Archaeology Wales

West Holloway,
Penally, Pembrokeshire

Geophysical Survey

By
Hywel Keen & Philip Poucher

Report No. 1411

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Archaeology Wales

West Holloway, Penally, Pembrokeshire

Geophysical Survey

Prepared For: Gerald Blain Ltd

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Date: 13/11/15	Date: 13/11/15

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November 2015

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Non-Technical Summary

This report results from work undertaken by Archaeology Wales Ltd for Gerald Blain Ltd. It presents the results of a geophysical survey on the site of a proposed development on land at West Holloway, Penally, Tenby, Pembrokeshire (15/0222/PA). The survey was undertaken using a gradiometer and covered an area subdivided into three fields measuring in total c. 3ha.

The survey results revealed a cluster of linear features towards the western end of the site that appear to relate to buried modern services. Two further linear features identified within the site area may relate to earlier field divisions and/or ploughing scars. Other features identified within the site area appear to be modern or natural geological features.

Other than possibly, the earlier field divisions and/or ploughing scars, no features of archaeological interest were identified.

1. INTRODUCTION

1.1 Project commission

1.1.1 The proposed development comprises plans for the construction of 45 self-catering units and a site maintenance building on land adjacent to West Holloway, Penally, Tenby, Pembrokeshire (Henceforth – the site) Associated works would also include access and distributor roads, footpaths and services and general landscaping, and the site covers an area of *c*. 3 hectares (6.83 acres). The development proposal has been submitted by Gerald Blain Ltd. The local planning authority is Pembrokeshire County Council (Henceforth - PCC) and the planning application number is 15/0222/PA. The site is located at NGR SN 1146 0001 (Figures 1 & 2).

1.1.2 Dyfed Archaeological Trust (Henceforth – DAT), in their capacity as archaeological planning advisors to PCC, have determined that the proposed development may potentially affect buried archaeological remains, but that there is insufficient information to identify the form, character, type, date or relative significance of the buried archaeology. Consequently, in a letter to PCC dated 3/9/15, DAT have recommended:

> That a staged archaeological evaluation of the application area is required. In the first instance we envisage a geophysical survey, with the results of this guiding possible subsequent works. As there is the potential for significant archaeology, we also recommend that the survey results are presented to your Authority prior to the determination of the application.

1.1.3 Archaeology Wales Ltd (Henceforth - AW) was commissioned to undertake the archaeological work. A Specification was produced by AW and approved by DAT in September/October 2015 (Appendix I). This Specification was for a geophysical survey across the proposed development site, designed to detect archaeological features using a gradiometer. AW previously undertook a Desk-based Assessment (Hadley 2015) associated with the same development.

1.2 Project objectives

1.2.1 The primary objective of the work was to locate and describe, by means of geophysical survey, archaeological features that may be present within the development area. The proposed archaeological work was designed to elucidate the presence or absence of archaeological

material that might be affected by the proposed scheme, in particular its character, distribution, extent and relative significance.

1.2.2 This work was undertaken in October 2015. All field-work being undertaken by suitably qualified staff and in accordance with the standards and guidelines of the CIfA.

2. THE SITE

2.1 Location and Archaeological Potential

2.1.1 The application site covers some 3 hectares (approximately 6.83 acres) of farmland within the Ritec Valley in the coastal village of Penally, Pembrokeshire (Figure 1). The development area is located directly to the west of the dwelling 'West Holloway' and the Night Owl Public House. The southern and northern boundaries are defined by garden plots of properties along Holloway Hill and Trefloyne Lane, respectively. There are pasture fields and woodland to the west. The application site lies some 700m to the north of the historic core of Penally.

2.1.2 The fields are currently in agricultural use for pasture, grazed by horses and bounded largely by post and wire fencing. The southern boundary is at an approximate altitude of 25m OD. The land falls away to the northern perimeter of the site, to around 15m OD. An overhead powerline crosses the site.

2.1.3 The development site was the subject of a previous Desk-Based Assessment (Hadley 2015), designed to assess the impact of the development proposals on the historic environment. The historical and archaeological background of the site is detailed in the report. The following presents a brief summary of its findings.

2.1.4 The proposed scheme is situated within a landscape of considerable historic and archaeological significance. The archaeological record for this area is remarkably diverse in scope with evidence for human activity dating back to the Upper Palaeolithic, and the study area encompasses two multi-period sites of considerable archaeological importance; Hoyle Moth Cave and Little Hoyle Cave. There was considered to be a moderate potential for Prehistoric features to exist within the development area, along with a minor potential for Iron Age and Roman sites. There is also some potential for early medieval or medieval remains. The early medieval high status settlement at Longbury Camp represents a rare survival. In addition, there is documentary evidence for pre-Conquest land grants, recorded in the Book of Llandaff. These indicate the presence of a series of estates dependent on the early medieval monastery of Penally; one of which 'Luin Teilau' may be identified with Trefloyne Farm.

