Penrhos Leisure Village, Holyhead, Anglesey

Report on Archaeological Evaluation Trenches





Ymddiriedolaeth Archaeolegol Gwynedd Gwynedd Archaeological Trust

Penrhos Leisure Village, Holyhead, Anglesey

Report on Archaeological Evaluation Trenches

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PENRHOS LEISURE VILLAGE, HOLYHEAD, ANGLESEY

REPORT ON ARCHAEOLOGICAL EVALUATION TRENCHES (G2163): Report number 1050

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PENRHOS LEISURE VILLAGE, HOLYHEAD, ANGLESEY

REPORT ON ARCHAEOLOGICAL EVALUATION TRENCHES (G2163)

Summary

Gwynedd Archaeological Trust (GAT) was commissioned by Land and Lakes (Anglesey) Ltd to carry out an archaeological evaluation involving the excavation of 44 trial trenches across the area of a proposed development at Penrhos to the south and east of Holyhead, Anglesey. The trenches were located to investigate anomalies identified by a geophysical survey. This enabled a preliminary characterisation of the archaeology in the three zones of the development area (Kingsland, Cae Glas and Penrhos).

The trenching confirmed that there was prehistoric activity in the development area. Two burnt mounds of probable Bronze Age date were found in Cae Glas. Both sites had features present under the spreads of burnt stone, representing possible structures and an apparently contemporary ditch which cannot be paralleled on other sites in north west Wales. The presence of more complex prehistoric sites was also anticipated and this was also confirmed by the geophysical results and the excavation in trench 01 in the Kingsland zone. These results possibly indicate the presence of a roundhouse associated with other features and parts of a field system. Prehistoric pottery and flint flakes were recovered showing that this area contains finds with the potential to provide dating evidence and information on the function of the site. The existence of charred grain in the base of the probable corn drier within the middle of this complex shows that environmental evidence is also to be expected.

Occasional isolated pits were found. A small pit in trench 13 in Kingsland contained burnt stones and may be prehistoric in date, but a larger stone-filled pit in trench 24 at Penrhos may be part of 18th century farming activity. Buried remains related to a 18th century farmstead were found in trench 06 in Kingsland and survey in Cae Glas area B5 allowed the earliest site of Trefignath farm to be securely identified.

The majority of field boundaries identified on the geophysical survey proved to be simple and slight. Many can be identified on the historic maps, but some appear to be earlier. Penrhos has large parts of a field system that pre-dates the 1769 estate map and some of the field boundaries at Kingsland appear to be much earlier and could be prehistoric.

1. INTRODUCTION

Gwynedd Archaeological Trust (GAT) was commissioned by Land and Lakes (Anglesey) Ltd to carry out an archaeological evaluation at the proposed Penrhos Leisure Village residential and leisure development site. The evaluation involved the excavation of trial trenches in targeted locations informed by the results of an archaeological assessment (Evans 2011 Report **968**) and a geophysical magnetometer survey (see appendix 3).

The development scheme encompasses a combined area of 246 ha located near Penrhos, east of Holyhead, Anglesey (centred on NGR **SH27168166**) and is sub-divided into three areas: Kingsland, Cae Glas and Penrhos. Both Kingsland and Cae Glas are located south of the A55 Expressway; Penrhos is located north of the Expressway (figure 1).

The application for the proposed development will be submitted as a single Outline Application for the three sites:

Kingsland Residential Development

The first phase of the development is for a 375 unit residential development.

Penrhos Leisure Village

The majority of the developable area will be used to deliver a leisure village of c. 500 lodges, restaurants, a central hub, small retail units, bars, cafés, sports and leisure facilities, coastal park, spa, conversion of existing farm buildings for hotel accommodation, education centre, multi-use games area, car parking and gate house.

Cae Glas Nature Village

The Cae Glas Nature Village will be of lower density than the Penrhos development and will comprise 315 lodges, a 120-room hotel and car parking.

The area to the east of the Cae Glas Nature Village is currently inaccessible to the public. It is proposed to open this area up to the public for limited and carefully managed use for an outdoor learning resource with a limited number of lodges set into the landscape coupled with a visitor / education centre. New football and cricket pitches will be provided to the south of the leisure village area.

Temporary Uses

It should be noted that although the eventual use of both 'Village' areas is leisure, there is an intention to use the facilities at the Cae Glas site for the first few years of operation as accommodation for construction workers and engineers working on the build of the new Wylfa Nuclear Power Station, should the development go ahead.

2. SPECIFICATION AND PROJECT DESIGN

The current evaluation programme (trial trenching) is the second stage of a programme of archaeological evaluation; preceded by a geophysical magnetometer survey of targeted areas, which was completed in December 2011 by *Stratascan* on behalf of Land and Lakes (Anglesey) Ltd (see appendix 3 for a reproduction of the *Stratascan* report). The geophysical survey zones were located by GAT according to accessibility (excluding overgrown and/or wooded areas) and proposed scheme impact, based on the September 2011 client masterplan. The Kingsland survey zone covers almost all the proposed area of impact in this part of the development. Roughly half of the area to be developed in Penrhos was surveyed and well over half of that in Cae Glas, but parts of the Cae Glas and Penrhos areas could not be evaluated at this time because of tree cover. The site of a proposed cricket pitch was not evaluated at this stage despite the proximity of the Treaddur Burial Chamber (feature 14 on Figure 1) as the exact location of the pitch is flexible and, if outline planning permission is granted, detailed archaeological evaluation can be used to find a suitable location for the pitch.

The trial trenches were used to test the geophysical results and establish the depth of archaeological features below the present surface. The trenching allowed the date and condition of archaeological remains to be assessed, but was clearly envisaged as the first phase of evaluation with more necessary if outline planning permission is granted, to fully characterise the archaeology of the development area; in particular areas currently inaccessible will have to be evaluated once clearance is commenced.

The aim of the current phase of evaluation was to establish the archaeological significance of the targeted portions of the site, to assess the impact of the development proposals and to help inform future decision making, design solutions and further archaeological evaluation and/or archaeological mitigation strategies. If outline planning permission for the development is successful this will lead to further stages of evaluation and mitigation dependant on the final details and timescale of the project.

The trial trenching was carried out in accordance with the project design reproduced as appendix 5. Gwynedd Archaeological Planning Service (GAPS), on behalf of the Local Planning Authority, were consulted about the trenching programme, approved the project design and have monitored the work.

This document reports on the preliminary results of the evaluation trenching, assesses those results and proposes further analysis necessary to allow the results to be adequately understood and reported to accepted standards. It conforms to the guidelines specified in the *IFA Standard and Guidance for Archaeological Evaluation* (Institute of Field Archaeologists, 1994, rev. 2001 & 2008).

3. ARCHAEOLOGICAL BACKGROUND

3.1 Archaeological Assessment

GAT completed an archaeological assessment of the development site (incorporating all three areas) in August 2011 (Davidson and Evans 2011 GAT Report **968**).

The assessment identified a development area 'rich in history and archaeology. A wealth of sites from the Neolithic to the Second World War survives, including significant remains of the Penrhos estate.' (GAT Report **968**: 24).

The report concluded that the "potential for the existence of buried archaeology is considered to be high in the Penrhos and Cae Glas areas, and moderate to high in the Kingsland area" (*ibid*). Kingsland and Cae Glas are located to the west and east respectively of the site of Parc Cybi. Large parts of this site were archaeologically investigated between 2006 and 2010 in advance of development of the area for a business park (Kenney et al 2011). Nationally important archaeology was excavated dating from the Neolithic onwards, with the remains of an Early Neolithic timber building, a Bronze Age cemetery and an extensive Iron Age roundhouse settlement being some of the more significant sites. There were also numerous Neolithic pits and features such as Bronze Age burnt mounds.

Below is a brief summary of the results of the archaeological assessment. See the full report for a list of sites.

3.1.1 Kingsland

All identified sites are post-medieval farmsteads, probably of only local importance, although the nature and extent of buried remains is unknown. The historic maps show several phases of field systems.

3.1.2 Cae Glas

The study area is potentially rich in archaeological remains. It contains two Neolithic chambered cairns (one of them scheduled). The area is similar in character to Parc Cybi, where considerable remains of buried archaeology were found. There are the ruined remains of Tre'r Gof Farm; a substantial farm originally built in the 16th century. The tide mill at Tre'r Gof is of late medieval date and of archaeological significance as the earliest of a series of tide mills which lay within the inland sea.

3.1.3 Penrhos

The Penrhos estate was the seat of the principal land and property owners on Holy Island for over 400 years and the Penrhos study area is entirely contained within the former demesne lands. The layout of the demesne became more elaborate in the latter part of the 18th century and into the 19th century. Though the house has been demolished and the gardens very overgrown there are still seven listed buildings associated with the estate. Most of the sites identified in this area are related to the estate but three fish weirs of possible medieval date are present on the coast and a prehistoric standing stone and flint scatter indicates prehistoric activity.

3.2 Test Pitting

Land and Lakes (Anglesey) Ltd commissioned 6 geotechnical test pits (3.0m long by 0.5m wide by more than 2.0m deep) within the area encompassed by the Penrhos evaluation zone (geotechnical report reproduced as Appendix 4, see figure 5 for approximate location of test pits). This work was carried out on 3rd February 2012 by Kehoe Countryside Ltd. Test pits 1 to 3 identified topsoil/ploughsoil to a depth between 400mm and 600mm, followed by drift geology. Test Pits 4 to 6 identified topsoil/ ploughsoil to a depth between 300mm and 600mm, followed by drift geology. The deep topsoil appears indicative of agriculturally improved land.

3.3 Geophysical Magnetometer Survey

Stratascan carried out a gradiometer survey over a total of *c*. 25% of the proposed development area (see appendix 3 for specific methodology and figure 1 for surveyed areas). This method is particularly effective at identifying linear features such as ancient field boundaries and can be less useful for detecting smaller discrete features such as pits.

In Kingsland a range of field boundaries was identified as well as discrete features, some of which were interpreted as potential pits. There was also a group of quite strong positive and negative anomalies suggesting a semi-circular bank and ditch with other features that could be interpreted as a prehistoric settlement site. A smaller number of potential field boundaries were identified in Cae Glas along with various amorphous features of potential archaeological importance. Penrhos had numerous linear features interpreted as field boundaries. All zones had considerable areas of geological background noise that could obscure archaeological features. This is particularly significant in the B5 area of Cae Glas where no significant potential archaeological features were identified on the geophysical survey but there is the possibility that a Roman period trackway excavated within Parc Cybi continues into this field. Remains of the 18th century site of the farm at Trefignath, as shown on the tithe map, could also be hidden within the background noise.

The survey data was presented as grey-scale plots. Stratascan provided interpretation plans of each area with their interpretations of the results, but information from the evaluation trenches has enabled a reinterpretation of the grey-scale plots in some cases.

4. METHODOLOGY

4.1 Trench locations

All trench locations were informed by the results of the archaeological assessment of the development area (Report 968) and by the geophysical magnetometer survey completed by *Stratascan* (Appendix 3). For the location of individual trenches see figures 2 to 5.

Thirty seven trenches were originally proposed across all three areas. Once these were excavated GAPS required additional trenching. Eight additional trenches were dug, their location informed by the results of the original trenches and particularly positioned to investigate areas with geophysical background noise that might mask archaeological features (see figures 2 to 5 for trench locations).

Kingsland: Trenches 01- 16 were dug at Kingsland. These were located to investigate specific geophysical signals, mostly linear anomalies forming apparent enclosure systems and discrete pit-like anomalies. Trench 01 targeted a complex series of positive and negative anomalies that were interpreted as a possible prehistoric settlement. Trench 06 targeted features possibly related to post-medieval farm buildings (GAT Report 968 Site 2). Additional trenches 38 – 40 were dug to investigate an area classified as "geological background noise" (*Stratascan* report J3015: 14) and to test an area with no clear geophysical anomalies but with a vague hint of a linear anomaly on the grey-scale plot.

The geophysical survey/trial trenching targeted the central portion of the development zone. The western zone has not been evaluated at this time.

Cae Glas: Trenches 17 - 23 were dug at Cae Glas, targeting anomalies indicative of former field systems and other possible archaeological features. An additional trench (T43) was dug to explore spikes in the geological signal. The majority of the evaluation trenches were located within the proposed estate lodges zone close to the Expressway. The remaining areas have not been targeted at this time either because they are inaccessible (woodland/overgrown) or appear from the masterplan to be retained as woodland or heathland. The former landfill site has not been targeted as this is deemed to be a previously disturbed area.

Trenches (T41 and T42) were dug to investigate the nature of the geological background noise recorded in geophysical survey area B5, and to try and identify archaeological features.

Penrhos: Trenches 24 - 37 were dug at Penrhos, with the exception of T34, which had been located in the middle of the cricket pitch and this was abandoned as it would cause too much disruption to the ground surface. These trenches all targeted linear anomalies that appeared to form part of one or more field systems. Additional trenches T44 and T45 were located to investigate a broad linear anomaly and an area of geological background noise respectively.

4.2 Specific Methodology

All trenches measured 20m by 2m and were opened with a 13 tonne JCB excavator fitted with a toothless bucket, which gradually removed deposits in spits under constant archaeological control down to the level of the undisturbed glacial deposits. Where features were identified at a higher level these were left in place to be investigated by hand. Where the nature of the glacial deposits was not clear the JCB dug slightly into these to confirm their natural origin.

All trenches were hand cleaned sufficiently to photographically record the natural deposits and to check for any subtle features. Where significant archaeological deposits and features were identified these were manually cleaned, excavated and recorded to determine extent, function, date and relationship to adjacent features. Ditches and other linear features were investigated usually by a single slot dug across them, but significant prehistoric features were either half sectioned or fully excavated. Where archaeological layers, such as the burnt mounds, potentially could be obscuring other features these were removed by hand or machine after recording. Where possible relationships between features were investigated.

All finds were collected and where features or layers contained charcoal and/or prehistoric artefacts bulk soil samples were taken up to 20 litres of soil, depending on the size of the feature.

Significant archaeology was planned by hand at a scale of 1:20 and appropriate sections drawn by hand generally at a scale of 1:10. The base lines of the drawings and the trenches were located with a Global Positioning System (*Trimble R8 GNSS GPS*).

A written record of the trenches and all identified features was completed on GAT pro-formas. Each trench and any significant features were recorded photographically, using a digital SLR camera set to maximum resolution.

The trenching was undertaken between 3rd April and 4th May 2012 with backfilling of the trenches completed on 8th May 2012.

4.3 Geotechnical Test Pits

Capita Symonds carried out a programme of geological test pitting at Penrhos during the archaeological evaluation, on 23rd and 24th April 2012. The test pits were located within the completed evaluation trenches in areas with no archaeological remains (see figure 5 for locations). The test pits were dug with a mini-excavator under the control of the Capita Symonds geologist. One additional test pit was required outside the archaeological trenches (TP06). The excavation of this was carried out as for the evaluation trenches and monitored by an archaeologist until the glacial deposits had been reached.

The results of the test pitting are to be reported separately by Capita Symonds.

5. RESULTS

5.1 Quantification of records, finds and samples

This section itemises the field records produced and the finds and ecofacts recovered.

Table	1.	Total	site	records
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Trench sheets	44 sheets
Context sheets	181 sheets
Photo register	12 sheets
Drawing sheet register	1 sheet
Drawing register	3 sheets
Find register	1 sheet
Environmental sample register	1 sheet
Survey notes and level	1 notebook
Plan and section drawings	55 drawings on 23 sheets
Digital photographs	448 shots

Material	No of items
Bulk soil samples	11 samples (12 tubs)
Bone	11 fragments
Prehistoric pot	5 pieces
Post medieval pot	1 piece
Flint	4 pieces
Slate	1 piece

5.2 Fieldwork results

A summary of each trench is given in Appendix 1.

Across the development area the depth of the topsoil and ploughsoil varied significantly (see Appendix 2 for depth in each trench). In Cae Glas soil depth was fairly shallow, generally being between 0.3m and 0.4m, but reaching 0.6m in T21. In Kingsland the soil depth was greater with no trenches shallower than 0.4m deep, except T16 on bedrock, and many much deeper, with T04 up to 0.8m deep. The soil depth was greatest at Penrhos where no trenches had soil depths of less than 0.4m and in T33 it was up to 0.95m deep. These depths have significant implications for opening larger trenches or stripping areas to investigate the archaeology but may allow engineering solutions to be developed that have minimal impact on the archaeology.

The natural glacial deposits revealed in the base of the trenches were less variable than expected. A yellowbrown stony silt was most common (plate 1) with some trenches having a less stony red-brown silt (plate 2). Bedrock was on or close to the surface (plate 3) but boulder clay was not seen, although it must underlie most of the area.

The 1769 and 1817 Penrhos estate maps, as well as the OS County Series maps, were used to compare with the features seen in the geophysical survey and in the evaluation trenches. The maps are included in the references, see the assessment report (Davidson and Evans 2011) for reproductions of these early maps.

5.2.1 Kingsland

See figure 2 for trench locations and geophysical survey

Possible prehistoric settlement (PRN 34737, SH 24415 80608)

See figure 6

Description

Trench 01 was located to investigate a geophysical anomaly (8c) suggested to indicate a roundhouse. The geophysics implied the presence of a bank or other positive remains, so remains of a stone wall were anticipated. When these were not found in machining the trench it initially appeared that the geophysics had been mistaken but hand cleaning of the trench revealed several dug features, which excavation showed to be probably prehistoric in date.

The features in this trench are dug into a loose sandy gravel seen only in this trench and in the northern end of trench 02. This must have been a particularly well-drained area.

Towards the eastern end of the trench was a linear feature [0110], 0.7m wide, running NNW to SSE and possibly curving slightly. This had steep sides and a narrow rounded base but was particularly notable for the unevenness of the base. The feature was formed of a series of elongated hollows separated by narrow ridges of gravel (plate 4). These hollows measured up to 1.26m long and the feature was up to 0.46m deep in the base of the hollows. This feature had a loose gravelly fill packed around numerous thin schist slabs mostly set on edge either vertically or at an angle (figure 7). These slabs had the appearance of packing stones. A flint flake (SF02) was recovered from the fill. About 7.7m to the west was another feature [0109] very similar in character with upright slabs in its fill. Only a short section of this survived in the trench as it was cut by ditch [0107].

Towards the middle of the trench was the rounded NW end of a feature [0104] aligned NW to SE and extending out of the trench to the SE. As it appeared in the trench this feature was an elongated oval in plan, 1.7m wide and 0.55m deep. It had steeply sloping sides and a fairly flat base. It had occasional stone slabs (0124) set nearly vertically at intervals around the sides and the base was covered by a thin deposit of black silt (0117) (plate 5, figure 8). This contained lumps of burnt clay and lenses of pale grey silty clay with frequent charred cereal grains. Overlying the black deposit were several irregularly shaped slabs (0121) that seemed to form a partial lining to the feature. These were sealed by gravelly deposits (0118, 0122, 0123), that seemed to have slumped in from the sides of the feature. Over this were deposits of rounded cobbles (0119 and 0120); the latter contained sherds of prehistoric pottery (SF07) that seemed to have collected towards the base of the deposit. Built over this infill was what appeared to be a rough drystone structure (0114), comprising a slightly curving, 1m long section of walling constructed of slabs up to 0.45m long (plate 6). This structure was only one course high but the slabs were laid horizontally. The structure was sealed under a brown silt (0113) similar to the ploughsoil.

About 1.2m west of feature [0104] ditch [0107] cut across the trench, running nearly north-south. This ditch was 1.1m wide and 0.5m deep, and its sandy silt fill contained a high proportion of gravel (figure 9). It cut away much of feature [0109] so that only a short section of the latter was visible in the trench. A sherd of prehistoric pottery (SF03) was recovered from the upper fill of this ditch.

Trench 01 was carefully cleaned and no other features were identified.

Interpretation

The features found in trench 01 seem to correspond well with the geophysical survey, especially when the gray scale plot is compared to the excavation results. There is a sub-circular narrow linear anomaly that might be feature [0109/0110], however it does not correspond exactly to the excavated feature and it is probable that feature [0109/0110] was not picked up on the geophysical survey but that a roughly concentric feature surrounds it. Feature [0104] appears to be identifiable on the geophysics plot with a tail extending to the south giving it a

tadpole shape. Ditch [0107] seems to be the same as the north-south ditch on the geophysics plot which cuts through the western side of the circular feature and possibly joins with a sharp corner of two linear features to the south.

Both the geophysics and the excavated evidence suggest some complexity with possibly more than one phase of activity. It is suggested that feature [0104] is a corn drier. Its shape, especially as suggested by the geophysical survey, supports this. It has traces of a stone lining, as is common, and most significantly the black layer in the base of the feature is full of charred grain. Drying corn does not deliberately result in the charring of grain but accidents seem to have been frequent causing the grain to be set alight. Assemblages of charred grain are often recovered from corn driers and can provide valuable evidence for the contemporary farming regime. The pottery from the fill of this feature has been inspected by Frances Lynch who considers it to be probably Early Bronze Age. The position of these sherds within backfill deposited after the feature went out of use suggests that they have been redeposited from elsewhere but the occupation must be close by. It is possible therefore that the corn driers were excavated at Parc Cybi that have not yet been dated (Kenney *et al* 2011). They were located close to prehistoric and Roman period activity, so it is possible that other early corn driers are present in the area.

Some of the backfilling of feature [0104] appeared deliberate with a stony material being dumped in the cut. The stone structure (0114) built on top seems to be an entirely different and later structure.

A prehistoric date is suggested for feature [0110] by the presence of a flint flake in its fill, although it is possible that this was residual. More diagnostic is the distinctive character of this feature, which is very similar to the foundation trench of a round house excavated just over 1km to the east in Parc Cybi (roundhouse I) (Kenney *et al* 2011). This roundhouse was nearly perfectly circular and had an internal diameter of 9.6m and the wall was defined by a foundation trench very like feature [0110] with conjoined, elongated postholes set within a continuous slot (figure 10). The roof of the structure would have been supported by a ring of postholes. The entrance was on the north-western side with a substantial porch supported by large postholes and beam slots. Radiocarbon dates have not yet been obtained but on stratigraphic grounds it has been concluded that this building was roughly contemporary with the stone-built roundhouse settlement to the north-east and these are assumed to be Iron Age in date.

The presence of feature [0109], which is almost certainly a continuation of [0110], makes it likely that this is a circular foundation trench. A circle of about 10m diameter will fit between these two features giving a potential internal diameter very similar to the Parc Cybi example. The absence of postholes may be explained by them lying outside the trench or the use of post pads rather than postholes. Roundhouses often have entrances in the south-eastern arc but if the parallel with the Parc Cybi roundhouse I example is exact it is possible that the entrance is just outside the trench. The stones in slots [0109] and [0110] appear to have been packing stones to support uprights in the elongated holes. The shape of these holes led to the suggestion for Parc Cybi roundhouse I that they held stone slabs rather than wooden posts. Timber planks might be a possibility but they would be more likely to be set in a continuous trench. The possibility that these conjoined holes actually did hold stones is supported by the excavation of a roundhouse on Trevelgue Head in Cornwall (Catling 2012) with stone slabs set on edge forming the inner face of the wall in just the same manner as imagined for the Holyhead examples.

Ditch [0107] cut the foundation trench [0109] and so appears to be a later feature. However this ditch is part of a well-defined system of ditches on the geophysical plot forming the corners of two small fields. These fields are not identifiable on the historic maps and the much greater depth of ditch [0107] is very different to the slight ditches associated with the field boundaries that are on the maps. This suggests that ditch [0107] and the related ditches could be much earlier than the other ditches investigated in this area. The geophysical survey shows the features of the possible prehistoric settlement directly adjacent and apparently associated with the north-south ditch. The excavation shows that this ditch cuts some of the features but might be contemporary with other parts of the settlement and the possibility of it being prehistoric would have to be explored in any future investigation.

The combined geophysical and excavated evidence therefore suggests a prehistoric settlement with possibly more than one phase of use, potentially with an associated field system. It is notable that the site is located on a small area of gravel, which would have ensured that this position was well-drained. The possibly associated field system extends over a relatively level plateau and seems to end at the scarp that defines this plateau to the north. The plateau and scarp are natural glacial formations but the use of this area suggests the exploitation of a level dry area on the edge of the marsh to the north for settlement and agriculture.

Post-medieval farmstead (PRN 34718, SH 2436 8065) See figure 11

Trench 06 was positioned to investigate a linear feature adjacent to the site of an 18th and 19th century farmstead, the northern and probably earlier site of Bodwredd farm (PRN 34718). This linear feature, running SW to NE, was seen to be a ditch [0605], 1.0m wide and 0.3m deep. It is not explicitly shown on the historic maps but may have continued the line of a boundary that is shown and could represent an earlier boundary to the farmstead. The ditch cut through the top of a pit [0607], 1.5m long, at least 1.4m wide and 0.35m deep, only partially exposed in the trench (figure 12). This pit was an irregular oval shape with fairly gently sloping sides and was filled with a deposit (0606) including many marine shells, mostly limpets but also occasional winkles (plate 7). There were also animal bones, mainly cattle. Over both the pit and ditch was a deposit of stone, possibly to consolidate this soft area to make a firmer surface. There was no secure dating evidence from the excavated features but the good preservation of the shell and bone suggests a fairly recent date. The quantity of shells would have raised the Ph of the soil in the pit but if the feature had been prehistoric the surrounding acid conditions would have eventually leached away both the shells and the inorganic parts of the bones. This and the proximity to the site of the farm suggest a post-medieval date.

Trench 06 shows that some buried remains relating to the adjacent farmstead do survive. As the earliest recorded site of Bodwredd farm, which seems to have moved south during the 19th century, this site has potential to contain evidence of a medieval origin as well as preserving evidence of life on a 16th or 17th century Anglesey farm.

Field systems

The geophysical survey identified several linear anomalies interpreted as boundary ditches. The evaluation trenches confirmed this interpretation and T38 located a ditch not highlighted on the interpretation plan but visible as a slight line on the grey scale plot. T40 was intended to investigate a very vague broad linear anomaly not highlighted on the interpretation plan and the trench demonstrated that this feature was an artefact of the data.

