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LLANFAWR NEWYDD

SERVICE AREA

ARCHAEOLOGICAL EVALUATION

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Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Event PRN: 40495

ARCHAEOLOGICAL EVALUATION AT LLANFAWR NEWYDD SERVICE AREA (G1596)

1. INTRODUCTION

It is proposed to build a Service Area alongside the new A55 on Anglesey to the east of Llanfawr Newydd, Llangristiolus.

A planning condition, specifying a programme of archaeological work, formed part of the planning permission. Gwynedd Archaeological Trust (Contracts Section) was contracted by Symonds Group to carry out an archaeological evaluation, comprising desktop study, geophysical survey and trial excavation, of the area to be developed.

2. METHODOLOGY

The evaluation was carried out as a staged process allowing information from each stage to inform the later stages. The work was carried out in the order of desktop study, geophysical survey, trial excavation and report. It should be noted that an archaeological evaluation had already been carried out in the northern part of the area under examination and therefore no further field evaluation was carried out in that area. The results of the earlier evaluation have been incorporated into the current report.

2.1 Desktop Study

The desk-based assessment involved the study of all available published and archive material relevant to the development area. Consultation of maps including early Ordinance Survey maps, computer records, written records and reference works, which make up Gwynedd Sites and Monuments Record, was under taken at Gwynedd Archaeological Trust. Estate maps were consulted at the University of Wales, Bangor archives. Stereo pairs of aerial photographs taken by The RAF were consulted at the National Monuments Record, Aberystwyth.

2.2 Geophysical Survey

A geophysical survey was carried out in an 80m x 60m area in the field at the west of the site (see Fig. 1). The results of the survey were used to determine the most appropriate position for the trial excavation.

2.2.1 Instrumentation

The instrument used was a Geoscan FM36 Fluxgate Gradiometer. 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 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. 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.

2.2.2 Data Collection
The gradiometer includes an on-board data-logger. Readings in the Llanfawr Newydd survey 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 0.5m along each traverse giving 800 readings per grid.

2.2.3 Data presentation
The data was transferred from the data-logger to a computer where it was compiled and processed using Geoplot 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.

2.2.4 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 Trial Excavation

Trial trenching was confined to the southern end of the site as the northern part had already been evaluated. Three trenches were excavated, two measuring 20m x 2m and one measuring 40m x 2m (Fig.1). The turf and ploughsoil were removed by machine under the supervision of the archaeologist. The trenches were then cleaned by hand and inspected for features. All features that were encountered were examined and fully recorded both photographically and by hand-drawn plans and sections. Finds were located and removed for examination.

A watching brief was also kept during the excavation of geological test-pits.

3. RESULTS

3.1 The study area

The proposed development area is irregularly shaped, measuring approximately 250m x 200m, set within three fields. Field 1 on the east side of the area is a large field which is bounded by the A5 to the east, and a minor road to the south, it has an old quarry in the south-west corner, and a stream crossing the east side. The development lies on the higher ground in the north-east corner of the field. Fields 2 and 3 lie west of Field 1, the former to the north, the latter to the south. The north-east end of Field 2 is to be developed, the western boundary of which is marked by a public footpath. The extreme north corner of Field 3 lies within the development area. All of the fields have been extensively ploughed, cleared and improved, and are presently used for grazing sheep and cattle. The landowner, Mr Owen of Llanfawr Newydd, stated that Field 3 had not been much ploughed within living memory. The fields are bounded by dry gritstone walls.

The highest part of the study area is a ridge which coincides with the boundary between the two western fields (2 and 3), from where the ground gradually falls away towards the north-west and south-east. Fields 1 and 2 are gently undulating. A disused track, visible as a slightly raised linear feature (fig 3 site I), runs NNW – SSE close to the line of the public footpath which crosses Field 2. Field 3 is very uneven and was seen to contain a number features of probable archaeological significance.

The underlying geology was found to be quite variable consisting of dark grey limestone at the western end of the study area with gritstone and conglomerate at the east. Red boulder clay was overlying the bedrock on the lower parts of the fields.

The depth of topsoil varied greatly over the study area. About 10cm of stony topsoil was recorded above the bedrock adjacent to the wall at the top of Field 2. This was in direct contrast to the 0.8m of good well-drained loam that had accumulated in the lower parts of the same field.

3.2 Archaeological and historical background

No Prehistoric or Roman remains have been recorded in the vicinity of the study area although a settlement of Roman date lies a kilometre to the west and finds of Prehistoric date are known from a number of locations within a 500m radius.

Sites of medieval date lie close to the development area. These include the parish church of St Cristiolus which stands 300m to the east of the proposed development. The site probably originates from the 6th century, although the first stone church was built around the 12th century and was reconstructed in the first half of the 13th century, when the chancel was enlarged and a chancel arch-inserted. The majority of the building was rebuilt in modern times but the chancel arch and a 12th century font remain (RCAHMW 1937).

Settlement of the area during the medieval period is reasonably well documented but physical remains are less common. The present farm of Lledwigan lies some 700m to the north of the development site. The place name reflects the name of the former medieval township of Lledwigan, which was originally subdivided into two parts, Lledwigan Llys and Lledwigan Llan. The exact position of the medieval settlements is not known but Lledwigan Llys could be expected to lie close to the present farm of Lledwigan and Lledwigan Llan may have been either close to the church, or close to the farm called Llanfawr. Between the church and Llanfawr lies Field 3, which contains a number of earthworks including a rectangular enclosure that may be the remains of a dwelling. On the Baron Hill estate map of 1776 the field is subdivided into 11 smaller plots (Baron Hill 4960, sheet 85) that form part of two leased units, Nant at the north and Lan Mawr (i.e. Llanfawr) at the south. Only one plot, listed as Lain'r Hendy house and gardens (Hendy can be translated as old house), is shown to contain a dwelling. A pencil mark on the northern side of a plot listed as Tyddyn Bleddyn could represent a building that was a later addition to the map. Fig.2 shows the details of the estate map overlying a modern ordinance survey map.

The estate map shows that much of the surrounding area was composed of fields that were relatively large and regular, but that there were also a number of smaller plots which usually contained buildings. The pattern of small plots in Field 3 containing few buildings is therefore anomalous and it seems likely that these plots reflect an earlier settlement pattern, that is small enclosures which formerly contained buildings that had been abandoned and dismantled by 1776. The cartographic evidence therefore appears to reflect the presence of an earlier nucleated settlement and it would be reasonable to assume, given its proximity to the church, that this was the medieval bond township of Lledwigan Llan.