2.1.5 A wide variety of post-medieval sites and features were identified within the surrounding landscape, including agricultural, domestic, industrial, transport and military sites, however map regression analysis could identify no features post-medieval features within the development area.

2.1.6 The regional geology as mapped by the British Geological Survey (1:50,000 scale) indicates that the bedrock geology is composed of interbedded limestones, mudstones and cherts of the Pembroke Limestone Group, laid in the Early Carboniferous (*circa* 359-323 million years ago). This deposit extends over 250m beyond the site in all directions. There are no superficial deposits mapped across the site. Flandrian Age alluvial deposits (12,000 BCA – Present),

associated with the River Ritec, are mapped to the north of the scheme site. No other superficial deposits are mapped in the vicinity of the application area.

3. METHODOLOGY

3.1 The area surveyed included all of the development area (see Figure 2). The site was located by GPS combined with measured survey to known points and plotted onto an Ordnance Survey base map.

3.2 The survey was carried out using a Bartington Grad601 Magnetometer, a type of equipment that works by detecting variations in the earth's magnetic field. Each survey area was divided into 20m square grids set along a common alignment.

3.3 Within each grid, parallel traverses 1m apart were walked at rapid pace along the same orientation. Instrument readings were 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 were completed using the "dummy log" key.

3.4 All data was downloaded in the field into a laptop computer. A composite of each detailed survey area was created and processed using the Terrasurveyor software package. A variety of processing tools were used to enhance potential archaeology. The final results are presented at an appropriate scale tied to the Ordnance Survey National Grid, see figures 4 to 6.

4. RESULTS

4.1 Limitations

4.1.1 The survey was undertaken in October 2015. Weather conditions were generally dry and sunny. All fields were under improved grazed pasture, see photos 1 – 4.

4.1.2 The site is subdivided into three fields with post and wire fencing and as a result the areas adjacent to the fencing were un-surveyed to avoid the strong signal from the metallic fencing obscuring the adjacent readings.

4.1.3 Areas of dense undergrowth surrounded the edges of the site preventing surveying up to the external limits of the site. Housing development along the southern edge of the site also appears to have resulted in a spread of modern debris in this area that may have obscured gradiometer readings.

4.1.4 The site is crossed by overhead powerlines, although the lines themselves do not appear to have obscured the readings the posts within the site obscured any readings from around their base.

4.1.5 The underlying geology of limestones, mudstones and cherts of the Pembroke Limestone Group do not appear to have caused any distortions to the geophysical survey results.

4.2 Processing and presentation

4.2.1 Processing was performed using the latest version of *Terrasurveyor*. The data is presented with a minimum of processing. However, because of the presence of high values caused by ferrous objects, wire fencing and overhead services, all of which tend to hide fine details and obscure archaeological features, the values were 'clipped' to a range from *c.*10nT to –10nT to allow the finer details to show through.

4.2.2 The processed data is presented as grey-scale plots (Figure 3). The main magnetic anomalies have been identified, plotted onto a map showing local topographical features (Figure 4), and interpreted (Figure 5).

4.3 Survey Results

4.3.1 Towards the western edge of the site a series of linear anomalies are recorded on the geophysical survey results. The western feature (101) is a faint linear feature, represented by a faint line of slightly more magnetically positive (darker) readings, running in a roughly north – south direction, parallel to the current field boundary to the west. This may therefore be evidence of ploughing scars within the subsoil or potentially represent an earlier field boundary line.

4.3.2 Close by are a series of linear features including two parallel lines (102) of slightly more magnetically positive (darker) readings on a roughly north – south orientation, and two linear features of both magnetically negative (lighter) readings (103) and positive (darker) readings (104) running along a NW-SE and NE – SW orientation respectively. The parallel linear feature (102) is somewhat typical of a post-medieval field boundary line, and may continue northwards as linear feature 105. However, it would appear significant that these linear features all converge on the site of modern overhead powerline posts with attached transformer, and are likely therefore to be related modern services.

4.3.3 A further linear feature is also identified to the north (106) that does not appear to converge on the site of the modern powerline posts. However, as can be seen on modern internet sourced satellite imagery of the site (Bluesky et al 2015), both 106 and the adjacent linear 105, converge on the site of modern animal feeders and possible small temporary agricultural buildings. It is likely therefore that these features also relate to modern services.

4.3.4 Across the centre of the site another linear anomaly (107) of magnetically positive (darker) readings crosses the southern part of the site on a roughly north – south orientation. There is the possibility that faint traces of this feature continue to the north, beyond the modern wire fencing. The magnetic readings would suggest a ditched feature, possibly representing a previous field boundary line.

4.3.5 Towards the southeast corner of the site the northern edge of a trackway from a field gate is represented by a triangular spread of material (108) visible on the geophysical survey results. Very high magnetic readings in this area imply modern disturbance around the trackway.

4.3.6 Numerous irregular anomalies are shown on the results, spread throughout the field and all following a roughly north-south alignment, which would suggest these are the result of natural variations in the underlying geology.