Several of the ditches (those investigated by T02, 05, 08, 09) were pairs of parallel ditches (figures 13 and 14). These proved to be shallow, generally not more than 0.2m deep, although ditch [0507] in T05 was 0.4m deep, with one ditch sometimes slightly deeper than the other. The ditches were between 1.5m and 2.5m apart and about 1m wide. Anomaly 8b investigated by T05 and anomaly 9 (T02) can be identified on the early 19th century estate map. Anomaly 10a investigated by T08 and T09 can be accounted for by a NE to SW boundary on the late 18th century map and possibly a 19th century boundary crossing it, if a potential error in the mapping can be argued. It therefore appears that the double ditched boundaries are of 18th or 19th century date. They probably had a field bank between the ditches, although no trace of this was found in any of the trenches. Anomaly 51 was not evaluated but runs along the line of a field boundary used in the 18th and 19th centuries through to at least 1890. Part of anomaly 42, not interpreted as a ditch by Stratascan, forms a linear feature running along the line of a 19th century boundary.

Ditch [0407] in T04 was 1.4m wide and 0.3m deep. Its base was heavily disturbed by animal burrowing in a way not seen in the other ditches (plate 8, figure 15). This ditch can be identified as a boundary to a paddock adjacent to the northern site of Bodwredd farmstead. This boundary is shown on the early 19th century map. The degree of animal burrowing might suggest that there was a hedge associated with the ditch providing cover for rabbits and encouraging their activity.

Anomaly 36 was clearly defined on the geophysics plot and its investigation in T15 showed it to be a ditch 0.7m wide and 0.4m deep. This cannot be identified on the historic maps and may indicate an earlier field system. Possibly also associated are features seen in T10. This trench was dug to investigate a discrete pit-like anomaly but what was found were a series of ditches (figure 17). A shallow ditch 0.1m deep [1005] ran NW to SE and about 3m north of this was a parallel deeper ditch [1009], 0.3m deep. The latter was cut by a shallow broad ditch [1011] running parallel and that was cut by a stone-filled land drain on the same alignment. These would not have formed a right angle with anomaly 36 but might still have been a related field boundary. The failure of the geophysical survey to detect these ditches is not explained as they were under only about 0.45m of overburden, but it is a warning that geophysics may even miss ditches when the conditions are unfavourable.

A ditch forming part of the group recorded as anomaly 8a was investigated in trench 01 and has been described above. This ditch [0107] was much deeper and better defined than the probable 18th and 19th century ditches. It is possible that this group of ditches defined small prehistoric fields associated with the settlement identified in T01. A narrow gully, roughly V-shaped in profile, ran across the SE end of T04 (figure 16). This gully [0405]

was 0.45m wide and 0.3m deep. It was filled by a grey silt which formed a general layer over this end of the trench. This grey layer (0408) seems to be an earlier rather gleyed ploughsoil or colluvial deposit, suggesting that the gully significantly pre-dates ditch [0407], and may be associated with the potential prehistoric field system (PRN 34738, SH 24395 80620 (centre)).

In conclusion most of the ditches can be identified as dating from the 18th and 19th century. The smaller fields of the 18th century seem to have been amalgamated into larger fields in the early 19th century and further rationalised into much larger fields in the late 19th century, but the orientation and layout shows that this was essentially a single field system developing over time (PRN 34739, SH 2460 8060 (centre)). Other ditches seem not to have been part of this field system, particularly the ditches around T01 and those investigated by T15 and T10. The ditches in T10 seem too similar to the later ditches to be considered particularly early but those around T01 could be prehistoric, as discussed above.

Pit-like features

The geophysical survey identified several discrete anomalies that appeared to be pits. These were targeted by trenches 07, 10, 11, 12, 13 and 14. T10 has been discussed above. In all the other trenches, except T11, nothing could be seen to explain the anomalies so it was assumed that they are the result of variations in the natural deposits. In T11 an irregular pit [1105] measuring 3.5m by >0.7m and 0.3m deep was seen partially obscured under the trench baulk (PRN 34740, SH 24738 80657); the full shape in plan could not therefore be determined (figure 18). The fill of the pit was a loose dark grey silt. The loose texture gave the impression that this was not an ancient feature but there was no evidence of its purpose or date. This pit was towards the southern end of the trench and therefore probably did not produce the geophysical anomaly, which was more central. A small pit was identified in T13 (PRN 34741, SH 24772 80645), which may have contributed to the geophysical signal but seems unlikely to explain the full extent of the anomalies on the SE end of this trench. The pit [1305] was sub-circular, 0.75m by 0.65m and 0.1m deep (figure 19). It was filled with angular burnt stones and charcoal (plate 9, figure 20). The fill suggests that it may have been associated with a burnt mound but no trace of one was identified. However it may indicate other prehistoric activity in the area.

The discrete anomalies identified by the geophysical survey seem to be the result of varying geology. However the discovery of the small probably prehistoric pit in T13 demonstrates that such small features are present but are highly unlikely to be clearly identified on the geophysics survey.

Geology

Trenches 16, 38 and 39 were located to investigate areas with geological background noise on the geophysical plot. The exact cause of this noise was not easy to determine. It may be related to bedrock near the surface but in many trenches glacial deposits obscured the bedrock. In T16 bedrock was very close to the surface and outcropped at numerous points long the trench. In T39 there was also a significant outcrop of bedrock but in T38 only glacial deposits were visible in the trench base.

There are numerous lines within these areas of noise and T38 was positioned to investigate one of the more coherent lines. This proved to be a shallow ditch [3805] and the geophysical signal in this area might be interpreted to indicate a small rectangular ditched feature measuring 15m by 10m, presumably related to the Bodwredd farmstead. It is likely that other features are obscured within this area.T03 showed that a curving anomaly (8d) was geological, as there were distinct changes in the geology visible within this trench.

It is clear that the geological background noise is not solely caused by bedrock at the surface and so archaeological features may be present in these areas but obscured by the noise.

5.2.2 Cae Glas Area B1

See figure 3 for trench locations and geophysical survey

Burnt mounds

Description

In trenches 17 and 18 the remains of burnt mounds were found. This is a site type that usually dates from the Bronze Age and involved the use of hot stones for boiling water for cooking or other purposes. The geophysical survey showed two probable archaeological features that were investigated by T17. The anomaly investigated by T18 was little different to other amorphous signals elsewhere on the project.

In T17 were two areas of burnt stone (1704 and 1705) corresponding to the two geophysical anomalies (PRN 34742, SH 26396 80160). These covered the width of the trench and were 3.7m and 6.4m in length, respectively and up to 0.2m deep (figures 21 and 22). They were composed of small angular stones, generally no larger than 0.15m in length in a matrix of grey silt (plate 10). There was generally little charcoal present except in occasional lenses. The stones were often reddish in colour due to heating. In layer (1705) there were two large flat stones (up to 0.55m in length) laid next to each other and quite level within the mound material. There was no evidence that these formed part of a structure but they seemed to have been deliberately laid.

Once recorded the burnt mound material was removed partly by hand and partly by machine. Beneath the mounds was a thin layer of grey silt (1715), which may be the remains of a buried soil. Cut through this were two probable postholes. Feature [1706] was an oval cut with steep sides and a narrow base, 0.5m by 0.35m and 0.4m deep. A projection on the southern side extended into the baulk, suggesting that it may be part of a larger feature. Feature [1707] was a near circular cut, 0.27m in diameter and 0.39m deep, with steep sides and a narrow tapering base (plate 11). Both features were filled with densely packed stones up to 0.2m long, most of which were burnt. The shape of the features strongly suggests that they were postholes although the stones they contained did not seem to be post packing stones, but were probably introduced after the posts had been removed.

Beneath the grey silt was an amorphous hollow [1716] with a grey silt fill, but this seems to have been a natural hollow and not related to the burnt mound.

The burnt mound (1804) in T18 (PRN 34743, SH 26428 80311) was very thin, less than 0.05m thick, and seems to have largely been truncated by ploughing (figures 23 and 24). It was composed of a dark grey charcoal-rich silt with numerous burnt stones. This layer was removed by hand to reveal features beneath. There was a group of shallow features that may be postholes (1811) (plate 12). There were three larger sub-circular cuts [1806, 1820, 1822], up to 0.25m diameter and no more than 0.13m deep. More scattered were three slighter features [1824, 1826, and 1828] no more than 0.2m in diameter and 0.08m deep. All were filled with burnt mound material and if they were truncated it was presumably before the burnt mound material was deposited. They did not form a clear plan of a structure but other features outside the trench might clarify their function.

Towards the NW end of the trench was a ditch [1808], 0.85m wide and 0.45m deep, with a near V-shaped profile. It had a complex sequence of fills (plate 13). The lower fill (1816) contained burnt stones and seemed to be erosion or slumping of burnt mound material from the northern side into the ditch. After some silting, burnt mound material identical to, and continuous with the main burnt mound layer (1804), slumped into the southern side of the ditch. Over this was a series of fine, often organic silt layers, representing the infilling of the remaining wet hollow. The ditch cut through a thin patch of charcoal (1818). This ditch was open when the burnt mound was being deposited so that the material could slump into the ditch, but it was also preceded by activity that created the charcoal patch. It therefore seems likely that the ditch was used as part of the burnt mound activity and was dug during the use of the site.

The geophysical anomaly 45 also suggested a burnt mound but when investigated by T23 this was demonstrated to be an area of grey brown silt with dark red mineralisation towards its base. There was evidence of tree root activity in this deposit, which may have resulted in mineral precipitation or it may have been the specific hydrological conditions of this areas that caused the deposits, but there was no evidence that this was an anthropogenic feature.

After the burnt mounds had been discovered it was considered possible that the magnetic spikes (anomaly 44) also indicated a burnt mound. When these were investigated by T43 no burnt mound material, metal objects or other obvious explanations of the spikes were found. However the natural deposits were only 0.4m below the surface and there was a natural grouping of rocks in approximately the right location and it may be that the rocks in this area are sufficiently magnetic to cause the anomalies.

Interpretation

Burnt mounds are a common site type in North Wales, often, but not always, found in low-lying wet areas. Three sites were found during the works in advance of the construction of the A55 in the vicinity of Cae Glas (PRN 31806 SH 2627 8068; PRN 31805 SH 2601 8076; PRN 31804 SH 2575 8093. One was on the edge of Area B5 and another on the route of the road to the NW of area B1 (see figures 3 and 4)). These were all small areas of burnt stone but the last seemed to have a pit associated. These were not investigated in detail or dated (Maynard 2011). The excavations at Parc Cybi revealed two burnt mounds (PRN 31582 and 31583), one large with several pits and a possible well and one small with a single pit. There were also several features containing burnt stone

but lacking mounds that seem to be related features (PRNs 31584-31587). All these were excavated and recorded in detail but no dates have yet been obtained (Kenney *et al* 2011). Dates on sites elsewhere in North Wales show these sites to start in the late Neolithic and to be used throughout the Bronze Age and possibly into the Iron Age, although none of the later dates are secure (Kenney 2012).

While pits or troughs are common under mounds and some traces of structures are also found there are no records from north-west Wales of substantial ditches associated with these features. However a recently excavated site at Pentrefelin near Criccieth did have shallow straight channels and a very well preserved site at Nant Farm, Porth Neigwl (Smith 2009) had a wooden launder made from a tree trunk for carrying water into the trough. It is possible that feature [1808] is a type of trough rather than a ditch although its V-shaped profile seems to strongly contradict this. The feature is not visible on the geophysical plot as a ditch so there is no indication of its length or where it might be running from and to.

Although groups of postholes and stakeholes are found on burnt mound sites the size of the posthole in T17 is also difficult to parallel and could indicate the former presence of a structure of considerable size.

The geophysical survey indicates that the T18 mound is about 15m across while the two areas of mound material in T17 are each about 5-6m across. The presence of features under the investigated parts of the mounds suggests that further features are still preserved in the uninvestigated areas. The existence of substantial postholes in T17 and the ditch in T18 potentially show the presence of less usual features that might help to inform the use of these sites.

The burnt mounds are quite clearly shown on the geophysics plot and as anomalies 44 and 45 proved negative there are no other obvious anomalies indicating other burnt mounds in the area, although the geological background noise in the NE part of the area could obscure such signals. On current evidence therefore no further burnt mounds might be expected in this area but they might be hidden under deeper deposits of soil or be otherwise geophysically invisible.

Culvert (PRN 34744, SH 26683 80347)

A substantial culvert [2207] was found in T22 (figures 25 and 26). This was 1.3m wide and 0.4m deep and constructed with drystone side walls composed of undressed slabs (2218) capped by large flat slabs measuring up to 1m by 0.4m (plate 14). These were covered by other smaller stones (2208) up to 0.5m in length. This culvert was still functioning with water running along it.

This large feature was not clearly identified by the geophysical survey. A linear anomaly (47) was identified as probably a land drain but its continuation was not recognised. At the location of T22 the culvert was represented in the geophysical plot as part of a group of rather confused short linear anomalies (29c). Once the culvert had been identified by excavation it is possible to detect its route on the grey scale plot, although it is faint. The culvert runs nearly east-west and then turns to the NW just south of T22. At the point at which it turns a hole can be seen in the field where part of the culvert capping has collapsed. The culvert runs to an outflow into the stream on the NW boundary of the field.

Stone-filled land drains were seen to cut through the fill of the culvert rather than feeding into the culvert so the field drainage seems to post-date the culvert. The size and careful construction of the culvert suggests that it was part of a coherent drainage scheme implemented by the Penrhos estate. A similar culvert was found at Parc Cybi and they are almost certainly part of the same scheme. The map evidence suggested that the Parc Cybi culvert was built in the mid 19th century (Kenney *et al* 2011) and a similar date is suggested for the present feature. The former example carried a stream from an area of marsh and it is probable that this culvert provided a similar function rather than being purely for field drainage, which seems to have been added after the culvert was built and probably feeds directly into the field-side ditch rather than into the culvert.

Post medieval field system (PRN 34745, SH 2662 8033 (centre))

Cae Glas has fewer old field boundaries visible in the geophysics survey than the other areas, most of which can be identified on the 1817 estate map of Tre'r Gof. The double ditches marking the start of the route of the track west from Tre'r Gof can be seen on the geophysical plot (anomaly 24) and these were not investigated by trenching. The continuation of the route further west is much less clear but the map gives a good indication of the route.

A double ditched boundary was investigated by T21. This can be identified with a boundary running NE from the farm, which geophysics suggests originally ran further north than is shown on the 1817 map (anomaly 22a

and b). It was expected that this would be seen as a clear double ditched feature in T21 but it proved very difficult to identify. A shallow ditch [2105], only 0.15m deep and 0.84m wide was seen in the SW trench section, immediately below the topsoil and cut into the ploughsoil, which at this point is 0.35m deep (plate 15). No other ditch was identified so the second ditch must have been very shallow and difficult to distinguish from the ploughsoil. Ditch [2105] could not be identified in the opposite section, but seems only to have been identifiable where it was incidentally filled with stone rather than soil.

A ditch not shown on the 1817 map was identified in T22. This ditch [2212] was 1.4m wide and 0.55m deep with steeply sloping sides and a flat base (figures 25 and 27). In the base was a thin deposit of flat stones (2213) including a roofing slate (SF01). The majority of the fill was a grey-brown silt with occasional stones (2214). This ditch appeared to be aligned NW to SE parallel to the culvert [2207] and might have been an open ditch that carried the stream before the culvert was constructed. However, there were no obviously water-laid deposits in the base of the ditch. The depth of the ditch compared to the slight 19th century boundary ditches could suggest that it is of a much earlier date, although the presence of the slate suggests otherwise. The slate is rectangular and more like post-medieval slates that the usually diamond-shaped Roman slates. Without this evidence it would have been tempting to suggest a connection between the ditch and that found in T42 in Cae Glas area B5 (discussed below), possibly indicating the continuation of the Roman trackway. However it appears that this association is incorrect.

Therefore, with the exception of ditch [2212], it appears that most of the linear anomalies in Cae Glas are 18th and 19th century field boundaries. The features that cannot be directly identified on the 1817 map, e.g. anomaly 28, are probably 18th century boundaries defining smaller fields that were amalgamated into larger fields in the early 19th century. Anomalies 26 are probably land drains, and the whole area seems to have been extensively drained by a system of stone-filled drains. These do not seem to directly relate to and post-date the large culvert running across the field. At present it seems possible that ditch [2212] was an open precursor to this culvert.

It is clear that not all the 19th century field boundaries are shown on the geophysics plot. The western continuation of the track is not visible, nor is a boundary running north from this. Perhaps most unexpected is the invisibility of a pond, shown on the 1889 OS map just south of T18. There is a loose scatter of positive readings in this area but not enough to define a feature. The absence of recent features that the geophysics should be able to detect warns that this technique could be missing many other features of possibly much earlier date.

Geology

Trenches 19, 20 and 43 were empty of archaeological features and the anomalies that they were intended to investigate were presumably of natural origin. In T20 bedrock came close to the surface with broken rock projecting through the glacial deposits. This appeared to explain the pattern of geophysical anomalies seen. In T19 there was no obvious explanation and it is assumed that either there was unseen variation in the glacial deposits or that the bedrock was close to the surface but obscured by a thin later of glacial silt. In T43 broken bedrock at the surface seemed to be enough to cause magnetic spikes. Trench 21 investigated the larger area of geophysical background noise. This signal did not relate directly to bedrock at the surface as it was not found over the obvious bedrock outcrops that punctuate the field. In trench 21 much of the area of the signal was covered with orange brown silt. It may be that the high level of iron oxide in this deposit accounts for the background noise.

5.2.3 Cae Glas Area B5

See figure 4 for trench locations and geophysical survey

Description

Trenches

Two trenches were dug in this area. T41 contained no archaeology. The natural deposits were mottled red-brown clayey silts and these may have caused the background noise on the geophysical survey that covered large parts of this field. Immediately north-west of this trench is a low rounded knoll. There is no evidence that this is caused by outcropping bedrock as is seen elsewhere in the field so it may a glacial feature. This knoll does not appear defined on the geophysical survey although the band of noise runs across it.

Trench 42 contained land drains and ploughscars, probably from recent ploughing. It also had a ditch [4205] running across it (PRN 34746, SH 26053 80603). This was 1.2m wide and 0.49m deep, with a nearly V-shaped profile (plate 16, figures 28 and 29). Its fills were mottled dark grey silt (4204, 4208), and it was partially sealed by a thin yellowish clay layer.

Topography

The outline of the obvious rock outcrops and the rounded knoll were surveyed during the project. While surveying these it was noticed that there were gently sloping scarps near the north-western boundary of the field. One scarp formed a rough rectangle defining a level area about 17m square. This was closed in by the scarps on three sides and was open down the slope towards the NE. Running into this area was a slight west facing scarp, aligned roughly N-S but turning to the west at its southern end (figure 4, PRN 13929).

Interpretation

During the excavation of the adjacent field in advance of the Parc Cybi development fragmentary remains of a trackway (PRN 31597) were found (figure 4). Where best preserved the track was defined by a stony bank and a ditch on each side and in places had stony deposits suggesting a metalled surface, but along much of its length it had been truncated and was poorly preserved. At its western end this track ran into an area of possible settlement and industrial activity dated to the Roman period by pottery finds. The track seemed to form an integral part of the layout of this occupation area and it was suggested that this was also Roman period in date. Several ditches seemed to project from the line of the track and may represent the remains of a Roman period field system (Kenney *et al* 2011).

Roughly continuing the line of the track at its eastern end the geophysics grey scale plot indicated a linear feature. This was not identified as an archaeological feature by Stratascan and it was initially assumed that it was an artefact of the data collection. However this linear feature crossed T42 at almost exactly the location of ditch [4205]. The ditch was aligned E-W rather than NW-SE like the linear anomaly so this correspondence might be coincidental. If the linear anomaly represents the continuation of the trackway the ditch might indicate that it is more irregular than the geophysics suggests and was not nearly straight. In Parc Cybi one of the best preserved sections of the trackway had a V-shaped ditch similar to ditch [4205], however there were 18th century field boundaries in this area and the ditch might be identified as one of these. The geophysics shows this linear anomaly running across the position of T41 but no ditch was seen here, so some care must be exercised in firmly identifying this linear anomaly as the trackway, however the possibility of the Roman trackway continuing through this area must be considered when planning further evaluation works.

The possibility of quite distinct archaeological features being obscured in the geological background noise is demonstrated at the western end of this band of noise. The earthworks recorded here are almost certainly related to the 18th century position of Trefignath Farm. This site is clearly shown on the 1769 estate map but the errors in the map make it difficult to be absolutely sure of its position. However pits and a probable hayrick gully excavated in Parc Cybi strongly suggested that the farm was located close to the position in which the earthworks were found. If the 1769 map is adjusted to fit the modern mapping using field boundaries in the immediate area it can be seen that the site of the farm does fall in this area and closely resembles the plan of the earthworks. It is very likely that some of the noise seen on the geophysics plot is actually the remains of this farm and some possible rectangular features can be seen that might suggest building remains.

The presence of the farm in this location in the 18th century strongly suggests an earlier origin and this has the potential for preserving remains of a medieval farmstead. The survey of the earthworks means that this site can now be accurately located and should be evaluated in future phases of the project.

5.2.4 Penrhos

See figure 5 for trench locations and geophysical survey

Field system (PRN 34747, SH 2718 8153 (centre))

Description

Most of the features shown on the geophysical survey and investigated by the trenches seemed to be field boundaries. One class of geophysical anomaly indicated by a narrow negative linear anomaly seemed generally to correspond to fragmentary remains of drystone walls found in the trenches. These were found in trenches 24, 27, 28 30 and 32, although similar signals elsewhere did not produce convincing remains of walls or banks. In T32 the feature was not noticed in plan as it was very slight and indistinct but in section a stony bank could be seen slumping down a terraced slope (figure 30). In T28 only 3 large stones indicated the line of the wall (plate 17) and in T30 and T27 a scatter of loose stones were all that survived (plate 18, figures 31 and 32). Only in T24 was the wall foundation well-preserved (plate 19, figures 35 and 36). Here the wall (2404) was constructed of cobbles and boulders up to 1m in length, the larger of which were laid flat. The natural deposits were lower on either side of the wall, probably due to the effects of ploughing and immediately to the SW was a ditch [2405], 1m wide and 0.25m deep.

To the NE of this wall in T24 was a large sub-circular pit measuring 1m in diameter and 0.6m deep. There was a stony silt in the base of this but most of the pit was field by numerous large and medium stones randomly distributed and not part of post packing or a lining to the cut (plate 20). No finds were recovered and there was no charcoal that might enable radiocarbon dating, but the position of this feature near the wall may indicate that they are of a similar date.

In T33 there was no trace of the wall possibly indicated by the geophysics but there was a ditch [3305], 0.8m wide and about 0.3m deep (figure 33). Two ditches were found in T31, as indicated by the geophysics. There were each 1.3m wider and 0.35m deep and 3.4m apart.

One boundary clearly indicated by the geophysics proved elusive on excavation. T29 and T45 were positioned to investigate anomaly 6, but only a group of stones in the ploughsoil was seen in T29 to possibly indicate its presence and no trace was detected in T45. However a ditch [2905] was found running NE-SW in T29, this did have a hint of another ditch [2907] running across it, which might be a trace of anomaly 6 (figure 34). Ditch [2905] was 0.6m wide and 0.2m deep and completely straight.

A ditch seen in T44, 0.6m wide and only 0.11m deep is probably the continuation of anomaly 2a. A narrow ditch 0.6m wide and 0.2m deep in T37 seems to represent part of anomaly 1e rather than 1b.

Interpretation

Penrhos house and its farmyard and the area immediately around it altered considerably from the late 18th century into the 19th century and it is not always easy to identify boundaries from one map to the next. However the area evaluated to the north of the farmyard was split into 5 fields that changed subtly in their boundaries but remained recognisable. Some of these boundaries are on or close to existing boundaries and others that have shifted slightly can be identified on the geophysics plot (e.g. anomalies 4a and 4e). However most of the boundaries identified on the geophysical survey and investigated by the trenches appear to pre-date the 1769 map. Linear anomalies 4c and 4d run parallel to the curving boundary around the paddocks close to the farmyard. It seems likely that this field was originally composed of several small narrow fields, possibly enclosed groups of strips. There are further hints of this to the south on the 18th century map. Possibly there were originally large open fields in this area along the coast and that these were gradually enclosed into smaller fields. Some of these been consolidated into more regular fields in the 18th century and this trend continued into the 19th century. Many of the boundaries shown on the geophysical plot in area A2 therefore probably date to the early 18th century but could have much earlier origins. The genuine boundaries in area A1 probably have a similar explanation and date although this area is complicated by the presence of geological features that mimic the signal of large field boundaries.

Anomaly 2b that T24 investigated includes a junction of boundaries and this might represent a junction in this area on the 1769 map. That map does not indicate a continuation of the boundary to the NE but the geophysics suggests that the wall found in T24 was part of this field system but had gone out of use by 1769. Although a building is shown to the SE on the 1769 map there is no indication of buildings in the vicinity of T24. However it is possible that there was some activity in this area that had also gone out of use by 1769 and that the stone-filled pit represents part of this activity. Other features might therefore be expected in this area.

Close inspection of the estate maps of this area have led to the identification of three buildings beyond the main house and farmyard complex not highlighted in the assessment report (see figure 5 for locations). A building (PRN 34748, SH 27018 81572), presumably a barn, is shown on the 1769 estate map within a yard. It is also shown on the 1817 map and may be indicated by an anomaly (48) on the geophysical survey. A long building (PRN 34749, SH 26858 81425), presumably a barn, is shown on the 1769 estate map. It is not marked on the 1817 map. This area has not been covered by geophysical survey as it is currently woodland. The field boundaries identified as geophysical anomalies in the field to the north that suggest the map may be inaccurate in this area and the building may actually be located about 30m west of the coordinates given. The 1769 map shows an L-shaped building in a yard (PRN 34750, SH 26967 81375) also not indicated on the 1817 map. Most of this site must now be under the road and there has been too much recent disturbance in neighbouring fields that have been geophysically surveyed for evidence of this building to be identified.

