CPAT Report No 957

The Mount, Abergele

GEOPHYSICAL SURVEY

THE CLWYD-POWYS ARCHAEOLOGICAL TRUST

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Report for Abergele Town Council

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1 INTRODUCTION

1.1 This report details a programme of geophysical survey carried out by the Clwyd-Powys Archaeological Trust during October 2008 on the earthwork known as 'The Mount', which is located in the town of Abergele in Conwy County Borough (NGR: SH 94767763). The work was funded by Abergele Town Council, and was undertaken in an attempt to determine whether any evidence could be found which might shed further light on the origin and nature of the earthwork, which has been designated as a scheduled ancient monument (SAM De 031) by Cadw on the understanding that it represents the remains of a moated site of medieval date. The survey used a fluxgate gradiometer and the methodology employed is described in Section 2, below.

1.2 The site appears to have originally been a raised platform that was sub-square in shape, measuring approximately 30m north-east/south-west by 30m north-west/south-east. It was recorded as an 'earthen platform 30yds square' when visited by the Royal Commission field investigators in 1912 (RCAHMW 1914, 10). However, sections have been subsequently lost on the north-east and south-east sides as a result of modern developments, specifically the construction of the playing grounds of Abergele school and a row of houses. If the RCAHMW description applies to the whole of the site as it was originally constructed, then the overall area it occupied was probably about 0.16ha. The surviving earthworks slope down to lower ground adjoining the Afon Gele on the west and define an area of about 0.12ha which is bounded elsewhere by the school grounds and land attached to the row of houses mentioned above.

1.3 The site has been known for some considerable time. Certainly Edward Lhuyd in the late 17th century considered it to have been a castle called 'Kastell Pen y Pil' and suggests that it was in two parts (RCAHMW 1914, 10). Whether this refers to a motte and bailey castle is debatable. Williams (1968, quoted in Owen 1994, 7) suggested that it belonged to the 9th or 10th centuries, although the basis for this suggestion is unknown, and the earliest substantiated reference is in 1334, where two mentions of land holdings, respectively 'next to the Peel' and 'before the gate of the Peel', are included in the Survey of the Honour of Denbigh (Vinogradoff and Morgan, 1914, 253).

1.4 The term 'Peel' normally refers to a square fortified tower of a type which is commonly associated with the border between England and Scotland, where towers of this pattern were constructed around the 16th-century period to act as places of refuge that could withstand a short siege during raids. The appearance of 'The Mount' does match what would be expected to survive if the superstructure of a square tower had been removed. Although the use of the term in North Wales is unusual, perhaps even unique, the inherent implication that the site was used as a place of refuge is supported by the fact that the two land holdings mentioned in the previous paragraph had been in the possession of Dionysius de Wath and Adam Arnald, names that suggest they were persons of Anglo-Norman descent. It is also known that there were 24 burgesses in the town in 1311 (Owen 1994, 6-7) and together this suggests strongly that Abergele was a planted settlement, probably dating to the late 13th century. Feelings of insecurity might have led the inhabitants to construct a defensive tower around this time.

2 METHODOLOGY

2.1 Fluxgate gradiometer survey provides a rapid, non-invasive, method of examining large areas for magnetic anomalies. Plans can then be produced which relate the anomalies to the modern topography and allow for their assessment in regard to the aims of the survey programme.

2.2 *Instrumentation and background*

2.2.1 The geophysical work was carried out using a Geoscan FM36 fluxgate gradiometer, which detects variations in the earth's magnetic field resulting from the presence of iron minerals in the soil. These minerals are generally the weakly magnetised iron oxides that are normally found in

topsoil. Features cut into the subsoil can be detected by the instrument when topsoil has formed part of their fill, whether directly or by silting.

2.2.2 There are a variety of other processes which may result in detectable anomalies, such as the presence of iron objects in the soil, which yield high readings. The potential to detect areas of burning is also of interest, as it can identify hearths and kilns where the fired clay has acquired a thermo-remnant magnetic field upon cooling.

2.2.3 Unfortunately, not all soils are conducive to the use of this method, particularly in cases where the topsoil and subsoil have similar magnetic properties. Occasionally, high or random levels of magnetic material within the soil can effectively mask the results and prevent detection of artificial features. The lack of detectable anomalies cannot be taken to mean conclusively that there is no surviving archaeology in a locality.

