



Geophysical Survey Report No. 7

**Cornashee
Co. Fermanagh**

Dr Steven Trick

1 Introduction

1.1 This report describes a geophysical survey carried out at Cornashee, Co. Fermanagh. The mound at Cornashee is popularly regarded as a medieval royal inauguration site, however, the origins of the mound and its relationship with surrounding enclosures is uncertain. In 2005 staff and students from Queen's University Belfast carried out a topographic survey of the site. In January 2006 EHS funded a geophysical survey in support of the recent topographic work, to elucidate on the nature of the mound and its enclosure, and other coincidental features.

2 Description of the site

2.1 The monument at Cornashee is a large, steep sided mound, located centrally within a circular enclosure, and tangent to an elliptical enclosure. All lie on a large, high ridge 1km NNE of the centre of Lisnaskea village, in Co. Fermanagh (see figure 1). The following description of the site is mostly drawn from the EHS 'SM7 file' on the mound and enclosures at Cornashee, recorded in the SMR as 246: 1,2,3 (see figure 2 for the accompanying plan). Plate 1 shows an aerial view of the site. Figure 3 shows the results of the 2005 topographical survey.

2.2 The mound (256:1) is 8.7m high and measures 45.5m by 42.5m in diameter at the base, tapering to 14.5m by 15.5m in diameter at the summit. On the summit are a low mound of large stones.

2.3 The EHS inspector additionally recorded two earthen platforms near to the mound. One is located 35m NNW of the centre of the mound, measuring 0.2 to 0.3m high, 10m in diameter. The other is located 55m west of the mound, 0.4m high and measuring 12m by 10m.

2.4 Tangent to the southeastern edge of the mound is an elliptical earthwork, with bank and outer ditch (246:2). Its diameter at its widest point is 82m and 42m at its narrowest. The bank is 5m wide and stands 0.2m above the interior and 0.4m above the ditch. The majority of the east side of the enclosure has been truncated by the bank of another enclosure 246:3, see below. The west end of the ditch is overlain by collapse from the mound, but chronological relationships are not confirmed.

2.5 The mound sits centrally within a circular earthwork 132.5m in diameter (246: 3). The enclosure is formed by a bank, 6m wide, standing 0.6m in height. The bank is accompanied by an outer ditch to the east, south and northwest, 3.5m wide and 0.3m deep. This enclosure is regarded as being a relatively recent construction (see below).

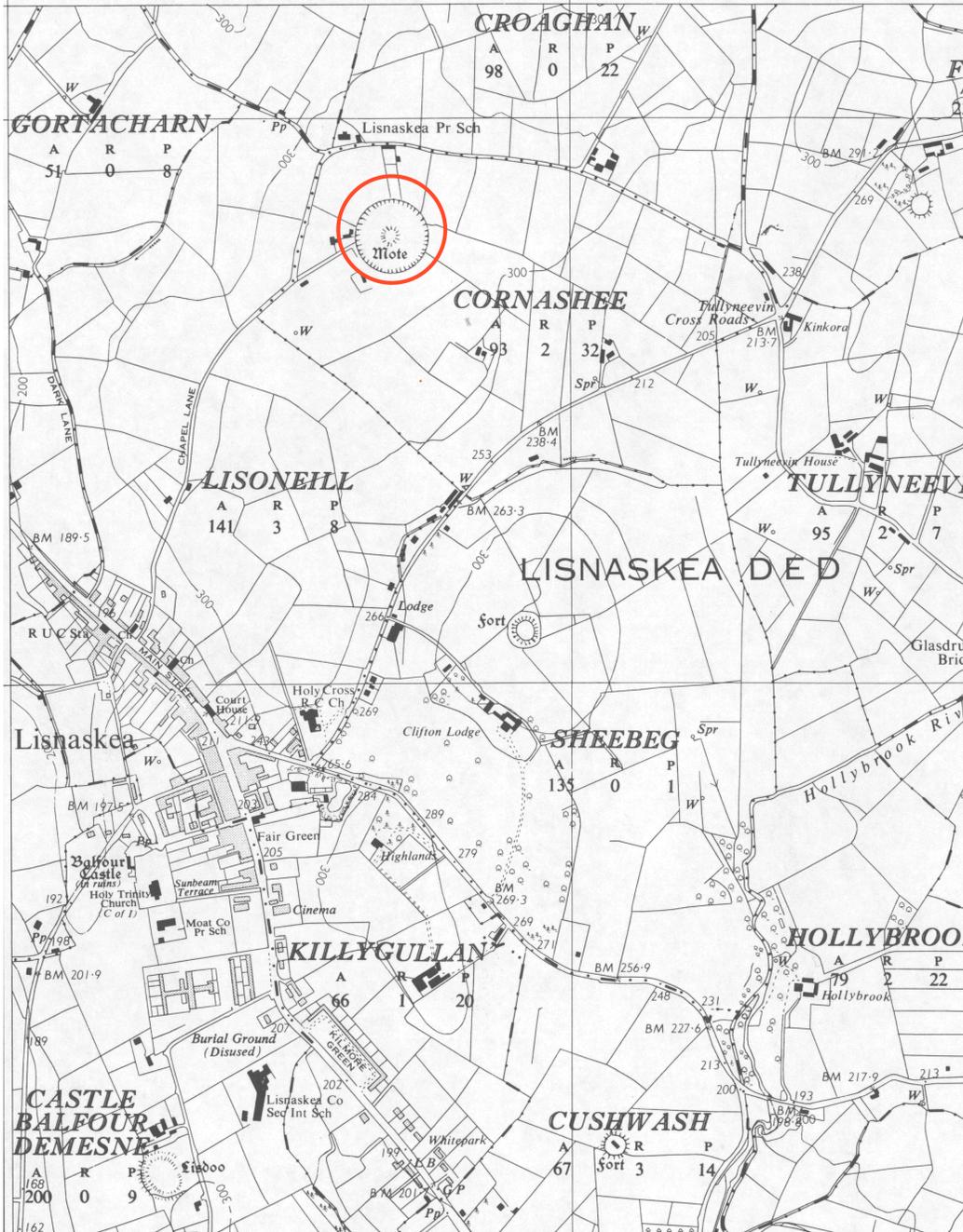


Figure 1. Location plan showing position of the site in relation to Lisnaskea, Co. Fermanagh. Map: OS 1906 (1957 revision).



