ROMAN FORT ENVIRONS 2002/2003

G1632

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Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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Prepared

By

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Ymddiriedolaeth Archaeolegol Gwynedd
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G1632 ROMAN FORT ENVIRONS

1. INTRODUCTION

One of the most noticeable signs of the Roman occupation of North Wales is a network of forts, often visible as well-defined earthworks, sited at tactically important points within the landscape (Fig. 1). All of the surviving forts so far discovered in Gwynedd have been designated as Scheduled Ancient Monuments and as such have a high level of statutory protection. In many cases, however, the scheduled area only extends as far as the edge of the visible earthworks. A great deal of evidence has accumulated, both in Wales and further afield demonstrating that Roman forts should not be seen as standing alone in the landscape but instead viewed as the centre of a wider area of both military and civilian activity. Evidence from cropmarks, rescue excavation and chance finds has revealed the presence of extramural remains at several forts in Gwynedd but the evidence is in general fragmentary. Only the *vicus* at Caerhun, some extramural remains at Tomen y Mur, the military complex at Llanfor and a small extramural area at Caer Gai have been designated as Scheduled Ancient Monuments.

Several specific examples of damage or threat to Roman fort environs have been recorded:

(i) Agriculture and the erection of associated buildings have caused disturbance at both Cefn Caer and Caer Gai.
(ii) Housing has destroyed a large part of the annexe at Brithdir and much of the possible fort at Aberffraw.
(iii) A large part of the *vicus* at Segontium has been lost due to urban expansion.
(iv) The fort at Pen Llystyn and part of the surrounding area were destroyed by quarrying in the 1960s.

An increased knowledge of the extent and character of the extramural remains could allow greater protection to be given to Roman fort environs either by statutory protection, a better informed planning process or, in the case of agricultural land, better land management.

The present project aims to identify the extent and character of the archaeological remains in and around the Roman forts of Gwynedd, to assess their condition and present management regime and to recommend management options.

It is also hoped that the survey can add to the body of knowledge about Roman forts and their environs. This will hopefully allow comparative work to be carried out, examining the layout and development of *vici* and other extramural structures and perhaps identifying regional trends. The possibility of continued use of *vici* into the Early Medieval period was also investigated in this study.

The CBA research report, *Britains and Romans : advancing an archaeological agenda* (James and Millet 2001) arising from an English Heritage-sponsored session at the Roman Archaeology Conference, Durham 1999, presents a detailed consideration of longer term Romano-British research agendas. James argues that the traditional view of a strict military-civilian dichotomy is seriously misleading. The common image of a tightly disciplined monolithic war machine existing entirely within its forts and camps is not borne out by the available evidence. James' examination of the interactions between the *milites* and the civilian population is of particular relevance to this project. Non-combatants were closely integrated into military life and the *viciani* consisted of much more than the commonly portrayed collection of entrepreneurs and hangers-on. James notes a wide range of categories of integrated non-combatants including personal grooms, private servants, slaves, unofficial wives and children as well as craftsmen and other support staff. He argues that forts and *vici* were not spatially and socially distinct communities but were 'only partly differentiated components of one complex community'. The evidence for this view is compelling but the complex relationship between the military and civil spheres is still largely unexplored, as is the relationship between the immediate community of the forts and the wider civil and native community.

Clearly, the level of research needed to address all of the above issues is considerable. Hopefully the current project will begin to characterise the features, settlement and land use around the forts of Gwynedd which must be seen as a starting point for any more detailed analysis.

Davies (1990) identifies a number of additional research objectives in 'Military Vici' (Burnham and Davies *Conquest Co-existence and Change, Recent Work in Roman Wales*);

(i) The desirability of obtaining plans of *vicus* buildings and the differentiation of those of specifically military origin from the civilian.

(ii) The function of buildings including *mansiones.*

(iii) Understanding the range of activities undertaken by a garrison outside the fort and by *vicani* in manufacturing and industry

(iv) Information on religious and funerary practice – shrines temples and cemetery evidence.

2. METHODOLOGY

2.1 Desktop study

Ten Roman forts have been positively identified in Gwynedd along with one possible fort at Aberffraw and a fortlet at Brithdir. All of the forts have been surveyed and most have been excavated to some extent. All available information from both published sources and the Sites and Monuments Record was collected in compiling this report. In addition to this, tithe maps and schedules were consulted along with readily available estate maps. Information from aerial survey was obtained from RCAHMW and Cambridge University aerial photographs were re-examined.

2.2 Geophysical survey

Fluxgate gradiometer survey provides a relatively swift and completely non-invasive method of surveying large areas. Roman military sites are well suited to this technique as significant magnetic enhancement of the soil is an inevitable result of the day to day activities in a Roman fort. The recent survey of the Roman Military complex at Llanfor by Snowdonia National Park and Gwynedd Archaeological Trust (Crew 1997) demonstrates the value of gradiometer survey. The survey detected a wide range of features associated with the fort and its outworks including ribbon development along one of the roads leading from the fort indicating the presence of a *vicus*.

Suitability for Survey

Roman sites are relatively easy to detect using gradiometer survey but other factors such as soil composition, the type and proximity of bedrock and urban contamination can render sites unsuitable for survey. It was initially decided to carry out small test surveys on three sites to determine suitability for survey. These were carried out at Cefn Caer (Pennal), Caer Gai and Caerhun. All sites produced acceptable results showing that gradiometer survey is capable of resolving *vicus* details in soil conditions typical of many areas in North Wales.

It was, however, clear that some fort environs are more suitable for survey than others. Both the possible fort at Aberffraw and Segontium fort in Caernarfon stand in built up areas and are unsuitable for survey. The rest of the ten sites in Gwynedd appeared to have some potential and they are summarised below in order of priority.

(i) Cefn Caer There is very little known about both the fort and its environs and only the fort and a very small area around it have statutory protection.

(ii) Caer Gai Both aerial photography and occasional finds suggest the presence of a *vicus* to the north-east of the fort. The scheduled area only extends around the fort and a small possible annexe.

(iii) The environs of the now destroyed fort of Pen Llystyn The long-term expansion of the quarry continues to threaten the archaeology in this area and no significant Roman extramural remains have so far been identified. It would be expected that structures such as a bathhouse would have been present and that the destruction of such an easily identified structure would almost certainly have been noticed. This suggests that significant structures may still survive in the vicinity of the site of the fort. It should also be noted that there is some evidence of early medieval settlement on and around the site (Hogg, 1968 and Edwards and Lane 1988).

(iv) Bryn-y-gefeiliau fort and annexe No evidence for a *vicus* has so far emerged from this site and it is probable that extramural remains extend well beyond the scheduled area.

(v) Canovium (Caerhun) The line of a road with remnants of an extensive *vicus* was detected from aerial photographs. Initial investigations carried out in phase 1 of the project suggest that the area would produce good geophysical results. An extensive level area to the south of the fort could also contain Roman military remains although nothing beyond a small annexe has been so far discovered. Geophysical survey would almost certainly reveal further details of the northern *vicus* and other extramural structures and could also determine the extent of activity to the south. This would allow better management of the site and would add to our overall understanding of the fort and its environs.

(vi) Llanfor The fort at Llanfor is unique within Gwynedd, being a probable example of a large pre- or very early Flavian fort. The site is particularly significant because it appears that the fort was never rebuilt in stone. It is therefore possible that an unusual amount of detail of the wooden buildings will have survived. There is a good chance that site would, considering the clarity of the results from the survey of the stores compound, vicus and marching camps to the north-east, produce unusually clear geophysical survey results. If significant survival of the features related to the internal wooden structures can be demonstrated it is most important that the site is properly managed because these features will inevitably be slight and vulnerable to damage. It is also significant that the site is increasingly being used for public events such as international sheepdog trials. This activity does not at present have any significant impact on the sub-surface archaeology but will inevitably produce increased magnetic noise in the topsoil. Geophysical survey must therefore be seen as an essential part of the interpretation and appropriate future management of the site.

(vii) Tomen-y-mur An extensive complex of Roman remains stands at Tomen-y-mur. Recent geophysical work by Snowdonia National Park on the fort itself has shown that the site has some potential for gradiometer survey. It was however felt that further survey was not essential to the management of the site.

(viii) Brithdir Much of the area around the fort at Brithdir has undergone geophysical survey. It is however possible that further remains stand to the north and east of the fort.

It was decided that the first six sites in the above list should be prioritised for survey and the project was carried out over three years. Cefn Caer and Caer Gai were surveyed in 2000/1, Pen Llystyn and Bryn-y-gefeiliau in 2001/2, and Canovium and Llanfor in 2002.

Instrumentation

All geophysical work was carried out using Geoscan FM36 Fluxgate Gradiometers. This instrument detects variations in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetised iron oxides which tend to be concentrated in the topsoil. Features cut into the subsoil and backfilled or silted with topsoil therefore contain greater amounts of iron and can therefore be detected with the gradiometer. This is a simplified description as there are other processes and materials which can produce detectable anomalies. The most obvious is the presence of pieces of iron in the soil or immediate environs which usually produce very high readings and can mask the relatively weak readings produced by variations in the soil. Strong readings are also produced by archaeological features such as hearths or kilns as fired clay acquires a permanent magnetic field upon cooling. Not all surveys can produce good results as results can be masked by large magnetic variations in the bedrock or soil and in some cases, there may be little variation between the topsoil and subsoil resulting in undetectable features.

The Geoscan FM36 is a hand held instrument and readings can 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. Their Mumetal cores are driven in and out of magnetic saturation by a 1,000Hz alternating 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. The high frequency of the detection cycle produces what is in effect a continuous output (Clark 1990).

The gradiometer can detect anomalies down to a depth of approximately one metre. The magnetic variations are measured in nanoTeslas (nT). The earth's magnetic field strength is about 48,000 nT, typical archaeological features produce readings of below 15nT although burnt features and iron objects can result in changes of several hundred nT. The machine is capable of detecting changes as low as 0.1nT.

Data Collection

The gradiometer includes an on-board data-logger. Readings in the Roman fort surveys were taken along parallel traverses of one axis of a 20m x 20m grid. The traverse interval was one metre. Readings were logged at intervals of either 0.5m or 0.25m along each traverse giving 800 or 1600 readings per grid.

Data presentation

The data is transferred from the data-logger to a computer where it is compiled and processed using Geoplot 3.0 software. The following two display options are used in this report along with an interpretation drawing.

a) X-Y plot

Each traverse is shown by a line trace. These are presented side by side allowing the full range of data and the shape of any anomalies to be seen.

b) Grey-Scale

Data values are represented by modulation of the intensity of a grey scale within a rectangular area corresponding to the data collection point within the grid. This produces a plan view of the survey and allows subtle changes in the data to be displayed.

Data Processing

The data is presented with a minimum of processing. High readings caused by stray pieces of iron, fences, etc are usually modified on the grey scale plot as they have a tendency to compress the rest of the data. The data is however carefully examined before this procedure is carried out as kilns and other burnt features can produce similar readings. Corrections are also made to compensate for instrument drift and other data collection inconsistencies. Any further processing is noted in relation to the individual plot.

2.3 Assessment excavation

Assessment excavations were carried out at two sites in order to enhance the interpretation of the geophysical survey results. Large area gradiometer survey does not produce dating evidence beyond the typological recognition of building plans. This is usually adequate to recognise a Roman fort but is less certain when faced with less distinctive anomalies produced by potential *vicus* settlements. Trial excavation, following on from gradiometer survey overcomes some of the problems associated with very small-scale excavation. The excavation areas can be located with great accuracy over the required anomalies thus allowing specific areas to be assessed without danger of trenches falling between features etc. High resolution gradiometer surveys (readings at 0.5m x 0.25m) were carried out over relevant areas before excavation thus allowing accurate integration of the two sources of information.

Two trial trenches were excavated within the *vici* at both Cefn Caer and Caer Gai. The works at Cefn Caer were conducted over two weeks in June 2002 and at Caer Gai during a similar period in November 2002. The excavations were carried out by the writer and George Smith from Gwynedd Archaeological Trust along with volunteers, John Burman, Mat Jones, Archie Gillespie and Rob Haworth. Further details are provided in the individual excavation area descriptions, below.

3. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

The Roman conquest of Britain was initiated in 43AD by the Emperor Claudius. The initial campaign was successful in subjugating the southern British kingdoms but probably had little impact on Wales. Its mineral wealth and important tactical position meant that invasion was inevitable and in AD 47 the army under the governorship of Ostorius Scapula began a campaign against the Deceangli of north-east Wales. A protracted and difficult campaign then ensued against the Ordovices and Silures culminating in an attack on Anglesey by Suetonius Paulinus in AD 60. The Boudican revolt in East Anglia, however, resulted in the redeployment of the legions and much of the territorial gains in North Wales were lost. The pre-Flavian campaigns are well documented by Tacitus but the archaeological record in Gwynedd is sparse. A series of marching camps would be expected to reflect the progress of the campaign and no archaeological evidence for the campaign against Anglesey has emerged. The complex of camps, possible stores base and fort at Llanfor remains one of the best candidates for pre-Flavian occupation (Davies 1980). The fort had probably been abandoned by the time that the early Flavian fort at Caer Gai was founded but could still be associated with the early Flavian campaigning (Arnold and Davies 2000). The camps appear to pre-date the fort suggesting an early date but hard evidence has yet to emerge. The marching camps at Derwydd-bach, Penygwryd and Tomen-y-Mur remain undated and could be Flavian. Pottery recovered from the annexe at Cefn Caer fort (Pennal) appears to be Pre-Flavian (Brewer 1978) but it is not known how this relates to the dating of the fort itself.

The attitude to the Welsh tribes changed significantly with the more aggressive policies of the new Flavian dynasty marked by the accession of Vespasian in AD 69. The conquest of all but the north-west of Wales was undertaken during the governorship of Julius Frontinus (AD 73-7). Cn. Julius Agricola became governor in AD 77 and was immediately faced with a rebellion by the Ordovices. The rebellion was crushed; Tacitus records that 'he cut to pieces almost the whole fighting force of the nation'. Agricola went on to conquer Anglesey thus extending Roman control across the whole of Wales. The network of forts and roads that can be seen across Gwynedd were mostly founded in the early Flavian period. The as yet undated fort at Llanfor could have been founded during the initial Frontinian campaign (Arnold and Davies 2000) and Ceramic evidence from Brithdir (Hopewell 1997) suggests Frontinian occupation although the fortlet itself remains undated. Other signs of the Frontinian campaign are less certain, the marching camps so far discovered in Gwynedd may date from this campaign and the more southerly auxiliary forts may have Frontinian origins. The auxiliary fort of Segontium, designed to form the hub of the Roman consolidation of North Wales is almost certainly Agricolan (Casey and Davies 1993) as is Pen Llystyn (Hogg 1968).

Agricolan campaigning in Scotland AD 78 initiated a period of gradual decline in the number of troops deployed in Wales. Many of the earth and timber forts were rebuilt in stone at the end of the first and beginning of the second century. In some cases, the reduction in troop numbers was reflected in a contraction in the size of the fort. Tomen-y-Mur was reduced in size by about a third (Jarrett 1969) and the fort at Pen Llystyn was replaced by a fortlet, possibly after a short period of abandonment (Hogg 1968). The process of garrison reduction gathered pace under Trajan and was most extreme in the period AD 110-25. It appears that the fortlets at Brithdir and Pen Llystyn were abandoned at this point (Hopewell 1997, Hogg 1968). Some forts have yet to be accurately dated but it seems likely that by AD 140 Segontium was the only auxiliary fort still in use in Gwynedd and this was operating with a much reduced garrison (Arnold and Davies 2000). Segontium underwent substantial rebuilding at the beginning of the third century. The mid to late forth century saw a dramatic increase in the levels of activity at Segontium and a probable reoccupation of Caerhun perhaps as a response to the threat posed by Irish Raiders (Casey and Davies 1993, Arnold and Davies 2000). It is probable that Segontium and the late naval base at Caer Gybi, Holyhead continued in use until about AD 393 when they were abandoned in response to the revolt of Eugenius in Gaul (Casey 1989).

3.1 The role of the *Vicus* and ancillary buildings

The *vicus* was a point of contact between the military and civilian population. The traditional view of the civilian *vicus* and military fort being mutually exclusive domains is no longer universally accepted and it is probable that there was a high degree of integration both spatially and socially between the

two (James 2001). The large numbers of regularly paid troops within the fort naturally attracted traders and it can also be shown that goods for military supply were produced by the civilian population. Limited excavation within the *vicus* of Caersws auxiliary fort in Powys produced finds suggesting the presence of a tavern, along with copper and leatherworking workshops. Industrial debris has been recovered from an extensive settlement outside the walls of Segontium. Tanning and metal working areas in the annexe at Brithdir fortlet in Gwynedd could also be interpreted as being part of a *vicus*. Industrial debris makes such structures easy to identify, but the typical *vicus* contains number of buildings of indeterminate function and it is thought that these could have been eating or trading premises along with the houses of the civilian population some of whom may have had close links with the *milites* (Sommer 1984, James 2001). In many cases the fort became the nucleus of an extensive settlement and in the more prosperous areas of Roman Britain the settlements continued to be occupied after the army had abandoned the site. Current evidence suggests that the *vici* associated with the forts in Wales were very much dependent on the income from or presence of the military and did not survive beyond the abandonment of the forts.

Other more specifically military buildings that might be expected to be encountered in the environs of Roman forts include a bath house, a *mansio* (official inn or guesthouse), burial monuments, shrines, a parade ground, practice works, roads and leats.

3.2 The Roman Forts of Gwynedd

Aberffraw

Limited excavations in 1973 and 1974 within the village of Aberffraw revealed the bank and ditch of what appeared to be a previously unrecorded Roman fort (White 1979). A trench was cut through two phases of a ditch, rampart and road with Roman military characteristics. The first phase consisted of a ditch with a typical Roman Punic profile and an earth rampart. The ditch was subsequently back filled with rampart material. The second phase of activity comprised a V-shaped recut of the ditch along with a road interpreted as the *via sagularis* or intervallum road. No contemporary rampart was identified. The ditch subsequently silted up and a later, crude and probably post-Roman, rampart was erected. Unusually no closely datable finds were recovered from the excavation making definite interpretation of the site impossible. The Punic ditch, rampart, and possible *via sagularis* strongly suggest a Roman military installation but leave its status and extent open to question. White tentatively interprets the remains as evidence for an auxiliary fort associated with either the campaign of Paulinus in 61 or Agricola in 78. This can only be considered as an hypothesis based on well-documented history until further evidence emerges. There certainly seems to be little point in further investigations as part of the current project because the remains lay within a built-up area and the extent of the fort has not been determined.

Pen Llystyn, Bryncir

In 1957, an hitherto unknown Roman fort was discovered in gravel workings at Bryncir. The site was destroyed within five years of its discovery by further gravel extraction. Much of the plan and history of the fort was recovered by RCAHM under less than ideal conditions as the extraction progressed (Hogg, 1968). Some limited excavation in the area of the commandant's house, *principia* and granaries was carried out but most of the site was recorded during episodes of topsoil stripping and large areas of the fort were not recorded. Fig. 2 shows the outline of the fort, fortlet and annexe along with the extent of the gravel workings.

The fort occupied a flat-topped hill, and was surrounded on three sides by marsh. Two main phases of activity were identified. An auxiliary fort, with dimensions of 117m x132m (1.55 ha) and following the standard layout, occupied the north-eastern part of the hill. This was founded c. AD 80 as part of the process of consolidation following the Frontinian victory. The fort was destroyed by burning about AD 90. Hogg suggests that the fort was destroyed by the Romans as part of a process of deliberate evacuation as a result of native pressure.

The site appears to have been abandoned for about a decade when an attempt was made to re-occupy the site. The beginnings of a smaller fort with an area of about 0.85ha were indicated by the presence

of an unfinished ditch running across the centre of the old fort. The construction of the second fort was abandoned at an early stage and a 0.4 ha fortlet was constructed in the northern quarter of the old auxiliary fort. The internal buildings seemed to consist mainly of storage sheds suggesting that the fortlet maintained a small garrison and may have been little more than a storage compound. Finds were scarce from this phase of occupation and much of this area of the site was destroyed by gravel extraction without detailed recording of the features. Hogg argues that the fortlet was constructed between AD 100 and 130 and was abandoned soon after.

An annexe of about 1.2 ha was recorded at the south west of the fort. This had been mostly destroyed before the excavations took place but Hogg observed some topsoil stripping and a section across part of the area and could recognise no significant buildings. It was suggested that this area was free from buildings and was used as a camping ground for troops on the march. A ditch, two hearths and a posthole were identified in a level V-shaped area to the south-east of the 1st century fort. Hogg suggests that the ditch implies an intention to build an extramural settlement but also states that there were no buildings as substantial as those within the fort in this area suggesting that a *vicus* did not develop in this area. It is however, possible that lightly built structures could not have been detected during the soil stripping process. Hogg also noted that common extramural features such as a bath-house have yet to be identified at Pen Llystyn. The siting of such features must have been constrained by the undulating and marshy ground around the fort and it is possible that extramural buildings may still survive in the more dry and level areas around the fort.

Canovium (Caerhun)

The fort of Canovium occupied a point of strategic importance, standing on the west bank of the river Conwy (which was accessible to ships of up to an about 100 tons) and being the last of the forts on the coastal road between the legionary fortress of Deva (Chester) and Segontium. A further road running south across the mountains joined Canovium to Caer Llugwy and Tomen-y-Mur.

The fort stands on a slight rise in the valley floor and is still visible as a square embanked enclosure of 140m x 140m, covering an area of 1.97 ha. The parish church of St Mary's and its graveyard stand on the north-eastern quarter of the fort. The area of the fort not occupied by the churchyard was excavated between 1926 and 1929 (Reynolds 1938). The first phase of defensive works comprised an outer ditch with a clay and rubble rampart presumably topped by a timber palisade. The rampart was subsequently cut back and faced with a stone wall and detached corner towers were added. The original ditch had silted up, suggesting a period of withdrawal, and the second phase ditch was dug further away from the fort wall. The dating of these phases of occupation has been problematic. Reynolds dated the fort to c. AD 80-145 with the second phase rebuilding of the defences occurring about AD 105-110. A reappraisal of the ceramic evidence by Dr Grace Simpson (1962) suggests a later Antonine date for the second phase stone-built defences and abandonment in the late third or fourth century. Rodger's (1977) re-evaluation of the CINNAMVS and CETTVS potters suggests a date of AD 139-142 for the abandonment. The presence of late 3rd-4th century pottery along with a collection of chance finds of coins noted by Gardner (1925) demonstrate a later reoccupation of the site.

Reynolds also investigated a small annexe on the southern side of the fort which yielded some evidence of civilian habitation between AD 75 and 150. A bathhouse to the east of the fort was excavated in 1650 and 1801 (see Reynolds 1938) and cremation burials were uncovered both to the south-west and north-east of the fort (Gardner 1925). A dock is clearly visible on the bank of the Conwy to the north-east of the fort. Gardner records that the dock had 'been made use of in connection with the modern brick-works across the water'. Trial trenching in 1929 suggested but failed to prove Roman date for the dock. The scattered evidence for extramural activity was confirmed during the dry summers of 1975 and 1976 (Frere and St Joseph 1983). Parch marks revealed a road running from the *porta principalis sinistra* parallel to the river (Plate 1). Extensive signs of ribbon development along the road confirmed the presence of an extensive *vicus*. Further parch marks to the east of this suggested the presence of buildings around the dock. A possible *mansio* within a walled enclosure was also visible to the west of the road.

Bryn-y-Gefeiliau (Caer Llugwy)

The fort stands on level ground within a bend of the Afon Llugwy on the line of the road between Caerhun and Tomen-y-Mur (Fig. 3). Edward Lhuyd first mentions the site in *Parochialia* (c.1665), 'There is a brickwork in Bryn a Gevile by or near Lan Lhygwy in ye parish of Lhanrwst'
More precise details were given by Samuel Lysons in a paper to the Society of Antiquities in 1807 suggesting that parts of the site were clearly visible at this time.

> There are considerable remains of a large Roman building on an estate belonging to the Duke of Ancaster between Capel Kerrig and Llanrwst, near a spot called Bryn Gevailio or the Hill of the Smithy….. Abundance of building materials have been taken from these remains, for several years past. I distinctly traced the walls of one room the dimensions of which were six feet by twenty, and another eighteen feet six inches square, in which were several short square pillars of stone, like those of the Hypocaust under the Feathers' Inn at Chester.

Fenton visited the site and its environs on several days in July 1810

> July 4th A peasant shewed me how the Sam Helen went, which his father remembered a narrow causeway. It crossed a ford which shews pavement to this day under water. It must have led from Tommen y Mur to Conovium. Hear of bricks having been found at a place up the Vale of Llugwy near to Bryn y Geveilie, not much out of the road we take to Capel Curig.
>
> I enquired of a Mr. Price who lives at Hendre Skethin, who directed me to it, who said he had seen many of the Bricks, ……. On the hedge of a moory meadow a little farther on, where I thought I perceived something like an agger with rounded angles round a spongy ground, I picked up a bit of Roman brick, which will induce me to search for a station or Villa near.
>
> July 6th. I then returned to explore the spot below Bryn y Geveilie, where, from bricks having been found there, I concluded there might have been a Roman Station, but on examining it, I found it evidently the Ruins of a Roman Villa of no small extent, the Rubbish displaying every species of Brick and some fine Roman Cement, with some small stunted pillars of wrought stone, such as I had seen at Caerhun; and I make no doubt but that this was the residence of the Officer who superintended the Iron Works and Forges where all their tools and implements were fabricated; there being to this day all over the hills leading to this Bryn y Geveiliau scoria of Iron found.
>
> Almost opposite to this place there is a place called Nant yr Haiarn, where they had Iron works, and to which an old Road led from towards Gwydir, probably connecting it with Conovium. The Roman Villa is situated on a fine flat on the banks of the River Llugwy, below a bend of it, where there appear the remains of an immense stone fence, with many pieces of brick interspersed, as if it was coeval with the Roman establishment there, to prevent the ravage of this mountain stream.' The popular notion is that here stood some monastick building, an error from an early time inherited, and which has ascribed the relics of Roman works in many places of Wales to the early Christian Era, the knowledge of Roman Stations, Roads, Villas, and other edifices of that people not having been cultivated till of late years.
>
> July 14th. I turned in once more to explore the Roman Relic. I followed the line of what I the first day conceived to be the Agger of the Station, and think I may venture to pronounce it of that description, for even in the hedges that intersect it, and the old Barn at the end of it, you perceive Bricks, though by its being under Corn and Hay, there was no possibility of carrying the search so far as to place it beyond conjecture. The Villa was just without it. I went through the ruins again, and once more examined the rude pillars that supported the Hypocaust.
>
> We digressed a little way on from the main road, attended by a peasant, through a beautiful birch grove to the middle of the acclivity on our right, till we came to a place black with ashes, and near it, an immense heap like a tumulus grassed over, of nothing else but cinders and scoria, infallible evidence of there having been some great works there and such heaps are found in several places; the whole hill being called by a name in Welsh signifying the Brow or Hill of the Forges. In regaining our road we had diverged from, we followed

> the old Roman way communicating with those works, and in one place saw for several yards the undoubted old pavement.

The account clearly identifies both a fort and extramural buildings along with a road running into the hills to the south. The scoria (metal working debris) along with the place name strongly suggests that metal working had taken place in the vicinity of the fort. This cannot necessarily be assumed to be contemporary with the Roman remains but the fort could well have provided a focus for this type of industrial activity.

The fort was partially excavated by Hall, Hemp, and Higson in 1920-22 (Hall 1923) who also examined the environs of the fort and recorded that no signs of scoria could be found in the neighbourhood. The fort itself was found to be roughly square with dimensions of 131m x 120m, enclosing 1.57 hectares. An annexe on the west side with dimensions of 131 x 91m was found to contain the foundations of stone buildings. Hemp recorded that the northern portion had, however, been entirely robbed of stone.

The excavations in the fort comprised a series of trial trenches that mainly investigated the fort defences and gates along with minor investigations into the nature of the internal buildings (Fig. 4).

The defences were found to consist of two V-profiled ditches and a turf and clay rampart standing on a stone kerb (reappraisal by Jarrett in Nash Williams1969). Gateways were only identified on three sides of the fort. The eastern gate was centrally placed but both the southern and western gates were found to be offset from the position usually found on a standard Roman fort layout. The buildings in the interior of the fort were stone built but had been extensively robbed and only a small area was examined.

Substantial stone buildings standing at an oblique angle to the defences were identified in the annexe. These buildings appeared to be part of a later phase of activity overlying pottery deposits dated to AD 90- 120. The western building was 37.8m long and 7.3m wide and divided by cross walls into eight rooms. Buildings to the east of this also appeared to be divided up into small interlinking rooms some of which were slab floored. A further rectangular building was uncovered to the south. Hearths were also recorded in these buildings. Interpretation of the buildings in the annexe is somewhat problematic as the excavation records are a little patchy. This area has, at least for the last few centuries, been the most visible part of the site, being Lhuyd's brickworks and Fenton's villa. Unfortunately, this has also led to it being a convenient local source of stone. The hypocaust pillars had obviously been removed between Fenton's visit and the excavations just over a hundred years later. Hall records that the house on the other side of the river, Dolgam, and one of the walls at Swallow Falls had been built from stone from the fort. The current tenant of Cae-awr also records that slabs of stone were taken from the site for local flooring and that the field walls alongside the road, which have since largely been removed, contained dressed sandstone. The hypocaust pillars seen by the early visitors to the site along with the red tile fragments that can still be seen scattered in the topsoil in this area of the field suggest that the buildings functioned as a bath house for at least some of their life. Jarrett however suggests that they may be better interpreted as a *mansio*. The hearths when viewed alongside finds of lead scrap recovered from the site by Hall (amounting to some1.3 kg) suggest that metalworking was being carried out in the annexe. The earliest finds from the site suggest a late Flavian foundation (c. AD 90). No evidence for occupation beyond AD 140 was recorded by the excavators but subsequent re-evaluation of the ceramic evidence by Dr Grace Simpson (1962) suggests that the abandonment could have occurred sometime after the late second century and possibly as late as the fourth century. Rogers (1977) re-evaluation of the Antonine pottery suggests there is less evidence for later occupation than stated by Simpson.

Segontium

Segontium was both the longest lived and most important auxiliary fort in North Wales. It was founded by Agricola in AD 77-8 and was not abandoned until the end of the 4th century. The fort has undergone two extensive excavations (along with several smaller investigations), the first by Wheeler in 1922 (Wheeler, 1924) and the second by Casey and Davies in 1975-79 (Casey and Davies, 1993). The 2.27-hectare fort was originally timber built. The defences and the internal buildings were rebuilt in stone in the first half of the second century. The barracks in the south-eastern quadrant of the fort were replaced in the second century by a substantial courtyard house with its own bathhouse. Casey

and Davies suggest that this was built for a high-ranking official such as a *procurator*. Several phases of rebuilding were undertaken, principally in the early 3rd and early and mid 4th centuries.

The long occupation and high status of the fort resulted in the growth of a substantial *vicus*. The possible stores compound of Hen Waliau still stands 150m to the west of the fort. This mid to late second century structure overlies *vicus* buildings (Boyle 1991). The *vicus* has produced no evidence for use beyond the second century, reflecting the end of the most intensive phase of garrisoning (Arnold and Davies 2000).

Excavations by Gwynedd Archaeological Trust in 1976 (White 1985 ii) revealed rectangular timber buildings standing within ditched enclosures aligned with a street system. These produced evidence for industrial activity such as tile making, metalworking, carpentry and leather working. A *mithraeum* and cemetery stood to the east of the fort.

Llanfor

In the dry summers of 1975 and 1976, a series of parch-marks in permanent pasture revealed a previously unknown Roman military complex (Frere and St Joseph 1983). The siting of the 1997 National Eisteddfod on the site prompted further study of the aerial photographs and a program of geophysical survey (Crew 1997). The geophysical survey confirmed and added to the already detailed crop-mark evidence over much of the site. The earliest Roman features comprise a large (11 ha.) temporary camp with a smaller camp overlapping its north-west corner. A later, 3.8 ha. fort was identified on aerial photographs along with a polygonal enclosure. The fort was not included in the geophysical survey but a series of rectangular anomalies containing possible hearths was identified alongside the road leading from its north-west gate. These features appear to represent a timber built *vicus.*

There is no direct dating evidence for the complex but it is presumed that it predates the nearby fort of Caer Gai. As Caer Gai was founded around AD 75, it seems likely that these features date from either the pre-Flavian or very early Flavian campaigns.

Tomen y Mur

The fort at Tomen y Mur stands at a junction of two Roman roads at a height of 275m above sea level in the Vale of Ffestiniog. The 1.7 hectare fort was founded during the governorship of Agricola and was timber built with earthen ramparts. In AD 120, the defences were rebuilt in stone and the fort reduced in size to 1.3 hectares. It appears that the Tomen y Mur was not garrisoned for long after this and there is no evidence to suggest that it was in use after c. 140. A medieval motte was built on the ramparts of the smaller fort which was reused to form a ready-made bailey.

The most remarkable features of this site, however, comprise an exceptionally well preserved series of ancillary buildings that are all visible as earthworks. A small *vicus*, bathhouse and *mansio* stand outside the south-east gate. A bridge abutment leads to a Roman road beside which is an enclosed cemetery. To the north-east of the fort stands a parade ground with possible surviving *tribunal* (command or saluting base), a small amphitheatre, a leat providing water for the fort and a series of burial mounds. The somewhat remote upland siting of this fort, away from the effects of intensive agriculture, has ensured the survival of a well preserved and visible military and civilian complex. This gives a good indication of the range of features that could be expected to be found around the less visible lowland sites.

Brithdir

A fortlet is visible as a 54m square platform standing on the Roman road to Caer Gai and overlooking the probable route of the road to Tomen y Mur. Excavations by Gwynedd Archaeological Trust in 1974 (White 1978) and 1991 (Hopewell 1997), to the south of the fort along with geophysical survey have revealed a wide range of extramural activity. The first activity on the site appears to have been Frontinian and was possibly short-lived. Subsequent phases of activity saw the construction of a bathhouse and *fabrica* before abandonment between AD 110 and 130.

Caer Gai

Caer Gai auxiliary fort (Fig. 5) stands on a rounded spur on the left bank of the river Dee close to the south- west of Llyn Tegid. The northern quarter of the fort is covered by a farm buildings and a seventeenth century manor house. The fort is clearly visible as a rectangular earthwork 128m x 120m with the bank standing to a height of 3m on the south-west. The south-west side and some of the north-east side retains a recut ditch. Parts of the original rampart wall can be detected in the present-day field boundaries.

Excavations in the southern part of the fort in 1965 revealed three phases of activity inside the turf rampart (Jarrett 1968). The rampart was datable to AD 70-85. Two phases of wooden barracks were identified with a further later anomalous phase of building on a different axis. Salvage excavations by Gwynedd Archaeological Trust in 1982 in the north-west rampart of the fort revealed three phases of defences; the turf rampart identified in 1965, a mid second century stone rampart cut into the original rampart and a massive possibly post Roman earth rampart (White 1986). A description of the fort in the Report of the Annual Meeting of the Cambrian Archaeological Association in 1884 is interpreted by White in an earlier paper (White 1985) as suggesting the presence of a post-Roman citadel. The report states that 'At a little distance [from the *vallum*] an outer dyke encloses a considerable circuit, probably 6 or 8 acres; and on the north-western side are large quantities of boulders, some standing as if they formed a scarpment or chevaux-de frise, and others dispersed as if they had been the foundations of some primitive buildings'. A further discussion by D.R. Thomas in 1885 (Thomas 1885 (i) and (ii)) includes a copy of an 'Old map of Caergai' (Fig. 3) that appears to show a curvilinear outer defence on the west and north of the fort along with local field names. White interpreted the curvilinear feature as the 'outer dyke' and the field name Wern Dwyndir (rough or hummocky land) as being the area of large boulders.

This interpretation is possible but not entirely convincing; the outer dyke is described in the 1884 report as enclosing a considerable circuit of between 6 and 8 acres, it is not clear if this includes the fort but this does not appear to correspond to the small enclosure shown on the 'old map'. Thomas (1885 (i)) also states that 'at some distance an outer embankment may be traced for a considerable portion of its circuit, having once enclosed many acres on the crown of the eminence on which it stands'. It should also be noted that Wern Dwyndir is on the east of the fort and not on the north-western side.

A wide range of extramural activity has been identified at this site. Robert Vaughan of Hengwrt (1592-1666) recorded the discovery of a coin of Domitian and an Early Christian stone with the inscription HEC [sic] IACET SALVIANVS BVRS (? or G) OCAVI(s) FILIUS CVPETIAN[I] (Nash-Williams 1950). Edward Lhuyd recorded in *Parochialia* (c.1665) that 'There was a chapel formerly in the field known as Kae'r Kapele, where there is a pavement when dug up'. Thomas (1885 (i)) also records that 'Bones have been dug up lately in this plot of ground, near the traces of the foundations of a building about 15 feet square, near the centre of the field. The outlines of the building are visible on the surface when the grass is scorched. This field is also called "Y Fonwent" or the graveyard'. A shrine consisting of a burnt square structure and part of an inscription in the name of the First Cohort of the Nervii possibly dating from the early to mid second century was discovered to the north-east of the fort in 1885 (Thomas 1885 (ii)). Flavian burials were also found to the north-east of the fort (Nash Williams 1950).

