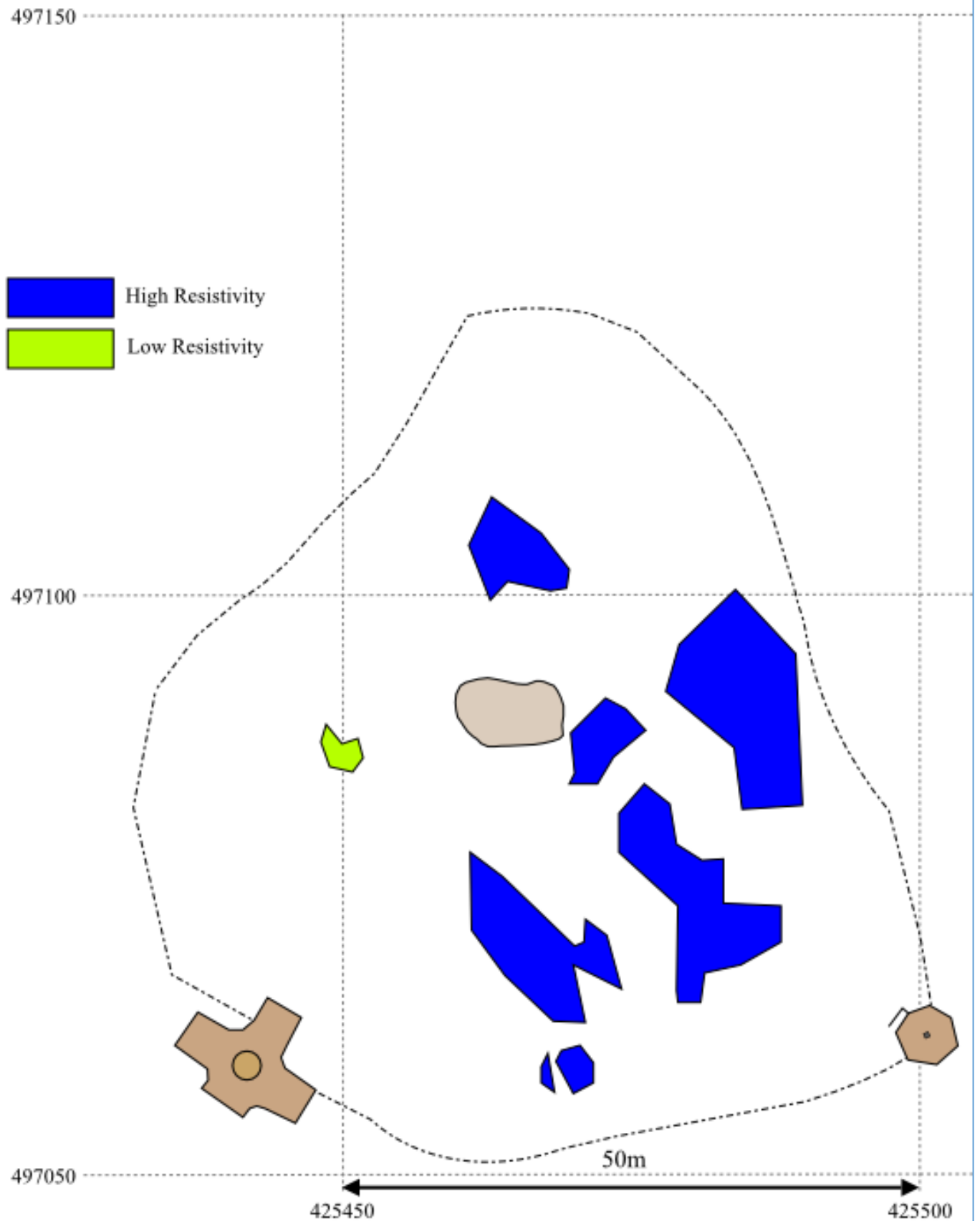
The next five maps show the primary resistance and magnetic results together with interpretative summary maps.

