

CYLCH CARON PROJECT, TREGARON, CEREDIGION: GEOPHYSICAL SURVEY 2015 (NGR SN 6812 5952)



Prepared by DAT Archaeological Services
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**CYLCH CARON PROJECT, TREGARON,
CEREDIGION:
GEOPHYSICAL 2015**

Gan / By
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**CYLCH CARON PROJECT, TREGARON, CEREDIGION:
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CYLCH CARON PROJECT, TREGARON, CEREDIGION: GEOPHYSICAL SURVEY

SUMMARY

DAT Archaeological Services were commissioned by Ceredigion County Council to undertake a geophysical survey of land to the rear of Talbot Yard and off Dewi road, Ceredigion. The geophysical survey was commissioned as a first stage of fulfilment of a condition placed upon planning application A120335.

The proposed development is located on the south-eastern edge of the town of Tregaron. The settlement is thought to have its origins in the early medieval period, centred around the Church of St Caron, which is immediately adjacent to part of the survey area. There was therefore considered to be an increased potential for archaeology from the early medieval period onwards to be present within the proposal area. Prehistoric activity in the surrounding area also suggested increased potential for prehistoric archaeology to be present within the survey area.

The geophysical survey was conducted in May 2015 and included an area approximately 5.6ha in size. The survey was conducted using a fluxgate gradiometer which detects variations in the earth's magnetic field.

The survey results demonstrate that gradiometer survey does work successfully on the geology of the site area. Old field boundaries and former track ways do show up clearly, as well as service trenches (possibly water pipes). The survey has also shown a few anomalies on the western side of the development area (the eastern side of Tregaron) which are more likely to represent archaeological features.

There is little evidence to suggest the need to mitigate the impacts of proposed development within Field A. it is recommended that development within fields B, C and D, is only considered once additional archaeological evaluation has been undertaken..

1. INTRODUCTION

1.1 Project Commission

1.1.1 An initial desk-based assessment undertaken by DAT Archaeological Services (Poucher 2012) was commissioned by Ceredigion County Council to support an outline planning application.

1.1.2 Following consultation on the initial planning application the archaeological advisors to the planning authority recommended the following condition should be placed on the development:

'No development shall take place until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted and approved in writing by the Local Planning Authority.'

1.1.3 Advice from DAT Archaeological Services suggested that an initial geophysical survey might provide a better indication of the archaeological potential of the site and enable targeting of any further archaeological mitigation requirements (such as evaluation trenching, excavation or watching brief) before or during the development programme.

1.1.4 DAT Archaeological Services was subsequently commissioned by Ceredigion County Council to undertake an initial geophysical survey at the site of the proposed Cylch Caron Project development (planning application A120335) in Tregaron, Ceredigion (NGR SN 32790 35510; Figure 1).

1.2 Scope of the project

1.2.1 A Written Scheme of Investigation (WSI) for a geophysical survey was prepared by DAT Archaeological Services prior to the commencement of the survey. The WSI was drawn up following initial consultation with the archaeological advisors to Ceredigion County Council:

- Provision of a written scheme of investigation to outline the methodology for the geophysical survey which DAT Archaeological Services will undertake.
- To identify the presence/absence of any potential archaeological deposits through gradiometer survey.
- To establish the character, extent and date range (where possible) for any archaeological deposits to be affected by the proposed works; and
- To use the information to determine the scope of any further archaeological mitigation that may be required.

1.3 Report outline

1.3.1 This report provides a summary and discussion of the geophysical survey and its results.

1.4 Abbreviations

1.4.1 Sites recorded on the Regional Historic Environment Record (HER) are identified by their Primary Record Number (PRN) and located by their

National Grid Reference (NGR). Gradiometer readings are measured in nanoTesla (nT).

1.5 Illustrations

1.5.1 Printed map extracts are not necessarily produced to their original scale.

1.6 Timeline

1.6.1 The following timeline (Table 1) presents the date ranges for the various archaeological periods that may be mentioned within the text.

