VERYAN CASTLE

VERYAN

CORNWALL

Results of a Geophysical Survey

South West Archaeology Ltd. report no. 230911

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VERYAN CASTLE, VERYAN CORNWALL

RESULTS OF A GEOPHYSICAL SURVEY

By J. Bampton
Report Version: Final
Draft issued: 31st August 2023
Finalised: 2nd November 2023

Work undertaken by SWARCH for the Cornwall AONB

SUMMARY

This report presents the results of a magnetometry survey and resistivity survey carried out by South West Archaeology Ltd. (SWARCH) on land at the Scheduled Iron Age Veryan Castle (List entry no. 1019746; MCO87; HER no.22826), which is on the top of a steep valley slope overlooking a valley down to Pendower Beach in Gerrans Bay, c.590m south-west of Veryan, near to Carne Beacon. It is in an area of modern enclosed land within section 8 of the Cornwall AONB. This phase of geophysical survey was requested as part of the AONBs Monumental Improvement Project.

The geophysical survey identified 43 groups of anomalies (1-35 on the magnetometry survey; and a-h on the resistivity survey) comprised of c.86-92 anomalies, depending on how one differentiates the responses, across the survey area as a whole. These included: up to five linear anomalies possibly indicative of outer defensive earthworks to the castle; five linear anomalies indicative of middle defensive earthworks to the castle associated with extant field boundaries; five linear anomalies and spreads indicative of the inner defences/ramparts; approximately seven sinuous anomalies indicative of possible internal activity or ground disturbance to the outer enclosure; ten anomalies of possible features within and at the edge and entrance of the inner enclosure; two anomalies indicative of the inner enclosure platform construction; six anomalies that equate to historical field boundaries and a probable associated linear anomaly; twelve anomalies indicative of a relict field system and its associated agricultural activity; nine anomalies indicative of ditches and probable modern agricultural activity; nine or ten discrete anomalies indicative of possible pits, tree-throws or geological variation; and an anomaly indicative of a large hollow or pit-type feature. Agricultural activity across the site may have truncated any buried archaeological resource.

The surveys have ostensibly succeeded in identifying probable archaeological resources; although these do not clearly represent settlement activity within the castle. A complicated array of possible features have been identified at the extant entrance to the inner enclosure platform. Across the wider survey area the survey has more clearly defined relict field systems and the ramparts to the outer earthworks.

September 2023

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ACKNOWLEDGEMENTS

THE SURVEY WAS CARRIED OUT WITH THE GENEROUS SUPPORT OF MONUMENT IMPROVEMENT PROJECT VOLUNTEERS
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1.0 INTRODUCTION

LOCATION: VERYAN CASTLE, OFF UN-NAMED ROADS NEAR CARNE
PARISH: VERYAN
COUNTY: CORNWALL
NGR: SX 91263 38647
SWARCH REF. CANB22 (VERYAN CASTLE)

1.1 PROJECT BACKGROUND

South West Archaeology Ltd. (SWARCH) was commissioned by the Cornwall Area of Outstanding Natural Beauty (AONB) to undertake a geophysical survey on land at Veryan Castle, near Carne, Veryan, Cornwall. This work was requested as part of the Monumental Improvement (MI) project at a number of Scheduled Monuments within the AONB. This work was undertaken in accordance with best practice and CIfA guidance.

1.2 TOPOGRAPHICAL AND GEOLOGICAL BACKGROUND

Veryan Castle is located on agricultural land overlooking a valley that leads to Pendower Beach in Gerrans Bay. It is *c.*590m south-west of the village of Veryan, and *c.*550m north-west of the village of Carne. The extant inner defensive enclosure of the fort sits on the top of a very steep sided valley overlooking Gerrans Bay. East of the extant fort is a relatively level plateaux/ridge which slopes gently down to the south and, at the north edge of the fort, steeply to the north. The south-east field of the site began to slope steeply towards its western boundary. The site lies at a height of between *c.*70m and *c.*85m AOD.

The soils on the site are the well drained fine loamy and fine silty soils over slate or slate rubble of the Denbigh 2 Association (SSEW 1983), which overlie the mudstone of the Pendower Formation on the valley slopes atop which the fort sits; and sandstone of the Carne Formation on the eastern edge of the site (BGS 2023).

1.3 METHODOLOGY

This work was undertaken in accordance with current best practice and CIfA guidance.

Any desk-based assessment aspect of this report follows the guidance as outlined in: *Standard and Guidance for Archaeological Desk-Based Assessment* (CIfA 2014a) and *Understanding Place: historic area assessments in a planning and development context* (English Heritage 2012).

The geophysical survey follows the general guidance as outlined in: *EAC Guidelines for the use of geophysics in Archaeology: Questions to Ask and Points to Consider* (Europae Archaeologiae Consilium/European Archaeological Council 2016) and *Standard and Guidance for Archaeological Geophysical Survey* (CIfA 2014b).

FIGURE 1: SITE LOCATION (THE SITE IS INDICATED).

2.0 DOCUMENTARY BACKGROUND

2.1 HISTORICAL BACKGROUND

The site is in the parish of Veryan; a parish in the deanery and west division of the hundred of Powder (Lysons 1814). This parish was originally named for the manor of *Elerkey*, which according to the Domesday Book (1086) was originally in the hundred of Tybesta (Morris 1992). It was a large manor of *c.*45 households that was worth 2 pounds 10 shillings in 1086 and 5 pounds prior to the conquest. It was held by *Merleswein the sheriff* in 1066 and *Leofnoth of Veryan* in 1086 who held it from the Count of Mortain (Morris 1992). In the 14th century *Elerkey* was held by the Archdeknes of Ruan-Lanihorne from whom it passed inheritance and marriage and was broken down and sold off over several generations in moieties and parcels via the families of Lucy, Vaux, Tregian, Wallop, Maynard, Hobart, Morice and Molesworthy, until in 1790 it was bought by a Francis Gregor Esq. who sold the estate in lots to several tenants along with the manorial rights (Lysons 1814).

2.2 PLACE-NAME ASSESSMENT

Veryan was recorded as 'St Symphorian's (church)' in 1278 then (*Parochia) Sci Simphoriani* became *Severian/Seyntveryan* by 1525/1534 and in the early 17th century this became *Verian/Veryan* (Watts 2004). This name was derived from a 2nd/3rd century Gaulish saint martyred at Autun. In 1086 the manor was known as *Elerchi*, meaning 'Swan stream' from the Cornish *elerhc* meaning 'swan' (Watts 2004). The nearby settlement of Carne is derived from the Cornish *carn* meaning 'tor/pile of rocks', and although this usually refers to natural outcrops, this example may refer to the barrow, *Carne Beacon*, just east-south-east of the site. Legend has it that the barrow contains a boat burial of the 8th century King Gerent of Cornwall (Watts 2004).

2.3 CARTOGRAPHIC DEVELOPMENT

The *c.*1811 Surveyor's draft map (Figure 21) that covers the site depicts the roads of the area in detail and depicts and labels Carne Beacon. The castle is not shown but the valley slope on which it sits is clearly depicted. Off of the steepest slopes this mapping shows ostensibly Post-Medieval straight sided field boundaries in the wider landscape, which may allude to enclosure across the area including the site.

The *c.*1840 Veryan tithe map (Figure 22) depicts the site location in detail; split across approximately seven fields (plots 1296, 1447, 1450, 1451/7(?), 1452, 1473, 1474, 1475, 1493) one of which in the south-east was depicted with sub-divided plots (plots 1452, 1475, 1493). The earthworks of the fort are shown, ostensibly pencilled-in as an afterthought along with its southern entrance. It shows a bank and ditch on the east side of the fort. *Carne Beacon* is more clearly depicted and inked-in. The accompanying tithe apportionment indicates that the site is across plots belonging to two estates split between three owners and three tenants (see Table 3). The land is generally listed as under arable cultivation with some field uses not specified. Most of the field names are prosaic, indicative of size or location. Of note are plots 1296 and 1297 refer to *Yonder-* and *Great Borrow Close*, which may refer to the proximity of Carne Beacon barrow (MCO2370) or features associated with a possible Bronze Age barrow (MCO50229) or an Iron Age 'round' (MCO50205) in/near these fields. Plot 1294 to the south of these is called *Park Warren* and these 'borrows' may refer to burrows and rabbit warrens. Plot 1490, to the south of the site, is called *Higher Towan* and is derived from the Cornish *Tewyn* meaning 'sand dune'. It is probably the higher inland part of the sand dune system from the adjacent bay/coast. Plot 1449 was called *Osier Bed* and may refer to a wet and wooded habitat, perhaps with Willows that provided coppice and withies. The stitches described in some plot names ostensibly refer largely to divisions within shared fields.

The *c.*1880 Ordnance Survey (OS) mapping (Figure 23) shows continuity with the *c.*1840 tithe map, but with much greater detail of the fort earthworks. The main change to the site is the apparent removal of the boundary between plots 1457 and 1474 and the south-east boundary to plot 1475. Continuity in the site layout and OS mapping is evident on the subsequent *c.*1907 OS mapping (Figure 24). The boundaries between the north boundary of tithe plot 1450 and the road to the south were removed through the 20th century to form the large enclosure containing the south-east part of the survey area for this phase of works, as at the time of the survey.

LiDAR imagery from 2019 (Figures 17 and 18) shows earthworks equating to the east-south-east annex/outer enclosure of the fort. It also shows relict field boundaries and a number of modern linear features. An approximately circular hollow with possible up-cast on its east side is also discernable on LiDAR imagery near the middle of the inner enclosure. Aerial photography/satellite imagery from the early 2000s show similar and a relatively dense concentration of linear features across the south side of the north-east field of the site as well as the modern linear features and cropmarks equating to many of the same features as on the LiDAR imagery. One can discern ploughing activity parallel and perpendicular to the sites field boundaries, and aligned north-west by south-east on 21st century satellite imagery. Supporting cartographic sources and LiDAR imagery for this section can be seen in Appendices 1 and 2.

2.4 ARCHAEOLOGICAL SURVEYS AND UNDESIGNATED ASSETS

The Aerial Investigation and Mapping project (NMP) for the area (see Figures 19 and 20) conducted from 1994-2006 with continuing additions/amendments based on LiDAR and satellite imagery identifies the approximate areas and parts of the fort (MCO87), including: the outer enclosure/east-south-east annex, the principle/inner enclosure, and a sub-rectangular annex on the north-west side of the fort. It also identifies: relict/probable Medieval field systems across the field south (MCO50212) of the fort and north-west (MCO50204) of the fort; a sub-rectangular enclosure associated adjoining the relict/Medieval field system (part of MCO50212) south of the fort; a possible 'round' (MCO50205) west of the site; a possible barrow/mound north-west (MCO50229) and north-east (MCO50215) of the site; details including ditches, banks and additional barrows/mounds at Carne Beacon barrow (MCO50219, MCO50220, MCO50364, MCO57914, MCO2370); and various additional features in the wider area.

These NMP assets account for the pertinent undesignated heritage assets on and near the site. In addition, Cornwall's Historic Environment Record (HER) includes a World War II observation post on/at Carne Beacon (MCO56511). Relevant HER events on and near the site include a number of broad, largely desk-based, assessments. These included a geoarchaeological regional review of marine deposits along the coastline of southern England (ECO5328); a rapid coastal zone assessment for the area (ECO5358); and the Roseland Heritage Coast Historic Audit (Cole & Herring 2000; ECO366), which directly refers to Veryan Castle. The HER also includes geophysical surveys that were undertaken as part of the National Trusts 'Unlocking Our Coastal Heritage Project', at Carne Beacon (Roseveare & Roseveare 2013a; ECO4067; HES Report Ref. ER392); and in the south-east corner of the north-east field of this phase of work, east of the fort (Roseveare & Roseveare 2013b; ECO4080; HES Report Ref. ER1455).

Cornwall's Historic Landscape Characterisation (HLC) describes the site as an area of Modern Enclosed Land (HCO11) – *'Mainly Anciently Enclosed Land or Post-Medieval Enclosed Land whose field systems have been substantially altered by large-scale hedge removal in the 20th century. It also includes, however, 20th century intakes from rough ground, woodland and marsh'*. In the wider landscape the HLC records Medieval Farmland (HCO4) east and south of the site; and Post-Medieval Enclosed Land (HCO13) north of the road north of the site. Medieval Farmland is described as: *'The agricultural heartland, with farming settlements documented before the 17th century AD and whose field patterns are morphologically distinct from the generally straight-sided fields of later*

enclosure. Either medieval or prehistoric origins'. And Post-Medieval Enclosed Land is described as '*Land enclosed in the 17th, 18th and 19th centuries, usually from land that was previously Upland Rough Ground and often medieval commons. Generally in relatively high, exposed or poorly-drained parts of the county'.*

2.5 SITE AND WIDER DESIGNATIONS AND LISTED ASSETS

Veryan Castle is a Scheduled Monument (List entry no. 1019746; MCO87; HER no.22826). It is also known as *Ringarounds* (*Ringarounds Castle*). It is a probable late Iron Age, 4th century BC to AD 1st century, multiple enclosure fort. These forts are typically interpreted as having inner enclosures for occupation and outer enclosures for livestock. Entranceways/gaps through ramparts and spaces between the defensive works have been shown to vary; with potential earthworks of screens, ditches, banks and/or in-turned ramparts being possible features and routes through the defences sometimes being either straight or staggered. The Listing description states that '*Excavations within the inner enclosures have revealed a range of buildings and structures, including circular structures, hearths, ovens and cobbled surfaces as well as occasional small pits and large depressions'*. Opinions of the site provided in the 1960's and 1970's include that it '*…is defensively not very strong, being overlooked on all sides but the west, but…that it still looks impressive*' and an implication that it could be Medieval in origin; although there is no reason not to consider it a probable Iron Age feature (MCO87).

The details of the monument in the Listing text are:
'*The scheduling includes a later prehistoric multiple enclosure fort and annexe, situated on a steep west slope to a stream above Gerrans Bay, south west of Veryan. The fort has an inner enclosure, egg-shaped in plan, with a concentric outer enclosure on the south and east sides, and a crescentic annexe beyond this, the whole being sub-oval in plan and measuring approximately 180m north west-south east by 130m north east-south west. The inner enclosure, measuring 60m north-south by 42m east-west internally, is levelled into the slope by cutting in on the uphill side and building out downhill. On the east side it has an enclosing bank approximately 6m-8m wide and 6m high, formed by an earth and stone rampart above the scarp cut to level the enclosure, with an external ditch 2.2m-4m wide at its base and around 4m deep. On the west side the enclosure is defined by a scarp up to 7.5m high, having no visible inward facing bank, but with a terrace around its base 3m-4m wide and sloping slightly outwards, considered to be a silted external ditch, above a very steep natural slope. An original entrance from the outer enclosure to the south east is visible as a gap some 6m wide on the south side, between the bank on the east side and the scarp on the west side. The outer enclosure of the fort, surrounding the inner enclosure on the south and east sides, measures up to 25m across and slopes west with the natural gradient. A boundary bank of earth and stone with stone facing, relatively recent in its present form, is considered to incorporate remains of the rampart around this enclosure. The northern part of the boundary bank is 2m wide and 2m high inside, 1.5m high outside, and has an external ditch 2.6m wide and up to 0.6m deep. On the south west side the return to the inner enclosure is formed by a scarp some 6m across and 2m-3m high. The original entrance to the outer enclosure is considered to be on the south side, where it is approached by a hollow way. The annexe adjoining the fort to the south east has an enclosing bank visible on the ground as a scarp around 12m across and 0.7m high, with traces of an external ditch. The bank and ditch are shown on aerial photographs. All modern fencing, gateposts, gates, and the timber stile and signpost, are excluded from the scheduling, although the ground beneath them is included*.'

It is considered in the Listing that the fort '*…survive well. Despite reduction of the annexe earthworks and modification of the outer rampart, they remain substantially intact. The old land surface underlying the upstanding earthworks, and remains of buildings and structures and other deposits associated with these, will survive'.*

Representatives of Cornwall Archaeological Society (Sheila James and Coral Pepper) assessed the site in 2011 observing, '*Site becoming overgrown, nettles and thistles on the platform area (photo), furze and bracken on the bank. Some scrub hawthorn and brambles particularly in the ditch. Site is beside a public footpath but this is rarely used*' (MCO87).