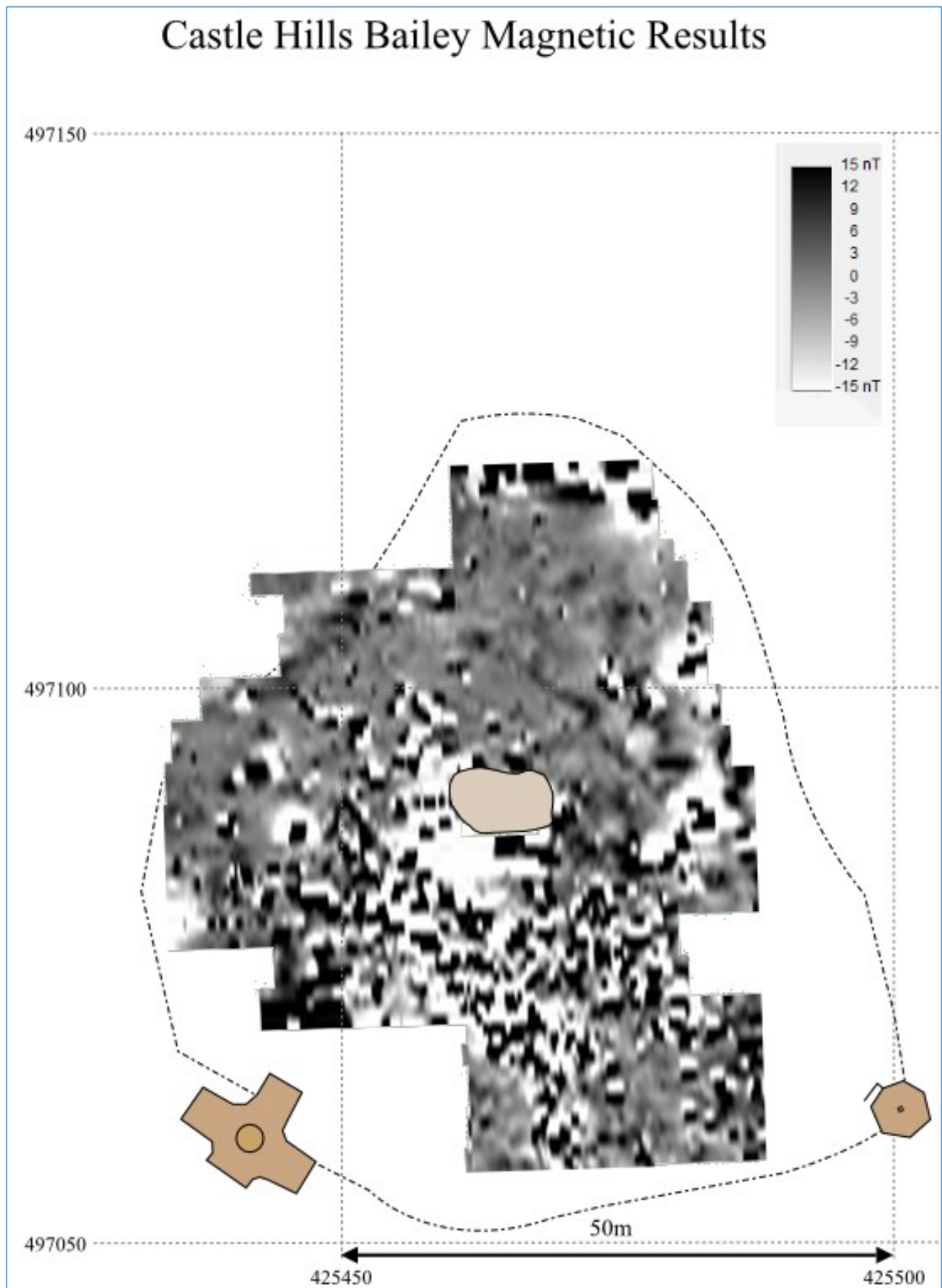
The bailey is heavily contaminated with dipolar magnetic debris thereby invalidating the majority of the magnetic survey data. A few strong positive areas present are not very informative.

The resistance data does show some strong areas of high resistance, but in view of the World War II activity on the site and the presence of underground drainage or communication lines, if an excavation was being contemplated then it would be expeditious to dig a small number of test pits first.

