# Topographic Survey at Tyn y Coed Earthworks, Dinas Powys, Vale of Glamorgan, 2012-2013

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| **Site Name and Code** | Tyn y Coed Earthworks |
| **Grid Reference** | ST1494972015 |
| **PRN** | 00015S |
| **SM number of site** | GM24 |
| **Date of Report** | 22/10/13 |
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***Summary***

*Full topographic survey and limited geophysical survey were undertaken at Tyn y Coed earthworks between June 2012 and July 2013. The topographic survey suggests that the earthworks consist of three separate monuments of indeterminate function, whilst no traces of occupation or activity were revealed by the geophysical survey. The work forms part of a wider research project focused on the early medieval occupation at the nearby Dinas Powys promontory fort. It is hoped that excavations undertaken concurrently with the surveys will help to elucidate the date and function of the earthworks.*

## *The Site and its Background*

The Tyn y Coed earthworks (ST1494972015) are located on a prominent whale-back ridge between the valley of the River Cadoxton and a narrow gorge known as 'Cwm George' in the eastern Vale of Glamorgan, 5.5km west of Cardiff (see Figure 1). The closest settlement is Dinas Powys village but the monuments actually lie in the parish of Michaelston le Pit. The earthworks lie 150m south of the important early medieval promontory fort known as Dinas Powys, which was excavated by Leslie Alcock between 1954 and 1958. The Tyn y Coed earthworks are named after Tyn y Coed House (the 'house in the woods'), a post-medieval farmhouse which lies at the southern end of the hill on which the earthworks are situated. If the earthworks had an earlier name it has not been recorded. The earliest reference to the earthworks is an estate map of the 1750s, in which they are depicted as two parallel boundaries labelled as an 'ancient breastwork' (Glamorgan Records Office DF/26). The earthworks are not visible on the tithe map of 1842 or the 6-inch to a mile Ordnance Survey of 1878, but their shape appears to be is preserved by a patch of woodland delineated by a series of field boundaries (Glamorgan Records Office P43/1 & 2).

The earthworks lie in an area of dense woodland (see Figure 2), and it is very difficult to gain an appreciation of the scale and form of the monuments when on the site. The earthworks have previously been described as consisting of the north-west and north-east sides of a possible enclosure with dimensions of at least 60m north-east by 50m south-west. The notional enclosure is delineated by a L-shaped bank (known as Bank B) fronted by a ditch with a second straight-sided rampart and ditch on the north-west side (known as Bank A) with an 'entrance' gap at its north-east. The first plan of the earthworks was created by Mortimer Wheeler in the early 1920s (referred to in Alcock 1963: 6), but it has not been possible to locate a surviving copy. The RCAHMW undertook a topographic survey of the earthworks in the early 1950s (RCAHMW 1991), and the Ordnance Survey have also published a plan (OS Mastermap and earlier editions to 1940s), but both surveys are problematic, and neither give a true reflection of the form of the monuments and their relation to the surrounding topography (it is also interesting to note that when the RCAHMW and OS plans are overlaid they show 5-10m discrepancies in places).

Despite being scheduled in the 1920s the earthworks have received little detailed or systematic research. In the 1940s they were described by Hubert Savory as a 'large (?cattle) enclosure adjoining [Dinas Powys hillfort] to the south' (Savory 1948-50: 156). In 1958 Leslie Alcock undertook small-scale trial trenching of the earthworks as part of his larger campaign of research excavation on the adjacent hillfort (Alcock 1963). Despite recovering very limited

evidence Alcock tentatively suggested that the earthworks represented two distinct monuments; an incomplete late-Iron Age hill-slope enclosure (Bank A) and a Norman siege work (Bank B) associated with an earth and timber 'ring-work castle' at the hillfort (Alcock 1963, 19-22, 81-83). Alcock's interpretations were accepted at the time of publication and reiterated by himself in 1987 and by the RCAHMW in 1991 (Alcock 1987; RCAHMW 1991). Since the 1980s, however, doubts have arisen over Alcock's interpretations. This has come about as a result of the re-interpretation of the multivallate phase of the adjacent hillfort. Alcock interpreted the multivallate defences as an earth and timber ring-work castle of the late-11th/early-12th century which had been besieged by an adjacent siege work represent by Tyn y Coed earthwork Bank B. Both Ewan Campbell (1991; 2007) and Ken Dark (1993) have separately questioned Alcock's identification of a medieval ring-work castle and instead proposed that the multivallate defences should be attributed to the 6th-7th century AD. The 'Dinas Powys Revisited' project has confirmed this revised chronology via a campaign of targeted radiocarbon dating (Seaman 2013). The interpretation of Dinas Powys as medieval ring-work castle and Tyn y Coed earthworks as an adjacent siege work must, therefore, be dismissed. Indeed, Ewan Campbell (1991; 2007) has tentatively assigned the Tyn y Coed earthworks to the 5th-7th century and associated them with occupation of the hillfort at this time. One parallel to this arrangement could be the bi-focal high and low status settlements reported at Crickley Hill, Gloucestershire (Jarrett 2011). The lack of data, however, renders any interpretation of the date and function of the earthworks highly speculative.

### *Aims and Objectives*

The 'Dinas Powys Revisited' project aims to establish the socio-political and economic contexts of the early medieval occupation at Dinas Powys hillfort. One of the primary aims is to establish the date, form, and function of the Tyn y Coed earthworks, in order to ascertain their relationship with the hillfort. One of the specific objectives has been to ascertain the form and function of the Tyn y Coed earthworks and their relationship to the sounding topography by undertaking detailed topographic and geophysical survey and targeted trial excavation (Seaman and Lane 2013; forthcoming).

