Archaeology Wales

Land part of the former Goodig Hotel, Pwll Road, Burry Port

Geophysical Survey

By
Jennifer Muller

Report No. 1777

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Geophysical Survey

Prepared For: Pobl Housing Group

Edited by: Philip Poucher Signed: Position: Senior Project Manager Date:	Authorised by: Rowena Hart Signed: Position: Regional Director Date:

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March 2019

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Contents

List of Figures

List of Plates

Appendices

Summary

This report results from work carried out by Archaeology Wales Ltd (AW) for Pobl Housing Group, following recommendations made by Dyfed Archaeological Trust – Development Management (DAT-DM), in their capacity as archaeological advisors to Carmarthenshire County Council (CCC). It draws on the results of a geophysical survey undertaken on the site of a proposed residential development on land that was part of the former Goodig Hotel, Pwll Road, Burry Port, Carmarthenshire (henceforth – the site), centred on NGR SN 45563 01303. The planning application number is S/36993.

The aim of the geophysical survey was to determine the nature and extent of any buried archaeological features within the proposed development area. The work was undertaken using a Bartington Grad601 dual fluxgate gradiometer.

A small number of linear features were identified throughout the survey area. One may have been associated with a former boundary around Goodig Hotel, some appear to be associated with landscaping and terracing and a possible former field boundary, with the remainder likely associated with modern services. Discrete features and areas of high readings appear to be associated with modern activity across the site. No clear features of significant archaeological merit were identified.

The work was carried out to the Standard and Guidance set out by the Chartered Institute for Archaeologists for archaeological geophysical survey (CIfA 2014) and completed in accordance with EAC Guidelines for the Use of Geophysics in Archaeology (Historic England 2016).

Crynodeb

Mae'r adroddiad hwn yn ganlyniad i waith a wnaed gan Archaeology Cymru Cyf (AC) ar gyfer y Grŵp Tai Pobl, yn dilyn argymhellion a wnaed gan Ymddiriedolaeth Archeolegol Dyfed – Rheoli Datblygiadau, yn ei chapasiti fel cynghorwr archeolegol i Gyngor Sir Gâr. Mae'n tynnu ar ganlyniadau arolwg geoffisegol a gynhaliwyd ar safle datblygiad preswyl arfaethedig ar dir a oedd yn rhan o'r Gwesty Gwdig blaenorol, Heol y Pwll, Porth Tywyn, Sir Gaerfyrddin (a elwir y safle o hyn allan), sydd wedi'i leoli yn NGR SN 45563 01303. Y rhif cais cynllunio yw S/36993.

Amcan yr arolwg geoffisegol oedd canfod natur a hyd a lled unrhyw nodweddion archeolegol sydd wedi'u claddu o fewn yr ardal ddatblygu arfaethedig. Gwnaed y gwaith gan ddefnyddio gradiomedr fluxgate deuol Bartington Grad601.

Nodwyd nifer fechan o nodweddion unionlin drwy'r ardal a arolygwyd. Mae'n bosibl bod un ohonynt wedi'i chysylltu â ffin flaenorol o gwmpas Gwesty Gwdig, mae'n ymddangos bod rhai yn gysylltiedig â gwaith tirlunio a therasu a ffin flaenorol bosibl i gae, ac mae'n debygol bod y gweddill yn gysylltiedig â gwasanaethau modern. Mae'n ymddangos bod nodweddion ar wahân ac ardaloedd sydd â darlleniadau uchel yn gysylltiedig â gweithgaredd modern ar draws y safle. Ni nodwyd unrhyw nodweddion clir o bwys archeolegol sylweddol.

Gwnaed y gwaith yn unol â'r Safonau a'r Canllawiau a nodwyd gan Sefydliad Siartredig yr Archeolegwyr ar gyfer arolygon geoffisegol archeolegol (SSA 2014) ac fe'i cwblhawyd yn unol â Chanllawiau Cyngor Archeolegol Ewrop ar gyfer y Defnydd o Geoffiseg mewn Archeoleg (Historic England 2016).

1. Introduction

1.1 Location and scope of work

In March 2019, Archaeology Wales Ltd (AW) carried out a geophysical survey on the site of a proposed residential development on land that was part of the former Goodig Hotel, Pwll Road, Burry Port, Carmarthenshire (henceforth – the site), centred on NGR SN 45563 01303 (Figure 1 and 2). The local planning authority is the Carmarthenshire County Council (henceforth – CCC), and the planning application number is S/36993.

The site covers an area of open ground to the south of the former Goodig Hotel. Dyfed Archaeological Trust – Development Management (henceforth – DAT-DM), in their capacity as archaeological advisors to CCC, highlighted the potential for prehistoric archaeological remains in the area, along with potential activity associated with Goodig House/Hotel, and a record of earthworks and terracing of unknown date noted within the site boundaries. As a result DAT-DM recommended that a geophysical survey of the site was undertaken prior to determination of any further mitigation requirements.

Subsequently, a Written Scheme of Investigations (WSI) was prepared by AW at the request of Pobl Housing Group (Appendix I). It provided information on the methodology to be employed by AW during a geophysical survey of the site. The WSI was submitted to, and approved by, DAT-DM, on behalf of the CCC, prior to the survey being undertaken.

The work was managed by Phil Poucher MCIfA, AW Project Manager, and the site work was undertaken by Daniel Moore, Jennifer Muller and Christian Lindesay.