Geology

Several of the trenches demonstrated that not all the linear features on the plot are ditches but some appear to be geological features. T36 was aimed on a complex junction of linear anomalies but no archaeological features were seen in the trench, in which was exposed a mottled yellow clayey silt that composed the undisturbed

subsoil. It is therefore concluded that the rather broad and uneven anomalies are produced by either the surface geological deposits or the underlying bedrock. The pattern of these features (1a) is perhaps suggestive of frost polygons. The anomaly 1b, that should have been seen in T37 but was not identified, is assumed to be part of this system. The larger linear and amorphous features (anomaly 13a) explored in T26 and T44 also appeared to be entirely due to geology, and a fairly sharp linear (anomaly 1d) investigated by T25 proved to be the edge of outcropping bedrock. The bedrock visible in the NE end of this trench seems to have produced little in the way of a geophysical signal but the glacial deposits in the SW end seem to have been the cause of background geological noise on the survey. Trench 45 also shows that this type of iron-rich silt seems to be the cause of the background noise. The anomaly investigated by T35 also appeared to be the result of variations in the natural, although the 18th century map shows a field boundary in this general area. Anomalies 48 and 49 next to the A5 are within what is clearly a modern levelled area defined by the right angled corner of regular scarp. A building is shown in this location on the 1910 OS map but not earlier and the current levelled area probably results from the demolition and removal of this building.

5.3. Finds and samples

Recommendations are made below for work to be carried out on the finds and samples recovered but these will be finalised in discussion with GAPS.

Five sherds of pottery were recovered from T01. Four pieces were from the corn drier [0104] and one from the fill of the ditch [0107]. Of the pieces from the corn drier one is decorated and one is a square-sectioned rim. Frances Lynch has made an initial inspection of these pieces and considers them to be probably Early Bronze Age. There appear to be two types of fabric in the group from the corn drier and one sherd in this group is similar to the small sherd from the ditch fill. These sherds need closer study and the decorated piece and rim fragment require drawing.

Four pieces of flint also came from T01. One was recovered from the fill of the foundation trench [0110] and three came from the corn drier [0104]. The pieces are not formal tools, although one piece does have fine chipping along one edge. Three pieces are on a rather course grey chert and the other is on a finer flint. These pieces require recording by a specialist, but are not significant enough to require drawing.

A single sherd of post-medieval pottery was recovered from the ploughsoil in T24. This was retained because it appears to have been burnt, revitrifying the white glaze and giving it a mottled brown appearance. However this single sherd is of little archaeological significance and no study is proposed.

A roofing slate was recovered from the base of the ditch [2212] in T12. It is neatly made of purple slate and measures 280mm by a maximum of 170mm. The hole is set at the top of the slate slightly to the right hand side. Advice will be obtained as to the possible date of the slate, although they are generally not closely datable. However it is not of the Roman style and is likely to be post-medieval in date. The slate is of importance because it provides the only dating evidence for the ditch.

Pit [0607] in T06 produced 11 pieces of bone, some of which are small but it includes a nearly complete humerus from a small cow. Most of the bones are of cattle but there are fragments of small ribs that are probably from sheep. Some of the bones have unfused epiphyses and are from young animals. Several of the bones have butchery marks and some appear to have been broken to extract the marrow. This is a small assemblage, although some smaller pieces might be recovered during the wet sieving of the soil sample taken from this context, and can contain only limited information but it can give indications about butchery, the age of animals and possibly the breed of cattle. It is therefore recommended that this assemblage is studied by a bone specialist.

Eleven bulk soil samples have been collected from features within 6 trenches. Most are from deposits with a charcoal content but a sample has also been taken from the shell deposit in pit [0607]. These samples have the potential to provide information about the species of wood forming the charcoal and other plant remains could be included that might give information about the environment and farming practices. To recover this information the bulk samples must be processed in a floatation tank to recover the charred plant remains. The residue should also be wet sieved to recover and small artefacts. The artefacts and plant remains can then be studied by specialists. The shells from pit [0607] should be quantified and described but are not worth further study at this stage.

If suitable material is present the charred plant remains can also be used to provide radiocarbon dates. If the planning application is agreed the acquisition of radiocarbon dates from certain features at this stage will give important information for planning further evaluation and mitigation. If the planning application is unsuccessful the current work will provide the only opportunity to obtain dates on important features. At this stage approximate dates for the main features are required so it is proposed to obtain two dates from the corn drier in T01, and two dates from each of the burnt mounds in T17 and T18. A sample was also taken from the small pit containing burnt stone in T13. On its own this small feature is not of great significance but it may indicate much more extensive archaeology in the immediate area so it would be useful at this stage to securely establish whether it is prehistoric and two dates are also proposed on this feature. Two dates are required in each case to test whether the material is all from a single even or contaminated by mixing. The dates should be carried out on short lived items such as cereal grains or small twigs to avoid the error of dating old heartwood. It may be possible that some of the samples do not contain suitable identifiable items and that not all the proposed dates will be possible.

6. SUMMARY AND CONCLUSIONS

The 44 trenches excavated comprise a very small proportion of the total area of the development but combined with the geophysical survey they have revealed important evidence enabling a preliminary characterisation of the archaeology of the development area. Prehistoric activity was suspected in the area and the trenching confirmed this. Two burnt mounds of probably Bronze Age date were found in Cae Glas. The geophysical survey does not suggest other features of this type in this area but the trenching elsewhere has demonstrated that features can be unexpectedly missed by the geophysics. Similar sites may be expected in other wet areas of the development. Traces of buried soil survived under both burnt mounds and these may preserve information, especially pollen, on the local environment. Both sites had features under the spreads of burnt stone. The postholes in T17 may suggest a substantial structure. In T18 there is evidence of a much slighter structure but the existence of a ditch apparently contemporary with the use of the mound is important as this feature cannot be paralleled on other sites in north west Wales.

More complex prehistoric sites were also anticipated from the results of the Parc Cybi excavations and from the number of roundhouse settlements on Holy Island. This was also confirmed by the geophysical results and the excavation in T01 which suggest the possible presence of a roundhouse associated with other features including a field system, not all necessarily contemporary. There is no indication of deep stratigraphy but stratigraphic relationships were seen between some of the excavated features. Prehistoric pottery and flint flakes were recovered showing that this area contains finds with the potential to provide dating evidence and information on the function of the site. The existence of charred grain in the base of the probable corn drier within the middle of this complex shows that environmental evidence is also to be expected.

The presence of occasional pits such as that in T13 and the larger stone-filled pit in T24 show that there is other activity. The former pit contained burnt stones and may be prehistoric in date. Other similar pits could be present in the vicinity. The pit in T24 may be related to the probable 18th century field boundaries in this area but equally its proximity to wall (2404) might be coincidental and it could indicate a completely different phase of activity.

T06 showed that buried remains related to the 18th century farmsteads can survive. Survey in Cae Glas area B5 allowed the site of the first Trefignath farm to be securely identified. The relatively clear outline of the earthworks indicates little disturbance so it is likely that buried archaeology survives in this area. The identification of a medieval origin to some of these farms is a priority as although many medieval churches are known on Anglesey the number of certain farms and domestic sites is small and very few have been excavated.

The majority of field boundaries identified on the geophysical survey proved to be simple and slight, and contained only minimal information. Many can be identified on the historic maps, but some appear to be earlier. Penrhos has large parts of a field system that pre-dates the 1769 estate map, although it can be seen how this earlier system could evolve into the later fields and it is suggested that this may still be of 18th or 17th century date. Some of the field boundaries at Kingsland appear to be much earlier and could be prehistoric.

One ditch in T42 is approximately on the expected line of the Roman period trackway identified in Parc Cybi. However, if this feature had continued it might have been expected to have been present in T41, which contained no ditches or other traces of a trackway. The current trenching has therefore not proved whether this trackway does continue and if so on what line.

The evaluation trenching was also useful in testing the geophysical survey. This demonstrated that many of the possible features identified in the survey were the result of variations in the natural deposits, but also that even quite substantial ditches could be concealed. The extensive areas of geological background noise appeared to relate to iron-rich silts rather than to bedrock, although bedrock may cause some of the noise and irregular anomalies.

Even in the areas of the geophysical survey it cannot be concluded that all archaeology is identified and further sites of some complexity might be discovered. However where the geophysical survey did suggest a complex site in Kingsland this was proved to be accurate. The testing of other possible burnt mound sites in Cae Glas, which proved negative, gives some confidence that in this area no other large scale features of this type are present. The soils in this area are shallow and the signal less likely to be obscured than under deeper ploughsoil, so it is likely, although not certain, that the signals of any large burnt mounds will have been detected.

7. RECOMMENDATIONS

The possible prehistoric settlement in Kingsland (PRN 34737) is of considerable importance and therefore it is recommended that preservation *in situ* is considered as the preferred mitigation. The geophysical survey should be used to inform the area to be avoided. Further evaluation may be required around the edge of the possible settlement but it is recommended that no further evaluation be carried out on the settlement itself if preservation *in situ* is possible, as it is important that it be preserved as undisturbed as possible. If preservation is not possible the site will have to be fully excavated. It is recommended that this is done by area excavation and not piecemeal evaluations that do not allow the archaeology to be fully seen and understood.

The present phase of work has been an initial stage of evaluation and if outline planning permission is granted more evaluation will be necessary to more fully characterise the archaeology of the development area. This would include the full excavation of the burnt mounds in Cae Glas (PRNs 34742 and 34743), evaluation trenching to establish the depth and nature of deposits within the site of the early Trefignath farmstead (PRN 13929), and further investigation of the possible presence of a Roman trackway across Cae Glas Area B5. The level of evaluation trenching so far has been low for the size of the area and further trenching is needed to investigate areas shown as blank in the geophysical survey. The initial trenches demonstrated that even linear features such as ditches that are usually easily detected by magnetometer surveys were in some cases missed and a greater density of trenches is required to more rigorously estimate the risk of archaeology being present that has not been detected by the survey.

Areas to be developed that have not yet been evaluated will have to be investigated once they become accessible. The evaluation should include an assessment of the damage of the present trees on the archaeology and the risk to the archaeology of removing tree roots. The depth and nature of archaeological deposits associated with upstanding remains such as the Tre'r Gof farmstead and the Penrhos House complex will have to be evaluated. The evaluation will lead to the development of a mitigation strategy to allow archaeological remains to be avoided by the development or fully recorded and to allow the recording for historically important buildings as laid out in the Technical Advice Note (TAN) Development and Archaeology.

The current report has presented the results of the evaluation trenching and has highlighted the importance of carrying out further analyses on certain finds and samples. It is recommended that the finds, pottery, bone and flint, are fully described and drawn where necessary. The soil samples that have been collected from trenches 01, 06, 17, and 18 need to be wet sieved and floated to recover charred plant remains and any very small finds that they contain. These then require analysis. The charred plant remains should be identified to species, and material from short-lived species should be selected for radiocarbon dating. The two burnt mounds require dating and particularly the corn drier in trench 01. The aim at this stage is to obtain a general date for the features so two dates should be obtained from each feature. The pit in T13 should also be dated to confirm a prehistoric date.

The results of these analyses should be incorporated into the interpretation of the trenching results and a full report including the specialist reports should be written. Land and Lakes (Anglesey) Ltd has committed to funding this work and if the planning application is refused will ensure that the post-excavation analysis is completed within 6 months of the planning decision. This will allow the current work to be finished to accepted standards and the results published so that the findings from the evaluation are available to all archaeologists working in the area and for future consultation. If the outline planning application is granted discussions will be held with GAPS as to how this work might best combine with and inform subsequent evaluation trenching, so that a combined programme of post-excavation analysis can be undertaken.

8. REFERENCES

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Maps

OS 25" County Series Anglesey XI.6 and XI.7 published 1889, 1900 and 1924

Penrhos II 772 Map of Several Estates of Penrhos, Bodewryd and Bodwina, lying in the Island of Anglesey, surveyed by T. Boydell 1769

Penrhos II 804 Reduced plans of the property of Sir John Stanley Bart in the Parish of Holyhead and part of Rhoscolyn 1817

Penrhos III 209 A Plan of Bodwradd 1810

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- Plate 7: Shell deposit 0606 in pit 0607, from the SW
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- Plate 9: Pit 1305 half excavated
- Plate 10: Burnt mound spread 1704, from the west
- Plate 11: Postholes 1706 and 1707 fully excavated, from the north
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- Plate 19: Wall 2404 and ditch 2405 from the NW
- Plate 20: Pit 2406 partially excavated showing stone fill, from the NE







Figure 7. North facing section through foundation trench [0110]

Figure 13. NW facing section of trench 02 showing ditches [0205] and [0207]

Figure 14. SE facing section of trench 05 showing ditches [0505] and [0507]

Figure 16. NE facing section of ditch [0405]







Figure 30. North facing section of boundary [3205]













Plate 1: Trench 15 from the NW, showing typical stony silt natural



Plate 2: Trench 14 from the SW, showing red-brown silt natural



Plate 3: Trench 16 from the SW showing bedrock close to the surface



Plate 4: Foundation trench [0110] for possible roundhouse, from the north



Plate 5: Probable corn drier [0104] partially excavated to show charcoal layer in base, from the NW



Plate 6: Stone structure 0114 in the top of feature [0104], from the south



Plate 7: Shell deposit 0606 in pit 0607, from the SW



Plate 8: Ditch 0407, from the SW



Plate 9: Pit 1305 half excavated



Plate 10: Burnt mound spread 1704, from the west



Plate 11: Postholes 1706 and 1707 fully excavated, from the north



Plate 12: Posthole group 1811, from the SE



Plate 13: Ditch 1808, from the SW



Plate 14: Area of capstones removed to show construction of culvert 2207, from the SW



Plate 15: Ditch 2105 seen in the trench section, from the NE



Plate 16: Ditch 4205 from the SE



Plate 17: Wall 2804 from the SW



Plate 18: Wall 3004 from the south



Plate 19: Wall 2404 and ditch 2405 from the NW



Plate 20: Pit 2406 partially excavated showing stone fill, from the NE

APPENDIX 1. Detail of Trenches

Trench 01 Area: Kingsland, area C1 Max. trench depth: 0.50m Orientation: E-W Plans: SHT 12/DWG 28, 54 SHT 21/DWG 48 SHT 22/DWG 49 Sections: SHT 02/DWG 32 SHT 11/DWG 26, 27, 31, 55 Photos: 121-134, 638-651, 658-659, 668-677, 690-692

Summary: This trench was located with the help of the geophysical survey which flagged up quite a few anomalies within this area. A possible roundhouse with continuous running postholes located near the E end of the trench, 0110, and probably coming back round in the W end of the trench, 0109. Large ditch 0107 truncated possible roundhouse 0109. A corn dryer, 0104, was located at the W end of the trench. It had burning in situ of burnt grain and clay. The dry stone wall 0114 within the corn dryer with evidence of change of use.

Context No.	Depth below surface	Description
0101	0	Topsoil-Grey brown silt with numerous small stones.
0102	0.22m	Ploughsoil-Grey brown silt with numerous small stones and medium sub-rounded stones.
0103	0.50m	Natural-Loose brown stony gravel with numerous small rounded stones and some sand.
0104		Cut of large sub-oval corn dryer with steep sides and a fairly flat, slightly concave base. Located within possible roundhouse 0110.
0105		Upper fill of possible roundhouse 0110. Friable loose dark orange brown sand silt with frequent broken schist and small-medium angular stones. Likely to be the silting up of feature 0110, when it had gone out of use.
0106		Primary fill of large ditch 0107. Compact, friable mid brown sand silt with moderately frequent sub-rounded pebbles.
0107		Cut of large steep sided ditch. This feature appears to truncate possible roundhouse gully 0109.
0108		Fill of linear 0109. Associated with possible packing stones 0125. Friable mid brown clay silt with numerous sub-rounded cobbles and gravel. Sherds of prehistoric pottery were found within this deposit.
0109		Cut of curvilinear, possibly the return wall of possible roundhouse 0110. Steep sided with concave base that was deeper at the NE end. Contained packing stones 0125 and fill 0108.
0110		Possible cut of roundhouse wall consisting of a continuous curving linear cut. A series of 3 postholes with small scoop/gully intermissions between them. There seemed to be a large schist packing stone for each of the possible postholes, all on the W side of the cut, therefore it is likely that the posts were situated on the E side of the cut. Possible the same as 0109.
0111		Large schist packing stones within curving linear 0110. Very fragile and easily broken into sheets. One for each posthole on the W side of the cut.
0112		Secondary fill of large ditch 0107. Friable mid brown sand silt with frequent sub-rounded gravel/cobbles.
0113		Upper fill of corn dryer 0104. Similar to the ploughsoil, likely to have slumped into the feature after abandonment.
0114		Slightly curving dry stone structure within the top/middle of the corn dryer 0104, consisting of sub-angular fairly flat slabs (<0.45), One course high with stones overlapping. Evidence of change use, deliberate backfilling to form a floor.
0115		Lower main fill of 0110. Friable loose mid orange brown sand silt and some gravel with moderately frequent small rounded and sub-rounded stones. Probably same as 0116.

0116	Probably the same as 0115 fill of feature 0110. Loose mid brown orange sand silt gravel with sub-angular and sub-rounded small stones and frequent sub-rounded cobbles
0117	Deposit of burnt material. Soft black silt clay with frequent burnt grains and lumps of heat affected clay indicating in situ burning and that this deposit built up whilst the feature was in use.
0118	Deposit within the N end of 0104. Friable mid brown sand silt material slumping in from the side of the cut.
0119	Deposit of rounded poorly sorted pebbles in the centre of 0104. Probably an alluvial deposit.
0120	Stony deposit below 0114 within the corn dryer 0104. Frequent sub-rounded gravel and cobbles within a friable mid brown sand silt matrix.
0121	Sub-angular irregular shaped stone slabs forming a partial lining on the base of 0104 and partially overlying the burnt deposit 0117.
0122	Slumped material on the E side of 0104. Firm-friable mid brown sand silt with occasional sub-rounded gravel.
0123	Possible redeposited natural, slumped in from the W side of 0104. Firm-friable mid brown sand silt with moderately frequent sub-rounded gravel and cobbles.
0124	Up to 4 large sub-angular stone slabs on end at intervals around the sides of the corn dryer 0104.
0125	Irregularly shaped schist slabs set within possible roundhouse 0109=0110. Possible packing stones same as 0111.

Area: Kingsland, area C1 Max. trench depth: 0.70m Orientation: NE-SW Plans: GPS Sections: SHT 14/DWG 39 Photos: 678-689

Summary: Trench with variable natural covered in a layer of silt with 2 ditches at the SW end.

Context	Depth	Description
No.	below surface	•
0201	0	Topsoil-Friable dark grey brown silt with occasional sub-rounded pebbles.
0202	0.26m	Ploughsoil-Dark brown silt with occasional small and medium sub-rounded stones.
0203	0.40m	Natural-Pale orange brown silt with occasional gravel and small stones and overlies natural gravel 0208.
0204		Fill of ditch 0205.Friable brown silt with occasional small stones and some larger stones up to 0.20m long.
0205		Boundary ditch parallel to 0207. Straight broad, shallow ditch with gradual sloping sides and a fairly flat base.
0206		Fill of ditch 0207. Friable dark brown silt with moderate small stones and occasional larger stones up to 0.20m long.
0207		Very shallow ditch seen in section with a rounded base, barely visible in plan. Stones within the fill indicate it was cut just below the topsoil. Parallel to ditch 0205, therefore probably double a boundary ditches.
0208	0.70m	Natural gravel-Orange brown silt gravel with moderate sub-rounded small and medium stones. Under 0203.
0209		Natural sand and gravel-Brown sand gravel with moderate small and medium sub-rounded stones. Under 0203 at the E end of the trench.

Trench 03

Area: Kingsland, area C1 Max. trench depth: 0.60m Orientation: SE-NW Plans: Sections: Photos: 652-657

Summary: Trench with variable natural. The geophysical survey seemed to have picked up some of this variation. No archaeology was present within this trench.

Context	Depth	Description
No.	below	
	surface	
0301	0	Topsoil-Friable grey silt with occasional rounded and sub-rounded stones.
0302	0.25m	Ploughsoil-Friable grey silt with numerous mall sub-rounded stones.
0303	0.40m	Natural-Compact yellow brown mottled silt with moderate stones and
		bands/patches of yellow silt.
0304	0.40m	Natural-Very compact mottled pale grey and yellow brown clay silt forming
		bands diagonally across the trench.
0305	0.40m	Natural-Gravel deposit at the NW end of the trench. Orange brown gravel silt
		with numerous stones.

Trench 04

Area: Kingsland, area C1 Max. trench depth: 1.00m Orientation: NW-SE Plans: Sections: SHT 14/DWG 40, 41 Photos: 693-704

Summary: Trench with grey silt deposits over the natural with one ditch and one possibly early gully.

Context No.	Depth below surface	Description
0401	0	Topsoil-Brown silt with occasional small and medium stones.
0402	0.40m	Ploughsoil-Grey brown silt with few stones but some gravel.
0403	0.80m	Natural: Yellow brown stony silt with patches of manganese concretions.
0404		Fill of gully 0405. Grey gritty silt with occasional sub-rounded stones up to 0.20m long and Iron oxide mottling. Indistinguishable from 0408. Gully seems to have been in-filled when 0408 was deposited.
0405		Straight narrow gully with a V shape profile. Sealed by deposit 0408 and cuts pale silt deposit 0409.
0406		Fill of ditch 0407. Brown silt with occasional small and medium stones with some patches of vellow silt/redeposited natural.
0407		Straight ditch disturbed by animal burrows. Probably originally a broad flat based ditch. The animal burrows may suggest that it was accompanied by a hedge.
0408		Lower deposit, an earlier build up of ploughsoil or colluvium. Slightly gritty grey silt with iron oxide mottling and iron panning at the base of the deposit.
0409		Silt, possible water line but probably deposited in the late glacial peri-glacial period. Very firm pale grey silt with occasional sub-angular stones.

Trench 05

Area: Kingsland, area C1 Max. trench depth: 0.40m Orientation: NE-SW Plans: SHT 13/DWG 30 Sections: SHT 13/DWG 29 Photos: 116-120, 660-667 Summary: Trench with 2 parallel boundary ditches, one with a recut. Evidence of ploughing was seen with one possible furrow. Also there was a stone filled land drain at the SW end of the trench.

Context No.	Depth below surface	Description
0501	0	Topsoil-Dark grey brown silt with numerous small stones and gravel.
0502	0.20m	Ploughsoil-Almost indistinguishable from 0501 but with less root activity therefore more compact.
0503	0.30m	Natural-Mottled yellow brown stony silt with numerous small stones and moderate medium stones up to 0.20m long.
0504		Fill of ditch 0505. Grey brown loam with occasional small and medium stones and very occasional flecks of charcoal.
0505		Straight ditch with gently sloping sides and flat base. Boundary ditch parallel to ditch 0507.
0506		Fill of ditch 0507. Friable dark brown silt with few stones but some stones up to 0.20m long and are concentrated in the middle of the ditch.
0507		Straight ditch with the SW side cut away but the NE side was steep and curved gradually into a flat base. Boundary ditch parallel to 0505.
0508		Very straight narrow furrow, roughly V shaped in profile and filled with brown silt.
0509		Fill of ditch 0510. Soft loose dark grey brown silt with numerous small and medium stones up to 0.15m long. The stones were concentrated against the SW side of the ditch.
0510		Straight ditch with gently sloping sides and undulating base. This ditch was an apparent recut of ditch 0507 as it runs along the SW side of 0507 cutting away its SW edge.

Trench 06

Area: Kingsland, area C1 Max. trench depth: 0.75m Orientation: NW-SE Plans: SHT 18/DWG 44 Sections: SHT 14/DWG 42 SHT 18/DWG 43 Photos: 705-715

Summary: Trench with a small shell midden pit and a ditch. Trench also had a dumping of stones to possibly consolidate the area and variations of natural.

Context No.	Depth below surface	Description
0601	0	Topsoil-Loose dark brown silt with moderate small and medium stones.
0602	0.40m	Ploughsoil- Brown silt with moderate small and medium stones.
0603	0.75m	Natural- Orange brown stony silt with fewer stones at the SE end and many rounded stones at the NW end.
0604		Fill of ditch 0605.Soft dark brown loam with numerous small medium stones. Almost indistinguishable from 0602.
0605		Straight ditch with gently sloping sides and flat base. This ditch cut through fill of pit 0607.
0606		Main fill of pit 0607. Presumably a rubbish deposit consisting mostly of shells, with some dark grey silt and bone.
0607		Irregular oval shape pit with fairly gently sloping sides and fairly flat base. Cuts through 0613. Probable rubbish pit (shell midden).
0608		Lower fill of pit 0607. Very loose brown silt with moderate small stones.
0609		Upper fill of hollow 0610. Dark grey silt organic layer.
0610		Probable natural hollow. Very unclear oval hollow with gently sloping sides and

	rounded base.
0611	Variation in natural. Soft yellow brown silt with occasional small stones.
0612	Dump of stones, perhaps to consolidate the area. Seals pit 0607 and extend over ditch 0605.
0613	Lower layer of ploughsoil/colluvium. Brown loam with moderate stones.
0614	Natural gravels- Dirty brown gravel with some silt and medium sub-rounded stones.

Area: Kingsland, area C1 Max. trench depth: 0.50m Orientation: NW-SE Plans: Sections: Photos: 552-555

Summary: Trench with no archaeological features and 1stone filled drain cutting diagonally across the centre of the trench.

Context	Depth	Description
No.	below	
	surface	
0701	0	Topsoil-Dark brown silt sand.
0702	0.25m	Ploughsoil-Light brown silt sand.
0703	0.40m	Natural-Mottled grey orange silt clay.
0704	0.45m	Stone filled land drain.

