Contin's Hidden History

Contin

Ross-shire



Geophysical Survey Report

October 2023

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Ross-shire

Geophysical Survey Report

Project No: 1002

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1 Introduction

Contin's Hidden History is a project led by Contin Community Council, in partnership with the Orkney Research Centre for Archaeology (ORCA), part of the UHI Archaeology Institute, which aims to explore the early settlement of Contin, Ross-shire, and its church (Figure 1), which was founded by St Maelrubha in the 8th century AD. The creation of a community-led heritage project is intended help to raise awareness of Contin's significance amongst both local and wider communities through archaeological survey and fieldwork, with planned archive research and heritage promotion, including the 3D-printing of early historic carved stones from the Site. It is intended that the results of the overall project will be disseminated through an archive to be held at the new community hall, as well as a planned online resource to enable wider community access and promote the Site to new audiences.

The present report focuses on the initial phase of the project, which involved *c*. 4ha of magnetometer survey and *c*. 0.2 ha of targeted earth resistance survey, undertaken by ORCA. The survey aimed to investigate the potential for the remains of medieval structures to be preserved in the fields north and south Contin Parish Church.

Members of the local community, including pupils from Strathpeffer Primary School, took part in the survey. The results were shred in a public talk and school workshop.

All work was carried out according to the Standards and Code of Practice of the Chartered Institute for Archaeologists (CIfA 2014a), EAC (Schmidt et al 2015) and the ORCA project design (Brend & Lee 2023).

All figures contain licenced map information: © Crown copyright and database rights 2023 Ordnance Survey (AC0000851941).

The project was jointly funded by EDF Renewables Corriemoillie Wind Farm Community Fund (Contin), administered by Foundation Scotland, and Historic Environment Scotland.

2 Site Location, Topography and Geology

Contin Parish Church lies immediately southwest of Contin village, Ross-shire (National Grid Reference NH 45626 55779). It is situated on the west side of Contin Island, which is formed by two arms of the Blackwater River (Abhainn Dubh) (**Figure 1**). The church is surrounded by a burial ground, with a modern cemetery extension and carpark located to the northeast.

Situated on a floodplain, the island's topography is flat and low-lying at 20m above Ordnance Datum (AOD) and comprises pasture fields with wooded areas at the island's southern end and around its fringes. Across the river to the east, the ground slopes gently

uphill to a summit at 128m AOD, while to the west of the river the floodplain extends westwards for c. 250m before rising quickly to the eminence of Torr Achilty at a maximum height of 252m AOD. Due to the low-lying nature of the island, there is the potential for the presence of deep alluvial deposits that may mask more deeply buried archaeological features.

The solid geology is Braemore Mudstone Formation and the drift geology is alluvium (information accessed at BGS Geology Viewer (BETA)).

The survey area is owned by the Church of Scotland and Contin Parish Church and Burial Ground is designated as a Category 'B' Listed Building (LB1790).

The fieldwork was carried out in September 2023. The weather conditions during fieldwork were generally dry, with light winds, some sunshine, and occasional rain.

3 Archaeological Background

The following provides a brief summary of archaeological records for the area covered by and in the immediate vicinity of the geophysical survey.

3.1 Contin Parish Church

Contin Parish Church (CANMORE ID 12436; HER MHG7868) was founded in the 8th century AD by St Maelrubha, a saint based at the monastic settlement in Applecross, who had numerous associations across Scotland. He is believed to have created a new settlement in Contin, although no traces of this are visible.



Plate 1: Contin Parish Church and burial ground from the air. © Andy Hickie.

Maelrubha was born in c.642 from Irish royal lineage and established the monastery in Applecross in c.673. He and his monks undertook missionary activities in Skye and the north of Scotland, with numerous associations, mainly in the west and Outer Hebrides (Reeves 1859). The Saints in Scottish placenames project recorded 21 places with certain to doubtful connections to the saint (University of Glasgow 2013), however other scholars suggest that these might be the conflation of two MaelRubha, east (Contin) and west (Boyle 1981). This is due to there being two feast and two death days for the same saint, with the 27th of August commemorated with the annual fayre in Contin until recently. The connection with the Contin MaelRubha and Norse invaders in the 12th century and the Prase Marie Chambered tomb, said to be the resting place for his coffin, could relate to a later eastern saint. MaelRubha died in 722 (21 April).

The church is dedicated to Maelrubha and the current building dates from the 12th century. The church was re-built after in 1477 it was burnt by the McDonald's with the congregation inside. Today, the church retains an 18th-century plain rectangular form, although the building has undergone several phases of modification and rebuilding with evidence in the walls for some late-15th century stonework (MacLean 1915). The church underwent modifications to the roof, windows and doors during the 18th and 19th centuries and some repairs during the early 20th century.

In 2021, two carved stones of possible 15th-century date, were discovered in the burial ground, in addition to those housed in the church. The designs on these stones include a possible plough and a cross (More medieval gravestones found in Contin churchyard (ross-shirejournal.co.uk).

Cursory metal-detecting near Contin Church has located a number of coins (including one dating from the reign of Edward I and possible Saxon *scaets*) and a significant amount of lead and worked copper.

Preliminary LiDAR survey and ortho-rectified drone photography of the island has revealed the possible features around the church and evidence of artificial waterways, although the open access Environment Agency LiDAR data resolution is not sufficient for detailed analysis, which has not been undertaken at this stage. The presence of such features could suggest that buried structures located on the island within the geophysical survey areas.



Plate 2: Contin Parish Church and burial ground. © Phil Baarda.

3.2 The Island

Four further sites are recorded on the island two of which are post-medieval in date, situated to the southeast of the church and burial ground. Contin Manse (CANMORE ID 86374; HER MHG16513) is a late 18th-century C-Listed building situated c. 140m to the southeast of the church and burial ground. A farmstead and stables (CANMORE ID 12448; HER MHG6307) are situated a further 60m to the southeast. These sites are depicted on the First and Second Edition Ordnance Survey (OS) maps of 1881 and 1907, respectively.

Two field-boundaries are depicted on both OS maps, running north-south across the northern portion of the island. A road bridge (CANMORE ID 12446) and footbridge (CANMORE ID 304679) are situated on the east side of the island, each spanning the east arm of the Blackwater River. Both are of unknown date, although the road bridge is depicted on the First Edition OS map. A weir is depicted on the east side of the island on the First Edition map.

3.3 Wider area

There are numerous sites listed in the national record for the historic environment in the Contin area. It is beyond the scope of this report to list them in detail.

One site, however, has particular relevance. Praes Mairi – 'Maelrubhas Bush' is the private burial ground for the Mackenzie's of Coul with the earliest surviving gravestone dated 1768 (CANMORE ID 12409). The burial ground is situated on the site of a Neolithic chambered cairn (CANMORE 12447) which is just to the side of the family burial plot and fully encompassed within the boundary wall. The connection with Maelrubha is unclear, but the site might represent the appropriation of a pagan site with the saint story, and then with a high-status burial ground. The chambered cains is said to be the place where Maelrubha's coffin was rested, although this could be conflation of the two saint stories mentioned above.

4 Fieldwork Aims

The Contin Hidden History project aims to explore the roots of Christianity in the area, seeking to establish whether there is evidence of an early medieval, possibly monastic, settlement in Contin.

The geophysical survey was a key part of an initial phase of archaeological investigation designed to help achieve this overall goal and aims to:

- Establish whether any structures are present in the fields to the north and south of the church and burial ground. Was there a medieval settlement associated with the early church?
- Identify areas of Contin island that could be a focus for archaeological excavation and inform further research.
- To provide training and educational opportunities for the local community.
- To raise awareness and the profile of the site among the local community and farther afield.

