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Roman SW Anglesey Landscape Survey Project:

Geophysical survey, metal detecting survey and trial excavation at Rhuddgaer, Dwyran, Anglesey

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

ROMAN SW ANGLESEY LANDSCAPE SURVEY PROJECT

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Project Nos. G2240 & G2276

Prepared for Ynys Mon Council

Report No. 1165

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Cover: Carneddau ponies on the Rhuddgaer coastal dunefield

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ROMAN SW ANGLESEY LANDSCAPE SURVEY PROJECT

GEOPHYSICAL AND METAL DETECTING SURVEY OF A MEDIEVAL SETTLEMENT AND FIELD SYSTEM AND TRIAL EXCAVATION OF AN EARLY MEDIEVAL BUILDING AT RHUDDGAER, DWYRAN, ANGLESEY

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1. INTRODUCTION

The work was carried out as part of a project investigating exciting new evidence about early settlement along the shores of the Menai Straits on Anglesey. This evidence largely derives from geophysical survey of areas where antiquarian reports have suggested the presence of Roman and Early medieval activity. Previous work at Trefarthen and Tai Cochion, close to Brynsiencyn has identified an extensive Roman settlement with an accompanying road. The work aimed to identify the date and function of one of a number of settlement features discovered at Rhuddgaer.

The area of study described below has been around the farm of Rhuddgaer, close to the mouth of the River Braint and facing Caernarfon on the opposite shore. In the 19th century the former presence of a 'destroyed village' to the west of Rhuddgaer House was recorded, as well as the discovery of an inscribed lead coffin, of probable 5th-6th century AD date, as well as the site of fort of probable Iron Age and Roman date, close to Rhuddgaer House itself.

Acknowledgements

The project was initiated by Matthew Jones of CR Archaeology, Llandudno. The geophysical survey was carried out in several stages beginning with an area by Matthew Jones and David Hopewell, funded by a grant from the Cambrian Archaeological Association (Jones, Hopewell and Rees 2012). Further stages of survey were carried out by David Hopewell, Roland Flook and Macsen Flook of GAT with John Burman and Cliff 'Beaver' Hughes (Flook 2013) as part of a project for Cadw.

The excavation was part-funded by a grant from the Anglesey Area of Outstanding Natural Beauty Sustainability Fund administered by Efan Milner for Anglesey County Council.

Thanks are due to the Marquis of Anglesey for agreeing to the work on his land and to David Holmes of Jones Peckover, the Land Agents for the Plas Newydd Estate, for arranging the agreement. Thanks also to Graham Williams of Natural Resources Wales for allowing the excavation on land managed as a Nature Reserve. Thanks are also due to the farmer, Mr Simon Sturrock of Y Felinheli, and to David Devalle of Rhuddgaer House for allowing access.

The preliminary sand removal and later re-instatement machine work was carried out to a high standard by Hewden of Bangor. The bulk of the hand excavation was carried out by local volunteers Cliff 'Beaver' Hughes, Jeanine Vann Lewis, Jeff Marples and Brian Milner with recording by George Smith and Neil McGuinness of GAT.

2. TOPOGRAPHIC AND HISTORICAL BACKGROUND.

The study area lies at SH44096363 (centre) on slightly undulating but mainly level land, alongside the Menai Straits to the south-west of Rhuddgaer House, south of the village of Dwyran (Fig. 1). The area surveyed includes a large field used for arable and a strip of rough grazing along the coast edge. The land here is at an elevation of no more than 10m above Ordnance datum. The cultivated fields are relatively level although lower, in places than the coastal strip, making them prone to tidal flooding. The coastal strip is slightly raised and hummocky and this appears to be because of the remains of a degraded dune system.

The bedrock is recorded as marine alluvium beneath a gleyed soil (HMSO 1972, 1974 and Soil Survey1958). No blown sand is recorded by the geological or soil survey but soil test pits carried out during the present work indicate up to a metre of clean blown sand. This is presumably an extension of the Newborough Warren dune field to the south-west (Fig. 1). The date of creation of this dune field is not known but must have happened subsequent to the Early Neolithic sea-level maximum, after the development of the extensive sand bars around the mouth of the Menai Straits due to longshore drift. There must have been a number of sand blows over the millennia and there were several with historical records, the most notable of which, in 1330, buried over a hundred acres of farmland as well as twelve cottages to the west of the village of Newborough (Carr 2011, 207). The sand blow also buried the ruined remains of the buildings of the Welsh Royal court or llys of Rhosyr (Johnstone 1999). If the blown sand at Rhuddgaer resulted from the same episode then it could be expected that the buried fields and houses are of the same period. However, the presence of even earlier occupation in the area is indicated by the finds of Roman pottery and of the lead coffin.

There are historical records of a Medieval settlement, the township of Aber-Braint (The Mouth of the Braint) in this area and that uncovered by the survey could be it.

The land of Rhuddgaer was granted to the Cistercian abbey of Aberconwy by the Welsh Prince Gruffydd ab Cynan between 1188 and 1199 (Carr 2011, 214) and the abbey had a windmill there (ibid. 84).

The results of the geophysical survey were given in an earlier report (Flook 2013), subsequent to which further survey was carried out to complete the survey area up to the coast edge, described here. The survey identified what appeared to be a discrete nucleated system of small sub-rectangular fields (Fig 2a). Study of the complex shows that there at least two and possibly up to four phases of fields defined by distinct boundaries, possibly walls (Fig. 2b). Within the fields are the clear cultivation marks of ‘ridge and furrow’ excavation, a typical Medieval style of cultivation. However, some of the ridge and furrow runs over some of the field boundaries showing that the ridge and furrow must post-date some of the fields. Attached to one of the boundaries are four or five small elongated, possibly walled features. These are each about 15m long and 5m wide and are best interpreted as long huts of Medieval date. One of these was targeted by the trial excavation described here. It lay within the coastal strip of rough pasture just outside the area of modern cultivation, which occupies a system of large, straight sided fields which resulted from re-organisation of the fields as part of the Plas Newydd Estate in the early 19th century. The feature studied also happened to be close to the reported position of the lead coffin found in 1878 (Williams, 1878).

3. GEOPHYSICAL SURVEY METHODOLOGY

Technical Detail

The survey was carried out in a series of 20m grids, which were tied into the Ordnance Survey grid using a Trimble GPS system. The survey was conducted using a Bartington Grad 601-2 dual fluxgate gradiometer. The surveys were carried out at standard resolution (1.0 m traverse interval by 0.25m sample interval).

Instrumentation

The Bartington Grad 601-2 dual fluxgate gradiometer uses a pair of Grad-01-100 sensors. These are high stability fluxgate gradient sensors with a 1.0m separation between the sensing elements, giving a strong response to deeper anomalies. The instrument detects variations in the earth's magnetic field caused by the presence of iron in the soil. This is usually in the form of weakly magnetized iron oxides which tend to be concentrated in the topsoil. Features cut into the subsoil and backfilled or silted with topsoil, therefore contain greater amounts of iron and can therefore be detected with the gradiometer. This is a simplified description as there are other processes and materials which can produce detectable anomalies. The most obvious is the presence of pieces of iron in the soil or immediate environs which usually produce very high readings and can mask the relatively weak readings produced by variations in the soil. Strong readings are also produced by archaeological features such as hearths or kilns as fired clay acquires a permanent thermo-remnant magnetic field upon cooling. This material can also get spread into the soil leading to a more generalized magnetic enhancement around settlement sites. Not all surveys can produce good results as results can be masked by large magnetic variations in the bedrock or soil or high levels of natural background "noise" (interference consisting of random signals produced by material with in the soil). In some cases, there may be little variation between the topsoil and subsoil resulting in undetectable features.

The Bartington Grad 601 is a hand held instrument and readings can be taken automatically as the operator walks at a constant speed along a series of fixed length traverses. The sensor consists of two vertically aligned fluxgates set 500mm apart. Their mu-metal cores are driven in and out of magnetic saturation by a 1,000Hz alternating current passing through two opposing driver coils. As the cores come out of saturation, the external magnetic field can enter them producing an electrical pulse proportional to the field strength in a sensor coil. The high frequency of the detection cycle produces what is in effect a continuous output. The gradiometer can detect anomalies down to a depth of approximately one meter. The magnetic variations are measured in nanoTeslas (nT). The earth's magnetic field strength is about 48,000 nT, typical archaeological features produce readings of below 15nT although burnt features and iron objects can result in changes of several hundred nT. The machine is capable of detecting changes as low as 0.1nT.

Data Collection

The gradiometer includes an on-board data-logger. Readings are taken along parallel traverses of one axis of a 20m x 20m grid. The traverse interval was 1.0 meter. Readings were logged at intervals of 0.25m along each traverse

Data presentation

The data is transferred from the data-logger to a computer where it is compiled and processed using ArchaeoSurveyor2 software. The data is presented as a grey-scale plot where data values are represented by modulation of the intensity of a grey scale within a rectangular area corresponding to the data collection point within the grid. This produces a plan view of the survey and allows subtle changes in the data to be displayed. This is supplemented by an interpretation diagram showing the main feature of the survey with reference numbers linking the anomalies to descriptions in the written report. It should be noted that the interpretation is based on the examination of the shape, scale and intensity of the anomaly and comparison to features found in previous surveys and excavations etc. In some cases the shape of an anomaly is sufficient to allow a definite interpretation e.g. a Roman fort. In other cases all that can be provided is the most likely interpretation. The survey will often detect several overlying phases of archaeological remains and it is not usually possible to distinguish between them. Weak and poorly defined anomalies are most

susceptible to misinterpretation due to the propensity of the human brain to define shapes and patterns in random background “noise”. An assessment of the confidence of the interpretation is given in the text.