2.2.4 The Geoscan FM36 is a hand-held instrument which allows readings to be taken automatically as the operator walks at a constant speed along a series of fixed length traverses. The sensor consists of two vertically-aligned fluxgates, set 500mm apart, whose Mumetal cores are driven in and out of magnetic saturation by a 1,000Hz AC current passing through two opposing driver coils. As the cores come out of saturation, the external magnetic field can enter them, producing an electrical pulse proportional to the field strength in a sensor coil (Clark 1990, quoted in Hopewell 2004).

2.2.5 Magnetic fields and variations are measured in nanoTeslas (nT). The earth's magnetic field is approximately 48,000nT, but archaeological features generally produce instrument readings of less than 15nT. Areas of burning and iron objects produce higher readings, perhaps up to several hundred nT. The gradiometer can detect changes as low as 0.1nT.

2.3 *Data collection*

2.3.1 The gradiometer has an on-board data logging device which enables readings to be taken at specific time intervals. These readings are taken along parallel traverses within a grid of known size, which allows them to be correlated with geographical locations.

2.3.2 In the case of this survey, the grids measured 10m by 10m, with intervals between the traverses of 0.5m. The speed of each traverse was controlled such that readings were taken every 0.25m, thereby giving a total number of 800 readings per 400m^2 grid.

2.4 *Data processing and presentation*

2.4.1 The data was transferred from the data logger to a computer, where it was compiled and processed using Geoplot 3.0 software. A minimum of processing was carried out, although compensations were made for instrument drift caused by gradual changes in the earth's magnetic field, and inconsistencies in data collection. Typical processing functions utilised for these ends were *Zero Mean Grid, Zero Mean Traverse, and Destagger.* The *Clip* function allowed smaller variations in the readings to become visible by reducing the impact of very low and very high readings on the plot.

2.4.2 The results are presented in greyscale format (Fig 1), along with an interpretation drawing (Fig 2). The greyscale plot produces a plan view of the survey and normally allows subtle changes in the data to be displayed. Trace plots have been eschewed because they appeared to add little to the overall impression and understanding of the survey, but it would be possible to produce such plots from the archived data if these were required at any stage in the future.

2.5 *Grid location and the plotting of the geophysical survey results*

2.5.1 Prior to the commencement of the geophysical survey, the survey grids were laid out and then located in relation to nearby boundaries and features by topographic survey using an EDM and

Penmap software. The EDM survey was then related to a scan of the first edition Ordnance Survey mapping using the Mapinfo program and a composite plan of the location was drawn up.

Plate 1 Surveying in progress (Photo CPAT 2669-004)

2.5.2 The greyscale plot of the geophysical survey results was produced using Geoplot 3.0 software and the plot was exported as a Windows Bitmap. This was then rotated to match grid north using Paint Shop Pro software, before being imported as a raster layer into Mapinfo, where it could be related to the EDM survey.

3 GEOPHYSICAL SURVEY RESULTS

3.1 The overall area of visible earthworks measures about 42m north-east/south-west by 30m, or 0.12ha, this including the slope down from the crest of the mound. Within this, a single area totalling 0.11ha was examined by geophysics, comprising 11 part or whole grids, each 10m square. As mentioned above, a greyscale plot of the results in relation to the local topography is depicted on Fig. 2.

3.2 Examination of the results revealed that the area contained significant anomalies (see Fig. 3), whose level of response was sufficiently large to mask any archaeological features that might have been detected. The anomalies were fairly amorphous and could not be attributed to any archaeological features; it appears most likely that they represent spreads of iron objects in the soil although the possibility they signify areas of burning cannot be ruled out.

3.3 The anomalies were present on the crest of the mound, as well as its slope and in the expected position of the surrounding ditch. No evidence for discrete features was identified in the interior and neither was there any clear evidence of the ditch.

Plate 2 Demonstrating the results of the survey to Mrs D Macrae, Deputy Mayor of Abergele (Photo CPAT 2669-009)

4 DISCUSSION

4.1 The survey has been unsuccessful in providing any information on the nature and origin of The Mount. The results demonstrated the presence of a number of large magnetic anomalies which might be due to iron objects in the soil or areas of burning. It may also be that the soils contain patches of naturally occurring iron and were therefore unsuitable for this survey method.

4.2 Although the results were not encouraging, there seems to be little reason to doubt the existing wisdom that the site represents the base of small, square, defensive structure which was present at the beginning of the 14th century and was perhaps used as a refuge by local inhabitants. Nothing seems to be known about the nature of the original structure, which could have been either of masonry or wooden construction.

