Archaeoleg Brython Archaeology

# Fieldwork Report:
# Archaeological Evaluation Trenching
# Coleg Menai, Llangefni
# Document Number B1612.02.01

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# Coleg Menai
# Llangefni

Fieldwork Report:
Archaeological Evaluation Trenching

Prepared for Grŵp Coleg Llandrillo Menai

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B1612.02.01

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# *Crynodeb*

*Er mwyn goleuo cais cynllunio i ehangu tir o amgylch eu campws Llangefni, comisiynwyd Archaeoleg Brython gan Grŵp Coleg Menai Llandrillo i gwblhau gwerthusiad archaeolegol o ardal y datblygiad. Dangosodd arolwg geoffisegol magnetometer, cyflawnwyd gan Statascan Ltd., nifer o nodweddion a oedd yn ymddangos i fod yn gysylltiedig â system o gaeau afraid, a gweithgareddau amaethyddol o'r cyfnod Ôl-Ganoloesol a modern. Hefyd, cyflawnwyd arolwg Radar Treiddio Daear mewn ardal gyfagos i fynwent yn dyddio i'r Canoloesoedd Cynnar darganfyddwyd yn ddiweddar wrth adeiladu Ffordd Gyswllt Llangefni.*

*Cynlluniwyd rhaglen o ffosi er mwyn gwerthuso natur y nodweddion gwelir yn yr arolwg geoffisegol ac i asesu ardaloedd 'gwag', hynny yw heb unrhyw nodweddion amlwg. Lleolwyd nifer o ffosydd er mwyn darganfod terfyn y fynwent i fedryddu potensial yr effaith gallai gael ar y rhaglen adeiladu.*

*Cloddiwyd cyfanswm o 38 ffos, nid oedd Archaeoleg sylweddol yn bresennol yn y mwyafrif.*

*Llwyddodd y gwerthusiad i ddarganfod y mwyafrif o'r nodweddion gwelir ar yr arolwg geoffisegol. Dangoswyd mai hen gloddiau a draeniau yn gysylltiedig ag amaeth yn y r ardal oedd nifer o'r nodweddion, daearyddol oedd natur eraill.*

*Darganfyddwyd rhai nodweddion archaeolegol o ddiddordeb a all gael effaith ar y rhaglen adeiladu, gan gynnwys twmpath llosg a all ddyddio o'r Oes Efydd a tua 20-50 o feddi mewn parhad o fynwent Ganoloesol Gynnar Ffordd Gyswllt Llangefni.*

*Mae'r gwerthusiad hefyd wedi profi bod siawns o ddarganfod archaeoleg mewn ardaloedd sydd wedi cael eu heffeithio gan waith adeiladu diweddar.*

*Argymhellir bod samplau amgylcheddol a gasglwyd yn ystod y gwerthusiad yn cael eu prosesu er mwyn adennill deunydd palaeoamgylcheddol ar gyfer dyddio radiocarbon C14.*

*Os yw'r datblygiad yn mynd ymlaen argymhellir briff gwylio archaeolegol yn ystod unrhyw waith cloddio yn Safleoedd 1,2,3 a 5. Dylid diffinio a chloddio'r twmpath llosg yn Safle 4 cyn i'r gwaith clirio tir gychwyn, neu ar ddechrau'r gwaith. Dylid cael briff gwylio cynhwysfawr yn ystod holl waith clirio tir a chloddio yn weddill Safle 4 ac ochr ddeheuol Safle 6. Bydd angen cloddio'r fynwent i gyd cyn i'r gwaith clirio tir gychwyn i osgoi effaith negyddol ar y rhaglen adeiladu. Dylid stripio'r pridd o ochr ddwyreiniol Safle 6 dan reolaeth archaeolegol.*

# *Summary*

*To inform a planning application for the development of land surrounding their current Llangefni campus, Grŵp Coleg Menai Llandrillo commissioned Brython Archaeology to undertake a programme of archaeological evaluation to determine the archaeological potential of the proposed development area. A geophysical magnetometer survey, undertaken by Stratascan Ltd., revealed a number of anomalies which appeared to relate to a redundant field system and general post-medieval and modern agriculture. In addition, a Ground Penetrating Radar survey was undertaken in a small area immediately adjacent to an Early Medieval cemetery which was recently discovered during the construction of the Llangefni Link Road. An evaluation trenching programme was designed to assess the nature of identified anomalies and areas which appeared to be void of archaeology, the trenching programme was also designed to specifically identify the limits of the Early Medieval cemetery to gauge the potential impact of the proposed development. 38 trenches were excavated, the majority of which did not contain significant archaeology.*

*The evaluation was successful in identifying the majority of targeted anomalies seen on the geophysical survey. Some were shown to be former field boundaries and drainage features which are of little archaeological interest, others were shown to be geological in nature.*

*Archaeological features which are of greater interest and show that development of the area could potentially impact on significant archaeological deposits include a possible Bronze Age burnt mound and approximately 20 to 50 graves in a continuation of the Llangefni Link Road Early Medieval cemetery.*

*The evaluation also demonstrated that areas shown to have been disturbed by recent construction programmes in the vicinity could still have the potential to contain archaeological features.*

*It is recommended that environmental samples collected during the evaluation are processed to recover palaeoenvironmental material for C14 radiocarbon dating.*

*If the development proceeds it is recommended that Sites 1,2,3 and 5 are subject to an archaeological watching brief during construction. The possible Bronze Age burnt mound in Site 4 should be defined and excavated before, or at the outset of, ground clearance. The remainder of Site 4 and the southern edge of Site 6 should be subject to a comprehensive watching brief during all groundworks. The Early Medieval cemetery should be subject to full excavation prior to the clearance works commencing to avoid any risk of impact to the construction programme, the area surrounding the cemetery should be subject to an archaeological controlled strip at the outset of ground clearance.*

# 1 Introduction

Archaeoleg Brython Archaeology (ABA) was asked by Grŵp Coleg Llandrillo Menai (the Client) to undertake a programme of archaeological evaluation in advance of the expansion of their Llangefni Campus (NGR SH47027581) (see figure 1).

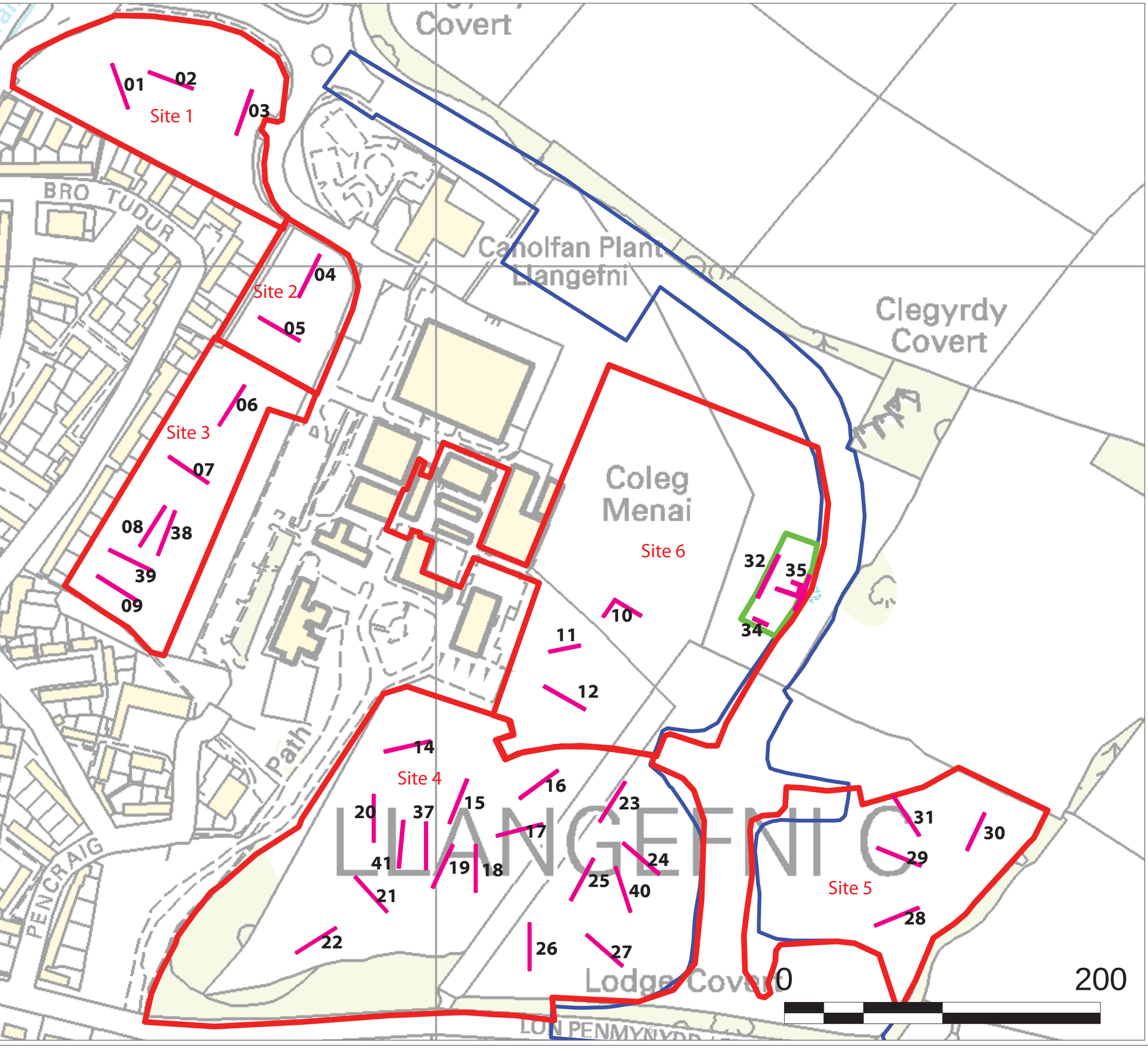
The proposed development area was sub-divided into six Sites which generally surround the existing campus.

- Site 1 is located to the north west of the existing campus directly opposite Ysgol y Graig, it measures approximately 13,200m$^2$.
- Site 2 is a small field to the north west of the existing campus, close to the main entrance. It measures approximately 5,690m$^2$.
- Site 3 is a field immediately west of the main campus car park and is bordered to the west by Bro Tudur and Pencraig housing estates. It measures approximately 12,250m$^2$.
- Site 4 occupies a large plot of land to the south of the main campus and is bordered to the south by Penmynydd road. It consists of two fields currently laid to pasture and some wooded areas probably associated with the Pencraig mansion estate. The eastern side of the Site is bounded by the newly constructed Llangefni Link Road. The area measures approximately 51,010m$^2$.
- Site 5 is located to the south east of the main campus on the eastern side of the newly built Llangefni Link Road. The area measures approximately 16,610m$^2$.
- Site 6 comprises parts of the existing campus and the land immediately to the east up to the newly built Llangefni Link Road. Much of the area has been disturbed by heavy plant training associated with the college. Despite this the eastern side of the site has high archaeological potential due to the discovery of an Early Medieval cemetery with exceptionally good bone preservation during the construction of the Llangefni Link Road. The total area measures approximately 39,250m$^2$.

Following consultation with Gwynedd Archaeological Planning Services (GAPS) Sites 4, 5 and the southern (undisturbed) part of Site 6 were subject to a geophysical magnetometer survey to identify underlying archaeology, (see figure 2). An area to the east of Site 6, immediately west of the cemetery identified on the link road, was subject to a Ground Penetrating Radar (GPR) survey in an attempt to establish the extent of the burials, (see figure 3). The full results of both surveys have been included in Appendix I.

This document details the results of the evaluation and suggested post-excavation tasks.

All works were undertaken to meet the standards of the Chartered Institute for Archaeologists Standard and Guidance for Archaeological Field Evaluation (2014).



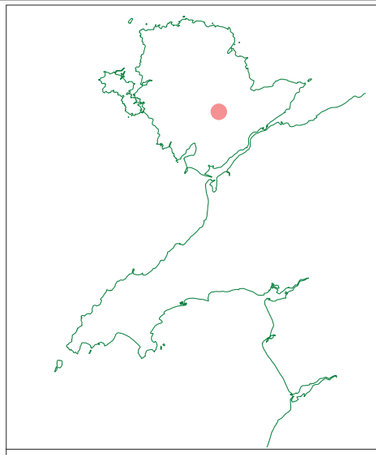



**Figure 1**
Location plan showing final evaluation trench locations.

**Key**

- Proposed Development Boundary
- Llangefni Link Road
- GPR Survey Area
- Evaluation Trenches



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| Drawn By: IGP | |
| Date: 02/02/17 | |
| Location: SH 4706 7585 | |
| Project: AB1612 | Scale: NTS - Scale Bar |

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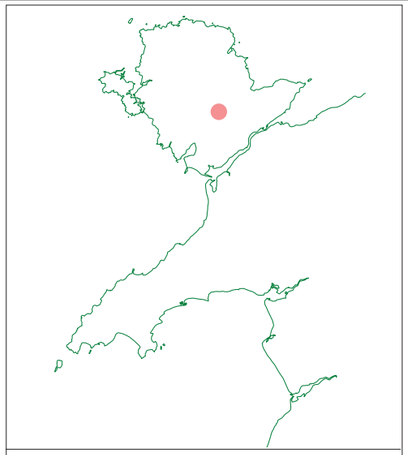

**Figure 2**
Geophysical Survey (magnetometer) interpretation with final trench locations.

**Key**

- Proposed Development Boundary
- Llangefni Link Road
- GPR Survey Area
- Proposed Trenches

Key to geophysical survey shown in Appendix I



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| Drawn By: IGP | |
| Date: 02/02/17 | |
| Location: SH 4706 7585 | |
| Project: AB1612 | Scale: NTS - Scale Bar |

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# 2 Background

## 2.1 Project Background

The proposed development will facilitate the expansion of the Llangefni campus of Coleg Menai Llandrillo to provide specialised training for proposed energy sector projects on Anglesey. Part of the development area will also be utilised for residential units.

## 2.2 Geology

The British Geological Survey's Geology of Britain viewer website shows that the superficial geology in the area consists of glacial till which formed in ice age conditions up to 2 million years ago, in the Quaternary Period. The underlying bedrock varies across the proposed development area. To the east of the current campus the bedrock consists of interbedded Sandstone and Conglomerate of the Clwyd Limestone group, which formed approximately 326 to 352 million years ago. These rocks were formed in a shoreline environment with sediments deposited in beaches and barrier islands. To the west of the current campus the bedrock also consisted of Limestone of the Clwyd Limestone Group which formed approximately 326 to 352 million years ago in the Carboniferous Period in shallow carbonate seas.

## 2.3 Brief Archaeological Background

The location of the proposed development has been recently researched due to its proximity to Sections 1 & 2 of the Llangefni Link Road. Very little archaeology was identified in the vicinity of the link road in a Desk Based Assessment (DBA) produced by AMEC (2014) and a subsequent programme of geophysical survey and archaeological evaluation trenching undertaken by Archaeology Services Durham University (2014) and Wessex Archaeology (2014) respectively, which appeared to confirm that very little archaeological remains were present. However, during the archaeological watching brief by ABA (2016) which was undertaken as mitigation during the construction of the link road an Early Medieval cemetery with exceptionally good bone preservation was identified.

The cemetery was located immediately east of Site 6 at NGR SH47237579 and extends into the proposed development area, although to what extent was not known at the time. The remains of 54 individuals had been identified in the preliminary osteological assessment, these were buried in both long cist graves and simple pit dug graves on a roughly east-west alignment. The GPR survey undertaken to try and identify the extent was not conclusive but a slight concentration of stone at the eastern side of the survey area could represent cist slabs.

A small number of unstratified Prehistoric flint artefacts and small fragments of Roman pottery were discovered in the vicinity of the cemetery suggesting earlier activity in the area.