The aims were met through the following:

- Magnetometer survey over approximately 4 hectares in 2 fields to the north and south of Contin Church and graveyard;
- Targeted earth resistance survey across c. 0.4 ha, based on the results of the magnetometer survey and available open access Environment Agency LiDAR data which has tentatively identified possible building/structures near the existing church;
- Involvement of community members in training and educational opportunities throughout the survey, including survey techniques, processing and interpretation.
- Dissemination of new information through a public talk in Contin to

summarise the findings of the geophysical fieldwork.

4.1 Research Frameworks

The project addresses the following strategic aims identified in *Scotland's Archaeology Strategy* 2016:

1) **Delivering Archaeology:** The project enhances collaboration in Ross-shire through working with community organisations, develops a group of participants with fieldwork tasks, within a structured and properly resourced project. The fieldwork contributes to a community instigated project with the aim of enhancing interpretation locally. The fieldwork will produce new research results.

   Measure of success: Completion of the project, report and participant evaluation. Dissemination of the results and contribution to enhanced interpretation. Establishing the potential for additional phases of fieldwork.

2) **Enhancing Understanding:** the project has clear research aims to understand better the area around Contin Parish Church and will implement dissemination through media, reporting and local interpretation. The resulting report can be distributed widely to stakeholders and organisations.

   Measure of success: Completion of the report and participant evaluation. Dissemination of the results and contribution to enhancing interpretation.

3) **Caring and protecting:** the project will ensure that the archaeological resource in the study area is better understood and managed. Landowners will be more aware of archaeological sites on their land. Local residents will play an active role in exploring and characterising archaeological remains and co-producing phases of investigation. The results will contribute to the Highland Historic Environment Record (HER) National Record for the Historic environment (NRHE / Canmore).

   Measure of success: Better understanding of archaeological sites in the study area shared with landowners, co-produced additional phase of investigation. Contribution to long term interpretation and management of the area.

4) **Encouraging Greater Engagement:** The project provided opportunities for local residents to take part in the survey and learn about non-intrusive techniques, the result they produce and how they inform future stages. The results will be shared on social media and with a public talk.

Measure of success: Participant involvement, evaluation of participants, dissemination.

5) **Innovation and skills:** The project provided volunteer opportunities and memorable learning experiences in geophysical survey. Co-production of knowledge and interpretations with Contin Community Council.

Measure of success: Evaluation of participant experience. Evaluation of project outcomes and application of geophysical survey in this context with Contin Community Council.

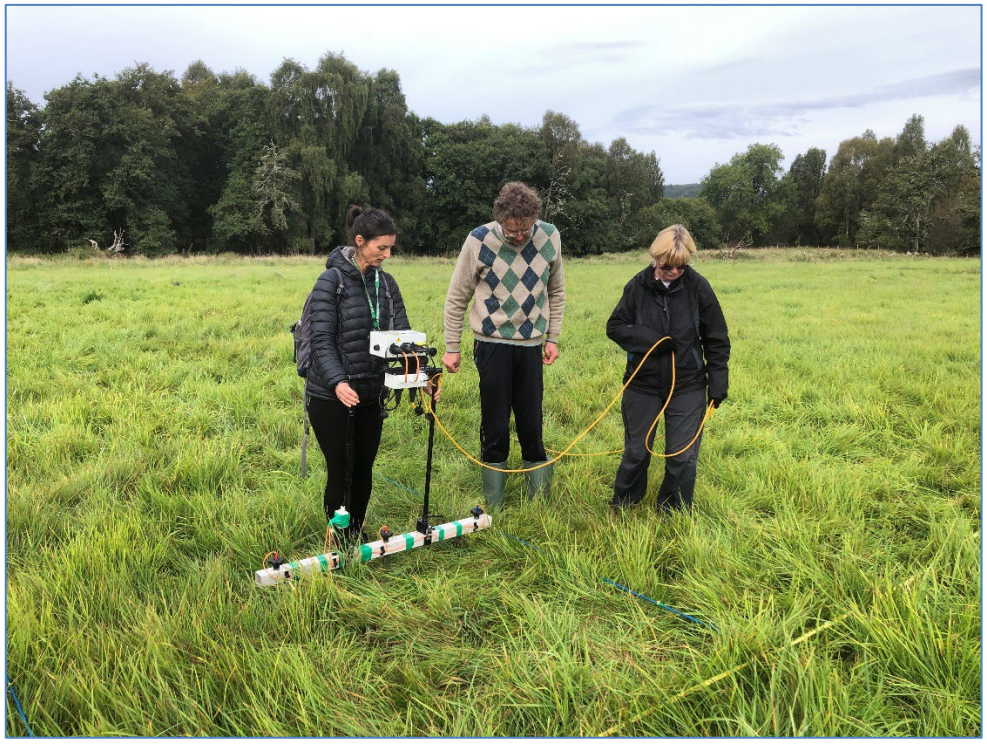


Plate 3: Volunteers undertaking earth resistance survey. © Phil Baarda.

5 Methodology

All surveys were carried out in accordance with the project design (Brend & Lee 2023) and the standards and guidance issued by CIfA (2014a) and EAC (Schmidt *et al* 2016). Magnetometer survey was carried out across an area measuring *c*. 4 hectares (ha) followed by targeted areas of earth resistance survey (see Figure 1).

Magnetometer survey is a rapid survey technique that is well suited to locating cut features, such as ditches, areas of intense burning (hearths, ovens and kilns), occupation deposits, ferrous debris, drains and utilities, such as electrical cables.

Earth resistance survey is suited to locating walls and rubble spreads, made surfaces, such as roads, and stone coffins or cists. It can also locate cut features, such as ditches and pits.

Table 1 summarises the equipment and methodology used in the field. A more detailed methodology for data collection, processing and display is presented in **Appendix 1**.

Set Out	
Instrument	Trimble 5800/R8 or by hand
Type of correction	RTK Paired GPS
Magnetometer Survey	
Instrument	Bartington Grad601-2
Grid size	20x20m
Sampling along the traverses	0.25m
Traverse intervals	0.5m
Collection mode	Zig-Zag
Earth Resistance Survey	
Instrument	Geoscan RM15 with multiplexer
Grid size	20x20m
Sampling	0.5x0.5m
Array	Parallel twin probes

Table 1: The equipment and methodology used in the field.



Plate 4: Setting out the survey grid. © Phil Baarda.

6 Fieldwork Results

The results are presented in greyscale plots of the raw data, processed data and the anomalies are presented in annotated interpretation diagrams. Anomaly numbers are highlighted in **bold** where first mentioned. Magnetometer anomalies are referred to by numbers and earth resistance anomalies by letters.

Both techniques were conducted across the two fields, the North Field and the South Field. The anomaly numbering runs continuously across both areas.

6.1 Magnetometer Survey

The raw and processed survey data are presented in **Figures 2** and **3** and an interpretation diagram is provided in **Figure 4**.

Anomaly 1 is a possible archaeological feature situated *c*. 17m north of the northern graveyard boundary. Visible as a linear positive feature with a negative halo, Anomaly 1 measures *c*. 50m in length and between 3m and 10m wide. The feature is orientated NNW-SSE and may be an archaeological feature, such as a boundary.