Data Processing

The data is presented with a minimum of processing although corrections are made to compensate for instrument drift and other data collection inconsistencies. High readings caused by stray pieces of iron, fences, etc. are usually modified on the grey scale plot as they have a tendency to compress the rest of the data. The data is however carefully examined before this procedure is carried out as kilns and other burnt features can produce similar readings. The data on some ‘noisy’ or very complex sites can benefit from ‘smoothing’. Grey-scale plots are always somewhat pixellated due to the resolution of the survey. This at times makes it difficult to see less obvious anomalies. The readings in the plots can therefore be interpolated thus producing more but smaller pixels and a small amount of smoothing based on a low pass filter can be applied. This reduces the perceived effects of background noise thus making anomalies easier to see. Any further processing is noted in relation to the individual plot.

4. METAL DETECTING SURVEY METHODS

The metal detecting was envisaged as a replacement for field walking. Ideally one would field walk the area around the site under investigation to recover any other associated finds, however as the survey area was under pasture this would be of limited value. Metal detecting therefore provided a way of partially compensating for this. The limitation is, of course, that only metal finds would be recovered which means the metal detecting will only register Bronze Age or later sites and is most effective for Roman or medieval sites, where the quantity of finds produced means residual objects are more likely. The metal detectorists will, however, also from time to time recover non- metallic objects such as pieces of pot, and flint while detecting, thus providing some limited compensation for this bias. Metal detectors can be adjusted to provide a certain level of ‘discrimination’ against ferrous objects. Effectively screening out all except the largest and densest iron finds. As there is often a high occurrence of modern iron debris in the top soil originating from farm machinery and as the result of manuring, eliminating these allows a much quicker rate of survey. The survey in this case was, however, over a limited area so the metal detecting was ‘non-discriminating’ (i.e. both ferrous and non-ferrous), The metal detection used the geophysics grid for reference; the area was detected in 2m wide traverses in a ‘zigzag’ fashion across the area, from one side to the other and with a 1m overlap on each side of the previous traverse. Each traverse, except the end traverses, was therefore detected twice, once in one direction and once in the other direction. Finds were excavated at the time of discovery. A small specialised spade was used to cut a flap of turf about 30cm square including the topsoil and this was then turned over. Finds were bagged and marked with permanent marker including the farm name, an initial interpretation the object type, and dating (where possible), the finder’s initials, and the grid reference gained from a hand held GPS. The hole was then filled in with any loose soil and the turf and topsoil flap put back in place and stamped down. The aim being to return the surface to as close to original condition as possible. Finds were recovered only from within the top soil and no stratified archaeological deposits were disturbed.

5. GEOPHYSICAL SURVEY RESULTS

An additional area of 238m x 165m was surveyed at the south of the previously surveyed areas (Jones, Hopewell and Rees, 2012 and Flook 2013). This area is outside the intensively cultivated area and consisted of rough grazing between the modern fields and the coast and comprises low dunes consolidated by well-established turf and bracken. The results were combined with those from the earlier phases of the survey and are shown in Figs 2a and 2b. The interpretation below is an updated and expanded version of that produced by Flook (2013).

The survey identified a series of complex linear anomalies in the southern half of one of the large rectangular modern fields and spreading over into the rough land to the south-west. These are best interpreted as a series of overlapping field systems representing several phases of land-use. Their morphology allows some phasing to be estimated from the survey results. Field system 01 (in red on Fig. 2b) appears to be the earliest. The fields are roughly rectangular and of variable sizes and the boundaries are, in places, gently curvilinear rather than straight. The southern part of the system has been truncated by coastal erosion. The narrow fields with curvilinear boundaries at the south of the system (5) are typical of fields with origins in medieval open-field strip-farming. Most of the other fields probably have similar origins but have subsequently been modified. All of the fields contain parallel linear anomalies that are the result of ridge and furrow ploughing. There are several places where overlapping plough marks run in different directions indicating changing agricultural practices. The ridge and furrow generally respects the field boundaries but in places runs over the ends of the fields indicating that the boundaries were sufficiently denuded for a plough to cross them. Of particular note in this system is a series of six oval or sub–rectangular positive anomalies (6 and 7) located at irregular intervals along the main north-eastern boundary of this field system. These measure 14m long by 7m wide and are best interpreted as buildings; their rounded rectangular shape could indicate medieval longhouses. Feature 6 appears to be enclosed within a rectangular enclosure defined by a faint negative anomaly that could indicate a stone wall. The north-eastern boundary contains a central negative anomaly suggesting a different construction technique to the boundaries further to the south-east.
Field system 02 (in brown) comprises larger sub rectangular fields that appear to respect field system (01) and may be roughly contemporary; perhaps a later addition extending the existing system towards the north-east. There are two phases of ridge and furrow within this system. The earliest respects the boundaries. A second phase is, however, much narrower and straighter and doesn't seem to respect the field boundaries or reflect their orientation. This perhaps suggests that this is later ploughing which may have obliterated much of the earlier wider (medieval?) ridge and furrow. Three sub-rectangular features (8) can be seen oriented NW to SE In the south-eastern corner of system 02. These are similar in shape and dimensions to the possible buildings attached to field system 01 discussed above. These are, however, well-defined negative anomalies suggesting stone foundations. It is possible that (8) represents three more longhouses but perhaps with a differing construction technique from those attached to (01). These features seem to intersect one of the boundaries of (02) suggesting either the longhouses had fallen out of use by the time the field system was laid out or the field system was redundant when the dwellings were built. A linear feature (09/10) may be part of a later field system replacing system 02 as it seems to deviate to run around the buildings. It also seems to be later than system 01 as it cuts across this diagonally and is visible despite the very heavy ridge and furrow here. Just to the SW of linear 09 is another short linear anomaly (11). This is part of a larger system (04 in blue) the surviving elements of which can be matched with field boundaries marked on an estate map of 1792 by J. Corris (Jones, Hopewell and Rees 2012). Field system 03 (in green) is a further

series of linear anomalies forming a system which appears to be on a different alignment from both (02) and (04) indicating another different phase, perhaps post-medieval as the boundaries are quite straight. Anomalies 12 and 13 are similar: a small group of connected linear anomalies which doesn't seem to correspond with the alignment of (02) or (01). They do appear to relate to system (04) being roughly parallel and apparently joining it but they don't appear on the estate map and so presumably are of a different period too. There are other fragments of linear features elsewhere (14, 15 and 16) which do not seem to relate to any of the identified systems. Feature 16 in particular seems to have a different character to most of the other linear anomalies and its wandering form may suggest it is a natural channel. Blocks of the narrower, straight ridge and furrow seem to run parallel to elements of field systems (03) and (04) as well as fragments (14) and (15). This may indicate that these linear features represent sub-divisions and systematic replacements, roughly repeating the same pattern, and thus that they may be broadly of a similar period; possibly post-medieval in date. Weak anomalies (17) and (18) are two similar looking rectangular anomalies about 14m long and 5m wide. Both extend from a different field boundary (system 02), and linear (14). They have clearly defined sides but their projecting ends are not very clearly delineated. It is possible that they are some sort of platform perhaps for a dwelling or haystack attached to associated fields. However, their alignment suggests an alternative interpretation as two ends of one particularly wide linear feature perhaps a bank of some sort.

Anomaly 19 is a sub-circular area of strong positive and negative signals just under 40m in diameter. This spot was noted when laying out the geophysics grid as it appears on the ground as a low mound covered with a concentration of medium angular stones some of which appear to be heat affected. A smaller area of stones (20) was noted to the N measuring about 20m in diameter. Anomaly 14 is a wide band of increased 'noise' running NE from the edge of the stony mound (20). It is about 25m wide and about 65m long. By the evidence of (19) and (20) this probably represents a concentrated stony band, perhaps plough-dragged from the stony mound but the concentration was not sufficient to make it particularly noticeable on the ground.

Features 22 to 25 are all strong positive/negative anomalies. This usually indicates a significant ferrous object. Three of these are on the line of anomalies interpreted as former field boundaries. These could be interpreted as pieces of broken iron ploughshare indicating that large stones survive in the boundaries and that they are relatively close to the surface.