Plate 1. Aerial photograph of Cornashee, from the north. (Cambridge University Committee for Aerial Photography).

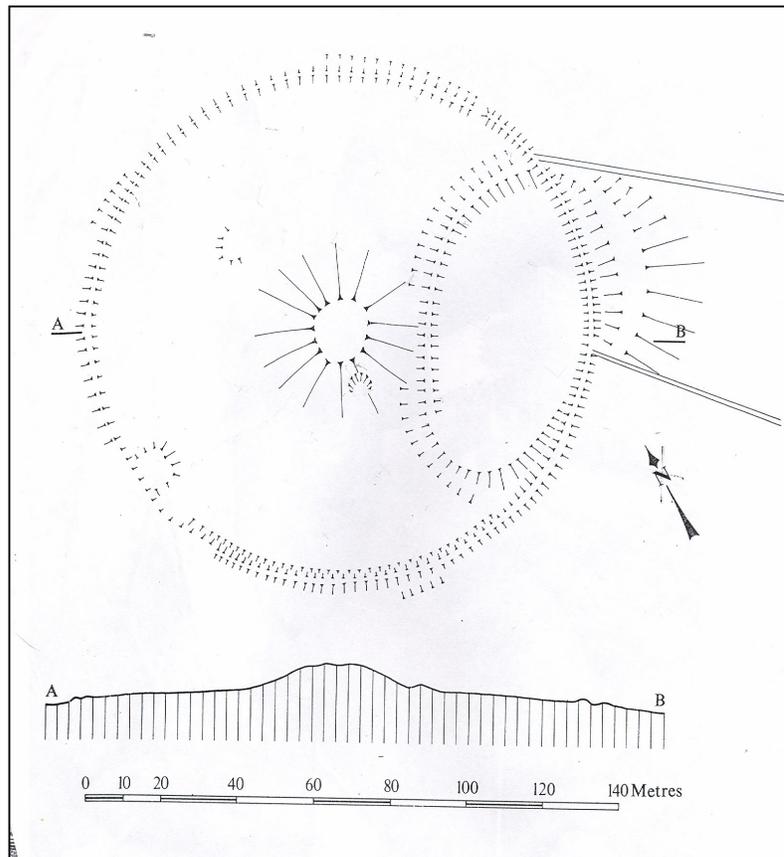


Figure 2. Hachure plan and profile of Cornashee, from the SM7 file held by EHS (dated February 1977).

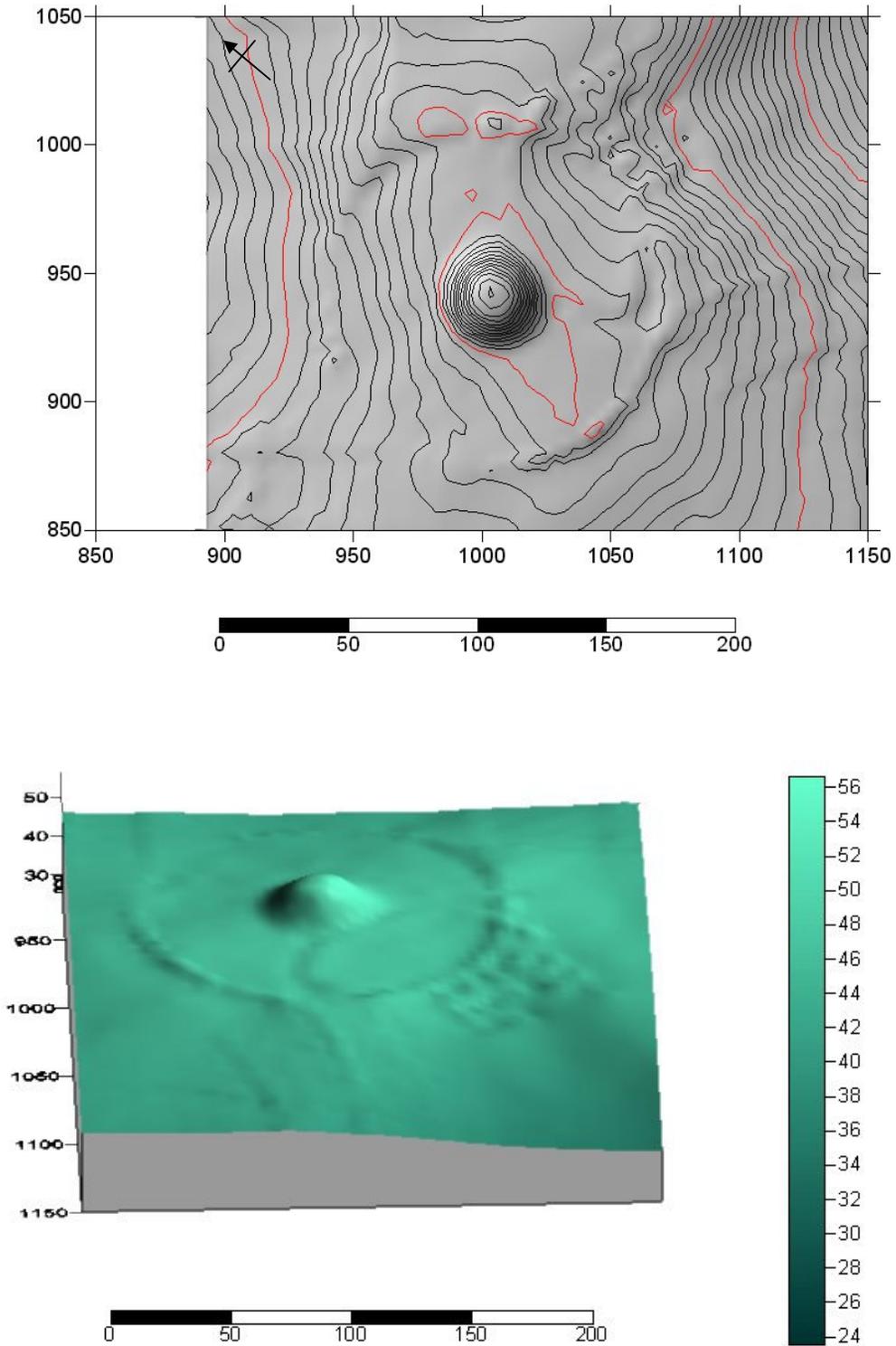


Figure 3. Topographic survey of Cornashee. Top image is a contour plan (red contour every 5m). Bottom image is a 3D visualisation (vertical exaggeration x2). Heights are relative rather than absolute. Both plots created with Surfer 8. Images supplied by Ronan McHugh.