Trench 08

Area: Kingsland, area C1 Max. trench depth: 0.40m Orientation: NW-SE Plans: Sections: Photos: 556-562

Summary: Trench with stony natural cut by 2 parallel very shallow ditches of furrows. These may have been truncated by ploughing.

Context	Depth	Description
No.	below surface	
0801	0	Topsoil-Friable grey brown silt with occasional small and medium stones.
0802	0.15m	Ploughsoil-Grey brown silt with occasional stones.
0803	0.30m	Natural-Mottled yellow brown silt with occasional sun-rounded small and medium stones.
0804		Fill of ditch/furrow 0805.Firm-friable mid yellow grey brown sand silt with few sub-angular small cobbles. Similar to 0802 and 0806.
0805		Cut of ditch/furrow. Shallow linear with a flat slightly undulating base. Probably associated with parallel ditch/furrow 0807.
0806		Fill of ditch/furrow 0807. Firm-friable mid yellow grey brown sand silt with <5% sub-angular and sub-rounded cobbles. Similar to 0802 and 0804.
0807		Cut of ditch/furrow. Shallow linear with a flat slightly undulating base. Probably associated with parallel ditch/furrow 0805.

Trench 09

Area: Kingsland, area C1 Max. trench depth: 0.46m Orientation: NE-SW Plans: Sections: Photos: 545-548

Summary: Trench with 2 parallel ditches running NW-SE across the trench, probably boundary ditches.

Context	Denth	Description
No	below	
10.	surface	
0901	0	Topsoil-Friable grev brown sand silt with occasional rounded gravel.
0902	0.15m	Ploughsoil-yellow grey brown clay silt with occasional rounded gravel and small cobbles.
0903	0.46m	Natural-Mottled brown yellow clay silt with moderately frequent small sub- rounded cobbles.
0904		Fill of ditch 0905. Similar to ploughsoil, mid yellow grey brown sand silt with occasional gravel and small sub-rounded pebbles with sparse sub-rounded cobbles.
0905		Straight shallow ditch with slight gradual sides curving into a flat base, 1.5m wide and 0.15m deep. Probably part of a double boundary ditch with ditch 0907.
0906		Fill of ditch 0907. Similar to ploughsoil, mid yellow grey brown sand silt with occasional gravel and small sub-rounded pebbles with sparse sub-rounded cobbles.
0907		Very shallow ditch, 0.90m wide and 0.10m deep maximum. This ditch was barely visible in plan. Probably part of a double boundary ditch with ditch 0905.

Trench 10

Area: Kingsland, area C1 Max. trench depth: 0.45m Orientation: NW-SE Plans: SHT 04/DWG 10 Sections: SHT 04/DWG 17 Photos: 545-548

Summary: Trench with a furrow running NE-SW across the trench and a ditch 1009 with possible recut 1011, both cut by a land drain 1007.

Context No.	Depth below surface	Description
1001	0	Topsoil-Soft and friable dark brown clay silt with occasional sub-rounded gravel and cobbles.
1002	0.25m	Ploughsoil-Friable mid brown clay silt with occasional sub-angular gravel.
1003	0.45m	Natural-Compact and friable mid yellow grey silt moderately frequent sub- rounded cobbles.
1004		Fill of ditch/furrow 1005. Soft dark brown sand clay silt with moderately frequent sub-rounded cobbles
1005		Cut of shallow ditch/furrow with gradual sloping sides curving into a flat base.
1006		Fill of 1007. Stone filled land drain. Loosely compact sub-angular cobbles.
1007		Cut of stone filled land drain. Cuts earlier linears 1011 and 1009.
1008		Secondary fill of ditch 1009. Soft mid brown clay silt with moderately frequent sub-angular gravel and concentration of cobbles against the S side of the cut.
1009		Fairly wide straight ditch with moderate sloping sides with a concave base, truncated by 1011, a possible recut.
1010		Fill of ditch 1011. Soft mid brown clay silt with lenses of redeposited natural and occasional sub-rounded gravel.
1011		Cut of very shallow linear, possibly a recut of 1009.
1012		Primary fill of ditch 1009. Soft mid brown grey clay silt with moderately frequent sub-rounded cobbles.

Trench 11 Area: Kingsland, area C1 Max. trench depth: 0.60m Orientation: NW-SE Plans: SHT 03/DWG 06 Sections: SHT 03/DWG 07 Photos: 523-528

Summary: Trench with the natural disturbed by animal burrows/root disturbance and an irregular, probably modern, pit with no obvious function.

Context	Depth	Description
No.	below surface	
1101	0	Topsoil-Friable dark brown grey sand clay silt with occasional sub-rounded poorly sorted gravel.
1102	0.25m	Ploughsoil-Soft dark grey brown silt clay with occasional sub-rounded gravel and flecks of iron staining.
1103	0.5	Natural-Compact mottled pale grey yellow brown clay silt with moderately frequent poorly sorted sub-rounded cobbles, disturbed in places by roots/burrows.
1104		Fill of pit 1105. Soft mid orange grey clay silt with lenses of redeposited natural and occasional poorly sorted sub-rounded cobbles.
1105		Elongated slightly irregular pit with rounded corners with irregular sides and flat base. Cut into the natural with no obvious function. The soft fill indicates a fairly modern date.

Trench 12

Area: Kingsland, area C1 Max. trench depth: 0.50m Orientation: NW-SE Plans: Sections: Photos: 519-522

Summary: No archaeology was present in this trench.

Context No.	Depth below surface	Description
1201	0	Topsoil-Friable dark brown clay silt with moderately frequent sub-angular gravel.
1202	0.25m	Ploughsoil-Friable dark brown clay silt with occasional gravel.
1203	0.50m	Natural-Friable soft mottled yellow grey brown clay silt with occasional sub- rounded cobbles.
1204		Burnt out root disturbance. A small patch of black silt with high charcoal content.

Trench 13

Area: Kingsland, area C1 Max. trench depth: 0.50m Orientation: NE-SW Plans: SHT 04/DWG 08 Sections: SHT 04/DWG 09 Photos: 529-532, 542-544 Summary: Trench with a small shallow pit near its southern corner containing burnt stone charcoal flecks and evidence of in situ burning.

Context	Depth	Description
No.	below surface	
1301	0	Topsoil-Friable dark grey brown sand clay silt with occasional sub-rounded gravel.
1302		Ploughsoil-Friable mid grey brown sand clay silt with occasional sub-rounded gravel and small cobbles.
1303	0.50m	Natural-Firm mottled mid orange grey brown clay silt with moderately frequent sub-rounded poorly sorted cobbles.
1304		Primary fill of small pit 1305. Soft dark brown clay silt with frequent flecks of charcoal and burnt angular cobbles.
1305		Cut of small shallow pit, with steeps sides and irregular base and possible evidence of in situ burning due to heat affected natural. A possible hearth/midden
1306		Secondary fill of pit 1305. Friable mid brown silt with frequent angular burnt stones.

Trench 14

Area: Kingsland, area C1 Max. trench depth: 0.70m Orientation: NE-SW Plans: Sections: Photos: 511-515

Summary: Trench with no archaeological features, but area heavily affected by root/animal disturbance.

Context No.	Depth below surface	Description
1401	0	Topsoil-Firm friable dark brown clay silt with moderately frequent sub-rounded gravel.
1402	0.25m	Ploughsoil-Firm friable dark brown sand clay silt with occasional small sub- rounded cobbles.
1403 1404	0.70m	Natural-Friable mid brown orange clay silt with occasional sub-angular cobbles Root disturbance/animal burrows. A series of irregular shallow features visible across the entire trench filled with cobble, concentrations of charcoal flecks, areas of pale grey silt and dark brown clay silt.

Trench 15

Area: Kingsland, area C1 Max. trench depth: 0.60m Orientation: N-S Plans: SHT 03/DWG 04 Sections: SHT 03/DWG 05 Photos: 505-510

Summary: Trench covered with yellowish silt with grey patches and occasional stones. Ditch 1505 runs across the S end of the trench. The other ditch shown on the geophysical survey was not seen.

Context	Depth	Description
No.	below	
	surface	
1501	0	Topsoil-Dark brown silt with occasional small and medium stones
1502	0.20m	Ploughsoil-Friable grey brown silt with occasional small and medium stones.

1503	0.45m	Natural-Yellow brown gritty silt with occasional stones up to 0.25m in length
		and pale grey patches.
1504	0.50m	Fill of ditch 1505. Soft friable mid orange grey clay silt with a concentration of poorly sorted sub-rounded cobbles at the base, possibly deliberately deposited to
1505		Cut of straight ditch with steep sides and a slightly concave base. Possible drainage ditch.

Area: Kingsland, area C1 Max. trench depth: 0.50m Orientation: NE-SW Plans: Sections: Photos: 500-504

Summary: Trench had bedrock outcropping close to the surface explaining the strong geophysics signals but no archaeology found. The undulating bedrock with hollows between them explains the difference in the levels of deposits.

Context	Depth	Description
No.	below surface	
1601	0	Topsoil-Very friable dark grey brown silt with frequent small angular stones.
1602	0.20m	Ploughsoil-Dark grey brown silt with occasional angular stones.
1603	0.35m	Bedrock mixing into ploughsoil-Dark grey brown silt with numerous angular schist fragments.
1604	0.30m	Natural-Yellow brown silt with sub-rounded pebbles and gravel, generally quite thin overlying the bedrock.
1605	0.20m (min.)	Bedrock-Slabs of schist bedrock sloping gently down to the NW.

Trench 17

Area: Cae Glas, area B1 Max. trench depth: 0.40m Orientation: E-W Plans: SHT 06/DWG 15 Sections: SHT 07/DWG 16 Photos: 036-056, 137, 716-717

Summary: The trench had 2 deposits of burnt mound material, one of which had possible posthole features underneath. Three stone filled land drains cut across the trench. The central one was on a different alignment to the other two and seemed to be cut through the ploughsoil, suggesting that it was very recent. The burnt mound material was removed by machine and by hand, no other archaeological features were seen.

Context	Depth	Description
No.	below	
	surface	
1701	0	Topsoil-Friable grey brown silt with numerous small and medium stones
1702	0.20m	Ploughsoil-Friable brown silt with occasional small and medium stones.
1703	0.40m	Natural-Mottled yellow brown silt with occasional stones.
1704		The larger of the burnt mound deposits. Friable dark grey brown silt with 60%
		medium angular stones and some flat slabs 0.25m long. Many of the stones were
		heat reddened. There were occasional patches and flecks of charcoal but not
		much. A schist slab 0.40m long was set into the natural on the edge of this
		deposit. This material probably survived in a natural hollow or shallow channel.
1705		Burnt mound deposit. Friable dark grey brown silt with 60% medium angular
		stones and 2 flat slabs 0.55m long. Many of the stones were heat reddened. There

	were concentrations of charcoal at the W end of the trench but generally not much charcoal.
1706	Cut of possible oval posthole with steep sides and a narrow rounded base with a hollow or other possible feature extending S under the baulk from this cut.
1707	Cut of deep circular posthole with steep regular sides and narrowing tapering base
1708	Fill of possible posthole 1706. Densely packed angular stones up to 0.20m long (not packing stones) in a grey stilt matrix with many of the stones heat-reddened and very little charcoal. Indistinguishable from burnt mound material, therefore part of 1705 and probably filled the hole when the post was removed
1709	Fill of posthole 1707. Densely packed angular stones up to 0.17m long (not packing stones) with some flat stones at the base ensuring an even base. Indistinguishable from burnt mound material, therefore part of 1705 and probably filled the hole when the post was removed.
1710	Water borne silt deposit. Soft grey slightly clay silt with a lens of orange silt over the top. Probably just part of the natural, or a fill of a shallow hollow or possibly the base of a relict soil.
1711	Fill of 1714. Loose brown silt with occasional unburnt stones and no charcoal.
1712	Slight irregular hollow with the E side sloping gently and a very steep W side and a flat base. Possibly the remains of a peri-glacial channel but may just be undulations in the natural.
1713	Grey silt gravel deposit with some angular heat-reddened stones within it. It formed a patch at the W end of the trench. Initially thought to be natural however the occasional burnt stone within it suggests that it was part of the burnt mound or mixed with the burnt mound material.
1714	Modern cut only seen in section with gradual sloping E side, steep W side and fairly level base.
1715	Probable relict soil under the burnt mound material seen over most of the trench. Thin layer of grey brown silt with very few stones and flecks of charcoal from burnt mound deposit above. The postholes cut through this layer.
1716	Natural feature caused by frost cracking/root action. Compact mixed brown grey clay with few stones and flecks of charcoal. The edges were very diffuse and the feature was irregular in plan.

Area: Cae Glas, area B1 Max. trench depth: 0.35m Orientation: NW-SE Plans: SHT 15/DWG 33 SHT 16/DWG 34 Sections: SHT 19/DWG 45 Photos: 176-183, 718-747

Summary: Trench with a thin spread of burnt mound material and associated V cut ditch which held water. Up to 6 possible postholes were uncovered they had no obvious post packing and all the fills were likely to have been deposited in the hole after the post was removed as it was indistinguishable from the burnt mound material which overlaid them.

Context	Depth	Description
No.	below surface	
1801	0	Topsoil-Grey brown silt with occasional stones
1802	0.20m	Ploughsoil-Grey silt with iron oxide mottling and occasional small stones
1803	0.30m	Natural- Yellow brown silt clay with occasional small and medium sub angular stones up to 0.30m long.
1804		Burnt mound material. Firm but loose when wet grey black silt clay with charcoal staining and some visible chunks. Contained 30% burnt stones up to 0.08m long. This layer partially infilled ditch 1808 and sealed some of its fills. It is possible that this layer could have been redeposited into the ditch due to

1805	erosion, or that all of this deposit has been shifted from the original in situ burnt mound by erosion or by use of the bound. Overburden. Interface between burnt mound material and ploughsoil. Loose friable dark orange brown sand silt with some clay and some angular burnt stones and infracuent charcoal
1806	Cut of shallow posthole. Circular in plan with steep sides and slightly undulating
1807	Fill of posthole 1806. Firm dark grey black silt clay with some charcoal and
1808	50% burnt stone. Fill was indistinguishable from the burnt mound material 1804. Straight V shaped ditch associated with 1804. Some mound material was deposited in the ditch which cut a thin charcoal layer 1818 that seemed to be
1809	Fill of gully 1810. Grey silt mottled with iron oxide and indistinguishable from 1802.
1810	Cut of slight straight gully with gently sloping sides curving into a flat base.
1811	Group number for 6 shallow/truncated postholes, 1807, 1820, 1822, 1824, 1826, 1828. 3 postholes were close to each other and the other 3 form a rough line. All containing burnt mound material, therefore any truncation must have occurred before the burnt mound material was spread over the area.
1812	Silt layer. Grey silt with mottled iron oxide forming a thin layer over ditch 1808. A wet deposit with organic components possibly collecting in pools.
1813	Deposit over 1804. Fine quite organic grey silt with occasional small stones. Part of the process of a slight hollow infilling with organic silts.
1814	Erosion deposit infilling a hollow over ditch 1808. Grey brown clay silt with small fragments of burnt stone and patches of redeposited vellow clay natural.
1815	Fill of ditch 1808, probably mostly water borne. Grey clay silt with occasional stones, fragments of red burnt stone and occasional flecks of charcoal.
1816	Lower fill of ditch 1808. Continuous with the deposit of burnt stones to the N of the ditch. Grey slight clay silt with numerous angular burnt stones and some
	lumps of yellow clay, similar to the natural.
1817	Regular and even grey silt layer with yellow mottles and red burnt stones throughout the deposit but concentrated at the base. This layer ends at the edge of 1820 and morgad with 1816
1818	Black deposit cut by ditch 1808. Thin layer of charcoal with some small lumps
1010	resembling coal rather than charcoal. Not likely to be and in situ burning due to lack of heat alteration under the deposit.
1819	Fill of posthole 1820. Dark grey silt with numerous angular burnt stones. No obvious post packing and the material was likely to be deposited in the hole after the post was removed.
1820	Possible shallow posthole. Irregular oval with steep sides and flat base.
1821	Fill of posthole 1822. Dark grey silt with numerous angular burnt stones. No obvious post packing and the material was likely to be deposited in the hole after the post was removed.
1822	Possible posthole. Elongated oval with steep sides curving into a narrow pointed base.
1823	Fill of posthole 1824. Dark grey silt with numerous angular burnt stones. No obvious post packing and the material was likely to be deposited in the hole after the post was removed.
1824	Possible posthole. Roughly circular with steep sides and a flat base.
1825	Fill of posthole 1826. Dark grey silt with numerous angular burnt stones. No
	obvious post packing and the material was likely to be deposited in the hole after the post was removed.
1826	Slight hollow, sub-rectangular adjacent to a stone. Filled with burnt mound material. Possible stones hole, however due to its proximity to the other postholes, it's possible that it was the base of a posthole.
1827	Fill of posthole 1828. Dark grey silt with numerous angular burnt stones. No obvious post packing and the material was likely to be deposited in the hole after the post was removed
1828	Possible posthole. Sub-circular with variable sides, steeper on the N side and gradual on the S side, with a narrow pointed base.

1829	An apparent cut through clay deposits. Fairly steep edge cutting through 1929 and into clay layer 1930 to form a terraced edge, there was no opposite edge. Could also be the point at which the mixing that created deposit 1817 stopped and not a genuine cut.
1830	Clay layer. Grey silt clay with few stones and occasional yellow mottles. Layer was directly below the burnt mound material. Similar to Natural 1803 and merges with it but was greyer and more clayey.

Area: Cae Glas, area B1 Max. trench depth: 0.48m Orientation: NW-SE Plans: Sections: Photos: 007-010

Summary: Trench contained no archaeological features. There was no variation in the natural to explain the geophysical anomalies. The natural was slightly stony loess, like silt, very homogenous.

Context	Depth	Description
No.	below	
	surface	
1901	0	Topsoil-Friable grey brown silt with some small medium stones, but generally
		not stony.
1902	0.20m	Ploughsoil-Friable grey brown sand silt with few stones.
1903	0.30m	Natural-Yellow brown slightly clay silt with occasional small stones and mottled
		colouring.
1904		Stone filled drain 0.18m wide and visible in the NW end of the trench.

Trench 20

Area: Cae Glas, area B1 Max. trench depth: 0.50m Orientation: SW-NE Plans: Sections: Photos: 001-006

Summary: Trench with no archaeological features. The geophysical anomalies were probably caused by stony deposits in the natural. Elsewhere in the trench the natural was silt but quite stony at the SW end so bedrock probably not far below this. There were also 4 stone filled land drains.

Context No.	Depth below surface	Description
2001	0	Topsoil-Friable grey brown silt with occasional small and medium stones but numerous stones over 2004
2002	0.24m	Ploughsoil-Grey slightly clay silt with iron oxide mottling and occasional stones.
2003	0.40m	Natural-Yellow brown slightly clay silt with occasional gravel and small stones. Deposit becomes stonier at the SW end of the trench where it was mottled with grey silt.
2004	0.35m	Stony patches in the natural and are contain and project from gravel sand silt varying from dark to light grey in colour. Patches of grey silt filled hollows in the top of this deposit. A natural deposit possibly due to the closeness of the bedrock to the surface.
2005	0.20m	Stone filled land drain 0.20m wide.
2006	0.20m	Stone filled land drain 0.20m wide.
2007	0.20m	Stone filled land drain 0.20m wide.
2008	0.20m	Stone filled land drain 0.20m wide.

Trench 21 Area: Cae Glas, area B1 Max. trench depth: 0.66m Orientation: NW-SE Plans: Sections: Photos: 026-033

Summary: Trench targeted 2 geophysical anomalies interpreted as ditches. Only one was located, 2105, which was cut from the topsoil horizon and is of modern date. A deposit of stones found towards the SE end of the trench is likely to be the result of field clearance. The natural slopes gently upwards to the SE before becoming an outcrop of bedrock.

Context	Depth	Description
No.	below surface	
2101	0	Topsoil-Fairly soft dark brown grey clay silt with occasional small pebbles.
2102	0.30m	Ploughsoil-Moderately soft mid red brown clay silt with very occasional small pebbles.
2103	0.60m	Natural-Glacial deposit, fairly soft light red brown silt.
2104	0.10m	Field clearance below the topsoil and lying directly on the bedrock. Fairly soft dark brown grey clay silt with very frequent large and medium sub-angular and angular stones.
2105	0.23m	Modern ditch cut seen in section only with concave sides and a flat base. Cut from high up in the ploughsoil.
2106	0.23m	Fill of ditch 2105. Fairly loose dark grey brown clay silt with very frequent sub- angular small stones.
2107	0.02m	Bedrock-Solid blue grey schist.

Trench 22

Area: Cae Glas, area B1 Max. trench depth: 0.65m Orientation: NE-SW Plans: SHT 01/DWG 01 Sections: SHT 01/DWG 02 SHT 02/DWG 03 Photos: 011-025

Summary: Trench with slightly undulating natural, deeper at the SW end. A substantial stone built culvert 2207 and ditch 2212 match with geophysical anomalies. Two smaller drains 2209 and 2205 were observed feeding into the culvert and a second small ditch was identified along the main ditch.

Context	Depth	Description
No.	below surface	
2201	0	Topsoil-Soft dark grey brown clay silt with occasional small cobbles and gravel.
2202	0.20m	Ploughsoil-Friable mid grey brown clay silt with iron oxide mottling and occasional cobbles
2203	0.40m	Relict soil-Similar to the ploughsoil and overlies the natural. Firm brown grey clay silt with flecks of iron panning and occasional small sub-rounded cobbles.
2204		Natural-Compact mid grey brown sand clay silt with frequent iron panning and occasional cobbles.
2205		Cut of small stone filled land drain which feeds into a large culvert 2207.
2206		Fill of land drain 2205. Firm mid brown clay sand silt matrix surrounding blue grey sub-angular cobbles.
2207		Cut of large probably C19th culvert. There were dry stone walls lining the sides

	of the feature but no stone lined the flat base. There were flat cap stones resting on the side stone walls. Over them were more, less structural, stones which were surrounded by 2219 which was similar to the ploughsoil. Field drains 2205 and
	2209 feed into this culvert.
2208	Stones above caps stones 2217. Semi structural deposit of loose large slabs and cobbles predominantly blue-grey up to 0.50m long.
2209	Cut of small drain with a rough stone lining and which feeds into a large culvert 2207 and cuts ditches 2212 and 2216. A linear with slightly concave sides and base.
2210	Rough stone lining of small drain 2209. Sub-rounded slabs of blue grey stone up to 0.15m long.
2211	Fill of small drain 2209. Soft mid brown sand clay silt with frequent gravel.
2212	Cut of large ditch with moderately steep straight sides and a flat base. Truncated by drain 2209.
2213	Deposit of stone in the base of large ditch 2212. Thin deposit of flat stones/broken roofing slate.
2214	Secondary fill of large ditch 2212. Firm mid grey brown clay silt with occasional sub-rounded cobbles and lenses of orange iron panning.
2215	Shallow ditch with moderately sloping, slightly concave sides and a concave base. Running parallel to large ditch 2212 and truncated by drain 2209.
2216	Fill of shallow ditch 2215. Soft mid grey brown clay with occasional small sub- angular gravel.
2217	Capstones of culvert 2217 supported by side walls 2218 and covered by 2208. Large flat undressed slabs of blue-grey stone1.0m long and 0.40m wide and up to 0.50m thick.
2218	2 Side walls lining culvert 2207. Dry stone construction using angular slabs of undressed blue-grey stone measuring 0.30m wide and 0.80m high. They stand 0.25m apart forming a channel on which capstones 2217 rest on.
2219	Uppermost fill of culvert 2207 built up around stones 2208, likely to be deliberate backfill. Firm mid brown grey sand clay silt with very occasional small cobbles.

Area: Cae Glas, area B1 Max. trench depth: 0.50m Orientation: NW-SE Plans: SHT 02/DWG 13 Sections: SHT 02/DWG 14 Photos: 034-035, 057-064

Summary: Trench contained 2 field drains one of which was cut by the other. There was some evidence of root disturbance within the natural as well as signs of mineralisation within the natural. A partially revealed sub-oval pit with no known function was excavated.

Context	Depth	Description
No.	below	
2301	0	Topsoil-Dark grey brown clay silt with sparse amount of stone pebbles
2302	0.15m	Ploughsoil-Mid grey brown clay silt with sparse amount of stone people.
2303	0.35m	Natural-Mottled grey blue and orange clay sand with angular stone inclusions and areas of manganese mineralisation, evidence of standing water.
2304		Stone filled drain cut by drain 2305. Straight in plan with a mix of small to medium angular schist stones in an orange brown clay silt matrix.
2305		Stone filled drain cuts drain 2304. Straight drain with medium sized schist stones in a fairly compact brown orange clay silt.
2306		Irregular sub-oval pit with steep irregular sides and concave base.
2307		Fill of pit 2306. Firm mid brown sand clay silt with occasional large sub-rounded sandstone cobbles.
2308		Probable root disturbance. Amorphous shape in plan with uneven edges and

undulating base. Contained firm clay silt with medium to large schist stones. Overburden deposit, firm grey brown clay silt, with dark orange red mineralisation band, probably the early stages of iron panning.

Trench 24

Area: Penrhos Farm, area A1 Max. trench depth: 0.90m Orientation: NE-SW Plans: SHT 10/DWG 23 Sections: SHT 09/DWG 22, 25 SHT 10/Dwg 24 Photos: 606-635, 579-580

Summary: Trench with the remnants of a dry stone wall and ditch running parallel are likely to be part of a field boundary. The natural drops away on either side of the wall, probably due to ploughing. One large pit was excavated as well as 2 only partially revealed possible pits. There was also evidence of a possible relict soil however it may have only been the merging on the ploughsoil and the natural.

