ARCHAEOLOGICAL SERVICES
DURHAM UNIVERSITY

on behalf of
G W Moore and Sons

Tarset Castle
Lanehead
Northumberland

geophysical survey

report 3631
December 2014

Durham University

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1. Summary

The project

1.1 This report presents the results of geophysical surveys conducted as part of a wider scheme of archaeological investigations to inform on-going conservation works at Tarset Castle, Northumberland. Detailed geomagnetic and earth electric resistance surveys were undertaken over the castle mound and its immediate environs.

1.2 The works were commissioned by G W Moore and Sons and conducted by Archaeological Services Durham University.

Results

1.3 Evidence of possible structures has been identified, including remains of the curtain wall and possible annex buildings, to the south and west of the four-towered fortified house on the castle mound. The remains of the castle itself are not clearly defined in the geophysical surveys. This could be due to a number of factors, including the presence of rubble spreads and stone-robbing.

1.4 Former ridge and furrow cultivation, which survives as earthworks, has been geophysically recorded to the east of the castle.

1.5 Substantial anomalies forming a regular band to the east of the ridge and furrow may reflect an earth and stone bank, or at least substantial revetment. This feature could have been built as a defensive structure, such as the boundary of an outer enclosure associated with the castle.

1.6 No evidence of the suggested mill-race to the west of the castle has been identified; this may exist closer to the edge of the Tarset Burn, outside the survey extent.

1.7 Probable drains and other modern disturbances have been identified.

2. Project background

Location (Figure 1)

2.1 The survey area was located at Tarset Castle, in the parish of Tarset, Northumberland (NGR centre: NY 78831 85473), within the Northumberland National Park. The castle itself occupies a roughly square mound measuring approximately 5500m^2. The mound is partially surrounded by a substantial ditch to the east, south and north. The ditch has been significantly truncated by erosion from the Tarset Burn on the north side and by a railway cutting on the south side. On the western side of the mound is a steep slope down to the River North Tyne floodplain. The site is surrounded by pasture fields with the Tarset Burn to the north, the line of the former Border Counties Railway to the south, Tarset Hall Farm to the west and the main road to Bellingham to the east and south.

2.2 Approximately 3.5ha of detailed geomagnetic and earth electrical resistance survey were conducted over the castle mound and areas of pasture to the east and west.

Conservation works

2.3 The castle is a Scheduled Monument and Grade II* listed building, and is also currently under a Natural England Higher Level Stewardship (HLS) agreement. A landslip between 1862 and 1865 on the northern slope of the castle has led to contained deterioration of this side of the monument. The site has been on English Heritage's 'Heritage at Risk Register' (No. 1015528) since 2008 and its condition is judged to be declining and generally unsatisfactory with major localised problems as a result of natural erosion from the Tarset Burn. The HLS agreement allocated funding to address the conservation issues of the site. Thus far work has included a geotechnical report, a laser scan and topographic survey and a slope stability report. These works are described and referenced in our accompanying desk-based assessment of the site (Archaeological Services 2014). The geotechnical works have identified that the stabilisation of the northern slope is not financially viable and so alternative options for the preservation of the monument are being examined, which include the possibility of 'preservation by record'. These geophysical surveys form part of a wider scheme of works which includes desk-based assessment, geophysical survey and intrusive investigations, and which will inform decisions regarding any future stages of work on the monument.

Objective

2.4 The principal aim of the surveys was to assess the nature and extent of any sub-surface features of potential archaeological significance within the survey area, so that an informed decision may be made regarding the nature and scope of any further scheme of archaeological works that may be required in relation to the conservation and recording of the castle and its immediate environs.

Methods statement

2.5 The surveys have been undertaken in accordance with a Description of Scope provided by English Heritage (Appendix) and national standards and guidance (see para. 5.1 below).

2.6 Since the survey area lay within a Scheduled Monument the surveys were undertaken in accordance with a licence granted by English Heritage under Section 42 of the Ancient Monuments and Areas Act 1979 (as amended by the National Heritage Act 1983).

Dates

2.7 Fieldwork was undertaken between 24th and 27th November 2014. This report was prepared for December 2014.

Personnel

2.8 Fieldwork was conducted by Richie Villis (supervisor) and Patricia Voke. Geophysical data processing and report preparation was by Richie Villis, with illustrations by David Graham. This report was edited by Duncan Hale, the survey Project Manager.

Archive/OASIS

2.9 The site code is **TTC14**, for **T**arset, **T**arset **C**astle 20**14**. The survey archive will be supplied on CD to the client for deposition with the project archive in due course. Archaeological Services Durham University is registered with the **O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S** project (**OASIS**). The OASIS ID number for this project is **archaeol3-197166**.

Acknowledgements

2.10 Archaeological Services Durham University is grateful for the assistance of the Tarset Archive Group, the landowners and English Heritage in facilitating this scheme of works.

3. Historical and archaeological background

3.1 A detailed archaeological desk-based assessment has been produced for the site as part of a wider scheme of archaeological works (Archaeological Services 2014). The following information is intended to provide a brief summary, and is taken from the Description of Scope (Appendix), presented here with only minor amendments.

3.2 The monument includes the remains of the fortified residence known as Tarset Castle, situated upon a steep-sided promontory commanding the valley of the Tarset Burn to the north and the River North Tyne to the west, south and east. The promontory is surrounded by a substantial artificially dug ditch on the east and south sides, 20m wide and 5m deep, on average. The remaining two sides are bounded by steep banks which have the appearance of having been artificially scarped for added defence.

3.3 The fortified house occupied the eastern half of the promontory and is largely visible as the grassed-over remains of a rectangular structure, oriented north to south. Standing masonry and rubble is visible at the north-east and the south-east corners of the structure, standing upon the uncovered remains of a stone plinth. This masonry is thought to represent two of the four square corner turrets known to have existed at Tarset Castle.

3.4 The fortified house has a long documented history: John Comyn was given licence to crenellate his residence here with a stone wall and a ditch in 1267, the earliest surviving licence to do so in Northumberland. It was clearly a site of some importance, situated as it is above the River North Tyne and the Tarset fords and hence also commanding traffic on two old routeways. In 1523 the fortified house was occupied by Sir Ralph Fenwick and 80 men but was taken and burnt in 1525.

3.5 A sketch of the house in 1773 shows it to be a long narrow rectangular building with square turrets at each of the four corners surrounded by a stone wall of the same shape; this is thought to be the wall for which licence was given in 1267.

