# Clawdd Coch, Carreghofa, Llanymynech, Powys Evaluation Report

Report by: Trysor

**For:** Glyn Jones

April 2016

trysor

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By

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Trysor Project No. 2016/506

For: Glyn Jones

April 2016

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*Cover photograph: Laying out Trench 1, looking southwest*

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Paratowyd yr adroddiad hwn gan bartneriad Trysor. Mae wedi ei gael yn gywir ac yn derbyn ein sêl bendith.

This report was prepared by the Trysor partners. It has been checked and received our approval.

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*Croesawn unrhyw sylwadau ar gynnwys neu strwythur yr adroddiad hwn.*

*We welcome any comments on the content or structure of this report.*


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Paul Sambrook (BA Joint Hons., Archaeology and Welsh, MCIfA, PGCE) has extensive experience as a fieldworker in Wales. He was involved with Cadw's pan-Wales Deserted Rural Settlements Project for 7 years. He also undertook Tir Gofal field survey work and watching briefs. He has been an independent archaeologist since 2004 undertaking a variety of work including upland survey, desk-based appraisals/assessments, and watching briefs.

**Contents**

## 1. Summary

1.1 In March 2016, Trysor undertook an evaluation in advance of groundworks for a chicken shed at SJ2481820275 at Clawdd Coch, Carreghofa, Llanymynech, Powys, planning application P/2016/0154.

1.2 No archaeologically significant contexts were recorded in the evaluation trenches. A geophysical survey by Ian Brooks, Engineering Archaeological Services, of the proposed development site did not identify any evidence of buried archaeological features. A fieldwalking exercise carried out over the evaluation area found no artefacts dating to earlier than the medieval or post medieval period. Only two possible medieval pottery sherds were found, all other pottery sherds recovered were clearly of post-medieval date.

1.3 The research undertaken for this evaluation report has included a review of previous work relating to the site of the postulated Clawdd Coch B Roman Fort. This has included an examination of antiquarian sources and more recent archaeological study. It is concluded that there is no evidence for a Roman fort at the Clawdd Coch B.

## 2. Copyright



## 3. Introduction

3.1 Glyn Jones of Clawdd Coch, Carreghofa, Llanymynech, Powys, SY22 6LF has commissioned Trysor heritage consultants to provide a Written Scheme of Investigation for field evaluation in advance of determination of a planning application.

3.2 Trysor produced a written scheme of investigation for the evaluation, see Appendix A, and it was approved by the planning archaeologist at Clwyd Powys Archaeological Trust.

## 4. The development

4.1 The proposed development is for a free range egg production unit including external feed hoppers, hardstanding and an access road, planning application reference number P/2016/0154.

4.2 It is proposed that a new agricultural building is built SJ2481820275 in an arable field to the west of the farmyard at Clawdd Coch, see Figure 1.

4.3 The building would be 72 metres northeast to southwest by 20 metres, with a hardstanding around all sides of the building extending

the footprint to 115 metres northeast to southwest by 30 metres. The access track would run from the northeast end of the hardstanding.

4.4 A sump in the floor for dirty water will drain water further below ground into a sealed tank.

## 5. Planning context of the proposed development

5.1 A planning application was submitted for the free range poultry unit to Powys County Council, reference number, P/2016/0154. This was commented on by the Planning Archaeologist at the Clwyd-Powys Archaeological Trust (CPAT, 2016). The Planning Archaeologist recommended that a pre-determination archaeological evaluation was undertaken before the planning application was determined because there is a record in the regional Historic Environment Record (PRN 21) of a possible Roman military fort being located within the same field as the proposed development.

5.2 Trysor produced a written scheme of investigation for the evaluation, see Appendix A, and this was approved by the planning archaeologist at Clwyd Powys Archaeological Trust.

## 6. Scope of Work

6.1 The written scheme of investigation (Appendix A) said that the evaluation would consist of geophysical survey, field walking and three evaluation trenches.

6.2 The evaluation was carried out in accordance with the Chartered Institute for Archaeologists' *Standard and Guidance for an Archaeological Field Evaluation* (Chartered Institute for Archaeologists, 2014).

6.3 An extensive review of previous work at the site, and of historic mapping was carried out, including the consulting the archive of Professor Barri Jones' work held in the National Monuments Record in Aberystwyth.

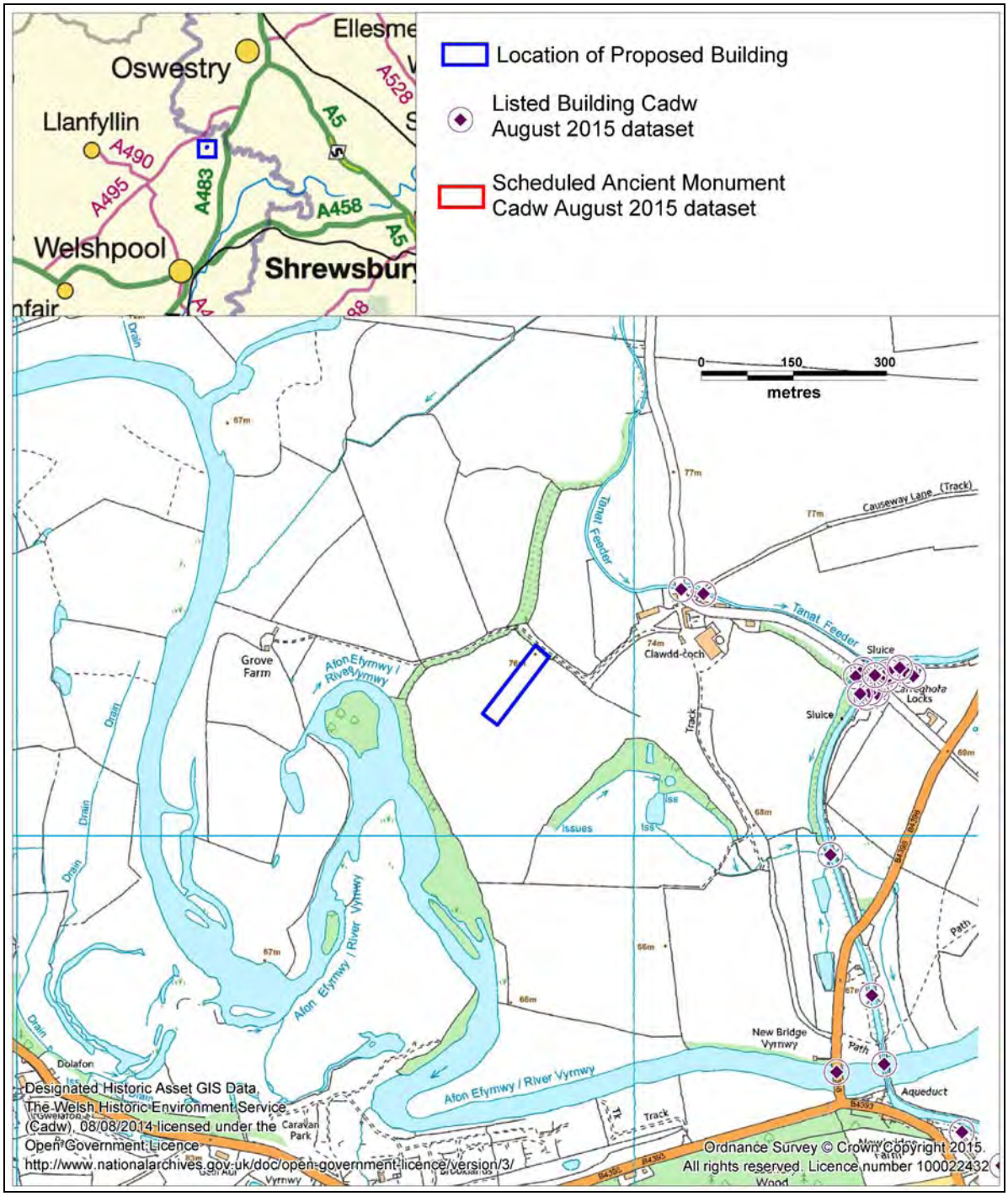



*Figure 1: Location of proposed development*

## 7. The Development Site

7.1 The proposed development site lies in a relatively flat, arable field, located on a broad raised terrace to the east of the Afon Efyrnwy. The proposed site is approximately 75 metres above sea level and from this location there are good views to the west. Higher ground restricts the view to the north and east.

7.2 The underlying strata at the proposed development site consist of mudstone, siltstone and sandstone of the Nantglyn Flags Formation. They are the result of sediments from shallow water environments being redeposited in a deep sea environment, between 419 and 428 million years ago in the Silurian Period.

7.3 Despite being immediately alongside the River Vyrnwy, this land at Clawdd Coch is not an area of floodplain and, unlike adjacent land to the west and south does not suffer periodic flooding by the river. The development site is located on a raised terrace, approximately 10 metres above the floodplain, formed by the dumping of boulder clay and glacial gravels at the end of the last Ice Age, some 10,000 years ago.

## 8. Historical and Archaeological Overview

8.1 There is a long and persistent tradition that a Roman fort exists in the vicinity of Clawdd Coch farm.

8.2 The current Historic Environment Record for Powys records that there are two possible Roman forts on the farm named as Clawdd Coch A and B. Both records are largely based on the work of Professor Barri Jones in the first half of the 1990s. He undertook aerial and ground surveys, limited geophysical surveys and small-scale excavations at Clawdd Coch between 1991 and 1994.

8.2.1 Clawdd Coch A (HER ref. PRN 4598) is recorded as a Roman Marching Camp or Post Medieval Field System. The site is mislocated in the HER at SJ2520020170, but should be located at SJ2507019900, where Barri Jones excavated ditches that he thought might be part of a Roman fort. This site is not affected by the proposed development.

8.2.2 Clawdd Coch B (HER ref. PRN 21) is recorded in the vicinity of SJ24822024, although its precise position and extent have never been pinpointed. It is this site which was thought to be potentially exposed to damage from the proposed development.

8.2.3 The HER descriptions for both Clawdd Coch A and B note that the interpretations of these sites as Roman camps or forts by Professor Jones is “not universally accepted”.

8.2.4 Some evidence of the uncertainty surrounding these potential Roman fort sites is provided by the National Monuments Record, held by the Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW). The RCAHMW have recorded at Clawdd Coch a possible Roman Settlement (NMR ref. NPRN 140020) located at SJ2476520175, close to the site given for Clawdd Coch B Roman Fort (PRN 21) in the Powys HER. The RCAHMW also hold the archive for Professor Jones' survey and excavation at Clawdd Coch. They conclude that his work "failed to produce any evidence for a Roman military installation" contrary to Jones' own conclusion. (source; online description for site NPRN 140020 in the NMR).

8.3 Some examination of the origins of the tradition that there is a Roman fort, or forts, at Clawdd Coch, and the work of Professor Jones, is necessary to understand why there are doubts over both the tradition and the interpretation of the archaeological evidence recorded in the 1990s.

8.4 The earliest writer to attempt to locate a possible Roman fort in the area was Sir Richard Colt-Hoare (1758-1838). He took an interest in the location of the fort of *Mediolanum*, which is shown by the "Itinerary of Antonius" and the "Ravenna Cosmography", and mentioned by Giraldus Cambrensis in his "Introduction to the History of Cambria", an English language volume of which was edited and published by Colt-Hoare in 1806 as part of a two volume edition of the "Itinerary of Archbishop Baldwin Through Wales" (ed. Colt-Hoare, 1806). The location of *Mediolanum* has since been identified as Whitchurch, Shropshire (Rivet & Smith, 1979, p.416).

8.4.1 Several 19th century writers use Colt-Hoare as their source when identifying Clawdd Coch as the location of the Roman fort of *Mediolanum*. Amongst these is Samuel Lewis (c.1782 – 1865), who refers to Clawdd Coch in his "Topographical Dictionary of Wales" (Lewis, 1840, p.231). In the section on the township of Carreghofa, in the parish of Llanymynech, Lewis states;

> "…at its south-western border, overhanging the river Vyrnwy, below where it is joined by the Tanat, rises a triangular mound, surrounded by a deep fosse, called Clawdd Coch, or 'the red dyke,' which Sir Richard Colt-Hoare supposes to be the ancient Mediolanum…"
> (Lewis, 1840, p.231)

8.4.2 It is not clear why Lewis makes such a claim of Colt-Hoare. In his translation of Giraldus Cambrensis' "Introduction to the History of Cambria", Colt-Hoare states;

> "The very important station of Mediolanum, at which four roads met, remains yet unknown…. I made three repeated visits to the Vale of Tanad, and explored every field I thought likely to have been occupied by the Romans ; but although I found many suspicious names, such as Cae Castelh, the Castle field, Tre Hen, the old city, &c. &c. yet I found no coins, no brick, no pottery, no inscribed stones, in short, no index whatever of a Roman town : it is, however, singular, that a tradition should so universally prevail amongst the natives, of a large old city having once stood in the Vale of Tanad, and on the very spot where, from the direction of the Via Devana, I should have expected it to meet by the branch of the Southern Watling street ; but after many minute and tedious researches, I could gain no satisfactory information on this subject."
> (Colt-Hoare, 1806, p.clx)

8.4.3 Colt-Hoare, therefore, does not appear to be the source of the tradition which places *Mediolanum* in the vicinity of Clawdd Coch and Lewis, amongst others, had converted Colt-Hoares' negative conclusion into a positive identification.

8.4.4 It is evident that by 1820 there were already sources emerging which claimed that Clawdd Coch was the true location of Mediolanum. The Rev. Peter Roberts appears to be one of the earliest sources to make this argument, as revealed in this passage written by the Rev. Walter Davies, under the pen name "Idris", in the first volume of the Cambro-Briton of 1820:

> "…he (Colt-Hoare), made three successive journeys from Stourhead into the Vale of Tanat, which he explored attentively and anxiously, but without success. This brought Sir Richard to the dernier resort of concluding, that the rapid Tanat had, in the course of ages, destroyed every vestige of the station [this does not accord with Colt Hoares published conclusion]. The editors of the "Beauties of England and Wales" could not be satisfied with such a disappointment; therefore they cut the Gordian knot, which Sir Richard had so anxiously, though unsuccessfully, endeavoured to untie. They cry "Ecce Mediolanum!" at Pen y Bont, the extremity of the southern wing of this parish, upon the junction of the Cynllaith with the Tanat [i.e. in the area of SJ2177323532]. This is the spot fixed upon in the body of the work, but in a map of the stations, &c. prefixed Mediolanum is not put down at Pen y Bont, but at Clawdd Coch, several miles to the southeast, and in the Denbighshire part of the parish of Llanymyneich. The late learned Mr. Peter Roberts had viewed this spot, and would fain insist, in conversation, that

> it was the identical spot where Mediolanum once quartered the legions of ambitious Rome. I am not aware that he ever committed his opinion to paper; however, the Editors of the Beauties caught the flying report. I had myself, some years before, been rather sanguine on the subject; and, in consequence of preconceived ideas, hastened to Clawdd Coch, full of expectations. When I arrived, I found, fortunately, a team in the field ploughing; and the farmer declared, that he had seen the piece ploughed and harrowed occasionally for upward of forty years past, but had never seen nor heard of any Roman relics, coins, bricks, or utensils, the indispensible accompaniments of Roman stations… From these data I am led to conclude, that Mediolanum is still among the terrae incognitae."
> (Davies, 1820, p.339).

8.4.5 This reference to "The Beauties of England and Wales" is significant. This series of books were published between 1801 and 1815, under various editors, which each volume describing the history and topography of the English counties. North Wales was covered by a volume edited by the Rev. John Evans in 1812. Evans firmly associates Roman Mediolanum with Meifod, Powys (Evans, 1812, p.10) and does not mention Clawdd Coch.

8.4.6 In 1818 a new volume was published, entitled "Introduction to the Original Delineations, Topographical, Historical and Descriptive intituled The Beauties of England and Wales". This volume, edited by J. Norris Brewer includes a list of Roman stations "Mentioned by Richard of Cirencester" in England and Wales (Brewer ed., 1818, p.22), amongst which is included "Mediolanum – Clawdd Coch". It does seem likely that this is the source of which Walter Davies was so critical two years later, or is at least a source influenced by the Rev. Peter Roberts. However, it is not clear why Clawdd Coch had become associated with *Mediolanum*, as the volume does not include any discussion of the location of the lost Roman fort.