Aerial photography (Plate 2) has revealed evidence of road systems running from the south-east and north-west gates, along with a road running diagonally from the north-east gate. The outline of a building at the south-west end of Cae Capel could also be seen in enough detail to interpret it as a bath house (St Joseph 1977).

Cefn Caer – Pennal

The fort at Cefn Caer (Fig. 4) stands on a low spur about 100m north-east of the marshy flood plain of the Dyfi. The fort commands a view of both the highest tidal point of the river and its first good crossing point and was probably built in this location in order to allow the unloading of sea borne supplies (Bosanquet 1921).

The ramparts are clearly visible where they coincide with field boundaries to the south-west and north-west. Elsewhere they have been reduced to low spread banks. The sub-Medieval farmhouse of Cefn

Caer occupies the western corner of the fort and a minor road running west from Pennal bisects the northern corner. A mound in the centre of the earthworks probably represents the remains of the *principia*. Cefn Caer was first recorded in 1693 by Maurice Jones, rector of Dolgellau in a letter to Edward Lhuyd. The remains appear to have been well preserved at this time:

> The main fort was on the highest topp of the Hill and built quadrangular; and about it there was a strong wall and a broad ditch…And on the outside of the great ditch next the river Dyfi there were a great many houses built, and a little fort upon a lower banck which was built (as is supposed) of Brick, in that they are there very common. All the out walls are built of a rough hard stone…. From the fort to the water-side there is to this day a broad hard way paved with stones 10 to 12 yards broad in a straight line made through the marsh ground and meadow lands to the River side which is in length about 200 yards.

He also records a number of finds; a coin of Domitian, a little gold chain, a huge brass pan, a 'saphyr' [all from Cae Llwyn y Neuadd] and several pieces of lead and glass. He also collected local information stating that a well, built of lime and stone and at least '10 to 12 fathoms deep', had been found. It was also conjectured that the church at Pennal had been built with stones from the fort being built from 'rough stones with brick among them'.

Fenton visited the site in 1804 and recorded that the Vicar of Towyn had seen the Causeway running from Cefn Caer to the 'fordable part of the Dyfi opposite Garreg'. Fenton revisited the site four years later and 'Could see no ancient pitched way, unless the modern road to the River pursues the same Line'

There are local traditions of tiles, pottery, charcoal, masonry, charcoal and ashes being discovered on the site and in 1866 the Cambrian Archaeological Association made a small excavation and uncovered the remains of a well preserved hypocaust in the banks of the lane running in a southerly direction from the farm. They also recorded 'vast quantities' of ashes and charcoal in some of the hedge banks.

The only dating evidence from Cefn Caer is in the form of stray finds recovered from the site. A stamped tile attributed to the II Augustian Legion (AD 212-22) is said to have come from the fort (Nash-Williams 1969). The present owner Mr Elfyn Rowlands recovered two burnt central Gaulish lead-glazed bottles from the bank of the farm lane. These were reported as being pre-Flavian by R. Brewer of the National Museum of Wales (Brewer 1978).

4. GEOPHYSICAL SURVEY RESULTS

The survey was carried out in six phases over three years by the author and Mr John Burman of Meirioneth Geophysical Survey Team. Mr Burman worked as a volunteer and added greatly to the scope of the project allowing additional areas such as the fort interior at Cefn Caer and outlying areas at Bryn y Gefeiliau and Canovium to be surveyed.

Cefn Caer was surveyed in October 2000 and most of Caer Gai was surveyed in December 2000. Survey conditions were not ideal, as the autumn of 2000 was the wettest on record. Work was frequently interrupted by torrential rain and flooding and was abandoned altogether for 6 weeks as the Caer Gai site was under water and the constant wet conditions had caused a severe malfunction in one of the gradiometers which required a major overhaul.

Bryn y Gefeiliau was surveyed during September 2001 and Bryncir during November 2001. Some of the outlying areas at Bryn y Gefeiliau were surveyed by John Burman in early 2002. Survey conditions were generally good.

Canovium was surveyed in July 2002 and Llanfor in August 2002. Additional areas at both sites were surveyed by John Burman later in the year.

4.1 Cefn Caer

Introduction

An irregular area of approximately 500m x 300m was surveyed encompassing the whole fort and extensive extramural areas extending to between 50m and 250m beyond the ramparts. The survey was carried out in four separate areas that were divided by roads and field boundaries.

The data is presented as four separate trace plots showing the data with only minimal processing to remove the affects of instrument drift (Figs 9-12). The grey-scale plots were combined (Fig. 13) because many archaeological features were found to extend over several areas.

All four areas produced a similar range of results with relatively low levels of background noise. Ditches and roads produced weak and in some cases barely discernible anomalies. Buildings and occupation sites were visible as collections of strong anomalies many with readings of 20 to 30nT. Most archaeological anomalies produce readings of +- 15nT. The higher reading from Cefn Caer suggest significant magnetic enhancement, probably as a result of burning. This hypothesis is supported by the antiquarian references to charcoal and ash in the area of the fort. The surveyors also observed significant amounts of charcoal in an area of erosion in the northern corner of the fort.

The very high readings around the edges of the survey areas were the result of fences, barns and, in one place, a cast iron bath.

A simplified interpretation plan was produced (Fig 14). This shows only the more definite anomalies along with outlines areas of more complex activity. It was felt that the grey-scale plot revealed the maximum amount of information and that any attempt to produce an interpretation plan showing all of the finer detail would tend to be over-complicated and obscure the weaker anomalies.

Results

The most noticeable set of anomalies form the close to square outline (135m x 125m) of the fort immediately to the east of the farm buildings. The rampart (1) is visible as a spread of moderate to high readings. The highest signals, in the northern corner of the fort, appear to be a result of burning, and deposits of charcoal can be seen eroding out of the field at this point. A single ditch (2) stands immediately to the outside of the rampart this can be seen as a faint anomaly around the northern and eastern corners of the fort. A 17-20m wide space (3) separates the inner ditch from an array of three outer ditches (4) on the north-west and south west sides of the fort. This area produced the quietest responses in the survey suggesting that it had been deliberately kept clear of all activity in order to preserve the integrity of the defences. It is difficult to trace the multiple ditches around the north-west of the fort and the wide space between the inner and outer defences does not appear to be present. The fort ditches turn around the western corner of the fort to be lost amid the strong responses produced by the remains of the annexe.

It can be seen that the fort does not sit centrally within the outer defences. This may be due to topographic and other constraints but it is possible that the three outer ditches belong to an earlier phase and represent the defences of a larger wooden fort as opposed to the outer defences of the presently visible fort. Geophysical survey would probably be unable to detect earlier wooden buildings within most of the fort because they would tend produce very weak responses that would be masked by later activity. The area between the two sets of defences is however very magnetically quiet and weak anomalies could perhaps be expected to be detected here. It is clearly beyond the scope of geophysical survey to produce a definite interpretation of the somewhat eccentric defences at Cefn Caer but the possibility that an earlier fort underlies the more obvious anomalies should be considered.

The internal arrangement of the currently visible fort can be seen with a reasonable degree of clarity. The most striking feature is the well-defined *principia* (5) with dimensions of 25m x 28m. The typical elements of a first century *principia* (Johnson 1983) are all visible. The entrance on the south-west leads into a courtyard with a portico on four sides bounded by a cross hall at the rear. At the rear of the building stand a set of five rooms comprising a central shrine room (*sacellum*) with offices to either side. The outline of the building is very similar to the *principia* at Gelligaer (Boon 1969) and Penllystyn. The large mound in the centre of the field suggests that the *principia* is stone built.

The usual arrangement of roads within the fort is well defined. The *principia* opens onto the *via principalis* (6), running from north-west to the south-east across the centre of the fort. A short length of the *via praetoria* (7) can be seen running at right angles to the *via principalis* but this is lost under the farmyard before it reaches the gate. The *via decumana* (8) running from the rear of the *principia* to the north-eastern gate (*porta decumana*) is well defined. The *via sagularis* (9) running around the inside of the ramparts is also visible in places. Two buildings can be seen to either side of the *principia*. The building to the north-west (10) is only partially visible but appears to be a substantial rectangular building and is best interpreted as the *praetorium* (commander's house). The building to the south-east (11) is less well defined consisting of a mass of linear anomalies, some of which appear to be on a slightly different alignment to the rest. This area of buildings extends behind the *principia* as far as the *via decumana*. It is probable that the anomalies represent several phases of building. *Horrea* (granaries) are commonly found in this area of the fort but there is nothing that can be interpreted as such in the results here. An alternative interpretation is that the many cross walls represent the divisions in a complex building such as a *fabrica* (workshop).

Elsewhere in the *retentura* one block of *centuriae* (barracks) (12) can clearly be seen, with the officer's quarters standing towards the corner of the fort. Some of the cross walls dividing the rest of the building up to form the *contubernia* can also be seen. The expected opposite set of *centuriae* (13) are very poorly defined in an area of what appears to be plough dragged remains. Short linear plough scars cross both the internal buildings and the rampart.

The *praetentura* appears to contain three ranges of buildings, those adjacent to the *via principalis* are rectangular in plan (14) with some cross walls visible at the south-east along with a fair degree of internal complexity, which could again represent several phases of building. The internal walls are most pronounced in the south-western half of the building and the building could thus be tentatively interpreted as a stable block with the stalls in this side of the building. The end of a rectangular building (15) with somewhat curved corners can also be seen on the north-western side of the *via praetoria*. The rest of the space in the *praetentura* appears to be taken up by two ranges of *centuriae*. Building 16 is reasonably well defined with some visible cross walls but only the narrow plot taken by building 17 gives any guide to its form.

Only two gates appear on the survey. The *porta principalis sinistra* (18) is visible as a break in the ramparts on the south-east but no detail of guard towers etc. can be seen. The *porta decumana* (19) is even less well defined. The other two gates could not be surveyed as they lie within the garden of the house and the outer farmyard. Neither has been built over and they could be relatively undisturbed.

A subrectangular annexe with dimensions of 110m x 75m can be seen on the south-western side of the fort. The edge of the enclosure is defined by a steep natural drop and a ditch (20) appears to run along the base of the slope. The road from the *porta praetoria* divides the annexe in two. A substantial rectangular enclosure (21) or building, with dimensions of 42m x 40m and of uncertain function stands to the south-east of the road. The remains of stone walls standing to a height of around 0.4m can be seen in the sides of the farm track where it cuts the structure. A mass of high magnetic responses (22) defines the activity to the north-west of the road. Very little structural detail can be seen in this area but examination of the aerial photographs suggests the presence of a bathhouse. This hypothesis is supported by the fact that numerous pieces of Roman tile can be seen in the topsoil in the area suggesting that this is the site of the excavation made by the Cambrian Archaeological Association in 1866. The results from the geophysical survey probably represent a spread of tile and *pilae* all of which, being fired clay, will produce strong magnetic responses.

The most noticeable of the extramural features are a series of rectangular enclosures, probably delineated by ditches, running from the outer defences on the north-east side of the fort. The very well defined anomaly (23) just to the north of the modern road defines the northern edge of these features. The grey scale plot is a little misleading, as it appears to show the anomaly running alongside the road in area A. If the trace plot is consulted, it becomes obvious that the high responses here are a result of proximity to the fence and that the line of the feature probably runs along the modern road. A series of anomalies in area A (24) could represent the return of this feature, but the responses alongside the modern road are somewhat unclear. There does however appear to be at least one visible corner here. Another corner of a rectangular enclosure (25) can be seen on the inside of the (apparently) larger enclosure, but again only two sides can be traced. A further linear feature (26) along with an area of

slightly increased noise can be seen to cross the inner enclosure close to the fort ditches. The multiple fort ditches in this area are not very well defined and it is possible that one, possibly the inner as it is on a slightly different alignment, could be part of the enclosures. The function of the enclosures is unclear, they are obviously of a different phase to the outer fort ditches, they give the impression of cutting the outer ditch but this may be misleading. The road running from the *porta decumana* certainly appears to avoid the enclosures and the activity alongside the road also does not appear to extend into them suggesting that they were in use during at least part of the life of the fort. The function of these features is open to debate, the lack of noise and high responses seen over much of the survey area suggests that they were not used for the type of military or domestic activity seen in the fort and associated buildings and settlements. It is possible given the relatively level area in which these features are sited that the larger enclosure represents a small parade ground. There is no other level area that does not encroach into the marshes for some distance.

The rest of the extramural activity is centred on a series of roads running from the four gates of the fort. The extended *via praetoria* (27) runs through the annexe and then turns sharply to the south-east as it leaves the gate and appears to be leading towards the present road through the marshes. This suggests that the paved way noted in the early accounts of the fort may, as Fenton conjectured, follow the line of the modern road to the river. Beside the road at the very south of the survey area is a circular feature (28) showing very clearly on both the gradiometer results and the aerial photographs best interpreted as a stone built temple or tomb similar to that found at High Rochester (Bidwell 1997). The road running from the *porta decumana* (29) takes a sharp kink apparently to avoid features 23 to 26 before continuing in a north-easterly direction to the edge of the survey area. A considerable amount of activity (30), probably best interpreted as a *vicus*, can be seen alongside this road, concentrated at a distance of between 80 and 200m beyond the gate. The survey results consist mainly of linear anomalies between 10 and 15m in length running at right angles from both sides of the road with a spacing of 5 to 6m. These anomalies can, in places, be resolved into rectangular enclosures or buildings many of which contain a relatively strong single anomaly. Comparison with the results from Llanfor (Crew 1997), which clearly show rectangular plots or buildings containing a single anomaly interpreted as a hearth, helps to elucidate the Cefn Caer results. The basic structures seem to be similar in both cases although the somewhat confusing mass of anomalies in part of the Cefn Caer survey suggest that the buildings may have been rebuilt several times in different positions. The Roman occupation at Cefn Caer was almost certainly longer lived than at Llanfor and it would therefore be reasonable to expect several phases of building within the *vicus*. It should also be noted that this part of the survey exhibits a series of faint linear negative anomalies (31) which run across the road and are probably a result of later agricultural activity. The road appears to fork at the south-western end of the *vicus* with one branch (32) bypassing the fort, presumably to connect with the road leading from the *porta principalis dextra*.

What appears to be a substantial rectangular building (33) with dimensions of 34 x 22m and at least one internal division, stands on the south-western side of the road leading from the *porta principalis dextra*. This could be tentatively interpreted as a *mansione* (official inn). The road beyond this point (34) is joined by a further road from the south-west which appears to overlie the corner of the rectangular building. The road is also flanked on both sides by a series of small strong anomalies (35) similar to the possible hearths in the *vicus* to the north-east (see trace plots, Figs 11 and 12). There are however no buildings visible here. It is possible that the buildings have been ploughed out leaving only the stronger burnt anomalies (again c.f. Llanfor, Crew 1997). Initial impressions also suggest a series of quarry pits although the strong anomalies would only occur if they had been backfilled with strongly enhanced material such as burnt rubbish. The north-western corner of the northernmost survey area (area 4) also seems to show a length of parallel anomalies (36) consistent with a *vicus*. A road presumably runs along this alignment possibly to the south but the small area surveyed makes it difficult to be sure.

Several other anomalies on the survey are of interest. The southern part of the survey displays a criss-crossing series of linear anomalies (37) which could be drains ditches or tracks of unknown age. A linear anomaly, with a rectangular enclosure of 20m by approximately 30m at the western end (38) of it, can be seen towards the north-eastern end of the survey area. This may be a larger plot relating to a phase of the *vicus*, but could delineate the edge of another alignment of the road from the *porta decumana*. An intriguing linear alignment of 8 small of anomalies at a regular spacing of 15m (39) can be traced to the south of the modern road to the north-east of the fort. They seem to be too close

together to represent a fence line and too far apart to be the result of modern features such as telegraph poles and remain open to interpretation.

It should be noted at this point that the interpretation of the geophysical results should be seen as a series of hypotheses that can be tested by excavation, comparison or other techniques. In the case of Cefn Caer, some interpretations are more definite than others. The interior of Roman forts follow a standard layout with only minor variations between sites. The interpretation of the more well defined anomalies, e.g. anomaly 5 interpreted as the *principia*, can therefore be supported by comparison with other sites. The interpretation of the extramural anomalies is less certain. Comparison with other geophysical surveys suggests that the anomalies interpreted as roads and a *vicus* can indeed be interpreted as areas of settlement. The dating evidence for these features is, however, mainly circumstantial and is based on the proximity of the anomalies to the fort, the apparent Roman character of some of the features and the way that some features appear to have been constructed in order to avoid others. This gives us a crude relative chronology and it can therefore be said that it is *likely* that most of these features are contemporary with the fort. It should however be noted that Pennal was the Medieval commotal centre of Ystumanner. A motte stands to the south-west of the village but this does not necessarily mean that the Llys and other Early Medieval occupation was centred around this area. It is possible that the fort provided a focus for occupation long after its abandonment by the Romans and that some of the anomalies represent Early Medieval features. The definite interpretation of these features depends on further study. Limited excavation could probably provide enough dating evidence to conclusively prove or disprove the existence of a Roman *vicus*.

4.2 Caer Gai

Introduction

Evidence from aerial photographs and chance discoveries suggested that the most likely site for a *vicus* is in the large field to the north-east of the fort. A roughly rectangular area with dimensions of 140 x 170m, encompassing most of the field was surveyed. The results are presented as a trace plot (Fig. 15), a grey-scale plot (Fig 16) and an interpretation diagram (Fig 17).

Results

Background noise levels were generally low and archaeological features produced fairly clear anomalies. The most obvious anomaly consists of a road (1) running across the field. The road presumably runs out of the fort gate and turns towards the east-south-east close to the edge of the survey area. A *juncus* free terrace in the somewhat marshy field to the north east of the survey area appears to represent a continuation of the road. Activity of a form that is very similar to that at Cefn Caer can be seen alongside the road. Short linear anomalies (2), probably representing the sides of rectangular buildings or plots, can again be seen running at right angles to the road. Several strong anomalies, perhaps indicative of hearths, can be seen alongside the road. These seem to be associated with the rectangular structures along the eastern part of the road. A well-defined group of six possible hearths (3) with no associated rectangular structures can be seen at the western end of the visible road. Comparable anomalies were detected at both Llanfor and Cefn Caer (see above) and have been interpreted as ploughed out buildings with only the strong anomaly produced by the hearth surviving. A well-defined 35m long anomaly (4) appears to overlie the road with an area of very high responses (5) standing to the north-west of this. A further linear anomaly (6) stands to the north-west of the area of high readings. The two linear anomalies appear to be associated forming the corner of a rectangular enclosure with (detectable) dimensions of 45 x 50m. The function of the enclosure is unclear although the southern side appears to belong to a different phase of activity to the road The high readings in feature 5 are almost certainly a result of burning. The southern part of this area of high responses appears to be a square structure with dimensions of 14m x 14m, possibly representing the foundations of the burnt wooden shrine discovered in 1885 (Thomas 1885). There appears to be a slight kink in the road at this point suggesting that the road was built after the shrine and deviates in its course in order to avoid it.

The northern third of the field produced very even responses with few visible archaeological features being detected. One small area of high responses (7) is visible. This appears to be rectangular with dimensions of 15m x 6m and could be interpreted as a small building. A weak linear anomaly (8) to the south-east of this could represent a path or track from the building.

The western side of the survey area is divided in two by a somewhat vague linear anomaly (9) which runs along the base of what appears to be a natural break of slope. This anomaly can best be interpreted as a ditch, probably dug to carry the run off from the slope. An area of short linear anomalies along with stronger single anomalies similar to the *vicus* alongside the road (2) can be seen to the north-east of ditch 9. It is worth noting that this area produced a higher level of background noise than its surroundings suggesting some artificial magnetic enhancement (see trace plot). A small circular anomaly (10) could be interpreted as a shrine or grave, similar to that detected at Cefn Caer. These anomalies are, however, very weak and poorly defined and while they superficially appear to represent further strip development alongside a road they may only be the result of plough scarring on a slight break of slope in the field.

The area to the west of ditch (9) comprises two areas of greatly differing responses. The northern part is magnetically very quiet. The southern part contains a mass of strong anomalies (11), some obviously linear, others less well defined. The anomalies are consistent with the remains of a large building or series of buildings, covering an area of 50m x at least 30m but no definite outlines can be traced. The linear anomalies are on a slightly different alignment to the fort itself and may therefore be either aligned with the road as it turns into the fort gate or possibly not contemporary with the fort. The area between the edge of the survey and the lane was unfortunately unsuitable for survey as it was surrounded by a wire fence and was very muddy. It was, however, possible to feel a large amount of stone beneath about 40cm of mud when the area was walked over suggesting the presence of substantial foundations. It should also be noted that a small building is shown just to the south of this area on the 'Old map of Caergai' (Fig 6). The base of the building still stands against the field bank and it is possible that some of the stone has come from this source although this does not account for the linear anomalies.

The geophysical results are, as in the case of Cefn Caer, open to alternative interpretation. The development alongside the road, particularly considering the existence of the shrine, is probably contemporary with the fort. There is however, evidence for Early Medieval activity in the area in the form of an early Christian stone and it is possible that some of the features detected on the survey could date from this time. Limited excavation could provide much information about both the features alongside the road and the state of preservation of the archaeology in this area.

4.3 Pen Llystyn

Introduction

The fort originally stood on a flat-topped hill of glacial gravel. Most of the fort and the hill have now been quarried away and only a fragment of the north-western ramparts survive (Fig. 2). Hogg failed to identify a bathhouse or any other significant extramural activity although an annexe was recorded but had unfortunately been mostly destroyed before Hogg could examine it. It was therefore felt that there was a good chance that extramural structures could have been sited away from the limited area available for development on the hill top. Hogg also recorded an old road that he thought could be Roman running down a spur to the south-east of the fort.

Much of the land surrounding the site of the fort and hill is either sloping or very wet and therefore unsuitable for survey and presumably for settlement although the quarry could have changed the local drainage patterns to some extent. A somewhat arbitrary cut off point of around 200m from the fort (assuming that a *vicus* would be close to the fort) was chosen and all of the land within this radius was field walked and examined in detail. Debris from a bathhouse can often be seen as tile fragments in the topsoil. Particular notice was therefore taken of the patches of erosion that occurred in many places around the fort site but no signs of Roman activity were found. Pieces of degraded brick or tile were found in molehills in between the railway cutting and road between geophysics area A and B. Degraded 18/19th century bricks were, however, recovered from the edge of lane leading to the west and it was therefore concluded that the debris probably originated in imported material for the road or railway. Two relatively dry, level areas around the fort were eventually selected for geophysical survey along with an area along the spur that Hogg identified as being the route of the old road. The data is presented as three separate trace plots showing the data with only minimal processing to remove the affects of instrument drift (Figs 18-20). The grey-scale plots for areas A and B are

combined (Fig. 21) and area C is presented separately (Fig. 23). Figs 22 and 24 show interpretation plans for the grey-scale plots.

Results

Area A

A steep terraced path runs down the edge of the hill from close to the north-western gate of the fort. The land at the bottom of the path is relatively flat and contains a 19th century agricultural building and several small platforms cut into the base of the slope. Hogg thought that this area could have been the site of the bathhouse but limited investigation revealed nothing but modern agricultural structures (Hogg 1968). Two hypotheses have been put forward about the line of the road from this side of the fort. Hogg suggests that it follows the line of the present track along the high ground to Llystyn Gwyn. It should be noted that an Early Christian inscribed stone was recovered, 300m to the north of the fort, from close to this line. Waddelove (1999) suggests a line following the terraced path from the north-west gate and then north across the fields to the present A487. A track was shown following this line on the 1888 OS map.

An irregular area (area A Fig. 21 and 22) with dimensions of 100 x 200m was surveyed between the base of the slope below the fort and the modern road. The north-eastern end of the survey was bounded by very boggy land that was unsuitable for survey.

Background noise levels were found to be low and there was no interference from the underlying geology. The most striking feature of the results is a slightly skewed rectangular feature (1 Fig 22) forming a parallelogram with dimensions of 60 x 45m enclosing an area of 0.27 ha. This is best interpreted as a Roman practice camp. A double, roughly linear anomaly (2) could perhaps be interpreted as a road or track but could be of any age. It does not however follow the line of the road shown on the 1888 map suggesting that this route may have been in use for some time and may have varied in its direction. A series of drains or silted ditches that can be seen as depressions in the field (3 and 4) produced clear anomalies. A further possible ditch or drain (5) was detected at the south-west of the survey area. A series of weak parallel anomalies (6 and 7) appear to be the result of ploughing.

Area B

A level raised area of land stands 160m to the west of the fort site. The relative proximity of the area to the fort suggested that this would be a likely site for extramural buildings. The level part of the area was divided by a ruined wall and wire fence. A roughly rectangular area with dimensions of 140 x 60m was surveyed to the north of the wall and rectangular area with dimensions of 40 x 60m was surveyed to the south. The western part of the survey was quite noisy and contained a strong geological anomaly. The strongest artificial anomaly (9) appears to be a ploughed-out field boundary; the southern part is still visible on the ground. A weaker linear anomaly (10) may represent a boundary pre-dating the modern field system; its southern side is not well defined and could either continue in a southerly direction or turn towards the east. A very faint rectangular anomaly towards the west of the area (8) could represent the outline of a small building with a hearth represented by a stronger response in the interior. This very weak feature cannot be interpreted with any certainty however and could also be an artefact caused by intersecting plough scars. Feature 10 could represent an enclosure associated with the possible building but interpretation must again be regarded as tentative. The southern area contained criss-crossing linear anomalies that appear to be agricultural in origin, probably representing modern plough scars and drains.

Area C

Hogg stated that ‘the only reasonably certain stretch of Roman road is on the south of the fort’. This road can still be seen as a terrace running down the spur to the east of Bryncir village. The upper part has been buried beneath spoil from the quarry. There are level areas to the west and east of the road which could have contained extramural features which are often found alongside the roads running from the fort. A rectangular area standing about 200m south of the fort site with dimensions of 120 x 60m was surveyed.

The terraced road (1 on Fig. 24) is clearly visible, as is the line of a footpath (3) shown on the 1888 OS map. An extremely weak anomaly (2) was detected on a natural terrace to the east of the road. This cannot be clearly seen on the grey-scale print out but is a little clearer when viewed on a computer screen. It could be tentatively suggested that this represents the foundations of a wooden building with dimensions of 22 x 15m but anomalies this weak are difficult to interpret and are often found to be caused by chance combinations of agricultural or geological features. Anomalies 4 and 5 could be the result of burning but are best interpreted as being of geological origin.

Overview

The possible practice camp in area A and the road in area C are the only anomalies that can convincingly argued to be of Roman origin. The survey areas were selected because they appeared to be the most likely sites for extramural buildings within 200m of the fort. There were, however, no indications of a *vicus* or bathhouse in the areas examined. Most of the rest of the area within this radius was found to be steeply sloping or waterlogged. It should however be noted that other unexplored areas have been lost; the railway and road cut a 45m wide swathe through the land to the west of the fort and Bryncir village occupies a large area to the south.

Fig. 2 shows the extent of disturbance caused by gravel extraction. Hogg was able to record much of the fort but the area around it was not examined in detail and it appears that parts of it were not recorded at all. Hogg records that much of the annexe had been destroyed before the fort was recognised and that no part of the interior was cleared under satisfactory conditions. Hogg was able to examine 'a good clean section…running for about 230ft west by north from near the centre of the fort's south-west gateway' apparently during topsoil stripping. Only a few postholes and a drain were identified, and he concluded that the annexe was free from buildings. This situation would be anomalous when compared with annexes so far discovered at the other auxiliary forts in Gwynedd. In the case of Cefn Caer and Bryn-y-gefeiliau and perhaps Caer Gai, the bathhouse stood in the annexe along with other substantial buildings. It does seem likely that Hogg would have identified the scatter of bricks and tile that are usually present in the vicinity of the ruins of a bath house, had one been present either in the annexe or elsewhere on the top of the hill. At Caer Gai and Bryn-y-gefeiliau, the topsoil is peppered with red tile fragments for at least 50m around the site.

Hogg recorded a ditch and a series of 'minor features' to the south-east of the fort. The ditch was thought to be contemporary with the fort and appears to have enclosed a triangle of level ground on the hilltop. This would presumably have been bisected by the road identified running down the spur to the south. This would appear to have been the ideal location for a *vicus*. Hogg was able to examine a band about 100 ft wide and 300 ft long that had been exposed by scraping and recorded two hearths, a post hole and a rubbish pit. He records that 'some of the gravel surface had been removed, but not enough to destroy traces of any buildings as substantial as those in the fort' and concludes that an extramural settlement did not develop in this area. It could be argued, particularly in the light of the evidence from the geophysical surveys at Cefn Caer and Caer Gai, that the buildings of a *vicus* would have been wooden and the remains relatively slight and that this type of site could easily have been destroyed during topsoil stripping or even by earlier agricultural activity. The slight remains recorded by Hogg could therefore have been the denuded remnants of a *vicus* alongside the road running south from the fort. This rather sparse evidence remains the best candidate for extramural settlement at Pen Llystyn.

4.4 Bryn y Gefeiliau (Caer Llugwy)

Introduction

The fort and annexe at Bryn y Gefeiliau occupy a level area bounded on the north and west by the Afon Llugwy. Hall (1932) produced an outline of the fort and annexe and details of some internal buildings (Fig. 4). The line of the roads running from the fort and the extent of any extramural activity had not been established. It was decided to survey the two fields containing the known archaeology in their entirety in order to establish the direction of the roads from the fort and ascertain the level of immediate extramural activity. It was hoped that this would provide sufficient information to allow further survey to be carried out in the surrounding fields. The data is presented as four separate trace plots showing the data with only minimal processing to remove the affects of instrument drift and

directional error (Figs 25-28). The grey-scale plots were combined (Fig. 29) because many archaeological features were found to extend over several areas.

Results

Area A

The three fields containing the fort and annexe comprising a subrectangular area of 330m x 190m were surveyed in their entirety. Background noise levels were generally low although there were several areas where intrusive responses were produced by the underlying geology. The strong anomaly in the south-east corner is almost certainly a result of igneous geology lying close to the surface. A broad diffuse anomaly typical of more deeply buried geology could be seen to run from the north-west corner to the centre of the survey area. This was removed from the final results using a high pass filter. A similar unfiltered geological signal can be seen running across area B (below).

The fort and annexe is defined by a mass of rather scattered anomalies that can only be resolved into archaeological features in a few places. A simplified interpretation plan was produced (Fig. 30), delineating the more definite anomalies.

The line of the rampart (Fig 30, 1) can be seen as a well defined band of noise at the eastern end of the fort and less certainly across the centre of the remains (2). A double linear anomaly (3) appears to represent the rampart on the north. Hall recorded a parallel pair of 'massive foundations' here along with an outer ditch which is just about visible on the grey-scale plan. A double ditch (4) defined by a weak negative anomaly stands within 10m of the rampart at the north and east but is less clear at the centre of the fort. Hall suggests that the modern ditch (5) may well follow the original line of the defences. Three ditches (6) including, including one on a slightly different alignment, suggesting a recut, define the south-eastern and south-western sides of the annexe.

The *principia* (7) is the only well defined building in the interior of the fort. This has dimensions of 25m x25m and stands at the south-western end of the currently visible square earthwork. The courtyard and rear range of rooms are clearly visible, as is a cross hall defined by a wall running across the centre of the building with a central entrance. This design is similar to the phase 1 *principia* at Segontium (Nash-Williams, 1969). Other *principia* in North Wales e.g. Cefn Caer do not include a cross hall. The status of a further wall at the rear of the *principia* is less certain as it is not entirely clear if it is part of the same structure. One dividing wall in the rear range of rooms does however appear to continue and link the two structures suggesting that a further range of rooms were incorporated into the rear of the *principia*. It should be noted that there appears to be little chronological significance in *principia* design (Johnson 1973).

The position of the *principia* at the far south-western end of the fort is clearly anomalous. The buildings identified by Hall in the annexe were set at an oblique angle to the defences and the rest of the fort. The geophysical results clearly show fragments of buildings aligned to the fort defences (8 and 9) along with other features (10) more closely aligned to the buildings identified by Hall in the annexe. This suggests that two phases of buildings are present. The overall extent of the area of increased noise associated with the buildings aligned with the fort describes the outline of what is presumably an earlier, more traditional, rectangular fort with the *principia* at the centre and the usual arrangement of roads and gates. The dimensions of this fort are about 190m x 95m enclosing an area of 1.8ha. The ditches and gate identified by Hall behind the *principia* show the fort was subsequently divided into two with a new array of defences being constructed behind the *principia* and the *retentura* being reused as an annexe. This arrangement explains the curious offset positioning of Hall's *porta decumana* which could presumably not be placed directly behind the rear wall of the *principia*.

None of the other buildings in the fort are clearly visible, most being defined by patches of increased noise between the relatively quiet roads. The presence of cross walls in the long buildings at the front of the *praetentura* (11 and 12), however, identifies them as four blocks of *centuriae* (barracks). The building (13) to the north of the *principia* is hidden by modern field boundaries. Part of the outline of a rectangular building to the south of the *principia* is visible as a weak anomaly. The rest of this area is masked by a series of high responses (see trace plot Fig. 25), characteristically produced by burnt material. This could be interpreted as evidence for either destruction by fire, the presence of roofing tiles (fired clay) or the presence of kilns or metalworking debris.

No other buildings can be identified although parts of the internal road system, characterised by slightly quieter linear areas, help to define the organisation of the fort. The *via praetoria* can be seen to run from the *principia* and out of the *porta praetoria*. The road then continues across the field and can then be traced through the woods to the east. A linear series of ten regularly spaced anomalies were detected just to the north of the road. These appear to be similar to a line of anomalies detected at Cefn Caer (Feature 35 Fig. 11) and could be interpreted as either cremation burials or quarry pits.

Most of the *via principalis* (18) is hidden by a modern field wall although the northern end appears to run to a gate (19) in the north-western rampart. Hall did not identify a gate on this side and the fort is often portrayed with three gates (e.g. Ellis Jones 1969 in Nash Williams). It is difficult to get an exact correlation between Hall's plan and the geophysical results because there is a slight discrepancy in scale, but it appears that no trenches were dug in the area of the gate as indicated by the geophysics. The gate on the south-east side cannot be seen in the geophysical results. It should be noted that fragments of a cobbled road, initially marked by a farm gate on the southern side of the present minor road, can be traced for some distance into the woods on the presumed alignment of the Roman road.

The survey in area A extended to 50m beyond the fort defences on the south-east and north-east sides and it was hoped that there would be some indication of extramural settlement in this area. A linear anomaly (20) best interpreted as a ditch or possibly a bank (cf. anomalies 1 to 4) can be seen running parallel to the fort defences 50m outside the north-eastern gate. This cuts the line of the possible cremation burials and is therefore probably of a different phase. The feature is not visible on the ground although its southern end has a modern field boundary built over it. The ditch is aligned with the defences and could therefore be Roman, possibly forming part of a larger enclosure with the south-eastern side defined by the line of the present road. This hypothesis can only be tested by excavation and it should be noted that the feature could well be a post-Roman field boundary. Three small, fairly strong, regularly spaced anomalies lie on one side of the line of the ditch (21) a similar group of three anomalies (22) can also be seen on the inside of the north-western side of the rampart. Simpson (1962) suggests that a deposit of ashes recorded in Hall's excavations indicates the presence of ovens on the inner side of the rampart. The ashes could also, presumably, be a by-product of certain types of metalworking hearths. Anomaly 22 could best be interpreted, as some type of burnt feature as could 21 particularly if the linear feature 20 is a bank. Elsewhere in area A, a few very faint linear anomalies aligned with the fort can be seen between the defences and the outer ditch (20) with one (23) that can tentatively be resolved into a rectangular feature. These types of anomalies could be the result of plough scarring but it is possible that slight features such as the foundations of wooden buildings could be present. There is however, nothing here to indicate the presence of characteristic roadside ribbon development seen at Cefn Caer and Caer Gai. There are areas of increased noise (24 and 25) containing vaguely linear or perhaps rectangular anomalies between the present minor road and the fort some of which may relate to extramural activity but there is again nothing that resembles the well defined features detected at Cefn Caer and Caer Gai.

Area B

Much of the land around the fort is unsuitable for survey as it contains numerous large rock outcrops, is wooded, and is very uneven. These areas can also be seen as less than ideal sites for *vicus* development. It was felt that a few areas of more even ground between the outcrops held the potential for the detection of extramural remains. An area of relatively level and clear ground stands 70m to the south-east of the fort. An irregular area with dimensions of 110m x 70m was surveyed. A diffuse anomaly caused by the underlying geology was detected across the south of the area. Elsewhere the responses were unusually quiet and no anomalies were detected.

