

New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey

Archaeological Assessment and Geophysical Survey: Phase 1 Field Evaluation



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey

Archaeological Assessment and Geophysical Survey: Phase 1 Field Evaluation

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Prepared for: Cyngor Ynys Mon

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Written by: Robert Evans, Dave Hopewell and Neil McGuiness

Illustration by: Neil McGuiness




Cover Photo: View towards Newborough from Bryn Howydd (G2467_024)

Cyhoeddwyd gan Ymddiriedolaeth Archaeolegol Gwynedd
Ymddiriedolaeth Archaeolegol Gwynedd
Craig Beuno, Ffordd y Garth,
Bangor, Gwynedd, LL57 2RT

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Cadeiryddes/Chair - Yr Athro/Professor Nancy Edwards, B.A., PhD, F.S.A.
Prif Archaeolegydd/Chief Archaeologist - Andrew Davidson, B.A., M.I.F.A.

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	Role	Printed Name	Signature	Date
Originated by	Document Author	ROBERT EVANS		25/5/16
Reviewed by	Document Reviewer	DAVE MCNEIL		25/5/16
Approved by	Principal Archaeologist	JOHN ROBERTS		25/05/16

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SUMMARY

An archaeological assessment and geophysical survey was carried out by Gwynedd Archaeological Trust for Cyngor Sir Ynys Môn on land at the proposed site for the New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey. The site is currently a green field site, consisting of two fields set aside for pasture, and lies off the northeast side of the B4421.

The assessment identified that the land lay to the north of the historic core of the medieval town of Newborough, but within an area that was likely to have formed part of the town fields, with evidence of medieval strip fields having been identified in close proximity to the assessment area. The assessment area was identified as having been the property of Lord Boston's Lligwy estate from at least the latter part of the 18th century. A Lligwy estate map of 1782 shows a house and associated paddock in the southwest of the assessment area, which is not shown on any later mapping. The Ordnance Survey maps of the later 19th and early 20th centuries shows the current area boundary, along with additional hedgerows that have been grubbed out in recent times. There appears to be a palimpsest of former field boundaries which were formerly present on the site.

The Walk-over survey identified that the surviving field boundaries could be medieval in origin, and possibly evidence for former strip field agriculture within the two fields.

The geophysical survey noted interference in two parts from strongly magnetic bedrock, indicating significant interference from the sub-surface geology, which was not visible on the surface.

Linear anomalies were also identified, some of which probably represent field boundaries shown on the historic mapping and aerial photographs. Further linear anomalies probably represent field drains, and a former trackway was identified. A probable former small quarry was noted in the northwest corner of the site. Thirteen areas of activity identified in the geophysical survey were recommended for targeting with trial trenching during Phase 2 of the field evaluation.

Basic recording of all field boundaries within the assessment area (Feature 1) in advance of any ground works followed by drawn sections through any boundary breaches if sufficient information revealed is recommended. It is recommended also that the possible house site

(Feature 2) is targeted for archaeological evaluation trenching during Phase 2 of the field evaluation.

1 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Cyngor Sir Ynys Môn* to undertake a geophysical survey and desk based assessment as phase one of a two phase field evaluation at the proposed site for the New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey (NGR 242475 366010). The site is currently a greenfield site, consisting of two fields set aside for pasture (Figure 01).

The requirements were for a two phase field evaluation consisting of:

- Phase 1: A desk based assessment and geophysical survey
- Phase 2: Trial trenching

This report relates only to Phase 1, and an updated project design will be submitted for Phase 2 along with the report for this phase. Both this design and the updated project design will need to be approved by the Gwynedd Archaeological Planning Services (GAPS) Archaeologist.

All work was planned, managed and undertaken by Gwynedd Archaeological Trust in accordance with the following standards and guidance:

- English Heritage, 1991. Management of Archaeological Projects (MAP2)
- English Heritage, 2006. Management Of Research Projects in the Historic Environment (MORPHE)
- Chartered Institute for Archaeologists, 2014. Standard and guidance for historic environment desk based assessment
- Chartered Institute for Archaeologists, 2014. Standard and guidance for geophysical survey

2 METHODOLOGY

2.1 Desk Based Assessment

A desk based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the intertidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage....Significance is to be judged in a local, regional, national or international context as appropriate” (ClfA 2014b, 4).

The desk based assessment involved a study of the following resources:

1. The regional Historic Environment Register (Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, Gwynedd LL57 2RT) was examined for information concerning the study area. This included an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary information held within the HER.
2. The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) was checked for sites additional to the HER, and for aerial photographs held.
3. Online catalogue search of the National Library of Wales.
4. Archive data and maps, were consulted in the regional archives at the Anglesey Archives Service, Llangefni and at the Bangor University Department of Manuscripts.

2.2 Walk-over Survey

Part of the assessment involved a walkover of the study area. The aims of this stage of the work were to:

- verify the results of the desktop study.
- identify any further archaeological sites which may exist as above ground features
- photograph and record the present condition of all sites noted.

The walkover survey was carried out on the 17th May 2016 and visited the assessment area that consisted of two fields. A descriptive record was maintained on GAT *pro formas*. A photographic record was taken of the site, including all identified features and field boundaries. A complete table of metadata with details of each image, including descriptions and directions of shot was produced using Microsoft Access; a total of 31 images were taken (archive ref. G2467_001 to G2467_031; cf. Appendix II);

2.3 Geophysical Survey

2.3.1 Summary

The survey was carried out in a series of 20m grids, which were tied into the Ordnance Survey grid using a Trimble high precision GPS system. The survey was conducted using a Bartington Grad 601-2 dual fluxgate gradiometer with a 1.0m traverse interval and a 0.25m sample interval.

2.3.2 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 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.

2.3.3 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 is 1.0m and readings are logged at intervals of 0.25m along each traverse. 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.

2.3.4 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.

2.3.5 Aims

The results of the geophysical survey will be used to decide on the location of the trial trenching to be carried out as part of Phase 2.

2.4 Data processing and report compilation

Following completion of the stages outlined above, this report was produced incorporating the following:

1. A non-technical summary
2. The results of the desk based assessment
3. Copies of historic maps where copyright restrictions allow
4. Results of the Walk-over survey
5. A map locating all recorded features and the extent of the Walk-over survey
6. Geophysical Survey Results
7. An assessment of the impact of the development on the known or potential archaeological resource
8. Recommendations for more detailed field survey if appropriate
9. Conclusions
10. Sources
11. Summary list of sites
12. Photographic index
13. A gazetteer of all sites and features

Illustrations include plans of the location of the study area and archaeological sites. Historical maps where available have been included.

A copy of this report will be sent to Gwynedd Archaeological Planning Services and the National Trust. It will be to the Historic Environment Record located at the Gwynedd Archaeological Trust. Submission of digital information to the Royal Commission on the Ancient and Historical Monuments of Wales will be undertaken in accordance with the RCAHMW Guidelines for Digital Archives Version 1 (2015). Digital information will include the photographic archive and associated metadata.

3 RESULTS

3.1 Desk-Based Assessment

3.1.1 *Location and Geological Summary*

The proposed site of the new Ysgol Bro is currently a greenfield site, consisting of two fields set aside for pasture and covering an area of approximately 28,571 m². It is located on the north eastern edge of the town of Newborough, on Anglesey (NGR 242475 366010) off the B4421. The fields are bounded by further pasture land to the north, east, and west; by the farm of Bryn Howydd to the northwest; housing to the southeast; and a road to the south (Figure 01).

The underlying geology comprises Central Anglesey Shear Zone and Berw Shear bedrock, overlain by superficial deposits of Devensian Till (British Geological Survey, Geology of Britain Viewer). Soils consist of typical Brown Earths of the East Keswick 1 Association (BGS 1980), overlain in many cases with blown sand.

3.1.2 *Statutory and Non Statutory Designations*

The assessment area does not lie within a landscape of Outstanding Historic Interest in Wales (Cadw/ICOMOS 1998).

The nearest Scheduled Ancient Monument (SAM) is the site of Llys Rhosyr (PRN 899; SAM AN129; SH 419653), which lies 870m southeast of the assessment area.

There are ten listed buildings within the town of Newborough itself and 500m from the assessment area. These are listed in Appendix III, but include the Grade II* listed Parish Church of St. Peter (PRN 2623; LB5553; SH41986546) which is of medieval origin, and contains three sepulchral slabs and other features of 14th century date. The remaining listed buildings are of 18th to 20th century date, and include the Grade II* Listed Pritchard Jones Institute and six associated cottages around a courtyard in front of it (PRN 34931; LB20554-20564; SH 42526580), built in 1905 and endowed by John Prichard Jones 'as a free gift forever to the people of Newborough for their use and for the use of the adjoining parishes'. The Grade II listed war memorial (LB20573; SH 42536571) is located as the centrepiece of the courtyard in front of the Pritchard Jones Institute.

The Grade II Listed Capel Ebeneser was built in 1785 and is of rectangular Renaissance design (PRN 7827; LB20552; SH 42506553). A Grade II listed chapel house and Sunday School building lies adjacent to it (LB20556; SH42496555).

Sites on the Gwynedd HER, and on the Royal Commission's NMR within 500m of the assessment area are listed in Appendix III.

The assessment area lies 250m northeast of the Anglesey Area of Outstanding Natural Beauty (Llanddwyn area), and 630m east of the Newborough Warren Site of Special Scientific Interest (SSSI).

3.1.3 Environmental Remains and Soil Morphology

The surface soil morphology is likely to be a brown loamy sand overlying other sand rich deposits, as has been encountered in other archaeological excavations in the vicinity of Newborough. The value of environmental remains in previously undisturbed ground that will be reduced is unknown; there were no clear areas of wetland identified within the site and the survival of peat deposits is thought to be unlikely, but if anything in the way of peat deposits is encountered, then a sampling strategy will be required to deal with this.

3.1.4 Historical and Archaeological Background

3.1.4.1 Prehistoric and Roman

There is little direct evidence for prehistoric activity within Newborough, however Mesolithic to Bronze Age activity has been recorded from Newborough Warren (Lynch 1991, 116-117, 122) to the southeast of Newborough. The excavations at Rhosyr, although mainly being of medieval date, did recover three flint flakes which are assumed to be prehistoric in date (Richards 1999, 575). A Neolithic burial chamber has been suggested at Rhoscolyn (PRN 2629), however the site has not been identified on the ground. A late prehistoric hut group is located at Llangeinwen (PRN 2639; SH 43006500). The fact that samian ware sherds have been found at this location in historic times suggests that it may be occupied into Roman times. Again the location of this site on the ground is not known in detail.

