

Abertay Historical Society Fieldwork Division

Topographical and Geophysical Surveys at Market Knowe 2017–2019

Abertay Historical Society Fieldwork Division and Peter Morris

Introduction

The project at Market Knowe was initiated by the Abertay Historical Society's Fieldwork Division which was established by a small group of members in 2015. The Division seeks to involve Society members and volunteers from the wider community to take an active role in the study of archaeology, local history and the built environment.

The site

Market Knowe is a mound of unknown origin situated within Huntly Wood, community woodland owned and managed by The Woodland Trust Scotland. Huntly Wood is located to the north of the village of Longforan, Perth and Kinross, some five miles (8 km) west of Dundee, at NGR NO 3122 2958 (Fig 1a).

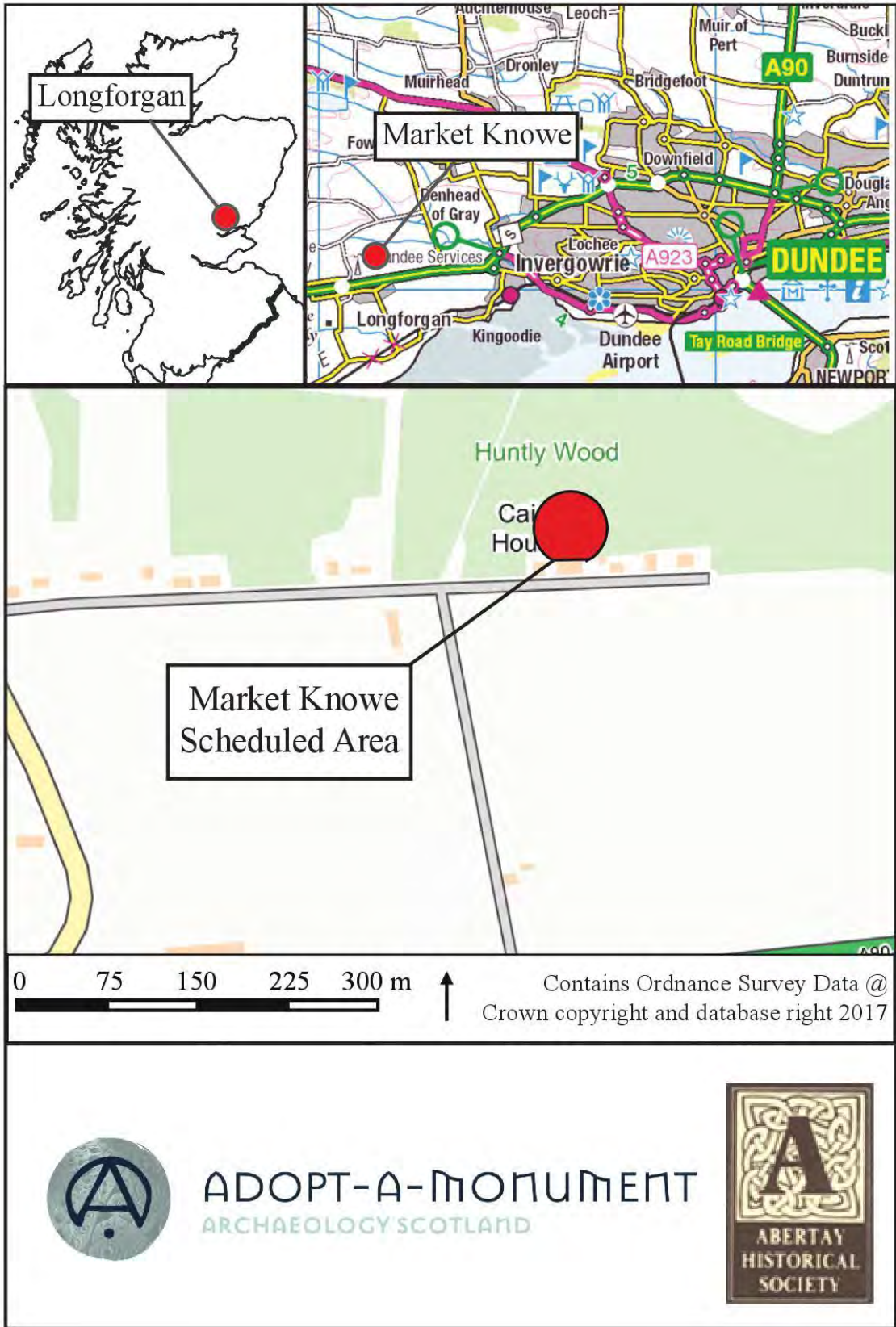


Fig 1a Location of Market Knowe, Adopt a Monument Project

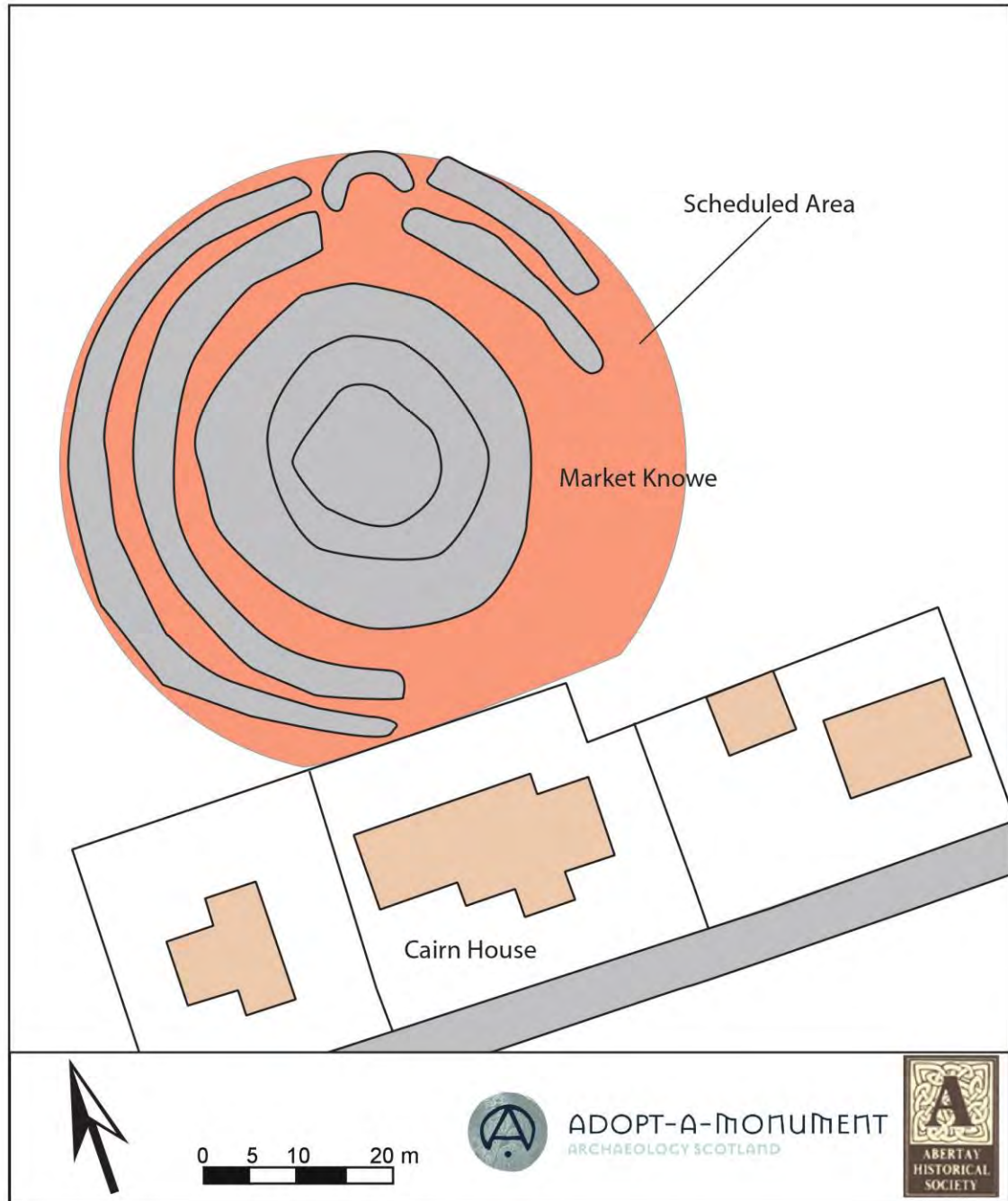


Fig 1b Scheduled area, Adopt a Monument Project

Market Knowe is a scheduled ancient monument (Fig 1b) and is recorded in the NRHE (National Record of the Historic Environment) as a cairn of unassigned date. It is approximately 30m in diameter and is surrounded by an outer bank and ditch. Generally it is