### *Topographic Survey Methodology*

The monuments are very densely wooded, and so the survey methodology had to be adapted to accommodate the difficult conditions imposed by tree coverage. Moreover, the land owners requested that the survey be fitted around the nesting season of the birds resident within the woods and in such a way as to cause minimal disturbance to the local fauna and flora. The tree coverage prevented the use of a differential GPS system within the vicinity of the earthworks, so the survey had to be undertaken by a total station. Although the OS Master Map shows a series of fixed points within the vicinity of the earthworks these had in fact been removed during the 1980s. Thus in order to fix the survey into the OS Nation Grid it was necessary to establish a network of fixed points with a Trimble dGPS system (via Geomatics Office Baseline Processing) on open ground several hundred metres to the south of the earthworks. A closed network of fixed stations was then traversed up to the earthworks using a Leica total station. In total a network of 24 stations was needed to ensure total coverage of the earthworks. In addition a number of secondary stations were established via the 're-section' function on the total station. Establishing the network of stations and closing the traverse (via Least Squares network adjustment) was a time

consuming process, but it was possible to establish a coherent and accurate network which formed the basis of the survey.

Data was collected systematically across the earthworks; firstly the major breaks of slope were recorded and given codes in the total station software (bottom of ditch, top of ditch, top of bank, bottom of bank etc.). Secondly, a network of general topographic points (2552 in total) was collected from across and around the earthworks. The data was downloaded into E*xcel* and inspected in *ArchGIS 10* to check for consistency. It was then imported into *Surfer 11* and converted into a grid file for contouring. The breaks of slope were added to this dataset as a series of breaklines, and the resulting dataset was blanked around the edges so as to avoid distortion.

***Results*** (figures 3-8)

The Tyn y Coed earthworks consist of three distinct earthworks; an L-shaped linear bank and ditch usually referred to as 'Bank B'; a linear bank and ditch usually referred to as 'Bank A'; and a shorter section of linear bank and ditch which is usually considered to be part of Bank A, but for the purposes of this report will be described as 'Bank C' (see Figure 8). The natural topography of the hill in this area rises from south to north and from west to east, and so the earthworks are overlooked by higher ground to the north and east, although they would have had a commanding view of the Cwm George if the tree cover was not present.

Bank A runs in a north-easterly direction for 60m from the top of south-western scarp of the hill. The ditch lies directly in front of the bank on the northern uphill side and there is no evidence for an intervening berm. Whilst the bank rises directly from the scarp edge there is a short gap between the terminal of the ditch and the south-western break of slope. The earthwork is most impressive towards its south-west terminal where the ditch is nearly 1.5m deep, but it becomes progressively smaller after running for about 30m where its course also deviates 10° to the east. At its north-east terminal the ditch shallows to less than metre in depth.

There is a gap of around 7m between the north-west terminal of Bank A and the south-east terminal of Bank C. Bank C is aligned 10° further east than Bank A and runs in a north-easterly direction for around 11m. Bank C is fronted by a subtle ditch, again without any trace of a berm. It is a much slighter earthwork than Bank A; indeed the top of the bank is not much higher than the natural ground surface to the north. It is therefore possible that Bank C was not constructed from material quarried from the ditch, but instead represents an island between two ditches. It is also possible that the rear of Bank C encroaches upon the ditch of Bank B, but it is not possible to discern a stratigraphic relationship between the two earthworks.

Bank B lies to the south and east of Banks A and C. It rises from the top of the south-western scarp of the hill and runs roughly parallel to Bank A for 55m, before then turning 95° clockwise and then running on a south-west alignment for around another 50m. Bank B is fronted by a ditch (the shape of which may have altered by its use as a footpath) and again there appears to be no visible berm between the bank and ditch. Bank B is noticeably smaller than Bank A, and the ditch of south-west aligned segment gets progressively shallower towards the west where no discernible terminal is present. After the ditch fades

out the line of the bank continues for around another 11m, but it becomes progressively smaller and more diffuse.

### *Discussion*

The survey raises a series of issues concerning the function and interpretation of monuments. Banks A and C have previously been interpreted as two sections of an incomplete Iron Age hill-slope enclosure with the intervening gap serving as an entrance (Alcock 1963: 19-22). The survey raises doubt as to this interpretation however. Bank A is a substantial earthwork which could have formed part of a defensive monument, the difference in size and alignment of Banks A and C suggests that they were not part of a unitary monument however. Indeed the configuration of the 'enclosure entrance' is not in keeping with the majority of univallate enclosures in Glamorgan which often have slightly swollen or in-turned terminals that face towards lower ground (RCAHMW 1976: 10). Moreover, whilst Gerrard *et al* (2006: 29) have noted that almost all of a sample of 73 prehistoric enclosures from Glamorgan had entrances which opened in a southerly direction, the 'entrance' at Tyn y Coed opens in a north-westerly direction. In this regard it is interesting to note that Bank C terminates at the point where it would have met a post-medieval field-boundary which is no longer discernible but which is recorded on the Tithe survey of 1842. It is therefore possible that Bank C was constructed sometime after Bank A when the hill top was being used for agriculture, and that the intervening gap was left to provide access into a field to the north.