The Scheduled Carne Beacon barrow with modern observation post (1019745; MCO2370; MCO4044) is located *c.*250m east-south-east of the fort. This is a round barrow, which dates from the Late Neolithic period to the Late Bronze Age (*c.* 2400-1500 BC).This example survives well considering reuse as a beacon and modern observation post. The Scheduling text states: '*The location on a false crest shows well the important role of topography in Bronze Age funerary activity. The large mound and double ditch illustrate the diversity in size and form of round barrows, and the reuse of the site as a beacon and a wartime observation post demonstrates the continuing importance of this monument type as an element in the landscape'*.

Areas around both the Scheduled fort and beacon have been subject to geophysical survey (see Section 2.4). Near the fort this identified possible Iron Age ditch-type features and probable Post-Medieval or Modern ditch-type features (Roseveare & Roseveare 2013b). Beside the beacon a probable neighbouring barrow, ring ditches associated with the beacon, and relict field boundaries and probable ditches were identified (Roseveare & Roseveare 2013a).

2.6 ARCHAEOLOGICAL POTENTIAL AND GEOPHYSICAL RELEVANCE

The site has an obviously high and proven archaeological potential. Potential multiple phases of agricultural activity, including field boundaries, ditches and ploughing activity may account for potential obfuscation and/or truncation of any significant buried archaeological resource directly associated with the Iron Age fort. Inner enclosures to these forms of monument have been known to produce evidence of settlement activity; and outer enclosures are considered agricultural pens or working zones. One may not expect to find many anomalies indicative of significant or probable settlement activity in the wider survey area/outer enclosures; but Medieval and later agricultural activity or boundaries may probably be represented in the geophysical record. The inner enclosure has a greater potential to reveal anomalies indicative of settlement activity.

3.0 GEOPHYSICAL SURVEY

3.1 INTRODUCTION

An area *c.*3.15ha, comprising the interior of the Scheduled fort and fields in which this and an identified outer enclosure sits, was subject to a magnetometry survey; *c.*0.32ha that comprised the interior of the inner/'principle' enclosure of the fort and across its entrance was also subject to a resistivity survey. The purpose of the magnetometry survey was to identify and record magnetic anomalies within the survey: and the purpose of the resistivity survey was to identify and record anomalies of relative resistance within the proposed site. While identified anomalies may relate to archaeological deposits and structures the dimensions of recorded anomalies may not correspond directly with any associated features. The following discussion attempts to clarify and characterise the identified anomalies. The survey was undertaken between the 23rd and 25th of January 2023 by J. Bampton, and P. Bonvoisin from SWARCH; and MI project staff and volunteers. the survey data was processed by J. Bampton.

3.2 SITE INSPECTION

The extant inner defensive enclosure of the fort sits on the top of a very steep sided valley overlooking Gerrans Bay. At the time of the survey the site was under short grass pasture (ovine). It had stony, rocky patches and scrub in the ditch between the ramparts on the east side of the interior enclosure; and gorse scrub at the edges and steep slopes across and surrounding the earthworks of the inner enclosure, particularly on its more rough and presumably shallow soil slopes. The fields comprising the site were divided by scrub and shrub overgrown Cornish hedgebanks (stone-lined earth banks with hedges on top) that were flanked by post and wire fences. The south-east field of the site began to slope steeply towards its western boundary. It had animal feeders and farm equipment in its north-west corner and a subtle earthwork of a linear depression aligned approximately north-north-west by south-south-east at the north end of the survey area. A topographic feature comparative to- and presumably contiguous to the one at the north end of the south-east field was located in the north-east field of the site. There was a relatively large amount of shallow ground disturbance and shallow erosion in through the access gate from the north-east field to the west field near the extant fort. A very slight hollow was noticeable just south-east of the middle of the inner enclosure. Gorse scrub from the inner enclosure had been recently cut and the cut scrub laid in piles near the edge of the enclosure. A detailed description of the extant fort earthworks can be seen in its Scheduling text description (see Section 2.5). Supporting photographs for the site inspection can be seen in Appendix 3.

FIGURE 2: VIEW INTO THE ENTRANCE OF THE FORTS INNER ENCLOSURE; VIEWED FROM THE SOUTH-EAST (NO SCALE).

3.3 METHODOLOGY

The magnetometry and resistivity survey follow the general guidance as outlined in: *EAC Guidelines for the use of geophysics in Archaeology: Questions to Ask and Points to Consider* (Europae Archaeologiae Consilium/European Archaeological Council 2016) and *Standard and Guidance for Archaeological Geophysical Survey* (CIfA 2014b).

3.3.1 MAGNETOMETRY METHODOLOGY

The magnetometry survey was carried out using a twin-sensor fluxgate gradiometer (Bartington Grad601). These machines are sensitive to depths of up to 1.50m. The survey parameters were: sample intervals of 0.25m, traverse intervals of 1m, a zigzag traverse pattern, traverse orientation was circumstantial, grid squares of 30×30m. The gradiometer was adjusted ('zeroed') every 0.5-1ha. The survey grid was tied into the Ordnance Survey National Grid- and set out using a Leica CS15 GNSS Rover GPS. The data was downloaded onto Grad601 Version 3.16 and processed using TerraSurveyor Version 3.0.36.0. The primary data plots and analytical tools used in this analysis were Shade and Metadata. A technical summary of the survey method, and data details and processing can be seen in Appendix 4.

3.3.2 RESISTIVITY METHODOLOGY

The resistivity survey was carried out using a RM15-D Resistivity Meter with an MPX15 Multiplexer module allowing for four terminal sensing using a PA20 multiprobe array with parallel twin log mode 2. These machines are sensitive to depths of up to c.1m. The survey parameters were: sample intervals of 1m, traverse intervals of 1m, a zigzag traverse pattern, traverse orientation was circumstantial, grid squares of 30×30m. . The survey grid was tied into the Ordnance Survey National Grid- and set out using a Leica CS15 GNSS Rover GPS. The data was downloaded onto- and processed using TerraSurveyor Version 3.0.36.0. The primary data plots and analytical tools used in this analysis were Shade and Metadata. A technical summary of the survey method, and data details and processing can be seen in Appendix 4.

3.3.3 ASSESSMENT OF METHODOLOGY

Both types of geophysical survey produced a usable range of results, demonstrating the potential for them to work and provide meaningful results. The magnetometry and resistivity surveys provided data that corresponded to discernable potential archaeological features. Archaeological evaluation/excavation would test the efficacy and validity of the results of the geophysical survey and aid to confirm the presence or absence of any buried archaeology resource on the site. Data responses indicative of in-filled material and relatively low resistance at the edge of the principle fort enclosure/platform may correspond to bioturbation, such as animal burrows or root disturbance. Anecdotally more intensive magnetometry or resistivity surveying may not yield clear or accurate results if targeting- and aiming to define the extent of damage by animals, such as badger sets; although experimentation in this could be of interest. However, targeted GPR survey, focused purely on this objective might yield meaningful results.

3.4 RESULTS

Tables 1 and 2 with the accompanying Figures 3-6 show the analyses and interpretation of the geophysical survey data. Additional graphic images of the survey data and numbered grid locations can be found in Appendix 1.

*note on 'Class' when interpreting the resistivity survey data:
• High responses refer to readings of higher relative resistance and represent built/compact stony features or relatively hard deposits. Simplistically, these are comparable to negative responses in the magnetometry data and both are represent in the interpretive Figures 4 and 6 in shades of blue.

• Low responses refer to readings of lower relative resistance and represent in-filled cut features or relatively soft deposits. Simplistically, these are comparable to positive responses in the magnetometry data and both are represent in the interpretive Figures 4 and 6 in shades of red.

In this instance readings of above 200 Ohm are considered high responses and readings below 200 Ohm are considered low responses. Readings above *c.*270 ohm are considered strong high; and readings below *c.*150 Ohm are considered strong low. Responses of between *c.*170 Ohm and *c.*250 Ohm could be considered as probable natural variation.

TABLE 1: INTERPRETATION OF MAGNETOMETRY SURVEY DATA.

Anomaly Group	Class and Certainty	Form	Archaeological Characterisation	Comments
1	Weak-moderate positive and negative, probable	Linear	Historical boundaries	Four examples in the south half of the survey area; in the south-east field. Indicative of Cornish hedgebanks: banks flanked by ditches. These anomalies correspond to boundaries depicted on *c.*1840 mapping. By *c.*1880 the north-east by south-west aligned limb of the western example as removed from the cartographic record and the very south-eastern example is part of a diminishing boundary. The remaining boundaries were removed between *c.*1907 and 2000. Associated with Group 10, and possible 3 and 12. Response strengths of between +/-10nT to +/-23nT
2	Weak-moderate positive and negative, probable	Curvi-linear	Ditch and bank material (outer rampart)	Located near the middle of the site, aligned approximately north-east by south-west, in the south-east field. Corresponds to an extant broad shallow earthwork visible on LiDAR and aerial photography. Indicative of a cut and in-filled feature, such as a ditch with some slight responses associated with possible former bank material or debris. An inconsistent response near the middle of this anomaly may be indicative of an entrance, but the response in general is not consistent, which probably represents its in-fill and spread bank material. Defining an outer enclosure to the Iron Age fort. Visible on aerial photography (NMP). Probably associated with Groups 3, 17 and/or 20. Response strengths of between /+16nT and +25nT, and <-16nT.
3	Weak-moderate positive and negative, probable	Linear	Ditch and bank (outer rampart)	Located near the middle of the site, in the south-east field. Aligned north-west by south-east with a slight bend northwards at its north-west end and aligned with an example of Group 1 at its south-east end. Indicative of a cut and in-filled feature such as a ditch with probable bank material on its inside/upslope side. Probably the return limb to Group 2 defining an outer enclosure to the Iron Age fort. Visible on aerial photography (NMP). Probably associated with Group 2 and possibly respected by or incorporated into an earlier phase of Group 1. Response strengths of between +10nT and +23nT, and <-13nT.
4	Moderate-strong positive, probable	Curvi-linear	Ditch (inner rampart ditch)	Located near the middle of the site in the south-east field, around the edge of this fields curving north-west boundary. Indicative of a cut and in-filled feature, such as a ditch. Possibly intermittent related responses at the edge of the survey area and obfuscated by responses from adjacent fencing. Possibly associated with drainage for the extant field system, or part of the Iron Age forts separating the outer

				enclosure from the middle enclosure or passage-way to the inner/principle enclosure. Possibly associated with Group 19. Response strength of *c.*+20nT to +33nT.
5	Moderate-strong positive and weak negative, probable	Linear	Boundary (bank and ditches)	Located across the middle of the south-east field, aligned north-west by south-east. Indicative of parallel ditches flanking possible bank material. On a slightly different alignment to the Group 1 anomalies. Ostensibly part of a field system predating the extant and historical boundaries; possibly Prehistoric-Medieval in date. Associated with Groups 6, 7, 8, 9, and possibly 11, 12 and 13. Response strengths of *c.*+20nT to +30nT, and <-10nT.
6	Moderate positive and weak negative, probable	Linear	Ditches with possible banks	Located in in the south half of the south-east field, aligned parallel and perpendicular to Group 5, forming a recti-linear field pattern, possibly Iron Age or later in date; possibly Medieval. Three examples indicative of cut and in-filled features, such as ditches with possible associated bank material (although this negative response may simply be a relative response/shadow to the positive). Associated with Groups 5, 7, 8, 9, and possibly 11, 12 and 13. Response strengths of *c.*+15nT to +28nT, and <-10nT.
7	Weak positive, probable	Linear	Ditch, ploughing activity	Located at the south end of the south-east field, aligned north-west by south-east. Perpendicular to parts of Group 6 and parallel to Group 8. Indicative of a cut and in-filled feature, such as a ditch or an in-filled furrow formed over time. Associated with Groups 5, 6, 8, 9, and possibly 11, 12 and 13. Response strength of *c.*+7nT to +20nT.
8	Weak positive and negative, probable	Linear	Ditch, boundary	Located in the south-west corner of the south-east field, aligned north-west by south-east, parallel to Group 7. Indicative of a possible ditch and bank feature. Possibly part of the same field system as Group 6. Associated with Groups 5, 6, 7, 9, and possibly 11, 12 and 13. Response strengths of *c.*+17nT, and <-20nT.
9	Weak-occasionally moderate positive, probable	Linear	Ditches	Located in the south-east corner of the south-east field, aligned parallel and perpendicular to Group 6. Three anomalies indicative of cut and in-filled features, such as ditches. Part of drainage or boundary side ditches defining drove-ways of a relict field system represented by Group 6 and accompanying Groups. Associated with Groups 5, 6, 7, 8, and possibly 11, 12 and 13. Response strengths of *c.*+10nT, to <+24nT.
10	Weak positive and negative, probable	Linear	Ditches	Located in the south-east corner of the south-east field, aligned west-north-west by east-south-east. Approximately perpendicular to a Group 1 anomaly to its west and meeting a confluence of Group 1 anomalies at its east end. Response comparable to Group 1; indicative of a Cornish hedgebank (bank flanked by ditches). Probably part of the same extant and historical field system but removed before *c.*1840. Associated with Group 1, and possible 3 and 12. Response strengths of <+14nT and <-10nT.
11	Very weak negative and positive, possible	Linear	Ditch, boundary, drain, shallow ground disturbance	Located in the south-east corner of the south-east field, aligned approximately east-west. Ephemeral response that may indicate poor or shallow survival of any corresponding archaeological feature or deposit. Similar response to Group 6, but more predominantly negative indicative of a possible drain, relict track, or relict ditch with bank. Possibly associated with sub-divisions of this field depicted on *c.*1840's mapping. Possibly associated with Groups 5, 6, 7, 8, 9, 12 and 13. May be associated with 20th century+ activity visible on LiDAR imagery as with examples of agricultural activity along the north boundary of this field and possibly Group 14. Response strengths of *c.*+4nT to +10nT and *c.*-3nT to -12nT.
12	Very weak positive, possible	Linear spread	Ridge and furrow, agricultural activity, shallow ground disturbance	Two broad diffuse, intermittent responses in the south-east corner of the south-east field, aligned north-east by south-west. Could be aligned relative to either aspects of Group 1 historical field boundaries, or Group 6 relict field pattern. Could be associated with activity and sub-divisions in this field as shown on *c.*1840s mapping. Possibly indicative of natural variation or ridge and furrow ploughing activity. Ephemeral response that may indicate poor or shallow survival of any corresponding archaeological feature or

				deposit. Possibly associated with Groups 5, 6, 7, 8, 9, 11 and 13. Response strengths of *c.*+3nT to +12nT.
13	Very weak - weak positive, possible	Linear	Ridge and furrow, agricultural activity, shallow ground disturbance	Ephemeral response aligned north-east by south-west in the south-west corner of the south-east field. Indicative of a cut and in-filled feature, such as a ditch, or accumulation of soil or deeper soil over time such as an in-filled furrow. Ephemeral response that may indicate poor or shallow survival of any corresponding archaeological feature or deposit. Perpendicular to Group 6. Possibly associated with Groups 5, 6, 7, 8, 9, 11 and 12. Response strength of <+12nT.
14	Very weak positive, probable	Linear	Ditches, ploughing, agricultural activity	Three parallel and sometimes intermittent anomalies in the north half of the south-east field. Aligned east-north-east by west-south-west (possibly aligned with Group 11 if Group 11 were part of the same activity(?)). Indicative of cut and in-filled features such as ditches relatively regular spacing and occasionally contiguous with probable ploughing activity that post-dates the removal of boundaries depicted on 19th and early 20th century mapping. Possible modern ploughing activity or drainage ditches/furrows. Parallel to agricultural activity (green line) along north boundary of this field and possibly associated with topographic features visible on LiDAR imagery. Ephemeral response may indicate poor or shallow survival of any corresponding archaeological feature or deposit. Response strengths of +2nT to +12nT.
15	Weak-moderate positive, possible	Oval, sub-oval	Pits, tree-throws, natural variation	Eight discrete anomalies located across the south-east field. Indicative of cut and in-filled features, such as pits, tree-throws or natural hollows/geological variation. Some examples near the western boundary of the field may be associated with disturbance from other features or agricultural activity near the boundary of the field. There is no clear concentration or pattern to these anomalies to indicate potential settlement activity. Response strengths of +13nT to +32nT.
16	Weak positive and negative, possible	Sinuous linear spread	Geology, tracks, shallow ground disturbance	Located in the north-west segment of the south-east field this diffuse and sinuous spread of linear anomalies has two distinct parts: one running along the inside of Group 2 indicating that it may be disturbance associated with Group 2; and a number of irregular sinuous spreads/lines radiating from the curved north-west boundary of the field. These are all weak and diffuse responses that may be indicative of shallow ground disturbance or poorly surviving/shallow features associated with tracks, ditches, natural/water based anomalies, or the removal of former topographic features. They may also allude to geological variation. Associated with Group 2. Response Strengths of *c.*+/-4nT to +/-12nT.
17	Weak-moderate positive, probable	Linear	Ditch (outer rampart ditch)	Located at the north end of the site, in the north-east field. Aligned north-west by south-east. Associated with an earthwork visible on the ground near the southern boundary of this field and visible on aerial photography (NMP). Indicative of a cut and in-filled feature, such as a ditch. Possibly truncated, obfuscated or with a gap at its south-west end at a confluence of anomalies. Associated with Groups 2, 18, 20 and 21. Response strength of *c.*+10nT to +22nT.
18	Very weak positive and slight negative, probable	Linear	Ditches, land drains, ploughing activity	Two examples located in the north-east of the site in the north-east field. Aligned approximately east-north-east by west-south-west. Indicative of cut and in-filled features such as ditches with slight negative responses that may allude to drains or ploughing activity. These follow contour lines across the slope. Possibly associated with Group 17. Response strengths of <*c.*+/-10nT.
19	Weak positive, probable	Linear	Ditch (inner rampart ditch)	Located on the west side of the north-east field, aligned approximately north-south, parallel to the adjacent field boundary. Indicative of a cut and in-filled feature, such as a ditch. Probably associated with- or contiguous with Group 4. Possibly associated with Group 21 and 24. Response strength of *c.*+10nT to +18nT.
20	Weak positive, probable	Linear	Ditch	Located in the south-west corner of the north-east field, aligned north-west by south east. Indicative of a cut and in-filled feature, such as a ditch. Possibly associated with Group 17 due to being approximately parallel to it. Response strength of *c.*+13nT.