regarded as a prehistoric burial cairn and antiquarian discoveries at the cairn, in 1877, of stone cists containing skeletons gives credence to this interpretation (*Dundee Courier*, 8 May, 1877). It is not known if these were long or short cists. An excavation, in 2011, in advance of housing close to the Knowe revealed two long cist burials (one radio-carbon dated AD420–590) of possible later Iron Age/Pictish date. These are regarded as satellite burials to the Market Knowe. Satellite burials are associated with earlier burial mounds or cairns. The presence of these burials implies that Market Knowe is of greater antiquity than the burials and was regarded with some reverence. (Cachart and Hall 2014). In the past the site has been referred to as Roman Knowe but there is no evidence for Roman activity or occupation at the site. In the 18th century a medieval coin hoard in an earthenware vessel (now lost) was discovered within the cairn. (Old Statistical Account Volume XIX 1797) It is possible that the site is that of „Hundhil of Langforgund“, mentioned in documentary sources as being the location of an open-air barony court of Sir Patrick Gray of Longforgan in the 14th century (Philip 1895). By the 17th century a weekly market and two three-day annual fairs were being held on or around the site and this continued until the early 19th century when the market site was moved to Market Muir, Longforgan (Taylor 1998). In more recent times Huntly Wood has been the focus of gatherings of travelling people, agricultural workers and in the early 20th century, with the advent of motorised travel, also recreational visits by Dundonians (*Dundee Courier*, 24 March 1914).