Bank B was interpreted as a medieval siege work by Alcock (Alcock 1963: 81), but this interpretation can no longer be supported (Seaman 2013). Although Alcock noted that the western leg of the earthwork stopped short of forming a complete enclosure he suggested that 'their line is more or less maintained by modern ditches and hedges, so that it is likely that they originally continued to the head of the steep scarp on the south' and that 'the present termination of the rampart may perhaps mark an original entrance' (Alcock 1963: 82). The present survey casts doubt on this interpretation however; firstly although the line of Bank B is maintained by a subtle field bank there is no indication that it headed to the southern scarp edge, instead it appears to continue in a south-westerly direction. Indeed the historic Ordnance Survey mapping shows that the hedge Alcock appears to have referred to was not established until the 1940s. Secondly, given that the scale of the earthworks starts to diminish some metres before the ditch fades away it is unlikely that the termination marks the position of an entrance. Indeed, it is perhaps most likely that the earthwork was left unfinished before being incorporated into a changing network of field boundaries.

### *Geophysical Survey Methodology*

The magnetic gradiometry survey was targeted at a 20m x 40m area within Bank B (see Figure 8). The dense woodland in Area C and the alignment of the earthworks imposed constraints upon the survey procedures. In order to recover the maximum amount of data the survey grid was offset to a NW-SE alignment. The grid was then tied to within accepted (English Heritage 2008) standards of the Ordnance Survey National Grid using a Leica total station. The magnetic gradiometry data was collected using a single Geoscan RM265

gradiometer operated manually through an external hand-log key. Despite the difficult conditions it was possible to collect data at a 0.25m sample internal with a 1.0m traverse internal. The data was collected in a parallel walking pattern starting in the south-west corner. Obstacles, such as trees and fence lines, were avoided using the dummy log and end line functions.

The data was downloaded into *Geoplot 3* and assembled into a composite. The composite was clipped at +/- 6nT. Deslope, zero mean grid and despike functions were applied to the dataset before it was exported into *Surfer 11* and *ArchGIS 10* where it was georeferenced and presented for publication.

### *Results (see Figure 9)*

The only feature of archaeological importance which can be identified within the gradiometry plot is a weakly positive anomaly running SW-NE for *c.* 8m across the NW edge of the survey area. This feature aligns exactly with the rear of Bank B and can be interpreted as deriving from the enhanced magnetism of the bank material. The strongly negative anomaly on the SW edge of the survey area derives from a metal fence (not marked on the OS Master Map) which encroached upon the survey in this area. A few iron spikes can be identified, but there are no other features of archaeological interest.

### *Conclusions*

Despite the difficult conditions the topographic and geophysical surveys were carried out successfully and the data quality is of a high standard. We now have an accurate plan of the Tyn y Coed earthworks which is tied into the Ordnance Survey National Grid. Whilst full a full discussion of the results must await publication of the excavations, we can make several preliminary observations. Firstly, it appears that Banks A and C are not contemporary and should not be interpreted as the remains of an incomplete prehistoric enclosure. Indeed, it is possible that Bank C could be attributed to a much later period. Secondly, there is little evidence for assuming that Bank B once formed a complete enclosure, and thus far no evidence for occupation inside the earthwork has been identified.