- 2.6 The circular enclosure is currently used as a field for the grazing of livestock. The landowner has no knowledge of cables or pipes running beneath the enclosure (Patterson pers. comm.).

3 Background

- 3.1 The mound at Cornashee is located in a landscape rich in prehistoric and early Christian monuments, many of these occupying prominent hilltops in the vicinity. Local placenames emphasise the significance of the mound. The townland name Cornashee translates as 'hill of the fairy mound' (Muhr 1999). Other suggestive placenames include the townland to the west, Gortacharn 'field of the cairn', and to the north Croaghan, 'hill'.
- 3.2 The purpose of the mound has often been mysterious to historical commentators. Early OS maps add the label of 'Moat' or 'Mote' to the enclosure. The OS Memoirs of the early 19th century refer to the site as a 'fort' and mused that the mound may mark the burial of 'some prince of the district' (Day and McWilliams 1994, 9).
- 3.3 Most discussion however focuses on its role as a royal inauguration mound associated with the Maguire clan (Evans 1966; Waddell 1998; SM7). FitzPatrick has recently given the site of Cornashee a thorough examination in her book on Gaelic inauguration mounds (FitzPatrick 2004). FitzPatrick identifies it as *Sgiath Gabhra*, the inauguration mound of the Méig Uidhir (Maguire), the chiefs of Fermanagh, who used it from as early as the thirteenth century. The correlation of Cornashee with Sgiath Gabhra comes from historic OS correspondence claiming the mound still retained the name 'Skegoura'. (O'Donovan 1927 cited in Fitzpatrick 2004, 84). Specific use of the mound for inauguration purposes however only appears in documentary record from the sixteenth century. A poem records the inauguration of Cú Chonnacht Mág Uidhir there in 1566 (Greene 1972 cited in FitzPatrick 2004, 85). FitzPatrick suggests that the name of the townland to the north Croaghan, is significant. Originating in the Old Irish *Cruachán*, it can simply mean 'hill', but research suggests that the name, and the presence of inauguration sites often coincides (FitzPatrick 2004, 32).
- 3.4 It has been suggested that medieval inauguration practices have re-appropriated an older prehistoric monument, specifically a Neolithic passage grave. The EHS SM7 file on the monument describes the mound as having 'the appearance of a large passage tomb', and states that large boulders are visible at the south and northwest which may be kerbstones. It also describes some subtle earthwork platforms around the periphery of the mound which may be satellite tombs (EHS SM7 file, dated Feb 1977).

- 3.5 The SM7 file suggests that the perfect form of the circular enclosure points to landscaping of the 18th century, which has created a 'tree ring'. A letter written in 1934 states that Lord Erne, three to four generations previous to that time had the site planted with trees. The trees grew to maturity , but were cut down for military purposes in the first world war (see SM7 file).
- 3.6 The landowner states that there was in the past a wall built on top of the circular enclosure, with a postern gate forming an entrance on the western side. The approach to this would have been via a lane, marked on OS maps until the 1970s, but now only marked by a single field boundary on the ground. The current entrance gate on the north side is 'new' (Patterson pers. comm.).

4 Geology

- 4.1 The geology within this area of Co. Fermanagh is comprised of predominantly Carboniferous strata, which rest unconformably on older Ordovician rocks. The site marks a fault boundary between two of the formations within this Carboniferous succession, namely the younger Dartry Limestone formation (to the West) and older Benbulbin Shale Formation (to the East). The Dartry Limestone Formation is composed of bedded, fine-grained fossiliferous limestone with thin layers of mudstone and greyish black chert, and generally lies above the Benbulbin Shale formation. The Benbulbin Shale formation is composed of bedded, grey, calcareous, fossiliferous mudstone with thin lenticular layers of limestone and sandstone. However, this fault boundary has disrupted the Carboniferous succession in such a way that the older strata (the Benbulbin Shale formation) has been uplifted and exposed at the surface (to the East) and therefore lies next to younger material (the Dartry Limestone formation to the West) which it would normally underlie (McAllister pers. comm.).
- 4.2 The soils of the survey area are relatively dry gleys featuring good drainage, on a drift geology of Upper Limestone till. These constitute perhaps the best quality agricultural land in the area and may be the reason for the location of the town of Lisnaskea (Cruickshank 1997, 161).

5 Survey strategy

- 5.1 The aim of the survey was to further our understanding of the complex of monuments at Cornashee, specifically focusing on the relationships between visible features, and identifying other features only surviving as subsurface archaeology. The survey aimed to cover the interior of the circular enclosure with both resistivity and magnetometry techniques.
- 5.2 Focus areas included the perimeter of the mound, the elliptical enclosure, and the possible 'satellite tombs' suggested in the SM7 file. Neither of these latter features were visually apparent when the geophysical team visited the site in January 2006. One of the aims of the survey was to locate them and define their geophysical characteristics.