Period	Approximate date	
Palaeolithic –	c.450,000 – 10,000 BC	Prehistoric
Mesolithic –	c. 10,000 – 4400 BC	
Neolithic –	c.4400 – 2300 BC	
Bronze Age –	c.2300 – 700 BC	
Iron Age –	c.700 BC – AD 43	
Roman (Romano-British) Period –	AD 43 – c. AD 410	Historic
Post-Roman / Early Medieval Period –	c. AD 410 – AD 1086	
Medieval Period –	1086 – 1536	
Post-Medieval Period ¹ –	1536 – 1750	
Industrial Period –	1750 – 1899	
Modern –	20 th century onwards	

Table 1: Archaeological and historical timeline for Wales.

¹ The post-medieval and industrial periods are combined as the post-medieval period on the Regional Historic Environment Record as held by Dyfed Archaeological Trust

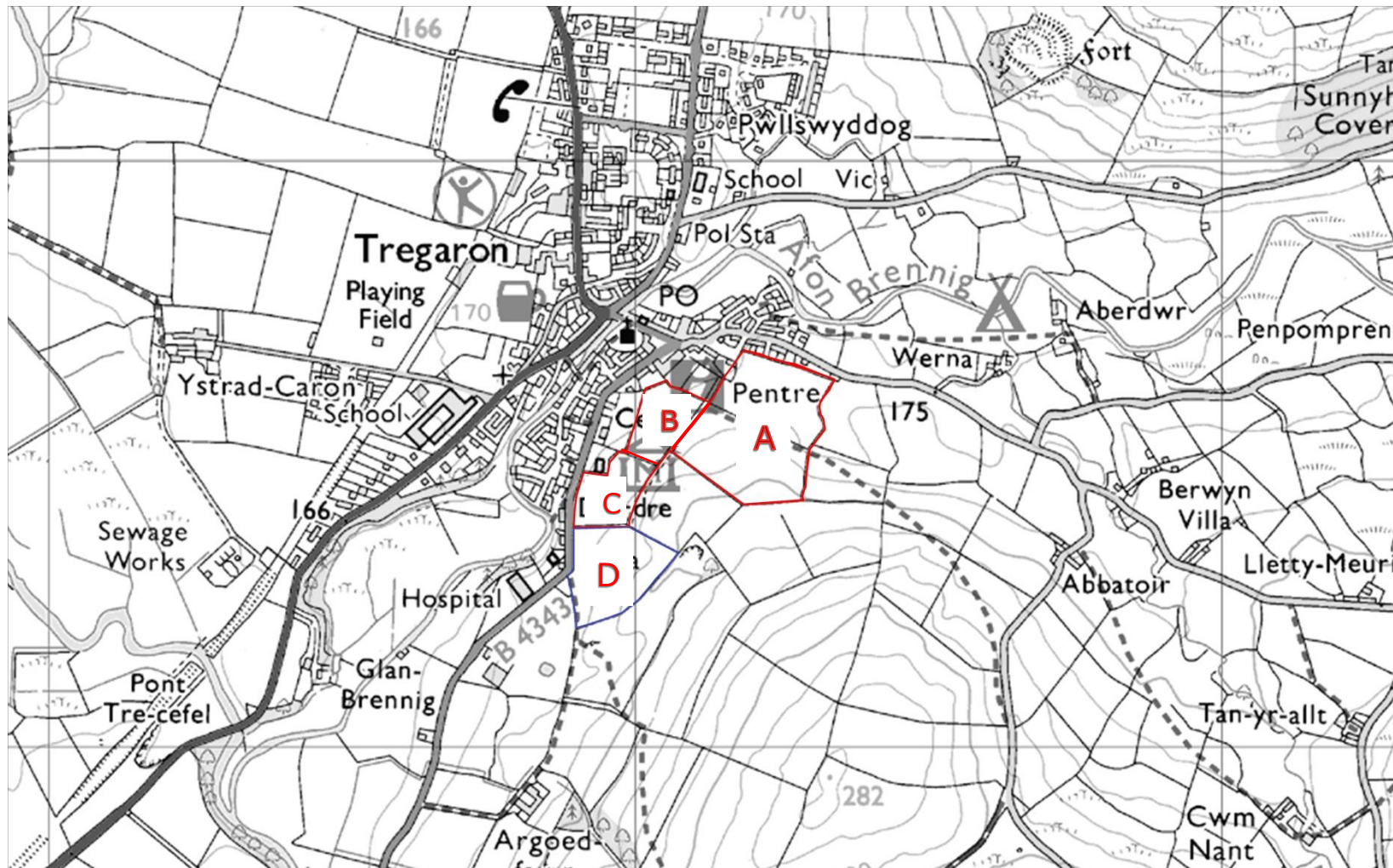


Figure 1: Location map based on the Ordnance Survey. Proposed development location outlined in red

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2. THE SITE

2.1 Location

- 2.1.1 The proposed development site covers an area of approximately 5.6ha and is divided into three fields (labelled A to D in Figure 1) on the south-eastern edge of Tregaron. These fields are primarily used for pasture but may have been ploughed in the past.
- 2.1.2 Having been commissioned to survey Fields A-C, it is now understood that the current development will be located entirely within the area of Field A, and that Fields B, C and D may be developed in the future under different planning applications.
- 2.1.3 Field A covers an area of c.3.6ha, Field B covers an area of c.09ha and Field C covers an area of c.1.1ha. Field D covers an area of c.1.7ha but was not surveyed during the fieldwork.
- 2.1.4 The proposed development is located to the south-east of Tregaron town on land to the rear of Talbot Yard and adjacent to Dewi road. It is situated on the lower slopes of Pica Bach, at the edge of the valley floor of the river Brennig.

2.2 Archaeological potential

- 2.2.1 As part of the original application, an Archaeological Desk-Based assessment was prepared by Poucher (2012). This includes a detailed archaeological and historic background and supporting plans and illustrations.
- 2.2.2 The assessment highlights during its conclusion that the site had potential to contain archaeological remains relating to the early medieval settlement of Tregaron as this settlement is understood to be nucleated around the Church of St Caron which is immediately adjacent to Fields B & C.
- 2.2.3 The report also notes that there is strong local interest related to discovering the location of a burial of an elephant that died during a circus visit to the town in the mid-19th century. It is noted that there is a potential for this burial to be located within the development area.