4.3.7 No further features of archaeological interest were noted.

5. CONCLUSIONS

5.1 This report results from a gradiometer survey of an area of proposed development located at West Holloway, Penally, Tenby, Pembrokeshire. The site consists of one field of grazed pasture, currently subdivided into three by wire fencing. The proposed development comprises plans for the construction of 45 self-catering units and a site maintenance building, and the site covers an area of *c*. 3 hectares.

5.2 A cluster of linear anomalies were identified towards the western end of the site area. The majority of these features however appear to be aligned in relation to readily identifiable modern features, such as a the former site of an animal feeder and the location of overhead powerline posts with attached transformer, and it is likely therefore that these features are related to buried modern services.

5.3 Two further linear features are identified on the site (Nos. 101 & 107) that do not converge on these modern features. The possibility remains that they also represent buried modern services. However, they may also represent previous field boundary ditches or, in the case of 101, ploughing scars. These features are considered to be of limited archaeological interest.

5.4 An area of modern disturbance associated with a trackway was also identified at the eastern end of the site, with the remaining anomalies visible on the geophysical survey results likely to relate to natural geological features.

5.5 No further features of archaeological interest were identified.

6. SOURCES

Bluesky. Infoterra Ltd & COWI A/S 2015 *Digital imagery* (accessed 09/11/15)

Chartered Institute for Archaeologists 2014 *Standards and Guidance for archaeological geophysical survey*

Clark A. J. 1996, *Seeing Beneath the Soil* (2nd edition), Batsford, London

Hadley, A 2015 *West Holloway, Penally, Tenby, Pembrokeshire: Archaeological Desk-Based Assessment & Site Visit* Archaeology Wales Report No.1382