Context No.	Depth below surface	Description
2401	0	Topsoil-Firm/ friable dark orange brown sand silt with moderately frequent sub- rounded gravel.
2402	0.30m	Ploughsoil-Mid grey orange brown clay silt with moderately frequent sub- rounded gravel.
2403	0.70m	Natural-Firm/friable mid grey yellow with brown orange mottling and moderately frequent angular gravel.
2404		Remnants of a dry stone boundary wall. Loosely compact dry stone wall with frequent voids filled by ploughsoil. Constructed of sub-rounded cobbles and boulders.
2405		Cut of boundary ditch running parallel, on the SW side, to wall 2404. Straight ditch with moderately sloping sides and fairly flat base.
2406		Cut of large sub-circular pit with slightly irregular near vertical side and slightly irregular concave base. Function unknown.
2407		Concentration of stones within the top of a large pit 2406, mostly in the upper centres of the feature, so not a lining but may be possible post packing. Surrounded by primary fill 2408.
2408		Primary fill of large pit 2406, soft mid red brown slightly clay silt with occasional small sub-rounded pebbles.
2409		Fill of boundary ditch 2405. Firm/friable mid brown clay silt with moderately frequent sub rounded cobbles.
2410		Tumbled stone on the NE side of wall 2404. Friable mid brown sand silt with frequent sub-rounded cobbles.
2411		Burnt out tree bole below wall 2404. Soft dark brown clay silt with moderately frequent sub-rounded cobbles and frequent charcoal flecks and lumps.
2412		Cut of possible pit, only partially revealed. Sub circular feature with slightly concave sides and slightly concave base.
2413		Fill of feature 2412. Firm slightly friable orange brown clay silt with small to medium run-round and sub-angular stones.
2414		Cut of possible pit, only partially revealed. Circular, as seen. Pit with steep sides and flat base.
2415		Secondary fill of possible pit 2415. Firm /friable light grey orange brown silt clay with infrequent sub-angular cobbles.
2416		Possible relict soil or a diffuse interface between the ploughsoil and the natural. Very firm and friable light orange grey brown with orange mottling clay silt matrix with infrequent sub-angular pebbles.

2309

Trench 25 Area: Penrhos Farm, area A1 Max. trench depth: 0.75m Orientation: NE-SW Plans: GPS Sections: Photos: 581-584, 591-594

Summary: No archaeology was present within this trench. Bedrock was very close to the surface and takes up to 50% of the trench with glacial clay silt natural taking up the rest.

Context	Depth	Description
No.	below	
	surface	
2501	0	Topsoil-dark to mid red brown clay silt with occasional small sub-rounded stones.
2502	0.18m	Ploughsoil- Soft mid red brown clay silt, no inclusions.
2503	0.56m	Natural-Soft yellow orange clay silt, no inclusions.
2504	0.29m	Bedrock-Fractured shale.

Trench 26

Area: Penrhos Farm, area A1 Max. trench depth: 0.75m Orientation: NW-SE Plans: Sections: Photos: 591-594

Summary: No archaeology was present within this trench. The natural was variable with grey yellow silt, 2604, at the NW end of the trench merging into mottled clay with areas of concentrated large sub-rounded cobbles 2603.

Context No.	Depth below surface	Description
2601	0	Topsoil-Soft mid grey brown clay silt with occasional sub angular poorly sorted cobbles.
2602	0.30m	Ploughsoil-Soft friable dark grey brown clay silt with occasional sub-rounded gravel.
2603	0.65m	Natural 1-Soft mid brown grey with orange flecks and staining with mineralised inclusions and pockets of large sub-rounded cobbles within grey silt.
2604	0.75m	Natural 2-Mid grey yellow silt with moderately frequent sub-angular cobbles and flecks of orange silt.

Trench 27

Area: Penrhos Farm, area A2 Max. trench depth: 0.70m Orientation: NE-SW Plans: SHT 08/DWG 21 Sections: SHT 08/ DWG 18 Photos: 078-081, 567-570

Summary: Trench contained the possible remnants of a dry stone boundary wall at the SW end of the trench.

Context	Depth	Description
No.	below	
	surface	
2701	0	Topsoil-Firm mid grey brown sand silt with occasional sub angular cobbles.

2702	0.30m	Ploughsoil-Soft mid grey brown sand clay silt with occasional sub-angular cobbles.
2703	0.70m	Natural-Firm friable mid grey orange yellow silt with moderately frequent sub- angular gravel and cobbles.
2704	0.20m	Probable remnants of a dry stone boundary wall running NW-SE. A firm friable mid brown sand silt matrix with moderately frequent poorly sorted sub-angular and sub-rounded cobbles making up what remained of the possible wall. The natural drops away on either side of the wall, suggesting possible ditches or the result of ploughing.

Area: Penrhos Farm, area A2 Max. trench depth: 0.55m Orientation: NW-SE Plans: Sections: Photos: 086-093, 575-578, 563-566

Summary: Trench contained the possible remnants of a dry stone boundary wall at the SE end of the trench.

Depth below surface	Description
0	Topsoil-Firm slight friable dark grey brow clay silt with moderately frequent small sub-angular cobbles.
0.30m	Ploughsoil-Friable mid orange brown clay silt with occasional sub-rounded cobbles.
0.55m	Natural-Friable mid brown orange clay silt.
	Possible remnants of dry stone boundary wall. Consists of 3 large schist stones in a row running NE-SW sitting in Firm friable mid orange brown sand silt matrix very similar to the ploughsoil. The wall sits on a 'rise in the natural, this is probably due to ploughing.
	Depth below surface 0 0.30m 0.55m

Trench 29

Area: Penrhos Farm, area A2 Max. trench depth: 0.85m Orientation: NE-SW Plans: Sections: Photos: 065-068, 111-112

Summary: Trench with 2 very similar ditches running at a right angle to each other and where ditch 2905 has cut truncated the terminus of ditch 2907. They are likely to be associated with one another.

Context No.	Depth below surface	Description
2901	0	Topsoil-Firm friable dark brown sand silt with moderately frequent sub-angular gravel.
2902	0.25m	Ploughsoil-Firm dark brown clay silt with occasional sub-rounded cobbles.
2903	0.50m	Subsoil-Soft mid orange brown clay silt with occasional sub-rounded cobbles.
2904	0.85m	Natural-Soft mid orange brown clay silt overlying a firm mid yellow grey gravel clay silt.
2905	0.85m	Cut of narrow shallow straight ditch running N-S with moderately sloping sides and a flat base. Cuts similar and possible associated ditch 2907.
2906	0.85m	Fill of ditch 2905. Firm mid grey brown clay silt with occasional sub-angular cobbles
2907	0.85m	Cut of shallow ditch running E-W with the eastern terminus truncated by ditch

		2905. This linear had moderately sloping sides with a flat base.
2908	0.85m	Fill of ditch.2907. Soft mid brown clay silt with occasional sub-rounded cobbles.
2909		Area of stone visible in the ploughsoil in the section. Could perhaps be related to
		a boundary but not clearly defined or seen in the opposite section.

Area: Penrhos Farm, area A2 Max. trench depth: 0.73m Orientation: E-W Plans: SHT 09/DWG 20 Sections: SHT 09/DWG 19 Photos: 069-072, 571-574

Summary: Trench with a possible dry stone wall running N-S across the W end of the trench, no other archaeology seen within this trench.

Context	Depth	Description
No.	below	
	surface	
3001	0	Topsoil-Mid orange brown sand silt.
3002	0.20m	Ploughsoil-Firm mid orange brown clay silt.
3003	0.65m	Natural-Brown orange clay silt diffusing into yellow clay silt.
3004		Stone deposit, the possible remains of a dry stone wall. Large sub-rounded schist stones within a mid orange brown clay silt matrix.

Trench 31

Area: Penrhos Farm, area A2 Max. trench depth: 0.55m Orientation: N-S Plans: SHT 17/DWG 37 Sections: SHT 17/DWG 38 Photos: 073-077, 094-099

Summary: Trench with 2 ditches probably originally each side of a bank that has been ploughed away.

Context	Depth	Description
No.	below surface	-
3101	0	Topsoil-Friable dark brown silt with occasional small and medium stones.
3102	0.35m	Ploughsoil-Friable dark brown silt with moderate small and medium stones.
3103	0.50m	Natural-Orange and yellow brown stony silt with angular schist pieces and patches of protruding broken stones.
3104		Fill of ditch 3105. This deposit was friable brown and loamy silt with a concentration of stones at its base, some up to 0.15m long.
3105		Ditch with a shallow V-shaped profile ran parallel to ditch 3107 and was probably part of a double ditch field boundary.
3106		Fill of ditch 3107. This deposit was friable brown loamy silt with moderate small and medium angular and sub-angular stones.
3107		Broad V-shaped ditch with a flat base, similar to ditch 3105 and probably part of a double ditch field boundary.

Trench 32 Area: Penrhos Farm, area A2 Max. trench depth: 0.70m Orientation: ENE-WSW Plans: GPS Sections: SHT 17/DWG 35 Photos: 103-104, 599-603

Summary: Trench with ditch and possible bank seen in both sections. Animal burrowing was seen in patches in the base of the trench.

Context No.	Depth below surface	Description
3201	0	Topsoil-Dark brown slightly clay silt with occasional small and medium stones
3202	0.30m	Ploughsoil-Very friable dark brown silt with occasional stones.
3203	0.70m	Natural-Friable yellow grey stony, slightly clay silt with moderate small and medium stones.
3204		Fill of ditch 3205, consisting of very loose brown silt with occasional small stones.
3205		Ditch seen in both sections but not in plan, it had gently sloping sides with the flat base disturbed by animal burrows. Probably boundary ditch with traces of bank/wall 3206.
3206		Trace of possible wall/bank relating to ditch 3205. Consisted of stones up to 0.15m long stacked on the W side of ditch 3205. The soil matrix was similar to the fill of the ditch, brown silt.
3207		Lower, possibly undisturbed, soil B horizon. Friable red brown silt with some yellow brown mottling and diffuses into the natural below.

Trench 33

Area: Penrhos Farm, area A2 Max. trench depth: 0.95m Orientation: E-W Plans: Sections: SHT 17/DWG 36 Photos: 082-085, 105-108

Summary: Trench in which ditch 3305 crosses the W end of the trench and with probable animal burrow at the E end of the trench.

Context	Depth	Description
No.	below surface	
3301	0	Topsoil-Friable dark brown silt with occasional stones.
3302	0.40m	Ploughsoil-Friable dark red brown silt with very few stones.
3303	0.95m	Natural-Yellow brown stony silt with numerous small angular stones and shale fragments.
3304		Fill of ditch 3305. Dark brown silt with moderate small angular stones.
3305		Straight ditch with gentle sloping sides and a curved base. Presumably a boundary ditch.
3306		Fill of probable animal burrow 3307. Friable brown silt with patches of redeposited natural and compact pale grey silt in the base.
3307		Probable animal burrow chamber. Irregular elongated oval with gradual sides and undulating base.
3308	0.87m	Orange brown silt with few stones merging with 3303. Possible remains of a B horizon.
3309		Lower ploughsoil. Identical to 3302 but because the stones within the ditch fill 3304 suggest that the ditch is cut within the ploughsoil, therefore 3309 is the lower ploughsoil the ditch is cut through.

Trench 34

Not excavated

Trench 35 Area: Penrhos Farm, area A4 Max. trench depth: 0.65m Orientation: N-S Plans: Sections: Photos: 595-598

Summary: No archaeology seen within this trench. A patch of brown soil suggested a ditch but this proved not to exist. There has been recent landscaping in this field near the road resulting in scarps forming a square corner and defining a level area.

Context	Depth	Description
No.	below	
	surface	
3501	0	Topsoil-Friable brown loam with occasional small and medium stones.
3502	0.28m	Ploughsoil-friable red brown loam with occasional small and medium stones
3503	0.60m	Natural-Pale grey stony clay silt with patches of orange brown silt.

Trench 36

Area: Penrhos Farm, area A1 Max. trench depth: 0.60m Orientation: N-S Plans: Sections: Photos: 585-586

Summary: No archaeology seen within this trench. A modern field drain or change in strata was seen crossing at the N end of the trench.

Context	Depth	Description
No.	below	•
	surface	
3601	0	Topsoil-Slightly friable dark grey orange brown sand silt.
3602	0.25m	Ploughsoil-Firm mid orange brown clay silt.
3603	0.45m	Natural-Slightly mottled yellow orange clay silt with regular stone inclusions and
		blue grey silt patches.

Trench 37

Area: Penrhos Farm, area A1 Max. trench depth: 0.55m Orientation: NE-SW Plans: Sections: Photos: 587-588, 604-605

Summary: Trench with at large boulder at the NE end within the natural. The ditch, 3705, was likely to have been machine cut and therefore modern. No other archaeology was seen in this trench.

Context	Depth	Description
No.	below surface	
3701	0	Topsoil-Firm dark orange brown sand silt with moderate sub-angular gravel
3702	0.15m	Ploughsoil-Firm mid yellow brown sand silt with moderate sub-rounded gravel and small stones.
3703	0.45m	Firm friable mottled yellow brown grey clay silt with frequent sub-rounded and small cobble stones and very occasional large boulder.
3704		Fill of ditch 3705. Soft mid brown sand clay with occasional sub-rounded cobbles.
3705		Cut of small shallow drainage ditch. Very regular cut, possibly machine cut and

likely to be modern.

Trench 38 Area: Kingsland, area C1 Max. trench depth: 0.40m Orientation: NE-SW Plans: SHT 20/DWG 46 Sections: SHT 20/DWG 47 Photos: 158-161, 185-188

Summary: Trench with a probable boundary ditch running NW-SE at the NE end. Running parallel to the ditch was a rough linear of stones, which could be the possible remains of a bank/wall. A burnt root hollow was also investigated at the SW end of the trench.

Context	Depth	Description
No.	below surface	
3801	0	Topsoil-Grey brown silt with occasional sub-rounded stones.
3802	0.25m	Ploughsoil-Slightly firmer grey brown silt with occasional stones
3803	0.35m	Natural-Yellow brown stony loam with numerous small angular stones and occasional larger stones up to 0.50m long.
3804		Fill of shallow ditch 3805. Fairly compact grey brown loam with small stones and occasional sub-rounded stone.
3805		Straight shallow ditch, presumably a boundary ditch, probably truncated from higher up.
3806		Possible remains of a bank/wall. Roughly linear collection of stones running parallel to ditch 3805. The stones were up to 0.50m long with the largest embedded in the natural, while the smaller stones may have possibly been pressed into the natural.
3807	0.40m	Sub-circular patch of charcoal, 0.40m in diameter and 0.2m deep. Consisted of very dark grey clay silt with a high concentration of charcoal. No sample taken, probable burnt root hollow.

Trench 39

Area: Kingsland, area C1 Max. trench depth: 0.65m Orientation: NE-SW Plans: Sections: Photos: 152-167

Summary: No archaeology seen within this trench. A large area of the trench was taken up by a large area of bedrock 3904.

Context No.	Depth below surface	Description
3901	0	Topsoil-Grey brown loam with crumb structure and occasional stones.
3902	0.25m	Ploughsoil-Grey brown silt with occasional small and medium stones.
3903	0.55m	Natural-Pale grey/yellow grey slightly sandy silt with gravel and numerous small stones
3904	0.15m	Schist bedrock projecting into the trench from the centre towards the SW end.
3905	0.40m	Red brown silt merging into the top of 3903 containing a few stones.

Trench 40

Area: Kingsland, area C1 Max. trench depth: 0.45m Orientation: NW-SE Plans: Sections: Photos: 162-165

Summary: No archaeology seen within this trench. A modern cut trench was seen running from the centre of the SW edge to the NE corner of the trench.

Context	Depth	Description
No.	below surface	
4001	0	Topsoil-Grey loamy silt with occasional stones.
4002	0.20m	Ploughsoil-Grey loam silt with occasional stones. Indistinguishable from 4001 except fewer roots.
4003	0.30m	Mottled yellow brown grey stony silt with numerous schist fragments, some up to 0.40m in length.
4004	0.20m	Possible service trench. Very straight and uniform, cut from just below the topsoil. The upper fill was redeposited natural.

Trench 41

Area: Cae Glas, area B5 Max. trench depth: 0.46m Orientation: NE-SW Plans: Sections: Photos: 142-145

Summary: No archaeology seen within this trench.

Context	Depth	Description
No.	below	
	surface	
4101	0	Topsoil-Mid red brown clay silt with occasional small pebble inclusions.
4102	0.26m	Ploughsoil-Light brown clay silt with infrequent small pebble inclusions
4103	0.46m	Natural-Light red brown silt clay with frequent small pebble inclusions.

Trench 42

Area: Cae Glas, area B5 Max. trench depth: 0.52m Orientation: NE-SW Plans: SHT 23/DWG 51 Sections: SHT 23/DWG 50 Photos: 146-151, 748-751

Summary: This trench had hints of modern plough furrows in the natural close to the NE corner and a probable drainage ditch running NW-SE close to the centre of the trench. A stone filled land drain created a 'T' shape within the trench.

Context	Depth	Description
No.	below	
	surface	
4201	0	Topsoil-Dark grey brown silt loam with infrequent small pebble inclusions.
4202	0.23m	Ploughsoil-Dark grey brown clay loam.
4203	0.51m	Natural-Bright/light brown yellow silt clay with occasional medium and small sub-rounded stone inclusions.
4204	0.50m	Secondary fill of ditch 4205. Soft dark grey with some orange mottling silt clay.
4205	0.50m	Fairly large ditch, probably a drainage ditch due to the sediment and silt in its fills.

4206	0.50m	Narrow parallel furrows just clipping the natural, probably modern ploughing.
4207	0.50m	Stone filled land drain visible from just below the topsoil and cutting through 4202.
4208	0.73m	Primary fill of ditch 4205. Soft mottled dark grey and orange slit clay.
4209	0.52m	Tertiary fill of ditch 4205. Moderate to soft yellow, with occasional grey and orange mottling, clay with infrequent small rounded pebbles.
4210	0.49m	Quaternary fill of ditch 4205. Soft to moderate mid grey silt clay with occasional small sub-rounded stones.

Area: Cae Glas, area B1 Max. trench depth: 0.40m Orientation: NE-SW Plans: Sections: Photos: 138-141, 184

Summary: No archaeology seen within this trench. The anomaly seen on the geophysical survey maybe because of the stone clusters, possibly, being magnetic.

Context No.	Depth below	Description
	surface	
4301	0	Topsoil-Friable mid grey brown sand silt
4302	0.20m	Ploughsoil-Friable mid grey/orange brown silt with moderately frequent small sub-angular stones.
4303	0.40m	Natural-Brown orange clay silt with patches of large sub-rounded grey-blue stones.
4304	0.40m	A cluster of sub-angular cobbles, <0.40m, set within the natural – likely to have caused the anomaly on the geophysical survey.

Trench 44

Area: Penrhos Farm, area A1 Max. trench depth: 0.64m Orientation: NE-SW Plans: SHT 23/DWG 53 Sections: SHT 23/DWG 52 Photos: 170-175, 752-755

Summary: Trench with a shallow ditch running NW-SE across it. The ditch may have possibly been a boundary ditch.

Context No.	Depth below surface	Description
4401	0	Topsoil-Soft dark grey brown silt loam.
4402	0.22m	Ploughsoil-Soft dark brown grey clay silt.
4403	0.43m	Natural-Soft light grey yellow clay silt with occasional small and medium sub- rounded stones
4404	0.50m	Straight Shallow ditch. Possibly a boundary ditch.
4405	0.50m	Fill of ditch 4404. Soft dark red brown silt loam which lies beneath the ploughsoil.

Trench 45

Area: Penrhos Farm, area A2 Max. trench depth: 0.56m Orientation: NE-SW Plans: Sections: Photos: 166-169

Summary: No archaeology was seen within this trench.

Context No.	Depth below surface	Description
4501	0	Topsoil-Soft mid to dark grey brown silt loam with occasional small sub-angular stones.
4502	0.29m	Ploughsoil-Soft light red brown silt loam with infrequent small sub-angular stones.
4503	0.43m	Natural-Fairly loose light red-brown clay silt with frequent medium sub-angular stones.

Test Pit 06

Area: Penrhos Farm, area A1 Max. trench depth: 0.3m Orientation: Plans: Sections: Photos: 109-110, 135-136

Summary: A test pit was required beyond the excavation trenches. The area was checked with a CAT scanner prior to digging. No archaeology was present in the trench.

Context	Depth	Description
No.	below	
	surface	
TP0601	0	Topsoil-Grey silt with occasional small stones.
TP0602	0.30m	Ploughsoil-Pale brown stony silt.

APPENDIX 2. Summary of depth of topsoil and ploughsoil

Trench	Total depth of topsoil and
	ploughsoil
01	0.5m
02	0.4m
03	0.4m
04	0.8m max
05	0.3m
06	0.75m
07	0.46m
08	0.3m
09	0.46m
10	0.45m
11	0.5m
12	0.5m
13	0.5m
14	0.7m
15	0.45m
16	0.3m
17	0.4m
18	0.3m
19	0.3m
20	0.4m
21	0.6m
22	0.4m
23	0.35m

Trench	Total depth of topsoil and
	ploughsoil
24	0.8m max
25	0.6m
26	0.75m max
27	0.6m
28	0.55m
29	0.5m
30	0.65m
31	0.5m
32	0.7m
33	0.95m
34	Not dug
35	0.6m
36	0.45m
37	0.45m
38	0.35m
39	0.55m
40	0.3m
41	0.45m
42	0.50m
43	0.4m
44	0.4m
45	0.4m

APPENDIX 3. Geophysical survey report

STRATASCAN



Geophysical Survey Report

Penrhos Leisure Village, near Holyhead

Gwynedd Archaeological Trust

January 2012

Job ref: J3015

Melanie Biggs BSc (Hons) and Bryony P Marsh BA


Document Title:	Geophysical Survey Report Penrhos Leisure Village, near Holyhead
Client:	Gwynedd Archaeological Trust
Stratascan Job No:	J3015
Survey Date:	December 2011
Techniques:	Detailed Gradiometry & Ground Penetrating Radar
National Grid Ref:	SH 271 815



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1 SUMMARY OF RESULTS

A gradiometer survey was carried out across approximately 65.3ha of land located across the Holyhead region of Anglesey in North Wales. The data collected has identified several areas of positive and negative responses (indicative of former cut and banked features respectively) which are of probable archaeological origin, particularly in the north of the site (Areas A1 & A2) where rectilinear responses indicating enclosure type features have been identified. Areas of high amplitude amorphous magnetic variation, probably of geological origin, can be seen across much of the survey areas and may be acting as an obscuring factor for weaker anomalies. Further magnetic responses have been identified which may be of archaeological origin however a geological response may not be discounted. In these areas, intrusive investigation would be recommended to clarify the nature of the response. Strong magnetic responses of modern origin have also been noted, often associated with services, field boundaries and modern magnetic debris.

A ground penetrating radar survey was carried out across the north of the survey area with the aim of identifying areas of bedrock and gathering information regarding the approximate depths of soils in the area. The radar data was collected across a 50m orthogonal grid covering six different fields. The characteristics of the radar data differed as the survey progressed from west to east; the data from the west of the area indicated some well defined planar anomalies interpreted as probable glaciated bedrock, however this was only identified in fragmented form and not unified across the site. The data collected in the east of the site is different in character with, in many cases, two buried horizons visible within the radargrams. These buried horizons indicate a transition between lithologies. They may relate to layers within overlying till or the bedrock. Should the higher one relate to the bedrock the lower one would be within the bedrock. Intrusive investigation is recommended to define the origin of each buried horizon.

2 INTRODUCTION

2.1 Background synopsis

Stratascan were commissioned to undertake a geophysical survey of an area outlined for development. This survey forms part of an archaeological investigation being undertaken by Gwynedd Archaeological Trust.

2.2 <u>Site location</u>

The site is located across land near Penrhos, east of Holyhead at OS NGR ref. SH 271 815.

2.3 Description of site

The site is split into three regions of land near Penrhos, south east of Holyhead. Area A is situated between the A5 trunk road and the sea to the north east of the wider survey area. All 'A' sites are mainly flat pasture fields with the exception of Area A3 which

consists of rough overgrowth to the north and a football pitch to the south. Areas B1 and B5 are situated immediately to the south of the A55. Area B1 is made up of two fields of flat pasture which contain some rock outcrops. B5 lies just north west of B1 and consists of a pasture field which rises to the south of the field. Area C1 is situated on the flat pasture land directly south of the sports stadium, south of Holyhead itself.

The underlying geology of Area A and B is Mica Schist and Psammite which are members of the New Harbour group. The drift geology is Devensian Diamicton, i.e. glacial till.(British Geological Survey website).

The underlying geology of Area C is Pelite and Psammite which are members of the South Stack formation. The drift geology is Devensian Diamicton (British Geological Survey website).

The overlying soils are East Keswick 1 which are typical brown earths. These consist of deep well drained fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging (Soil Survey of England and Wales, Sheet 2 Wales).

2.4 <u>Site history and archaeological potential</u>

The following information was provided in the form of an Archaeological Desk Based Assessment written by Gwynedd Archaeological Trust.

Area C1 - Kingsland

Five known sites are all post-medieval farmsteads with only one site containing upstanding remains. This site is considered to be of local importance, and if any remains have survived from the other four sites, they would probably have the same status. It is unknown whether any of the below-ground features have survived, but trial excavations would determine this.

There are no known buried archaeological sites of prehistoric or Roman date in this area, though the DBA has shown that the surrounding area is rich in sites of archaeological interest. This lack may be partly explained by the rocky nature of much of the area, and the boggy low-lying ground now occupied by the sports centre. The nearby ridge, where the farms of Ogof and Tanrallt were established, would have held more appeal to early settlers. However, the excavations at Parc Cybi revealed a wealth of archaeological information from prehistoric times onwards, much of which was not identified during the assessment phase, and it is possible that prehistoric remains lie preserved underground, which will only be revealed by field evaluation. This includes the possibility of Late Bronze Age burnt mounds, a site type often found on low-lying wetter ground.

Given the known quality and quantity of remains in the vicinity, the study area at Kingsland is thought to have a medium to high potential for the survival of archaeological remains.