A burnt mound, likely to be Bronze Age in date, was also identified at NGR SH47197594 during the construction of the link road. This highlights the possibility that prehistoric archaeology may be present in the proposed development area.

No archaeological sites or features are recorded within the proposed development area on the Gwynedd Historic Environment Record.

# 3 Aims and Objectives

The aim of the current work was to determine whether previously unrecorded buried archaeology was present at the site, its importance, and the extent to which it will be impacted by the development. The information will be used to determine the appropriate level of mitigation required to minimise any negative impacts resulting from the development. By effectively disseminating the results of the evaluation the work will also aim to increase knowledge and inform future management of the archaeological resources of the area.

The specific objectives of the evaluation trenching were:

- To determine whether archaeological features are present within the proposed development area by targeting anomalies identified in the geophysical survey and areas which appear to be void of archaeology.
- To evaluate and record identified features and determine date, function and stratigraphic relationships as far as is reasonably possible within the scope of the evaluation.
- To increase understanding of the archaeology and historical development of the area.
- To inform potential mitigation in relation to the development and future management of the site and wider area.

# 4 Methodology

The location and extent of the evaluation trenching was based on the results of the geophysical survey. A total of 38 trenches, generally measuring 1.6m x 30m, were excavated to evaluate all potential development Sites, including the eastern edge of Site 6 to evaluate the extent of the Early Medieval cemetery.

Three trenches were located in Site 1 to provide an idea of ground conditions and determine the extent of recent disturbance. Approximately 1.09% of the 13,200m$^2$ Site was evaluated.

Two trenches were located in Site 2, approximately 1.68% of the 5,690m$^2$ site was evaluated.

Four trenches were originally planned for Site 3, but a further two were excavated to evaluate possible linears. Approximately 2.35% of the total area of 12,250m$^2$ was evaluated.

21 of the trenches were located in Sites 4 and 5 providing a total evaluated area of 1008m$^2$ which equates to 2.13% of the accessible 47,242m$^2$.

Three trenches, including one 'L' shaped, were located in the accessible southern part of Site 6, a total area of 144m$^2$. Approximately 1.22% of the accessible 11,790m$^2$ was evaluated.

Up to five smaller trenches measuring 1.6m x 10m were proposed in the vicinity of the Early Medieval cemetery at the eastern edge of Site 6. As the objective of trenching in this area was to determine the limits of the Early Medieval cemetery, the programme did not strictly follow the original plan outlined in the WSI. Three trenches were excavated within the area, one of which was extended in various directions until the required information had been gained.

During the evaluation:

- Trenches were opened by mechanical excavator fitted with a flat, toothless ditching bucket under constant guidance of the archaeologist.
- Mechanical excavation continued until archaeological deposits or the natural glacial subsoil/bedrock was encountered.
- When archaeological deposits were encountered, mechanical excavation ceased and the features were cleaned and investigated by hand.
- All identified features were evaluated to gain as much information as possible within the scope of the evaluation, this included:
    - 50% of each discrete feature such as pits and post holes
    - At least 10% or 1m of linear features, terminals and intersections were investigated to gain additional information.
    - Surface area of the cist graves for positive identification.

- Bulk soil samples were collected from suitable deposits.
- All features were recorded in writing, drawn and photographed.
- Survey was undertaken using a Leica Viva GPS system.
- A photographic record of progress was made using a Nikon DSLR camera, images will be stored in .NEF/RAW format.

Following initial identification of archaeological features some trenches required extending to provide adequate interpretation.

# 5 Results

A total of 38 trenches were excavated to evaluate the archaeological potential of the site. Trenches were located to assess anomalies identified on the geophysical survey and areas which appeared to be void of archaeology. The majority of the trenches were located as shown in the Written Scheme of Investigation, a number were slightly repositioned to avoid unforeseen obstacles and some additional trenches were excavated in response to identified archaeology (see figure 1). Descriptions of trenches where archaeology was encountered are included below in paragraphs 5.2 – 5.6, a gazetteer of all trenches has been reproduced in Appendix II.

## 5.1 General Summary

No archaeology was encountered in Site 1 and Site 2 and both areas appeared to have been recently disturbed, probably during the construction works at Ysgol y Graig and Coleg Menai.

Site 3 also showed signs of being heavily disturbed during recent construction work at the college campus. Despite the disturbance two linear features were found in Trench 08, one of which contained an abraded sherd of pottery likely to be Roman in date. The trench was extended to identify the limits of the features, further investigation demonstrated that the features were shallow and may have been heavily truncated or potentially the result of bioturbation. Two additional trenches (Trench 38 & Trench 39) were excavated to the west and south of Trench 08, but did not reveal any archaeological features.

A total of 17 Trenches were excavates in Site 4, most of which revealed evidence of post-medieval and modern field drainage systems. A former field boundary was identified in Trench 22. Trench 19 & Trench 37 provided evidence a possible Bronze Age burnt mound and two small pits containing burnt mound material which may represent associated troughs see figure 3. Trench 41 was excavated to the west of Trench 37 to identify the extent of the feature, no evidence of the burnt mound was present.

Site 5 was in a very waterlogged area with two of the trenches having to be moved to avoid groundwater. Numerous land drains were found in this area, but no archaeological features.

The accessible portions of Site 6 were located to the south and east of the college's heavy plant training area. Trench 10 at the southern edge of Site 6 revealed a former field boundary and evidence of cut drainage or deep ploughing was found in Trench 12, all of which are likely to be post-medieval in date. The trenches at the eastern edge were positioned to locate the extent of the Early Medieval cemetery identified during the construction of the link road. At least 15 further graves and cists were visible within Trench 35, given the identified limits of the burials it is estimated that the area contains 20 to 50 graves, see figure 4.

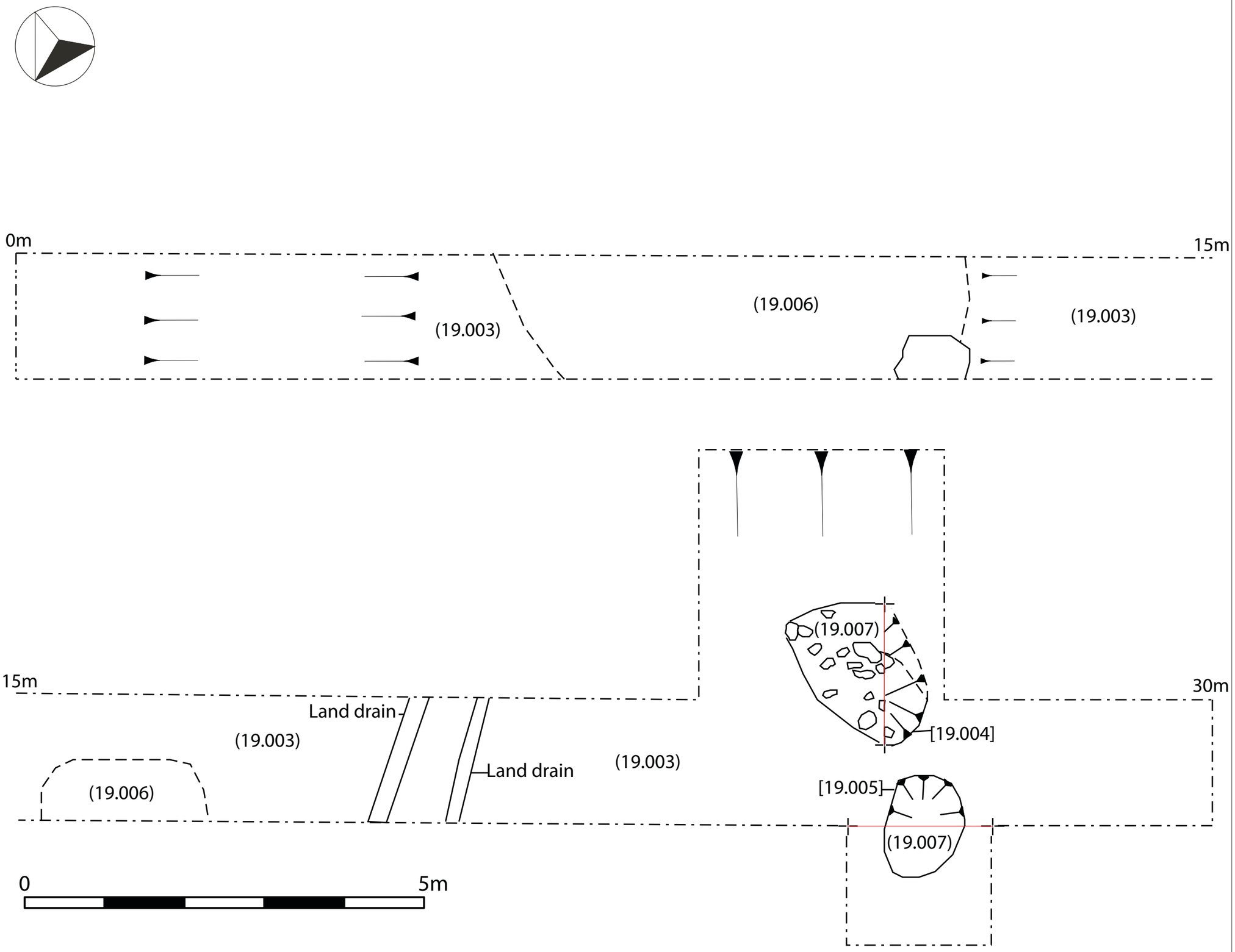


**Figure 3**
Plan of possible Bronze Age burnt mound in Trench 19



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| Drawn By: | KSS/IGP |
| Date: | 02/02/17 |
| Location: | SH 47004 75620 |
| Project: AB1612 | Scale: NTS - Scale Bar |

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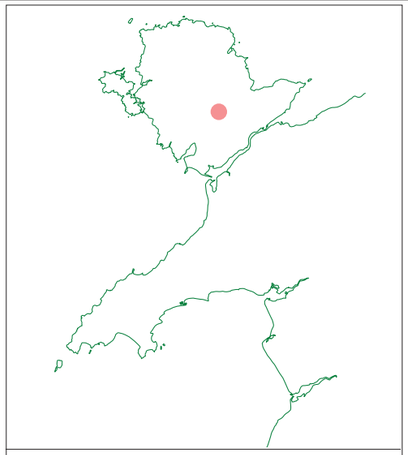

**Figure 4**
Plan of Trench 35 showing newly identified graves and location of graves excavated on the Llangefni Link Road.

**Key**

- Proposed Development Boundary
- Llangefni Link Road
- GPR Survey Area
- Evaluation Trenches
- Excavated Graves (link road)
- Newly Identified Graves
- Likely Extent of Cemetery



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| Drawn By: IGP | |
| Date: 02/02/17 | |
| Location: SH 47231 75793 | |
| Project: AB1612 | Scale: NTS - Scale Bar |

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Table 5.1.1: Evaluation Trenches – General Summary

| Trench No. | Site | Dimensions | Orientation | Description |
|---|---|---|---|---|
| 1 | 1 | 1.6m x 30m x 0.6m | NNW-SSE | No archaeology, modern disturbance and disused watercourse within trench. |
| 2 | 1 | 1.6m x 30m x 0.62m | SE-NW | No archaeology, modern disturbance. |
| 3 | 1 | 1.6m x 30m x 0.73m | NNE-SSW | No archaeology, modern disturbance. |
| 4 | 2 | 1.6m x 30m x 0.53m | NE-SW | No archaeology, modern disturbance including plastic. |
| 5 | 2 | 1.6m x 30m x 0.49m | NW-SE | No archaeology, modern disturbance and slate dump. |
| 6 | 3 | 1.6m x 30m x 0.6m | NNE-SSW | No archaeology, modern disturbance and made ground. |
| 7 | 3 | 1.6m x 30m x 0.8m | E-W | No archaeology, re-deposited natural/made ground. |
| 8 | 3 | 1.6m x 30m x 0.55m | NE-SW | Two linear features within trench, one contained a small and badly abraded fragment of possible Roman pottery. Trench extended 12m x 2m to examine features, possibly animal burrows. |
| 9 | 3 | 1.6m x 30m x 0.5m | NW-SE | No archaeology, area of made ground. |
| 10 | 6 | 1.6m x 10m, 1.6m x 14m x 0.66m | ESE-WNW, NNE-SSW | L-shaped trench located to investigate two linear anomalies running NW-SE and NE-SW. Identified as a modern field boundary and bedrock. Trench was also reduced slightly to avoid power line poles. |
| 11 | 6 | 1.6m x 20m x 0.78m | E-W | No archaeology, trench shortened by 10m to avoid underground power line. |
| 12 | 6 | 1.6m x 30m x 1.64m | WNW-ESE | Two land drains within trench, there were also two other linears one of which is most likely a land drain. The other is not positively identified at present, but probably post-med in date. |
| 13 | 6 | | | Trench was cancelled due to an underground power cable which corresponded to anomaly seen on geophysical survey. |
| 14 | 4 | 1.6m x 30m x 0.8m | NE-SW | Large area of unburnt angular stone at the western end of trench, depth of 0.38m, very likely to be modern deposits. Two land drains in trench running in a NW-SE direction. |
| 15 | 4 | 1.6m x 30m x 0.83m | SSW-NNE | No archaeology. |
| 16 | 4 | 1.6m x 30m x 0.66m | NE-SW | No archaeology. Two land drains running in a NNE-SSW direction, and a water pipe running NW-SE. |

| | | | | |
|---|---|---|---|---|
| 17 | 4 | 1.6m x 30m x 0.8m | NE-SW | Trench was re-aligned to avoid a power line pole. No archaeology. Land drain was identified at the NE end, and an irregular feature which was interpreted as a tree bole. |
| 18 | 4 | 1.6m x 30m x 0.62m | N-S | No archaeology. Two land drains within the trench, both running NW-SE. |
| 19 | 4 | 1.6m x 30m x 0.62m | NE-SW | The northern half of the trench contained burnt mound material with a depth of at least 0.25m (also seen in Trench 37). At the southern end of the trench two small oval pits containing burnt mound material were identified and samples collected. |
| 20 | 4 | 1.6m x 30m x 0.67m | N-S | No archaeology. Ceramic land drain running ESE-WNW, a tree bole was also investigated. |
| 21 | 4 | 1.6m x 30m x 0.59m | NW-SE | No archaeology. |
| 22 | 4 | 1.6m x 30m x 0.66m | NE-SW | Field boundary located roughly central within the trench with a shallow linear close to the eastern edge, both post-medieval in date. A small roughly circular burnt patch was also excavated and sampled. |
| 23 | 4 | 1.6m x 30m x 0.8m | NE-SW | No archaeology. |
| 24 | 4 | 1.6m x 30m x 0.7m | NW-SE | No archaeology. A land drain which ran NW-SE was identified at the southern end of the trench. |
| 25 | 4 | 2m x 30m x 0.59m | NE-SW | No archaeology. |
| 26 | 4 | 2m x 23m x 0.87m | N-S | No archaeology. Trench shortened by 7m due to a newly erected stock fence at the southern end. |
| 27 | 4 | 2m x 28m x 0.61m | NE-SW | No archaeology. Three features were located within the trench, Two were investigated and found to be land drains running NE-SW. The third was probably the trench of a disused water main, modern pottery found at depth. |
| 28 | 5 | 1.6m x 30m x 0.54m | NE-SW | No archaeology. Trench re-located due to very wet ground. Nine land drains found within this trench. |
| 29 | 5 | 1.6m x 30m x 0.6m | W-E | No archaeology. Two land drains within the trench. |
| 30 | 5 | 1.6m x 26m x 0.54m | N-S | No archaeology. Trench was shortened by 4m to 26m to avoid a newly planted tree. Four land drains within trench running in a E-W direction. |
| 31 | 5 | 1.6m x 30m x 1.1m | NNW-SSE | No archaeology. Trench located in waterlogged area, two land drains at the southern end of trench and a third near the centre. |
| 32 | 6 | 2m x 30m x 0.8m | NE-SW | Located close to the previously identified cemetery. Three features were identified at the southern end of the trench, as well as a field drain at the northern end. A shallow and narrow linear gully, a small possible |