6 Method

- 6.1 A series of 20m x 20m geophysical grids were set out using a total station (see figure 4). A large proportion of these were 'partial' grids due to the confined nature of the survey area. The grids were aligned on magnetic north using a compass and were tied into the Irish Grid using a hand-held GPS. The survey took place between January 30th and February 3rd 2006. Time constraints only allowed portions of the enclosure to be surveyed.
- 6.2 *Resistivity*
- 6.2.1 The resistivity equipment comprised a Geoscan RM15 Resistance Meter in a twin-probe array. The probe separation was 0.5m. Both the traverse and sample interval were 1m. The grids were surveyed in a zig-zag pattern. Figure 5 shows the layout of the grids surveyed with this technique.
- 6.2.2 The resistance values recorded were generally in the range 40 – 90 ohms. Particularly high values, up to 234 ohms, were recorded around the edge of the mound.
- 6.2.3 The resistance data were downloaded and processed using Geoplot 3.0s software (Geoscan 2005). The data were interpolated in the direction of traverse to provide a smoother display. Due to the large range of data values recorded, the basic plot does not offer good contrast to the majority of features. Therefore the display parameters were adjusted to spread the available greyscale across the majority of the readings.

Figure 6 shows the raw and processed earth resistance data. Figure 7 shows the data overlaid on a large scale map of Cornashee.

6.3 Magnetometry

6.3.1 The magnetometry equipment comprised a Bartington Grad601-2 fluxgate gradiometer. The traverse interval was 1m and the sample interval was 0.25m. Grids were surveyed in a zig-zag pattern. Figure 8 shows the grids surveyed with this technique.

6.3.2 The magnetometry data were downloaded using the Bartington Grad601 application. These were then exported to Geoplot for processing. The data were clipped from -50 nT to +50 nT to remove excessive iron spiking. A Zero Mean Traverse function was applied to one of the grids to remove striping in the data. A low-pass filter was applied to smooth the plot. The data were finally interpolated twice in the direction of traverse to bring symmetry to each unit of data.

6.3.3 Figure 9 shows two different visualisations of the magnetometry data. The trace plot shows a pseudo-3D view of the data. This is semi-processed data, which shows more clearly the differentiation between the areas of increased magnetic response and background level. The shade plot shows the fully processed data in traditional format. Figure 10 shows the data overlaid on a large scale map of Cornashee.

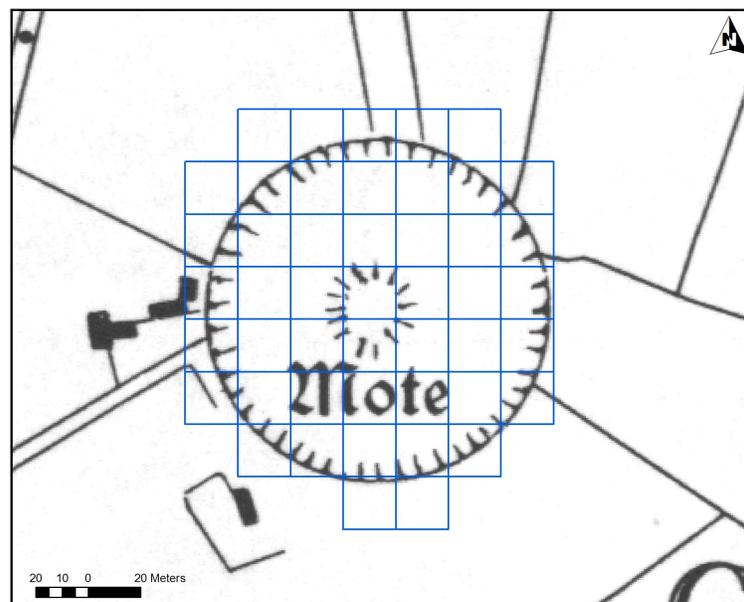


Figure 4. Geophysical grid layout, overlaid on OS 1906 plan (revised 1959).

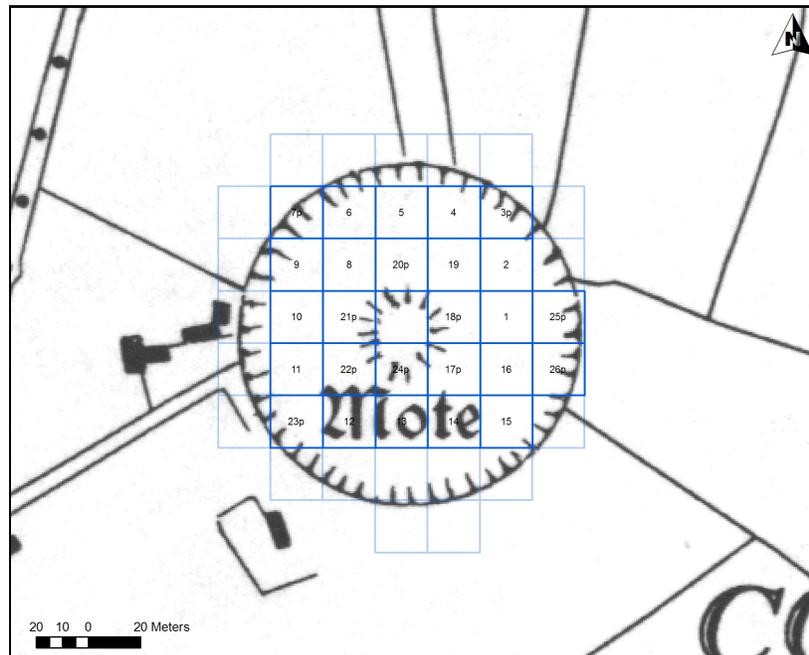


Figure 5. Grids surveyed with resistivity. 'p' = partial grid.

7.0 Results

7.1 Resistivity

7.1.1 Figure 11 shows a summary of the anomalies discussed in the text below.

7.1.2 The anomaly at 1 is the edge of the central mound, clearly defined as a border of very high resistance values, up to 234 ohms. This suggests the mound is formed from a cairn of stones. During survey of this area the probes made contact with stone blocks beneath the surface. The SM7 file has suggested that the mound is a passage grave and that large boulders are visible around the edge. A stone cairn with revetting boulders would indeed be fitting of a Neolithic passage grave.