A rectilinear feature, **Anomaly 2**, visible in the north of the North Field, is defined by a series of negative anomalies. Measuring 22m NNW-SSE by 20m transversely, this feature may represent the remains of an enclosure defined by walls or banks. Three positive features, **Anomaly 3**, situated adjacent to, and immediately north of, Anomaly 2, may represent deposits associated with the possible enclosure.



Plate 5: Magnetometer survey at Contin. © Phil Baarda.

Two further possible boundaries, **Anomaly 4**, are visible to the east of Anomaly 2. These parallel linear features are aligned NNW-SSE and measure 7m and 12m; it is possible that the westernmost feature continues for *c*. 23m as a faint trend to the southeast.

Positive linear anomalies, **Anomaly 5**, running northwest-southeast in the centre of the north field for 50m. This feature may continue *c*. 15m to the south where a short positive feature runs north-south for *c*. 10m. These may represent the remains of former field boundaries.

Cluster or positive and negative anomalies, **Anomaly 6**, situated amongst a series of linear trends in the west of the north field. Uncertain but may be archaeological. Further linear group of features, **Anomaly 7**, immediately west of Anomaly 1, may also be archaeological in nature and may relate to Anomaly 1.

A positive feature, **Anomaly 8**, situated on the southern edge of the north field, immediately north of the kirk boundary, may be archaeological in nature – its location makes interpretation difficult.

Anomaly 9 is a linear positive feature with associated negative responses, situated in the west portion of the south field. This feature measures *c*. 28m NNW-SSE and between 0.7m and 2.9m wide. This feature may represent the remains of a boundary.

Anomaly 10 is a gently curving linear positive feature situated on the east part of the south field, measuring *c*. 45m in length and aligned roughly northwest-southeast. This is likely to be a former trackway.

Two linear positive anomalies, **Anomaly 11**, situated at the north and south ends of the south field may be archaeological in nature. Given their proximity to the pipe that dominates the middle of the Survey Area, interpretation is difficult.

A positive feature, **Anomaly 12**, in the centre of the south field is part of a fainter trend running northwest-southeast, which may represent a former trackway or cultivation remains.

An area of increased magnetic response, **Anomaly 13**, is visible on the southern limit of the south field. This measures 15m NW-SE and may be a continuation of Anomalies 1 and 9 to the northwest.

Groups of linear features, **Anomaly 14**, visible across both fields, are likely to represent the plough-lines. The orientation of these features varies but the majority are aligned roughly NW-SE. Their narrow spacing of *c*. 2.5m suggests that they are of more recent origin.

A 'L'-shaped trend, **Anomaly 15**, immediately west of Anomaly 2, could be the faint remains of another enclosure.

A curving linear trend, **Anomaly 16**, immediately south of the kirk may represent the slight change in topography here, where the ground rises. This feature corresponds with the edge of Anomaly H in the earth resistance data.

Faint trends, mainly concentrated in the north field, **Anomaly 17**, may represent ploughing, while other trends, **Anomaly 18**, could represent further traces of pathways between the kirk and the manse.

Modern pipes/cables are visible as linear ferrous responses, **Anomalies 19**, **20** and **21**. These run NNW-SSE through the north field, NE-SW through the south field and east-west through the south field, respectively. A substantial ferrous anomaly, **Anomaly 22**, in the south of the north field corresponds with the location of a telegraph pole and stay.

Other ferrous responses across the Survey Area are associated with the presence of wire fences and tracks that access the church and manse. Smaller ferrous responses are likely to represent the presence of debris in the topsoil although an archaeological origin cannot be ruled out for all.

6.2 Earth Resistance Survey

The raw and processed survey data are presented in **Figures 5** and **6** and an interpretation diagram is provided in **Figure 7**. The southernmost area of resistance survey is presented as raw data only as no processing was required.

The earth resistance survey shows rectilinear moderate high resistance and high resistance features, **Anomaly A**, visible in the south field, immediately south of the kirk boundary. The nature of the responses suggests the presence of rectilinear stone structures, orientated roughly northwest-southeast and measuring *c*. 19m by 15m overall. It is difficult to establish the date or function of these structures from the geophysical survey alone and excavation would be needed to understand them more fully. Linear trend, **Anomaly B**, may represent a continuation of Anomaly A.



Plate 6: Earth resistance survey at Contin. © ORCA.

Broad linear features of lower resistance, **Anomaly C**, visible in the north field partly correspond with magnetometer feature, Anomaly 1.

A high resistance feature, **Anomaly D**, corresponds with a negative feature at the south end of Anomaly 1 in the magnetic data, suggesting the presence of stone or compacted material. It is not possible to determine whether this is archaeological or geological in origin without further investigation.

A linear feature of moderate low resistance, **Anomaly E**, corresponds with the western extent of Anomaly 5, a positive feature in the magnetometer data. This may represent a ditch-type feature or a linear feature that has moisture-retentive material built up against it.

A sub-oval high resistance feature, **Anomaly F,** is situated immediately north of magnetic response Anomaly 8, and measures 9m north-south by 5m transversely. While this feature may be archaeological, it could also be natural in origin.

Anomaly G is an area of high resistance situated on the southern edge of the northernmost area of earth resistance survey. Although only a small area is visible, the response coincides with part of Anomaly 6 in the magnetometer survey, and it may be archaeological in nature.

In the south field, immediately south of the graveyard boundary, an area of moderate low and low resistance, **Anomaly H**, corresponds with a slight rise in ground level and is likely

to reflect differential drainage in this area. The southern extent of this feature corresponds with Anomaly 16 in the magnetometer survey.

7 Discussion

The geophysical surveys at Contin have revealed a series of archaeological features in the main two fields north and south of the church.

The magnetometer results were successful in highlighting a range of features across the island that relate to its agricultural past. Areas of ploughing and possible trackways are visible in both fields, broadly oriented NNW to SSE. Possible field-boundaries in the north field, inconsistent with the 19th-century field layouts on the 19th- and early 20th-century OS mapping, suggest the survival of earlier agricultural field-systems. Linear features, Anomalies 1, 9 and 13, situated to the north and south of the church may represent a boundary that predates the church.

In the earth resistance survey results, the presence of possible structural remains to the south of the kirk is significant. It is possible that they could represent the remains of medieval or earlier structures, although further archaeological investigation would be necessary to help establish date and purpose. These features are not visible in the magnetometer data and, as such, they may not represent settlement activity, where we would typically expect stronger responses.

More generally, the broad distribution of ferrous responses is likely to represent debris in the topsoil, however, some of these could represent archaeological features.

Flood/erosion defences marked on the First and Second Edition OS maps and visible in the LiDAR images on the northwest and northeast of the island suggest that this has been a dynamic floodplain in the past. It is likely, therefore, that this activity has laid down alluvial deposits that could mask other archaeological features of much earlier origin.



Plate 7: Pupils from Strathpeffer Primary School trying out the equipment. © Phil Baarda.

8 Engagement evaluation

During the geophysical survey, four residents from the Contin area took part, learning skills in setting up and survey. Data was downloaded in the field and the results were viewed by the group. The magnetometer results were used to inform the location of the targeted earth resistance survey.

In addition, 50 pupils form Strathpeffer primary School visited the team during the survey. Pupils had a try with the magnetometer and helped collect data with the earth resistance instrument. A follow up workshop was held at the primary school with project leader Dan Lee with the same pupils (6th Dec). Following an introductory talk on geophysical survey and discussion about methods in archaeology, the group were given greyscale plots from other surveys, and interpreted the Contin data themselves.

A public talk was held at Contin Community Hall (5th Dec) as part of the Highland Archaeology Festival. It was attended by 55 people and the results were met with interest. There was strong support for continued work on the island.