Some of the boundaries and features shown on the estate map can still be seen on the ground. Fig. 3 shows features transcribed from stereo pairs of aerial photographs taken by the RAF in 1947 (CPE/UK 1939, JAN 18 '47 3186-7).

Several of the transcribed features can be recognised as features on the estate map:

The position of rectangular feature A corresponds to the building Hendy on the estate map. The feature on the ground appears to be at a different orientation and to be somewhat larger than that depicted on the map. If the map evidence is correct, then it is possible the original structure was subsequently extended or rebuilt.

Features B, C, G and J can all be seen as low banks or lynchets on the ground and correspond to field boundaries on the estate map

Feature F is a slight hollow running across the field, and documentary evidence shows this to have been a road, dating from the 16th century or earlier, known as 'Church Way' running between Rhos Engan and Llangristiolus Church (White, 1977-8. Note that White's location of Tyddyn Bleddyn is incorrect). The line of the track is preserved as a public footpath.

Another track, feature I, which is also a modern right of way, joins Church Way at the western side of the field. The landowner reported that this path had been built as a farm track early in the present century by dumping stones from field clearance. He did not know of any tradition of an earlier road. This track does not appear on the 1900 edition OS map.

Feature K represents a quarry that was infilled in the last decade.

Features D, E, L and H are visible on the ground as low indistinct earthworks, but cannot be correlated to features shown on the 1776 estate map.

3.4 Geophysical survey

The geophysical survey was carried out over an area of 80m x 60m aligned along the south-western edge of the western field (Fig. 1). The area was surveyed in 20m x 20m grids using a 1m traverse interval. Readings were taken at 0.5m intervals along each traverse.

3.4.1 Survey Conditions
Conditions were good. The survey was carried out on a warm sunny day with light winds.

3.4.2 The gradiometer survey results (Fig. 4)
The background noise levels were variable with high to moderate noise levels at the south of the site and low levels at the north-west. The noise at the south of the site can be seen on both the x-y plot and the grey scale plot as a concentration of linear anomalies. These readings reflect variations in the bedrock which was found to be very close to the surface in these areas.

The following anomalies with archaeological potential were detected and are indicated on the interpretation diagram on Fig. 4.

A. A well defined curvilinear anomaly. It varies in width and intensity across the site and appears to be made up of numerous smaller features suggesting that it is made up of stones as opposed to earth. It can thus be best interpreted as a stone track or a collapsed wall, and therefore almost undoubtedly represents the 19th century track (Feature I on fig 3).

B and C. Two, roughly parallel, weak linear anomalies were detected, running in an east - west direction across the survey area. These features could be a result of deep plough scarring or could be field drains or ditches.

D. A small anomaly was detected at the west of the site. This was not particularly well defined and can best be seen on the x-y trace plot. This anomaly could be interpreted as a pit but could also be the product of a concentration of stone or iron in the topsoil.

3.4.3 Summary of gradiometer survey, June 1994
Three areas of geophysical survey were carried out within the development area by Geophysical Surveys of Bradford in 1994 as part of the evaluation for the A5 Anglesey Improvements (Geophysical Surveys of Bradford report 94/59 and GAT report No 70). The location of the survey areas (Geo.Plot A, B, and E) is shown on Fig. 1.

Areas A and B were mainly outside the development area. Plough scarring, possibly indicating ridge and furrow was detected within both of these surveys.

Area E was located in the north-west of the development area. Fig. 5 shows the interpretation plan of the results. Several weak archaeological responses were tentatively noted. The majority of these were ditch type anomalies. The truncated linear response in the south-eastern corner of the grid was interpreted as a possible field boundary.

3.5 Trial Excavation (Fig's 1 and 6)

Three trenches were excavated (Trenches A to C, Fig. 1); the location of these was partly influenced by the results of the geophysical survey. Trenches A and B measured 20m x 2m and trench C measured 40m x 2m.

3.5.1 Trench A
This was excavated in order to investigate the nature of the track (Feature I in fig 3) and to confirm the existence of bedrock close to the ground surface. The topsoil was removed by machine and the trench was cleaned by hand. The north-eastern end of the trench consisted of 0.1 to 0.2m of turf and topsoil directly overlying the limestone bedrock. The level of the bedrock dropped away towards the south-eastern end of the trench where red boulder clay and a stony track and could be seen directly beneath the shallow topsoil. The road surface consisted of an accumulation of mixed stones embedded in the top of the boulder clay. The road was 2.2m wide and the surface was consistent with the landowners description of a track formed from an accumulation of field clearance.

3.5.2 Trench B
This was excavated in order to investigate geophysical anomalies B, C and D (fig. 4). However, only one feature was detected after the removal of the topsoil, a 1.4m wide by 0.3m deep trench filled with a single context of stones and very wet grey clay. This was almost certainly anomaly B, and was interpreted as a field drain that had become choked with clay and had not been renewed. Field drains were uncovered elsewhere in the field (see trench C, below) but these were much narrower, on a different alignment and were still fully functional. The drain in trench B therefore appears to belong to an earlier phase of drainage. A flint flake was recovered from the clay on the surface of the drain but there were no finds from within the feature.

3.5.3 Trench C
This trench was aligned to further investigate geophysical anomolies A and B. An unusual depth of ploughsoil had accumulated at the northern end of the trench. Between 0.9m and 0.5m of fairly uniform ploughsoil was removed by machine. No finds were recovered from this soil but manganese panning was observed in the lower part of the profile suggesting that the depth of soil had gradually accumulated over a long period of time as a result of ploughing and erosion from the higher parts of the field. Regularly spaced modern stone filled field drains, cut into the boulder clay beneath the topsoil, were revealed in the northern half of the trench.

The ploughsoil became shallower towards the southern end of the trench. A continuation of the track detected in trench A (Feature I on fig. 3) was revealed within the topsoil 10m from the southern end of Trench C. The 3.5m wide track consisted of a loose accumulation of small field clearance stones along with the occasional broken brick, again suggesting that it was constructed during the present century.

However another track was detected south of the 19th century track, 6m from the southern end of the trench. This was of a markedly different character to the former. The surface was constructed from a mixture of

gritstone and limestone slabs up to 0.4m across (Fig. 7). These had been laid onto natural clay and shattered bedrock. The alignment of the track could not be accurately determined but it could run parallel to the other, and may therefore be an earlier alignment of the later track, although it is not shown on the 1776 map.

3.6 Watching Brief

A watching brief was kept on two geological test-pits (see Fig. 1 for approximate positions). Test pit 1 was found to contain roughly 0.6m of topsoil containing assorted animal bones and late 18th century pottery. This was overlying a few centimetres of boulder clay that was in turn overlying limestone bedrock. No structural features were identified.