3.1.4.2 Medieval and Post-medieval Newborough

Rhosyr

The earliest reference to Rhosyr is a reference to a Norman force sacking the churches of St. Peter and St. Mary in 1157 (probably Rhosyr and Llanfair-yn-cwmwd) (Carr 1982, 267). Llywelyn ab Iorwerth signed a charter from Rosyr in 1237 and Edward I stayed at Rhosyr on the 29th July 1283 (Johnstone 1995, 50). Rhosyr was the *maerdref* of the commote of Menai, with demesne lands of 600 acres. There was a royal court, which appears to have been enclosed, and which was probably accompanied by a nucleated bond settlement nearby. There are references to the bond tenant's obligations to fence the court, and build some of the lord's buildings within it. The *llys* was located southwest of the later town, near to the church, and building remains were still visible into the 18th century (PRN 899; SH 41826614; SAM).

Two seasons of excavation at Cae Llys resulted in the identification of a number of buildings and the extent of the *Llys* is now more fully understood. Within the perimeter wall of the *Llys* three buildings were investigated. The largest, orientated east west, measured 20m by 14m and appeared to have been of at least two phases. A second building identified to the south in 1995 was 13m by 7.5m on the same alignment. A perimeter wall enclosing a rectangular enclosure was also identified, along with a third substantial building in the northeast corner of the enclosure. The large building was probably a hall and the smaller one to the south possibly a private chamber. The dimensions of the hall without the other buildings are comparable to the hall at the medieval Bishop's Palace at Gogarth on the Great Orme (Johnstone 1997, 66-67).

Newborough

In 1303, Edward I resettled the displaced tenants of Llanfaes, whose town was removed to make way for Beaumaris, on 90 acres of land on and around the *maerdref* of Rhosyr, creating the new town of Newborough (PRN 3195; Carr 1982, 258). Although the plantation was an English instigation, its inhabitants were almost exclusively Welsh. The inhabitants of the town received their charter by Michaelmas that year (29th September), indicating that the town was well established by then. At least 99 burgage (house and garden) plots were laid out, partly encompassing the holdings of the Rhosyr tenants, who the Newborough burgesses attempted to have removed in 1305. The accounts of the 1304-5 record the construction of a new mill and indicated that the borough rents amounted to £8 8s 6d a year. In 1309 and again in 1331 the commote of Menai was granted to Queen Isabella, and subsequently in 1345 to Edward III. On 6th December 1332 186 acres of the borough land

was lost to a sand storm and another 28 acres and 11 cottages of the king's tenants was also lost at this time (Soulsby 1983, 195).

In 1349 the burgesses secured the right to elect their own mayor, and in the extent of 1352 it was noted that there were 58 named taxpayers, seven of whom owned six or more plots (*ibid.*, 195). This suggests that an urban elite was starting to develop.

The town of Newborough had the same characteristics as most planted boroughs. The burgage plots were set out along two streets which was crossed at right angles by the main northwest southeast orientated street. There was no castle at the town and neither is there any evidence that it was defended with either walls or a bank and ditch. The existing parish church of St. Peter (PRN 2623; SH 41986546) was used as the town church, which had previously served the inhabitants of Rhosyr. No early buildings from the town have survived, however the mainly 19th century buildings on the plots are strikingly small as there has been little coalescing of the original burgage plots (Soulsby 1983, 195).

The town remained important throughout the remainder of the middle ages, despite suffering during the Glyndŵr uprising, which left several of the burgage plots unoccupied during the reign of Henry V (Lewis 1912, 208).

In 1507 Henry VII enhanced the status of the town by transferring the county courts from Beaumaris (Haslam *et al* 2009, 201). This was reversed in 1549 when it was said that the town had become impoverished and was no longer able to support its position within the shire. Nevertheless a survey of 1547 indicated a sizeable town of 93 houses, 12 crofts, 13 gardens and an orchard (Pennant 1783, 234).

The decline of the town's financial position was attributed to extensive sand drifts which had gradually been covering large areas of the surrounding land. As early as 1331 the drifts had destroyed several farms and 186 acres of pasture. In 1561, to prevent further destruction, Elizabeth I granted an order forbidding the pulling up of marram grass, which alone could stave off further encroachment. This protection of the grass was beneficial to the town also in that it provided the inhabitants with the material to carry out mat and basket weaving, for which the town had become noted. In July 1629 the Corporation of London, which had acquired 'the township of Rhosfayr (sic)' from the crown, sold the properties to William Owen of Brondeg, subsequently passing to the Bodowen estate (Johnstone 1995, 51). The assessment area itself, to the north of the town but within the probable area of the town fields, passed into the hands of the Lligwy estate of Lord Boston, and is shown in detail on an estate map of 1782 (Lligwy Additional MSS 1123, Figure 03).

By the end of the 17th century Newborough had lost most of its urban character and functions. The shire hall building is believed to have been in ruins by 1739, and has since been lost. Thomas Pennant in 1783 stated that ‘the glory of Newborough is now passed away [and] now subsists by a manufacture of mats’ (Pennant 1783, 234-235). Fenton in 1811 described the town as ‘a wretched place’, and even the weekly market had been abandoned by the early 19th century (Fenton 1917, 270).

Archaeological evaluation was carried out in 1996 to the rear of Church Street Car Park, Newborough, to the south of the current study area within the medieval town which identified the possible presence of burgage plot boundaries (PRN 40357; Johnstone 1996, 4). A geophysical survey at Hendre Bach on the south side of Church Street in 2002 did not reveal any significant archaeological features (PRN 40612; Hopewell 2002). Work off Church Street in 2013 identified activity related to buried soils, ditches and slots for timber buildings, which probably relates to agricultural and industrial activity carried out to the rear of properties within burgage plots. It is thought likely that this area is of great significance in the understanding of the interaction between the settlement of the bond tenants of the *maerdref* of Rhosyr and the development of Newborough (PRN 59776 and 59777; Brookes 2013, 6). *CR Archaeology* has carried out works adjacent to Ty Capel, Chapel Street, Newborough, which lies approximately 500m south of the current study area, where structural remains, including house platforms were encountered, along with a possible small cist grave. These are believed to relate to the medieval period and are thought to be wall and yard remains. Within the roughly laid floor area of the structure were found four gritstone hand querns and a grit millstone, along with medieval pottery. These are thought to be highly significant evidence of agricultural and domestic activity behind the properties within the burgage plots (Rees 2015a). They have also carried out a further phase of evaluation work within 1 hectare of land at Church Street, Newborough, where archaeological remains were uncovered in three of five evaluation trenches, including the remains of a medieval structure and a yard area with midden material, with the yard area being very similar in character to that uncovered on Chapel Street (Rees 2015b). This work indicates that the burgage plots themselves within the town of Newborough have good surviving archaeology both in terms of structural evidence and finds and are a valuable resource for understanding a medieval planned town and the varied activities carried out to the rear of the houses.

With the exception of the church, the majority of the surviving buildings within Newborough are of post-medieval and modern date, although often using the medieval burgage plots. The following sites, of 19th and 20th century date, are noted on the Gwynedd HER in the vicinity of the assessment area:

- Primary Reference Number (PRN 8111) – Post-medieval Baptist Chapel, Pendref Street, located to the SSW of the site at NGR SH4244 6568;
- Listed Building 20552 – Post-medieval Chapel, Capel Ebenezer, Church Street, Grade II, located to the south of the site at NGR SH4250 6553;
- Listed Building 20554 – Pritchard Jones Institute, Grade II*, located to the south of the site at NGR SH42523 65807;

A fairly coherent area of enclosed strips and furlongs can be seen around Newborough (Kenney 2015, 11; Figure 5), along with the medieval plan of Newborough itself with its long narrow burgage plots. The field system around the town is probably largely medieval in origin (Johnstone 1997). Some of the strips of the open fields are preserved in the modern boundaries and even where the fields are fairly large and rectangular their alignment probably reflects the orientation of the open field strips. Some additional boundaries can be seen on the 1st edition 25 inch Ordnance Survey Maps (Kenney 2015, 11-12), and the use of the place name *llain* is also indicative of strip fields. Kenney suggests that the northern boundary of the study area may be medieval in origin and related to the field system (*ibid.* Figure 5; Feature 1).

3.1.5 Cartographic Evidence

There is a significant amount of surviving cartographic evidence for the town of Newborough and the surrounding area, particularly from the Penrhos Estate dating from 1788 and 1801. However these do not depict areas beyond the boundary of that estate, but do show a market cross at the centre of the crossroads in the town. The study area itself was an isolated parcel of the Lligwy Estate of Lord Boston from the 18th century, and an estate map survives from 1782 within the Lligwy papers (Bangor Archives, Lligwy Additional MSS 1123, Figure 03). This shows that the field boundaries to the east, around Field No. 1, are the same as those currently noted, with an apparent boundary to former medieval burgage plots to the south, which are now covered in modern development. A small sub circular enclosure along with a rectangular plot to the north is noted adjacent to the former road (now the B4421). It is shown as a house enclosure with associated plot (Figure 03). None of this is visible on the 1845 tithe map or any latter mapping, so may represent an early house plot of some significance (Feature 2). The field boundaries noted dividing up the field between 1 and 2 does not match exactly with the latter mapping. This is probably due to the presence

of the small house and garden plot. It is also shown that the western side of the main street was densely packed with housing at this time.

The tithe map of 1845 shows the current field boundaries to the north, east and the burgage plots to the south (Figure 04). It does not show the field boundaries to the west, but this is probably because only the main property holding boundaries are shown. The study area, with an additional area of land of similar size to the southwest, is depicted as field 228, which is described in the apportionment as being the property of Lord Boston, in the occupation of Owen Owens. It is named as *Yr House* and covered 11 acres 2 roods and 31 perches. It is possible that *Yr House* is a reference to the house shown on the 1782 map, but lost by 1845. Some individual strips of field are indicated on the tithe map, although this is in areas where their ownership is separate from the surrounding land.

The 1st edition 25 inch County Series Ordnance Survey map of 1889 (Figure 05) shows the current property boundaries, with the addition of field boundaries between fields 229 and 230, 264 and 265, and 229 and 270-272, which have subsequently been grubbed out. The later ones between 229 and 270-272 are particularly interesting because they suggest that there may formerly have been house plots along the street frontage at this point. These boundaries are shown also on the 2nd edition 25 inch map of 1900 (Figure 06) and the 3rd edition one of 1926 (Figure 07), which show little change from the 1st edition map within the study area. The field boundaries noted on the 1st to 3rd edition Ordnance Survey maps are still present on a 1945 RAF vertical aerial photograph (cf. section 4.5; Figure 08).

Seven sites recorded on the Gwynedd HER within Newborough are shown on Figure 02, and listed in Appendix III.

3.1.6 Artefactual Potential

There is considered to be some potential for the survival of artefactual remains from the site from the prehistoric to post-medieval periods. Whilst early archaeology has not been located within the immediate landscape of the site, evidence from the surrounding area has revealed a very significant amount of medieval archaeology, so medieval artefacts may be recovered. The area is thought to have been intensively used and occupied from the medieval period, and there is also evidence for medieval and post-medieval structures moderately close to the site. The recovery of medieval and post-medieval artefacts has therefore to be considered moderately likely, particularly in the vicinity of Feature 2.

