

Short Report

Geophysical Investigation of the Environs of Rattin Castle Tower House, County Westmeath, Ireland

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ABSTRACT No visible archaeological features are today associated with Rattin Castle Tower House in County Westmeath, Ireland located near the boundary of the Pale, the area around Dublin and adjoining counties where English control prevailed. However, both magnetic and resistance data show that Rattin Castle was surrounded by a substantial bawn wall, which has since been removed. Interpretation of two-dimensional resistivity shows a deep trench at the site of the bawn wall. A small (12 by 16 m) rectangular low-resistance anomaly located outside the northern section of the bawn wall but connected to it, is interpreted as a possible gatehouse providing access to the castle. Less than 20 m from this anomaly, the course of an old military road is delineated by magnetic data but is seen most clearly on the resistance data where it is represented by two parallel low-resistance anomalies 230 m long. This road is possibly older than the castle. Rattin is associated with an extensive network of subrectangular field boundaries and enclosures, most noticeably west of the castle. The presence of the military road, potential gatehouse, substantial bawn wall and geographical location all suggest that Rattin Castle was an important strategic fortification in Ireland. Copyright © 2009 John Wiley & Sons, Ltd.

Key words: Rattin Castle; Tower House; resistance; magnetometry; two-dimensional resistivity; field systems; Ireland

Introduction

Throughout the Irish countryside are the remains of an estimated 2500 Tower Houses (fortified residences), most of which today stand as isolated features in the landscape, Figure 1. Typically these Tower Houses are small structures, rectangular in shape and up to four stories high. It is believed that not only did Irish and Anglo-Irish wealthy landowners build Tower

Houses but they were also built by planter families of the British Plantations of Ireland (O'Brien and Sweetman, 1997). According to Barry (1995), Tower Houses were built in Ireland due to the lawless conditions in the country, which meant that undefended manor-type houses could not be constructed, which was the norm in England during the same period. The large number of Tower Houses meant that by the end of the seventeenth century, Ireland was the most heavily castellated region of the British Commonwealth (Fry, 2001). Barry (1995) and O'Keefe (1997) both date the origin of the Tower House to the middle of the fourteenth century. Large numbers were built in the first half of the

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Figure 1. Rattin Castle Tower House, County Westmeath, Ireland.

fifteenth century, with fewer from the start of the sixteenth century until the British Plantations of Ireland in the early seventeenth century, which saw a huge growth in their construction (McNeill, 1997). Approximately 20% of Tower Houses in Ireland are associated with a bawn wall. A bawn wall (or bawn) is the term used to describe the defensive wall, which surrounds some Irish Tower Houses creating a courtyard. According to both McNeill (1997) and Sweetman (1999), the bawn wall was not generally built as a defensive feature, but in order to prevent theft of, for example, livestock. However, some bawn walls, such as Clara Castle, Co. Kilkenny and Fidduan, Co. Galway appear to have a defensive purpose (Sweetman, 2000).

Although today, Tower Houses are commonly seen as stand-alone structures in the Irish landscape, it is highly likely that during their occupation there would have been ancillary buildings associated with them. McNeill (1997) acknowledges that a large dining room referred to as a hall and other domestic buildings could have been associated with many of Ireland's Tower Houses. Sweetman (1999) refers to the presence of buildings inside the bawn wall of a number of Tower Houses. Examples include Derryhivenny Castle Co. Galway, Walterstown

Tower House, Co. Meath, Doe Castle, Co. Donegal and Athclare Tower House, Co. Louth. McNeill (1997) provides an account from Richard Stanihurst from the late sixteenth century, which describes other buildings associated with Tower Houses. 'Adjoining them are reasonably big and spacious palaces made of white clay and mud. They are not roofed with quarried slabs or slates, but with thatch'. In addition, Tower Houses would have acted as the nucleus for extensive agricultural activity and would be associated with features such as field systems, enclosures and farming activity linked to the production of foodstuffs and the rearing of animals.

Rattin Castle

The area around one such Tower House, Rattin Castle, was geophysically surveyed in the period May–June of 2008 to determine if it was once surrounded by a bawn wall and was associated with unknown buildings and field systems. This castle is located 5 km west of the town of Kinnegad in County Westmeath. It is situated near the western edge of the Pale, which was the area surrounding Dublin and adjoining counties, under English control, and beyond which the indigenous Irish continued to pose a threat.

Rattin Castle is a rectangular stone built Tower House, which was constructed in two separate phases, the earliest being the western, larger portion of the castle. The older part is four stories high, has rounded external corners and measures externally 11.5 m north–south and 9.5 m east–west. The thickness of the south wall is 1.60 m. There are a number of windows on all four sides of the original castle with the windows on the east side now blocked up by the extension. The newer eastern section of the castle is much narrower than the original part and has external dimensions of 11.5 m north–south and only 4.25 m east–west. The castle possesses a base batter (i.e. the base is wider than the summit) and narrow slit windows on all sides.