3.6 The monument was partly explored by excavation in 1888 but no records of the findings were left. It is thought that there may have been a timber palisade on the inner edge of the ditch and that there must have been a bridge across the ditch to give access to the house

4. Landuse, topography and geology

4.1 At the time of survey the study area comprised pasture with the castle mound and ditch at its centre, a railway cutting and the Tarset Burn and its floodplain. It was not possible to collect data over the entirety of the study area due to the steepness of the earth banks of both the castle itself and the railway cutting to the south. Three separate survey areas were established: Area 1 on the pasture to the east of the castle mound: Area 2 occupied the flood plain of the Tarset Burn to the west of the castle mound; and Area 3 covered the castle mound itself.

4.2 The study area comprised a raised spur of land, with ridge and furrow earthworks in the east, the castle mound in the centre and the floodplain of the Tarset Burn in the west. To the east the land slopes down gently from the Bellingham road and then beyond the enhanced castle slope. The land falls away steeply to the north and west, down to the floodplain of the Tarset Burn. The elevation across the ridge and furrow drops from 141m OD to 134m OD and on the castle mound ranges from 131m to 129m OD, whilst the elevation alongside the river is 121m OD.

4.3 The underlying solid geology of the area comprises Carboniferous strata of limestone, sandstone, siltstone and mudstone of the Tyne Limestone Formation (BGS 2014). In the vicinity of the castle the underlying strata is of the Lower Carboniferous period and consists of sandstones and mudstones. These lie stratigraphically below the Bearsmouth Coal seam, which has been exploited to the east of the castle, mostly on Park Hill and Boe Rigg. To the north of the castle a small stream flows into the Tarset Burn; it contains ochreous staining probably due to drainage from nearby old workings (Tarset Archive Group 2014).

4.4 The solid bedrock of the area is overlain by drift deposits of Devensian diamicton till (BGS 2014). In places till deposits have been moulded by ice into drumlins. It has been suggested that the castle site sits on such a drumlin and exposed till in slip scars on the site show it to comprise brown silty sandy clay with gravel, cobble and boulder inclusions (Tarset Archive Group 2014).

4.5 The extensive floodplains of the River North Tyne and the Tarset Burn are underlain by alluvial deposits. The deposits of the Tarset Burn can be seen in the bed of the burn and this material consists mainly of sand, gravel and cobbles, with some boulders (Tarset Archive Group 2014).

5. Geophysical survey

Standards

5.1 The surveys and reporting were conducted in accordance with English Heritage guidelines, *Geophysical survey in archaeological field evaluation* (David, Linford & Linford 2008); the Institute for Archaeologists (IfA) *Standard and Guidance for archaeological geophysical survey* (2011); the IfA Technical Paper No.6, *The use of geophysical techniques in archaeological evaluations* (Gaffney, Gater & Ovenden 2002); and the Archaeology Data Service & Digital Antiquity *Geophysical Data in Archaeology: A Guide to Good Practice* (Schmidt 2013).

Technique selection

5.2 Geophysical survey enables the relatively rapid and non-invasive identification of sub-surface features of potential archaeological significance and can involve a suite of complementary techniques such as magnetometry, earth electrical resistance, ground-penetrating radar, electromagnetic survey and topsoil magnetic susceptibility survey. Some techniques are more suitable than others in particular situations, depending on site-specific factors including the nature of likely targets; depth of likely targets; ground conditions; proximity of buildings, fences or services and the local geology and drift.

5.3 In this instance it was considered likely that cut features such as ditches and pits would be present on the site, and that other types of feature such as trackways, wall foundations and fired structures (for example kilns and hearths) would also be present.

5.4 Given the anticipated nature and depth of targets, two complementary geophysical survey techniques were considered appropriate: geomagnetic and earth electrical resistance survey. The selected geomagnetic technique, fluxgate gradiometry, involves the use of hand-held magnetometers to detect and record anomalies in the vertical component of the Earth's magnetic field caused by variations in soil magnetic susceptibility or permanent magnetisation; such anomalies can reflect archaeological features. Given the possible presence of wall-footings and tracks, an electrical resistance survey was also considered appropriate. Earth electrical resistance survey can be particularly useful for mapping stone and brick features. When a small electrical current is injected through the earth it encounters resistance which can be measured. Since resistance is linked to moisture content and porosity, stone and brick features will give relatively high resistance values while soil-filled features, which retain more moisture, will provide relatively low resistance values.

Field methods

5.5 A 20m grid was established across each survey area using a Leica GS15 global navigation satellite system (GNSS) with real-time kinematic (RTK) corrections provided by a temporary base station typically providing internal survey accuracy of less than 10mm. The base station also logged raw GNSS data, which was subsequently post-processed and related to the Ordnance Survey National Grid using OS supplied corrected RINEX data from five permanent stations and Leica GeoOffice v8.3 software.

5.6 Measurements of vertical geomagnetic field gradient were determined using Bartington Grad601-2 dual fluxgate gradiometers. A zig-zag traverse scheme was employed and data were logged in 20m grid units. The instrument sensitivity was

nominally 0.03nT, the sample interval was 0.25m and the traverse interval was 1m, thus providing 1,600 sample measurements per 20m grid unit.

5.7 Measurements of earth electrical resistance were determined using Geoscan RM15D Advanced resistance meters and MPX15 multiplexers with a mobile twin probe separation of 0.5m. A zig-zag traverse scheme was employed and data were logged in 20m grid units. The instrument sensitivity was 0.1ohm, the sample interval was 1m and the traverse interval was 1m, thus providing 400 sample measurements per 20m grid unit.

5.8 Data were downloaded on site into a laptop computer for initial processing and storage and subsequently transferred to a desktop computer for processing, interpretation and archiving.

Data processing

5.9 Geoplot v.3 software was used to process the geophysical data and to produce both continuous tone greyscale images and trace plots of the raw (minimally processed) data. The greyscale images and interpretations are presented in Figures 3-5; the trace plots are provided in Figure 6. In the greyscale images, positive magnetic and high resistance anomalies are displayed as dark grey, while negative magnetic and low resistance anomalies are displayed as light grey. Palette bars relate the greyscale intensities to anomaly values in nanoTesla and ohm, as appropriate.