3.1.7 Aerial Photographs and LIDAR (Figures 08-09)

RAF vertical aerial photograph 106G/UK655 frame 3081 taken on 13th August 1945 of Newborough was examined. It was a clear vertical image which did not show significant additional archaeological information, however the east-west boundary crossing the eastern field and field boundaries to the south (Field 2) shown on the 1st to 3rd edition Ordnance Survey 25 inch maps (Figures 05 to 07) can be seen to have still been present in 1945. Field 1 would appear to have been ploughed and to be under cultivation at the time the photograph was taken, and for there to be a small structure in the northwest corner of it (Figure 08). This may explain the disturbed ground noted in this area during the Walk-over survey.

LIDAR data coverage at 50cm DTM was available for the area under assessment, and was observed at <http://lle.wales.gov.uk/>. This was examined, and possible evidence for the former field boundaries noted on the historic maps, and possible ridge and furrow agriculture was identified (Figure 09). The possible remains of ridge and furrow agriculture were noted, these on a southwest northeast orientation. No new archaeological sites of any other type were identified however, nor was there any evidence of the house and enclosure shown on the 1782 map (Feature 2; Figure 03).

3.2 Site visit and Walk-over

3.2.1 Introduction

A site visit was made on 17th May 2016 to the study area, when the conditions were sunny and the ground conditions firm and dry. The two fields within the study area are indicated by Field 1 (western field) and Field 2 (eastern field), which are shown, with the study area outlined, on Figure 02.

3.2.2 Field 1

Field 1 was a field of improved grassland, bounded to the southeast by a mortared fieldstone rubble wall with cock and hen capping, 1.6m high by 0.6m wide, with a standard width modern gateway in the southwest corner of the field (Plate 01). There was also a remnant of hawthorn hedging along the road edge, southeast of the mortared stone wall (Plate 02). The hawthorn was mature and was on top of a shallow clawdd, with an approximate 0.5m drop to road level. The southwest field boundary was approximately 1.7m high and up to 3m wide and was mixed bramble and hawthorn, which was taller to the northwest, where it reached the boundary with Bryn Howydd. The north eastern boundary consisted of a hawthorn and bramble hedge, but in this case on a clawdd 0.8m high and 1.5m wide, with the hawthorn extending 0.6m above the clawdd. To the rear of Bryn Howydd there is no clawdd and sycamore trees were present, suggesting that this area had been modified. This boundary also extends along the northern edge of Field 2 (Plate 03). The northwest to southeast boundary on the eastern side of the field consisted of a clawdd with rubble stone facing of medium sized uncut blocks (up to 0.4m by 0.2m) and 0.8m high (Plate 04). The clawdd is somewhat collapsed now, with up to 3m high hawthorn above it, but was clearly well built. There was a 6m wide opening in this field boundary that may be ancient in origin (Plate 05).

This field was an improved pasture field, with a gentle slope from the northwest to southeast, the lowest point being the boundary between the two fields to the east. The upper north eastern portion of it appears to be more undulating, which may be explained by the presence of a structure in this area on the 1945 aerial photograph (*cf.* Section 4.5). All the boundaries appear to have some antiquity, although that to the southwest is the most modified, particularly close to Bryn Howydd.

No specific new archaeological features were noted within the field, although there is possible evidence for linear features running northeast southwest, which may represent former field boundaries or ridge and furrow agriculture (Plate 06).

3.2.3 *Field 2*

Field 2 was an irregular polygonal field to the east of Field 1. It shared a south western boundary with Field 1. To the east and south it had irregular lengths of boundary. To the west there was a modern boundary fence with a house and garden. To the east the boundary consisted of a bank up to 1m in height with elder and hawthorn (Plate 07). The modern houses to the southeast appeared to have been constructed on a substantial bank, possibly house platforms that are visible on the 1782 estate map (Figure 03, Plate 08). To the northeast of Gweithdai Rhosyr the field boundary consisted of a clawdd up to 1m high with occasional facing stones topped with hawthorn. This has a sinuous course, following the ancient boundaries shown on the 1782 map (Plate 09).

The southern portion of this polygonal shaped field lies outside the assessment area, although the Ordnance Survey 1st edition map (Figure 05) shows that there was once a field boundary here. There were gentle undulations in the field suggestive of former field boundaries and possible ridge and furrow agriculture. No other archaeological features were noted, with the exception of the boundaries to the east, which appear ancient and correspond with the historical mapping evidence.

3.3 Geophysical Survey

3.3.1 *Survey Conditions.*

The survey was carried out in a single block of 20m grids across the 2 fields of improved pasture. There were no major obstacles apart from a denuded hedge and clawdd separating the two fields. Initial scanning showed that there was interference in two parts of the survey from strongly magnetic bedrock. This was not visible as outcrops on the surface. Pegs and grid markers could be pushed into the ground with ease indicating fairly deep, sandy topsoil.

3.3.2 *Processing*

The results are presented on three different grey-scale plots. Figure 11 consists of raw data cropped to $\pm 50\text{nT}$ and shows the extent of the interference from the bedrock. Figure 12 is a conventional grey-scale plot with minor corrections for mismatched traverses (de-stripping). The data was clipped to $\pm 15\text{nT}$. The strongly magnetic bedrock areas were processed separately and recombined with the rest of the data after processing in order to minimise processing artefacts caused by the large areas of high magnitude responses. Figure 13 shows the complete data-set after processing with a high-pass filter. This filter is designed to minimise the effects of large-scale anomalies while leaving smaller features unaltered. The very high flux density, in the range of many thousand nT, associated with the bedrock could only be compensated for across a limited area. A series of anomalies were detected across the survey and these are transcribed on the interpretation plot (Figure 14).

3.3.3 *Interpretation*

3.3.3.1 Geological Anomalies

3. This anomaly was produced by a very strongly magnetic feature, probably an igneous dyke. It is fairly well-defined suggesting that the magnetic rock is quite close to the surface. The anomaly produced readings of 3000nT ; the maximum the gradiometer will register. A typical archaeological anomaly is less than 15nT . This geological anomaly therefore dominated the results in this area, masking any potential archaeological anomalies.

4. A second strong anomaly also caused by strongly magnetic bedrock runs across the western side of the survey.

5-7. Minor variations in the background noise are best interpreted as being the result of natural variations in the subsoil or weakly magnetic bedrock

3.3.3.2 Archaeological Anomalies

8-9. A well-defined linear anomaly best interpreted as a former field boundary. A break may indicate a gate. The anomaly is well-defined at the northwest (8) and less well-defined (9) to the south of geological anomaly (4).

10. A well-defined linear anomaly aligned with an extant field boundary to the northeast. It is therefore likely to be a ploughed out continuation of this and survives as a low bank in the field.

11. An uneven linear band of magnetic noise leading to an existing gateway. This is best interpreted as a trackway.

12. A 20m x 25m area of strong randomly orientated magnetic responses. The land-owner reported that this was a former quarry. This has been infilled, presumably with material including ferrous objects.

13-14. Two narrow, roughly parallel, linear anomalies. Anomaly 14 appears to have slight protuberances to the east. These are narrow cut features; possibly land drains.

15. A slightly irregular linear anomaly. This runs to a stub of field boundary on the northwestern side of the survey and corresponds to a former field boundary shown on the first three editions of OS 25 inch county series maps.

16. A very direct and well defined linear anomaly corresponding to a linear hollow in the field. Its origin is unclear, possibly a trench containing a non-ferrous pipe or drain or alternatively a former eroded pathway.

17-18. A well-defined linear anomaly. The western end is, however, unclear; it appears to turn to run alongside anomaly 14, there is also a possible fragmentary continuation in a straight line across the south western field towards the southern end of anomaly 14, a cut feature, possibly a ditch or drain.

19. An area of magnetic noise. A narrow circular feature is faintly discernible on the clipped grey-scale plot Fig 12. This is poorly defined and could merely be a natural subsoil feature or random arrangement of stones. This anomaly requires further assessment (trial trench)

20. A small discrete circular anomaly. This type of anomaly could be produced by a large weakly-magnetic stone, a pit, or a deeply buried piece of iron.

3.3.3.3 Ferrous anomalies

A scatter of small ferrous anomalies is routinely detected in a gradiometer survey. These are visible as small half black and half white dots on the grey-scale plot. They are a result of small pieces of ferrous rubbish within the topsoil and have not been transcribed. There is a particular concentration alongside the road caused by objects discarded from cars.

21-22 Two strong ferrous anomalies caused steel stays and other hardware on power line poles.

3.4 Gazetteer of Features

The features listed below (located on Figure 15) were identified during the analysis of the cartographic evidence and field visit at Newborough, with recommendations for further assessment and mitigatory measures, where appropriate (Features 1 and 2). Features identified as part of the geophysical survey are also included in the gazetteer (Features 8-20), with the exception of purely geological ones (Features 3-7). The use of (C) in the grid reference indicates that the reference given is the central point of linear or larger more complex features; (A) indicates an approximate location. Definitions of the categories used and impact assessments are given in Appendix IV.

NB: The archaeological recommendations reflect the information currently provided by the client; any change to the scheme may require the recommendations to be reconsidered.

FEATURE 1

Site Name: Field Boundaries

Grid reference: SH 42476607 (C)

Period: Medieval/Post-medieval

Category: C

Impact: Significant – the development works are likely to involve the removal of some field boundaries

Description: The field boundaries consist of *clawdd* earthen banks with stone facings, usually topped with hawthorn. These are prevalent to the north and east of the site, and the northwest southeast boundary dividing Fields 1 and 2. To the southwest of the assessment area, and south adjacent to the B4421, the boundaries appear modified, although remnants of earlier field boundaries remain. A modern gate and length of mortared stone wall are located in the southwest corner of the site. Some internal field divisions shown on the 1st to 3rd edition Ordnance Survey maps (Figures 05 to 07) have been removed, particularly in Field 2.

The surviving boundaries, particularly those to the east of the assessment area, are shown to have been present in 1782 (Figure 03) and may reflect early boundaries that go back to medieval times.

