LLANDOVERY PLAYING FIELDS, CARMARTHENSHIRE: ARCHAEOLOGICAL GEOPHYSICAL SURVEY

DAT Archaeological Services

Prepared by Dyfed Archaeological Trust
For: Carmarthenshire County Council.

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REPORT NO. 2021-44
EVENT RECORD NO. 126002

March 2021

LLANDOVERY PLAYING FIELDS, CARMARTHENSHIRE: ARCHAEOLOGICAL GEOPHYSICAL SURVEY

By

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Client	Carmarthenshire County Council
Event Record No	126002
Report No	2021-44
Project Code	FS20-078
Report Prepared By	Andrew Shobbrook
Fieldwork Directed By	Andrew Shobbrook
Illustrated By	Andrew Shobbrook
Report Approved By	Fran Murphy

Rev Number	Description	Undertaken	Approved	Date
_V1	Final	AS	FM	22/03/2021

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EXECUTIVE SUMMARY

DAT Archaeological Services were commissioned to undertake a geophysical survey on land currently used as a playing field, at Llandovery, Carmarthenshire (centred on NGR SN 76626 35032).

The purpose of the survey was to provide a better indication of the archaeological potential of the site and if required, enable targeting of any further archaeological mitigation requirements before or during proposed residential development.

The geophysical survey recorded no obvious archaeological features within the proposed development area.

However, the survey did record a single linear anomaly just outside the development area boundary. This anomaly is visible in aerial photographs and may potentially represent the surviving remains of a Roman road.

CRYNODEB GWEITHREDOL

Comisiynwyd Gwasanaethau Archeolegol YAD i gynnal arolwg geoffisegol ar dir a ddefnyddir ar hyn o bryd fel cae chwarae, yn Llanymddyfri, Sir Gaerfyrddin (wedi'i ganoli ar NGR SN 76626 35032).

Pwrpas yr arolwg oedd rhoi arwydd gwell o botensial archeolegol y safle ac, oes angen, galluogi targedu unrhyw ofynion lliniaru archeolegol pellach cyn neu yn ystod datblygiad preswyl arfaethedig.

Ni chofnododd yr arolwg geoffisegol unrhyw nodweddion archeolegol amlwg yn yr ardal ddatblygu arfaethedig.

Fodd bynnag, cofnododd yr arolwg anghysondeb llinellol sengl y tu allan i ffin yr ardal ddatblygu. Mae'r anghysondeb hwn i'w weld mewn awyrluniau a gall o bosibl gynrychioli olion ffordd Rufeinig sydd wedi goroesi.

LLANDOVERY PLAYING FIELDS, CARMARTHENSHIRE:

ARCHAEOLOGICAL GEOPHYSICAL SURVEY

SUMMARY

DAT Archaeological Services were commissioned by Carmarthenshire County Council to undertake n archaeological geophysical survey at Llandovery Playing Fields, Llandovery, Carmarthenshire (centred on NGR SN 76626 35032).

The proposed development area lies within a landscape considered rich in archaeology that contains remains dating to both the Roman and later medieval periods. The scheduled remains of Llandovery Roman fort (CM188, PRN4072) lies just 0.2km northeast of the development area. Alongside the fort, an extramural settlement is thought to have grown that would have been occupied throughout the Roman period. Within the surrounding area of the proposed development linear crop mark features, identified from aerial photographs, have been interpreted as surviving evidence for the routes of Roman roads leading from and to the Roman fort.

The potential for buried archaeological remains to survive within the development area of Roman or later date was considered medium/high. Therefore a geophysical survey was recommended to provide a better indication of the archaeological potential of the site and if required, enable targeting of any further archaeological mitigation before or during the development.

In total, an area measuring roughly 2 ha was surveyed. The geophysical survey did not record any obvious potential archaeological features within the proposed development area.

The survey did record a single linear anomaly that corresponds with the location of a Roman road crop mark (PRN13152) previously identified from aerial photographs. This linear anomaly was located east of the proposed development area and will not be directly impacted by the proposed works but it should be noted that if future developments progress further eastwards into the playing fields then this feature may be impacted upon.

1. INTRODUCTION

1.1 Project Commission

1.1.1 DAT Archaeological Services were commissioned by Carmarthenshire County Council to undertake a geophysical survey within an area proposed for residential development, centred on NGR SN 76626 35032 (Figure 1).