21	Weak-moderate positive and weak negative, probable	Linear	Ditch, possible bank material/track	Located along the southern side of the north-east field, aligned approximately east-west. Possibly associated with tracks or agricultural activity along the side of the field or with the relict field system represented by Groups 5 and 6. Indicative of a cut and in-filled feature, such as a ditch with possible associated bank material, similar to Group 6. Possibly cuts through Group 17 or obfuscates the response. Response strengths of *c.*+15nT to +28nT, and <-10nT.
22	Strong positive, probable	Oval	Pit, hollow, SFB	Located near the bend of a group 1 linear anomaly in the north-west of the south-east field. Indicative of a cut and in-filled feature such as a pit, hollow, or sunken featured building (SFB), such as some forms of roundhouse. Response strength of between +14nT to +41nT.
23	Weak-very strong positive, possible	Linear	Ditch, magnetic disturbance	Located along the southern boundary of the north-east field. This response is largely associated with magnetic disturbance from fencing along this boundary. However, the consistent weaker responses along this area of disturbance may allude to a cut and in-filled feature, such as a silted up boundary ditch on the alignment of the fence line. Response strengths of between *c.*+14nT and <+100nT from the magnetic disturbance of the boundary fence.
24	Very weak positive, possible	Linear	Ditch, shallow ground disturbance	Located on the west side of the north-east field, roughly parallel to the adjacent boundary. Indicative of a cut and in-filled feature, such as a ditch. Ephemeral response that may indicate poor or shallow survival of any corresponding archaeological feature or deposit; or be indicative of shallow ground disturbance. Response strength from +3nT to +13nT.
25	Moderate positive, probable	Linear	Ditch	Located on the east side of the 'principle' fort, running approximately north-north-west from the entrance to this field in this part of the site. Indicative of a cut and in-filled feature, such as a ditch. Possibly part of the forts inner ramparts. Associated with Groups 26 and 27. Response of +20nT to +35nT.
26	Moderate positive and weak negative, probable	Curvi-linear	Ditch, bank material, track/ shallow-ground disturbance	Located along the eastern boundary of the north-west field, beside the 'principle' fort. Other than its intermittent response it could be indicative of a cut and in-filled feature, such as a ditch with associated bank material. This may be associated with inner rampart defences or improvements to the site for agriculture after the forts redundancy/abandonment. Associated with Group 25 and 27. Response strengths of *c.*+20nT to +35nT, and <-10nT.
27	Moderate positive, probable	Linear, sub-rectangular	Ditch, elongated pit, ground disturbance	Located in the north-west field of the site, south-east of the 'principle' inner rampart ditch. Indicative of a cut and in-filled feature, such as a ditch, elongated pit, or disturbed ground. Possibly associated with Group 26. Response strength of *c.*+30nT.
28	Moderate negative, probable	Amorphous - linear spreads	Bank material to inner/principle ramparts	Three anomalies at the edge of the inner ramparts to the 'principle' fort. Indicative of stony/compacted material associated with made-ground and stony material on the defensive earthworks of the fort. Associated with Group c. Response strengths of *c.*-20nT to -36nT.
29	Moderate positive, probable	Linear, slight curvi-linear	Ditches, possible hollow-way/track	Located at the entrance to the 'principle'/inner enclosure to the fort. Two linear anomalies; one running through the entrance; and one running across it extending from the large rampart ditch to its north-east. Indicative of cut and in-filled features, such as ditches. One example is ostensibly an extension of the main rampart ditch and may be associated with the forts drainage, construction or defence: the other example running in to the fort is ostensibly less well consolidated a response and may be a ditch or shallow ground disturbance associated with a worn- then silted-up path way. Associated with Groups 31, a, d, e. Response strength of *c.*+15nT to +22nT.
30	Moderate positive, probable	Oval, spread	Made-ground, pit, or ditch	Located just outside the west entrance to the inside/'principle' enclosure of the fort. Indicative of a cut and in-filled feature, such as a pit or end of a ditch. May be a deposit of made-up ground on the slight downhill slope of the fort. Associated with Group 29, e. Response strength of *c.*20nT.
31	Weak-moderate negative, probable	Amorphous spreads	Made-ground, compact/stony deposit	Located along the south-west edge of Group 29, in the entrance to the 'principle' enclosure/platform. Indicative of possible stony, compacted ground or shallow soil. This may

				be related to bank material associated with a relict aspect of the fort, beside a possible ditch (Group 29), or some other ground disturbance or made-ground associated with this part of the site. Associated with Group 29. Response strength of *c.*-16nT to -26nT.
32	Weak negative and positive, possible	Oval	Disturbed or made-ground, pit	Located south of the entrance to the forts principle enclosure/platform; in north-west survey area/field. Indicative of a cut and in-filled feature and/or a mixed deposit, such as a pit, hollow or ground disturbance. Associated with Group d. Response strengths of *c.*-17nT and +13nT.
33	Weak positive, possible	Linear spreads	Made-ground, disturbed deposits	Two examples at the edge of the 'principle' enclosure/ platform in the north-west of the site. Indicative of in-filled or relatively soft deposits. These may be indicative of differential made-ground deposits or be associated with ground disturbance at the edge of the interior to the fort. This disturbance may be natural bioturbation. Associated with Groups a, h. Response strengths of *c.*+12nT to +16nT.
34	Weak negative, possible	Rectangular	Stony deposits, made-ground, natural variation	Two examples in the 'principle'/inner enclosure of the fort, in the north-west of the site. Indicative of compacted or stony deposits in an area of probably built-up ground. These are the more convincing examples of similar responses that may simply indicate variation in a made-ground or natural. Possibly indicative of a purposeful deposit. Associated with Groups a, f. Response strengths of *c.*-13nT to -17nT.
35	Weak positive, possible	Oval	Pits, postholes, made-ground, natural variation	Five examples in the 'principle'/inner enclosure, in the north-west part of the site. indicative of discrete cut and in-filled features, such as pits, postholes or tree-throws, but with weak and irregular signatures indicative of possible natural origins or variation. Also within an area of probable made- or terraced ground and possibly part of variation in the geology or built-up ground. Associated with Groups a, b. Response strengths of *c.*+14nT to +16nT.
Other Anomalies				
-	Moderate-strong dipolar, probable	Point/ ovoid	Geology/ Ferrous objects/debris	The site has a small number of dipolar responses. Black crosses in Figure 4. The strongest examples are indicative of ferrous objects that are typically presumed to be modern, such as farm machinery fragments. Similar and weaker responses can be indicative of geological features/anomalies. These are highly probable to be non-archaeological in nature. Responses of < +/-100nT.
-	Magnetic disturbance, probable	Linear/ amorphous spread	Magnetic disturbance	Typically these types of response are near the edges of sites and fields due to the magnetic disturbance from fence lines and gateways (as at many of the edges of this survey area) as well as areas of debris and farm equipment. In this instance a small area of dipolar responses/debris is located in the north-west field/survey area. Represented by hacched areas in Figure 4. Responses of <+/-100nT.
-	Weak-moderate, positive and negative, probable	Alternating linears	Agricultural activity, drainage and ploughing	Across the north-east and south-east fields of the survey area to varying degrees. These are regular alternating linear anomalies indicative of agricultural activity such as ploughing. Green lines in Figure 4. Visible in shade plots of survey data. These generally run parallel and perpendicular to the existing site boundaries and slopes and at a diagonal to these. One very strong example in the south-east field/survey area and parallel to its north boundary is particularly indicative of a drain or deep furrow. This example corresponds to topographic features visible on LiDAR imagery, of which other parallel examples are visible and may be associated with Groups 11 and 14 activity. Response strengths of *c.*+/-6nT and into the +/- low-teens.

TABLE 2: INTERPRETATION OF RESISTIVITY SURVEY DATA.

Anomaly Group	Class of resistance and Certainty	Form	Archaeological Characterisation	Comments
a	Low, possible	Amorphous spread	Made-ground to platform/terrace of principle enclosure	Located predominantly across the west half of the principle/inner enclosure to the fort and wrapping around the north and south sides of the inner enclosure. Possibly associated with natural variation across the slope on the site, but its relationship to Group b is indicative of material/made-ground from a cut-and-fill terrace/platform construction. Associated with Groups 33, 34, 35, g. Response strength of between *c.*160 Ohm to 190 Ohm.
b	High and strong high, possible	Amorphous spread	Cut terrace/ made-ground of principle enclosure platform	Located on the east side of the principle/inner enclosure to the fort. Indicative of stony/compacted material that may be associated with natural variation: such as natural cut in to, in a cut-and-fill construction to the enclosure terrace/platform. Stronger readings in the east and south of this group may be associated with particularly hard/rocky outcrops or deposits within the ground or from debris spread down from the adjacent, easterly bank. Associated with Groups a, f, 34, 35. Response strength of *c.*210 Ohm with higher response areas of up to between 267 and 297 Ohm.
c	Strong high, probable	Linear spreads	Bank material and principle ditch base	Located in the south-east of the survey area across the surveyed part of the bank on the east side of the inner/principle enclosure/platform, and in the base of the principle ditch on the east side of the inner enclosure/platform and bank. This is indicative of compacted stony material being the principle construction material of the bank and stony debris and/or shallow soil across compact/rocky natural within the base of the ditch. Large stones were noted across this part of the survey area at the time of the survey. Associated with Group 28. Response strengths of *c.*290 to 432 Ohm across the bank; and *c.*624 and 1308 Ohm in the ditch.
d	Low, possible	Spread	Ditch or made-ground	Located on the south side of the survey area, in and beyond the southern entrance to the inner/principle enclosure/platform. Possibly indicative of natural variation, but more likely indicative of cut and in-filled features such as a ditch or an in-filled hollow-way/worn area at the entrance to the inner part of the fort. Associated with Groups 29, 31. Response strength of *c.*150 to 180 Ohm.
e	Strong low, possible	Curvi-linear	ditches	Located in the entrance to the inner enclosure/platform. Indicative of relatively low resistance such as relatively soft material within a ditch-type feature. Possibly indicative of two separate ditches; one extending from the large ditch on the east side of the survey area across the fort entrance; one running approximately east-west just south of the entrance. Associated with Groups 29, 30. Response strength of *c.*140 to 150 Ohm.
f	Strong high, probable	Sub-oval	Stony/compact material, natural	Located on the west side of the inner/principle fort enclosure/platform. Indicative of relatively high resistance such as rock outcrops or deposits within possible made-ground (Group a). This would probably be natural material within any made-ground, but could be indicative of a later deposit/feature. Associated with Groups a, b, 34. Response strength of *c.*207 to 228 Ohm.
g	Strong low, possible	Liner-oval spread	Disturbed made-ground	Located along the south-west side of the survey area. Indicative of notably lower resistance compared to the adjacent Group a responses. These probably represent areas of differential made-ground or later disturbed ground. Associated with Groups a, d, g, 33. Response strength of *c.*114 to 140 Ohm.
h	High, possible	Liner-oval spread	Stony/compact material within- or retaining made-ground	Located on the north and south-west sides of the survey area. Indicative of notably higher resistance compared to the adjacent Group a responses. As with Group g these may be indicative of differential made-ground; but may be representative of later disturbances/deposits; or along the north side of the survey area may be representative of a deliberate choice in the possible cut-and-fill construction of the inner fort platform/enclosure. Associated with Groups a, 33. Response strength of *c.*207 to 268 Ohm.

3.5 DISCUSSION

3.5.1 OVERVIEW

The geophysical survey identified 43 groups of anomalies (1-35 on the magnetometry survey; and a-h on the resistivity survey) comprised of *c.*86-92 anomalies (*c.*68-74 magnetic anomalies and *c.*18 resistivity anomalies, some of which equate to one-another), depending on how one differentiates the responses, across the survey area as a whole. These included: three or four linear anomalies indicative of outer defensive earthworks to the fort (Groups 2, 3, 17 and possibly 20); five linear anomalies indicative of middle defensive earthworks to the fort associated with extant field boundaries (Groups 4, 19, 24, 25 and 26); five linear anomalies and spreads indicative of the forts inner defences/ramparts (Groups 27, 28, 29, c, e and possibly d); approximately seven sinuous anomalies indicative of possible internal activity or ground disturbance to the forts outer enclosure (Group 16); ten anomalies of possible features within and at the edge and entrance of the inner enclosure (Groups 30, 31, 32, 33, 34, 35, some of b, f, g and h); two anomalies indicative of the inner enclosure platform construction (Groups a and b); six anomalies that equate to historical field boundaries (Group 1); a linear anomaly indicative of a relict boundary associated with Group 1 (Group 10); twelve anomalies indicative of a relict field system and its associated agricultural activity (Groups 5, 6, 7, 8, 9, 12 and 13); nine anomalies indicative of ditches and probable modern agricultural activity (Groups 11, 14, 18, 21, 23 and ploughing activity); a probable ditch-type anomaly (Group 20); nine or ten discrete anomalies indicative of possible pits, tree-throws or geological variation (Group 15); and an anomaly indicative of a large hollow or pit-type feature (Group 22). Additional visual interpretations of the data and cartographic sources supporting the discussion and comments can be seen in Appendices 1 and 2.

Instances of magnetic debris associated with ferrous debris or weak geological variations were also evident in the survey data as were a large number of striations typically indicative of agricultural works such as ploughing. Agricultural activity across the site, including intense ploughing, is evident in the survey data and on satellite imagery. This activity may have truncated any buried archaeological resource. Grazing animals across the entire site were also identifiable on satellite imagery and at the time of the survey.

Regarding the magnetometry survey, the general 'noise' (inherent geological variation) of the site was relatively low to moderate across the site, <*c.*+/-1nT in the north and west fields and <+/-4nT in the south-east field; with occasionally higher fluctuations, typically associated with ploughscars of <+12nT and <*c.*-5nT. Anomalies of a comparable strength are probably/possibly natural and geological in nature. In terms of the resistivity survey, responses of between *c.*170 Ohm and *c.*250 Ohm are of possible natural/geological origins or variation; although, as in a magnetometry survey, the potentially ephemeral and subtle nature of archaeological deposits or features may or may not be visible or present within this data set/range.