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***Figures***

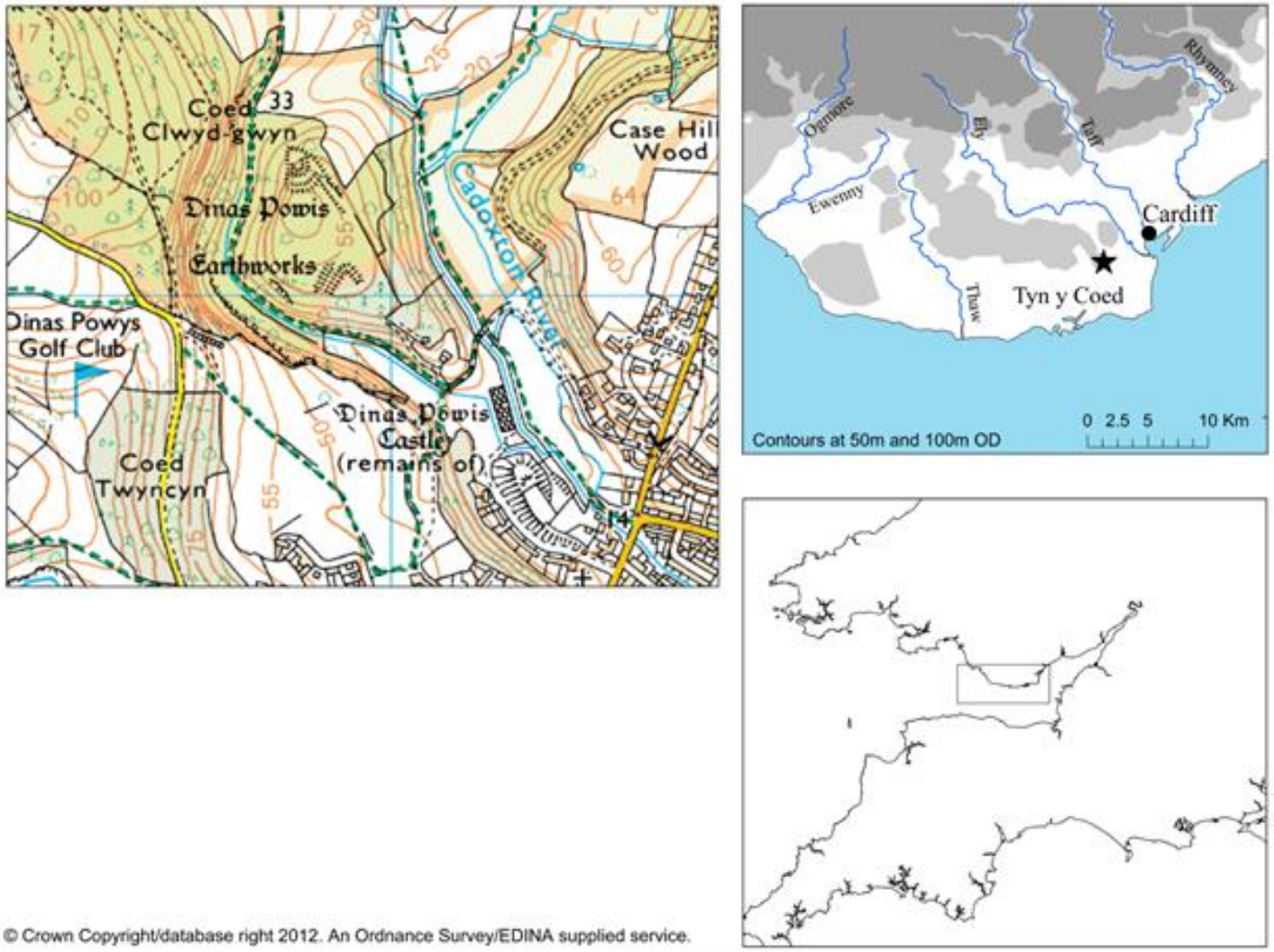


Figure 1: Location Map

**Figure 2: Photograph showing how densely wooded the Tyn y Coed earthworks are.**

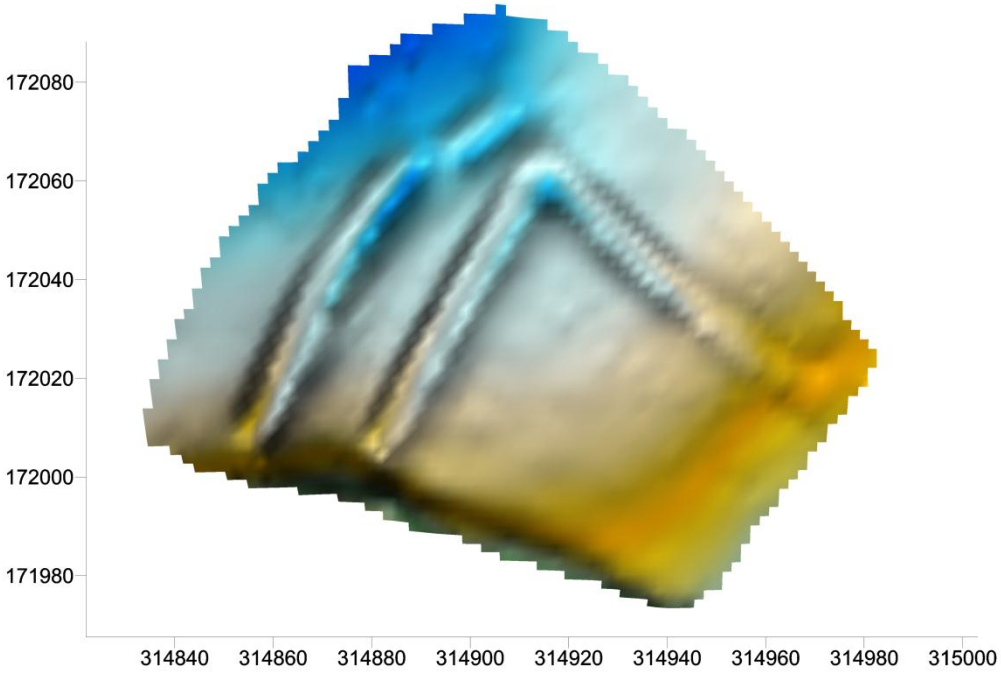


Figure 3: Digital terrain model, plan view.

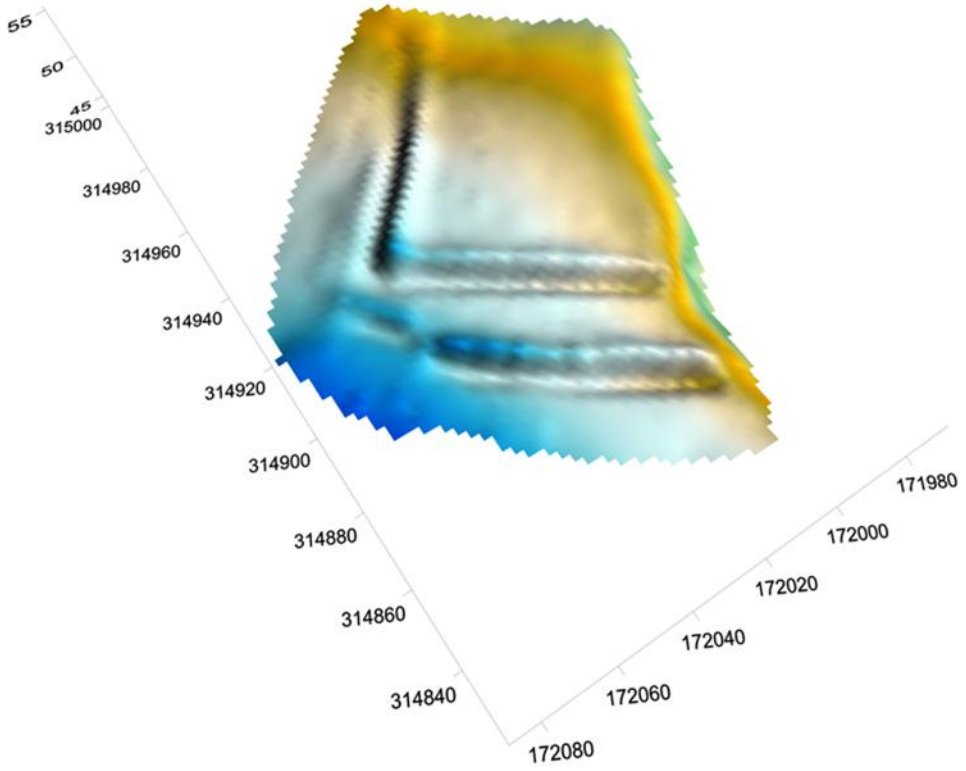


Figure 4: Digital terrain model, from above, looking south-west.