6. METAL DETECTING SURVEY RESULTS

The survey was carried out by C.R. Hughes, who also provided training for local volunteer, P. Corbett. A scatter of finds was recovered from the survey area. All could be confidently dated to the 1940s or later. Most appeared to be associated with cultivation in WW2 although shotgun cartridges and a gin trap were associated with later rabbit hunting and wildfowling. All of the finds were recovered from what appeared to be an accumulation of blown sand at least 0.5m deep. The results of the survey suggest that finds from earlier archaeological activity would be too deep to be detected and that the 20th century ploughing had not brought any earlier material to the surface. Finds recovered in previous phases of the project, within the current field system were mostly a result of 19th and 20th century manuring. There was however one find of archaeological significance. This was an abraded base sherd of Roman samian pottery (Find 465) recovered from the area of features 19 and 20 (Flook 2013)

7. GEOPHYSICAL AND METAL DETECTING SURVEYS DISCUSSION

This site is potentially of unique importance if, as suggested by the 5th century coffin findspot, some of the features identified by the geophysics represent an early medieval settlement and possibly continued occupation from Roman to sub-Roman times. The subsoil here seems very sandy perhaps indicating that the area has a history of sand inundations similar to that at Newborough just across the Afon Braint. Williams sketch map of 1861 labels the area to the SW of the farm as “marsh” (Williams 1861) suggesting that this area was not cultivated at that time or was at least marginal. It is possible that the survival of so many field systems in one place is down to the shifting character of the sand dunes. Perhaps the field systems were constantly being overwhelmed and had to be rebuilt sometimes on a different pattern sometimes closely following the existing pattern to reflect ownership. This may also suggest a potentially high level of survival of the earlier remains protected beneath layers of encroaching sand. The features do seem much better preserved within the unenclosed land judging by the clarity of the signals recorded. It is likely that there has been much less ploughing here to degrade the features. But it is also possible that the regularity of sand inundations and the depth of the deposits was greater closer to the Braint. It is interesting that these systems have no obvious connection to the site of the earthwork enclosure at Rhuddgaer farm. The activity these systems represent seems to be focused at the SW end of the farm and becomes less intense as it spreads NE towards the farmhouse. This strongly suggests that these remains represent a completely different phase of occupation at Rhuddgaer. Stony patches (19 to 21) may be significant. At least some of the stone visible on the ground seemed to be heat affected which may explain the strong magnetic response in the plot. A low but visible mound corresponds with (19). It is possible that this feature represents a large dispersed burnt mound of Bronze Age date. As mentioned this area of the farm was noted as ‘”marsh” on Williams 1861 map, and the area is certainly prone to flooding even now. Burnt mounds are often found in this type of landscape. It is possible that (20) is a smaller satellite burnt mound. The stony spread (21) is more difficult to interpret. It is possible that it is some sort of track that has been dispersed by ploughing, or it may be material from (19); though this seems unlikely as the material has been moved in one direction only.

8. TRIAL EXCAVATION METHODS

The grid used for the geophysical survey was re-established by GPS to allow the position of the possible long hut to be identified. A trench 11m by 7m was then laid out, at SH44086388 (centre), to uncover one end of the possible hut as well as part of an adjoining field boundary and its adjoining ridge and furrow cultivation (Fig. 3).

The trench was designed to uncover part of the interior of the hut and to provide a cross section across it. The end of the trench would also provide a cross section across the adjoining field boundary.

A local site grid was used for planning and this, the trench outline and sections and the spot heights were recorded by GPS, recorded as OS national co-ordinates.

Initial soil test pits suggested that the archaeological features were covered by up to 1m depth of blown sand. The turf and blown sand were first stripped by a small excavation machine under close supervision. On the surface the position of the possible hut was marked by a slight rise in ground level. It quickly became obvious that the rise in surface ground level was because blown sand had been deposited around and over the remains of the walls of a stone building and that elsewhere,

south-west of the building, the sand was of shallower depth. The remains of the walls of the building were upstanding at their highest only 0.5m below the surface, while within the house the sand depth was over 1m.

After removal of the bulk of the blown sand by machine the excavation continued by hand. As this was only a trial excavation the walls were uncovered down to the level of the buried soil surface but only three small areas were taken deeper – sub-trenches 1, 2 and 4 and four small test pits were also dug to test the depth of the buried soil and to take samples.

The main excavated area was recorded in plan by photogrammetry with smaller details hand drawn at 1:20 scale. The main trench sections at the north-east and south east were hand drawn at 1:10 scale as was a profile across the building wall at the north-west side.

Bulk soil samples for possible macrobotanical analysis were taken from the floor within the building and from the buried external soil at the north-west side.

9. EXCAVATION RESULTS

The blown sand deposit

The sand was a clean, buff colour although there was quite deep discolouration by humification from penetration of roots of surface vegetation. The sand was quite homogeneous with no evidence of phases of deposition in the form of standstill soil horizons. In the eastern corner of the trench the sand was darker and there was evidence of disturbance to some a depth and a shallow pit cutting into the cleaner sand from a high level, all associated with a number of well-preserved cattle and sheep bones, probably from relatively modern animal burials (Figs 5A and B).

The building

Cleaning of the walls of the building showed that they were up to 1.20m wide, built largely of sub-angular glacial boulders (Fig. 4). They consisted of larger stones laid as rough edging with an infill of smaller boulders and cobbles and sandy soil to create a wide and rather flat surface. Although apparently rather irregular, it was clear that some of the upper stones had been dislodged, probably by later ploughing. Excavation of a smaller sub-trench (2) at the north-west side showed that the wall extended some way below the level of the external ground surface and that the edging stones seen on the surface lay approximately horizontal and on top of larger stones that had been set neatly upright on top of the buried soil, rather than in a foundation trench (Figs 5C and 7a).

In plan the building had curving rather than angular ‘corners’. The interior, however, had more angular, if somewhat irregular corners.

The floor of the building was quite level and made of very compact sandy clay. There was no identifiable surfacing as such, so it is presumed to have been a beaten earth floor. The small area of floor exposed showed no evidence of features such post-holes, post-pads or a hearth and was at a level approximately 0.25m below the surface of the old ploughsoil surrounding the building (Fig. 5A). The floor was only properly exposed in sub-trench 4 where its surface was defined by a number of tumbled wall stones that lay on it (Fig. 4). These coincided with a slightly lower area of wall and a gap in the wall facing, perhaps resulting from a later linear cut, faintly visible on the geophysical survey. A small soil pit was cut through the probable floor (Context 20) and a bulk sample taken for flotation. The soil pit did not reach the

subsoil but its level could be expected to be at the same depth as the subsoil exposed outside the building (Fig. 5B). The soil of the floor contained a scatter of small pieces of charcoal in very poor condition, most of which were retrieved by flotation. A number of these were identified for possible use in radiocarbon dating (Appendix 1). Due to their small size and poor condition it was impossible to identify them with certainty but they were not oak and three were possibly holly and two of these were submitted for AMS dating.

The field wall
The field wall was less substantial than the house wall even though it appears as just a strong a signal on the geophysical survey. It consisted of a relatively slight line of stones but with a fairly clearly set edging face on the south-west (down slope) side. There was also one larger slab set on edge close to the house wall that suggested an 'inner' face. The wall appeared to butt up to the facing of the house wall. This would be expected as the field boundary did not continue beyond the house. Although slight the field wall marked a substantial boundary that consisted of a bank on which the 'wall' stones sat. It seems more that the boundary consisted initially of a bank with a single line of stones, behind which collected field stones were deposited randomly during cultivation. The bank was not cut through but by reference to relative levels seemed likely to be mainly a remnant feature between areas of cultivation at either side, rather than a constructed feature (Fig. 5C).

The buried plough soils
The soils south and east of the building were about 35cm deep and all dark brown (10YR 3/3), clay-rich silt with occasional small stones. To the south-west of the building parts of two plough furrows were visible, corresponding to features seen on the geophysical survey. To the south-east slight ridges were present in the surface of the buried soil, in both the north and east section faces, possibly ridges cast up during turning of the plough in the headland.

The ploughing had created a slight negative lynchet below the building wall and the field wall and seems to have continued surprisingly close to the house wall (Figs 5B and 8A).

The soils produced a scatter of charcoal fragments but these have not been identified.

The plough soil overlay yellow-buff, slightly stony clay natural subsoil.

10. ARTEFACTS

Iron
One small, indeterminate, very corroded iron fragment came from the surface of the buried old ploughsoil (3), south-west of the building.

Bone
One sheep's tooth came from the soil between the wall stones at the south-east side of the building.

One sheep's tooth came from the base of the buried ploughsoil in sub-trench 2.

Shell

Two deposits of dog-winkle shells were found. One from the soil between the wall stones at the south-east side of the building, the other from the buried soil just in front of the facing stones of the field bank in sub-trench 1 (Fig. 4).

Charcoal
Individual charcoal pieces were recorded from the buried soils (8) in sub-trench 1 and (10) in sub-trench 2 and from the floor level (11) within the building.

11. INTERPRETATION AND DISCUSSION

The Rhuddgaer building seems most likely to be a dwelling despite the lack of artefactual evidence for occupation. Pottery was not in common use in north-west Wales until later in the Medieval period and insufficient of the house interior was excavated to uncover other evidence, such as a hearth, which might be expected to be in the centre of the building, which would have been beyond the excavated area. The lack of finds from excavations of houses of the earlier Medieval period in Wales is normal and the almost total lack of artefacts at the Rhuddgaer house is not unexpected. It is also true that house floors are generally kept clean and rubbish is deposited outside. The entrance to the building would have been on the south-east side. The main excavated area was within the field on the south-west side of the building, where domestic activity would be unlikely.

The remains of the building walls were very wide and lacked tumble suggesting that they were deliberately flat topped and never any higher than the 0.7m recorded. The width of the wall, at over 1m, is comparable that of many excavated Iron Age round-houses. The width of the wall may be accounted for partly by the depth of the thatched roof. The edge of the exposed internal wall top provided a kind of shelf, accounting for the finding of items such as spindle whorls on roundhouse wall-tops. One artefact was found on the wall-top at Rhuddgaer, a large flake of fine black chert (RF 1). While this was clearly much earlier than the building its presence on the wall is hard to explain unless it was collected as an unusual keepsake and placed on the wall during the life of the building.

The odd shape of the building, with rounded external corners is one that is found elsewhere in houses of the rural poor, for instance in the Medieval houses of the western isles of Scotland which had low turf walls. Use of turf means that angular corners would not be achievable. However, a collapsed turf roof could be expected to leave identifiable archaeological deposits, of which there was no evidence at Rhuddgaer. The rounded end of the building probably also indicates the use of a hipped roof that was more economical of roofing materials and, like prehistoric roundhouses, more streamlined in windy situations. The building, with only a very low wall may thus have had a very low roof and this may explain the lowering of the internal floor, to enhance internal height.