1.1.2 The development proposal comprises the construction of residential development on land currently used as sport/playing fields in the town of Llandovery, Carmarthenshire.

1.1.3 The geophysical survey was undertaken using a fluxgate gradiometer which detects subtle variations in the earth's magnetic field, which can indicate the presence of buried features such as ditches, pits, walls or postholes, which are not visible on the ground surface. The purpose of the geophysical survey was to provide a better indication of the archaeological potential of the site through the identification of subsurface features which could be indicative of archaeology. This will allow for an informed decision on whether any further archaeological mitigation is required or not before or during the development programme.

1.2. Scope of the Project

1.2.1 The aim of the project was:

- To identify the presence/absence of any potential archaeological deposits through an initial gradiometer survey;
- To establish the character and extent of any potential archaeological remains within the site area that could be affected by the proposed works;
- To prepare a report and archive on the results of the geophysical survey.

1.3 Report Outline

1.3.1 This report provides a summary and discussion of the geophysical survey and its results and puts those results within their regional and national context.

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). Sites recorded on the National Monument Record (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) are identified by their National Primary Record Number (NPRN). Altitude is expressed to Ordnance Datum (OD). References to cartographic and documentary evidence and published sources will be given in brackets throughout the text, with full details listed in the sources section at the rear of the report.

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) is used within this report to give 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 –	20th 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