The significant results from this survey will be discussed in relation to: the inner enclosure; the outer and middle enclosures; anomalies indicative of possible relict field systems; and additional anomalies across the survey area.

3.5.2 THE INNER ENCLOSURE

The inner enclosure to the fort is a platform on a steep slope with ramparts along its eastern edge, a steep downward slope curving around its north and western sides, and an entrance on its south side. The resistivity survey indicated areas of relatively higher resistance across the middle and east sides of the platform (Group b), and relatively lower resistance wrapping around the outside/downslope sides of the platform (Group A). This general response could be indicative of a cut-and-fill style of construction in which the slope is terraced into, and then the excavated material used to build up the down-slope side of the enclosure. This may account for more shallow soil and

more compacted/rocky natural based responses on the east side of the platform. If the extracted material contained particularly rock deposits or boulders, or softer soils and deposits, these could account for patches of higher or lower resistance within Groups a and b, such as Groups f, g, h, 33, 34 and 35. The south-western stronger high resistance response of Group b approximately corresponds to a slight depression that was on the site and is visible on LiDAR imagery. This response may indicate shallow soil over a possibly recent pit or shallow surface depression. This may indicate that the depression will not correspond to a deeper excavated feature, such as a well or large pit.

The high resistance responses near the north and west edges of the platform (Group h) may be indicative of a purposeful deposit of stone material to help retain and consolidate any built-up ground. Lower resistance responses around these edges and possible areas of ground disturbance (Groups g and 33) cold be indicative of differential construction material on the platform or of ground disturbance and features. The edges of the enclosure had seen the most bioturbation from shrubs and scrub and animal burrows on the steeper slopes over the edge of the platform.

Group's f and 34, as already discussed, may indicate differential stony deposits within made-ground; but these may represent purposeful stony deposits indicative of platforms or structures. The possible pits or tree-throws or natural variation of Group 35 could similarly be representative of natural or inconsequential geological variation, but are the best examples of such responses with the potential to be archaeological within the inner enclosure. Beside and with part of the Group b response, one of the Group 34 anomalies might correspond with the slight depression identified on the site at the time of the survey and on LiDAR imagery. The potential subtle up-cast on the east side of this depression may allude to its not being subsidence within a deeper pit/feature, and being relatively recent; having not had time to settle or be eroded or dispersed over time.

Surveying across the extant ramparts to the inner enclosure both magnetometry and resistivity responses were indicative of compacted and stony ground (Groups c and 28). Large stone debris was also visible in the main rampart ditch at the time of the survey. Ostensibly it appears likely that the banks have a relatively large amount of stone content. Within the ditch stone may have tumbled- and partially filled in the ditch. Furthermore, the ditch may not have a substantial depth beyond its extant depth, which accompanied with its shallow, scrubby stony soil may account for these responses.

Responses at and around the entrance to the inner enclosure were extremely complex and variable, suffice to say that features and/or deposits will probably be present on this area. These include anomalies indicative of possible ditches (Groups 29, 30 and e), possible associated deposits (Group 31) and possible disturbed ground or buried features (Group 32). Possible features contemporary with the Iron Age use- or construction of the fort may account for some or all of these responses. One can speculate on these factors: when the fort would have been constructed the working area may have been defined by a preliminary ditch that equated to the main rampart ditch but crossed where the entrance now exists. If this ditch were open when the fort were in use it may have been bridged and provided a slight defensive aspect to the entrance that may have had a gateway. It is possible that part of Group 29 along with Groups 30/e and 27 define a relict extent of the outer rampart, suggesting the entrance may have been altered or moved. The length of Group 29 that runs approximately north-west by south-east may represent a ditch that defended transition from steep slope to more level ground and the entrance; or along with Group 31 may be indicative of a holloway/track leading onto the inner platform that has subsequently filled-in.

3.5.3 THE OUTER AND MIDDLE ENCLOSURES

The extant curving field boundary between the three fields of the site is flanked by anomalies indicative of ditches and boundaries (Groups 4, 19, 24, 25 and 26) that may indicate a once broader

rampart aspect to the fort. This would define a narrow inner enclosure, which could channel and control access to the inner fort from the east and the outer enclosure.

The outer enclosure to the fort is defined by a boundary/rampart that has been largely identified via aerial photography/satellite imagery/LiDAR imagery as part of the National Mapping Program (NMP). This already identified area, along with the extant part of the fort defines the Scheduled extent of the fort. Groups 2 and 3 and either or both of Groups 17 and 20 define this enclosure which ostensibly had substantial ditches and possible banks. The earthwork of a linear depression on the site corresponds to most of Group 2 and the south-east end of Groups 17 and/or 20. The presence of Groups 17 and 20 that are indicative of probable ditches associated with the outer enclosure may indicate changes to the fort's layout or a more complicated layout at this end of the fort. The space between Groups 2 and 3 is extremely obscured by the possible confluence of various anomalies; Groups 1, 2, 3 and 5. The NMP does not record the outer enclosure ramparts in this area; the south-east corner of the outer enclosure. It could be that this was an entrance into the forts outer enclosure. It is noteworthy that Group 1 may respect Group 3 and that Group 6 may respect Group 2. Is could be used to suggest that the earthworks of the outer enclosure survived more substantially or to some degree in the landscape when later enclosed.

Group 16, within the outer enclosure in the south-east field is mostly likely to be geological in nature or associated with shallow ground disturbance; apart from the broad mixed diffuse response running parallel and adjacent to Group 2. These responses may be indicative of subtle/poorly surviving features associated with tracks or landscaping during the removal of the outer ramparts and any internal features. The sinuous nature of the majority of this group would typically be indicative of a natural/geological deposit/variation.

3.5.4 RELICT FIELD SYSTEMS

Multiple phases of relict field system are represented in the geophysical record.

Firstly, some anomalies that probably correspond to features that can be identified on LiDAR imagery and 21st century satellite imagery are represented by parts of Group 14 and possibly Groups 11 and 18. Group 23 may be associated with the extant northern boundary to the south-east field and Group 21 may be associated with a large number of striations visible as tracks, ploughing and ground disturbance on 21st century satellite imagery. Group 14 may indicate deep drainage furrows or surface drainage/land drains. Some of the ploughing activity evident in the geophysical record is comparable to these responses.

Group 1 represents historical boundaries on the site that are relict parts of the extant field-scape. These were present on *c.*1840 mapping. A section of this Group was removed prior to *c.*1880 mapping and the subsequent boundaries removed in the 20th century. Improvements in machinery and a population boom after the Second World War accounted for a nationwide policy/action of creating larger fields by removing boundaries to boost production. Group 10 appears to be a part of this same field system, which was removed prior to- or absent from the *c.*1840 mapping. It is of some interest that parts of this Group align with Group 3 and possibly a fort boundary line south of the inner enclosure entrance. These may suggest that earthworks of the Iron Age monument/fort survived at the time that these boundaries were laid out and affected decisions regarding their location.

Groups 5, 6 and 8 represent ostensibly earlier straight sided enclosures that predate the Group 1 anomalies. These anomalies do not equate to features in the cartographic record. It is possible that this Group represents a field system from the later Iron Age or the Medieval period; either prior to the extant field system or as an earlier phase of parts of the extant field system that was subsequently modified. Whether as ditches or ploughing activity such as ridge and furrow, a

number of linear anomalies run parallel and perpendicular to Groups 6 and 8 and are probably indicative of contemporary activity to Groups 6 and 8; these are Groups 7, 9, 12 and 13. The Group 6 anomalies are indicative of probable ditches with possible associated bank material.

The various linear anomalies within the north-east field survey area and away from its boundaries could represent parts of- or modifications to the fort's enclosures, as already discussed (Groups 17 and 20); and modern activity associated with the extant field system, as already discussed (Groups 18 and 21). However, possible amendments to the monument boundaries, such as Groups 17 or 20, could be part of one of the later Iron Age or later field-systems and approximately perpendicular ditch-type features (Group 18) associated with internal divisions or drainage of these field systems that predate or overlap with the extant field-pattern. Some faint linear anomalies in this field are contiguous with and equate to agricultural/ploughing activity in the field.

3.5.5 ADDITIONAL ANOMALIES ACROSS THE SURVEY AREA

A sporadic dispersion of approximately ten discrete anomalies indicative of cut and in-filled features, such as pits or tree-throws are identified in the south-east field of the survey area (Group 15). These could represent natural geological deposits or variation. They are not particularly concentrated in any one area. The examples near the edge of the field and in line with intermittent or ephemeral linear responses could be associated with those associated anomalies or agricultural activity at the edge of the extant field system.

A single large anomaly indicative of a possible in-filled hollow or depression (Group 22) could represent a sunken featured building (SFB). However, its location on a removed historical field boundary, and lack of responses indicative of bank material associated with Group 1 may imply that it is a Modern feature that either respected- or came after the boundary or during its removal.

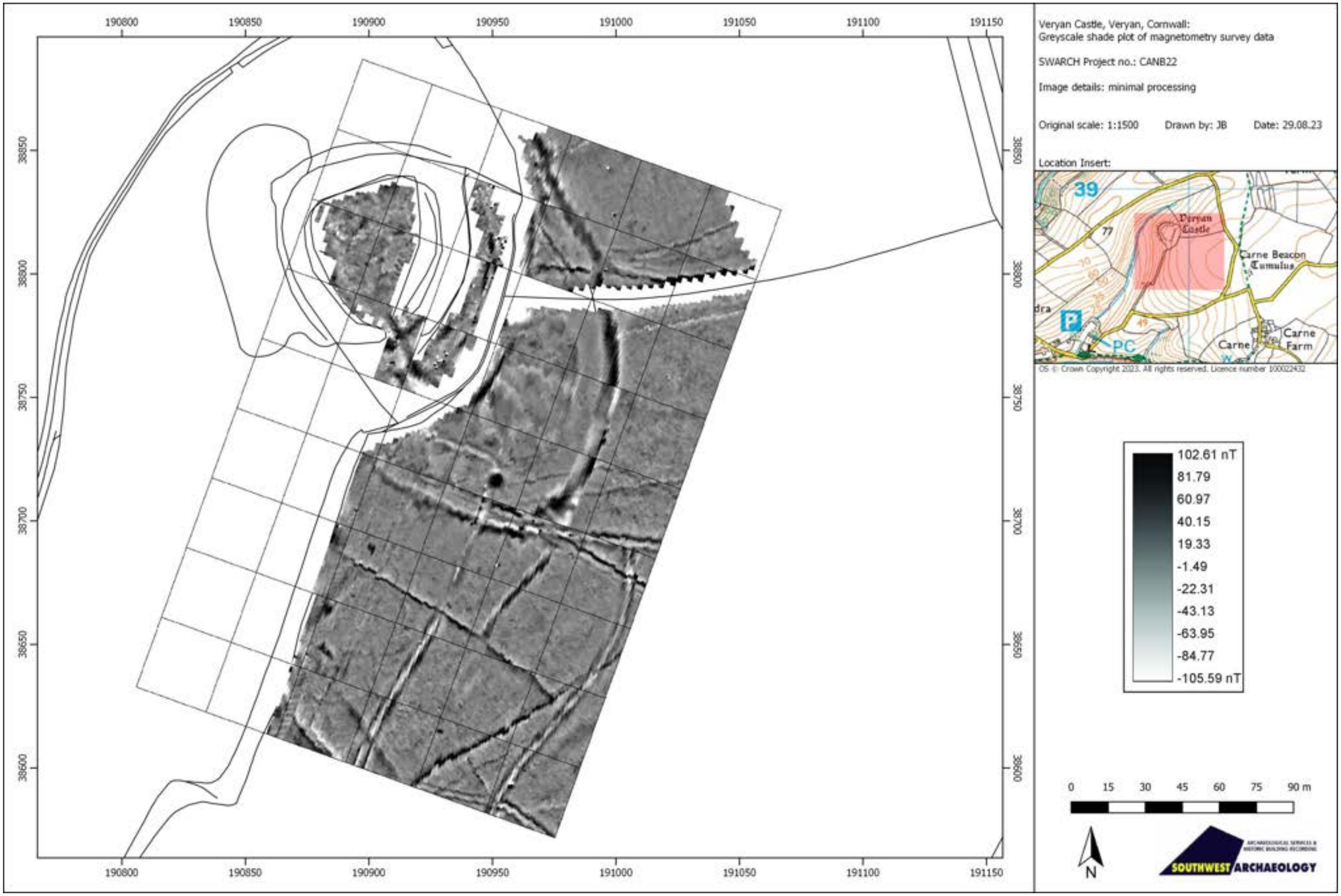

FIGURE 3: GREYSCALE SHADE PLOT OF MAGNETOMETRY SURVEY DATA; MINIMAL PROCESSING.

FIGURE 4: INTERPRETATION OF MAGNETOMETRY SURVEY DATA.

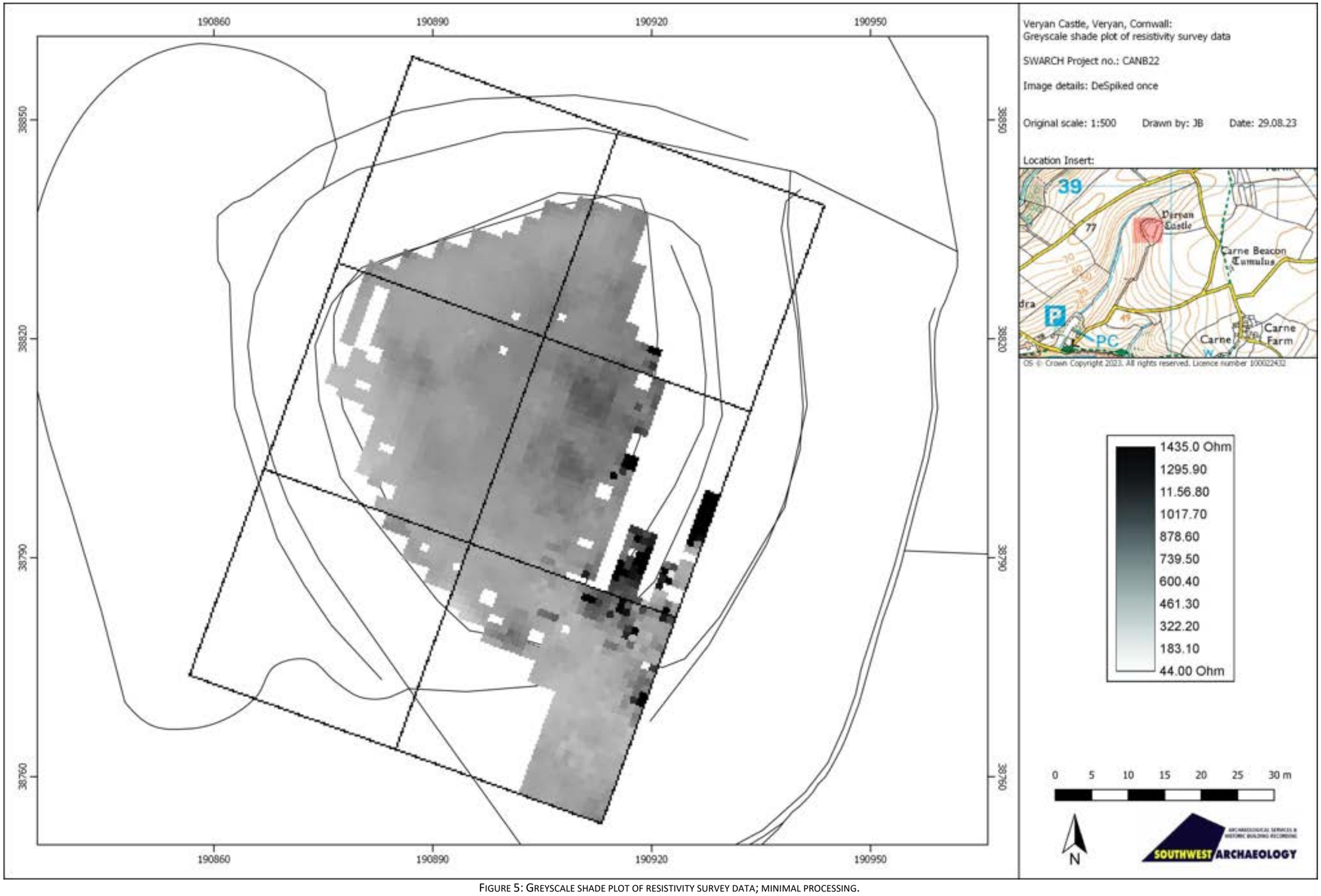

FIGURE 5: GREYSCALE SHADE PLOT OF RESISTIVITY SURVEY DATA; MINIMAL PROCESSING.