As Rattin Castle was built in the ancient province of Meath, it shares similar characteristics with the Tower Houses of present-day County Meath. The majority of the Tower Houses are located along its borders with the counties

outside of the Pale in order to protect the Pale from the 'lawless Irish' (Barry, 1995).

Historical information regarding Rattin Castle is limited, however, a number of historical sources and maps have provided some information about it. Rattin Castle has variously been referred to as Rattan, Rateen, Rattny and Rathyne Castle. Seward (1795) records 'Rattan Castle situated in the county Westmeath, province of Leinster. According to Sir William Petty, it had formally 500 rooms in it. There is now but one Tower left, which contains nearly twenty apartments'. Such a size would have made it one of the largest in Ireland and extensive records would have existed if such a castle had been built here. It is clear that the 'remaining Tower' referred to is in fact the Tower House, which is presently still standing. However, it does suggest that by 1795, the Tower House was no longer in use. This is supported by the 1794 painting of Rattin Castle by Joseph Turner as a derelict ruin, very similar to how it appears today.

Lewis (1837) reports 'At Rateen are the remains of a castle, in which the lord-lieutenant, who in 1450 had been made prisoner, was confined for some time'. This reference indicates a pre-1450 construction for the castle, which is supported by its architectural characteristics. Casey and Rowan (1993) record that the seventeenth century owner of Rattin Castle was Nicolas D'Arcy and that centuries earlier the lands of Rattin may well have been included in the grant given to John D'Arcy of Platten for the nearby Rathwire manor in 1336. Rattin Castle and townland have appeared on various maps. The earliest recorded map reference shows that the castle was in ruins in 1778 (Taylor and Skinner, 1969). The c. 1830 Six inch to One mile Ordnance Survey map of the area shows Rattin Castle located immediately south of a road which is no longer in existence. An Ordnance Survey memorandum dated 1837 by George Wynne states (referring to Rattin) 'One chain North of it runs an old road in a direction nearly East and West. It is said to be an old military road'. This road is shown on the 1656 Down Survey Map of the Barony of Farbill where it forms the northern boundary of the Rattin townland. A c. 1906 Ordnance Survey shows only part of this road and it appears to have completely vanished by the early twentieth century.

Geophysical survey of Rattin Castle

An area of 6.7 ha was surveyed around Rattin Castle within three fields using grids of 30 × 30 m, Figure 2. All grids were tied into Irish Grid co-ordinates using an Irish Transverse Mercator projection with the OSGM02 geoid model with a Trimble 5800 differential GPS system. Cartographic data were processed using AutoCad 2008 software and imported into ArcMap 9.1. The underlying rock type in the region is Carboniferous limestone and calcareous shales, which are overlain by rendzina soils with a high (40%) carbonate content.

The resistance survey was undertaken using a twin electrode array with a 0.5 m electrode spacing yielding a penetration of up to 75 cm. The data were collected in a zigzag fashion at 1-m intervals along 1-m spaced parallel lines. Nine hundred data points were collected for a 30 × 30 m grid, resulting in a total of 66,600 resistance readings for the site. The data were combined into three mosaics (one for each field surveyed) using ArchaeoSurveyor software. The individual grids were matched to yield a smooth tonal variation between them and the processed data were output and gridded in Golden Software's Surfer program using a kriging algorithm with a pixel size of 0.3 m × 0.3 m. The resultant grey-scale images were 'cookie-cut' using a boundary file so that they matched the area over which data were collected, georeferenced and input into ArcMap 9.1 for display.

Magnetic data were collected along the same survey lines as those used in the resistance survey using a Bartington 601 gradiometer. Data were also collected in a zigzag pattern at a walking speed of 1 m s⁻¹ along 1-m spaced lines with a sample interval of 0.25 m for each line. Thus 3600 readings were acquired for each 30 × 30 m grid, a total of 266,400 in all. A similar processing stream was used for the magnetic data as for the resistance data. However, in addition, the data were despiked in order to remove spurious high or low readings and a zero mean grid algorithm applied. Twelve two-dimensional electrical imaging traverses were obtained using a Campus Geopulse resistivity meter with 25 electrodes. A parameter file was written in order to collect data using a Wenner-