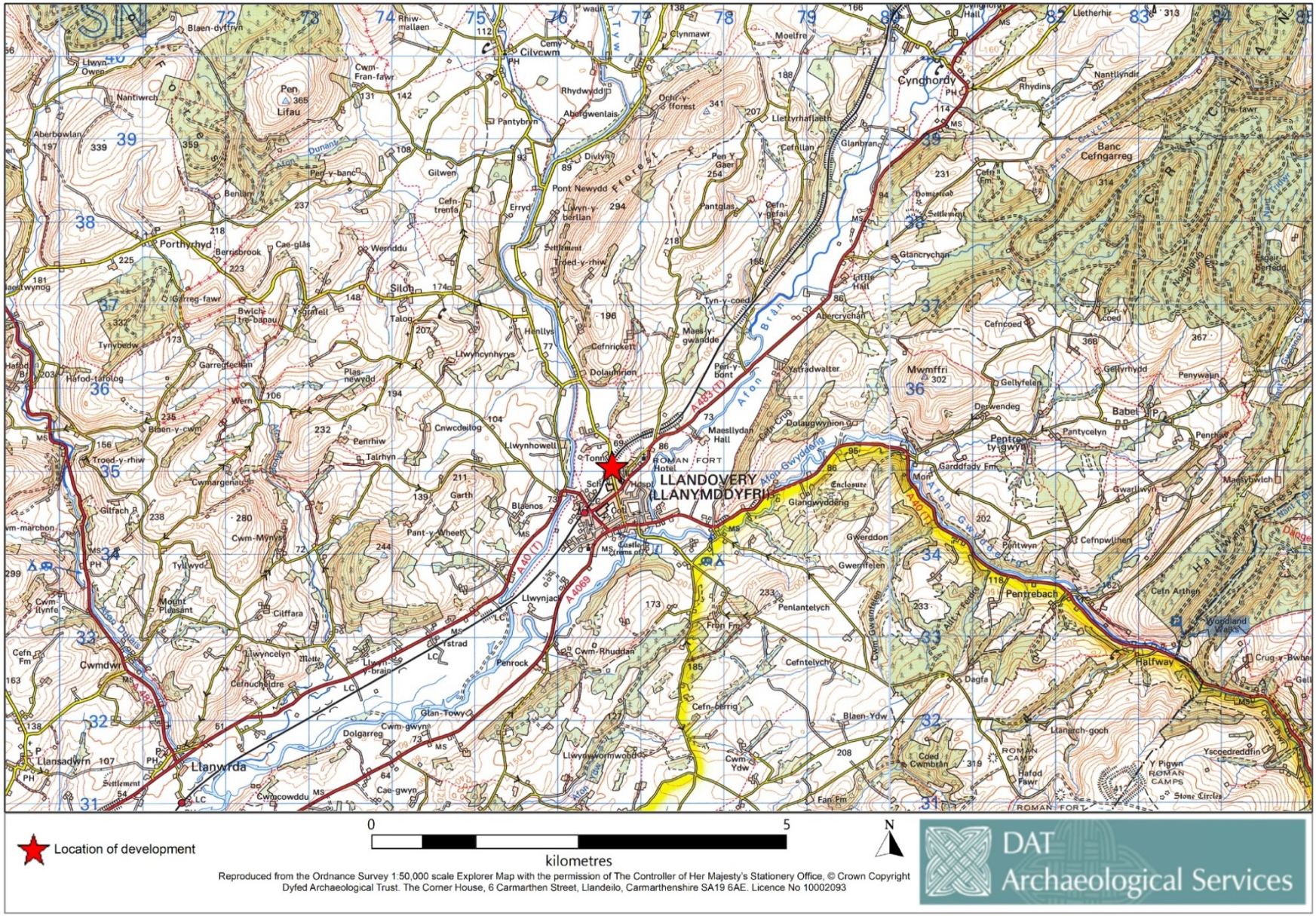

Figure 1: Site location

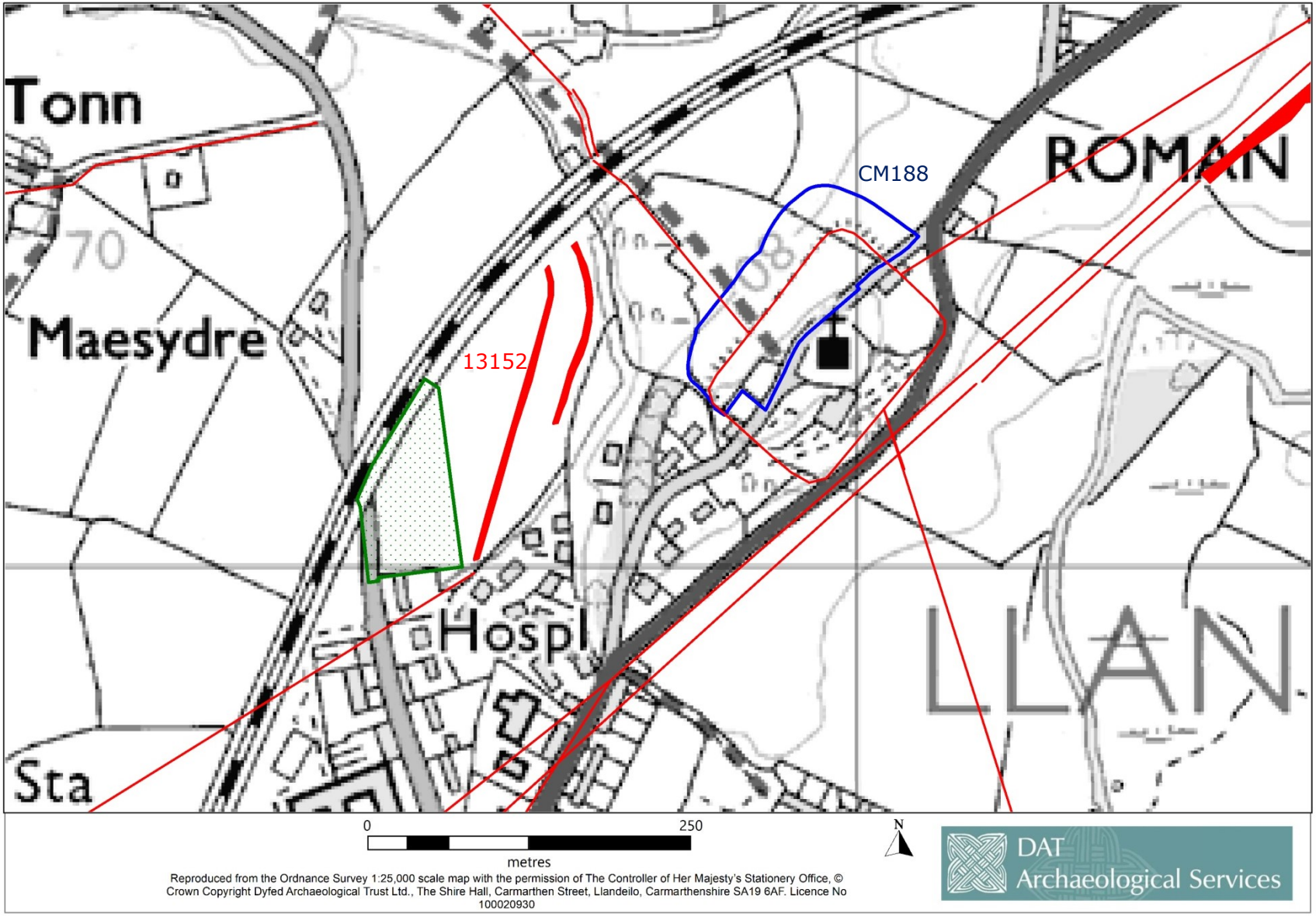

Figure 2: Map extract showing the proposed development area (green), scheduled area of Llandovery Roman fort (blue) and Roman roads and fort boundary-identified from aerial photographs (red).