Area C

The field on the opposite side of the river to the south-west of the fort is relatively level and high enough to escape all but the most severe flooding. The river is at present easy to cross at this point. A 10m wide, linear terrace is clearly visible running across the field and it was thought that this could represent a road running from the fort. An irregular area with dimensions of 170m x 120m was surveyed. The area was found to be, in general, magnetically quiet with two anomalies caused by underlying geology being the most noticeable features. The linear terrace could be seen as a weak anomaly running across the field (26). Another similar anomaly (27) was detected 45m to the south-

east. There is nothing to suggest that these features are of Roman origin, and it was felt that they are probably a result of recent drainage or other agricultural activity. The north-western end of the field was noticeably more noisy than the rest and one concentration of greatly increased noise (28) is particularly noticeable on the trace plot (Fig. 27). The random orientation of the responses in this feature suggests that it is not geological and could be the result of burnt or ferric debris, and could possibly be a metalworking site.

Area D

This area, standing across the river, 50m to the north of the fort, is also level and high enough to escape flooding. An L shaped area was surveyed with dimensions of 180m x 80m There were two geological anomalies in this area, along with one strong anomaly (29) that could be a result of either geology, buried iron or an *in situ* burnt feature. The linear anomaly (30) at the north of the survey is most likely to be caused by a modern drain. River terracing (31) at the far east of the survey was also detected. There was nothing to suggest Roman activity in this area.

Overview

The results from the geophysical survey at Bryn y Gefeiliau were not as well defined as those from Cefn Caer or Caer Gai. This could reflect the level of sub-surface survival, the records of stone 'quarrying' from the site suggest that severe damage may have occurred to many areas of the monument. There was enough detail to identify an earlier rectangular fort that was subsequently divided along the line of the *via quintata* to form a square fort and a substantial annexe. Several areas around to fort were surveyed but, in marked contrast to the dense activity around Cefn Caer and Caer Gai, no evidence has emerged for presence of a *vicus* or any other extramural buildings.

4.5 Canovium

Introduction

Two areas were surveyed. The northern area included most of the field containing the *vicus* identified by St Joseph along with additional grids in fields to the west and north. The combined survey formed an irregular area with dimensions of 375m x 260m. An iron water main lies just to the north of the fort producing a very strong 5 to 10m wide anomaly that masks all other survey readings. The southern area with dimensions of 225m x 180m comprised most of a large flat field to the south and south-east of the fort. The area to the west of the fort is now a golf course and the area to the east is too steeply sloping for geophysical survey. The results are presented as a grey scale plot, clipped to + -15nT (Fig 31), two trace plots showing the raw data (Figs 32 and 33) and a simple interpretation diagram (Fig 34).

Results

Area A

The most striking feature of this survey is the Roman road (1) running from the fort in a north-north-easterly direction before curving to pass through the current field gate. It is unusually wide being up to 10m across in places. The wide parts of the road were visible as parchmarks in 1975/6 and St. Joseph (1977) suggested that this indicated the presence of a market. It is, however, worth recording that the road was still in use until superceded by the current track (5) in the 1970s and that the wide parts could well be the result of resurfacing and other changes in the post-Roman period. The anomaly produced by the road is, in itself, very weak and is mainly defined by the high levels of activity to either side. The course of the road is consequently barely visible when the activity lessens at the north of the survey. The activity along side the road is very dense and is similar to that identified in the *vici* at Cefn Caer and Caerhun. The small fairly strong round anomalies, best interpreted as hearths, are very densely packed and the associated linear anomalies appear to indicate a series of overlapping rectangular plots or buildings. This pattern of occupation perhaps reflects the relative longevity of the fort, with several superimposed phases of wooden buildings being present. Many of the hearths fall within the buildings although it is noticeable that there are scatters elsewhere, particularly to the west of the *vicus*. These could well indicate small scale industrial activity. The density of roadside activity appears to fall into three zones. There are few hearths in a zone extending 70m from fort and there are

traces of a different building style here. Two larger buildings (3) and (4) can be seen to the east of the road. Both appear to be subdivided into smaller rooms and could be tentatively interpreted as courtyard buildings. The most dense activity occurs between 70m and 200m from the fort. After 200m, there are still some hearths but the overlapping buildings seem to peter out. The *vicus* extends as far as the modern field boundary and stream 260m from the fort. The zoning exhibited by the roadside development hints at a degree of planning, with higher status, perhaps official, buildings near the fort followed by a concentration of smaller buildings and workshops. The more distant hearths could indicate an attempt to keep hazardous and polluting industrial activity away from the fort.

The Roman road then continues in a north easterly direction along the banks of the river. A small, possibly circular, anomaly beside the road 340m from the fort could tentatively be interpreted as a tomb. The writer was contacted by Dave Alexander, a local amateur historian with a good knowledge of the fort and its environs, while carrying out the fieldwork. Mr Alexander claims that a series of low mounds can be seen alongside the road, when the grass is short, just beyond the northern edge of the geophysical survey. These were not easily visible during the summer although there were clearly some large stones present close to the surface. There is a possibility that the mounds represent roadside burials. An urn containing a cremation was recovered 1878 during building works further along the road, at a distance of about 600m from the fort. Unfortunately, further investigations into a possible cemetery were beyond the scope of the current project. Two other possible roads (7 and 8) can be seen on the survey, both leading to the boathouse (9) and dock (10). It is known that both road 8 and the dock were used during the rebuilding of Caerhun Hall. They also may have had links with a post-Medieval brickworks on the east side of the river. Both a road and the jetty were sectioned by Reynolds (1938). Both appeared to contain several phases of construction and although no secure dating evidence was obtained it was concluded that 'on the whole the balance of probability may be said to be in favour of the Roman origin for both'. Reynolds' road follows the line of anomaly 7 but runs a few metres to the north on his plan. It seems likely that they are the same feature and that the plan is slightly inaccurate. Possible road 8 remains undated but could be considered as another candidate for a Roman road to the dock.

Several linear anomalies (11 to 18), mostly to the west of the road are best interpreted as ditches. Ditch 11 appears to bound the activity associated with the *vicus*. An almost identical pattern of settlement, consisting of roadside buildings with scattered hearths at the rear, bounded by a somewhat meandering ditch was identified during a gradiometer survey at Maryport (Burnham, Keppie and Fitzpatrick 2001). Ditch 11 could also be considered to form part of a much altered, larger camp if considered along side features 12, 13 and 14. This tentative interpretation could only be proved by excavation. Feature 17 appears to terminate at ditch 11 and could be contemporary with it The group of anomalies directly to the north of the fort (15) are difficult to interpret and clearly include several phases of activity. There is however nothing of obvious Roman character. Feature 16 appears to cut through the features in the *vicus* and is probably post Medieval or modern. It is likely that most of the current field boundaries date from the early 19th century or later and it can thus be expected that some of these linear anomalies relate to an earlier field system. Curvilinear anomaly 18 is relatively slight and cannot be traced reliably beyond the magnetically quiet area north-west of the boathouse. It is on sloping ground but could tentatively be interpreted as a representing part of an enclosure possibly of prehistoric date. Feature 19 is probably a post-Medieval boundary on the edge of the marsh.

Area B

The western part of the field to the south of the fort is level and stands above a steep slope down to the marshes. Reynolds excavated several trenches in this area and identified a range of activity adjacent to the south wall of the fort, some of which can be recognised on the geophysical survey. Anomalies 20 and 21 were identified as a seventeenth century farm and yard. The curving corner of anomaly 21 did not, however, fall within the excavation trench. It is parallel to the curved corner of the fort and appears to be an outer defensive ditch suggesting an earlier origin for the farm boundary. A small annexe was partially excavated to the east of the fort gate. Anomaly 22, an area of increased magnetic noise, corresponds roughly to this feature. Anomaly 23 corresponds to one of Reynolds' excavation trenches. The road running from the south gate is barely visible on the geophysical survey, although Reynolds traced two phases of the road, on slightly different alignments, for 142 yards. He records that 'all efforts to trace it beyond this point failed, and the metal had clearly been removed; but it was thought that what had been its bed was detected some 60 yards beyond on a line bending towards the south-west'. A linear area of noise roughly corresponds to the line shown on Reynolds' plan. The plan

does however seem to show the road a few metres below the break of slope at the edge of the flat part of the field. It is thus possible that the line of the road was not accurately plotted. Two parallel geophysical anomalies (25 and 26) were detected at exactly the same distance from the fort that Reynolds looses the line of the road, these are crossed at right angles by a further shorter anomaly (27), a few metres away from Reynolds' section as marked on his plan. It seems to be likely that these geophysical anomalies correspond to the remains of the road and the excavation trench (although it could be coincidence). The two parallel anomalies could thus be roadside ditches. They cannot, however, be traced all the way back to the fort possibly because the signals are masked by plough scars on the same alignment.

The rest of the field provides a direct contrast to the to the area to the north of the fort with surprisingly little activity visible on the geophysical plot. There are clear signs that this area has been more intensively cultivated, with regular plough striations visible across all but the relict farmyard, suggesting that the ploughing was carried out when the farm and yard were still upstanding. There are a few hearth/fire anomalies in the southern half of the field but these could be of any date. A cluster of short linear anomalies to the south-west of the fort (28) are too faint to fully resolve but could represent the foundations of light, perhaps wooden, buildings. There is obviously not enough information to assign these features to any historical period.

A line of small, evenly spaced, possibly ferrous anomalies (29) cross the field in front of the fort. These remain open to interpretation but are very similar to feature 39 at Cefn Caer.

Overview

The gradiometer survey at Canovium produced clear and detailed results. It confirmed the line of the road and *vicus* to the north of the fort and revealed very dense activity in the central part of the settlement. This activity appears to consist of several phases and presumably reflects the relative longevity of the fort. A degree of zoning is evident in the *vicus* and is particularly noticeable close to the fort where occupation is relatively sparse. This implies a degree of centralised planning. The area to the south of the fort was shown to be very different to the northern *vicus* with little activity apart from that previously recorded by Reynolds.

The roads around the fort were relatively difficult to detect using gradiometer survey. The road through the *vicus* is defined by a lack of anomalies, which makes it clearly visible compared to the activity to either side. When this activity is lacking the roads are harder to see. The southern road is just about visible, heading straight out of the fort gate and then probably turning to the south-west. Two probable roads down to the currently visible docks add weight to Reynolds' hypothesis that the Roman docks were in this area. The possible docks, identified by St Joseph (1977) further to the north, now seem unlikely. The level of detected roadside activity is very low in this area and the features seen on the aerial photograph appear to be modern drains and channels that are presently visible on the edge of the marshes.

4.6 Llanfor

Introduction

A single roughly rectangular area of 300m x 360m, extending into four fields, was surveyed. This area extends the 1997 survey (Crew 1997) to the south-east and encompasses the entire fort and some peripheral features. A test area was surveyed that showed faint anomalies consistent with the foundations of wooden buildings. The survey procedure was modified to produce an absolute minimum of noise in order to allow anomalies at the maximum range of the equipment to be detected. This involved very careful selection of zero reference point, frequent balancing of the gradiometers and slower data collection. The results are presented as a trace plot showing the raw data (Fig. 35) a greyscale plot clipped to +-15nT (Fig. 36) and an interpretation diagram (Fig. 37). A plot showing both the current and the 1977 survey is also included (Fig. 38).

Results

The survey revealed a detailed plan of the complete fort and its immediate environs. A series of faint anomalies in the fort interior are clearly a product of the foundation trenches and post-holes of wooden buildings, along with internal drains and roads. The various elements of the survey are analysed below.

The fort defences

The fort is close to square with dimensions of 202m x 184 including the ramparts and covering an area of 3.86 ha. The outer defences consist of three ditches (1, 2, and 3) on all sides apart from the northern part of the western defences. A steep banked stream currently runs alongside the fort at this point and it may have been impossible to dig the outer ditch in sloping ground, which would itself have formed a natural defensive feature. The geophysics clearly shows that the outer ditch is missing here but, due to the effect of modern field boundaries and sheep pens, cannot show the exact point of its terminus. The inner ditch can be traced across the *porta decumana* and the *porta principalis dextra* but not the other two gates. The ditch was presumably bridged at these two points.

The ramparts (4) are visible on the survey as an 8m wide anomaly containing a great variety of positive and negative readings. Some patches of stronger signals suggest burning. A few possible structural anomalies are visible within the rampart, the most common being a linear feature along the centre perhaps marking the line of the timber breastwork. The width of the rampart suggests a simple turf construction although occasional lines of possible burning on the inner and outer faces could indicate timber components. Groups of four anomalies at the end of the rampart at the *porta praetoria* presumably indicate the postholes of gate towers. Less clearly defined towers are evident at the other three gates.

Internal drains

Well-defined linear anomalies run alongside the *via principalis*, the *via praetoria*, the *via quintata*, and another minor internal road. These are best interpreted as drains.

The Latera Praetorii

The central range of buildings has produced particularly clear results. The *principia* (5) with dimension of 38m x 36m follows the same layout as Pen Llystyn (Hogg 1968) but is about 10m wider. The colonnaded courtyard and the cross hall are defined by a series of anomalies produced by large post-holes. A rear range of five rooms is also well defined.

To the south of the *principia* is another colonnaded courtyard building (6). This is presumably the *praetorium* and is very similar in layout and size to that at Pen Llystyn, with a central colonnaded courtyard surrounded by a single range of rooms on three sides and either three ranges of rooms or two ranges with a corridor at the rear. A very strong anomaly in one of the rooms at the rear could indicate an oven in a kitchen.

A somewhat irregular and complex building (7) with dimensions of 46m x 35m, can be seen to the north of the *principia*. The exact layout of the building is difficult to trace but there are clearly many small rooms and a collection of post holes in the southern part of the building could indicate a courtyard. The rather irregular layout of the building suggests that it could be a *fabrica*. Many examples e.g. Valkenburg 1 and Oberstimm 1b (Johnson 1983) include a courtyard, usually containing a water tank. The other large building that could be found at this point in a fort is a hospital. These are generally well planned, regular courtyard or corridor buildings. Building 7 appears to be too irregular to be interpreted as such. Three evenly-spaced hearth type anomalies, aligned with, and thus suggesting that they are contemporary with, the building could indicate metalworking hearths.

To the north of the possible *fabrica* lies a magnetically quiet area (8), with a faint northern boundary. This could be interpreted as a yard. At the north of the *latera praetorii* stands a well defined building of uncertain function (9) containing a range of 9 small rooms.

At the south of *latera praetorii* is a two or perhaps three roomed building (10) with hearths in the western side. It could be suggested that this is an internal bathhouse. This speculative interpretation is supported by the fact that most of the area around the fort and above the flood plain of the river has been surveyed and no external bathhouse has been identified.

The retentura

The subdivided buildings in the *retentura* can be interpreted as barrack blocks (*centuriae*) with a good degree of certainty. They stand in two blocks of six (11 and 12), each containing a single barrack at the north and south, flanking two double barracks at the centre. Each single barrack has dimensions of 60m x 10m. This is a little larger than the typical 45 to 50m long auxiliary barracks found elsewhere in Wales (Nash Williams 1969), and smaller than the usual 75m long examples from legionary forts. The anomalies produced by the barrack walls are faint making it difficult to fully resolve the plans. The officer's quarters are clearly towards the rampart and are about 15m long, with perhaps three lateral subdivisions. There is a very clear hearth anomaly at the outer end of the officers quarters producing a characteristic double anomaly in the paired barracks. The men's quarters appear to consist of more than the standard 10 *contubernia*, careful examination and extrapolation of the faint anomalies (see also barracks in the *praetentura*) suggest 12 pairs of rooms. A standard 10 room auxiliary barrack would house one century with a block of six housing a *cohors quingenaria peditata* (infantry battalion). The extra rooms may not be significant, but could indicate non-standard, i.e. not typical auxiliary, garrisoning. Assuming standard garrisoning, the *retentura* would have housed two cohorts.

The praetentura

The northern quadrant of the *praetentura* contains a block of 6 barracks (13) similar to those in the *retentura*. The results are, in places, a little clearer here, resolving the officer's quarters into 14m long ranges with four rooms along the front and probably one larger room at the rear. Rows of post holes along the front of the northernmost range confirms the presence of a veranda.

A road running parallel to the *via principalis* divides the barracks from a further range of buildings, also running parallel to the *via principalis*. The survey failed to resolve these buildings in any great detail but it appears that there are two buildings each with dimensions of 30m x 10m to the north of the *via praetoria* (14) and two to the south (15). The buildings have some transverse divisions but their function is unknown. A large granary (48m x 16m), defined by parallel slots for the floor supports (16), stands to the south of the *via praetoria*. The form of this is somewhat unclear although it can probably best be interpreted as a double granary similar to, but much larger than the example found at Pen Llystyn (Hogg 1968). A narrow building (17) can be seen just to the north of the granaries. This invites further comparisons with Pen Llystyn, where a similar building tentatively interpreted as an administrative block, can be seen in a comparable position. A substantial anomaly with high magnetic readings can be seen in the southernmost granary suggesting that it may have been destroyed or damaged by fire. The buildings in the southern part of the *praetentura* are only visible as very faint anomalies. There appear to be three buildings here all with cross walls. The central building is about 22m wide and the buildings to the north and south about 10m. All three are 60m long. There is unfortunately not enough visible detail to assign any function to them.

Extra-mural features

The road to the north of the fort is visible as a faint anomaly (21) flanked by hearths and rectangular buildings or plots (22) suggesting a *vicus*. This settlement is much more sparse that at Canovium and Cefn Caer perhaps reflecting a short period of occupation. A further possible road running north-east from the *porta praetoria* (23) is principally defined by a scattering of hearths to either side. Very faint rectangular anomalies (24) could indicate further *vicus* buildings. Linear anomaly 25 is the south end of the large temporary camp previously identified by St Joseph (1977) and Crew (1997).

The camp ditch runs on a different alignment to and, intersects the fort ditches. The gradiometer results suggest that the camp ditch cuts the fort ditch. This cannot be taken as absolute proof of the

phasing because the gradiometer will detect both ditches if both have surviving elements in the soil. It does seem likely that, if they were later, the fort ditches would have removed a portion of the less heavily defended temporary camp ditch and this is not supported by the geophysical evidence. It should also be noted that the temporary camp gate coincides with the fort gate and it is more likely that the temporary camp would utilise the metalled road leading from the fort, than that the fort would respect the relatively light temporary camp defences and road. The temporary camp also appears to respect and perhaps utilise the rampart of the polygonal stores base (see Fig. 39). It again seems most likely that the temporary camp would utilise the permanent defences of the compound.

Overview

The fort at Llanfor has few parallels in Wales. It appears to be a single-phase construction as the survey revealed no evidence for rebuilding. This strongly suggests that it was short lived.

It appears to have been built entirely from wood and is about twice the size of any of the auxiliary forts that characterise the Flavian garrisoning of Wales. The barracks suggest that it housed three infantry cohorts. The fort is presumably not contemporary with the nearby auxiliary fort of Caer Gai and can be presumed to pre-date it. Llanfor's large size and heavy garrisoning also suggests a different function to the auxiliary fort. Unfortunately, there is no dating evidence from any of the structures at Llanfor. There are, however, at least two phases present within the overall military complex. The large temporary camp appears to post-date the fort but this can only be confirmed by excavation.

The absolute dating of the complex at Llanfor remains problematic. It can be assumed with a fair degree of certainty that it pre-dates Caer Gai and was therefore abandoned before AD 75-80. This could indicate that it dates from the beginning of the Frontinian campaign, around AD74. It is presumably a campaign base, being relatively short-lived and never having been consolidated in stone. It could, however, also be argued to date from Paulinus' (AD 58-61) aborted campaign in North Wales.

The former hypothesis is supported by the discovery of early-Flavian pottery at the only similar site in Wales, Llwyn y Brain (Caersws 1) (Arnold & Davies 2000). The fort at Llwyn y Brain was discovered by St Joseph on aerial photographs in 1957 (St Joseph 1977) but little is known about the details of the site. The size of the fort is, however, about the same as Llanfor, both cover about 3.8 ha and it also predates a nearby Flavian fort.

5. TRIAL EXCAVATION RESULTS

5.1 Cefn Caer

High resolution gradiometer survey

An 80m x 60m area within the *vicus* was surveyed with a sample interval of 0.25m and a traverse interval of 0.5m (Fig. 39). Three rectangular anomalies provisionally interpreted as buildings could be seen with a much greater degree of certainty than on the standard resolution survey. Two trial excavations were conducted to investigate these anomalies.

Trench 1

Introduction

This excavation area was designed to investigate a rectangular area of geophysical anomalies to the east of the fort and immediately to the south of the eastern road out of the fort (Fig. 39). It was also laid out to sample a possible large east-west ditch (geophysical feature 23, Fig. 14). The rectangular area of anomalies was interpreted as a possible building in which was one strong central anomaly, possibly a hearth. The east-west ditch formed one side of a large rectangular enclosure, possibly a parade ground, although there seems no reason why such a feature should be fortified. The trench was L-shaped, consisting of a main north-south part, 16m by 2m wide approximately bisecting the possible rectangular building longitudinally and crossing the large east-west ditch perpendicularly. There was

also a western extension to the trench at the north end, 6.5m long and 2m wide designed to provide a half cross-section across the edge of the possible building.

Methods

After removal of the ploughsoil by machine, a layer of paler grey loam was revealed in which could be seen occasional pieces of Roman tile, charcoal and burnt clay. The area of the probable ditch on the other hand was relatively clean soil, free of such artefacts. The trench was then cleaned by hand and soil features were planned. A number of individual features were identified in the west-east arm of the trench and one area of burning in the north-south arm, approximately where the strong anomaly was identified on the geophysical survey. Subsequently it was found necessary to remove a further depth of material in the north-south trench before any features could be identified, and this material was removed by hand shovel scraping.

All features were planned at 1:20 and the sections of all excavated features were drawn at 1:10.

Results (Fig. 40)

In the main part of the trench, the most evident features were a number of post-holes, of which there were at least seven. These were defined for planning purposes and two were excavated as examples (Fig. 40, 05 and 36). Both were *c*. 0.5m in diameter and 0.5m deep. Three of the post-holes lay in an east-west line, across the width of the probable building. Two of them lay in a north-south line on the east edge of a linear feature (04), which was excavated and identified as a double beam-slot. Together the beam-slot and post-holes were taken to represent the west edge of a timber building. Its southern edge must also have been within the excavated area and was taken to be represented by a single beam-slot (35), to the south of which, outside the presumed building was a small drainage ditch or possible large beam-slot (34), 0.5m wide and 0.4m deep. Within the building, the floor consisted of compacted clay mottled with areas of burning and thin charcoal spreads. There were also four areas of more intense burning. One (37) was probably a laid hearth, being a well-defined area of re-used brick and tile and which registered as a geophysical anomaly. Three more diffuse areas of burning (11, 53 and 54) were each associated with small discontinuous gullies.

Close to the centre of the building was a well-defined rectangular feature (06), *c*. 2.6m long, which lay partly beyond the excavated area. The visible portion was 0.6m wide suggesting the feature was *c*. 1.2m wide in total. This feature proved to be well defined because it had been a timber-lined trough, the timbers laid in slots, with overlapping tenon joints at the corners. The trough was only 0.30m deep and so was likely to have been just the base for a timber structure that was upstanding above the floor level. The trough was filled with a variety of thin lenses some of burnt clay, some of charcoal.

To the west of the beam-slot (04) were three non-structural features (01, 02 and 03) interpreted as being outside the building. Feature 02 was shallow and that part exposed was ‘key-hole’ shaped in plan. Its main part was *c*. 0.5m in diameter and 0.15m deep and contained several horizontal slate slabs in a charcoal-rich fill. At the ‘neck’ were two burnt igneous cobbles. The feature was interpreted as a small furnace of which the narrow neck may have formed the draught-hole. Adjacent to this feature was a small pit (03), *c*. 0.90m in diameter and 0.30m deep. This contained a humic loam with occasional charcoal fragments and was interpreted as a rubbish pit except that centrally in its base was found a small vertical-sided hole, *c*. 0.2m in diameter and 0.25m deep. The feature may then have been a robbed-out post-hole although there were no packing stones to confirm this idea. Further to the west was an irregular-shaped feature (01) that proved to be simply a shallow hollow in the old ground surface, filled with dark charcoal-rich loam.

The surface of the area to the west of beam-slot 4 was compact buff-yellow clay, which appeared to be simply the top of the natural sub-soil. This contrasted with the area to the east of beam-slot 4, which was of a more mottled appearance and which was initially taken to be a spread of destruction or demolition debris. However, the packing of the post-holes appeared at this level so it was clear that the surface must be an internal floor level. Excavation of the beam-slot and the post-holes revealed no evidence of burning so the burnt clay and charcoal on the floor surface must derive from activity within the building. The more discrete areas of burning were associated with small linear features and so were probably the result of some small-scale industrial or craft activity rather than domestic activity.

The Enclosure Ditch (12) (Fig. 42)

The ditch was of Punic profile, the lowest part, preserved by the rapid primary silts, was steep-sided. The overall width of the weathered profile was *c*. 4.5m and the depth 1.90m. The original width, as first cut would have been around 2.5m The lowest, primary silts (22), consisted of a series of thin lenses, possibly annual weathering. The middle level of fill (21) was a thick layer of homogeneous grey silt with scattered charcoal fragments. Above this was a layer of relatively clean silt (20), which had been re-cut. Layers 14 and 15, above 20 and within the re-cut were more humic and topsoil-like but had been much disturbed by animal burrows. The ditch had been cut into a pre-existing gentle hill-slope and the rampart above is still partly visible as a ridge underlying the modern hedge bank and road. Despite the asymmetric bias of the ditch profile to the south (uphill), the fills were actually biased to the north side (downhill) the opposite to what might be expected. This might be explained as the result of repeated cleaning of the ditch with the excavated material being thrown to the north side.

Dating and discussion

The general area of the building was covered with a grey silty layer, mottled with burnt material. Although first taken to be a demolition layer it was proved to be the floor of the building slightly disturbed by ploughing as some post packing stones protruded into this horizon. It contained scattered nails as well as pottery in poor condition and occasional tile fragments. The pottery included a good number of Samian fragments, which high status material seems at odds with the possible industrial nature of the building. There was a particular concentration of pottery within the beam-slot 4. This seems to have accumulated there because it was an inaccessible corner, in the gap between the posts and the sleeper beam for the plank wall.

The building was clearly of timber construction. Its west side-wall consisted of a main support of a line of posts, each *c*. 0.30m in diameter between which ran short sleeper beams about 0.20m square while the outer face was formed of planks *c*. 0.10m thick. The end wall, which was not load-bearing, consisted of just a sleeper beam, which would have supported a frame for planking, as there was no sign of wattle and daub debris. There were several quite large internal post-holes that did not form a clear plan but were suggestive of an aisled building. If this was so, and the main hearth was central, then the building would have been *c*. 18m long and 8m wide. The lack of re-cut post-holes or other modifications suggests that the building was ‘single-use’, and did not have a very long life. The building must have been constructed to align with a pre-existing road on the north side, where its main entrance was likely to be.

The building also fitted neatly into the space between the road at the north and the ditch at the south. However, its relationship with the ditch is more obscure. There was no stratigraphic connection between the ditch and the features of the building that might have directly demonstrated their relationship. Also, none of the ditch fills bore much resemblance to those of the building, which were all mottled with areas of burnt clay and charcoal. All the ditch silts were relatively artefact-free compared to the layers associated with adjoining building, apart from a few large and fresh pieces of pottery. Either the ditch entirely pre-dated the building and had been backfilled or, if it was open during the life of the building, no rubbish from the building was deposited in the ditch except occasional individual sherds of pottery. The latter would be expected if the ditch was defensive, as it appears to have been. However, building would not be expected to take place so close to it, if it retained a defensive function. Most likely then, the ditch was decommissioned and backfilled when or before the building was constructed.

Trench 2

Introduction

This excavation area was designed to investigate two overlapping rectangular geophysical anomalies just to the south of the east road from the fort (Fig. 39). It was also extended to investigate the road itself. The rectangular anomalies had been interpreted as buildings, fronting onto the road, each containing a central hearth. A 20m x 4m trench, with one end crossing the road, and with an 9m x 2m extension on the west was excavated.

Methods

The topsoil was stripped using a mechanical excavator to reveal a mid to light-greyish loamy context containing Roman brick, tile and pottery. The road metalling could also be seen at the north of the trench, c.25cm below ground level. All subsequent layers were excavated by hand. The limited time available for the assessment constrained the amount of excavation that was possible in this area. It became clear, early in the excavation, that the trench could not be completely excavated without compromising the quality of the excavation process. It was therefore accepted that only a limited amount of information could be recovered from this trench and that this approach was preferable to losing data through hasty excavation. One aim of the assessment was to determine the depth of surviving stratigraphy. A 5.5m x 1m cut was therefore excavated down to natural subsoil across a central part of the trench (A-B on Fig. 43).

Results (Fig. 43)

The grey loam beneath the topsoil (100) was found to be fairly uniform and to overlie the majority of the Roman stratigraphy. This context contained Roman pottery but none of the post-Medieval finds found in the topsoil and was interpreted as an earlier phase of agricultural soil perhaps originating from Medieval cultivation. This was excavated by hand revealing the full extent of the road and a series of generally charcoal rich contexts, apparently relating to the two structures identified on the geophysical survey.

Building I

This was identified in the western extension trench. A central hearth (43), corresponding to the high readings on the geophysical survey, was clearly visible, made up of burnt clay and stones within what appeared to be a floor of hard packed earth (44 and 49). The western side of the building was defined by a spread of small stones. The loose stones were cleared revealing a 0.2m wide linear feature (38), presumably the foundations for a light wall, consisting of small flat stones laid in a gravelly silt matrix. A corresponding feature (52), 7m to the east, was identified in cut 1 (Fig.44). A cut in the floor of building I (48) was visible in the section and the hearth material (43) appeared to be one of the fills of this feature. The earth floor 49 had spread over the wall foundation, perhaps as a result of weathering after the destruction of the building. No further excavation was carried out in building I and most features remain relatively undisturbed. It was noted that two apparently linear cuts outside the building, 54 & 55 (Fig. 44) probably belong to this phase of occupation.

Building II

This building was defined by a series of mixed deposits containing variable amounts of charcoal and burnt clay (03 group), extending across the whole of the main excavation area from a point about 2m to the south of the road. The burnt deposits were bounded on the west by a somewhat variable linear feature containing intense concentrations of burnt clay and charcoal (24/45). This was most clearly defined in the western extension trench and a small part of the feature was examined during the excavation of the cutting 1 (Fig. 44). The section shows a 0.15m deep and 0.7m wide feature, partially collapsed towards the east, consisting of flat stones and charcoal rich soil capped by a layer of heavily burnt clay. This is best interpreted as the remains of the foundation of a wooden or perhaps wattle and daub wall. The burnt clay presumably indicates destruction by fire. The mixed deposits extending across the interior of the building appear to be the remains of an earth floor mixed with burning products, presumably derived from the destruction of the building. A row of six post-holes (06 to 10 & 36) were initially visible due to edge-set packing stones protruding through the burnt layers. These were typically 0.6m in diameter and could be seen to run along one side of the building. A further post-hole (05), 3.5m to the east, presumably marks the line of a parallel row of posts, forming a central aisle. The strong anomaly on the geophysical survey was shown to be a 2.5m diameter hearth (12) consisting of fire-cracked stones in a matrix of burnt clay. A linear feature of hard yellow clay (35) could be traced just to the west of the row of post-holes. This petered out at a point level with the hearth but appeared in section 1. The section showed it to consist of a 7cm deep ridge of yellow clay.

The function of this feature is unclear; it could be associated with an internal division but seems to be a little close to the side wall.

Two features were visible running under the eastern baulk, possibly corresponding to the geophysical anomaly originally thought to represent the front wall of the building. Feature 25 was shallow and contained quite a few small stones. This was not investigated further. Feature 26 was fairly steep sided and appeared to be post Roman.

The road

The road (29) was for the most part directly beneath the ploughsoil although the lower parts were overlain by context 100. The surface was cleaned and recorded but not excavated. The metalling consisted of stones, between 1cm an 90cm across, in a matrix of compact silt, clay and gravel. Patches of more regular cobbling perhaps indicated areas of repair. The road was 4.2m wide and the surface was slightly cambered. A context of silt (30) containing stones, probably derived from the road, was recorded between the road and building II but was not investigated further.

Dating and discussion

The trial excavation confirmed and added to the findings of the geophysical survey. Buildings I & II were shown, by a combination of geophysical survey and excavation to have dimensions of around 15 x 7m and appear to be of a similar construction. Building II was shown to incorporate a central aisle and probably had wooden walls set on a stone and clay foundation. Building I appeared to have a similar construction, although no post holes fell within the trench. Building I was aligned at right-angles to the road and had been destroyed by the time building II, set at a slight angle to the road, was constructed. Building II showed evidence of being destroyed by fire. Both buildings produced a large quantity of pottery including high status Samian ware and a considerable quantity of amphora. The majority of this was recovered from the floor/demolition layers. A few sherds were recovered from more safely stratified deposits in cut 1 and are awaiting analysis. The function of building I is yet to be determined because only a very small proportion has been excavated. The debris from the floor/demolition of building II failed to produce significant finds of industrial debris suggesting a social, trade or domestic function. The frequent finds of a wide range of pottery along with two glass beads tend to support this hypothesis.

5.2 Caer Gai

High resolution gradiometer survey

Two 40 x 40m areas within the *vicus* was surveyed with a sample interval of 0.25m and a traverse interval of 0.5m (Fig 45). The first area was aligned over anomalies 4 and 5 within the *vicus* on the standard resolution survey (Fig. 17). These anomalies had been tentatively interpreted as representing a rectangular enclosure with a burnt shrine in the corner. The high resolution survey did not add significant detail and if anything, tended to suggest that the interpretation was incorrect. Trench 1 was excavated over the two anomalies. The second area was aligned over anomaly 7, an isolated feature to the north of the *vicus*. The survey confirmed the presence of a rectangular feature with dimensions of 19m x 9m. Trench 2 was excavated across this anomaly

Trench 1

Introduction (Fig. 46)

This area of excavation was designed to investigate a group of major geophysical anomalies at the north side of the road leading east from the fort, as well a providing a sample exposure of the road itself. The trench was L-shaped, consisting of an east-west arm 10m long and a north-south arm 19m long. The east-west arm was laid out so as to provide a sample area about halfway across, and perpendicular to, an area of anomalies forming a roughly rectangular area about 10m square, aligned approximately parallel to the road. This was re-interpreted as possibly a large building, perhaps

defined by drainage ditches and with a strong central anomaly that might be a hearth. The north-south arm was laid out perpendicular to the first, so as to cross the whole width of the Roman road, as identified on the survey.

Results

The road (Context 32) (Fig. 47)

This was revealed immediately on removal of the ploughsoil as it lay only 200mm below the field surface and was in very good condition. The surface was cleaned and drawn but not excavated. The surviving surface was surprisingly smooth, with no evidence of plough-scarring or of earlier wheel ruts. The best preserved part of the surface was of small sub-rounded pebbles, up to 30mm long, closely laid and compacted. These must have been brought in, perhaps from a coastal source and may have been mechanically graded. In one part of the surface was a fine mortar-like surface, perhaps part of a lower binding material. There were also areas of larger cobbles and of randomly-laid angular shale fragments, both probably areas of repair. In places, protruding from the surface of the road were occasional small boulders with flattish surfaces laid level with the general road surface. These may have been repair or part of a more general lower foundation for the road. A small piece of lead waste and a large piece of amphora handle were found embedded in the road surface.

The road surface was cambered slightly but had a general slight downhill tilt so most drainage would have been downslope where there may have been a road-side ditch. There may have been an uphill drainage ditch but this was not obvious on the surface and was not investigated further.

The yard and associated features (Fig. 46)

Cleaning of the east-west arm of the trench revealed a very variegated surface with areas of grey clay-loam with scattered charcoal, mid-brown humic loam, fine gravel, occasional small boulders, a patch of large cobbles and various patches of burnt clay and light grey clay. This area was delimited at the east by a casually-laid line of small boulders in a matrix of fine gravel (15), aligned approximately perpendicular to the nearby road. Beyond this line was an area of more homogeneous grey clayey silt with a faintly discernible central line of small boulders and cobbles. The main area of deposits was interpreted as an external 'yard' area (26) associated with a presumed building to the west. At the east side of the 'yard' area was a complex of re-cut drainage gullies (02). The boulder and gravel strip 15 seemed to form a consolidating edge to the yard area where it adjoined the drainage gullies (see below).