4.3 One possible explanation for the results is that we are dealing with a timber structure which eventually collapsed or caught fire, and the recorded anomalies represent either iron fixings or burnt material from the structure. It is also true that masonry structures do not always respond well to magnetometer survey and this may be another reason for the absence of evidence. It seems likely that only excavation will be able to shed light on the nature of the original structure, but it must be remembered that the site is protected as a scheduled ancient monument and such a suggestion could only be contemplated with the approval of Cadw.

5 ACKNOWLEDGEMENTS

5.1 The writer would like to thank his colleague Eleri Farley for her assistance with the survey, also Mrs D Macrae, Deputy Mayor of Abergele for her interest and help with logistics and to the Gwynedd Archaeological Trust for the use of their geophysics equipment.

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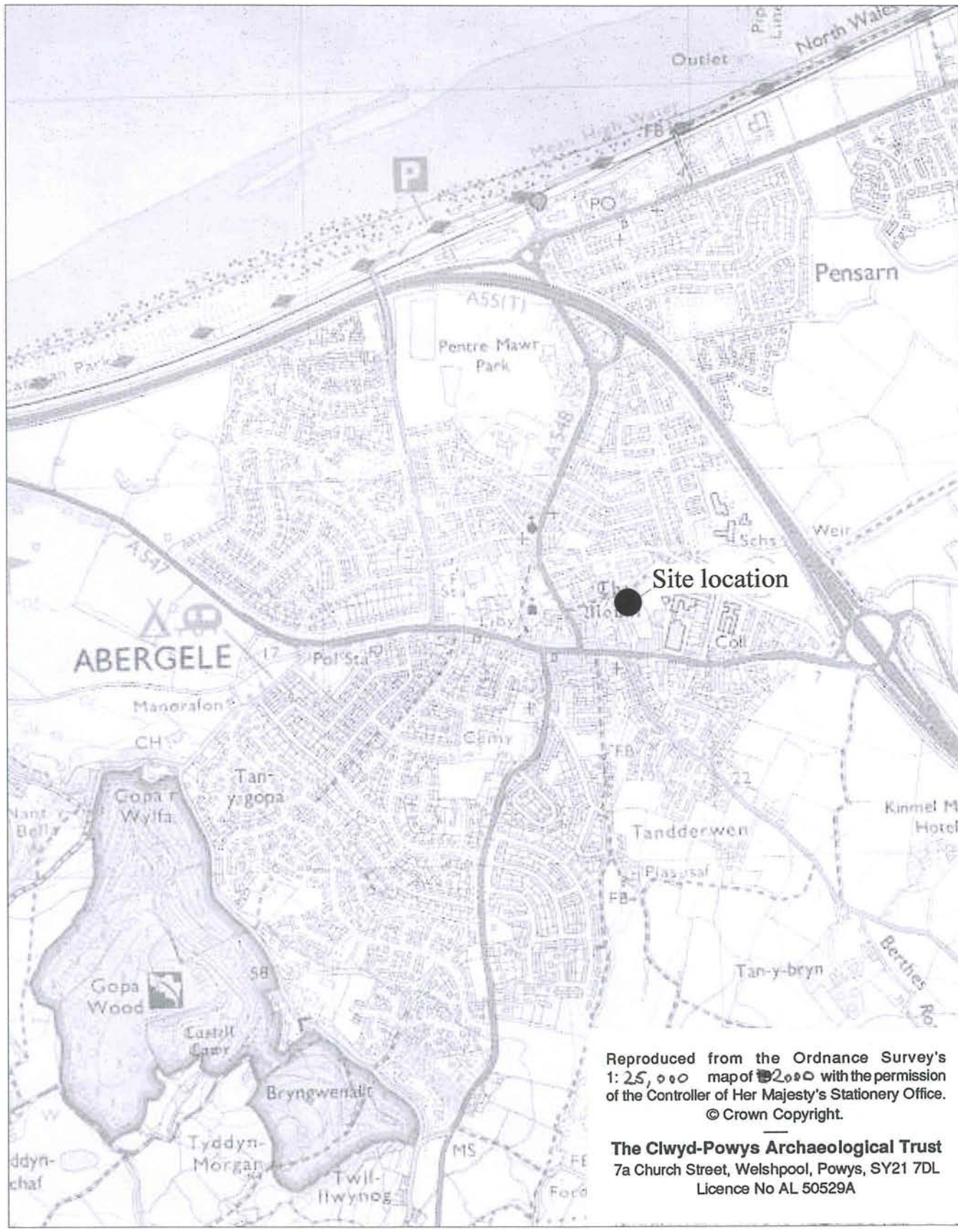

