



CAF Geophysical Report No. 10:

**Tullaghoge Fort
Co. Tyrone**

Client:

Cookstown District Council

Steven Trick & Ronan McHugh



Tullaghoge Fort, Co. Tyrone

A geophysical survey carried out on behalf of

Cookstown District Council

by

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enclosure around 1601 still survive, both seemingly drawn by Richard Bartlett, an English cartographer. The first of these (Plate 1) depicts the inauguration ceremony, while the second image (Plate 2) shows the *Leac na Rí* and the enclosure with two houses present in its interior. Following the Ulster Plantation the land around Tullaghoge was granted to Robert Lindsey in 1610, and a government survey of 1619 reports that his widow was living within the enclosure in a timber house; by 1622, however, we are informed by another government survey that the Lindseys had abandoned the old enclosure and that it was deserted.



Plate 2: Richard Bartlett's depiction of the enclosure circa 1601, with two houses located in the interior. The Leac na Rí is located downslope on the right of the map

- 2.3 The site is a Scheduled Monument and comprises a circular earthwork entered through a gap in the northwestern part of the outer bank, one of two banks which encircle the monument. The two high banks are set wide apart with a flat area between them, but there is no visible outer ditch. A causeway leads to a gap in the inner bank, giving access to the inner enclosed area. Whether the monument represents an Early Christian rath or ringfort, modified and altered through time, or whether it was originally a single-banked hilltop enclosure, perhaps of prehistoric origin, is a moot point since little previous study of the site and its morphology has been undertaken.

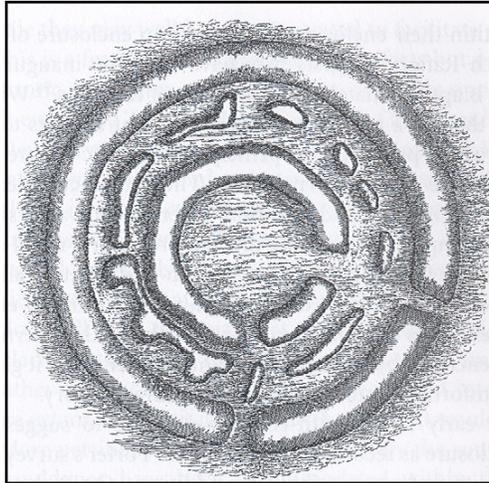


Plate 3: The first detailed plan of the enclosure was prepared in 1849 by Quigley

- 2.4 The first detailed plan and description of the monument was prepared in the late 1840s (Plate 3), work that indicates a more complex arrangement of banks and ditches to what is visible at the site today, but it is only with FitzPatrick's recent text (2004, 139-156) that a serious consideration of its historical context and importance has been undertaken. The geophysical survey reported on here will enable a more detailed understanding of its morphology and use to be ascertained.

3 Areas of investigation

- 3.1 The survey area was a corridor of ground aligned east-west comprising three separate fields, the central of these fields incorporating the site known as Tullaghoge Fort. This area was surveyed with earth resistance instrumentation using a grid-based methodology. A total of 85 30m x 30m grids were surveyed. The grids were set out using a total station, tapes, ranging rods and an optical square. The grids were geo-referenced to the base map using the total station.
- 3.2 Fieldwork was undertaken between 31st August and 20th September 2006, through negotiation with Cookstown District Council, DARD, and the Environment Heritage Service.
- 3.3 The survey was broken down into four discrete areas, from now on referred to as Area 1 through 4. Area 1 is the field east of the fort, Area 2 is the 'middle' field, Area 3 is the long western field, and Area 4 being the interior of the Fort. See Figure 1 for a plan of these survey areas.

4 Data Display

- 4.1 The report comprises the text, a plan of the survey areas, the results of the geophysical survey overlaid on the base mapping, interpretative diagrams of the survey area, and plots of the raw geophysical data from each discrete survey area.
- 4.2 The raw geophysical plots are produced in two different visualisations: standard greyscale shade plot, and trace plots.
- 4.3 The numbers in parentheses in the text of the report refer to anomalies highlighted in the relevant interpretation diagram (Figure 3).

5 Ground Conditions and General Considerations

- 5.1 The most imposing factor in the survey was the steep nature of the ground across the majority of the survey area. The vegetational cover was however amenable to geophysical survey, consisting of longish grass.
- 5.2 In some parts of Area 2 patches of field weeds made progress awkward and in extreme cases small areas were precluded from survey. The walkway around the Fort was too confined to be surveyed. The inner rampart slopes were not surveyed in order to avoid damage to the monument and risk of injury to the survey team. The outer bank of the Fort was generally avoided due to dense tree cover and uneven surfaces. The small areas of outer bank that were surveyed were uniformly high-resistance in nature, suggesting survey of these areas would be unfruitful in terms of locating spatially discrete anomalies.
- 5.3 Earth resistance techniques were employed since a magnetic survey may encounter igneous geology causing interference to the instruments. Resistance methods were expected to be successful in locating occupation areas internal and peripheral to the fort, ditches around the ramparts, and perhaps activity sites associated with medieval inauguration ceremonies.

6 Survey Results

The results will be described sequentially from east (Area 1) to west (Area 3), with the results from the Fort itself (Area 4) discussed finally.

6.1 Area 1 (Figures 1,2,3,5,6)

- 6.1.1 Area 1 is a steep- sloped trapezoidal field immediately east of the hilltop fort. A relatively high concentration of area and linear anomalies were noted in this field, which is of particular interest since it is postulated as being the possible focus for inauguration ceremonies at the site during the medieval period. Two large stones in this field are held to be possible components of the inauguration chair (O'Neill 1988).
- 6.1.2 The southern and eastern fringes of this field are marked by strips of high resistance areas (Anomalies **a1**, **a2**). On-site the field boundary here showed lynchet formation – a build up of material against the fence (positive lynchet), with a marked drop on the external side of the fence (negative lynchet), where material has been eroded away. Such formations are usually caused by a combination of ploughing and solifluction down-slope. It was noted that in many places the edge of the field consisted of stony soil with inclusions such as brick and tile. Such a make-up of soil would register as high resistance.
- 6.1.3 Located on the slope above the eastern field boundary is Anomaly **a3**, which is a roughly circular area of high resistance, approximately 10m in diameter. This anomaly has a short 'arm' sprouting from the northeastern edge, and a circular ring-formation, approximately 3m in diameter adjacent to its western edge. It has no obvious interpretation, but may be a circular platform made from stone or other hard material, possibly related to medieval ceremonial activity on the site. Alternatively, it is also possible it results from similar processes which resulted in Anomalies **a3** and **a4**, i.e. a build up of debris at the bottom of the slope, and it consists of a cache of stones and other hard material.
- 6.1.4 Immediately down-slope is high-resistance Anomaly **a4**, similar in morphology to **a3** but smaller in scale, approximately 5m x 8m. Its proximity to the high-resistance lynchet material at the bottom of the field suggests it may be again related to the build up of debris at the field edge.
- 6.1.5 Several metres up-slope to the west is an amorphous patch of high-resistance (Anomaly **a5**), measuring c. 8m x 7m. Since this anomaly is located at or near the terminus of low-resistance linear (**l4** – discussed below), the former is interpreted as being related to drainage measures, perhaps a subsurface water tank or stone-lined drain.
- 6.1.6 Near the northern edge of this field two small areas of high resistance were noted (**a6**), both c. 3m in diameter. The origin of these anomalies is uncertain. According to 19th century accounts this field was known to contain many boulders in the past

(Lewis 1837). It is possible that anomalies such as this represent buried boulders occurring naturally or through human agency.