Aims and Objectives

The main aim of the project was to undertake topographic and geophysical surveys of Market Knowe by professional archaeologists and volunteers. The aim of these non-invasive surveys was to form a better picture of the site’s original function and its subsequent uses.

Another aim of the project was to raise the profile of the site, especially within the local community. Although Huntly Wood is well used by dog walkers, few in Longforgan know of the existence of Market Knowe and its archaeological and historical importance. Abertay Historical Society conducted guided tours and open days, and a free information leaflet was made available during Longforgan Gala Day.

Topographic survey

A topographic survey of the site was made by professional archaeologists from Archaeology Scotland and volunteers from Abertay Historical Society in 2017 as part of Archaeology Scotland's Adopt a Monument programme (Figs 1c and 2).

Cara Jones of Archaeology Scotland and Ian Hill of HARP Archaeology trained volunteers in topographical surveying over two days. The work produced the first accurate survey of the site demonstrating its form as a central area enclosed by an external circular bank and ditch. It did not shed additional light on the site's typology. It was hoped that such information might be provided by geophysical survey work and this was undertaken in 2018 and early 2019.



Figure 1c Topographical survey detail, Adopt a Monument project

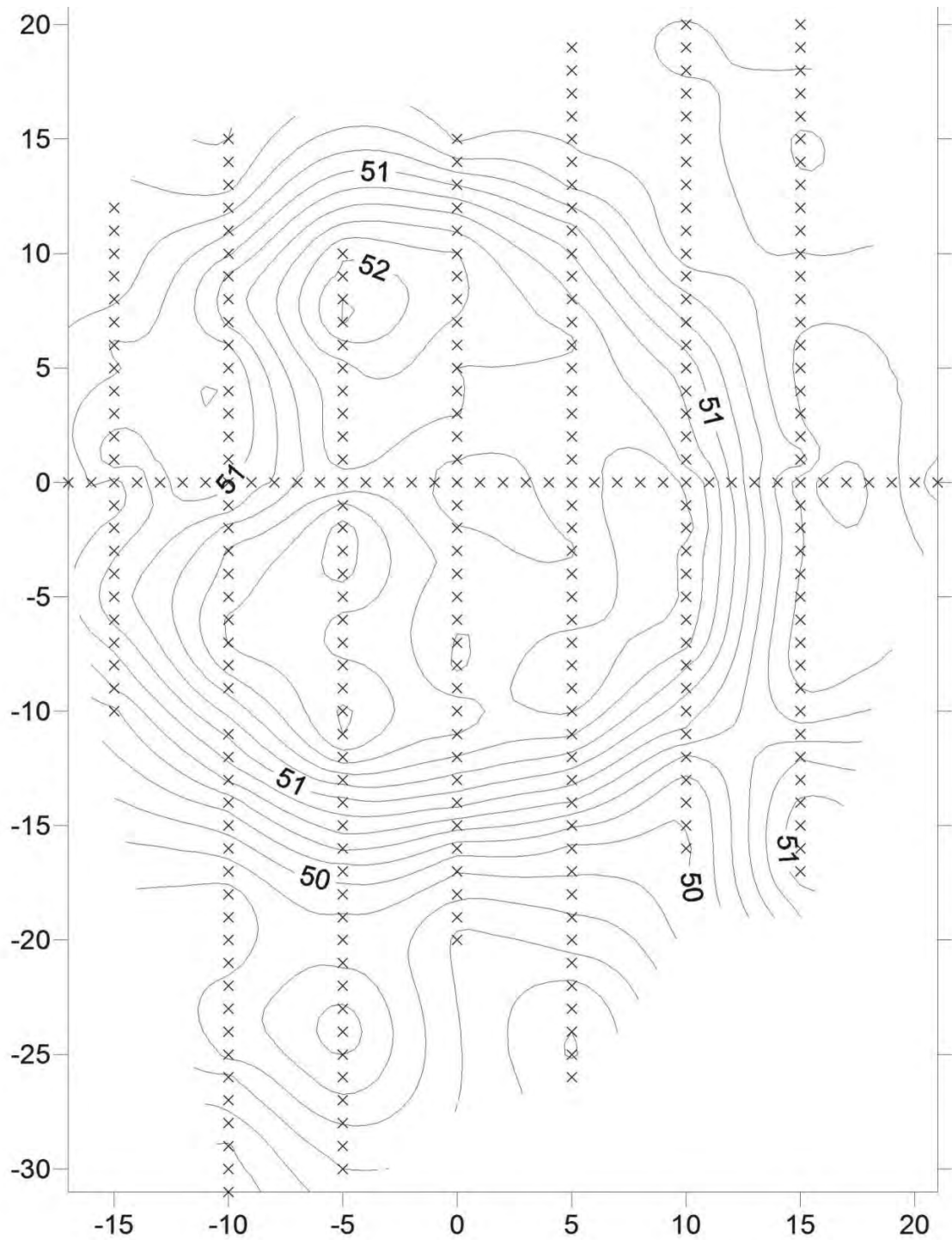