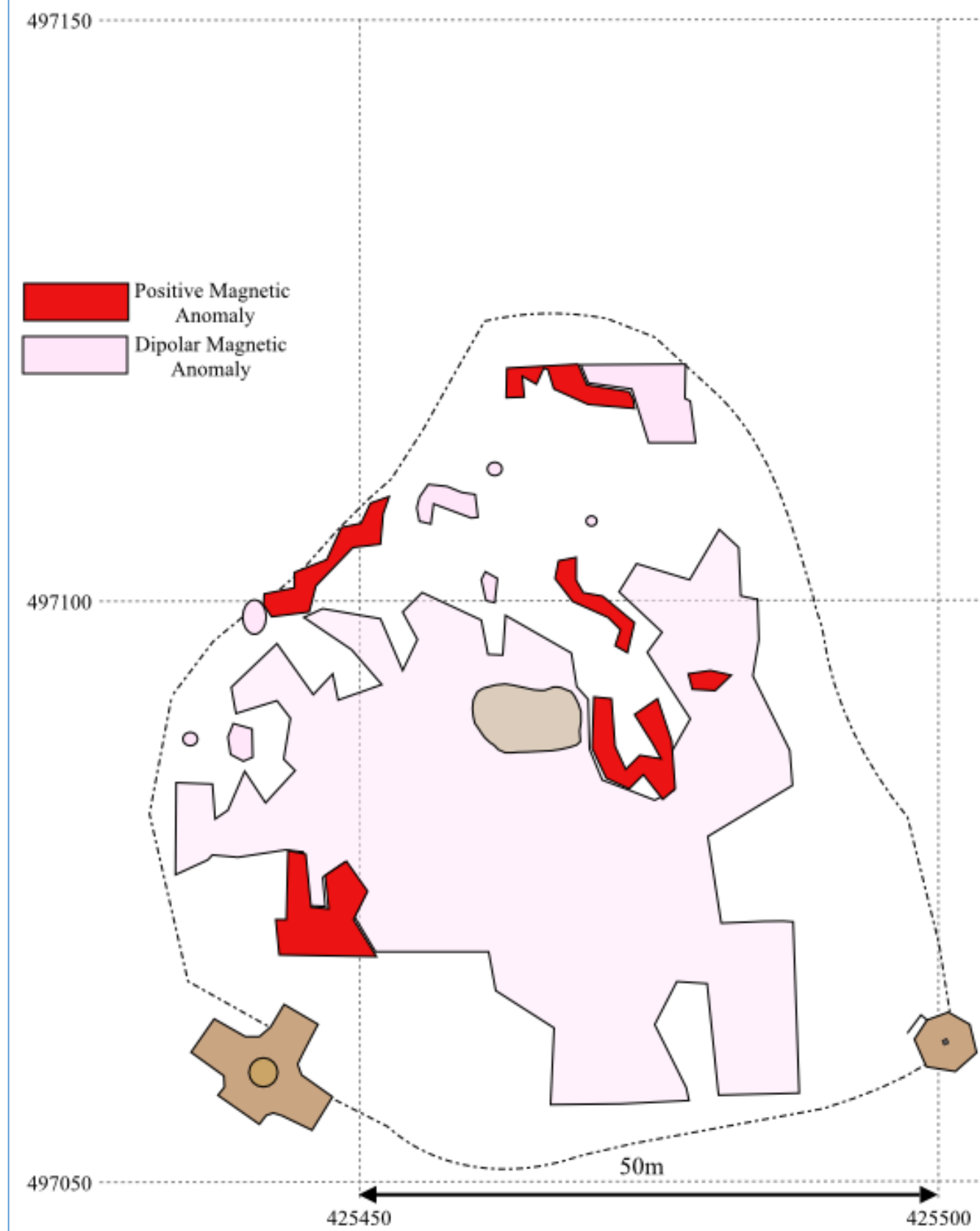


Castle Hills Bailey Resistivity Results

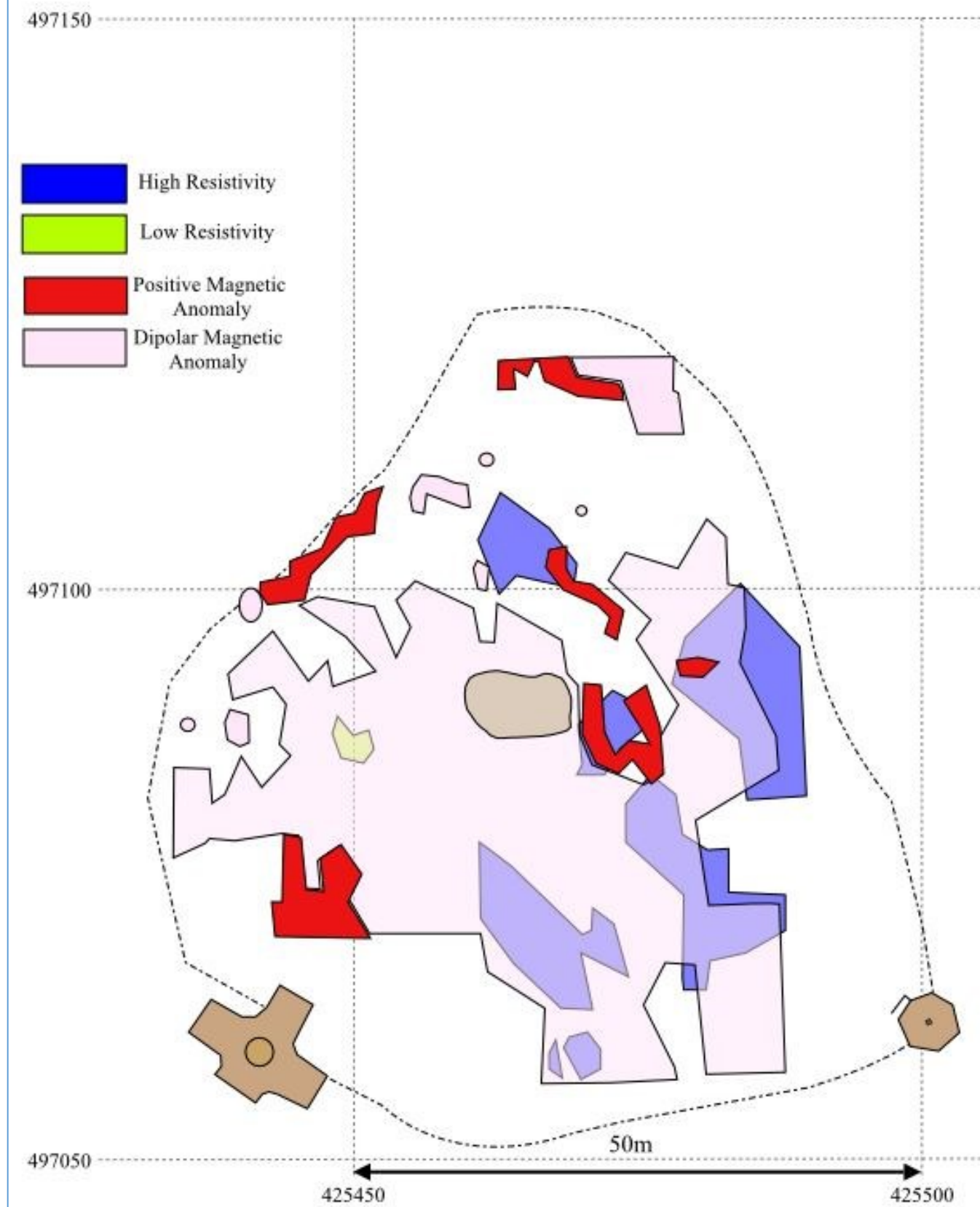




Castle Hills Bailey Magnetic Results



Castle Hills Bailey Resistivity & Magnetic Anomalies



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1. Where indicated third party copyright of images and text must be respected.
2. Primary information published by the Swaledale and Arkengarthdale Archaeology Group (SWAAG) is free to use with accreditation.
3. Images and illustrations published by SWAAG members are free to use with accreditation including the photographer's name when given.
4. All images taken by Stephen Eastmead
5. LIDAR images ©Environmental Agency. Images must not be copied and distributed.

SWAAG Personnel

The following SWAAG members contributed to these surveys:

Ann and John Russell

David Brooks

David Metcalfe

Flora and Graham Smith

Mike Keenan

Mike Walton

Rob Nicholson

Shirley Gale

Stephen Eastmead

Appendix 1 Castle Hills Monument Summary (©Historic England)

List Entry Summary

This monument is scheduled under the Ancient Monuments and Archaeological Areas Act 1979 as amended as it appears to the Secretary of State to be of national importance. This entry is a copy, the original is held by the Department for Culture, Media and Sport.

Name: Castle Hills, medieval motte and bailey castle, and 20th century airfield defences, 700m north east of Oran House

List Entry Number: 1020991

Location

The monument may lie within the boundary of more than one authority.

County: North Yorkshire

District: Richmondshire

District Type: District Authority

Parish: Catterick

National Park: Not applicable to this List entry.

Grade: Not applicable to this List entry.

Date first scheduled: 11-Jan-1965

Date of most recent amendment: 30-Jul-2003

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: RSM

UID: 34720

Asset Groupings

This List entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List Entry Description

Summary of Monument

Legacy Record - This information may be included in the List Entry Details.