The charcoal samples of possible holly wood from the floor within the building provided two almost identical radiocarbon dates. One was 1179+/-30 (SUERC-51980), 769-902 cal AD (87.5%) or 920-953 cal AD (7.9%) at 2 s.d. The other was 1183+/-27 BP, 769-899 cal AD (91.0%) or 924-945 cal AD (4.4%) at 2 s.d. The presence of charcoal pieces of probably the same species suggests that they might all be from the same tree and the same burning episode. They were embedded in the soil, not on its surface, so may be from clearance at the time of construction of the building, rather than from domestic activity during use of the building. This interpretation might be supported if charcoal recovered from the soil immediately outside the building proved to be of similar species and date to that within the

building. However, this would require additional funding. On present evidence alone it can be suggested that the radiocarbon dates provide a *terminus post quem* and that the building was constructed some time during or after the period between *c*. 770-900 cal AD.

Excavations of Medieval long huts in Wales are mostly confined to upland situations because of the lack of preservation of similar sites in well-cultivated lowland. In the upland such houses survive mainly as platforms perpendicular to the slope and typically with a curving 'hood bank' protecting the uphill end and with a curving terrace below. Several such houses have been excavated on Gelligaer Common in the Glamorgan uplands. Some produced no datable finds and even lacked evidence of a hearth (Fox 1937). However, one, at Gelligaer East, produced a number of finds including some pottery of 13-14th century date (Fox 1939) although the house itself could have earlier origins. These long huts were in upland areas and were not associated with any kind of cultivated fields so possibly were jus 'hafod' dwellings used only during summer pasturing. One upland long hut has been excavated in Gwynedd at Ynys Ettws, Nant Peris. Although lacking datable finds, associated worked wood from an adjoining spring pool produced radiocarbon dates indicating that the house began as early as the mid-11th century (Smith and Thompson 2006).

Some long hut sites with associated fields or paddocks survive in lowland that has remained permanent pasture since abandonment. One of these is at Gesail Gyfarch, Dolbenmaen, Gwynedd, at 170m OD, a site identified as the seat of the township of the Lords of Penyfed in the 14th century (Gresham 1954). This includes the platforms of at least three long huts, about 5m wide and varying from 8m to 15m in length. Trial excavations there produced pottery of 13th, 14th and 15-16th century date (Smith and Thompson 2006). Historical documents indicated that the main building was of half timbered construction. The platform for this house was excavated but produced no structural remains other than a clay floor and it was presumed that the base timbers of the house frame had been laid directly on the clay. However, a stone footing could have been removed during later field clearance although if this was so it had not been set in a foundation trench. In this respect the construction was similar to that seen at the Rhuddgaer building.

Two long hut type dwellings are known not far from Rhuddgaer, and ones that were also buried by blown sand. These are Hendai 1 and 2 in what is now Newborough Forest, to the west of Newborough village at SH40486371. One has been excavated and was a building 15m long and 5m wide of two separate compartments, one 10m and one 5m long (Adams, 1973). The smaller compartment was thought to be for farm animals and the other a dwelling with a central open hearth. The walls were of rough stones laid directly on a clay platform which itself overlay blown sand. There were no datable finds but the house is thought to be of Late Medieval or Early Post-Medieval date, the underlying blown sand suggesting that it post-dated the 14th century sand incursion.

The near absence of wall tumble and of any evidence of collapse of a roof structure, suggests that the building was already open and roofless when the sand blow began to fill and bury it. The roof must have been of wood and thatch, which would certainly have left some humic deposit if it had collapsed and left *in situ.* The implication is that when the sand began to blow the roofing materials were taken away and used elsewhere, perhaps to establish a new settlement away from the coast edge. The ridge and furrow ploughing carried on after the building had been abandoned but continued to respect it as an obstruction. The same appears to have been the case of the other buildings in the settlement. This might also explain the lack of access tracks to the buildings. The field system, as shown by the geophysical survey, had a

long history, with several phases of lay-out (Fig. 2B). There are indications that the field pattern derived, in an earlier phase, from a Medieval open field system of long, narrow curving fields which was modified into a system of small sub- rectangular fields mirroring changes in land ownership and style of cultivation. The geophysical survey also shows that part of the field system was lost to coastal erosion, but this seems likely to have occurred after the field system was abandoned because the field pattern did not conform to the restraints of a nearby coast edge, or, subsequently, be adjusted to fit one. The erosion is best explained as occurring after the 14th century sand blows, when the mouth of the Afon Braint was blocked by sand and was forced into a new course close to the Rhuddgaer shore, as it is today. The land would subsequently have become unsuitable for cultivation, probably becoming pasture divided into the much larger fields shown on the earliest map of the fields here, of 1792 (Hughes 1792) (Fig. 9), parts of which were identified by the geophysical survey (Field system 04)

The name Rhuddgaer is first appears in a charter of 1188-1199 in which it is mentioned as one of the lands given by the Welsh ruler Gruffydd ap Cynan to the monks of Aberconwy. Other lands nearby were also granted to the church of Clynnog Fawr. The latter included a township called Dwyran Feuno (after Beuno, the patron saint of Clynnog Fawr), but known also as Aber-Braint, that is 'Mouth of the Braint' (Richards 1972). This would fit well with the location of the settlement close to Rhuddgaer and suggests that the settlement still existed in the 12th century.

12. POTENTIAL FOR FUTURE WORK

There were no finds that require further analysis. Two soil samples were taken and these could be processed for charred macro botanical remains. There were also a number of individual charcoal samples and species identification of these would be useful in comparison with the few that were identified to see if charcoal from the old ploughsoil was similar to that from within the building. If this proved to be so then it would indicate that the charcoal probably derived from clearance prior to construction of the building, giving a firm start date for the settlement. It would similarly be useful to get further radiocarbon dates, from charcoal outside the building.

The house wall and the field boundary were only partly excavated to their full depth. The field boundary bank, in particular, consisted of more stone than was exposed.

Now that the good preservation of the building has been proven, and its origins dated to the 8th or 9th century AD it would be very productive to excavate the entire building to show its layout, with entrance, hearth and perhaps other features. Direct settlement evidence from this period is almost entirely lacking from Anglesey, despite the fact that documentary records show that the island was well-settled.

The Rhuddgaer settlement is given further value because it appears to contain a complete settlement along with its fields, providing opportunities to investigate the agricultural economy and possibly its changes over time. On present evidence it seems that the evolving field system spanned the period when the communal strip fields of a Medieval bond settlement changed into a system of small individual fields, perhaps the result of a change in the tenurial system.

There is, in addition the area of the possible cairn (Geophysics feature 15) which might be where the lead coffin was discovered in the 19th century (Williams 1878). This area deserves closer study, perhaps by high resolution geophysical survey and trial excavation. The lead coffin has been dated to the 6th to 7th century AD and

beneath the yard and house of Rhuddgaer itself are the as yet unexplored remains of a defended settlement of Iron Age and Roman date, all suggesting that the Medieval settlement had much earlier origins and that the area as a whole has within it the potential for study of a long period of continuity.

The area of the settlement and field system is an important resource for research because it is unusually complete and in a good state of preservation. The present excavation shows that radiocarbon dating is possible and the presence of wood charcoal provides some environmental evidence and the possibility of charred palaeo-botanical evidence. The newer technique of Optically Stimulated Luminescence dating could also be used to directly date layers buried by the blown sand. The survival of settlement, field boundary and cultivation features under a blown sand means that it is not immediately at risk but the excavation has shown that the sand depth is variable and quite shallow in places. The continuation of intensive arable cultivation using large machinery puts the majority of the Rhuddgaer archaeological remains at risk of damage in the long term.

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APPENDIX 1

EXCAVATION ARCHIVE SUMMARY

Context sheets	23
Drawing sheets	5
Drawings	5
Digital photographs	61
Spot levels	13
Recorded finds	6
Bone	2
Marine shell	2
Chert	1
Iron	1
Soil samples	2
Charcoal samples	11

APPENDIX 2

RHUDDGAER EXCAVATION: CHARCOAL IDENTIFICATION FOR RADIOCARBON DATING

Pat Denne, European Plant Science Laboratory, Intec Building, Parc Menai, Bangor

Only charcoal from one context, (20), the floor of the building was submitted with the aim of selecting and identifying two pieces for AMS dating. All were single pieces, recorded and packed separately even when broken. The charcoal included pieces hand picked from a 10l sample. These were still had clayey soil attached and were too moist and friable to study. Half of the 10l sample was washed through a 1mm mesh and the residue dried. Charcoal then picked from the residue. These pieces were used for the identification. Only seven pieces were checked, which included four that were possibly useable, comments in table below. The lab does not have micro scales so the weights could not be recorded.

Context	***Sample***	***length***	***breadth***	***depth***	***Comment***	***Species***
20	32				Too poor condition to identify	
20	36	6	5	3	Poor condition. Rays not obvious. Fine pits. Not oak	?Salix
20	37	7	4	4	As 39/40. Square section. Boat shaped rays <4	?Ilex
20	38				Too poor condition to identify	
20	39	7	4	4	Probably from a twig about 10mm diam. Rays 1-3, several rows of square cells. Strong ?sp thick scale perf? Prob. Ilex, poss. Corylus	?Ilex
20	40	10	8	5	Poor condition. Ray <4, boat shaped, distorted. Conspicuous sp thick. Radial strings vessels. Scal perf., few ?. Not oak, prob. ilex.	?Ilex
20	41	7	3	2	Too poor condition to identify. Diffuse porous. Rays <3 ??	