5.10 The following basic processing functions have been applied to the geomagnetic data:

clip	clips data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic
zero mean traverse	sets the background mean of each traverse within a grid to zero; for removing striping effects in the traverse direction and removing grid edge discontinuities
de-stagger	corrects for displacement of geomagnetic anomalies caused by alternate zig-zag traverses
interpolate	increases the number of data points in a survey to match sample and traverse intervals; in this instance the data have been interpolated to 0.25m x 0.25m intervals

5.11 The following basic processing functions have been applied to the resistance data:

clip	clips data to specified maximum or minimum values; to eliminate large noise spikes; also generally makes statistical calculations more realistic
add	adds or subtracts a positive or negative constant value to defined blocks of data; used to reduce discontinuity at grid edges

de-spike	locates and suppresses spikes in data due to poor contact resistance
interpolate	increases the number of data points in a survey to match sample and traverse intervals; in this instance the data have been interpolated to 0.25m x 0.25m intervals

Interpretation: anomaly types

5.12 Colour-coded geophysical interpretation plans are provided. Three types of geomagnetic anomaly have been distinguished in the data:

positive magnetic	regions of anomalously high or positive magnetic field gradient, which may be associated with high magnetic susceptibility soil-filled structures such as pits and ditches
negative magnetic	regions of anomalously low or negative magnetic field gradient, which may correspond to features of low magnetic susceptibility such as wall footings and other concentrations of sedimentary rock or voids
dipolar magnetic	paired positive-negative magnetic anomalies, which typically reflect ferrous or fired materials (including fences and service pipes) and/or fired structures such as kilns or hearths

5.13 Two types of resistance anomaly have been distinguished in the data:

high resistance	regions of anomalously high resistance, which may reflect foundations, tracks, paths and other concentrations of stone or brick rubble, or voids
low resistance	regions of anomalously low resistance, which may be associated with soil-filled features such as pits and ditches

Interpretation: features

General comments

5.14 Colour-coded archaeological interpretation plans are provided.

5.15 Except where stated otherwise in the text below, positive magnetic anomalies are taken to reflect relatively high magnetic susceptibility materials, typically sediments in cut archaeological features (such as ditches or pits) whose magnetic susceptibility has been enhanced by decomposed organic matter or by burning.

5.16 Small, discrete dipolar magnetic anomalies have been detected in all of the survey areas. These almost certainly reflect items of near-surface ferrous and/or fired debris, such as horseshoes and brick fragments, and in most cases have little or no archaeological significance. A sample of these is shown on the geophysical interpretation plans, however, they have been omitted from the archaeological interpretation plans and the following discussion.

Area 1

5.17 Series of broadly north-west/south-east aligned positive and negative magnetic and high and low resistance anomalies have been detected across much of this survey area. These correspond to earthworks noted on the ground and reflect the remains of former ridge and furrow cultivation. Two stronger positive magnetic and high resistance anomalies have been detected at the east of the ridge and furrow. These also correspond to earthworks. The westerly earthwork may reflect an agricultural terrace, however, the strength of both the magnetic and resistance anomalies over the easterly feature probably indicate the presence of stone and/or rubble. This appears to be a man-made bank or at least the substantial revetment of a terrace. It is possible that this could have been a defensive structure at some time, such as the boundary of an outer enclosure associated with the castle.

5.18 The north-east corner of the area is characterised by high electrical resistance, especially along the north boundary. This is likely to reflect the relatively drier ground here compared with the boggy area immediately east of the bank/revetment and to the south of the open drain along much of the north boundary.

5.19 Three strong linear magnetic anomalies have also been detected in the north-east of the area. These are likely to reflect drains or other services within the boggy area east of the earthwork mentioned above. A probable north-south drain appears to be cut through an arc of higher resistance in the south of the area.

5.20 Two, parallel, low resistance anomalies have been detected at the south of the area, parallel to the railway cutting. These are likely to reflect drains and broadly correspond to a slight earthwork feature before the drop of the railway cutting. No corresponding geomagnetic anomalies have been detected due to the strong magnetic presence of an adjacent livestock feeder.

5.21 A strong dipolar magnetic anomaly and corresponding high and low resistance anomalies have been detected in the south of the area, along the roadside. These correspond to a ditch and bank earthwork feature. It is likely that material has been brought in to enhance the embankment for the road construction. The strong dipolar magnetic anomaly detected along the rest of the south-eastern edge of the area corresponds to a metal fence.

Area 2

5.22 The majority of anomalies detected in this area are considered likely to reflect modern disturbances rather than features of archaeological significance. No evidence for the suggested mill-race has been detected in this area, and it may lie closer to the river's edge, beyond the survey extent.

5.23 A broadly north-west/south-east aligned low resistance anomaly has been detected along the south-west edge of the area, broadly in line with the railway embankment. This also broadly corresponds to a chain of dipolar magnetic anomalies and may reflect a drain.

5.24 A region of anomalously high resistance has been detected in the centre of the area. This does not appear to correlate with any geomagnetic anomaly but it broadly corresponds to a slight earthwork feature where the ground level rises. It is possible that this reflects a deliberately laid hard surface, such as a yard or floor, rather than

natural variation in soil drainage. Regions of anomalously low resistance have also been detected in this area, notably around the high resistance feature. These could in part be due to increased run-off from the hard surface mentioned above and broadly correspond to boggy and semi-waterlogged areas noted on the ground.

5.25 Strong dipolar magnetic anomalies detected in the west of the area correspond to a concrete pad for a former sheep dip and a pile of ferrous debris.

Area 3

5.26 A number of high resistance anomalies have been detected across this area. The two eastern corner towers of the fortified house, which survive as earthworks and exposed masonry, have provided the highest responses. A number of linear and rectilinear high resistance anomalies are likely to reflect structural remains, including remnants of the outer wall with possible annex buildings constructed against this to the south of the main castle, and at least one possible further structure to the west.

5.27 High resistance anomalies in this area are also likely to reflect areas of rubble and possible surfaces. There is also some evidence for internal divisions, although the actual walls of the castle itself are not clearly defined.

5.28 The west of the area is characterised by high resistance. This could reflect either a constructed yard surface or a concentration of stone and gravel within the natural drift deposits west of the castle mound.

5.29 The structure of the castle itself is poorly represented in the geomagnetic data, however, a broadly rectangular area of raised values in the geomagnetic data has been detected across the footoprint of the castle.