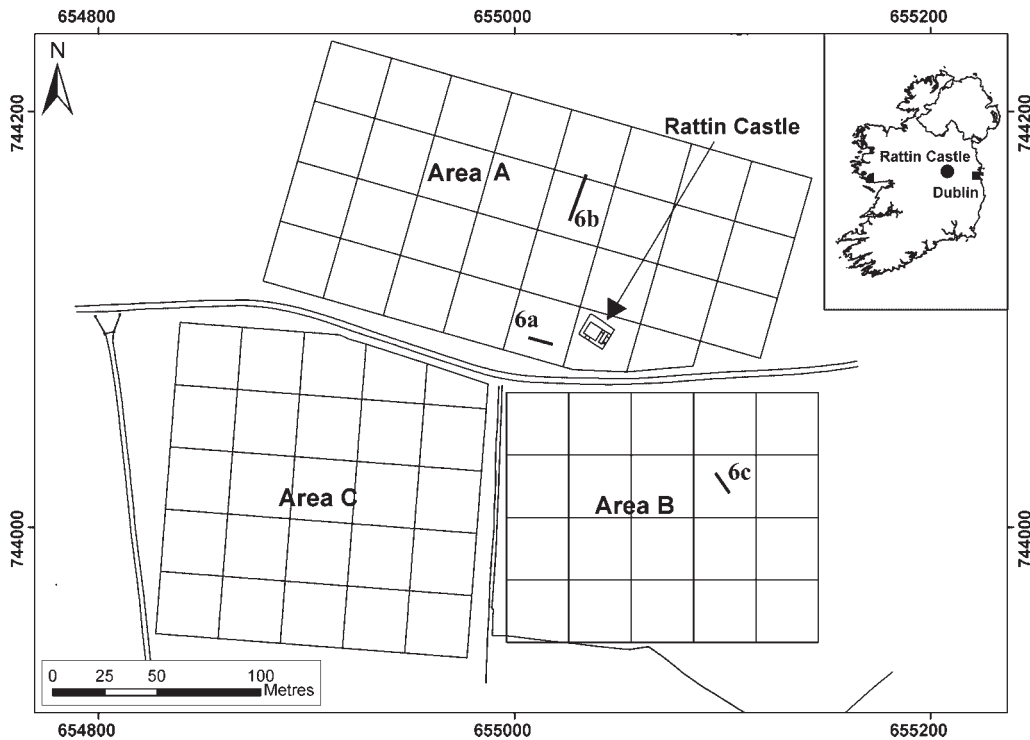


Figure 2. Location map of study area around Rattin Castle: 6a, 6b and 6c show the locations of two-dimensional resistivity profiles (see Figure 6 for results).

Schlumberger array, which is reasonably good at detecting both lateral and vertical resistivity changes (Loke, 2001). This approach produces a two-dimensional slice (pseudosection), which shows the variation in apparent resistivity. The data were then modelled using the RES2DINV inversion program to determine how the 'true' resistivity varied with depth. This is achieved using model resistivities that are then progressively altered using a least-squares optimization approach in order to reduce the root mean square (RMS) error between the calculated and measured apparent resistivity (Loke and Barker, 1995, 1996).

Results

Area A

Figure 3 shows the results of the resistance and magnetic gradiometer survey in Area A, north and west of Rattin Castle. The area immediately

around the castle ruins is characterized by high resistance values with an unstructured shape. This anomaly can be explained due to its location directly surrounding the castle ruins. When the resistance survey was being carried out, it was noted that the ground surrounding the castle contained a large number of stones, some partly buried, which had fallen from the castle. These stones combined with the large foundations required for the construction of a four-story castle have yielded a high-resistance signature.

A regular c. 3 m wide linear low-resistance anomaly, which contains 90-degree turns corresponding to the corners of Rattin Castle, is located 11 m from the west wall, 8 m from the north wall and 14 m from the east wall of the castle, Figure 3a. This anomaly can be seen on three sides of the castle but is lost on the southern side as it extends out of the survey area and under the local road. There is no evidence for the anomaly continuing south of the road and it is hypothesized that this anomaly is caused by a feature that once completely encircled the castle.