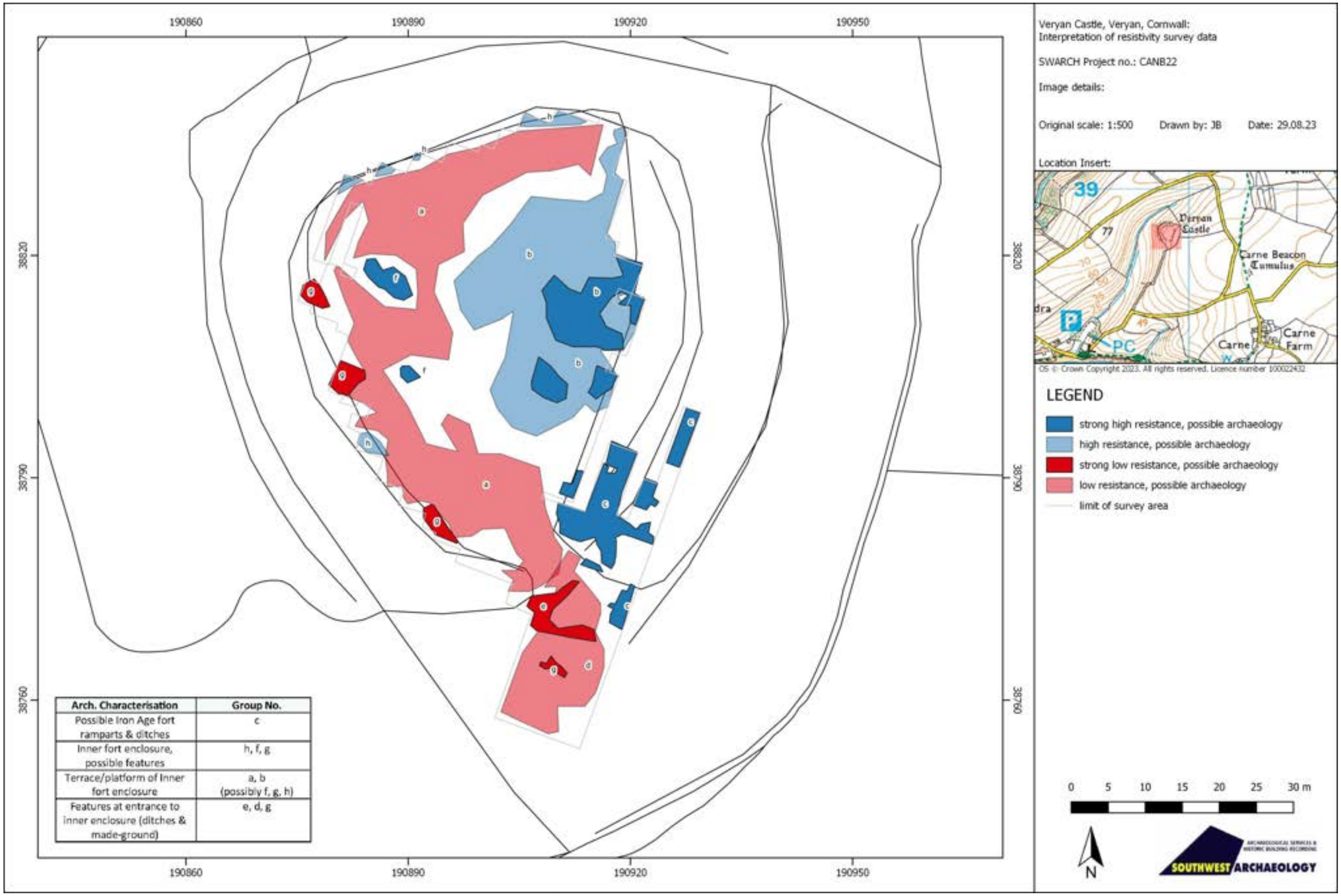

FIGURE 6: INTERPRETATION OF RESISTIVITY SURVEY DATA.

4.0 CONCLUSION

The site is located at the Scheduled Iron Age Veryan Fort (List entry no. 1019746; MCO87; HER no.22826), which is on the top of a steep valley slope overlooking a valley down to Pendower Beach in Gerrans Bay, *c.*590m south-west of Veryan, near to Carne Beacon. It is in an area of modern enclosed land within section 8 of the Cornwall AONB. This phase of geophysical survey was requested as part of the AONBs Monumental Improvement project.

The geophysical survey identified 43 groups of anomalies (1-35 on the magnetometry survey; and a-h on the resistivity survey) comprised of *c.*86-92 anomalies (*c.*68-74 magnetic anomalies and *c.*18 resistivity anomalies, some of which equate to one-another), depending on how one differentiates the responses, across the survey area as a whole. These included: three or four linear anomalies indicative of outer defensive earthworks to the fort; five linear anomalies indicative of middle defensive earthworks to the fort associated with extant field boundaries; five linear anomalies and spreads indicative of the forts inner defences/ramparts; approximately seven sinuous anomalies indicative of possible internal activity or ground disturbance to the forts outer enclosure; ten anomalies of possible features within and at the edge and entrance of the inner enclosure; two anomalies indicative of the inner enclosure platform construction; six anomalies that equate to historical field boundaries; a linear anomaly indicative of a relict boundary associated with Group 1; twelve anomalies indicative of a relict field system and its associated agricultural activity; nine anomalies indicative of ditches and probable modern agricultural activity; a probable ditch-type anomaly that could be associated with the outer enclosure ramparts; nine or ten discrete anomalies indicative of possible pits, tree-throws or geological variation; and an anomaly indicative of a large hollow or pit-type feature. Agricultural activity across the site may have truncated any buried archaeological resource.

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The most significant anomalies in broadening the understanding of this monument are: probable earthworks including ditches at the entrance to the inner enclosure platform; and a clearer understanding of the relict field systems across the survey area, which include earlier phases of the extant field system and an earlier undated field system.

It would be of note if the possible entrance at the southern end of the outer enclosure present on the NMP mapping were genuine or simply the result of truncation by intercutting relict field boundaries. It would also be significant if anomalies within the fort's outer enclosure transpired to represent genuine archaeological features, as these zones of such Iron Age multiple-enclosure forts are generally considered to be for livestock management rather than settlement. Questions over the exact nature and date of probable ditches associated with the extant curving field boundary dividing the survey areas, and the north end of the outer enclosure ditch remain. But the potential for these aspects of the fort having been remodelled at some point remain. Staggered and internal defensive ditch and bank type features have been identified in other examples of similar Iron Age forts. Some possible targets for potential settlement based archaeology have been identified on the inner enclosure platform, but these are not clear or definitive and may be associated with the construction of the platform which, although potentially interesting, is not unexpected.

The surveys have ostensibly succeeded in identifying probable archaeological resources; although these do not clearly represent settlement activity within the fort. However, a complicated array of possible features have been identified at the extant entrance to the inner enclosure platform. Across the wider survey area the survey has more clearly defined relict field systems and the ramparts to the outer earthworks.

4.1 RECOMMENDATIONS ON MONUMENT MANAGEMENT AND FURTHER WORKS

The survey shows that probable significant archaeological activity has survived in the geophysical record despite agricultural activity. Grazing cultivation of the site seems to be not unreasonably encroaching upon the buried archaeological resource. The existing Scheduled area appears to encompass the extent or majority of the monument. If it could be agreed with the appropriate parties, a community based excavation of parts of the site would be of interest and would clarify and test the results of the geophysical survey; particularly across the entrance to the inner enclosure platform, in the outer enclosure and across parts of the undated field system that predates the historical and extant field system.

Further geophysical survey designed to specifically measure or assess bioturbation on the Scheduled Monument, in particular its ramparts and about the steep slopes of the inner enclosure platform, could be attempted via GPR survey. Anecdotally, more intensive magnetometry or resistivity surveying may not yield clear or accurate results in targeting- and aiming to define the extent of damage by animals, such as badger sets; but as an experimental and publishable experiment methods could be designed to attempt this. Such experiments would target very small areas and potentially be rather time-consuming for little gain; while GPR might be adequate to the task as standard.

5.0 BIBLIOGRAPHY & REFERENCES

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Kresen Kernow (KK):

Surveyors draft map for the Grampound area, *c.*1811

Veryan Tithe Map and Apportionment, *c.*1840

National Library of Scotland (NLS):

Ordnance Survey 1st edition, 25 inch map, Sheet: Cornwall LXV.12, surveyed 1879, published 1880

Ordnance Survey 2nd edition, 25 inch map, Sheet: Cornwall LXV.12, revised 1906, published 1907

APPENDIX 1: ADDITIONAL GRAPHICAL IMAGES OF THE GRADIOMETER SURVEY

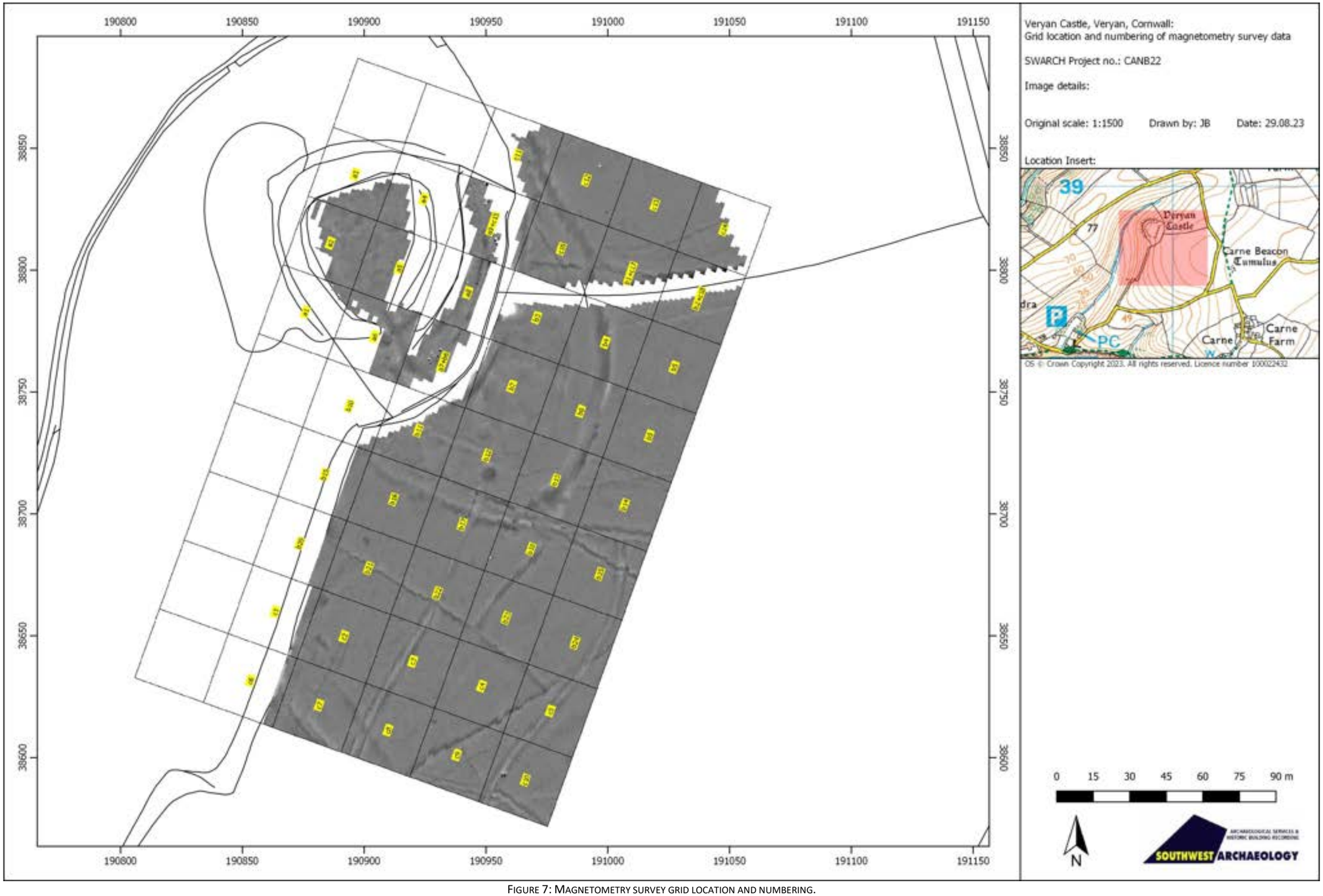


FIGURE 7: MAGNETOMETRY SURVEY GRID LOCATION AND NUMBERING.

FIGURE 8: RED-GREY-BLUE SHADE PLOT OF MAGNETOMETRY SURVEY DATA; BAND WEIGHT EQUALISED; GRADIATED SHADING.

FIGURE 9: RED-GREY-BLUE SHADE PLOT OF MAGNETOMETRY SURVEY DATA; CLIPPED AT 2 STANDARD DEVIATIONS (SD).

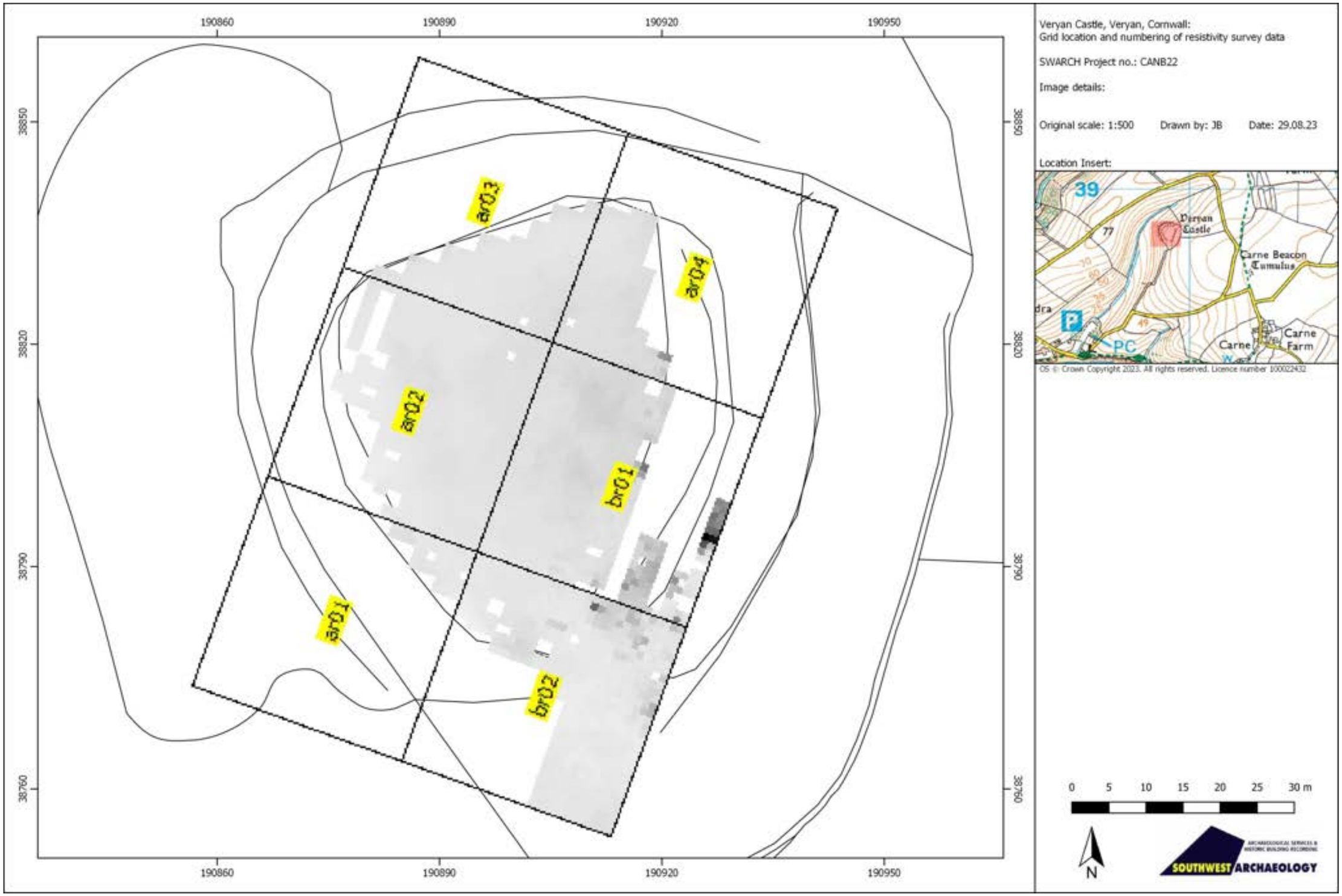


FIGURE 10: RESISTIVITY SURVEY GRID LOCATION AND NUMBERING.