5.30 Strong dipolar magnetic anomalies detected in the south-west of the area correspond to a series of iron posts set in the ground, perhaps associated with the former railway to the south-west.

6. Conclusions

6.1 A programme of detailed geomagnetic and earth electrical resistance survey was undertaken at Tarset Castle, Northumberland, as part of a wider scheme of archaeological investigations to inform ongoing conservation works.

6.2 Evidence of possible structures has been identified, including remains of the curtain wall and possible annex buildings, to the south and west of the four-towered fortified house on the castle mound. The remains of the castle itself are not clearly defined in the geophysical surveys. This could be due to a number of factors, including the presence of rubble spreads and stone-robbing.

6.3 Former ridge and furrow cultivation, which survives as earthworks, has been geophysically recorded to the east of the castle.

6.4 Substantial anomalies forming a regular band to the east of the ridge and furrow may reflect an earth and stone bank, or at least substantial revetment. This feature could have been built as a defensive structure, such as the boundary of an outer enclosure associated with the castle.

6.5 No evidence of the suggested mill-race to the west of the castle has been identified; this may exist closer to the edge of the Tarset Burn, outside the survey extent.

6.5 Probable drains and other modern disturbances have been identified.

7. Sources

Archaeological Services 2014 *Tarset Castle, Lanehead, Northumberland: archaeological desk-based assessment*. Unpublished report **3638**, Archaeological Services Durham University

David, A, Linford, N, & Linford, P, 2008 *Geophysical Survey in Archaeological Field Evaluation*. English Heritage

Gaffney, C, Gater, J, & Ovenden, S, 2002 *The use of geophysical techniques in archaeological evaluations*. Technical Paper **6**, Institute of Field Archaeologists

IfA 2011 *Standard and Guidance for archaeological geophysical survey*. Institute for Archaeologists

Schmidt, A, 2013 *Geophysical Data in Archaeology: A Guide to Good Practice*. Archaeology Data Service & Digital Antiquity, Oxbow

Tarset Archive Group, 2014 *Tarset Castle--Heritage at Risk*, V 0.3. Unpublished report

Appendix: Description of Scope

2.1 DESCRIPTION OF SCOPE

Geophysical Survey at Tarset Castle, Tarset, Northumberland.

Summary

A geophysical survey is required over an area of approximately 3.5ha at Tarset Castle, Tarset, Northumberland (NGR NY 78829 85479) to inform the future management of the site. A combination of magnetic and earth resistance survey are required over the extant earth works and surrounding area to establish both the location and approximate depth of any significant remains at the site. Tenders are invited for this work, to be concluded with a report by 5th December 2014.

Background

A geophysical survey at Tarset Castle, Tarset, Northumberland, is required to inform the future management of the site and enhance the previously conducted topographic and laser scanning surveys (Landform Surveys 2010). The aim of the geophysical survey is to determine the location and approximate depth of any significant remains over both the scheduled monument and surrounding area.

Archaeology

The monument includes the remains of the fortified residence known as Tarset Castle, situated upon a steep sided promontory commanding the valley of the Tarset Burn to the north and the North Tyne to the west, south and east. The promontory is surrounded by a substantial artificially dug ditch on the east and south sides 20m wide and on average 5m deep. The remaining two sides are bounded by steep banks which have the appearance of having been artificially scarped for added defence. The fortified house occupies the eastern half of the promontory, and is largely visible as the grassed over remains of a rectangular structure, oriented north to south. Standing masonry is visible to a maximum height of 1.5m at the north east and the south east corners of the structure standing upon the uncovered remains of a stone plinth. This masonry is thought to represent two of the four square corner turrets known to exist at Tarset Castle. The fortified house has a long documented history: John Comyn was given licence to crenellate his residence here with a stone wall and a ditch in 1267, the earliest surviving licence to do so in Northumberland. It was clearly a site of some importance, situated as it is above the North Tyne and the Tarset fords and hence also commanding traffic on two old routeways. In 1523 the fortified house was occupied by Sir Ralph Fenwick and 80 men but was taken and burnt in 1525. A sketch of the house in 1773 shows it to be a long narrow rectangular building with square turrets at each of the four corners surrounded by a stone wall of the same shape; this is thought to be the wall for which licence was given in 1267. The monument was partly explored by excavation in 1888 but no records of the findings were left. It is thought that there is a timber palisade on the inner edge of the ditch and that there must have been a bridge across the ditch to give access to the house.

Site conditions

The site is under grass partially interrupted by mature vegetation, the standing remains and the ditch surrounding the castle promontory and lies over geology of the Tyne Limestone Formation.

The geophysical survey requirement

The objective of the survey is to attempt to locate any significant archaeological remains or other activity within the designated areas (Figure 1).

Specification

1. An area of approximately 3.5ha (maximum extent), indicated by the red hatching shown on Figure 1, is to be covered by magnetic and earth resistance survey where possible. Parts of the castle mound banks will be too steep to survey and should be excluded.

2. The magnetic survey is to be conducted with a fluxgate gradiometer or similar instrument and readings must be recorded at intervals of 0.25m x 1.0m (or closer) over the survey area.

3. The earth resistance survey will use either the Twin Electrode (Twin Probe) configuration with a mobile probe spacing of 0.5m, or a wheeled resistivity square array system with probe spacings of 0.75m. Readings should be recorded at 1.0m x 1.0m intervals. Every effort should be made to ensure that a uniform dataset is acquired in which discontinuities of measurement levels at grid edges are minimised.

4. Any temporary survey grid established over the site should be accurately measured in to permanent landmarks or discreetly positioned permanent marker pegs by the geophysical survey team. The temporary survey grid should be removed after the completion of fieldwork unless other arrangements have been agreed to facilitate further work on the site. Location measurements, provided in the final survey report, should allow the temporary survey grid to be exactly relocated from readily identifiable landmarks or marker pegs if necessary. In addition, the location of the temporary survey grid should be co-registered to the Ordnance Survey National Grid and any permanent markers established at the site.

5. The fieldwork must, ideally, be conducted and 5 copies of a full report provided by 5th December 2014. A copy of the raw geophysical data, the final report text, figures and associated electronic drawing files must also be supplied to the English Heritage Geophysics Team in an appropriate, mutually compatible electronic format.

