



## **Geophysical Survey Report No. 15**

**Cornashee, Co. Fermanagh  
Integrated earth resistance and magnetometry report**

**Dr Steven Trick**

## 1 Introduction

This report presents and discusses the results of two seasons of geophysical survey at Cornashee, Co. Fermanagh (SMR FERM 246:1, FERM 246:2, FERM246:3). In February 2006 the CAF conducted an earth resistance survey of the site, and results of this work were published in CAF GSR 007 (Trick 2006). In August 2006 the CAF followed up the resistance survey with a magnetometer survey of the site, with the results published in CAF GSR 013 (Trick 2007). This report brings together the results of the two surveys, discusses the significance of the combined results, and suggests further work at the site. Please see GSR007 or GSR013 for the background on the site, and the individual reports for details on the respective survey methods.

## 2 Earth Resistance Survey

The resistance survey used a standard survey resolution of 1m x 1m over a series of 20m x 20m grids. The majority of the interior of the circular enclosure (FERM 246:3) was surveyed. This survey is fully described and reported on in CAF GSR 007. The anomalies encountered are summarised in Table 2.1 below and are presented graphically in Figure 1.

<b>Table 2.1. Description and interpretation of resistance anomalies (see Fig. 1)</b>		
Code	Description	Interpretation
r1	A circular border of very high-resistance values, up to 234 ohms.	This is the edge of the central cairn, resistance values suggest it is uniformly comprised of stone blocks with air-filled cavities. Appears to overlie r2 below.
r2	Curving low-resistance anomaly, c. 5m across, tangential to r1.	This is the ditch of the elliptical enclosure, the low-resistance nature suggesting it has filled with rich silty material since last cutting/re-cutting. Appears to be overlain by r1 adjacent to cairn.
r3	Incoherent curving low-resistance anomaly, c. 6m across which mirrors the	Gap between r2 and r3 suggests this is not the signal made by the internal bank of the elliptical enclosure but

	path of r2.	rather a further shallow, and poorly-defined ditch internal to the bank.
r4	Rectilinear patch of low-resistance, c. 13m x 14.5m, internal to the elliptical enclosure, marked on the ground by a dense patch of fibrous weeds.	No obvious interpretation, although its position within the elliptical enclosure might suggest the two are related.
r5	Low-resistance arc encircling the mound, c. 3m in width.	Possible ditch around the central cairn.
r6	Spatially aggregated group of sub-circular low-resistance anomalies, each 1m -3m in diameter.	Resistance values suggest pits, possibly of former post-hole or stone-hole alignment.
r7, r8	Amorphous patches of high-resistance readings.	r7 appears to be truncated by the ditch of the elliptical enclosure and may be related in some way. The archaeological significance of r7 and r8 is uncertain.
r9	Curving anomaly, c. 1m across, in the north-western sector of the circular enclosure.	Resistance values are suggestive of a ditch, which may possibly continue outside survey area, and the circular enclosure.
r10-r14	Areas of high-resistance encountered at the edge of the circular enclosure, up to 140 ohms.	This is the bank of the circular enclosure. Resistance values suggest it is well-drained with possible stone-core. Landowner stated that there was once a wall on this bank suggesting the footing of the wall may remain within the bank.

### 3 Magnetometry Survey

The magnetometry survey used a high-resolution sampling interval of 1m x 0.25m, over a series of 20m x 20m grids, and covered the entirety of the circular enclosure (FERM 246:3, 'Area 1' in GSR013 and this report). Also surveyed was a small portion of a field to the east ('Area 2') where the EHS inspectors had noted and planned the apparent continuation of the elliptical enclosure (see EHS SM7 file and Fig. 2). The magnetometry survey is fully described in GSR013. The anomalies encountered are summarised in Table 3.1 below, and are presented graphically in Fig. 2).