The yard had no properly laid surface although one feature showed that it was once a utilised surface. This was an area of hard, compact burnt clay (13) that appeared to be a deliberately laid hearth, rather than just a dump of burnt material and so defined a surface, unless it were a 'raised' feature, not level with its contemporary surface. The hearth, 13, matched closely with a strong anomaly on the geophysics survey. Further cleaning showed that the majority of the yard was composed of a grey clayey silt with scattered charcoal fragments but with an undulating surface overlaid by areas of humic loam and patches of gravel and cobbles. The 'yard' surface was investigated in the two cuttings in the trench. Cutting 7 was located centrally and cutting 27 at the west end.

Cutting 7 investigated two groups of small boulders at the north and south side that might be post-holes. However, these proved to be just randomly laid stones within a humic soil layer 06, about 280mm deep, that must represent an organic rubbish-rich horizon and which seemed to have developed around a raised hearth, 13. The humic layer contained some large pieces of pottery as well glass vessel fragments and iron nails. Below the humic horizon was a grey clayey layer, 42, with patches of red burnt clay, similar to what formed the surface of the yard elsewhere (16). This layer was relatively thin, about 80mm deep, and overlay light grey clay subsoil at about 0.50m below the modern ground surface.

Cutting 27 (Fig. 48), revealed a layer of red burnt clay material (35), after removal of about 300mm of soil (34), equivalent to layer 06 in cutting 7. The surface of the burnt clay layer sloped down to the south, below the level of the subsoil in cutting 7, indicating some kind of feature. Removal of the burnt layer revealed a clayey layer with many small stone chippings, context 36, which proved to be the upper silts of a small ditch (40), aligned approximately west-south-west to east-north-east, that is

approximately parallel to the road. The ditch was 0.38m deep below the subsoil surface, 0.58m deep below the yard surface and 1m deep below the modern land surface. This feature was not identifiable on the geophysical survey. The dip of the burnt surface 35 into the top of the ditch shows that the ditch was open when the rubbish was deposited in the yard. The ditch possibly formed the southern edge of the yard and perhaps an accompanying building, where it adjoined the road. At the south side of the ditch fill were several small boulders, at an equivalent level to the yard surface and these probably represent consolidation of the edge of the road at a late period in its use. At the north side of the ditch, beyond its edge, was a thin humic layer (38), beneath the yard deposits *and ditch deposits 36 and 39*, possibly the remains of an old turf line, predating occupation in the area.

Apart from hearth 13, there were only two distinct features in the yard surface. These were two linear features, 28 and 30. Only small parts of these were exposed at the east side of the yard where they cut into the boulder and gravel strip 15. Context 28 was a narrow linear feature, about 0.30m wide and 0.09m deep filled with charcoal-rich soil. It lay approximately parallel to the road and was truncated in plan by gully 14. Context 30 was broader and deeper at about 0.7m wide and 0.17m deep but with a similar fill to 28. It lay approximately parallel to 28 but ended before it reached the edge of gully 14.

Gully complex 2 (Fig. 49)

East of the yard surface was a linear feature aligned approximately north-west to south-east, i.e. perpendicular to the road. This was investigated in two cuttings, 12 at the north and 9 at the south. Aligned down the length of the feature was a straggling line of stones. Excavation showed these to lie in the central fill of small ditch or gully (14), the west edge of which was delimited by the boulder and gravel strip, 15, which formed the east limit of the yard 26. In cutting 9 The gully extended to a depth of 0.35m below the yard surface, with a shallow, eroded profile. It cut an earlier gully of similar size at the east side while at the west it cut a series of horizontal layers (Context group 24), part of the deposits of the yard, or predating the yard surface. The two gullies were also identified in cutting 12 but were less well defined and in addition, there was another small gully or drain (10), which predated the boulder and gravel strip 15.

The gullies 14 and 23 continued towards the edge of the road, but clearly did not continue so are likely to have joined a road-side ditch. However, this was not obvious on the surface and the presumed junction, which would have been complicated, could not be investigated in the time available. If the line of ditch 40, exposed in cutting 27, was projected, it would meet gully complex 2 just to the north of cutting 9. However, there was no sign of such a feature at this point, where the boulder and gravel line 15 provided a good background. It is possible that the layers that were visible at the west side of and cut by gully 14 were the fill of an earlier feature that might not be recognisable in longitudinal view.

Dating and discussion

The general yard surface produced a good number of finds, including brick and tile as well as coarse ware, Samian pottery, iron nails, occasional small pieces of broken burnt bone and scattered charcoal. The humic layer 6 also produced two glass beads, one spherical, the other cylindrical. Scanning of the surface by detector for non-ferrous materials produced three finds, all pieces of lead, two waste pieces and one small weight or seal. In all the impression was of a spread of domestic rubbish, including much quite high status material although it was surprising that no copper alloy was found. There was no obvious evidence of industrial activity, although the hearth 13 and other spreads of burnt clay may point to some small-scale activity. There were quite a number of iron nails and unidentified small iron objects, as well as a scatter of pieces of iron slag. One piece of tile also had a vitrified surface suggesting some high temperature burning. Although there were a few pieces of brick and tile there was an absence of building material as such and any building nearby must have been of timber. The predominant soil layer beneath the obvious humic and other rubbish layers was grey clayey loam containing well-scattered charcoal fragments and this is difficult to explain. Perhaps it was a mixed gleyed soil deriving from the construction or early phase of the fort when the heavy and wet ground here may have been open and well-trampled, before extra-mural buildings were built along with necessary drainage ditches.

Trench 2

Introduction

This excavation was designed to investigate a roughly rectangular geophysical anomaly that was detected 50m to the north of the main roadside *vicus*. The high resolution gradiometer survey made of the immediate area prior to excavation revealed a well defined but rather diffuse rectangular anomaly with dimensions of 10m by 20m. A discrete patch of very high readings, typically 10 to 45nT, forming a 11m x 5m subrectangular anomaly is also visible on the south eastern side of the larger anomaly. Readings of this magnitude are usually produced by the effects of burning.

A 14m x 2m trench with a 6.3m x 2m extension forming a T-shape was excavated over the north-eastern end of the anomaly.

Results (Fig. 50)

The topsoil was removed using a JCB and the trench was hand cleaned. A roughly rectangular patch of red intensely burnt clay (05) was revealed along with several linear features. Three features were particularly well defined and were found to be two Victorian field drains (02 and 03) and a shallow irregular sided cut (04) that appeared to mark the line of a grubbed out hedge. All three features contained residual Roman pottery along with occasional fragments of 19th century pottery and clay pipe stems. Most of the rest of the trench appeared to be sealed with a rather amorphous grey spread. The soil colour was due in part to the largely anaerobic soil conditions caused by the frequently waterlogged soil in this field. Two ill defined and diffuse changes were detected at this level suggesting a linear feature (30) bounding the south-east end of the area of burning and a cut (43) 3.6m from the north western end of the trench. The upper part of one of the field drains was excavated in order to provide a section through the features in the north-western end of the main axis of the trench. This was extended to form a 1m wide cutting along the length of the trench (Fig. 51) and further extended 3.5m along the north-west side of the other arm of the trench.

Early drains and slots

The earliest features were found to be a stone and clay filled linear cut (26) and a very shallow 0.5m wide linear cut with a flattened U shaped profile (35) both cut into natural clay. The stone filled feature is probably best interpreted as a drain. There was little to suggest a definite function for the shallow feature but it could be seen as a shallow drain or could possibly have held a beam. A better candidate for a beam slot is a 2 to 3 cm deep and 20cm wide slot (25), cut into the natural, close to the south-east end of the trench. This feature is at the same level as contexts 26 and 35 but cannot be shown to be stratigraphically related as the contexts above it have been truncated.

The hearths and gravel surfaces

The central part of the trenches is characterised by a series of surfaces containing burnt material. A patch of burnt material (40) overlying the subsoil is sealed by a gravel surface (37/39) containing another patch of burning (38) This appeared to be an undisturbed hearth, about 0.5m in diameter, as opposed to redeposited material. This is sealed by another apparently deliberately laid context of gravelly clay (06). The heavily burnt feature (05) detected by the geophysical survey forms the upper part of this surface. The section shows that the feature consists of several patches of hard undisturbed burnt clay along with patches of disturbed burnt material. This suggests that there were either several hearths in different positions or that a more widespread episode of burning had occurred.

A further context (28) of gravelly clay sealed by a layer of grey clayey loam (12) was identified in the south-eastern part of the trench. This was at a slightly lower level than the surfaces to the north-east but appeared to be the same as 34, although no definite stratigraphic relationship could be demonstrated due to truncation by cut 30 (described below).

The Palisade

The clear rectangular delineation of the burnt feature/upper gravel surface 05/06 was shown to be a result of it being cut by a U-shaped slot (30). The lower gravel layers 28/34, in contrast, appear to

extend beyond the slot. A short length of the feature was excavated in cutting 1. The slot was found to be roughly U-shaped in profile and to be 0.6m deep and 0.55m wide. A 12cm diameter stake hole, containing a small piece of the stake itself in the waterlogged zone at the bottom of the feature, was recorded in the section. Another piece of wood, apparently a piece of a split log, 0.35m in length, was lying along the bottom of the trench. The function of this piece of wood is unclear and it is possible that it was a piece of scrap that had fallen into the trench. These finds demonstrate that the slot held a wooden structure, the stake suggests a palisade or similar construction. A similar slot (44) was identified at the north-western side of the burnt feature, although in this case it appears that the upper fills had been truncated by a later cut (45). The slot could be traced for 4m in a north-easterly direction before turning to the south-east thus suggesting that it is a continuation of context 30.

The Later Features

The cut through the north-western edge of the burnt/gravel surface is stepped back from the edge of the slot by 0.25 m. The evidence in the section and the small area excavated is not conclusive but it appears that a cut (45) truncates both the burnt/gravel surface (39/06) and the upper part of context 44. The north-western side of the feature could not be identified suggesting that the cut was wide and shallow. The gravel surfaces certainly do not continue beyond this point. The fill of context 45, a somewhat mixed grey clayey loam, is truncated by a well-defined, shallow but wide cut (43). The excavated portion of this feature has straight sides and is thus probably linear or rectangular. It is 1.8m wide and 0.3 m deep with a flat bottom and a uniform fill of grey clayey loam with charcoal flecks (09). The south-eastern edge is protected by a rough stone revetment. One degraded sherd of Roman colour coated ware was retrieved from the lower part of the feature.

The stratigraphy at the south-eastern end of the trench was also truncated by a feature containing Roman pottery (24). This feature was however truncated by 19th century field boundary (07) making interpretation difficult.

Dating and interpretation.

The topsoil contained frequent sherds of Roman pottery along with a selection of 18th to 20th century artifacts. The modern drains and field boundary contained residual Roman pottery and modern artifacts. The rest of the excavated features yielded very few artifacts. The feature cutting the rest of the stratigraphy at the south-east of the investigated area (24) contained frequent sherds of Roman pottery but none of the clay pipe stems and Buckley ware found in the topsoil. The frequent finds suggest a Roman date but further investigation would be needed to demonstrate that the finds are not residual. The wide feature (43) at the north-eastern end of the trench yielded a single fairly large sherd of Roman pottery. This demonstrates a Roman or post-Roman date. The geophysical survey shows a wide rectangular anomaly to the north-west of the burnt features and this may well be the feature identified in the trench. Interpretation is still problematic without further excavation. It should be noted that any open feature cut into the impervious clay subsoil will be full of water for most of the year. The excavation was carried out after several weeks of dry weather and the contexts at this level were still waterlogged. It is therefore possible that this feature could be a cistern. The loamy fill was probably derived from the topsoil either from silting or backfilling. The lack of frequent Roman pottery sherds suggests either a date predating the *vicus* and the general spread of Roman debris across the area.

The rest of the deposits in the trench i.e. the gravel surfaces, hearths, the possible palisade trench and other minor features yielded no artifacts apart from the degraded stake and wood fragment. The features do not appear to be typically pre-Roman therefore an earlier Roman date roughly contemporary with context 43 can be suggested. Charcoal samples from hearth 05 and the wood should yield radiocarbon dates and help to test this hypothesis.

Overall integration and interpretation of the features is difficult due to the small scale of the assessment excavation. There are clearly several phases of activity here and their similar alignments suggest that they are all related. There are a series of made up surfaces containing well used hearths or at least one layer of destructive burning. Unfortunately, no structure contemporary to the surfaces was identified although there could well be post holes or other evidence that did not fall within the small area of excavation. The geophysical survey suggests a rectangular building. The rectangular slot (30 and 44) appears to have held a wooden structure probably either a palisade, fence or wattle structure. This cuts

and is therefore later than the surfaces. It does however seem to respect the limits of the upper surface 05/06. The south-eastern side in particular shows a distinct change in the level of deposits in an alignment with the slot. The slot could therefore be a recut replacing a structure that was perhaps destroyed by the fire that produced burnt layer 05. Only further excavation could demonstrate the nature of the structure(s) although the small length of stake and slot structure that has been examined does not appear to be part of a typical building. This may not be significant; areas of hard standing produced by earlier structures have commonly been reused for animal pens etc in most periods of history.

5.3 Trial excavations: dating and further work

A total of 1558 sherds of pottery including 148 sherds of Samian were recovered from the excavations. This has been processed along with the other small finds and is awaiting analysis and detailed cataloguing. An initial examination of the finds by Dr Jeffrey Davies and the writer suggest a fairly typical late 1st and early to mid 2nd century assemblage. Arrangements have been for Dr Jeremy Evans to produce a full pottery report during the final part of the Roman fort environs phase of the project in 2003/4.

6. CONCLUSIONS

The stated principal aim of the project has been to identify the extent and character of the archaeological remains in and around the Roman forts of Gwynedd, to assess their condition and present management regime and to recommend management options. Geophysical survey has been shown to be an ideal method for assessing the extent of the archaeological resource.

A wealth of new information has been revealed about all of the sites that have been surveyed. The results from the previously largely unexplored fort at Cefn Caer, Pennal are particularly informative showing details of the fort and its defences set in a wider landscape containing both military and civilian features. Ribbon development in the form of a probable *vicus* alongside two of the roads from the fort extends to over 100m beyond the scheduled area. A variety of more specifically military features are clustered around the fort and include a bathhouse, a circular tomb and a possible *mansio* and parade ground. The results from Caer Gai confirmed the line of a road leading from the fort and revealed the presence of what appears to be an extensive *vicus* along with a shrine and an extensive complex of buildings of unknown date and function. The results from Bryn y Gefeiliau demonstrate the presence of a subdivided 1.8 ha fort. The lack of extramural buildings at this site makes an interesting contrast with Cefn Caer, Caer Gai, Canovium and Tomen y Mur. It should be noted that the fort was occupied for a similar length of time as most in North Wales and is no more inaccessible than Tomen y Mur. It is possible that settlement was sited further away from the fort, perhaps in association with the piles of scoria identified by Fenton. Other factors connected with the fort such as garrisoning levels and the local political situation could affect the growth of a *vicus*. The survey at Caer Llugwy suggests that little now survives of the fort and its associated features although there is still some potential for the discovery of outlying features such as practice camps. The *vicus* to the north of Canovium had previously been discovered on aerial photographs and the scheduled area had been extended to encompass this area. There was however, a reasonable expectation that the extramural remains would extend to the south of the fort, particularly in the light of the results from Cefn Caer. The north *vicus* was surveyed in order to allow better management of the scheduled area along with a large area to the south of the fort. Further details of the *vicus* were revealed but little extramural activity was identified to the south of the fort. The presence of a potentially fragile and possibly unique large wooden fort at Llanfor was confirmed by geophysical survey. An almost complete plan of the fort was produced demonstrating a high level of subsurface survival. The survey adds greatly to our knowledge of the Llanfor military complex and provides information vital to the long-term management of the site.

The extramural remains extend far beyond the scheduled areas at Cefn Caer and Caer Gai and can be seen to be vulnerable to damage or destruction. The agricultural regime at Cefn Caer is probably not causing any major damage to the sites at present but the relatively slight remains that make up the *vicus* are very vulnerable to deep ploughing. The clarity of the results in the fort and annexe when considered alongside the antiquarian evidence suggest a very good level of subsurface preservation. The extramural remains at Caer Gai are less well defined and give the impression of having been

partially ploughed out. The buildings at the west of the survey area are almost certainly being affected by livestock trampling, down to a depth of at least 0.4m, in a very wet part of the field. Limited trial excavation has been carried out in the *vici* of both sites in order to assess their level of preservation and to confirm their Roman date. The excavations revealed significant Roman stratigraphy at both sites. Three wooden aisled buildings a well preserved Roman road and a Punic ditch were identified at Cefn Caer. Some of the features were as little 0.25m below the ground surface and while they are not threatened by current land use, such information is vital for the longer term preservation of the site. The relatively faint geophysical anomalies in the *vicus* at Caer Gai were shown to be a result of the magnetic properties of the soil as opposed to truncation of the stratigraphy by ploughing. The excavation revealed a yard overlying drains and ditches containing some evidence for industrial activity, a well preserved Roman road and an as yet undated rectangular structure.

It is interesting to note that several surveys of Roman fort environs have recently been carried out along Hadrian's Wall (Initial results are published along with a plot of the Cefn Caer survey in Burnham, Keppie and Fitzpatrick 2001) and provide interesting parallels to the present project. At Halton Chesters a gradiometer survey revealed ribbon development very similar to the regular plots and hearths at Llanfor. Surveys at Carvoran, Birdoswald, Castlesteads and Maryport all showed *vici* of varying complexity. All showed the by now familiar pattern of somewhat irregular rectangular plots containing single, strong, hearth type anomalies. This accumulation of data will hopefully allow comparative work to be carried out thus achieving some longer term research objectives. It is already becoming clear that there is considerable variation is the size and complexity of the *vici* so far surveyed and that sites such as Bryn y Gefeiliau suggest that there are significant variations in the balance of the civilian/military community as proposed by James (2001)

The project has produced a great deal of new primary information about the Roman military occupation of North Wales and has succeeded in widening the focus away from the forts and into the wider landscape. The results will initially be presented in a short paper to the 2003 Roman Archaeology Conference. A paper for publication will be prepared in the 2003/4 phase of the project.

The project is also to be extended to examine the Roman road network in Gwynedd. An initial examination of the archaeological resource along with proposed strategies for further assessment is presented as an appendix to this report.

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APPENDIX 1 ROMAN ROADS IN GWYNEDD

INTRODUCTION

Introduction and background

The Roman forts of Gwynedd are linked by a network of roads. The basic lines of some roads were initially mapped out by Codrington (1918). This work was elaborated on by Margary in his influential 'Roman Roads in Britain' (1955). Margary did not attempt to solve many of the omissions in the earlier work and remarked that "it is absurd and regrettable how little is still known about much of the road system by which [the forts] are certainly linked together". He acknowledged that there are serious problems associated with accurate mapping of the roads across the uplands of Wales.

> Much of the country [of Wales], even when not actually mountainous, is very hilly and broken, rendering aligned roads out of the question and causing frequent construction of terraced roads which are usually much narrower than normal. Thus the roads, where visible in their original form, are often only some 9 feet wide, and a large agger, wide ditches, or a well-marked alignment are rarely seen, all factors which render the observation and recognition of roads as Roman work unusually difficult.

The basic line of the roads can be inferred from the position of the forts and the general topography but their exact alignment is more difficult to assess. Much work has been carried out at both a professional and amateur level since Margary's work was completed. Davies (Arnold and Davies 2000) notes that the Flavian road system is reasonably well known but is still incomplete. Some of the available information has been integrated into the regional sites and monuments records (table 1 and map 1) but a detailed overall synthesis is lacking.

TABLE 1. ROMAN ROADS: SMR DATA

PRN	SITENAME	NGR	MARGARY NO	STATUS NO
609	ROMAN ROAD, COED BOLYN LODGE	SH53906580A		
3841	ROMAN ROAD : CANOVIUM - VARIS	SH70008000	67b	
3842	ROMAN ROAD : CANOVIUM - SEGONTIUM	SH	67c	C131e
3843	ROMAN ROAD : SEGONTIUM - TOMEN Y MUR	SH	68	
3844	ROMAN ROAD : CANOVIUM - TOMEN Y MUR	SH	69a/69aa	
3845	ROMAN ROAD : TOMEN Y MUR - BRITHDIR	SH	69b	
3846	ROMAN ROAD : BRITHDIR - CEFN CAER, PENNAL	SH	69b	
3847	ROMAN ROAD : CEFN CAER, PENNAL - TRAWSCOED	SH		
3848	ROMAN ROAD : TOMEN Y MUR - CAER GAI	SH	68	
3849	ROMAN ROAD : CAER GAI - BRITHDIR	SH	66b	
3850	ROMAN ROAD : CAER GAI - DEVA	SH	66a	
3851	ROMAN ROAD : CEFN CAER, PENNAL - CAERSWS	SH	?64	
3852	ROMAN ROAD : CAER LLUGWY - SEGONTIUM	SH		
3853	ROMAN ROAD : BRITHDIR - LONG MOUNTAIN	SH		
3854	ROMAN ROAD : CAER GAI - ST. ASAPH	SH		
5018	ROMAN ROAD (POSS.), NR. DOLGARROG	SH75406620A		
5060	ROMAN ROAD - BLAEN LLIW UCHAF	SH79373571		
5087	ROMAN ROAD, TOMEN Y MUR	SH70473873		M002
5201	ROMAN AND MEDIEVAL ROADS, BEDDAU GWYR ARDUDWY	SH72304240A		
5329	ROMAN ROAD - POSS. - FOEL YSTRODUR BACH	SH81183395C		
16047	ROMAN ROAD, CLEFIOG UCHAF	SH28687940		

Nature of Threat

The Roman Roads of Gwynedd are under represented as Scheduled Ancient Monuments. About 2km of the road network falls within scheduled areas and this is mainly a result of the proximity of the roads to other sites. The ongoing fragmentation of the relict historic environment by modern agricultural practice and the pressure on natural transport corridors by road improvements renders the recognition

and protection of Roman roads increasingly difficult. Threats that are more specific have also been recognised:

The increase in recreational off-road driving threatens well-known upland routes such as Sarn Helen.

Damage was recorded to the road at Bwlch-y-Ddeufaen during the removal of stones using a Himac excavator for a landscaping scheme at Manchester Airport.

Methodology for further assessment

There are several bodies and individuals currently working on Roman Roads in Gwynedd. The recent work by Peter Crew of the Snowdonia National Park Authority and Chris Musson of RCAHMW has traced the line of roads at Llyn Hiraethlyn and Cae'r Tyddyn from aerial photographs (Crew & Musson 1996). Jones, Pitman and Toller (1998) have demonstrated the value of fieldwork, incorporating survey and trial trenching, in tracing part of the road from Caersws to Caer Gai. Waddelove's, 'The Roman Roads of North Wales, Recent Discoveries (1999) includes some valuable research but is unselective in its approach and includes much unproven material. Several local amateur groups have also contacted the SMR with information on possible road alignments.

Clearly, the first task in any review of this monument type is a synthesis and examination of all of the available data along with its conversion into a form compatible with the modern SMR, such as MapInfo tables. Liaison with people currently working in the field is already underway and it is hoped that this will allow future research to be better integrated into the SMR.

Site visits and condition surveys of confirmed stretches of Roman road should be carried out in order to allow the production of management recommendations.

This integrated approach should allow further targeted research to be carried out on the many unconfirmed routes. Field walking and detailed survey along with examination of aerial photographs are the principal methods of broader research and these can be supplemented with trial trenching and geophysical survey where appropriate. Spatial analysis of findspots may also prove to be a useful research method, particularly where the approximate line of the road is unknown e.g. roads across Anglesey.

References

Arnold C J and Davies J L, 2000 *Roman and Early Medieval Wales*
Crew P and Musson C, 1996 *Snowdonia from the Air, Patterns in the Landscape*
Jones G D B, Putnam W G and Toller H S, 1998 Roman Road, Caersws to Caer Gai *Arch in Wales 38*
Margary I D, 1955 *Roman Roads in Britain* revised ed 1967
Waddelove E, 1999 *The Roman Roads of North Wales, Recent Discoveries*

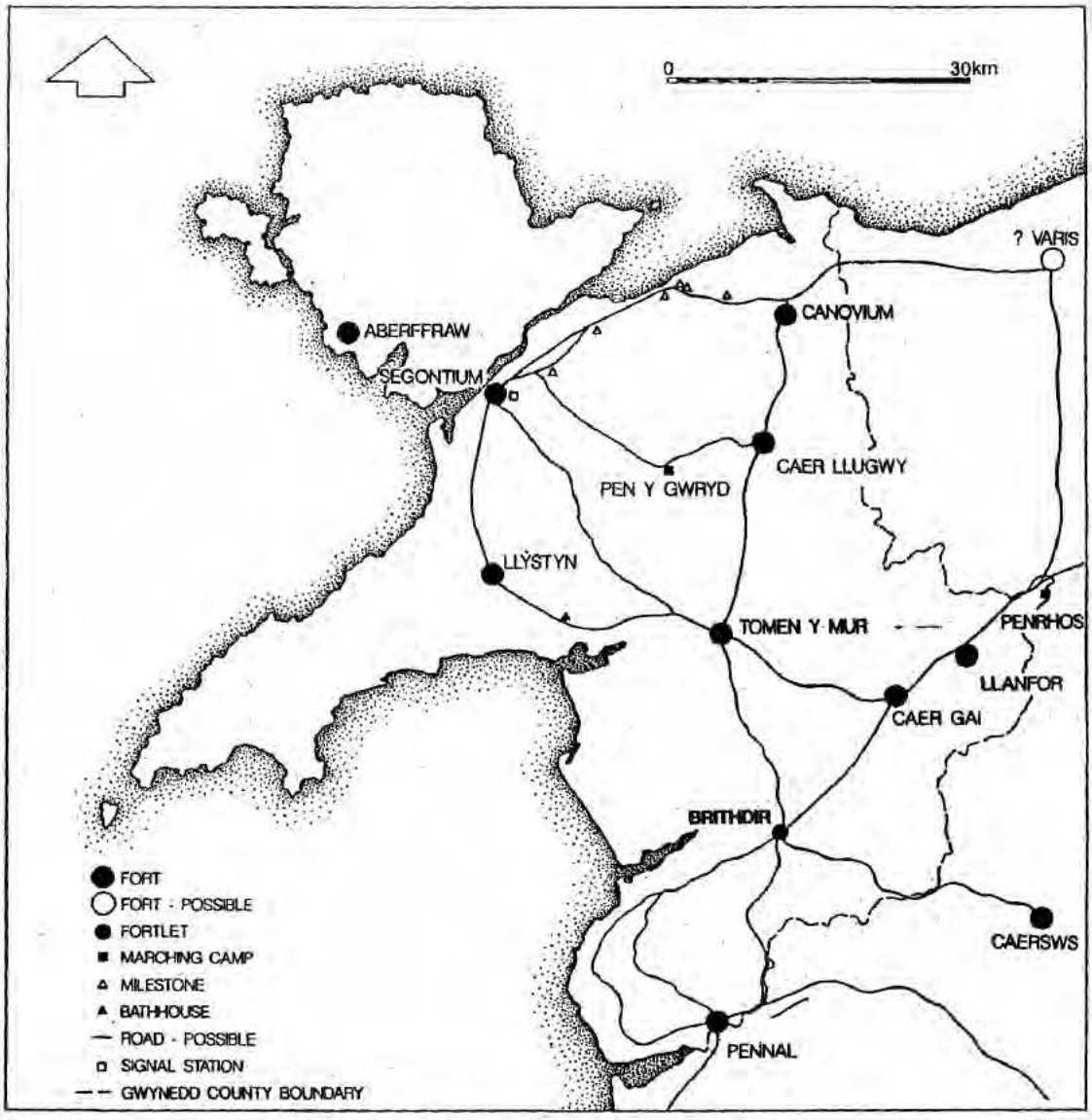
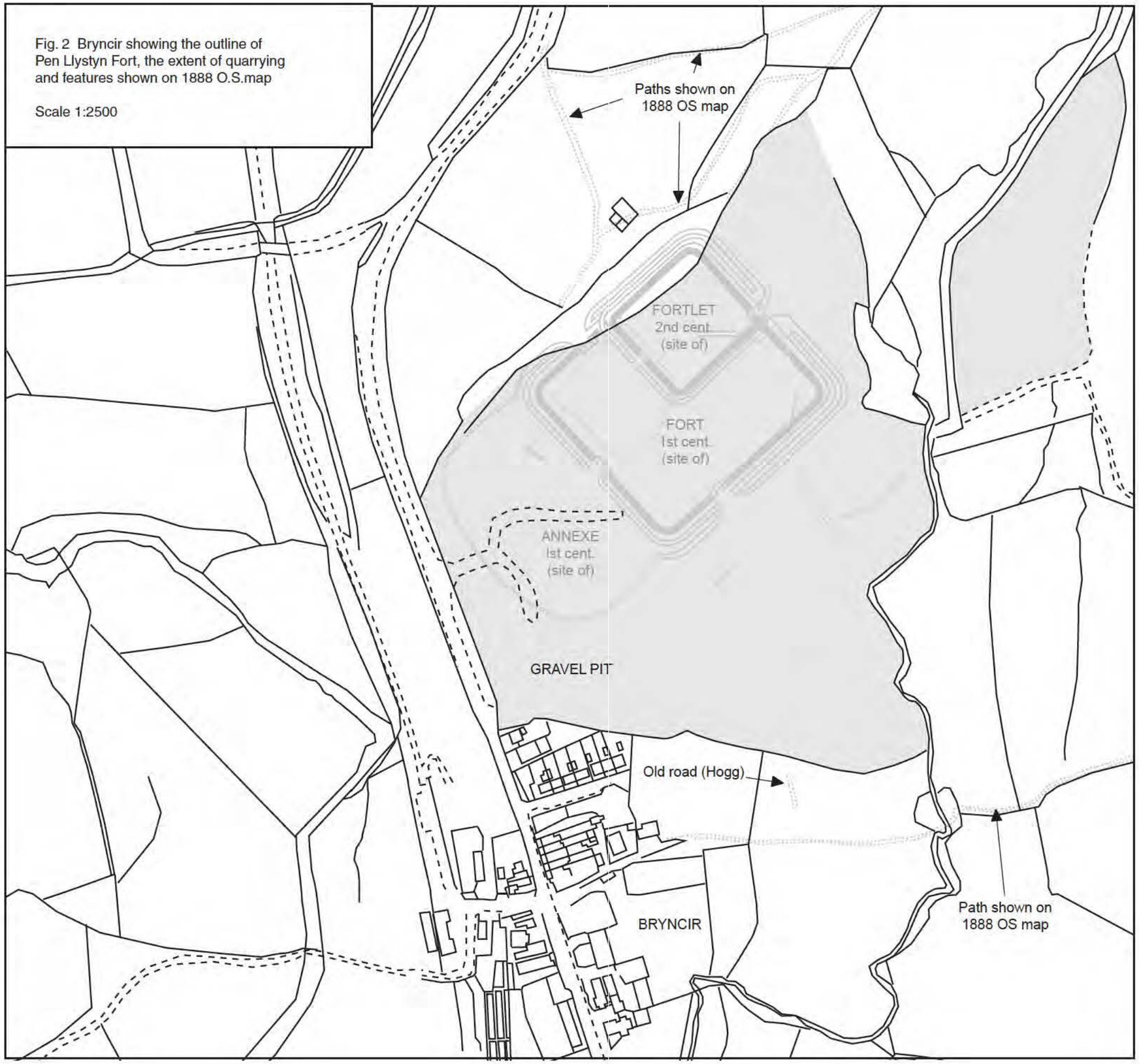


Fig.1 North-west Wales in the Roman Period

Fig. 2 Bryncir showing the outline of Pen Llystyn Fort, the extent of quarrying and features shown on 1888 O.S.map

Scale 1:2500



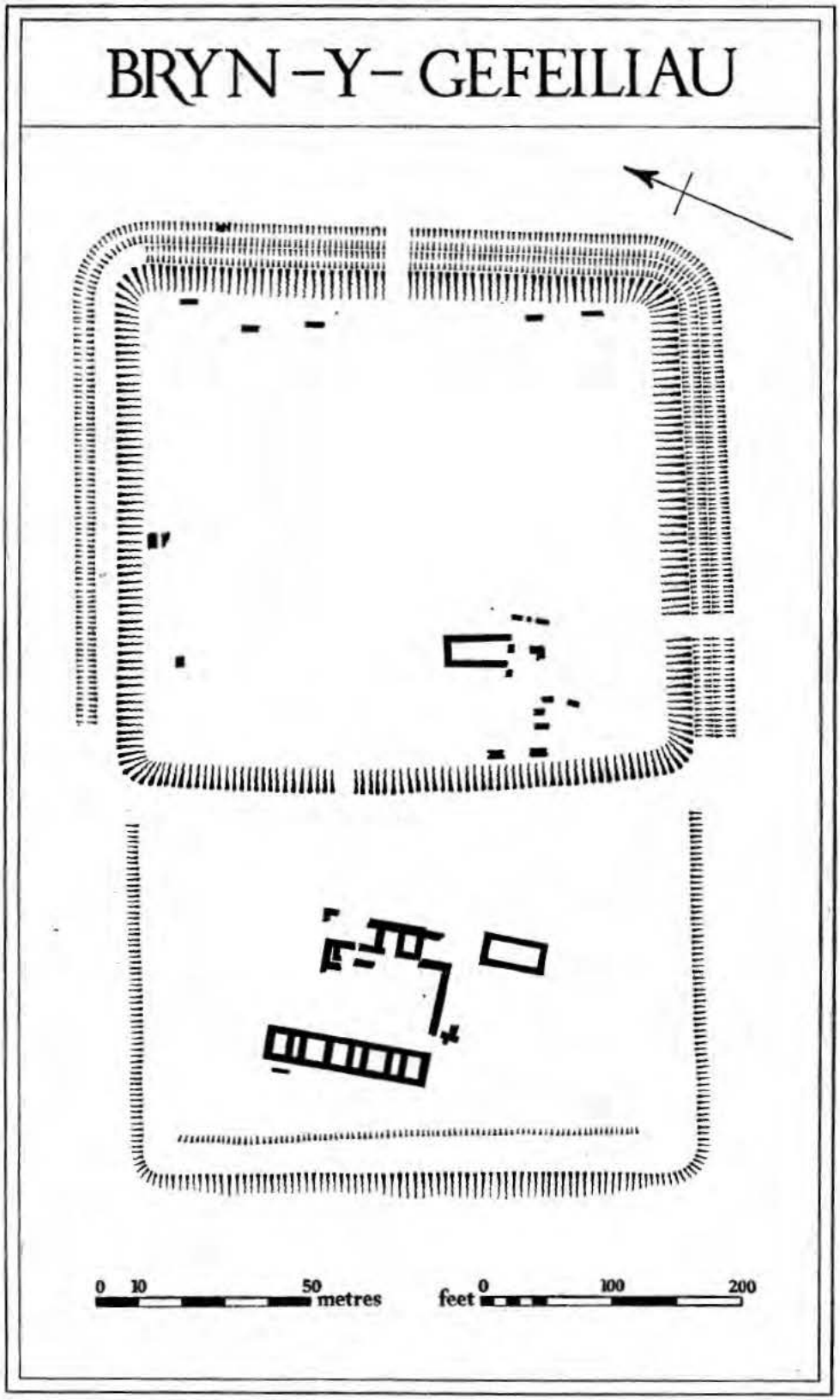


Fig. 3 Bryn-y-Gefeiliau (Nash-Williams 1969)