Recommendations for further assessment: None

Recommendations for mitigatory measures: Basic photographic record of all boundaries in advance of groundworks on site, and drawn sections through any boundary breaches if sufficient information revealed

FEATURE 2

Site Name: House plot and associated small garden plot

Grid reference: SH 4246865897(A) (this is taken from historic map evidence, so may involve error)

Period: Medieval/Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A curvilinear house plot orientated southwest northeast, with an attached sub rectangular garden plot orientated north south, and covering an area about 60m by 20m is shown on the **Lligwy Estate map of 1782** (Figure 3). A house with a chimney is depicted on the plot. It was located near to the southwest corner of the assessment area (Plate 01), and is not shown on the tithe map or any later mapping. The exact location of this feature is unknown, and no evidence for this feature was seen on the ground. It has been located 25m southwest of a widening of the road shown on all mapping, where the entrance to the house is thought likely to have come off the road from, and then the distance measures off the 1782 map measured. The probable location of the house plot is likely to have been significantly disturbed during the creation of the modern gateway and modern modifications to the B4421. It is possible however that archaeological evidence for this feature survives below surface level.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 8-9

Site Name: Linear anomaly

Grid reference: SH 4241965952 (C) and SH 4245865923

Period: Medieval/Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A well-defined linear anomaly best interpreted as a former field boundary. A break may indicate a gate. The anomaly is well defined at the northwest (8) and less well defined (9) to the south of geological anomaly (4). Feature 8 would appear to be shown on the 1782 Lligwy estate map (Figure 03), so is probably earlier than late 18th century in date.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 10

Site Name: Linear anomaly

Grid reference: SH 4246265954 (C)

Period: Medieval/Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A well-defined linear anomaly aligned with an extant field boundary to the northeast. It is therefore likely to be a ploughed-out continuation of this and survives as a low bank in the field.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 11

Site Name: Linear band of magnetic noise

Grid reference: SH 4245265962

Period: Medieval/Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: An uneven linear band of magnetic noise leading to an existing gateway. This is best interpreted as a trackway.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 12

Site Name: Area of strong, randomly-orientated magnetic responses

Grid reference: SH 4245265962

Period: Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A 20m x 25m area of strong randomly-orientated magnetic responses. The land-owner reported that this was a former quarry. This has been infilled, presumably with material including ferrous objects.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 13-14

Site Name: Two narrow, roughly parallel anomalies

Grid reference: SH 4241966031(C) and SH 4243266027(C)

Period: Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: Two narrow, roughly parallel, linear anomalies. Anomaly 14 appears to have slight protuberances to the east. These are narrow cut features; possibly land drains.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 15

Site Name: Slightly Irregular Linear Anomaly

Grid reference: SH 4247866035(C)

Period: Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A slightly irregular linear anomaly. This runs to a stub of field boundary on the north western side of the survey and corresponds to a former field boundary shown on the first three editions of OS 25 inch county series maps.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 16

Site Name: Well defined linear anomaly

Grid reference: SH 4249266025(C)

Period: Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A very direct and well-defined linear anomaly corresponding to a linear hollow in the field. Its origin is unclear, possibly a trench containing a non-ferrous pipe or drain or alternatively a former eroded pathway.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 17-18

Site Name: Well defined linear anomaly

Grid reference: SH 4250466010(C) and SH 4244866006 (C)

Period: Post-medieval

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A well-defined linear anomaly. The western end is, however, unclear; it appears to turn to run alongside anomaly 14, there is also a possible fragmentary continuation in a straight line across the south western field towards the southern end of anomaly 14, a cut feature, possibly a ditch or drain.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 19

Site Name: An area of magnetic noise

Grid reference: SH 4252665998(C)

Period: Unknown

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: An area of magnetic noise. A narrow circular feature is faintly discernible on the clipped grey-scale plot Fig 12. This is poorly defined and could merely be a natural subsoil feature or random arrangement of stones.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

FEATURE 20

Site Name: An area of magnetic noise

Grid reference: SH 4249066047(C)

Period: Unknown

Category: E

Impact: Significant – the development works are likely to involve work in the area of this feature

Description: A small discrete circular anomaly. This type of anomaly could be produced by a large weakly-magnetic stone, a pit, or a deeply buried piece of iron.

Recommendations for further assessment: Archaeological evaluation trenching

Recommendations for mitigatory measures: Await the results of the archaeological evaluation

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusion

An archaeological assessment was carried out on land at the proposed site for the New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey (NGR 242475 366010). The site is currently a green field site, consisting of two fields set aside for pasture.

The assessment identified that the land lay to the north of the historic core of the medieval town of Newborough, but within an area that was likely to have formed part of the town fields, with evidence of medieval strip fields having been identified in close proximity to the assessment area (Kenney 2015). The assessment area was identified as having been the property of Lord Boston's Lligwy estate from at least the latter part of the 18th century. A Lligwy estate map of 1782 (Figure 03) shows a house and associated paddock on the south western edge of the assessment area, which is not shown on any later mapping (Feature 2). The Newborough parish tithe map of 1845 (Figure 04) does not show all the field boundaries present because it depicts parcels of land ownership only. The Ordnance Survey maps of the later 19th and early 20th centuries shows the current area boundary, along with additional hedgerows that have been grubbed out in recent times. They are shown on an aerial photograph of 1945 (Figure 8). There appears to be a palimpsest of former field boundaries which were formerly present on the site (Feature 1; Figure 14).

The Walk-over survey identified that the surviving field boundaries could be medieval in origin, and possible evidence for former strip field agriculture within the two fields.

Basic recording of all field boundaries within the assessment area (Feature 1) in advance of any ground works followed by drawn sections through any boundary breaches if sufficient information revealed is recommended. It is recommended that the possible house site (Feature 2) is targeted for archaeological evaluation trenching during Phase 2 of the field evaluation.

The geophysical survey encountered no major obstacles apart from a denuded hedge and clawdd separating the two fields. Scanning showed that there was interference in two parts of the survey from strongly magnetic bedrock, orientated north northwest to south southeast

across the study area, indicating significant interference from the sub-surface geology (Anomalies 3-4, 15; Figure 14). This was not visible as outcrops on the surface.

Linear anomalies on various orientations were also identified (Anomalies 8-10; Figure 15), some of which probably represent field boundaries shown on the historic mapping and aerial photographs (Figures 03-08). Further linear anomalies probably represent field drains (Anomalies 13-18; Figures 14-15), and a former trackway (Anomaly 11; Figure 14-15). Anomaly 12 (Figure 14-15) is believed to have been a former quarry, and a structure is shown on this site on the 1945 aerial photograph. Other unidentified anomalies were also noted (19-20; Figure 14-15), and it is recommended that the Phase 2 trial trenching should target these.

4.2 Table of Sites and Recommendations

The table of sites below notes the sites identified during the assessment (Features 1 and 2) and those noted in the geophysical survey (Features 3-20), and recommendations for further assessment and any mitigation required.

No.	PRN	Name	Impact	Recommendations for Further Assessment	Recommendations for Mitigatory Measures
1		Field Boundaries	Significant	None	Basic photographic record of all boundaries in advance of groundworks on site, and drawn sections through any boundary breaches if sufficient information revealed
2		House plot and associated plot	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation
3		Strong magnetic geological feature	Likely	None	None
4		Strong magnetic geological feature	Likely	None	None
5-7		Minor geological variations	Likely	None	None
8-9		Well defined linear anomaly, probable former field boundary	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation

No.	PRN	Name	Impact	Recommendations for Further Assessment	Recommendations for Mitigatory Measures
10		Well defined linear anomaly, probable former field boundary	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation
11		Possible former trackway	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation
12		Area of randomly orientated magnetic responses	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation
13-14		Two possible land drains	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation
15		Irregular linear anomaly	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation
16		Possible pipe trench	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation

No.	PRN	Name	Impact	Recommendations for Further Assessment	Recommendations for Mitigatory Measures
19		Area of magnetic noise	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation
20		Discrete circular anomaly	Significant	Archaeological Evaluation Trenching	Await the results of the evaluation