6. All fieldwork, data processing and reporting must follow recommendations set out by English Heritage (2008).

7. Fieldwork on site must be conducted with a high degree of professionalism. Extreme care must be taken to avoid trip hazards caused by trailing equipment leads or survey grid markers during the conduction of the survey. The northern edge of the monument is actively eroding and unstable, particular care must be taken in identifying a safe working area in the vicinity of this. Contractors will be responsible for preparing a Risk Assessment prior to the commencement of work.

Access

To be arranged in consultation through the agent, Mr H Remnant, 01661 843168.

References

English Heritage 2008 Geophysical survey in archaeological field evaluation, second edition. Swindon, English Heritage.

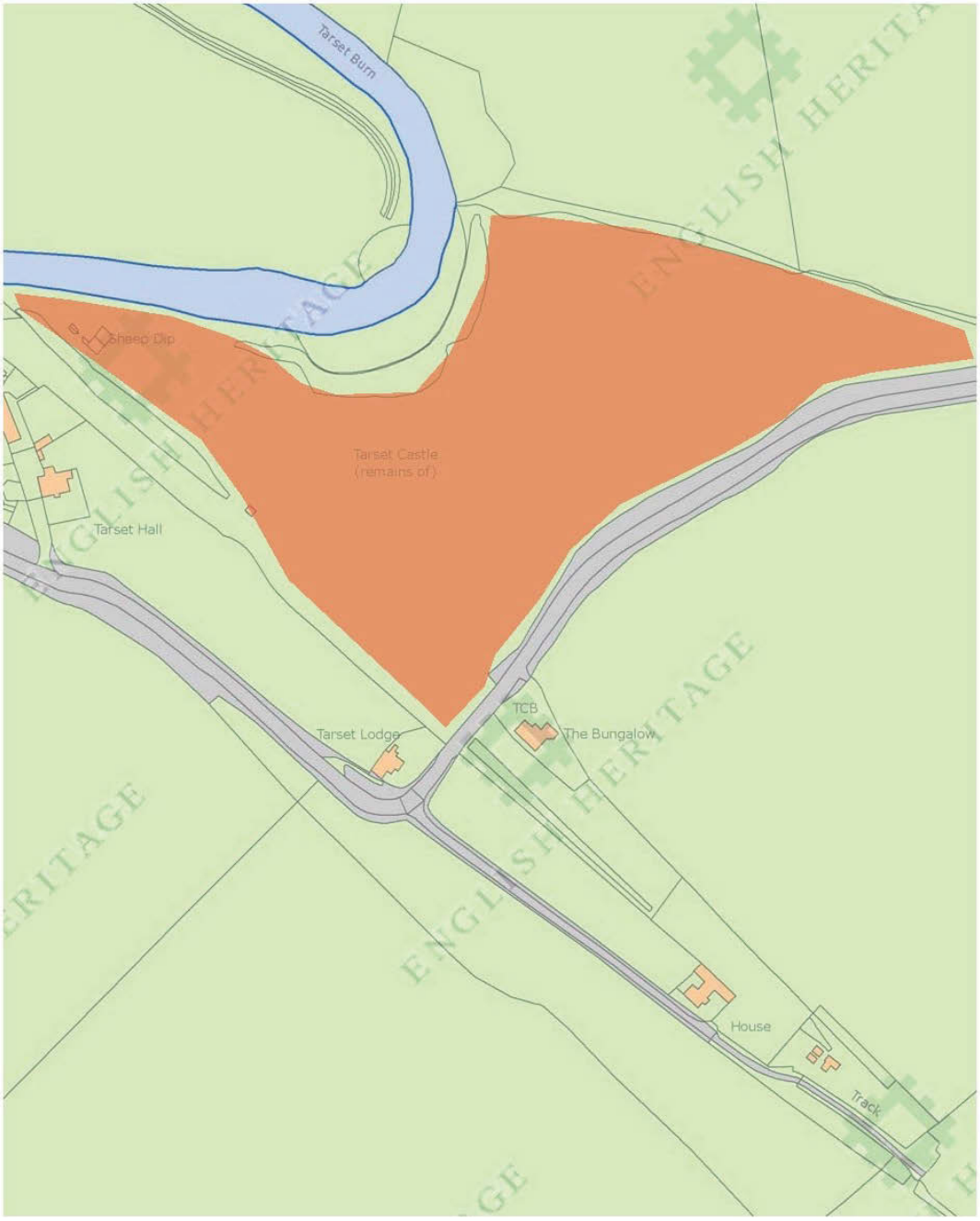

Figure 1 Location for the geophysical survey, shown by the area of red shading. (scale 1:2500)