2. THE SITE

2.1 Site Location and Topography

2.1.1 The proposed development area lies within the northern outskirts of the town of Llandovery (Figure 2). The present-day Heart of Wales railway line borders the development area to the northwest, with residential housing and Llandovery Hospital to the south. The development area is currently undeveloped pasture land which has been used as a sports field in the recent past (Photos 1 and 2).

2.1.2 The underlying solid geology of the site comprises of the Yr Allt formation - Mudstone – sedimentary bedrock formed approximately 444 to 449 million years ago in the Ordovician period. The overlying superficial deposits comprise of sands and gravels deposited around 3 million years ago during the Quaternary period (British Geological Survey mapping portal).

Photograph 1: View east across proposed development area.

Photograph 2: View south of development area with geophysical survey in progress.

2.2 Archaeological Potential

2.2.1 Before this scheme of works a detailed assessment of the archaeological potential and historical background of the development site was produced by DAT Archaeological Services (Shobbrook 2020). Below is listed a summary of the findings:

There are numerous Roman historic assets recorded within close proximity of the developments boundaries, including the scheduled site of Llandovery Roman Fort (PRN 4072) and Caefelin Cie-Roman cemetery (CM188, PRN 4087) located southwest of the development area. Also recorded surrounding the development area are five separate segments of Roman road. The closest is located immediately east of the development area and is represented by crop mark (PRN 13152) and is thought to represent the probable line of a Roman road between Llandovery and Pumpsaint. During the 18th and 19th centuries small excavations undertaken by members of the local clergy recovered Roman finds including coins, pottery and an alter base; many from the site of the nearby vicarage (PRN 7125).

There are 4 sites located near the development area which are considered to date to the early medieval and later medieval period. This grouping includes the church of Llanfair-ar-y-bryn which is located northeast of the development area. The church is of medieval date (PRN 3856), with a possibility of an early medieval foundation (PRN 49281) due to its possible link with the Celtic saint St Paulinus. It has also been suggested that a medieval priory once stood within the church grounds although there is little or no real evidence for this theory (PRN 4071). Also located northeast of the development area are references to Llanfair Grange (PRNs 10410 & 12284); thought to be agricultural land set aside by the church for clergy.

During the late post-medieval and early industrial period Llandovery remained a small agricultural market town. Little expansion is recorded within the northern limits of the town until the post-war period. A small

number of public, educational and ecclesiastical buildings were constructed during the post-medieval period near the development area. These buildings include Vicarage House (PRN 7125), Llandovery Cottage Hospital (NPRN 493) formally the Llandovery Union Workhouse, Llandovery Intermediate School (NPRN 417969) and Llandovery County Primary School (NPRN 417870).

3. METHODOLOGY

3.1 A fluxgate gradiometer with a DL601 data logger was used to conduct the detailed geophysical 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.

3.2 The survey grid was tied into the local Ordnance Survey grid using a Trimble R8s integrated GNSS with TSC3 controller.

3.3 The data was processed using *Terrasurveyor 3.0.35.10* 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.

3.4 The processed data has been presented as a grey-scale plot, overlaid on local topographical features (Figure 3). The main magnetic anomalies have been identified and an interpretation of those results is also given where appropriate (Figure 4).

3.5 The resulting 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 a 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.

3.6 All measurements given will be approximate as accurate measurements are difficult to determine from fluxgate gradiometer surveys. The width and length of the identified features can be affected by its relative depth and magnetic strength.

3.7 As much of the field as possible within which the development area lies was subjected to geophysical survey. However, the far northeast corner of the field was not surveyed due to encroaching vegetation from both eastern and western hedgebanks and also due to the presence of a concrete inspection chamber.

4. RESULTS

4.1 The geophysical survey results are presented as a greyscale plot in Figure 3. In total, an area of roughly 2ha was surveyed.