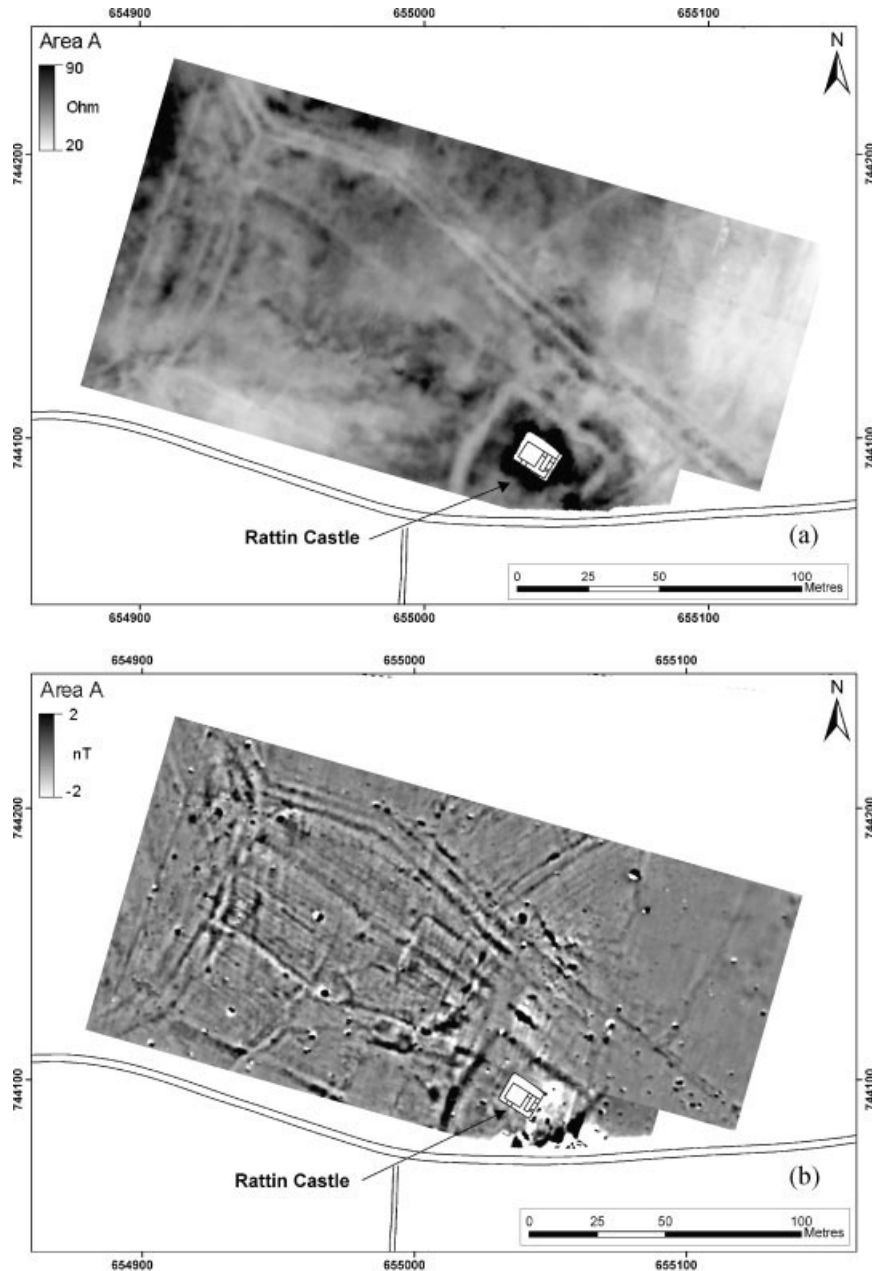


Figure 3. (a) Resistance and (b) magnetic data for Area A.

A corresponding magnetic signature is also located at the same position, Figure 3b. The dimensions and shape of this anomaly suggest that it represents the site of a bawn wall, which once surrounded the castle. However, the low-resistance characteristics of this anomaly are not consistent with the high values expected for a

stone or brick wall. An in-filled defensive ditch/moat could produce such an anomaly, but the authors are unaware of any Irish Tower Houses that were defended by an encircling ditch. The low-resistance anomaly can be explained by the common process of 'robbing out', when stone would be taken (robbed) from redundant

features and reused for constructing newer buildings. After removing the stone from the wall and its foundation, the resulting cut in the ground would have been infilled with soil, causing a low-resistance anomaly to be detected by a resistance survey. A low-resistance rectangular anomaly (12 by 16 m) is centrally located on the outside of and connected to the northern part of the bawn wall. This anomaly possibly indicates the position of the gatehouse, which controlled access to the castle through the bawn wall. Fiddaun Tower House in County Galway has an almost identical rectangular gatehouse, which is also located on the outside of its northern wall. Interestingly the bawn wall at Fiddaun is believed to have been for defensive purposes and the width of the anomaly associated with the bawn wall at Rattin (c. 3 m) also indicates that it was a very substantial structure, built with defence in mind. Immediately north of the gatehouse are two 230 m long parallel low-resistance anomalies that are c. 7 m apart from one another. These represent ditches either side of the old military road, whose course on the 1830 six inch to 1 mile map matches the observed resistance pattern. The course of this road can also be seen on the magnetic gradiometer data. A distinct curvilinear pattern of anomalies, most clearly seen on the magnetic data, extend outside the survey area, these can be observed in the western part of Area A, Figure 3b. Between these features and the castle, there are a number of magnetic anomalies, some over 90 m in length, which form the boundaries of enclosures within which ridge and furrow lines can be discerned at some locations.

Area B

The resistance and magnetic data for Area B, south and southeast of Rattin Castle are displayed in Figure 4. A linear 100 m long low-resistance anomaly, which runs southwestwards from the eastern edge of the survey area coincides with a low bank and intersects another similar feature at right angles. Parallel to this, in the northwest of Area B, is another linear anomaly, which is aligned with the eastern part of the bawn wall located in Area A. Towards the south it curves to the west and continues into

Area C. High values of resistance are recorded for a large 2 m high mound east of centre for Area B.

Two weak low-resistance parallel arcs can be seen along the northern edge of the study area, which are also evident on the magnetic data (1, Figure 4b). The arcs are 1 m wide and are 3 m apart from each other and may be a small enclosure. No continuation of these anomalies has been detected in Area A. The most dominant response on the magnetic data is the pronounced NNW–SSE ridge and furrow pattern, Figure 4b.