Test pit 2 contained about half a metre of ploughsoil, directly overlying gritstone bedrock.

3.7 Archaeological evaluation 1994

Seven trial trenches were excavated at the north-eastern end of the development area during the phase 2 evaluation of the A5 Anglesey improvements (GAT Report No.106). One trench lying just to the outside of the development area also contained features of archaeological relevance. These trenches are indicated on Fig. 1. The excavation results are summarised below.

Trench 7
A trench, 2.3m wide and 50m long, was excavated to a depth of 0.4 to 0.5m. No archaeological features were found.

Trench 11
This trench was 2.3m wide and 32m long. No archaeological features were found.

Trench 19
This trench was 2.3m wide and 32m long. It contained three stone filled field drains.

Trench 20
This trench was 2.3m wide and 35m long. It contained four stone filled field drains.

Trench 22
This trench was 2.3m wide and 33.5m long. It contained two stone filled field drains and one shallow linear feature. This feature was aligned east – west from the present field boundary and could be traced for a distance of 3.3m where it petered out. The excavator reported that it appeared to be a shallow field drain.

Trench 25
This trench was 2.3m wide and 20m long. It contained one stone filled field drain.

Trench 27
This trench was 2.3m wide and 33m long. It contained a linear ditch in a north-east to south-west orientation that was identified on the geophysical survey. The ditch was 1.4m wide and contained a stony fill. A stone filled field drain was also identified that stopped when it reached the ditch suggesting that both features formed part of the same drainage system.

Trench 6
Trench 6 was 2.3m wide and 30m long and was located about 15m to the east of the development area. Two graves were found in this trench. Both were orientated east – west and were of a size that suggested that they were for a juvenile. There was no bone survival and no datable remains. Their orientation however, suggests that that they were Christian burials probably of a sub-Roman date. The two graves were about 5m apart suggesting that they did not form part of a closely packed cemetery. No other inhumations were discovered during the assessment and it is possible that the graves belonged to a small family group.

4. RECOMMENDATIONS

4.1 Development area

4.1.1 Field 1
This field was investigated during the evaluation in advance of the new A55 road. No archaeologically significant remains were identified within the development area in this field and therefore there are no further work is recommended.

4.1.2 Field 2
Two tracks were identified in this field. The more recent 19th century track was investigated and its structure and route have been recorded, so no further is recommended. The older stone track may be medieval or sub-medieval and only a small section was recorded during the evaluation. A watching brief during the stripping of topsoil is therefore recommended allowing the orientation and structure of the track to be recorded (see Fig. 8 for area recommended for watching brief).

4.1.3 Field 3
Extensive archaeological remains are visible in this field. The evidence from documentary evidence suggests there that the remains are Medieval in date and may, therefore, represent the township of Lledwigan Llan. The development area impinges on the northern end of this field and extends to within a few metres of the earthworks associated with the site of the house called Hendy (fig's 2 and 3). Bones and pottery were recorded in a geological test pit suggesting nearby domestic activity. Archaeological survival is likely to be very poor at the top of the hill i.e. adjacent to the north-western field boundary as the topsoil is very shallow and overlies the bedrock. The south-eastern part of the development area could, however, contain significant archaeological material of regional or national importance. A programme of 'strip and record' is therefore recommended in this area (see Fig. 8 for area recommended for strip and record). This procedure involves the removal, under continuous archaeological supervision, of topsoil and other such overburden as is necessary to expose any archaeological remains and the recording of any such archaeological remains. The adequate recording of the remains could entail full excavation.

The location of the two geological test pits lie outside the development area shown on fig. 1, and there is therefore some doubt as to the exact location of the southern boundary of the development area. Because of the potential of the archaeological remains in this area, it is recommended that the southern boundary does not lie further south than that shown on fig. 1. However, if any work south of this line is necessary, it should also be subject to 'strip and record'.

4.2 Sewage pipe

The designs for the development show a sewage pipe crossing Field 3, to link to the main sewage pipe on the road. It is recommended that this pipe avoids passing through Field 3. A possible alternative route would be down the track past Llanfawr Newydd, however, because of the possibility of this track lying on the line of a medieval predecessor, it is recommended that a watching brief is maintained during any construction works.

5. SUMMARY

A programme of archaeological assessment has revealed the probable presence of significant archaeological remains consisting of a medieval settlement and associated trackways. The visible evidence for the former lies just outside the south side of the development area, but it is possible that the archaeological remains encroach on to the area. Because of the potential importance of the remains, it is recommended that the boundary of the development area lies no further south than that marked on fig 1 of this report, and that the area which lies in Field 3 north of that boundary is subject to a programme of 'strip and record', which could lead to full excavation if substantial remains are located. A possible medieval track has been located in Field 2, and it is recommended that a watching brief is maintained to identify and

record the nature of the remains. It is also recommended that the route of the sewer pipe is changed to avoid it passing through Field 3.

5. REFERENCES

5.1 Published references

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Clark, 1990 *Seeing Beneath the Soil*
Jones, G. R. J. 1955 The distribution of Medieval Settlement In Anglesey *Proceedings of the Anglesey Antiquarian Society and Field Club*
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Smith, B. and Neville George, T., 1961 *British Regional Geology: North Wales*
Royal Commission on Ancient and Historical Monuments in Wales, 1937 *Inventory, Anglesey*
White, R. B., 1977-78 Bodbenwyn *Proceedings of the Anglesey Antiquarian Society and Field Club*

5.2 Cartographic and Unpublished references

5.2.1 Gwynedd Sites and Monuments Record
GAT Report No 70, 1993 *A5 Anglesey Improvements stage 1, west of Llanfairpwllgwyngyll to A5114 Nant Turnpike. Archaeological assessment*
GAT Report No 106, 1994 A5 *Anglesey Improvements Stage 1 Nant, Llangristiolus Archaeological evaluation – Phase 2*
Geophysical Surveys of Bradford Report No 94/59, 1994 *Report on Geophysical Survey A5 Anglesey*
OS maps 1:10000 1975
25" 1919