**Table 3.1. Description and interpretation of magnetometry anomalies (see Fig. 2)**

Code	Description	Interpretation
m1	A faintly positive, curving anomaly, c. 5m across.	This is the ditch and bank of the elliptical enclosure. The slight magnetic response suggests that the ditch and bank to not comprise much material derived from nearby anthropogenic activity.
m2	Positive linear anomaly c. 1m wide, on a northwest-southeast alignment.	Possible ditch or gully.
m3,m4	Two magnetic 'spots' at the northwest terminus of m2, just inside the elliptical enclosure. These correspond to Anomaly '2' in the preliminary magnetometry survey described in CAF GSR007.	Dipolar response and medium signal strength suggest buried ferrous objects at some depth. Alternatively, a hearth or cache of ceramic material. Possibly related to m2.
m5	Concentration of strong and above average magnetic responses in a curving pattern	Whether this is a true concentration of archaeological deposits or a concentration of ferrous rubbish is unclear. At the western end of the deposits the strength of the signal (+- 3000nT) suggests ferrous rubbish near

		the surface; perhaps debris of farming activities. The proximity to the central mound may forward a more archaeological interpretation, perhaps a deposit of metalwork in the liminal zone around of the mound.
m6	Strong dipolar anomaly at the edge of the mound, similar to m5 but the signal strength here is a modest 98nT.	The strength of signal suggests ferrous rubbish, perhaps farm debris. This anomaly is located at the edge of the cairn where the façade is flatter, suggesting a possible entrance. It is not inconceivable that this is a metalwork deposit a former entrance to the monument.
m7	Anomaly m7 is an area of increased magnetic response in Area 2. A strong dipolar response at the western end, with a positively magnetic tapering 'tail' to the south and east.	The spatially contained and dipolar response at the western end of the anomaly suggests a ferrous object buried beneath the surface. However this anomaly may also be representative of a hearth or kiln or dump of brick or tile. The positively magnetic 'tail' suggests a ditch or gully. These anomalies spatially coincide with an area of subtle earthworks (see Figure 2 and hachure plan in EHS SM7 file).
m8	This is a dipolar response which corresponds with Anomaly '1' in the preliminary magnetometry survey described in CAF GSR007.	The dipolar response suggests ferrous rubbish, however the width of the response (3m x 7m) suggests either a large ferrous object near the surface or a strong archaeological deposit.
m9	This is a dipolar response, similar to m8 but smaller in spatial influence.	The dipolar response suggests ferrous rubbish, however an archaeological source is possible and this anomaly

		has been highlighted (amongst many similar anomalies not discussed) since it coincides spatially with the location of one of the postulated satellite tombs northwest of the cairn (see hachures on Figure 2 transcribed from SM7 file) and could therefore represent a grave deposit.
m10	Dipolar magnetic 'spike'.	Anomaly m10 is highlighted as an example of the many magnetic spikes encountered which are most likely to be ferrous rubbish such as foil sweet wrappers or farm debris such as tractor parts or barbed wire fragments.
m11	Agglomerated area of magnetic spiking.	m11 has been highlighted as an example of an area of strong magnetic response encountered at the periphery of the main circular enclosure. This is caused by barbed wire or corrugated iron fencing around the site.

#### 4 Discussion of Results

Figure 3 shows the combined results of the resistivity and magnetometry survey overlaid on the base mapping. It can be seen that geophysical methods have located anomalies in all parts of the main enclosure and into the adjacent field.

The resistance survey highlighted a number of curvilinear anomalies and also more defined areas of high/low resistance. Importantly, it showed the central cairn to be a very high-resistance anomaly, strongly suggesting that rather than being an earthen mound it is a stone cairn made of rough stone blocks with cavities between them. The elliptical ditch showed up as a well-defined, low-resistance anomaly suggesting a deeper ditch than can be seen today, with a fill that potentially contains archaeological material.

The strong dipolar response of many of the magnetometry anomalies suggest they are the result of surface or near surface ferrous rubbish most likely items related to modern agricultural practice. However the possibility remains that some of these may be archaeological in nature. The most interesting of the magnetic responses are those associated with the elliptical enclosure, in particular anomalies m2 and m7. These have a positively magnetic linear element to them suggesting ditches or gullies, and both are spatially associated with strong dipolar responses suggesting associated ferrous or fired ceramic objects.