Fig 2 Market Knowe Topographic Map
Contour interval 0.2m

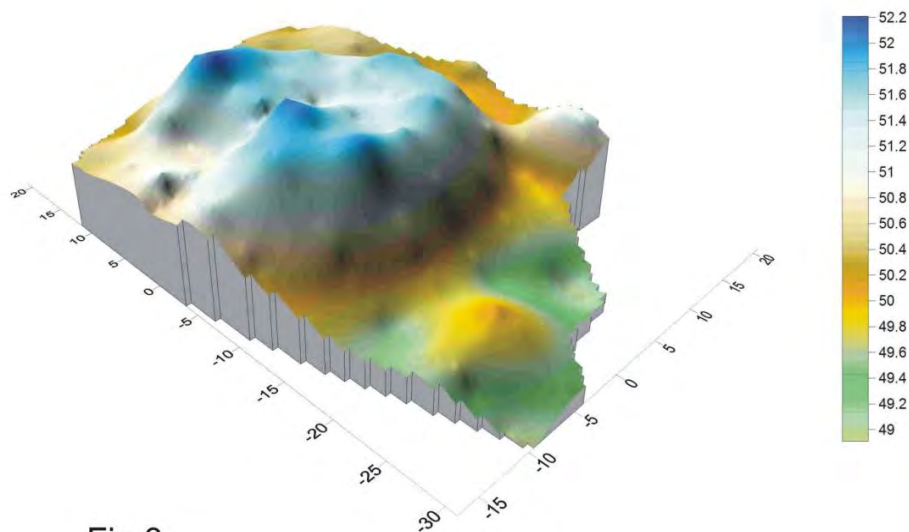


Fig 3
Market Knowe Topographic model

Geophysical surveys

A twin probe Resistivity survey, an Electrical Resistance Tomography (ERT) profile and a Magnetic Gradiometer survey were carried out over the central mound of the Market Knowe cairn.

The geophysical surveys used the same grid as the topographic survey. It should be noted that the precise coverage of the ground surveyed varies between the three surveys. This is due to the different vegetation coverage on the different occasions that the site was visited.

Resistivity Survey

The resistivity survey was carried out on 25th June 2018 using a twin dipole array configuration. The instrument employed was a TR Systems meter with a mobile probe spacing of 50cm. Readings were taken 1m apart along survey lines spaced 1 m apart. The

data was acquired as a set of 20m square grids. The data on the individual grids was edited to remove obvious noise spikes before being reduced to a common datum, The modified grids were then merged into one large grid and input to the “Surfer” software package for plotting.

The edges of the mound were well defined by the resistivity survey, (Fig 4). Extremely high resistance readings were found on the eastern flank of the structure suggesting the presence of near surface stonework; possibly unconsolidated boulders with small voids between them, around the upper rim of the structure. Very few stones are currently visible on the mound