A poster presentation about the project was presented at the Highland Archaeology Festival conference the weekend after the talk.



Plate 8: Public talk in Contin Community Hall. © Phil Baarda.

9 Conclusions & Recommendations

The geophysical surveys were successful in providing a picture of activity across Contin island. It is clear that there is unlikely to be an extensive medieval settlement to the north or south of the church. Perhaps the medieval settlement has always been across the river to the east, where the oldest part of Contin is located. Although the geophysical data was relatively quiet, dominated by linear trends which could be recent in origin, there are some clusters of potential features.

The possibility of structures to the south of the church is significant and may hint at the presence of a building associated with the early church, although it is not possible to date these at this stage. The two clusters of strongly magnetic features to the north of the church could represent activity. These features would benefit from further archaeological investigation to try to establish their date and character. The magnetometer survey shows that the island has been cultivated, with the remains of more recent ploughing evident, as well as the presence of possible field boundaries that predate the 19th and early 20th-century Ordnance Survey mapping.

Recommendations for future work:

- Additional areas of targeted earth resistance survey, especially south of the church (e.g. east of Anomaly A, east and west of Anomaly C, D & F).

- Ground-truthing of the geophysical anomalies north and south of the graveyard (e.g. test pits and / or small evaluation trenches) to establish their character, depth, authenticity and date.
- Measured survey of wider earthworks and features on Contin island.
- Detailed analysis of LiDAR data
- Map regression for the Contin area (especially estate maps)
- Archive, placename and wider historical research into the connection with Maelrubha and other sites in the area (e.g. Preas Mairi chambered tomb and Mackenzie mausoleum).

10 Dissemination and Archiving

Findings will be submitted to the national record via the OASIS system, and a short report for *Discovery and Excavation Scotland* will be generated.

11 Acknowledgements

Survey in the field was undertaken by Linda Somerville, Chris Gee and Travis Lowe.

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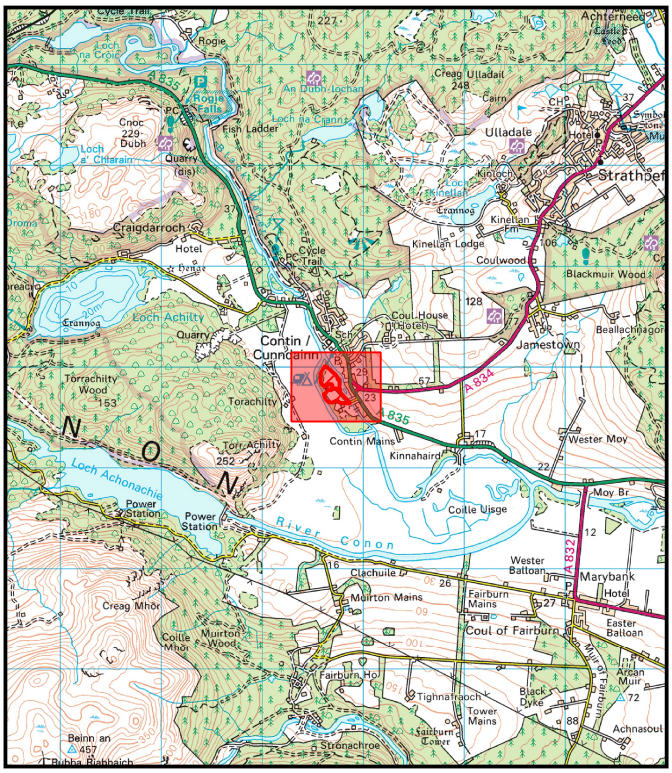
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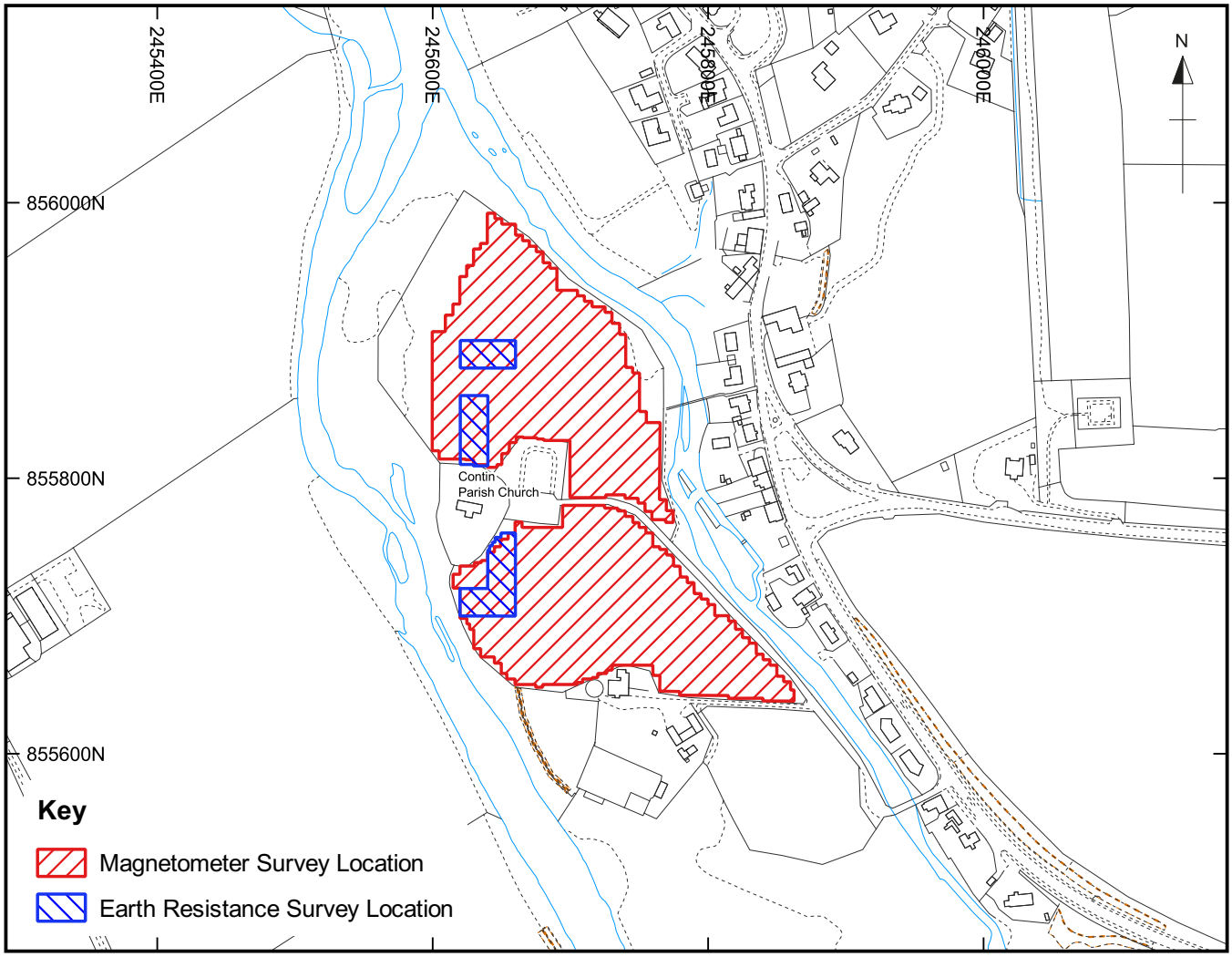
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Figures