8.4.7 The publication of the "Introduction" to "*The Beauties of England and Wales*" seems to be the point at which a belief that Mediolanum was located at Clawdd Coch entered the literature. The idea has been repeated in antiquarian, historical and archaeological sources down to the present day, although it appears to be based on the unsubstantiated and unpublished views of a single local source, the Rev. Peter Roberts (1760-1821). He was considered a learned man and he wrote many papers on ecclesiastical issues as well as Welsh History. He was granted freedom of the Borough of Oswestry in 1814 for "Author of numerous and extensive publications, for his deep and laborious

researches of ancient records and in consideration of his profound learning. (Cathrall, W, 1855)

8.4.8 Not all historical sources have accepted the identification of Clawdd Coch as the site of Mediolanum. The Royal Commission on Ancient Monuments rejected the idea in their Inventory for the county of Montgomeryshire, published in 1911;

> "There is… nothing in the physical configuration of the site, the existing remains or recorded finds, to warrant the idea of Roman occupation."
> (RCAM, 1911, p.13).

8.4.9 It seems likely that the topography of the land at Clawdd Coch has invited many antiquarians to conclude that there must be an archaeological explanation for the way the relatively flat fields at the supposed site of Clawdd Coch B Roman Fort appear. These flat fields are defined along their eastern side by a long and steep scarp marking the edge of a raised terrace of glacial origin. This scarp only drops down some 3 to 4 metres in height and runs south-southwest to north-northeast through the eastern side of the modern field and then continues in the direction of Clawdd Coch farmyard. This is likely to be the origin of the name "Clawdd Coch" or "Red Dyke", the "clawdd" being the natural bank formed by the scarp. Some antiquarians have seen this feature as a "fosse" or part of the defences of a large, irregular encampment, as previously quoted from Samuel Lewis;

> "…..a triangular mound, surrounded by a deep fosse, called Clawdd Coch."
> (Lewis, 1840, p.231)

8.4.10 A relevant and important article appeared in the "Montgomeryshire Express & Radnor Times of 28th June, 1910. This gave an account of the examination of the "Red Rampart" at Clawdd Coch by "Welshpool archaeologists", namely the anonymous writer and one Father Moore. The account gives an excellent description of the topography of the site and is worth quoting almost in full. It is particularly interesting for its reference to a feeder canal which formerly ran along the northern edge of the field where Clawdd Coch B is said to have been located. The present landowner is able to point out the line of the long infilled feeder canal to visitors today;

> "We went there, and, standing where we do now, we saw what former observers have described as a Roman camp: TWO PLOUGHED FIELDS, with three sides of the usual square shape marked out, the sides being about equal in

length, the fourth side being marked by what might have been a ploughed-down vallum stretching off across the field towards the river to form the fourth side. We went down White Lane, noticed the high bank on the left forming the east side of the camp, round the north side with its steep bank towering 30 or 40 feet above us, on by the west side of similar shape, and finally arrived at the river Vyrnwy. Coming through White Lane, we observed in passing what has been represented as the great vallum and fosse going in the N.E. direction. It all seemed plausible, but to our minds something was wanting. It was not quite like any Roman camp we had seen. In the first place the camp was a flat plateau with no ramparts of any kind (except in one case), the plateau ending suddenly where the scarp began. Then we noticed that, though the side along White Lane was fairly straight, the north and west sides with their high scarped banks were not so, but presented both inward and outward curves. The corners of the camp, too, were not rounded off. We took our measuring tape, and on an accurately measured blank plan we plotted out the camp and found that, though the west, north and east sides measured nearly the same - 400 feet, they did not by any means form a square. The bank crossing the ploughed field was found to slope far away to the left and joined the river some way from where the west side joined it, the river thus making a fifth side. Mr Fewtrell, the historian of Llanymynech parish, had been struck with the idea that the camp was partly a natural formation. I think that, when you have seen all the evidence I am going to place before you, you will come to the same conclusion as we did, that the whole thing is A VERY REMARKABLE NATURAL FORMATION.

We formed the conclusion that a huge plateau extended from the side of Llanmynech Hill to the banks of the Vyrnwy at Clawdd Coch, running N.E. by S.W. The N.W. side is roughly outlined by the Tanat feeder, which has been constructed eight of ten feet from its edge. The other side we have only traced from Clawdd Coch farm to the river. The wearing away of this plateau at its lower or Vyrnwy end by natural agencies has formed the series of high banks which some observers have thought to represent a Roman camp or camps. The fact is that these so-called camps are neither square, round, oblong, nor any other shape followed by any camp builders we know of. This plateau we have proved by repeated observations of the outcrop and small excavations, where necessary, to be a mass of consolidated shingle, not quite so hard perhaps as conglomerate, but so welded together with gravel, small stones and earth as to

have resisted the natural agencies tending to its destruction, and to remain to this day an important natural feature of the country...

...The scarp of the plateau going N.E. from Clawdd Coch (generally represented as consisting of a vallum with internal fosse) follows a straight course for a while, and then curves inwards until it meets the Tanat Feeder, the latter continuing on with a large inward curve, and occupying a position exactly corresponding with this fosse, giving one the impression that in the construction of the Tanat Feeder, which follows the edge of the plateau from Carreghofa Hall to Clawdd Coch, either use was made of a sunken road or path, which followed the edge of the plateau, or that in making this canal feeder it was originally intended to carry it round the plateau to White Lane, up the side of the lane and so along the edge' of the bank to Clawdd Coch farm, which latter suggestion is borne out by a section of White-lane shown in Mr Fewtrell's history. To find out if this supposition is correct I wrote to Mr Jebb, the engineer of the Shropshire Union Canal, and he very kindly sent me a copy of an Act of George IV., authorising the Canal Company to alter the course of the Feeder, and having a map attached, showing the course of the new and old Feeder. The old Feeder (made in the time of George III) ran along THE SO-CALLED FOSSE up White Lane, and round to Clawdd Coch farm in the way I expected it would. The Tanat Feeder Canal now curves round to the farm from where the dry ditch of the old feeder ends. From the farm to the ploughed fields extends a long raised bank, which on examination proves to be not straight, and is seen to be the edge of a shingle bank. The same may be said of the bank extending in a S.W. direction across the ploughed field the conglomerate or shingle is seen to be ploughed up at its salient points, and the so-called triple valla or banks sloping down towards the New Bridge prove to be of the same nature. White Lane I take to have been formed as a road down to the low-lying land, cut out deep to ease the gradient, and rendered extra wide by the merging into the original lane of the ditch of the old Tanat Feeder. It leads down to a field called Cae Coch, which may have some connection with Clawdd Coch (the Place of the Red Ditch). The plateau of consolidated shingle is probably the remains of the old moraine brought down by the Tanat Glacier during the glacial epoch, being piled up in its present situation when the glacier was deflected from its course by the high wall of Llanymynech Hill. In after years, when the glacier had melted, the Tanat river was formed, and it at first ran a more direct course to the Vyrnwy, carving out the edges of

> the plateau in its present shape, and forming a junction with it where the Clawdd Coch scarp ends. In stating our opinion that the so-called camp is entirely natural, we do not do, away with the possibility that Mediolanum is somewhere in the neighbourhood of Llanymynech, but we have cleared the air somewhat by showing that Clawdd Coch is not Mediolanum."
> (Anon & Father Moore, 1910, Montgomeryshire Express & Radnor Times of 28th June)

8.4.11 Despite the apparent absence of credible evidence from antiquarian and early archaeological sources, the tradition that a Roman fort was to be found at Clawdd Coch has persisted until modern times. Recent works such as "Roman Frontiers in Wales and the Marches", published by Barry C. Burnham and Jeffrey L. Davies in 2010, do not challenge the existence of some form of Roman site at Clawdd Coch. "Roman Frontiers" goes as far as to state that such a fort was "postulated by Sir Richard Colt-Hoare as long ago as 1816" (Burnham & Davies, 2010, p.310-311).

8.4.12 The tradition was greatly strengthened in the early 1990s when Professor Barri Jones from the University of Manchester, undertook a series of field surveys and excavations at both Clawdd Coch A and Clawdd Coch B sites, see Figure 2. Professor Jones was leading an excavation of another putative Roman fort at Abertanat (HER ref. PRN 119943), approximately 1km to the north of Clawdd Coch. Guided by aerial photographs taken by Chris Musson for the RCAHMW, Professor Jones also investigated Clawdd Coch, where apparent cropmarks were thought to represent the ditches of a possible Roman marching camp at Clawdd Coch A. Professor Jones also examined the eroding scarp of the eastern bank of the river Vyrnwy, which forms the western boundary of Clawdd Coch farm. Here, in 1991-1992, he noted and partly excavated a series of apparent ditches exposed in the river bank, which were defined as belonging to a second Roman fort, recorded as Clawdd Coch B (Jones, 1991, Jones, 1992, Jones, Various). A well-preserved clay oven, thought to be of Roman type, was also discovered close to the river bank here and fully excavated, see Figure 2, labelled Oven (Jones, Various). Limited geophysical survey was undertaken in 1993 to try to establish the extent of Clawdd Coch B (Burnham, 1993, Jones, 1993). This identified two anomalies to the east of the river which were interpreted as further Roman field ovens, C and D on Figure 2). Finally, in 1994, Jones excavated a ditch, 2.2m wide by 1m deep at the northern end of the same field, just inside the field gate. This he interpreted as the northeastern corner of Clawdd Coch B (Burnham, 1995).

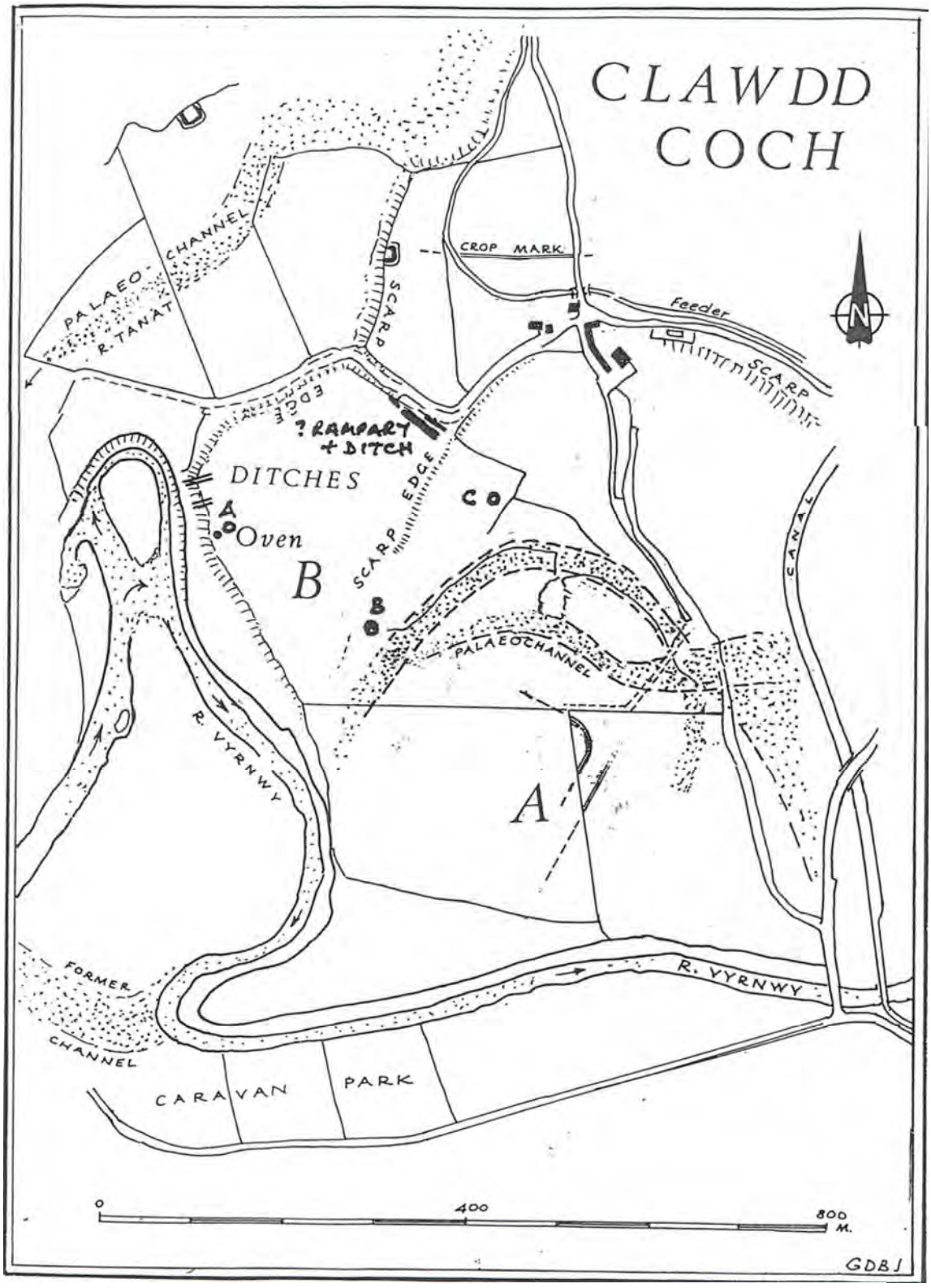



*Figure 2: Professor Barri Jones' plan of Clawdd Coch with hand-annotated notes for features A, B and C at Clawdd Coch B recorded in 1993, and the possible line of ditch and rampart to be investigated in 1994.*

- *"Ditches" and "Oven" were excavated in 1991 and 1992.*
- *Feature A was a possible second oven identified in 1993. A geophysical survey using a Proton Gradiometer gave*

*indifferent results. The oven was described as a "figure of eight" but no record survives in the archive and interpretation remains uncertain. It is unclear if it was excavated.*

- *B was a geophysical anomaly identified by Proton Gradiometer, in an area 16 metre by 16 metres. The soil was described as "dark soil with area of burnt clay". It was interpreted as a possible oven but does not appear to have been excavated.*
- *C was a geophysical anomaly identified by Proton Gradiometer, in an area 17 metre by 7 metres. The soil was described as "dark soil with burnt clay". It was interpreted as a possible oven but does not appear to have been excavated.*
- *?Rampart and Ditches seems to be where a rampart and ditch was believed to be and was excavated in 1994.*

8.4.13 Professor Jones' interpretation of the evidence he recorded at Clawdd B has long been subject to some doubt. No plan of the "fort" was produced as a result of his work and the geophysical surveys failed to find any evidence of the line of the defences of the fort. Unfortunately, no radiocarbon dating was undertaken from the ample amount of charcoal and carbonised grain found within the excavated field oven, therefore the assertion that it is of "Roman type" remains unproven. Field walking produced no evidence of Roman activity. A single iron artefact picked up during fieldwalking in 1991 was interpreted as being part of a broken Roman dagger or *pugio,* although this dating is by morphology alone and the current location of the artefact is unknown. No Roman pottery or any other artefact was found within the area of Clawdd Coch B.

8.4.14 Historically, there is a similar dearth of artefact evidence pointing to a Roman presence. Sir Richard Colt-Hoare some 180 years previously had found no artefacts suggestive of Roman activity in the district. The earliest find of any artefact attributed a possible Roman date at Clawdd Coch was reported in the early 19th century and described by Wynne Ffoulkes in 1851 (Archaeologia Cambrensis, 1851, p.144). Wynne Ffoulkes does not tell us where at Clawdd Coch this unusual artefact was discovered and little can be gleaned from its description. Its true purpose and date cannot be ascertained today and the attribution of a Roman date to the find was purely speculative and it is far from proof of Roman activity at Clawdd Coch:

> "Clawdd Coch belongs to a Mr. Asterley, who lives near to it, and farms the land there himself. He told me (and I took it down in my notebook at the time) that in his grandfather's time, a piece of silver with a device upon it, round like a five shilling piece, and as large as the palm of my hand, and some pieces of metal like the tops of spoons, but very small, were found there by a workman. His mother confirmed this statement, and said she remembered seeing them. The piece of silver was by them given to a clergyman, the then curate at Llanymynech, for the purpose of being submitted to the Rev. Walter Davies for his opinion upon it, and the reverend gentleman, the curate, never had the grace, as Mr. Asterley assured me, to return it. Thus is lost to us an important piece of evidence in the history of Clawdd Coch. Mr. Asterley believed them to have been Roman reliques. Perhaps the portions of what he described as very small spoons, may have been portions of "ligulce." I believe there is every reason for thinking that the Romans visited Clawdd Coch at some period or other."