Fig. 1 Site location

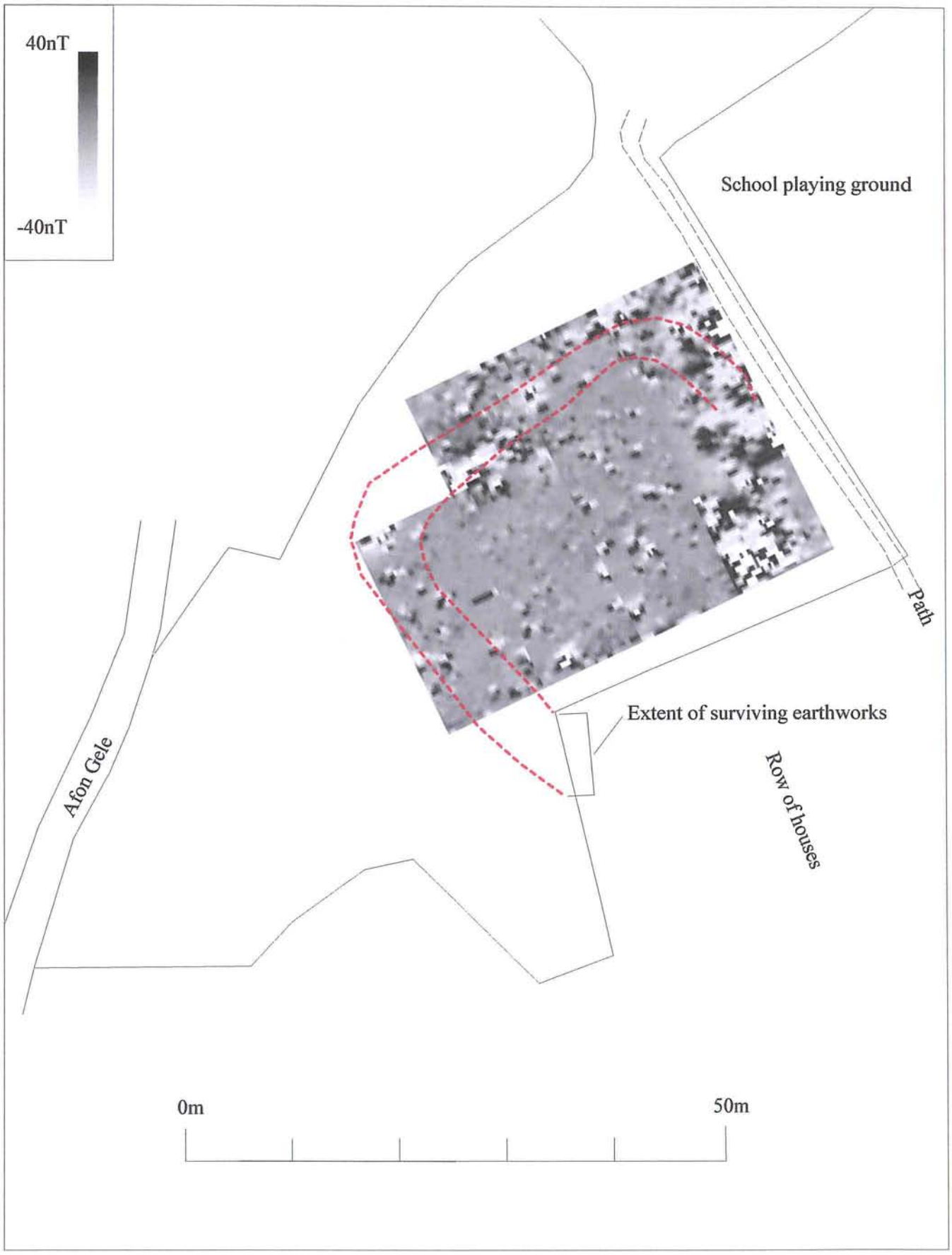

Fig. 2 Greyscale plot of the geophysics results showing the extent of the surviving earthworks

Fig. 3 Main anomalies in relation to the surviving earthworks