- 6.1.7 Running parallel to the eastern edge of this field is a high-resistance linear anomaly (**I1**), no more than 2m wide. This is interpreted as a pathway along the edge of the field, most likely formed by the constant trampling by livestock which has resulted in the compaction of the soil.
- 6.1.8 Curving gently across Area 1 is a narrow, low-resistance linear anomaly (**I2**), c.1m wide. Its origin at the north of the field coincides with the location of a water trough. Its destination in the southwest corner of the field also coincides with the location of another water trough. It therefore possibly marks the line of a trench containing a pipe carrying water between the troughs. The path of the anomaly also happens to pass by the two large stones located in the field. An alternative explanation would see it as the route taken by cattle between the two troughs, the animals stopping to rub on the stones en route. Livestock tracks may present themselves as low-resistance anomalies due to compaction of the soil which causes moisture to pool on the surface.
- 6.1.9 Another arcuate linear anomaly is that at **I3**. This anomaly is high-resistance, c. 1-2m wide, and its path continues into Area 2 to the west. It may represent a boundary of a former field or other enclosure. The fact that it crosses present field divisions is perhaps significant.
- 6.1.10 Heading east-west in a remarkably straight line is the low-resistance linear **I4**, picked up in both Area 1 and Area 2. Its extreme linearity and passage from high to low ground suggests it is a field drain. It is normal however for field drains to present themselves as high-resistance linear anomalies. It is possible that the postulated drainage pipe is leaking into the surrounding soil causing it to be waterlogged and of low-resistance.

6.2 Area 2 (Figures 1,2,3,7,8)

Area 2 is the field incorporating the fort itself (surveyed separately - Area 4). Its form is generally flatter being close to the summit of the drumlin, although it slopes markedly towards the south.

- 6.2.1 The plot of raw data from Area 2 (Figure 7) shows a broad band of lower resistance starting in the southeastern corner and heading northwestwards. This is taken to be the gentle response of the underlying geology, rather than an archaeological anomaly.
- 6.2.2 Along the inside of this southern boundary high-resistance readings were encountered, in a similar pattern to Anomalies **a1** and **a2** in Area 1. These are taken to be a result of the same process and are therefore not discussed further.
- 6.2.3 At the western edge of Area 2 is a band of high-resistance (Anomaly **a7**). This coincided on the ground with the eastern edge of a *sheugh*, which follows the fenceline. Large stones were seen to be protruding into the section of this sheugh, possibly a former field wall.
- 6.2.4 Immediately southwest of the fort, and covering a large part of Area 2 is an amorphous high-resistance area (**a8**). Due to its organic shape and indistinct limits it is interpreted as the underlying geology protruding up towards the surface. It has been postulated that there may be a ditch external to the outer bank of the fort, which would be fitting of a bivallate rath. The survey around the western perimeter here did not detect a ditch, although it must be borne in mind that the survey could not penetrate the fenced walkway immediately peripheral to the outer bank.
- 6.2.5 Immediately south of the fort are a pair of high-resistance linears of geometric pattern, both around 2m wide (**16**). They are of uncertain origin, although they appear to be radiating out from the fort, perhaps a formal passage leading in/out. Porter's discussion of Tullaghoge mentions a conversation with a local who remembered there being a fruit orchard in this field (Porter 1857). It is possible that these linear anomalies are related to the orchard in some way. Anomaly **17** is similar in nature to **16**, and again is not readily interpreted. It could also be related to the former orchard. A scatter of localised high-resistance points also occurring in this field could potentially be buried tree stumps of old fruit trees.

6.3 Area 3 (Figures 1,2,3,9,10)

Area 3 is the large field at the western end of the survey area. This field slopes at a consistent incline down to a forested area containing the visitor car park and beyond which is the Tullywiggan Road. At the bottom of the field the topography is more varied, with a distinct shelf just above the bottom fence.

- 6.3.1 In the northeast corner of the field is a finger of high-resistance c. 5m long and 2m wide (**a9**). Its proximity to the fence may indicate it is related to the field division here, perhaps a section of buried stone walling.
- 6.3.2 Terracing across the top of the field are a pair of parallel high-resistance linears (**I8**), c. 1m wide, which appear to continue beyond the survey area both north and south. They are unlikely to be field drains since they do not run down-slope. A more likely explanation for their parallel pattern is a pair of former field boundaries which delineate a track or driveway between cultivated areas or paddocks. Porter mentions a 'very old road' from the hill down to the village of Tullyhogue (0.5km to the south) in this area (Porter 1857). It is possible that the anomalies here delineate such a road, certainly the alignment is appropriate for a route from the hill to Tullyhogue village.
- 6.3.3 Just to the west, but on a similar alignment is a singular high-resistance linear (**I10**), more irregular in morphology ranging between 1 and 6m in width, which seems to split in two at its southern extremity. The irregular shape suggests it is a natural formation in the subsoil.
- 6.3.4 At the northern edge of the field is a rectilinear arrangement of high-resistance readings (**I10**). This appears to be some kind of enclosure which continues north under the farmer's track. With a width of c. 18m it is too wide to be the remains of a dwelling, instead it may represent an animal pound with stone walls, the bases of which remain.
- 6.3.4 Anomaly **I10** is intersected by a high-resistance linear anomaly which heads southeast to join another similar linear in a T-shape (**I11**). These are interpreted as a complex of field drains.
- 6.3.5 Large contiguous areas of high-resistance were noted towards the southwest corner of Area 3. The broad, amorphous shape of these areas on the raw plot (Figure 9) indicate that this is the underlying geology rising up to the surface in places (**a10**). This may be due in part to erosion processes in this field, as suggested by the raised level of adjacent fields. The proximity of the geology in this field has made the survey

data 'noisy' with scatters of high-resistance peaks in the central-southern part of the field in particular. This can mask the visibility of archaeological traces. In this latter part of the field a curvilinear arrangement of high-resistance 'spots' can be discerned (**a11**), each c. 3m wide. Given the context, these are most likely to be pockets of gravel or stones, however the possibility remains that they may be archaeological in origin, possibly pits or post-holes filled with stone. Other 'spots' in the field may equally be of archaeological potential.

- 6.3.6 Amongst the geological response at **a10**, a substantial linear anomaly c.3m wide can possibly discerned, running from the edge of the survey area, and turning through 90 degrees (**a12**). This is possibly the stone footprint of a substantial enclosure wall or structure. However given the proximity to a noisy geological zone, this may be a misleading arrangement of natural stones and gravels in the soil.

6.4 Area 4 (Figures 1,2,4,11,12)

Area 4 comprises the earthworks at the top of the hill, referred to as the 'fort'. The earthworks consist of concentric outer and inner circular banks, the interior of the latter consisting of a raised area. Between the inner and outer bank is a remarkably flat 'berm', however antiquarian plans of the site depict the patchy remains of a former, third, intermediate bank in this space. Nineteenth century accounts report that local farmers were actively quarrying away this intermediate bank (Porter 1857). However why they would focus on the middle bank rather than the more accessible outer one is puzzling. The interpretation that there was a bank here is perhaps a problematic one, especially since this area is so uniformly flat (bar a singular knoll) in the present day. The modern entrance to the enclosure is a slightly raised walkway through gaps in the ramparts, into the centre of the monument. Here the topography is complex with knolls either side of the path, between the outer and inner banks. The SMR entry for the fort suggests there was some kind of guard house on the causeway as it enters the enclosure (SMR TYR 038:016). Interpreting the results of the geophysical survey in Area 4 has been made more challenging by the fact there is no modern, accurate topographic plan of the fort interior on which to overlay the results. Such a plan is would prove useful for both academic research and heritage management purposes at the site.