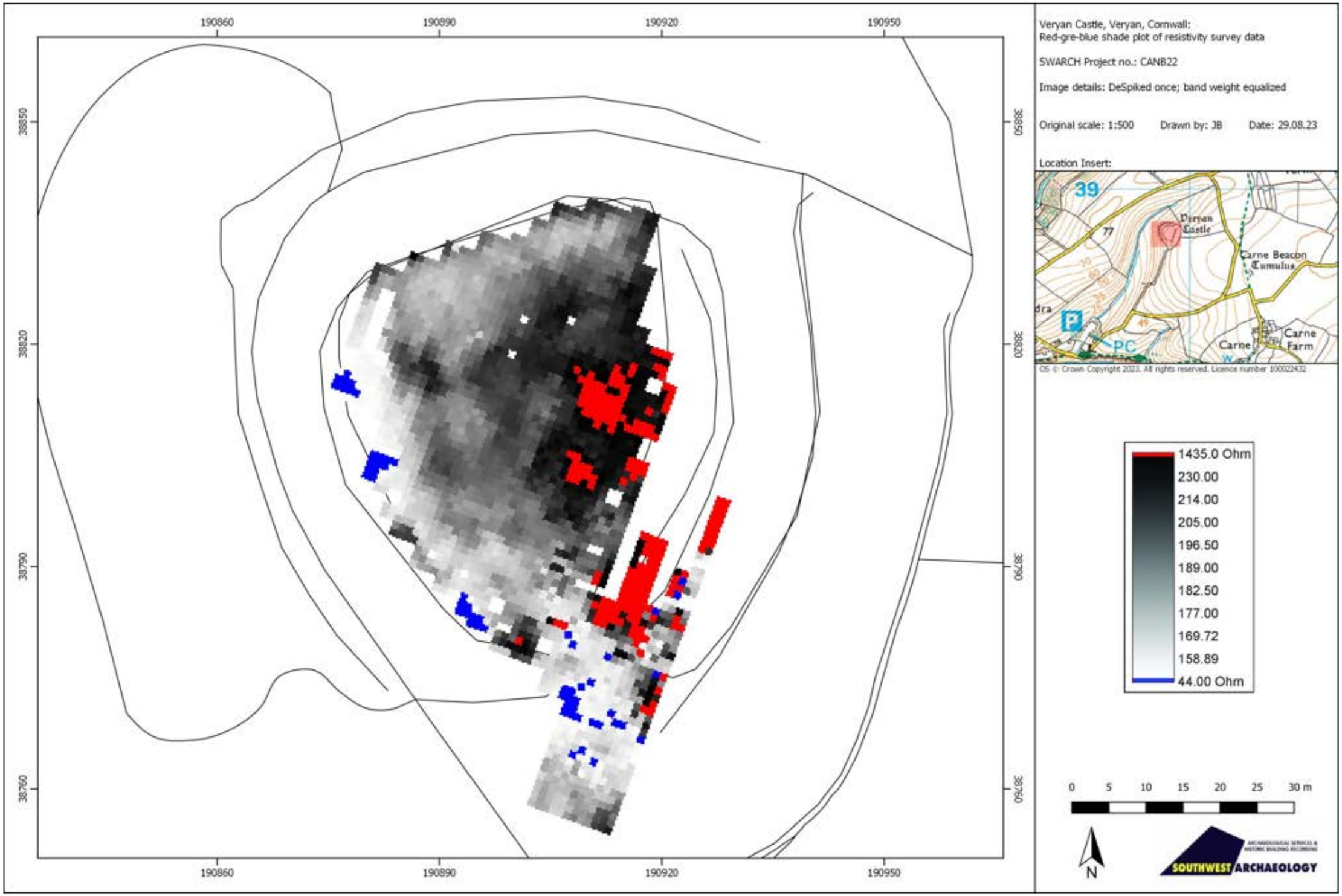


FIGURE 11: RED-GREY-BLUE SHADE PLOT OF RESISTIVITY SURVEY DATA; BAND WEIGHT EQUALISED.

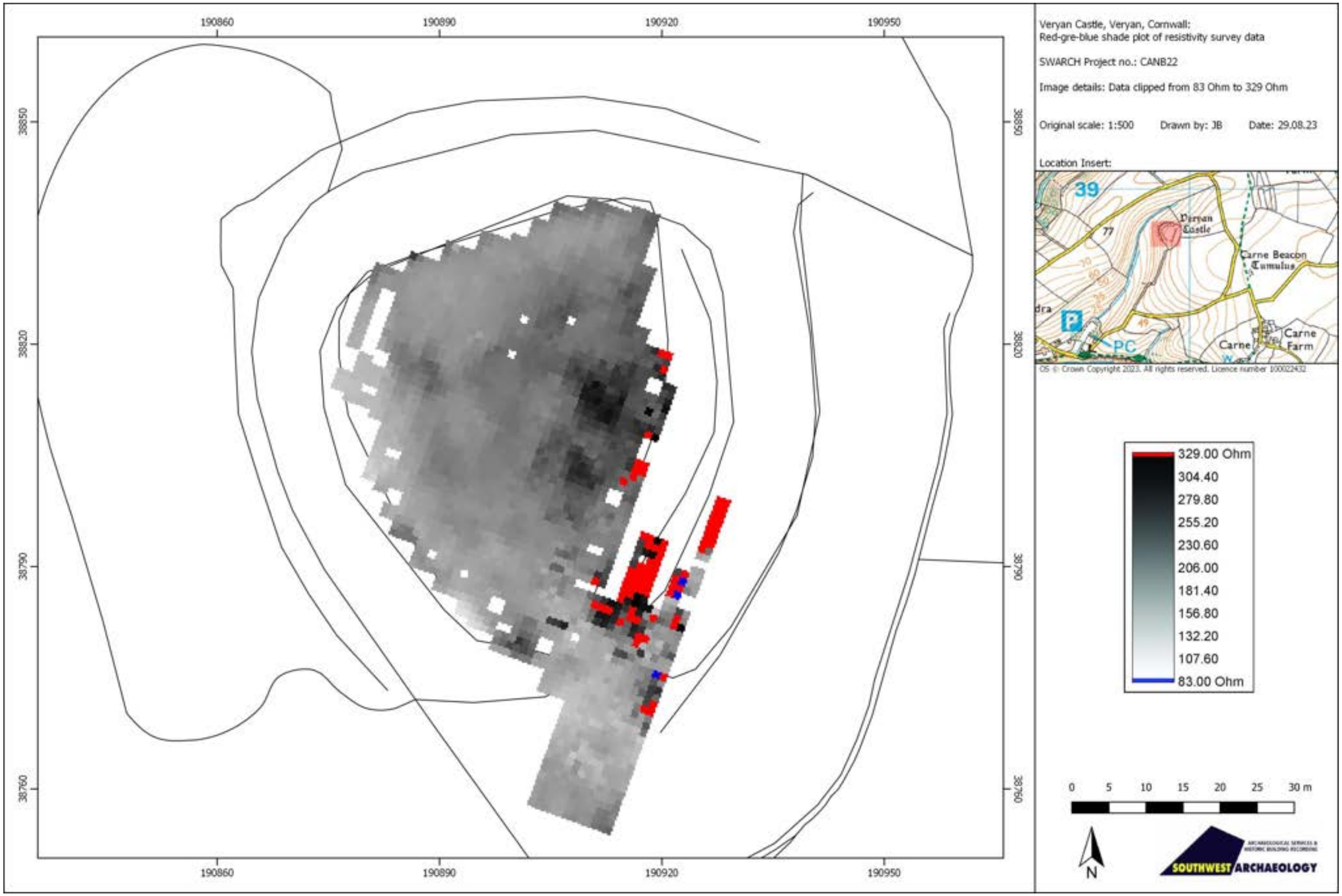


FIGURE 12: RED-GREY-BLUE SHADE PLOT OF RESISTIVITY SURVEY DATA; CLIPPED FROM 83 TO 329 OHM.

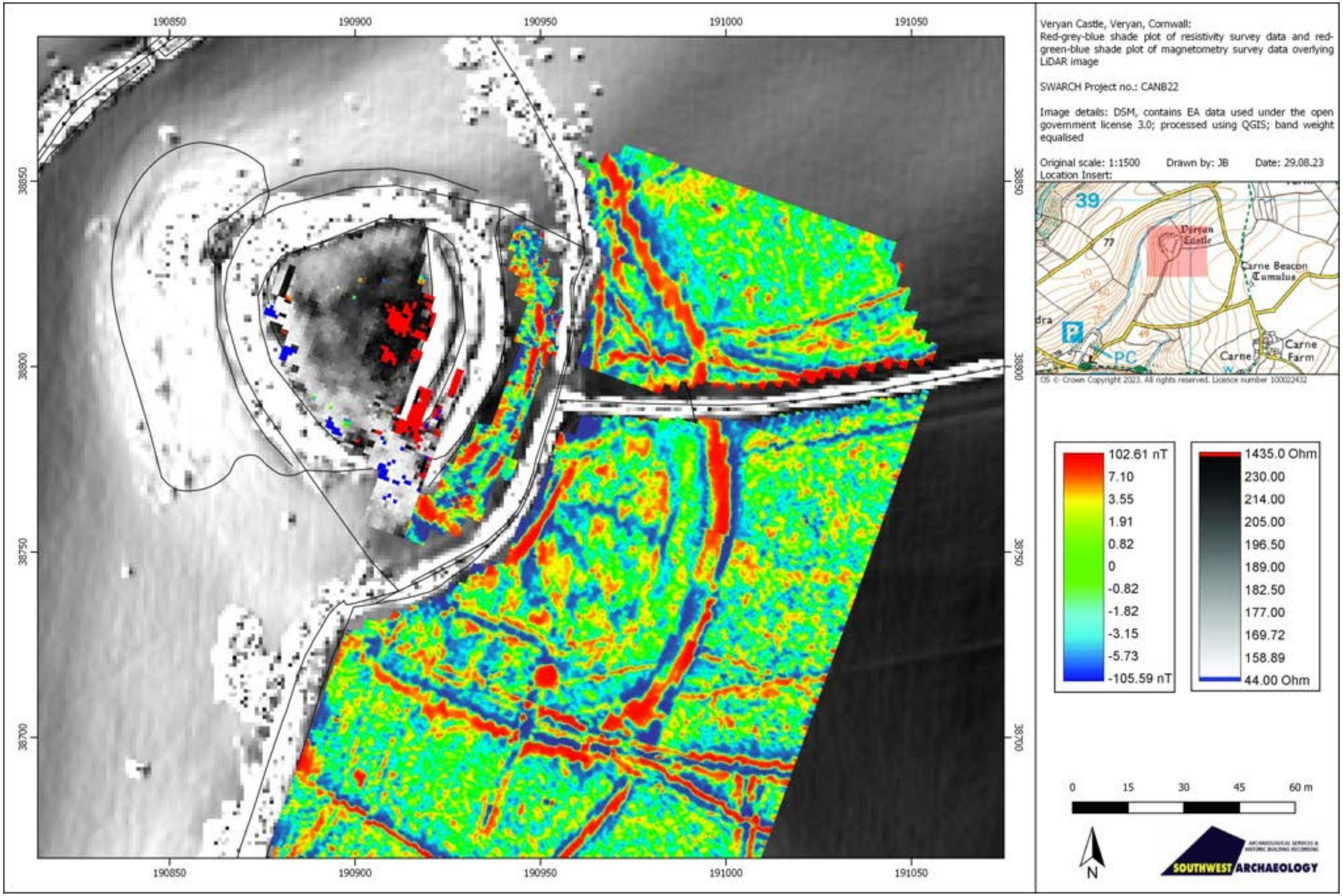


FIGURE 13: SHADE PLOTS OF MAGNETOMETRY- (RED-GREEN-BLUE) AND RESISTIVITY (RED-GREY-BLUE) SURVEY DATA OVERLYING LIDAR IMAGERY

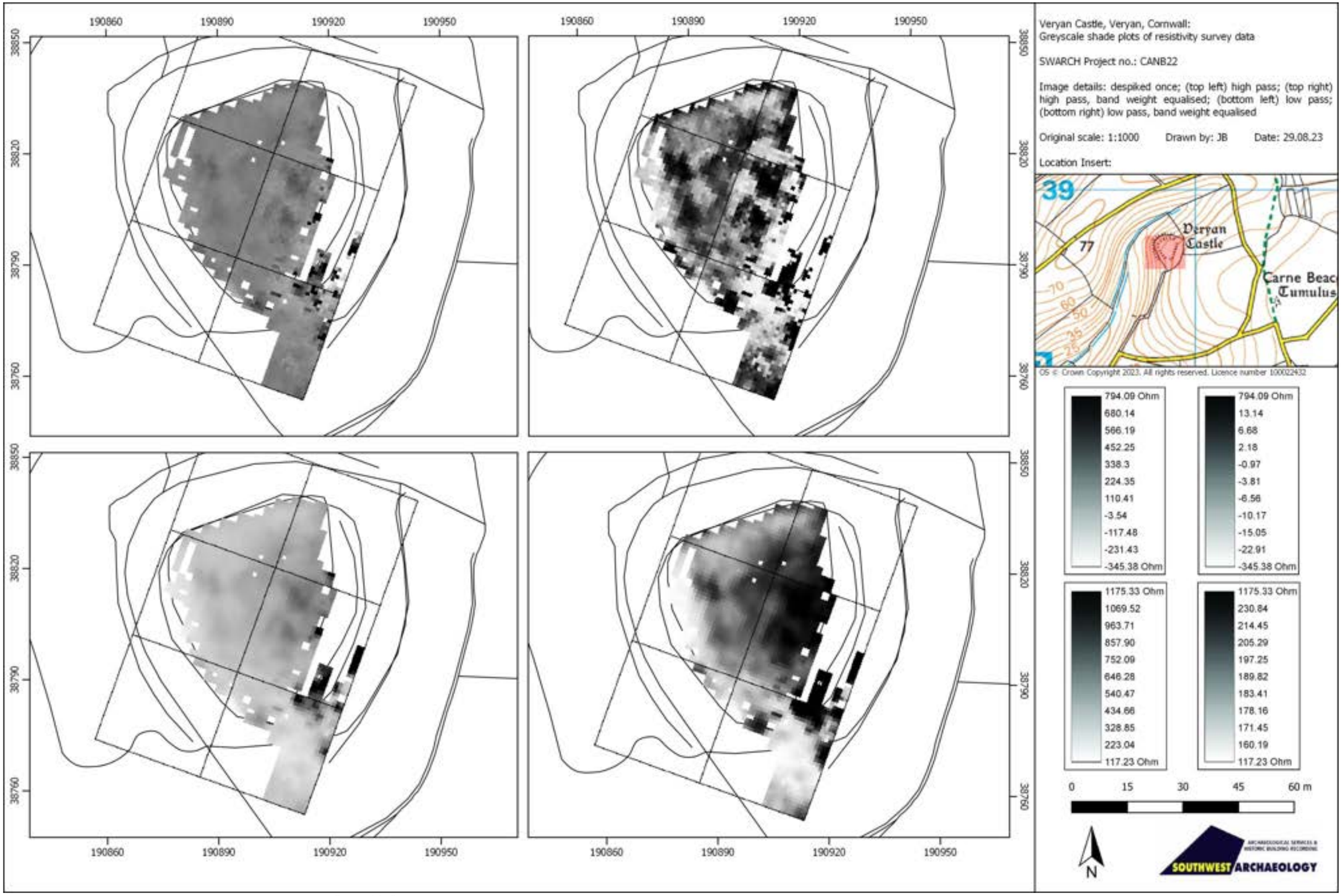


FIGURE 14: GREYSCALE SHADE PLOTS OF RESISTIVITY SURVEY DATA; HIGH- AND LOW PASS FILTER IMAGES INCLUDING BAND WEIGHT EQUALISED VERSIONS.