Area C

Unlike Areas A and B, which are pasture fields, Area C is a ploughed field, within which some small metal hooks and spikes along with broken shards of pottery were discovered. The most dominant anomaly located within this field is a large well-defined low-resistance area, Figure 5a. This region was boggy when the data were collected and although somewhat regular in shape, there is no evidence to suggest that it is archaeological in nature. This response is more likely to have been caused by its location at the bottom of steep slopes on a number of sides and it is constantly waterlogged during the winter months and remains moist during the summer; it is probably a result of natural processes. A low-resistance linear anomaly with a NNW–SSE trend is evident in the southern part of the field and is parallel to a response in Area B, 80 m to the east. A series of curvilinear anomalies continue outside the scope of the survey in the southwest (1, Figure 5a) and there is a continuation of a response from Area B (2, Figure 5a). This anomaly enters the survey area along the western edge and continues northwestwards before exiting the survey area along its northern edge.

There are a number of strong magnetic isolated responses in Area C (>100 nT), many of which display a dipolar signature, Figure 5b. These anomalies are considered to be the response of metal objects near the surface of the ground, which could be either archaeological or modern in origin. Field walking located a number of metal hooks, spikes and nails and broken shards of pottery, indicative of human activity in this field. Narrow linear magnetic anomalies, one over 100 m in length, probably represent old field

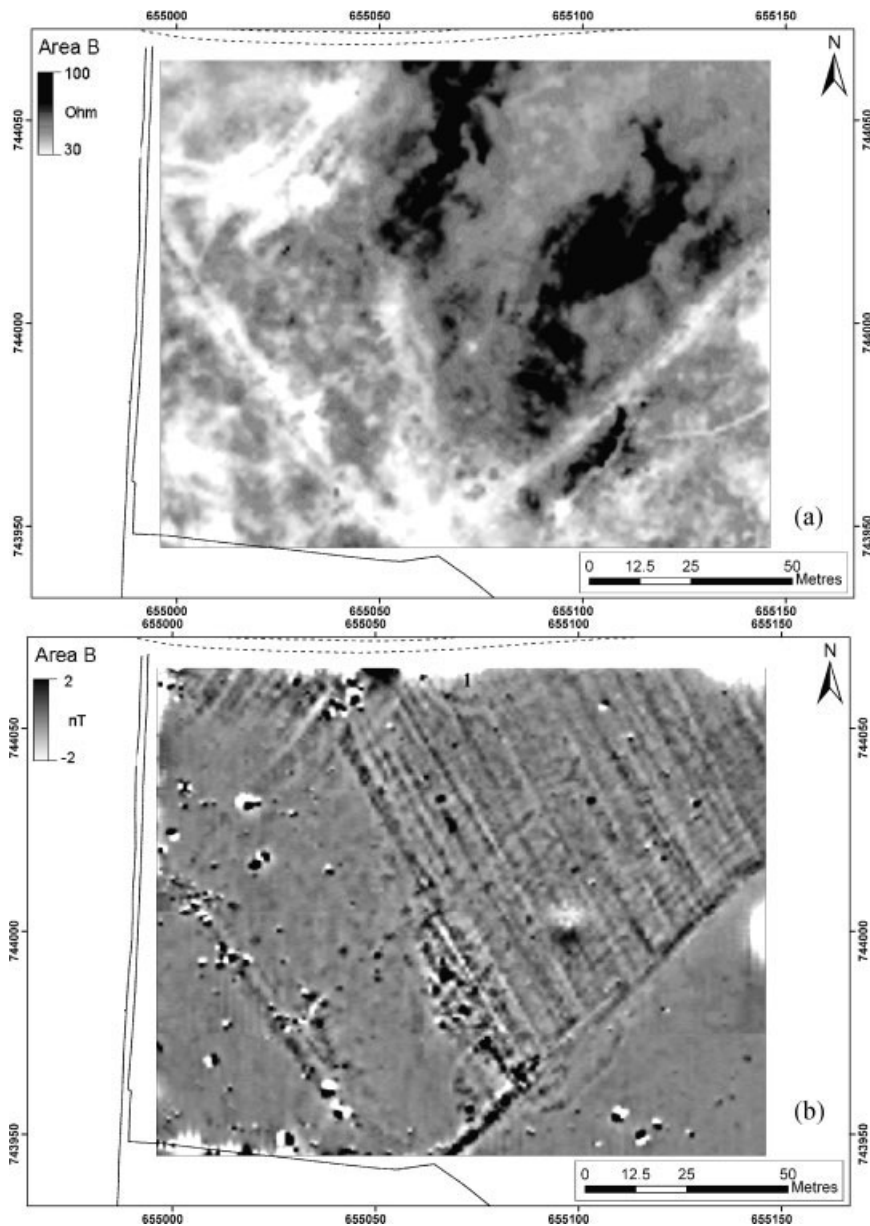


Figure 4. (a) Resistance and (b) magnetic data for Area B.

boundaries. In the extreme northwest corner of Area C are two short parallel anomalies, which are a continuation of the curvilinear anomalies observed in the western part of Area A.