8.4.15 There is some evidence of Roman activity in the wider area. The RCAHMW have a record for a Roman copper mine at Ogof, on Llanymynech Hill (NMR ref. NPRN 307004), where burials and coins dating to the 2nd to 4th centuries AD have been reported. A Roman coin hoard, found buried in an urn during the 19th century in Carreghofa township, Llanymynech parish, is recorded in the HER (HER Ref. no. PRN 26). The hoard has long been lost and no detail is known of the circumstances of its discovery. Professor Barri Jones also identified and excavated a Roman site at Abertanat, where he determined that at least two, possibly three, Roman forts had been built in successive phases (HER Ref. numbers PRNs 119943, 119944 & 119945). Partial evidence for these sites was first identified from aerial photographs taken by the RCAHMW and then through a series of small excavations carried out in the late 1980s. This recorded evidence was interpreted as the remains of timber revetted and gravel ramparts, with sections of ditch and posthole evidence of large timber buildings thought to be possible barrack blocks. Professor Jones reconstructed a section of rampart and the gateway of Abertanat Fort A following his excavations. The Abertanat site could be said to conform with the site of Mediolanum originally predicted by Sir Richard Colt-Hoare (Colt-Hoare, 1806, p.clx), "in the Vale of Tanat". However, as with Clawdd Coch A and B, the Clwyd Powys Archaeological Trust has recorded some doubt about the interpretation of features at Abertanat (CPAT HER site descriptions for PRNs 119943, 119944 & 119945, see also Silvester & Hankinson, 2006).

| **Source** | **Date** | **Conclusion** |
|---|---|---|
| Sir Richard Colt Hoare | 1806 | Negative |
| The Beauties | 1812 | Negative |
| The Beauties (Introduction) | 1818 | Positive citing Rev Peter Roberts |
| Rev Walter Davies (Gwallter Mechain) | 1820 | Negative |
| Samuel Lewis | 1840 | Positive citing Colt Hoare |
| Anon & Father Moore | 1910 | Negative |
| RCAM | 1911 | Negative |

*Table 1: Summary of 19th and early 20th century sources and their conclusions with regard to a fort at Clawdd Coch*

## 9. Fieldwork Methodology

9.1 All field work was carried out in March 2015. The evaluation area measured 120 metres northeast to southwest by 40 metres, see Figure 3.

9.2 The site code used was CCH2016.

9.3 Ian Brooks of Engineering Archaeological Services carried out a Fluxgate Gradiometer survey of the evaluation area on March 15th 2016, see Appendix D.

9.4 Trysor fieldwalked the evaluation area using the same grid as the geophysical survey. Each transect was 5 metres wide by 40 metres long (northwest to southeast), see Figure 4, and labelled CCH2016 FW001 to CCH2016 FW024.

9.5 Four trenches with a total length of 140 metres long were excavated, representing 5% of the evaluation area, see Figure 5 and Table 2. The trenches were excavated by machine using a 1.7 metre wide flat grading bucket. Trench 1 was originally intended to be 50 metres long but instead this was 40 metres long and a 10 metres trench 5 to its south excavated in order to further investigate an aspect of the subsoil.

| Trench Number | NGR | Trench description |
|---|---|---|
| Trench 1 | SJ2482520289 | 40 metre by 1.7 metre trench aligned northeast to southwest |
| Trench 2 | SJ2480320269 | 40 metre by 1.7 metre trench aligned northwest to southeast |
| Trench 3 | SJ2477520234 | 50 metres by 1.7 metre trench aligned northeast to southwest |
| Trench 4 | SJ2484020298 | 10 metre by 1.7 metre trench aligned northeast to southwest |

*Table 2: Dimensions of evaluation trenches*

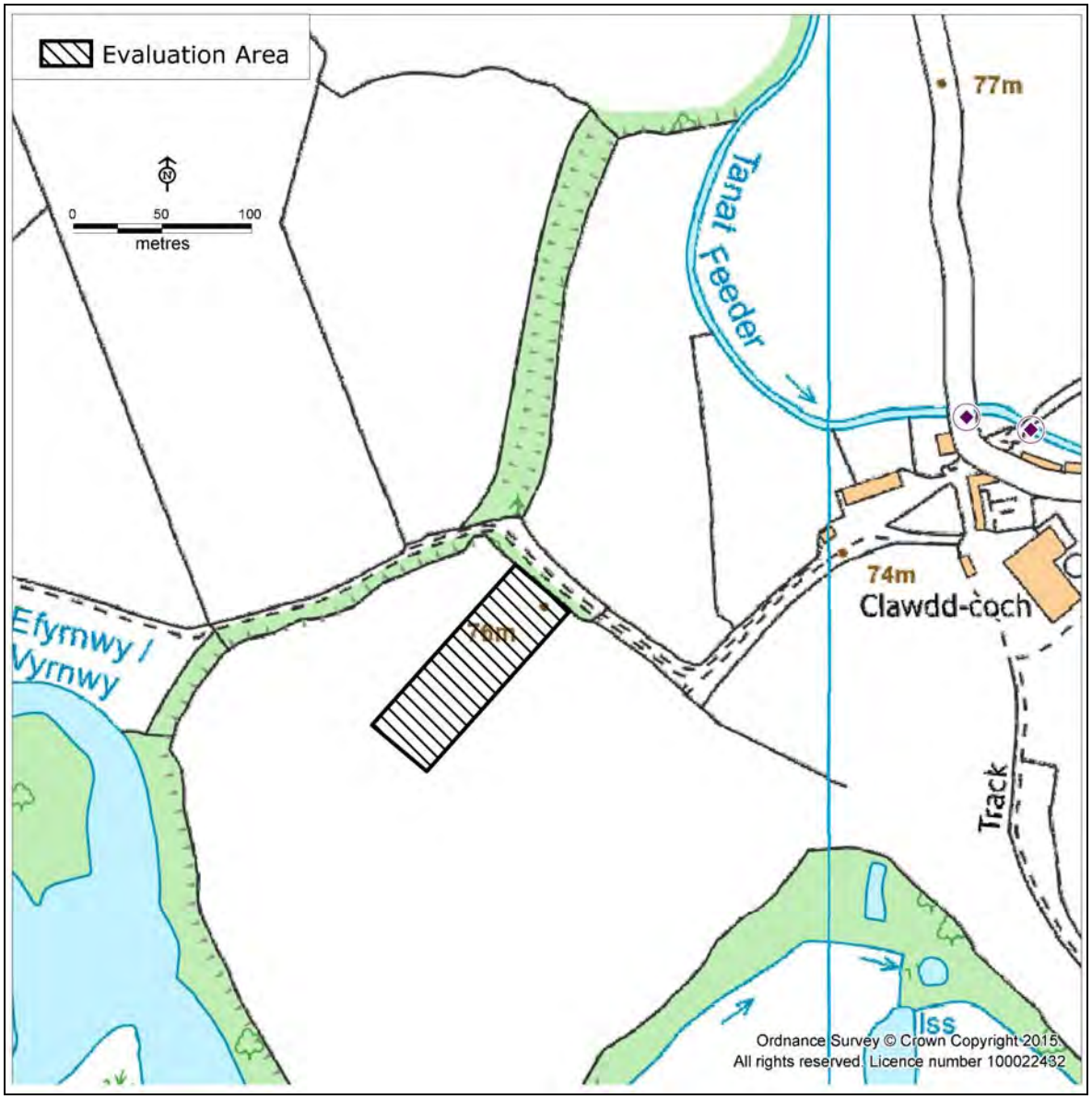



*Figure 3: The evaluation area, 120 metres northeast to southwest by 40 metres.*

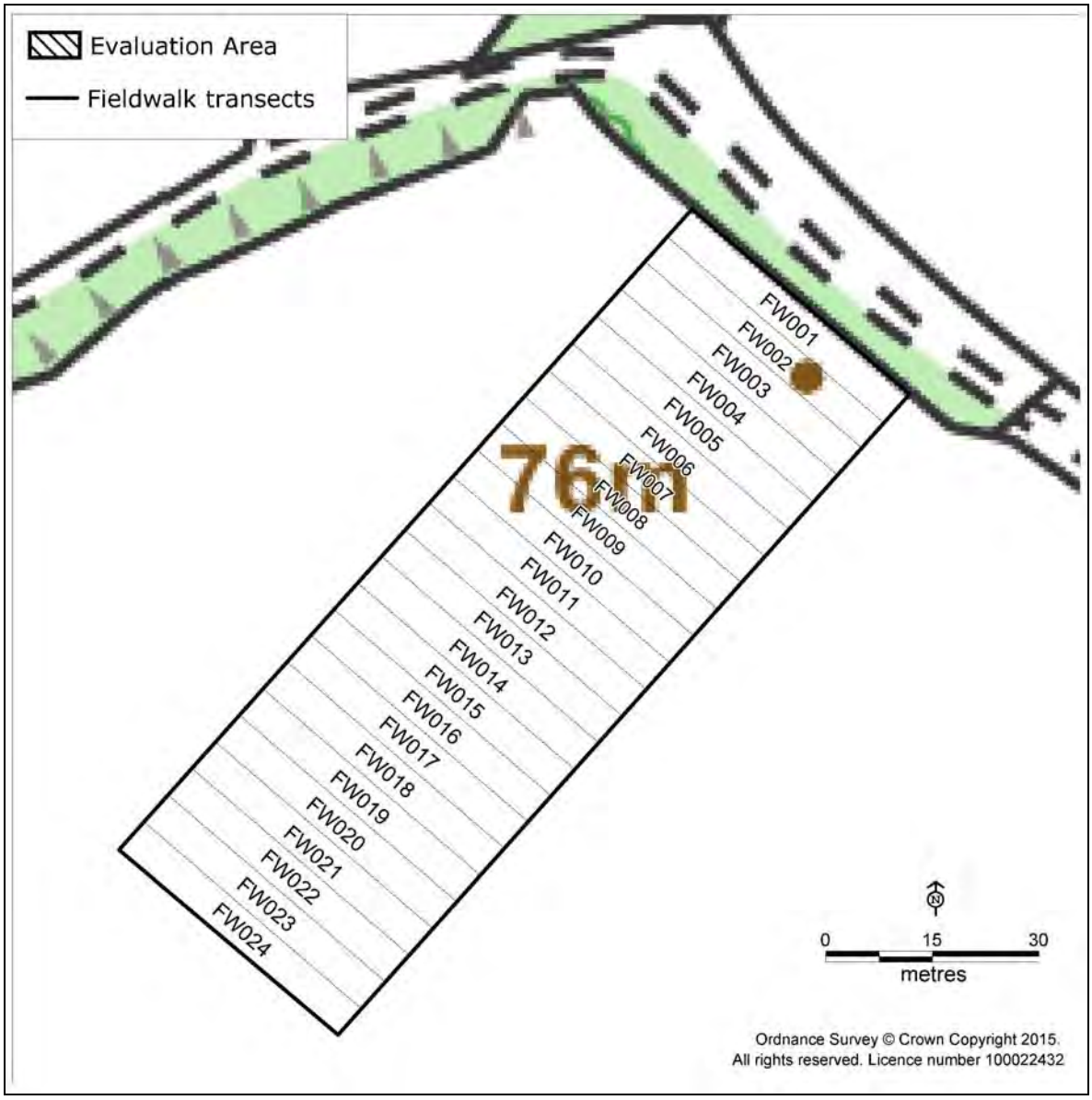



*Figure 4: Location of fieldwalking transects*

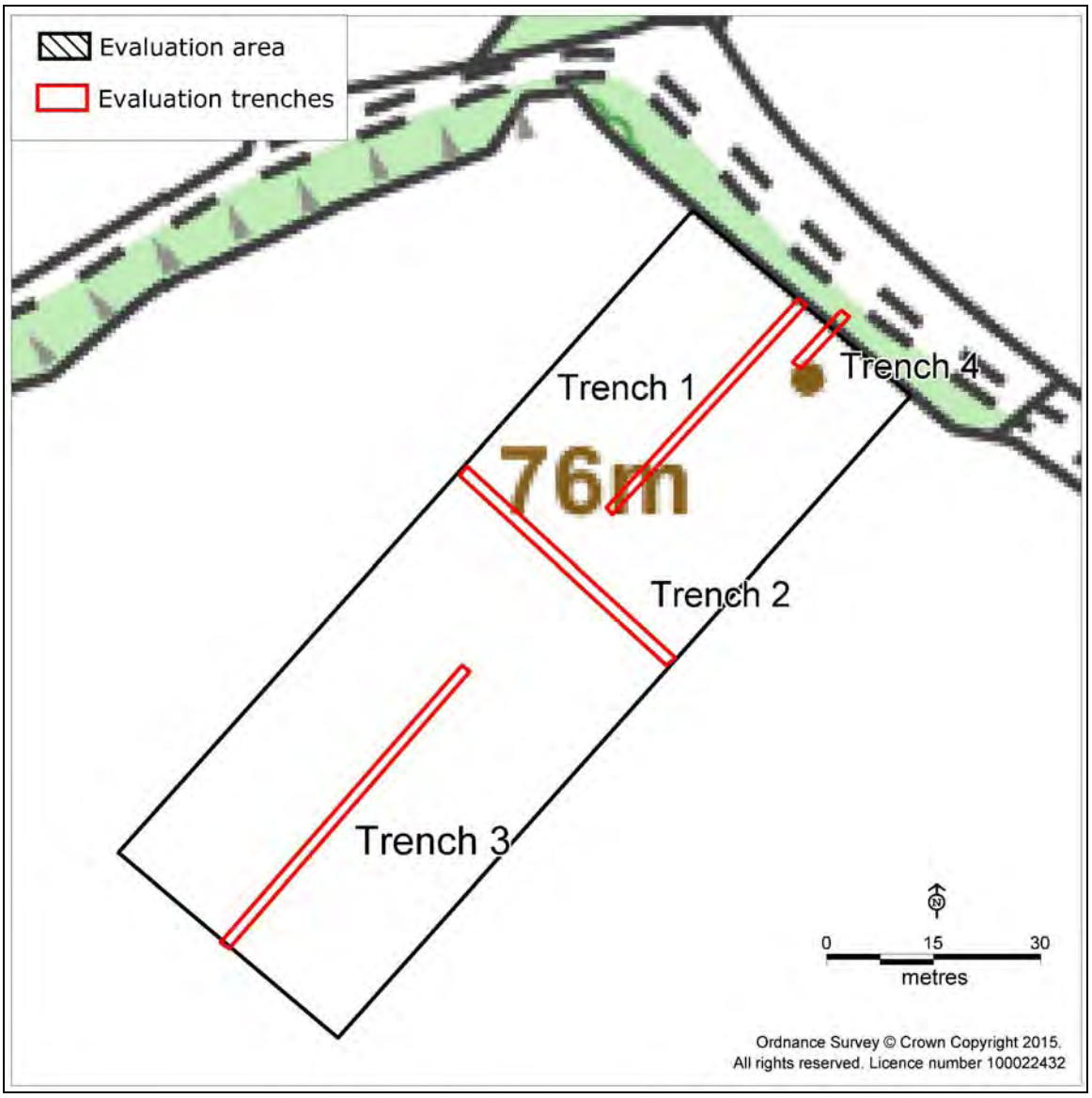



*Figure 5: Location of the trenches*

## 10. Results

10.1 Although the ground was suitable for this form of geophysical survey no anomalies with potential archaeological origins were detected, see Figure 6 and Appendix D.