4.2 Figure 4 shows an interpretation of the survey results, which are discussed by category below:

Ferrous material (Dipoles) (Red)

4.3 In geophysical greyscale plots, dipole anomalies are commonly seen across a range of sites, particularly agricultural land. Generally, unless they form a pattern or part of a larger feature they are not thought to be archaeologically significant. They are usually the result of miscellaneous modern ferrous rich debris, such as brick and tile fragments as well as objects such as horseshoes or broken ploughshares, which lie within the topsoil. In rare instances, isolated dipoles may reflect features of archaeological interest, but only further intrusive investigation can verify this. Within the survey data numerous ferrous dipoles can be seen spread across the entire survey area with the greatest concentration found in the south and southwest corner of the survey.

Magnetic interference (Pink)

4.4 Magnetic disturbance can occur where the survey encroaches near a field boundary, such as wire-fencing, that contains a ferrous material. In this instance, where the disturbance has occurred a single polarity response has been exhibited. This is particularly evident along the southeastern boundary of the field where there metal livestock fencing was present and a set of disused metal cricket practice nets. However, the interference was minimal and did not impact adversely upon the rest of the survey.

Artificial cricket-wicket (Green)

4.5 A linear negative anomaly was recorded within the centre of the survey area and is known to have been caused by the presence of the existing artificial cricket wicket. The wicket was aligned northwest by southeast and measured 29m long by 3 wide. This anomaly is located outside and to the east of the proposed development area.

Possible modern drainage (Brown)

4.6 Just northeast of the artificial cricket-wicket a second large negative oval-shaped anomaly was revealed which also contained a pair of small positive reading dipoles within its central area. It is assumed that this anomaly was of modern origin and may relate to a drainage system. This anomaly is located outside and to the east of the development area.

4.7 Semi-circular *structure (Yellow)*

The remains of a semi-circular concrete structure were recorded within the northern edge of the development area and it was suspected that this structure might be the remains of a former cricket pavilion.

Photograph 3: Aerial photograph taken in 1989 depicting crop mark PRN 13152 located east of the proposed development area (AP89-122.38 DAT).

4.8 *Archaeological linear anomaly (Dark blue)*

A linear anomaly was recorded just outside the development area boundary to the east. The anomaly was thought to be archaeological in origin and appeared to correspond with a linear crop mark (PRN 13152) identified from aerial photographs (Photo 3). The anomaly was aligned northeast-southwest and measured around 514m long and varied between 2m and 3m in width. The anomaly gradually faded out towards the north but it is assumed that it continues through and under the northern field boundary as visible on aerial photographs.