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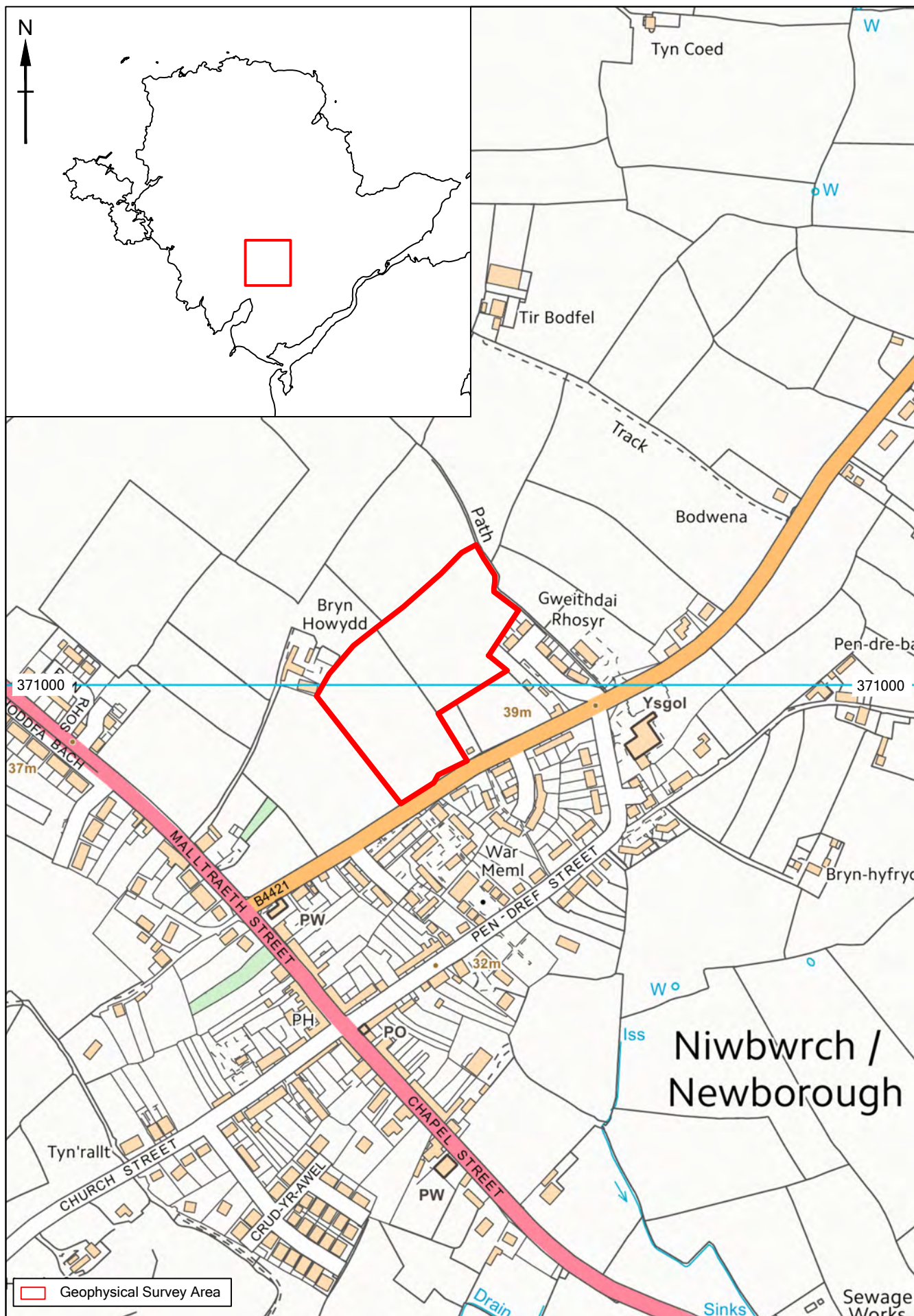
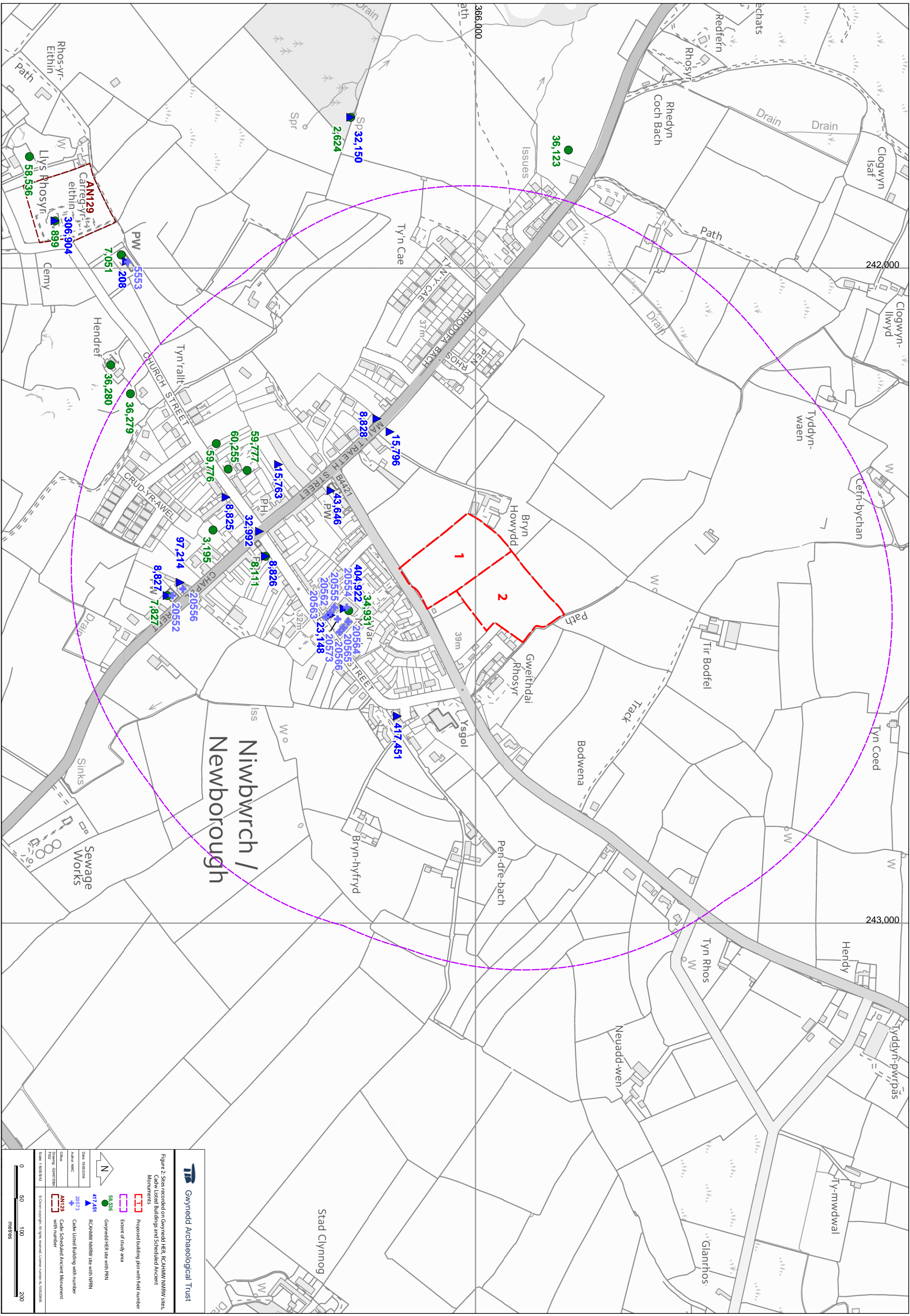
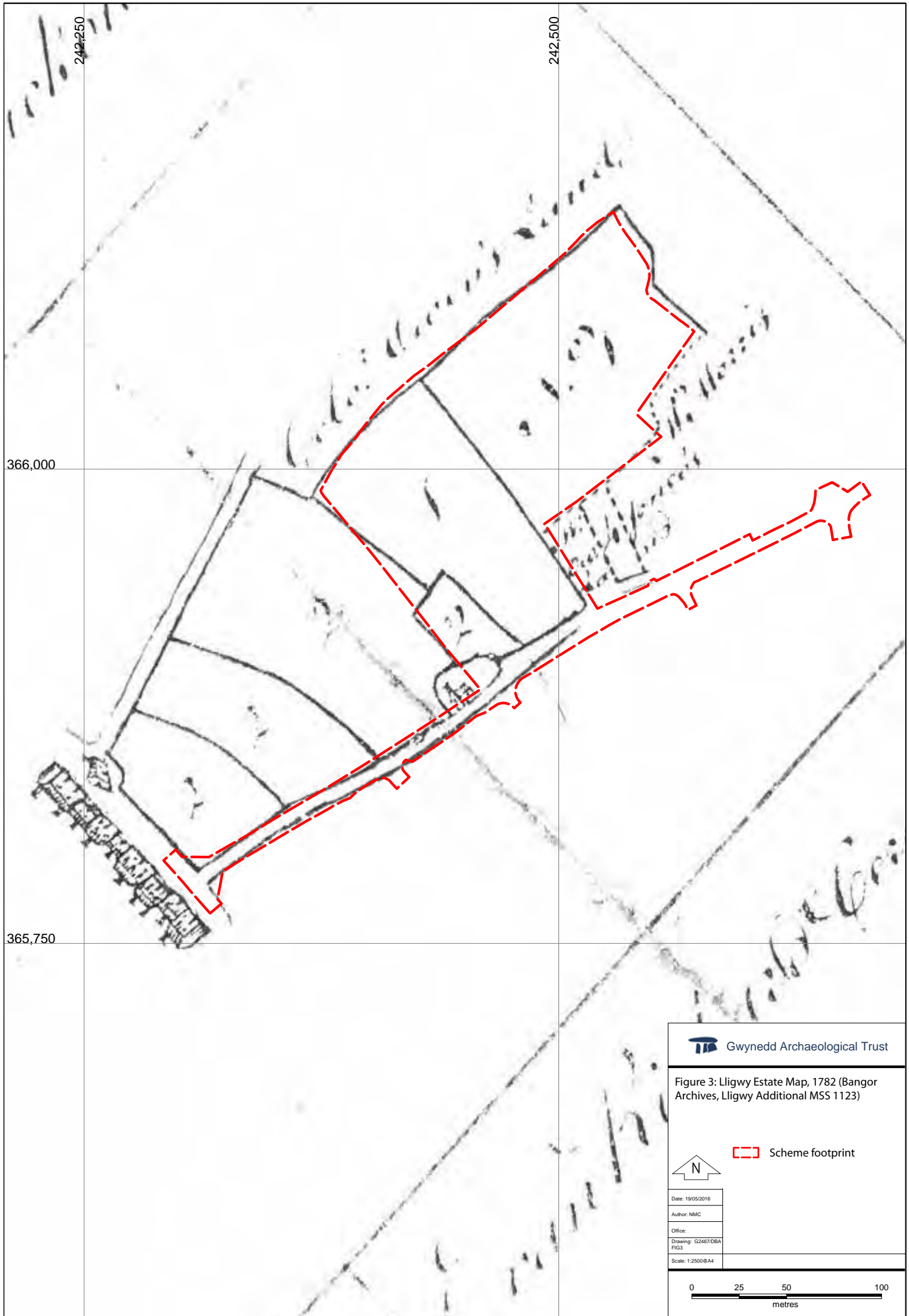


Fig. 1: Site Location








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Figure 3: Lligwy Estate Map, 1782 (Bangor Archives, Lligwy Additional MSS 1123)