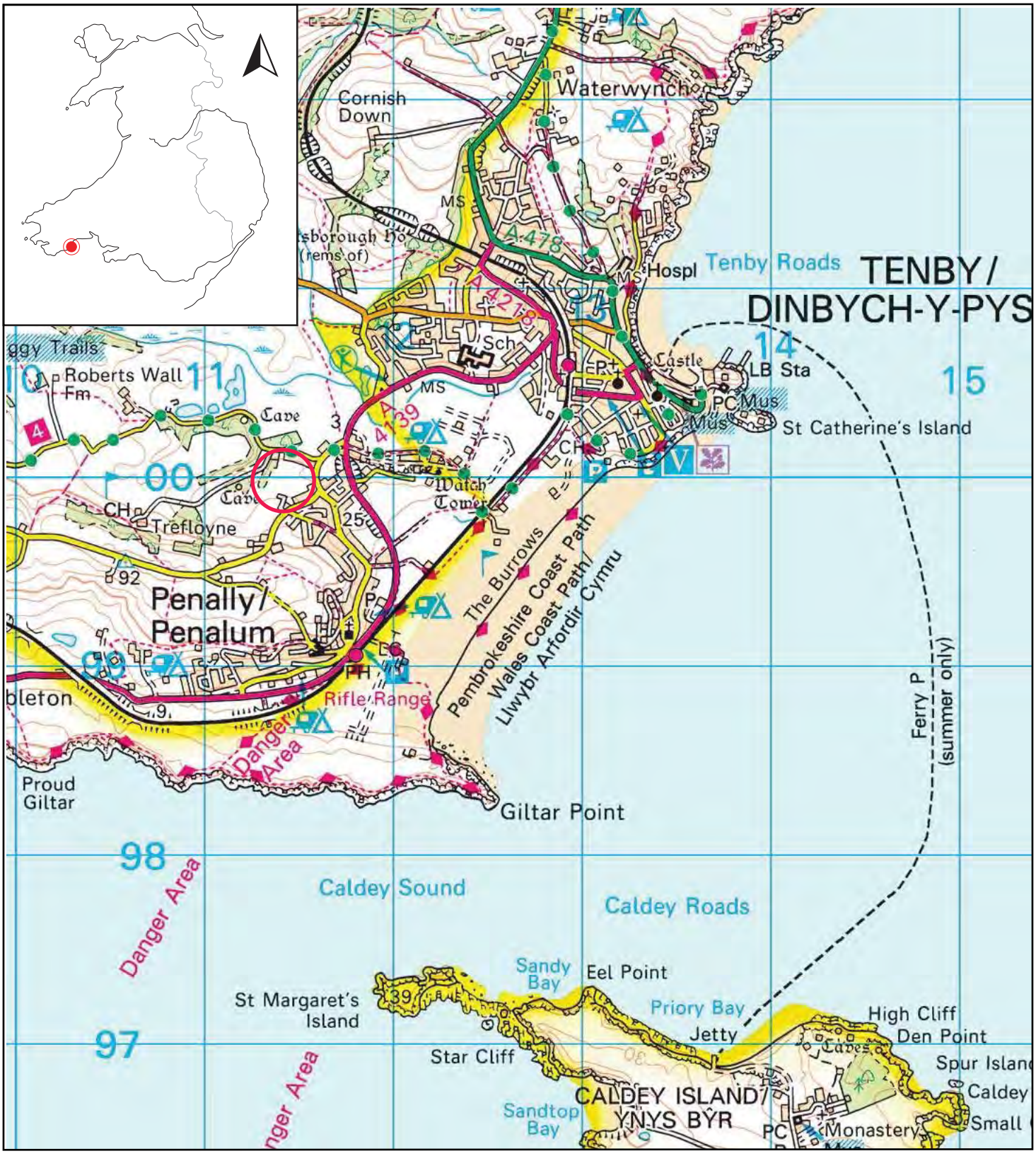
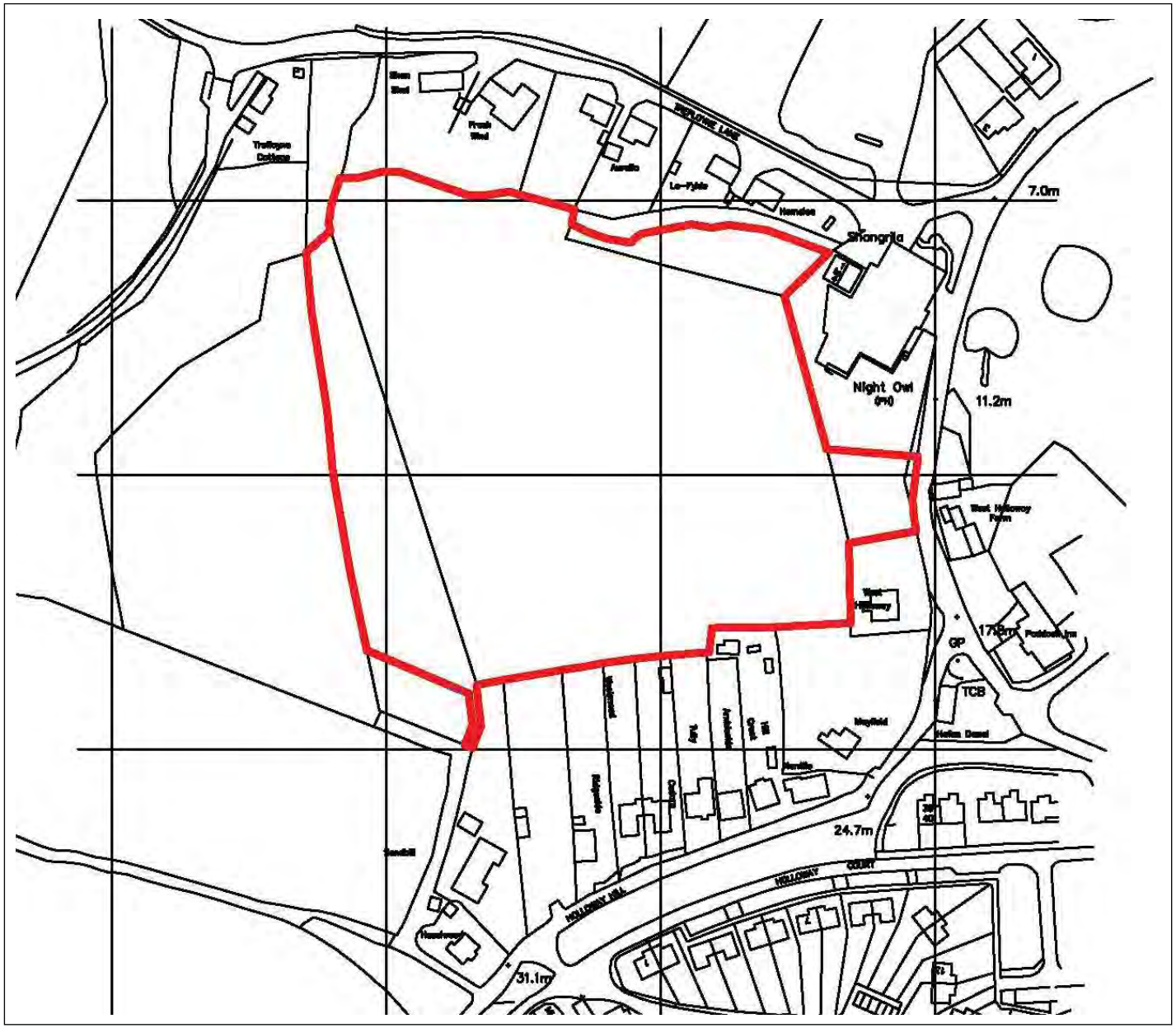