Interestingly, only rarely have both techniques detected the same feature: the elliptical ditch shows up in both, albeit very faintly in the magnetic survey. The potential negative features highlighted by the resistance survey (ditches, pits etc) have not produced a concomitant magnetic response, indicating that they have not been filled with magnetically enhanced material. This may suggest that the soils on the hill have not been enhanced through prolonged human habitation and the site was only used for shorter-term ritual use.

## **5 Future Work**

The complex of monuments at Cornashee remain enigmatic, and there are basic unanswered questions concerning the origins and phasing of the individual components of the complex. The central cairn has been postulated as a Neolithic passage grave (see EHS SM7 file), which is potentially unexcavated and therefore of immense archaeological potential. More commonly the monument is celebrated as the place where the Maguires of Fermanagh were inaugurated during the later medieval period (FitzPatrick 2004). However, as yet no firm archaeological evidence exists to support either of these interpretations. It is suggested that a series of exploratory trenches be opened at the site in order to address these ambiguities, using the results of the geophysical surveys as a basis for their location.

The site is a Scheduled Monument and, as such, any such work would require Scheduled Monument Consent from EHS: Built Heritage. By overlaying the resistance and magnetic surveys we can make more informed decisions regarding where to place excavation trenches, so that some of these can encompass anomalies detected in both surveys. Figure 4 shows the suggested locations of these trenches. The following trenches are recommended:

- Trench 1 encompasses the edge of the cairn and the ditch of the elliptical enclosure. This will elucidate on the phasing of the cairn and elliptical earthwork and provide dating evidence.
- Trench 2 spans the ditch of the elliptical enclosure again but also takes in high-resistance Anomaly r7 and magnetic 'hotspot' m4, providing information on the ditch chronology but also the origin of these geophysical anomalies.
- Trench 3 is a long strip trench internal to the elliptical enclosure that covers the edge of low-resistance anomaly r4 and extends to take in linear positive magnetic anomaly m2 providing information on both these anomalies.
- Trench 4 is a small exploratory trench over magnetic anomaly m9 which will investigate the source of the magnetic signal, and determine whether there is a satellite tomb in this position and whether the tomb and anomaly are interlinked.
- Trench 5 is positioned at the southwest edge of the cairn to investigate high-resistance anomaly r8, and anomaly r5 which is the subtle low-resistance ring around the cairn, and also one of the possible post holes (Anomaly r6).
- Trench 6 is located to investigate the magnetic anomaly m6 which occurs at a slight hollow in the slope of the mound hinting at a possible entrance into the monument. This trench will discover the source of the magnetic signal and investigate the possibility of an entrance at this point.
- Trench 7 is a long trench in Area 2 which is designed to investigate the nature of the large magnetic response here and also the form of the earthworks in this field, and whether they do represent an extension to the elliptical enclosure in Area 1.