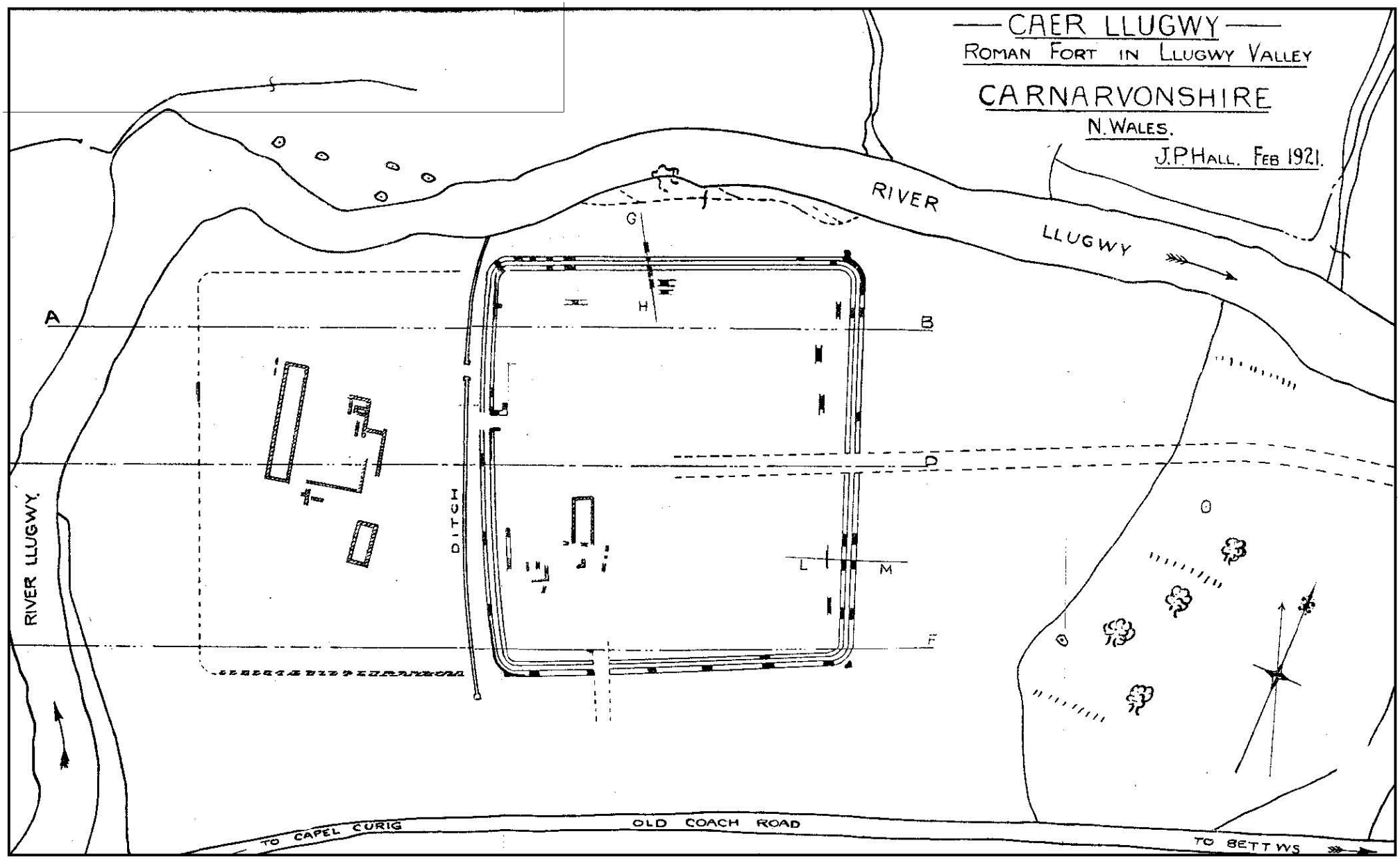


Fig.4 Bryn-y-Gefeiliau (Hall 1932)

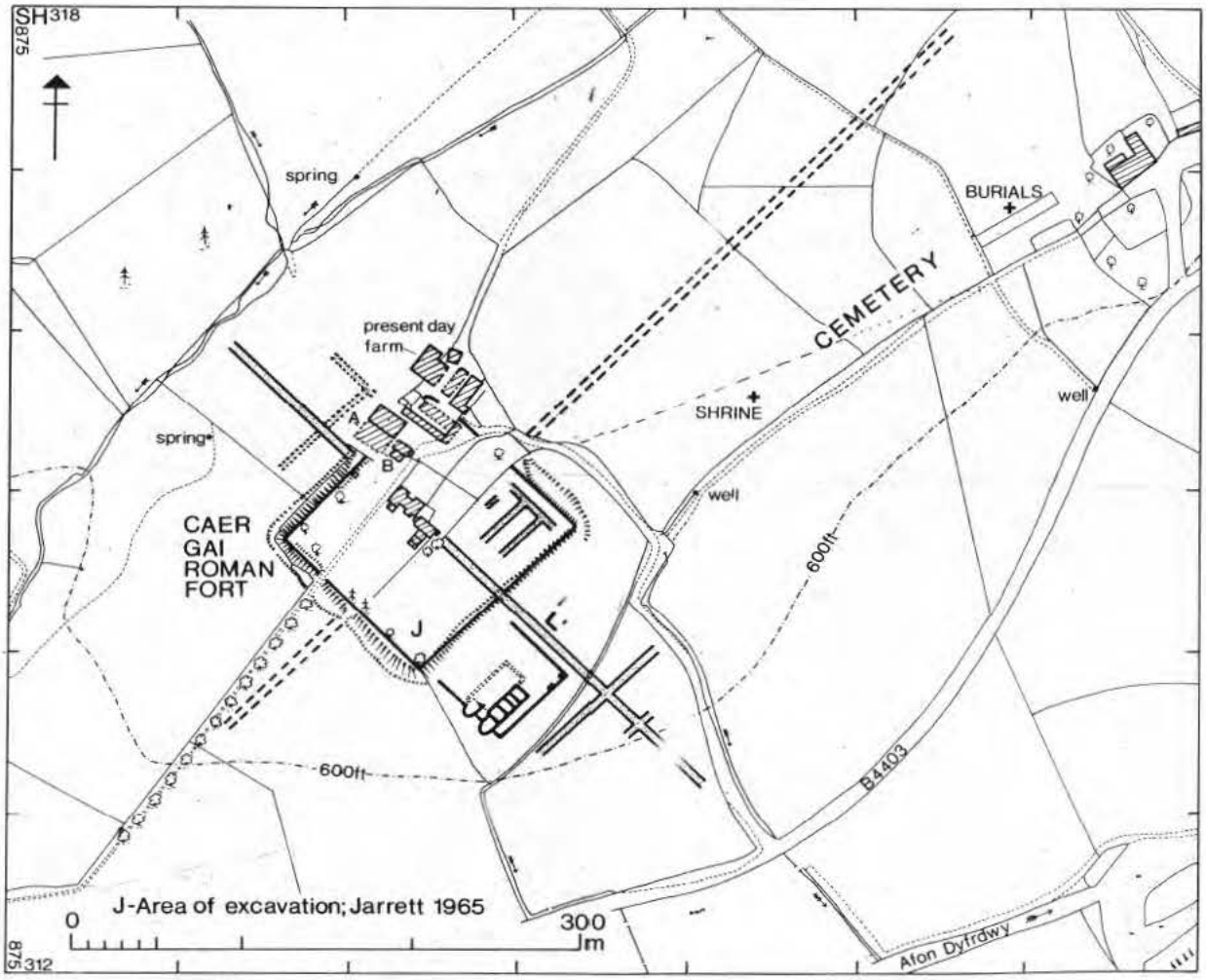


Fig. 5 Caer Gai, topographical survey and known archaeology

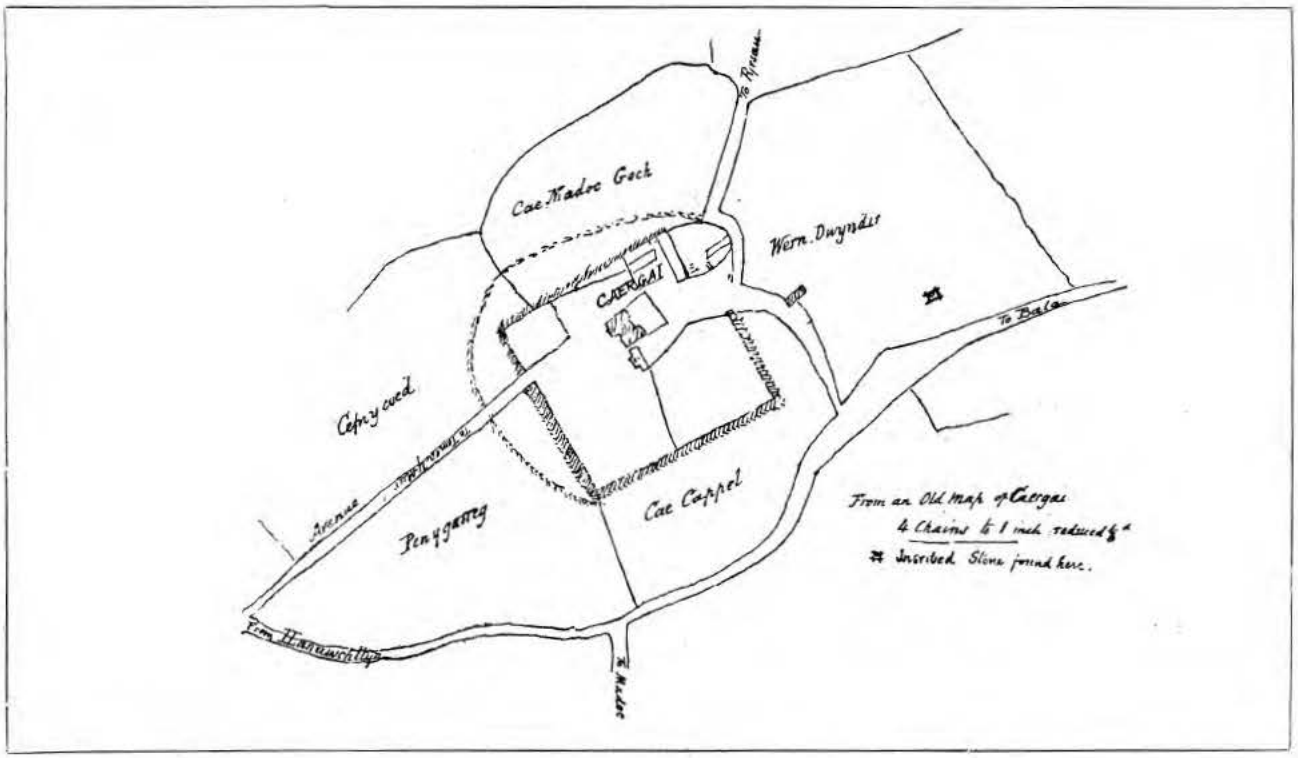


Fig. 6 The 'Old Map' of Caer Gai (Thomas 1885)

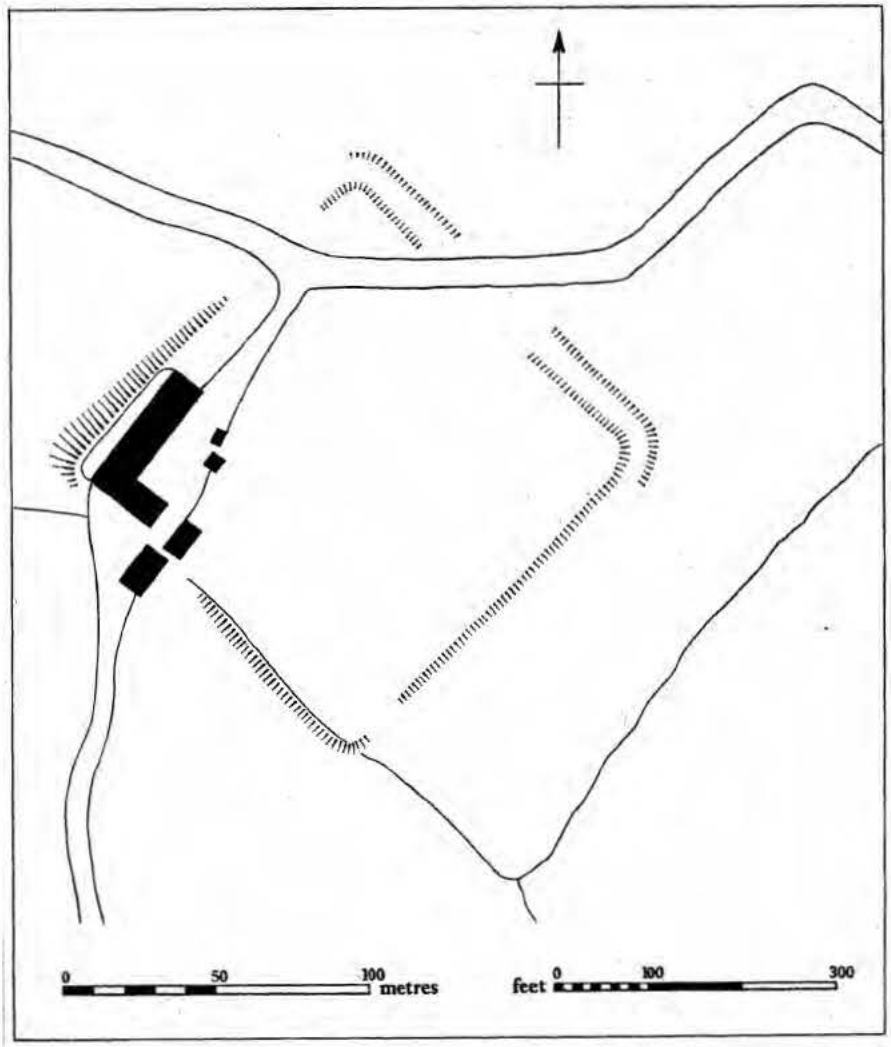


Fig. 7 Cefn Caer (Nash Williams 1969)

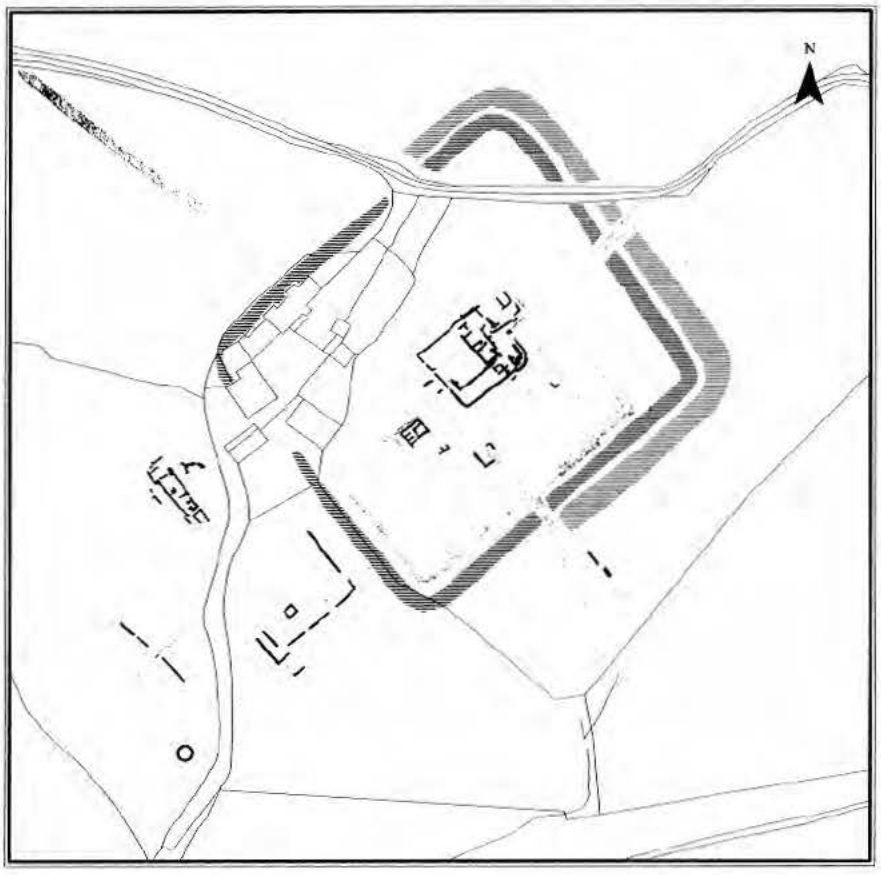


Fig. 8 Cefn Caer plan of features visible on aerial photographs (RCAHMW 2000)

Fig. 9 Cefn Caer gradiometer survey: Area 1 trace plot

Scale: 1:1500
Resolution: 40 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.09
Std Dev: 7.35
Min: -330.53
Max: 158.35

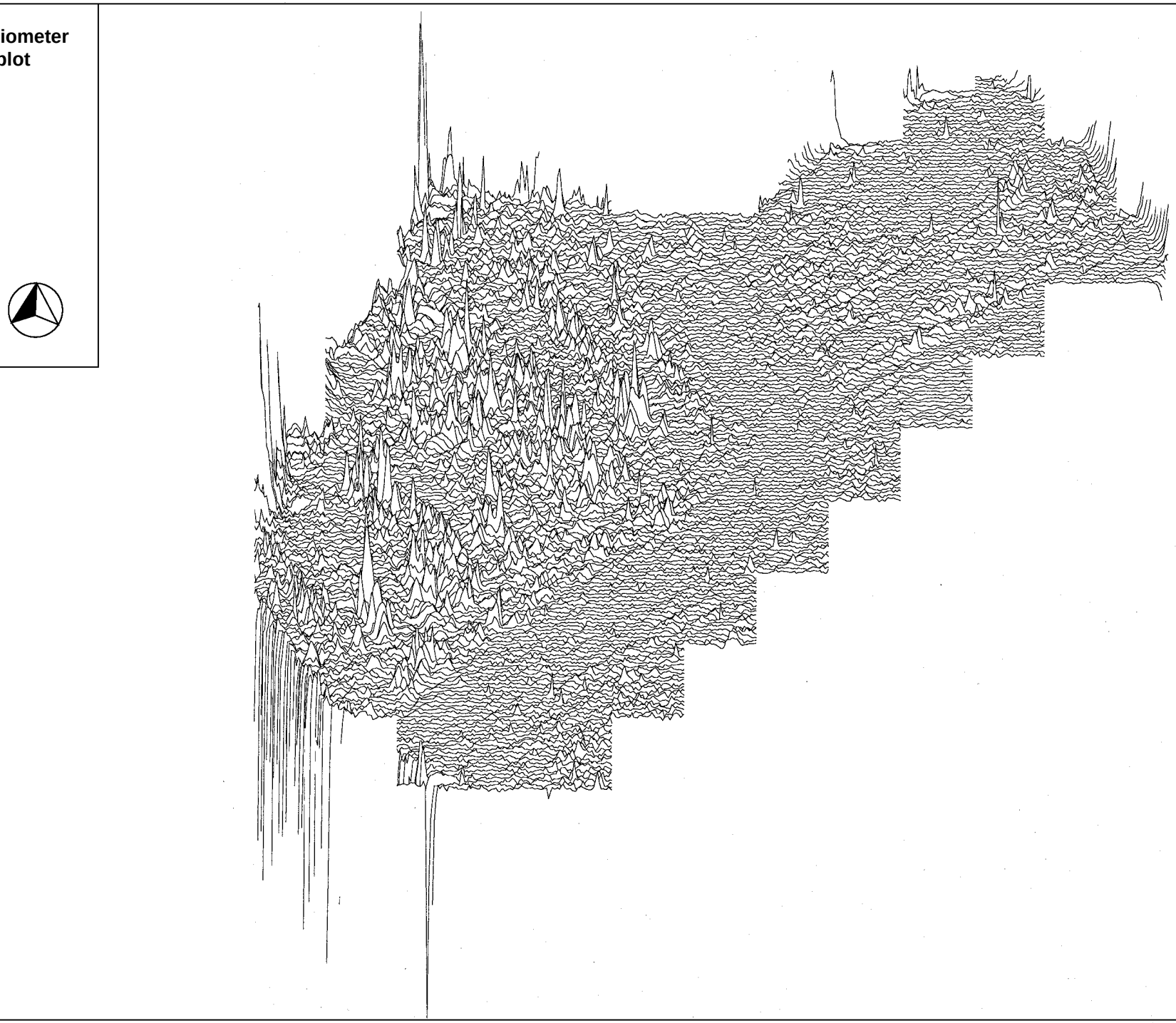


Fig. 10 Cefn Caer gradiometer survey: Area 2 trace plot

Scale: 1:1500
Resolution: 40 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: -0.54
Std Dev: 9.69
Min: -183.12
Max: 202.07

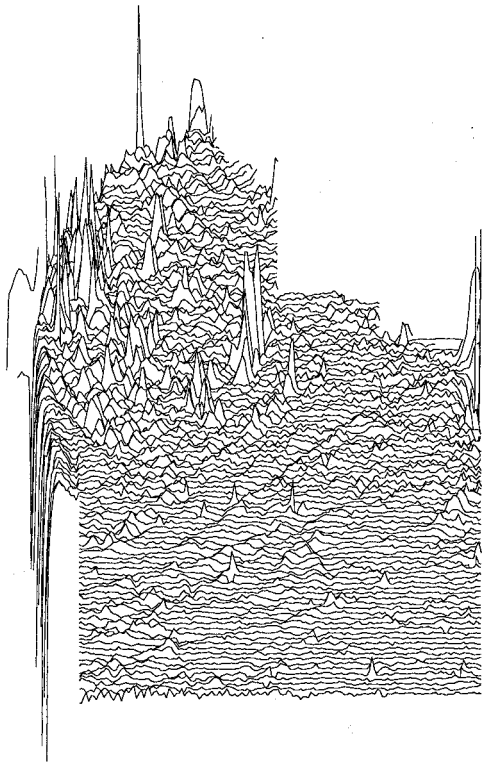


Fig.11 Cefn Caer gradiometer survey: Area 3 trace plot

Scale: 1:1500
Resolution: 40 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: -0.24
Std Dev: 9.66
Min: -193.01
Max: 136.12

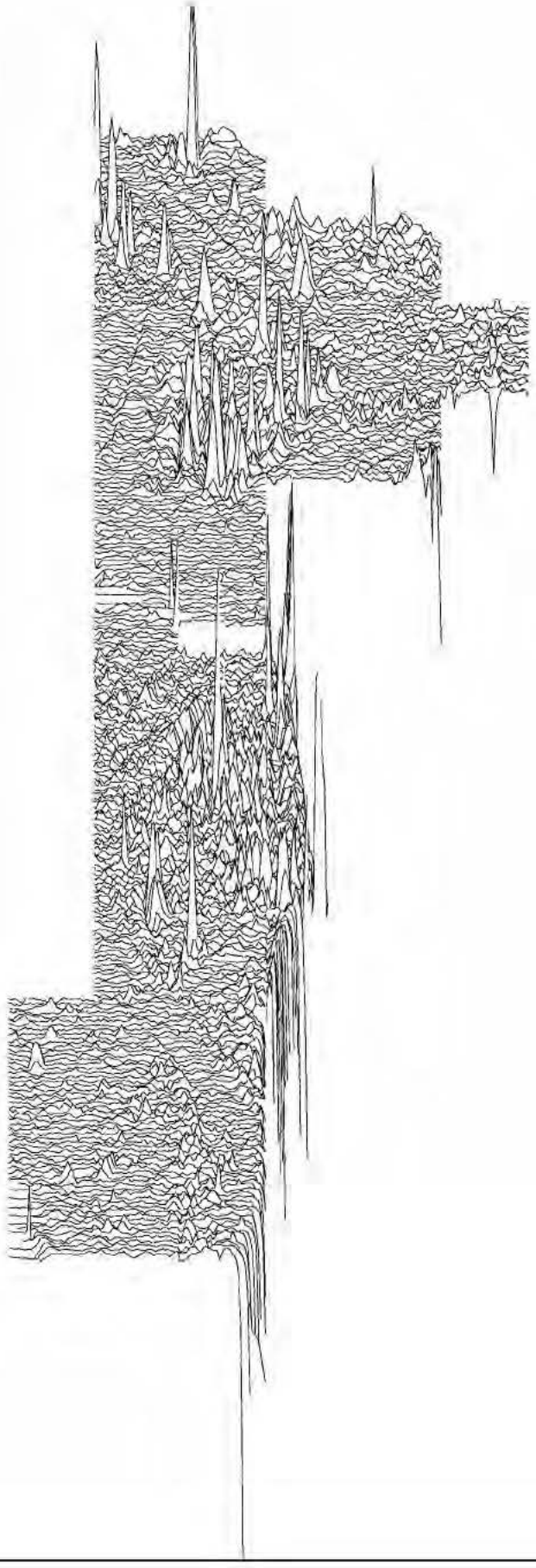


Fig. 12 Cefn Caer gradiometer survey: Area 4 trace plot

Scale: 1:1500
Resolution: 40 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.061
Std Dev: 4.91
Min: -202.69
Max: 166.23

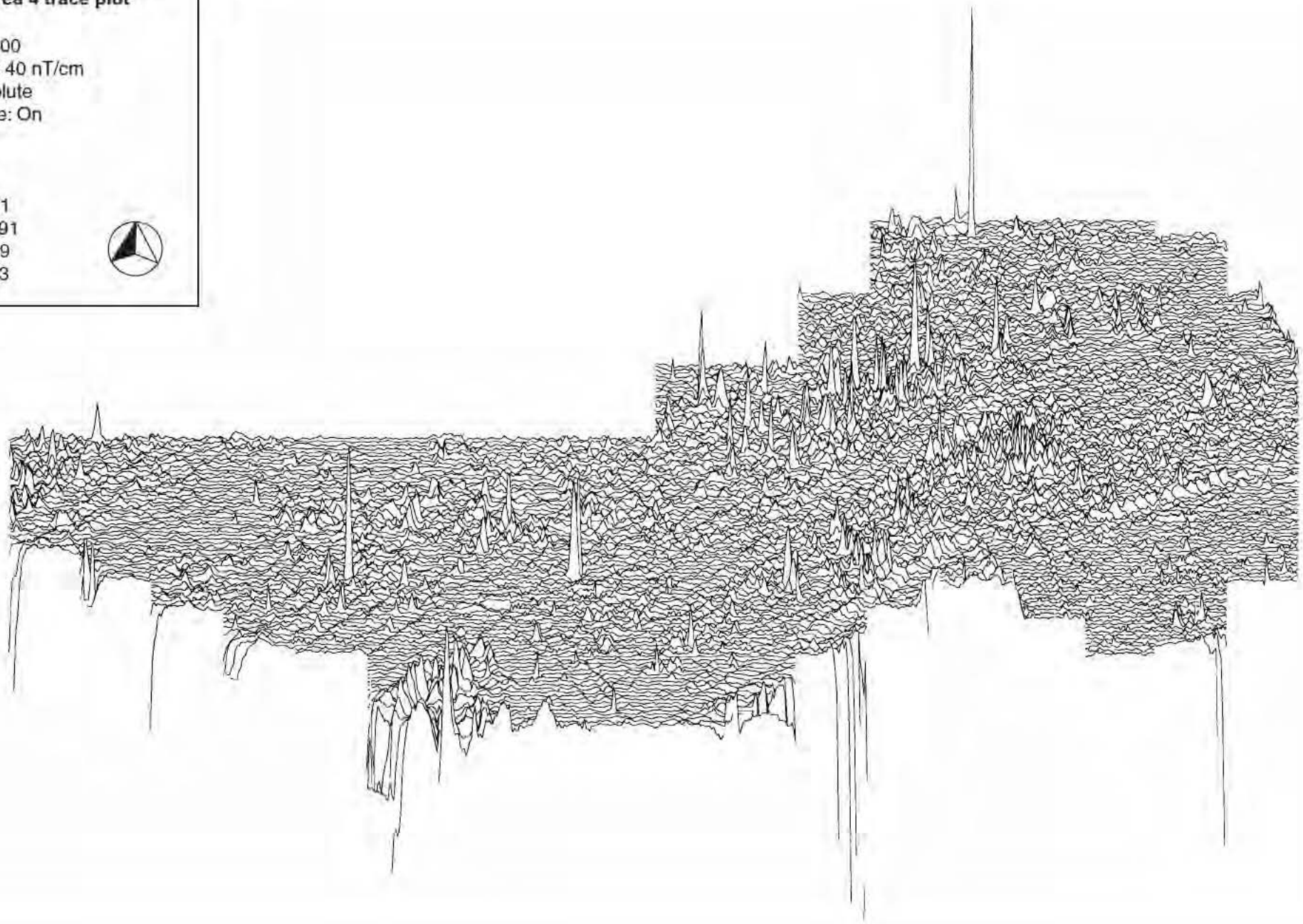


Fig. 13 Cefn Caer gradiometer survey

combined grey-scale plot

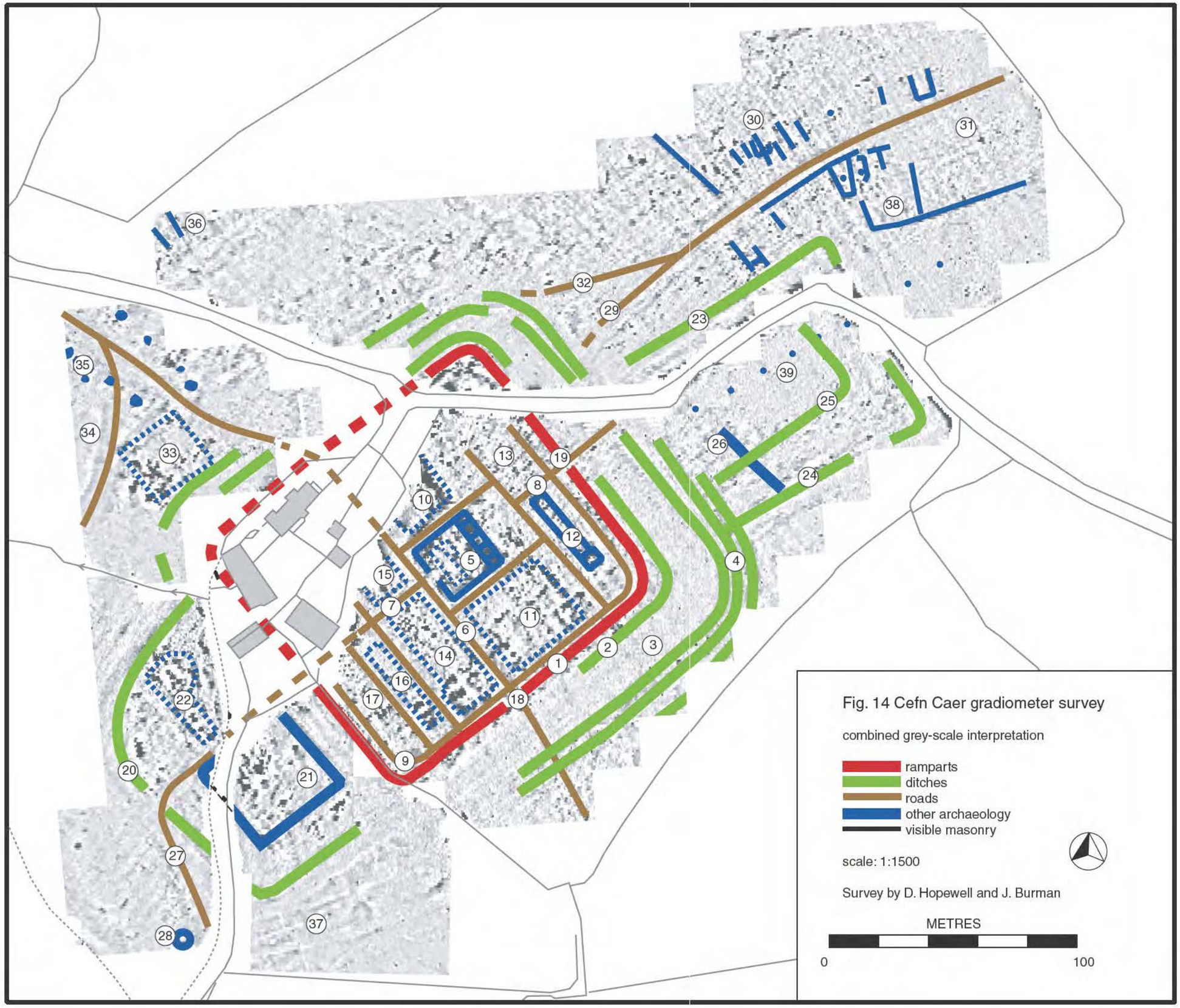


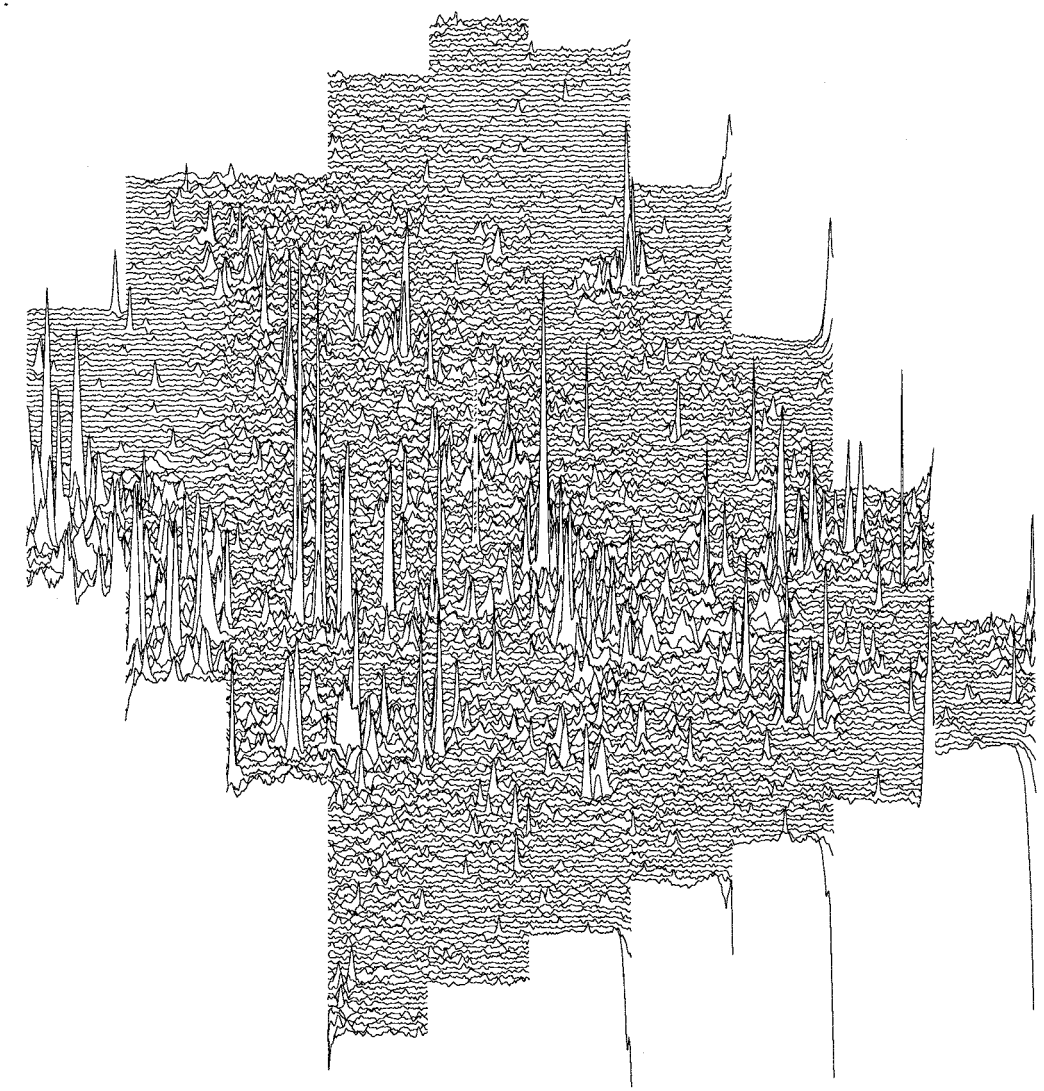
Fig. 14 Cefn Caer gradiometer survey
combined grey-scale interpretation
ramparts
ditches
roads
other archaeology
visible masonry
scale: 1:1500
Survey by D. Hopewell and J. Burman
METRES
0
100

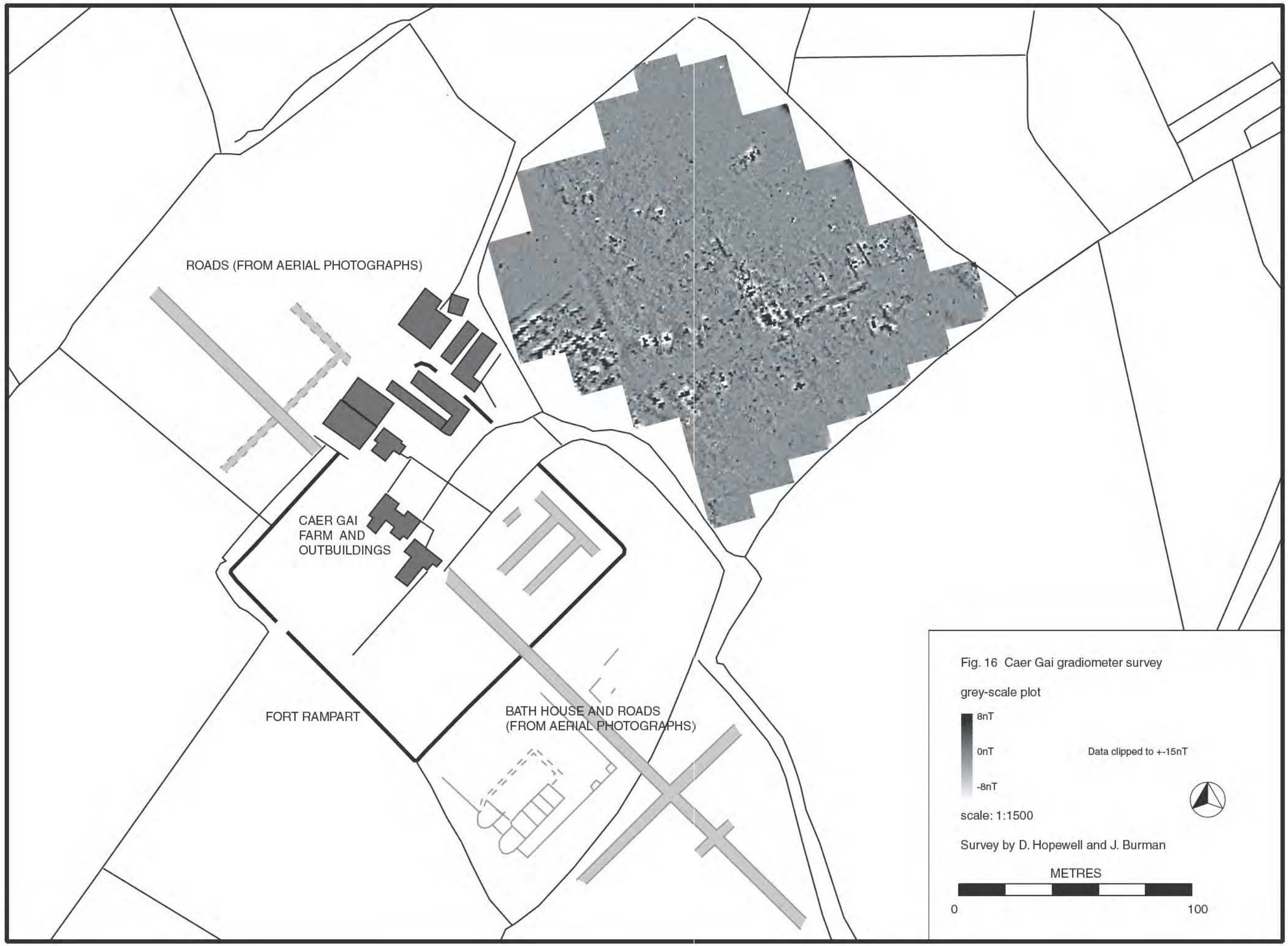
Fig. 15 Caer Gai gradiometer survey: Area 1 trace plot