5.2.2 University of Wales Archives, Bangor
Baron Hill manuscript 4960 sheet 85 1776

5.2.3 Aerial Photographs held by NMR Aberystwyth
CPE/UK 1939, JAN 18 '47 3186-7

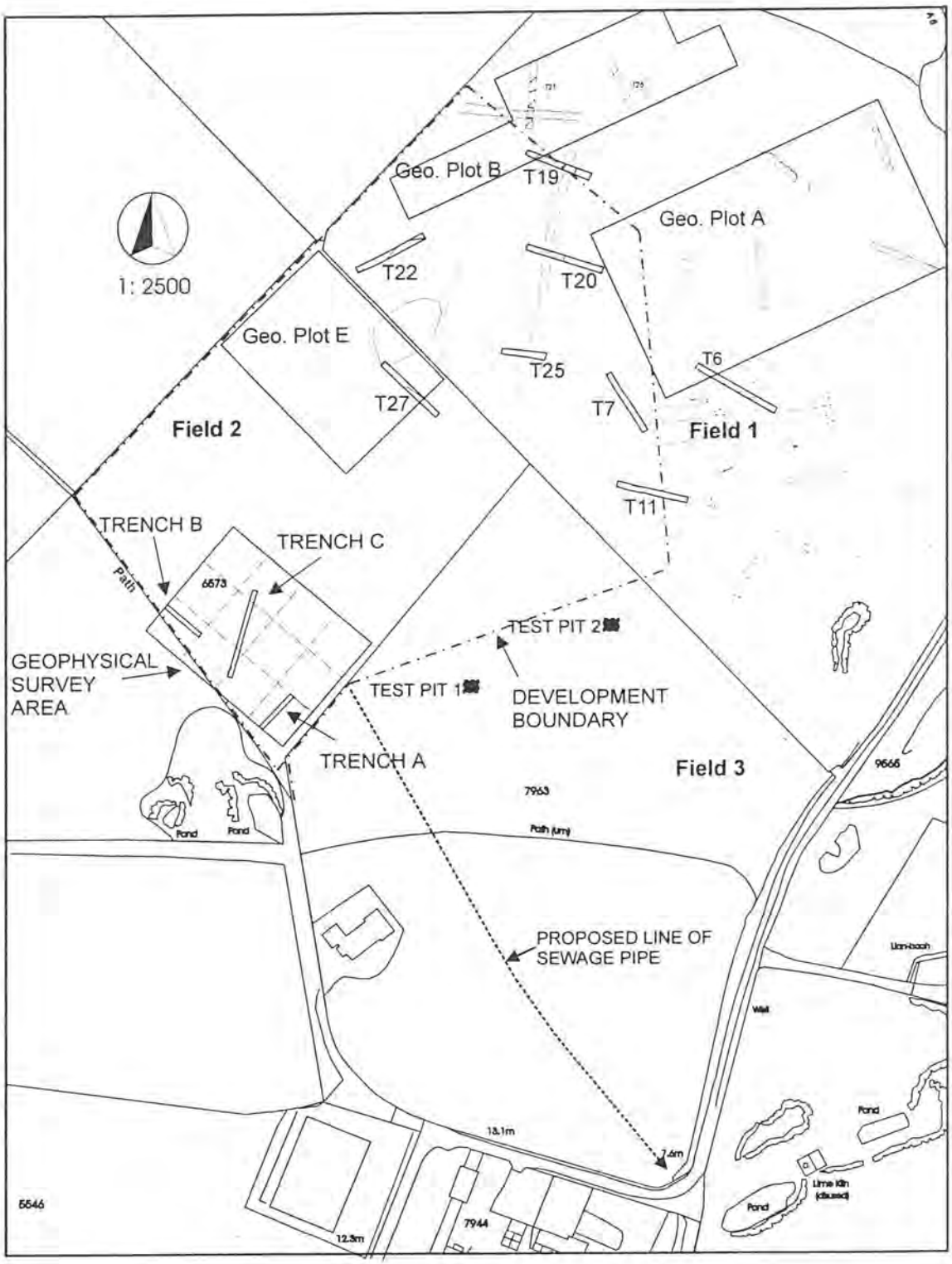


Fig. 1 Location of development