- 6.4.1 In the few places that the outer bank was surveyed (**a13, a14, a15**) this was found to be uniformly of high-resistance, suggesting the bank is made up of porous, dry material, the moisture depletion being assisted by the numerous trees and thick undergrowth colonising the banks.
- 6.4.2 The berm between the outer and inner banks - generally damp underfoot on site - was found to be uniformly low-resistance, with only two anomalous areas discernible

in the plot (**a16 and a17**). Anomaly **a16** is represented on the ground as a low knoll. Anomaly **a17** was not visible as a topographic feature, but is interpreted as a subsurface bank.

- 6.4.3 Just inside the entrance to the monument, either side of the walkway, between the outer bank and the 'guard' knolls there is a narrow ditch, which is filled with large stones. When this area was surveyed it exhibited high-resistance readings (**a18 and a19**) suggesting that the stones continue beneath the surface. These may be the remnants of a stone wall in the vicinity, or bank revetment, or some kind of structure.
- 6.4.4 The causeway into the centre of the monument, and the banks on either side generally produced high-resistance values. However of particular note are two 'spikes' in the data, either side of the causeway, at the entrance to the inner enclosure (**a20**, see the trace plot in Figure 12). These may be the structural remains of a formalised entrance, perhaps stone revetting to the banks. Bartlett's drawing of the enclosure from 1601 shows sturdy posts marking the entrance to the enclosure. It is possible that these anomalies are post-holes that have had the posts removed and the voids filled with stone packing material.
- 6.4.5 The raised area at the centre of the monument did not produce any anomalies indicative of structures on the site. There is a gentle geological response across the interior, from a low-resistance zone in the southwest, to higher resistance to the east and around the periphery. Higher resistance patches in the northeast, southeast, and southwestern corners, as illustrated by Anomaly **a21**, are the result of dead tree stumps, or the roots and low canopy of a tree drying out the soil. There is however a notably linear arrangement to the low-resistance area as it proceeds to the eastern edge of this inner enclosure (**a22**). This is interpreted as being a route out from the interior, which was perhaps worn into a hollow-way, which has since become in-filled with finer, siltier material. The inner bank is not broken at this point, although the outer bank on the same alignment has gaps in it.
- 6.4.6 Immediately south of Anomaly **a21**, there is a scatter of high-resistance spots, 1m or less in diameter (**a23**). These may be pits associated with occupation of the interior of the fort.
- 6.4.7 Given that Bartlett's drawing of 1601 depicts two sturdy houses in the interior of the fort, and a survey from 1612 records timber dwellings there (Donnelly 1997, 76), it is disappointing that no obvious structural remains have come to light. The houses depicted in Bartlett's drawing look like mud-walled houses. This style of housing often had subsurface stone footings, which should be detectable through resistance

survey, although such foundations were not a prerequisite. Plantation-period timber houses of the kind recorded as being present on the site, are likely to leave virtually no lasting subsurface traces. It is recorded that there have been a series of 19th century antiquarian excavations in the interior which may have removed any remaining structural elements (Porter 1857).

7 Conclusions

- 7.1 The resistance survey at Tullaghoge identified a number of anomalies, the majority of which relate to modern agricultural practices on the hill. The areas of most archaeological potential are considered to be Area 1 east of the fort, and the entrance to the fort in Area 4. In the former there a number of large, high-resistance subsurface features, made all the more intriguing in light of the association of this field with royal Gaelic inauguration rites. At the entrance to the fort, localised spots of high-resistance were encountered which may indicate some kind of formal entranceway to the enclosure, as indicated in 17th century drawings of the site.
- 7.2 Future work should consider the application of focused, high-resolution resistance survey, and magnetometry to the interest areas highlighted by the present survey. This work should take place after, or in concert to detailed topographic survey of the fort in order that the results can be readily disseminated

Acknowledgements

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the cities, bishopricks, corporate towns, and boroughs; and of the seals of the several municipal corporations. With an appendix, describing the electoral boundaries of the several boroughs, as defined by the act of the 2d & 3d of William IV. London: S. Lewis.

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SITE SUMMARY SHEET

CAF GSR 010 Tullaghoge Fort, Co. Tyrone

NGR: H 8250 7430

Location, topography and geology

Tullaghoge Fort (SMR No. TYR 038:016) is located on the crown of a prominent hill in the townland of Ballymully Glebe, 4km SSE of Cookstown, a short distance to the north of the village of Tullyhogue. The site is located in a drumlin landscape, the hill being roughly conical in shape with steep sides. The site offers expansive views of the surrounding landscape. The site is located on the solid geology of the Rockdale Limestone formation, comprising limestone and argillaceous interbedded rocks, above this is a drift geology of glacial till. Red Trias Sandstone soils dominate the local area, also with occurrences of sand and gravels.

Archaeology

The hill of Tullaghoge was the inauguration site of the O'Neills of Tyrone for a number of centuries up to 1601. The importance of the site is can be seen through its recurrence in early Gaelic literature, and regular appearance on English 16th and 17th century maps of Ulster. Documentary sources outline the inauguration rites at Tullaghoge and the use of a ceremonial chair. An early 17th century drawing depicts this inauguration chair located on the slope down from the fort, with modern scholars identifying this as the east side of the hill. Boulders strewn on the hillside here may be surviving elements of the chair. The appearance of the site is that of a bivallate rath, i.e. an outer bank, ditch, and inner bank, however it departs standard bivallate rath morphology in that the banks are not set closely together, and there is no outer ditch. There are several small islands in the ditch between banks, and older sources record the former presence here of a third rampart. It would appear to be a site geared strongly towards defence. The SMR entry postulates the presence of a guardhouse at the northern entrance. The site was used in the Plantation period as a ready made fort, with timber houses inside. A survey of 1622 suggests occupation shifted from the top to the base of the hill.