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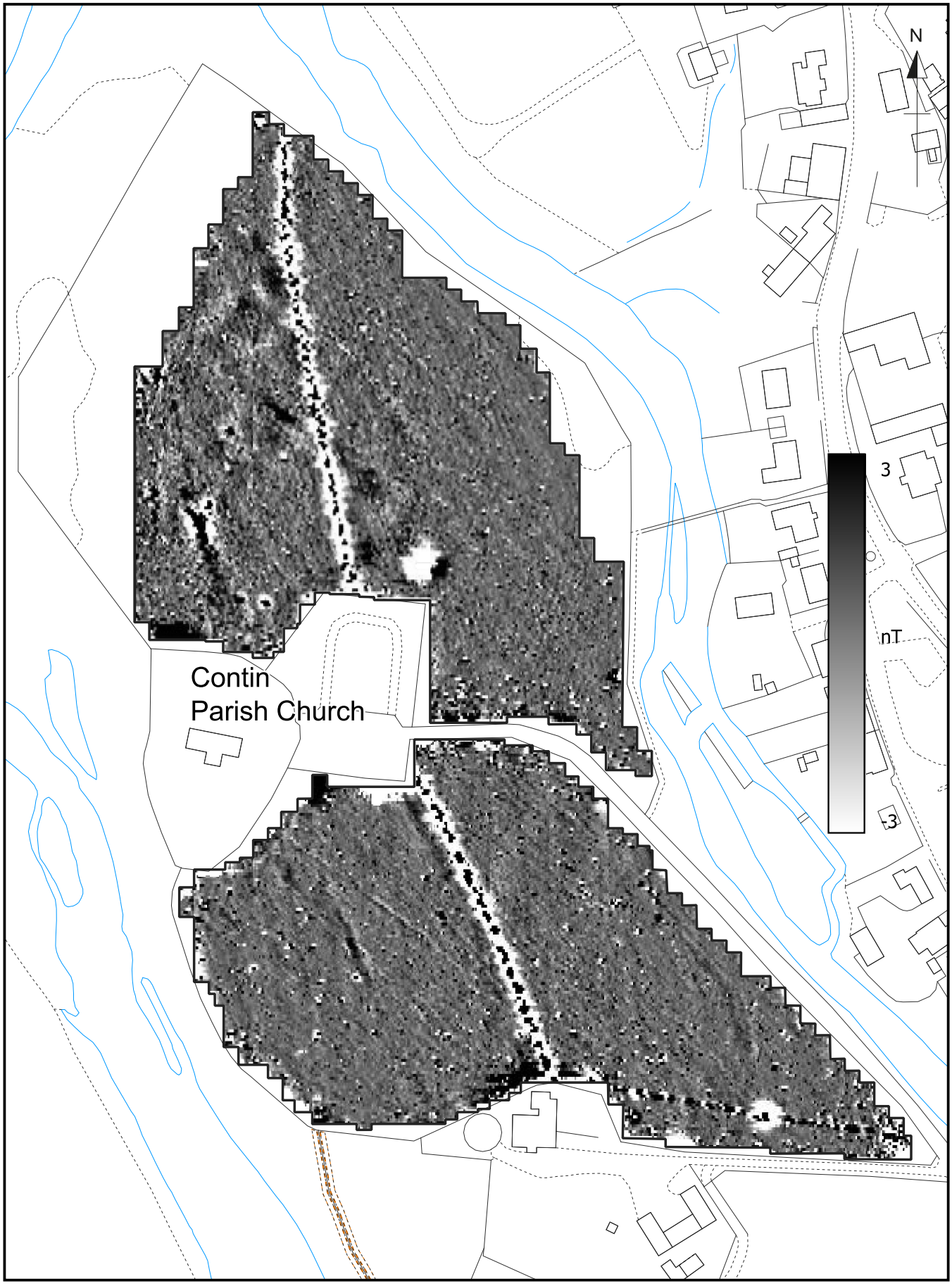
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Figure 1: Location map

Project Name: Contins Hidden History Map

Project No: 1002	Scale @A4 1:5,000	
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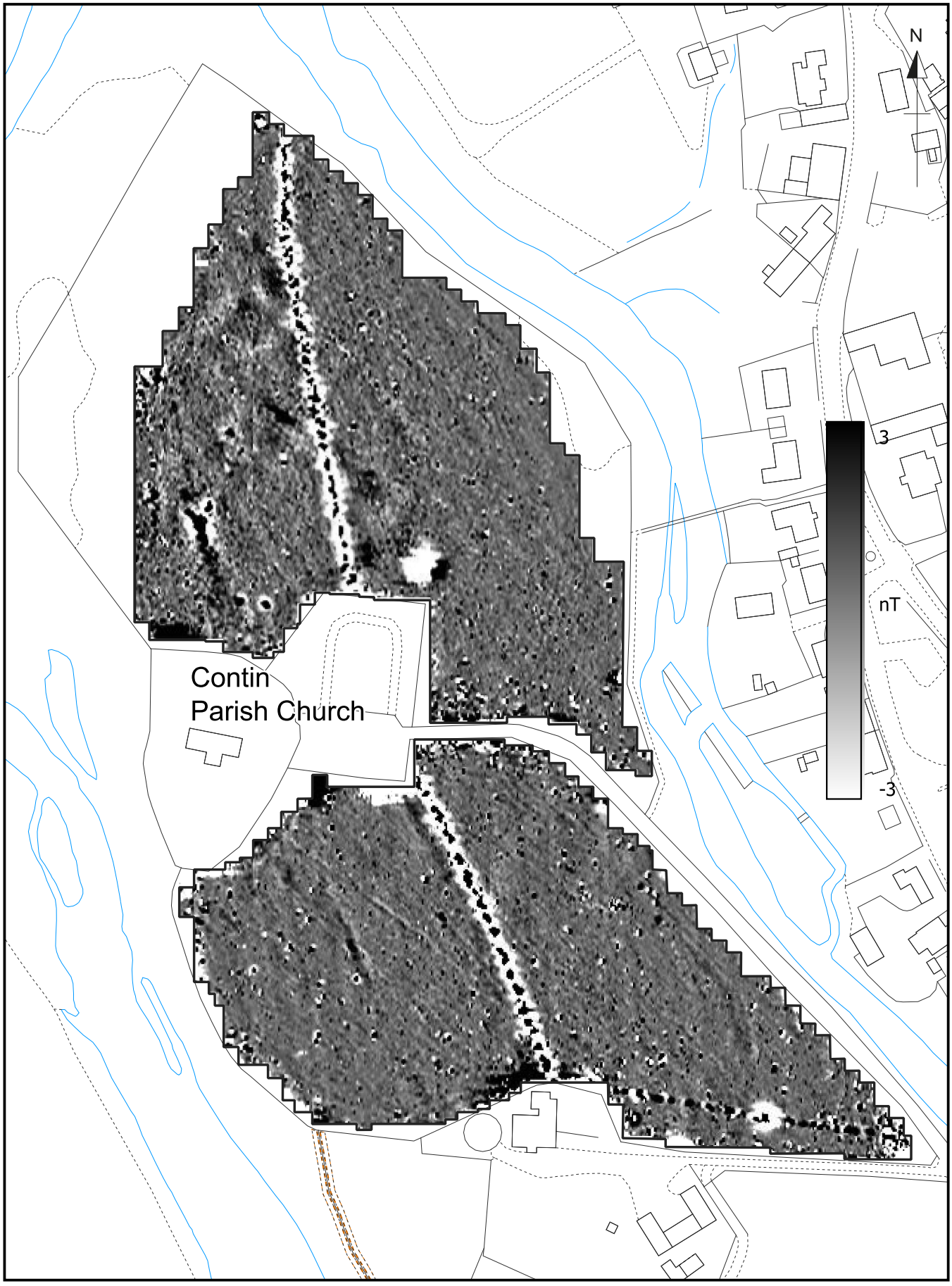
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Figure 2: Raw magnetometer data