area, geophysical surveys and trial trenches

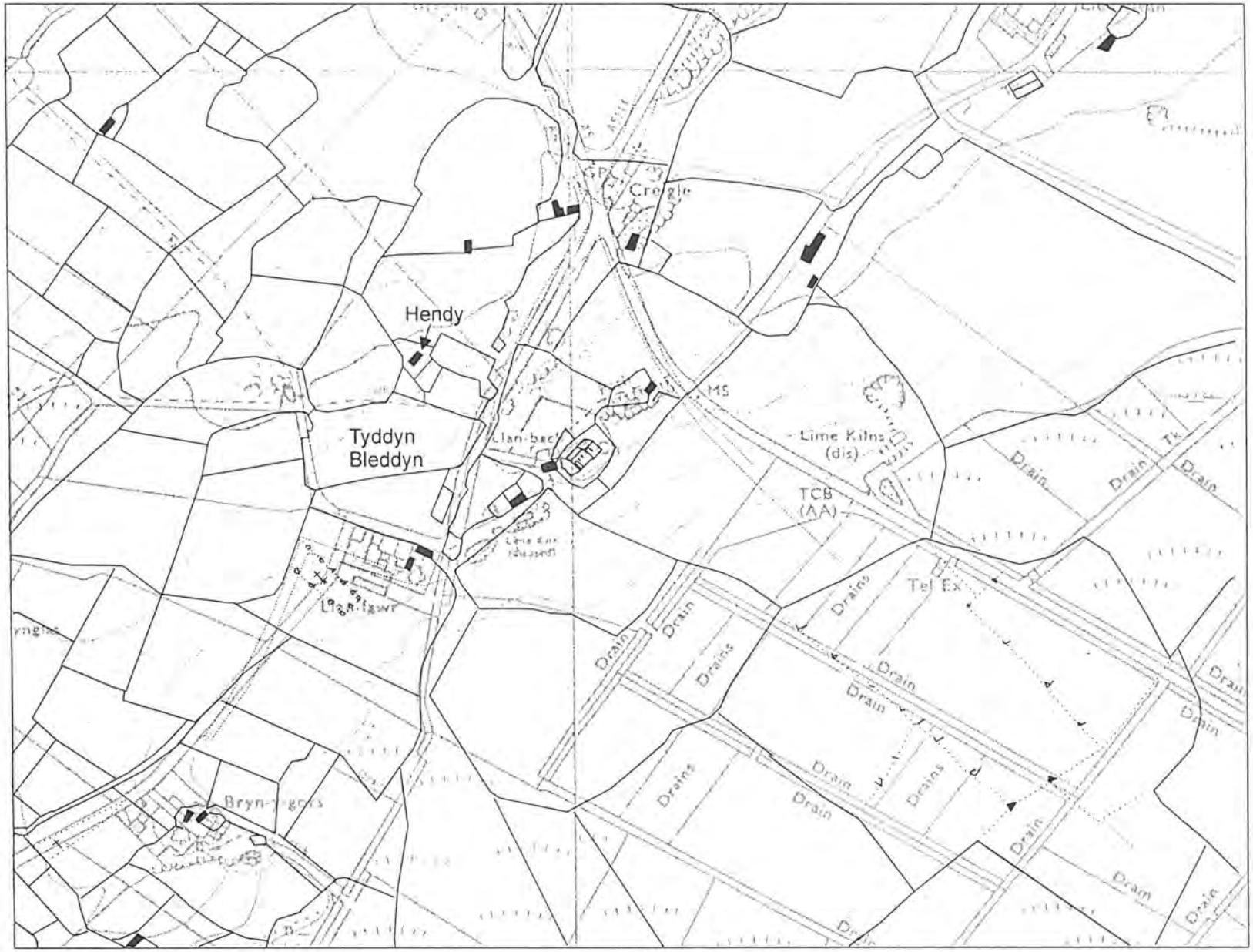


Fig. 2 Fields transcribed from the estate map of 1776 overlying 1:1000 OS map

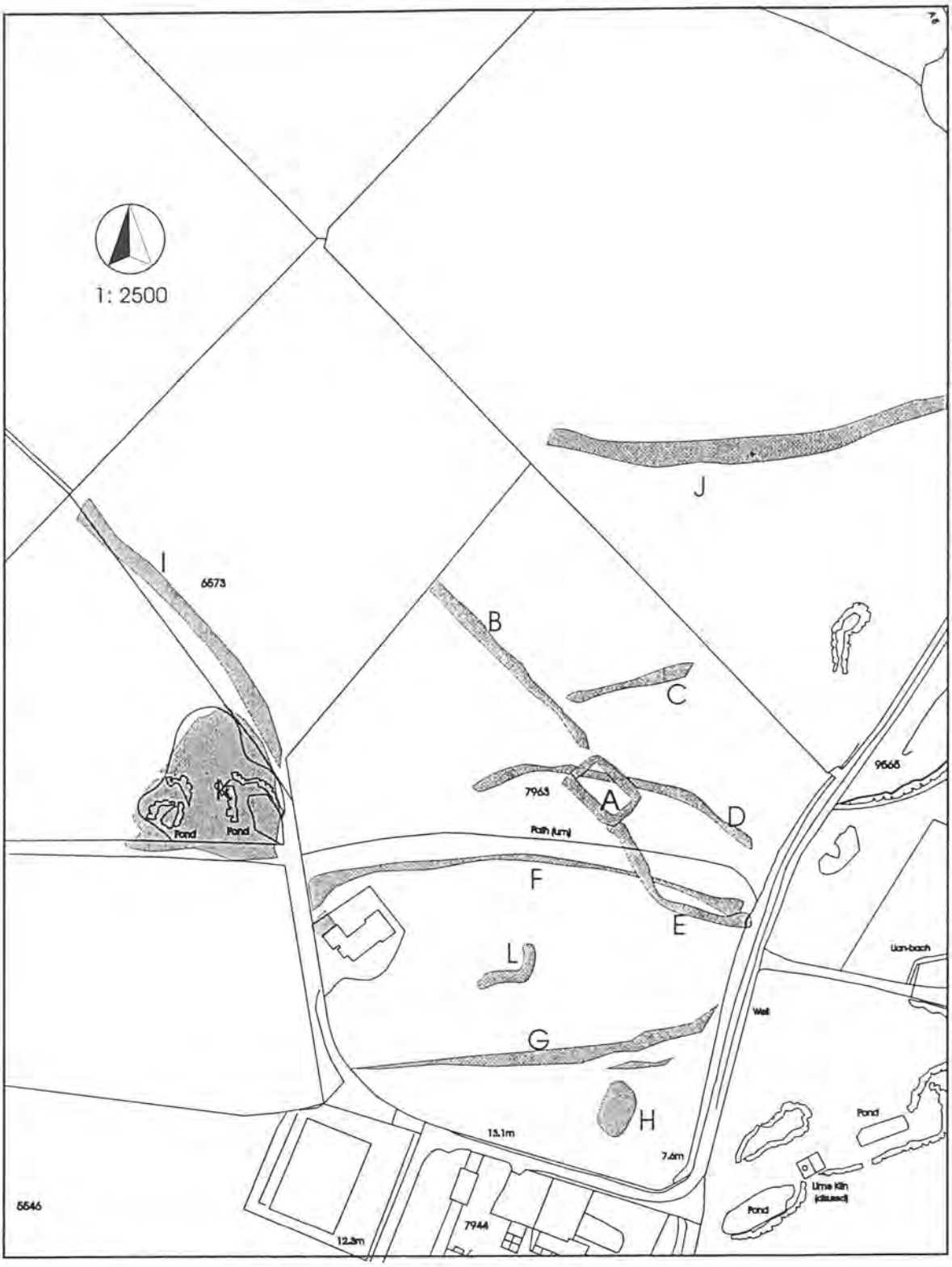
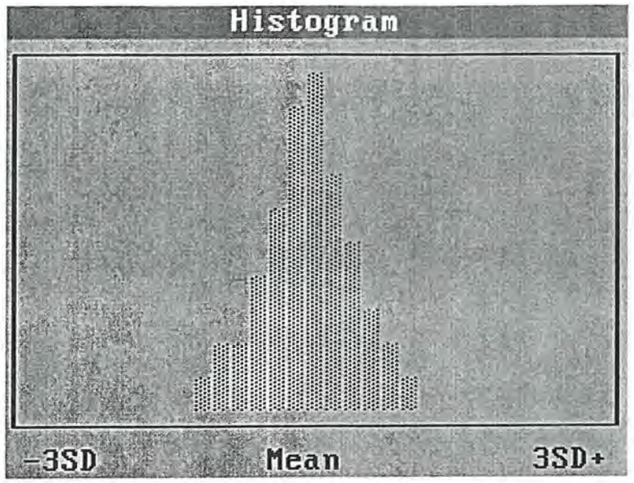