Aims of Survey

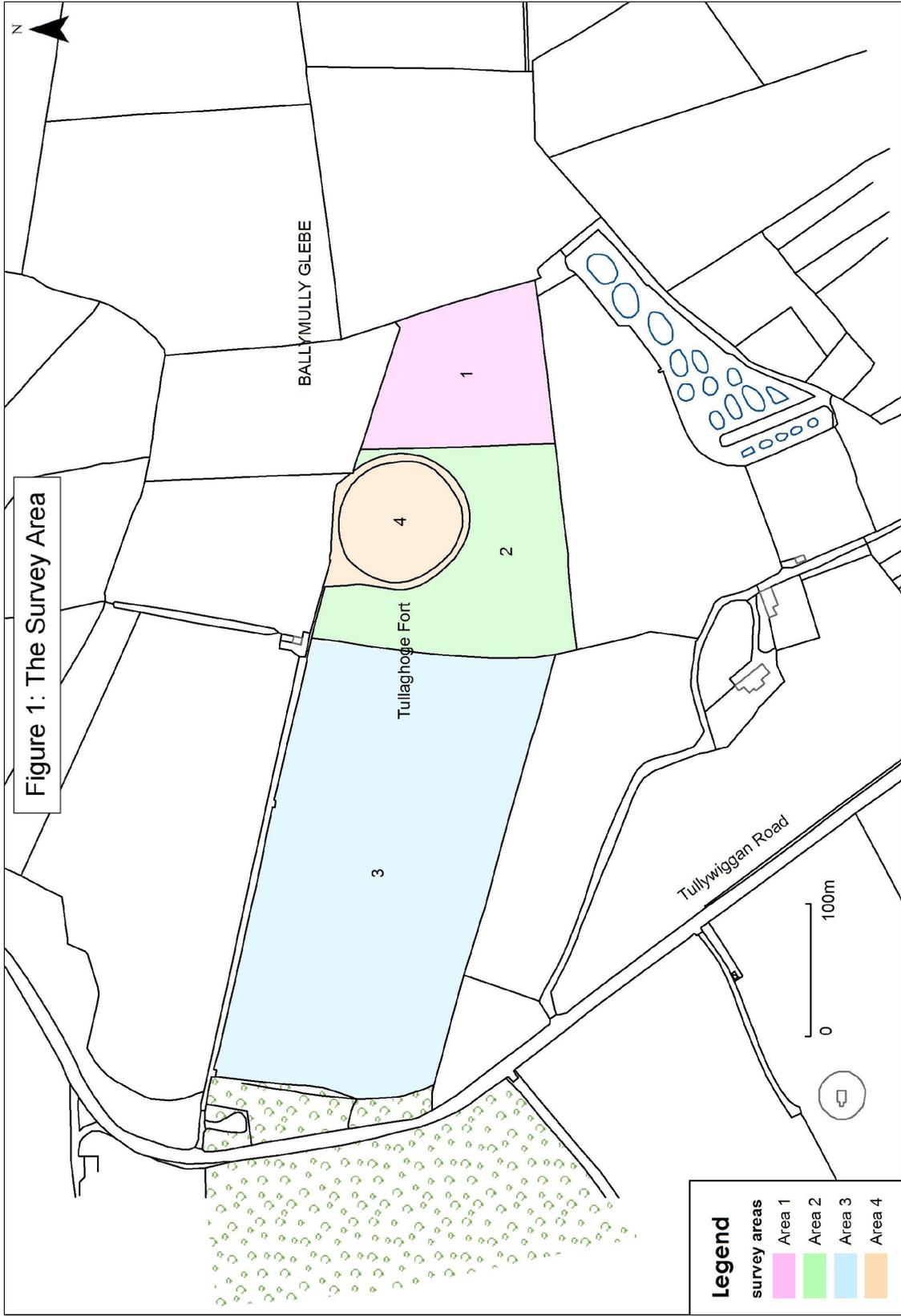
The aims of the survey were to identify the presence an extent of any archaeological remains within the fort and surrounding fields. The work forms part of ongoing archaeological assessment and heritage management of the site by Cookstown District Council.

Summary of results*

This report details the use of earth resistance techniques to identify archaeological deposits within Tullaghoge Fort, and fields peripheral to the site.

Many subsurface anomalies were identified during the survey, however most of these appear to relate to modern agricultural practices. An interesting concentration of anomalies occurred in the field east of the fort, regarded by some as the field which held the inauguration chair. The entrance to the fort itself showed a concentration of high readings, suggesting some kind of formalised structural entrance to the interior of the monument. The interior of the fort did not show any obvious structural remains although there were anomalies here of archaeological potential. Future, high-resolution survey and/or excavation of these interest areas would provide details on morphology and materiality.

*These should be read in conjunction with the rest of the report.