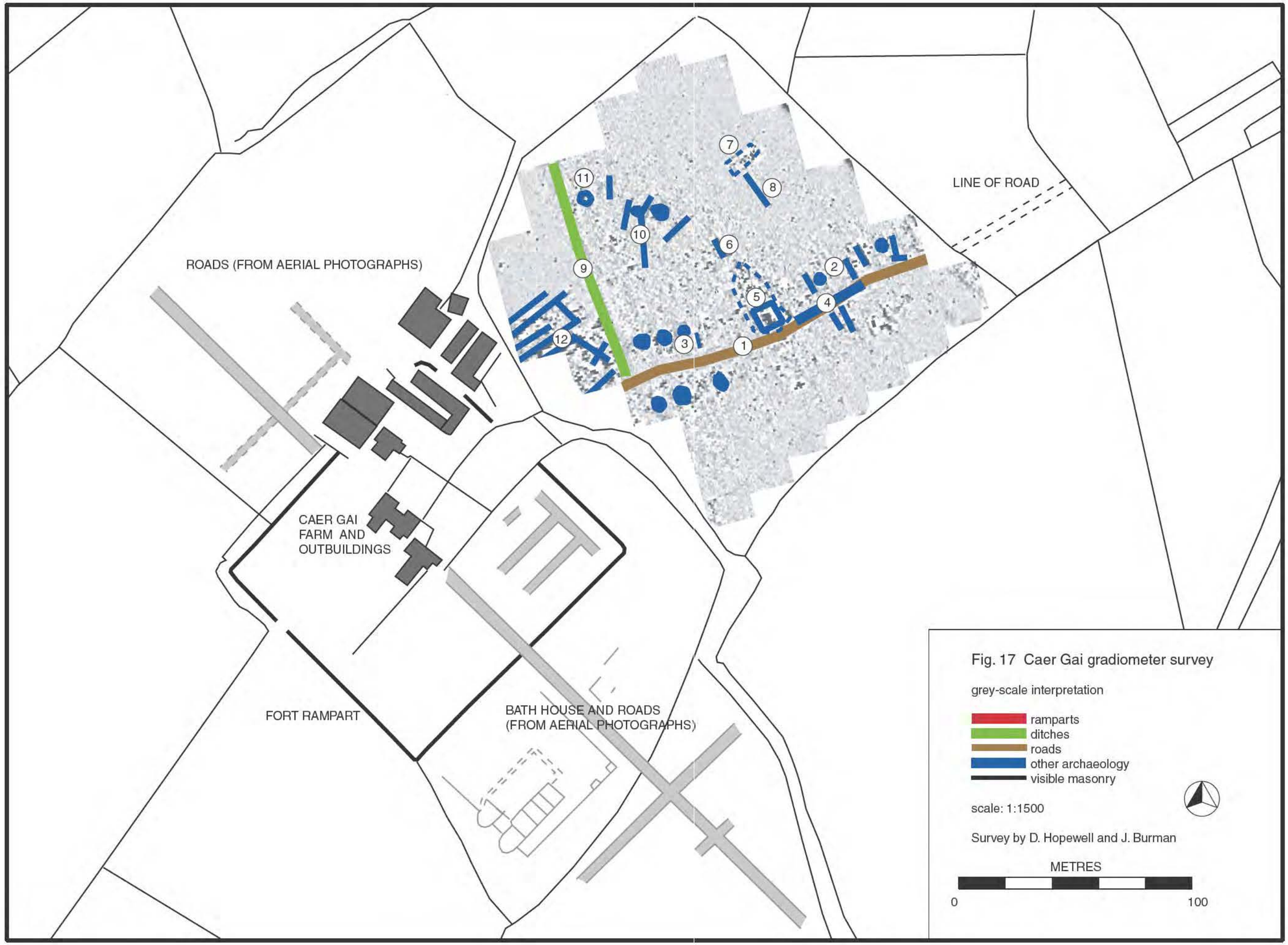
Scale: 1:1500
Resolution: 40 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.09
Std Dev: 7.35
Min: -330.53
Max: 158.35




ROADS (FROM AERIAL PHOTOGRAPHS)
CAER GAI
FARM AND
OUTBUILDINGS
FORT RAMPART
BATH HOUSE AND ROADS
(FROM AERIAL PHOTOGRAPHS)
Fig. 16 Caer Gai gradiometer survey
grey-scale plot
8nT
0nT
-8nT
Data clipped to +-15nT
scale: 1:1500
Survey by D. Hopewell and J. Burman
METRES
0
100


ROADS (FROM AERIAL PHOTOGRAPHS)
LINE OF ROAD
CAER GAI
FARM AND
OUTBUILDINGS
FORT RAMPART
BATH HOUSE AND ROADS
(FROM AERIAL PHOTOGRAPHS)
1
2
3
4
5
6
7
8
9
10
11
12
Fig. 17 Caer Gai gradiometer survey
grey-scale interpretation
ramparts
ditches
roads
other archaeology
visible masonry
scale: 1:1500
Survey by D. Hopewell and J. Burman
METRES
0
100

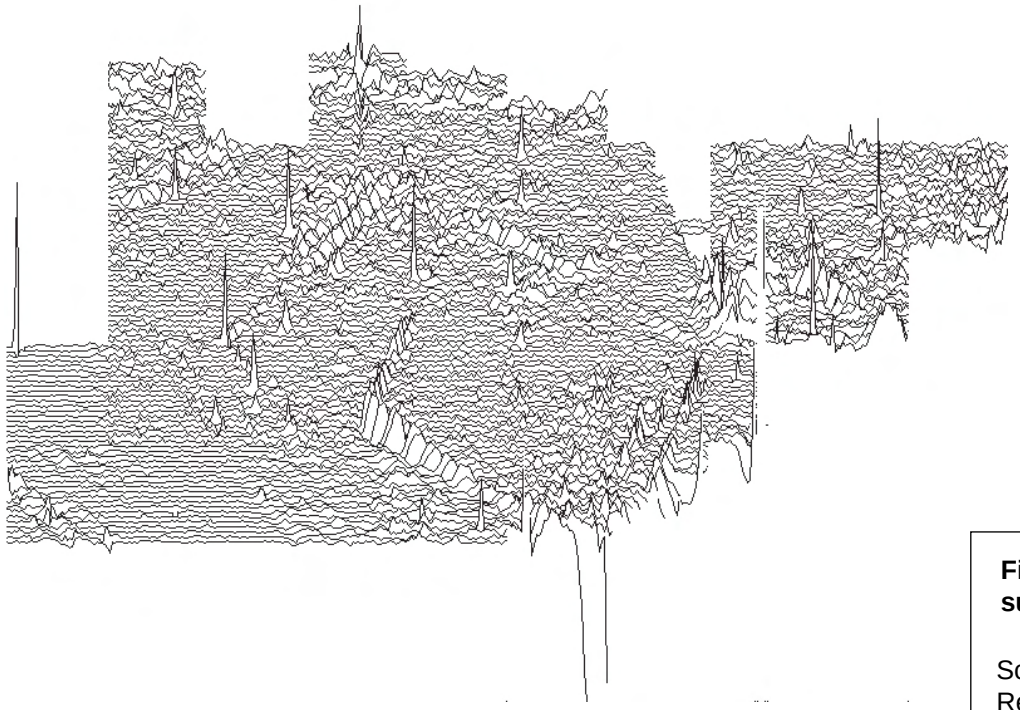


Fig. 18 Pen Llystyn gradiometer survey: Area A trace plot

Scale: 1:1500
Resolution: 48.7 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.06
Std Dev: 4.00
Min: -177.66
Max: 158.69

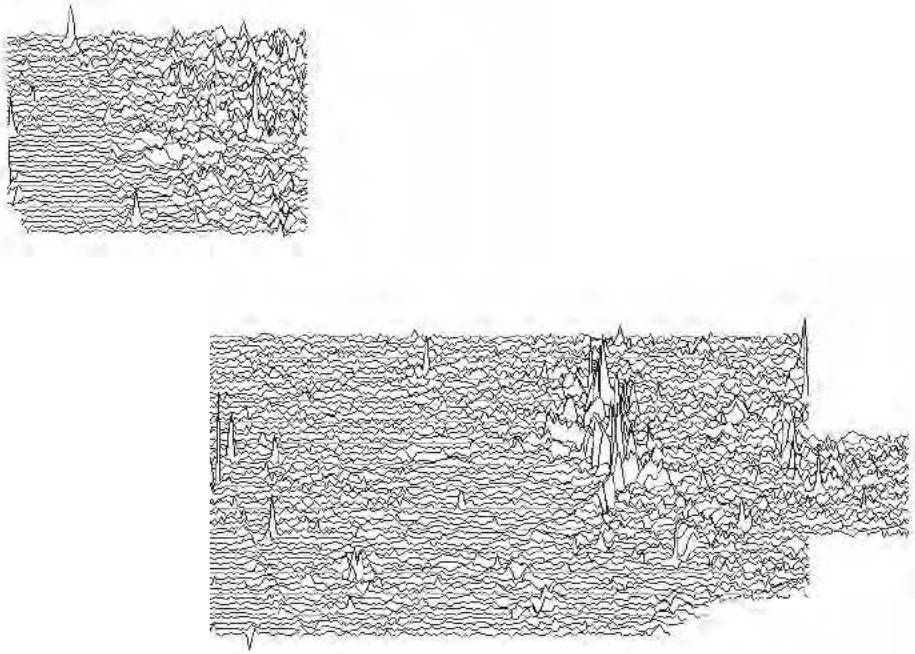


Fig. 19 Pen Llystyn gradiometer survey: Area B trace plot

Scale: 1:1500
Resolution: 57.5 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.04
Std Dev: 2.39
Min: -40.59
Max: 49.79

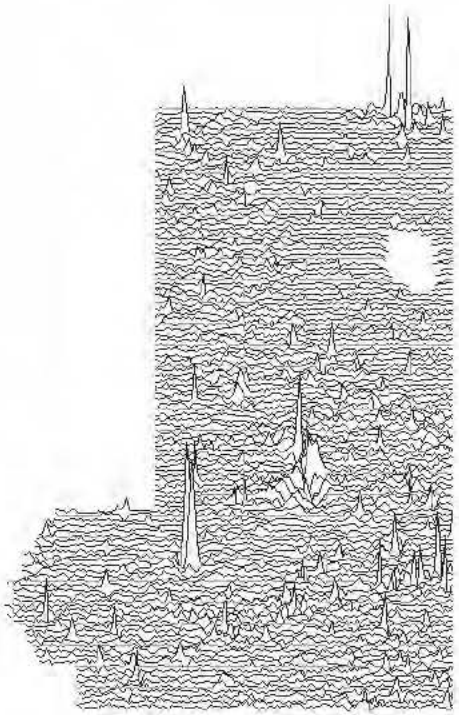
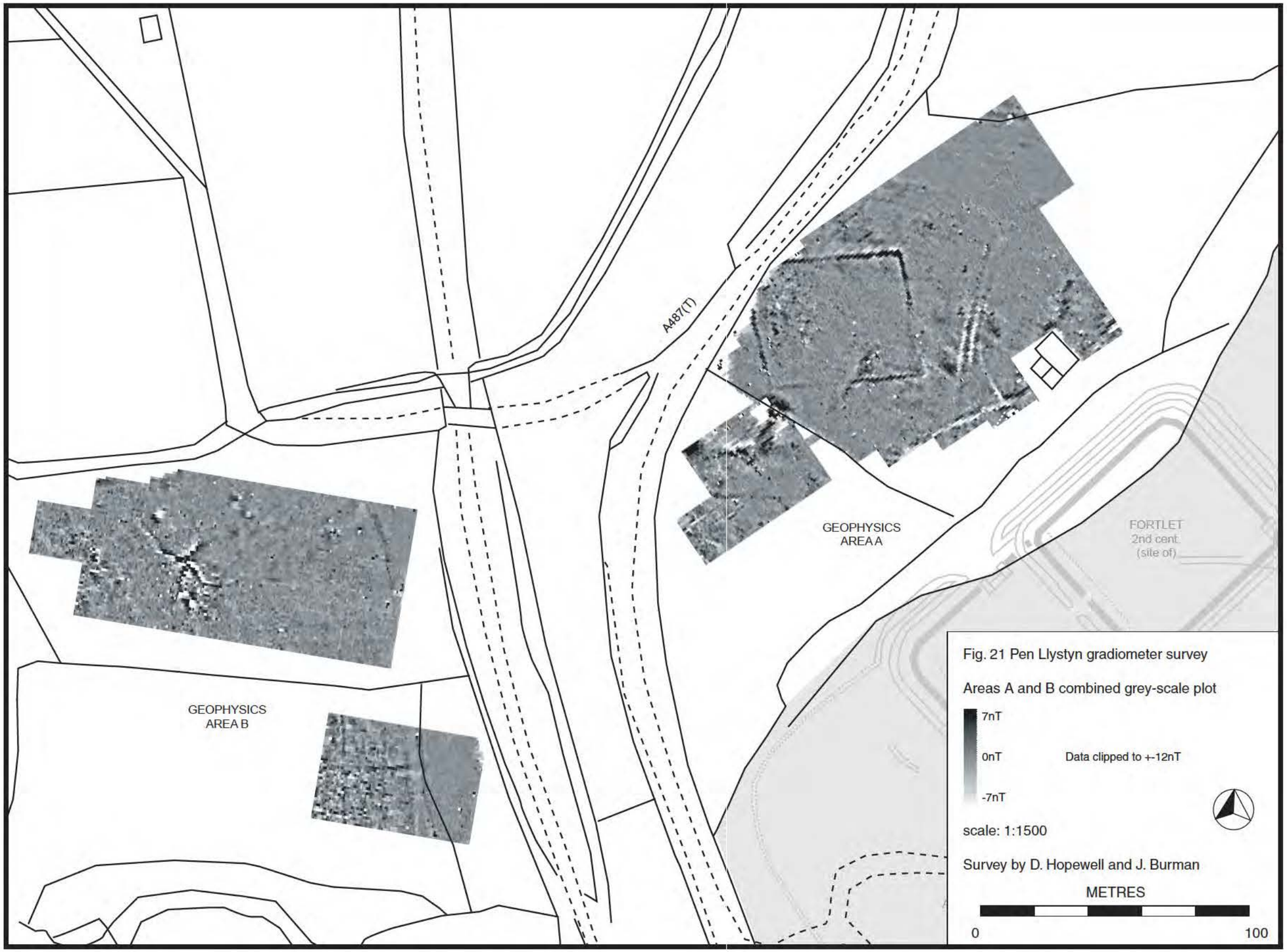


Fig. 20 Pen Llystyn gradiometer survey: Area C trace plot

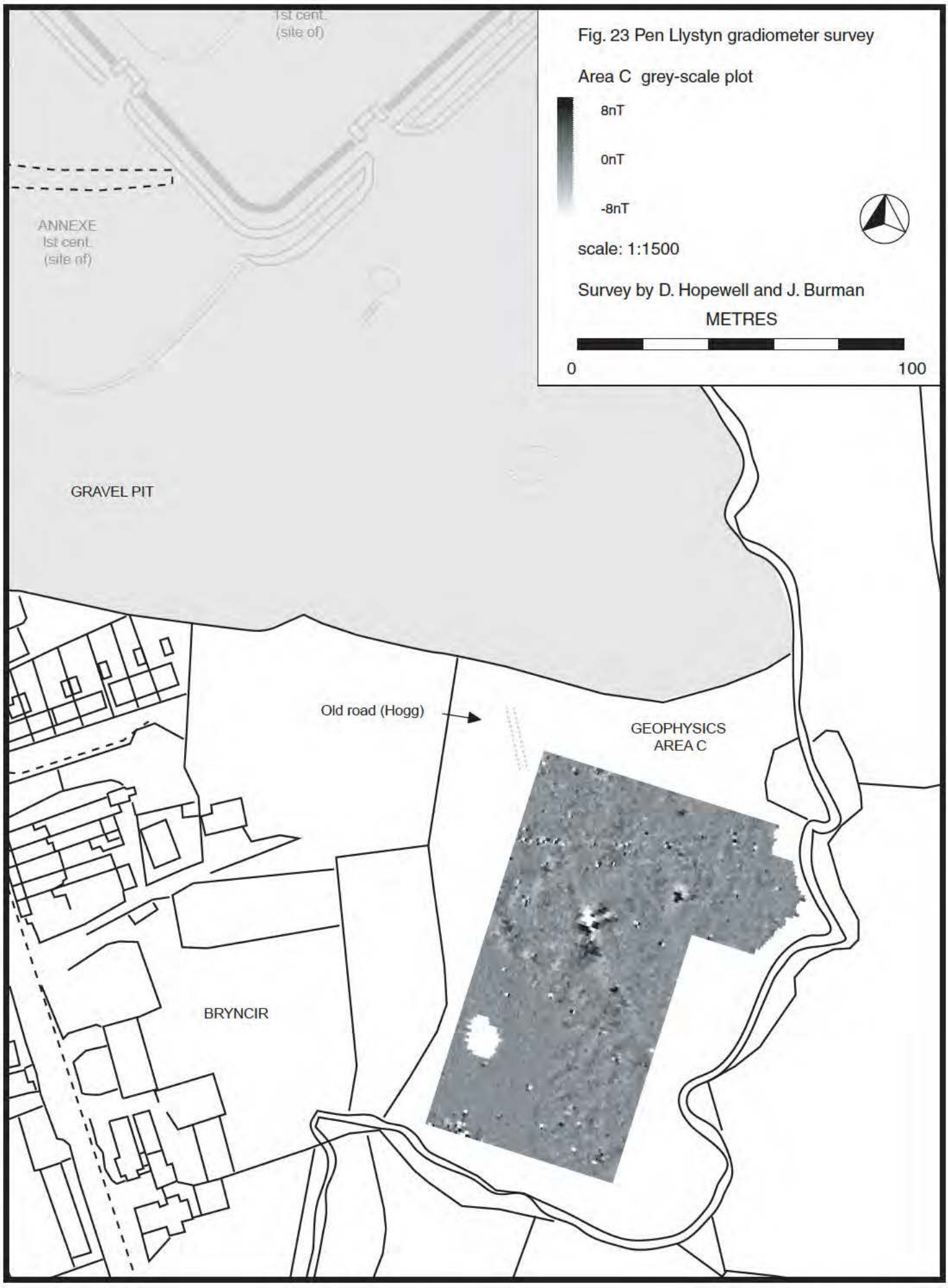
Scale: 1:1500
Resolution: 76.02 nT/cm
Units: Absolute
Hidden Line: On

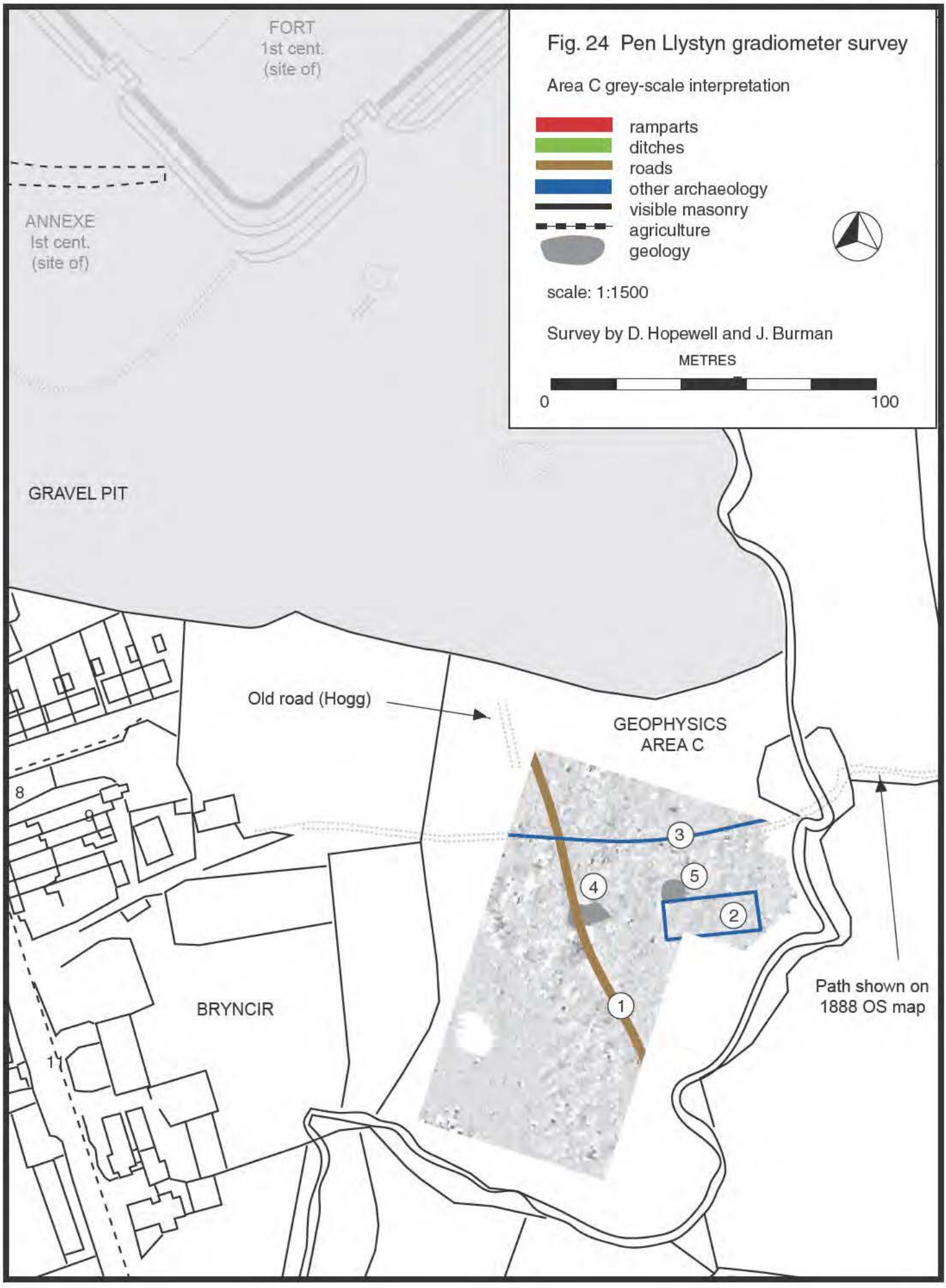
Statistics

Mean: 0.04
Std Dev: 3.17
Min: -85.81
Max: 38.01


A487(T)
GEOPHYSICS
AREA A
GEOPHYSICS
AREA B
FORTLET
2nd cent.
(site of)
Fig. 21 Pen Llystyn gradiometer survey
Areas A and B combined grey-scale plot
7nT
0nT
-7nT
Data clipped to +-12nT
scale: 1:1500
Survey by D. Hopewell and J. Burman
METRES
0
100


Disused
Railway Line
A487(T)
Paths shown on
1888 OS map
GEOPHYSICS
AREA A
GEOPHYSICS
AREA B
FORTLET
2nd cent.
(site of)
1
2
3
4
5
6
7
8
9
10
11
Fig. 22 Pen Llystyn gradiometer survey
Areas A and B grey-scale interpretation
ramparts
ditches
roads
other archaeology
visible masonry
agriculture
geology
scale: 1:1500
Survey by D. Hopewell and J. Burman
METRES
0
100


1st cent.
(site of)
ANNEXE
1st cent.
(site of)
GRAVEL PIT
Old road (Hogg)
GEOPHYSICS
AREA C
BRYNCIR
Fig. 23 Pen Llystyn gradiometer survey
Area C grey-scale plot
8nT
0nT
-8nT
scale: 1:1500
Survey by D. Hopewell and J. Burman
METRES
0
100


FORT
1st cent.
(site of)
ANNEXE
1st cent.
(site of)
GRAVEL PIT
Old road (Hogg)
GEOPHYSICS
AREA C
BRYNCIR
Path shown on
1888 OS map
8
9
11
1
2
3
4
5
Fig. 24 Pen Llystyn gradiometer survey
Area C grey-scale interpretation
ramparts
ditches
roads
other archaeology
visible masonry
agriculture
geology
scale: 1:1500
Survey by D. Hopewell and J. Burman
METRES
0
100

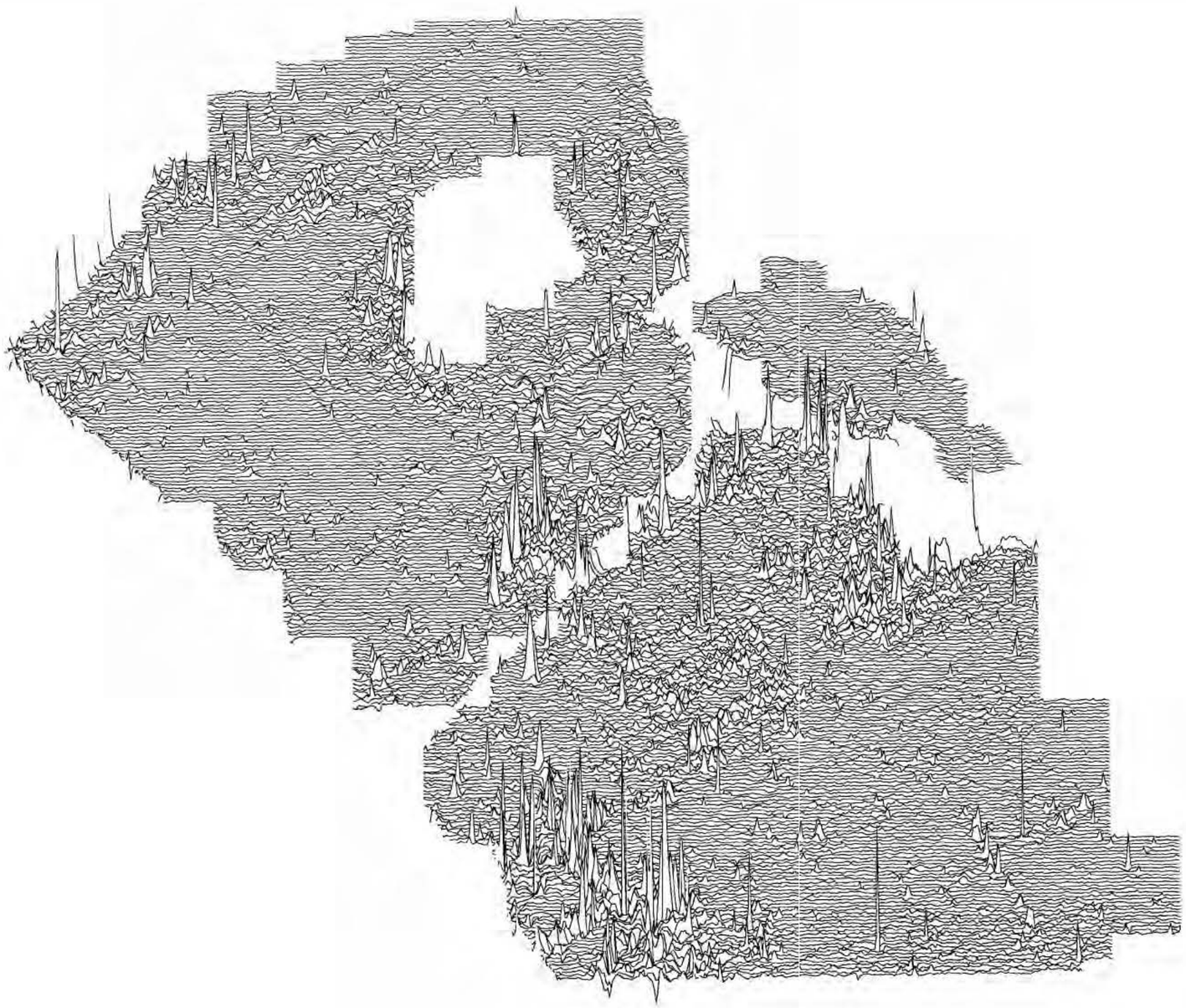


Fig. 25 Bryn y Gefeiliau gradiometer survey: Area A trace plot

Scale: 1:1500
Resolution: 70.2 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.22
Std Dev: 5.85
Min: -202.29
Max: 201.61

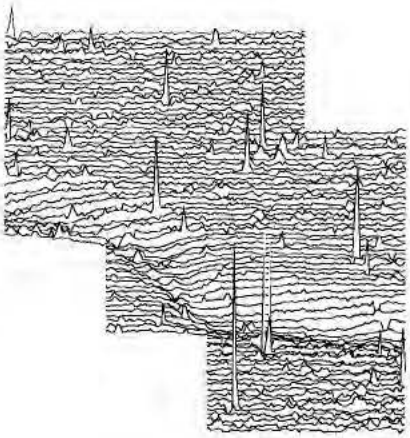


Fig. 26 Bryn y Gefeiliau gradiometer survey: Area B trace plot

Scale: 1:1500
Resolution: 41.3 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 1.01
Std Dev: 3.44
Min: -65.39
Max: 88.50

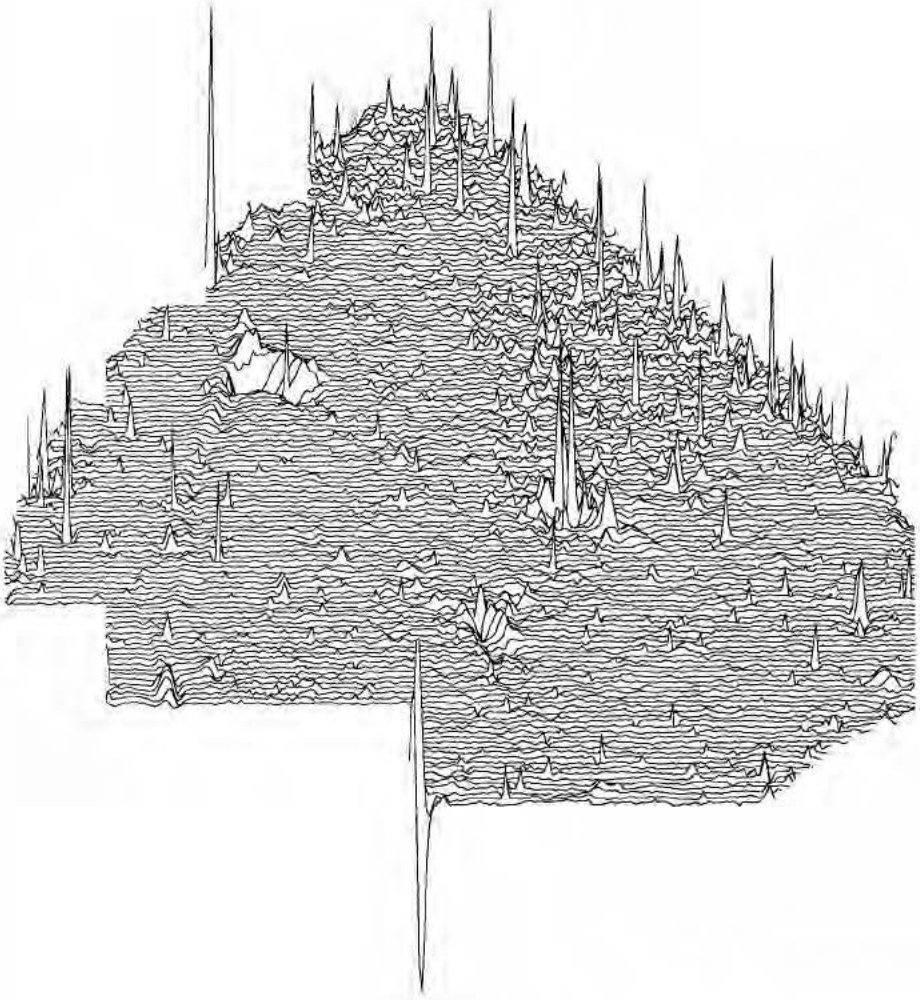


Fig. 27 Bryn y Gefeiliau gradiometer survey: Area C trace plot

Scale: 1:1500
Resolution: 46.0 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.03
Std Dev: 3.83
Min: -113.76
Max: 168.45