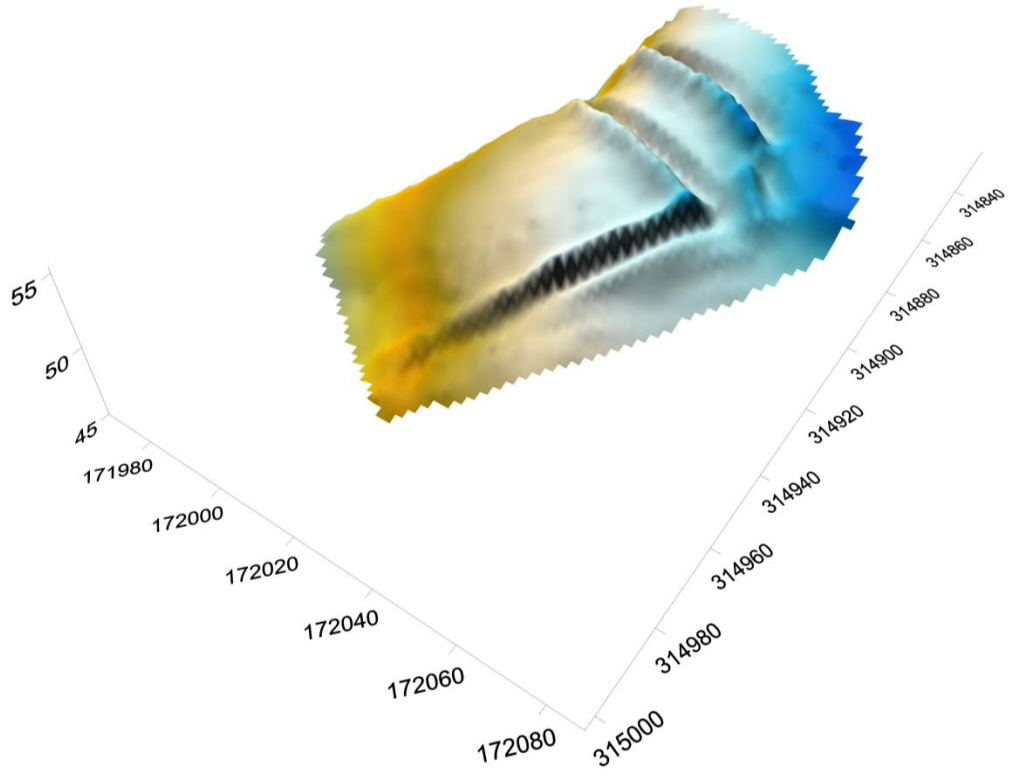


Figure 4: Digital elevation model, from above, looking south-east.

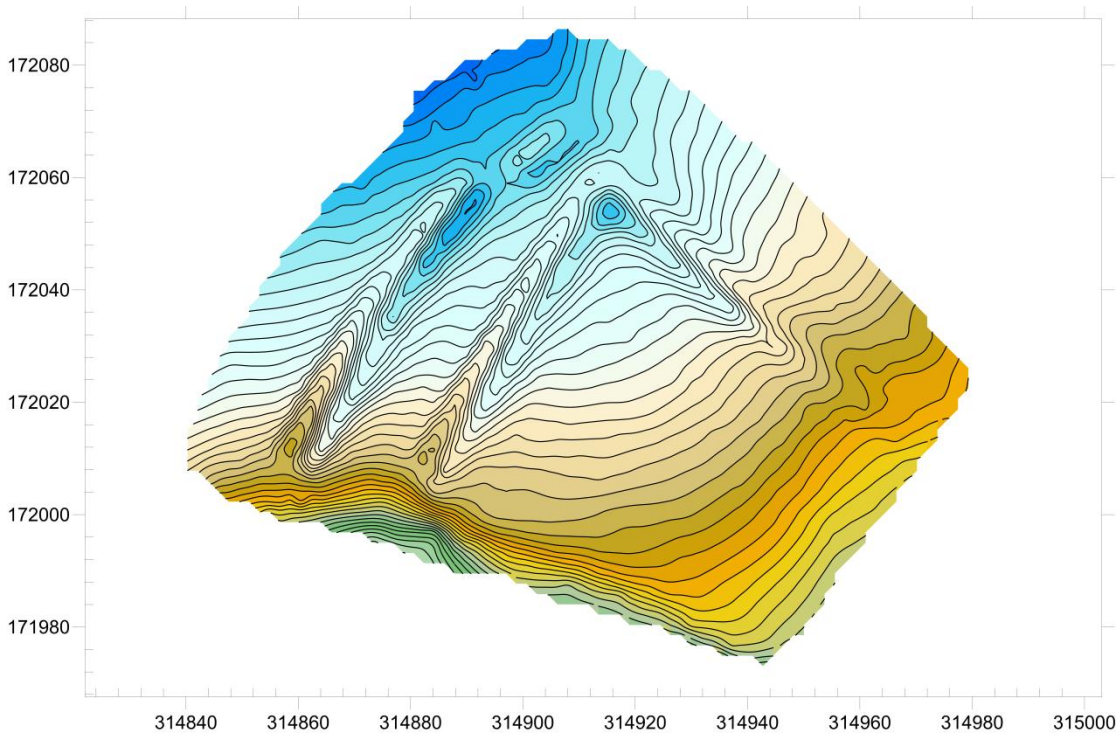


Figure 5: Shaded contour plan.