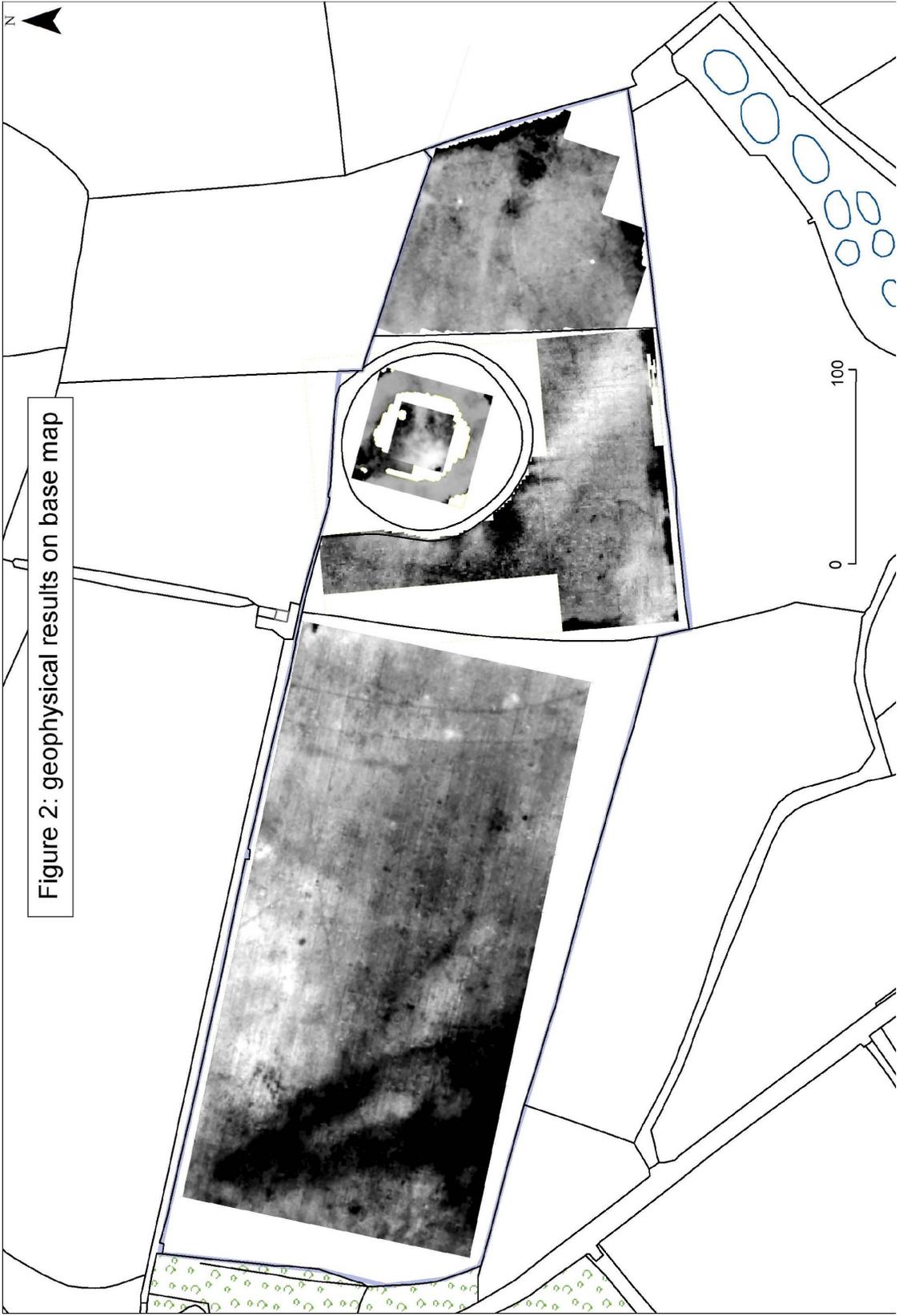


Figure 2: geophysical results on base map

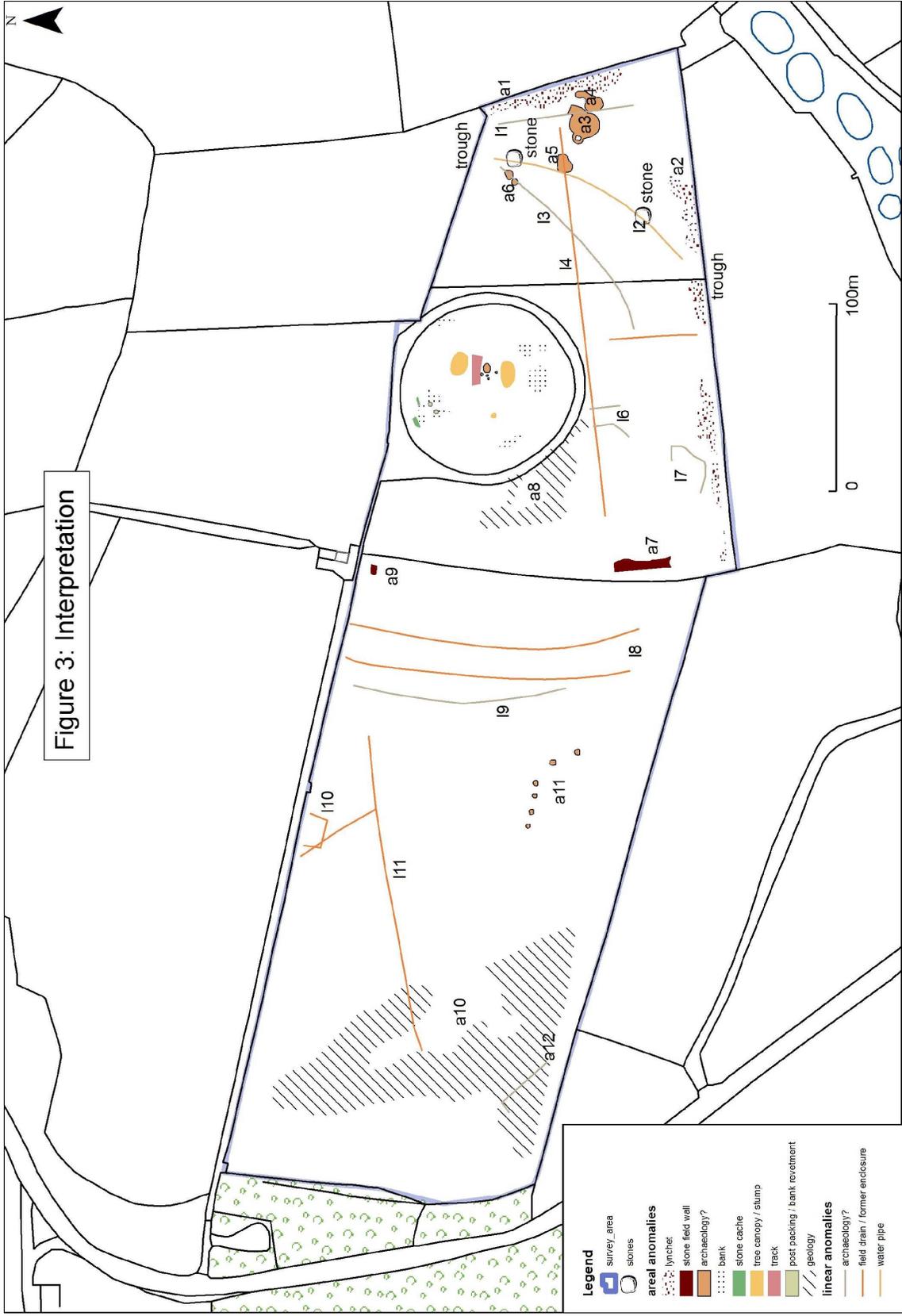


Figure 3: Interpretation

- Legend**
- survey_area
 - stones
 - areal anomalies**
 - lyncher
 - stone field wall
 - archaeology?
 - bank
 - stone cache
 - tree canopy / stump
 - track
 - post packing / bank revetment
 - geology
 - linear anomalies**
 - archaeology?
 - field drain / former enclosure
 - water pipe

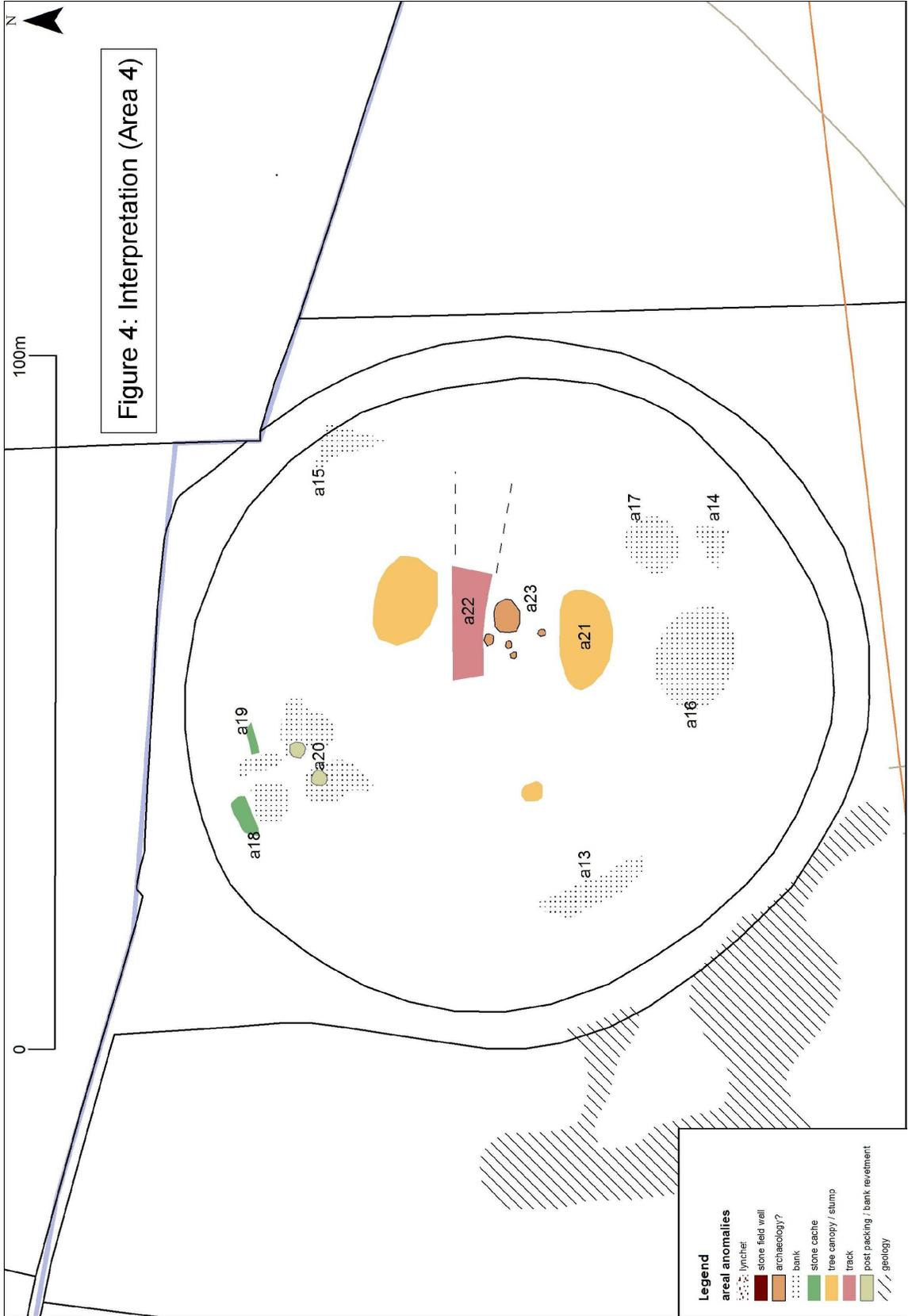


Figure 4: Interpretation (Area 4)

Figure 5: Area 1 raw data (shade plot)