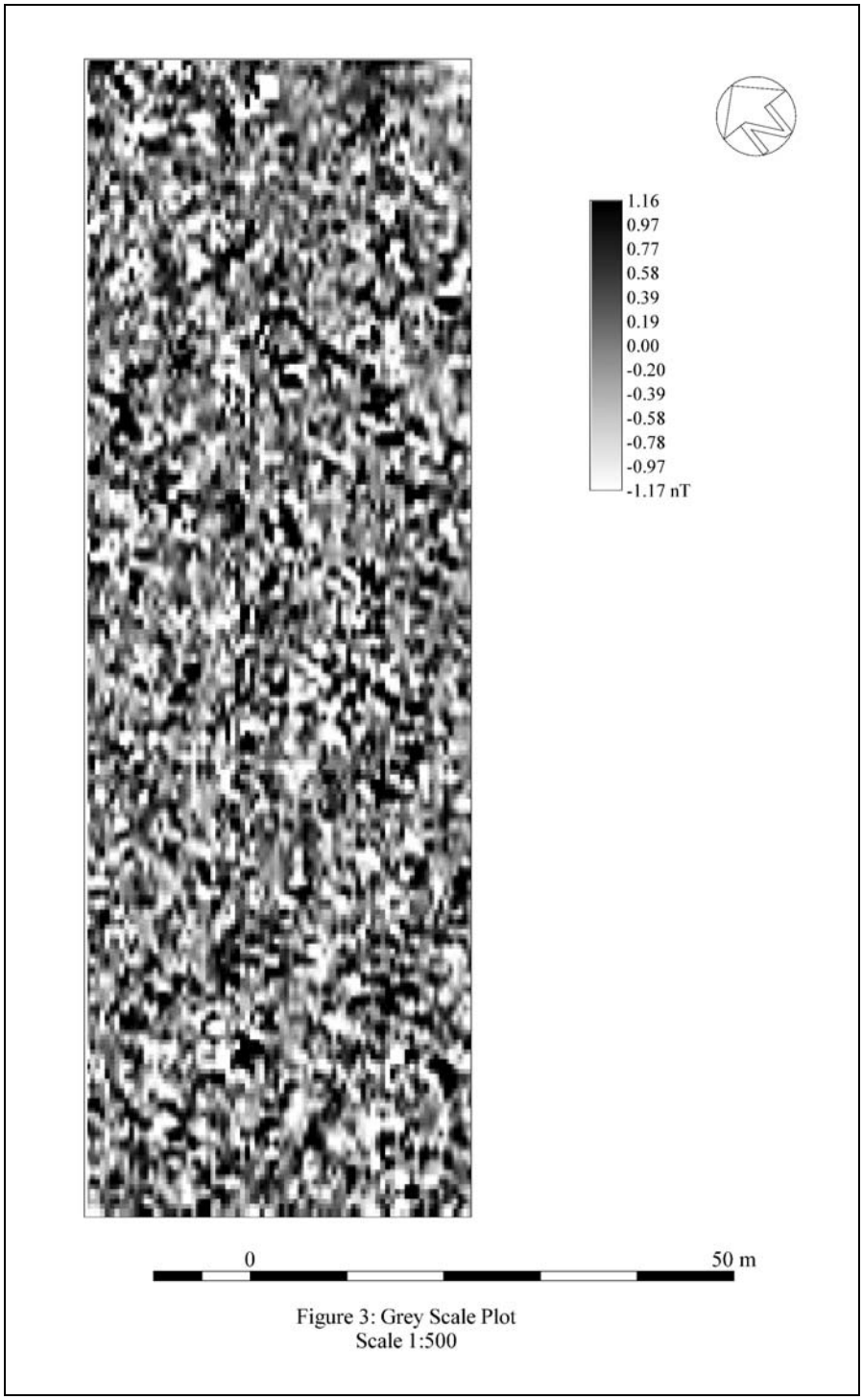



*Figure 6: Geophysical survey results, Ian Brooks, Engineering Archaeological Services*

10.2 The two northern grid squares gave lower readings than the rest of the field which was thought to reflect underlying geology, see Figure 7.

| Sample | Volume susceptibility $\chi_v$ | Mass susceptibility $\chi_m$ |
|---|---|---|
| Grid 1 | 87 | 82.9 |
| Grid 2 | 80 | 80.0 |
| Grid 3 | 89 | 83.2 |
| Grid 4 | 90 | 82.6 |
| Grid 5 | 79 | 79.0 |
| Grid 6 | 48 | 42.5 |
| Grid 7 | 83 | 75.5 |
| Grid 8 | 79 | 77.5 |
| Grid 9 | 73 | 75.3 |
| Grid 10 | 81 | 72.3 |
| Grid 11 | 78 | 72.2 |
| Grid 12 | 55 | 51.9 |
| Sub-soil | 64 | 68.8 |

*Figure 7; Magnetic Susceptibility. The northernmost grid, 12, has markedly lower results than the others. Ian Brooks suggested this reflected underlying geology, which was confirmed by the evaluation trenches 1 & 4, which exposed a band of gravel running parallel to the line of the scarp at the edge of the field.*

10.3 The fieldwalking produced no artefacts of Roman date, see Appendix B.

10.4 The majority of the pottery assemblage comprised utilitarian vessels of the early post-medieval period, although there were two small sherds of coarseware of medieval date. The latest type present was whitewares of the early 19th century. There was little indication of modern material apart for the iron objects. The ceramic building material was mainly parts of bricks, although one unglazed floor tile of probable post-medieval date is present.

10.5 No archaeological features were noted in any of the trenches.

10.6 At the northern end of Trench 1, the natural subsoil contained a band of gravel and cobbles overlying clay. This was close to the scarp face of the raised plateau on which the evaluation area stood. An additional trench, Trench 4, was placed 5 metres to the south of Trench 1 in order to further investigate this layer, see Plates 5, 6 & 7. This trench was offset to the northeast and cut into the scarp face of the northeastern edge of the field and showed the cobbles to be part of the glacial subsoil.

## 11. Site Stratigraphy

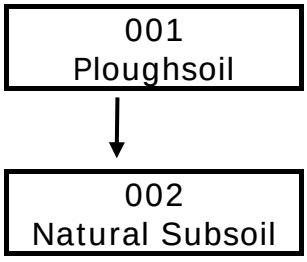
11.1 The stratigraphy in each of the four trenches was recorded, no sections were drawn as no archaeological features were encountered.

11.2 Context Catalogue

| Context Number | Trench | Depth | Description | Interpretation |
|---|---|---|---|---|
| **001** | 1,2,3,4 | Up to 0.40 metres | 10YR 3/4 dark yellowish brown, friable clay loam, with rounded pebbles. Darker at the eastern edge of field on slightly rising ground. | Ploughsoil. The darker soil overlies a natural gravel/ cobble band, where the ploughsoil was thinner and close to trees |

| Context Number | Trench | Depth | Description | Interpretation |
|---|---|---|---|---|
| **002** | 1,2,3,4 | - | 10YR 4/3 brown silty clay with gravel, also gravel/cobbles patches. In particular a band at the northernmost part of Trench 1. This band of gravel/cobbles was loose with ploughsoil mixed within the uppermost parts of it. A second trench was opened to further investigate the nature of the gravel and cobbles. This trench cut into the edge of the scarp along this side of the field, and it showed that the cobbles/gravels were part of the makeup of the subsoil. This coincides with a lower reading within the geophysical survey in this area which was thought by Ian Brooks to relate to differences in the subsoil. | Subsoil, glacial deposits, ranging from clays, silts, sands and gravels/cobbles The landowner reported that it was normal across these fields to find gravels and cobbles which underlie the sand/clay subsoils |

*Table 3: Context catalogue*



## 12. Photographs

12.1 Colour digital photographs were taken of topsoil stripping and excavation of trenches using a 16M pixel camera. The following table describes the content of each photograph included in the project archive and their locations are provided in the following map, see Table 4 and Figure 8. The photographs are included in Appendix C at the end of the report.

| Photo Number | Description | Date Taken | Direction |
|---|---|---|---|
| CCH2016_101 | Field and evaluation area, orange markers are just visible showing the southwestern corners of the area | 22/03/2016 | Looking west southwest |
| CCH2016_102 | Field walking markers for FW 001 to FW003 | 22/03/2016 | Looking east |
| CCH2016_103 | Trench 1 marked out prior to excavation | 22/03/2016 | Looking southwest |
| CCH2016_104 | Commencing excavating Trench 1 | 22/03/2016 | Looking south southeast |
| CCH2016_105 | Trench 1 with cobble layer in the foreground | 22/03/2016 | Looking southwest |
| CCH2016_106 | Northwest section of northeastern end of Trench 1, showing cobble layer | 22/03/2016 | Looking northwest |
| CCH2016_107 | Additional trench 4 excavated to investigate cobble layer further. This trench showed that the cobbles formed part of the natural subsoil | 22/03/2016 | Looking southwest |
| CCH2016_108 | Trench 2 fully excavated | 22/03/2016 | Looking northwest |
| CCH2016_109 | Trench 3 unopened, with trenches 1 & 2 open in the background | 22/03/2016 | Looking northeast |
| CCH2016_110 | Trench 3 | 22/03/2016 | Looking southwest |

*Table 4: Photograph catalogue*

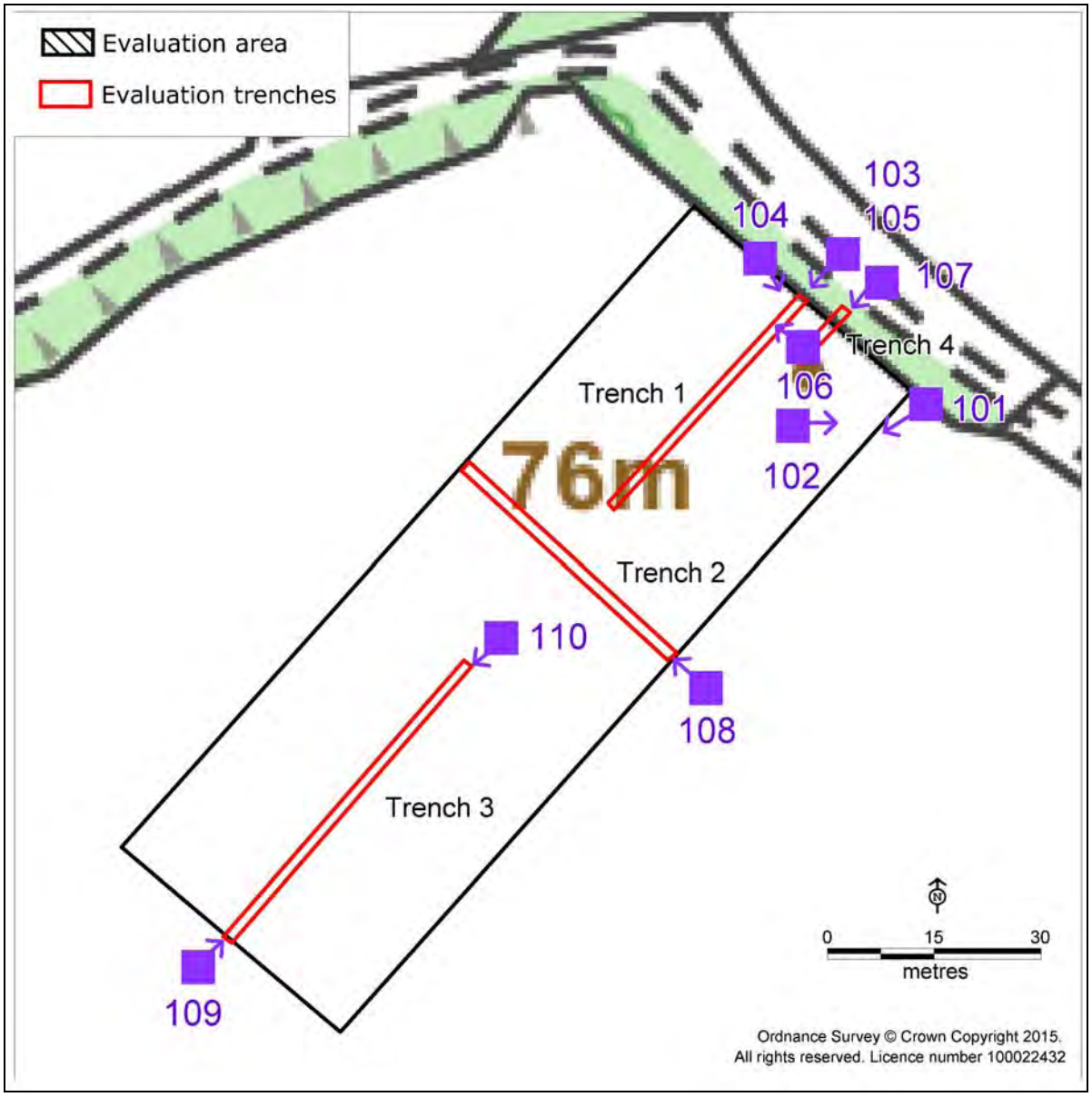



*Figure 8: Location of photographs*

## 13. Discussion

13.1 The results of the desktop research and the field evaluation undertaken for this report cast significant doubt on the existence of a Roman fort at Clawdd Coch, the so-called "Clawdd Coch B fort." There is certainly no evidence of such a fort within the evaluation area.

13.2 Perhaps the most persuasive argument against there being a Roman fort or settlement at Clawdd Coch B is the fact that despite nearly two centuries of study, no-one has ever found any credible evidence of a concentration of Roman pottery or other artefacts which would be expected to be retrieved from such a site, from land which is regularly ploughed for arable use. As early as 1820, the Rev. Walter Davies reported that there were no grounds to believe that there was a Roman fort at this location, having had the opportunity to speak to the farmer who could testify to decades of experience of ploughing the land here without seeing any evidence of archaeological interest (Davies, 1820 p.339). As will be seen elsewhere in this report, the fieldwalking, geophysical survey and evaluation trenching carried out at the proposed development site, within the area of the putative Clawdd Coch B fort has similarly drawn blank.

13.3 The research undertaken in association with this evaluation may offer alternative explanations for some of the features identified as evidence of Roman activity at Clawdd Coch.

13.4 Examination of early Ordnance Survey mapping and the parish tithe map for Carreghofa, which probably dates to 1838, show that there have been considerable changes to the landscape at both the Clawdd Coch A and Clawdd Coch B sites since the mid-19$^{th}$ century.

13.5 The Ordnance Survey's Original Surveyors Drawings of 1829 show that the large field where Clawdd Coch B is said to be located was originally divided into two parcels by a trackway, the line of which can still be made out in the field. These were parcels 356 (*Cae Penybryn*) and 360 (*Tir y Clawdd*) on the parish tithe map of 1838. The significance of the Tir y Clawdd field name is that the natural scarp at the edge of the raised glacial terrace runs south-southwest to north-northeast through the length of this field; this is the "*clawdd*" or bank which has given rise to the Clawdd Coch name. The trackway led from the farmyard at Clawdd Coch and ran to the south-southwest, almost to the banks of the river Vyrnwy, where an unnamed cottage stood, within its own garden enclosure (parcel 357). This area is known as "Molly's Patches" to the present owner. The track then turned to the west-northwest and ran to the boundary at the western corner of the modern field. There is now no trace of either the cottage or the western end of the trackway. It is evident that part of the southern edge of the field has been lost to river erosion since the 1840s.

13.6 Analysis of early maps raises several interesting points;

13.6.1 The “Roman” field oven excavated by Professor Barri Jones in 1991 is located very close to the cottage shown on the 1829 Ordnance Survey drawings. It seems quite possible that the oven is associated with this post-medieval dwelling, rather than with an unproven Roman fort.

13.6.2 Professor Jones excavated ditches at the riverbank, at the western edge of the field, and just inside the gateway entrance into the field at its eastern side. The alignments of these ditches are not suggestive of them being associated with each other. Those in the riverbank appear to be on a west-southwest to east-northeast alignment. Those near the gateway, said by Professor Jones to represent the northeastern corner of the fort’s defences, are said to run southeast to northwest. Their alignments make it evident that they cannot both be part of the defences of a typical “playing-card” shaped Roman fort. It must also be noted that the excavated ditches appear to be relatively slight. The excavation reports indicate that they were no more than 1 metre deep and a little over 2 metres wide at most. These dimensions are not suggestive of a Roman military fort.

13.6.3 In view of the significant changes to the field system on Clawdd Coch farm since the mid-19$^{th}$ century, it is quite possible that the ditches and the associated “ramparts” noted by Professor Jones were in fact field boundary features of unknown date or natural features. The presumption that they are associated with a Roman fort cannot be sustained on the evidence available.