Figure 1
Location of site



0 200m

Site boundary

Figure 2.
Plan showing boundary of development area

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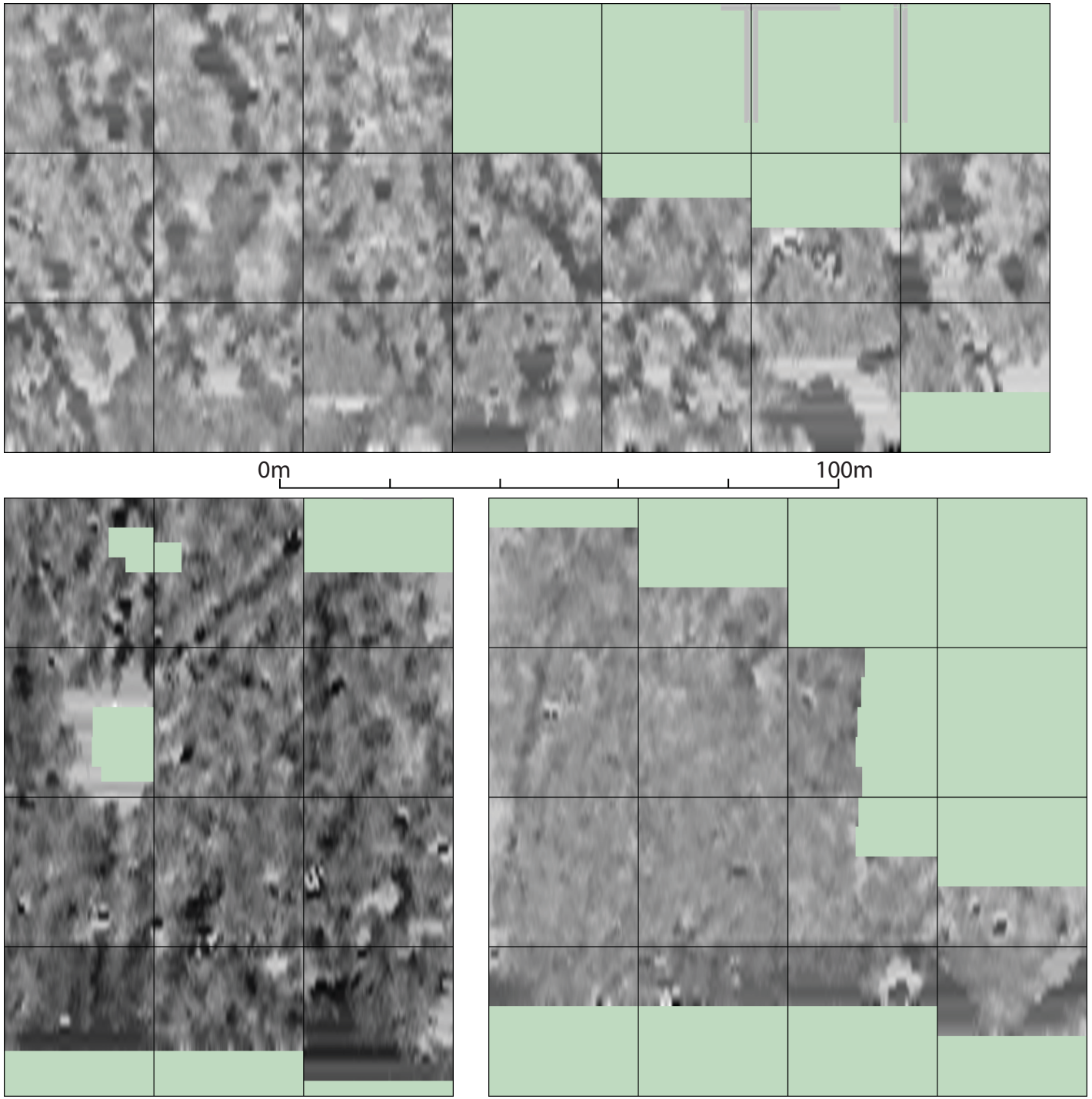

Figure 3: Individual geophysical survey results.

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Figure 4: Geophysical survey results overlaid on OS data. Site boundary outlined in red

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Figure 5: Interpretation layer. Identified features illustrated in blue, and labelled according to the main text.

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Photo 1: View of site from central point, looking NE, showing overhead powerlines and fencing. NB., horses removed from field during survey work.

Photo 2: View of site from central point, looking SE, showing fencing and development and vegetation along the southern edge of the site.

Photo 3: View of site from central point, looking SW, showing the overhead powerline posts with transformer

Photo 4: View of site from central point, looking NW.

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APPENDIX I:
Specification

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ARCHAEOLOGY WALES LIMITED:

Written Scheme of Investigation

for a geophysical survey

at

West Holloway, Penally, Tenby Pembrokeshire

Prepared for:
Gerald Blain Ltd

Project No: 2360

28th September 2015

Archaeology Wales Limited
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NON TECHNICAL SUMMARY

This Written Scheme of Investigations details a proposal for a geophysical survey of land at West Holloway, Penally, Tenby, Pembrokeshire, in response to proposals to build 45 self-catering units and a site maintenance building and associated infrastructure in the area. It has been prepared by Archaeology Wales Ltd for Gerald Blain Ltd.