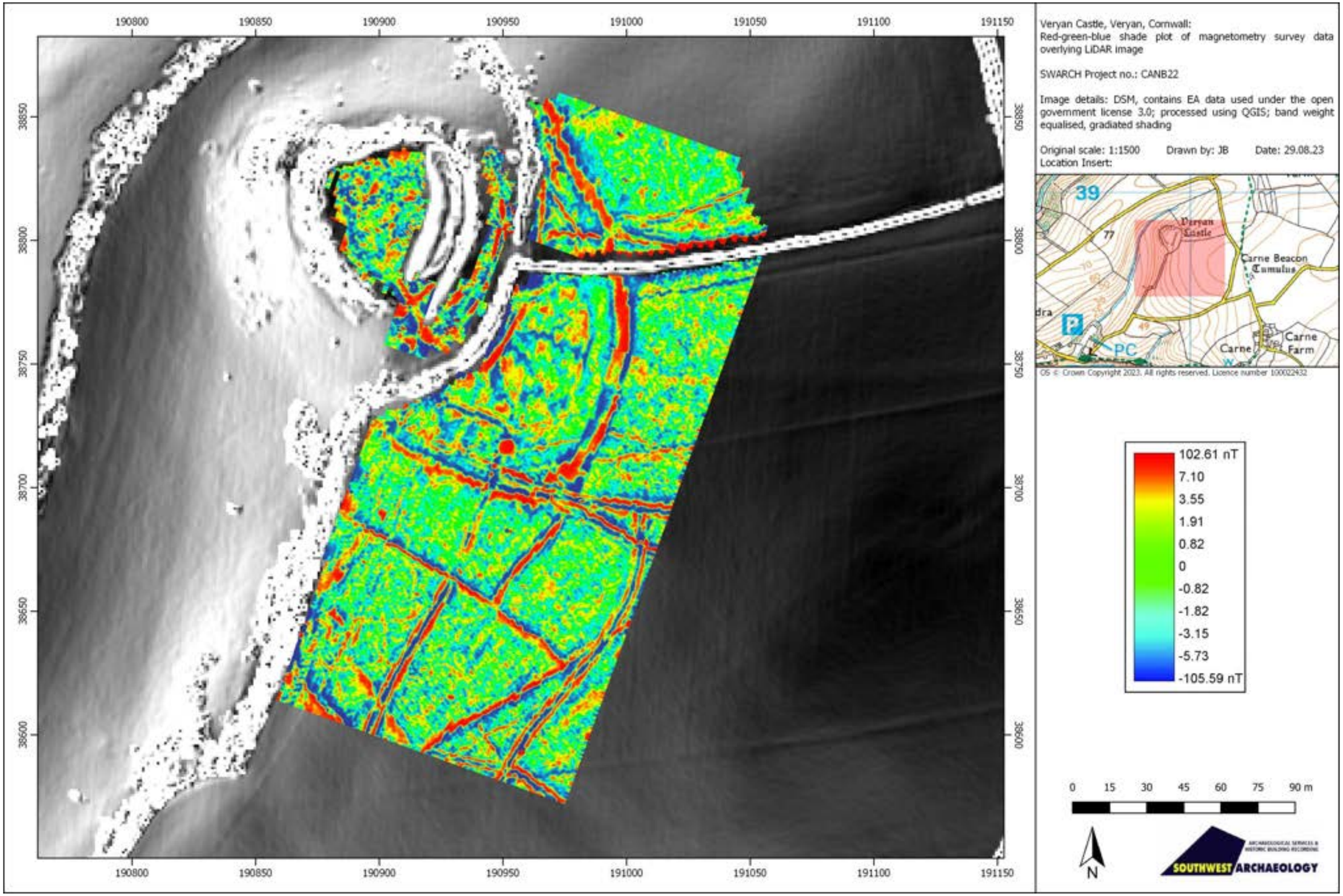
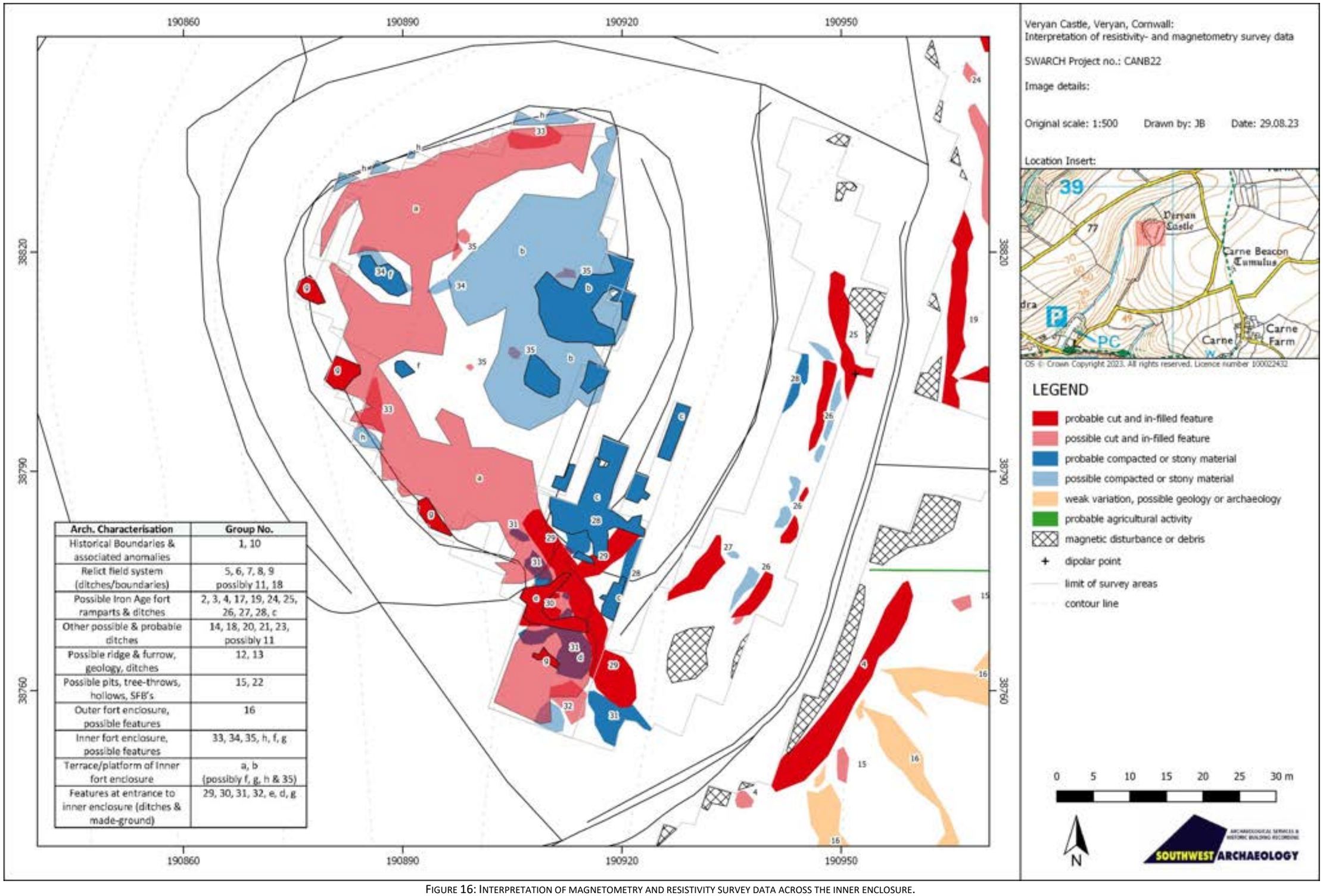


FIGURE 15: RED-GREEN-BLUE SHADE PLOT OF MAGNETOMETRY SURVEY DATA OVERLYING LIDAR IMAGE.



Arch. Characterisation	Group No.
Historical Boundaries & associated anomalies	1, 10
Relict field system (ditches/boundaries)	5, 6, 7, 8, 9 possibly 11, 18
Possible Iron Age fort ramparts & ditches	2, 3, 4, 17, 19, 24, 25, 26, 27, 28, c
Other possible & probable ditches	14, 18, 20, 21, 23, possibly 11
Possible ridge & furrow, geology, ditches	12, 13
Possible pits, tree-throws, hollows, SFB's	15, 22
Outer fort enclosure, possible features	16
Inner fort enclosure, possible features	33, 34, 35, h, f, g
Terrace/platform of inner fort enclosure	a, b (possibly f, g, h & 35)
Features at entrance to inner enclosure (ditches & made-ground)	29, 30, 31, 32, e, d, g

FIGURE 16: INTERPRETATION OF MAGNETOMETRY AND RESISTIVITY SURVEY DATA ACROSS THE INNER ENCLOSURE.

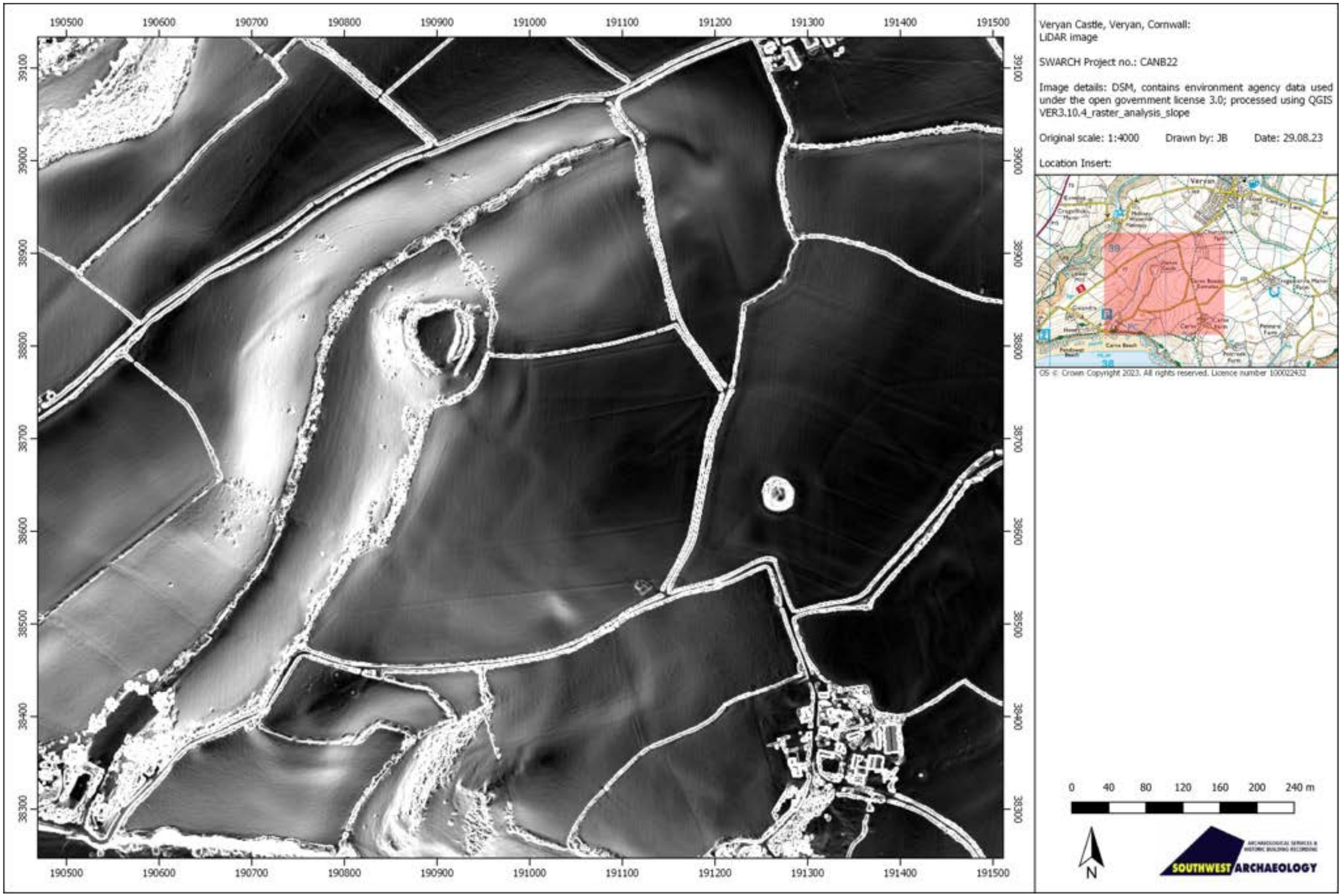


FIGURE 17: IMAGE DERIVED FROM LIDAR DATA; DSM SURVEYED *C.*2019.

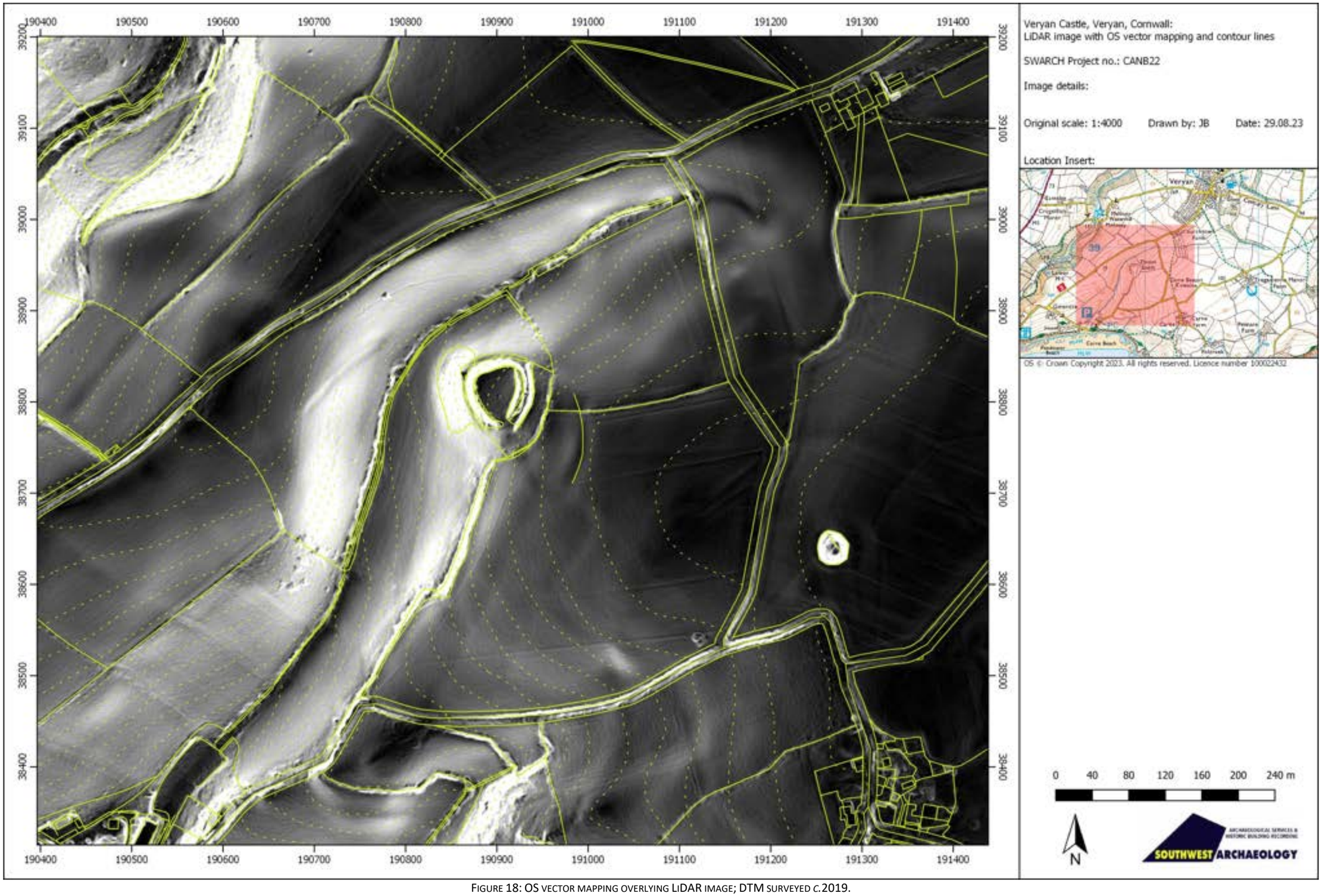


FIGURE 18: OS VECTOR MAPPING OVERLYING LIDAR IMAGE; DTM SURVEYED *C.*2019.