B1 & *B5* – *Cae Glas*

The study area has been shown to be potentially rich in archaeological remains. It contains two Neolithic chambered cairns (one of them scheduled). The area is similar in character to Parc Cybi, where considerable remains of buried archaeology were found. The presence of the cairns and the Roman coins suggest buried archaeology is likely in this area also. The remains at Tre-gof have the potential to considerably enhance our understanding of the development of medieval settlement. The tide mill at Tre-gof is also of late medieval date and of archaeological significance as the earliest of a series of tide mills which lay within the inland area.

Given the known quality and quantity of remains in the vicinity, the study area at Cae Glas is thought to have a high potential for the survival of archaeological remains.

A1-A4 & A7 – Penrhos

The Penrhos estate was the seat of the principle land and property owners on Holy Island for over 400 years, starting with John ap Owen in the 16th century, and passing into the hands of the Stanley family in 1763. The Penrhos study area is entirely contained within the former Demesne lands which became more elaborate in the latter part of the 18th century into the 19th. The 1st edition OS map shows elaborate gardens to the east and south of the mansion, a racecourse and a well-developed home farm. Though the house has been demolished and the gardens very overgrown there are still 7 listed buildings associated with the estate, of which three are towers. Much of the area currently forms part of the Penrhos Coastal Park.

The coastal edge of the Penrhos demense on the north east edge of Holy Island includes a number of other features of interest. These include a standing stone which is probably of prehistoric date and a Napoleonic era battery built to defend the port of Holyhead from possible invasion.

2.5 <u>Survey objectives</u>

The objective of the gradiometer survey was to locate any anomalies that may be of archaeological significance prior to trenching. In addition a ground penetrating radar survey was carried out across Areas A1, A2 and A7, with the aim of identifying the depth of the bedrock across the area.

2.6 Survey methods

Detailed magnetic survey (gradiometry) was used as an efficient and effective method of locating archaeological anomalies and ground penetrating radar was selected as the most suitable methodology for the identification of bedrock.

More information regarding these techniques is included in the Methodology section below.

3 METHODOLOGY

3.1 Date of fieldwork

The fieldwork was carried out over 14 days from Monday 5^{th} – Thursday 22^{nd} December 2011 when the weather was wet and windy.

3.2 Grid locations

The location of the survey grids has been plotted in Figure 1 together with the referencing information. Grids were set out using a Leica Smart Rover RTK GPS.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. A SmartNet RTK GPS uses Ordnance Survey's network of over 100 fixed base stations to give an accuracy of around 0.01m.

3.3 Description of techniques and equipment configurations

Gradiometry

Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.2 nanoTesla (nT) in an overall field strength of 48,000nT, can be accurately detected using an appropriate instrument.

The mapping of the anomaly in a systematic manner will allow an estimate of the type of material present beneath the surface. Strong magnetic anomalies will be generated by buried iron-based objects or by kilns or hearths. More subtle anomalies such as pits and ditches can be seen if they contain more humic material which is normally rich in magnetic iron oxides when compared with the subsoil.

To illustrate this point, the cutting and subsequent silting or backfilling of a ditch may result in a larger volume of weakly magnetic material being accumulated in the trench compared to the undisturbed subsoil. A weak magnetic anomaly should therefore appear in plan along the line of the ditch.

The magnetic survey was carried out using a dual sensor Grad601-2 Magnetic Gradiometer manufactured by Bartington Instruments Ltd. The instrument consists of two fluxgates very accurately aligned to nullify the effects of the Earth's magnetic field. Readings relate to the difference in localised magnetic anomalies compared with the general magnetic background. The Grad601-2 consists of two high stability fluxgate gradiometers suspended on a single frame. Each gradiometer has a 1m separation between the sensing elements so enhancing the response to weak anomalies.

Radar

Two of the main advantages of radar are its ability to give information of depth as well as work through a variety of surfaces, even in cluttered environments which normally prevent other geophysical techniques being used.

A short pulse of energy is emitted into the ground and echoes are returned from the interfaces between different materials in the ground. The amplitude of these returns depends on the change in velocity of the radar wave as it crosses these interfaces. A measure of these velocities is given by the dielectric constant of that material. The travel times are recorded for each return on the radargram and an approximate conversion made to depth by calculating or assuming an average dielectric constant (see below).

Drier materials such as sand, gravel and rocks, i.e. materials which are less conductive (or more resistant), will permit the survey of deeper sections than wetter materials such as clays which are more conductive (or less resistant). Penetration can be increased by using longer wavelengths (lower frequencies) but at the expense of resolution (see 3.4.2 below).

As the antennae emit a "cone" shaped pulse of energy an offset target showing a perpendicular face to the radar wave will be "seen" before the antenna passes over it. A resultant characteristic *diffraction* pattern is thus built up in the shape of a hyperbola. A classic target generating such a diffraction is a pipeline when the antenna is travelling across the line of the pipe. However it should be pointed out that if the interface between the target and its surrounds does not result in a marked change in velocity then only a weak hyperbola will be seen, if at all.

The Ground Probing Impulse Radar used was a SIR3000 system manufactured by Geophysical Survey Systems Inc. (GSSI).

The radar surveys were carried out with a 200MHz antenna. This mid-range frequency offers a good combination of depth of penetration and resolution.

3.4 Sampling interval, depth of scan, resolution and data capture

3.4.1 <u>Sampling interval</u>

Gradiometry

Readings were taken at 0.25m centres along traverses 1m apart. This equates to 3600 sampling points in a full 30m x 30m grid.

Radar

Radar scans were carried out along traverses 50m apart on an orthogonal grid as shown in Figure 14. Data was collected at 60 scans/metre. A measuring wheel was used to put markers into the recorded radargram at 1m centres.

3.4.2 <u>Depth of scan and resolution</u>

Gradiometry

The Grad 601 has a typical depth of penetration of 0.5m to 1.0m. This would be increased if strongly magnetic objects have been buried in the site. The collection of data at 0.5m centres provides an optimum methodology for the task balancing cost and time with resolution.

Radar

The average velocity of the radar pulse is calculated to be 0.066m/nsec which is typical for the type of sub-soils on the site. With a range setting of 120nsec this equates to a maximum calculated depth of scan of 3.9m, however in this instance, usable data is visible up to depths of 3.1m. A further point worth making is that very shallow features are lost in the strong surface response experienced with this technique.

Under ideal circumstances the minimum size of a vertical feature seen by a 200MHz (relatively low frequency) antenna in a damp soil would be 0.1m (i.e. this antenna has a wavelength in damp soil of about 0.4m and the vertical resolution is one quarter of this wavelength). It is interesting to compare this with the 400MHz antenna, which has a wavelength in the same material of 0.2m giving a theoretical resolution of 0.05m. A 900MHz antenna would give 0.09m and 0.02m respectively.

3.4.3 Data capture

Gradiometry

The readings are logged consecutively into the data logger which in turn is daily downloaded into a portable computer whilst on site. At the end of each job, data is transferred to the office for processing and presentation.

Radar

Data is displayed on a monitor as well as being recorded onto an internal hard disk. The data is later downloaded into a computer for processing.

3.5 Processing, presentation of results and interpretation

3.5.1 Processing

Gradiometry

Processing is performed using specialist software known as *Geoplot 3*. This can emphasise various aspects contained within the data but which are often not easily seen in the raw data. Basic processing of the magnetic data involves 'flattening' the background levels with respect to adjacent traverses and adjacent grids. Once the basic processing has flattened the background it is then possible to carry out further processing which may include low pass filtering to reduce 'noise' in the data and hence emphasise the archaeological or man-made anomalies.

The following schedule shows the basic processing carried out on all minimally processed gradiometer data used in this report:

1. Despike	(useful for display and allows further processing functions to be carried out more effectively by removing extreme data values)
	<i>Geoplot parameters:</i> X radius = 1, y radius = 1, threshold = 3 std. dev. Spike replacement = mean
2. Zero mean traverse	(sets the background mean of each traverse within a grid to zero and is useful for removing striping effects)
	<i>Geoplot parameters:</i> Least mean square fit = off

Radar

The radar plots included in this report have been produced from the recorded data using Radan software. Both high and low pass filters were applied to the data to remove background noise.

3.5.2 Presentation of results and interpretation

Gradiometry

The presentation of the data for each site involves a print-out of the minimally processed data both as a greyscale plot (Figures 2-5) and a colour plot showing extreme magnetic values (Figures 6-9). Magnetic anomalies have been identified and plotted onto the 'Abstraction and Interpretation of Anomalies' drawing for the site (Figures 10-13).

Radar

Manual abstraction

Each radargram has been studied and those anomalies thought to be significant were noted and classified as detailed below. Inevitably some simplification has been made to classify the diversity of responses found in radargrams. This abstraction is then employed as the primary source for producing the interpretation plot (Figure 15), but is not itself reproduced in the report.

i. Strong and weak discrete reflector.

These may be a mix of different types of reflectors but their limits can be clearly defined. Their inclusion as a separate category has been considered justified in order to emphasise anomalous returns which may be from archaeological targets and would not otherwise be highlighted in the analysis.

ii. Complex reflectors.

These would generally indicate a confused or complex structure to the subsurface. An occurrence of such returns, particularly where the natural soils or rocks are homogeneous, would suggest artificial disturbances. These are subdivided into both strong and weak giving an indication of the extent of change of velocity across the interface, which in turn may be associated with a marked change in material or moisture content.

iii. Point diffractions.

These may be formed by a discrete object such as a stone or a linear feature such as a small diameter pipeline being crossed by the radar traverse (see also the second sentence in iv. below).

iv. Convex reflectors and broad crested diffractions.

A convex reflector can be formed by a convex shaped buried interface such as a vault or very large diameter pipeline or culvert. A broad crested diffraction as opposed to a point diffraction can be formed by (for example) a large diameter pipe or a narrow wall generating a hybrid of a point diffraction and convex reflector where the central section is a reflection off the top of the target and the edges/sides forming diffractions.

v. Planar returns.

These may be formed by a floor or some other interface parallel with the surface. These are subdivided into both strong and weak giving an indication of the extent of change of velocity across the interface which in turn may be associated with a marked change in material or moisture content.

vi. Inclined events.

These may be a planar feature but not parallel with the survey surface. However, similar responses can be caused by extraneous reflections. For example, an "air-wave" caused by a strong reflection from an above ground object would produce a linear dipping anomaly and does not relate to any sub-surface feature. Normally this is not a problem as the antennae used are shielded, but under some circumstances these effects can become noticeable.

vii. Conductive surface.

The radiowave transmitted from the antenna has its waveform modulated by the ground surface. If this ground surface or layers close to the surface are particularly conductive a 'ground coupled wavetrain' is generated which can produce a complex wave pattern affecting part or all of the scan and so can obscure the weaker returns from targets lower down in the ground.

viii. A category for "*focused ringing*" has been included as this type of anomaly can indicate the presence of an air void. This is created by the signal resonating within the void, but with a characteristic domed shape due to the "velocity pull-up effect".

4 **RESULTS**

The abstracted anomalies have been divided into varying types. The types have then been tabulated and assessed as to the level of activity in each area according to the following table.

Level of activity	
-	None
*	Minimal
**	Moderate
***	Significant

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January 2012

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Description	Positive anomaly / weak positive anomaly - probable cut feature of archaeological origin.	Negative anomaly / weak negative anomaly - probable bank or earthwork of archaeological origin	Moderate strength discrete anomaly - probable thermoremanent feature	Widely spaced curving parallel linear anomalies - probably related to ridge- and-furrow.	Positive anomaly / weak positive anomaly - possible cut feature of archaeological origin	Negative anomaly / weak negative anomaly - possible bank or earthwork of archaeological origin	Moderate strength discrete anomaly - possible thermoremanent feature	Magnetic spike - probable ferrous object	Positive anomaly – of possible archaeological or natural origin. Further investigation required to define	Negative linear anomaly – of possible archaeological or natural origin. Further investigation required to define
	Reology	ble Archa	Proba	Possible Archaeology						

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Description	Closely spaced parallel linear anomalies - probably related to agricultural activity such as ploughing	Linear anomaly - probably related to pipe, cable or other modern service	Linear anomaly - possibly related to land drain	Magnetic disturbance associated with nearby metal object such as service or field boundary	Scattered magnetic debris	Area of amorphous magnetic variation - probable natural (e.g. geological or pedological) origin	Strong magnetic debris – possible disturbed or made ground	Linear magnetic debris – of uncertain origin
	Other Anomalies							

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5 DISCUSSION

The following list of numbered anomalies refers to numerical labels on the interpretation plots (Figures 10-13).

Gradiometer Survey Results:

Probable Archaeology

Area A1

- **1.** A collection of positive and negative linear anomalies arranged in a rectilinear fashion towards the west of Area A1.
 - **a.** Wide cut and banked linear features forming the main shape of the enclosures
 - **b.** A narrow, rough, double-ditch anomaly which appears to form the south eastern boundary of the main enclosure
 - **c.** Two wide cut linear features appear centrally in the main enclosure and run approximately north west to south east on the same alignment.
 - **d.** Narrower positive and negative linear features which appear to continue south east on the same alignment to Anomaly 1
 - e. A curvilinear banked feature appears to form the north eastern corner of the enclosure, with some positive cut features alongside.
- 2. Narrow positive and negative linear anomalies arranged in a partial rectilinear fashion.
 - **a.** This set of linear anomalies appears just north east of Anomaly 1. It appears to be on a slightly different orientation to the nearby Anomaly 1a and so could be of a different origin.
 - **b.** This set of anomalies appears towards the southern tip of Area A1. Similarly to Anomaly 2a, 2b appears to align differently to Anomaly 1. It is on the same orientation as anomaly 2a, and although it is situated ~284m south east of 2a, their similar nature suggests they are of similar origin.
- **3.** A collection of fairly straight, narrow positive and negative linear features appearing in the north eastern field of Area A1 which appear in the same alignment to the current field system.
 - **a.** A cross-shaped feature made up of cut linear anomalies running north west to south east and north east to south west with some associated negative responses. Possibly the intersection of four former fields.
 - **b.** A long straight positive linear feature running north east off of Anomaly 3a. This anomaly stretches the entire length of the field and runs in the same orientation to the current field system, suggesting it is of similar date.

- **c.** A cross-shaped feature made up of a narrow cut anomaly running north west to south east. It is crossed at the middle by two short positive linears that are closely parallel with each other, running north east to south west. A long narrow negative anomaly trails off towards the south of the field at the western end.
- **d.** A short positive and negative linear anomaly to the west of Anomaly 3c. It could form the corner of Anomaly 3c, if it extended towards the south east.

Area A2

- **4.** A collection of mainly positive linear anomalies, with some associated negative responses, ranges across the south eastern field in Area 2 and is probably associated with a former field system.
 - **a.** A long double-ditched linear feature that runs parallel to the northern boundary of the field.
 - **b.** A single positive curvilinear feature runs south of and parallel to Anomaly 4a
 - **c.** Two separate positive curvilinear features run north to south, roughly parallel to each other, intersecting Anomalies 4a and 4b.
 - **d.** Three linear anomalies cross each of the 4c anomalies south west to north east at the top, middle and bottom. If each extended towards each other, they are likely to link both the 4c anomalies together in a grid.
 - **e.** A rough curvilinear double-ditched feature runs north to south, parallel with the western boundary of the field, and appears to intersect 4a and 4b.
- 5. A positive partial rectilinear anomaly of which one section, at the right-angled corner, appears to be double-ditched with a narrow bank running north east to south west in between each ditch.
- 6. A linear, partially double-ditched feature with a narrow bank running in between each ditch. This anomaly runs north west to south east which is roughly perpendicular to Anomaly 5. It is possible, therefore, that this anomaly may be related to Anomaly 5, as a field boundary.
- 7. Two short, narrow negative linear features run north west to south east parallel to each other out from the southernmost boundary of the northern field of Area A2.

Area C1

- 8. A series of positive and negative anomalies appearing towards the west of Area C1 consisting of enclosure-type ditches (8a + 8b), a positive circular anomaly with associated negative responses (8c) and a weak positive semi-circular trend (8d).
- 9. A long, narrow, double-ditched feature appearing just south of Anomaly 8.

10. A double-ditched cross-shaped feature appearing to the east of the larger field in Area C1 (10a). Anomaly 10b is a narrow cut feature which runs parallel to the cross-bar in the eastern segment of Anomaly 10a. This collection of anomalies may have similar origins to Anomaly 9 as they both appear on the same alignment and are both double-ditched features.

Possible Archaeology

Area A1

- **11.** A number of long, narrow positive and negative linear features appear in the north eastern field of Area A1. Many of these run the majority of the length of and in the same alignment as the current field system. As this is similar to Anomaly 3b, it is possible that all the anomalies have the same origin.
- **12.** Three small pit-like anomalies, one with associated negative material, have been identified in the north western field of Area A1.
- 13. Positive and negative anomalies (13a and 13b) of uncertain archaeological or geological origin have been identified in the north western field of Area A1. They both seem to have the straight line character of most probable archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. They seem to form a partial former enclosure or field but it is difficult to deduce without intrusive investigation, what the origins of these anomalies are.
- 14. A long, broad negative linear anomaly of uncertain archaeological or geological origin has been identified in the south western field of Area A1. It appears to have the straight line character of other probable archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. It seems to fall into alignment with elements of the nearby Anomaly 1 and Anomaly 21 in Area A7 but it is difficult to interpret, without intrusive investigation, what the origin of this anomaly is.

Area A2

15. A partial rectilinear anomaly is identified in the south western field of Area A2. It consists of one positive linear feature which runs north-south and one negative linear feature which runs approximately north east to south west.

Area A3

- **16.** Two parallel positive linear anomalies running into Area A3 from the east. A possible double-ditch.
- 17. Two weak negative linear features enter Area A3 from the north western corner.

Stratascan Ltd © 2012 Job ref: J3015 **18.** Weak positive linear anomalies of uncertain archaeological or geological origin have been identified in the south of Area A3. They seem to have the straight line character of archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. They seem to form a partial former series of settlement enclosures or building foundations but it is difficult to say, without intrusive investigation, what the origins of these anomalies are.

Area A4

- **19.** Identified in the southernmost corner of the survey area are four short positive linear features which may or may not be associated with an archaeological origin. The area directly north of here was quite disturbed and these anomalies may or may not be linked with this disturbance.
- **20.** A broad strong positive linear anomaly of uncertain archaeological or geological origin cuts across the middle of Area A3. It seems to have the straight line character of most archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. It is difficult to predict, without intrusive investigation, what is the origin of this anomaly.

Area A7

21. Broad negative linear responses, set roughly at a right angle, which appear to fall in the same alignment as Anomaly 1. A narrow positive linear response runs parallel with the negative anomaly in the north eastern-south western orientation.

Area B1

- 22. A partially double-ditched anomaly appears to run from the north eastern field (22a) down into the larger south western field of Area B1 (22b, 22c and 22d). Anomaly 22c and 22d run close by to some existing enclosures.
- **23.** A partial rectilinear feature appears just south east of the existing enclosures in the south east of Area B1.
- **24.** A double-ditched feature with a slight curve, with some associated negative linear responses, runs out from the boundary in the south east of the larger field. This feature appears to run perpendicularly to Anomaly 22, and may form part of a former field system.
- **25.** A weak positive semi-circular feature appears to the west of the larger field of Area B1.
- **26.** A few randomly distributed positive linear features are identified in the west of the larger field of Area B1.
- **27.** Two pit-like anomalies, with some associated negative responses, appear in close proximity to each other in the southern corner of Area B1. As they appear to be in

isolation, it is difficult to assess whether they relate to the other anomalies in the local area or are of a different origin.

- **28.** A single positive linear anomaly, with an associated negative linear anomaly, appears to run parallel with Anomalies 22c and 22d. It is spaced roughly 95m away from Anomaly 22c to the north west. It may form part of a boundary of a former field system with Anomalies 22 and 24.
- **29.** Strong positive and negative anomalies of uncertain archaeological or geological origin appear across the northern half of Area B1. It is difficult to assess, without intrusive investigation, what the are precise origin of these anomalies.

Area B5

- **30.** Two linear double-banked features (**30a** and **30b**) appear in the north east corner of Area B5. The origin of these anomalies is uncertain.
- **31.** A positive curvilinear feature of uncertain origin is identified to the west of Anomaly 30.
- **32.** Two short negative linear anomalies (**32a** and **32b**) appear in the north of B5. They seem to form one alignment , heading north west to south east, in the same orientation.

Area C1

- 33. Two roughly linear positive cut features heading south on differing orientations (33a and 33b). It is difficult to deduce the origin of these anomalies as they do not appear to relate with other nearby responses.
- 34. Two roughly linear positive cut features appear to diverge in a north eastern direction (34a and 34b). The origin of these anomalies in uncertain as they do not appear to correlate with other nearby responses.
- **35.** A cut partial rectilinear feature. One positive linear feature appears in a north east-south west orientation (**35a**) and set at a right angle to it in a north west-south east orientation are two positive linear features (**35b**).
- **36.** A single positive linear anomaly running on a north east-south west orientation. It does not appear to directly relate to other anomalies nearby.
- **37.** A single positive linear anomaly running on a north north east to south south west orientation. It does not appear to directly relate to other anomalies nearby.
- **38.** Numerous small pit-like anomalies which seem to cluster towards Anomaly 35.

- **39.** A long positive linear feature running north west-south east is identified in the western field of Area C1. As it lies in close proximity to Anomaly 8, which is marked up as probable archaeology, it may be of a similar origin.
- **40.** Two small pit-like anomalies appear just north of Anomaly 39.
- **41.** A short positive linear feature which is curved at either end. It appears roughly parallel to Anomaly 8a, which is marked up as probable archaeology, and so could be of similar origin.
- **42.** A cluster of positive and negative linear and circular anomalies of uncertain archaeological or geological appear in the field alongside the leisure centre. It seems to have the characteristics of most archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. It is difficult to ascertain the origin of this anomaly, without intrusive investigation.
- **43.** A broad linear area of strong negative responses cuts across the north eastern corner of Area C1 (**43a**). Strong positive anomalies made up of broad curvilinear linear features, which run along the route of Anomaly 43a, and smaller circular pit-like anomalies that are dotted alongside Anomaly 43a. It is uncertain whether these anomalies are of archaeological or geological origin. It seems to have the characteristics of most archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. It is difficult to determine, the origin of these responses without intrusive investigation.

General

- **44.** A number of magnetic 'spikes' (strong focussed values with associated antipolar response) indicate ferrous metal objects. Although most of these are likely to be modern rubbish, some may be of archaeological interest. Particular attention may be paid to those found in association with other potentially archaeological anomalies.
- **45.** A moderate strength discrete anomaly appears towards the south west of Area B1. This is possibly an archaeological thermoremanent feature, and further investigation will determine its true origins.

Other Anomalies

- **46.** Pipes, cables or underground services have been located in Areas A7, B1, B5 and C1.
- 47. A linear anomaly which probably relates to a land drain appears in Area B1.
- **48.** Areas of magnetic disturbance are the result of substantial nearby ferrous metal objects such as fences and underground services. These effects can mask weaker archaeological anomalies, but on this site have not affected a significant proportion of the area.

- **49.** Strong magnetic debris relating to possible disturbed or made ground is located in Areas A2 and A4.
- **50.** Small areas of scattered magnetic debris appear in Areas B1 and B5. It is probable that these responses are of modern origin e.g. litter or rubbish.
- **51.** Linear magnetic debris of unknown origin appears in Areas A7 and C1.
- **52.** The vast majority of the data collected has some degree of geological background noise. The worst affected areas have been identified. Geological responses are characterised by areas of amorphous magnetic variation. Some of these responses are particularly strong, especially across the Penrhos (A) areas, and may be masking archaeological features that might be lying beneath.

Ground Penetrating Radar Survey Results:

Ground penetrating radar traverses were carried out over a 50m orthogonal grid across Areas A1, A2 and A7 with the aim of identifying the depth of soils over the bedrock. The GPR data has been collected across six different survey areas which have a variety of signature responses which are indicative of buried horizons probably or possibly associated with bedrock. Each survey area will be discussed individually:

Area A1-1:

The GPR data collected in Area 1 has identified a number of strong planar anomalies, smooth in character and indicative of a buried horizon. Due to the nature of the response, we feel that these anomalies may be associated with glaciated bedrock in the region. It is however interesting to note that these responses are identified in a fragmented state and cannot be seen as a unified layer across the entirety of the radargrams. In particular, the planar anomalies can be seen in the south of the area, losing clarity and definition in the north. The depth of these anomalies fluctuates between 0.6m and 2m, with some particular areas of undulation seen in (Figure 15, Example Radargram 3).

Area A1-2:

Within the data collected in Area 2, only 2 radargrams show anomalies as clearly as those seen in Area 1. In much of the survey data, weaker buried horizons are identified which may be associated with bedrock, however as the radar detects the transitions between changes in surface, this anomaly may be indicative of a boundary between soils, drift geology or bedrock and further intrusive investigation would be recommended to investigate the anomalies. Several horizons have been identified at very shallow depths (up to 0.5m) and have been classified separately. As with Area 1, the buried horizons are seen as fragmented anomalies and are not unified across the area.

Area A1-3:

The data collected in Area 3 is similar to Area 2 as there are fragmented buried horizons identified across many radargrams – some at very shallow depths. However, it is interesting to note that some radargrams show a band of strong complex responses not seen in previous areas. These high amplitude responses are of uncertain origin, but they may well be associated with areas of bedrock.

Area A7-:

The radar data collected across Area 4 predominantly shows two distinct buried horizons. The first anomaly is seen at depths of approximately 0.3m to 0.7m and is characterised by a layer of strong complex responses. The second deeper horizon can be seen between 1.4m and 2.7m depth and may be associated with a bedrock layer. Interestingly, in this region, the horizons are less fragmented than in previous data sets – the anomalies appear over the majority of the area and are more unified in depth.

Area A2-1:

As in Area 4, a double horizon is visible across much of the area, a shallow anomaly seen at depths of less than 1m and a deeper response at approximately 2.5m. These anomalies indicate a change in surface and either may be associated with the bedrock surface. In several radargrams, the anomalies are showing similar characteristics to the anomalies identified in Areas 1 and 2 classified as probable bedrock.