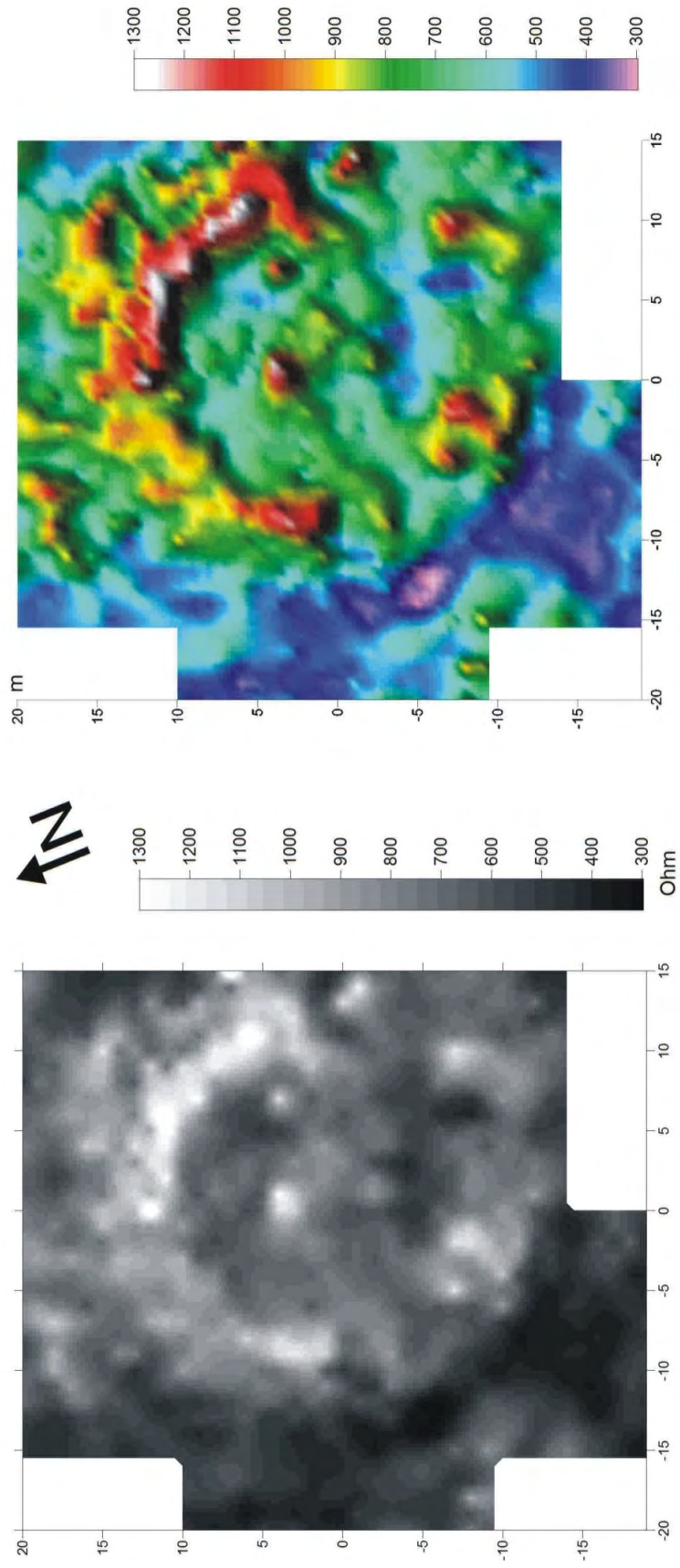


Fig 4 Market Knowe Resistivity Survey

Magnetic Survey

The magnetic survey was carried out on the 24th February 2018 using a Bartington 601-1 magnetic gradiometer. Readings were made every 25cm along survey lines spaced 1m apart in 20m square grids. As with the resistance data the magnetic data grids were edited, merged and input to “Surfer”. The plot of this data is shown on Fig 5.

The survey area proved to be very active from a magnetic point of view with many point anomalies implying that the mound, which shows higher amplitude anomalies than the surrounding area, contains a greater concentration of magnetic material. This may be in the form of strongly magnetic glacial erratics which were picked up in the surrounding area and added to the mound when it was being constructed. It is also possible to envisage that fires have been lit on the mound from time to time and that the resultant heating may have increased the magnetic susceptibility of some of the material from which it is built

The central mound is encircled by a low amplitude, concentric, bank and ditch out to a diameter of about 50m. This is hinted at by the present magnetics but as it is mostly within the current surrounding wood it would be awkward to survey.