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| | | | | corn drier, and a very small root bole which was not recorded. |
| 33 | 6 | | | Trench was not excavated due to information acquired during excavation of Trench 35. |
| 34 | 6 | 2m x 10m x 0.37m | WNW-ESE | Trench re-numbered (Trench 35 in WSI). Possible drain at the NW end of trench, very shallow linear which did not appear to be associated with the cemetery. Some fragments of animal bone found in the trench. |
| 35 | 6 | 2m x 19m x 0.76m | WNW-ESE | Trench re-located to evaluate the extent of the cemetery area. 1 cist burial found at the eastern end of trench. Trench expanded to achieve total extent of the cemetery. At least 15 probable graves identified, as well as some un-stratified human bone and a single sherd of probable Roman pottery. Total area was approximately 100m². |
| 36 | 6 | | | Not excavated. |
| 37 | 4 | 1.6m x 30m x 0.85m | N-S | Burnt mound material present within the majority of the trench, apart from 3m at the northern end. A slot was excavated to determine the depth of the material, and was found to be 0.4m towards the middle of the trench. Four land drains were found within the trench, all running NW-SE. |
| 38 | 3 | 1.6m x 25m x 0.74m | NNE-SSW | No archaeology. Trench comprised of re-deposited natural, with modern machine tracks seen below re-deposited material. |
| 39 | 3 | 1.6m x 30m x 0.75m | NW-SE | No archaeology. |
| 40 | 4 | 2m x 30m x 0.88m | NNW-SSE | No archaeology. |
| 41 | 4 | 1.6m x 30m x 0.68m | NNW-SSE | Trench opened to investigate the western extent of the burnt mound seen in Trench 37, no evidence of the feature was identified. Two land drains running SE-NW, and a French drain running NNE-SSW were observed. No further archaeology. |

## 5.2 Trench 08

Two linear features were identified and recorded in the southern half of the trench (Plate 1). The possible curvilinear feature 08.004 yielded a sherd of possibly Roman pottery. The trench was extended 2m eastwards to investigate the two features identified, it was revealed that ditch 08.004 continued to run eastwards, reasonably straight rather than a curving, and linear 08.006 (Plate 2) contained a stony fill which ran perpendicular to linear 08.004. Both linears may have been truncated due to recent land use. The features were initially thought to be curving, possibly suggesting prehistoric origins, however after extending the trench revealed that the features ran roughly straight. The possible roman pottery sherd could indicate a Roman date, although it may be residual and was in very poor condition.

The features discovered within the trench suggest the possibility of other features in the area, although they are likely to be truncated due to modern disturbance from Coleg Menai.


Plate 1. General view of Trench 08. Scale 2x1m. View from the SW.


Plate 2. Trench 08, section through linear 08.006. Scale 1x0.5m. View from the S.

## 5.3 Trench 12

This trench was located to investigate 5 possible parallel linear anomalies highlighted by the geophysical survey. Approximately 4 linears were observed all running roughly NE-SW across the trench (Plate 3). Two linear features ran NE-SW cross it at 10m [12.004] and 19m [12.006] into the trench from the WNW end and were recorded (Plate 4). Two linear features ran across it roughly 7m into the trench from the WNW end and approximately 7m into the trench from the ESE end. These two linear features ran running parallel with 12.004 and 12.006 contained fragmented schist stone and what looked like redeposited natural and were therefore not investigated further. This trench was located to investigated five parallel linear anomalies seen on the geophysical survey. The sloping edge of the NW side of the investigated cuts and the steep almost vertical SE side of the cuts, as well as the four linears observed on excavation running parallel NE-SW, suggests evidence of deep ploughing. This is likely to be the result of the college (Coleg Menai) and therefore modern.


Plate 3. General view of Trench 12 showing the plough scars running across the trench. Scales 2x2m. View from NW.


Plate 4. Trench 12. Showing 08.004, excavated plough scar. Scale 1x0.5m. View from the SW.

## 5.4 Trenches 19 & 37 – Burnt Mound

Trench 19 contained a spread of burnt material 19.006 (Plate 5). Two oval pits were investigated in the NE end of the trench 19.004 and 19.005, only half of them visible from the trench edge (Plate 6) also see figure 3.

Plate 5. Trench 19. General view of burnt mound material 19.006. Scales, 1x1m &1x0.5m. View from the NW.


Plate 6. Trench 19. Showing associated features with burnt mound 19.006. Possible troughs. Scale 1x1m. View from the SW.

The trench was therefore extended to the NW and SE to reveal their extent. The two oval pits were half sectioned and environmental samples were taken from them and burnt material from 09.006. This could be a burnt mound with troughs, or possible agricultural burning. A spring was breeched within the field caused the trench to flood quickly. The environmental samples taken should be analysed for charred material and radiocarbon dates acquired to try date the feature as nothing indicative was found to date it.

Trench 37 which was located near to Trench 19 to its NW showed a continuation of the spread of burnt material 37.003. It spread across most of the trench except 3m from the northern end. A ceramic drain was encountered 12m from the western end of the trench. Two field drains crossed the trench at 14m and 14.5 from its western end. Another field drain was encountered 27m from the western end of the trench. A small slot was cut through the burnt material 37.003 to determine its depth. The clay natural was reached 0.94m from the surface, and the depth of the burnt mound was 0.54m, starting 0.4m down from the ground surface.

There was an abundance of charcoal and heat altered stones throughout trenches 19 and 37 suggesting a substantial possible burnt mound. A possible trough in Trench 19, as well a natural water spring in the field also support this.

## 5.5 Trench 22

Trench 22 was located level ground. A disused ceramic water pipe 10.5m from the NE end was noted. One large linear 22.006 and one small linear 22.009 was examined as well as a pit containing burnt material which showed evidence of burning in situ with reddened earth (Plate 7).


Plate 7. Trench 22. Section through pit 22.004, showing reddened earth and evidence of in situ burning. Scales, 1x1m & 1x0.5m. View from the SE.

Linear 22.006 may be a possible field boundary, and linear 22.009 could be the remains of a small drainage ditch. Although these features are probably post medieval in date, it is not known as there was nothing diagnostic within them. An environmental sample was taken from pit 22.006 which contained burnt material and could potentially be analysed and a C14 radiocarbon date acquired.

## 5.6 Trenches 32 & 35 – Cemetery

Trench 32 contained a pit showing evidence of burning, which was tentatively interpreted as a possible corn dryer 32.004. It was only partially revealed (it continued under the SW baulk) and measured 1.5m into the trench from the SW (Plate 8).


Plate 8. Trench 32. Showing possible corn dryer, partially excavated and running under the trench baulk. Scale 1x1m. View from the SE.

A small circular feature was investigated but deemed to be natural (bioturbation). Linear 32.006 measuring approximately 3m into the trench from the SW was also recorded but its purpose is unknown.

Trench 35 was located to try and determine the extent of the early Medieval cemetery. Fragmented limestone bedrock was observed in the glacial subsoil throughout the trench. The trench was originally 17m long, but was extended to 19m to search for the extent of the cemetery. Grave cist stones were noted in the extended 3m in the eastern corner. After this discovery, the trench was extended by 8m to the SW, 14m to the NE, and a 10m long spur to the NW as well as a widening of the original trench. These extensions were made as more and more stone cists became evident (Plate 9).

Plate 9. Trench 35, Cemetery. Showing the top cist stones of newly revealed graves. Scales 2x1m. View from the E.

Approximately 15 graves were made visible in this initial uncovering. Fragments of poorly preserved, likely human, bone were found across the area. The stone cists seem to be of the same type as those excavated on the eastern part of the cemetery discovered during works on the Llangefni link road, having a stone lining and capstones on top of that. Some graves may cut into others, it is suspected that there will be earth inhumations in this new area as well, as there were on the eastern side. The graves were roughly aligned E-W. The extent and location of these graves were survey with a GPS.

# 6 Discussion

38 trenches were excavated across the 6 Sites proposed for development. The majority were void of significant archaeology which is likely to impact upon the development; however, evidence was found of former land use and two archaeological sites, one of which was previously unknown were identified.

The evaluation trenching demonstrated that the majority of the anomalies identified on the geophysical survey were probably geological or associated with post-medieval and later land use. Former field boundaries which are visible on LiDAR data and as earthworks on the ground were not identified within some of the trenches, suggesting that they were probably clawdd boundaries which have been ploughed flat.

As expected Sites 1,2 & 3 have been largely disturbed by recent development. Despite this the features identified in Site 3, along with the sherd of Roman pottery, suggests that there is the potential that some archaeological features may survive in the vicinity.

Two archaeological features of significance were identified during the evaluation. A probable Bronze Age burnt mound was previously unknown and an Early Medieval cemetery was presumed to be present within the development area.

The possible Bronze Age burnt mound was found within trenches 19 and 37, these are common features on Anglesey and in North West Wales, a similar feature was identified approximately 360m to the north west during construction of the link road. Samples of the charcoal rich burnt mound material were collected for palaeoenvironmental analysis and radiocarbon dating. It is recommended that these samples are processed in advance of any mitigation so that a date for the feature can be confirmed. The level of mitigation undertaken should be proportional to the date and significance of the feature.

The Early Medieval cemetery was unknown until it was discovered during a watching brief on the construction of the link road. The remains of 54 individuals in both stone lined 'long cist' graves and simple earth and bedrock cut pit graves were found within a relatively small area which appeared to be demarcated by a shallow ditch on its northern edge. All of the graves which were found within the footprint of the link road were excavated; however, during the excavation it was apparent that the cemetery continued to some degree into the area of the currently proposed development. The evaluation has shown that approximately 40% of the cemetery lies within the proposed development area, although only 15 graves were confidently identified during the evaluation it is estimated that between 20 and 50 may be present. The level of bone preservation encountered during the excavation on the link road has demonstrated that the site is of national importance and the amount of data which is likely to be gained from scientific analysis of the remains is unparalleled from a site of this period in North West Wales.

Although not recommended, if the site is to be preserved in situ by a change in the design of the proposed development it should be ensured that the hydrology of the area is maintained so as to minimise the potential of accelerated deterioration. As it has been publicised that some of the burials excavated on the link road contained jewellery and other objects it is recommended that the site is seeded with copper alloy washers to deter potential pillaging with metal detectors.

# 7 Recommendations

## 7.1 Post-Excavation

It is recommended that the bulk soil samples collected from the possible burnt mound deposit in Trench 19 (3 samples) and the pit containing burnt material in Trench 22 (1 sample) are processed by floatation and residue sorting to recover any artefacts and have all charred plant remains palaeoenvironmentally analysed. It is recommended that the recovered material is analysed by a specialist and suitable material selected for radiocarbon dating to assess the likely palaeoenvironmental potential of the deposits present within the development area. If available before work commences on site, the information gathered from the environmental analysis of the bulk sample will be used to tailor the proposed mitigation programme.

A total of three small finds were recorded; a small, possibly roman, pottery sherd from a linear in Trench 08, a small pottery sherd or piece of brick from Trench 35 and small fragments of human bone found during the excavation of Trench 35, these will be weighed, retained and archived. If the development proceeds they will be included in the main excavation archive and reasonable attempts made to identify the originating individual. Reburial is not considered a viable option at this stage but may be considered in future. It is proposed that specialists are not required to comment on these finds as there is very little or nothing to gained from them that is not already known.

## 7.2 Mitigation

It is recommended that Sites 1, 2, 3 and 5 are subject to an archaeological watching brief during all invasive groundworks as although it has been shown that Sites 1,2 and 3 have been extensively disturbed during recent developments it is also possible that truncated archaeology remains. Site 5 appears to be have lower archaeological potential based on the results of the geophysical survey, trenching and general topography.

The possible burnt mound found in Site 4 should be subject to targeted excavation in advance of, or at the outset of, main groundworks.

The remainder of Site 4 and the southern edge of Site6 should be subject to a comprehensive watching brief during all invasive groundworks.

The area around the identified graves should be subject to full excavation in advance of main groundworks to reduce impact to the construction programme. In a typical scenario, as the graves were identified pre-application, it would be recommended that a review of the design to facilitate preservation in situ was implemented. However, the cemetery presents a number of uncertainties which make this a less viable option. Excavation of the portion of the cemetery within the footprint of the Link Road has shown that the level of bone preservation is remarkably good for Northwest Wales which amplifies the research potential and significance of the discovery. It is not currently known what specific conditions have been conducive to the preservation of the remains and as such it cannot be guaranteed that those conditions wouldn't be altered by the proposed development. It is also

recommended that as well as being included in the final fieldwork report, the results of the cemetery excavation should be combined with those of the Link Road cemetery as a stand-alone publication in an appropriate journal.

The eastern side of Site 6, which is the area surrounding the cemetery, should be subject to an archaeological controlled strip at the outset of the main groundworks.

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# Appendix I

## Stratascan, Coleg Menai, Llangefni. Geophysics Report

GEOPHYSICAL SURVEY REPORT

# STRATASCAN™

SUMO Survey Services
SUMO Group Member

Project name:
**Llangefni, Anglesey**

Client:
**Brython Archaeology**

Job ref:
**J10607**

**December 2016**

# GEOPHYSICAL SURVEY REPORT

| | |
|---|---|
| Project name:<br>**Llangefni, Anglesey**<br>Client:<br>**Brython Archaeology** | Job ref:<br>**J10607** |
| Survey date:<br>**21,22,30 November & 1 December 2016** | Report date:<br>**December 2016** |
| Field team:<br>**Stephen Weston** BA<br>**Adam Clark** BA<br>**Richard Fleming**<br>**Matthew Wetton** MSci<br>**Paul Bracken** BA | Project Manager:<br>**Simon Haddrell** BEng(Hons) AMBCS PCIfA |
| Report written by:<br>**Rebecca Davies** BSc (Hons) | Report approved by:<br>**David Elks** MSc ACIfA |
| CAD illustrations by:<br>**Rebecca Davies** BSc (Hons) | Site Director:<br>**Dr John Gater** MCIfA FSA |
| Version number and issue date: | Amendments: |
| **V1** 23/21/2016 | |


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SUMO Survey Services
SUMO Group Member

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# 1 SUMMARY OF RESULTS

High density radar and gradiometer surveys were conducted over approximately 0.18 and 6.3ha of grassland respectively. No archaeological anomalies have been detected. A number of uncertain anomalies have been recorded in both datasets. Ridge and furrow plus former field boundaries are visible in the magnetic data.

# 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 Brython Archaeology.

## 2.2 Site Details

| | |
|---|---|
| **NGR / Postcode** | SH 470 755 / LL77 7HS |
| **Location** | The site is located to the east of Llangefni, Anglesey, immediately north of the B5109 (Penmynydd Road). |
| **HER/SMR** | Gwynedd Archaeological Trust |
| **Unitary Authority** | Isle of Anglesey |
| **Parish** | Llangefni |
| **Topography** | Sloping downwards from west to east |
| **Current Land Use** | Pasture |
| **Weather Conditions** | Very heavy rain, cloudy |
| **Soils** | The overlying soils are known as East Keswick 3 which are typical brown earths. These consist of fine loamy soils sometimes over limestone (Soil Survey of England and Wales, Sheet 2 Wales). |
| **Geology** | The underlying geology across the west of the site comprises Clywd Limestone Group – sandstone and conglomerate, while the geology across the east comprises limestone of Clwyd Limestone Group. Superficial deposits of Devensian Till – diamicton are recorded across the site (British Geological Survey website). |
| **Archaeology** | An early medieval cist cemetery has been discovered adjacent to the site, and it is thought that the graves extend into the northern part of the survey area. |

| | |
|---|---|
| **Survey Methods** | Detailed magnetic survey (gradiometry)<br>High density radar |
| **Study Area** | c. 7.5ha gradiometry – approximately 1.2ha was unsurveyable due to construction work, reducing the area surveyed to 6.3ha.<br>c. 0.18 ha high density radar |

### 2.3 Aims and objectives

To locate and characterise any anomalies of possible archaeological interest within the study area.