Area A2-2:

As in Area 5, a double horizon is visible across much of this area and is indicative of two changes in ground formation. The shallow horizon is seen at depths of less than 1m and the deeper anomaly at depths between 1.8m and 2.7m. As with all of the horizons mapped in this survey, they indicate a transition between different formations and therefore we would recommend intrusive investigation to clarify the origin of the responses.

6 CONCLUSION

Gradiometer:

The detailed gradiometry survey conducted at Penrhos, Holy Island, has identified several sites which might be of archaeological interest. Area A1 and A2 contain anomalies which suggest a former field system or enclosure network (1-6). There are other similar anomalies which have been tentatively marked up as possible archaeology (11, 15 and 21) and some whose origins are possibly archaeological or possibly geological (13, 14 and 20). There is a significant amount of amorphous magnetic variation caused by the underlying bedrock geology, which has created a wash of background noise across the whole survey area. The worst affected areas have been

identified as such (labelled as Anomaly 52), but weaker geological responses exist over the whole area. This has made labelling possible archaeological features a tentative process, particularly in the north eastern field of Area A1.

In another part of site, Area C1, it was a little easier to identify potential archaeological features. Two semi-circular cut features (8c and 8d), one larger than the other (8d), and an arrangement of cut and banked linear enclosure-type features (8a and 8b) has been identified to the west of the main field. A cross-shaped, partially double-ditched anomaly (10) has been identified in the east of the same field, and a long double-ditch (9) also shows clearly to the west. A number of linear and pit-like anomalies have been identified as possible archaeology (33-40). The short linear anomaly, 41, lies in close proximity to Anomaly 8, and may be associated with this probable former enclosure. Anomalies exhibiting possible archaeological characteristics but with a geological appearance have been identified in the field alongside the leisure centre (Anomaly 42) and in the north eastern field (Anomaly 43). Further intrusive investigation will help to understand these anomalies more clearly.

Area B1 contains some interesting possible archaeological features including doubleditch-like features and single ditches (22, 24 and 28) which seem to loosely make a former enclosure at the south west end. A partial rectilinear feature appears close to an area of existing enclosures (23) and could be related to the previously mentioned collection of ditches. A small, semi-circular ditch-like feature has been identified in the north of Area B1 (25). Two small pit-like features, surrounded by negative dug out material, appear closely together in the southern corner of Area B1. Five features grouped as Anomaly 29 exhibit characteristics expected of possible archaeological features but could relate to the high geological responses in the area,

Ground Penetrating Radar:

The ground penetrating radar data collected with the aim of identifying the depth to bedrock in the area has identified a series of smooth planar anomalies which are likely to be associated with the presence of glaciated bedrock in the area. These responses are identified predominantly in Area 1 and 2. Buried horizons have also been identified across much of the site, however these differ in character to those identified as probable bedrock and are therefore classified as possible bedrock. These horizons are indicative of a transition between different features – soils, drift geology or bedrock, and further intrusive investigation would be beneficial to determine the origin of each transition. This would be especially interesting in areas 5 and 6, where a double horizon is identified across much of the site.

6 **REFERENCES**

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<u>APPENDIX A – Basic principles of magnetic survey</u>

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns and material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically either 0.5 or 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried field. The difference between the two sensors will relate to the strength of a magnetic field created by a buried feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity, disturbance from modern services etc.

<u>APPENDIX B – Glossary of magnetic anomalies</u>

Bipolar



A bipolar anomaly is one that is composed of both a positive response and a negative response. It can be made up of any number of positive responses and negative responses. For example a pipeline consisting of alternating positive and negative anomalies is said to be bipolar. See also dipolar which has only one area of each polarity. The interpretation of the anomaly will depend on the magnitude of the magnetic field strength. A weak response may be caused by a clay field drain while a strong response will probably be caused by a metallic service.

Dipolar



This consists of a single positive anomaly with an associated negative response. There should be no separation between the two polarities of response. These responses will be created by a single feature. The interpretation of the anomaly will depend on the magnitude of the magnetic measurements. A very strong anomaly is likely to be caused by a ferrous object.

Positive anomaly with associated negative response

See bipolar and dipolar.

Positive linear



A linear response which is entirely positive in polarity. These are usually related to infilled cut features where the fill material is magnetically enhanced compared to the surrounding matrix. They can be caused by ditches of an archaeological origin, but also former field boundaries, ploughing activity and some may even have a natural origin.

Positive linear anomaly with associated negative response



A positive linear anomaly which has a negative anomaly located adjacently. This will be caused by a single feature. In the example shown this is likely to be a single length of wire/cable probably relating to a modern service. Magnetically weaker responses may relate to earthwork style features and field boundaries.

Positive point/area



These are generally spatially small responses, perhaps covering just 3 or 4 reading nodes. They are entirely positive in polarity. Similar to positive linear anomalies they are generally caused by infilled cut features. These include pits of an archaeological origin, possible tree bowls or other naturally occurring depressions in the ground.

Magnetic debris



Magnetic debris consists of numerous dipolar responses spread over an area. If the amplitude of response is low (+/-3nT) then the origin is likely to represent general ground disturbance with no clear cause, it may be related to something as simple as an area of dug or mixed earth. A stronger anomaly (+/-250nT) is more indicative of a spread of ferrous debris. Moderately strong anomalies may be the result of a spread of thermoremanent material such as bricks or ash.

Magnetic disturbance



Magnetic disturbance is high amplitude and can be composed of either a bipolar anomaly, or a single polarity response. It is essentially associated with magnetic interference from modern ferrous structures such as fencing, vehicles or buildings, and as a result is commonly found around the perimeter of a site near to boundary fences.

Negative linear



A linear response which is entirely negative in polarity. These are generally caused by earthen banks where material with a lower magnetic magnitude relative the background top soil is built up. See also ploughing activity.

Negative point/area

Opposite to positive point anomalies these responses may be caused by raised areas or earthen banks. These could be of an archaeological origin or may have a natural origin.

Ploughing activity



Ploughing activity can often be visualised by a series of parallel linear anomalies. These can be of either positive polarity or negative polarity depending on site specifics. It can be difficult to distinguish between ancient ploughing and more modern ploughing, clues such as the separation of each linear, straightness, strength of response and cross cutting relationships can be used to aid this, although none of these can be guaranteed to differentiate between different phases of activity.

Polarity

Term used to describe the measurement of the magnetic response. An anomaly can have a positive polarity (values above 0nT) and/or a negative polarity (values below 0nT).

Strength of response

The amplitude of a magnetic response is an important factor in assigning an interpretation to a particular anomaly. For example a positive anomaly covering a 10m² area may have values up to around 3000nT, in which case it is likely to be caused by modern magnetic interference. However, the same size and shaped anomaly but with values up to only 4nT may have a natural origin. Trace plots are used to show the amplitude of response.

Thermoremanent response

A feature which has been subject to heat may result in it acquiring a magnetic field. This can be anything up to approximately +/-100 nT in value. These features include clay fired drains, brick, bonfires, kilns, hearths and even pottery. If the heat application has occurred insitu (e.g. a kiln) then the response is likely to be bipolar compared to if the heated objects have been disturbed and moved relative to each other, in which case they are more likely to take an irregular form and may display a debris style response (e.g. ash).

Weak background variations



Weakly magnetic wide scale variations within the data can sometimes be seen within sites. These usually have no specific structure but can often appear curvy and sinuous in form. They are likely to be the result of natural features, such as soil creep, dried up (or seasonal) streams. They can also be caused by changes in the underlying geology or soil type which may contain unpredictable distributions of magnetic minerals, and are usually apparent in several locations across a site.


























APPENDIX 4. Report on geotechnical test pits dug by Kehoe Countryside Ltd on 3rd February 2012

Trial dig

We received a permit to work and site excavation clearance certificate from Anglesey aluminium.

Each pit we excavated to 500mm wide x 3000mm long x up to 2000mm deep. The turf and top soil was placed to the left hand side of the excavation, and the sub soil was placed to the right hand side of the excavation. We took photos and measurements during the excavation and when finished, replaced the sub soil, top soil and turf.



Map showing locations of Excavations

Deepest excavation 180cm

Depth (cm)	Comments
30	Topsoil
60	Soil turns gravely. Stone size 50mm down
90	Some larger stones – up to 100mm
180	Found rock



Deepest excavation 150cm

Depth (cm)	Comments
30	Topsoil
60	Change in colour. Sandy soil. Stones up to 120mm.
90	Change to clay.
120	Gray shale. Some rocks up to 300mm
150	Shale / bed rock





Deepest excavation 170cm

Depth (cm)	Comments
30	Topsoil – higher clay content. Sandy below 30cm.
60	Gravely shale.
90	Larger stones – up to 250mm
170	Large boulders/ bed rock





Deepest excavation cm 170

Depth (cm)	Comments
40	Topsoil
60	Sandy layer below topsoil. Then clay / gravel
90	Shale and larger stones
170	Bed rock





Deepest excavation 160cm

Depth (cm)	Comments
30	Topsoil
40	Gravel
50	Shale and gravel. Rocks up to 30cm. more stone and gravel than the other excavations.
160	Shale





Deepest excavation 190cm

Depth (cm)	Comments
30	Topsoil – change of colour. Sandy.
60	Change colour – sandier.
90	Change colour to grey – shale / gravel
120	Stones up to 180mm. less big stones
190	Ground hard to dig but not bedrock.





APPENDIX 5. Project design for archaeological evaluation

PENRHOS LEISURE VILLAGE, ANGLESEY

PROJECT DESIGN FOR ARCHAEOLOGICAL EVALUATION – TARGETED TRENCHING (G2163)

Prepared for Land and Lakes (Anglesey) Ltd, March 2012

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PENRHOS LEISURE VILLAGE, ANGLESEY

PROJECT DESIGN FOR ARCHAEOLOGICAL EVALUATION – TARGETED TRENCHING (G2163)

Prepared for Land and Lakes (Anglesey) Ltd, March 2012

1.0 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Land and Lakes (Anglesey) Ltd* to provide a project design with costs for carrying out a programme of archaeological evaluation (trial trenching) within targeted locations at the proposed Penrhos Leisure Village residential and leisure development site. The current design has been informed by the results of an archaeological assessment of the development area completed by GAT in August 2011 (Report **968**) as well as a geophysical magnetometer survey of selected zones completed by *Stratascan* in December 2011 (ref. **J3015**).

The development scheme encompasses a combined area of 246.0ha located near Penrhos, east of Holyhead, Anglesey (centred on NGR **SH27168166**) and is sub-divided into three areas: Kingsland, Cae Glas and Penrhos. Both Kingsland and Cae Glas are located south of the A55 Expressway; Penrhos is located north of the Expressway (cf. Figure 01).

The development proposals for the three development areas include:

- 1. Kingsland 31.0Ha
 - 400 Houses mix of affordable, family and executive homes.
 - Integrated landscape infrastructure and shared public space.
- 2. Cae Glas 135.0Ha
 - 100 lodges
 - 800 bed apartments
 - Visitor / Education field centre and dormitory accommodation
 - Nature Reserve
 - Nature trails / woodland walks / hides and wildlife information boards
- 3. Penrhos Coastal Park 80Ha
 - Indoor/ outdoor water park facility for year round use.
 - Variety of restaurant and retail offers
 - Refurbishment of Penrhos Manor House and historic outbuildings
 - Cycle routes, footpaths and trim trails

(Information based on client document PL1114.R.001).

The original client masterplan was completed in Septmber 2011 (incorporating *Planit* drawings PL1114.P.GA100, PL1114.CG.GA100 and PL1114.K.GA100); a revised masterplan was submitted by client in December 2011.

The current evaluation programme (trial trenching) will be completed in response to the results of a **magnetometer geophysical survey** completed by *Stratascan* on behalf of Land and Lakes (Anglesey) Ltd. The geophysical zones were located by GAT for Land and Lakes (Anglesey) Ltd according to accessibility (excluding overgrown and/or wooded areas) and

proposed scheme impact, based on the September 2011 client masterplan. Certain accessible areas within Cae Glas were not surveyed as the September masterplan did not indicate extensive development in these areas (cf. <u>para. 2.2</u> for the location of these key areas as well as the surveyed areas and <u>Appendix I</u> for a reproduction of the *Stratascan* report).

This phase is to be regarded as the **second stage** of a staged programme of archaeological evaluation, preceded by the geophysical magnetometer survey of targeted areas. The aim of the current phase is to establish the archaeological significance of the targeted portions of the site, to assess the impact of the development proposals and to help inform future decision making, design solutions and further archaeological evaluation and/or archaeological mitigation strategies. The current staged programme (targeted trenching) will be completed pre-planning application. Further stages will be discussed in future GAT project designs and may include additional evaluation and/or mitigation.

Gwynedd Archaeological Planning Service (GAPS), on behalf of the Local Planning Authority, has not prepared a mitigation brief for this phase but have been informed of the results of the preceding archaeological assessment completed by GAT (Davidson, A. and Evans, R. 2011 GAT Report **968**).

The current design conforms to the guidelines specified in the *IFA Standard and Guidance for Archaeological Evaluation* (Institute of Field Archaeologists, 1994, rev. 2001 & 2008).

2.0 BACKGROUND

2.1 Archaeological Assessment

GAT completed an archaeological assessment of the development site (incorporating all three areas) in August 2011 (Davidson, A. and Evans, R. 2011 GAT Report **968**).

The assessment identified a development area "rich in history and archaeology. A wealth of sites from the Neolithic to the Second World War survives, including significant remains of the Penrhos estate." (GAT Report **968**: 24).

The report summarised that the "potential for the existence of buried archaeology is considered to be high in the Penrhos and Cae Glas areas, and moderate to high in the Kingsland area" (*ibid*). Recommendations included "field evaluation for areas of proposed impact which could potentially contain buried archaeology...(and that the risks) proposed by the discovery of significant buried archaeological sites are to be managed by liaison with project designers to try to limit impact and minimise the need for large-scale archaeological excavations" (*ibid*.: 01). With particular reference to Kingsland and Cae Glas, these areas are situated close to a number of known archaeological sites and adjacent to the site of a major archaeological excavation carried out between 2006 and 2010 at Parc Cybi.

Within the individual areas, the assessment report summarised the known archaeological sites (identified either via a walkover survey, consultation of the Historic Environment Record/Regional Archives or a combination of both).

Number	Name	Category	Impact	Recommendations
1	Bodwredd Farmhouse	С	Unknown	Basic recording
2	Site of Buildings	E	Unknown	Trial Excavation
3	Site of Cottage	E	Unknown	Trial Excavation
4	Site of Ty'n y Coed Farmhouse	E	Unknown	Trial Excavation
5	Site of Cae'r Ty Hen Farmhouse	E	Unknown	Trial Excavation

2.1.1. Kingsland

All identified sites are post-medieval farmsteads, though only Site 1 contains any upstanding remains. This site is considered to be of local importance, and it is anticipated that the other four sites would, if any remains survive, be of similar status. The level of below-ground preservation is not known, but this could be easily determined at sites 2 - 5 by trial excavation (trenching), following which an appropriate course of mitigation could be decided upon. This would only be necessary if the sites were to be directly impacted upon (*ibid*.: 21).

Based on the current masterplan, only **Site 2** appears to be directly affected by the proposed development. The geophysical survey did not identify any anomalies at this location bar a linear anomaly (8a) at the general location; both the location of **Site 2** and anomaly 8a will be investigated via GAT Trench 6; at present **Sites 1, 3** to **5** do not appear directly affected by the (December) masterplan.

2.1.2 Cae Glas

Number	Name	Category	Impact	Recommendations
7	Trefignath	E	Unknown	Trial excavation
	Farm			
8	Trefignath	А	Unknown	Avoidance Essential, Statutorily
	Burial			Protected as a SAM. Every effort should
	Chamber			be made to avoid excessive visual
				intrusion. It must be possible to appreciate

				the monument in its landscape setting.
9	Tyddyn Bach	E	Unknown	Trial excavation
10	Tidal Mill at	В	Unknown	Detailed Recording
	Felin-Heli			
11	Tre-Ddaniel	E	Unknown	Trial excavation
12	Cae Glas	С	Unknown	Basic Recording
	Farm			
13	Tre'r Gof	В	Unknown	Detailed Recording and excavation
	Farm			
14	Treaddur	В	Unknown	Avoidance Every effort should be made
	Burial			to avoid any disturbance to this
	Chamber			monument.
33	Roman coin	E	Unknown	None
	hoard			
	findspot,			
	Trearddir			
34	Pillbox	В	Unknown	Retain <i>in situ</i>
35	Pillbox	В	Unknown	Retain <i>in situ</i>
36	Pillbox	В	Unknown	Retain <i>in situ</i>

The study area has been shown to be potentially rich in archaeological remains. It contains two Neolithic chambered cairns (one of them scheduled). The area is similar in character to Parc Cybi, where considerable remains of buried archaeology were found. The presence of the cairns and the Roman coins suggest buried archaeology is likely in this area also. The remains at Tre-gof have the potential to considerably enhance our understanding of the development of medieval settlement. The tide mill at Tre'r-gof is also of late medieval date and of archaeological significance as the earliest of a series of tide mills which lay within the inland sea.

The GAT assessment report recommended "given the known quality and quantity of archaeological remains in the vicinity, the study area is thought to have high potential for the survival of archaeological remains. It is recommended that a programme of field evaluation be undertaken. This should adopt a phased approach, of which the first phase would be geophysical survey with a possible subsequent phase of trial trenching. The trial trenching phase would typically consist of the excavation of a series of trenches 20m by 2m which would target features previously identified and also sample other areas, and would consist of a 5% sample of the area to be developed" (*ibid*.: 21).

The current evaluation stage will target specific geophysical anomalies, within accessible targeted areas. At present GAT report **968** Sites **7**, **9** & **11** (all recommended as evaluation trenching locations) will not be targeted as they are either outside the main masterplan impact zones or are currently overgrown/within woodland areas. <u>No sites listed above will be mitigated at this stage</u>

2.1.3 Penrhos

Number	Name	Category	Impact	Recommendations
6	Stanley Gate Tollhouse	В	Unknown	Retain <i>in situ</i>
15	Penrhos Bailiff's Tower and	В	Unknown	Retain <i>in situ</i>
	Home Farm			
16	Penrhos Betting Stand	В	Unknown	Retain <i>in situ</i>
17	Penrhos Candle Tower and	В	Unknown	Retain <i>in situ</i>
	walls adjoining remains of			

	Penrhos House			
18	Penrhos Water tower	В	Unknown	Retain <i>in situ</i>
19	Penrhos Garden	В	Considerable	Detailed Recording
20	Penrhos House	В	Unknown	Detailed recording
21	The Tower, Penrhos	В	Unknown	Detailed recording
22	The Battery	А	Unknown	Retain <i>in situ</i>
23	Prehistoric standing stone	В	Unknown	Retain <i>in situ</i>
24	Flint finds, Penrhos Bay	E	Unknown	Field evaluation
25	Boathouse	В	Unknown	Detailed recording
26	Bathing house	С	Unknown	Basic recording
27	Fish weir	В	Unknown	Retain <i>in situ</i>
28	Fish weir	В	Unknown	Retain <i>in situ</i>
29	Fish weir	В	Unknown	Retain <i>in situ</i>
30	Beddmanarch	С	Unknown	Basic recording
31	Roman coin hoard findspot,	E	Unknown	None
	Penrhos			
32	Penrhos Lodge, Penrhos	В	Unknown	Retain in situ

The Penrhos estate was the seat of the principal land and property owners on Holy Island for over 400 years, starting with John ap Owen in the 16th century, and passing into the hands of the Stanley family following the marriage of Margaret Owen to Sir John Thomas Stanley in 1763. The Penrhos study area is entirely contained within the former Demesne lands. The layout of the demesne became more elaborate in the latter part of the 18th century and into the 19th (Penrhos II 772). By the time of the 1st edition Ordnance Survey Map of 1888 the estate included elaborate gardens to the east and south of the mansion, a racecourse and a well-developed home farm. Though the house has been demolished and the gardens very overgrown there are still 7 listed buildings associated with the estate, of which three are towers. Much of the area currently forms part of the Penrhos Coastal Park.

The GAT assessment report recommended that "the significant nature of the formal estate layout requires that a full survey be carried out of all the buildings on the estate. It is considered that most of the structures could remain *in situ*, and that new development could be placed in such a manner that the most significant elements of the historic landscape are retained. Geophysical survey should be carried out on those open areas where this technique is considered suitable, in advance of trial trenching. An area covering approximately 5% of the area to be developed should be covered by the trial trenching" (*ibid*.: 22).

The geophysical survey (evaluation stage 1) was completed within the most accessible areas within the Penrhos development zone, viz., the northernmost area closest to the coastline; the remaining areas were inaccessible or impractical to survey at this time. The current evaluation stage (stage 2) will target specific geophysical anomalies within the proposed scheme footprint. No sites listed above will be mitigated at this stage.

2.2 Geophysical Magnetometer Survey

2.2.1 Introduction

Stratascan completed a gradiometer survey across a total area of *c*.62.0ha, which equates to *c*.25% of the proposed development area (specific methodology can be found in *Stratascan* report ref. **J3015**; January 2012, para. 3/page 6).

GAT subdivided the three development zones into targeted geophysical Zones; the locations were based both on the September client masterplan (the work was commissioned prior to the submission of the December masterplan) and accessible Zones/Zones suitable for survey (based on observations made during the GAT walkover survey of the development completed as part of Report **968**).

2.2.2 Results

The results are based on anomalies interpreted by *Stratascan* from the survey results (cf. reproduction of *Stratascan* report **J3015** in <u>Appendix I</u>). These anomalies are classed as either probable archaeology, possible archaeology or other (geological or unknown). They are not a definitive guide to all below ground archaeological potential, but provide guidance on below ground disturbance indicative of human activity as well as geological and pedological activity.

Kingsland

The entire survey area was designated by GAT as C1 (see <u>Figure 2</u>). The survey area was defined by the client September masterplan and did not target the western end of the development area.

The *Stratascan* survey identifed "probable" archaeological anomalies within the western portion of the survey area and "possible" archaeological anomalies across the entire survey area.

The probable archaeological anomalies (anomalies 8a to 8d) were classed as "significant". Anomalies 8a, b and c appear as linear cut features, possibly ditches; anomaly 8c appeared to be a semi-circular bank and ditch that could be interpreted as a prehistoric settlement site. The other "significant" anomalies were linear cuts (anomalies 9 and 10a/b) located to the southwest and southeast respectively.

The possible anomalies included a series of pit-type features clustered within the centre of the development zone (anomaly 38), with a more disparate collection of pit-type features (anomaly 42), located to the north. A broad linear area of irregular anomalies (designated as anomaly 43) were located towards the eastern end of the development; the possible feature type for this anomaly could not be defined.

- Whilst *Stratascan* were confident that anomaly 38 could be a pit cluster (albeit under the "possible" category), anomalies 42 and 43 were characterised as having archaeological potential, but equally with "the appearance and texture of geological or pedological responses".
- Anomaly 8c appears likely to be a prehistoric site; this interpretation is based both on the distribution of the anomaly and the known archaeology within the local area.
- Anomalies 8a, b and d, surrounding 8c, appear to be field enclosure systems, which are not apparent on any historical mapping; their association with 8c could not be determined without further investigation.
- Anomalies 10a and 10b appear to be field systems; they are not apparent on any historical mapping, so could be of medieval origin,
- Anomaly 38 appears to be a cluster of large pits; their origin could not be determined without further investigation.

- The amorphous anomalies represented 42 and 43 are inconclusive in terms of origin and would require further investigation.
- Anomaly 51, interpreted by *Stratascan* as "linear magnetic debris of unknown origin", appears to correlate with a former post-medieval field boundary extant on the 1st Edition Ordnance Survey map.

Along with Cae Glas, this area could be classed as one of high archaeological potential, for all periods, with prehistoric activity a high probability, based both on the survey results and the close proximity prehistoric archaeology within the Historic Environment Record.

The client masterplan indicates that the majority of the development zone will be directly impacted by the scheme, except for the western edge characterised by bedrock. The westernmost plot was not surveyed by *Stratascan* because the September masterplan did not include any development within this plot; the subsequent December masterplan did include development within this plot, encompassing the eastern half.

Cae Glas

The survey was completed within two accessible Zones within this area: B1, towards the centre of the development area, adjacent to the A55 and B5, towards the western end of the development area, also adjacent to the A55. The remaining Zones were not surveyed either due to inaccessibility (overgrown and/or plantations) or unsuitability (former landfill). The survey zones were targeted within development areas defined in the September 2011 client masterplan; subsequently the December 2011 client masterplan included additional development within GAT zone A4. This area was not surveyed by *Stratascan* as part of their survey programme, but is accessible.

The *Stratascan* survey did not identify any "probable" archaeological anomalies within either B1 or B5; "possible" archaeological anomalies were identified in both Zones, with "significant" possibles in B1 only. Made ground impact from a gas pipeline parallel to the A55 expressway was evident on the northern fringes of both B1 and B5, extending up to 20.0m into both zones. A large thermoremnant anomaly (45) was identified at the southern end of B1.

The possible anomalies within B1 included at least one example: anomaly 24 that was identified on the 1889 1st Edition Ordnance Survey map as a former field boundary. Anomaly 22 (a, b and c) was not identified on any historic mapping as a field boundary line, despite the regular shape. However, in this instance, it is possible it is the remnants of a medieval field boundary as such activity was identified during the neighbouring archaeological excavation at the site of the business park (west of B5). Two pit-shaped anomalies were identified towards the southern end of B1 (anomaly 27) that could indicate prehistoric archaeological activity, ditto anomaly 29 towards the centre of the zone. In terms of B5, the anomalies were limited to a series of linears close to the A55/gas pipeline. These could not be correlated with historic mapping. The majority of the zone was dominated by anomaly 52, interpreted by *Stratascan* as geological in origin. GAT suspects that a Roman trackway could form part of this anomaly, based on the extrapolation of a route identified during the neighbouring archaeological excavation at the site of the business park (west of B5).