Electrical resistivity traverses

Twelve two-dimensional resistivity traverses were made over selected features detected

during the resistance and magnetic survey, three of which are shown in Figure 6. The results of such a survey across the western part of the bawn wall with 0.5 m electrode spacing are illustrated in Figure 6a. This electrode spacing gives a depth of penetration of c. 2 m, considerably more than the twin electrode array used in the resistance survey. The location of the bawn wall is shown as a 2.5 m wide (5.0–7.5 m) low-resistivity zone with

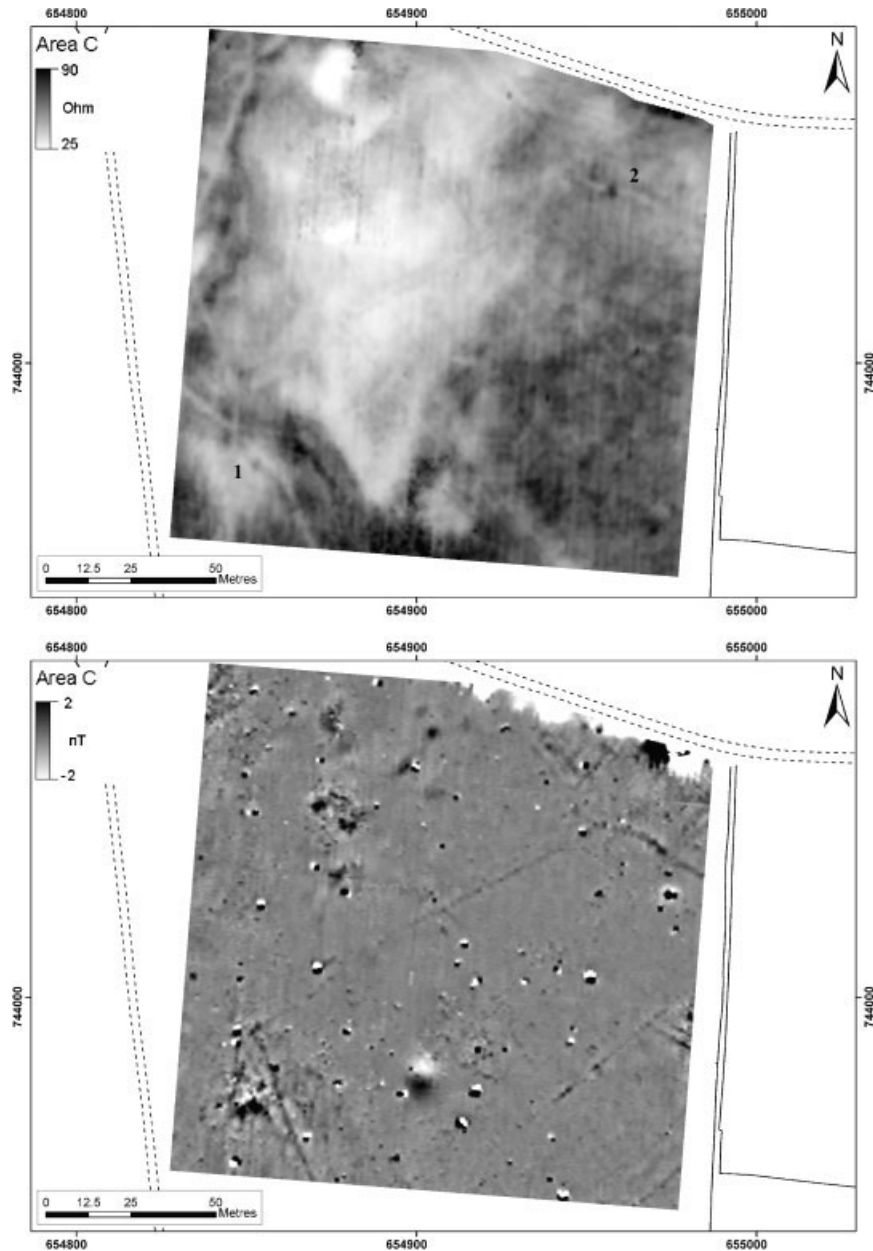


Figure 5. (a) Resistance and (b) magnetic data for Area C.

values of c. 85–100 ohm m, which contrasts sharply with the c. 500–700 ohm m resistivity values of the surrounding terrain.

Figure 6b shows the results of a 1-m electrode spacing two-dimensional resistivity survey over the military road in Area A. The ditches either side of the road (7–9 m and 12–14 m) have values

of c. 100–120 ohm m, with the ditch on the south side being much deeper (4 m compared with c. 2 m for the one on the north side of the road). The road itself has higher resistivity values of up to 400 ohm m.