# 3 METHODS, PROCESSING & PRESENTATION

### 3.1 Standards & Guidance

This report and all fieldwork have been conducted in accordance with the latest guidance documents issued by Historic England (2008) and the Chartered Institute for Archaeologists (2002 & 2014).

Stratascan Ltd are a Registered Organisation with the CIfA and are committed to upholding its policies and standards.

### 3.2 Survey methods

Due to the potential for detecting early medieval graves, high density radar and detailed magnetic survey were used as an efficient and effective method of locating archaeological anomalies.

More information regarding this technique is included in Appendix A.

### 3.3 Processing

***Gradiometry***

1. *De-stripe*
2. *De-stagger*

***High density radar***

Processing is performed using specialist software (Mala Rslicer). There are a wide range of filters available, the application of which will vary depending on the project. The most commonly used are:

| | |
|---|---|
| Gain | Amplification to correct for weakening of signal with depth. |
| DC-Shift | Re-establishes oscillation of the radar pulse around the zero point) |
| Dewow / Ringdown Removal | Removes low frequency, down-trace instrument noise |
| Bandpass Filtering | Suppresses frequencies outside of the antenna's peak bandwidth thus reducing noise |

| | |
|---|---|
| Background Removal | Can remove ringing, instrument noise and minimize the near-surface 'coupling' effect |
| Migration | Collapses hyperbolic tails back towards the reflection source |
| Amplitude Envelope | Simplifies pulses for production of time-slice maps by summing peak values, regardless of polarity, over a given time-window. |

### 3.4 Presentation of results and interpretation

***Gradiometry***

The presentation of the data for each site involves a plot of the minimally processed data as a greyscale plot and a colour plot showing extreme magnetic values. Magnetic anomalies have been identified and plotted onto the 'Interpretation of Anomalies' drawing.

When interpreting the results several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to very specific known features documented in other sources, this is done (for example: Abbey Wall, Roman Road). For the generic categories levels of confidence are indicated, for example: probable, or possible archaeology. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification "possible".

***High density radar***

If a number of radargrams are collected over a grid, or in conjunction with GPS data, it is possible to reconstruct the entire dataset into a 3D volume. This can then be resampled to compile 'plan' maps (time slices) of response strength at increasing time offsets (typically converted to show approximate depth), thus simplifying the visualisation of how anomalies vary beneath the surface across a survey area. The close centred traverses of the Mala MIRA make for effective time slices, which are included at a number of depths.

# 4 RESULTS

***Gradiometry***

The detailed magnetic gradiometer survey conducted at Llangefni has identified a number of anomalies that have been characterised as being of uncertain origin.

### *4.1 Probable Archaeology*

No probable archaeology has been identified within the survey area.

### *4.2 Possible Archaeology*

No probable archaeology has been identified within the survey area.

## 4.3 *Medieval/Post-Medieval Agriculture*

Widely spaced, parallel linear anomalies in the north of the area are likely to be a result of ridge and furrow cultivation. A weak positive anomaly, running approximately east-west in the western part of the site coincides with the location of a former field boundary, visible on available mapping from 1969 to 1991. A negative linear anomaly at the southern extent of the ridge and furrow is likely to relate to a former field boundary, but is not visible on available mapping.

## 4.4 *Other Anomalies*

A number of positive and negative linear anomalies, along with smaller discrete responses and an area of enhanced magnetic response have been classified as being of uncertain origin. It is possible that discrete anomalies are natural in origin, possibly related to the conglomerate geology in the west, however it is also possible that they relate to former cut features. The positive and negative linear anomalies may also relate to former cut features or earthworks respectively, though they may equally be associated with former field boundaries or other agricultural activity.

An area of strong magnetic debris in the north-west of the area is indicative of made ground and is likely to be modern in origin.

A bipolar linear anomaly in the eastern area is related to an underground service, such as a pipe or cable.

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. Smaller ferrous responses are likely to be a result of modern rubbish.

### *High density radar*

The high density radar survey conducted at Llangefni has identified a number of anomalies that have been characterised as being of uncertain origin.

A single possible obstruction has been detected at 0.2m depth in the north of the survey area. This is likely to be related to a buried object such as a stone or rubble.

A number of linear anomalies in the south and north-west of the area are of uncertain origin. These are uncharacteristic of underground services, though it is likely that they are modern.

Two larger areas of ‘mottled’ data are visible in the south and centre of the area. These are also of uncertain origin, and may relate to areas of made ground. It may be possible that the responses are related to areas of burials, though this interpretation is tentative at best.

# 5 DATA APPRAISAL & CONFIDENCE ASSESSMENT

***Gradiometry***

Both sandstone and conglomerate geologies can provide variable results for magnetic survey, while limestone generally provides good results. Superficial deposits of diamicton also provide variable results. Given that a number of anomalies of uncertain origin have been detected, along with former field boundaries and ridge and furrow, it can be determined that the data collected provide a good indication of buried features on the site.

***High density radar***

The GPR survey has identified a number of anomalies of uncertain origin, suggesting that the underlying soils and geology are conducive to the technique. There is little background 'noise' across the area, other than two possible areas of made ground, allowing for a good clarity of survey.

# 6 CONCLUSION

The survey at Llangefni has not identified any responses of archaeological origin, despite the potential for locating early medieval graves. A number of uncertain anomalies have been detected in both the gradiometry and radar surveys. The magnetic responses may be natural in origin, though may also relate to former cut features or be of agricultural origin. Former field boundaries plus ridge and furrow cultivation patterns have been recorded.

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# Appendix A - Technical Information: Magnetometer Survey Method

**Grid Positioning**
For hand held gradiometers the location of the survey grids has been plotted together with the referencing information. Grids were set out using a Trimble R8 Real Time Kinematic (RTK) VRS Now GNSS GPS system.

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. This results in an accuracy of around 0.01m.

## *Gradiometry*

| Technique | Instrument | Traverse Interval | Sample Interval |
|---|---|---|---|
| Magnetometer | Bartington Grad 601-2 | 1m | 0.25m |

**Instrumentation: Bartington *Grad*601-2**
Bartington instruments operate in a gradiometer configuration which comprises fluxgate sensors mounted vertically, set 1.0m apart. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried, or cart mounted, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method, though strongly magnetic objects may be visible at greater depths. The Bartington instrument can collect two lines of data per traverse with gradiometer units mounted laterally with a separation of 1.0m.

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

**Data Processing**

| | |
|---|---|
| Zero Mean Traverse | This process sets the background mean of each traverse within each grid to zero. The operation removes striping effects and edge discontinuities over the whole of the data set. |
| Step Correction (Destagger) | When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors. |

**Display**

| | |
|---|---|
| Greyscale/ Colourscale Plot | This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly all values below the given range are represented by the minimum intensity shade. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set. |

**Interpretation Categories**

In certain circumstances (usually when there is corroborative evidence from desk based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall,* etc.) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

| | |
|---|---|
| *Archaeology/Probable Archaeology* | This term is used when the form, nature and pattern of the response are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age. |
| *Possible Archaeology* | These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation. |
| *Industrial / Burnt-Fired* | Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal- working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies. |
| *Former Field Boundary (probable & possible)* | Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary. |
| *Ridge & Furrow* | Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases the response may be the result of more recent agricultural activity. |
| *Agriculture (ploughing)* | Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes. |
| *Land Drain* | Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains will often lead and empty into larger diameter pipes and which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains. |
| *Natural* | These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions. |
| *Magnetic Disturbance* | Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present. They are presumed to be modern. |
| *Service* | Magnetically strong anomalies usually forming linear features indicative of ferrous pipes/cables. Sometimes other materials (e.g. pvc) cause weaker magnetic responses and can be identified from their uniform linearity crossing large expanses. |
| *Ferrous* | This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material. |
| *Uncertain Origin* | Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of *Possible Archaeology* and *Possible Natural* or (in the case of linear responses) *Possible Archaeology* and *Possible Agriculture*; occasionally they are simply of an unusual form. |

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

## *High Density Radar*

**Instrumentation: MALA Mini MIRA**

***Sampling interval***

Readings were taken at 0.08m intervals with traverse intervals of 0.08m. All survey traverse positioning was carried out using a Trimble S6 Robotic Total Station.

***Depth of scan and resolution***

The average velocity of the radar pulse is calculated to be 0.06m/nsec which is typical for the type of sub-soils on the site. With a range setting of 60nsec this equates to a maximum depth of scan of 2m but it must be remembered that this figure could vary by ± 10% or more. 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.

***Data capture***

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.

# Appendix B - Technical Information: Magnetic Theory

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

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.

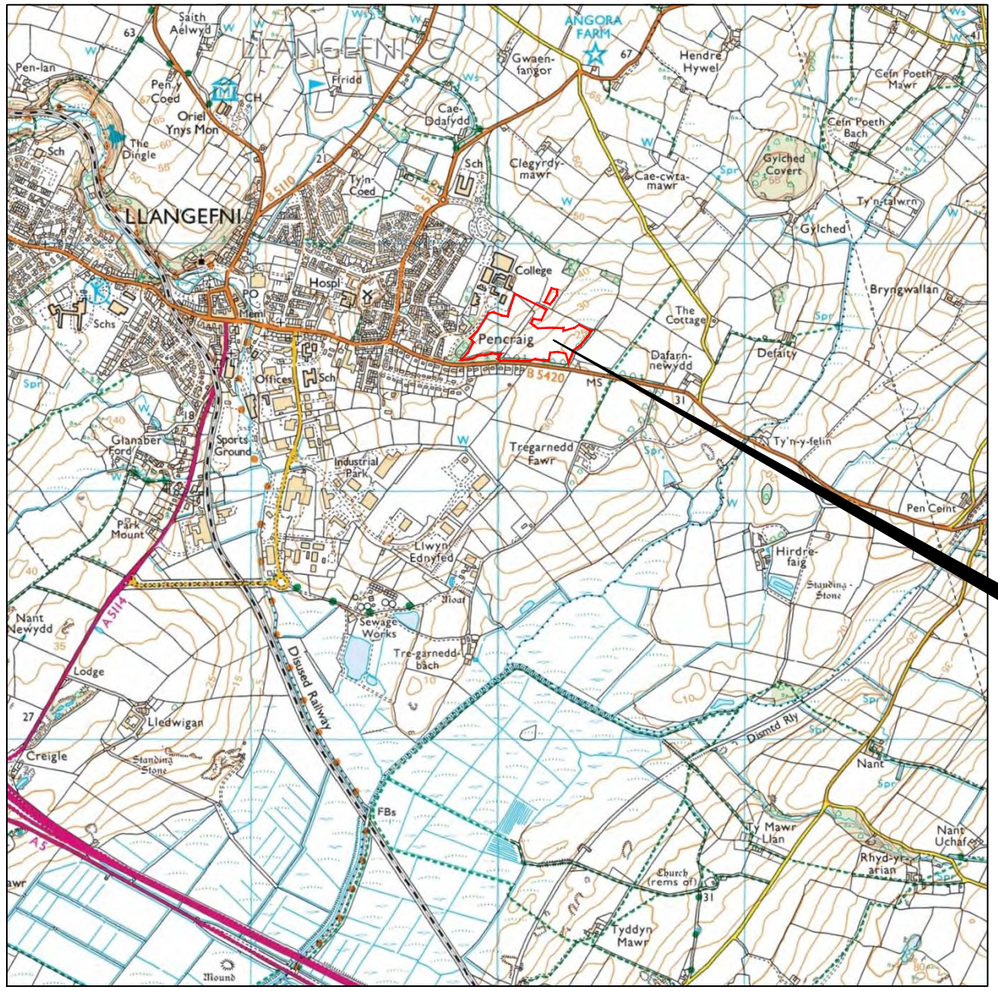
Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and 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 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.

77
76
75
74
73




45 46 47 48 49

N

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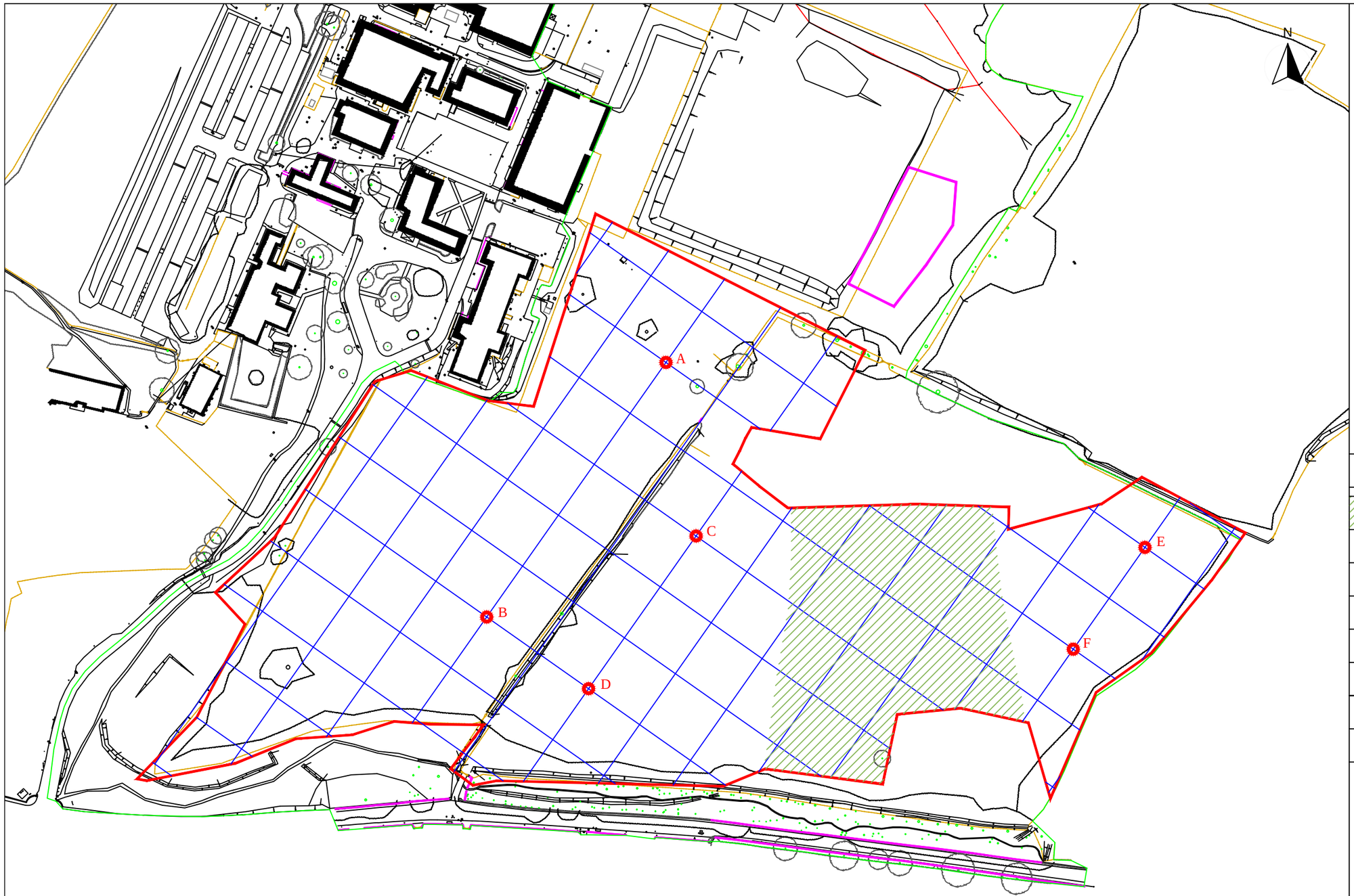
Title:
LOCATION PLAN OF SURVEY AREA

Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:25000 @ A3
0m 500 1000m

Fig No:
01




| | |
|---|---|
| | Radar survey area |
| | Unsurveyable due to construction work |

OS GRID REFERENCES

| | |
|---|---|
| A | 247105.45, 375737.83 |
| B | 247019.09, 375615.18 |
| C | 247119.97, 375654.23 |
| D | 247068.16, 375580.64 |
| E | 247336.23, 375648.73 |
| F | 247301.69, 375599.67 |

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Title:
REFERENCING

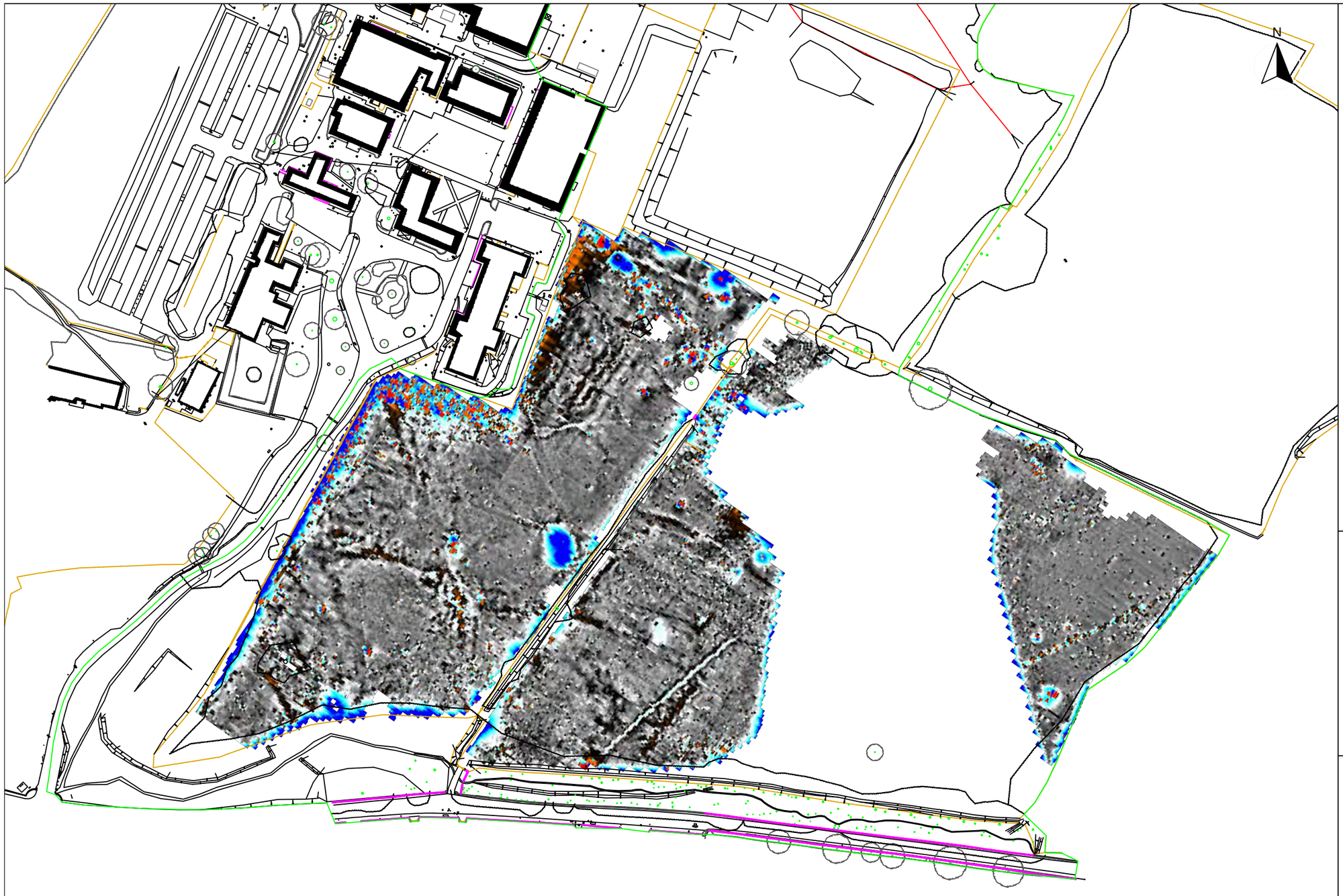
Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:2000 @ A3

0m 20 40 60 80 100m

Fig No:
02




Plotting parameters

Maximum +100nT (red)
Minimum -100nT (blue)

+100nT
+25nT
+3nT
-3nT
-25nT
-100nT

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Title:
COLOUR PLOT OF GRADIOMETER DATA SHOWING EXTREME VALUES

Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:2000 @ A3

0m 20 40 60 80 100m

Fig No:
03


Plotting parameters

Maximum +100nT (red)
Minimum -100nT (blue)

+100nT
+25nT
+3nT
-3nT
-25nT
-100nT

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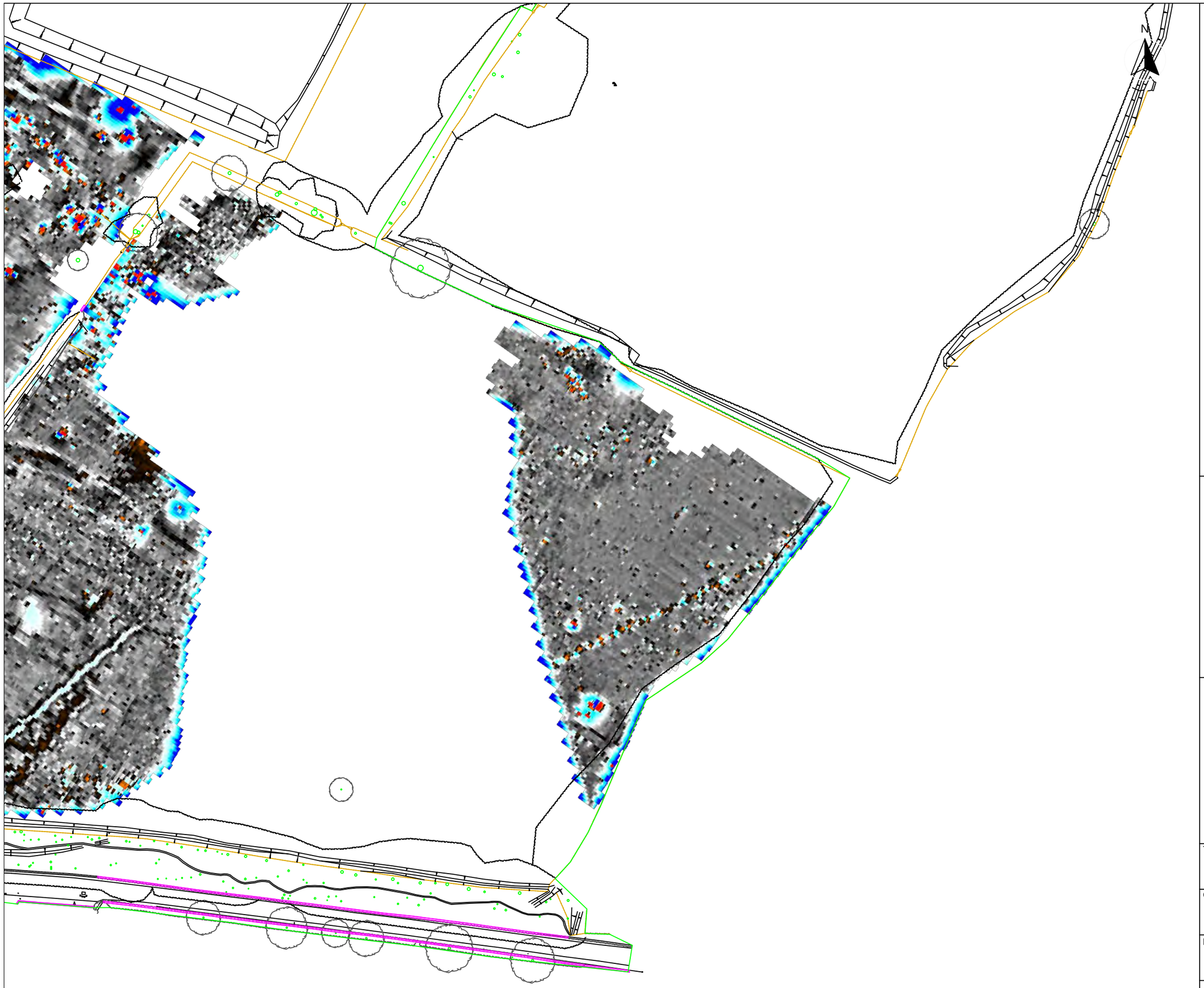
Title:
COLOUR PLOT OF GRADIOMETER DATA SHOWING EXTREME VALUES - WEST

Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:1250 @ A3
0m 10 20 30 40 50m

Fig No:
04




Plotting parameters

Maximum +100nT (red)
Minimum -100nT (blue)

+100nT
+25nT
+3nT
-3nT
-25nT
-100nT

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Title:
COLOUR PLOT OF GRADIOMETER DATA SHOWING EXTREME VALUES - EAST

Client:
BRYTHON ARCHAEOLOGY

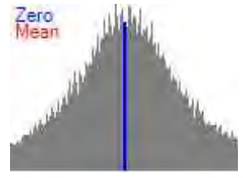
Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:1250 @ A3
0m 10 20 30 40 50m

Fig No:
05


Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)





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Title:
PLOT OF MINIMALLY PROCESSED GRADIOMETER DATA

Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:2000 @ A3

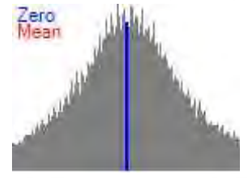
0m 20 40 60 80 100m

Fig No:
06

N

Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)




-2nT +2nT

+2nT

-2nT

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Title:
PLOT OF MINIMALLY PROCESSED GRADIOMETER DATA - WEST

Client:
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Project:
J10607 - LLANGEFNI, ANGLESEY

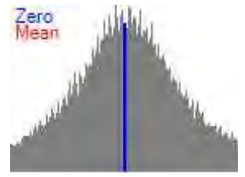
Scale: 1:1250 @ A3

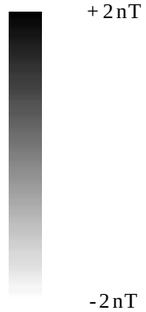
0m 10 20 30 40 50m

Fig No:
07


Plotting parameters

Maximum +2nT (black)
Minimum -2nT (white)

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Title:
PLOT OF MINIMALLY PROCESSED GRADIOMETER DATA - EAST

Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:1250 @ A3

0m 10 20 30 40 50m

Fig No:
08

N

KEY

| | |
|---|---|
| | Former field boundary (corroborated) |
| | Possible former field boundary |
| | Ridge and furrow |
| | Natural (e.g. geological or pedological) |
| | Made ground |
| | Service |
| | Ferrous |
| | Uncertain (positive/area of increased response/negative) |


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Title:
ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES

Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:2000 @ A3

0m 20 40 60 80 100m

Fig No:
09

N

KEY

| | |
|---|---|
| | Former field boundary (corroborated) |
| | Possible former field boundary |
| | Ridge and furrow |
| | Natural (e.g. geological or pedological) |
| | Made ground |
| | Service |
| | Ferrous |
| | Uncertain (positive/area of increased response/negative) |


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Title:
ABSTRACTION AND INTERPRETATION OF GRADIOMETER ANOMALIES - WEST

Client:
BRYTHON ARCHAEOLOGY

Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:1250 @ A3

0m 10 20 30 40 50m

Fig No:
10


KEY

| | |
|---|---|
| | Former field boundary (corroborated) |
| | Possible former field boundary |
| | Ridge and furrow |
| | Natural (e.g. geological or pedological) |
| | Made ground |
| | Service |
| | Ferrous |
| | Uncertain (positive/area of increased response/negative) |


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Title:
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Client:
BRYTHON ARCHAEOLOGY

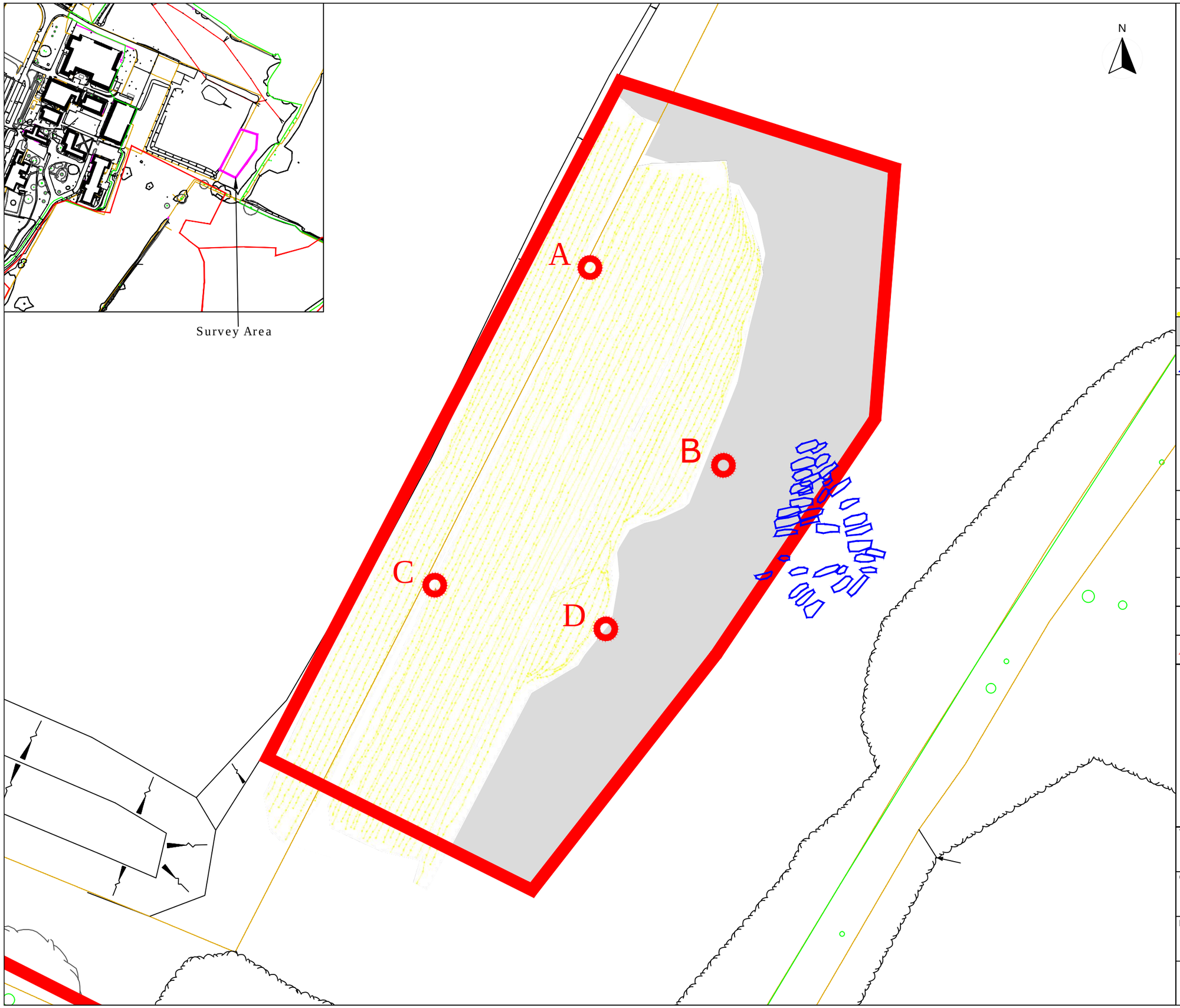
Project:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:1250 @ A3

0m 10 20 30 40 50m

Fig No:
11

Survey Area




## KEY

| | |
|---|---|
| | GPR traverses |
| | Unsurveyable - overgrown and waterlogged |
| | Early-Med cist and simple burials |

## REFERENCING INFORMATION

| | |
|---|---|
| A | 247220.02, 375816.43 |
| B | 247231.09, 375800.03 |
| C | 247207.15, 375790.09 |
| D | 247221.33, 375786.47 |
| A-D | Base points |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Title:
REFERENCING

Client:
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Project:
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Scale: 1:300 @ A3

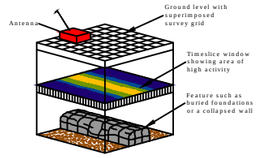
0m 2 4 6 8 10m

Fig No:
12



TIMESLICE PLOTS

In addition to a manual abstraction from the radargrams, a computer analysis was carried out. The radar data is interrogated for areas of high activity and the results presented in a plan format known as timeslice plots. In this way it is easy to see if the high activity areas form recognisable patterns.