1.2 Site Description and Geology

The site covers an area of open grassland, dotted with some mature trees, spread across south facing slopes bordering the northern edge of Pwll Road (A484), in Burry Port. The road forms the southern boundary, which comprises post-and-wire fencing on top of a low mortared stone retaining wall, changing to former hedgerow and matures trees to the east. The eastern boundary is formed by property boundaries of The Grange. The northern boundary is formed by a flattened trackway ridge and stands of mature trees with open ground beyond. The ruins of the former Goodig hotel lie just beyond the northern boundary. The western boundary is formed by mature trees along the edge of a drive accessing Glyneithin and Goodig Lodge to the northwest.

The settlement of Burry Port is largely laid out to the south and southwest of the site, and lies on the north coast of the Burry Estuary, at the point where the River Loughor enters the Bristol Channel. Llanelli lies 5km to the east, and the Gower Peninsula lies on the opposite side of the estuary to the south.

The underlying bedrock of the proposed development area comprises sedimentary sandstone of Brithdir Member, forming part of the South Wales Upper Coal Measures Formation. Overlying superficial deposits of Devensian Diamicton are recorded along the line of Pwll Road (BGS 2018).

1.3 Archaeological and Historical Background

There is a general potential for prehistoric archaeological activity in the area. The site is backed by a ridge of high ground to the north, and one round barrow (PRN 7329), a burial mound dating to the Bronze Age, has been recorded on the ridge, along with two records of potential Bronze Age standing stones to the east. These site would suggest the ridge may have been the focus of funerary and ritual activities during the Bronze Age. Also on a prominent hilltop, approximately 100m to the northwest of the site, lies Y Gaer Hillfort (PRN 1649). This a large defended enclosure, with two sets of banks and ditches encircling the hilltop. It likely dates to the Iron Age, and may have been a focus for settlement, with extensive views across Carmarthen Bay to the south.

The site borders the remains of Goodig Hotel, which may have its origins as an early 18th century house (PRN 25063), albeit with 19th century alterations. In the 20th century the house was sold and converted into an hotel. In the mid-1990s it was destroyed by fire and never rebuilt. Mid-19th century maps (Tithe 1841) show the site within a wooded enclosure just beyond the northern edge of the site, approached by a drive that runs roughly north – south direct from the main road. The site itself comprises agricultural land, divided into roughly three fields by north – south orientated field boundaries. This can be seen in more detail on the Ordnance Survey maps from the late 19th century onward (Figure 5). Goodig comprised an adjoining collection of several buildings, with an outlying building to the southeast (still outside the site boundary). It was approach by a tree-lined road from the south, but the main drive appears to have taken a more circuitous route around the west and north side of the site. The site was divided into five separate fields. By the early 20th century the fields appear to have been amalgamated, with sporadic tree planting reminiscent of a parkland estate across the site. A small collection of buildings had also been added adjacent to the north – south drive, but they are unlabelled. These were removed in the later 20th century when the current track from the south was established. Aerial

photographs from the 1940s (Britain from Above) show extensive woodland planting on the slopes immediately to the south of the house, enclosed by walls, the lower of which is reminiscent of a Ha Ha. A formal garden area lies to the west, enclosed by hedgerows, extending into the site boundary.

Also recorded in the survey area are a number of linear earthworks and terraces (PRN 7330), aligned largely east – west along the sloping ground, and clearly visible on aerial photographs from the 1990s onward. These terraces have not been explained, but it is suggested that they may relate to an earlier field system, and one not recorded on 19th or 20th century map sources. Alternatively they may be more recent in date, and associated with potential landscaping work that ccompanied the change from enclosed fields to a semi-parkland estate around Goodig House in the late 19th or early 20th century.

2. Aims and Objectives

2.1 Geophysical Survey

The geophysical survey was undertaken in order to:

- Locate and describe archaeological features that may be present within the development area. The archaeological work was designed to attempt to elucidate the presence or absence of archaeological material that might be affected by the scheme, in particular its character, distribution, extent and relative significance.
- Provide sub-surface data to inform any future on-site works.

3. Methodology

3.1 Geophysical Survey

A Bartington Grad601 dual-fluxgate gradiometer was used to undertake the survey. The machine consists of two high stability fluxgate sensors suspended on a single frame, accurately aligned, which can detect localised magnetic anomalies compared with the general magnetic background. When mapped in a systematic manner, this allows changes in the magnetic field resulting from differing features in the soil to be plotted. Previous research has shown that fired, or cut and backfilled archaeological features such as kilns and hearths, ditches and pits often have an anomalously higher magnetic susceptibility than the surrounding subsoil due to burning and biological processes. Data from this may be mapped at closely spaced regular intervals, to

produce an image that may be interpreted to locate buried archaeological features (Clark, 1997) (Aspinall *et al*, 2011).

Detailed survey was carried out in grids of 30m x 30m along zig-zag and parallel traverses spaced at 1m intervals, recording data points spaced at 0.25m intervals to a maximum instrument sensitivity of 0.1nT in accordance with Historic England Guidelines. The survey mode was set to bi-directional (traverses walked alternately south-north/north-south and west-east/east-west) except in two grids (Nos 4 and 5) which were walked in parallel traverses. Incomplete survey lines resulting from irregular area boundaries or obstacles were completed using the 'dummy log' key. At regular intervals the data was downloaded in the field onto a laptop computer for storage and assessment.