Fig. 3 Features transcribed from the aerial photographs



Statistics			
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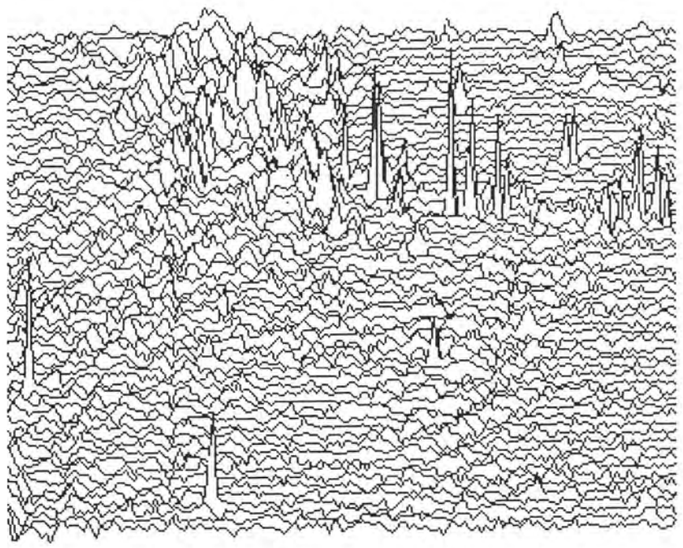
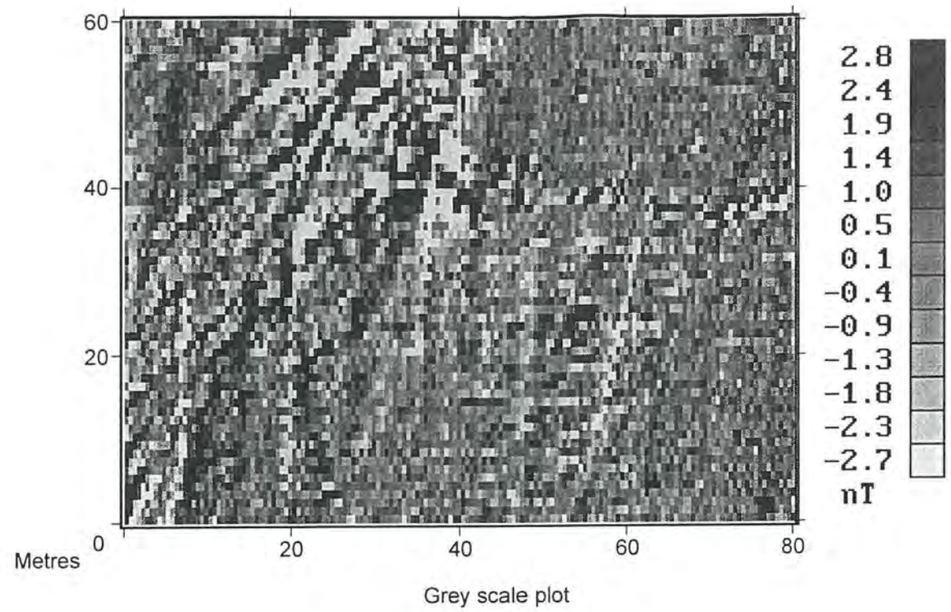
SD	2.77306		
3 SD	8.31918		
Min.	-52.75000		
Max.	63.25000	Dum.Val.	2047.5