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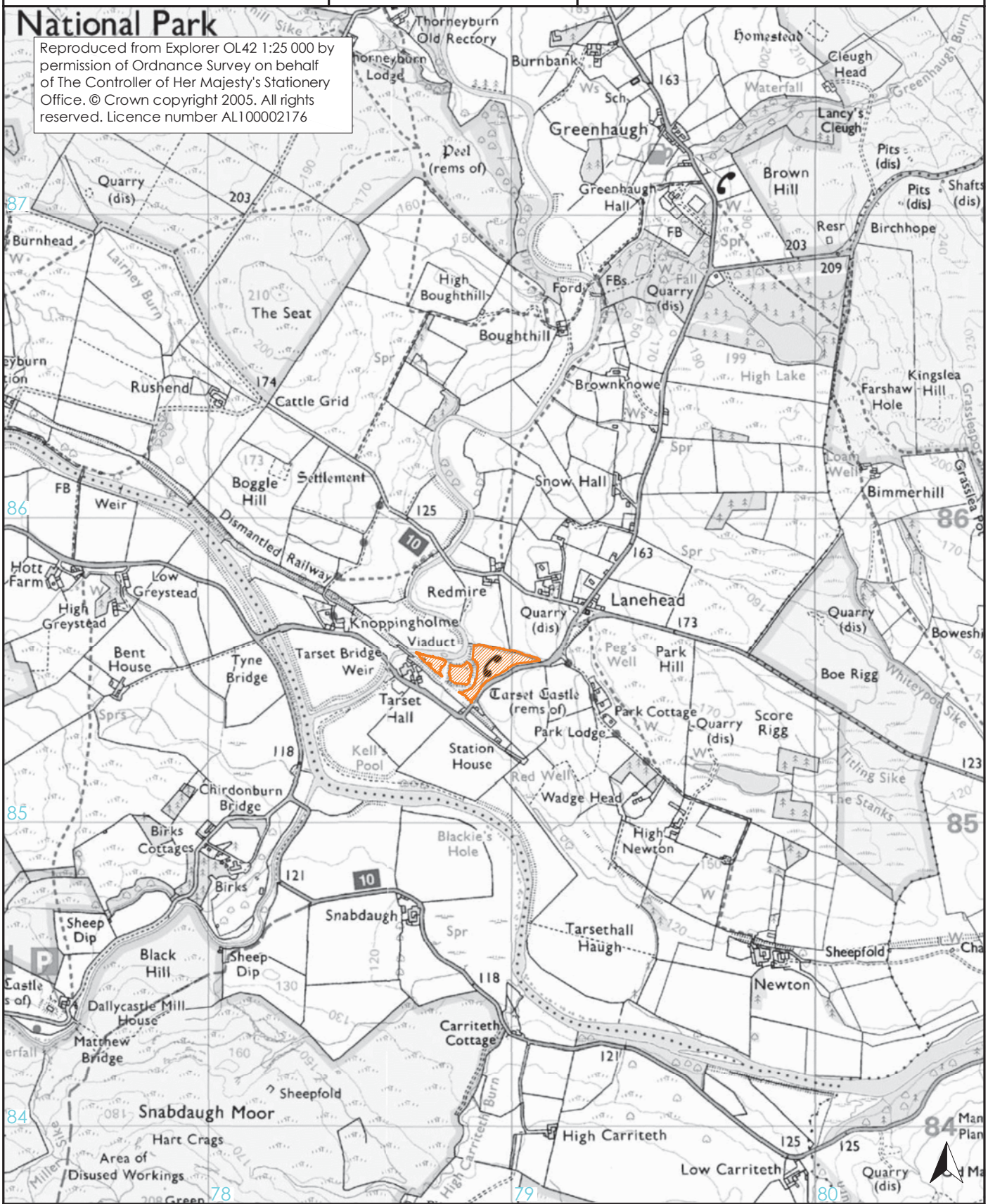
Figure 1: Site location