- 2.2.4 Although the desk based assessment did not identify any known records of prehistoric activity within the proposed development area, it was noted that due to records of prehistoric features in the surrounding area, a general potential for prehistoric features being present within the development area, remains.

3. METHODOLOGY

3.1 Geophysical survey methodology

- 3.1.1 A fluxgate gradiometer with a DL601 data logger was used to conduct the detailed survey, which detects variations in the earth's magnetic field. A sample interval of 0.25m (four readings per metre) was used with 1m wide traverses across 30m x 30m grids using the zigzag traverse method of collecting data. The gradiometers sensitivity was set to detect a magnetic variation in the order of 0.1 nanoTesla.
- 3.1.2 The survey grid was tied in to the local Ordnance Survey grid using in-field hand-measurements.
- 3.1.4 The data was processed using *Terrasurveyor 3.0* and is presented with a minimum of processing. The presence of high values caused by ferrous objects, which tend to hide fine details and obscure archaeological features, have been 'clipped' to remove the extreme values allowing the finer details to show through.
- 3.1.5 The processed data has been presented as a grey-scale plot, overlaid on local topographical features. The main magnetic anomalies have been identified and an interpretation of those results is also given.
- 3.1.6 The processed survey results and interpretation diagrams should not be seen as a definitive model of what lies beneath the ground surface, not all buried features will provide a magnetic response that can be identified by the gradiometer. In interpreting those features that are recorded the shape is the principal diagnostic tool, along with comparison with known features from other surveys. The intensity of the magnetic response could provide further information, a strong response for example indicates burning, high ferric content or thermoremnancy in geology. The context may provide further clues but the interpretation of many of these features is still largely subjective.
- 3.1.7 All measurements given will be approximate as accurate measurements are difficult to determine from fluxgate gradiometer surveys. The width and length of identified features can be affected by its relative depth and magnetic strength.
- 3.1.8 The results are presented as follows: Field A at $\pm 5\text{nt}$, Field B at $\pm 4\text{nt}$ and Field C at $\pm 3\text{nt}$ (Figure 2 & 3).