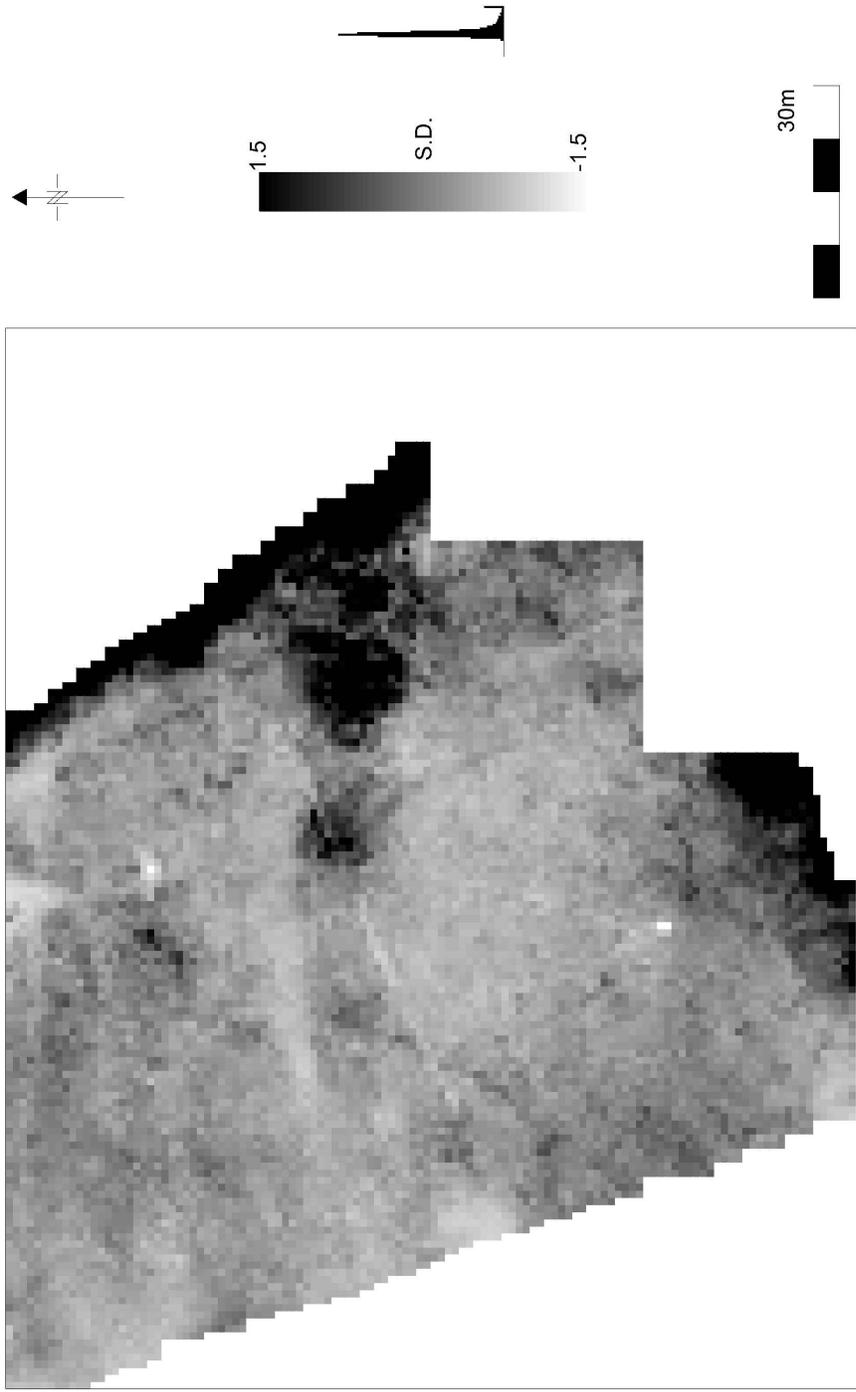


Figure 6: Area 1 raw data (trace plot)

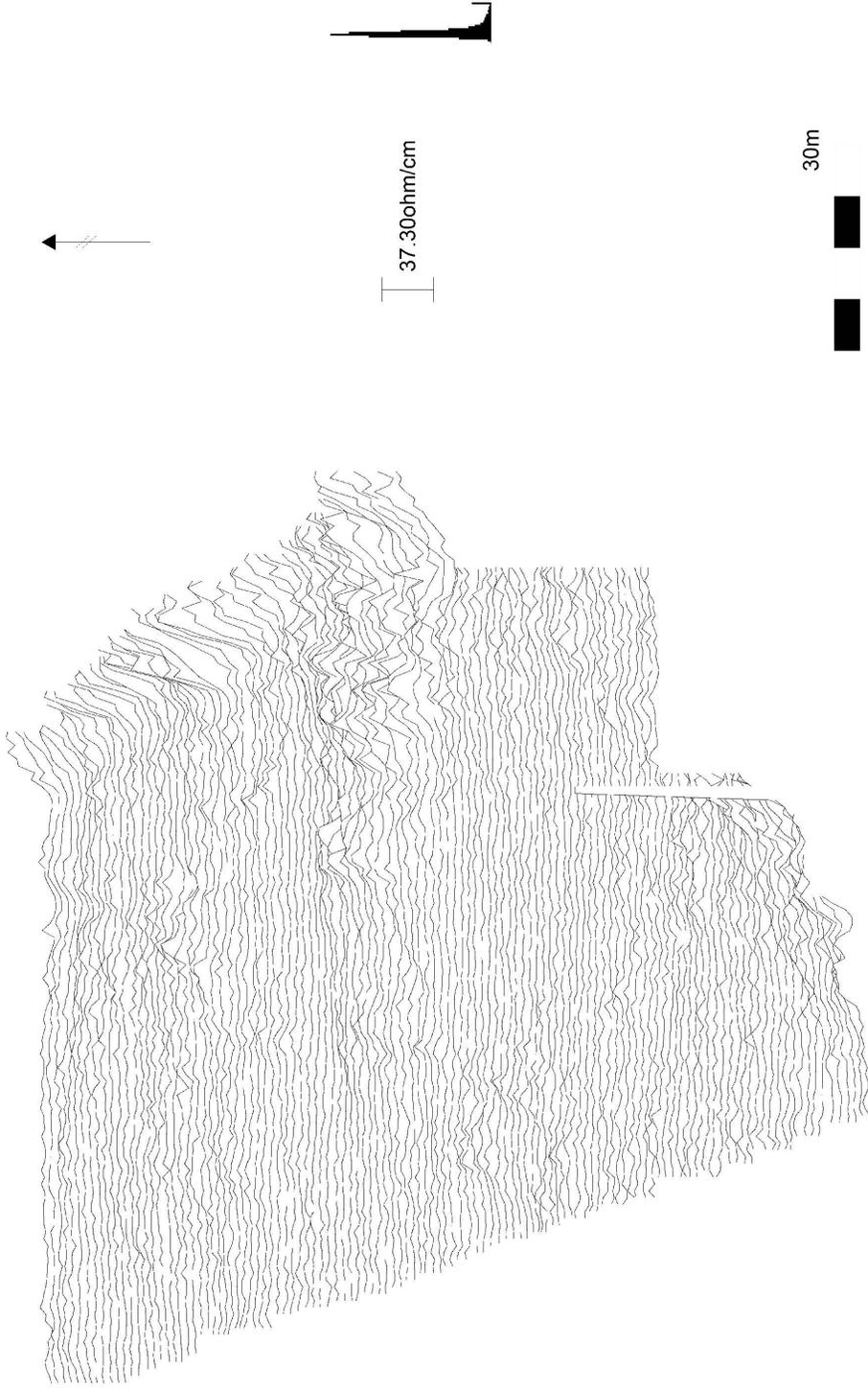
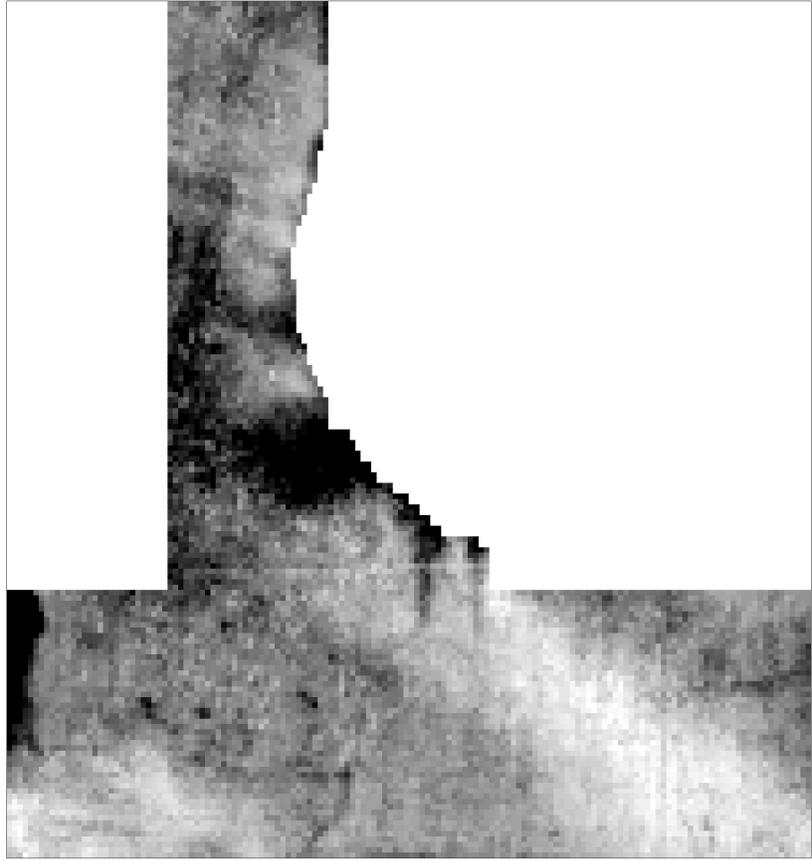