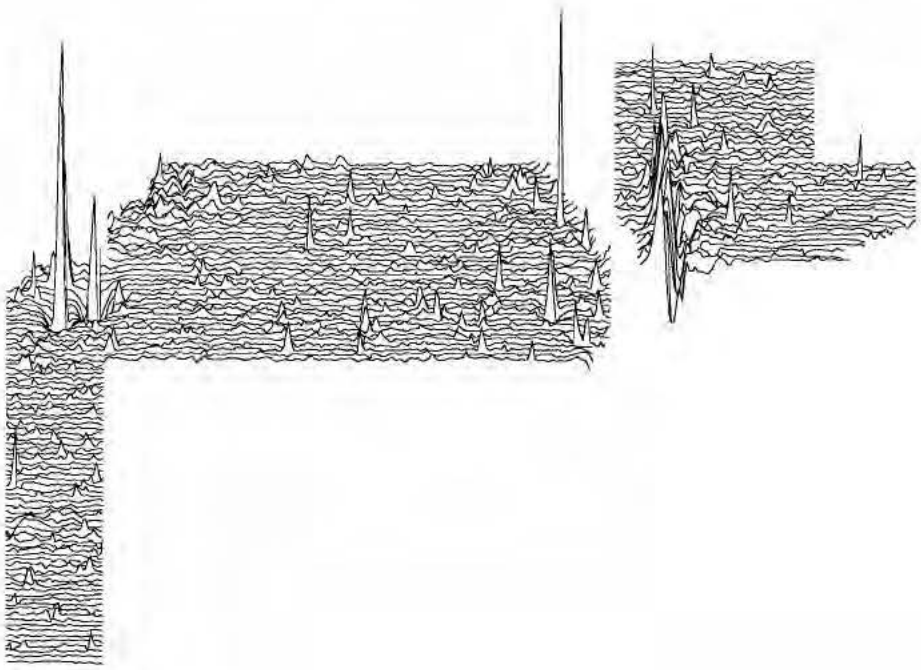


Fig. 28 Bryn y Gefeiliau gradiometer survey: Area D trace plot

Scale: 1:1500
Resolution: 47.0 nT/cm
Units: Absolute
Hidden Line: On

Statistics

Mean: 0.44
Std Dev: 5.88
Min: -182.30
Max: 164.05

Fig. 29 Bryn y Gefeiliau gradiometer survey

Combined grey-scale plot

7nT

0nT

-7nT

Data clipped to +-15nT

scale: 1:1500

Survey by D. Hopewell and J. Burman

METRES

0 100

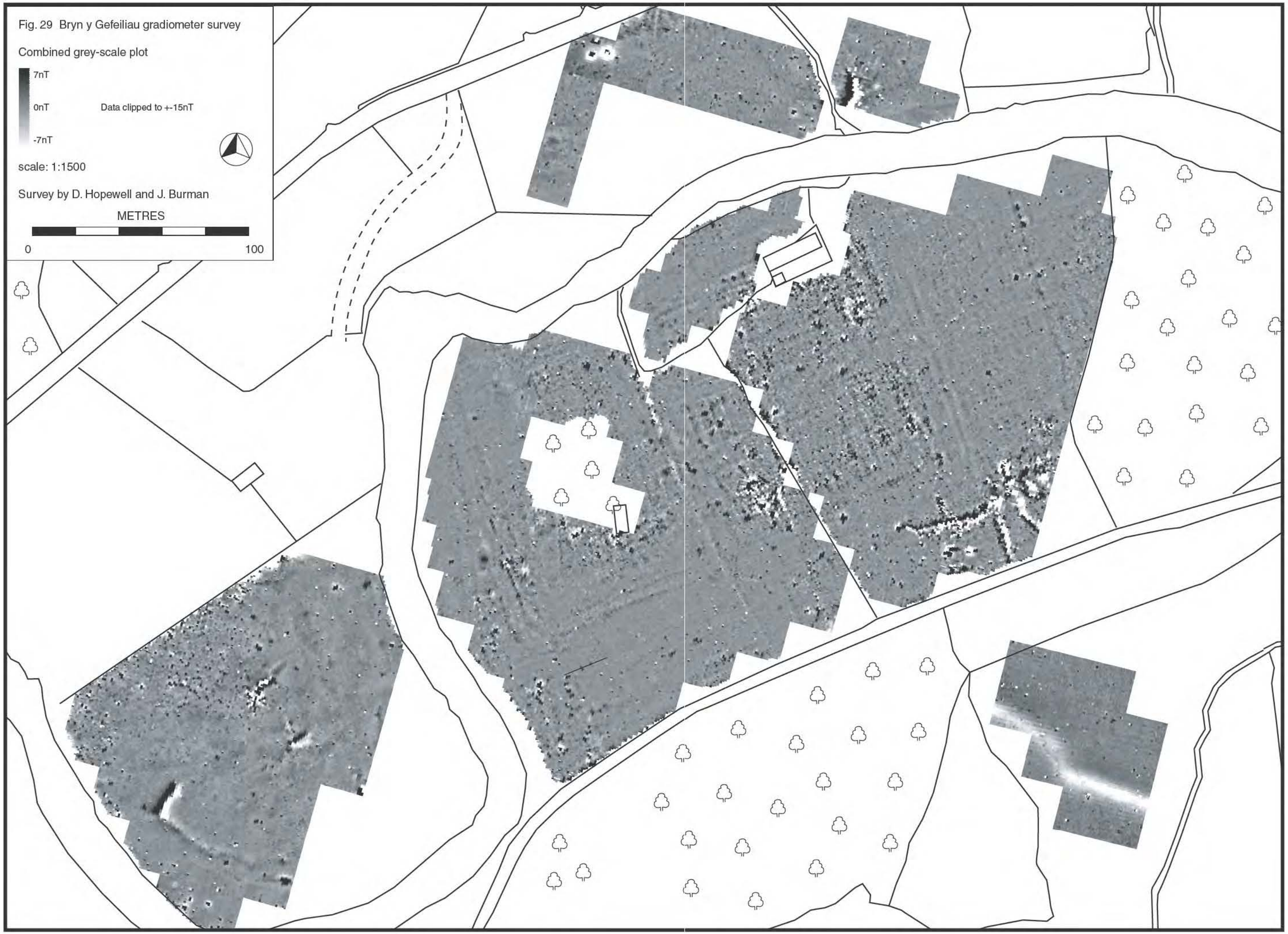


Fig. 30 Bryn y Gefeiliau gradiometer survey

Areas A to D grey-scale interpretation

ramparts
ditches
roads
other archaeology
visible masonry
agriculture
geology

scale: 1:1500

Survey by D. Hopewell and J. Burman

METRES

0 100

AREA A

AREA B

AREA C

AREA D

Fig. 31 Canovium gradiometer survey: Area 1 trace plot

Scale: 1:1000
Resolution: 79 nT/cm
Units: Std dev
Hidden Line: On

Statistics

Mean: 0.06
Std Dev: 7.56
Min: -207.01
Max: 204.03

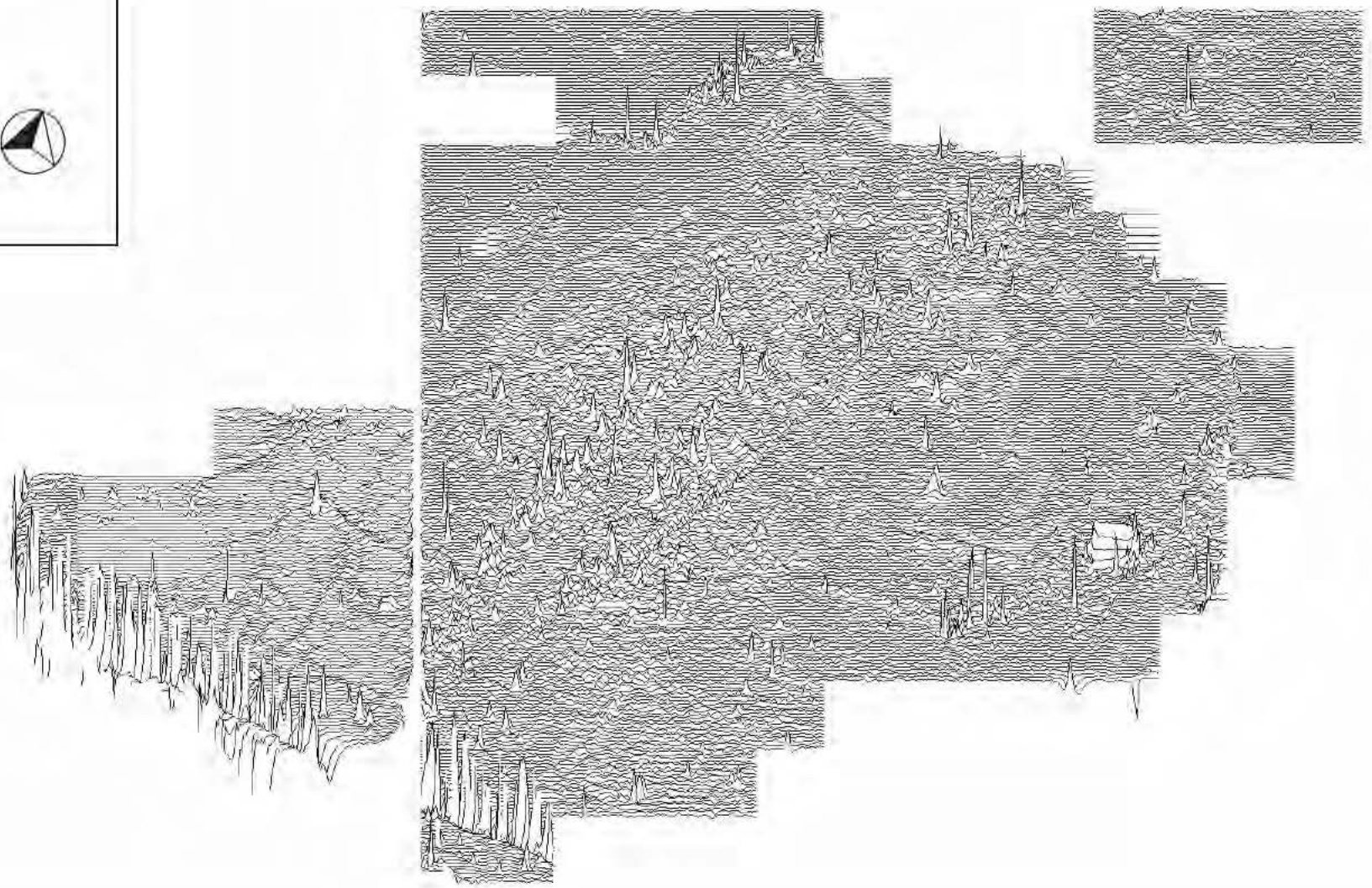
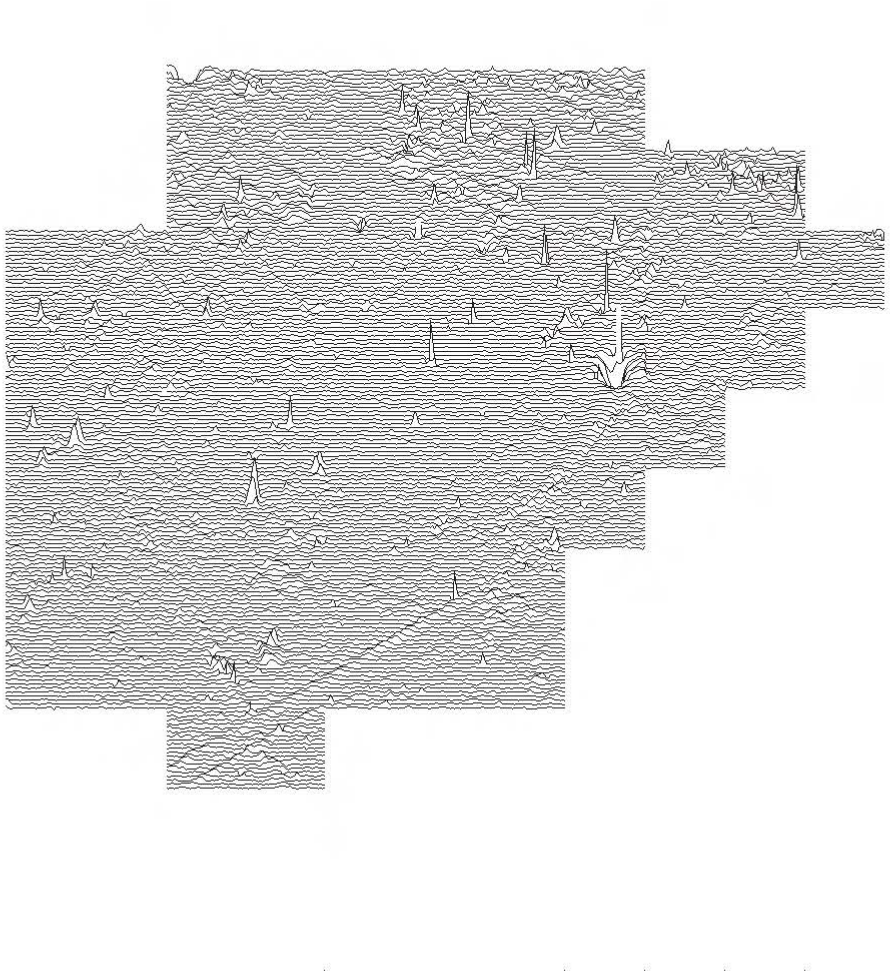


Fig. 32 Canovium gradiometer survey: Area 2 trace plot

Scale: 1:1000
Resolution: 79 nT/cm
Units: Std dev
Hidden Line: On

Statistics

Mean: 0.05
Std Dev: 3.94
Min: -195.71
Max: 103.28



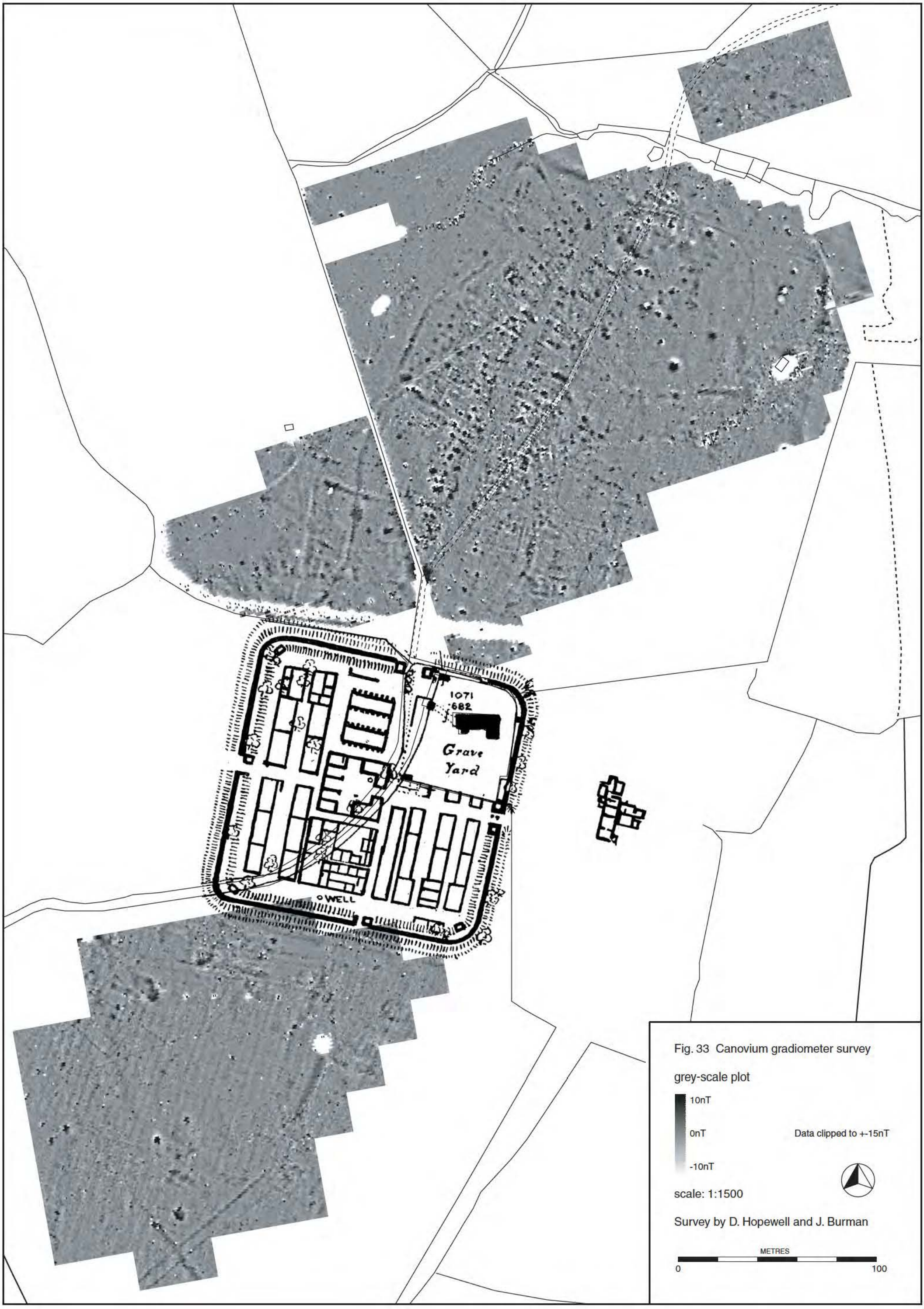


Fig. 33 Canovium gradiometer survey

grey-scale plot

10nT

0nT

-10nT

Data clipped to +-15nT

scale: 1:1500

Survey by D. Hopewell and J. Burman

METRES

0 100

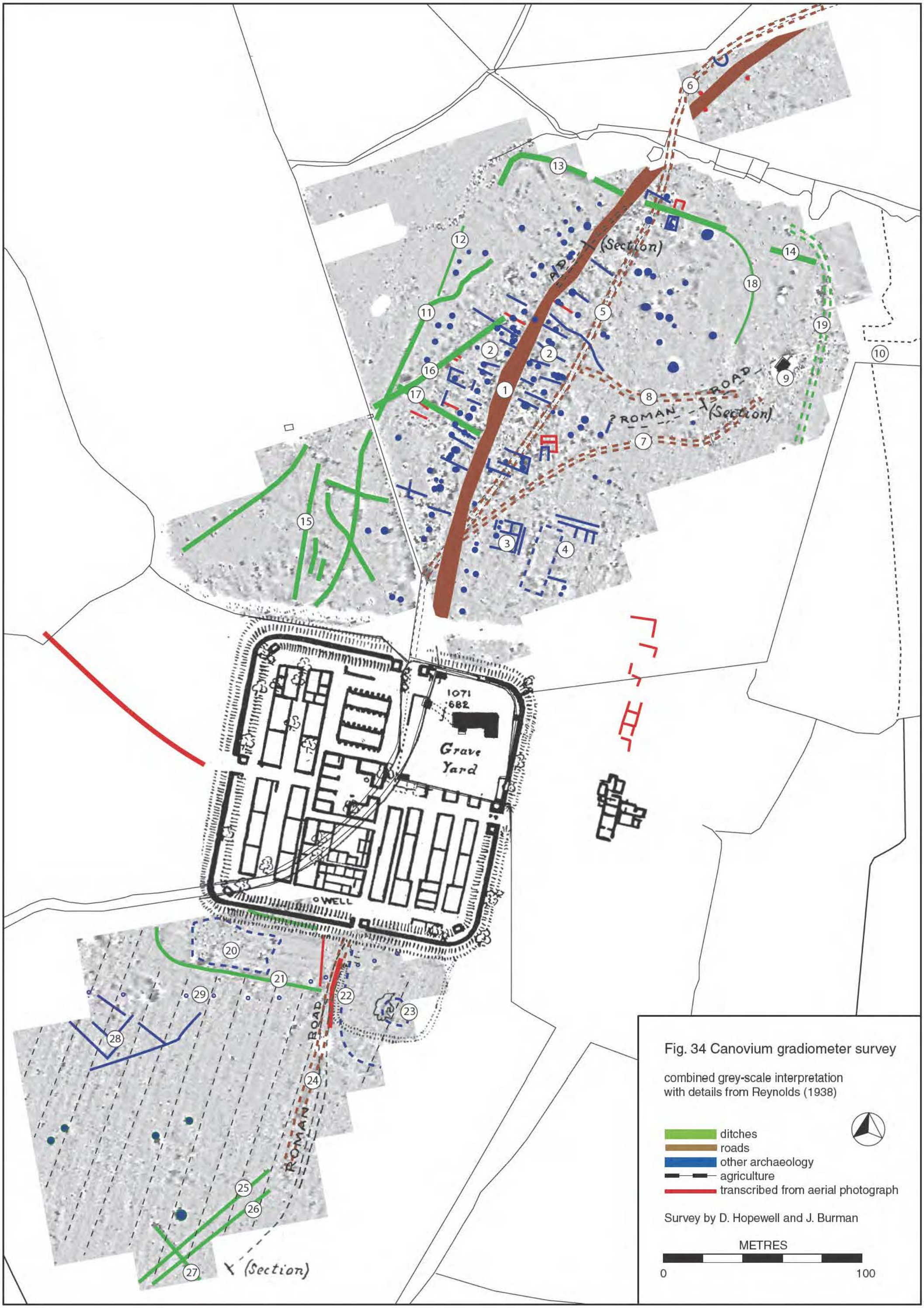


Fig. 34 Canovium gradiometer survey

combined grey-scale interpretation
with details from Reynolds (1938)

ditches
roads
other archaeology
agriculture
transcribed from aerial photograph

Survey by D. Hopewell and J. Burman

METRES

0 100

Fig. 35 Llanfor gradiometer survey: Trace plot

Scale: 1:1000
Resolution: 53 nT/cm
Units: Std dev
Hidden Line: On

Statistics

Mean: 0.04
Std Dev: 4.70
Min: -204.42
Max: 185.71

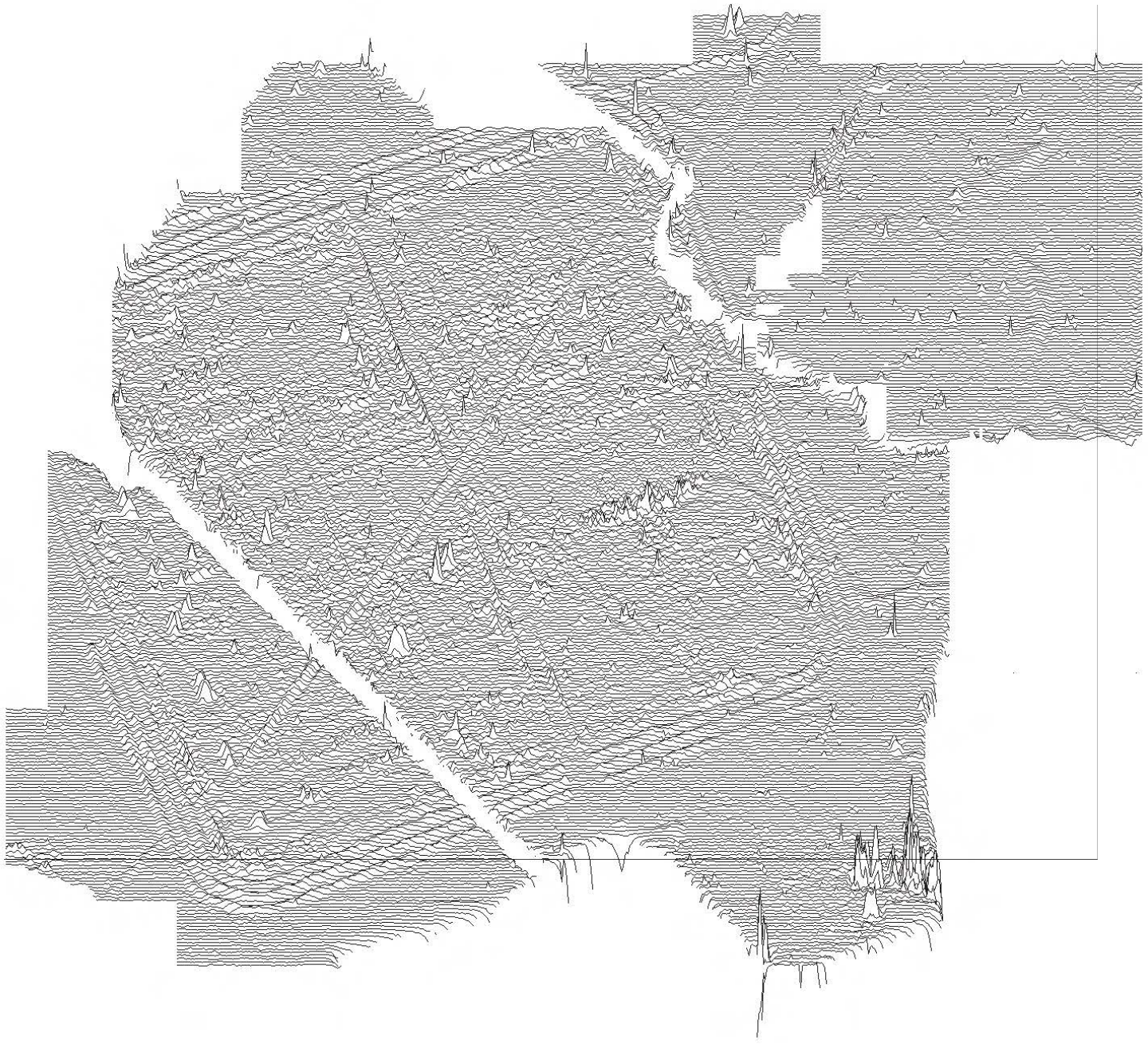


Fig. 36 Llanfor gradiometer survey

grey-scale plot

Survey by D. Hopewell and J. Burman

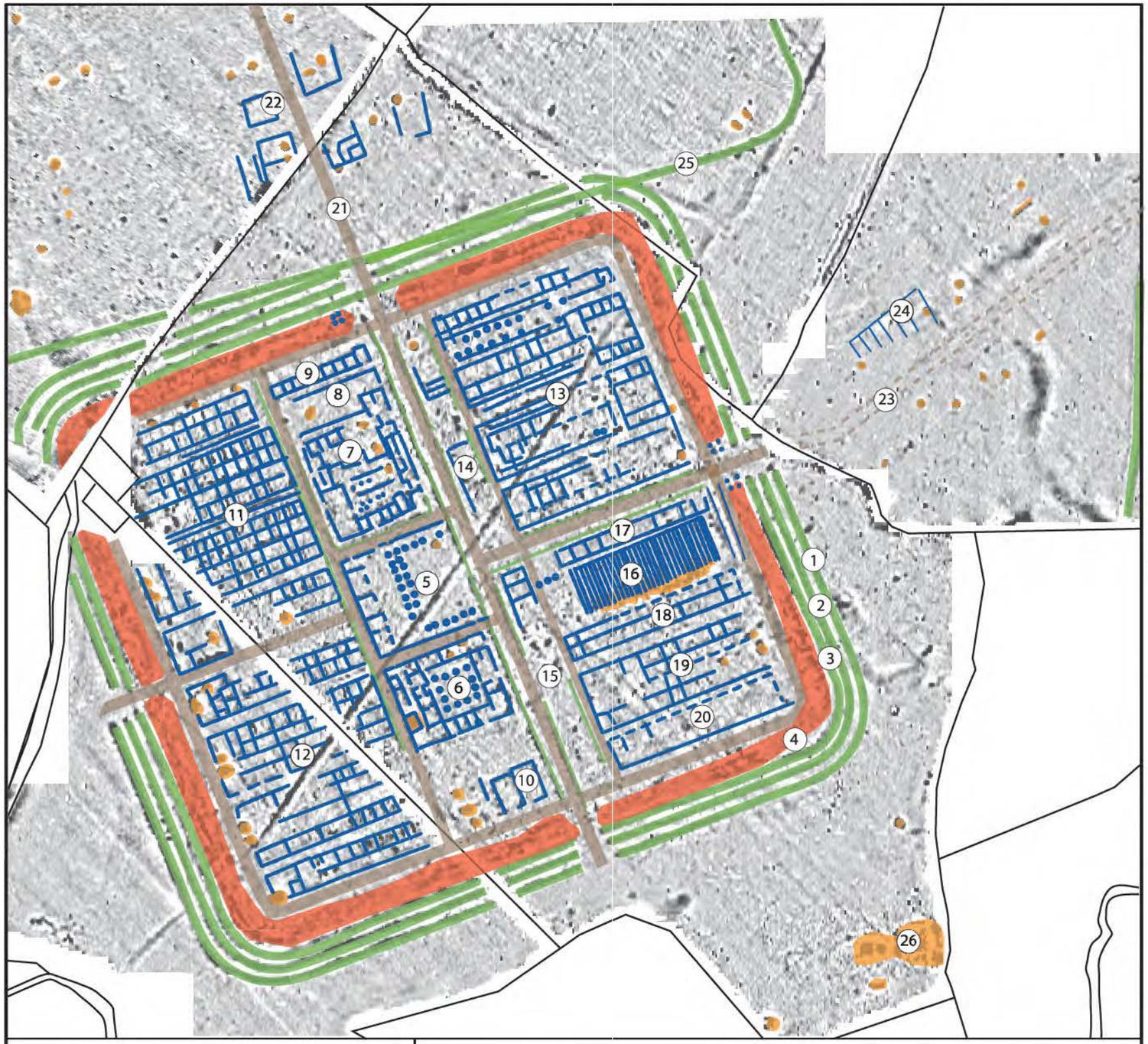


Fig. 37 Llanfor gradiometer survey

Interpretation plan

Survey by D. Hopewell and J. Burman

Fig. 38 Llanfor, combined gradiometer surveys

Survey by D. Hopewell, J. Burman and Engineering Archaeological Services (Crew 1997)

METRES

0 100

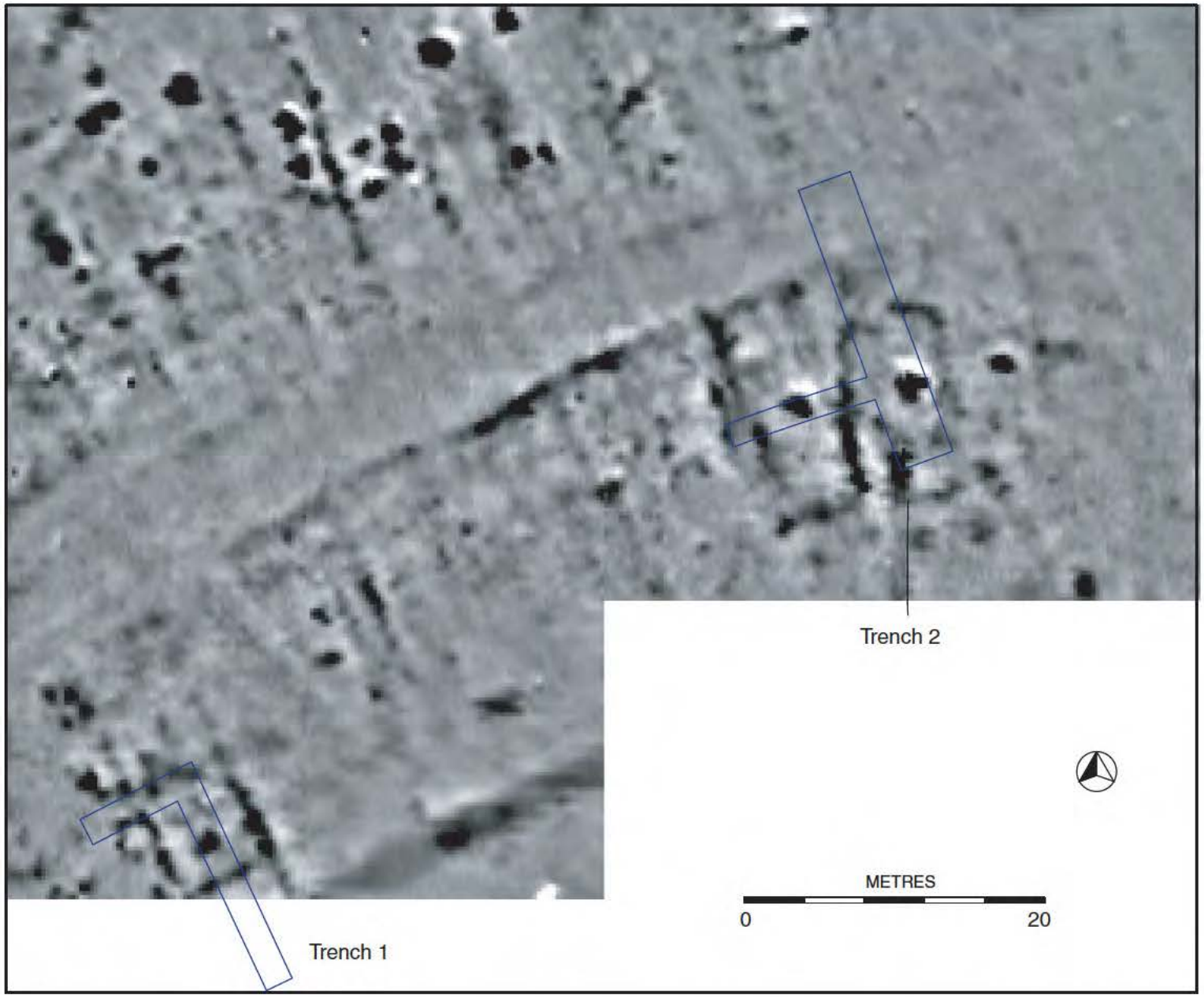


Fig. 39 Cefn Caer hi-res geophysics and trench locations

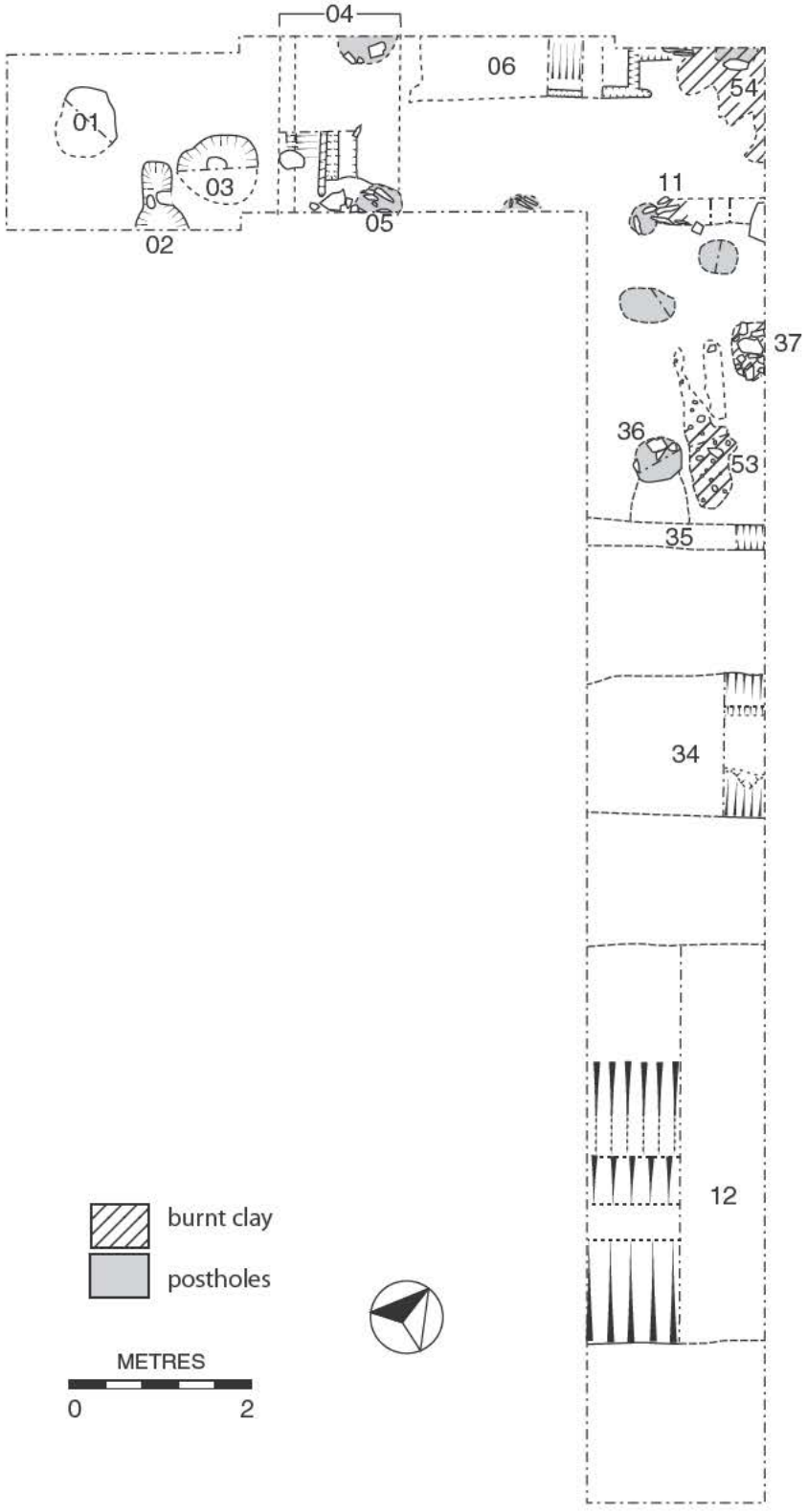
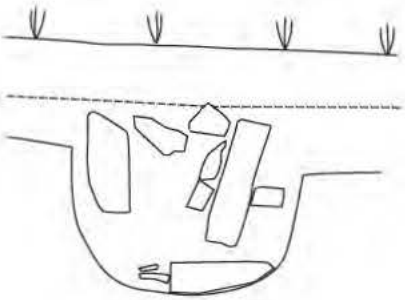
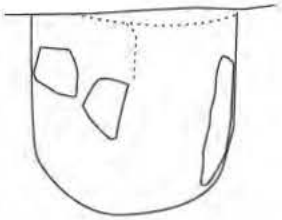