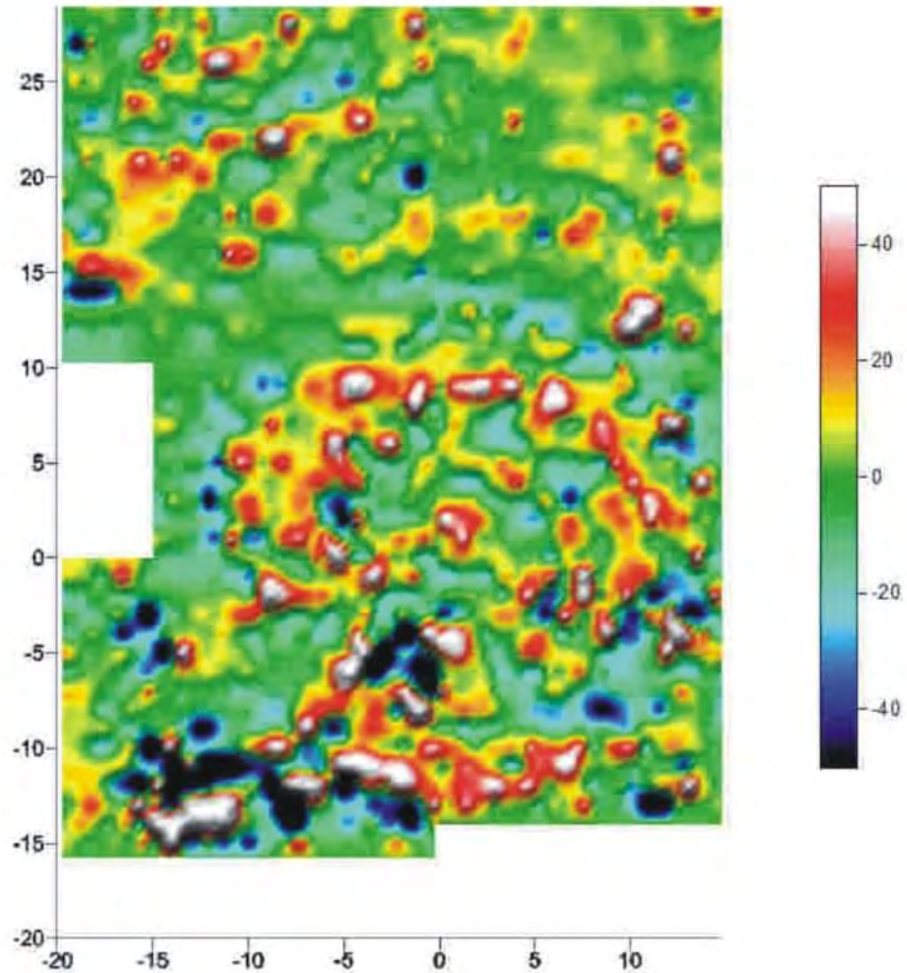


Fig 5 Market Knowe magnetic gradiometer survey

Fig 6 allows a comparison of the magnetic and resistivity surveys. Here the magnetic data is displayed after the application of a high pass survey which emphasises the spikey nature of the data over the mound. It also suggests the possibility of a concentric feature being present within the central part of the summit of the mound.

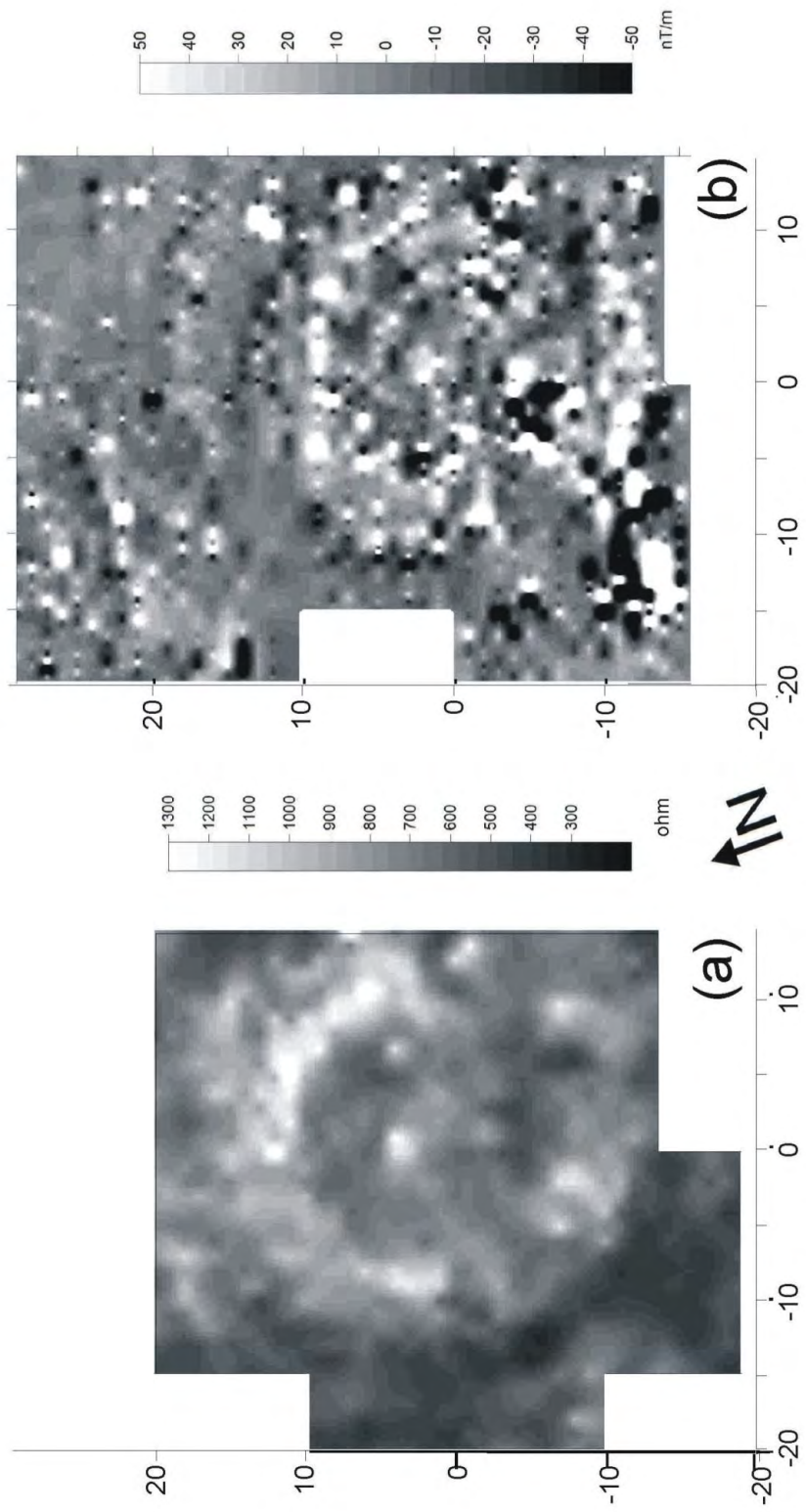


Fig 6 Market Knowe Comparison between Resistivity (a) and magnetics (b)