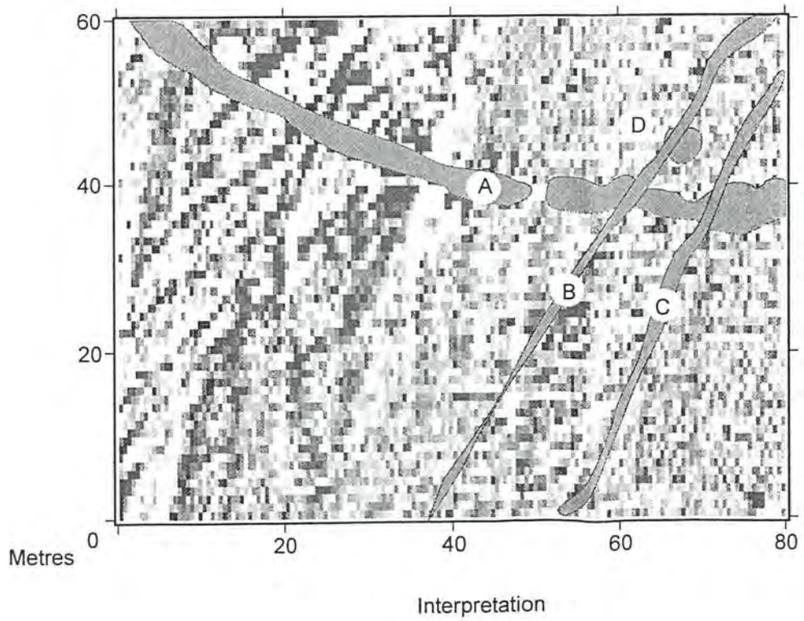
Statistics



X-y trace plot



Grey scale plot



Interpretation

Fig. 4 The geophysical survey results

A5
ANGLESEY
Area E

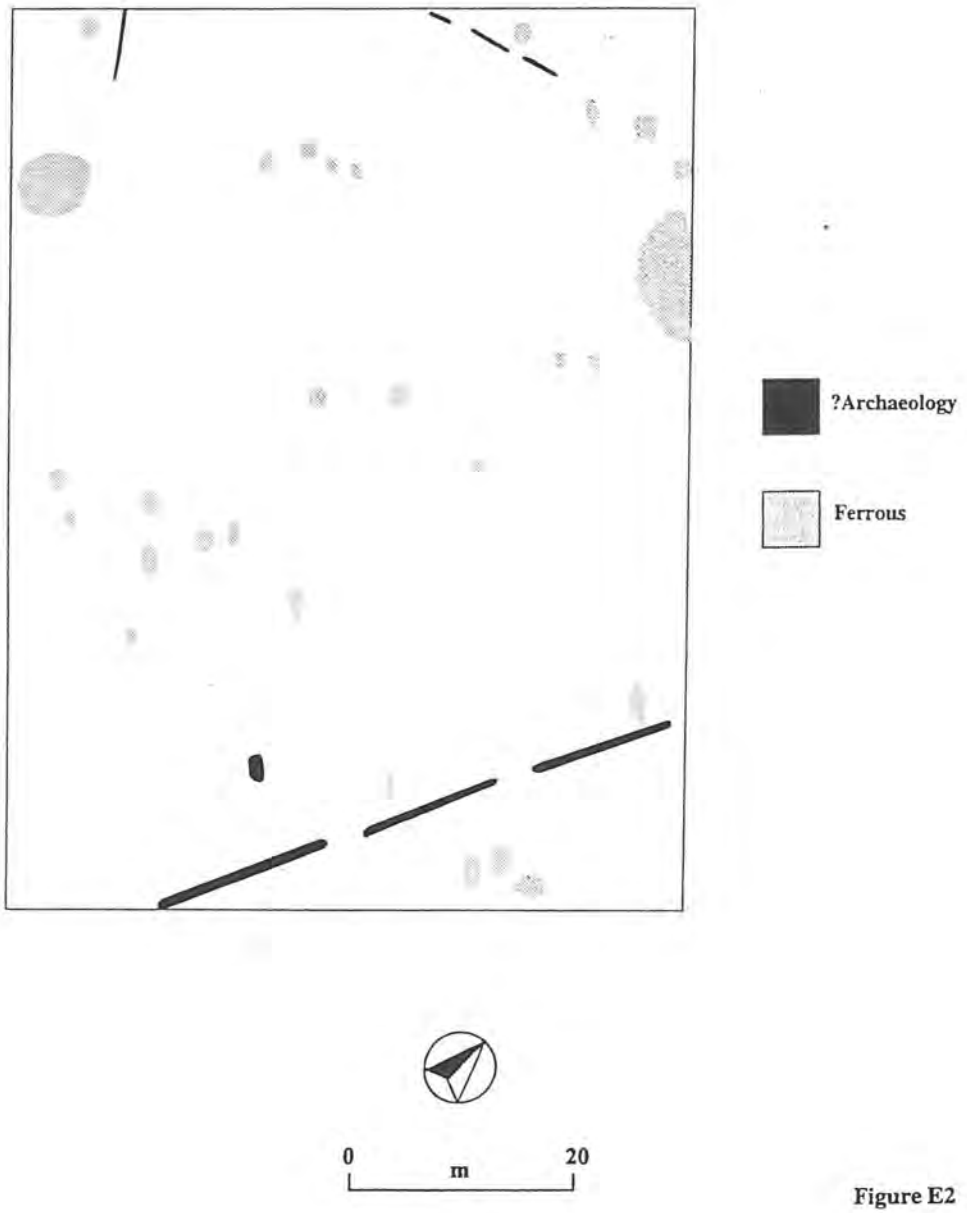
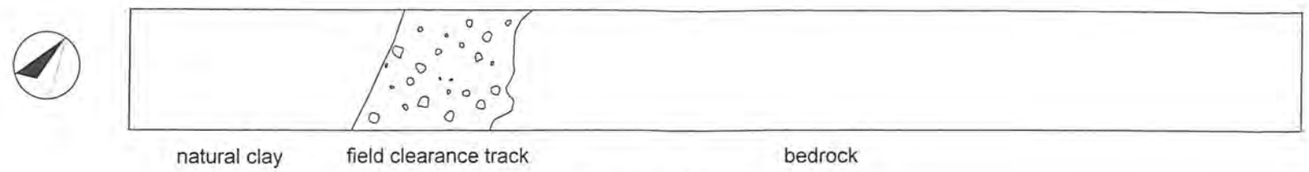
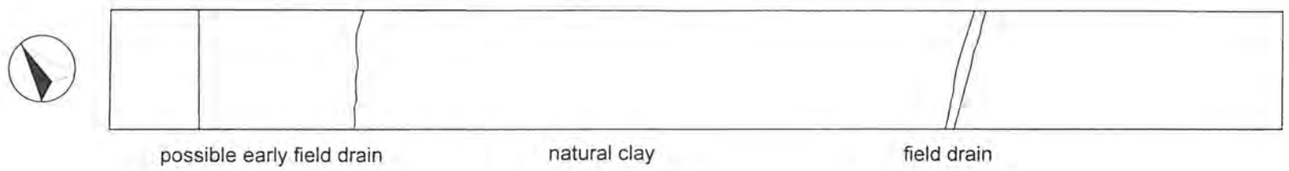