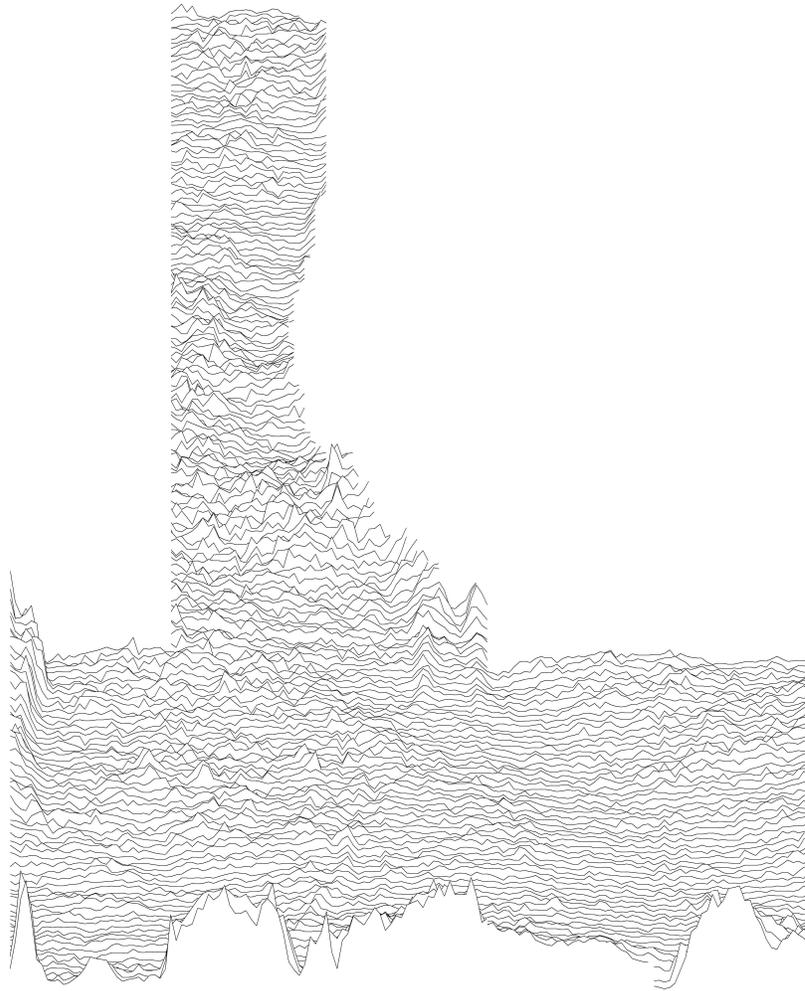
Figure 7: Area 2 raw data (shade plot)



40m



Figure 8: Area 2 raw data (trace plot)



40m

26.63ohm/cm



Figure 9: Area 3 raw data (shade plot)

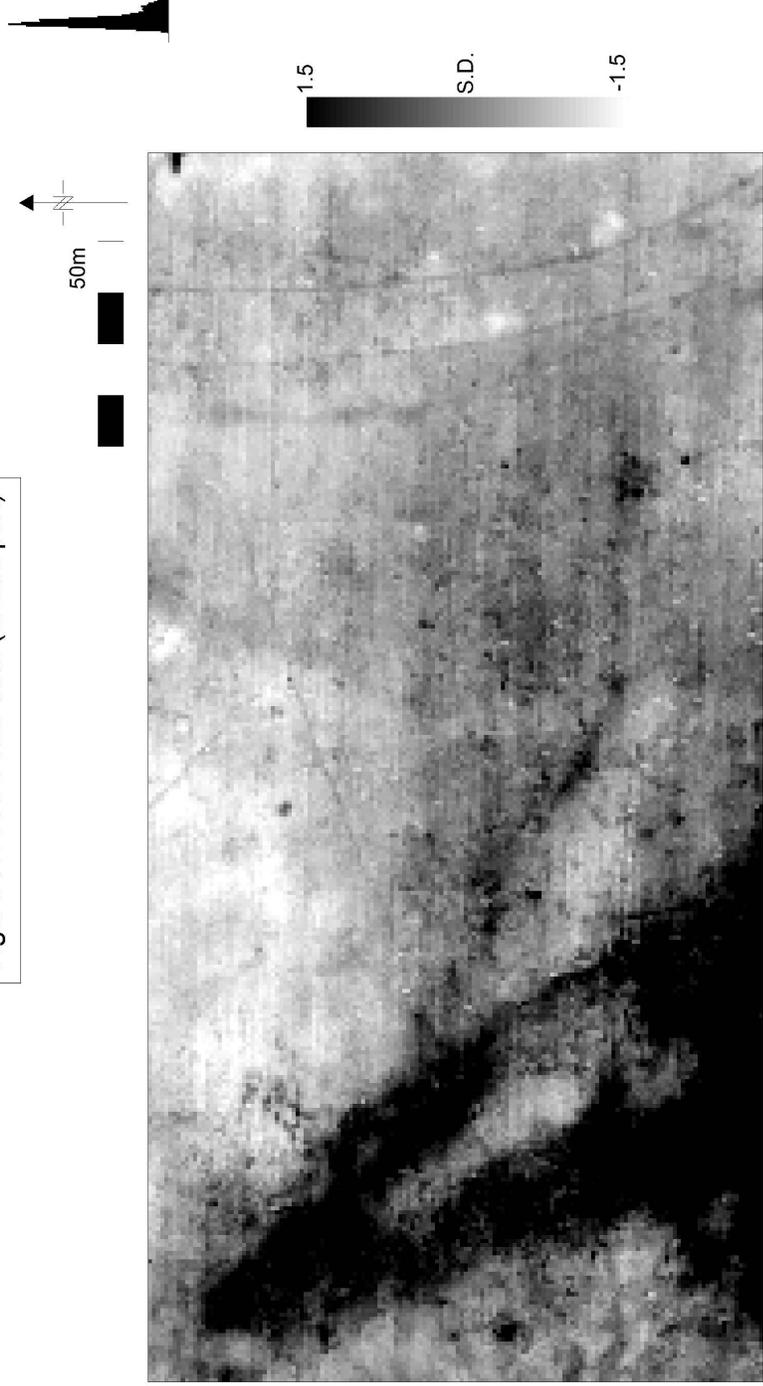


Figure 10: Area 3 raw data (trace plot)