4. RESULTS

4.1 Introduction

- 4.1.1 The site was surveyed between the 27th and 29th May 2015.
- 4.1.2 Three fields were surveyed with a total area of approximately 5.9ha (See Figure 2).
- 4.1.3 Field A was c.3.6ha in size and was steeply sloping from south to north and north-west, with the gradient becoming shallow for the northern half of the field.
- 4.1.4 The blank area in the south-eastern corner of the field was particularly steep and covered in dense vegetation, and was therefore omitted from the survey.
- 4.1.5 Field B was c.0.9ha in size and was gently sloping from the south-east to the north.
- 4.1.6 Field C was c.1.1ha in size and was sloped from the south-eastern corner to the west and north. The gradient became shallow at the northern and western extremities of the survey area.
- 4.1.7 Field D (see Figure 1) was c.1.7ha in size. It has been identified as a location for development in the future, but was not included in the geophysical survey.



Figure 2: Processed data as grey-scale plot overlaid on local topographical features

4.2 Interpretation of results

- 4.2.1 In Figure 3 all the features which can be considered dipolar are highlighted. Areas with a high positive value are coloured red, while high negative values are coloured green. Therefore dipolar features are depicted as mixed red and green.

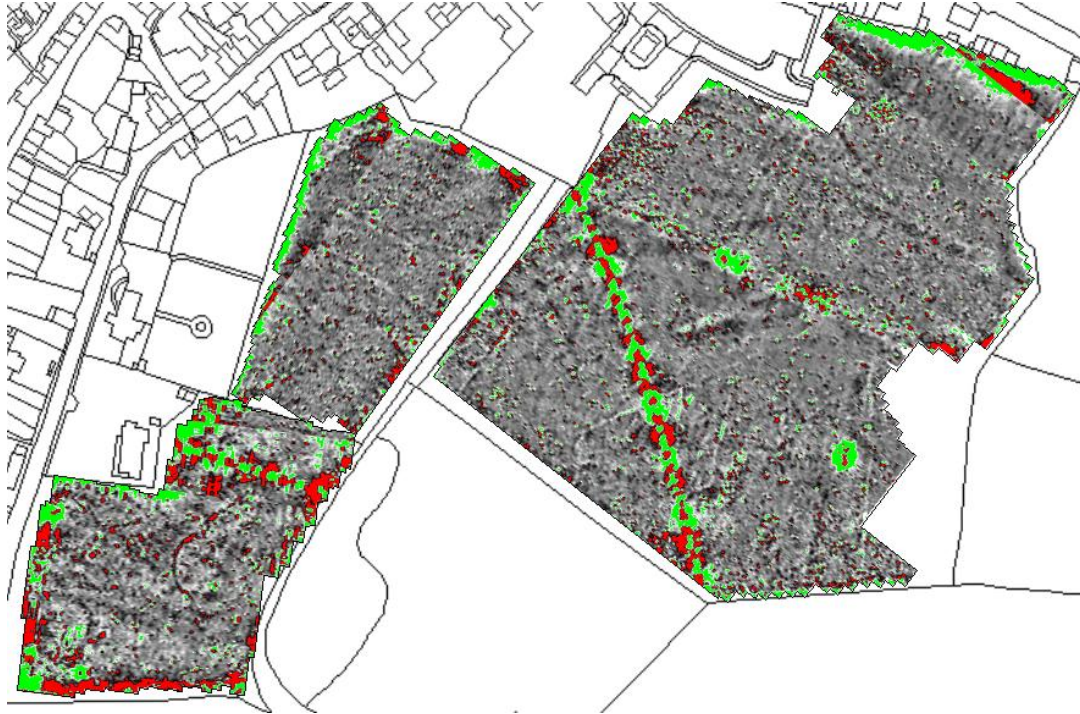


Figure 3: Dipole Plot of survey results.