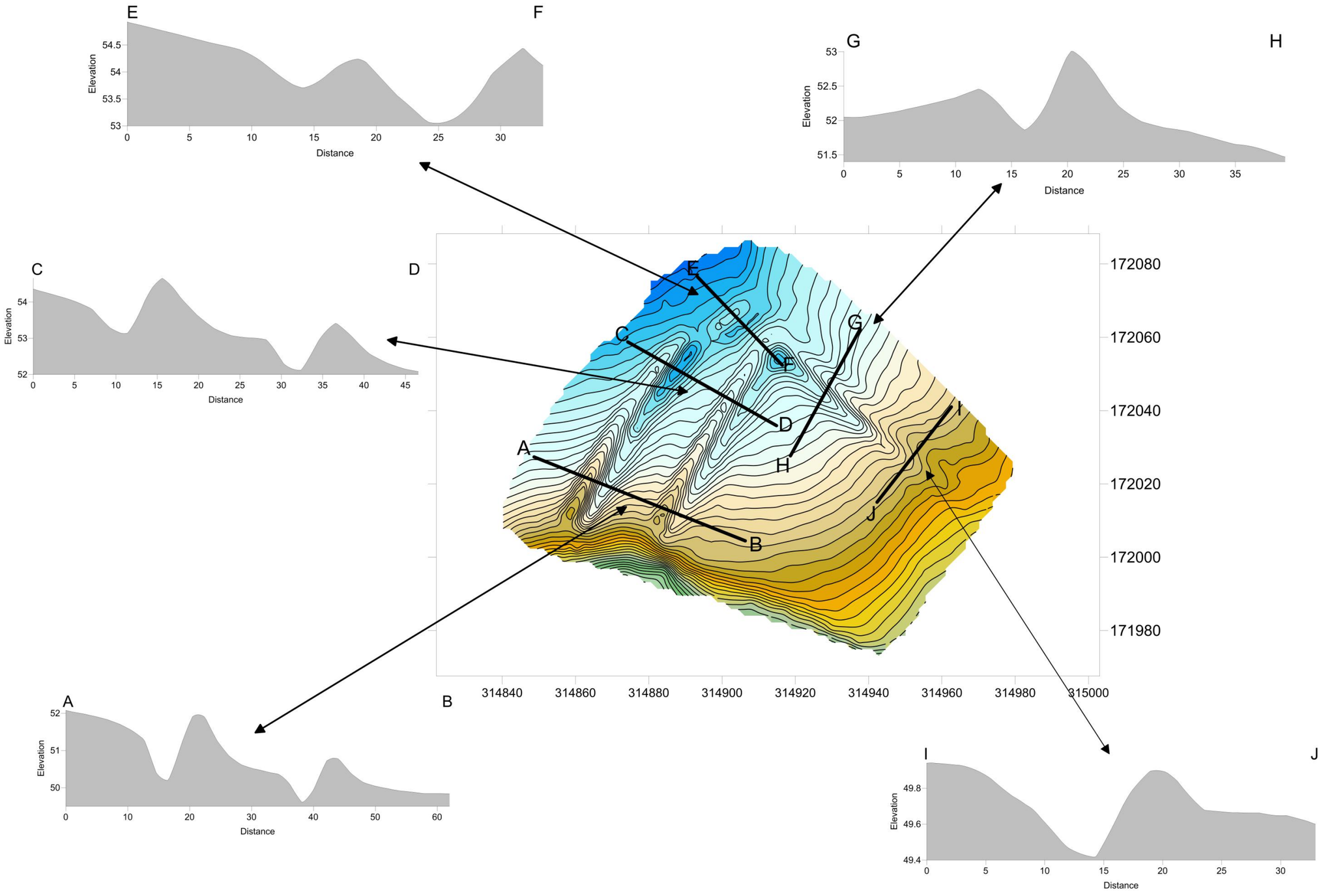


**Figure 6: Contour plan of the earthworks, with earthwork profiles.**

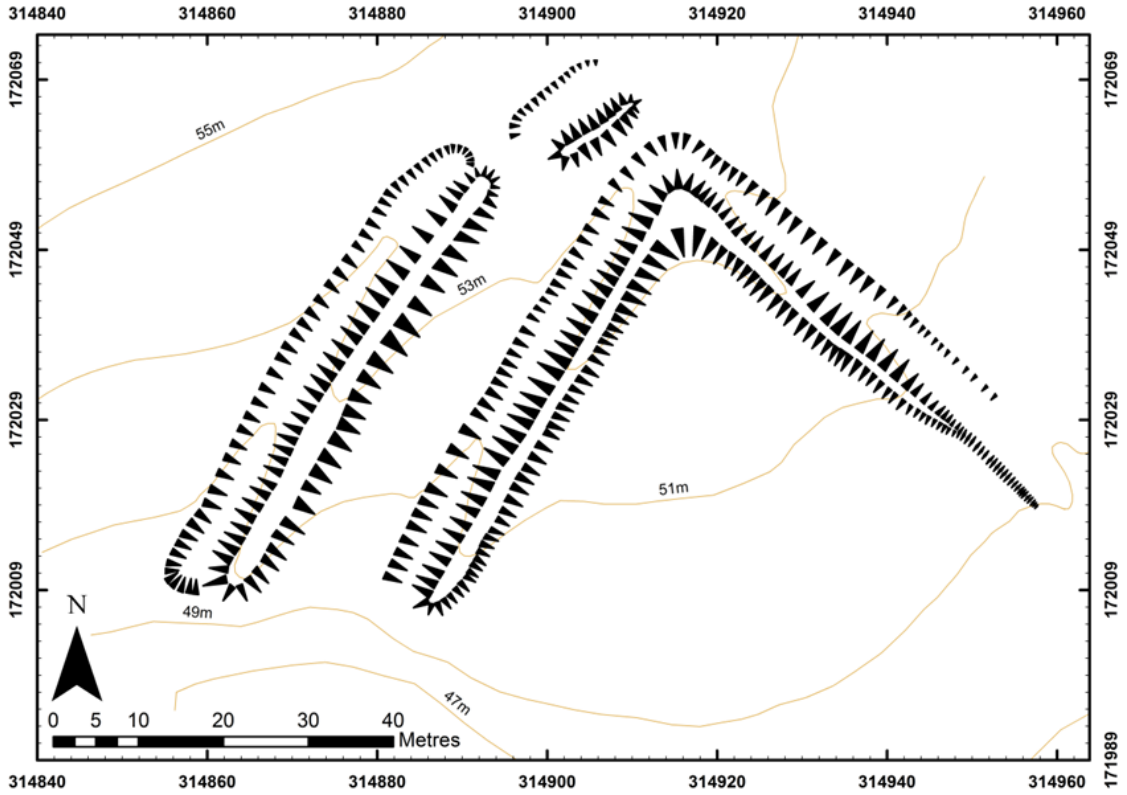