Reasons for Designation

Motte and bailey castles are medieval fortifications introduced into Britain by the Normans. They comprised a large conical mound of earth or rubble, the motte, surmounted by a palisade and a stone or timber tower. In a majority of examples an embanked enclosure containing additional buildings, the bailey, adjoined the motte. Motte castles and motte-and-bailey castles acted as garrison forts during offensive military operations, as strongholds, and, in many cases, as aristocratic residences and as centres of local or royal administration. Built in towns, villages and open countryside, motte and bailey castles generally occupied strategic positions dominating their immediate locality and, as a result, are the most visually impressive monuments of the early post-Conquest period surviving in the modern landscape. Over 600 motte castles or motte-and-bailey castles are recorded nationally, with examples known from most regions. As one of a restricted range of recognised early post-Conquest monuments, they are particularly important for the study of Norman Britain and the development of the feudal system. Although many were occupied for only a short period of time, motte castles continued to be built and occupied from the 11th to the 13th centuries, after which they were superseded by other types of castle.

Although of comparatively recent date, 20th century military sites are increasingly seen as historic survivals representing a defining episode in the history of warfare and of the century in general; as such they merit careful record and, in some cases, preservation. The importance of defending airfields against attack was realised before the outbreak of World War II and a strategy evolved as the war went on. Initially based on the principle of defence against air attack, Anti-aircraft guns, air raid shelters and dispersed layouts, with fighter or 'blast' pens to protect dispersed aircraft, are characteristics of this early phase. With time, however, the capture of the airfield became a more significant threat, and it was in this phase that the majority of surviving defence structures were constructed, mostly in the form of pillboxes and other types of machine gun post. The types of structure used were fairly standard. For defence against air attack there were Light Anti-aircraft (LAA) gun positions, either small machine gun posts or more substantial emplacements for Bofors guns. For defence against capture, pillboxes, trench systems and wire entanglements were provided. Fortified gun positions took many forms, from standard ministry designs used throughout Britain to designs specifically for airfield defence. Defences survive on a number of airfields, though few in anything like the original form or configuration. Examples are considered to be of particular importance where the defence provision is near complete, or where a portion of the airfield represents the nature of airfield defence that existed more widely across the site.

A national survey of England's Anti-aircraft provision, based on archive sources, has produced a detailed record of how many sites there were, where they were and what they looked like. It is also now known from a survey of aerial photographs how many of these survive. LAA sites used a range of weapons in defence against lower flying aircraft and of all the gun sites, these were the least substantial, with the fabric depending to a large extent on the type of weapon employed. The Bofors machine gun was the weapon most frequently provided with a static emplacement. It was also the only LAA weapon whose associated structures were covered by formal design drawings. It had three varieties of emplacement: ground level fieldworks, which were the most common; roof mountings; and towers of steel or concrete. Nearly 1,250 LAA gun sites of all types are recorded as having been built during World War II and can be accurately located. Around 50 of these have some remains surviving, though at only around 40 sites are these thought sufficient to provide an understanding of their original form and function. Surviving examples are therefore sufficiently rare to suggest that all 40 examples are of national importance.

Castle Hills is a well-preserved example of a motte and bailey castle which will retain buried evidence of its original timber structures and other deposits created during its medieval occupation. Its reuse in the 20th century as part of the defences for RAF Catterick adds to its importance, individual structures being of interest in their own right. The Light Anti-aircraft gun emplacement is a particularly rare survival and is considered to be of national importance.

History

Legacy Record - This information may be included in the List Entry Details.

Details

The monument includes earthwork and associated buried remains of a medieval motte and bailey castle along with the standing and earthwork remains of a group of 20th century defences constructed to defend RAF Catterick. A further sample of the World War II airfield defences, lying to the south of the airfield, are the subject of a separate scheduling. The monument is located on the west side of the River Swale, to the east of the former RAF airfield.

In the medieval period, the motte and bailey castle lay in an outlying part of the manor of Catterick known as Killerby. This was held by a man named Scholland who is thought to have built the castle in 1120-25 to control a fording point across the River Swale. Scholland was sewer, one

of the senior servants, to Count Alan Niger of Richmond. However it has also been suggested that the castle was remodelled from an earlier defensive site dating to before the Norman Conquest. The motte and bailey castle is thought never to have acquired masonry structures, but remained an earthwork and timber fortification. It passed through the same family until 1291 when it was abandoned by Brian Fitz-Alan of Killerby for a new stone castle just over 1km to the south east. In the 20th century, the high ground provided by the motte and bailey castle was again used defensively. In 1940-41 RAF Catterick was provided with airfield defences against attack by low flying aircraft and ground assault by troops, with the motte and bailey forming the main defensive strong-point. The remains of these defences are also included in the monument.

The motte and bailey castle forms a small area of higher ground on the western side of the River Swale's floodplain, the eastern flank of the castle being a continuation of an abandoned river cliff. It can be roughly divided into three parts, an outer ward in the southern part of the monument, the bailey at the centre and the motte in the north eastern part. The outer ward is a gently sloping, south facing enclosure about 60m by 80m, defined by the abandoned river cliff to the east and by old embanked hedge lines to the south and west. At the time that the castle was occupied, this area would have typically included some auxiliary buildings and probably have been used for activities such as blacksmithing. Along the southern side of this enclosure there are the platforms for a group of small buildings once part of the dispersed layout of RAF Catterick. On the north side of the outer ward, the slope steepens, marking the line of the southern rampart of the bailey and to the North West there is the southern part of a deep, broad moat ditch. This moat continues northwards, enclosing the western side of the bailey to meet the moat that encircles the motte.