Project Name: Contin's Hidden History

Project No: 1002	Scale @A4 1:1,800	
Date: 10/2023	ID: OR02AB	Rev. 1.00

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Orkney Research Centre for Archaeology

0 25 50 75 m

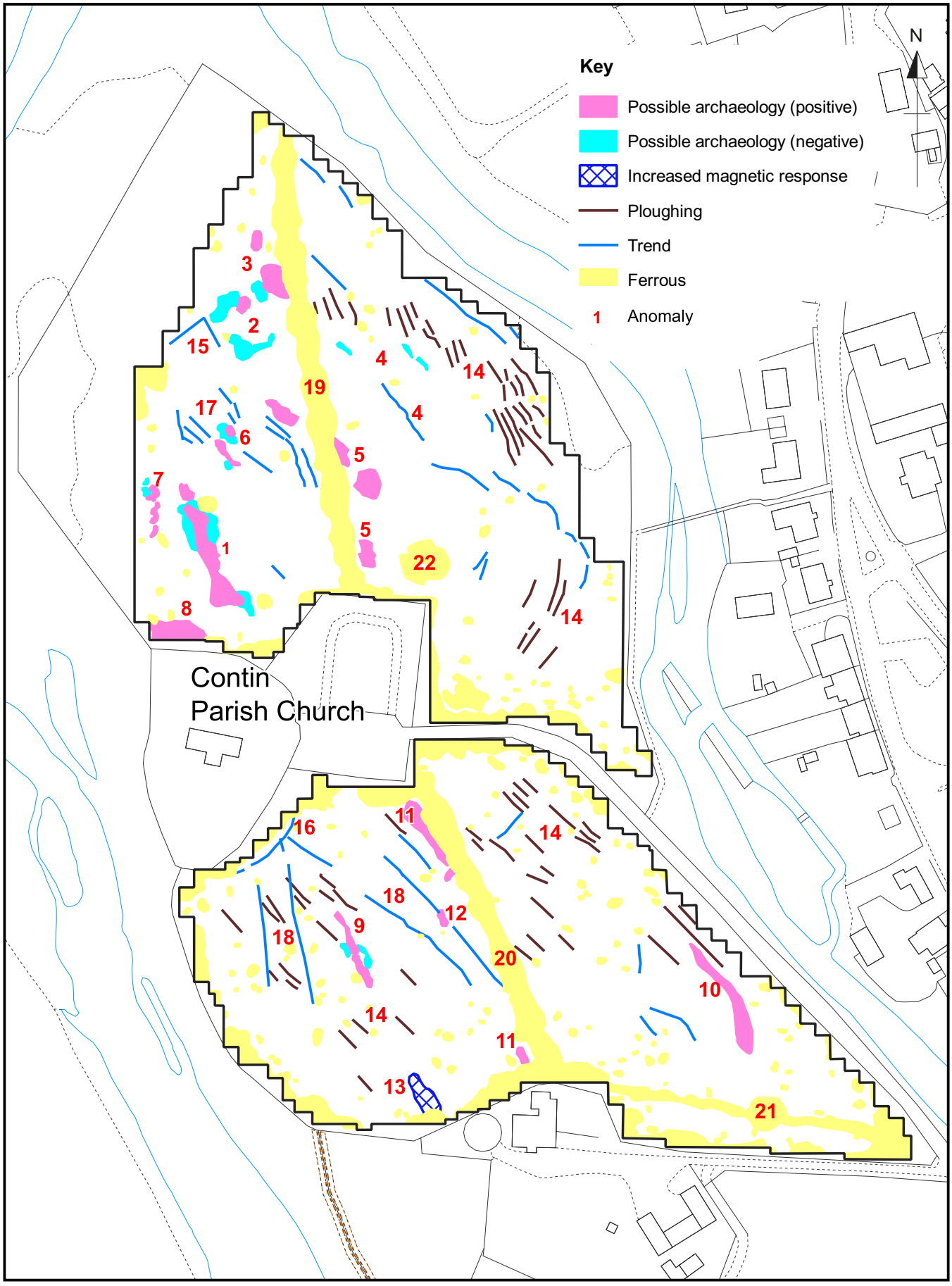
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Figure 3: Processed magnetometer data

Project Name: Contin's Hidden History

Project No: 1002	Scale @A4 1:1,800	
Date: 10/2023	ID: OR02AB	Rev. 1.00

GHLAND\2202\1002 Contins Hidden History\Geomatics\1002_GIS\Base Maps\1002_Base_Map-OC01980.qgz