3.2 Data Processing and Presentation

Following the completion of the detailed survey, processing and analysis took place using the TerraSurveyor v.3 software package. After downloading, the results were plotted in 2D. The most typical method of visualising the data is as a greyscale image. In a greyscale, each data point is represented as a shade of grey, from black to white at either extreme of the data range. A number of standard operations (including destriping) were carried out to process the data. The data was then analysed using a variety of parameters and styles and the most useful of these were saved as *TIF images and displayed using Adobe Illustrator software. Due to the presence of strong magnetic anomalies, the data displayed was clipped to a range of +/-10 and +/-20 nT to allow finer details to be discerned. The results of the survey were then overlaid onto a digital map of the study area. This was then used to produce interpretation figures.

All works were undertaken in accordance with the CIfA's Standards and Guidance for a Geophysical Survey (2014) and current Health and Safety legislation.

4. Geophysical Survey Results

4.1 Limitations

The survey was undertaken during a combination of periods of wet, windy and sunny weather.

The presence of wire fencing, a van and metal gates prevented surveying to the very edges of the field, as the metal would obscure more subtle magnetic readings taken in the vicinity. The overall condition of the field created an environment impossible to survey completely due to a number of factors: overgrown grass and reeds hid discarded pieces of metal (including sheet metal, wheels, old car batteries etc), only some of which was discovered and avoided. The vegetation also hid brick and stone, barbed wire fencing, holes and long ruts in the ground. Areas thick with brambles and reeds were avoided as the height of the vegetation would have interfered with the sensors, and the waterlogged nature of some of the ground was unsuitable to walk on. Brambles were present in most areas and created trip hazards. The presence of a dead tree prevented surveying directly downhill from it due to health and safety issues. Topographically there were also areas of steep slopes, which were largely covered in thick vegetation and therefore inaccessible.

As a result of these limitations differing surveying styles were adopted to establish a safe and effective method of surveying. The survey was largely carried out in bi-directional traverses, but in some areas parallel traverses were required. The hillslope and ground conditions also meant that the direction of the traverses also had to be changed. These changes are reflected in the appearance of the survey results.

4.2 Results of the Survey (Figs 3 & 4)

General

The field produced strong responses around the edges and road, where there was a high magnetic response due to fencing and gates, as well as a number of bipolar anomalies representing metallic pipes containing services. Several discrete features were identified throughout the field, but these appear to be associated with modern features, some of which were visible at ground level. In the centre of the survey area were a significant amount of strong magnetic, dipolar readings in spreads. Such strong responses are likely to be associated with modern activity, and indicate ferrous anomalies, or ‘spikes’, characteristic of small pieces of ferrous debris or material such as bricks brick/tile in the topsoil. This is strongly reinforced by areas of bricks and stone noted just under the grass along with other metal debris, corresponding to terraced area in close proximity to modern trackways or the former Goodig hotel. There is some suggestion of potential linear features amongst these readings however. Some slight

readings may possibly relate to the terracing visible on aerial photographs, but these did not show up as strong features within the survey results.

Linear Features

The western part of the field contained one strong positive linear anomaly (Feature 1) with an associated negative response. Such linear responses are often indicative of cut features, however the strength of the readings from this feature would suggest it is more likely to represent a wire, cable or pipeline representing a modern service. This ran northeast-southwest.

In the western-most part of the field and in the eastern part of the field were linears (Features 2 and 3, respectively) running north - south. Both features produced strong bipolar results, indicating metallic objects, and such features typically represent modern services.

Two very faint linear areas of positive responses (Feature 4) were picked up in the far western end of the site, both running roughly parallel in an east – west direction. They appear to fade to the east, although the northernmost linear leads into an area of trees and undergrowth that was inaccessible to survey. There is some indication that the southern linear may continue further east, potentially as far as the access track, but the differences in the magnetic responses are relatively slight and the eastern end becomes particularly indistinct.

Along the northern edge of the site, close to the Goodig Hotel site, there is clearly a large area of very strong dipolar responses, indicative of modern ground disturbance, which is visible at surface level. However there does appear to be one or two linear features (Feature 5), visible as strong positive responses with associated negative responses, running in an east – west direction.

Within the centre of the site slight differences in the magnetic readings suggest a possible linear feature (Feature 6) running north – south, emphasised by a possible linear arrangement of discrete bipolar responses. These reading are not clear however.

5. Interpretation and Discussion

The geophysical survey demonstrated no clear features of significant archaeological interest. It is possible this may be in part obscured by the difficulties the site presented in terms of getting a complete and consistent survey throughout, but it is also clear

that there has been areas of landscaping, groundworks, modern disturbance and possible recent agricultural activity that has affected the site.

Aerial photos and Lidar data at 1m resolution clearly show and area of linear earthworks and terraces (PRN 7330) across much of the site, largely orientated east – west, with a linear feature also orientated northeast – south. These features would also appear to be represented on the survey results, as Features 4 and 1. The diagonal linear feature (Feature 1) runs northeast-southwest up the hill towards a house immediately north of the site (Goodig Lodge). This type of linear can be representative of a boundary. However, there is no such boundary on historic maps, and the strength of the anomaly, its direction towards the house, and the fact that it is extant as an earthwork, make it more likely to be a modern feature, and likely to be services associated with the house.