Figure E2

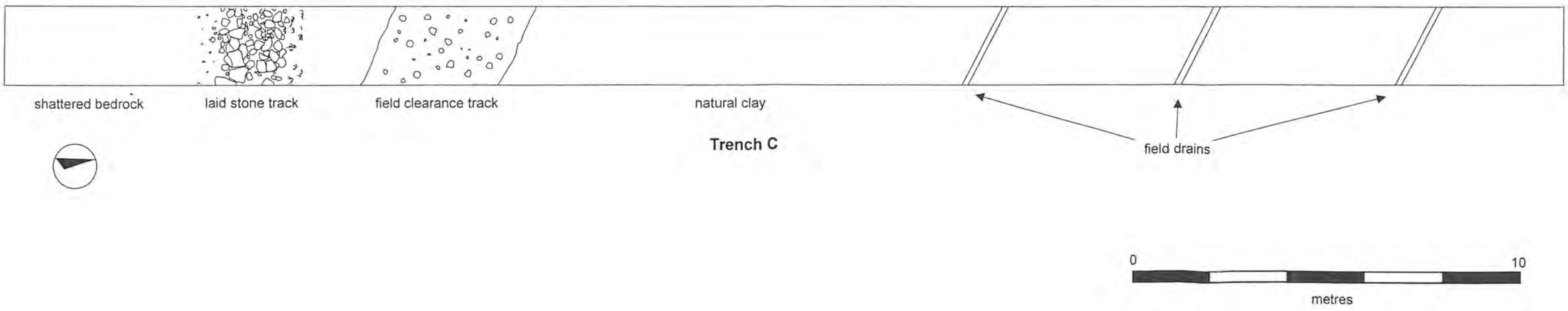
Fig. 5 Geophysical results 1994



Trench A



Trench B



Trench C

Fig. 6 Trial trenches 1, 2 and 3

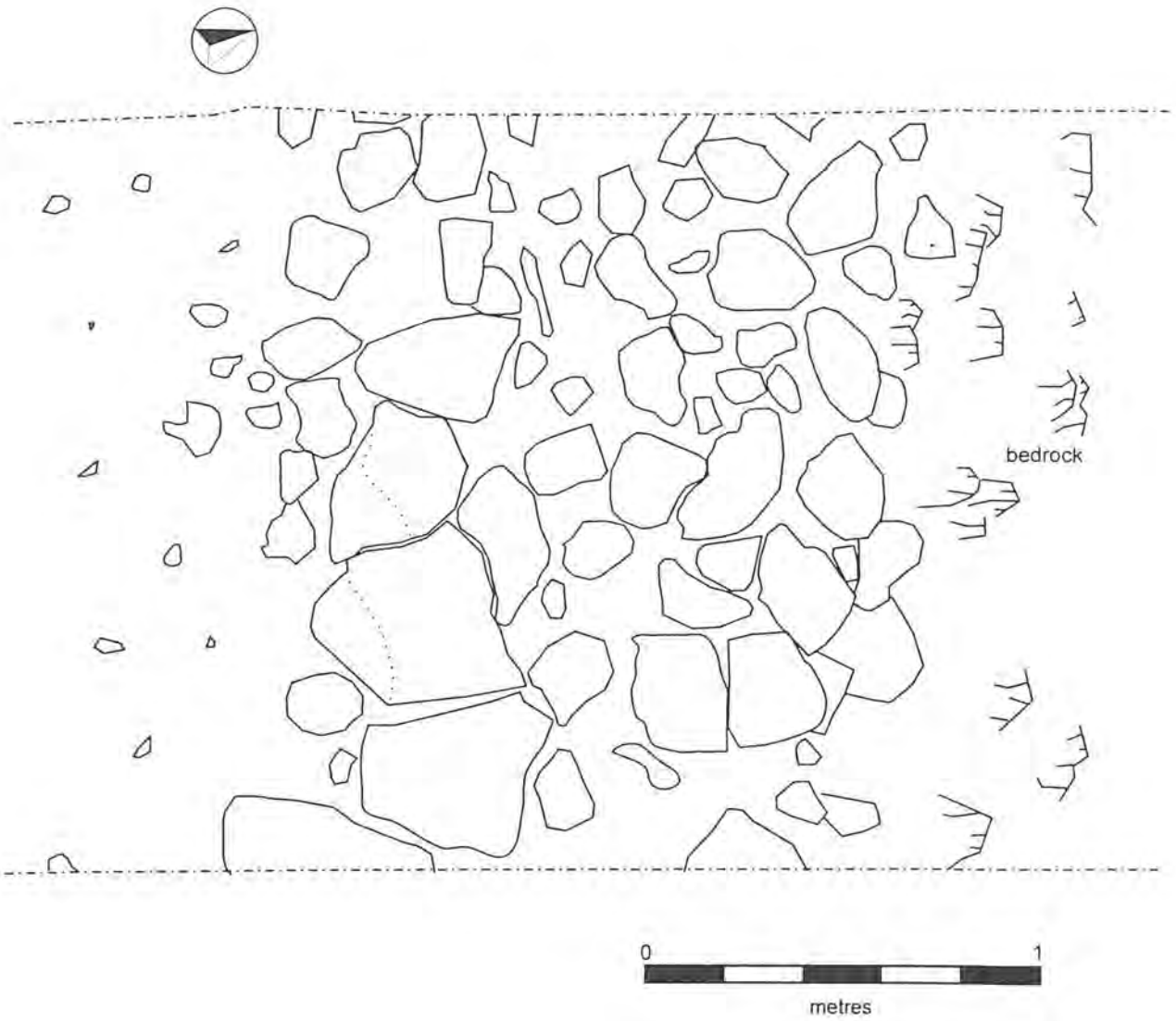


Fig. 7 Plan of the stone track in trench 3

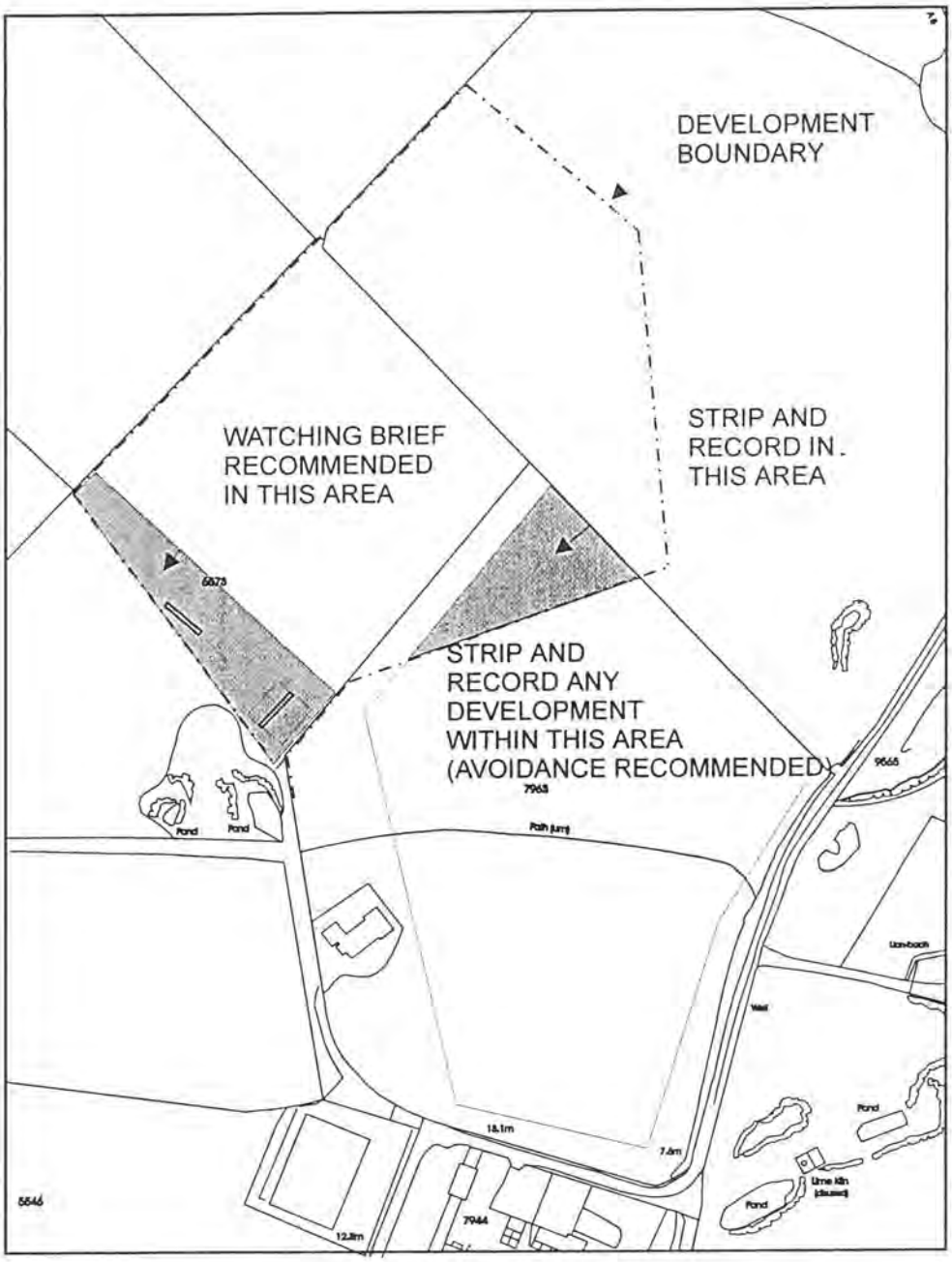


Fig. 8 Summary of mitigatory recommendations