APPENDIX 3

RHUDDGAER EXCAVATION: RADIOCARBON DATING

Scottish Universities Environmental Research Centre

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RADIOCARBON DATING CERTIFICATE

22 April 2014

Laboratory Code	SUERC-51980 (GU33355)
Submitter	George Smith Gwynedd Archaeological Trust Craig Beuno, Ffordd y Garth Bangor Gwynedd LL57 2RT
Site Reference	Rhuddgaer
Context Reference	G2276-20
Sample Reference	G2276-39
Material	Charcoal : ? Ilex
$\delta^{13}C$ relative to VPDB	-25.6 ‰
Radiocarbon Age BP	1179 ± 30

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

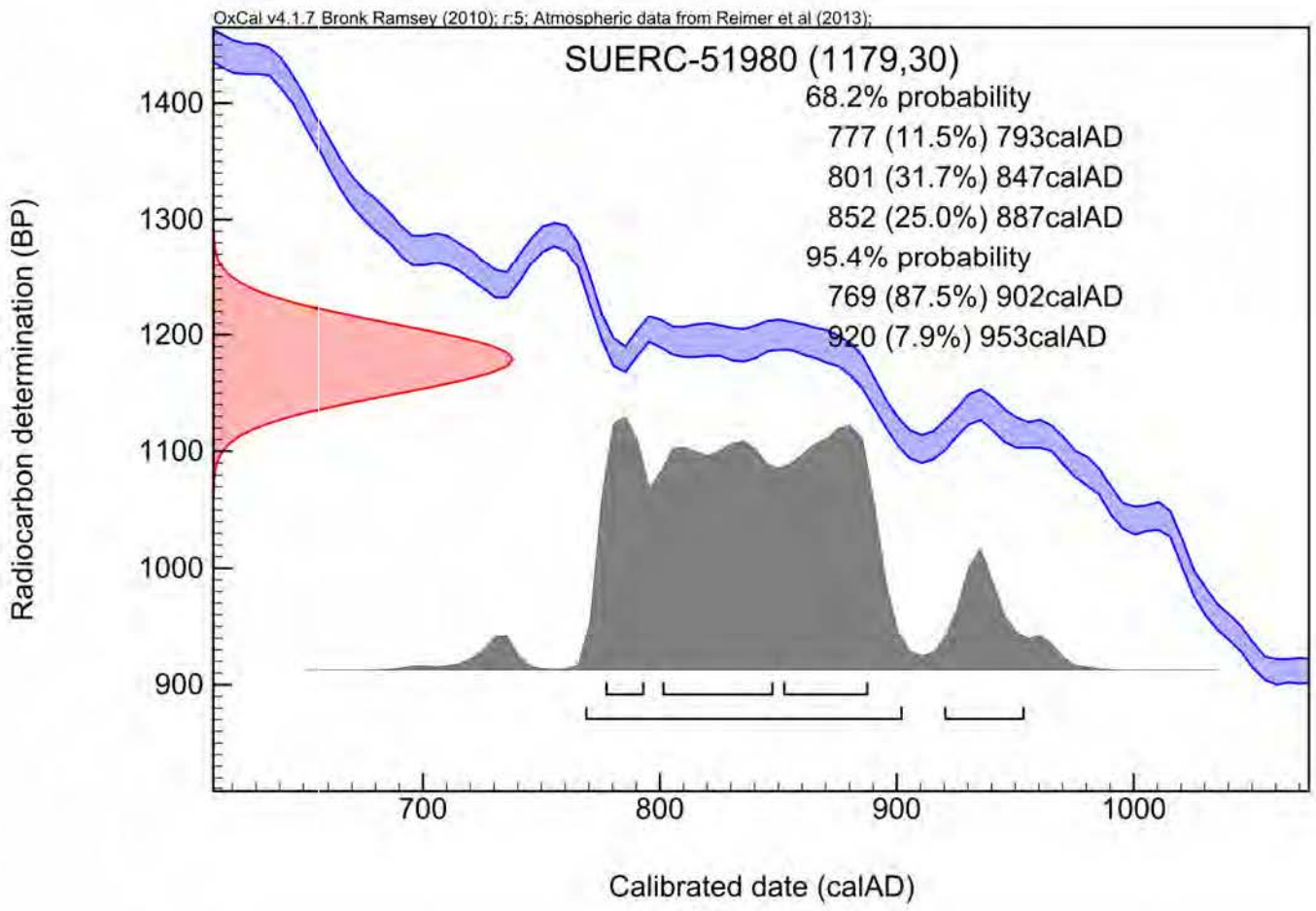
Conventional age and calibration age ranges calculated by :- P. Naysmith Date :- 22/04/2014

Checked and signed off by :- N. Rutt Date :- 22/04/2014

University of Glasgow

The University of Edinburgh

Calibration Plot



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RADIOCARBON DATING CERTIFICATE

22 April 2014

Laboratory Code	SUERC-51981 (GU33356)
Submitter	George Smith Gwynedd Archaeological Trust Craig Beuno, Ffordd y Garth Bangor Gwynedd LL57 2RT
Site Reference	Rhuddgaer
Context Reference	G2276-20
Sample Reference	G2276-40
Material	Charcoal : ? Ilex
$\delta^{13}C$ relative to VPDB	-25.3 ‰
Radiocarbon Age BP	1183 ± 27

N.B. The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.

The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal4).

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or telephone 01355 270136 direct line.

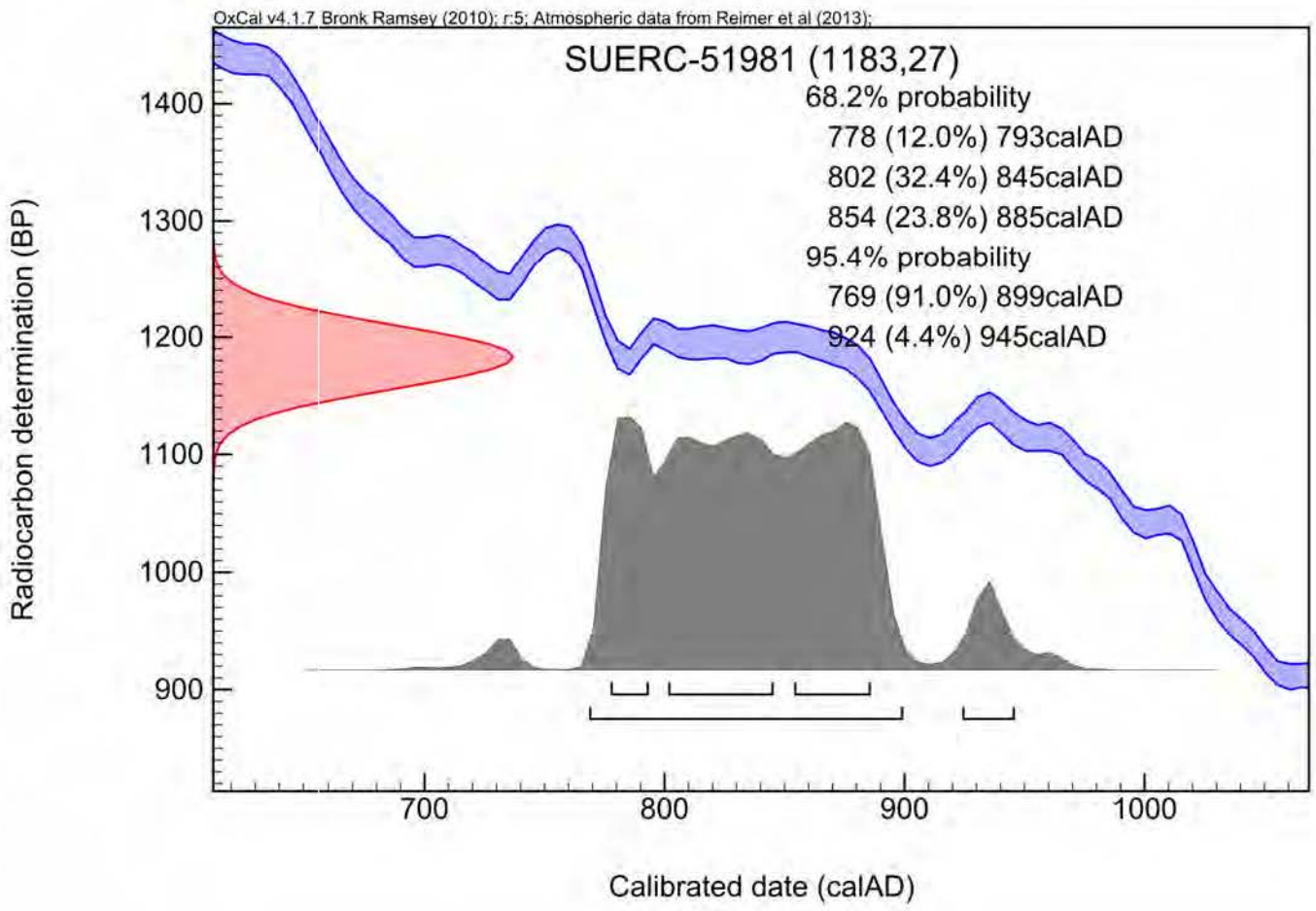
Conventional age and calibration age ranges calculated by :- P. Naysmith Date :- 22/04/2014