The bailey is an irregular, but roughly triangular area some 80m across. Around its edge there is evidence of a raised rampart, particularly on the western side, with its corners rising higher as definite mounds. This defended bailey at Castle Hills is considered to have included the castle's great hall, main apartments and other important buildings such as kitchens. The three mounds at the corners of the bailey were all modified in the 20th century. The south eastern mound is topped by a thickened type 22 pillbox for five Lewis or Bren machine guns. Hexagonal in plan, it has 24 inch (0.6m) thick walls constructed with an outer and inner cladding of brick over reinforced concrete. Internally it has an anti-ricochet wall with an iron ladder leading to a central hatchway in the roof. This provided access to a Light Anti-aircraft (LAA) gun position on top of the pillbox. Surmounting the south western mound is a concrete emplacement for another LAA gun. This emplacement, believed to have been for a 40mm Bofors gun, includes ammunition lockers that retain some surviving timber fittings. This LAA gun position is thought to have been sited so that it could also cover the airfield to prevent the successful landing of enemy troops. In the top of the north eastern mound is a shallow hollow which is interpreted as an infantry foxhole. Further probable foxholes lie on a terrace part way down the slope on the western side of the bailey.

To the north east of the bailey, surrounded by a broad moat, part of which frequently holds water, is the motte. This conical mound is around 50m-60m diameter at its base and about 10m-15m across at its summit. It forms the highest part of the monument, with extensive views across the surrounding countryside. It would have originally been topped by a timber tower or fortified enclosure, some buried footings for which are expected to survive. This vantage point was also reused in the 20th century and it retains a small trench system constructed upon its summit, with further foxholes on its northern flank.

To the south west of the motte, on the western boundary of the monument, there is a boundary

stone with the inscription AM No13. This stone, which is also included in the monument, is one of at least 25 individually numbered boundary stones erected by the Air Ministry in 1925-27, and marks where the boundary of RAF Catterick changed direction.

A number of features are excluded from the scheduling: these are all modern fences, gates, sign posts and all troughs provided for game birds, the ground beneath all these features is, however, included.

MAP EXTRACT The site of the monument is shown on the attached map extract.

Selected Sources

Books and journals

L'Anson, W M, 'Yorkshire Archaeological Journal' in Castles of the North Riding, , Vol. 22, (1913), 359-60

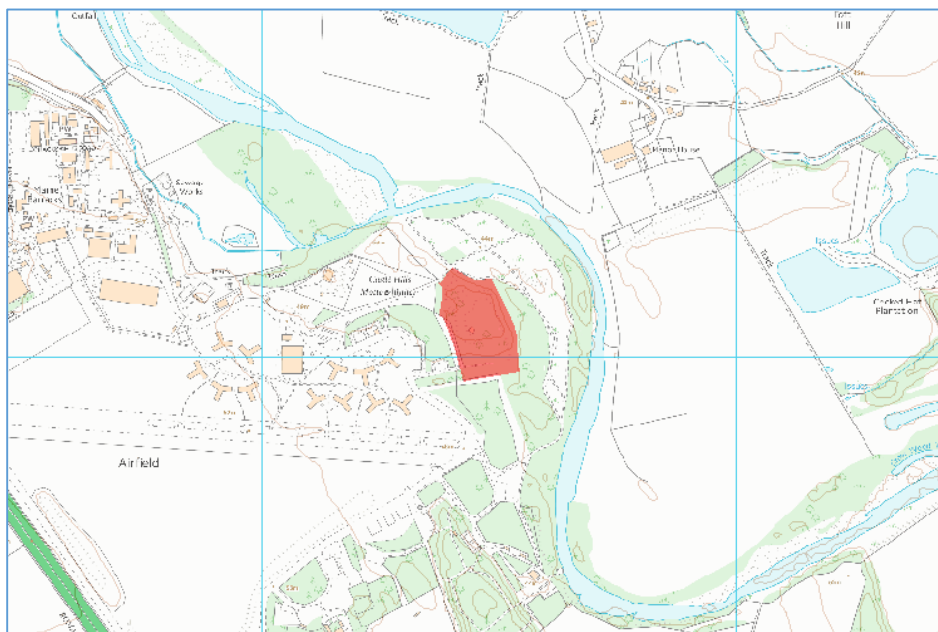
Other

Francis, Paul , RAF Catterick Historical Aerodrome Survey, 2000, Typescript Report for MoD

Map

National Grid Reference: SE 25456 97059

The below map is for quick reference purposes only and may not be to scale. For a copy of the full scale map, please see the attached PDF - [1020991.pdf](#) - Please be aware that it may take a few minutes for the download to complete.