site location

0 800m
scale 1:17 500 for A4 plot

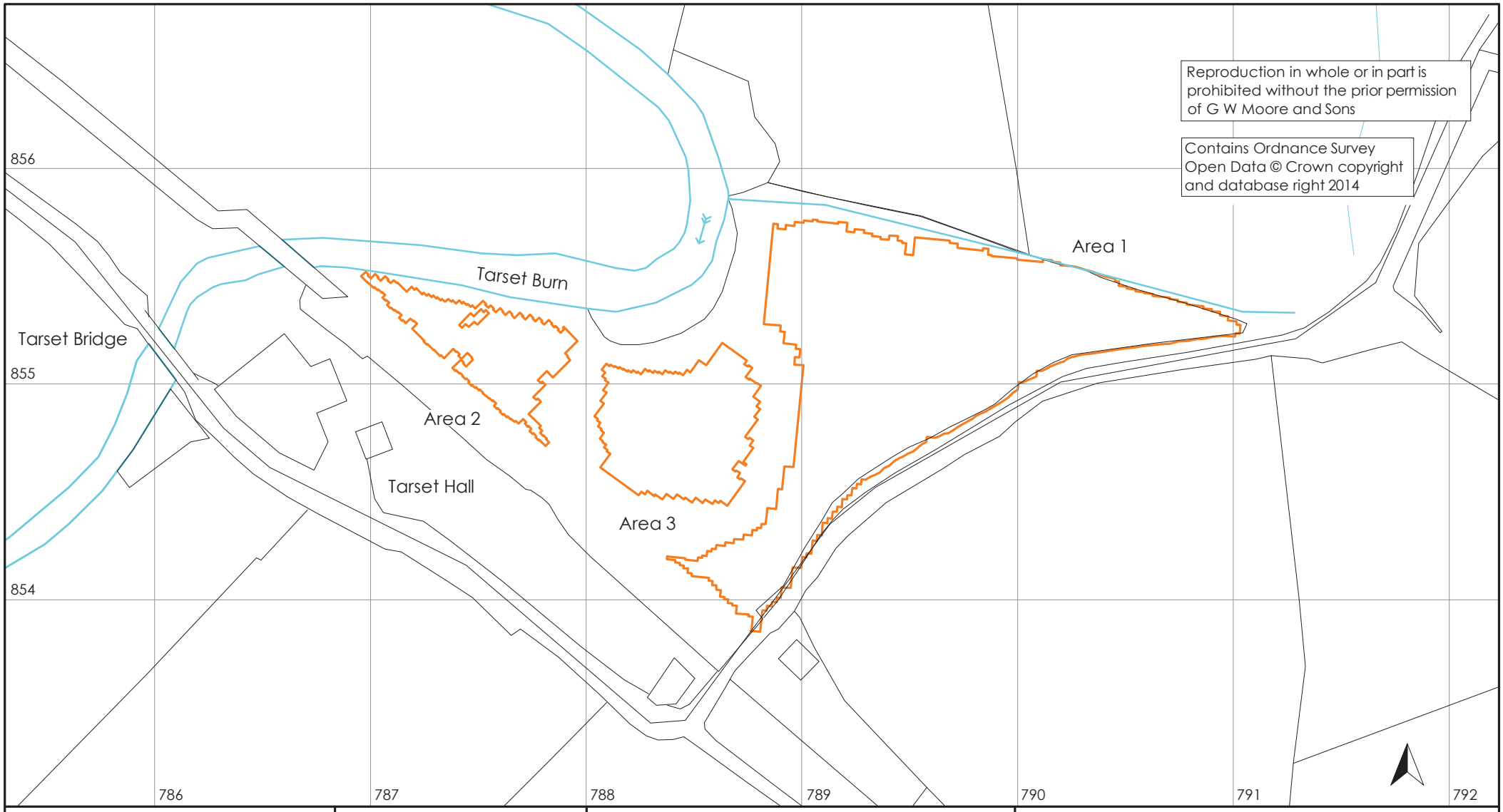


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Figure 2: Survey areas

survey area

0 100m
scale 1:2500 for A4 plot

A

Tarset Burn

Area 1

Area 2

Area 3

Tarset Hall

856

855

854

787

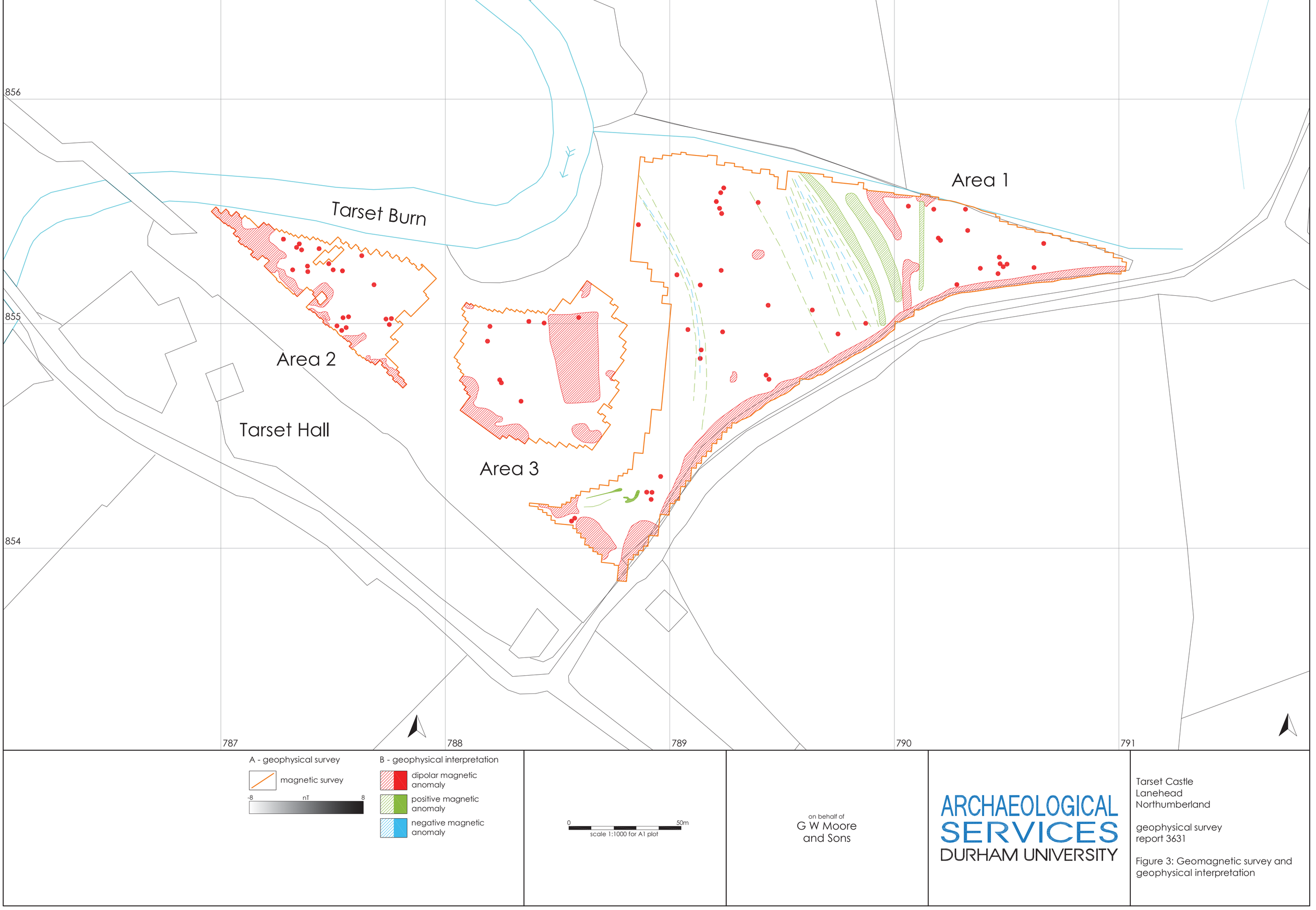
788

789

790

791

B



A - geophysical survey

magnetic survey

-8 nT 8

B - geophysical interpretation

dipolar magnetic anomaly

positive magnetic anomaly

negative magnetic anomaly

0 50m

scale 1:1000 for A1 plot

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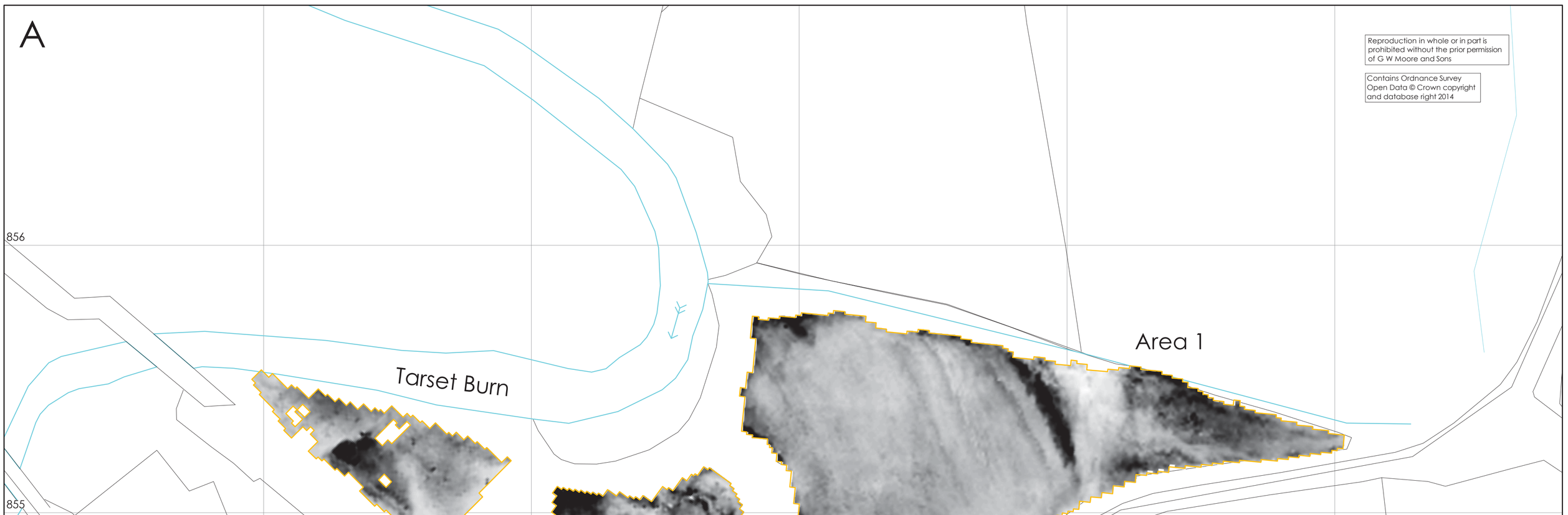
Figure 3: Geomagnetic survey and geophysical interpretation