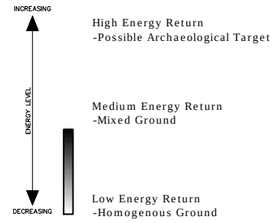



The GPR data is compiled to create a 3D file. This 3D file can be manipulated to view the data from any angle and at any depth within range. The data was then modelled to produce activity plots at various depths. As the radar is actually measuring the time for each of the reflections found, these are called "time slice windows". Plots for various time slices have been included in the report. Calculations, based on an average velocity, have been made to show the equivalent depth into the ground. The data was sampled between different time intervals effectively producing plans at different depths into the ground.

The weaker reflections in the time slice windows are shown as light grey. The stronger reflections are represented by dark grey and black.

Reflections within the radar image are generated by a change in velocity of the radar from one medium to another. It is not unreasonable to assume that the higher activity anomalies are related to marked changes in materials within the ground such as buried foundations or surfaces within the soil matrix.

Colour Scale for Timeslice 'Activity' Plots and Simplified Key

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Title: TIMESLICE

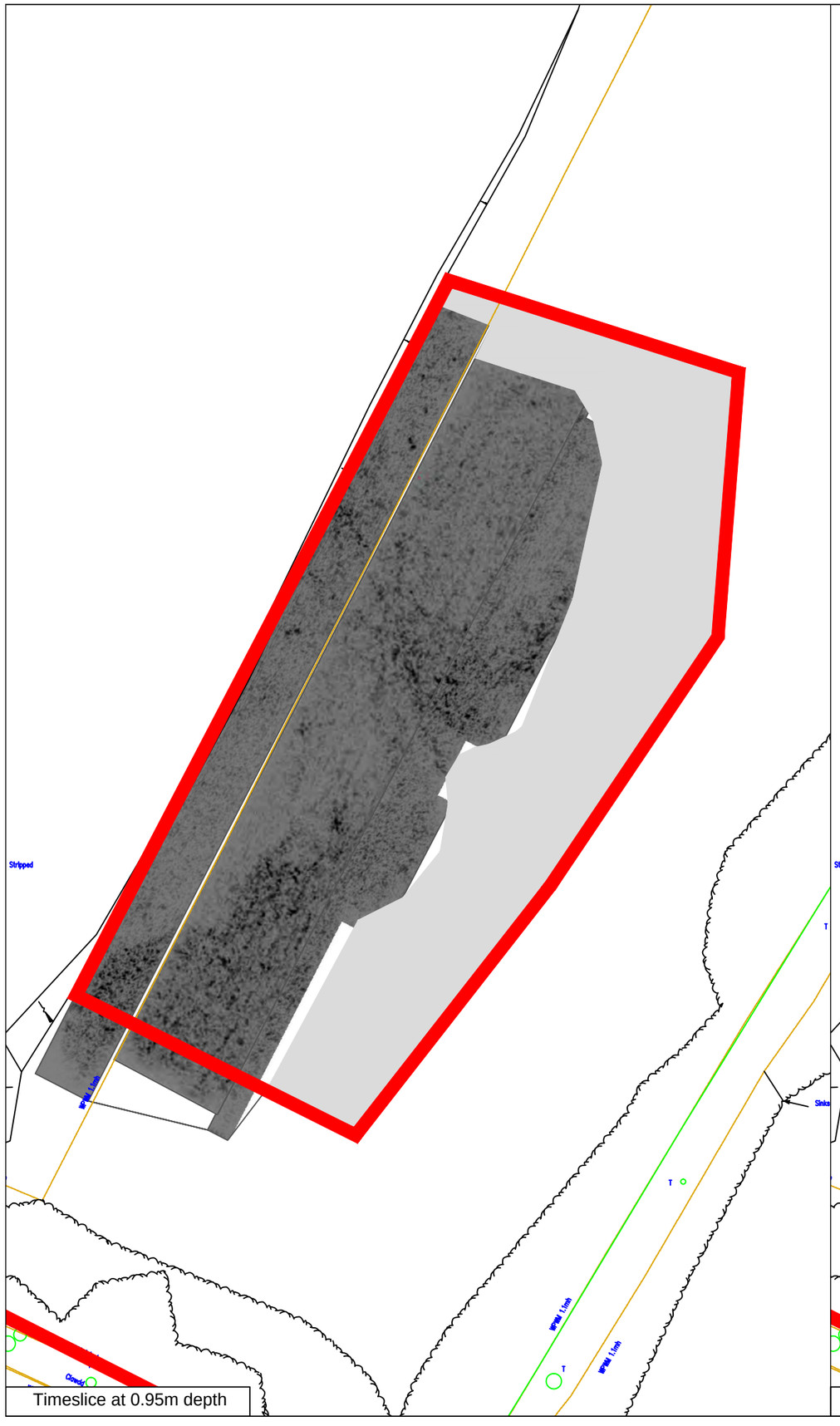
Client: BRYTHON ARCHAEOLOGY

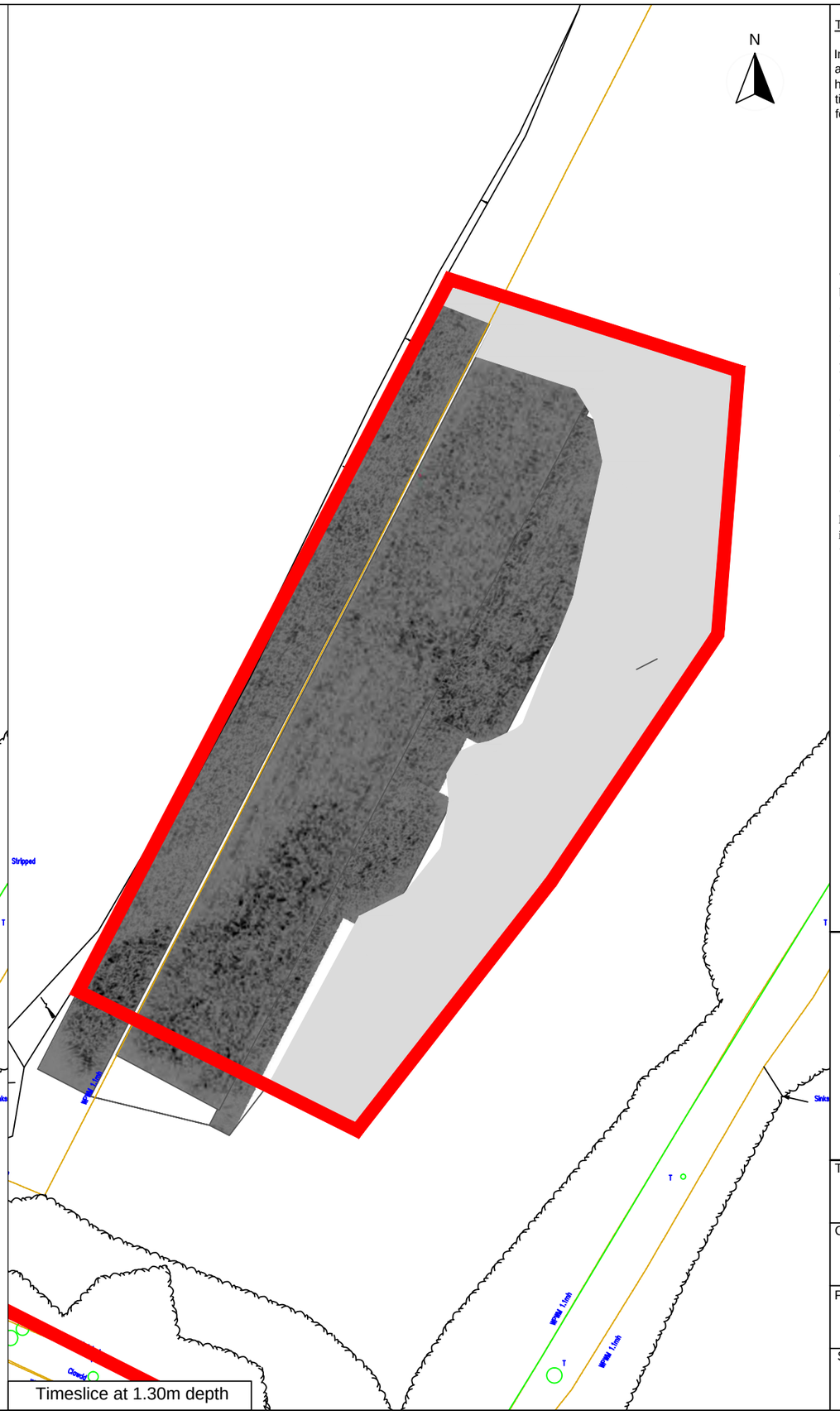
Project: J10607 - LLANGEFNI, ANGLESEY

Scale: 1:400 @ A3

0m 4 8 12 16 20m

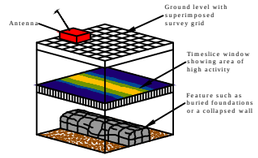
Fig No: 13




TIMESLICE PLOTS

In addition to a manual abstraction from the radargrams, a computer analysis was carried out. The radar data is interrogated for areas of high activity and the results presented in a plan format known as timeslice plots. In this way it is easy to see if the high activity areas form recognisable patterns.

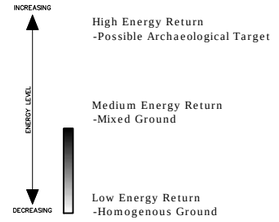



The GPR data is compiled to create a 3D file. This 3D file can be manipulated to view the data from any angle and at any depth within range. The data was then modelled to produce activity plots at various depths. As the radar is actually measuring the time for each of the reflections found, these are called "time slice windows". Plots for various time slices have been included in the report. Calculations, based on an average velocity, have been made to show the equivalent depth into the ground. The data was sampled between different time intervals effectively producing plans at different depths into the ground.

The weaker reflections in the time slice windows are shown as light grey. The stronger reflections are represented by dark grey and black.

Reflections within the radar image are generated by a change in velocity of the radar from one medium to another. It is not unreasonable to assume that the higher activity anomalies are related to marked changes in materials within the ground such as buried foundations or surfaces within the soil matrix.

Colour Scale for Timeslice 'Activity' Plots and Simplified Key

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Title: TIMESLICE

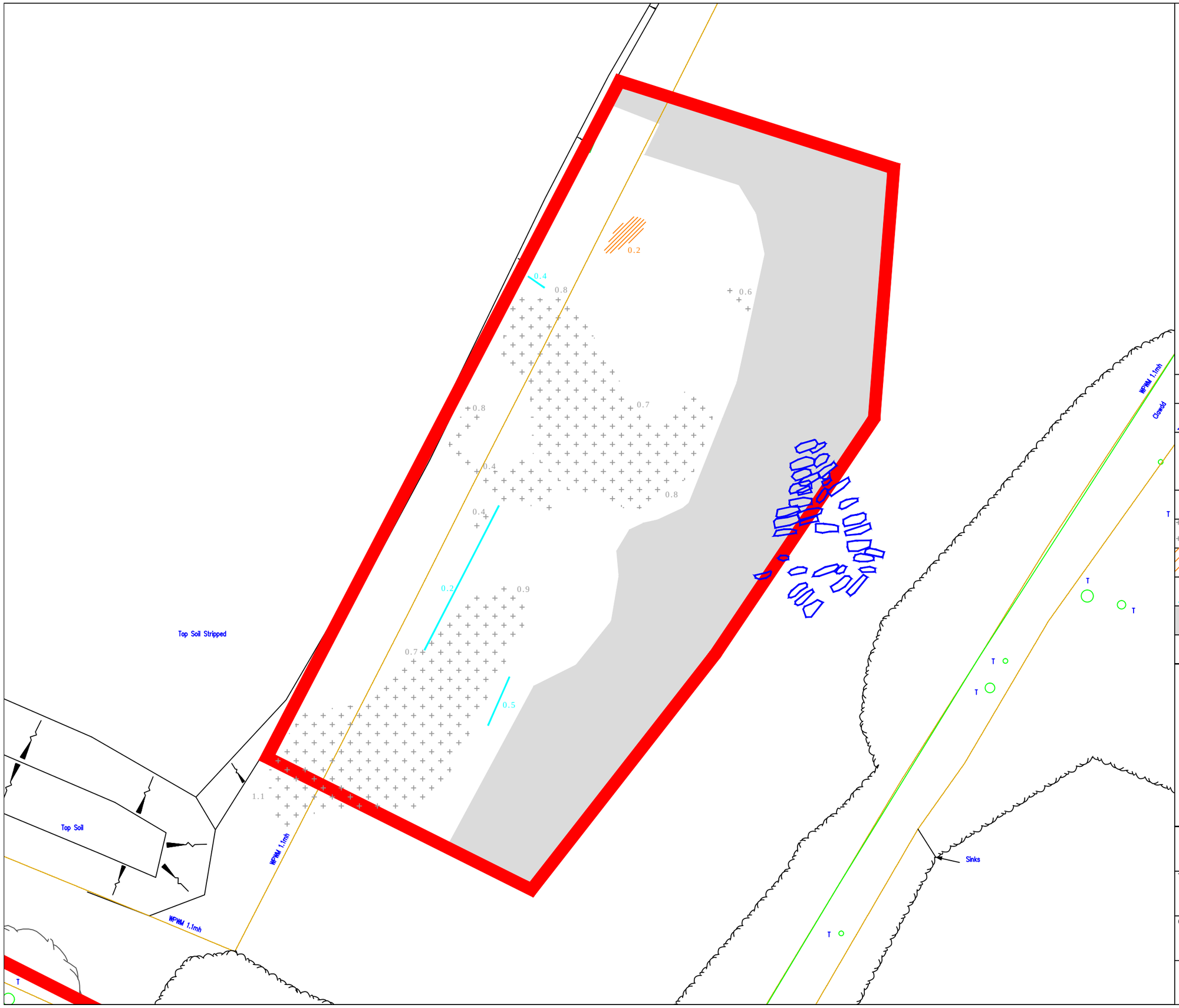
Client: BRYTHON ARCHAEOLOGY

Project: J10607 - LLANGEFNI, ANGLESEY

Scale: 1:400 @ A3

0m 4 8 12 16 20m

Fig No: 14




## Information provided by the client

| | |
|---|---|
| | Early-Med cist and simple burials |

## KEY

| | |
|---|---|
| | Mottled data - uncertain origin |
| | Possible obstruction |
| | Linear feature of uncertain origin |
| | Unsurveyable - overgrown and waterlogged |
| 0.5 | Depth to the top of the feature (in m) |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GPR INTERPRETATION

Title:
BRYTHON ARCHAEOLOGY

Client:
J10607 - LLANGEFNI, ANGLESEY

Scale: 1:300 @ A3
0m 2 4 6 8 10m

Fig No:
15

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- Railway
- Retrofit
- Setting Out
- Statutory Plan Collation
- Topographic
- Utility Mapping
- UXO Detection
- Void Detection

# Appendix II

# Gazetteer of Trenches

**Trench 01**

Site 01

Trench measurements - 30m x 1.6m, maximum depth - 0.60m, orientation NNW-SSE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 01.001 | 0.0m | Topsoil - Silt clay mid orange brown with infrequent inclusions of small sub angular stones. |
| 01.002 | 0.26m | Natural - Light brown orange sand clay with moderate inclusions of medium sub angular stones. |

Trench summary

The trench was located to investigate a slight slope. A dark band of loose material measuring 6.2m from the NNW side, with a width of 2.7m, was investigated and thought to be a silted up shallow watercourse. No archaeology was present.