*Figure 8; The lane and the unnamed cottage to the east and south of the evaluation area are shown on the Ordnance Survey's Original Surveyors Drawings of 1829. The cottage appears to be in a slightly different position to that shown on the later tithe map, being shown here between the lane and the river Vyrnwy. It is possible that one of the maps is slightly inaccurate or that a new cottage was indeed built a short distance to the northeast shortly after 1829, perhaps as a response to erosion along the riverbank. The position of the cottage on this map is close to the site of Professor Barri Jones' "Roman type" oven.*

*It is worth noting the Gothic font used to annotate the polygonal "enclosure" shown around the evaluation site. It is evident that by 1829 the Ordnance Survey had been convinced that such a fort existed; clearly this is not intended to represent a rectilinear Roman fort. This has resulted in curious descriptions of Clawdd Coch B in some modern sources, such as roman-britain.co.uk, which has it to be a huge Roman fort of "irregular polygonal" plan, extending over 5 hectares, a form quite untypical of Roman forts.*

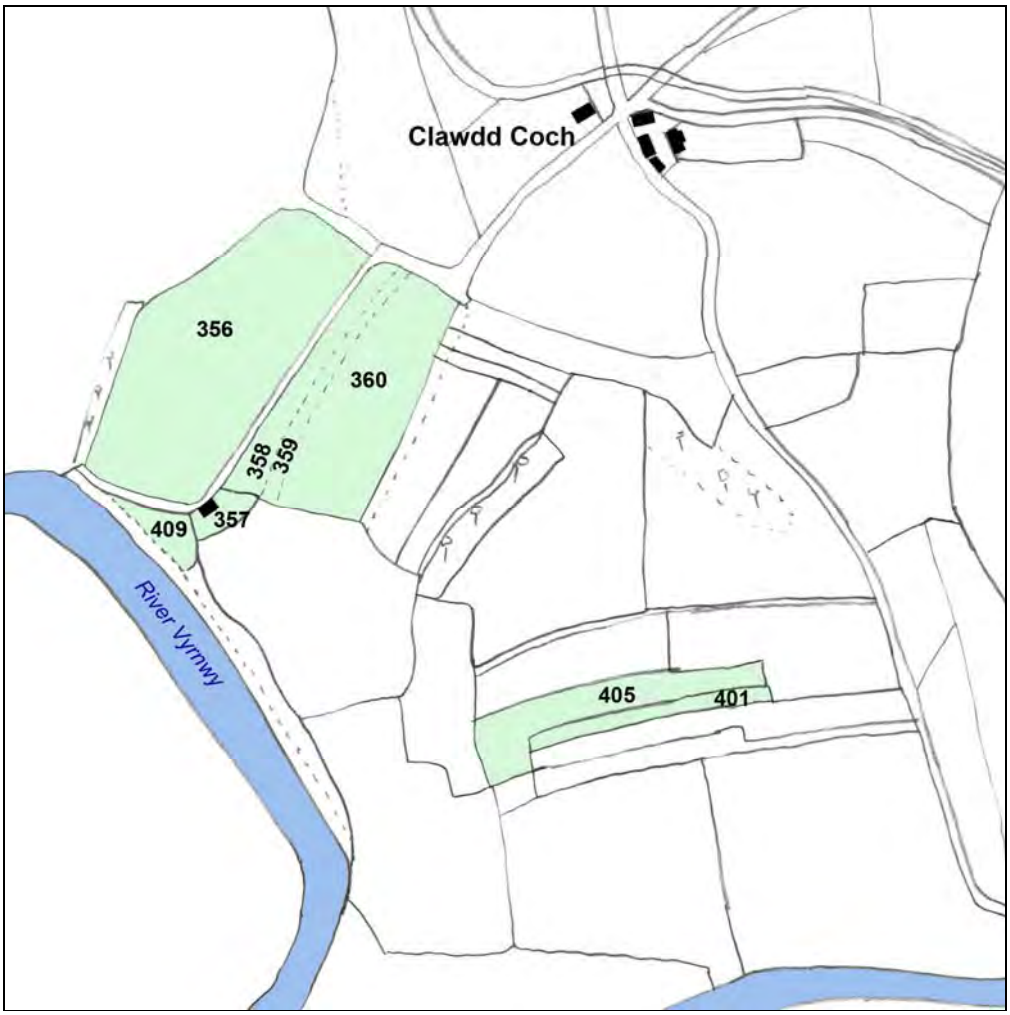



*Figure 9. An enhanced tracing of part of the Carreghofa township tithe map, showing the field system around Clawdd Coch in the 1830s. The proposed development would be located in field parcel 356, which equates to the site claimed as "Clawdd Coch B" Roman Fort. The excavations at "Clawdd Coch A" would be located in the area of strip fields numbered 401 and 405. Significantly, the unnamed cottage in parcel 357 stood close to the "Roman type" oven excavated by Professor Barri Jones in 1991. It is thought that the oven itself would have been found in parcel 409, where a cottage appears to have stood on the 1830 Ordnance Survey Drawings.*

*The date of this tithe map is uncertain. The copy from the PRO held at the National Library of Wales appears to be dated 1828, but the Tithe Commutation Act was not passed until 1836. It could be based on an estate map of 1828, although the land in Carreghofa was not all held by the same estate. It is maybe more likely that the map dates to 1838 and was therefore drawn a year after its accompanying schedule, which dates to 1837. The original map is kept in a folder dated 1836-1850 at the National Archives at Kew.*

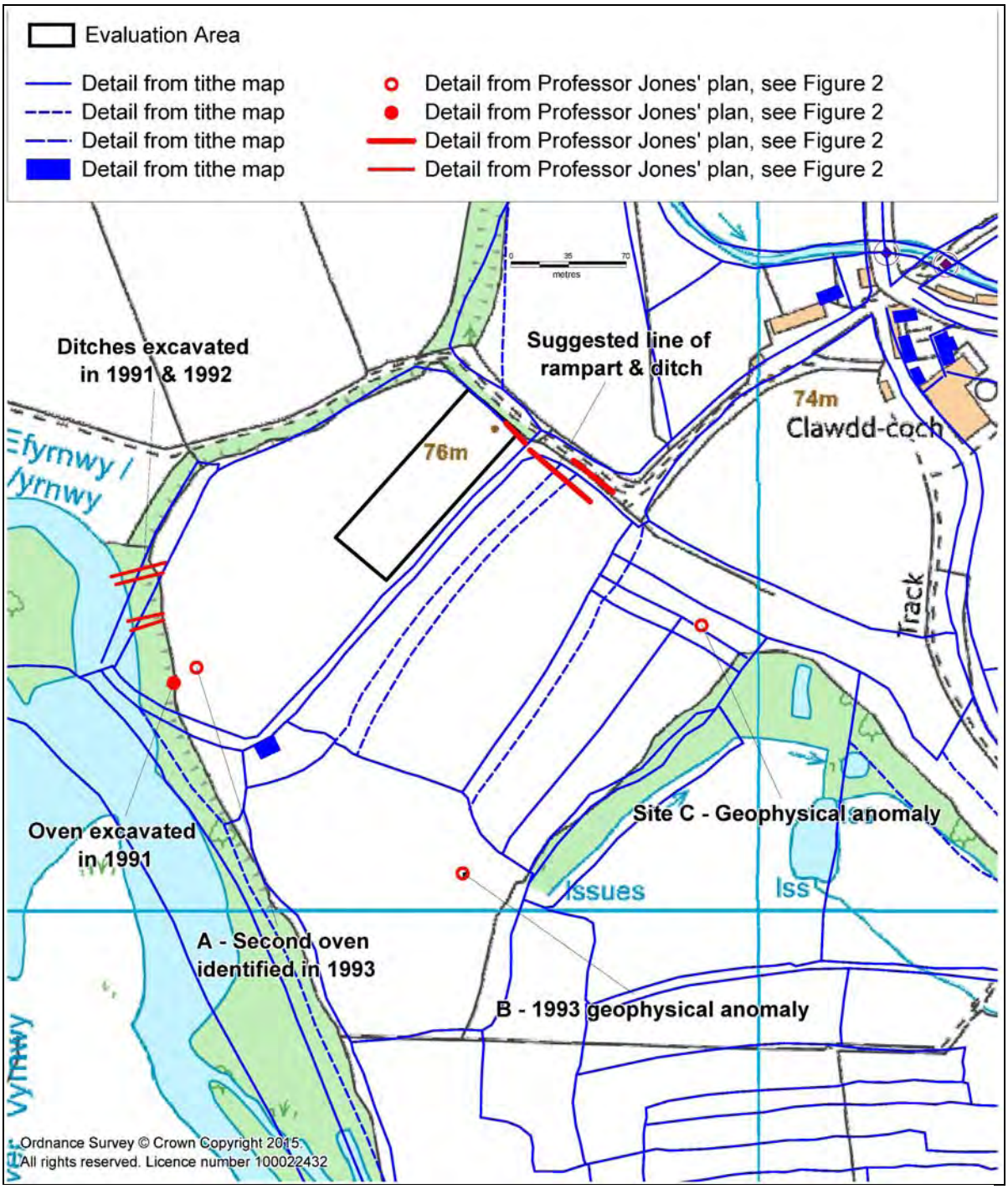



*Figure 10: Modern mapping overlain with rectified tithe map details and details from Professor Jones' excavations. The detail from Professor Jones's excavations is accurately plotted from his plans, although the accuracy of his work is not known. The rectification of the tithe map detail was hampered by the lack of stable points. There have been many changes in the farmed landscape with field boundaries removed or altered. The river course has also altered. Twelve registration points were used but there were fewer on the west side.*

## 14. Conclusion

14.1 During the evaluation excavation, no archaeological contexts were observed during removal of the topsoil down to subsoil at the proposed development site.

14.2 It is evident that the topography of the area surrounding the development site is dominated by glacial deposits. The nature of these deposits has given rise to the belief that Clawdd Coch is the site of an ancient camp or Roman fort, but antiquarian references to “fosses” or “dykes” here represent the misinterpretation of natural features, particularly the scarps which form the edges of a broad, raised terrace to the east of the river Vyrnwy, upon which Clawdd Coch farm is partly situated. These deposits include bands of gravels and cobbles as well as boulder clay. The evaluation trenches exposed the boulder clay subsoil at the proposed development site and one band of glacial gravel and cobbles along the northern edge of the site.

14.3 The historical evidence relating to the tradition that there was a Roman fort at the evaluation site has been reviewed for this report. No antiquarian who visited Clawdd Coch ever produced any evidence of Roman activity. Key antiquarian sources, including Sir Richard Colt-Hoare and the Rev. Walter Davies were emphatic in stating that there is no artefactual or archaeological evidence for such a fort at Clawdd Coch. A tradition that such a fort existed grew during the 19$^{th}$ century, nevertheless, but is not evidence based.

14.4 The results of the archaeological investigations undertaken by Professor Barri Jones between 1991 and 1994 have also been reviewed. It is clear that Professor Jones did not produce any verifiable evidence of Roman activity at Clawdd Coch B. Perhaps the best opportunity was presented by the charcoal and carbonised grain excavated from the so-called “field oven” excavated in 1991, but no radiocarbon dating was undertaken. Despite fieldwaking around the area of the putative fort, no artefacts were found indicative of Roman activity. A single iron artefact, claimed to be part of a Roman *pugio* or dagger, has not been verified as such. This artefact has since been lost. Even if it was shown to be a Roman dagger, it would not in itself be evidence that a Roman fort exists at this site. No dateable material was found in the sections of ditches excavated by Professor Jones and their relatively small dimensions suggest they are not associated with a Roman military fort. Professor Jones was not able to prove the extent or form of such a fort, despite employing geophysical survey and aerial photography to examine the site in some detail. As a result, no site plan was created for Clawdd Coch B.

14.5 Further geophysical survey, intense fieldwalking and 140 metres of evaluation trenches undertaken across the evaluation area for this

report have produced no evidence of Roman activity in terms of artefacts or archaeological contexts.

14.6 In conclusion, there is no evidence of Roman activity within the evaluation area. There is also no evidence of activity pertaining to any other archaeological or historical period, other than that associated with post medieval and modern agriculture.

14.7 No further archaeological mitigations are thought necessary in respect of the proposed development.

## 15. Archive

15.1 The archive and a copy of the report and photographs will be deposited with the National Monuments Record, Aberystwyth. Photographs are in TIFF format, following the standard required by the RCAHMW.

15.2 A further copy of the report will be supplied to the Historic Environment Record at Clwyd Powys Archaeological Trust, Swansea.

## 16. Sources

### 16.1 Ancient Souces

Antonine Itinerary, *Itinerarium Antonini* (ed. O. Cuntz) Leipzig, 1929

Ravenna Cosmography, *Ravenna Anonymi Cosmographia* (ed J Schnetz, being Volume II Itineraria Romana) Leipzig 1940

### 16.2 Maps

Ordnance Survey, 1821, Original Surveyors Drawing, 2 inches to a mile

Carreghofa Township tithe apportionment, 1837

Carreghofa Township tithe map, 1838?

### 16.3 Published

Anon & Father Moore, 1910, *Red Rampart,* Montgomeryshire Express & Radnor Times, 28th June

Brewer, J. Norris, 1818, *Introduction to the original delineations, topographical, historical, and descriptive, intituled the Beauties of England and Wales.* London

Burnham, B, 1994, Clawdd Coch military sites, Llanymynech, *Britannia*, Vol XXV

Burnham, B, 1995, Clawdd Coch military sites, Llanymynech, *Britannia*, Vol XXVI

Burnham, BC & Davies, JL, 2010, *Roman Frontiers in Wales and the Marches*

Cathrall, W, 1855, *The History of Oswestry*

Colt Hoare, 1806, The Itinerary of Archbishop Baldwin Through Wales

Davies, W, 1820, *Topographical Notices: Parish of Llansilan in the county of Denbigh* in Cambro Britain, May, Volume I

Evans, J, 1812, *The Beauties of England and Wales of Original Delineations, Topographical, Historical and Descriptive*

Wynne Ffoulkes, 1851, *Observations on some of the early inscribed and carved stones in Wales.* Archaeologia Cambrensis, New Series number VI

Lewis, 1844, *Topographical Dictionary of Wales*
RCAHM, 1911, *An Inventory of the Ancient Monuments in Wales and Monmouthshire: I – County of Montgomery.*

Rivet, AL & Smith, C, 1979, *The Place-names of Roman Britain*

Silvester, RJ, 2008, Abertanat, Llansantffraid and Clawdd Coch, Barii Jones' excavations in Montgomeryshire, *Studia Celtica* Vol 42, pp.27-42

Taylor, M P and Lewin, J, 1997, 'Non-synchronous response of adjacent floodplain systems to Holocene environmental change; *Geomorphology* 18, 25 1-64

### 16.4 Unpublished

CPAT, 2016, Letter from Mark Walters, CPAT to Kate Bowen, Powys County Council, dated 17th February 2016

Jones, GDB, 1991, *Abertanat and Llanymynech,survey and excavations 1991*, photocopy of off print supplied by client, publication source unknown

Jones, GDB, 1992, *Llanymynech: summary Report 1992*, typescript

Jones, GDB, 1993, Letter to Glyn Jones of Clawdd Coch, outlining the radio carbon dates obtained the previous year relating to the Tanat-Vyrnwy palaeo-channels, copy provided by client

Jones, GDB, Various, Archive of material relating to Clawdd, Coch and Abertanat, National Monuments Record, Aberystwyth

Silvester, R.J. & Hankinson, R., 2006, *Roman Military Sites in Powys Geophysical Survey at Brecon Gaer, Forden Gaer and Pen y Gaer Survey of Colwyn Castle, Radnorshire Barri Jones' excavations in Montgomeryshire.* CPAT report No. 767.

### 16.5 Standards and Guidance

Chartered Institute for Archaeologists, 2014a, *Standard and Guidance for Archaeological Field Evaluation*
Chartered Institute for Archaeologists, 2014b, *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*
Chartered Institute for Archaeologists, 2014c, *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*

## APPENDIX A – Written Scheme of Investigation

**WRITTEN SCHEME OF INVESTIGATION FOR AN EVALUATION AT CLAWDD COCH, CARREGHOFA, LLANYMYNECH, POWYS**

Contents

**1. Introduction**

1.1 Glyn Jones of Clawdd Coch, Carreghofa, Llanymynech, Powys, SY22 6LF has commissioned Trysor heritage consultants to provide a Written Scheme of Investigation for field evaluation in advance of determination of a planning application.

1.2 The proposed development is for a free range egg production unit including external feed hoppers, hardstanding and an access road, planning application, reference number P/2016/0154.

**2. The proposed development**

2.1 It is proposed that a new agricultural building is built in an arable field to the west of the farmyard at Clawdd Coch.

2.2 The building would be 72 metres northeast to southwest by 20 metres, with a hardstanding around all sides of the building extending the footprint to 115 metres northeast to southwest by 30 metres. The access track would run from the northeast end of the hardstanding

2.3 A sump in the floor for dirty water will drain water further below ground into a sealed tank.

**3. Location of Development**

3.1 The development site is located in an arable field to the east of the River Vyrnwy, 1.5km to the west-southwest of Llanymynech village, on the Powys/Shropshire border.

3.2 The field is slightly elevated above the river and its floodplain. The field appears to be well-drained and has been used as an arable field in modern times and is regularly ploughed.

3.3 The development site is situated on a natural raised area or terrace which is defined by low, natural scarps on the northwest, northeast and southeast sides, with the River Vyrnwy to the southwest. The surface geology of this terrace is composed of glacial deposits, including sands and gravels laid down in Ice Age conditions within the past 2 million years. These overlay Silurian mudstones and limestones of the Dolhir Formation, which were chiefly deposited in deep sea conditions between 444 and 451 million years ago.