1 Introduction

The proposed development comprises plans for the construction of 45 self-catering units and a site maintenance building on land adjacent to West Holloway, Penally, Tenby, Pembrokeshire (Henceforth – the site). Associated works would also include access and distributor roads, footpaths and services and general landscaping. The development proposals have been submitted by Gerald Blain Ltd. The local planning authority is Pembrokeshire County Council (Henceforth – PCC) and the planning application reference for the proposed development is 15/0222/PA. The site is located at NGR SN 1146 0001 (Figure 1 & 2).

Dyfed Archaeological Trust (Henceforth – DAT), in their capacity as archaeological advisors to PCC have determined that the proposed development may potentially effect buried archaeological remains. A previous assessment of the area indicated the proposed development lies in an area relatively rich in prehistoric archaeological sites and there is a moderate potential for prehistoric sites and a minor potential for Iron Age and Roman sites to be present. Consequently, in a letter to PCC dated 3/9/15, DAT have recommended:

> That a staged archaeological evaluation of the application area is required. In the first instance we envisage a geophysical survey, with the results of this guiding possible subsequent works. As there is the potential for significant archaeology, we also recommend that the survey results are presented to your Authority prior to the determination of the application.

This Specification has been prepared by Philip Poucher, Project Manager, Archaeology Wales Ltd (Henceforth - AW) at the request of Gerald Blain Ltd. It provides information on the methodology which will be employed by AW during the proposed geophysical survey.

The proposed work will be managed by Philip Poucher, all field-work will be undertaken by suitably qualified staff and in accordance with the standards and guidelines of the CIfA (2014).

2 Site Description & Archaeological Background

The application site covers some 3 hectares (approximately 6.83 acres) of farmland within the Ritec Valley in the coastal village of Penally, Pembrokeshire (Fig.1). The development area is located directly to the west of the dwelling 'West Holloway' and the Night Owl Public House. The southern and northern boundaries are defined by garden plots of properties along Holloway Hill and Trefloyne Lane, respectively. There are pasture fields and woodland to the west. The application site lies some 700m to the north of the historic core of Penally.

The southern boundary is at an approximate altitude of 25m OD. The land falls away to the northern perimeter of the site, to around 15m OD. The proposed development is centred at NGR 211460 200010 (SN 1146 0001).

The regional geology as mapped by the British Geological Survey (1:50,000 scale) indicates that the bedrock geology is composed of interbedded limestones, mudstones and cherts of the Pembroke Limestone Group, laid in the Early Carboniferous (*circa* 359-323 million years ago) This deposit extends over 250m beyond the site in all directions. There are no superficial deposits mapped across the site. Flandrian Age alluvial deposits (12,000 BCA – Present), associated with the River Ritec, are mapped to the north of the scheme site. No other superficial deposits are mapped in the vicinity of the application area.

A desk base assessment has been previously undertaken by Archaeology Wales Ltd (Hadley, 2015) which examines and lays out the historical and archaeological background to the area in detail. In summary the desk-based research identified that that the proposed scheme is situated within a landscape of considerable historic and archaeological significance. The archaeological record for this area is remarkably diverse in scope with evidence for human activity dating back to the Upper Palaeolithic, and the study area encompasses two multi-period sites of considerable archaeological importance; Hoyle Moth Cave and Little Hoyle Cave. There was considered to be a moderate potential for Prehistoric features to exist within the development area, along with a minor potential for Iron Age and Roman sites. There is also some potential for early medieval or medieval remains. The early medieval high status settlement at Longbury Camp represents a rare survival. In addition, there is documentary evidence for pre-Conquest land grants, recorded in the Book of Llandaff. These indicate the presence of a series of estates dependent on the early medieval monastery of Penally; one of which 'Luin Teilau' may be identified with Trefloyne Farm.

A wide variety of post-medieval sites and features were identified within the surrounding landscape, including agricultural, domestic, industrial, transport and military sites, however map regression analysis could identify no features post-medieval features within the development area.

3 Objectives

The primary objectives of the work will be to 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 or 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. The report will be used to allow a decision to be made on any subsequent planning application.

4 Methodology for geophysical survey

The area to be surveyed will include all of the development area (see the attached plan, Figure 2).

The site will be 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 two to

three days. This will be followed by report production.

The survey will be carried out using a Bartington Grad601 Magnetometer. 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 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 will be contacted at least one week prior to the commencement of site works and subsequently once the work is underway.

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

DAT 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 Archiving and Reporting

Site archive

An ordered and integrated project archive will be prepared in accordance with the National Monuments Record agreed structure and be deposited within an appropriate body upon completion of the work.

Final reporting

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

- Concise non-technical summary of the results
- Detailed plans of the site and survey results
- Site illustrations, related to Ordnance Datum
- Written description
- Statement of local and regional context
- Impact assessment with mitigation proposals
- Conclusions as appropriate

- Bibliography
- A copy of the AW Specification

Copies of the report will be sent to Gerald Blain Ltd, the archaeological advisors (DAT), to the local planning authority (PCC), and for inclusion in the regional HER. Digital copies will be provided in pdf format if required.