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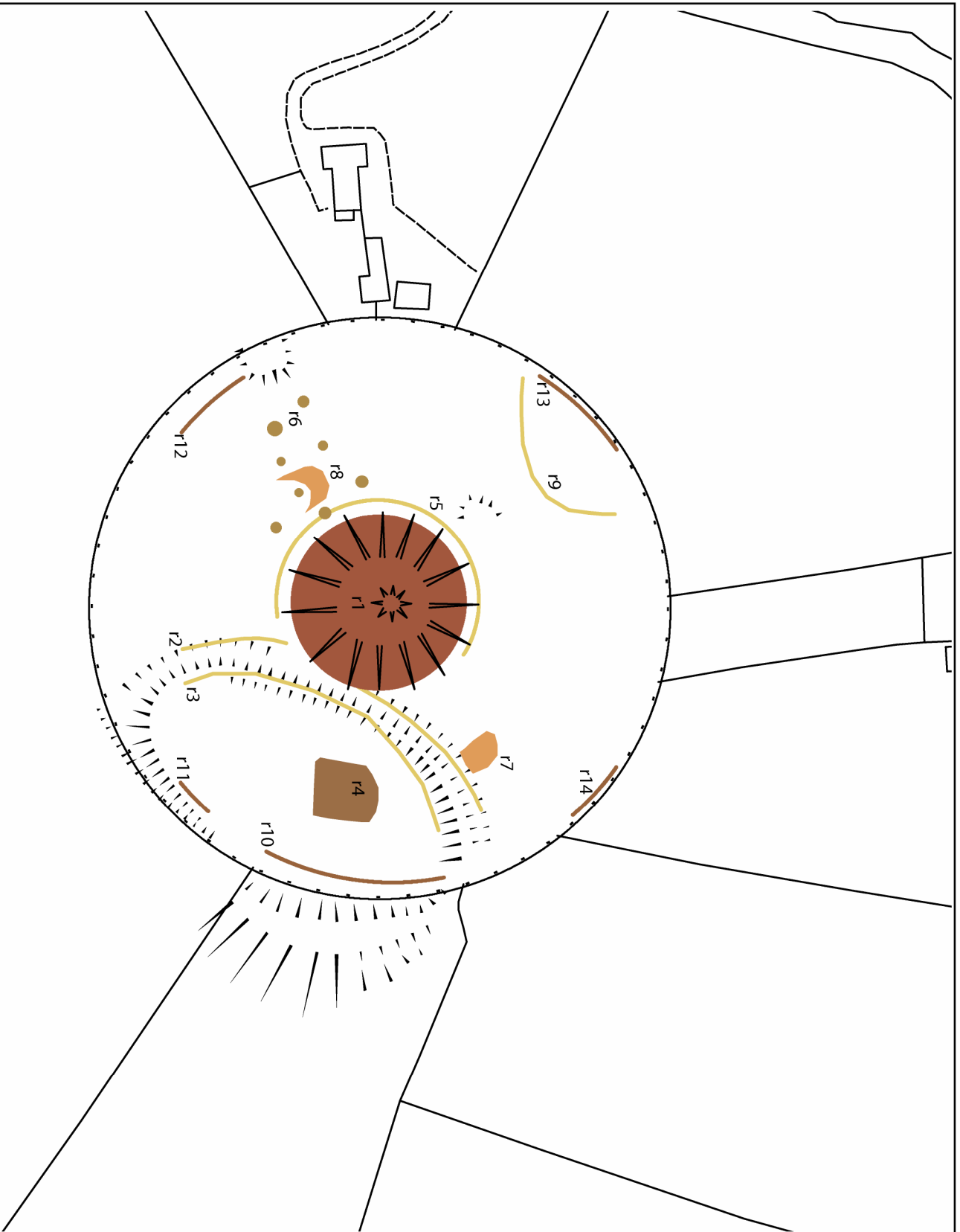
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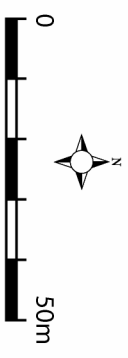
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- Resistance**
-  Low resistance curvilinear
  -  Enclosure bank
  -  Cairn
  -  High resistance amorphous
  -  Low resistance amorphous
  -  Post alignment?