High resistance values can be observed east of centre of Area B, which also coincide with a

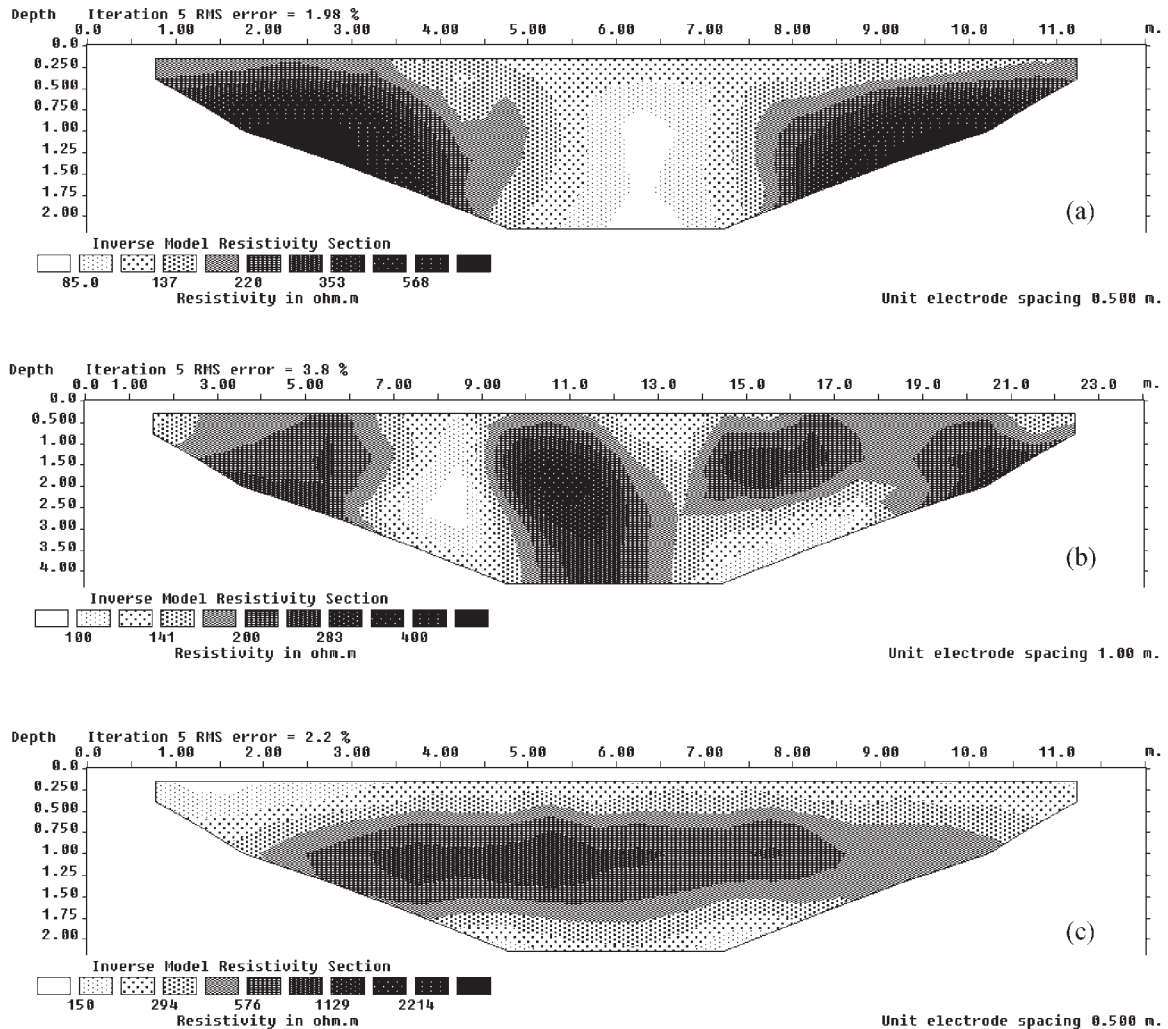


Figure 6. Two-dimensional resistivity profiles in study area. See Figure 2 for location.

topographic mound. A traverse at this location shows a distinct -m thick zone of high resistivity readings, c. 1000 ohm m, sandwiched between two layers with considerably lower values, c 200–300 ohm m, Figure 6c. These high values may represent the site of an ancillary building associated with Rattin castle which has since been destroyed.

Discussion of results

A combined interpretation of the magnetic and resistance data for Areas A, B and C is shown in

Figure 7. Early twentieth century aerial photographs do indicate the presence of some linear features in the vicinity of Rattin Castle, although today most have vanished. However, the geophysical data suggest that Rattin Castle was surrounded by a bawn wall, lies to the south of an old military road and was associated with an extensive network of fields and enclosures and a possible gatehouse.

According to Mc Neill (1997), data from the Archaeological Surveys of Counties Down, Louth, Meath and Limerick show that one in five of the Tower Houses have evidence of a bawn wall associated with them. Sweetman