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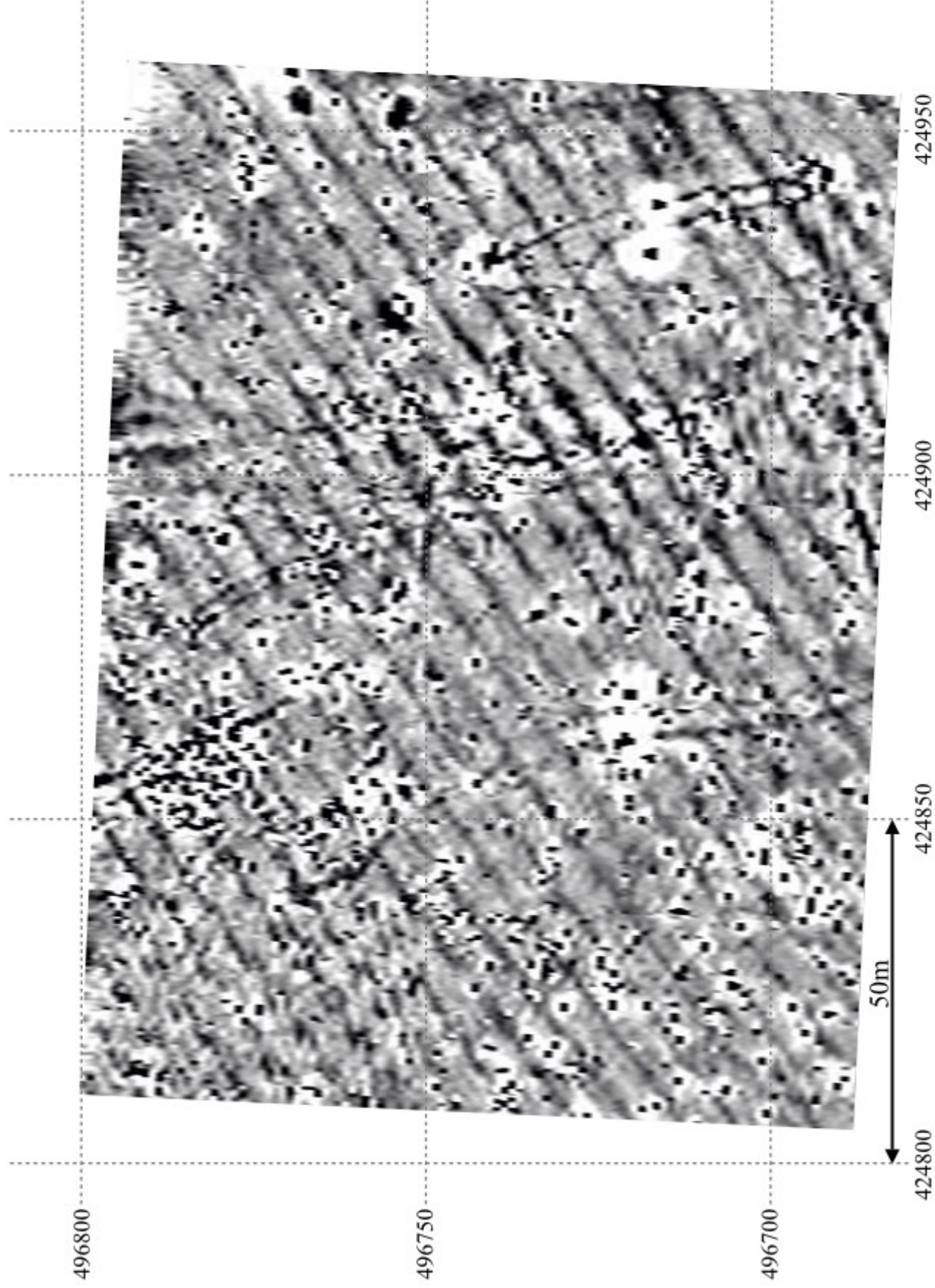
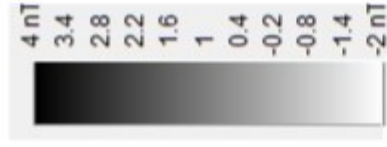
This copy shows the entry on 31-May-2015 at 03:07:04.

Appendix 2 Airfield Geophysics Report – Magnetometry Maps & LIDAR

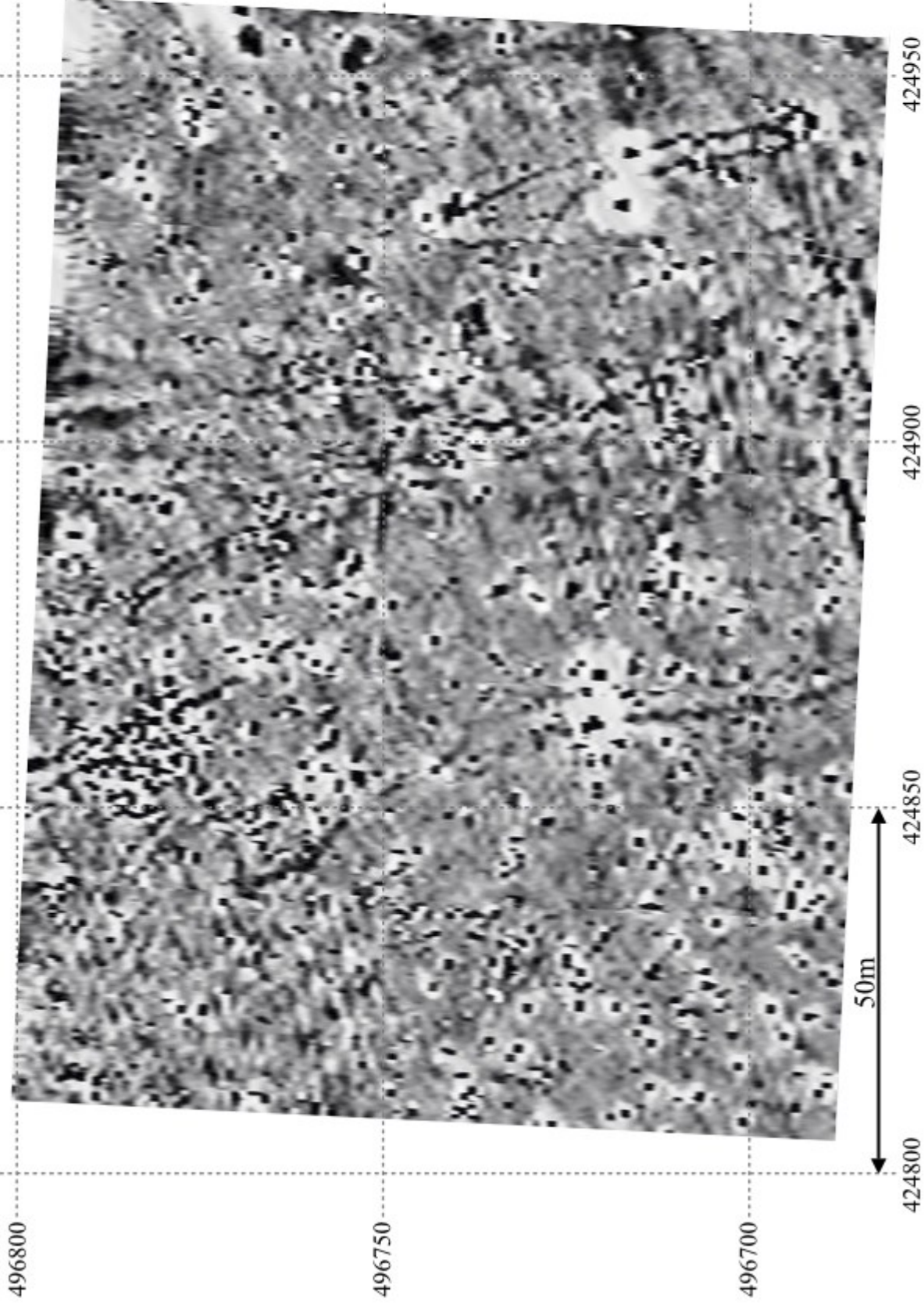
Marne Barracks (Old RAF Catterick Airfield) Magnetic Survey Extent on LIDAR Image