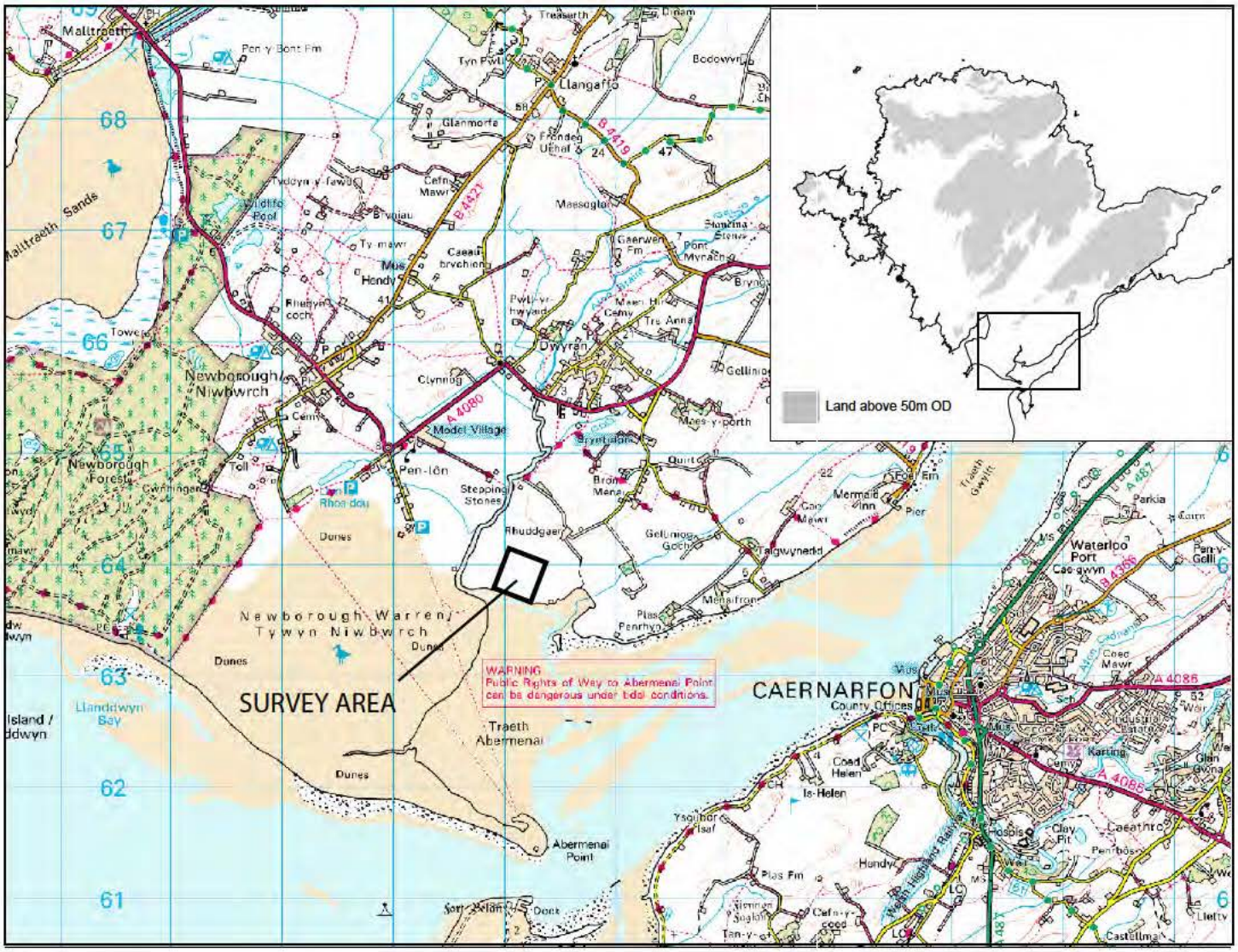
Checked and signed off by :- N. Rutt Date :- 22/04/2014