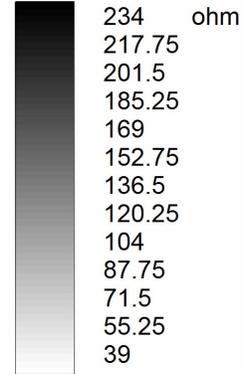
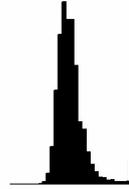
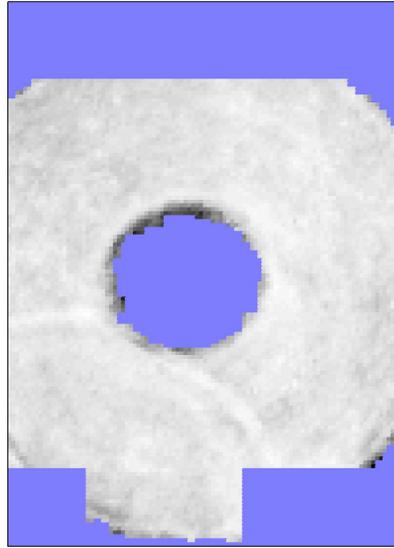
7.1.3 Tangent to anomaly 1 is the arcuate anomaly at 2. This is the ditch of the elliptical enclosure (246:2), clearly visible on the ground as a substantial earthwork. This ditch presents as a low-resistance anomaly suggesting the ditch has filled with rich, silty material since its digging or last recutting. The arc is truncated by the stone cairn of the central mound. The SM7 file also notes this relationship, stating that it is caused by 'collapse from the mound'. The geophysical response from the mound however depicts a well-formed circle, suggesting that collapse has been minimal, or less likely, symmetrically across the entire perimeter of the mound.

- 7.1.4 The curving anomaly at 3 mirrors the path of anomaly 2, but is weaker in strength and less coherent morphologically. The gap between 2 and 3 suggests that the phenomena is not caused by the bank internal to the ditch, but that rather there is another feature internal to the bank. The low-resistance values exhibited by this anomaly suggest there may be a relatively shallow and poorly defined ditch inside the bank.
- 7.1.5 Internal to the elliptical enclosure is a patch of low-resistance values (anomaly 4). This anomaly is sub-rectangular in shape and measures 13m by 14.5m. This anomaly is marked on the ground by a dense patch of dead fibrous weeds. These weeds also appear in the ditch of the elliptical enclosure (anomaly 2). This suggests that both anomalies are the result of similar subsurface materiality, i.e. a cut feature that has filled up with richer, water-holding matter. There is no obvious archaeological interpretation for this anomaly, but its position within the elliptical enclosure may suggest the two are related in some way.
- 7.1.6 Anomaly 5 is a low resistance arc that follows the perimeter of the mound, in all but the eastern and southeastern sectors. It is interpreted as an encircling ditch associated with the mound.
- 7.1.7 The pattern at 6 is a spatially aggregated group of small, subcircular low-resistance anomalies. Each measures between 1m and 3m in diameter. Their morphology is suggestive of pits that have become filled with finer, richer soils. Their spatial configuration is suggestive of a former post-hole or stone-hole alignment.
- 7.1.8 Anomalies 7 and 8 are amorphously-shaped patches of high-resistance values. Anomaly 7 appears to be truncated by the ditch of the elliptical enclosure (anomaly 2) and may be related to it in some way. Their archaeological significance is uncertain.
- 7.1.9 Located in the north-western sector of the circular enclosure is anomaly 9. This is a low-resistance anomaly suggestive of a ditch, whose morphology suggests that it may continue outside the circular enclosure.

Cornashee, Co. Fermanagh

Earth Resistance survey

Raw survey data



Processed survey data

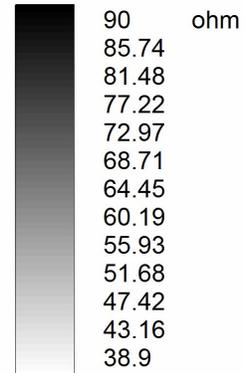
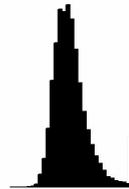
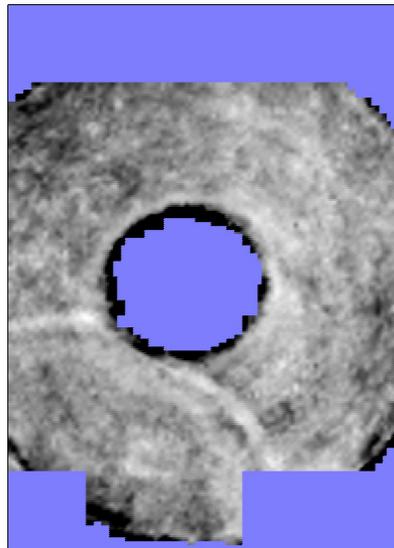


Figure 6. Plot of earth resistance data, showing shade plot, histogram, colour scale.