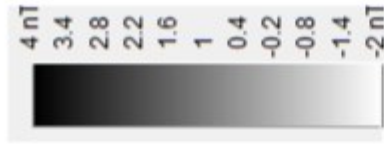
Marne Barracks (Old RAF Catterick Airfield) Magnetic Geophysical Survey



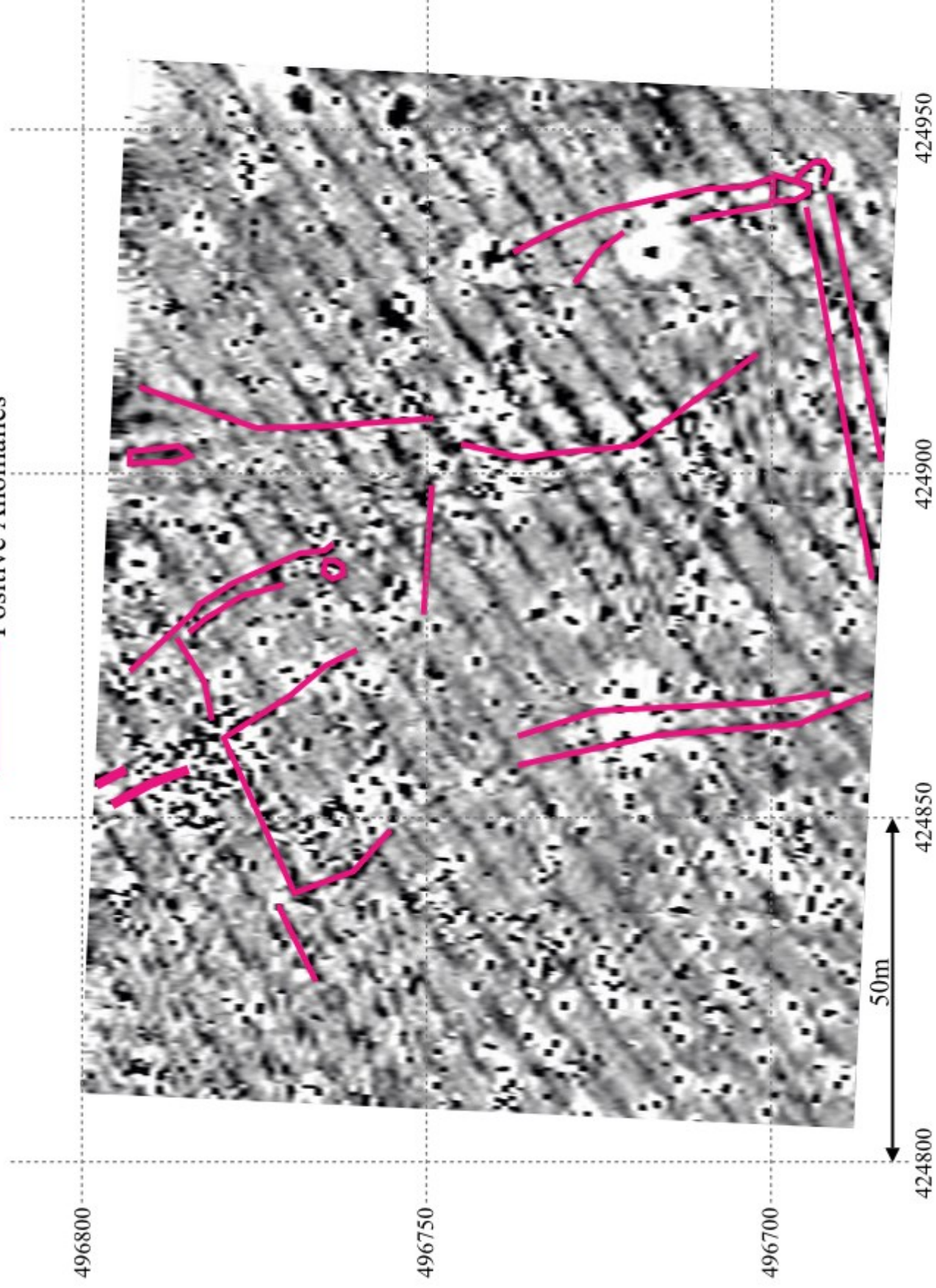
Marne Barracks (Old RAF Catterick Airfield) Magnetic Geophysical Survey 2D FFT Filter applied