- 4.2.2 Where a field boundary contains ferrous material such as wire-fencing, a dipolar effect can be seen where the survey encroaches near to it. This dipolar 'shadow' is visible in nearly all instances where the survey meets the field boundaries.
- 4.2.3 Numerous small dipolar features can be seen to cover the areas surveyed. These are likely to represent small ferrous objects such as horseshoes or nails, which are commonly found distributed across sites. Unless these features form a pattern or a part of a larger geophysical feature, they have been ignored.
- 4.2.4 Figure 4 presents the interpretation of the geophysical survey results. The anomalies with the greatest archaeological potential are represented in green.
- 4.2.5 The dipolar linear features (F1) in Fields A and C (Figure 4) depicted as magenta lines, indicate the route of modern services.
- 4.2.6 The dark blue linear features (F2) shown in Field A indicate the location of former field boundaries. The potential for their presence was predicted by Poucher (2012) and was confirmed from the survey results.
- 4.2.7 In the western corner of Field A, a curvilinear soil-filled feature (F3) enclosing an area roughly 10m x 20m is represented with red hatching. This indicates the location of recent ground disturbance. This corresponds with a patch of overgrown and uneven ground noted during the survey. The area shows up in the results as. No specific date can be inferred from the geophysical survey results, but the unevenness of the ground during the survey would suggest this is a relatively recent disturbance. It is unlikely to be the location of the elephant burial!