**Trench 02**

Site 01

Trench measurements – 30m x 1.6m, maximum depth 0.62m, orientation SE-NW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 02.001 | 0.0m | Topsoil - Silt clay mid orange brown with infrequent inclusions of small sub angular stones. |
| 02.002 | 0.24m | Natural - Light mottled brown orange sand clay with moderate medium sub angular stone inclusions |

Trench summary

The trench was located to investigate a SE-NW slope. No subsoil was observed. No archaeology was present.

**Trench 03**

Site 01

Trench measurements – 30m x 1.6m, maximum depth 0.73m, orientation NNE-SSW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 03.001 | 0.0m | Topsoil - Silt clay mid orange brown with infrequent small sub angular stone inclusions. |

| | | |
|---|---|---|
| 03.002 | 0.33m | Natural - Light brown orange sand clay with moderate medium sub angular stone inclusions. |

Trench summary

This trench held no subsoil and the natural was very mottled. Therefore, the SSE end was dug deeper to clarify the depth of the natural. No archaeology was present.

**Trench 04**

Site 02

Trench measurements – 30m x 1.6m, maximum depth 0.53m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 04.001 | 0.0m | Topsoil – Mid orange brown silt clay mid with infrequent small sub angular stone inclusions. |
| 04.002 | 0.27m | Subsoil - Light orange brown silt with patches of small to medium sized angular schist. |
| 04.003 | 0.43m | Natural - Light grey orange sand clay with frequent medium to small angular stone inclusions. |

Trench summary

This trench was very wet with modern rubbish in the topsoil. No archaeology was present.

**Trench 05**

Site 02

Trench measurements – 30m x 1.6m, maximum depth 0.49m, orientation NW-SE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 05.001 | 0.0m | Topsoil – Mid brown silt clay with moderate inclusions of small sub angular stones. |
| 05.002 | 0.12m | Modern slate dump, a thin layer of grey slate, approximately 2.5m wide. |
| 05.003 | 0.23m | Subsoil - Dark brown silt clay with occasional sub angular limestone pebble inclusions. |
| 05.004 | 0.34m | Natural – Mid yellow sand clay with moderate inclusions of medium sub angular shattered limestone. |

Trench summary

The trench was excavated in very wet conditions. The mechanical excavator sank into the topsoil and struggled to maintain a straight line. The trench was void of archaeology.

**Trench 06**

Site 03

Trench measurements – 30m x 1.6m, maximum depth 0.6m, orientation NNE-SSW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 06.001 | 0.0m | Topsoil - Mid brown silt clay. |
| 06.002 | 0.4m | Natural – Compact yellow grey brown sand clay with medium to small sized stone inclusions. |

Trench summary

The trench was excavated in very wet conditions. The mechanical excavator sunk into the topsoil and struggled to maintain a straight line. There was no subsoil present. It was remarked by the caretaker of Coleg Menai that the field had been used as a football ground for the college in the recent past. The trench contained modern debris but no archaeology.

**Trench 07**

Site 03

Trench measurements – 30m x 1.6m, maximum depth 0.8m, orientation E-W.

| Context No. | Depth below surface | Description |
|---|---|---|
| 07.001 | 0.0m | Topsoil – Mid brown silt clay with occasional post medieval pottery sherd inclusions. |
| 07.002 | 0.24m | Subsoil - Dark brown silt clay with occasional small sub angular stones and modern rubbish. |
| 07.003 | 0.42m | Natural – (W end) Orange yellow sand clay with moderate medium sized sub angular limestone pebble inclusions. |
| 07.004 | 0.36m | Natural – (E end) Light brown yellow silt clay with frequent sub angular limestone pebble inclusions. |

Trench summary

Nine metres from the E edge of the trench, the natural dips and changes. (07.004) may be a redeposited layer, topsoil may have been deposited in the field by Coleg Menai. The trench is void of archaeology.

**Trench 08**

Site 03

Trench measurements – 30m x 1.6m, maximum depth 0.55m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 08.001 | 0.0m | Topsoil – Mid brown silt clay with small stones inclusions. |
| 08.002 | 0.14m | Subsoil - Dark brown silt clay with occasional sub angular stones and modern rubbish. |
| 08.003 | 0.38m | Natural - Mid yellow red clay with abundant medium to large sized limestone inclusions. |
| 08.004 | 0.79m | Cut of shallow linear filled by 08.005. Runs E-W with concave base and sharp top break of slope. Likely to have been heavily truncated. |
| 08.005 | 0.79m | Fill of shallow linear 08.004. Firm mid brown sand clay with moderate small sub rounded stone inclusions. |
| 08.006 | 0.57m | Cut of shallow linear filled by 08.007. Possible bioturbation, or heavily truncated. |
| 08.007 | 0.57m | Fill of shallow linear 08.006. Soft mid to dark brown clay silt with medium to small angular schist stones. |

Trench summary

Two linear features were identified and recorded in the southern half of the trench. The possible curvilinear feature 08.004 yielded a sherd of possibly Roman pottery. The trench was extended 2m eastwards to investigate the two features identified, it was revealed that ditch 08.004 continued to run eastwards, reasonably straight rather than a curving, and linear 08.006 contained a stony fill which ran perpendicular to linear 08.004. Both linears may have been truncated due to recent land use.

**Trench 09**

Site 03

Trench measurements – 30m x 1.6m, maximum depth 0.5m, orientation NW-SE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 09.001 | 0.0m | Topsoil - Mid brown silt. |
| 09.002 | 0.2m | Subsoil - Orange brown silt clay with occasional small angular stone inclusions. |
| 09.003 | 0.35m | Natural - Brown orange sand clay with some small to medium sized angular schist inclusions. |

Trench summary

The trench ran down slope from the SE. No archaeology was present.

**Trench 10**

Site 6

Trench measurements – 20m x 1.6m, orientation ESE-WNW and 14m x 1.6m, orientation NNE-SSW (L-shaped trench), maximum depth 0.66m.

| Context No. | Depth below surface | Description |
|---|---|---|
| 10.001 | 0.0m | Topsoil, firm mid brown sand silt clay |
| 10.002 | 0.24m | Subsoil, firm to friable mid grey brown sand silt with occasional pebble inclusions. |
| 10.003 | 0.48m | Natural compact sand silt clay orange brown with patches of clay. |
| 10.004 | 0.41m | Possible field boundary, E-W, dark grey brown silt clay with pebble sized stone inclusions. 2.5m wide, lies 4.65m into the south-eastern L-leg. |

Trench summary

An L-shaped trench initially crossed under practice overhead cables, used for training by Coleg Menai. The trench edge was moved to a safe distance, and 10m of the length was lost, making the WNW leg of the trench 20m long and the SSW leg 14m long. A probable field boundary (10.004) crossed the L-shaped trench's SSW leg. It is likely to be a removed extension of a tree line, hedge or field boundary and contained mid 20$^{th}$ century pottery and plastic. It measured 0.6m deep and 2m wide. Fragmented bedrock was visible 0.30m below the surface at the ESE end of the trench with solid bedrock reached at approximately 1m below surface. Solid bedrock was found at a depth of 2.4m below surface at the WNW end of the trench.

**Trench 11**

Site 6

Trench measurements – 20m x 1.6m, maximum depth 0.78m, orientation E-W.

| Context No. | Depth below surface | Description |
|---|---|---|
| 11.001 | 0.0m | Topsoil - Mid brown silt clay with occasional small stone inclusions. |
| 11.002 | 0.44m | Subsoil – Mid Orange brown silt clay with occasional small stone inclusions. |
| 11.003 | 0.60m | Natural - Light brown orange sand clay with occasional medium sized stone inclusions. There were occasional patches of a grey gravel with frequent medium sized stone inclusions. |

Trench summary

This trench was shortened by 10m to avoid practice overhead power cables used by Coleg Menai. No archaeology was present.

**Trench 12**

Site 6

Trench measurement – 30m x 1.6m, maximum depth 0.64m, orientation WNW-ESE

| Context No. | Depth below surface | Description |
|---|---|---|
| 12.001 | 0.0m | Topsoil – Compacted dark grey brown silt clay. |
| 12.002 | 0.13m | Subsoil - Friable mid grey brown silt clay. |
| 12.003 | 0.5m | Natural - Compacted red orange silt clay with occasional gravel inclusions. |
| 12.004 | 0.5m | Cut of linear feature with flat base and steep sides. |
| 12.005 | 0.5m | Fill of 12.004. Friable mid grey brown clay silt with occasional gravel. |
| 12.006 | 0.49m | Cut of linear. Stepped steep sides and flat base. Probably a disused field drain. |
| 12.007 | 0.47m | Lower fill of 12.006. Compact grey orange silt clay with frequent angular stone inclusions. |
| 12.008 | 0.57m | The upper fill of 12.006. Friable mid orange brown silt sand clay with some sub rounded stone inclusions of up to 0.08m in diameter. |

Trench summary

Approximately 4 linears were observed all running roughly NE-SW across the trench. Two linear features ran NE-SW cross it at 10m [12.004] and 19m [12.006] into the trench from the WNW end. Two linear features ran across it roughly 7m into the trench from the WNW end and approximately 7m into the trench from the ESE end. These two linear features ran running parallel with 12.004 and 12.006 contained fragmented schist stone and what looked like redeposited natural and were therefore not investigated further.

**Trench 13**

Trench 13 was not excavated since it crossed an electricity cable.

**Trench 14**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.8m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 14.001 | 0.0m | Topsoil - Friable dark grey brown sand silt with occasional sub angular pebble inclusions. |
| 14.002 | 0.18m | Subsoil -Loose dark to mid brown grey sand silt with clay and occasional pebble inclusions. |
| 14.003 | 0.64m | Natural – Firm mid grey orange silt sand clay with frequent cobble inclusions. |
| 14.004 | 0.6m | A large spread of angular medium to large stones measuring between 0.04m-0.12m in diameter. |

Trench summary

A deep trench with two land drains and a large area of probably modern disturbance to the west (14.004). The depth of this deposited continued down to 1.2m below surface. Modern disturbance is a likely cause for the stony spread 14.004.

**Trench 15**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.83m, orientation SSW-NNE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 15.001 | 0.0m | Topsoil - Compact dark grey brown silt clay |

| | | |
|---|---|---|
| 15.002 | 0.31m | Subsoil - Light brown yellow silt clay with frequent gravel inclusions. |
| 15.003 | 0.57m | Natural - Mid yellow grey clay with frequent gravel, pebble and small stone inclusions. |

Trench summary

The trench slopes to the SE. No archaeology was present.

**Trench 16**

Site 4

Trench size – 30m x1.6m, maximum depth 0.66m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 16.001 | 0.0m | Topsoil - Mid brown silt clay with rare small sub angular stone inclusions. |
| 16.002 | 0.26m | Subsoil - Mid brown orange sand clay with occasional small sub angular stone inclusions. |
| 16.003 | 0.49m | Natural - Grey orange silt clay with frequent angular stone inclusions of small and medium size and gravel. |

Trench summary

The trench was situated at the bottom of a gentle slope near inactive overhead cables. Two land drains and a ceramic water pipe were noted.

**Trench 17**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.8m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 17.001 | 0.0m | Topsoil - Mid brown silt clay with occasional sub angular small stone inclusions. |
| 17.002 | 0.26m | Subsoil - Mid brown orange silt sand clay with regular small sub angular stones. |
| 17.003 | 0.59m | Subsoil - Dark brown silt clay with regular angular small stone inclusions. |
| 17.004 | 0.74m | Natural - Brown orange sand clay with occasional sub angular medium to small size stone inclusions. |

Trench summary

This trench excavated on level ground. Due to its proximity to the practice overhead power cables, point B of this trench was moved 15.25m NNW to the original point B. A land drain ran N-S at the NE end of the trench. There was a slight rise of the natural in the SW end of the trench, with an average depth around 0.45m. 7m-9m from the NE end of the trench, an irregular possible linear was encountered and proved to be a root bole after investigation.

**Trench 18**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.62m, orientation N-S.

| Context No. | Depth below surface | Description |
|---|---|---|
| 18.001 | 0.0m | Topsoil - Friable mid grey brown silt clay. |
| 18.002 | 0.13m | Subsoil - Dark brown silt clay with occasional small sub rounded stone inclusions. |
| 18.003 | 0.21m | Subsoil - Mid orange brown silt clay with frequent small sub angular stone inclusions. |
| 18.004 | 0.49m | Natural - Friable yellow grey mottled silt clay with small to cobble sized stone inclusions. |
| 18.005 | 0.46m | Cut of drain, with steep sides and flat base. |
| 18.006 | 0.46m | Fill of drain 18.005. Grey brown silt clay with moderate inclusions of sub angular stones of up to 0.1m in diameter. Stone lined with sub-rounded medium to large stones. |

Trench summary

The trench excavated on a gentle downhill slope. Contained two land drains. 18.005 was thought to be a linear and corresponded to the targeted anomaly and on investigation was revealed to be a stone filled land drain and lay 15.5m into the trench from the southern end.

**Trench 19**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.62m, orientation NE-SW

| Context No. | Depth below surface | Description |
|---|---|---|

| | | |
|---|---|---|
| 19.001 | 0.0m | Topsoil - Compact mid grey brown silt clay with occasional gravel inclusions. |
| 19.002 | 0.41m | Subsoil - Compact dark brown grey silt clay with occasional gravel inclusions. |
| 19.003 | 0.54m | Natural - Yellow orange compact clay with some gravel inclusions. |
| 19.004 | 0.37m | The cut possible pit going into the SE edge of the trench. Oval feature with gradual sloping sides and flattish base. |
| 19.005 | 0.40m | The cut of possible pit/trough going into the SW edge of the trench. Oval in plan with steep sides and flat base. |
| 19.006 | 0.33m | Dark charcoal rich deposit, possible a burnt mound. Extent was beyond the confines of the extended trench. Loose dark brown grey clay silt with abundant charcoal and fire cracked stones. |
| 19.007 | 0.37m | Upper fill of cut 19.004. Compact dark brown grey silt clay with small to medium heat altered stones. |
| 19.008 | 0.40m | Upper fill of 19.005. Compact dark brown grey silt clay with an abundant amount of heat altered stones. |
| 19.009 | 0.37m | The lower fill of 19.004. Compact dark grey black charcoal silt with frequent heat altered medium angular stones. |
| 19.010 | 0.59m | The lower fill of 19.005. Compact mid brown grey silt sand with heat altered medium stones. |

Trench summary

This trench contained a spread of burnt material 19.006. Two oval pits were investigated in the NE end of the trench 19.004 and 19.005, only half of them visible from the trench edge. The trench was therefore extended to the NW and SE to reveal their extent. The two oval pits were half sectioned and environmental samples were taken from them and burnt material from 09.006. This could be a burnt mound with troughs, or possible agricultural burning. A spring was breeched within the field caused the trench to flood quickly.

**Trench 20**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.67m, orientation S-N.

| **Context No.** | **Depth below surface** | **Description** |
|---|---|---|
| 20.001 | 0.0m | Topsoil - Mid brown silt clay with occasional sub angular small stone inclusions. |
| 20.002 | 0.41m | Subsoil – Orange brown silt sand with moderate small sub angular stone inclusions. |

| | | |
|---|---|---|
| 20.003 | 0.54m | Natural - Grey orange sand clay with frequent medium to large sub angular stone inclusions. |

Trench summary

Trench was located on a gentle slope. The southern end, on the down slope, had deeper deposits. A ceramic water pipe crossed it 10m from the N end. A dark area was observed near the S end of the trench. The feature was investigated, it was half sectioned, the fill was friable dark brown silt clay with frequent small sub angular stone inclusions. Its shape was very irregular and it is thought to have been a tree bole.