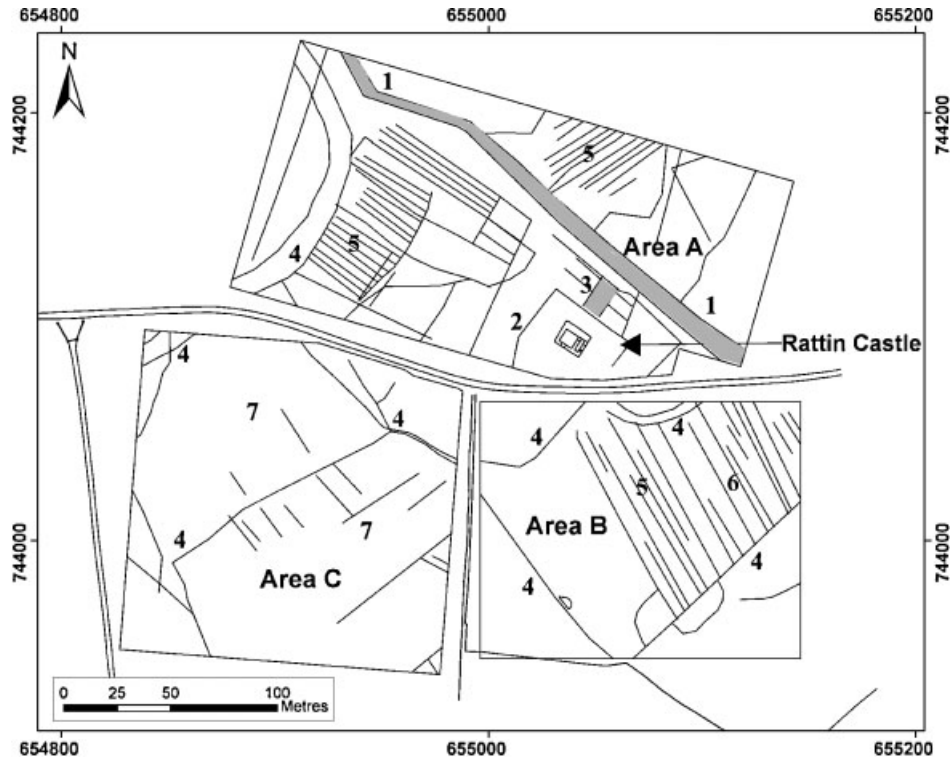


Figure 7. Interpretation of resistance and magnetic data for study area around Rattin Castle: 1, old military road (shaded); 2, bawn wall; 3, possible gatehouse; 4, field boundaries/enclosures; 5, ridge and furrow pattern; 6, site of high-resistivity subsurface anomaly, possible site of building; 7, metallic objects (hooks, spikes, nails) located.

(2000) quotes a similar figure for the presence of a bawn wall and provides the statistic that there are 125 Tower Houses in Co. Cork where 31 (1 in 4) of them have a bawn wall and similarly in Co. Laois, which has 29 Tower Houses where 6 (1 in 5) possessed a bawn wall. Leask (1995), however, believes that a bawn wall had originally enclosed the Tower Houses in the majority of cases. The evidence from Rattin Castle indicates that many other Tower Houses, where no bawn wall was thought to exist, may in fact possess one. A comprehensive geophysical survey of existing Tower Houses in Ireland has the potential to provide important information about how many others had associated bawn walls and whether such walls were relatively rare or an integral component of such buildings.

As mentioned previously, the width and depth of the anomaly associated with the bawn wall indicates that it was a substantial feature, which,

allied to the presence of the associated gatehouse adjacent to a major road, indicates that it was an important fortification in this part of Ireland, i.e. at the edge of the Pale.

Whereas the spatial relationship of Rattin Castle to the old road is clear from the geophysical survey, the temporal relationship is more difficult to determine. Is the road older than the castle, which was built in order to defend it, or was the road built in order to pass close to existing castles, which could then afford it protection? There is some indirect evidence, which suggests that the castle was constructed later than the road (or is possibly contemporaneous with it). The road does not cut across any pre-existing field boundaries that may have been associated with the castle. Indeed, for Area A, there are very few magnetic anomalies north of the road compared with the number south of the road, which suggests that the road acted as a

boundary to the agricultural patterns associated with Rattin. This indicates a pre-middle fifteenth century date for the road. There is no evidence that the road was paved. Resistivity profiles across an early medieval roadway paved with stone slabs in the adjoining County Offaly showed high resistivity values of c. 800–1000 ohm m (Gibson and George, 2004). Such high values are absent for the roadway at Rattin, suggesting a hard packed earthen road. The simple construction may also support the view that the road is quite old.

Conclusions

A geophysical study of Rattin Castle in County Westmeath has shown that it is surrounded by an extensive network of enclosures whose existence was unknown, most of which are concentrated to the west of the castle. There is no documentary evidence that Rattin was ever enclosed by a bawn wall, but both the magnetic and resistance data indicate that such a wall did exist but has since been removed. A structure, interpreted as a gatehouse is linked to the bawn wall and fronts onto an old military road. The castle has possibly been built to guard this road as it is located less than 20 m from it. The anomaly associated with the bawn wall is quite wide, suggesting a substantial defensive wall, supporting the view that Rattin Castle was of strategic importance. The research presented here has revealed that Rattin Castle is a more complex structure than previously thought and its context within the surrounding landscape is now much more apparent. Such knowledge allows a better understanding of its significance. Geophysics has the ability to provide similar information at the sites of other Tower Houses, which has the potential of

greatly enhancing our understanding and interpretation of these structures.

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