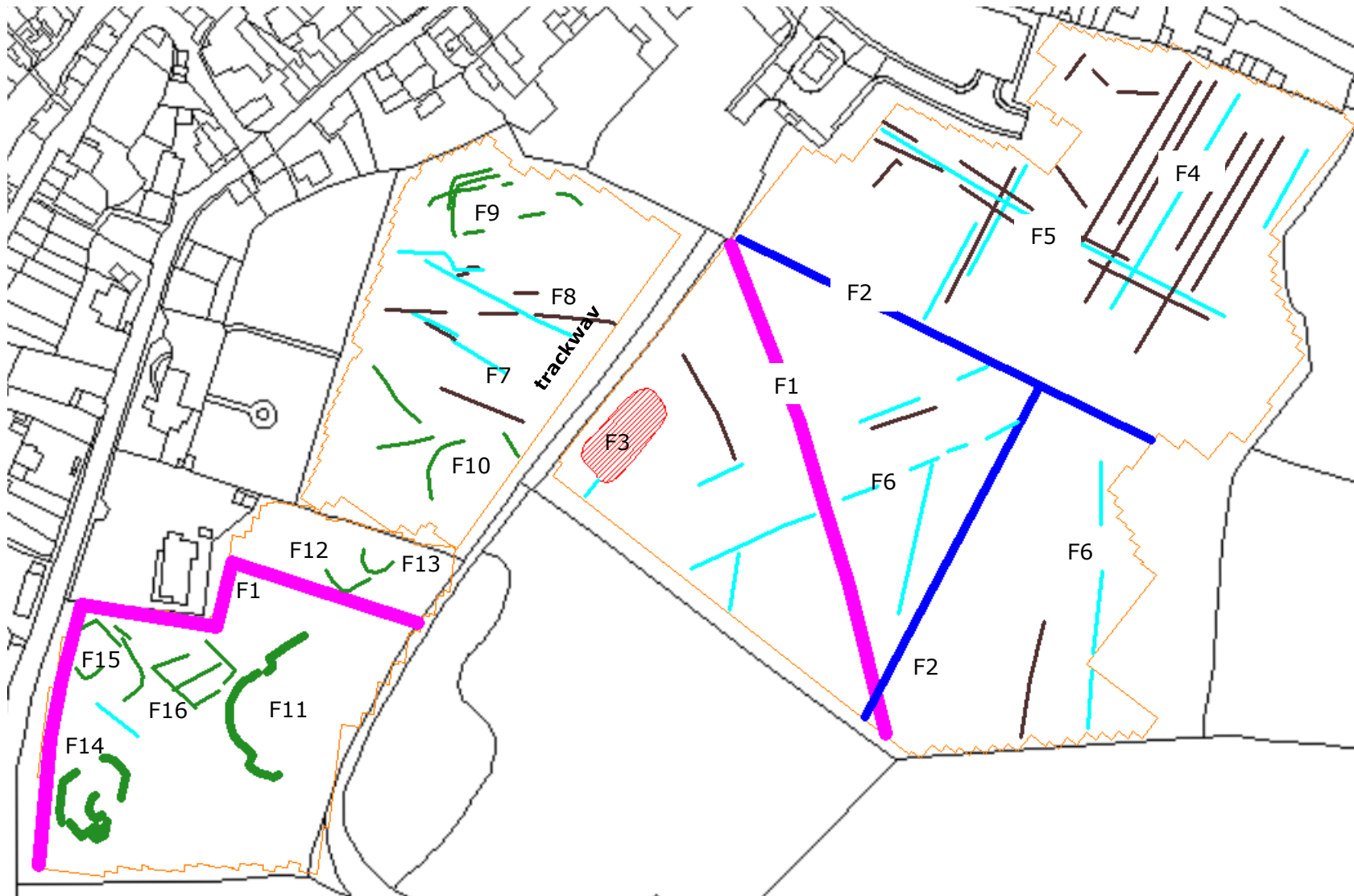


Figure 4: Interpretation Plot of survey results

- 4.2.8 At the northern end of Field A, a series of parallel linear positive and negative features (F4) running roughly north-east to south-west (represented in light blue and brown) are likely to represent historic ploughing activity.
- 4.2.9 Parallel positive and negative features (F5) that run at a right angle to F4 represent a former trackway or field boundary (represented in light blue and brown).
- 4.2.10 In the southern half of Field A, Features F6, are likely to represent field drains, as they hint at a herringbone pattern (represented in light blue).
- 4.2.13 Field B contains features that are quite faint in comparison to both Fields A and C. Negative linear features F7 (represented in light blue) probably represent field drains, while the majority of the positive features (F8) may represent former ploughing activity.
- 4.2.14 A group of faint linear and curvilinear features (F9) in the northern end of Field B may indicate the location of a former structure, or ditched enclosure, partially destroyed by later ploughing. The larger feature measures approximately 17m x 19m.
- 4.2.15 A faint curvilinear feature (F10) in the south of Field B is another possible former structure or ditched enclosure.
- 4.2.16 Feature (F11) in Field C is a curvilinear is another possible former structure or ditched enclosure.
- 4.2.17 Three L-shaped features in Field C (F12 and F13) and F10 in Field B may represent the partial remains of a group of possible former structures or ditched enclosure.
- 4.2.18 The remaining anomalies in Field C (F14, F15 and F16) are faint linear features that appear to form right angles and may represent a group of possible former structures or ditched enclosures.