Marne Barracks (Old RAF Catterick Airfield) Magnetic Geophysical Survey



Positive Anomalies

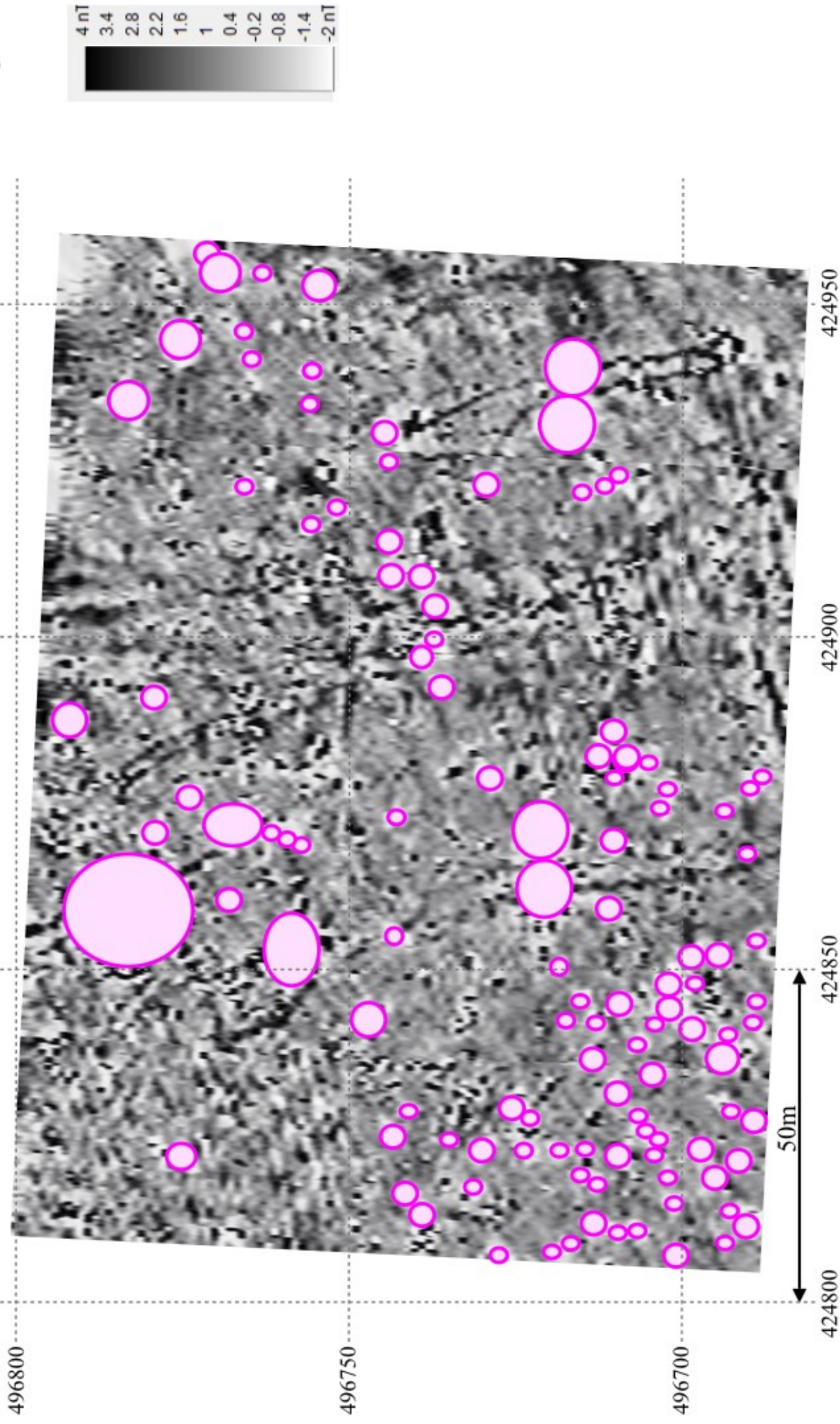


Marne Barracks (Old RAF Catterick Airfield) Magnetic Geophysical Survey



2D FFT Filter applied

○ Dipolar (ferrous) anomaly



Airfield Magnetic Survey Comment

The LIDAR image of the airfield has an overlay of the twenty 30m by 30m survey grids. The metal security fence that runs parallel with the old runway, obliquely crosses the northern boundary of the survey grid. Because of this the actual width measured in the grids nearest to the fence was 20m.

The course of the A1 and part of the Baines Roman roadside settlement and Anglian cemetery can be seen on the western side of the Lidar image.

The primary survey image shows a landscape of pronounced ridge and furrow ploughing in a northeast to southwest direction. Amongst the plough marks earlier archaeology is revealed. Perhaps not surprisingly the area is also quite heavily contaminated with dipolar magnetic contamination.

In order to view the archaeology better a 2D FTT filter was applied to hide the majority of the ridge and furrow plough lines.

A series of trackways and ditches are more clearly revealed.

These are highlighted in the next image.

The final image highlights the extent of the bulk of the dipolar contamination.

Appendix 3 Castle Hills Photograph Archive

All images taken by Stephen Eastmead

Archive Image 1 Castle Hills in 3 images - image 1/3 viewed from the Bofors gun emplacement looking north.	28
Archive Image 2 Castle Hills in 3 images – image 2/3 viewed from the Bofors gun emplacement looking north east.	28
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Archive Image 1 Castle Hills in 3 images - image 1/3 viewed from the Bofors gun emplacement looking north.



Archive Image 2 Castle Hills in 3 images – image 2/3 viewed from the Bofors gun emplacement looking north east.



Archive Image 3 Castle Hills in 3 images – image 3/3 viewed from the Bofors gun emplacement looking east towards the type 22 pillbox and across the southern entrance.



Archive Image 4 View of the wooded motte from the bailey.



Archive Image 5 Looking south from the northern edge of the bailey. The type 22 pillbox is just visible on the left, the Bofors gun emplacement on the right and the central mound of concrete debris.



Archive Image 6 Looking south along the eastern boundary of the bailey showing the steep gradient to the east and the type 22 pillbox in the distance.



Archive Image 7 Type 22 pillbox with the entrance on the right.



Archive Image 8 Type 22 pillbox roof and entrance with the Bofors gun emplacement in the distance.



Archive Image 9 Bofors gun emplacement.



Archive Image 10 Bofors gun emplacement.