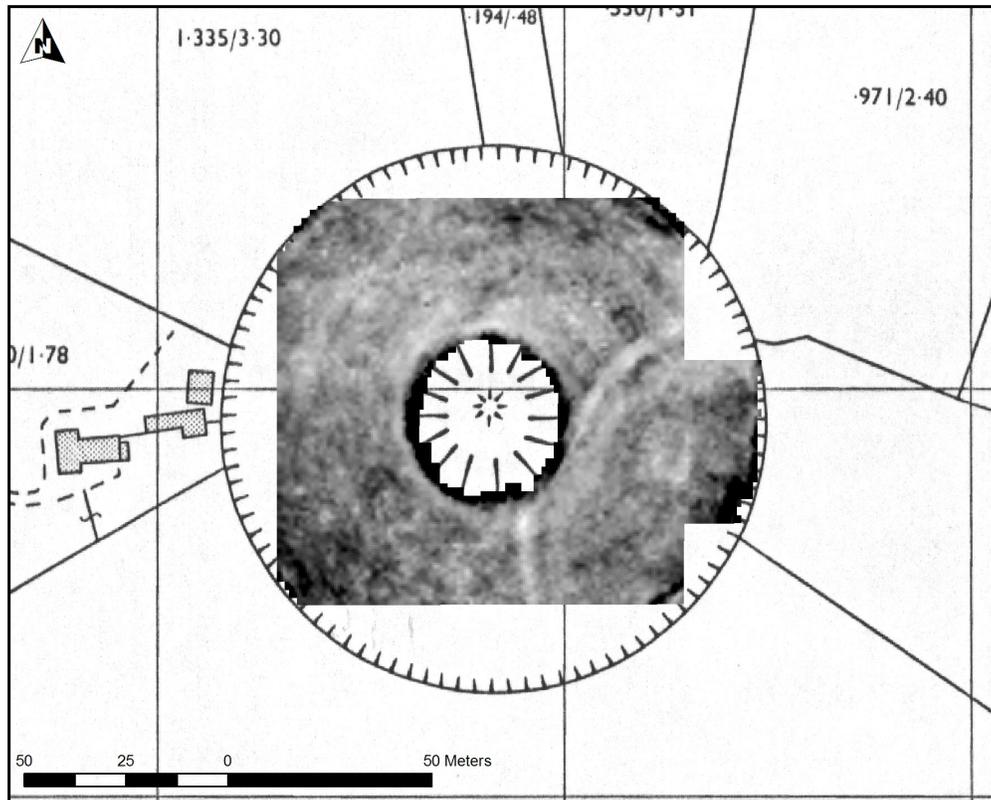


Figure 7. Resistivity plot overlaid on large-scale OS map from 1982.

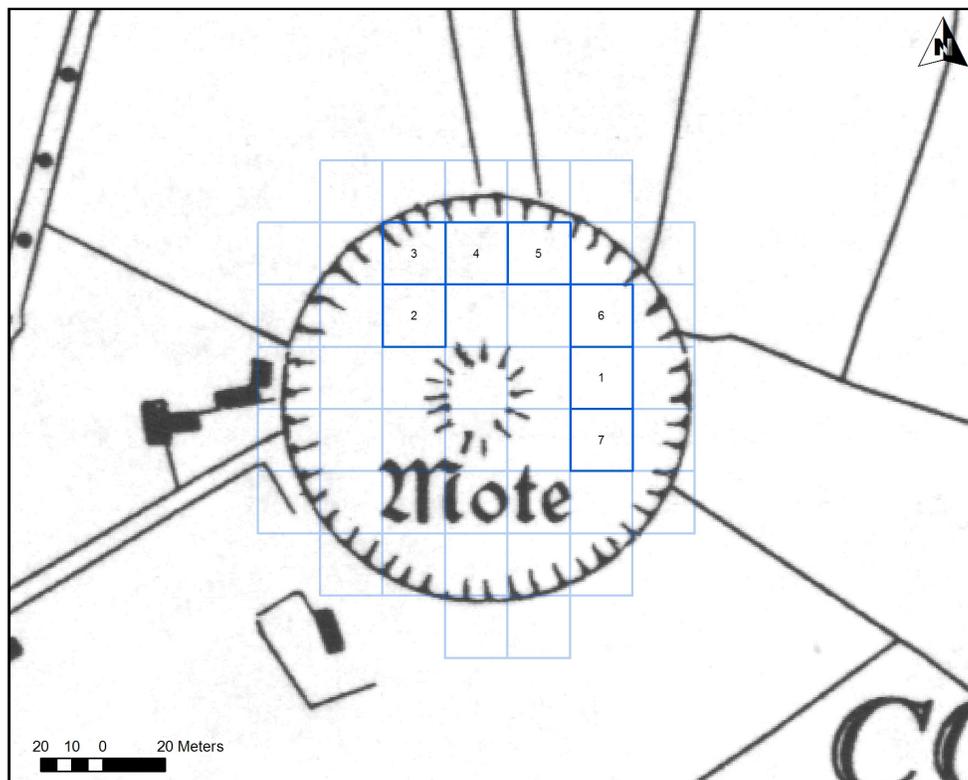


Figure 8. Layout of magnetometry grids.