The survey was carried out using a 24 Channel Syscal Kid Switch instrument from Iris Instruments. The total length of the survey profile was 59m with 1m electrode spacing. A first attempt to measure this profile in June 2018 failed because the ground was too dry, despite enthusiastic watering of the electrodes. A second, more successful attempt was made on 19th January 2019. The location of the line is shown on Fig 7. The instrument automates the taking of a large number of resistance values using the Wenner Array configuration with different electrode spacings. The set of electrical resistance measurements downloaded from the meter was converted to a commonly used format (Res2DInv) and topographic data was added. An inversion was then carried using the “Zond” software package to derive a resistivity section,

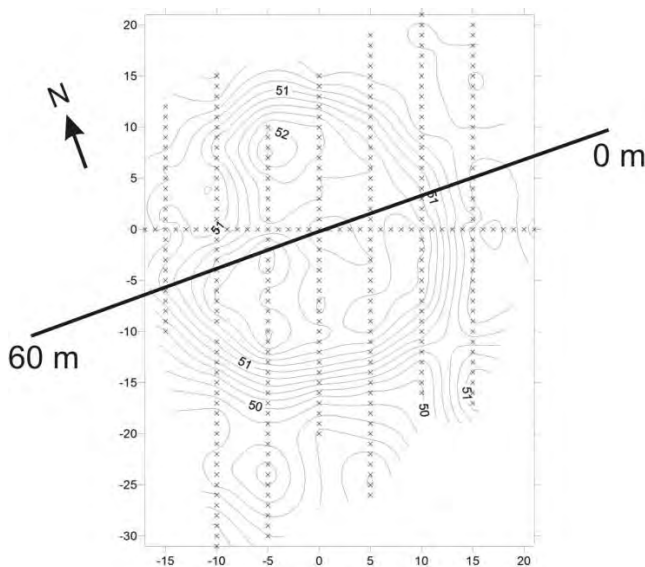


Fig 7 Market Knowe ERT profile location

The lowest of the three displays on Fig 8 is the resistivity model inverted from the raw data model on the top display and represents a vertical resistivity slice across the mound. There is obviously a layer of high resistance material 1-1.5m thick overlying possible damper soil.

Within the upper layer there are two particularly bright red spots one on the flank of the mound and the other at its centre. The flank anomaly corresponds to the high resistivity zone in this area seen on the resistivity survey and probably represents significant near surface stonework. The central anomaly could be something similar. The small high resistance anomalies at the ends of the line would seem to be related to the outer concentric bank structure.