Figure 7: Interpretive plan of the earthworks.

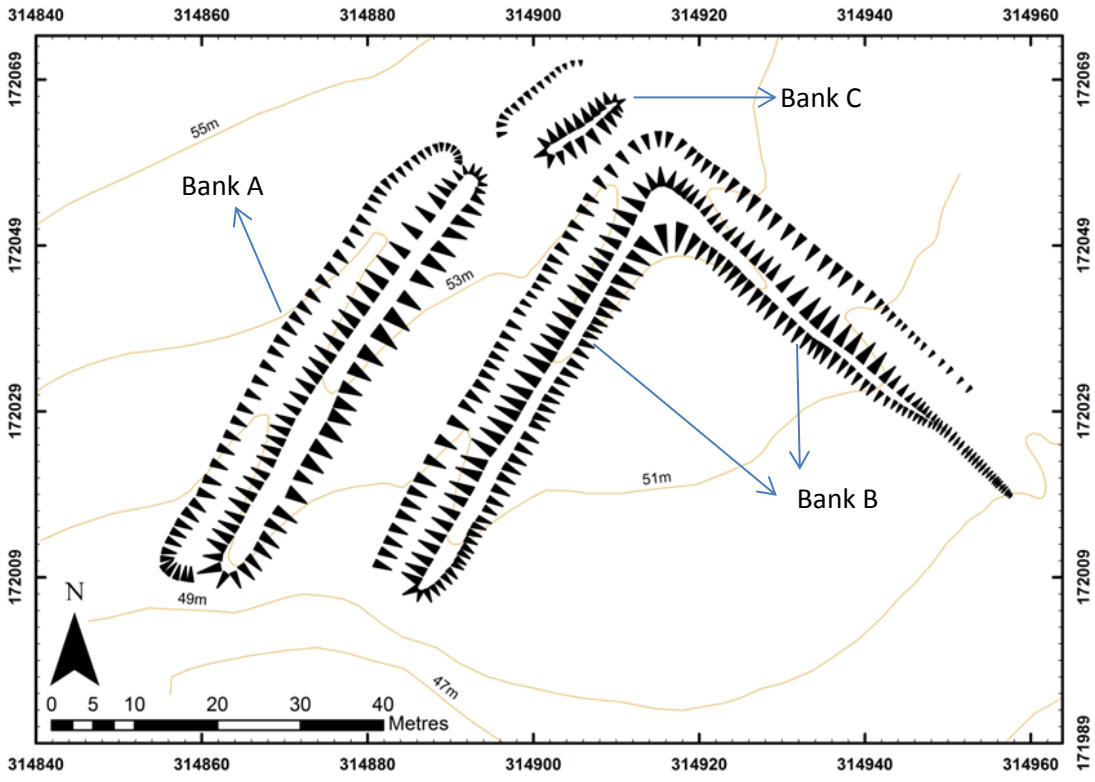


Figure 8: Interpretive plan with Banks labelled.