Feature 4 corresponds to the edges of shallow terracing noted at ground level. Aerial photos and Lidar data clearly show this terracing/earthworks extending across the field, but this is not as well reflected in the survey results, although faint readings do suggest some continuation of Feature 4. This is possibly due to the fact that for part of the central area of the field the grids were walked in a west - east orientation along the slope of the hill, rather than north - south up and down the hill as was done to the west and east. This choice was made due to the poor conditions of the terrain, considering health and safety issues. This method may not have proved as effective in identifying these east – west features however, although the terracing was also less prominent as a visible earthwork in this central area.

Feature 2 and 3 are very likely to represent modern services. Feature 5 across the northern end of the site may similar represent modern services given the strength of the readings and clear evidence both at ground level and within the survey results of modern disturbance in the vicinity. However, comparisons with aerial photographs taken in 1947 and illustrated by the RCAHMW in associated with Goodig House (NPRN 409427) show a boundary to the Goodig House site enclosing the house, lawn, woodland planting and formal gardens. The boundary is part formed by a stone wall, and part by hedgerow. The location of Feature 5 suggests it may be associated with the hedge boundary or area of gardens to the west of the house.

The former field boundaries visible running north - south on 19th century mapping (Figure 5) do not show up clearly within the survey results. However, the remains of one of the boundaries was apparent on the surface due to the trees growing in it and the stones around it from its collapse or demolition. This would also appear to mark the line of the former original north – south drive to Goodig House (to the east of the current access drive). The somewhat uncertain readings for Feature 6 also appear to

share an approximate line with the mapped boundaries, and may therefore represent the remains of such a feature. It is possible that either these boundaries were of a type that may not show up clearly on the survey results, such as small fence posts or small surface hedgerows, or potentially that any landscaping occurring on site when it was part of the Goodig Hotel and any more recent ground disturbance could have covered or eliminated these.

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Figure 1: Location map, 1:50,000 @ A4

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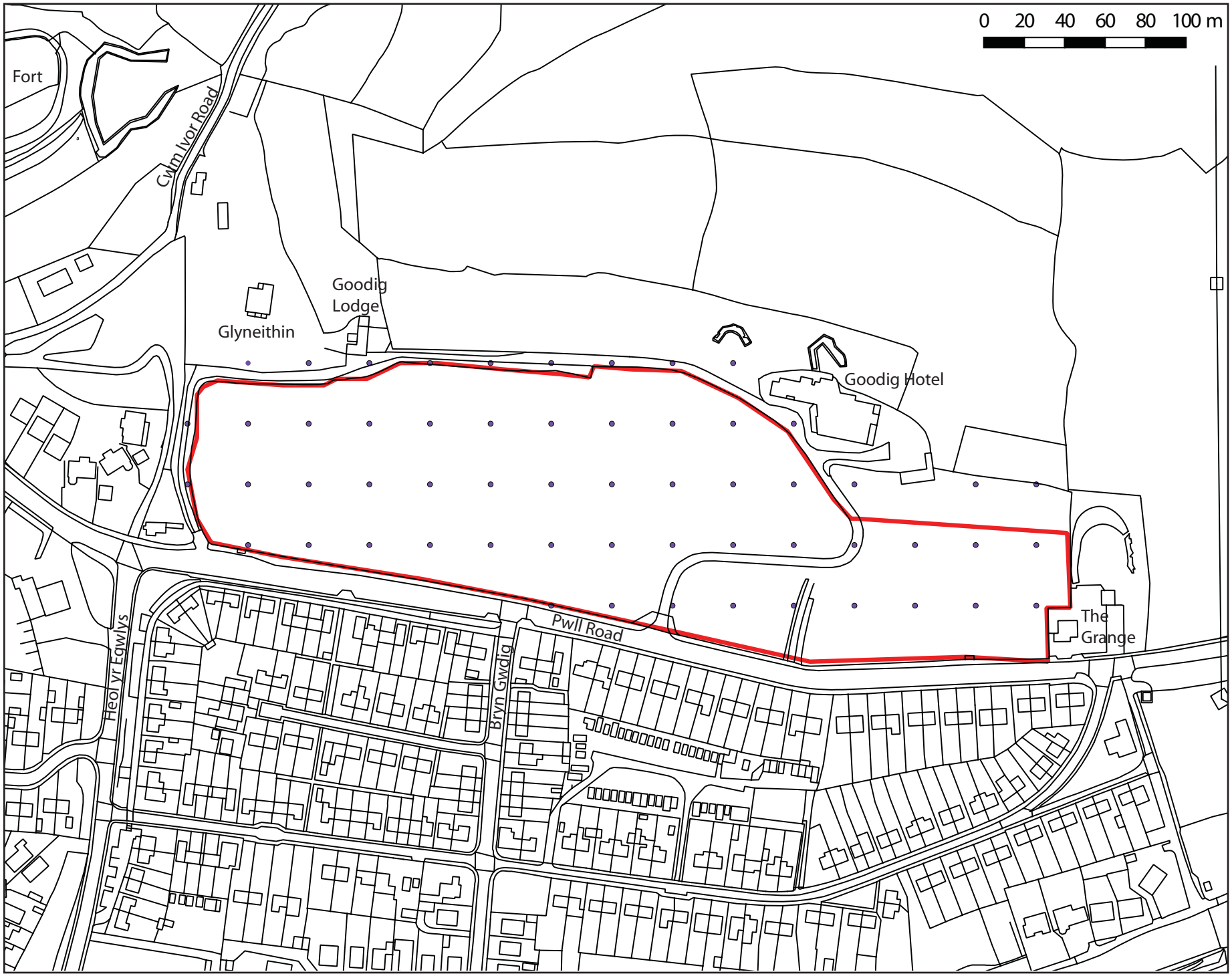

Figure 2: Site location and survey area plan. Mapped boundaries overlaid with geophysical survey grid, site boundary marked in red.