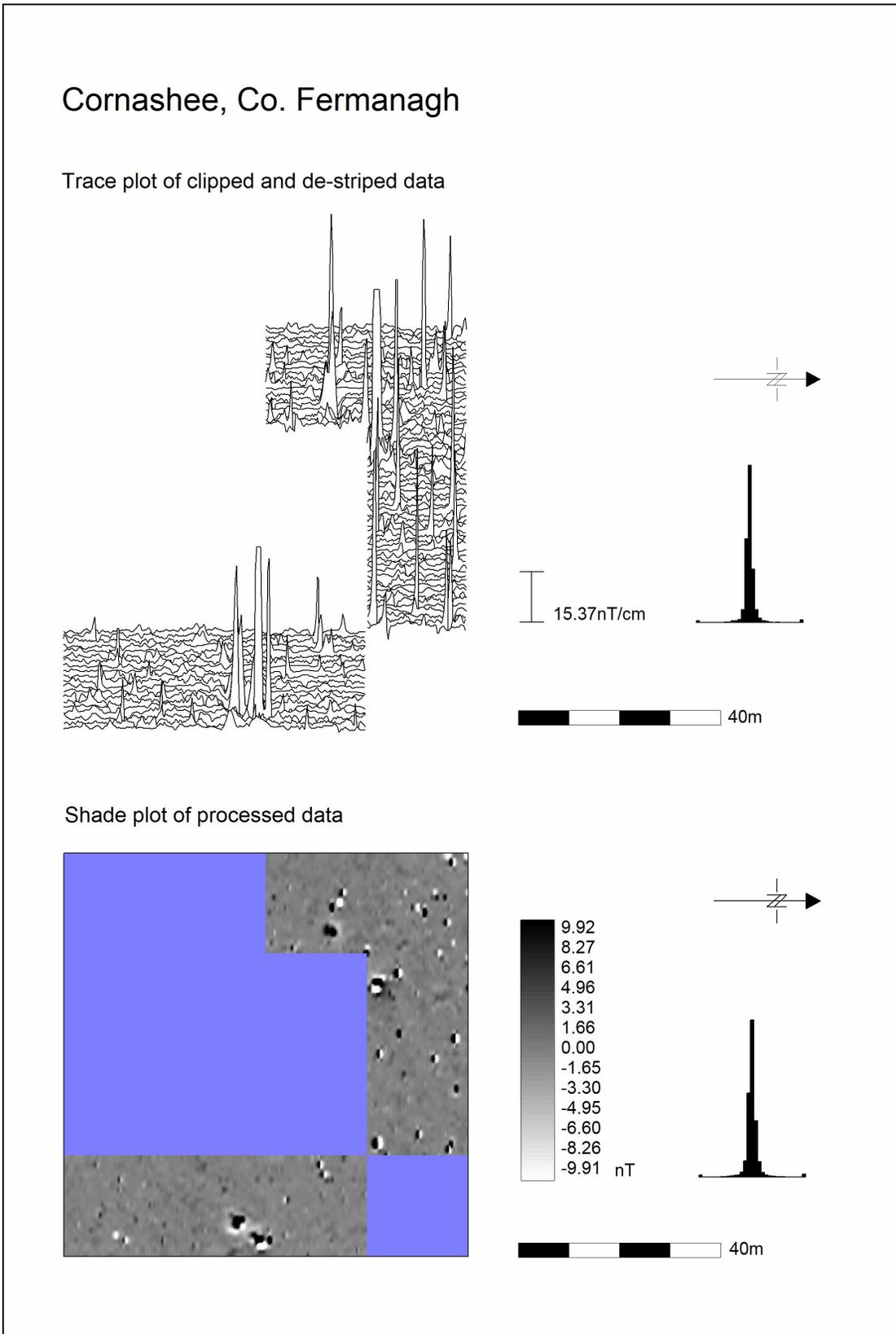


Figure 9. Combined trace and shade plot of magnetometry data, including histogram, vertical and horizontal scale bar, and colour scale.

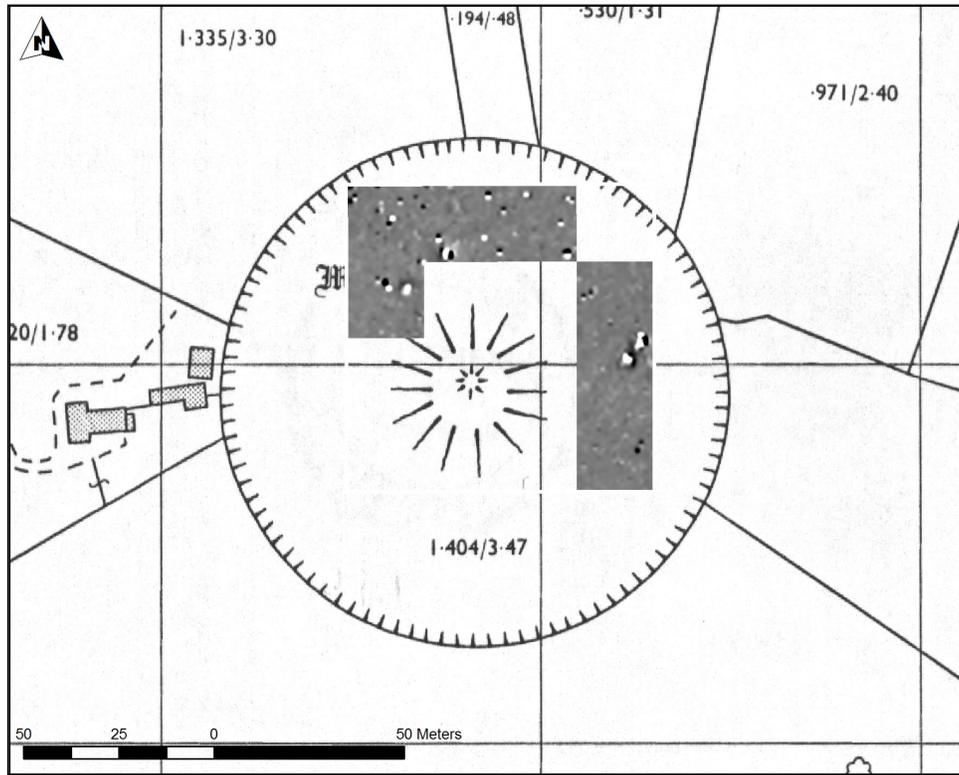


Figure 10. Magnetometry shade plot overlaid on large-scale OS 1982 map.

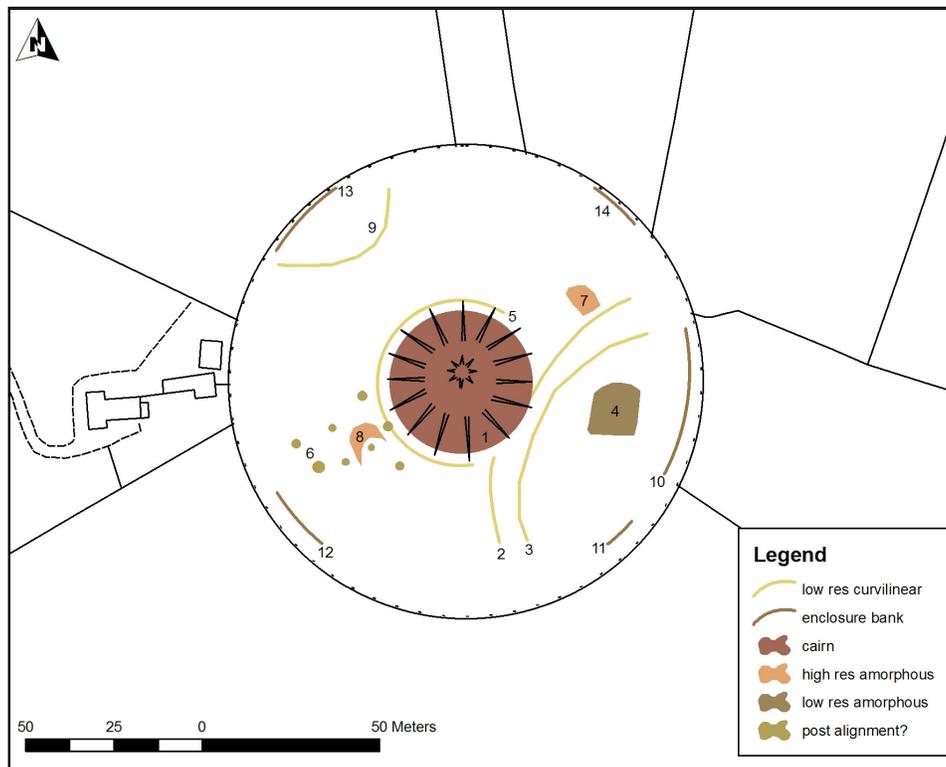


Figure 11. Summary of resistance anomalies discussed in the text.