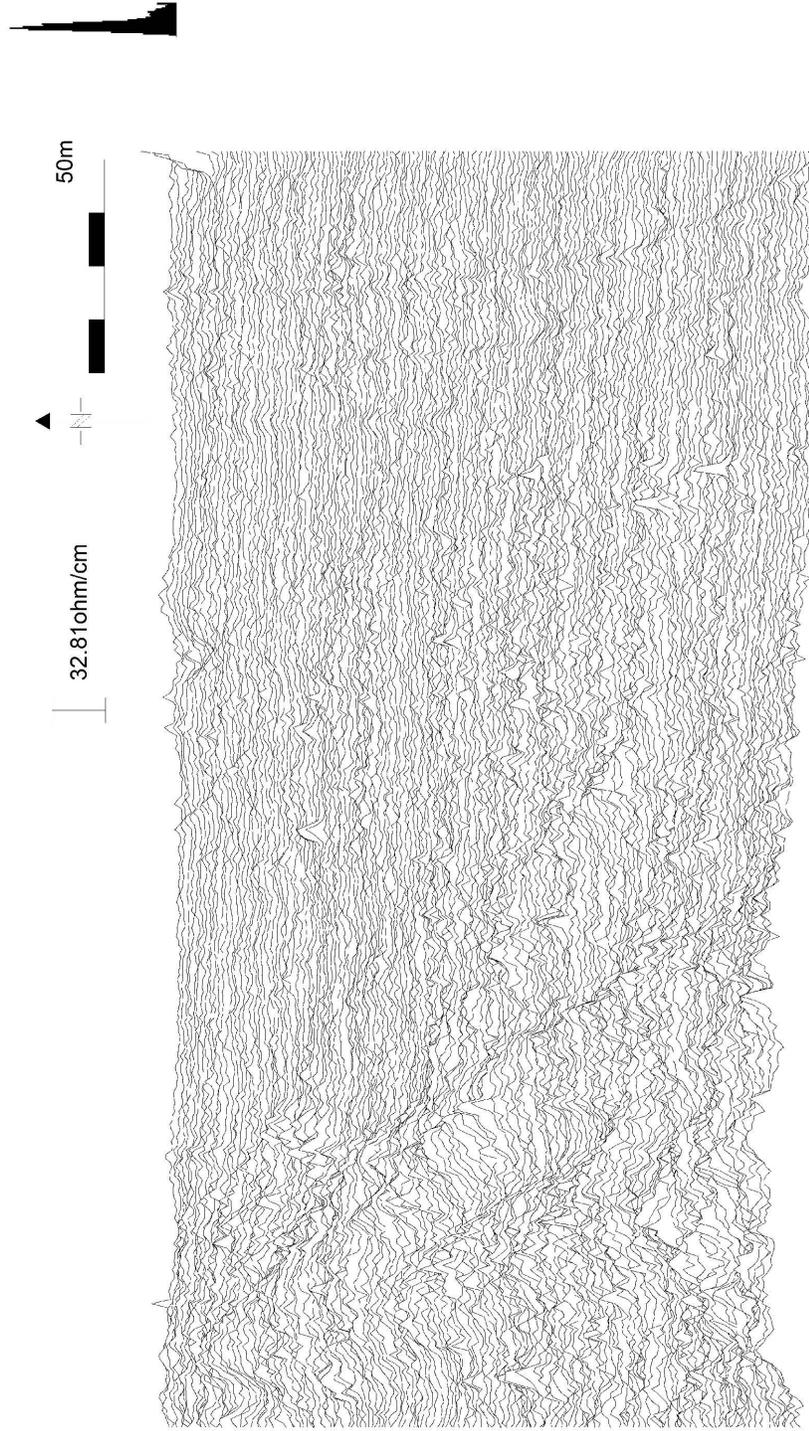


Figure 11: Area 4 raw data (shade plot)

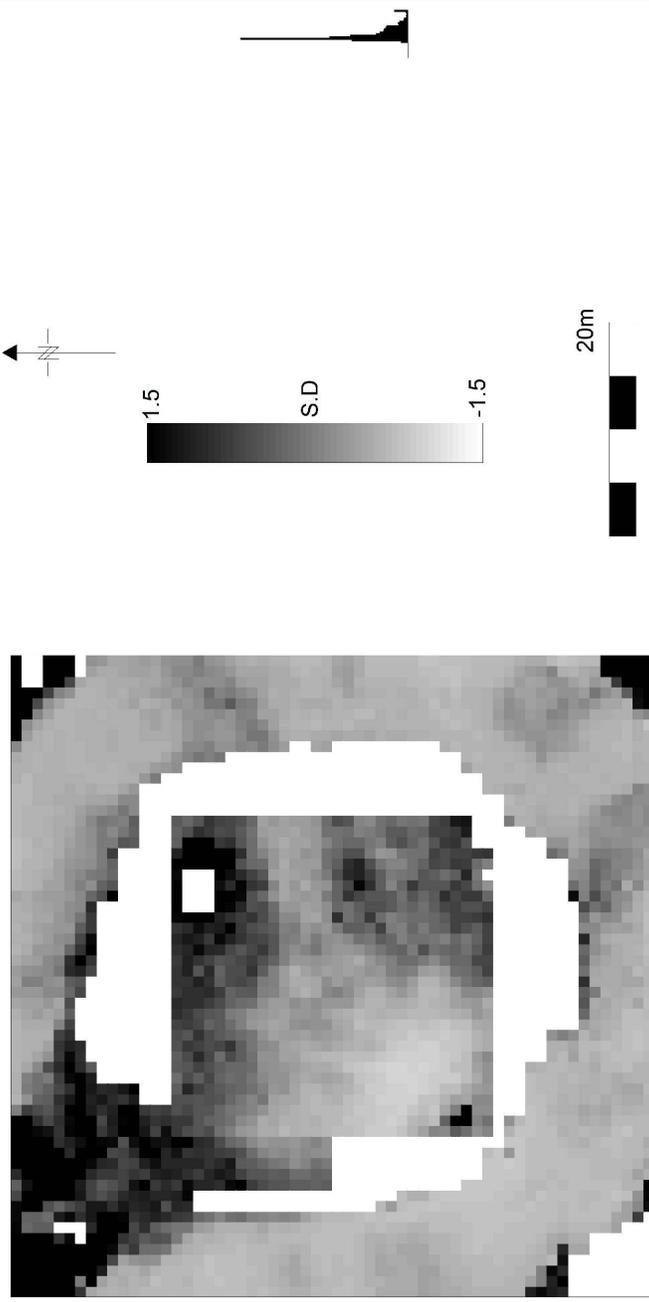


Figure 12: Area 4 raw data (trace plot)