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Fieldwork

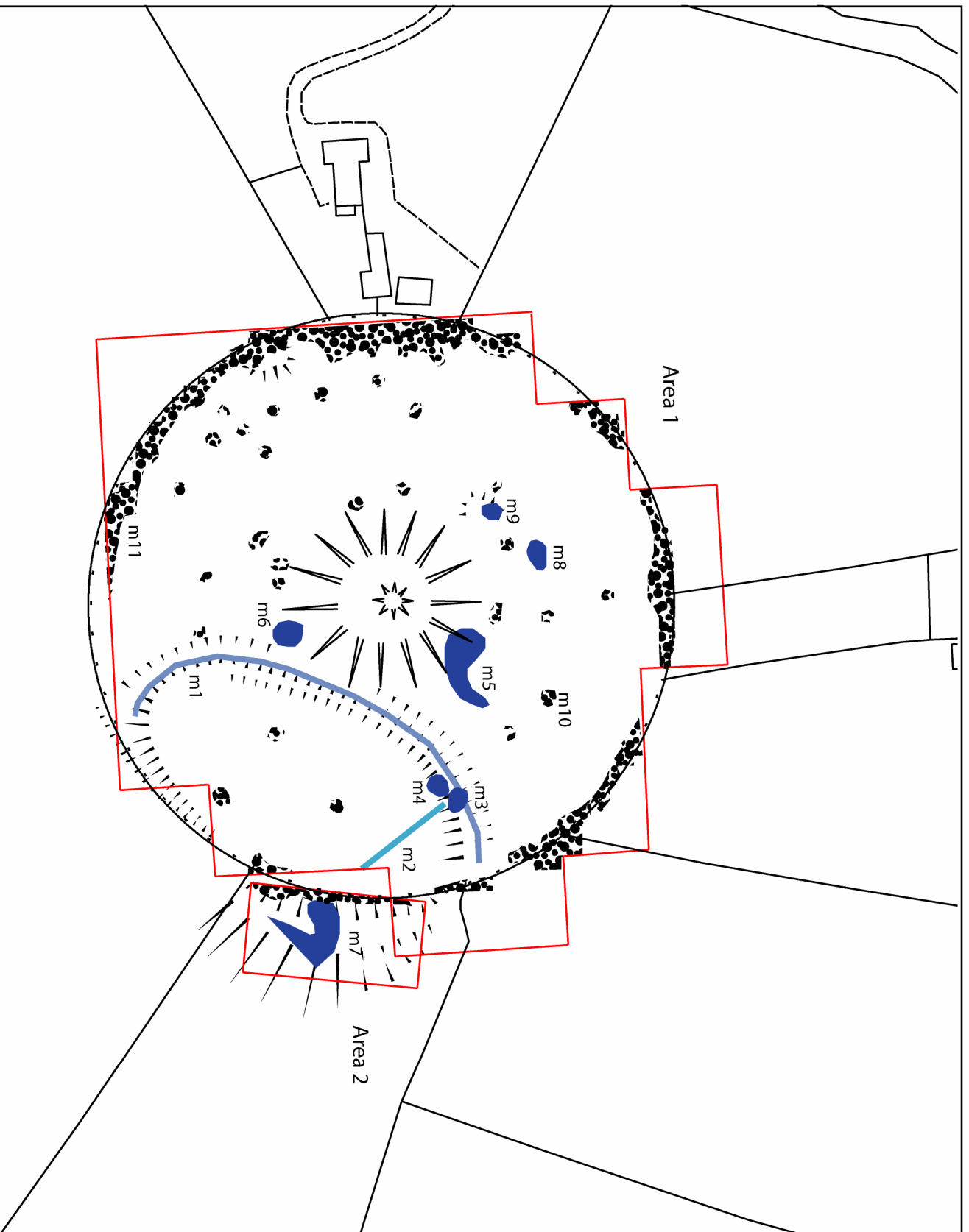
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Cornashree, Co. Fermanagh  
Geophysics






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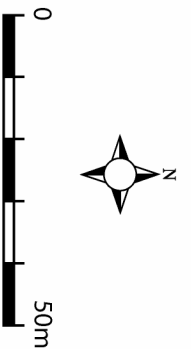
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Environment  
Heritage  
Service



**FIGURE:**  
Figure 1



-  Elliptical ditch
-  Archaeological deposit/buried ferrous object
-  Positive linear anomaly
-  Ferrous rubbish/fencing
-  Survey areas