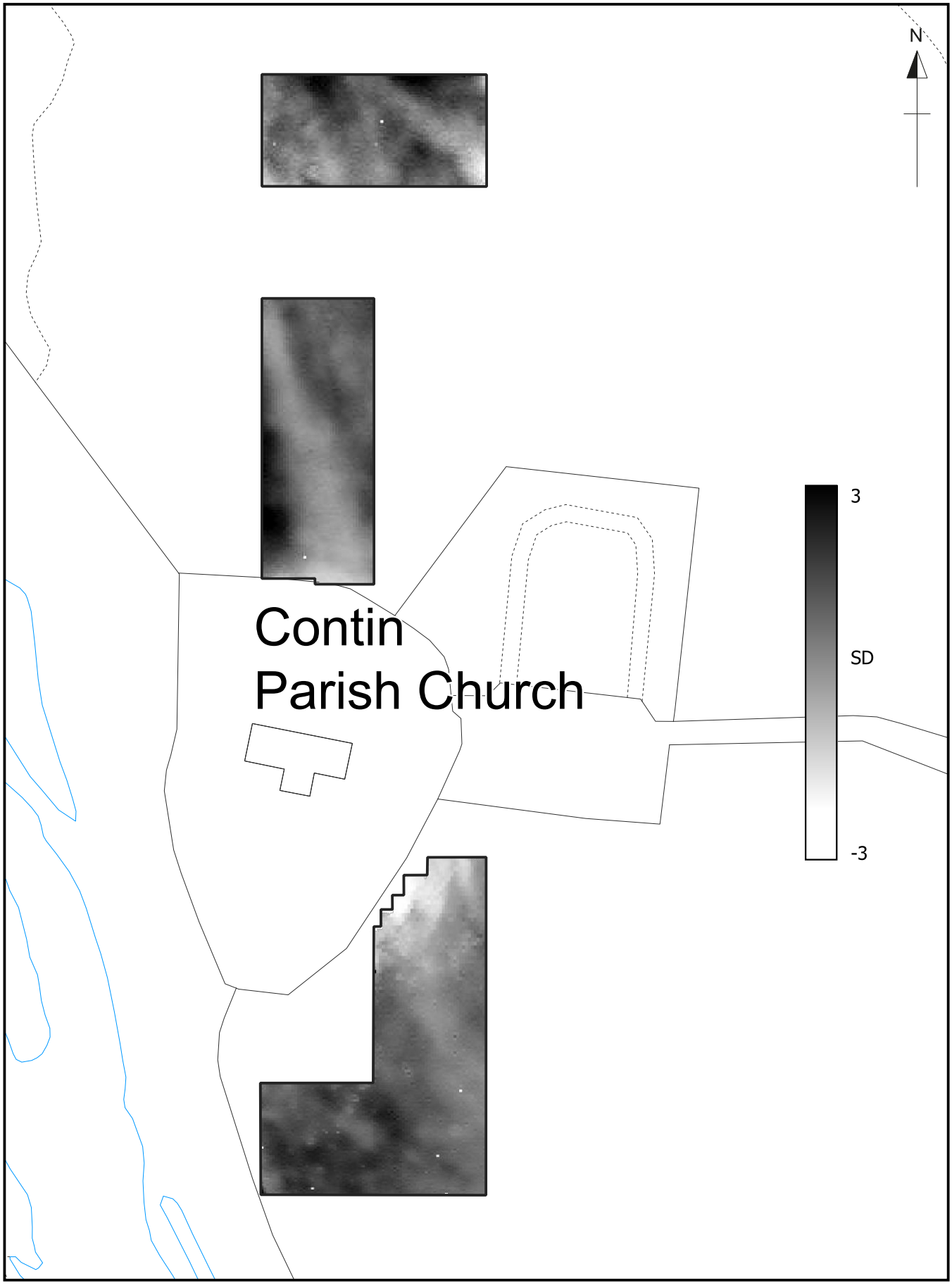


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Figure 4: Magnetometer data interpretation		
Project Name: Contin's Hidden History		
Project No: 1002	Scale @A4 1:1,800	
Date: 10/2023	ID: OR02AB	Rev. 1.00

GHLAND\2202\1002 Contins Hidden History\Geomatics\1002_GIS\Base Maps\1002_Base_Map-OC01980.qgz



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0 10 20 30 m

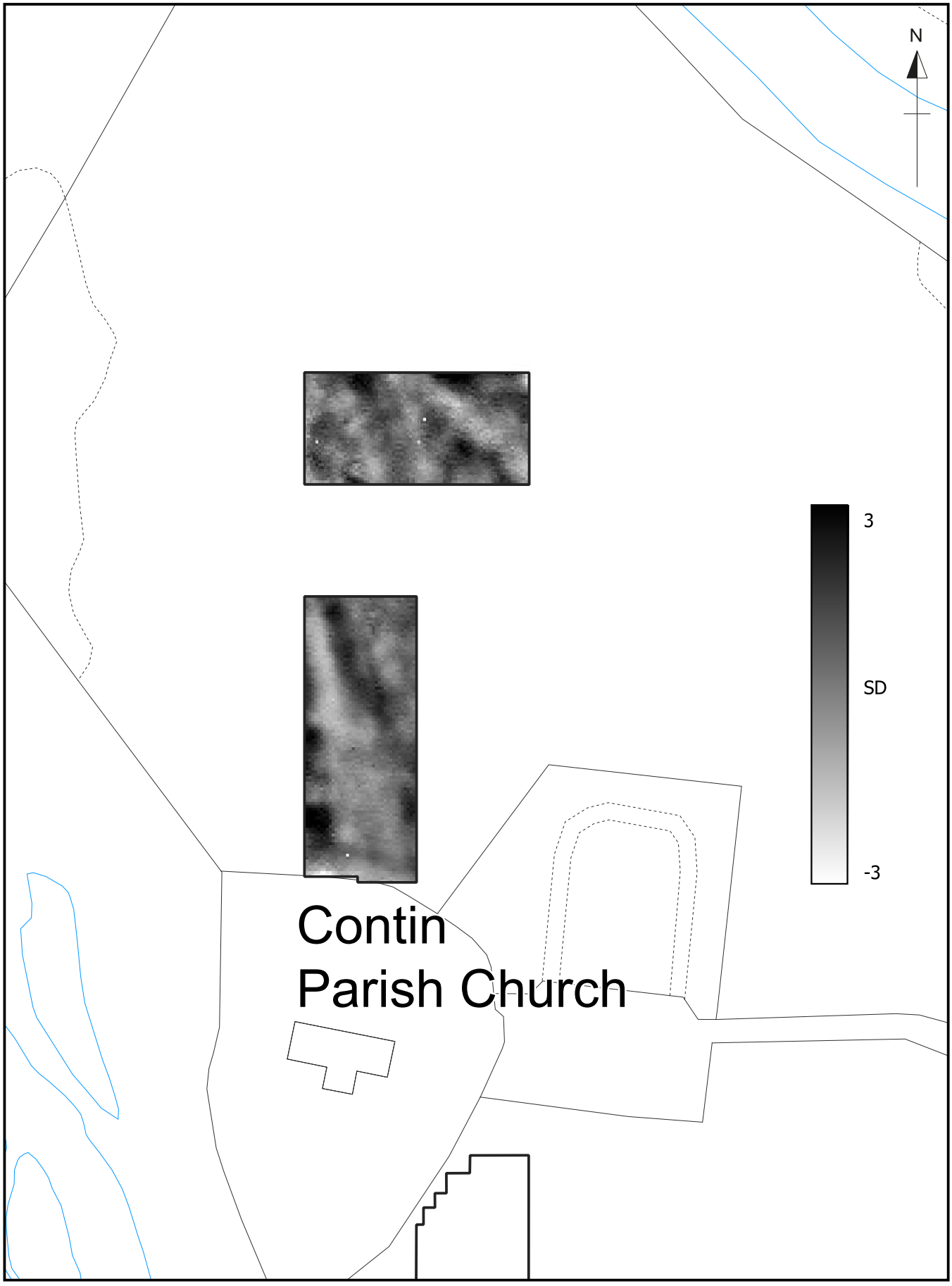
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Figure 5: Raw earth resistance data