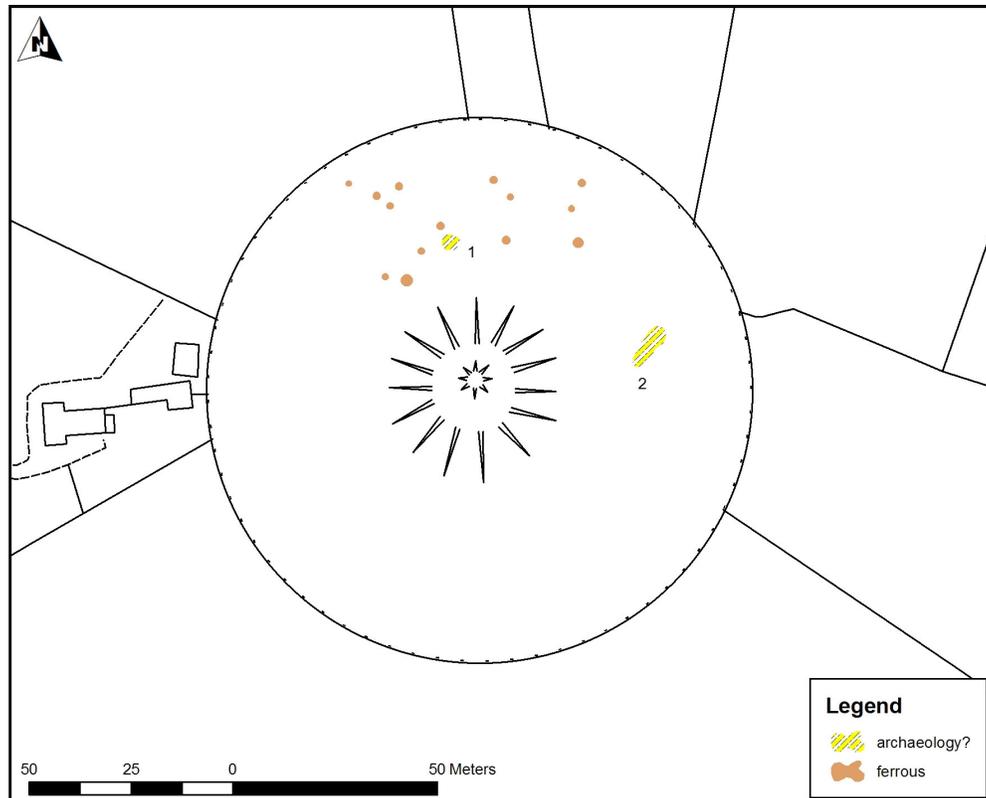


Figure 12. Summary of magnetometry anomalies discussed in the text.

7.1.10 Anomalies 10 to 14 are sections of the bank forming the circular enclosure around the mound. Earth resistance values recorded on this bank were occasionally very high (c. 140 ohms), suggesting there may be a stone packing to this bank. The landowner stated that a wall once stood on here, suggesting that stone footing may remain within.

7.2 *Magnetometry*

7.2.1 Figure 12 shows a summary of the anomalies present in the magnetometer plot. Overall the site was magnetically noisy, with a large number of 'iron spikes' in the dataset. A cursory examination of the survey area found a number of foil sweet wrappers and odd bits of farm debris. The orange spots in figure 11 show the incidents of this ferrous surface debris.

7.2.2 Anomalies 1 and 2 are strong responses of a similar magnitude to the ferrous debris. They are different in that they have a larger linear element to them, making them more interesting archaeologically. These signatures are suggestive of a buried

ferrous object such as a pipe leading from a field cistern, or a lost part of farm machinery. Alternatively, they possibly a kiln or oven. The keyhole nature of the magnetometry coverage does not assist in the interpretation.

8 Conclusions and recommendations for further work

- 8.1 The geophysical survey at Cornashee successfully located a number of anomalies that may be of archaeological significance. It is recommended that this success be followed by further survey work across a wider area and at an increased resolution. Of the anomalies already identified, a number merit further investigation.
- 8.2 The present survey only covered a portion of the main enclosure, and the resistance survey was carried out at a coarse resolution. The survey did not include areas of interest such a possible 'satellite tomb' west of the mound, former western entrance to the enclosure, or the remainder of the interior of the elliptical enclosure. It is suggested that a more substantial survey campaign be conducted at Cornashee, with both magnetometry and resistivity, covering the entirety of the circular enclosure, and the portion of the elliptical enclosure outside. The resolution of the resistivity survey should be increased to 0.5m
- 8.3 The mound is possibly a Neolithic passage grave of significant archaeological potential. An excavation is recommended at the junction between resistance anomalies 1 and 2 to clearly define dating and sequence.
- 8.4 The geophysical survey identified a possible ditch encircling the mound, and also a possible post/stone -hole approach. An excavation is recommended on the southwest side of the mound to further investigate these features. The trench should also take in high-resistance anomaly 8 to define its nature and relationship with surrounding anomalies.
- 8.5 Anomaly 4 possibly represents a substantial archaeological feature that should be investigated through excavation. Its position internal to the elliptical enclosure may suggest the two are associated in some way.
- 8.6 Anomalies 7 and 9 are potentially features of archaeological significance.

Acknowledgements

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