1:2500 @ A4

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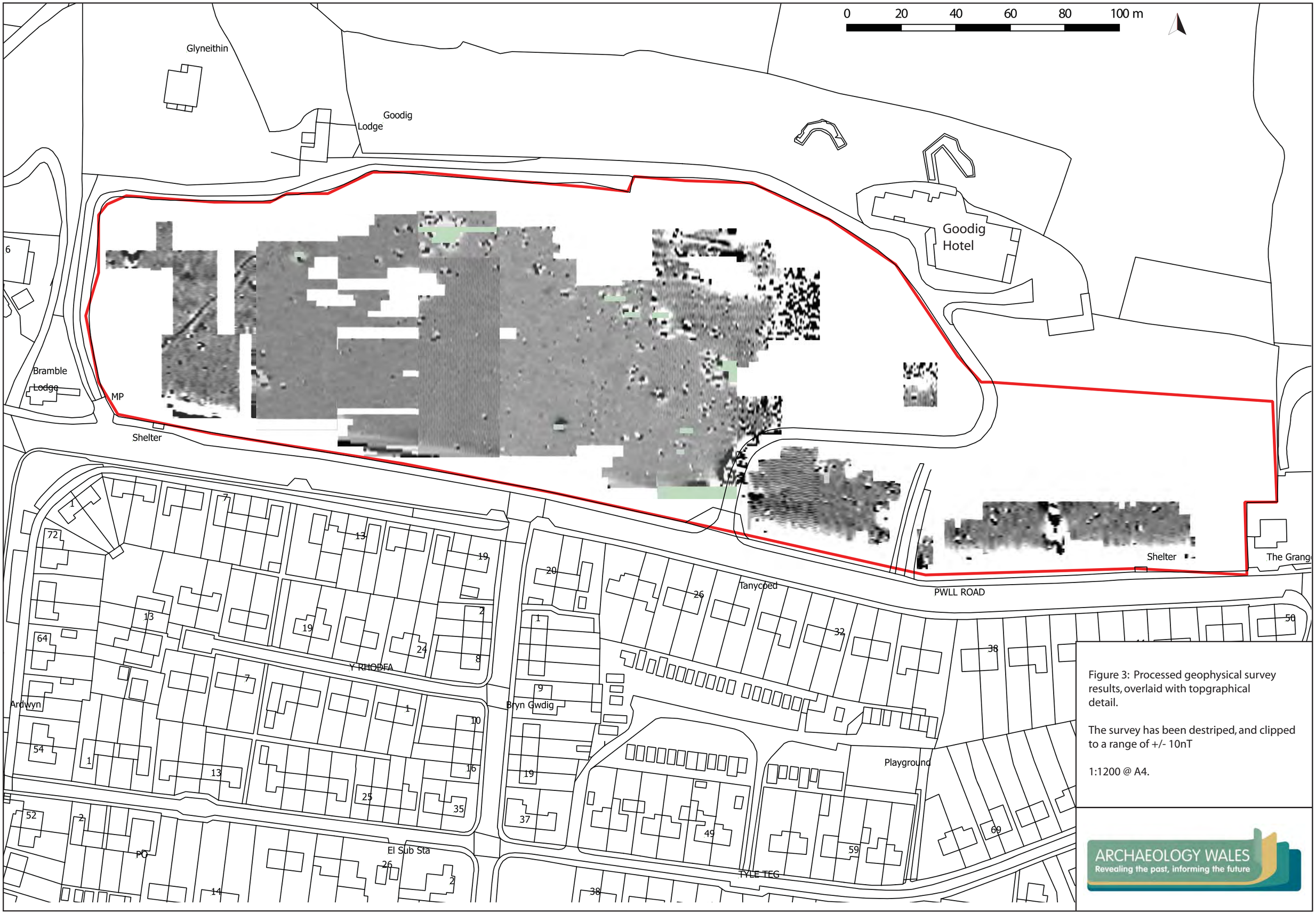

Figure 3: Processed geophysical survey results, overlaid with topgraphical detail.

The survey has been destriped, and clipped to a range of +/- 10nT

1:1200 @ A4.

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0 20 40 60 80 100 m

Glyneithin

Goodig Lodge

Rough vegetation / trees / sloping ground

Trees

Rough vegetation / trees / sloping ground

Feature 2

Feature 1

Feature 5

Trees / surface debris

Tree / fence

Goodig Hotel

Trees

Feature 4

Rough vegetation/ rutted ground

Surface debris

Steep slope

Bramble Lodge

MP

Fallen tree

Metal Cabin

Steep slope

Trees / Rough Vegetation

Shelter

Feature 6

Trees

Rough vegetation

Steep slope / Rough vegetation

Feature 3

Trees

Trees

Trees

Shelter

The Grange

PWLL ROAD

Tanycoed

Y RHODFA

Bryn Gwdig

Ardwyn

Playground

El Sub Sta

PO

TYLE TEG

Figure 4: Interpretation layer of geophysical survey results, with areas of constraints also highlighted.