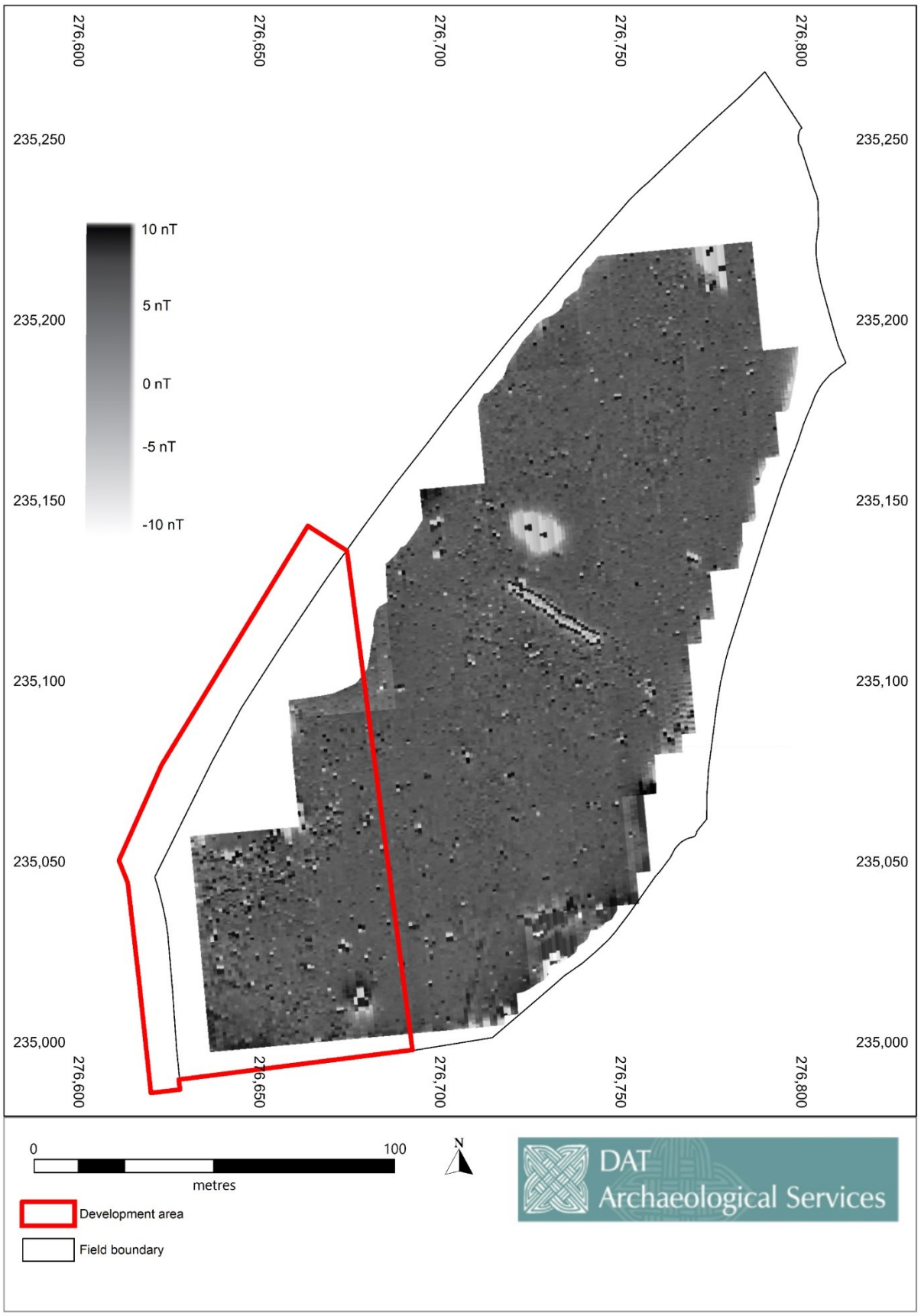

Figure 3: Geophysical survey greyscale plot.