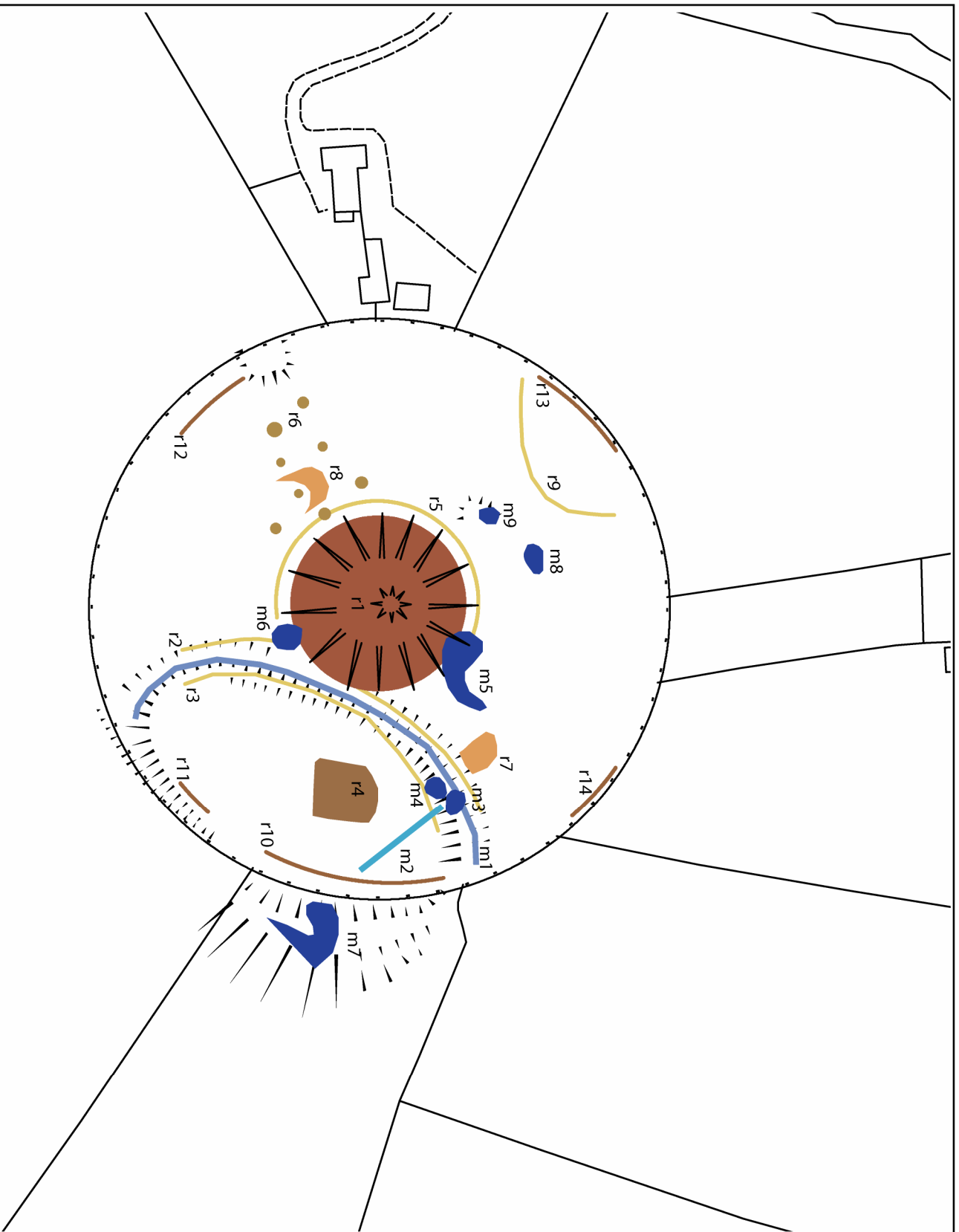
  
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 Fieldwork**

**PROJECT:**  
 Cornashree, Co. Fermanagh  
 Geophysics




**TITLE:**  
 Interpretation of magnetometry  
 survey (Areas 1 and 2)

**CLIENT:**  
  
**Environment  
 Heritage  
 Service**







**FIGURE:**  
 Figure 2

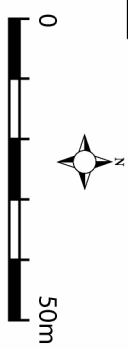


**Magnetic**

-  Elliptical ditch
-  Archaeological deposit/  
buried ferrous object
-  Positive linear anomaly

**Resistance**

-  Low resistance curvilinear
-  Enclosure bank
-  Cairn
-  High resistance amorphous
-  Low resistance amorphous
-  Post alignment?