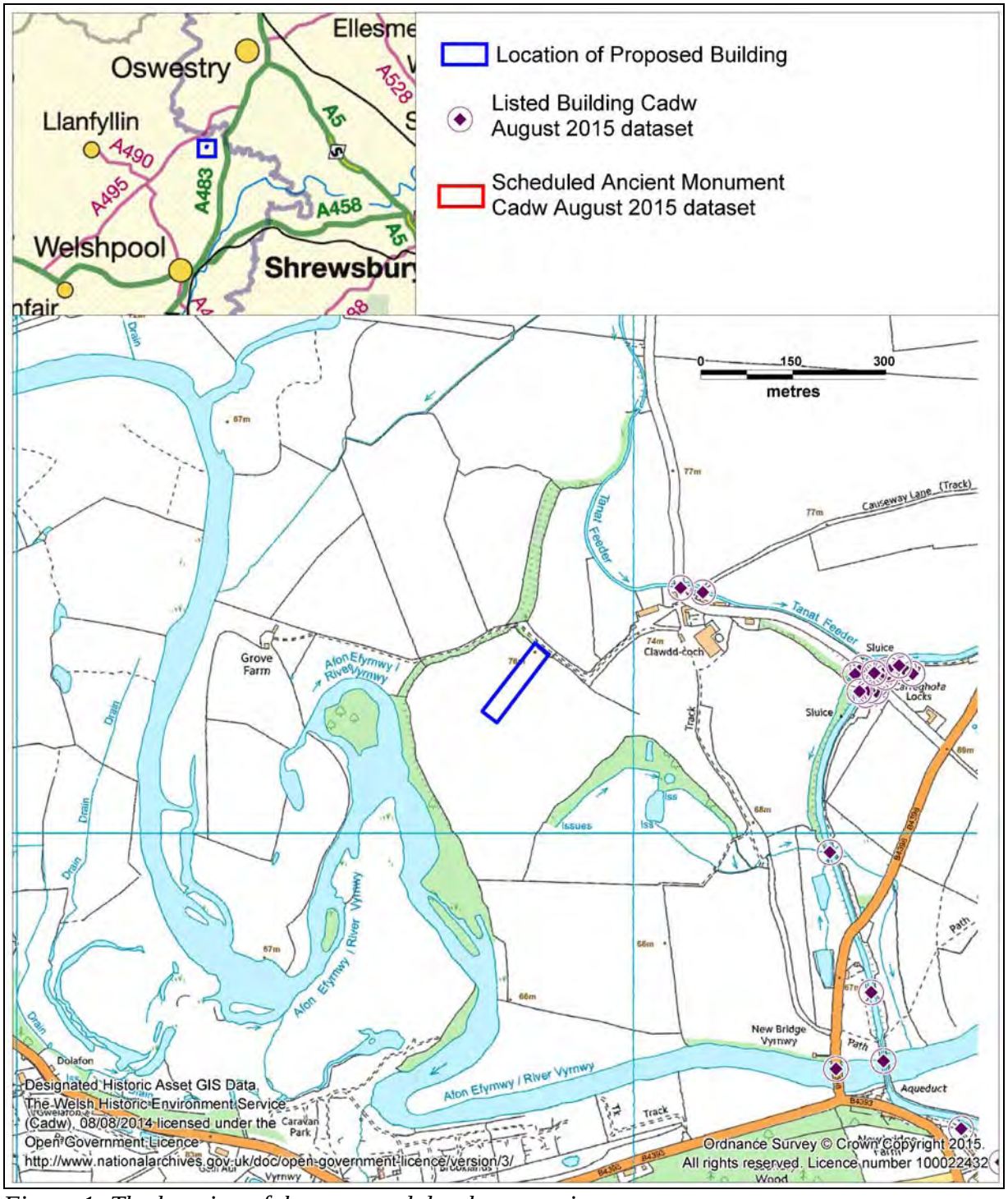



*Figure 1: The location of the proposed development site.*

**4. Planning context of the proposed development**

4.1 A planning application was submitted for the free range poultry unit to Powys County Council, reference number, P/2016/0154.

4.2 The planning application was commented on by the Planning Archaeologist at the Clwyd-Powys Archaeological Trust (CPAT, 2016). The Planning Archaeologist recommended that a pre-determination archaeological evaluation by undertaken before the planning application was determined. This is due to the fact that there is a record in the regional Historic Environment Record (PRN 21) of a possible Roman military fort being located within the same field as the proposed development.

4.3 The recommendation was made in order to allow an appropriate archaeological response or mitigation strategy to be devised to the proposed development.

**5. Objective of the Written Scheme of Investigation**

5.1 The objective of this written scheme of investigation (WSI) is to specify the method to be used for the evaluation.

5.2 The Chartered Institute for Archaeologists' Standard and Guidance for Archaeological Field Evaluation (CIfA, 014b) was used to write this Written Scheme of Investigation. They define field evaluation as:

"….. *a limited programme of non-intrusive and/or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site on land, inter-tidal zone or underwater. If such archaeological remains are present field evaluation defines their character, extent, quality and preservation, and enables an assessment of their significance in a local, regional, national or international context as appropriate."*

5.3 The purpose of field evaluation is described as gaining:

*"….. information about the archaeological resource within a given area or site (including its presence or absence, character, extent, date, integrity, state of preservation and quality), in order to make an assessment of its merit in the appropriate context, leading to one or more of the following:*

*a. The formulation of a strategy to ensure the recording, preservation or management of the resource*
*b. The formulation of a strategy to mitigate a threat to the archaeological resource*
*c. The formulation of a proposal for further archaeological investigation within a programme of research"*

5.4 This evaluation should establish whether any features can be identified as of possible archaeological significance within the footprint of the proposed development.

5.5 Once the nature of the features has been established further mitigation may be required.

**6. Nature of the Archaeological Resource**

6.1 The belief that a Roman military fort (HER PRN 21, NPRN 140020) is located at Clawdd Coch dates back to at least 1816, when Sir Richard Colt Hoare equated the site

with the fort of *Mediolanum*, a site shown in both the Antonine Itinerary and the Ravenna Cosmography. *Mediolanum* is now thought to be located at Whitchurch, Shropshire however (Burnham, BC & Davies, JL, 2010, p. 289).

6.2 In 1911, the Royal Commission on Ancient Monuments reported their findings, following a field inspection of the putative Roman fort at Clawdd Coch in 1909. They dismissed the site entirely and noted that there were no physical traces of such a site.(RCAHM, 1911, p.13 and Figures 3 & 4).

6.3 In 1991, Professor G.D.B. Jones began a series of field surveys and minor excavations at Clawdd Coch. Jones was actually engaged in work on a timber reconstruction at the nearby Abertanat Roman fort when he first visited the Clawdd Coch site. He identified at V shaped ditch and a field oven exposed in the eroding escarpment at the western side of the field within which the Roman fort is supposedly located. Jones excavated the field oven in August 1991 having carried out a geophysical survey of the immediate surrounding area in May 1991 which did not produce significant results. Following ploughing, the handle and upper part of a iron dagger or *pugio* was found within the field. These features were believed to be of Roman date and it was concluded that the field oven must lie within the fort itself, with the ditch to the north of the oven representing the northern defences of the fort. This "fort" was named Clawdd Coch B, with a second putative Roman fort identified as Clawdd Coch A, over 500 metres to the southeast (Jones, DGB, 1991)

6.4 In 1992, Professor Jones carried out further work at Clawdd Coch B. Professor John Lewin of Aberystwyth University dated a series of palaeochannels bordering Clawdd Coch, shown by radiocarbon dating to be Bronze Age in date and therefore predating an possible Roman activity here (Jones, DGB, 1993 and Taylor & Lewin, 1997). Jones also carried out some excavation on the series of ditches thought to form the northern defences of the putative fort. Three pairs of ditches were identified, with possible evidence of a defensive rampart to their south. The presence of features identified as timber slots suggested that an earth and turf box rampart formerly existed in this area. He also identified a second field oven, said to have been of a "figure of eight" plan within the feature containing the original oven. (Jones, DGB, 1992)

6.5 In 1993, Jones returned to Clawdd Coch and further geophysical survey was undertaken to the southwest of Clawdd Coch farm, identifying two magnetic anomalies interpreted as field ovens, and thought to indicate the approximate line of the southern side of a fort (Burnham, BC, 1994, p.246) It was also observed that ploughing had revealed a band of reddish clay to the east towards the present farm. It ran roughly north to south and was thought to be the line of the eastern defences.

6.6 In 1994, the final year of Professor Jones' involvement with Clawdd Coch, saw limited excavations at the eastern side of the field. Here it was reported that ditches at the northeastern defences of a fort were identified. This drew the conclusion that Clawdd Coch B might extend over an area of 5 hectares (Burnham, BC, 1995, p.326).

6.7 Unfortunately, no detailed publication of this work at Clawdd Coch B had followed by the time Professor Jones passed away in 1999. The surviving archive is said to be "disappointing" (Silvester & Hankinson, 2006, 34). Silvester and Hankinson (2006, 36) also note "*however, even the basic framework of the putative fort of they were the integral elements has yet to be established*."

**7. Scope of Work**

7.1 A fluxgate gradiometer survey of the proposed development area will be undertaken.

7.2 The area has been recently ploughed and will be field walked to collect and record any possible artefacts.

7.3 The results of the geophysical survey will be used to guide the placing of evaluation trenches to cover up to 5% of the proposed development area.

**8. Methodology**

8.1 The evaluation will be carried out in accordance with Chartered Institute of Field Archaeologists' *Standard and Guidance for Archaeological Field Evaluation (CIfA, 2014a).*

8.2 The area will be fieldwalked using 5 metres wide transects, each transect running northwest to southeast across the width of the development area i.e. 30 metres. All artefacts will be collected.

8.3 Fluxgate Gradiometer Survey to be carried out by Ian Brooks, PhD, BA, MCIfA.FSA

8.3.1 The survey areas will be gridded with a 20 x 20 m or 30 x 30 m grid. These squares will be marked by plastic pegs.

8.3.2 The grid will be tied to local features.

8.3.2 A Geoscan FM 36 Fluxgate Gradiometer will be used for the survey.

8.3.3 Readings will be taken at 0.5 m intervals along transects 1.0 m apart with a zig-zag pattern being walked

8.3.4 The data will be downloaded on to a laptop computer in the field

8.3.5 The data will be analysed using Geoplot v. 3.00v

8.3.6 Grey scale plots will be produced using Geoplot v. 3.00v

8.3.7 X - Y plots will be produced using Golden software "Surfer" v. 10

8.3.8 If possible, a limited number of small soil samples will be taken for magnetic susceptibility analysis as an aid to interpret the results of the Fluxgate gradiometer survey.

8.4 The results of the field walking and geophysical survey will be analysed and used to guide the location of evaluation trenches. The trench layout will be agreed with the planning archaeologists at Clwyd Powys Archaeological Trust beforehand and will cover up to 5% of the proposed development area.

8.5 A two-person team will oversee the mechanical removal of the ploughsoil from the trenches which will be excavated down to the natural subsoil. The ploughsoil/topsoil will be discarded, but will be scanned for artefacts. The trenches will be excavated with a toothless bucket.

8.6 If a buried soil horizon is encountered whilst excavating the trenches, mechanical machining will cease, and the trenches will be hand dug down to natural subsoil. Any archaeological features will be fully investigated and recorded.

**9. Recording – Excavation and Post Excavation**

9.1 A written record of all activity will be kept as well as context records on pro-forma sheets for all archaeological contexts, based on the CEU recording manual. The notes and context sheets will form part of the project archive.

9.2 A plan of the location of the trenches and representative sections of the trenches will be drawn, at an appropriate scale. If any archaeological features are observed, they will be excavated and recorded, photographed, and planned at an appropriate scale. Plans will be drawn on permatrace to a scale of 1:10, 1:20 or 1:50, as appropriate.
All plans will be related to boundaries shown on 1:10000 Ordnance Survey mapping. Levels will be taken from a site datum which will be cross referenced to an Ordnance Survey datum.

9.3 Any artefacts will be dealt with in accordance with the guidance provided in the Chartered Institute for Archaeologists' *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials (CIfA, 2014b).* .
All artefacts will be retained, cleaned and stored. They will be catalogued by context, including dimensions, weight, number, and description as relevant. Significant artefacts will be drawn at an appropriate scale.

9.4 Deposits of environmental or technological significance will be sampled according to *A guide to the theory and practice of methods, from sampling and recovery to post-excavation* published in 2002 as one of the Centre for Archaeology Guidelines by English Heritage.

9.5 In the event of human burials being discovered the Ministry of Justice will be informed. The remains will initially be left *in situ*, and if removal is required, a Ministry of Justice licence will be applied for under the Burial Act 1857.

9.6 Colour digital photographs will be taken, as appropriate, using a 18M pixel camera. A written record will be made on site of the photographs taken. Appropriate photographic scales will be used. The photographs will be archived with a full catalogue showing location of photographs and direction taken. Photographs will be archived in TIF format.

**10. Reporting**

10.1 Following the completion of the on-site work, a report on the evaluation will be prepared according to the requirements of section 3.4 of the Chartered Institute for Archaeologists' *Standard and Guidance for Archaeological Field Evaluation (CIfA, 2014a)*

10.2 The report will address the aims and purposes of the evaluation and be fully representative of the information gained including negative evidence. It will contain at a minimum:

- A non-technical summary of the evaluation
- Introductory statement
- Aims and purposes of the evaluation
- Methodology

- Results including documentary research and structural data and associated finds and/or environmental data recovered, details will be included in appendices as appropriate
- Interpretation
- Discussion/Conclusion
- Index to Archive and location of archive
- Illustrations, including a location plan
- Bibliography

10.3 Copies of the report will be provided to the client and the Powys Historic Environment Record.

**11. Health & Safety**
11.1 Trysor will undertake a risk assessment in advance of the fieldwork in accordance with their health and safety policy.

**12. Dissemination**
12.1 A summary of the work undertaken and its findings will be submitted to *Archaeology Wales*

**13. Archive**
13.1 The paper and digital archive will be deposited with the National Monuments Record and Historic Environment Record, including a copy of the final report in accordance with the CIfA's *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives* (IfA, 2013c). This archive will include all written, drawn and photographic records relating directly to the investigations undertaken. Digital archives will follow the standard required by the RCAHMW (RCAHMW, 2015).

13.2 Any artefacts will be returned to the landowner after recording and reporting.

**14. Resources to be used**
14.1 Jenny Hall, BSC, MCIfA and Paul Sambrook, BA, PGCE, MCIfA of Trysor will undertake the fieldwork outlined and reporting and archiving. During the fieldwork they will be equipped with standard field equipment, including digital cameras, GPS and first aid kit. Trysor have access to the computer hardware and software required to deliver the completed final report and archive to a professional standard.

**15. Qualification of personnel**
15.1 Trysor is a Registered Organisation with the Chartered Institute for Archaeologists and both partners are Members of the Chartered Institute for Archaeologists, www.archaeologists.net

15.2 Jenny Hall (BSc Joint Hons., Geology and Archaeology, MCIfA) had 12 years excavation experience, which included undertaking area and trench excavation, watching briefs and post excavation work. She worked on the extensive Stanwick Roman villa project in Northamtonshire for several seasons and undertook a year of postexcavation work with the project. In 1993 she became the Sites and Monuments Record Manager for a Dyfed Archaeological Trust for 10 years. She has been a partner in Trysor since 2004 undertaking a variety of work that includes upland field survey, desk-based appraisals and

assessments, watching briefs and evaluations as well heritage interpretation and community-based projects.

15.3 Paul Sambrook (BA Joint Hons., Archaeology and Welsh, MCIfA, PGCE) has extensive experience as a fieldworker in Wales. He was involved with Cadw's pan-Wales Deserted Rural Settlements Project for 7 years. He also undertook Tir Gofal field survey work and watching briefs. He has been a partner in Trysor since 2004 undertaking a variety of work including upland field survey, desk-based appraisals/assessments, watching briefs and evaluations as well as community-based, non-intrusive projects and community heritage interpretation.

15.4 Dee Williams (BA Archaeology and Classical Studies) graduated from the University of Wales, Lampeter. After University she pursued a career in field archaeology. Her first supervisory post was with Wessex Archaeology (Manpower Service Commission 1984-5) as the Finds Officer on a large multi-period urban excavation in Dorchester. From 1986 to 1994 she was employed as the Finds Officer with the Dyfed Archaeological Trust. From 1994 to the present she has worked as an administrator in the Department of Archaeology at Lampeter but continues her research interests in finds with specialisms in ceramics and glass.

15.5 Martin Locock (BA, MCIfA) – Martin has undertaken many bone reports for Glamorgan Gwent Archaeological Trust and others. He has also undertaken studies of bricks and mortar.

15.6 Dr Ian Brooks (PhD, BA, MCIfA, FSA) - Flint assemblages of any size from a single artefact to many thousands of artefacts can be analysis. Recent projects have varied from a few artefacts recovered during the excavation of a late medieval house in North Wales to over 16,000 Mesolithic artefacts from Bath. In addition to standard typological studies Ian Brooks has developed specialist techniques to investigate the original source of the flint and the deliberate heat treatment of flint by the use of micropalaeontology.