1:1200 @ A4.

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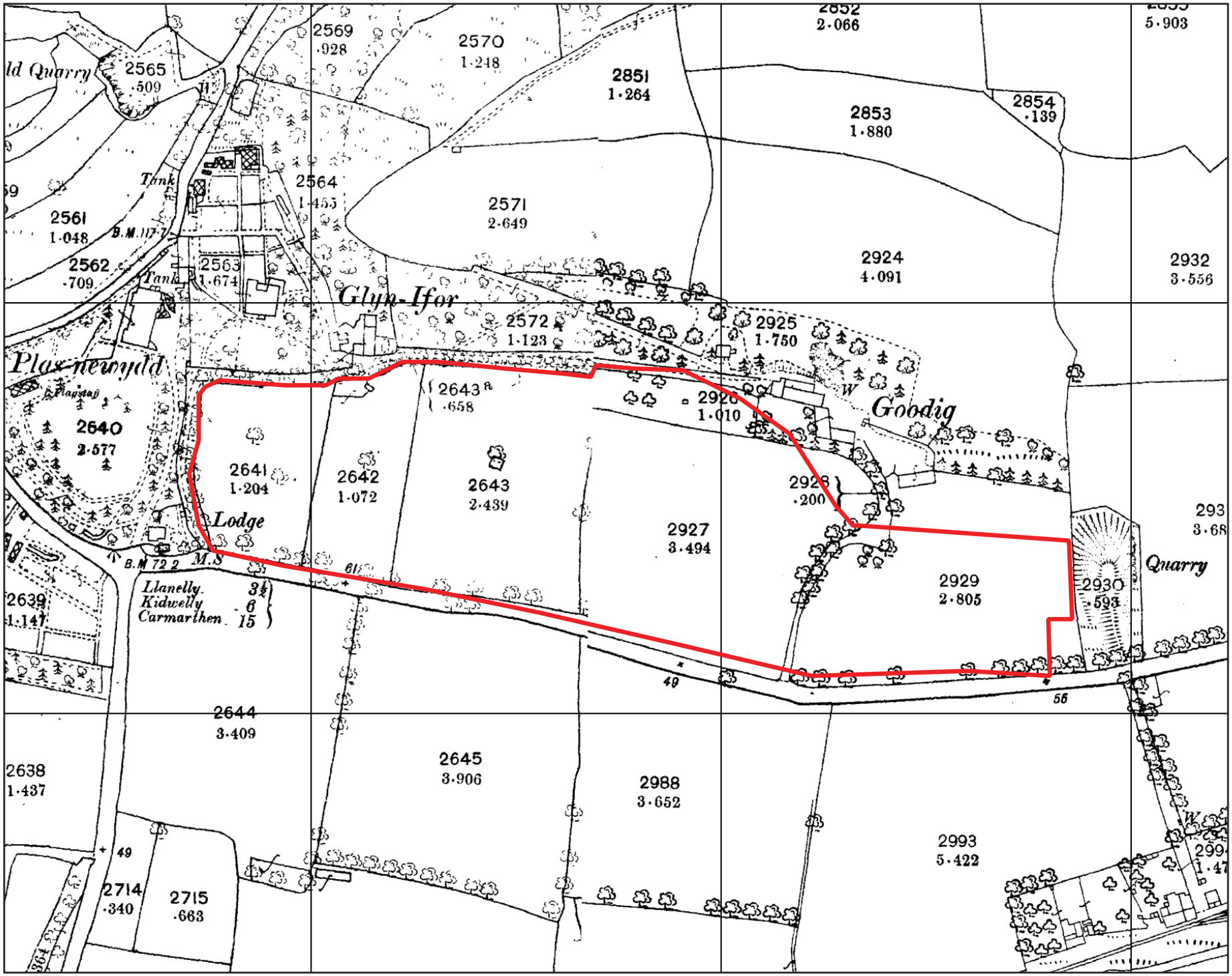

Figure 5: Extract from the Ordnance Survey map of 1880, showing the former field boundaries crossing the site.
Site outline in red.

1:2500 @ A4

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Plate 1: West end, facing east

Plate 2: Mid-site, facing west

Plate 3: Mid-site, facing north

Plate 4: East end, facing west

Plate 5: East end, facing northwest

Plate 6: East end, facing northeast

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APPENDIX I
Written Scheme of Investigation

ARCHAEOLOGY WALES
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Written Scheme of Investigation

For a Geophysical Survey:

Land part of former Goodig Hotel, Pwll Road, Burry Port

Prepared for:
Pobl Housing Group

Project No: 2670

November 2018

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NON TECHNICAL SUMMARY

This Written Scheme of Investigation (WSI) details the proposal for geophysical survey of land on the site of the former Goodig Hotel, Pwll Road, Burry Port, ahead of a proposed residential development. It has been prepared by Archaeology Wales Limited for Pobl Housing Group.

1. Introduction

This Written Scheme of Investigation (WSI) details the methodology for a programme of archaeological mitigation (geophysical survey) to be undertaken at the site. The proposed development comprises plans for the construction of a new residential development on land that was part of the former Goodig Hotel, Pwll Road, Burry Port, Carmarthenshire (henceforth – the site), centred on NGR SN 45563 01303 (Figure 1 and 2). The local planning authority is the Carmarthenshire County Council (henceforth – CCC), and the planning application number is S/36993.