5. DISCUSSION

- 5.1 The geophysical survey results suggest that there is little evidence for potentially significant buried archaeology within Field A. The discernible features appear to be cultivation marks resulting from ploughing, field drainage and a possible former field boundary, all of uncertain date.
- 5.2 Although there is always some potential for buried archaeology to be present that cannot be detected by geophysical survey, the contrast of this field with Fields B and C suggests the apparent absence of significant features in Field A does reflect their actual absence. The housing on the northern boundary of Field A may represent a later expansion of Tregaron, with no specific likelihood of settlement evidence relating to the core of the early settlement being likely in this location.
- 5.3 The results in Fields B and C that suggest the presence of archaeological features are quite faint. There are numerous factors that affect the readings including their depth, preservation, and the geological ground conditions. Further investigation would be necessary to confirm their existence and extents. This archaeological mitigation should consider the benefits of further geophysical prospection using other methods such as resistivity, as the buried resource may be more susceptible to other types of survey.
- 5.4 The numerous features in Field C (F11, F12, F13, F15, F16) that form rough rectangles or curvilinear features, that are roughly aligned north-east to south-west do not respect the route of the B4343 on the fields' western boundary. Instead, they appear to more closely respect the route of the trackway, which runs along the eastern boundary of the field. It is likely that this trackway previously extended beyond the turn visible today, to link up with an unusual kink in the B4343 to the south of the survey area cutting across Field D (see Figure 1). There is no indication of this former trackway extension in the earliest maps reviewed by Poucher (2012) so, if it exists, it is likely to predate the early 19th Century. The continuation of this broad alignment into the neighbouring field (F 10, Field B, see 4.2.16) would suggest these features also pre-date the establishment of the field boundary separating Fields B & C. This may indicate a medieval or prehistoric date to the features.
- 5.5 It is understood that the development will be contained entirely within Field A while Fields B, C and D may be developed in the future under different planning applications. As stated previously, appropriate archaeological mitigation would be required prior to development in these areas to better assess their archaeological potential.
- 5.6 Field D was not surveyed during the fieldwork, as agreed during the commission of the work. However the results from Field C would suggest that there is a potential for archaeological remains to be in the field. Any future development in this field should consider using geophysical prospection to identify whether or not a resource exists, alongside other archaeological mitigation works.

6. CONCLUSIONS

- 6.1 The gradiometer survey undertaken at the site of the proposed Cylch Caron Project has been successful in demonstrating the presence of a number of buried features within the area. The geology of the site area is evidently well suited to gradiometer survey.
- 6.2 A range of features were identified within the survey area of Fields A, B and C. A number of these are likely to be post-medieval or modern features including buried services, former field boundaries, former trackways, and evidence of historic agricultural cultivation. However some features may represent earlier, medieval or prehistoric activity, particularly those identified in Fields B and C.
- 6.3 The Desk-Based Assessment of the site (Poucher, 2012) suggests that an increased potential for archaeological features associated with the establishment of Tregaron during the medieval or early medieval period might be anticipated in those fields nearest the Church of St Caron. The results of the geophysical survey do indeed appear to suggest that Fields B and C contain several, features that may be the remains of settlement.
- 6.4 The features identified do not appear to relate to the present modern or Post-medieval agricultural landscapes and are more likely to represent medieval, early medieval or prehistoric settlement. Some of the geophysical anomalies may also be due to underlying geology.

7. RECOMMENDATIONS


- 7.1 It is understood that the current development will only take place within Field A. The results do not indicate the presence of significant archaeological remains within this area, however the potential for archaeological features to be present that cannot be detected by this type of geophysical survey remains.
- 7.2 The archaeological advisors to the local planning authority may therefore wish to consider whether further archaeological mitigation is justified or not.
- 5.7 Should any planning applications be made for development in Fields B or C, it is highly recommended that a programme of evaluation trenching is undertaken to test the results of the geophysical survey and to characterize any archaeology that may prove to be present before planning permission is granted.
- 5.8 The evaluation trenching would provide sufficient information to establish a suitable programme of archaeological mitigation to be formulated prior to planning approval or development.
- 5.9 Should development within Field D be proposed, it is highly recommended that in the first instance, a geophysical survey of the field is undertaken, followed, if necessary, by evaluation trenching, prior to a decision on planning permission or archaeological mitigation being made.

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on behalf of Dyfed Archaeological Trust Ltd.

Swydd / Position: Head of DAT Archaeological Services



Llofnod / Signature Dyddiad / Date 25/06/2015

Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau
sydd gennych ar gynnwys neu strwythur yr adroddiad hwn

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comments you may have on the content or presentation of this report