FIGURE 19: INTERPRETATION OF MAGNETOMETRY SURVEY DATA OVERLYING NMP POLYGONS BASED ON AERIAL PHOTOGRAPHY.

FIGURE 20: INTERPRETATION OF MAGNETOMETRY SURVEY DATA (EXTREMELY FADED) OVERLYING NMP POLYGONS BASED ON AERIAL PHOTOGRAPHY AND *C.*1880 OS MAPPING.

APPENDIX 2: SUPPORTING SOURCES

FIGURE 21: EXTRACT FROM THE SURVEYOR'S DRAFT MAP, *C.*1811; THE APPROXIMATE LOCATION OF THE SITE IS INDICATED (KK).

FIGURE 22: EXTRACT FROM THE *C.*1840 VERYAN PARISH TITHE MAP; THE SITE IS OUTLINED IN RED (KK).

TABLE 3: TRANSCRIPT EXTRACT FROM THE VERYAN TITHE APPORTIONMENT, *C.*1840 (KK).

Plot No.	Owner	Occupier	Field Name	Field Use
Gwendra				
1294	Edward Collins	William Middlecoat	Park Warren	Arable
1295			Cuckoo Close	Arable
1296			Yonder Borrow Close	Arable
1297			Great Borrow Close	Arable
Carne				
1445	Rev. Samuel Trist	William Spry	Part of Harney	Arable
1446			Plantation	Arable
1447			Nine Acres	Arable
1448			Nine Acres Hill	....
1449			Osier Bed	....
1450			Four Acres	Arable
1451			Carne Gwendra	Arable
1452			Three Stitches in Great Field	Arable
1457			Half of a Stitch in Carnes	Waste
1473	Executors of William Gully Tweedy & Rev. Jeremiah Trist	Peter Blamey	Higher Park Gwendra	Arable
1474			Three Stitches in Great Field	-
1475			Lower Field	Arable
1490			Higher Towan	Arable
1493			Four Stitches in Great Field	-

FIGURE 23: EXTRACT FROM THE ORDNANCE SURVEY 1ST EDITION, 25 INCH SERIES, PUBLISHED 1880; THE SITE IS OUTLINED IN RED (NLS).

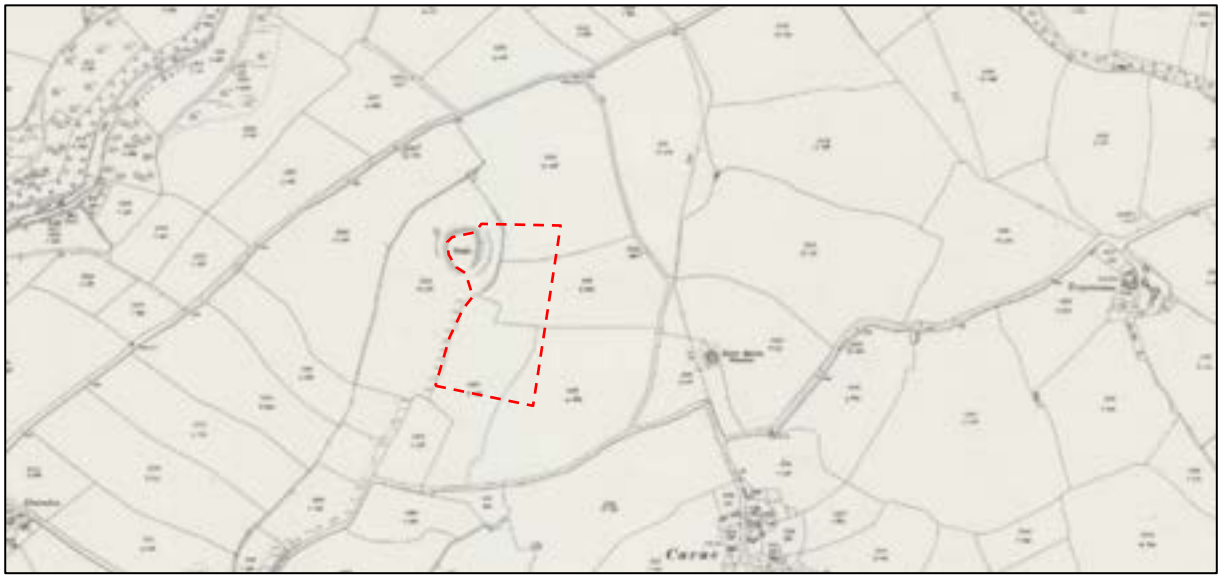


FIGURE 24: EXTRACT FROM THE ORDNANCE SURVEY 2ND EDITION, 25 INCH SERIES, PUBLISHED 1907; THE SITE IS OUTLINED IN RED (NLS).

Appendix 3: Supporting Photographs

1. VIEW OF THE FORT FROM THE VERYAN ROAD TO THE NORTH; VIEWED FROM THE NORTH-NORTH-EAST (NO SCALE).

2. VIEW FROM THE FIELD GATE EAST OF THE SURVIVING FORT EARTHWORKS TOWARDS THE ENTRANCE TO THE INNER ENCLOSURE; VIEWED FROM THE NORTH-EAST (NO SCALE).

3. VIEW ALONG THE EAST SIDE OF THE INNER ENCLOSURE RAMPARTS AND FIELD; VIEWED FROM THE SOUTH (NO SCALE).

4. VIEW OF THE INNER ENCLOSURE PLATFORM AND ITS ENTRANCE; VIEWED FROM THE SOUTH-EAST (NO SCALE).

5. INNER ENCLOSURE PLATFORM AND ITS ENTRANCE; VIEWED FROM THE SOUTH-SOUTH-EAST (NO SCALE).

6. VIEW ALONG THE RAMPART DITCH ON THE EAST SIDE OF THE INNER ENCLOSURE; VIEWED FROM THE SOUTH (NO SCALE).

7. THE EAST SIDE OF THE INNER ENCLOSURE; VIEWED FROM THE SOUTH (NO SCALE).

8. ACCESS GATE EAST OF THE EXTANT INNER ENCLOSURE EARTHWORKS; VIEWED FROM THE EAST (NO SCALE).

9. VIEW FROM THE OUTSIDE OF THE SOUTH-EAST EDGE OF THE INNER ENCLOSURE RAMPARTS; VIEWED FROM THE NORTH-EAST (NO SCALE).

10. VIEW OF THE SOUTH-WEST EDGE OF THE INNER ENCLOSURE PLATFORM ESCARPMENT; VIEWED FROM THE SOUTH-EAST (NO SCALE).

11. VIEW OF THE INNER ENCLOSURE EARTHWORKS; VIEWED FROM THE SOUTH (NO SCALE).

12. VIEW OF THE EAST SIDE OF THE INNER ENCLOSURE RAMPARTS; VIEWED FROM THE SOUTH-WEST (NO SCALE).

13. VIEW OF THE NORTH-EAST CORNER OF THE INNER ENCLOSURE; VIEWED FROM THE WEST-SOUTH-WEST (NO SCALE).

14. VIEW FROM THE NORTH SIDE OF THE INNER ENCLOSURE; VIEWED FROM THE SOUTH-WEST (NO SCALE).

15. VIEW ALONG THE NORTH EDGE OF THE INNER ENCLOSURE PLATFORM; VIEWED FROM THE EAST (NO SCALE).

16. THE WEST SIDE OF THE INNER ENCLOSURE PLATFORM; VIEWED FROM THE NORTH-EAST (NO SCALE).

17. THE EAST SIDE OF THE INNER ENCLOSURE PLATFORM; VIEWED FROM THE NORTH (NO SCALE).

18. ANIMAL BURROWS IN THE NORTH SIDE OF THE INNER ENCLOSURE PLATFORM ESCARPMENT; VIEWED FROM THE SOUTH (NO SCALE).

19. PLATFORM IN THE NORTH-WEST SIDE OF THE INNER ENCLOSURE PLATFORM ESCARPMENT; VIEWED FROM THE SOUTH-EAST (NO SCALE).

20. ANIMAL BURROWS IN THE WEST EDGE OF THE INNER ENCLOSURE PLATFORM; VIEWED FROM THE NORTH (NO SCALE).

21. VIEW ALONG THE VALLEY TOWARDS CARNE BEACH FROM THE WEST SIDE OF THE INNER ENCLOSURE PLATFORM; VIEWED FROM THE NORTH-EAST (NO SCALE).

22. ANIMAL BURROWS IN THE SOUTH SIDE OF THE INNER ENCLOSURE PLATFORM, WEST OF THE ENTRANCE; VIEWED FROM THE NORTH-EAST (NO SCALE).

23. CARNE BEACON; VIEWED FROM THE NORTH (NO SCALE).

24. VIEW FROM ATOP CARNE BEACON TOWARDS CARNE BEACH/GERRANS BAY; VIEWED FROM THE NORTH-EAST (NO SCALE).

25. VIEW FROM ATOP CARNE BEACON TOWARDS VERYAN FORT; VIEWED FROM THE EAST-SOUTH-EAST (NO SCALE).

26. VIEW ALONG THE VALLEY FLOOR NORTH-WEST OF THE FORT; VIEWED FROM THE SOUTH-WEST (NO SCALE).

27. VERYAN FORT; VIEWED FROM THE WEST-SOUTH-WEST (NO SCALE).

28. VIEW OF THE SOUTHERN SIDE OF VERYAN FORT; VIEWED FROM THE WEST (NO SCALE).

29. VIEW ALONG THE VALLEY FLOOR TOWARDS CARNE BEACH AND GERRANS BAY; VIEWED FROM THE NORTH-EAST (NO SCALE).

30. THE SOUTH-EAST FIELD OF THE SITE, CONTAINING MOST OF THE FORTS OUTER ENCLOSURE; VIEWED FROM THE NORTH-WEST (NO SCALE).

31. THE SOUTH-EAST FIELD OF THE SITE, CONTAINING MOST OF THE FORTS OUTER ENCLOSURE; VIEWED FROM THE NORTH (NO SCALE).

32. THE SOUTH-EAST FIELD OF THE SITE, CONTAINING MOST OF THE FORTS OUTER ENCLOSURE; VIEWED FROM THE WEST-NORTH-WEST (NO SCALE).

33. VIEW ALONG THE SOUTHERN EDGE OF THE NORTH-EAST FIELD OF THE SITE; VIEWED FROM THE WEST (NO SCALE).

34. THE NORTH-EAST FIELD OF THE SITE; VIEWED FROM THE SOUTH-WEST (NO SCALE).

35. VIEW TOWARDS THE INNER ENCLOSURE FROM ATOP THE FIELD GATE TO ITS EAST; VIEWED FROM THE EAST (NO SCALE).

36. THE GATEWAY AND AREA EAST OF THE INNER ENCLOSURE RAMPARTS; VIEWED FROM THE SOUTH (NO SCALE).

APPENDIX 4: TECHNICAL SUMMARY TABLES OF SURVEY METHOD AND METADATA

TABLE 4: TECHNICAL SUMMARY OF MAGNETOMETRY SURVEY METHOD AND METADATA.

Site no.	Site Name	Site Type	Period	AONB Section
36	Veryan Castle	Fort	Iron Age	9. South Coast - Central
Survey Type:	Magnetometry			
Equipment:	Twin sensor fluxgate gradiometer (Bartington Grad601) Leica CS15 GNSS Rover GPS			
Software:	Grad 601 - Version 3.16 TerraSurveyor - Version 3.0.36.0			
Instrument Settings / Parameters:	Survey Mode:	Grid Mode		
	Range:	100nT		
	Threshold:	2nT		
	Sensors:	2		
	Reject:	50 Hz		
Collection parameters:	Sample Intervals:	0.25m		
	Traverse Intervals:	1m		
	Traverse Pattern:	Zigzag		
	Traverse Direction:	North / Grid North / 0°		
	Adjustment frequency:	0.5-1ha		
Survey Size Metadata:	Individual Grid Size	30m x 30m		
	Composite Area:	4.86ha / 270m x 180m		
	Area Surveyed:	3.1404ha		
Raw Response Metadata:	Max.:	98.41nT		
	Min.:	-100.00nT		
	Standard Deviation:	9.15nT		
	Mean:	0.37nT		
	Median:	-0.20nT		
Processed Response Metadata: pre-clipping	Max.:	102.62nT		
	Min.:	-105.59nT		
	Standard Deviation:	7.37nT		
	Mean:	0.36nT		
	Median:	0.00nT		
Processes:	DeStripe all traverses, median			
	DeStagger all traverses out- and inbound by 1.25m (grid b21), by 1m (grids b22, c12, c16), by 0.75m (grids b1+c17, b11-14, b16-18, b20, b23-24, c4-5, c9, c11, c13), by 0.50m (all other grids)			
	Clip at +/- 2SD (Standard Deviation)			

TABLE 5: TECHNICAL SUMMARY OF RESISTIVITY SURVEY METHOD AND METADATA.

Site no.	Site Name	Site Type	Period	AONB Section
36	Veryan Castle	Fort	Iron Age	9. South Coast - Central

Survey Type:	Resistivity	
Equipment:	Geoscan Research RM15-D Resistivity Meter with MPX15 multiplexer module Four sensor PA20 mulitprobe array system at 0.5m probe spacing Leica CS15 GNSS Rover GPS	
Software:	TerraSurveyor - Version 3.0.36.0	
Instrument Settings:	Survey / Log Mode:	Parallel Twin Log Mode 2
	Gain:	x1
	Current:	1 mA
	Frequency:	137 Hz
	Output Voltage:	40 V
	Auto-log Speed:	Medium
	High Pass Filter:	13 Hz
	Mains Frequency:	50 Hz
	Hardware:	PA5
	Interface:	MPX15
	Log Mode:	Parallel Twin
	# Parallel Reads:	2 (4P)
	Baud Rate:	9600
Collection parameters:	Sample Intervals:	1m
	Traverse Intervals:	1m
	Traverse Pattern:	Zigzag
	Traverse Direction:	North / Grid North / 0°
	Remote Probe Spacing:	Between 0.5m and *c.*1.5m
Survey Size Metadata:	Individual Grid Size	30m x 30m
	Composite Area:	0.54ha / 90m x 60m
	Area Surveyed:	0.3195ha
Response Metadata: raw data	Max.:	2047.00 Ohm
	Min.:	-2047.50 Ohm
	Standard Deviation:	1010.42 Ohm
	Mean:	-386.52 Ohm
	Median:	179.00 Ohm
Processed Response Metadata: processed	Max.:	1435.00 Ohm
	Min.:	44.00Ohm
	Standard Deviation:	72.88 Ohm
	Mean:	204.69 Ohm
	Median:	191.00 Ohm
Processed Response Metadata: post-clipping	Max.:	329.00 Ohm
	Min.:	83.00 Ohm
	Standard Deviation:	39.17 Ohm
	Mean:	199.28 Ohm
	Median:	191.00 Ohm
Processes:	Search and Replace -2047.5 and 2047.5 with Dummy	
	DeSpike threshold 1 window size 3×3, once	
	Clip from 83.00 to 329.00 Ohm	
	High Pass filter with Gaussian weighted window 21x21 intervals	
	Low Pass filter with Gaussian weighted window 3x3 intervals	

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