The recommendations for a geophysical survey on the site have been proposed by Dyfed Archaeological Trust – Development Management (henceforth – DAT-DM), in their capacity as archaeological advisors to CCC. These recommendations are stated in a letter dated 5th April 2018 from DAT-DM to CCC in response to the planning application. The recommendation states:

> No development shall take place until a qualified and competent archaeologist has submitted a written scheme of investigation (WSI) for approval in writing by the local planning authority. This WSI will describe the different stages of the work and demonstrate that it has been fully resourced and given adequate time. On behalf of the local planning authority, their archaeological advisors (DAT DM) will monitor all aspects of this work through to the final discharging of the condition. This work will not be deemed complete until all aspects of the WSI have been addressed and the final report submitted and approved.
>
> Reason: to protect historic environmental interests whilst enabling development

This WSI has been prepared by Philip Poucher, Archaeology Wales Ltd (henceforth - AW) at the request of JCR Planning Ltd, on behalf of their clients the Pobl Housing Group. It provides information on the methodology that will be employed by AW during a geophysical survey of the site. This WSI is to be approved by DAT-DM, on behalf of CCC, prior to the survey being undertaken. The purpose of the archaeological mitigation (geophysical survey) is to provide CCC with sufficient information regarding the nature of archaeological remains on the site of the development, the requirements for which are set out in Planning Policy (revised edition 9, 2016), Section 6.5.7 and Technical Advice Note (TAN) 24: The Historic Environment (2017).

All work will conform to the Standard and Guidance for Geophysical Survey (CIfA December 2014) and be undertaken by suitably qualified staff to the highest professional standards.

2 Site Description & Archaeological Background

The site covers an area of open grassland, dotted with some mature trees, spread across south facing slopes bordering the northern edge of Pwll Road (A484), in Burry Port. The site lies both to the north and south of Slade Lane. The road forms the southern boundary, which comprises post-and-wire fencing on top of a low mortared stone retaining wall, changing to former hedgerow and matures trees to the east. The eastern boundary is formed by property boundaries of The Grange. The northern boundary is formed by a flattened trackway ridge and stands of mature trees with open ground beyond. The ruins of the former Goodig hotel lie just beyond the northern boundary. The western boundary is formed by mature trees along the edge of a drive accessing Glyneithin and Goodig Lodge to the northwest.

The settlement of Burry Port is largely laid out to the south and southwest of the site, and lies on the north coast of the Burry Estauary, at the point where the River Loughor enters the Bristol Channel. Llanelli lies 5km to the east, and the Gower Peninsula leis on the opposite side of the estuary to the south.

The underlying bedrock of the proposed development area comprises sedimentary sandstone of Brithdir Member, forming part of the South Wales Upper Coal Measures Formation. Overlying superficial deposits of Devensian Diamicton are recorded along the line of Pwll Road (BGS 2018).

As stated in the letter from DAT-DM to CCC, a number of prehistoric sites are recorded in the surrounding area, including a Bronze Age round barrow and Iron Age defended enclosure, which would suggest a general level of archaeological potential in the area. The site is also bordered by the remains of Goodig Hotel, which may have its origins as an early 18th century house (PRN 25063), albeit with 19th century alterations. Early 20th century building remains associated with Goodig may extend within the survey area, as indicated on early Ordnance Survey mapping. Also recorded in the survey area are a number of linear earthworks and terraces (PRN 7330), likely associated with an earlier, undated, field system.

3 Objectives

This WSI sets out a program of works to ensure that the geophysical survey will meet the standard required by The Chartered Institute for Archaeologist's *Standard and Guidance for archaeological geophysical survey (2014)*.

The primary objective of the work will be locate and describe, by means of geophysical survey, archaeological features that may be present within the development area. The proposed archaeological work will attempt to elucidate the presence of absence of archaeological material that might be affected by the scheme, in particular its character, distribution, extent and relative significance.

A report will be produced that will provide information which is sufficiently detailed to allow informed planning decisions to be made that can safeguard the archaeological resource. The information could then be used to determine further archaeological investigation or appropriate mitigation strategies for any archaeological remains within the area to be implemented prior to or during the proposed development.

4 Methodology for geophysical survey

The area to be surveyed will include all of the accessible development area (see the attached plan, Figure 2). On-site adjustments may be required to avoid areas of magnetic interference or inaccessibility. For example, both individual and small stands of mature trees are noted, which will be unsuitable for survey, similarly some steeper slopes may prove unsuitable for survey.

The site will located by GPS. All survey points will be located with a total station or similar survey equipment and plotted onto an O.S. base map.

The on-site survey will be undertaken in a single phase lasting approximately three to four days. This will be followed by report production.

The survey will be carried out using a Bartington Grad601 Magnetometer. This is chosen as an efficient and effective method of locating archaeological anomalies on this type of site. The machine consists of two high stability fluxgates gradiometers suspended on a single frame, accurately aligned, that can detect localised magnetic anomalies compared with the general magnetic background. When mapped in a systematic manner this allows changes in the magnetic field resulting from differing features in the soil to be plotted. Strong magnetic anomalies will be generated by iron-based objects or areas of heat-activity, such as hearths and kilns. More subtle anomalies may be generated by changes, typically in the iron-oxide content, of underlying soils, compared to the natural subsoil. This helps to detect infilling material of features such as ditches and pits, as well as overlying material such as wall lines.