**Trench 21**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.59m, orientation SE-NW.

| **Context No.** | **Depth below surface** | **Description** |
|---|---|---|
| 21.001 | 0.0m | Topsoil - Friable mid brown silt clay with rare sub angular small stone inclusions. |
| 21.002 | 0.28m | Subsoil – Orange brown silt sand clay with occasional small sub angular stone inclusions. |
| 21.003 | 0.45m | Natural - Brown orange sand clay with moderate medium sized stones and some larger stones towards the NW end of the trench. |

Trench summary

Trench was located on a mild slope. It had a slight change in the natural as more stone was observed to the NW. No archaeology was present.

**Trench 22**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.66m, orientation NE-SW.

| **Context No.** | **Depth below surface** | **Description** |
|---|---|---|
| 22.001 | 0.0m | Topsoil - Dark brown silt clay with occasional small sub angular stone inclusions. |
| 22.002 | 0.24m | Subsoil - Mid brown orange silt clay with some small sub angular stone inclusions. |
| 22.003 | 0.55m | Natural - Brown orange sand clay with moderate sub angular medium to small stone inclusions. |

| | | |
|---|---|---|
| 22.004 | 0.46m | Cut of pit. Sub circular in plan with moderately concave sides and base. |
| 22.005 | 0.46m | Fill of 22.004. Compact brown red silt clay with rare small angular stone inclusions. |
| 22.006 | 0.67m | Cut of linear. Orientated NW-SE and measured 2.85m wide with gradual sloping sides and slight concave base. |
| 22.007 | 0.67m | Secondary fill of linear 22.006. Firm mid grey brown silt clay with moderate small sub angular stones. |
| 22.008 | 0.77m | Primary fill of linear 22.006. Firm mid brown grey sand silt with occasional charcoal and sun angular stone inclusions. |
| 22.009 | 0.65m | Cut of small linear. Shallow with gradual sloping sides and flattish base. Orientated NW-SE. |
| 22.010 | 0.65m | Fill of small linear. Friable mid grey brown silt clay. |

Trench summary

The trench was located level ground. A disused ceramic water pipe 10.5m from the NE end was noted. One large linear 22.006 and one small linear 22.009 was examined as well as a pit containing burnt material and showed evidence of burning in situ with reddened earth. Linear 22.006 may be a possible field boundary, and linear 22.009 could be the remains of a small drainage ditch.

**Trench 23**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.8m, orientation NE-SW.

| **Context No.** | **Depth below surface** | **Description** |
|---|---|---|
| 23.001 | 0.0m | Topsoil – Mid brown clay silt mid brown with small angular stone inclusions. |
| 23.002 | 0.30m | Subsoil - Mid grey brown clay silt. |
| 23.003 | 0.48m | Natural - White sand clay with sub angular medium sized regular stone inclusions. |
| 23.004 | 0.80m | Natural – in centre of trench the natural changed to a grey clay mixed with shattered bedrock. It covers a few meters. |

Trench summary

The trench was located across a slight slope. It shallow trench which dips down in the middle – suspected paleochannel.

**Trench 24**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.7m, orientation NW-SE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 24.001 | 0.0m | Topsoil – Mid brown sand clay silt. |
| 24.002 | 0.30m | Subsoil - Orange brown clay silt with occasional small angular stone inclusions. |
| 24.003 | 0.60m | Natural - Grey clay mixed with shattered angular bedrock. |

Trench summary

A field drain ran from its southern most end partially along the side of the trench.

Site 4

**Trench 25**

Trench measurements – 30m x 2m, maximum depth 0.59m, orientation – NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 25.001 | 0.0m | Topsoil - Mid brown silt clay with rare sub angular small stone inclusions. |
| 25.002 | 0.24m | Subsoil – Mid Orange brown sand silt clay with occasional small sub angular stone inclusions. |
| 25.003 | 0.36m | Subsoil - A thin layer of orange sand clay with rare stone inclusions (subsoil- natural interface) |
| 25.004 | 0.48m | Natural - Brown grey orange silt clay with frequent gravel and sub angular stone inclusions. |

Trench summary

The natural was very mottled, but was consistently stony and gravelly. No archaeology was present.

**Trench 26**

Site 4

Trench measurements – 23m x 2m, maximum depth 0.87m, orientation N-S.

| Context No. | Depth below surface | Description |
|---|---|---|
| 26.001 | 0.0m | Topsoil - Mid brown silt clay with occasional sub angular small to medium stone inclusions. |
| 26.002 | 0.23m | Subsoil – Mid brown orange silt sand clay with occasional sub angular pebble inclusions. |
| 26.003 | 0.40m | Natural - Hard mottled brown grey orange silt clay with frequent medium sized stone inclusions of up to 0.3m in diameter. |

Trench summary

The trench was located on a slight slope. Because the natural was very mottled, it was excavated to a greater depth at the southern end of the trench to ensure that the mottled deposit was the natural. The trench was decreased by 7m because of a fence obstructing its original placement. No archaeology was present.

**Trench 27**

Site 4

Trench measurements – 28m x 2m, maximum depth 0.61m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 27.001 | 0.0m | Topsoil – Compact mid grey brown silt clay. |
| 27.002 | 0.28m | Subsoil - Friable mid orange brown clay silt. |
| 27.003 | 0.43m | Natural - Compact yellow orange silt clay with occasional cobble sized stone inclusions. |
| 27.004 | 0.47m | A cut of a very deep linear which was excavated to 1.2m depth, but base never found. – likely disused water main. |
| 27.005 | 0.28m | Fill of the linear 27.004. Compact orange grey silt clay with frequent stone inclusions of small and medium sized angular and sub angular stones. |

Trench summary

Three possible features were observed in the trench; a small field drain that crossed it in the NE end, another field drain at SE end of the trench and a deep linear, lying 10m from the NW end, which was sectioned and recorded; likely to be a disused water main.

**Trench 28**

Site 5

Trench measurement – 30m x 2m, maximum depth 0.54m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 28.001 | 0.0m | Topsoil - Mid grey brown silt clay with occasional small stone inclusions. |
| 28.002 | 0.14m | Subsoil - Dark grey brown silt clay with moderate medium sub angular stone inclusions. |
| 28.003 | 0.28m | Natural deposit of a layer of waterlogged light blue grey clay. |
| 28.004 | 0.32m | Natural - Mid yellow orange sand clay with sand clay patches and frequent small sub angular stone inclusions. |

Trench summary

Due to the boggy condition of the SE corner of site 5, trench 28 was moved westwards. It contained a total of nine field drains generally running SW-SE.

**Trench 29**

Site 5

Trench measurement – 30m x 1.6m, maximum depth 0.6m, orientation E-W.

| Context No. | Depth below surface | Description |
|---|---|---|
| 29.001 | 0.0m | Topsoil - Mid brown silt. |
| 29.002 | 0.15m | Subsoil - Grey brown silt clay. |
| 29.003 | 0.30m | Natural - Orange sand clay with rare small schist stone inclusions. |

Trench summary

The trench rans E-W and up a slope. It contained two land drains.

**Trench 30**

Site 5

Trench measurements – 26m x 1.6m, maximum depth 0.54m, orientation N-S.

| Context No. | Depth below surface | Description |
|---|---|---|
| 30.001 | 0.0m | Topsoil - Mid grey brown silt clay with occasional small sub angular stone inclusions. |
| 30.002 | 0.12m | Subsoil - Dark grey brown silt clay with moderate small to medium sub angular stone inclusions. |
| 30.003 | 0.30m | Waterlogged layer holding light blue grey clay. A natural deposit. |
| 30.004 | 0.37m | Natural - Mid yellow orange sand clay with abundant small sub rounded stone inclusions. |

Trench summary

The northern end of the trench was shortened by 4m because it ran into a freshly planted row of trees. The trench had four land drains running E-W.

**Trench 31**

Site 5

Trench measurements – 30m x 1.6m, maximum depth 1.1m, orientation NNW-SSE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 31.001 | 0.0m | Topsoil - Grey brown clay silt. |
| 31.002 | 0.30m | Subsoil - Friable orange brown sand silt clay. |
| 31.003 | 0.60m | Natural deposit blue grey clay. |
| 31.004 | 0.90m | Natural - Orange yellow sand clay. |

Trench summary

This trench contained three field drains.

**Trench 32**

Site 6

Trench measurements – 30m x 2m, maximum depth 0.8m, orientation NE-SW.

| Context No. | Depth below surface | Description |
|---|---|---|
| 32.001 | 0.0m | Topsoil - Friable mid grey brown clay silt. |

| | | |
|---|---|---|
| 32.002 | 0.32m | Subsoil - Compact light yellow brown silt clay. |
| 32.003 | 0.60m | Natural - Firm light orange yellow silt clay with occasional cobble sized to large stone inclusions. |
| 32.004 | 0.58m | Cut of a possible corn dryer. Sub-oval shape in plan with regular sides and concave base (only partially revealed – continued under SW baulk). |
| 32.005 | 0.58m | Fill of 32.004. Firm silt clay with burnt clay and charcoal. |
| 32.006 | 0.35m | Cut of linear. Linear with concave sides and flattish base. |
| 32.007 | 0.35m | Fill of 32.006. Friable mid grey brown silt clay with charcoal inclusions. |

Trench summary

The trench contained a possible corn dryer 32.004, which was only partially revealed and lay 1.5m into the trench from the SW. A small circular feature was investigated but deemed to be natural (bioturbation). Linear 32.006 measuring approximately 3m into the trench from the SW.

**Trench 34**

Site 5

Trench measurements – 10m x 2m, maximum depth 0.37m, orientation ESE-WNW.

| **Context No.** | **Depth below surface** | **Description** |
|---|---|---|
| 34.001 | 0.0m | Topsoil - Friable mid brown silt clay with moderate small sub angular stone inclusions. |
| 34.002 | 0.21m | Subsoil - Mid orange brown sand clay with rare small sub angular stone inclusions. |
| 34.003 | 0.37m | Natural - Orange sand silt clay with frequent medium sized sub angular stone inclusions. |

Trench summary

The trench was located on a slight slope to determine the extent of a probable early Medieval cemetery, and if this area held more graves. It was originally numbered 35 but was renumbered to 34. It held one linear thought to be a drain and loose animal bone, but no graves. The linear was 0.52m wide and 0.11m deep and was filled with dark brown silt clay and small angular stone inclusions.

**Trench 35 / Cemetery area**

Site 5

Trench measurements – 17m x 1.6m (before extensions), maximum depth 1m, orientation of original trench without extension WNW-ESE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 35.001 | 0.0m | Topsoil, friable wet and loose dark grey brown clay silt. |
| 35.002 | 0.21m | Subsoil, firm mid orange brown silt clay with occasional inclusions of small stones. |
| 35.003 | 0.45m | Natural compact silt clay of a mid yellow orange colour with occasional stone inclusions. In the extension of the trench, the natural consisted of broken up bedrock as well as the silt clay. |

Trench summary

The trench was located to try and determine the extent of a probable early Medieval cemetery. Fragmented limestone bedrock was observed in the glacial subsoil throughout the trench. The trench was originally 17m long, but was extended to 19m to search for extent of the cemetery. Grave cist stones were noted in the extended 3m in the eastern corner at depth of approximately 0.45m. After this discovery, the trench was extended by 8m to the SW, 14m to the NE, and a 10m long spur to the NW as well as a widening of the original trench. These extensions were made as more and more stone cists became evident. Minimum depth at which graves were encountered was 0.4m.

Approximately 15 graves were made visible in this initial uncovering. Fragments of poorly preserved, likely human, bone were found across the area. The stone cists seem to be of the same type as those excavated on the AB1604 site, having a stone lining and capstones on top of that. Some grave cut into others, it is suspected that there will be earth inhumations in this new area as well. The graves were roughly aligned E-W. The extent and location of these graves were survey with a GPS.

**Trench 37**

Site 4

Trench measurements – 30m x 1.6m, maximum depth 0.94m, orientation N-S.

| Context No. | Depth below surface | Description |
|---|---|---|
| 37.001 | 0.0m | Topsoil - Dark grey brown silt clay. |
| 37.002 | 0.15m | Subsoil – Compact dark brown grey clay. |
| 37.003 | 0.35m | Dark burnt spread - Possible burnt mound material dark black grey clay with occasional gravel inclusions and frequent small stone inclusions. |
| 37.004 | 0.51m | Natural – Firm orange yellow clay with occasional gravel inclusions. |

Trench summary

Deposit 37.003 covered most trench, overlying the natural, except 3m from the northern end. A ceramic drain was encountered 12m from the western end of the trench. Two field drains crossed the trench at 14m and 14.5 from its western end. Another field drain was encountered 27m from the western end of the trench. A small slot was cut through the burnt material 37.003 to determine its depth. The clay natural was reached 0.94m from the surface, and the depth of the burnt mound was 0.54m, starting 0.4m down from the ground surface.

**Trench 38**

Site 3

Trench measurement – 25m x 1.6m, maximum depth 0.74m, orientation NNW-SSE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 38.001 | 0.0m | Topsoil - Mid brown silt clay. |
| 38.002 | 0.12m | Subsoil - Mid brown sand clay with frequent small sub angular stone inclusions. |
| 38.003 | 0.33m | Redeposited natural - Mid yellow orange clay with occasional small to medium sub angular stone inclusions. |
| 38.004 | 0.54m | Natural - Mid brown red sand clay with moderate small sub angular stone inclusions |

Trench summary

This trench was void of archaeology and had what looked to be possible modern machine tracks visible in the natural in the northern end of the trench.

**Trench 39**

Site 3

Trench measurements – 30m x 1.6m, maximum depth 0.75m, orientation NW-SE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 39.001 | 0.0m | Topsoil - Mid brown clay silt with occasional small stone inclusions. |
| 39.002 | 0.20m | Subsoil, orange brown silt clay with some rooting. |
| 39.003 | 0.37m | Natural orange/grey sand clay with occasional medium sized and large angular schist stone inclusions. |

Trench summary

No archaeology present.

**Trench 40**

Site 4

Trench measurements – 30m x 2m, maximum depth 0.88m, orientation NNW-SSE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 40.001 | 0.0m | Topsoil – Loose mid grey brown clay silt. |
| 40.002 | 0.28m | Subsoil – Compact mid brown orange silt clay. |
| 40.003 | 0.60m | Natural - Compact silt clay which varies from mid yellow orange to mid yellow grey in colour with occasional medium stone inclusions. |

Trench summary

This trench was located at the bottom of a slope and was void of archaeology.

**Trench 41**

Site 4

Trench Measurements – 25m x 1.6m, maximum depth 0.74m, orientation NNW-SSE.

| Context No. | Depth below surface | Description |
|---|---|---|
| 41.001 | 0.0m | Topsoil - Mid grey brown silt clay with occasional sub rounded small stone inclusions. |
| 41.002 | 0.16m | Subsoil - Dark grey brown silt clay with moderate sub angular stone inclusions. |
| 41.003 | 0.39m | Natural deposit of mid black grey clay with abundant sub angular stone inclusions of small to medium size. |
| 41.004 | 0.51m | Natural - Light grey yellow sand clay with abundant small to large sub angular stone inclusions. |

Trench summary

This trench was located to investigate the western extent of the possible burnt mound visible in trenches 19 and 37. This trench showed no evidence of the possible burnt mound and the trench was void of archaeology. A French drain ran through the middle of the north side of the trench so the level was not brought to natural. A small test pit was excavated in this area to determine whether any possible burnt mound material was present. The test pit revealed the natural and no evidence of the possible burnt mound.


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