15.7 Wendy Carruthers (BSc, MSc) has worked as a freelance archaeobotanist for over 30 years, mainly analysing plant macrofossils from sites in southern and central England and Wales. After graduating in Manchester she worked as a field botanist for a year, followed by a couple of years on archaeological excavations as a digger and planner. I then took the Masters course in Plant Taxonomy at Reading, and started working as a freelance archaeobotanist after I graduated. In the early 1990s she was the English Heritage Archaeobotanist at the Ancient Monuments Laboratory for four years.
Over the years she has analysed charred, waterlogged, mineralised, silicified and desiccated plant remains. She is particularly interested in preservation by mineralisation.

**16. Insurance & Professional indemnity**
16.1 Trysor has Public Liability and Professional Indemnity Insurance.

**17. Project identification**
17.1 The project has been designated Trysor Project No. 2016/506. Identifying site code will be CCH2016.

**18. Monitoring**

18.1 Staff from Powys County Council and the planning archaeologists at Clwyd Powys Archaeological Trust will be welcome to visit the site and monitor the work. They will be informed as to when work will start on site and contact details given.

**19. Sources**

Burnham, B, 1994, Clawdd Coch military sites, Llanymynech, *Britannia*, Vol XXV

Burnham, B, 1995, Clawdd Coch military sites, Llanymynech, *Britannia*, Vol XXVI

Burnham, BC & Davies, JL, 2010, *Roman Frontiers in Wales and the Marches*

Chartered Institute for Archaeologists, 2014a, *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*

Chartered Institute for Archaeologists, 2014b, *Standard and Guidance for Archaeological Field Evaluation*

Chartered Institute for Archaeologists, 2014c, *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*

CPAT, 2016, Letter from Mark Walters, CPAT to Kate Bowen, Powys County Council, dated 17th February 2016

Jones, GDB, 1991, *Abertanat and Llanymynech,survey and excavations 1991*, photocopy of off print supplied by client, publication source unknown

Jones, GDB, 1992, *Llanymynech: summary Report 1992*, typescript

Jones, GDB, 1993, Letter to Glyn Jones of Clawdd Coch, outlining the radio carbon dates obtained the previous year relating to the Tanat-Vyrrnwy palaeo-channels, copy provided by client

Silvester & Hankinson, 2006, *Roman Military Site in Powys*, CPAT report

Taylor, M P and Lewin, J, 1997, 'Non-synchronous response of adjacent floodplain systems to Holocene environmental change; *Geomorphology* 18, 25 1-64

Jenny Hall & Paul Sambrook
Trysor, March 2016

## APPENDIX B – FINDS CATALOGUE

Martin Locock BA MCIfA FHEA

| Category | Weight | No. | Comments |
|---|---|---|---|
| **FW001** | | | |
| Iron | 35g | 1 | Modern machined nut and bolt |
| CBM | 157g | 4 | Brick fragments |
| | | | |
| **FW002** | | | |
| CBM | 3g | 1 | Brick fragment |
| Whiteware | 3g | 1 | |
| | | | |
| **FW003** | | | |
| Iron | 67g | 2 | Nail, hand-made; Bolt, modern |
| Clay pipe | 6g | 1 | Stem, 2mm bore |
| CBM | 29g | 6 | Brick fragments |
| Whiteware, yellow glazed | 1g | 1 | Rim |
| | | | |
| **FW004** | | | |
| Glazed red earthenware | 24g | 1 | |
| Black-glazed earthenware | 24g | 1 | Rim |
| Whiteware | 3g | 3 | Base; moulded with green glaze |
| CBM | 5g | 3 | Brick fragments |
| Iron | 9g | 1 | Strap/hinge |
| | | | |
| **FW005** | | | |
| CBM | 123g | 7 | Brick fragments; one is 50mm thick (possibly unglazed floor tile) |
| | | | |
| **FW006** | | | |
| CBM | 1g | 1 | |
| Whiteware | 3g | 1 | Base |
| Coarseware | 1g | 1 | Probably medieval, traces of glaze |
| | | | |
| **FW007** | | | |
| CBM | 19g | 3 | Brick fragments |
| Clay pipe | 1g | 1 | Stem, 2mm bore |
| | | | |
| | | | |

| Category | Weight | No. | Comments |
|---|---|---|---|
| **FW008** | | | |
| CBM | 1g | 1 | |
| Whiteware | 1g | 1 | |
| Brown glazed earthenware | 15g | 2 | Slip decoration on base |
| | | | |
| **FW009** | | | |
| CBM | 29g | 4 | |
| Slipware | 6g | 1 | Rim with toothed decoration |
| Coarseware | 5g | 1 | Numerous small stone inclusions, Medieval |
| Earthenware | 2g | 1 | |
| | | | |
| **FW010** | | | |
| Iron | 27g | 1 | Large hand-made nail |
| Brown glazed earthenware | 7g | 2 | Rim |
| CBM | 1g | 1 | |
| | | | |
| **FW011** | | | |
| CBM | 35g | 4 | |
| Brown glazed earthenware | 2g | 1 | |
| | | | |
| **FW012** | | | |
| CBM | 37g | 1 | |
| Brown glazed earthenware | 18g | 2 | |
| | | | |
| **FW013** | | | |
| Clay pipe | 1g | 1 | Stem, 2mm bore |
| Brown glazed earthenware | 6g | 1 | |
| Whiteware | 1g | 1 | |
| | | | |
| **FW014** | | | |
| Bottle glass | 53g | 2 | Parts of onion-shaped bottle with kick |
| Black glazed earthenware | 9g | 1 | |
| Glazed red earthenware | 1g | 1 | |
| Coal | 14g | 1 | |
| | | | |
| | | | |

| Category | Weight | No. | Comments |
|---|---|---|---|
| **FW015** | | | |
| Black glazed earthenware | 1g | 1 | |
| CBM | 1g | 1 | |
| Bone | 1g | 1 | Mammal bone, burnt |
| | | | |
| **FW016** | | | |
| CBM | 4g | 1 | |
| | | | |
| **FW017** | | | |
| CBM | 82g | 3 | |
| Iron | 15g | 1 | Nail |
| | | | |
| **FW018** | | | |
| CBM | 3g | 2 | Brick fragments |
| Clay pipe | 2g | 1 | Stem |
| Black glazed earthenware | 12g | 1 | |
| Slipware | 1g | 1 | |
| | | | |
| **FW019** | | | |
| Slipware | 8g | 1 | |
| CBM | 15g | 2 | |
| Stoneware | 3g | 1 | Base |
| Iron | 4g | 1 | Staple |
| | | | |
| **FW020** | | | |
| CBM | 227g | 1 | |
| | | | |
| | | | |
| **FW021** | | | |
| CBM | 7g | 2 | |
| | | | |
| **FW022** | | | |
| CBM | 1g | 1 | |
| | | | |
| **FW023** | | | |
| Whiteware | 2g | 2 | |
| CBM | 6g | 2 | |
| | | | |
| **FW024** | | | |
| CBM | 143g | 3 | |
| | | | |

| Totals by material | Weight | No. | Date |
|---|---|---|---|
| Ceramic Building material | 831 | 54 | 1500-1900 |
| Coarseware | 6 | 2 | Medieval? |
| Stoneware | 3 | 1 | 1600-1800 |
| Glazed red earthenware | 27 | 3 | 1600-1900 |
| Slipware | 15 | 3 | 1600-1800 |
| Black glazed earthenware | 46 | 4 | 1600-1900 |
| Brown glazed earthenware | 58 | 8 | 1600-1900 |
| Whiteware | 14 | 10 | 1800-1950 |
| Glass | 53 | 2 | 1600-1800 |
| Clay pipe | 11 | 4 | 1600-1900 |
| Iron | 157 | 7 | 1500-1950 |
| Coal | 14 | 1 | n/a |
| Animal bone | 1 | 1 | n/a |

**Summary**

The majority of the pottery assemblage comprised utilitarian vessels of the early post-medieval period. The latest type present is whitewares of the early 19th century. There is little indication of modern material apart for the iron objects. There are two small sherds of coarseware of medieval date. There is no identifiable Roman pottery.

The ceramic building material is mainly parts of bricks, although one unglazed floor tile of probable post-medieval date is present.

## APPENDIX C Photographs

*Plate 1: CCH2016_101. A general view of the field, looking west southwest, with two orange markers just visible showing the southern corners of the evaluation area.*

*Plate 2: CCH2016_102. The markers for the northernmost fieldwalking transects, looking east*

*Plate 3: CCH2016_103. Trench 1 marked out prior to excavation, looking southwest.*


*Plate 4: CCH2016_104. Beginning excavation of Trench 1, looking southeast*


*Plate 5: CCH2016_105. The excavated Trench 1, looking southwest. In the trench in the foreground is a waterworn cobble layer with clay beneath, different to the subsoil in other areas. This appears to be a natural band within the glacial subsoil.*

*Plate 6: CCH2016_106. Trench 1, looking northwest, showing the waterworn cobble layer, thought to be a natural band at the highest part of the field close to the scarp edge.*

*Plate 7: CCH2016_107. Additional Trench 4, looking southwest. This trench was excavated to check the cobble layer and ensure it was natural, which it proved to be.*

*Plate 8: CCH2016_108. Excavated Trench 2, looking northwest.*

*Plate 9: CCH2016_109. Marked out Trench 3 in the foreground, with the excavated Trenches 1 and 2 beyond, looking northeast.*

*Plate 10: CCH2016_110. Excavated Trench 3, looking southwest.*

## APPENDIX D – Geophysical Survey

*Clawdd Coch Geophysical Survey*
*March 2016*

**EAS Client Report 2016/01**

***Survey Commissioned***
***by***
***Trysor***

***Surveyed***
***by***
***I.P. Brooks***
***Engineering Archaeological Services Ltd.***

*registered in England*
*Nº 2869678*

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## *List of Illustrations*



### *Technical Information:*

## *NGR*

### *Centred on: SJ 24798 20263*

### *Location and Topography (Figure 1)*

The survey was located approximately 1.5km to the west-southwest of Llanymynech village, on the Powys/Shropshire border, to the east of the River Vyrnwy. Approximately 250m WSW of the farmyard of Clawdd Cloch the survey area is bounded to the north by a farm track which runs in a marked hollow way. The survey area was a relatively flat area within a ploughed field with a slight rise along the northern edge which runs parallel to the farm track. A few mature trees within the field suggests there was previously a field boundary which ran to the south west of the survey area.

It is intended to construct a free range egg production unit on the site (planning application, reference number P/2016/0154).

### *Archaeological Background*

The site is traditionally thought to be the site of a Roman fort (HER PRN 21, NPRN 140020) with the initial association of the site to a possible Roman fort dating to 1816 when Sir Richard Colt Hoare equated the site with the fort of Mediolanum. This view was challenged in 1911 when a field inspection by the Royal Commission on Ancient Monuments suggested there were no physical traces of a fort. However work by G.D.B. Jones in 1991 located a number of small features he interpreted as a “V” shaped ditch and a possible field oven

### *Aims of Survey*

1. It investigate the site of the proposed new free range egg production unit and to evaluate the archaeological potential of the site.

**SUMMARY OF RESULTS**

No anomalies of archaeological origins were located in the survey and the magnetic susceptibility samples suggest that there are no concentrations of increased human activity within the survey area.

### *Methods*

The Fluxgate Gradiometer survey took place on 15th March 2016. At the time of the survey the field had been plough and left to weather, however the field surface was still rough and uneven. The site of the proposed free range egg production unit had been previously marked out by the land owner and the survey was laid out based on these pegs.

The Fluxgate Gradiometer Survey was undertaken using twelve 20 x 20 m square laid out as in Figure 2. Readings were taken at 0.5 m intervals along transects 1.0 m apart. These transects were walked in a zig zag pattern. Readings were taken with the aid of a ST1 sample trigger.

The survey was carried out using a Geoscan FM 36 Fluxgate Gradiometer. Grey Scale Plots were produced using Geoscan Research "Geoplot" v.3.00x and X - Y Plots using Golden Software "Surfer" v. 5.01.

**Magnetic Susceptibility**

Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey. Soil samples were taken from all the grid squares within the survey area. These were dried in a heated cabinet, sieved through a 2 mm sieve and placed into 10 ml plastic pots for analysis with a Bartington MS 2 Magnetic Susceptibility Meter using the MS2B bench sensor

## Results:

### *Area*

The Fluxgate Gradiometer surveys covered a total area of 0.48 Ha.

**Display**

The results of the Fluxgate Gradiometer Survey is displayed as a Grey Scale Image (Figures 3) and as an X-Y Trace Plots. (Figures 4) and the results are summarized in Figure 7.

### *Fluxgate Gradiometer Survey*

This survey technique records slight changes in the earths' magnetic field, which may be the results of human activity. The interpretation of the Fluxgate Gradiometer Surveys is shown as Figure 5 and is summarized in Figure 7.

No anomalies of potential archaeological origins were located within the survey. Indeed, the whole survey has a standard deviation, on the reading, of only 1.16 nT suggesting the area is remarkably, magnetically, quiet. A few anomalies were located, however. The anomalies marked in blue on Figure 5 are high value ferromagnetic responses typical of those from fragments of agricultural iron. The feint, parallel, anomalies at the south west end of the survey area (shown in green) follow the line of the ploughing of the field and therefore probably reflect the modern land use.

**Magnetic Susceptibility**

Soil samples were taken from the area of the survey in order to assess the magnetic susceptibility of the soils. It was possible to obtain a subsoil sample for comparison. The location of the samples is shown on Figure 6.

| Sample | Volume susceptibility $\chi_v$ | Mass susceptibility $\chi_m$ |
|---|---|---|
| Grid 1 | 87 | 82.9 |
| Grid 2 | 80 | 80.0 |
| Grid 3 | 89 | 83.2 |
| Grid 4 | 90 | 82.6 |
| Grid 5 | 79 | 79.0 |
| Grid 6 | 48 | 42.5 |
| Grid 7 | 83 | 75.5 |
| Grid 8 | 79 | 77.5 |
| Grid 9 | 73 | 75.3 |
| Grid 10 | 81 | 72.3 |
| Grid 11 | 78 | 72.2 |
| Grid 12 | 55 | 51.9 |
| Sub-soil | 64 | 68.8 |

The values, as measured are of moderate values suggesting that the area was suitable for magnetic survey. There is also a difference between the sub soil sample and the majority of the topsoil samples confirming the suitability for magnetic survey. It is noticeable that the values for the two northern grids are lower than those in the rest of the survey. These grid squares correspond with the slight rise at the northern end of the survey and a band of slightly darker soil, thus it is likely that these

readings reflect a change in the underlying geology.

## *Conclusions*

It is a fundamental axiom of archaeological geophysics that the absence of features in the survey data does not mean that there is no archaeology present in the survey area only that the techniques used have not detected it.

Neither the Fluxgate Gradiometer survey nor the Magnetic Susceptibility samples suggest that there is any significant archaeological activity within the survey area.

### *Acknowledgements*

The survey was commissioned by Jenny Hall and Paul Sambrook of Trysor. Thanks are also due to the land owner, Glyn Jones, for allowing access and discussing the previous work on the site.

## *Techniques of Geophysical Survey:*

### *Magnetometry:*

This relies on variations in soil magnetic susceptibility and magnetic remenance which often result from past human activities. Using a Fluxgate Gradiometer these variations can be mapped, or a rapid evaluation of archaeological potential can be made by scanning.

### *Resistivity:*

This relies on variations in the electrical conductivity of the soil and subsoil which in general is related to soil moisture levels. As such, results can be seasonally dependant. Slower than Magnetometry this technique is best suited to locating positive features such as buried walls that give rise to high resistance anomalies.

### *Resistance Tomography*

Builds up a vertical profile or pseudosection through deposits by taking resistivity readings along a transect using a range of different probe spacings.

### *Magnetic Susceptibility:*

Variations in soil magnetic susceptibility occur naturally but can be greatly enhanced by human activity. Information on the enhancement of magnetic susceptibility can be used to ascertain the suitability of a site for magnetic survey and for targeting areas of potential archaeological activity when extensive sites need to be investigated. Very large areas can be rapidly evaluated and specific areas identified for detailed survey by gradiometer.

### *Instrumentation:*

### *1. Fluxgate Gradiometer - Geoscan FM36*

### *2. Resistance Meter - Geoscan RM15*

### *3. Magnetic Susceptibility Meter - Bartington MS2*

### *4. Geopulse Imager 25 - Campus*

### *Methodology:*

For Gradiometer and Resistivity Survey 20m x 20m or 30m x 30m grids are laid out over the survey area. Gradiometer readings are logged at either 0.5m or 1m intervals along traverses 1m apart. Resistance meter readings are logged at 1m intervals. Data is down-loaded to a laptop computer in the field for initial configuration and analysis. Final analysis is carried out back at base.