Relatively open fields of low vegetation, such as this site, provide ideal locations for this type of survey. The surface of the field is relatively uniform allowing rapid traverses and readings to be taken at consistent heights above the ground surface, and the upper topsoil is generally both neither deep enough to mask features cutting into the underlying subsoil, and unlikely to contain a significance amount of material that could interfere with the magnetic readings. The underlying geology of sandstone, overlain with diamicton, is also unlikely to provide a strong magnetic response that could distort the readings.

Each survey area will be divided into 20m or 30m square grids along a common alignment. Within each grid, parallel traverses 1m apart will be walked at rapid pace along the same orientation. Instrument readings will be logged at 0.25m intervals, with an average cycle of 4 using an ST1 internal sample trigger. Incomplete survey lines resulting from irregular area boundaries or obstacles will be completed using the "dummy log" key.

Further survey information will be completed on the relevant pro-forma sheet. All data will be downloaded in the field into a laptop computer. The location of the grid corners will be recorded using a total station or similar survey equipment so that results can be accurately placed onto an OS map.

A composite of each detailed survey area will be created and processed using the software package *Terrasurveyor v.3*. A variety of processing tools will be used to

enhance any potential archaeology. The final results will be presented at an appropriate scale tied to the Ordnance Survey National Grid.

5 Monitoring

DAT-DM will be contacted approximately one week prior to the commencement of site works, and subsequently once the work is underway.

Any changes to this WSI that AW may wish to make after approval will be communicated to DAT-DM for approval on behalf of the Planning Authority.

DAT-DM will be given access to the site so that they can monitor the progress of the work, they will be kept regularly informed about developments, both during the site works and subsequently during the post-fieldwork programme.

6 Post-fieldwork programme

Site archive

An ordered and integrated project archive will be prepared in accordance with *The National Standard and Guidance to Best Practice for Collecting and Depositing Archaeological Archives in Wales 2017* (National Panel for Archaeological Archives in Wales) and the guidelines of the Chartered Institute for Archaeologists upon completion of the project.

Final reporting

The client report will contain, as a minimum, the following elements:

- Concise non-technical summary of the results
- Description of, and reasoning behind, geophysical survey technique
- Detailed plans of the site and survey results
- Site illustrations, related to Ordnance Datum
- Written description
- Written interpretation of results along with illustrated interpreted site plan
- Statement of local and regional context
- Conclusions as appropriate
- Bibliography
- A copy of the AW Specification

Copies of the report will be sent to the Client, and a copy of the report will be sent to DAT-DM for approval. Following approval a copy will also be sent to CCC and the regional Historic Environment Record. Digital copies will be provided in pdf format if required.

The report and all relevant information will be submitted to the Historic Environment Record following the guidelines and procedures laid out in the *Guidance for the Submission of Data to the Welsh Historic Environment Records* (WAT 2018).

A summary report of the work will be submitted for publication to a national journal no later than one year after the completion of the work.

7 Resources and timetable

Standards

AW works to the standards and guidance provided by the *Chartered Institute for Archaeologists*. AW fully recognise and endorse the Chartered Institute for Archaeologists' *Code of Conduct*, *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* and the *Standard and Guidance for archaeological geophysical survey* currently in force. All employees of AW, whether corporate members of the Chartered Institute for Archaeologists or not, are expected to adhere to these Codes and Standards during their employment.

Staff

The project will be undertaken by suitably qualified AW staff. Overall management of the project will be undertaken by Philip Poucher MCIfA, AW Project Manager.

Equipment

The project will use a Bartington Grad601 set to standard specifications.

Timetable of archaeological works

The work will be undertaken at the convenience of the client. No start date has yet been agreed, but this it is anticipated to start soon after approval of this WSI.

Insurance

AW is fully insured for this type of work, and holds Insurance with Aviva Insurance Ltd and Hiscox Insurance Company Limited through Towergate Insurance. Full details of these and other relevant policies can be supplied on request.

Arbitration

Disputes or differences arising in relation to this work shall be referred for a decision in accordance with the Rules of the Chartered Institute of Arbitrators' *Arbitration Scheme for the Institute for Archaeologists* applying at the date of the agreement.

Health and safety

Prior to the commencement of work AW will carry out and produce a formal Health and Safety Risk Assessment in accordance with *The Management of Health and Safety Regulations* 1992. A copy of the risk assessment will be kept on site and be available for inspection on request. A copy will be sent to the client (or their agent as necessary) for their information. All members of AW staff will adhere to the content of this document.

AW will adhere to best practice with regard to Health and Safety in Archaeology as set out in the FAME (Federation of Archaeological Managers and Employers) health and safety manual *Health and Safety in Field Archaeology (2002)*.

References

British Geological Survey. 2018. British Geological Survey Maps. Accessed at www.bgs.ac.uk on 08/11/18

Chartered Institute for Archaeologists. 2014. *Standards and guidance for the collection, documentation, conservation and research of archaeological materials.*

Chartered Institute for Archaeologists. 2015. *Standards and Guidance for*

Geophysical Surveys.

The Welsh Archaeological Trusts (WAT). July 2018. *Guidance for the Submission of Data to the Welsh Historic Environment Records*

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