University of Glasgow

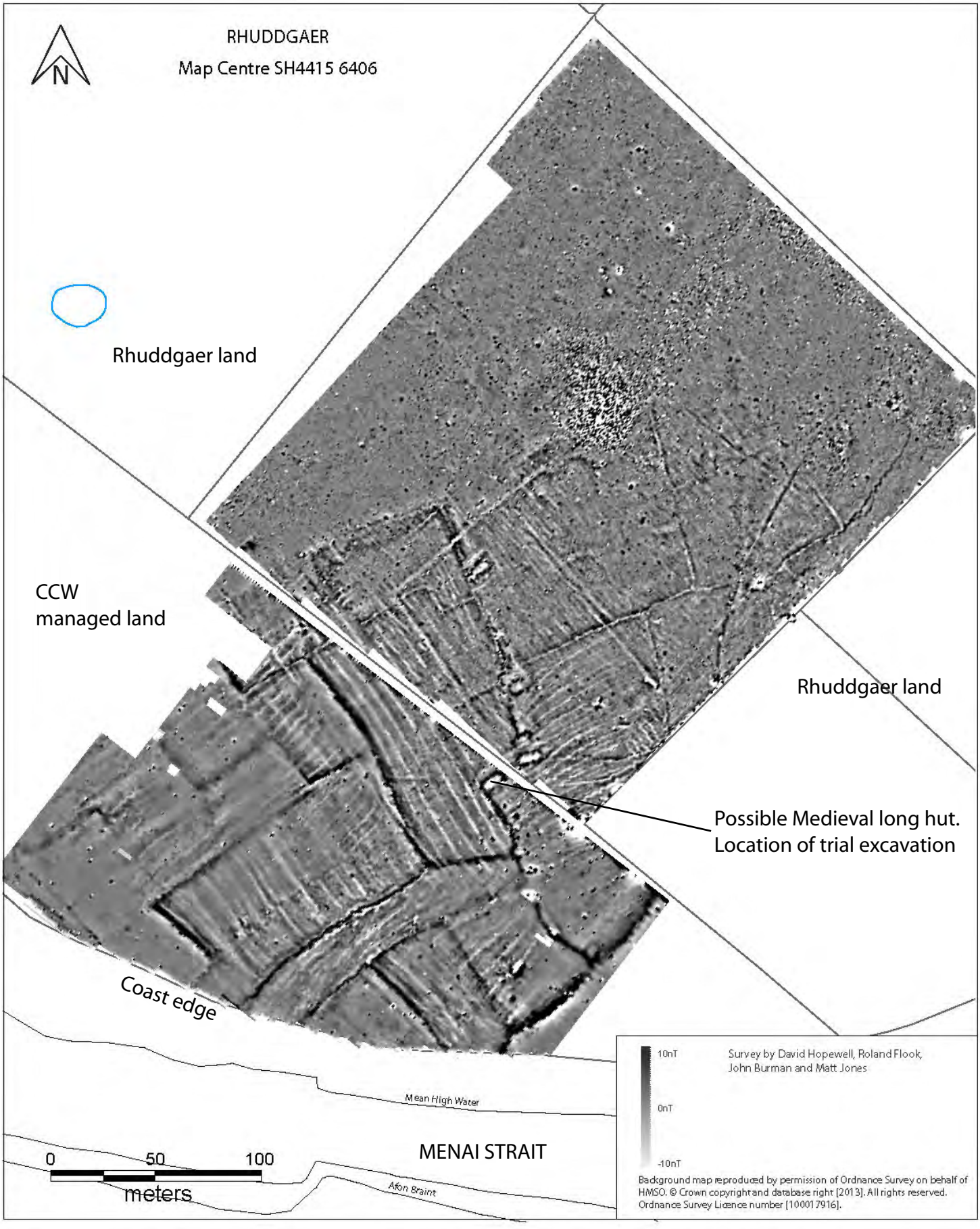
The University of Edinburgh

Calibration Plot

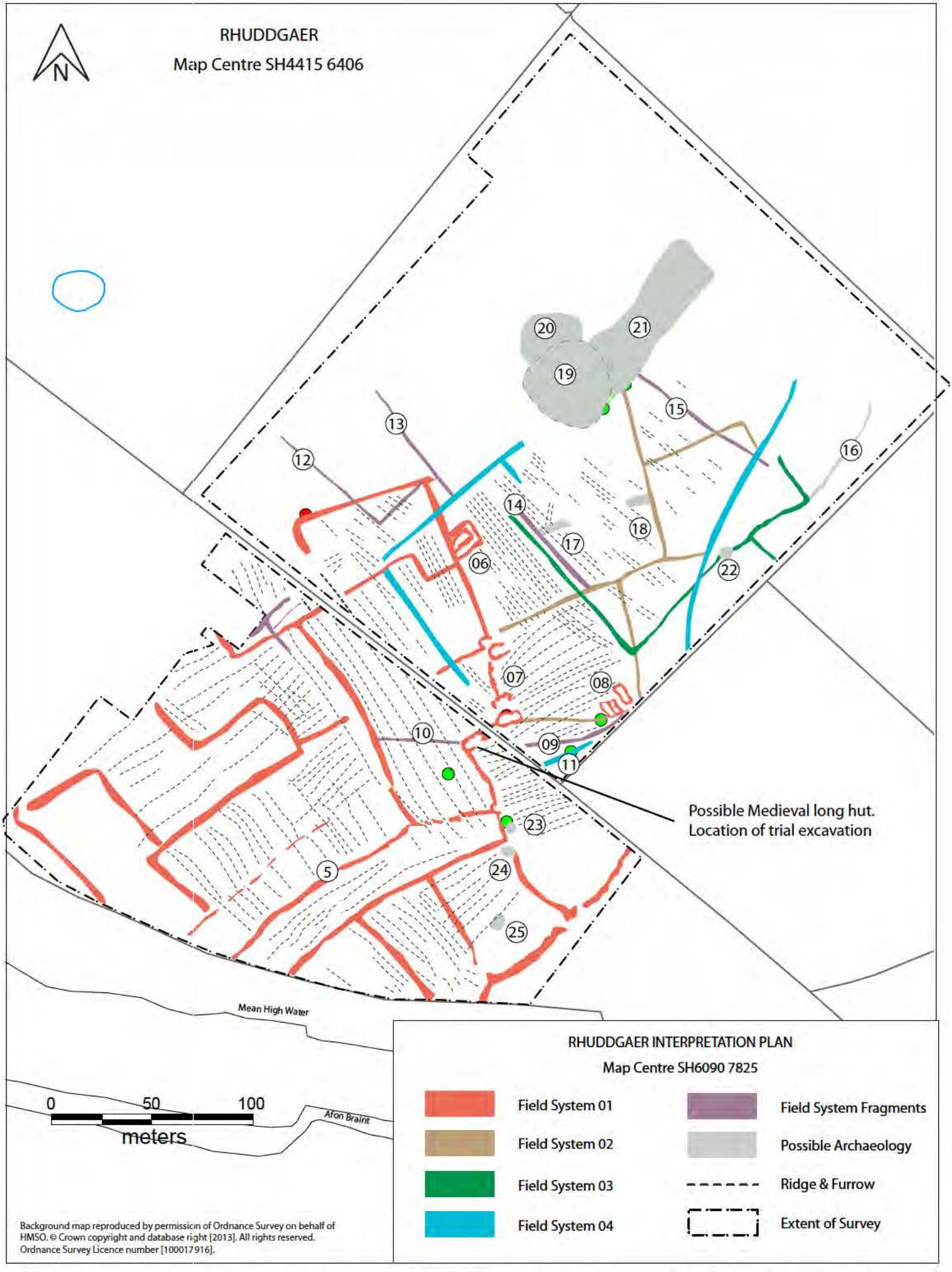




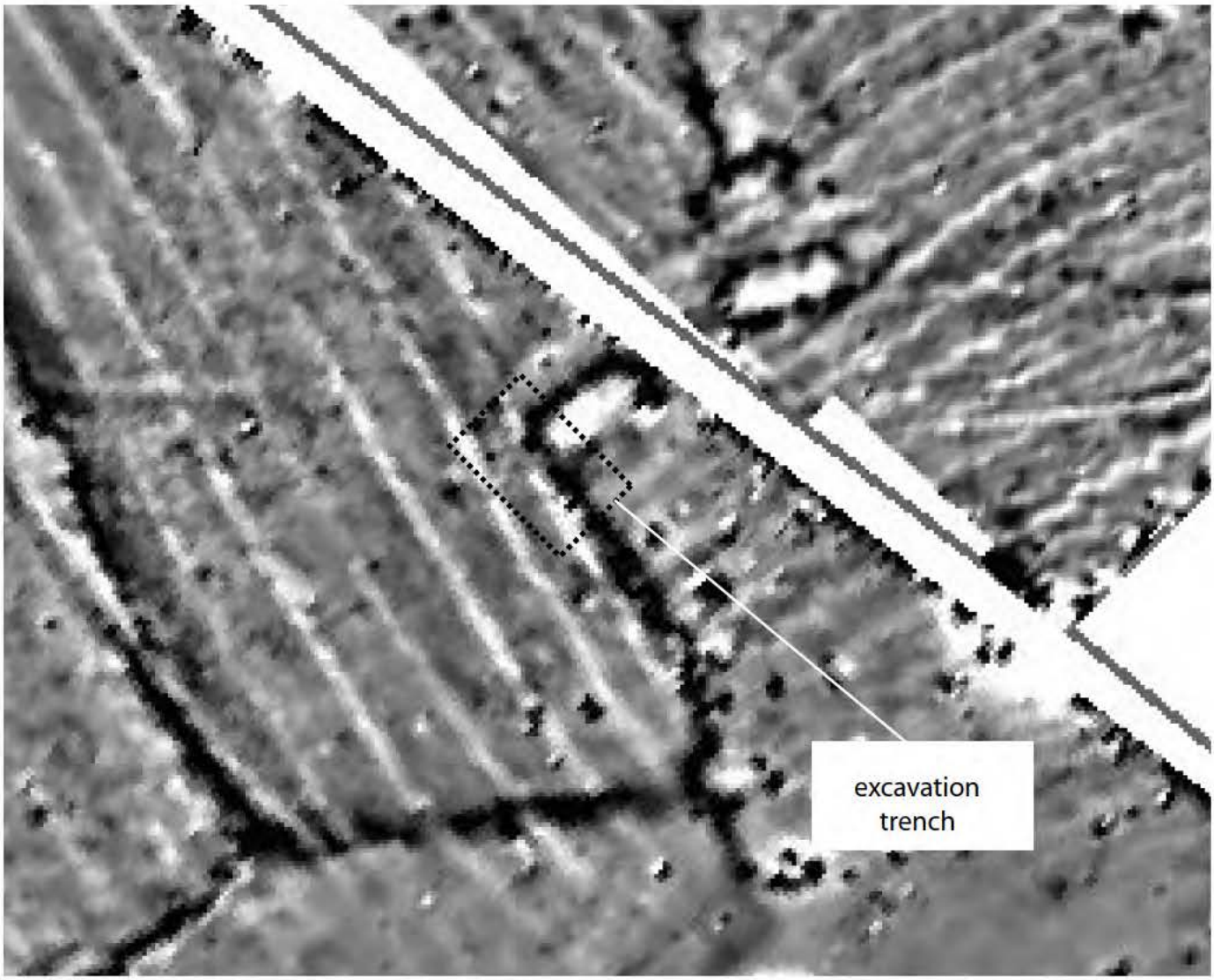
Rhuddgaer 2014: Fig. 1 Location map



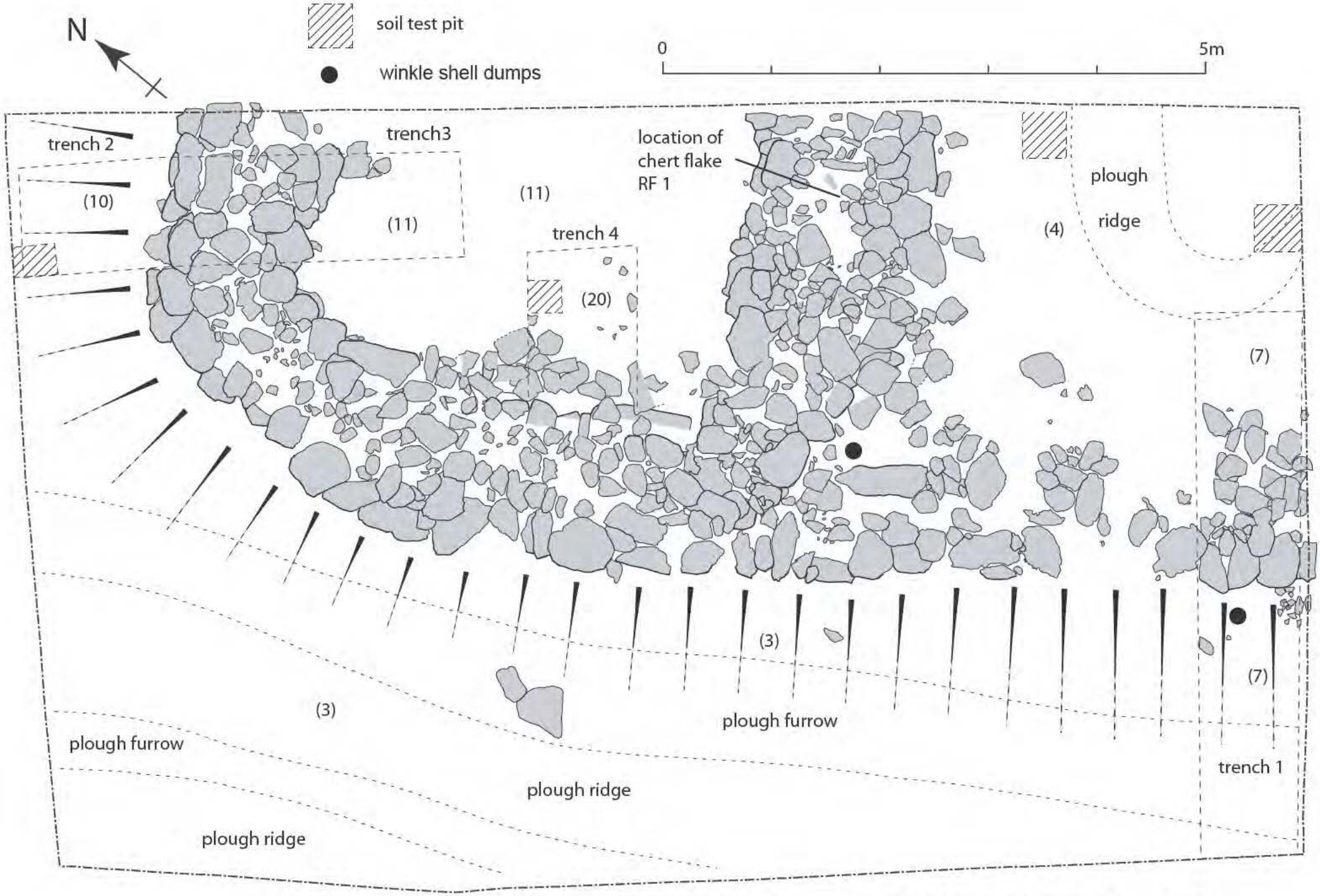
Rhuddgaer 2014: Fig. 2a Geophysical survey grey-scale plot showing the location of the trial excavation