Project Name: Contin's Hidden History

Project No: 1002	Scale @A4 1:1	
Date: 10/2023	ID: OR02AB	Rev. 1.00

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0 10 20 30 m

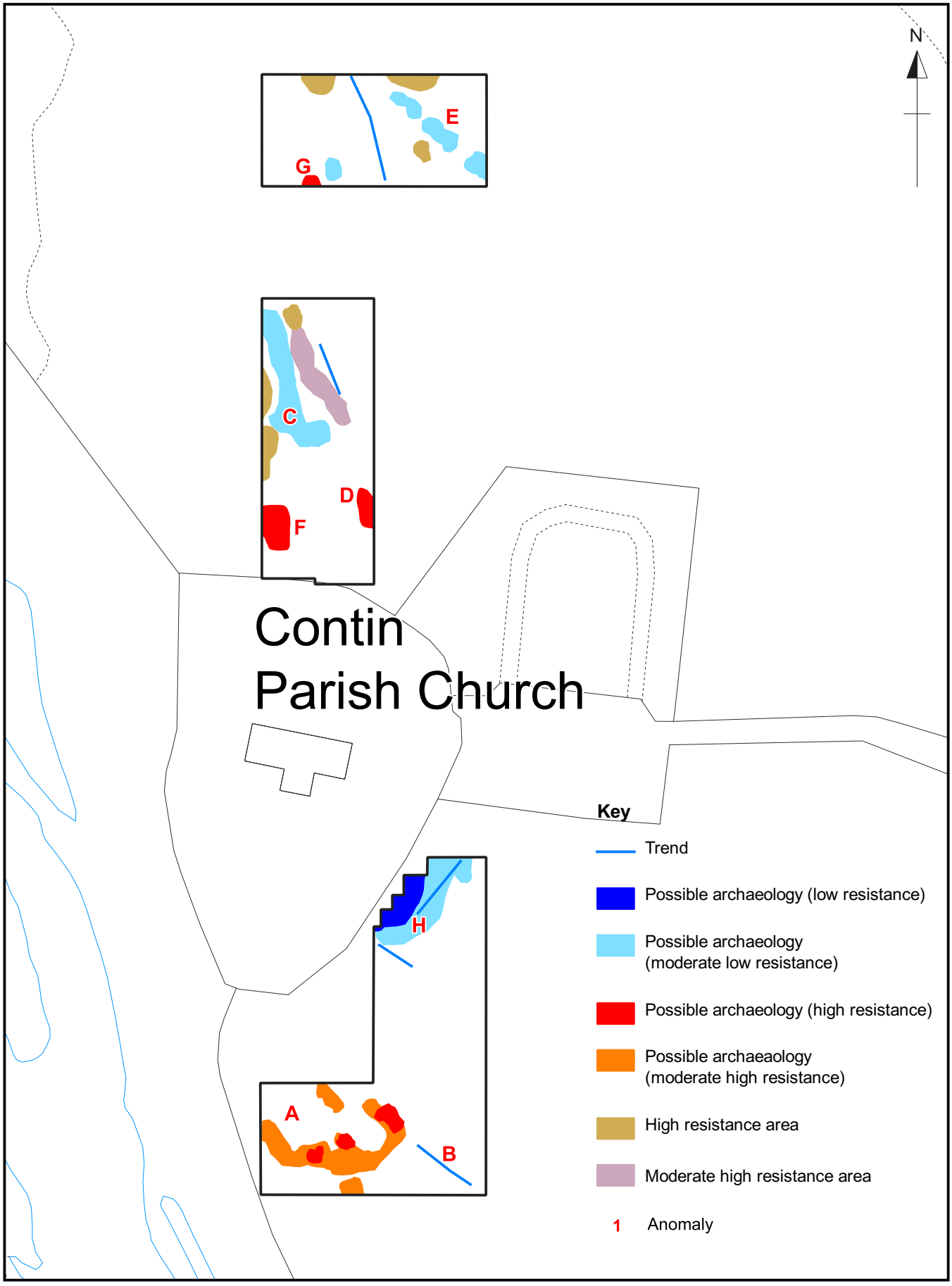
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Figure 6: Processed earth resistance data (high pass filter)

Project Name: Contin's Hidden History

Project No: 1002	Scale @A4 1:950	
Date: 10/2023	ID: OR02AB	Rev. 1.00

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0 10 20 30 m

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Figure 7: Earth resistance data interpretation		
Project Name: Contin's Hidden History		
Project No: 1002	Scale @A4 1:950	
Date: 10/2023	ID: OR02AB	Rev. 1.00

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13 Appendix 1: Methodology

13.1 Metric Survey

Metric survey was undertaken using a Leica GNSS system.

Data Processing

Most data processing involves the manufacture's software applicable to each instrument.

13.2 Methodology

Gradiometer Survey

Data Collection

Gradiometer survey was undertaken using a Bartington Grad601 gradiometer. The gradiometer comprises two fluxgate sensors mounted 1m apart on a vertical axis. Each sensor measures the earth's magnetic field, in nano-Tesla (nT), and the instrument records the difference between the observed readings for each sensor. By measuring the magnetic field in this manner, the dependency of fluxgate sensors upon the angle between the sensor and the earth's magnetic field and the variations due to large-scale geological variations and diurnal fluctuations are filtered out. By doing so the instrument is recording subtle changes or anomalies in the earth's magnetic field caused by material in the top metre or so of the earth's surface.

Data were collected at 0.25m intervals along traverses 1m apart, in 'zig-zag' fashion i.e. the direction of the traverse alternating between adjacent traverses, within a series of 20m by 20m grids which were later merged together.

Fieldwork

Data were collected at 0.25m intervals along traverses 1m apart, in 'zig-zag' fashion i.e. the direction of the traverse alternating between adjacent traverses, within a series of 20m by 20m grids which were later merged together.

Data processing

The data were processed using Geoplot 4.0.

'Zero mean traverse' corrections have been applied to all the data. This process sets the mean of each line to zero. These corrections remove discontinuities between adjacent grids and striping effects within grids caused by 'zig-zag' collection of data.

The processed data has been interpolated twice in the Y direction to create a 'square' data set. This has the overall effect of smoothing the data.

Data Display

Greyscale images: Greyscale images display the data within a predefined range with all values below the minimum being white and all values over the maximum being black with gradual increments between these two extremes.

Earth Resistance Survey

Data Collection

The earth resistance survey was undertaken using an RM15, system manufactured by Geoscan Research. This device has up to 6 probes mounted on a fixed frame (mobile), 3 were

used during this survey. Two additional (remote) probes are place in a fixed position. The console of the RM15 allowed automatic reading when the contact is made with the ground and the multiplexer MPX15 dispatch the current between probes configuration using a pair of electrodes. For each reading two probes are used to inject the current and the two others are used to measure the voltage. The measurement is then used to determine the apparent resistivity. The data shown are the resistance values in ohms.

Fieldwork

Readings have been collected using the twin parallel configuration allowing the collection of two parallel traverses continuously. The use of this configuration involves positioning two fixed remote probes at a distance of 30 times the mobile electrode separation. This probe separation used during this survey being 50cm the remote probes have to be kept at least 15m from the survey area.

Data were collected with a probe spacing of 0.5m, at 0.5m intervals along traverses 0.5m apart, in 'zig-zag' fashion.

Data Processing

The data were processed using Geoplot 4.0.

Despiking is generally applied to the data to remove individual extreme value called "spikes". Spikes are mainly due to poor contact with the ground during collection.

A high pass filter was applied to some of the datasets to remove large variations in the dataset that are often the product of underlying geological factors in order to clarify anomalies of a potentially archaeological nature.

Data Display

Greyscale images: greyscale images display the data within a predefined range with all values below the minimum being white and all values over the maximum being black with gradual increments between these two extremes.

The raw earth resistance data (see Figure 5) is shown with a 3/-3 SD range. The individual range for each area running south to north is provided below:

- South area: minimum 588 ohms, maximum 1994 ohms and a mean of 1214 ohms.
- Centra area: minimum 543 ohms, 1756 ohms and a mean of 1081 ohms.
- North area: minimum 627 ohms, 1447 ohms and a mean of 1123 ohms.

14 Appendix 2: Photographic Register

Frame	Description	Direction of shot
1	General shot Contin Kirk	W
2	General shot Contin Kirk from cemetery	N
3	Plot plan of Contin Cemetery (19th century)	
4	Ambry in Kirk	N
5	Ambry and Medieval tombstones in Kirk	N
6	Ambry and Medieval tombstones in Kirk	N
7	Geophysical survey area (south field) with Contin Kirk	W
8	Geophysical survey area (south field) with Contin Kirk	W
9	Geophysical survey area (south field) with Contin Kirk and Old Manse	W
10	Geophysical survey area (south field) with Contin Kirk and Old Manse	W
11	Geophysical survey area (south field) with Contin Kirk and Old Manse	W
12	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
13	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
14	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
15	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
16	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
17	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
18	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
19	Geophysical survey area (north field), with Contin Kirk and resistivity survey in progress	S
20	Geophysical survey area (south field), with Contin Kirk and resistivity survey in progress	W
21	Geophysical survey area (south field), with Contin Kirk and resistivity survey in progress	W
22	Geophysical survey area (south field), with Contin Kirk and resistivity survey in progress	NW
23	Geophysical survey area (south field), with Contin Kirk and resistivity survey in progress	NW
24	Geophysical survey area (south field), with manse	SE