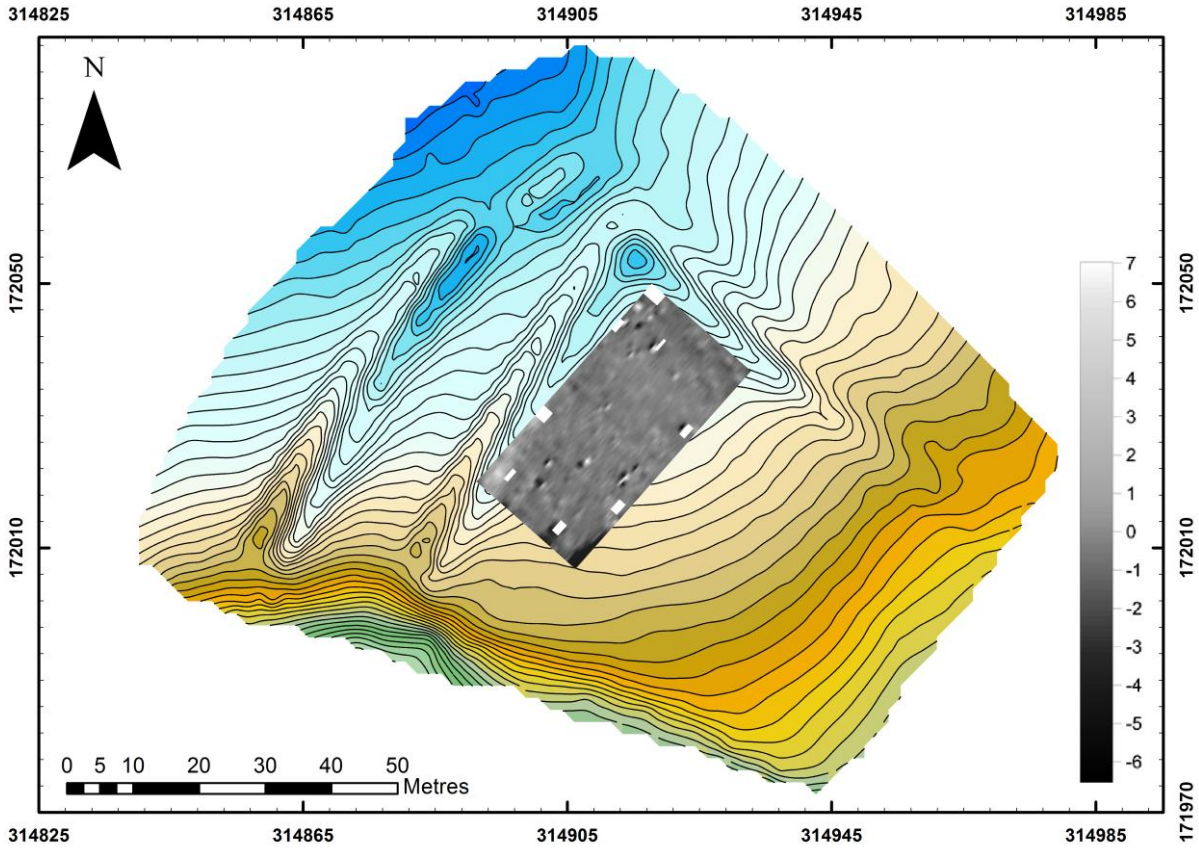


Figure 10: Geophysical survey superimposed on the contour plan of the earthworks.

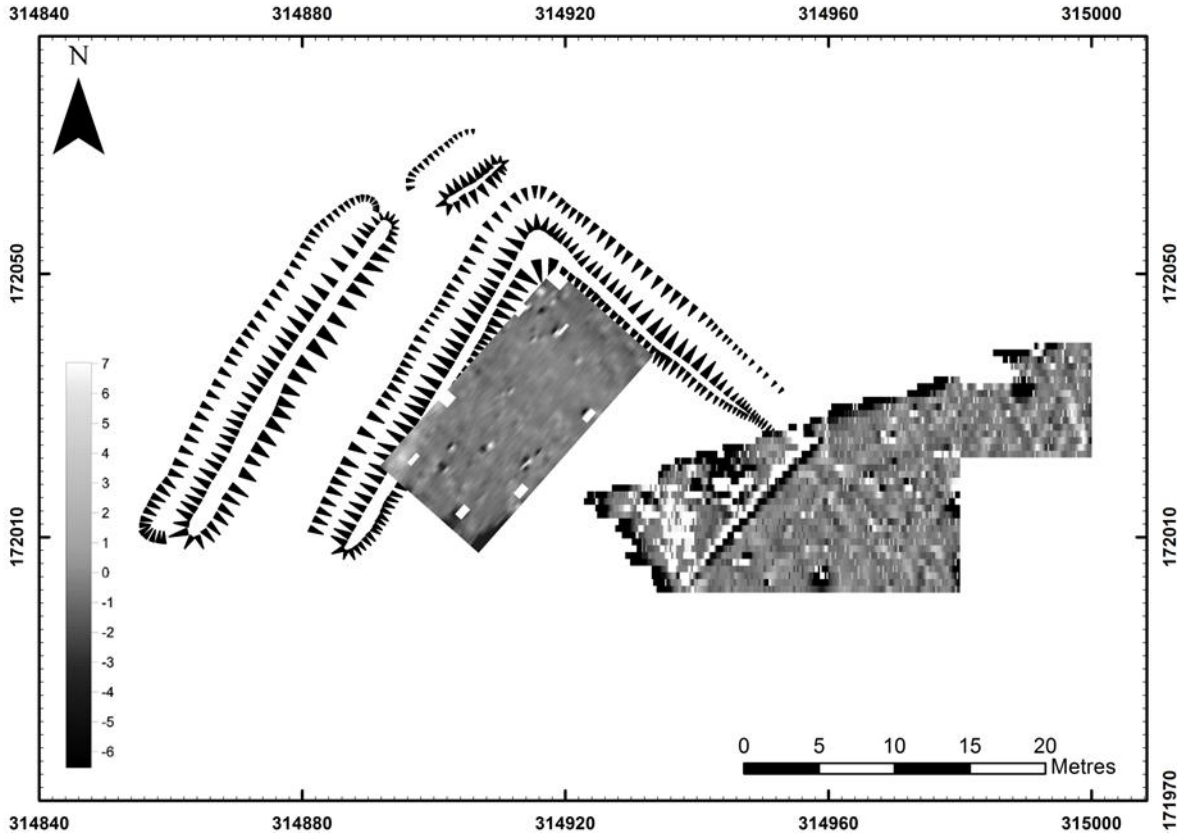


Figure 9: Geophysical survey from 2011 (to the south) and 2013.