Apart from anomaly 24 (nineteenth century field boundary), no other anomalies could be directly correlated with any mapping evidence identified in GAT Report **968**. As stated above, it is possible that a Roman trackway could be extant in B5, based on GAT information from the business park site, but this was "masked" by geological magnetic noise.

There is limited evidence of Tre'r Gof farmland apportionment within the survey results and this is limited to zone B1.

This is, however, an area of high archaeological potential, for all periods, with prehistoric activity a high probability. This is based both on the results of the large-scale excavation programme completed by GAT at the site of the business park, as well as the close proximity Trefigniath burial chamber (Scheduled Ancient Monument ref AN011; NGR SH25868055) and the Treaddur Hut Group (Scheduled Ancient Monument ref AN011; NGR SH26207980). Geophysical surveys are often unable to pinpoint individual prehistoric pits or pit clusters on a micro scale and tend to identify anomalies associated with prehistoric settlements on a larger scale (as is suggested by anomaly 8c in the *Stratascan* report). Anomaly 27 at the southern end of Zone A1 may indicate the presence of such activity, whilst anomaly 45 could be the location for a prehistoric burnt mound.

The client masterplan indicates that the proposed development will impact directly on Zone B1 whereas B5 will be limited to a heathland walk and/or low impact (i.e. *Grasscrete* style) parking.

Penrhos

The survey was completed mainly across the coastal headland to the north of the former Penrhos Estate buildings (except for A4, completed to the west of the Estate). The *Stratascan* survey identified probable archaeology on zones A1 and A2, and possible archaeology in all five areas. "Significant" archaeology was identified in both A1 and A2, classified by signal strength, size and orientation. The survey also confirmed the existence of shallow bedrock (less than 1.5m – the limit of survey depth) across large portions of A1, A2 and A7; A4 contained extensive evidence of "made ground", probably associated with localised estate management activities.

The "significant" anomalies identified by Stratascan were mainly linear in form and/or enclosures of sub-rectangular shape. GAT examined a series of historical estate maps and ordnance survey maps (all reproduced in GAT Report 968), to determine if any of these anomalies could be interpreted as former field boundaries and/or estate trackways. In Area A1, the main set of "significant" anomalies is two sub-rectangular enclosures (with associated smaller anomalies) to the immediate southeast of a Napoleonic era battery (SH26738176; PRN 7168). An examination of historic mapping, suggests that the smaller sub-rectangular anomaly could be related to a small enclosure (plot 14) detailed on the Penrhos Demense map c.1817 (Bangor Archives II 802; reproduced in GAT Report 968/Figure 12). The larger sub-rectangular anomaly could not be identified on any available historic mapping, but it may be a later enclosure addition. Associated Stratascan anomaly 1a could be a track indicated on the 1817 map. Within the same Demesne map, plot 16 could be a "possible" archaeological anomaly identified on the Stratascan survey (anomaly reference 13a). Anomaly 2a could be a field boundary from an earlier estate map: Penrhose (sic) the seat of Sir John Thomas Stanley c.1769 (Bangor Archives Penrhos II 772 GAT Report **968**/Figure 09)

In Area A2, the "significant" anomalies appear mainly to be a series of sub-rectangular enclosures. Whilst they have not been identified on the 1769 or 1817 estate maps (or the post 1889 Ordnance Survey Maps), these anomalies appear to be evidence for small enclosures or horse paddocks that formed part of the estate (note: anomaly 4a, extant as two parallel linears, could be a trackway separating plots 19 and 21 on the 1817 map).

In Area A4, *Stratascan* identified "moderate" possible archaeological anomalies as well as evidence for made ground. The moderate anomalies could not be rectified with any historical

mapping but the existence of made ground suggests the area has experienced postmedieval intrusion.

In Area A7, *Stratascan* identified amorphous anomalies of probable geological or pedological origin, as well as a possible "bank or earthwork" (anomaly 21). This anomaly could be associated with small area apportionments to the immediate west of the estate gardens indicated on the 1769 estate (which are subsequently absent on the 1817 map, where the area has been transformed into a large enclosed field), although nothing could be definitively identified.

The geophysical survey results and the historic mapping point towards an extensive period of estate management, evident both historically and physically. The difference between the 1769 and 1817 estate maps in particular point to the radical changes brought to the estate apportionments between the late eighteenth and early nineteenth centuries.

3.0 METHOD STATEMENT

3.1 Trial Trenching/Targeted Excavation

Before trial trenching commences an agreed programme of excavation timing, siting, duration, surface re-instatement and health and safety protection measures will be agreed with the Client and Gwynedd Archaeological Planning Services (GAPS).

All trench locations are based on been informed by the results of an archaeological assessment of the development area completed by GAT in August 2011 (Report 968) as well as a geophysical magnetometer survey completed by *Stratascan* in December 2011 (ref. J3015). For the location of individual trenches cf. Figures 3 to 5.

Note: this evaluation will target specific zones and anomalies and does not encompass the development area as a whole nor all recommendations within GAT Assessment Report 968. These will be discussed in separate GAT project designs/future stages.

Kingsland (figure 3)

- Trench 01 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 8c: a "semi-circular cut feature" of possible prehistoric origin; part of a series of positive and negative anomalies appearing at the western end of Kingsland consisting of enclosure-type ditches (8a + 8b), a positive circular anomaly with associated negative responses (8c) and a weak positive semi-circular trend (8d)
- Trench 02 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 9: a long, narrow, double-ditched feature appearing just south of Anomaly 8
- Trench 03 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 8d; a "semi-circular cut feature" of possible prehistoric origin; part of a series of positive and negative anomalies appearing at the western end of Kingsland consisting of enclosure-type ditches (8a + 8b), a positive circular anomaly with associated negative responses (8c) and a weak positive semi-circular trend (8d)
- Trench 04 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 8a; a cut and bank linear feature; part of a series of positive and negative anomalies appearing at the western end of Kingsland consisting of enclosure-type ditches (8a + 8b), a positive circular anomaly with associated negative responses (8c) and a weak positive semicircular trend (8d)
- Trench 05 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 8b; a banked linear feature; part of a series of positive and negative anomalies appearing at the western end of Kingsland consisting of enclosure-type ditches (8a + 8b), a positive circular anomaly with associated negative responses (8c) and a weak positive semi-circular trend (8d)
- Trench 06 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 8a/GAT Assessment Report **968** Site 2, the location from historic mapping Bodwredd farm buildings (GAT Report 968 figures 7 and 8), which were abandoned before the publication of the 1889 1st edition Ordnance Survey 25 inch map and not currently visible on the surface.
- Trench 07 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 40, comprising two small pit-like anomalies appear just north of Anomaly 39
- Trench 08 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 10a, a doubleditched cross-shaped feature within the Kingsland site that may have similar origins to Anomaly 9 (Trench 2) as they both appear on the same alignment and are both double-ditched features. Trench 9 also targets anomaly 10a to the southeast
- Trench 09 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 10a, a doubleditched cross-shaped feature within the Kingsland site that may have similar origins to Anomaly 9 (Trench 2) as they both appear on the same alignment and are both double-ditched features. Trench 8 also targets anomaly 10a to the northwest.
- Trench 10 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 38; part of a series small pit-like anomalies that seem to cluster towards Anomaly 35 (partial rectilinear cut)

- Trench 11 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 38; part of a series small pit-like anomalies that seem to cluster towards Anomaly 35 (partial rectilinear cut)
- Trench 12 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 38; part of a series small pit-like anomalies that seem to cluster towards Anomaly 35 (partial rectilinear cut)
- Trench 13 20.0m (I) x 2.0m (w): targeting *Stratascan* anomalies 35 (partial rectilinear cut) and 38 (part of a series small pit-like anomalies that seem to cluster towards Anomaly 35)
- Trench 14 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 42 cluster of positive and negative linear and circular anomalies of uncertain archaeological or geological appear in the field alongside the leisure centre. It seems to have the characteristics of most archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. It is difficult to ascertain the origin of this anomaly, without intrusive investigation.
- Trench 15 20.0m (I) x 2.0m (w): targeting *Stratascan* anomalies 36 and 37 two isolated linear anomalies that do not appear related to other anomalies within the local area.
- Trench 16 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 43b targeting a specific example from "a broad linear area of strong negative responses cuts across the north eastern corner of Area C1 (43a). Strong positive anomalies made up of broad curvilinear linear features, which run along the route of Anomaly 43a, and smaller circular pit-like anomalies that are dotted alongside Anomaly 43a. It is uncertain whether these anomalies are of archaeological or geological origin. It seems to have the characteristics of most archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. It is difficult to determine, the origin of these responses without intrusive investigation" (*Stratascan* report J3015: 14).

The Kingsland area geophysics is characterised by linear anomalies forming apparent enclosure systems and disparate pit-type features suggesting multi-period activity across the development area. The area encompassing anomaly 8 (and its derivations) will be of particular interest in determining if these anomalies represent prehistoric activity akin to the settlement sites identified at the Parc Cybi excavations. GAT Report **968 Site 2** (post-medieval farm buildings) will be investigated as part of Trench 6.

The geophysical survey/trial trenching will be targeting the central and eastern portion of the development zone. The western zone has not been evaluated at this time.

Cae Glas (figure 4)

- Trench 17 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 27: "Two pit-like anomalies, with some associated negative responses, appear in close proximity to each other in the southern corner of Cae Glas. As they appear to be in isolation, it is difficult to assess whether they relate to the other anomalies in the local area or are of a different origin" (*Stratascan* report J3015: 15).
- Trench 18 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 25: "a weak positive semi-circular feature" (*Stratascan* report J3015: 14).
- Trench 19 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 29b "Strong positive and negative anomalies of uncertain archaeological or geological origin appear across the northern half of Cae Glas. It is difficult to assess, without intrusive investigation, what the precise origin of these anomalies" (*Stratascan* report J3015: 15).
- Trench 20 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 29a "Strong positive and negative anomalies of uncertain archaeological or geological origin appear across the northern half of Cae Glas. It is difficult to assess, without intrusive investigation, what the precise origin of these anomalies" (*Stratascan* report J3015: 15).
- Trench 21 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 22c; "a partially double-ditched anomaly (that) appears to run from the north eastern field (22a) down into the larger south western field of Cae Glas (22b, 22c and 22d). Anomaly 22c and 22d run close by to some existing enclosures (*Stratascan* report J3015: 14)". GAT has suggested that this could be part of a medieval field system as they do not match any boundaries extant on Ordnance Survey mapping.
- Trench 22 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 29c "Strong positive and negative anomalies of uncertain archaeological or geological origin appear across the northern half of Cae Glas. It is difficult to assess, without intrusive investigation, what the precise origin of these anomalies" (*Stratascan* report J3015: 15).

Trench 23 - 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 45, a"moderate strength discrete anomaly (that) appears towards the south west of Area B1. This is possibly an archaeological thermoremanent feature, and further investigation will determine its true origins (*Stratascan* report J3015: 14)". GAT has suggested that this could be evidence for a prehistoric burnt mound.

The geophysical survey and proposed evaluation trenching are focused on the centralnorthern portion of the proposed development, targeting anomalies indicative of former field systems and possible pit groups. The remaining areas have not been targeted at this time either because they are inaccessible (woodland/overgrown) or appear from the masterplan to be retained as woodland or heathland. The former landfill site has not been targeted as this is deemed to be a previously disturbed area. The majority of the evaluation trenches are located within the proposed estate lodges zone (figure 4) close to the Expressway. The proposed parking zone immediately south of this will initially be evaluated with Trench 17 and Trench 23; the current (December) masterplan details an apparent low impact parking zone (i.e. minus tarmacadam; utilising a *Grasscrete* type suface) and Trenches 17 and 23 could help determine the extent of toposoil/subsoil deposition within this area, versus the impact depth of the parking zone and associated infrastructure. Whilst geophysical survey area B5 is accessible, it has not been selected for pre-planning evaluation stage 2 as the December masterplan implies that the area will currently be limited to a heathland walk and/or low impact (i.e. *Grasscrete* style) parking.

Penrhos (figure 5)

- Trench 24 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 2b a linear anomaly.
- Trench 25 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 1d: a narrow anomaly, possibly a bank.
- Trench 26 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 13a "(which appears to have) the straight line character of most probable archaeological anomalies and yet also...the appearance and texture of geological or pedological responses (which seems) to form a partial former enclosure or field but it is difficult to deduce without intrusive investigation" (*Stratascan* report J3015: 15).
- Trench 27 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 3a "A cross-shaped feature made up of cut linear anomalies running north west to south east and north east to south west with some associated negative responses. Possibly the intersection of four former fields" (*Stratascan* report J3015: 14).
- Trench 28 20.0m (I) x 2.0m (w): targeting *Stratascan* anomalies 3b and 3c; "A long straight positive linear feature running north east off of Anomaly 3a. This anomaly stretches the entire length of the field and runs in the same orientation to the current field system, suggesting it is of similar date (3b)" and "A cross-shaped feature made up of a narrow cut anomaly running northwest to southeast. It is crossed at the middle by two short positive linears that are closely parallel with each other, running north east to south west. A long narrow negative anomaly trails off towards the south of the field at the western end" respectively (*Stratascan* report J3015: 14 & 15).
- Trench 29 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 6 "a linear, partially double-ditched feature with a narrow bank running in between each ditch. This anomaly runs northwest to south east which is roughly perpendicular to Anomaly 5. It is possible, therefore, that this anomaly may be related to Anomaly 5, as a field boundary" (*Stratascan* report J3015: 15).
- Trench 30 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 7, "Two short, narrow negative linear features run north west to south east parallel to each other out from the southernmost boundary of the northern field (*Stratascan* report J3015: 14)".
- Trench 31 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 4a, part of "A collection of mainly positive linear anomalies, with some associated negative responses, ranges across the south eastern field in (Penrhos) and is probably associated with a former field system (*Stratascan* report J3015: 14)"; anomaly 4a is characterised as "A long double-ditched linear feature that runs parallel to the northern boundary of the field" (*ibid.*). GAT has suggested that this could be part of a paddock field system associated with the Penrhos Estate.
- Trench 32 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 4d, part of "A collection of mainly positive linear anomalies, with some associated negative responses, ranges across the south eastern field in (Penrhos) and is probably associated with a former field system (*Stratascan* report J3015: 14)"; anomaly 4d is characterised as "Three linear anomalies cross each of the 4c anomalies south west to north east at the top, middle and bottom. If each extended towards each other, they are likely to link both the 4c anomalies together in a grid" (*ibid*.); unlike anomaly 4a, this anomaly includes both a suspected ditch and bank. GAT has suggested that this could be part of a paddock field system associated with the Penrhos Estate.

- Trench 33 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 4d, part of "A collection of mainly positive linear anomalies, with some associated negative responses, ranges across the south eastern field in (Penrhos) and is probably associated with a former field system (*Stratascan* report J3015: 14)"; anomaly 4d is characterised as "Three linear anomalies cross each of the 4c anomalies south west to north east at the top, middle and bottom. If each extended towards each other, they are likely to link both the 4c anomalies together in a grid" (*ibid*.); unlike anomaly 4a, this anomaly includes both a suspected ditch and bank. GAT has suggested that this could be part of a paddock field system associated with the Penrhos Estate.
- Trench 34 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 21, a narrow linear anomaly.
- Trench 35 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 20, "A broad strong positive linear anomaly of uncertain archaeological or geological origin cuts across the middle of Area A3. It seems to have the straight line character of most archaeological anomalies and yet also have the appearance and texture of geological or pedological responses. It is difficult to predict, without intrusive investigation, what is the origin of this anomaly" (*Stratascan* report J3015: 14).
- Trench 36 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 1a, part of "A collection of positive and negative linear anomalies arranged in a rectilinear fashion towards the western end of Penrhos (*Stratascan* report J3015: 14)"; 1a is characterised by a "Wide cut and banked linear features forming the main shape of the enclosures" (*ibid*.). GAT has suggested that this could be a trackway extant on the Penrhos Demense map c.1817 (Bangor Archives II 802; reproduced in GAT Report 968/Figure 12).
- Trench 37 20.0m (I) x 2.0m (w): targeting *Stratascan* anomaly 1e, part of ", part of "A collection of positive and negative linear anomalies arranged in a rectilinear fashion towards the western end of Penrhos (*Stratascan* report J3015: 14)"; 1e is characterised by a "curvilinear banked feature (that) appears to form the north eastern corner of the enclosure, with some positive cut features alongside." (*ibid.*). The origin of the apparent large enclosure that includes anomaly 1e is unclear, but the smaller enclosure "attached" to the northwestern end of the enclosure appears to be "plot 14" detailed on the Penrhos Demense map c.1817 (Bangor Archives II 802; reproduced in GAT Report 968/Figure 12); whilst the larger sub-rectangular anomaly could not be identified on any available historic mapping, it may be a later enclosure addition and Trench 37 may inform this hypothesis.

The geophysical survey and proposed evaluation trenching are focused on the northern portion of the proposed development area, within large enclosed fields situated between the coastline and the former Penrhos Estate buildings. Figure 5 details the proposed extent of the lodges (outlined in green), with the remaining areas towards the coastline appear to be retained as managed coastal areas. The development areas east and south of the former Penrhos Estate buildings are currently wooded and have not been evaluated at this time.

Land and Lakes (Anglesey) Ltd commissioned 6No 500mm wide x 3000mm long x >2000mm deep geotechnical test pits within the area encompassed by the Penrhos evaluation zone (geotechnical report reproduced as Appendix II). Test pits 1 to 3 were located in the vicinity of proposed GAT trenches 26 to 28 and identified topsoil/subsoil to a depth between 400mm and 600mm, followed by drift geology. Test Pits 4 to 6 were located in the vicinity of proposed GAT trenches 29 to 32 and identified topsoil/subsoil to a depth between 300mm

and 600mm, followed by drift geology. The deep topsoil appears indicative of agriculturally improved land.

3.1.1 Specific Methodology

- If significant archaeological deposits are identified they will be manually cleaned, excavated and recorded to determine extent, function, date and relationship to adjacent features. Geotextile membranes may be used for preservation prior to backfilling
- The site will be planned to scale and trenches located via digital survey (*Trimble R8 GNSS GPS*).
- A written record of the trench content and all identified features will be completed via GAT pro-formas
- Any subsurface remains will be recorded photographically, with detailed notations and a measured survey. The photographic record will be maintained, using a digital SLR camera set to maximum resolution. <u>Photographic identification boards should also be used</u>.
- All trenches will be opened with a tracked excavator fitted with a toothless bucket
- <u>Any identified features will be temporarily cordoned with road pins/orange mesh</u> <u>fencing, for protection and to allow opportunity for Client/GAPS to attend/inspect.</u>
- If any trenches are to remain open overnight and/or weekends; provision for fencing off using road pins/orange mesh will be sought

3.1.2 Evaluation Aims

The evaluation will aim to address the following:

- Verify the efficacy of the geophysical survey for identifying archaeological remains within the site
- Establish the extent to which archaeological remains survive at the site within the targeted locations.
- Establish the date and nature of archaeological remains at the site and assess their implications for understanding the historical development of the area
- Establish the depth of archaeological remains and the quality, value and level of preservation of any deposits
- Assess the level of risk any surviving remains may pose to development.

NB. No specific reinstatement instructions have been supplied by client.

NB. If significant archaeological activity is identified within any trench (e.g. extensive and/or complex features/artefacts/deposits), cf. <u>para. 4.0</u>.

3.2 Report

Following completion of the stages outlined above, a report will be produced that will include:

- 1. Introduction
- 2. Project Design
- 3. Methods and techniques
- 4. Archaeological Background
- 5. Results
- 6. Proposals for further mitigation
- 7. Summary and conclusions
- 8. List of sources consulted.

The report will include the following:

a) a copy of the agreed specification

b) a site location plan based on current OS mapping

c) a trench location plan indicating trench positions relative to the development site and fixed manmade or topographic features

d) all identified features plotted on an appropriately scaled plan of the development site

e) appropriately scaled trench plans and sections showing identified features and significant finds

f) full dimensional and descriptive detail of all identified features

Provision should also be made for all archaeological work on site, including the postexcavation analysis, conservation of artefacts, any supplementary scientific analysis and for the subsequent publication of results in an appropriate journal.

3.3 Archive

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared. All plans, photographs and descriptions will be labelled and cross-referenced, and lodged in an appropriate place (to be decided in consultation with the regional Historic Environment Record) within six months of the completion of the project.

4.0 FURTHER ARCHAEOLOGICAL WORKS

- <u>The identification of significant archaeological features during the evaluation</u> <u>stage may necessitate further archaeological works. This will require the</u> <u>submission of new cost estimates to the contractor and may be subject to a</u> separate project design, to be agreed by the GAPS prior to implementation.
- This design does not include a methodology or cost for examination of, conservation of, or archiving of finds discovered during the evaluation, nor of any radiocarbon dates required, nor of examination of palaeoenvironmental samples associated with any peat deposits. The need for these will be identified in the post-fieldwork programme (if required), and a new design will be issued for approval by the GAPS Archaeologist.

5.0 ENVIRONMENTAL SAMPLES

If necessary, relevant archaeological deposits will be sampled by taking bulk samples (a minimum of 10.0 litres and maximum of 30.0 litres) for flotation of charred plant remains. Bulk samples will be taken from waterlogged deposits for macroscopic plant remains. Other

bulk samples, for example from middens, may be taken for small animal bones and small artefacts.

6.0 HUMAN REMAINS

Any finds of human remains will be left *in-situ*, covered and protected, and both the coroner and the GAPS Archaeologist informed. If removal is necessary it will take place under appropriate regulations and with due regard for health and safety issues. In order to excavate human remains, a licence is required under Section *25* of the Burials Act 1857 for the removal of any body or remains of any body from any place of burial. This will be applied for should human remains need to be investigated or moved.

7.0 SMALL FINDS

The vast majority of finds recovered from archaeological excavations comprise pottery fragments, bone, environmental and charcoal samples, and non-valuable metal items such as nails. Often many of these finds become unstable (i.e. they begin to disintegrate) when removed from the ground. All finds are the property of the landowner, however, it is Trust policy to recommend that all finds are donated to an appropriate museum where they can receive specialist treatment and study. Access to finds must be granted to the Trust for a reasonable period to allow for analysis and for study and publication as necessary. All finds would be treated according to advice provided within *First Aid for Finds* (Rescue 1999). Trust staff will undertake initial identification, but any additional advice would be sought from a wide range of consultants used by the Trust, including National Museums and Galleries of Wales at Cardiff, ARCUS at Sheffield and BAE at Birmingham.

Unexpected Discoveries: Treasure Trove

Treasure Trove law has been amended by the Treasure Act 1996. The following are Treasure under the Act:

- Objects other than coins any object other than a coin provided that it contains at least 10% gold or silver and is at least 300 years old when found.
- Coins all coins from the same find provided they are at least 300 years old when found (if the coins contain less than 10% gold or silver there must be at least 10. Any object or coin is part of the same find as another object or coin, if it is found in the same place as, or had previously been left together with, the other object. Finds may have become scattered since they were originally deposited in the ground. Single coin finds of gold or silver are not classed as treasure under the 1996 Treasure Act.
- Associated objects any object whatever it is made of, that is found in the same place as, or that had previously been together with, another object that is treasure.
- Objects that would have been treasure trove any object that would previously have been treasure trove, but does not fall within the specific categories given above. These objects have to be made substantially of gold or silver, they have to be buried with the intention of recovery and their owner or his heirs cannot be traced.

The following types of finds are not treasure:

- Objects whose owners can be traced.
- Unworked natural objects, including human and animal remains, even if they are found in association with treasure.
- Objects from the foreshore which are not wreck.

All finds of treasure must be reported to the coroner for the district within fourteen days of discovery or identification of the items. Items declared Treasure Trove become the property of the Crown, on whose behalf the National Museums and Galleries of Wales acts as advisor on technical matters, and may be the recipient body for the objects.

The National Museums and Galleries of Wales will decide whether they or any other museum may wish to acquire the object. If no museum wishes to acquire the object, then the Secretary of State will be able to disclaim it. When this happens, the coroner will notify the occupier and landowner that he intends to return the object to the finder after 28 days unless he receives no objection. If the coroner receives an objection, the find will be retained until the dispute has been settled.

8.0 STAFF & TIMETABLE

8.1 Staff

The project will be supervised by John Roberts, Acting Head of GAT: Contracts. The work will be carried out by fully trained Project Archaeologists who are experienced in conducting project work and working with contractors and earth moving machinery. (Full CV's are available upon request).

8.2 Timetable

It is expected that the trial will be undertaken in April 2012, in advance of a mid-May 2012 planning application submission.

9.0 HEALTH AND SAFETY

The Trust subscribes to the SCAUM (Standing Conference of Archaeological Unit Managers) Health and Safety Policy as defined in **Health and Safety in Field Archaeology** (1999).

10.0 INSURANCE

Liability Insurance - Aviva Policy 24765101CHC/00045

- Employers' Liability: Limit of Indemnity £10m in any one occurrence
- Public Liability: Limit of Indemnity £5m in any one occurrence
- Hire-in Plant Insurance: £50,000.00 any one item; £250,000.00 any one claim

The current period expires 21/06/12

Professional Indemnity Insurance – RSA Insurance Plc P8531NAECE/1028

• Limit of Indemnity £5,000,000 any one claim

The current period expires 22/07/12

11.0 BIBLIOGRAPHY

Davidson, A. and Evans, R. 2011. GAT Report **968**: PENRHOS LEISURE VILLAGE, ANGLESEY– Archaeological Assessment

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Figure 1 – Client development masterplan (issued December 2011)

Note: targeted geophysical survey zones were based on the September 2011 masterplan






Figure 2 – Targeted Geophysical Survey Zones



Figure 3 – Kingsland Targeted Geophysical Survey Zones/GAT proposed Trench Locations



Figure 4 – Cae Glas Targeted Geophysical Survey Zones/GAT proposed Trench Locations



Figure 5 – Penrhos Targeted Geophysical Survey Zones/GAT proposed Trench Locations





Gwynedd Archaeological Trust Ymddiriedolaeth Archaeolegol Gwynedd



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