For scanning transects are laid out at 10m intervals. Any anomalies noticed are where possible traced and recorded on the location plan.

For Magnetic Susceptibility survey a large grid is laid out and readings logged at 20m intervals along traverses 20m apart, data is again configured and analysed on a laptop computer.

### *Copyright:*

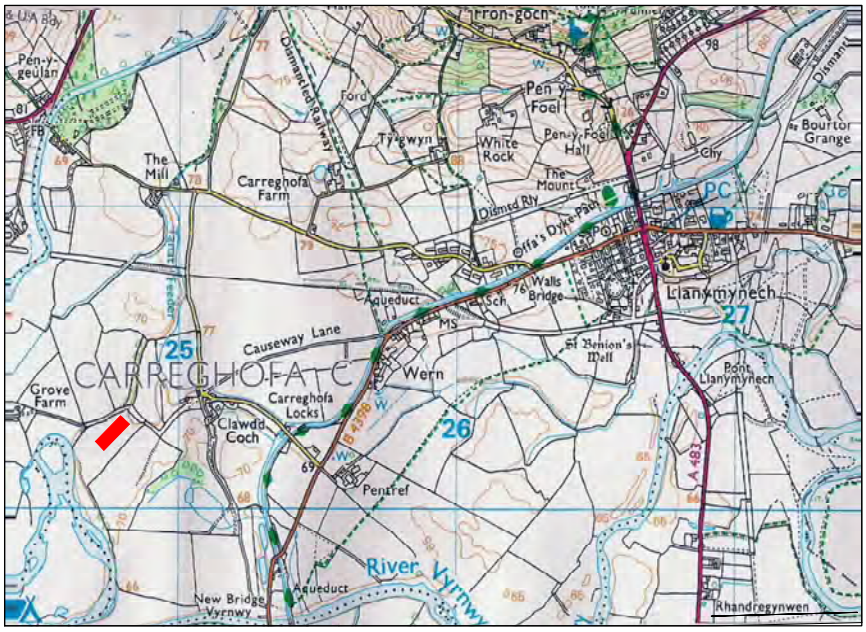



Figure 1: Location
Scale 1:25,000


Figure 2: Location of the Survey Area
Scale 1:2000

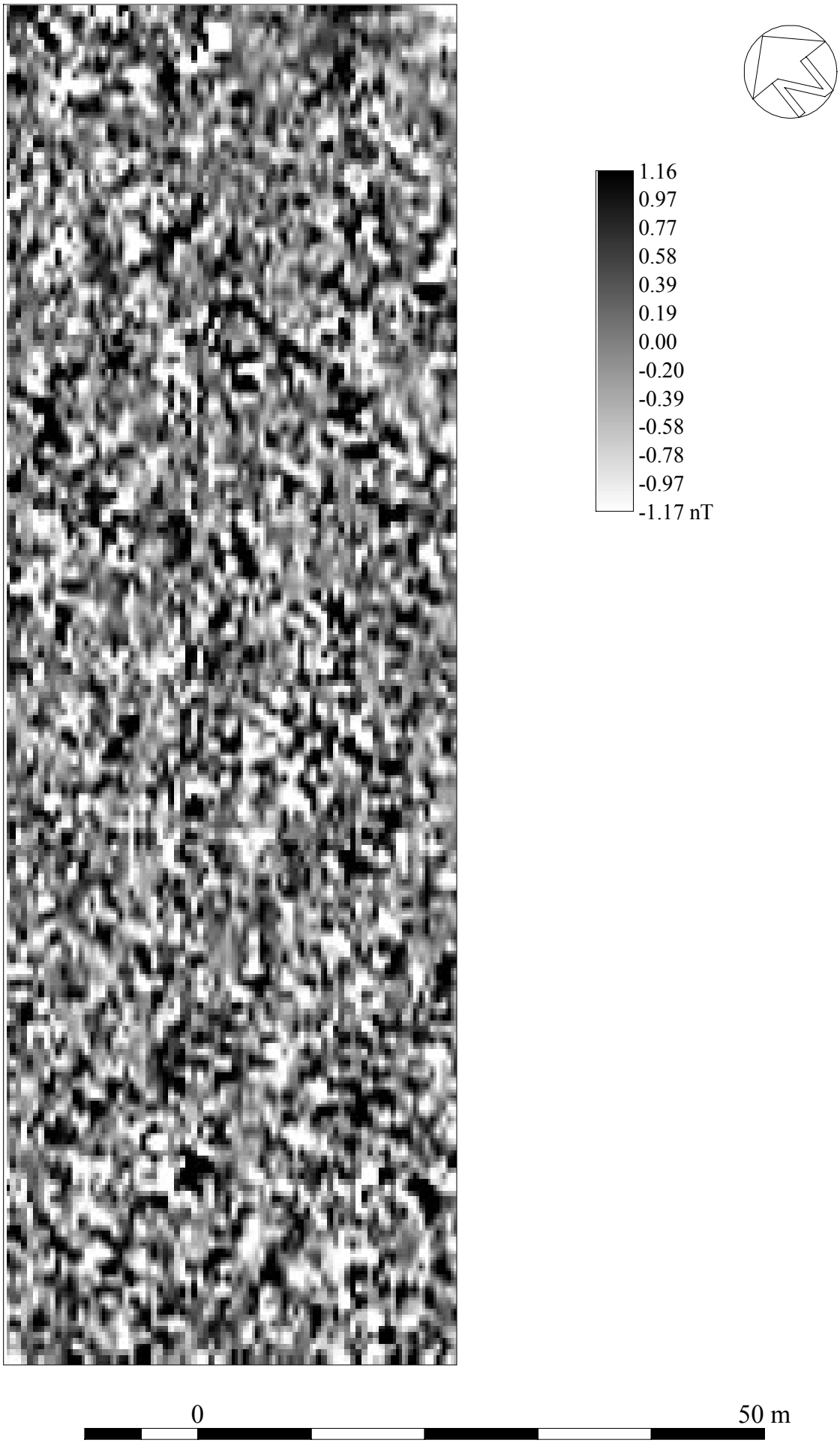



Figure 3: Grey Scale Plot
Scale 1:500

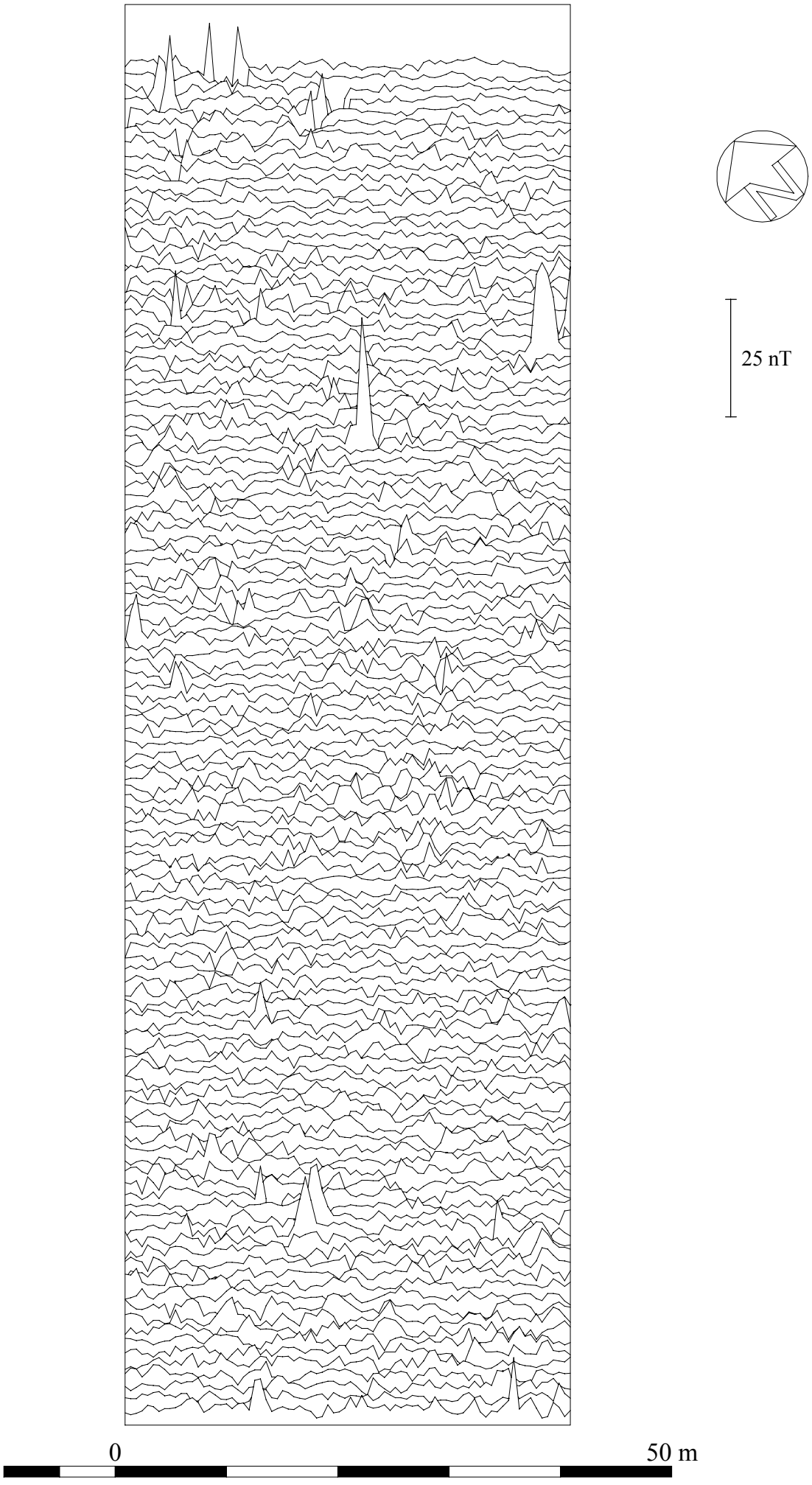
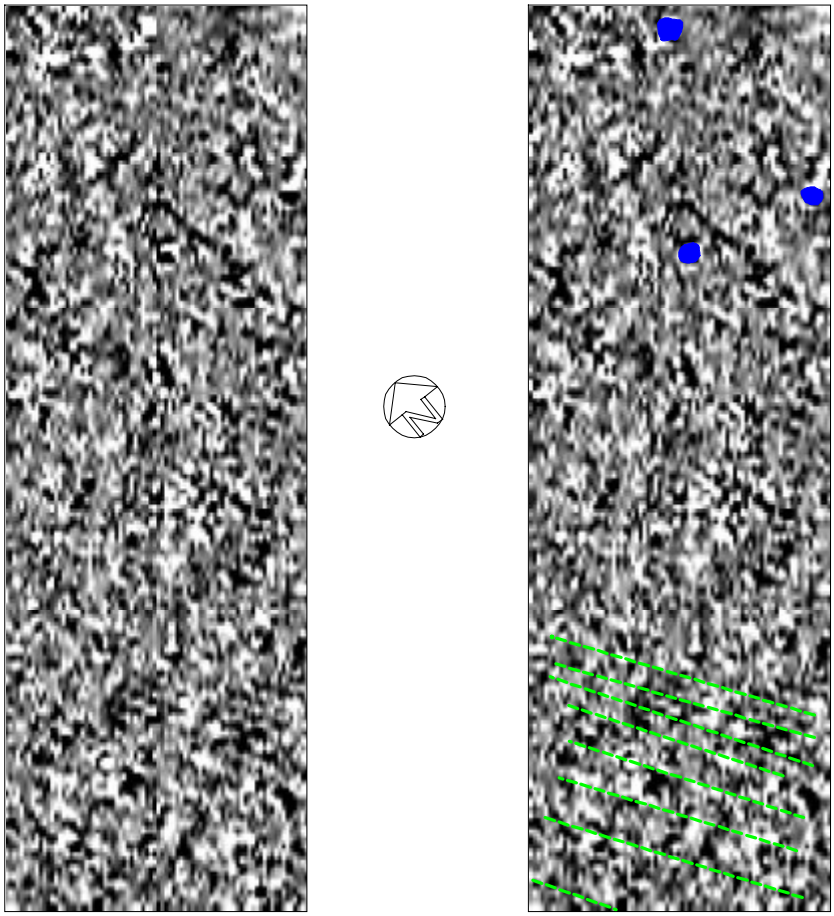



Figure 4: X-Y Plot
Scale 1:500



Feint linear anomaly (probably agricultural)

Ferromagnetic anomaly

Figure 5: Interpretation
Scale 1:1000


Figure 6: Magnetic Susceptibility Results
Scale 1:2000

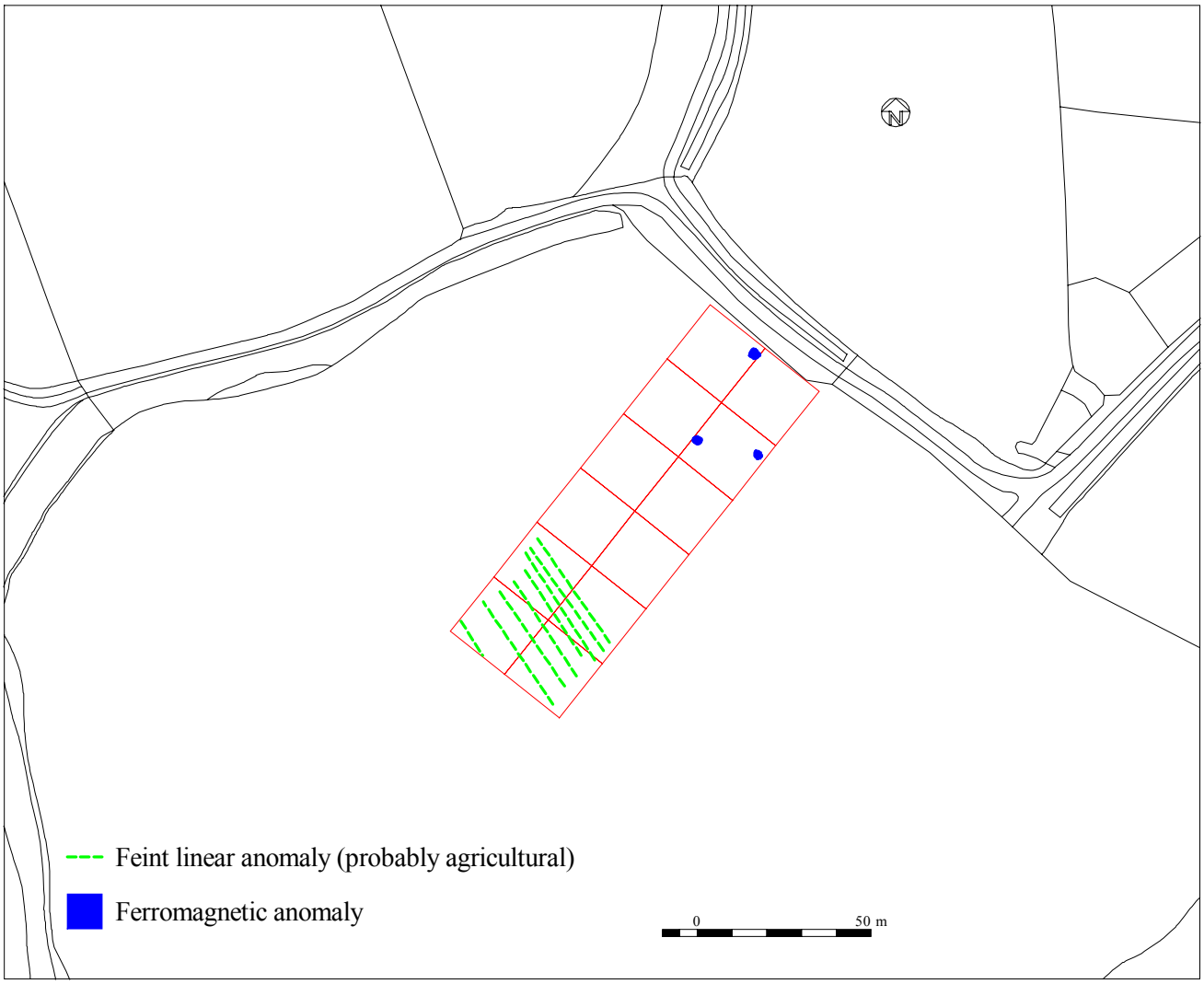



Figure 7: Summary
Scale 1:2000