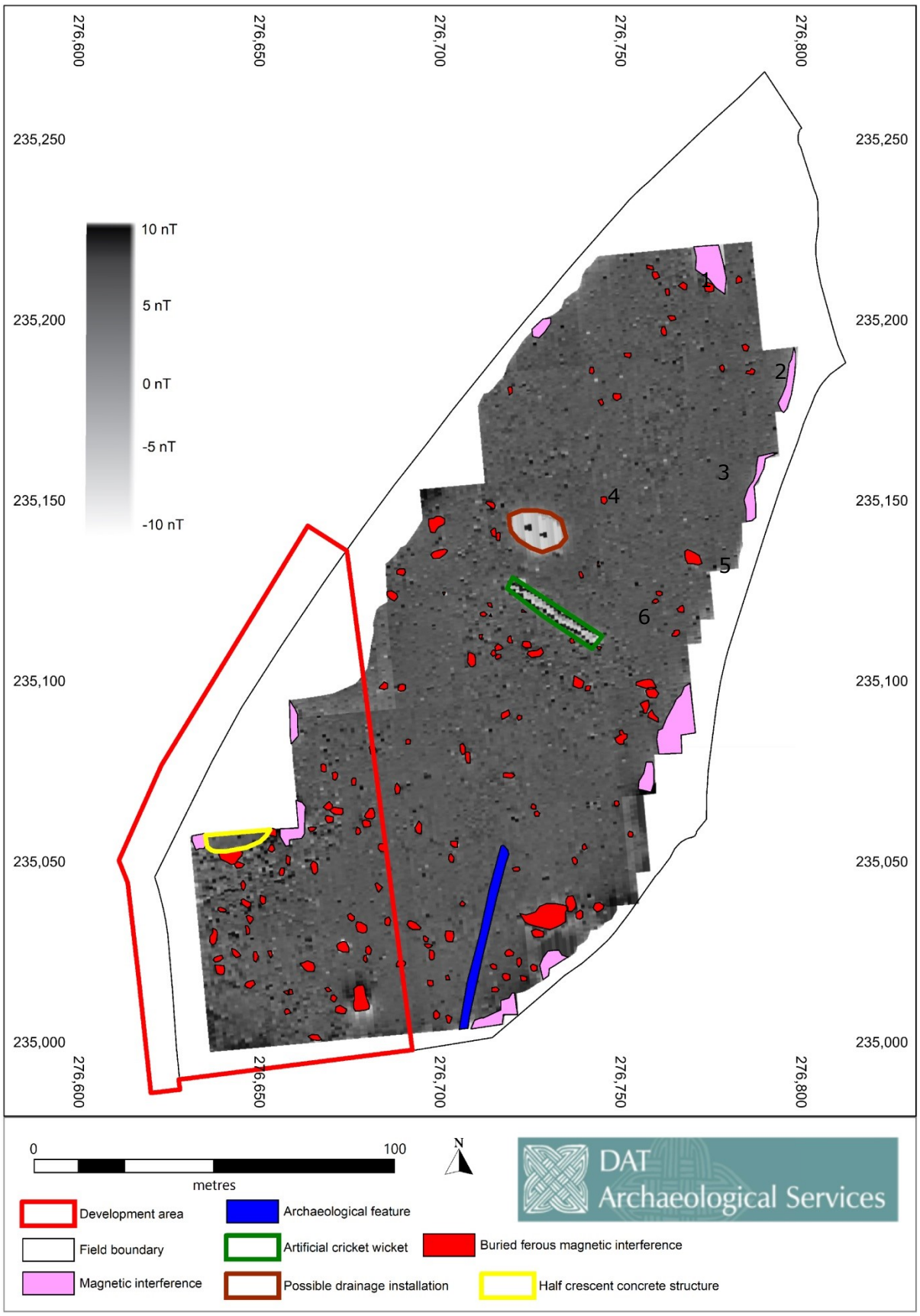

Figure 4: Geophysical survey interpretation

5. CONCLUSIONS

5.1 Generally the quality of the survey data was good; with little interference from external influences.

5.2 It is probable that during recent times Llandovery playing fields has undergone large-scale landscaping works to create a level sports field. It is possible that landscaping activates may account for the large amounts of buried ferrous readings which were encountered throughout the field as small metal ferrous objects may have been introduced through imported soil.

5.3 The geophysical survey identified the remains of a single linear anomaly that was judged to be archaeological in origin, that was located east of the development area and corresponds with a known crop mark (PRN 13152) that is thought to represent a Roman road running from Llandovery to Pumsaint. The crop mark was identified from aerial photographs taken during 1989 and is shown running roughly northwards across the field until it reaches the northern boundary of the field.

5.4 The strength of the linear geophysical anomaly fades as it continues northwards. This may be due to the effects of past landscaping works within the playing fields, which could potentially mask the rest the feature from the results.

5.5 Whilst the route of this suggested Roman road does not lie within the proposed development area it should be noted that if future developments progress further eastwards across the playing fields then this feature will be directly impacted upon.

5.6 Overall the results of the geophysical survey suggested that no significant archaeological features have survived within the proposed development area. However, within the wider remaining area of the playing field, the geophysical survey recorded evidence of a possible Roman road.

6. SOURCES

Published

CIfA, 2014 *Chartered Institute of Field Archaeologists Standards and Guidance for Archaeological Geophysical Survey*

Shobbrook, A, 2020. *Llandovery Playing Fields, Carmarthenshire: Historic Environment Desk-Based Assessment.* Unpublished DAT. Report no. 2020-54

National Standard and Guidance for Collecting and Depositing Archaeological Archives in Wales 2017.

http://www.welshmuseumsfederation.org/en/news-archive/resources-landing/Collections/national-standard-and-guidance-for-collecting-and-depositing-archaeological-archives-in-wales-2017.html

Aerial photographs

AP89-122.38 DAT

Online resources

British Geological Survey [online] Date Accessed 4th March, 2020.http://mapapps.bgs.ac.uk/geologyofbritain/home.html.

7. GLOSSARY

Fluxgate Gradiometer	An instrument used to measure magnetism to search for areas of disturbed ground that may be associated with subsurface archaeological features.
nanoTesla (nT)	A unit of measurement of a magnetic field.
Ferrous object	Metals and alloys that contain iron.
Dipole	An anomaly consisting of a single positive response with an associated negative response forming a 'halo effect'. The negative and positive response is of equal magnitude but opposite polarity and are caused by the same feature. Dipole anomalies are very commonly observed across a range of sites, particularly agricultural land. Generally, unless the dipoles form part of a larger pattern or feature they are regarded as not significant. They are usually the result of modern ferrous rich debris such as brick and tile fragments as well as objects such as horseshoes or broken ploughshares, which lie within the topsoil.

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