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

The geophysical survey will be undertaken by AW staff using current best practice. All work will be undertaken to the standards and guidelines of the CIfA.

Staff

The project will be undertaken by suitably qualified AW staff. Overall management of will be undertaken by Philip Poucher.

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. Work is anticipated to last a total of two to three days on-site.

Insurance

Archaeology Wales Limited (AW) is an affiliated member of the CBA, and holds Insurance through the CBA insurance service.

Arbitration

In the event of any dispute arising out of this Agreement (including those considered as such by only one of the parties) either party may forthwith give to the other notice in writing of such a dispute or difference and the same shall be and is hereby referred for decision in accordance with the Rules of the Chartered Institute of Arbitrators' Arbitration scheme for the Institute for Archaeologists applying at the date of this Agreement.

Health and safety

All members of staff will adhere to the requirements of the *Health & Safety at Work Act*, 1974, and the AW Health and Safety Policy.

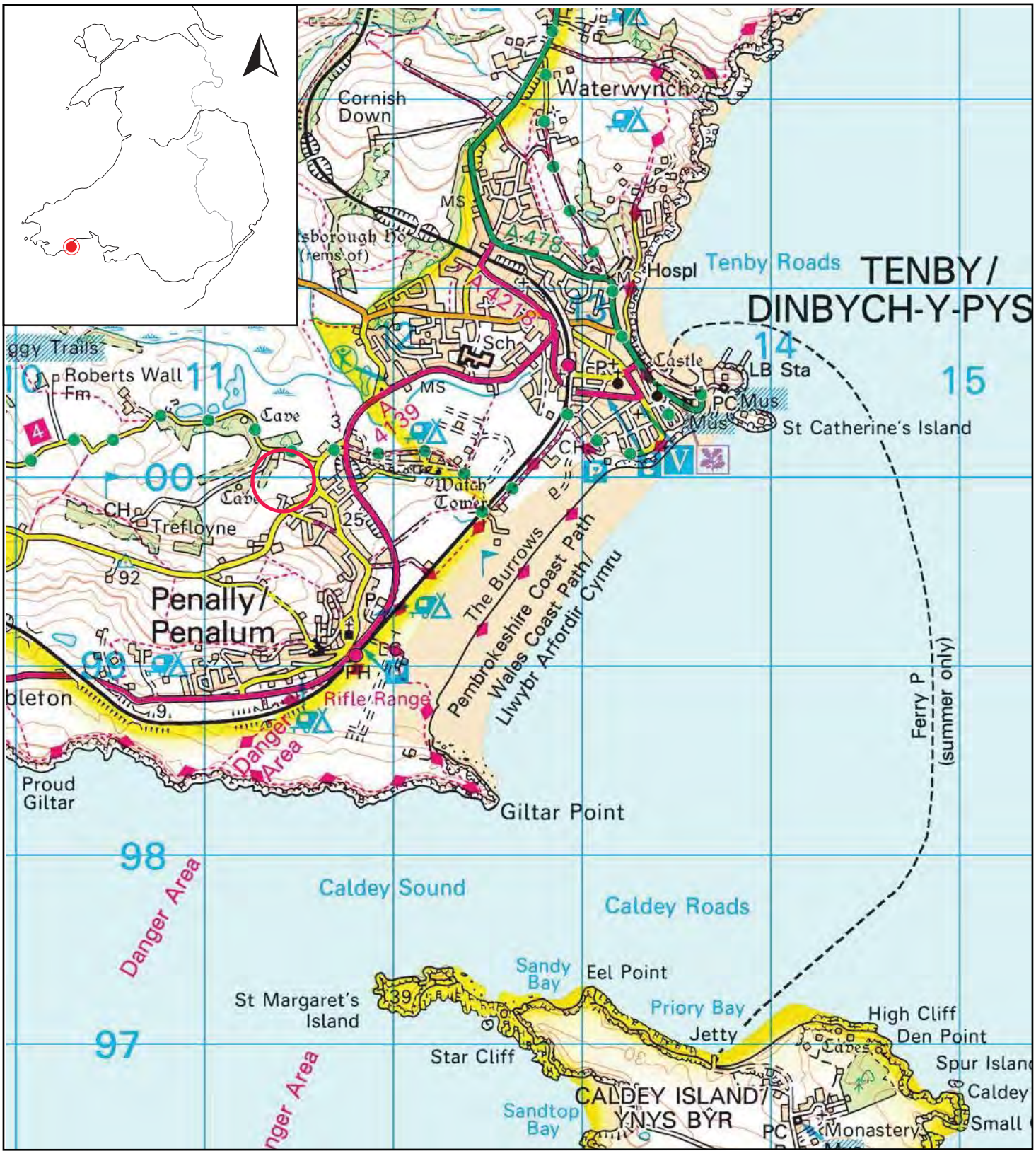
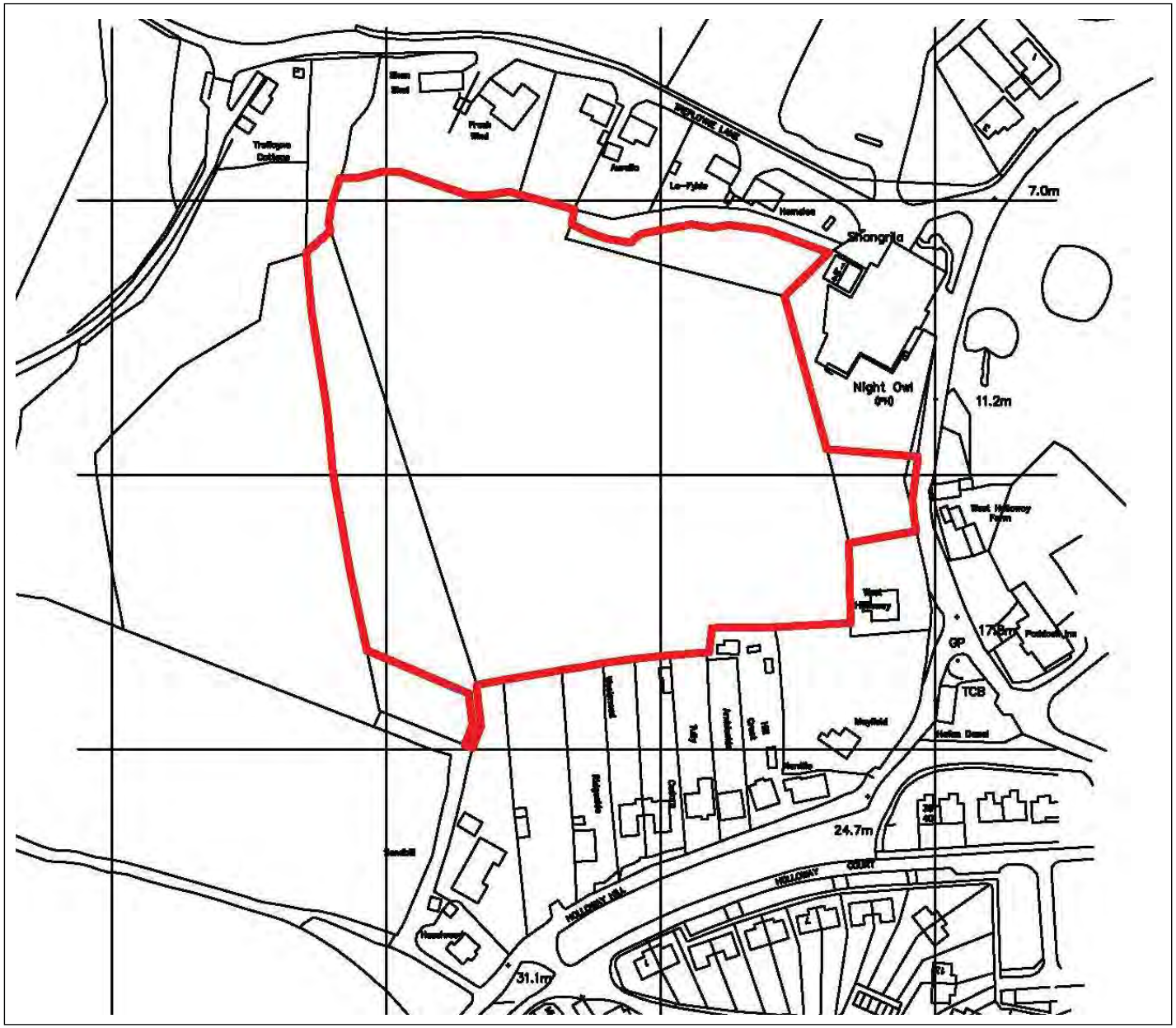


Figure 1
Location of site



0 200m

Site boundary

Figure 2.
Plan showing boundary of development area

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APPENDIX II:
Archive Cover Sheet

ARCHIVE COVER SHEET

West Holloway, Penally, Tenby, Pembrokeshire

Site Name:	West Hollway
Site Code:	WHP/15/GEO
PRN:	-
NPRN:	-
SAM:	-
Other Ref No:	-
NGR:	NGR SN 1146 0001
Site Type:	Agricultural land
Project Type:	Geophysical Survey
Project Manager:	Philip Poucher
Project Dates:	October - November 2015
Categories Present:	Prehistoric to Modern
Location of Original Archive:	AW
Location of duplicate Archives:	NMR Aberystwyth
Number of Finds Boxes:	NA
Location of Finds:	NA
Museum Reference:	NA
Copyright:	AW
Restrictions to access:	None

Archaeology Wales

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