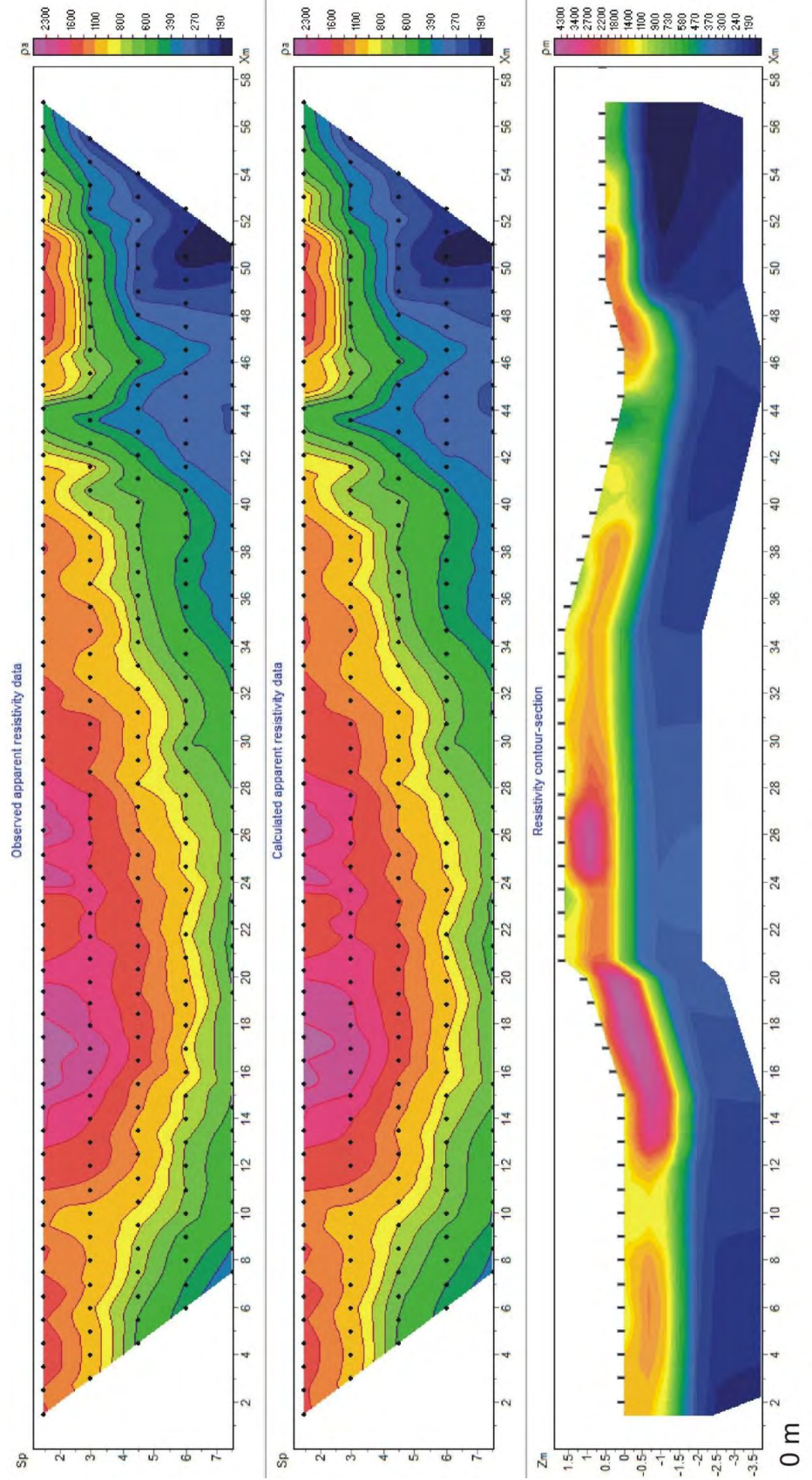


Fig 8

Market Knowe ERT profile

Conclusions

All of the geophysical surveys define the central mound and show that the best preserved portion seems to be to the north with the most serious later disturbances having taken place to the south. Extremely high resistance readings were found on the eastern flank of the structure suggesting the presence of near surface stonework, possibly unconsolidated boulders with small voids between them, around the upper rim of the structure.

The site appears to be a stone built or stone coated feature which has been extensively dug into in the past. The easterly side of the structure appears to be the least disturbed.

Summing up /Summary of project

Although the existence of Market Knowe as a site of archaeological and historical interest has long been known about, relatively little is known of its original date and structure and any subsequent structural alterations and uses. Apart from the excavation in 2011, in advance of building work nearby, no modern systematic archaeological survey or excavation work had been carried out at or near the site until the project reported on here.

The site is classified as a cairn with an unassigned date and has generally been regarded originally to have been a prehistoric burial mound of Wessex bell barrow type (Canmore ID 32008). Visible remains on the ground suggest it does conform to such a structure in terms of size and features i.e. a central mound, now heavily robbed and altered, surrounded by a bank and ditch. The topographical survey undertaken in 2017 would appear to support this interpretation as do the 18th and 19th century accounts of burial cist discoveries at the site.

Documentary sources may give an indication as to some of the subsequent uses of the site e.g. as an open-air barony court and site of markets and cattle fairs. In living memory it is

known that Huntly Wood was used for gatherings by travelling people and itinerant agricultural workers. Such subsequent uses may have robbed out or significantly altered any earlier mound or central structure.

It was hoped that the geophysical surveys might provide a clearer delineation of the central mound and surrounding ditch and also provide an indication of the composition of the mound and any anomalies within it. The resistivity survey did confirm the bank and ditch structure and defined the edges of the mound, best preserved on its northern side, and with possible near surface stonework on its eastern side. Intriguingly it also suggested the presence of a circular feature within the central mound. The magnetic survey demonstrated the possible presence of glacial erratic material, perhaps an indication of the type of stones which may have been used to build a cairn. Although not definitive these surveys do suggest a central stone structure and the near surface stonework on the eastern side suggests a stone wall may have featured on top of the mound at some point.

If Market Knowe was a prehistoric burial mound it would have then been a visibly dominant feature in the landscape and from it there would have been a particularly commanding view over the River Tay to the south. It would have remained a striking and respected feature in the landscape for thousands of years and like many similar structures probably did serve a variety of functions at subsequent times in history. Another Tayside site with a similar history is the now destroyed Stayt of Crieff which originally was a prehistoric burial mound. Deposits of bone in two short cist burials, one also containing a Food Vessel, were recorded in the 19th century when the site was levelled. Documentary evidence indicates the site's use in the medieval period as a barony court for the Earls of Strathearn (Canmore ID 25434).

Although the project achieved its aims of carrying out topographic and geophysical surveys, these in themselves have not provided absolute clarification as to the original function and dating of the site. Market Knowe is an enigma and remains so despite this basic and fundamental survey work having been undertaken. Awareness of the site has however been raised and the survey work should provide a significant building block to enable others to take forward further research work and study.

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Figs 1a, 1b and 1c are courtesy of Archaeology Scotland. Figs 2-8 are courtesy of Peter Morris.

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