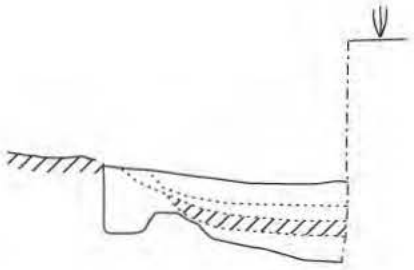
Fig. 40 Cefn Caer, Trench 1 plan



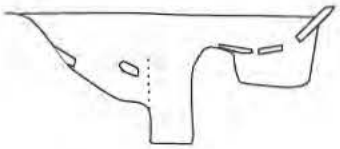
posthole 05



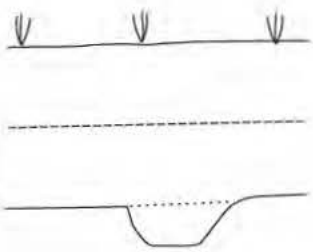
posthole 36



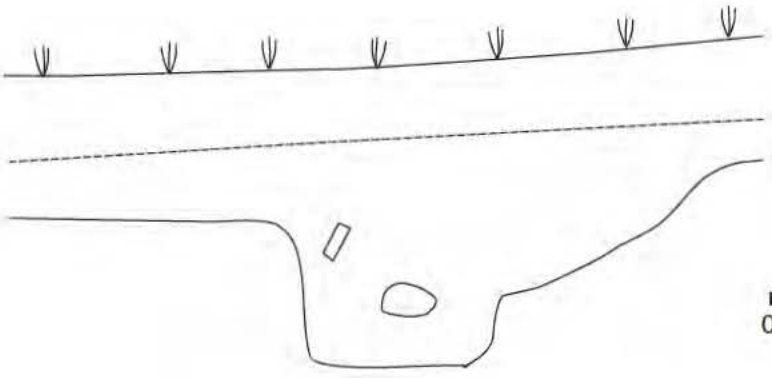
trough 6



beam slot 04



beam slot 35



gully / beam slot 34

Fig. 41 Cefn Caer, trench 1, sections

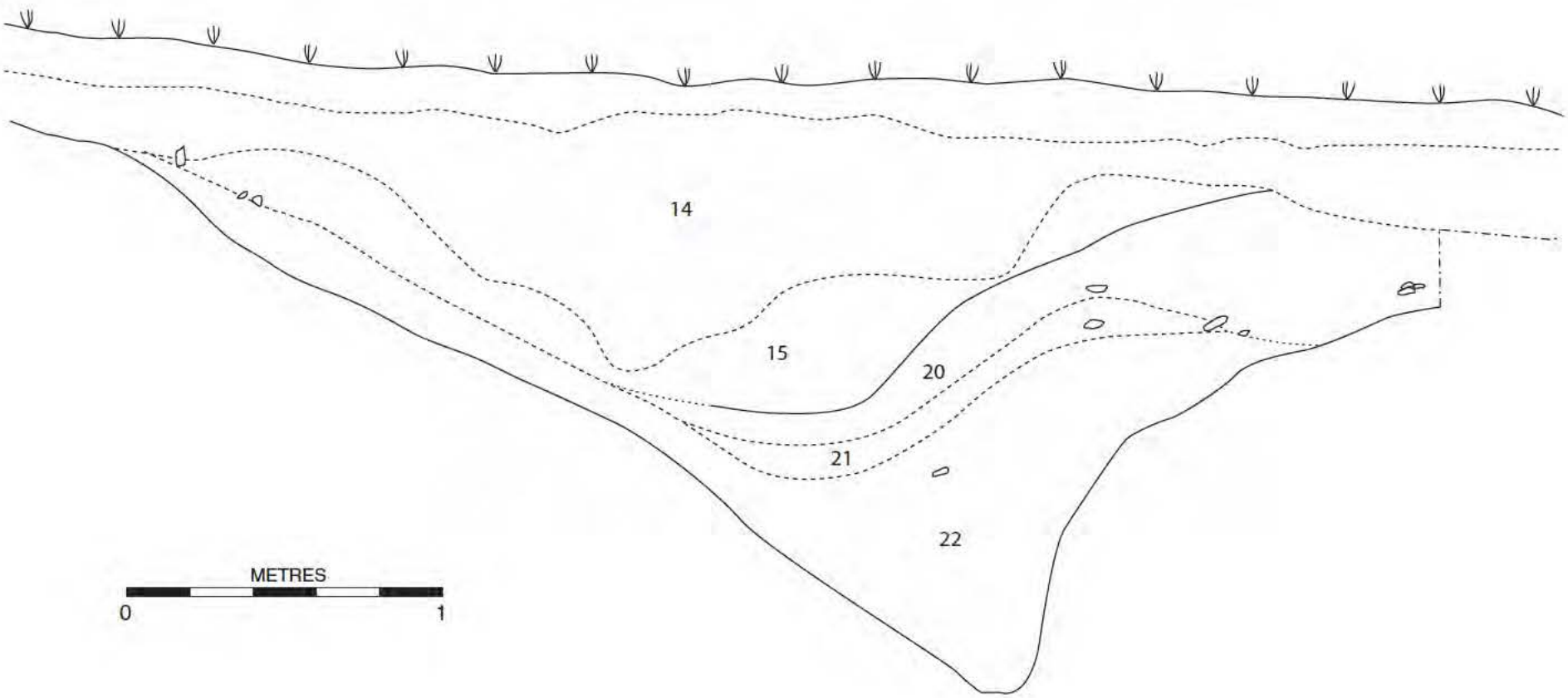


Fig. 42 Cefn Caer, trench 1, NE facing section of enclosure ditch 12

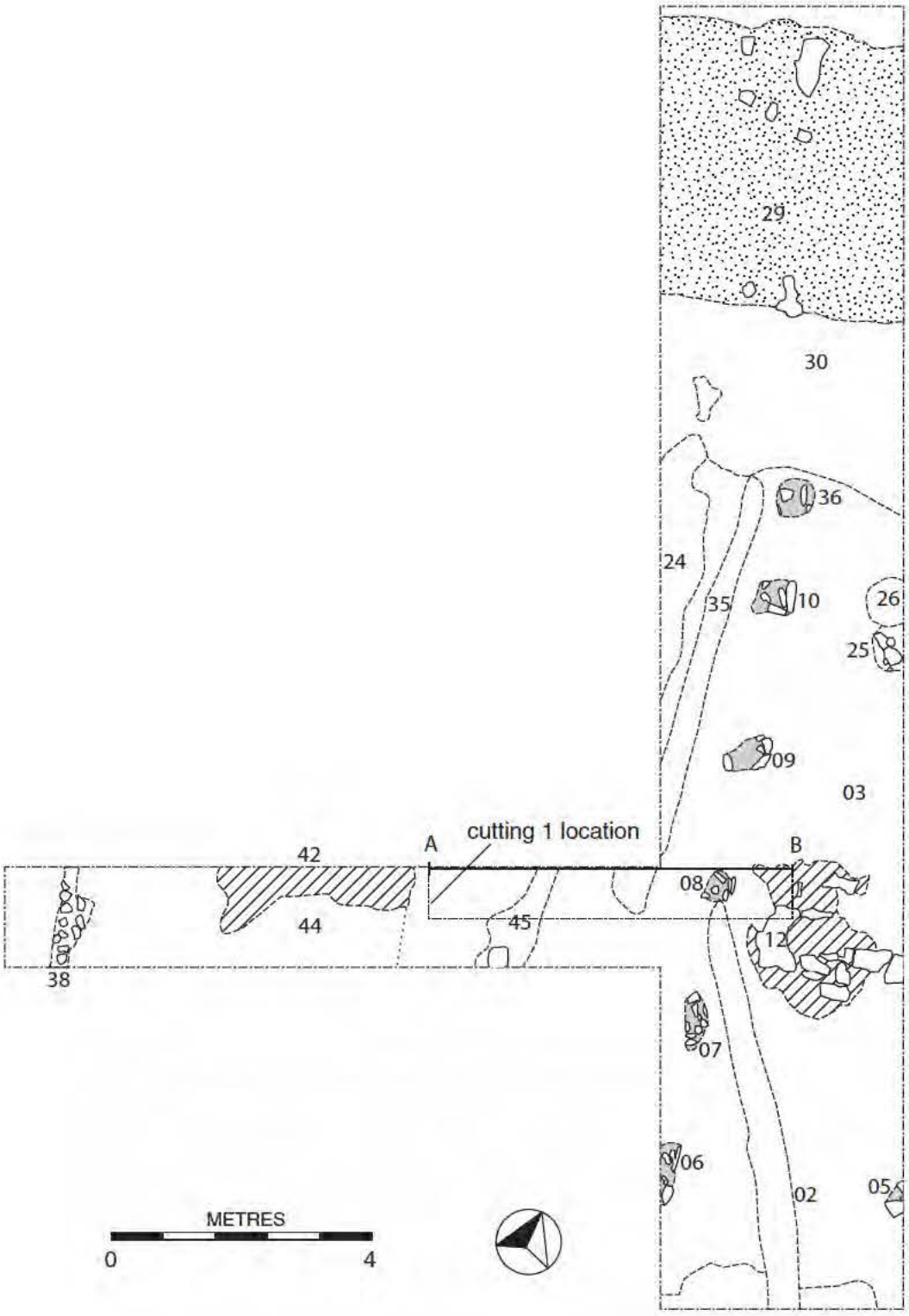


Fig. 43 Cefn Caer, Trench 2 plan

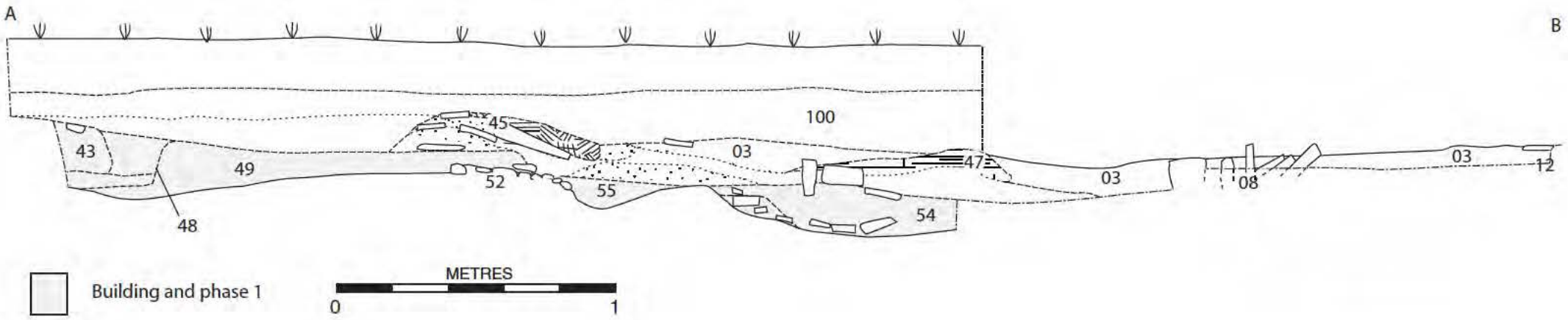
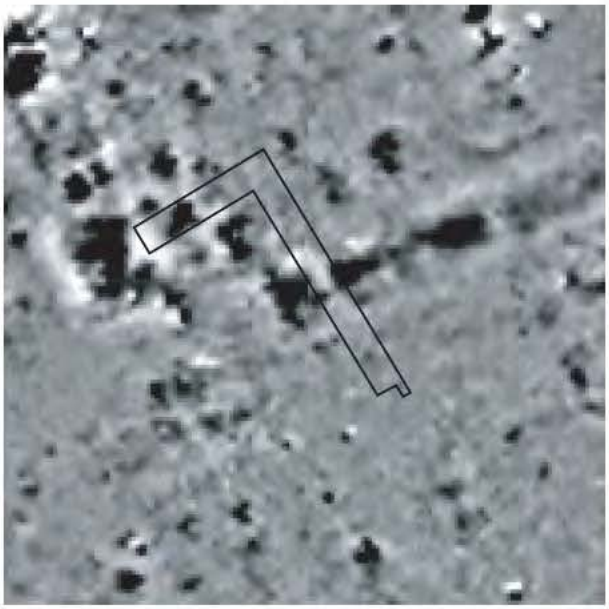
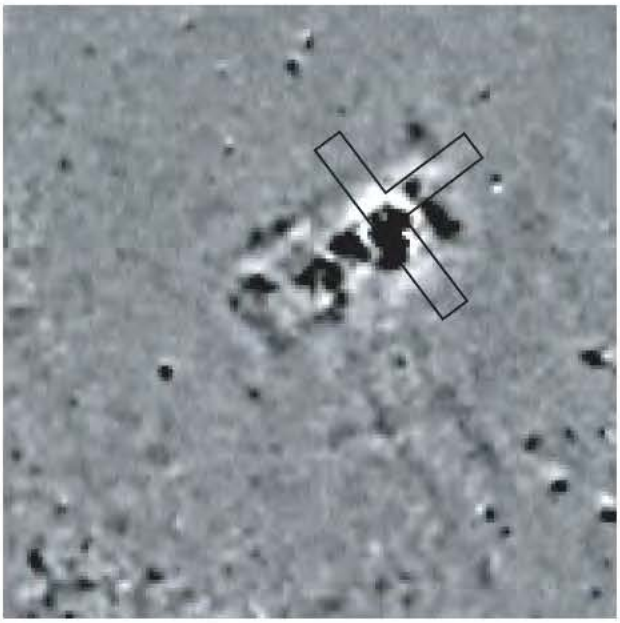


Fig. 44 Cefn Caer, trench 2 cutting 1 (SSE facing section)



Trench 1



Trench 2

METRES

0 20

Fig. 45 Caer Gai hi-res geophysics and trench locations

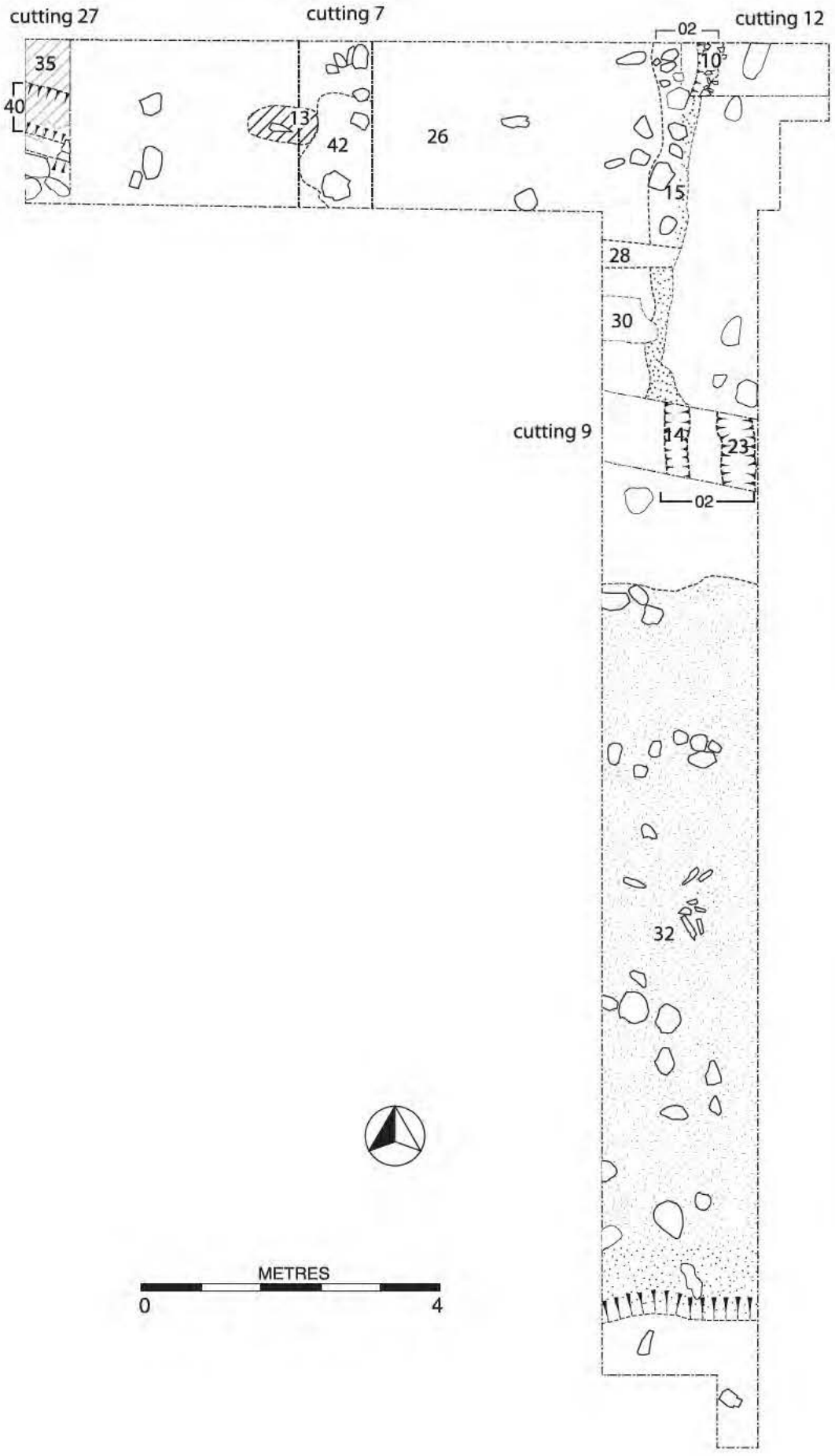


Fig. 46 Caer Gai, Trench 1 plan

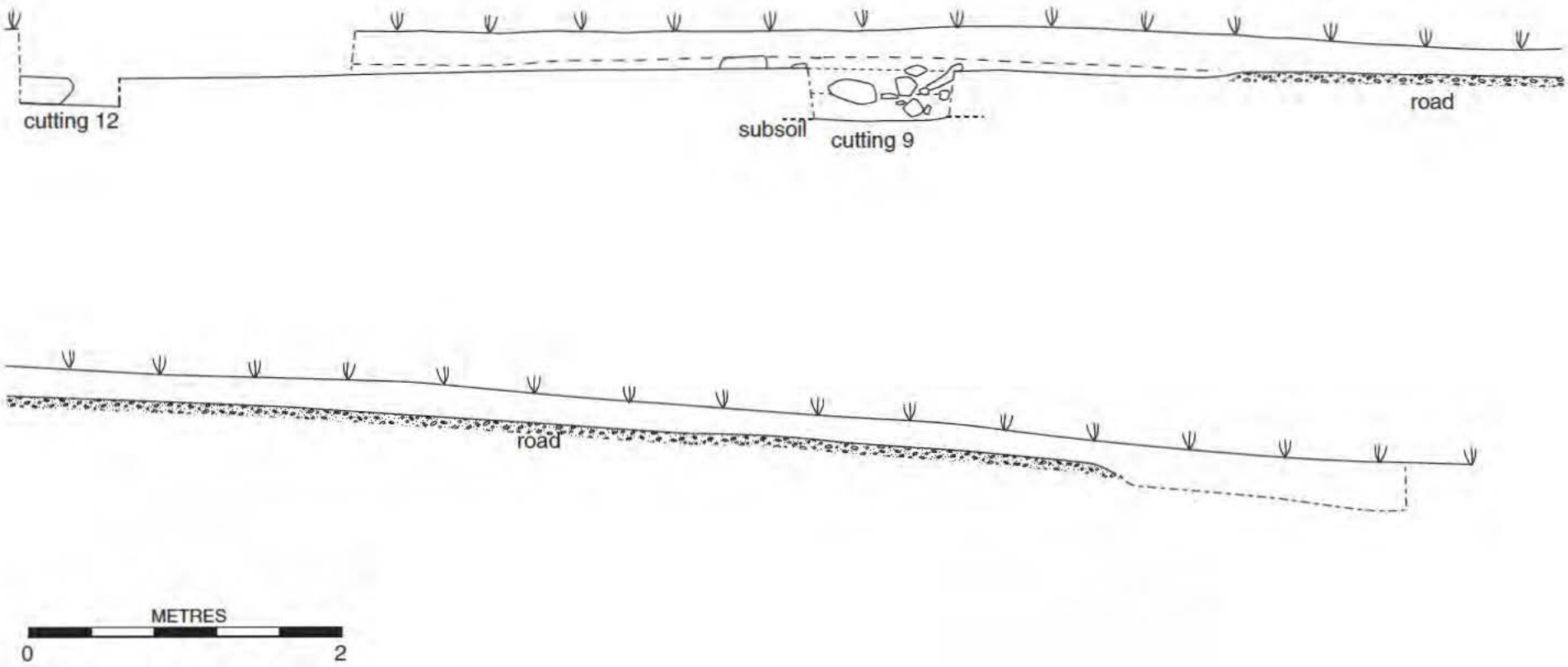


Fig. 47 Caer Gai, Trench 1 profile (W facing section)

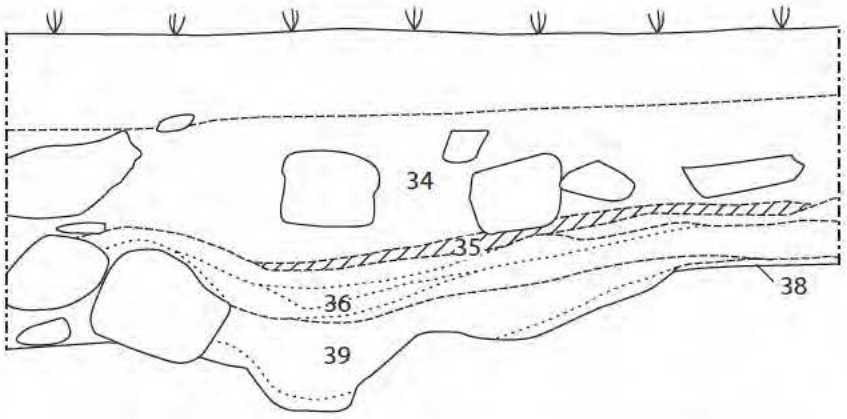


Fig. 48 Caer Gai trench 1, cutting 27 (W facing section)

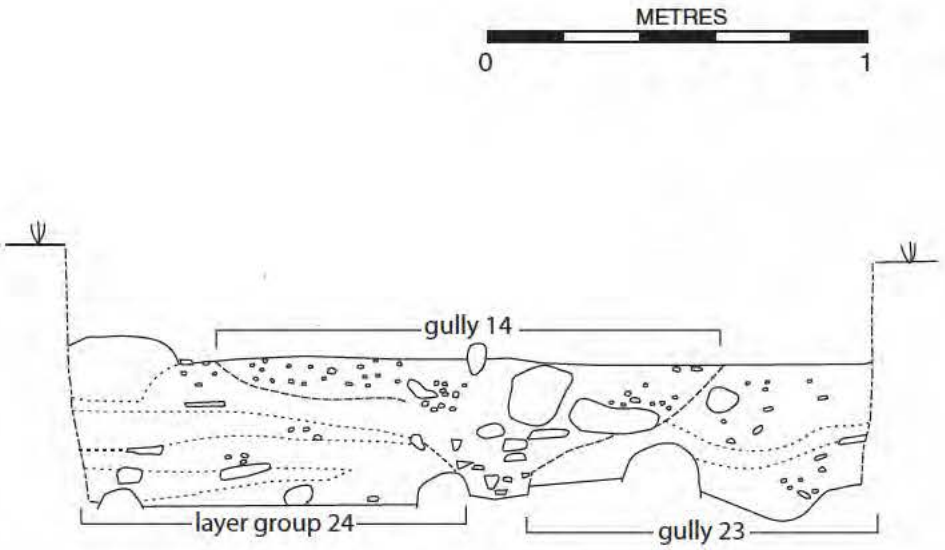


Fig. 49 Caer Gai trench 1, cutting 9, gully complex 2 (S facing section)

Fig. 50 Caer Gai, Trench 2 plan

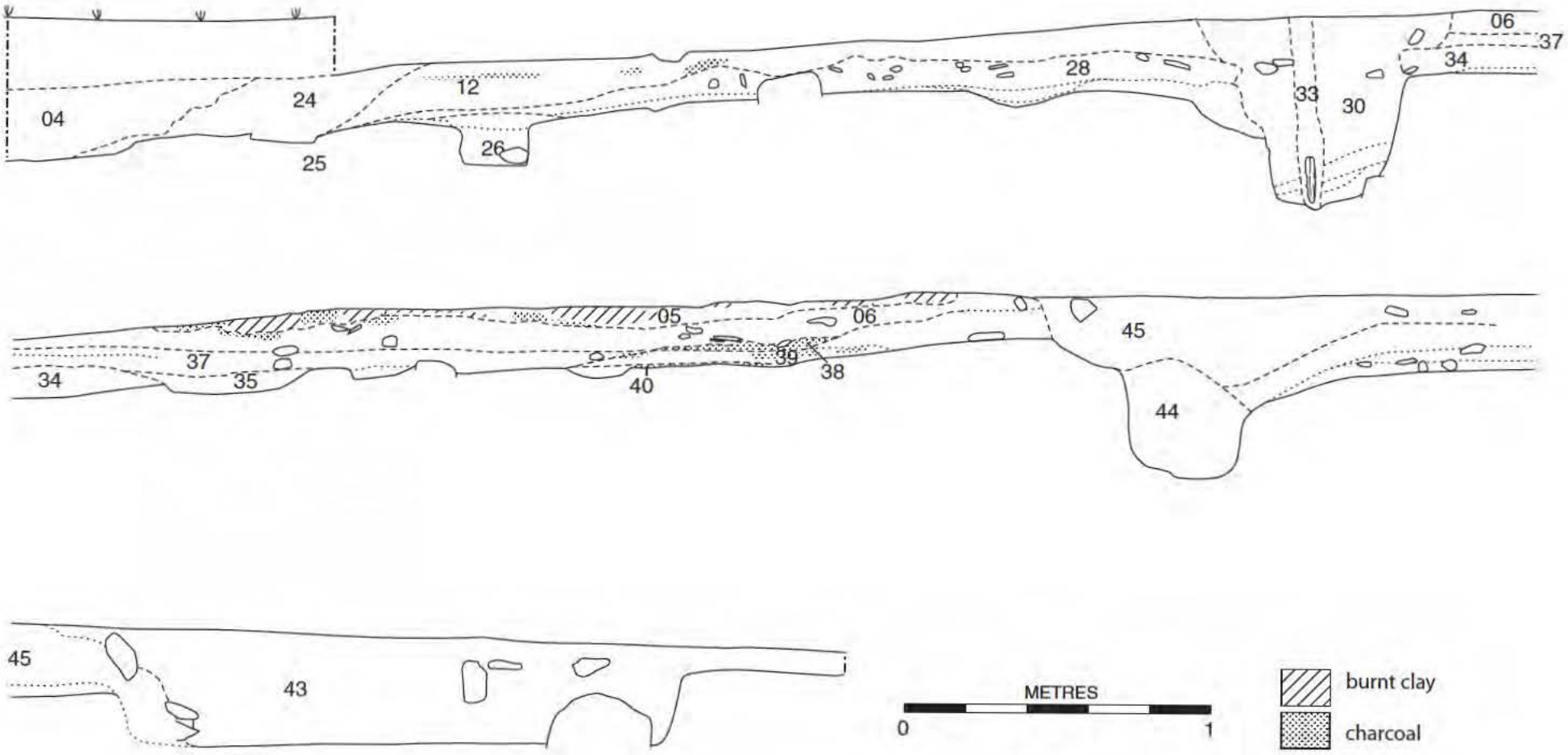
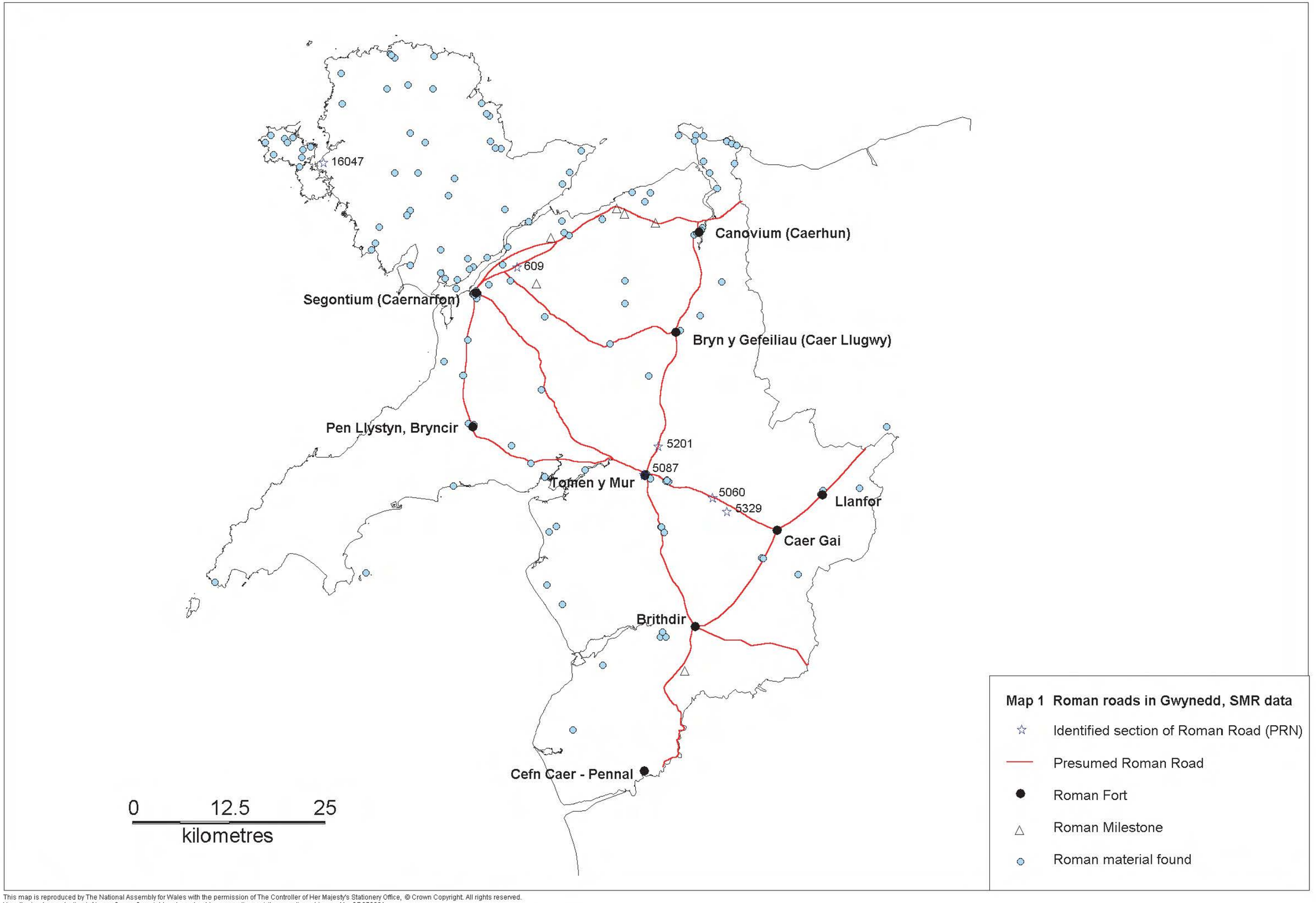


Fig. 51 Caer Gai, trench 2, cutting 1 (NW facing section)



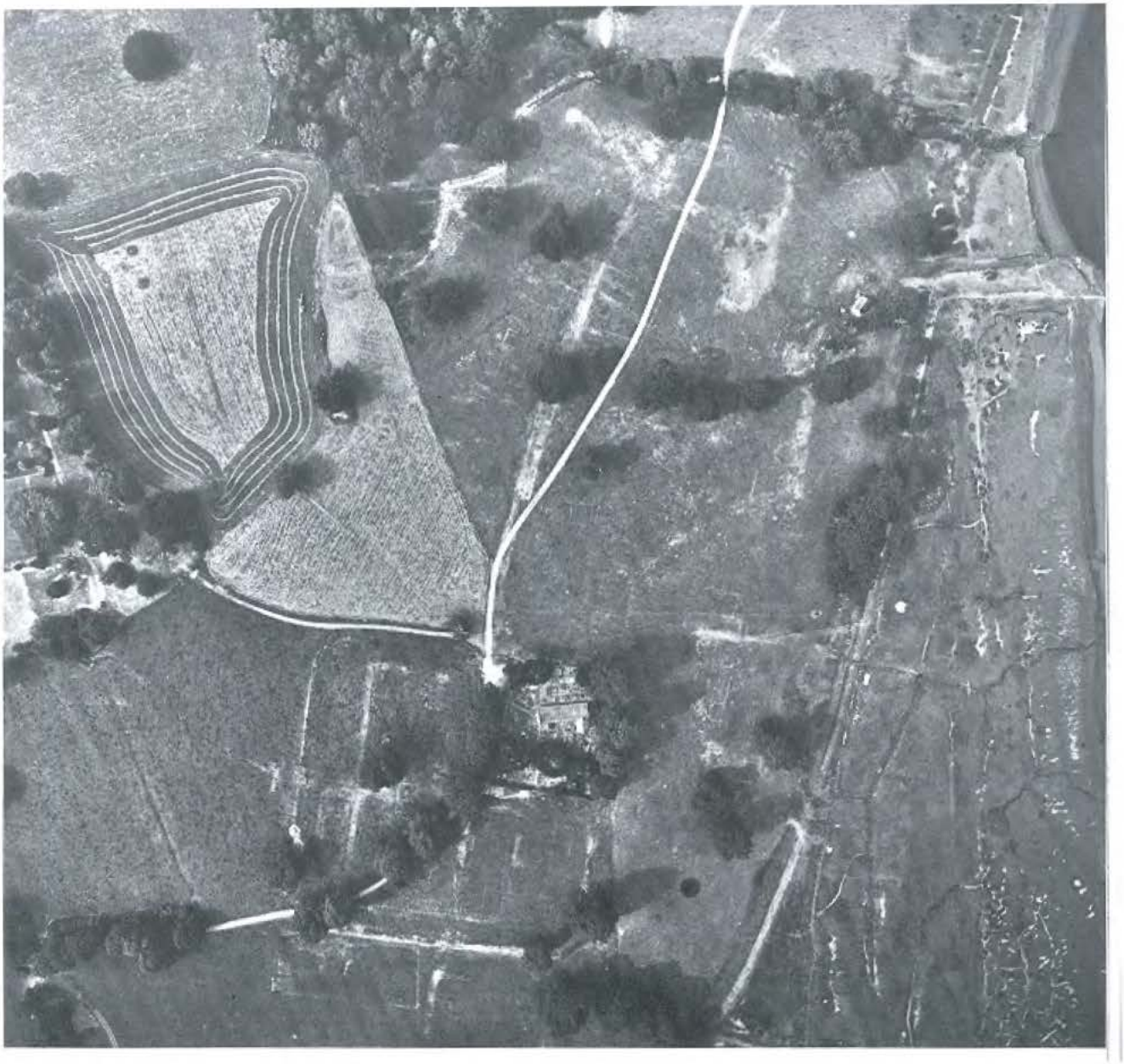


Plate1 Canovium showing crop marks (from Frere and St Joseph 1983)

Plate 2 Caer Gai, showing crop marks (Cambridge University Collection CB 13)

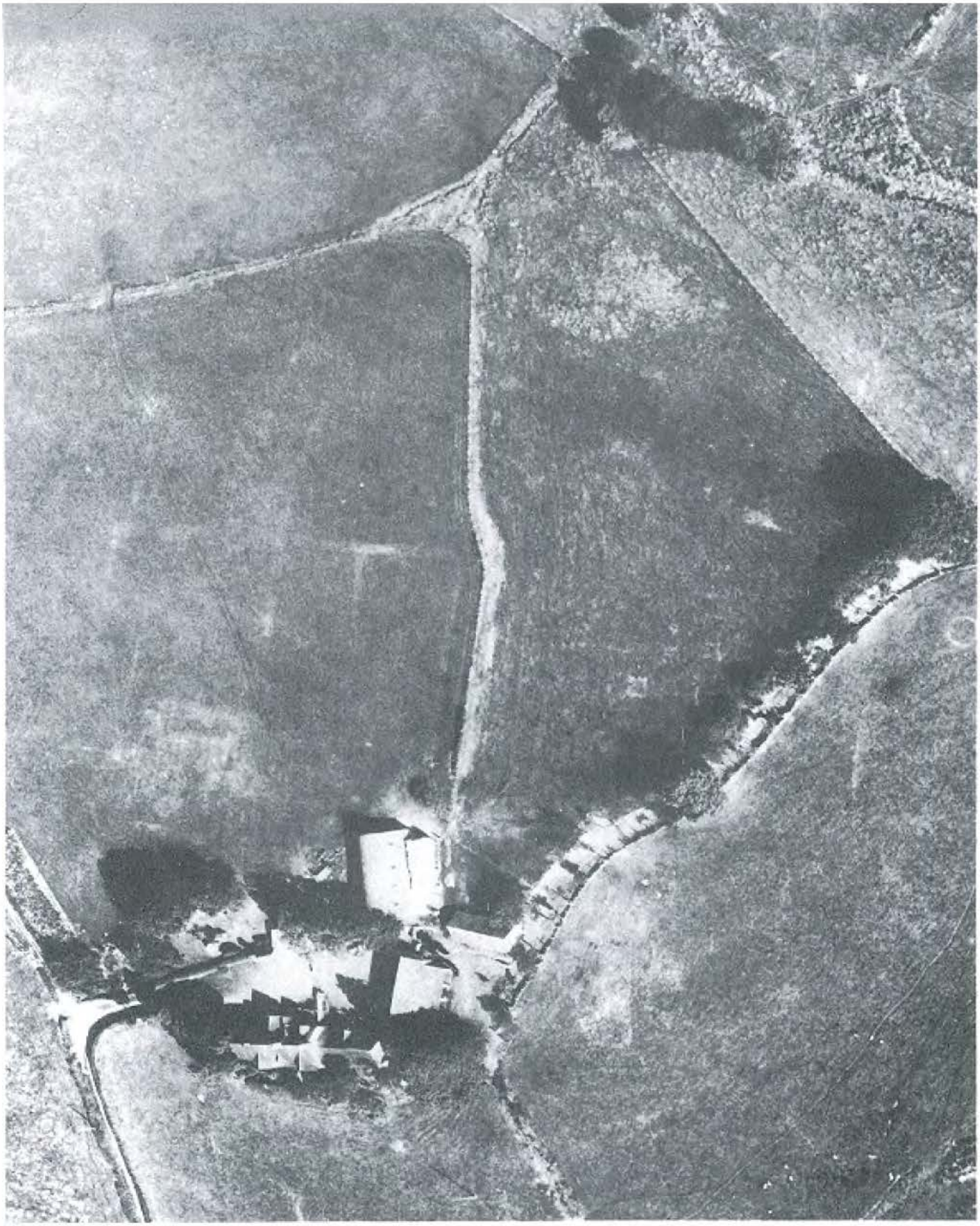


Plate 3 Cefn Caer showing cropmarks (from Sommer 1984)

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