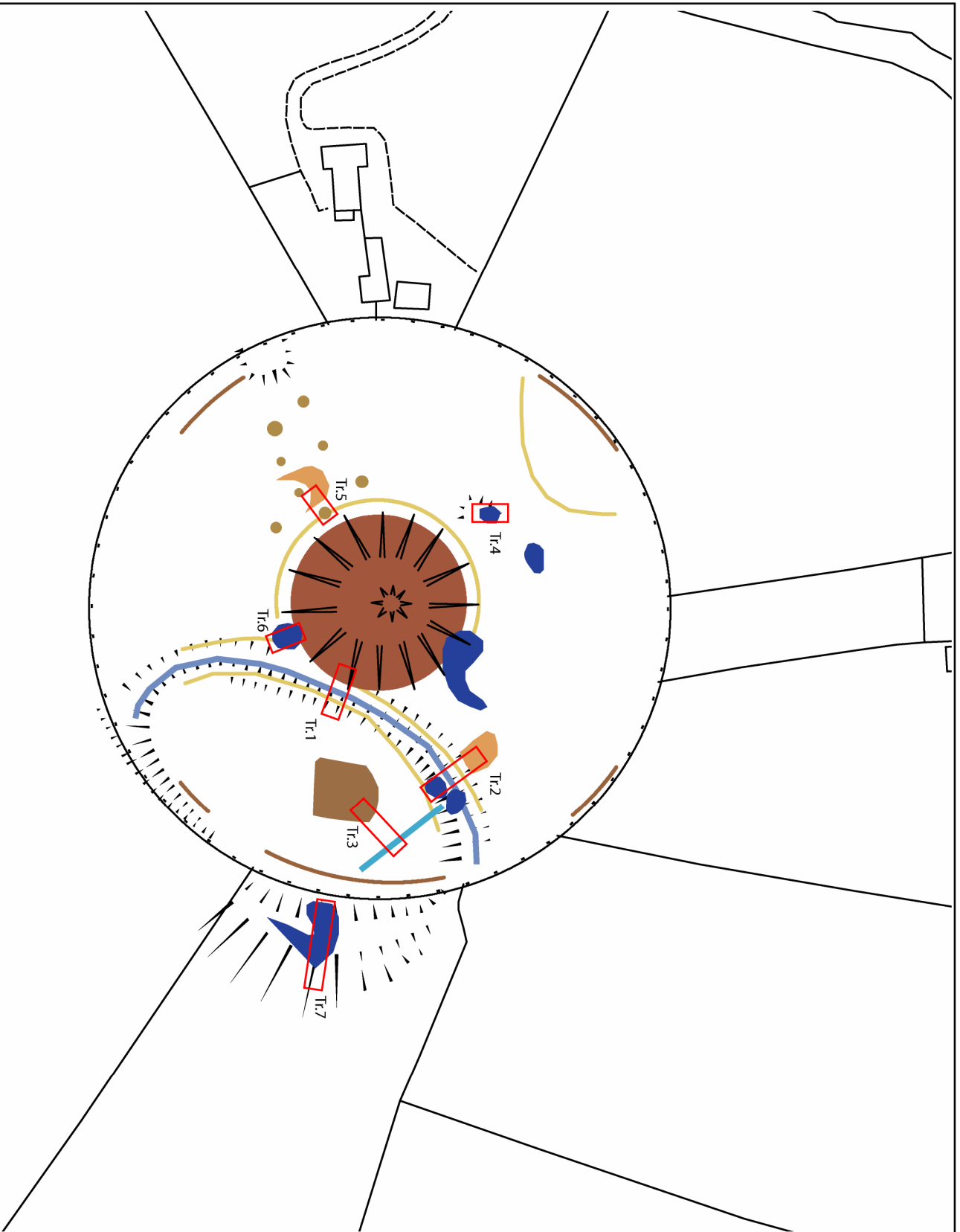
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Fieldwork**

**PROJECT:**  
Cornashree, Co. Fermanagh  
Geophysics

**TITLE:**  
Interpretation of magnetic and  
resistance surveys (minus ferrous  
responses)

**CLIENT:**  
  
Environment  
Heritage  
Service

**FIGURE:**  
Figure 3



Proposed Trenches

Magnetic

Elliptical ditch

Archaeological deposit/  
buried ferrous object

Positive linear anomaly

Resistance

Low resistance curvilinear

Enclosure bank

Cairn

High resistance amorphous

Low resistance amorphous

Post alignment?



Centre for  
Archaeological  
Fieldwork

PROJECT:

Cornashoe, Co. Fermanagh  
Geophysics

TITLE:

Proposed position of excavation  
trenches

CLIENT:

Environment  
Heritage  
Service

FIGURE:

Figure 4