A



B

A - geophysical survey

resistance survey

area 1
20 ohm 100

area 2
0 ohm 320

area 3
20 ohm 170

B - geophysical interpretation

high resistance anomaly

low resistance anomaly

0 50m
scale 1:1000 for A1 plot

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Figure 4: Resistance survey and geophysical interpretation

856

855

854

787

788

789

790

791

Tarset Burn

Area 1

bank

Area 2

Tarset Hall

Area 3

resistance survey

upcast/ modern overburden

structural remains / building rubble

hard surface

ridge and furrow

land drain

service pipe

feeder

0 50m

scale 1:1000 for A2 plot

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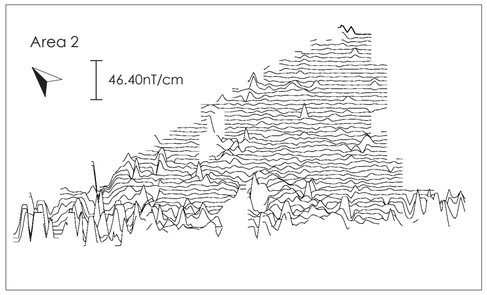
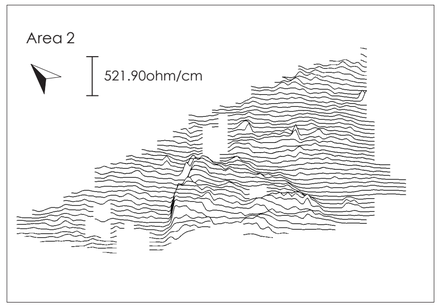
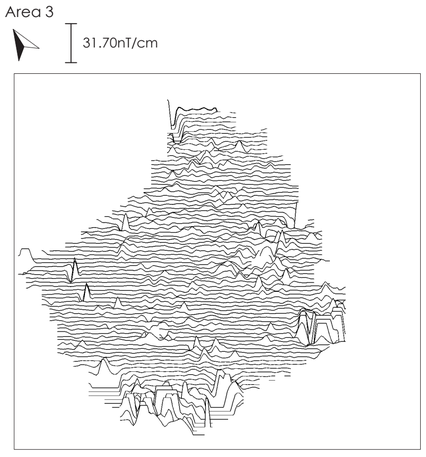
Tarset Castle
Lanehead
Northumberland

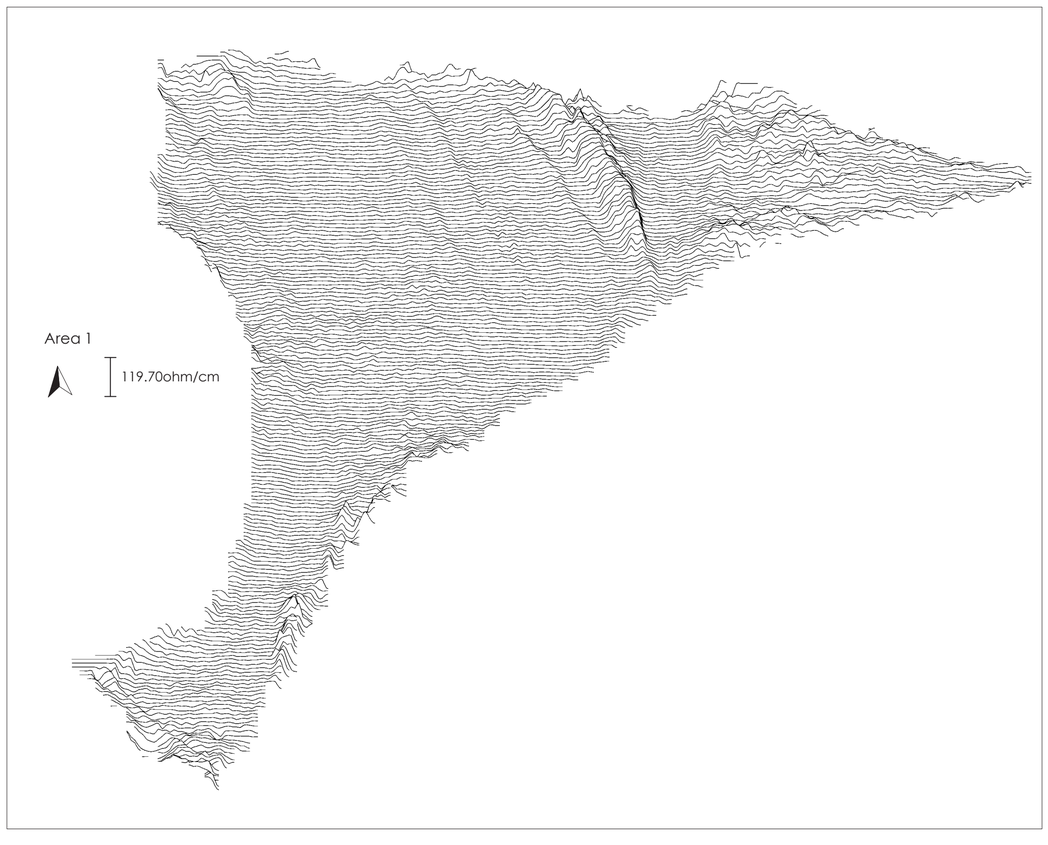
geophysical survey
report 3631

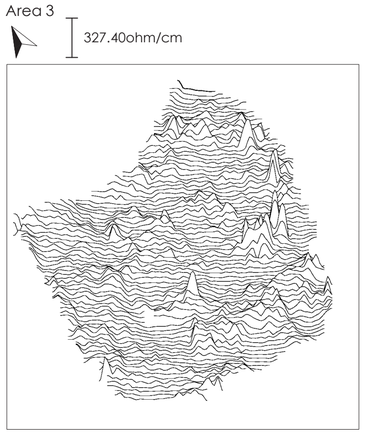
Figure 5: Archaeological interpretation











0 50m
scale 1:1000 for A1 plot

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Figure 6: Trace plots of geophysical data