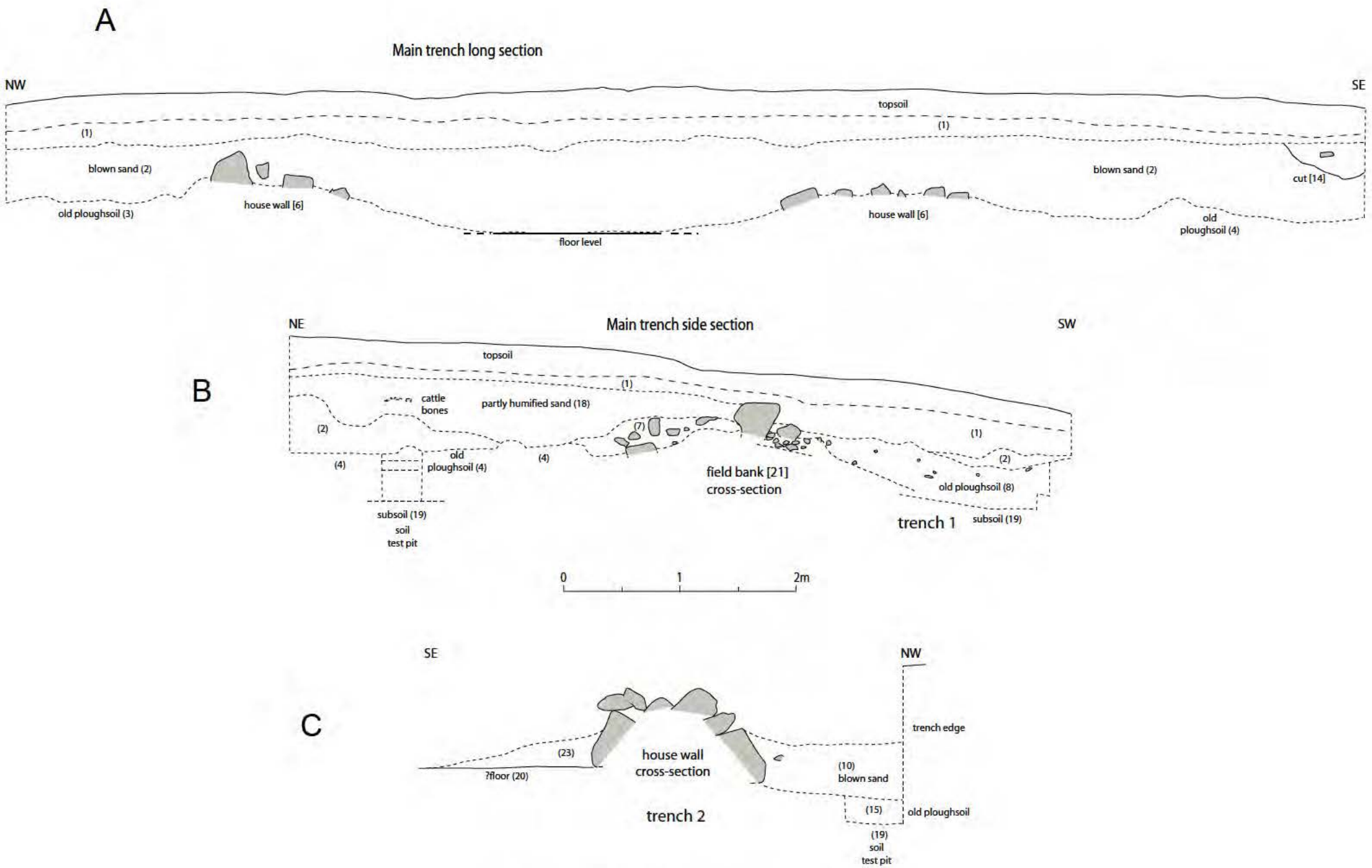
Rhuddgaer 2014: Fig. 2b Geophysical survey interpretation showing the location of the trial excavation



Rhuddgaer 2014: Fig. 3 Geophysical survey: detail of west area showing the location of the trial excavation



Rhuddgaer 2014: Fig. 4 General trench plan after removal of blown sand



Rhuddgaer 2014: Fig. 5 Excavation sections

Rhuddgaer 2014: Fig. 6a Working shot

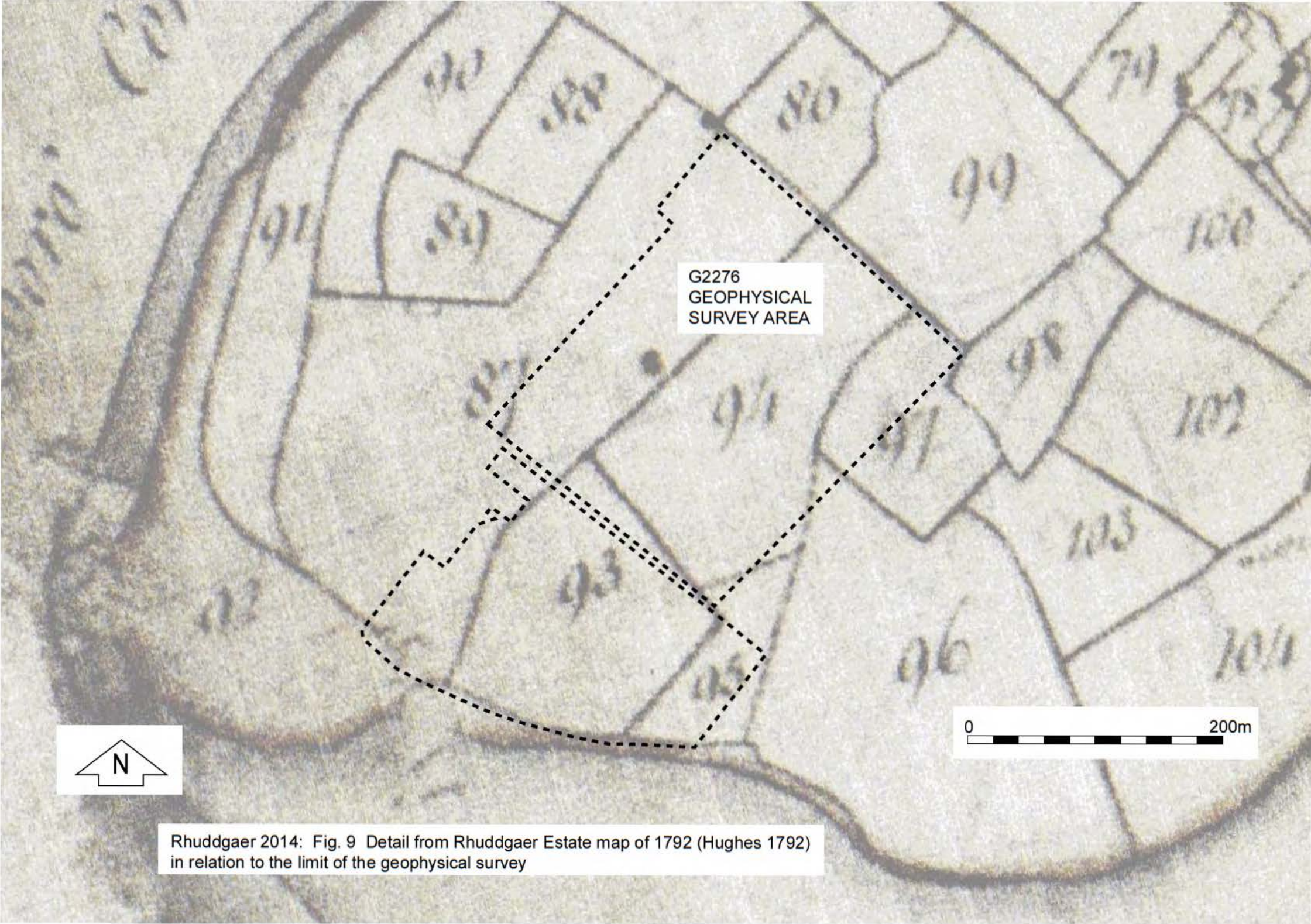
Rhuddgaer 2014: Fig. 6b general view of the building after removal of the blown sand layer. From the east. Scales with 20cm divisions

Rhuddgaer 2014: Fig. 7a Trench 2, the west wall of the building showing the footing slabs. From the west. Horizontal scale with 20cm divisions. Vertical scale with 1cm divisions

Rhuddgaer 2014: Fig. 7b Trench 4, the south wall of the building showing the stone tumble lying on the floor. From the north. Scale with 20cm divisions.

Rhuddgaer 2014: Fig. 8a Trench 1 section showing the buried old ploughsoil and negative lynchet immediately south of the field boundary. From the west. Scale with 1cm divisions

Rhuddgaer 2014: Fig. 8b Excavation trench after re-instatememt.



Rhuddgaer 2014: Fig. 9 Detail from Rhuddgaer Estate map of 1792 (Hughes 1792) in relation to the limit of the geophysical survey

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