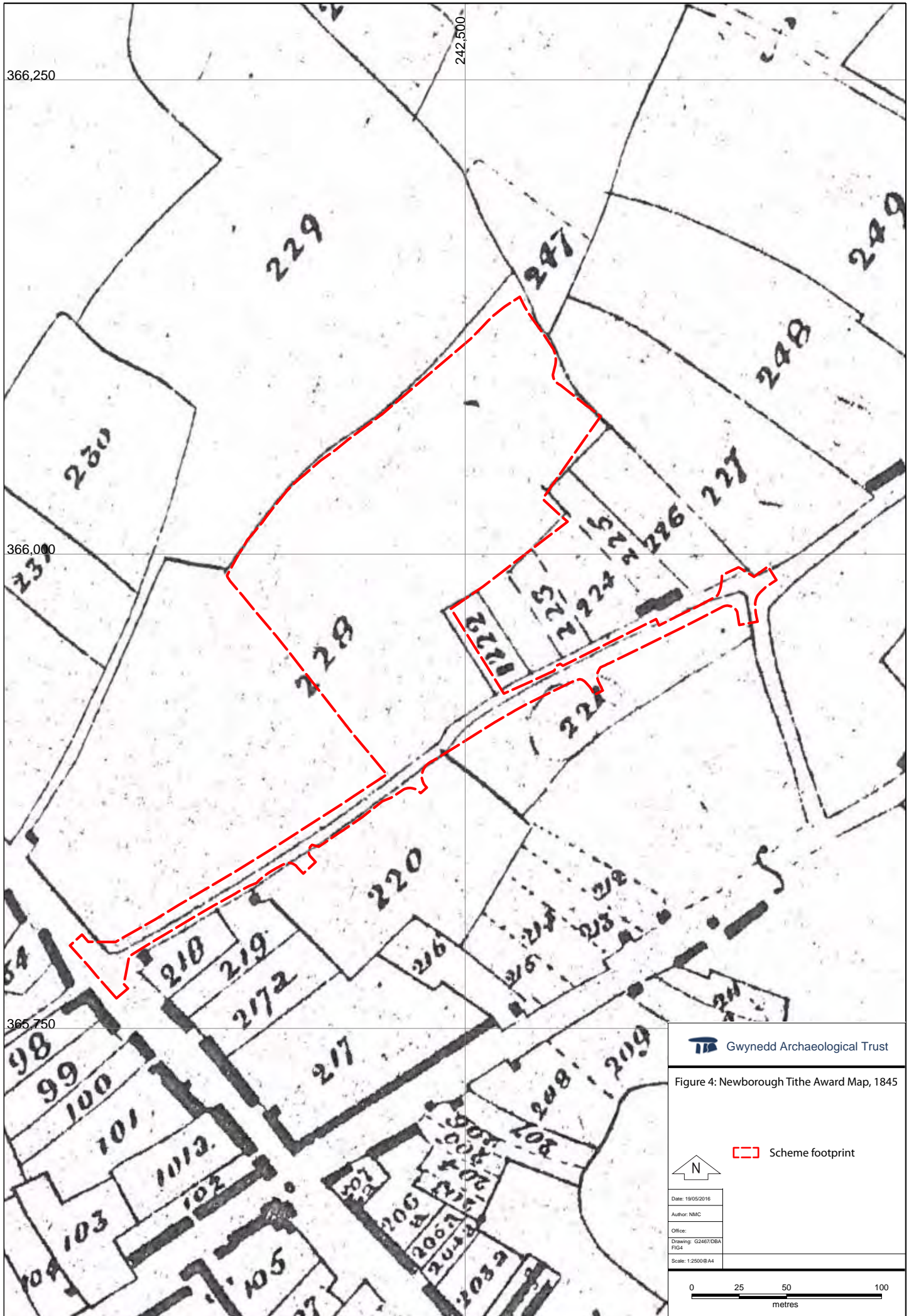
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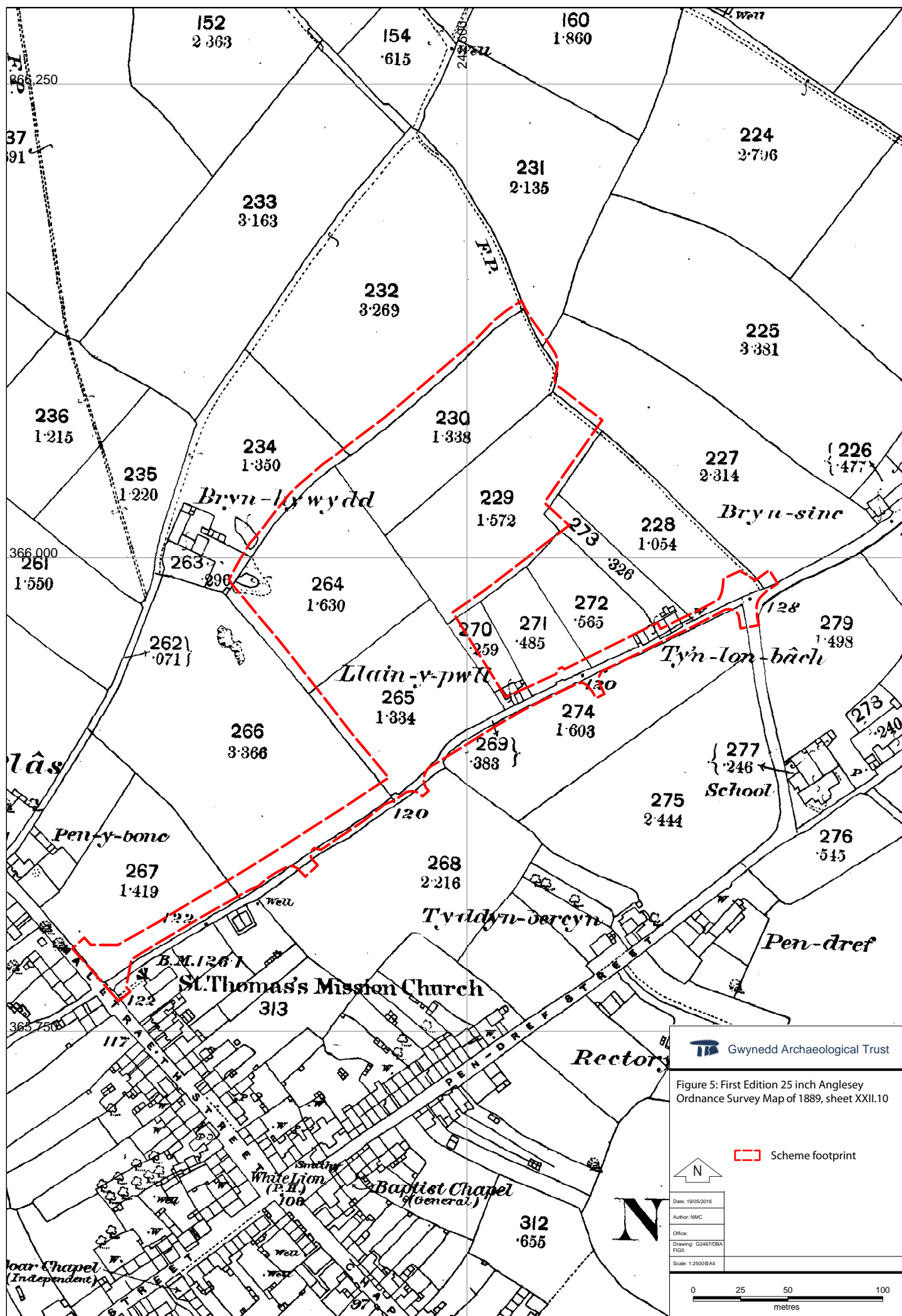
 Scheme footprint

Date: 19/05/2016
Author: NMC
Office:
Drawing: G2467/DBA FIG3
Scale: 1:2500@A4

02550100

metres





Gwynedd Archaeological Trust

Figure 5: First Edition 25 inch Anglesey Ordnance Survey Map of 1889, sheet XXII.10

Scheme footprint



Date: 19/05/2016

Author: NMC

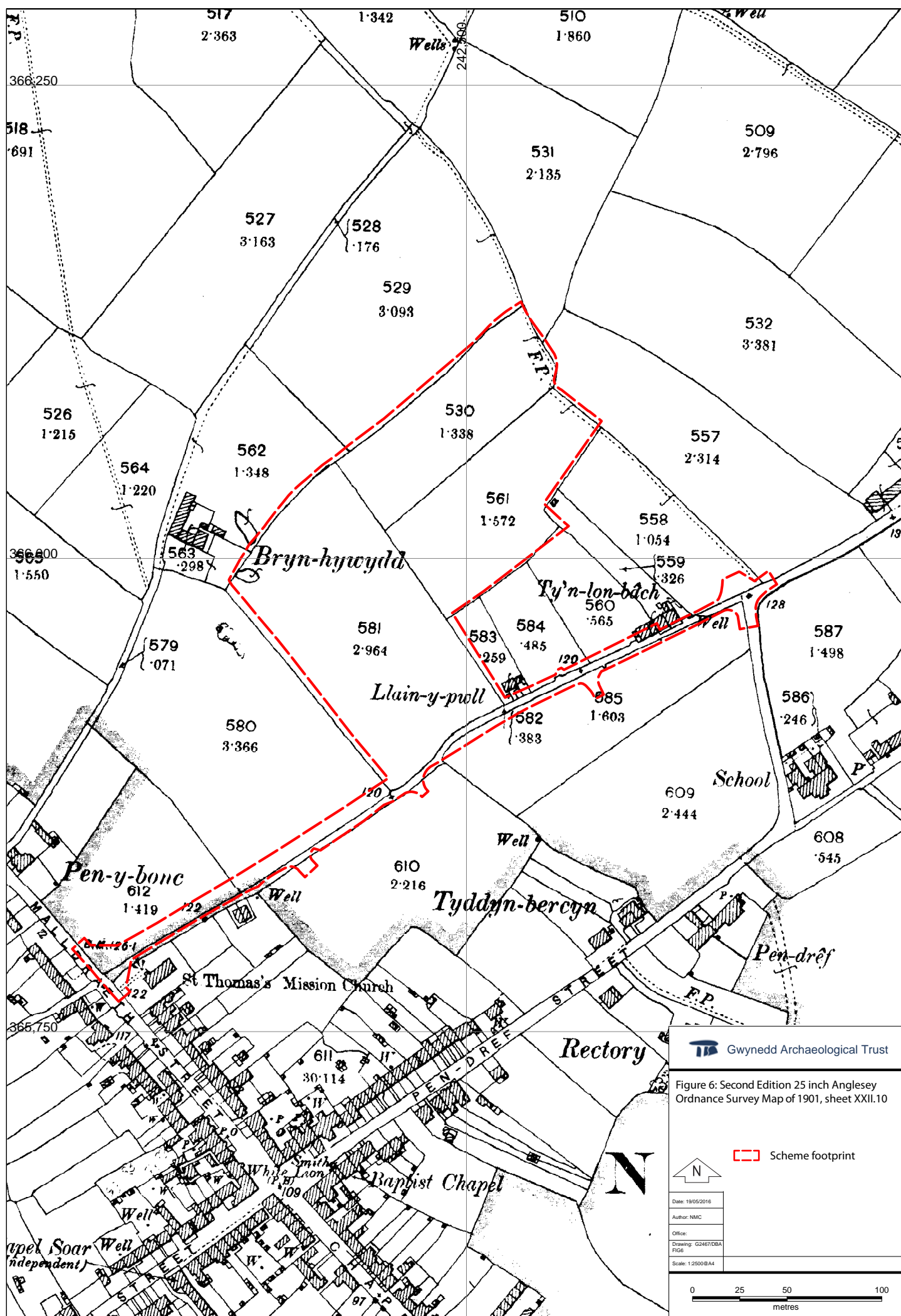
Office:

Drawing: G246/DBA

FIG5

Scale: 1:2500@A4

0 25 50 100
metres



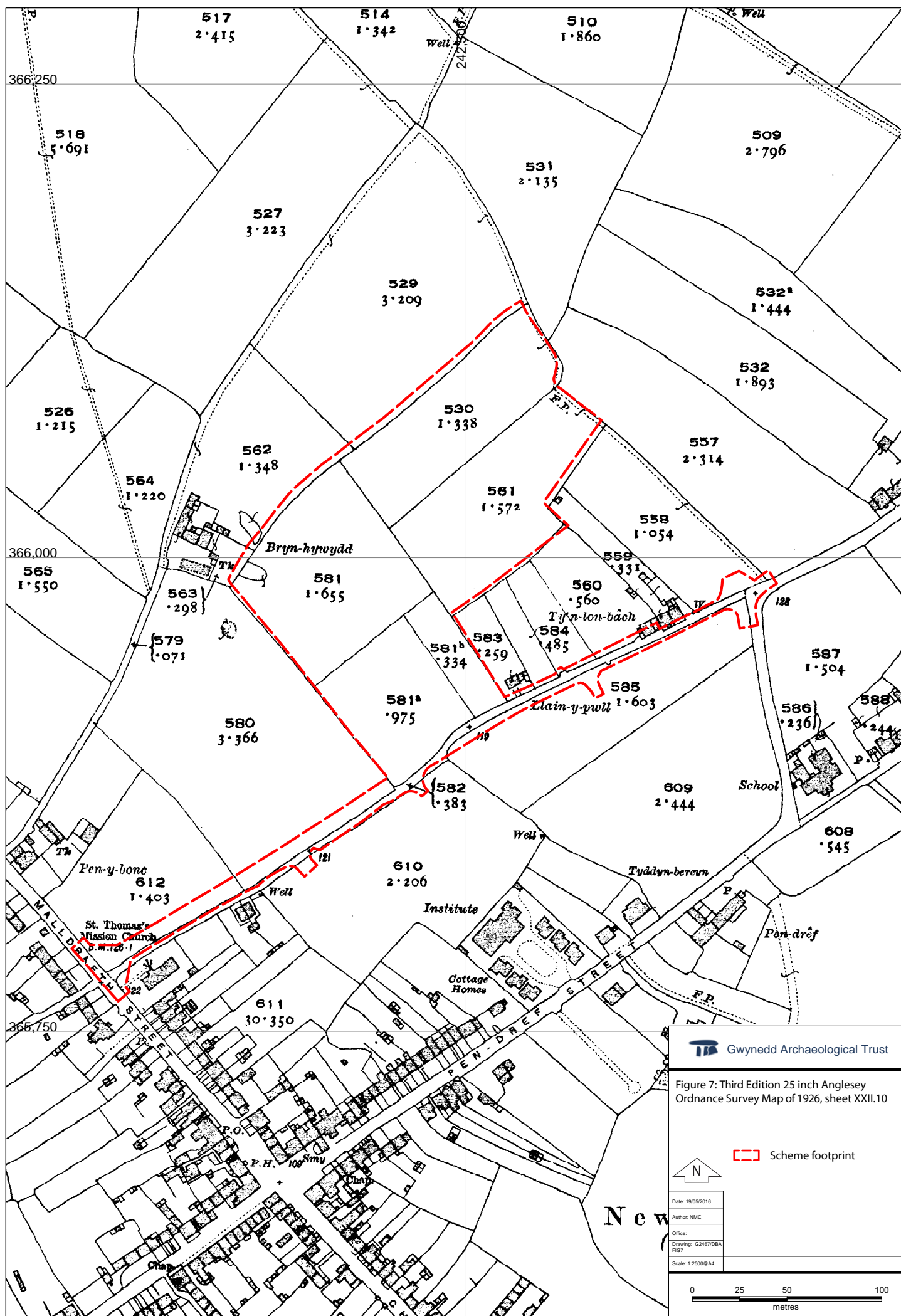





Figure 8: RAF aerial photograph (106G/UK655 frame 3081), taken on 13th August 1945



 Scheme footprint

Date: 19/05/2016

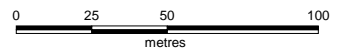
Author: NMC

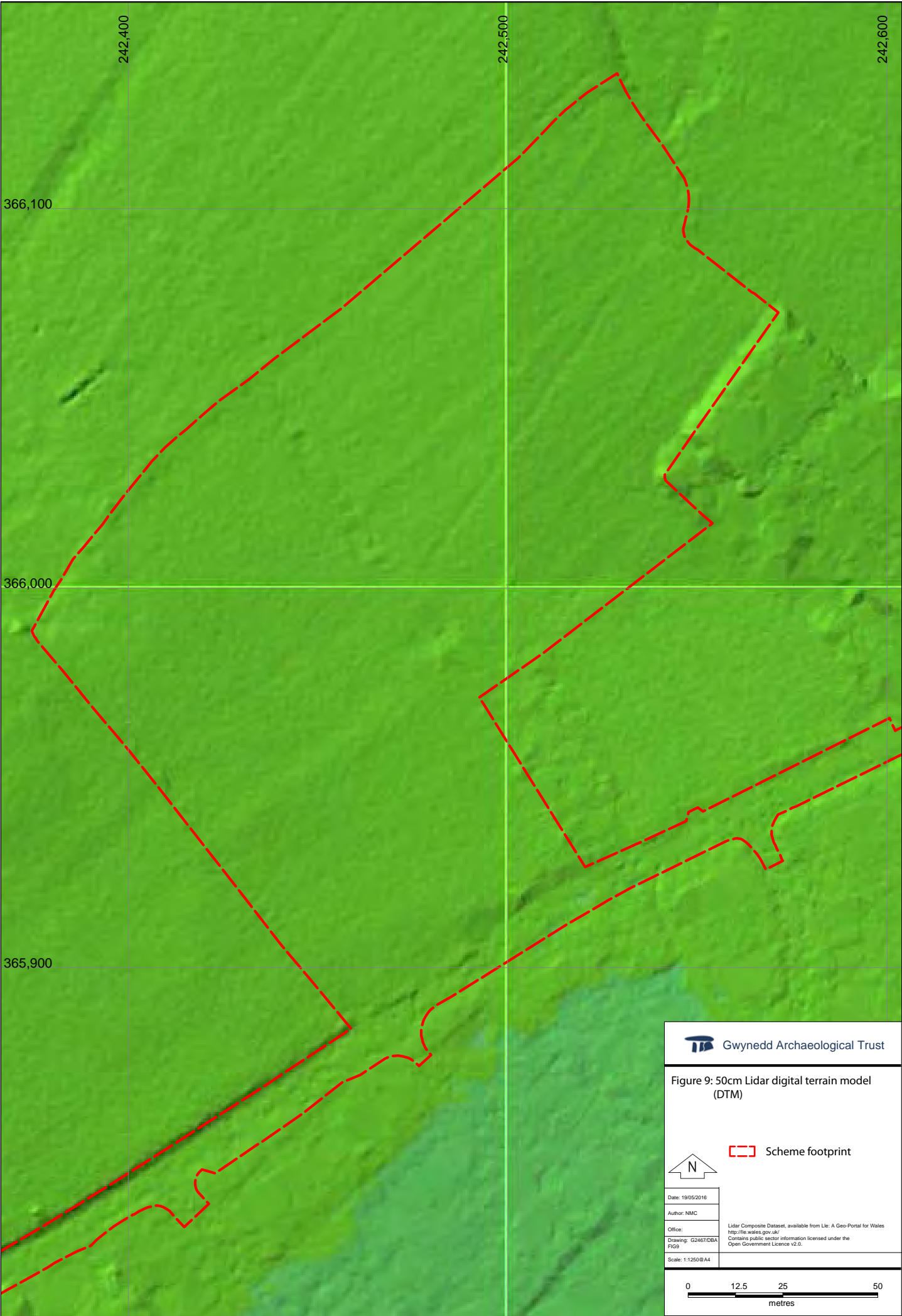
Office:

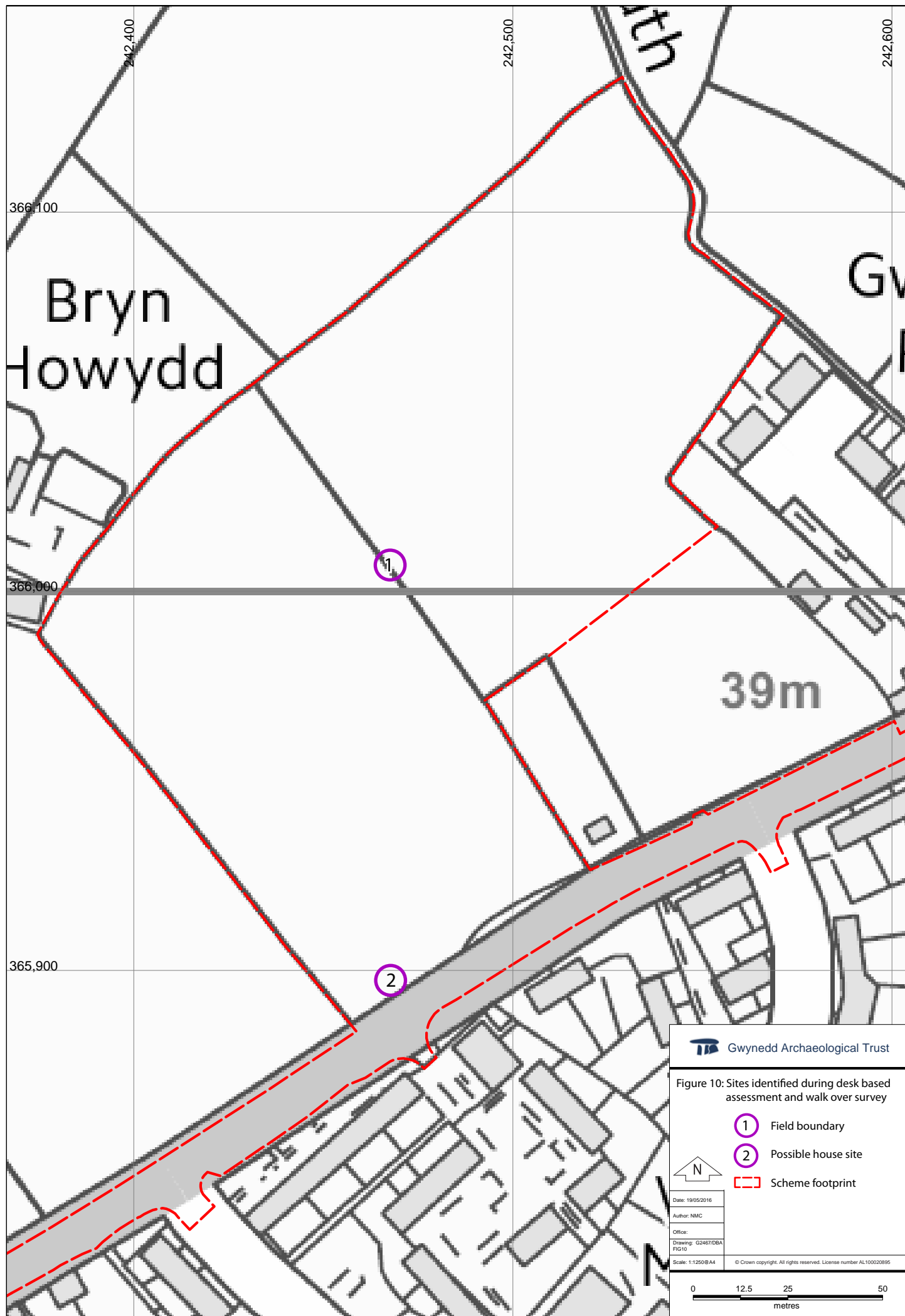
Drawing: G2487/DBA

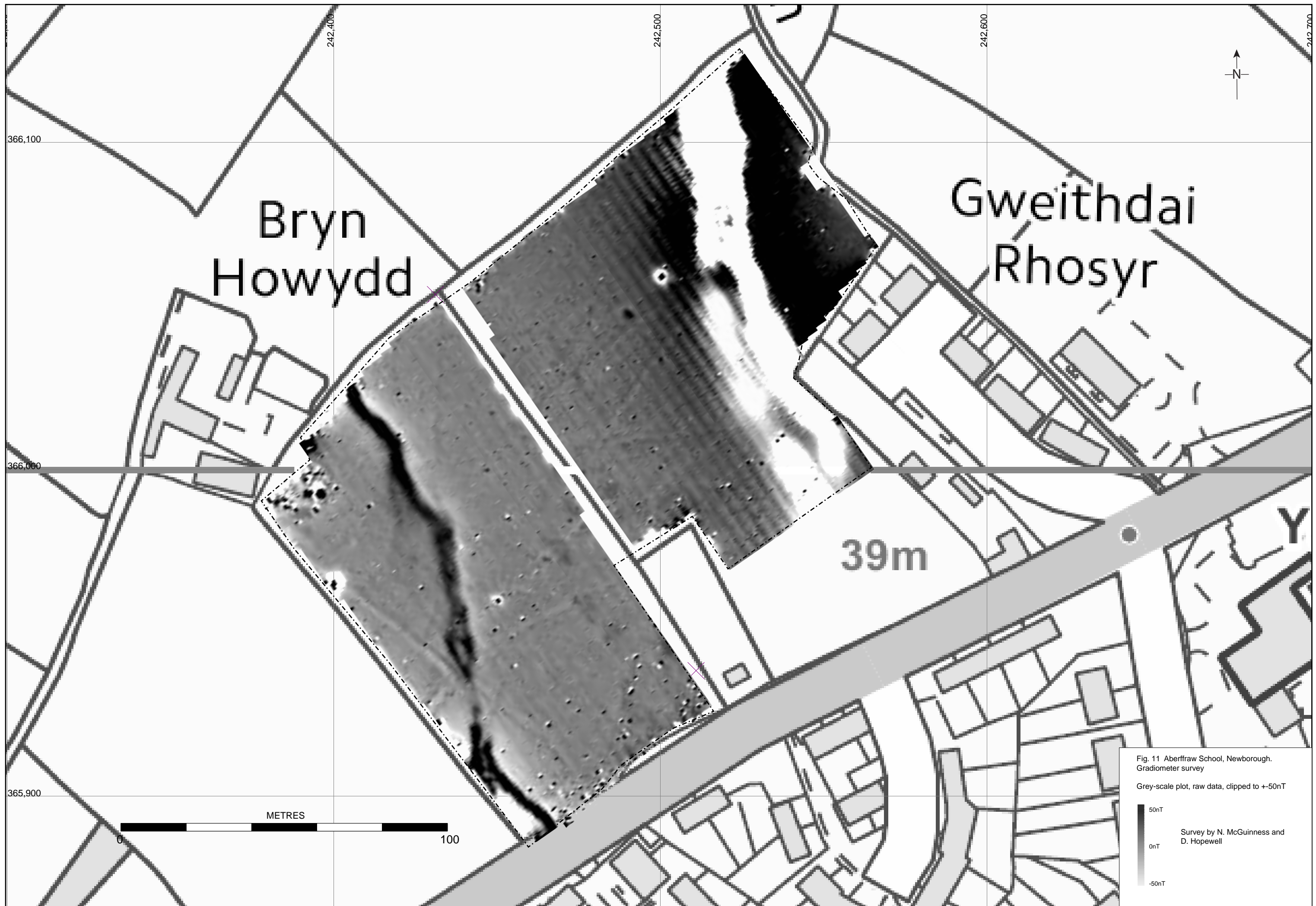
FIG8

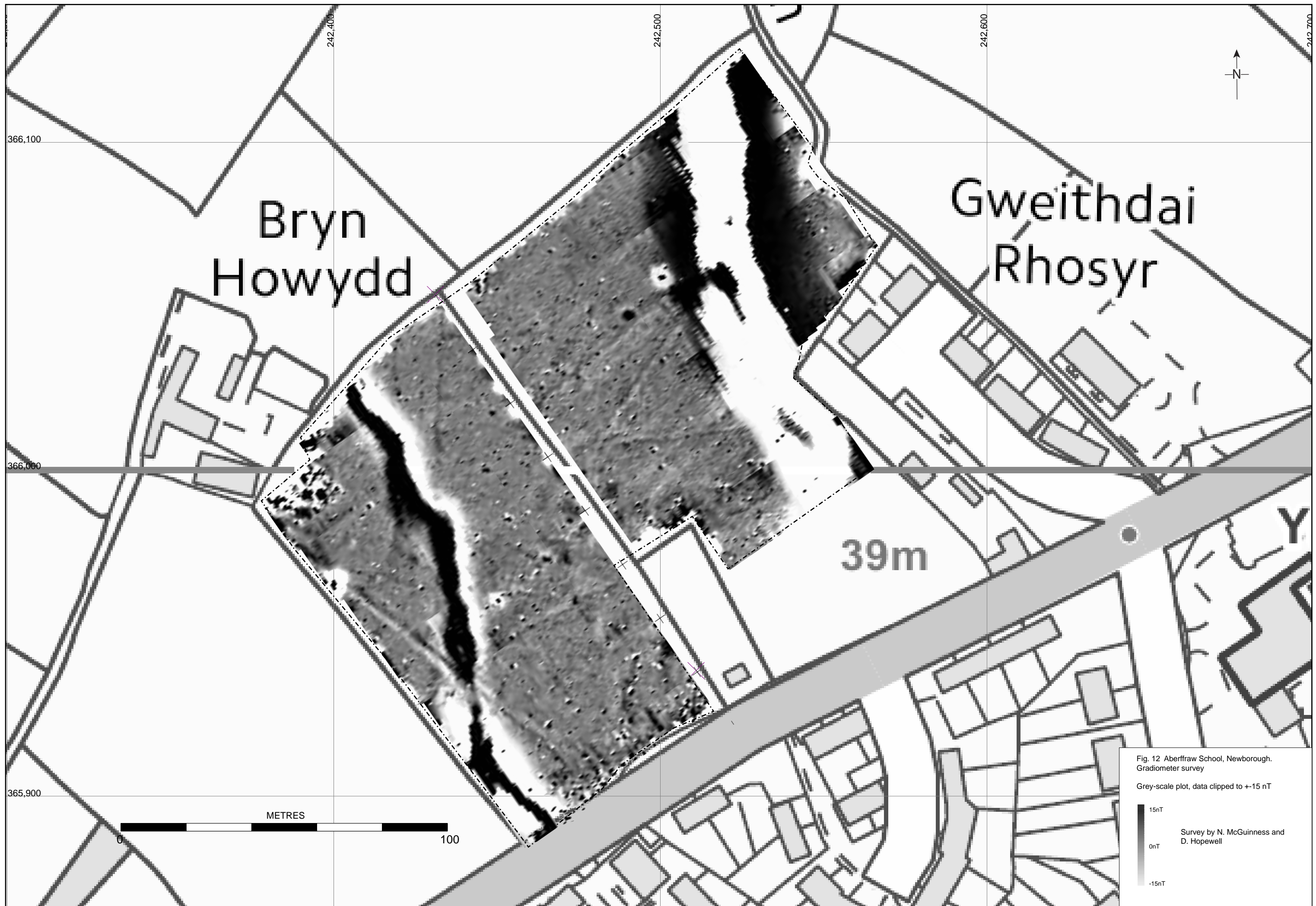
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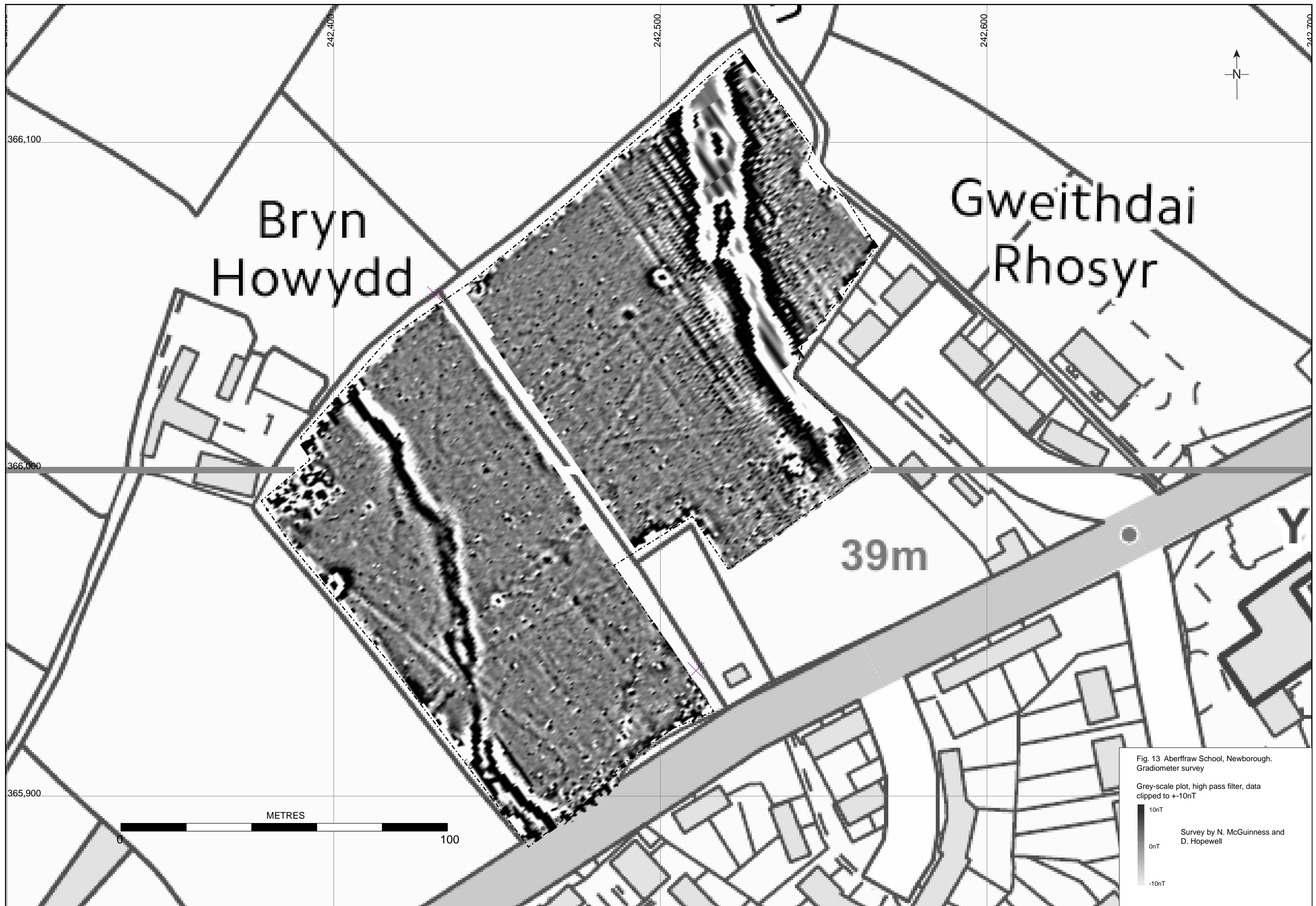


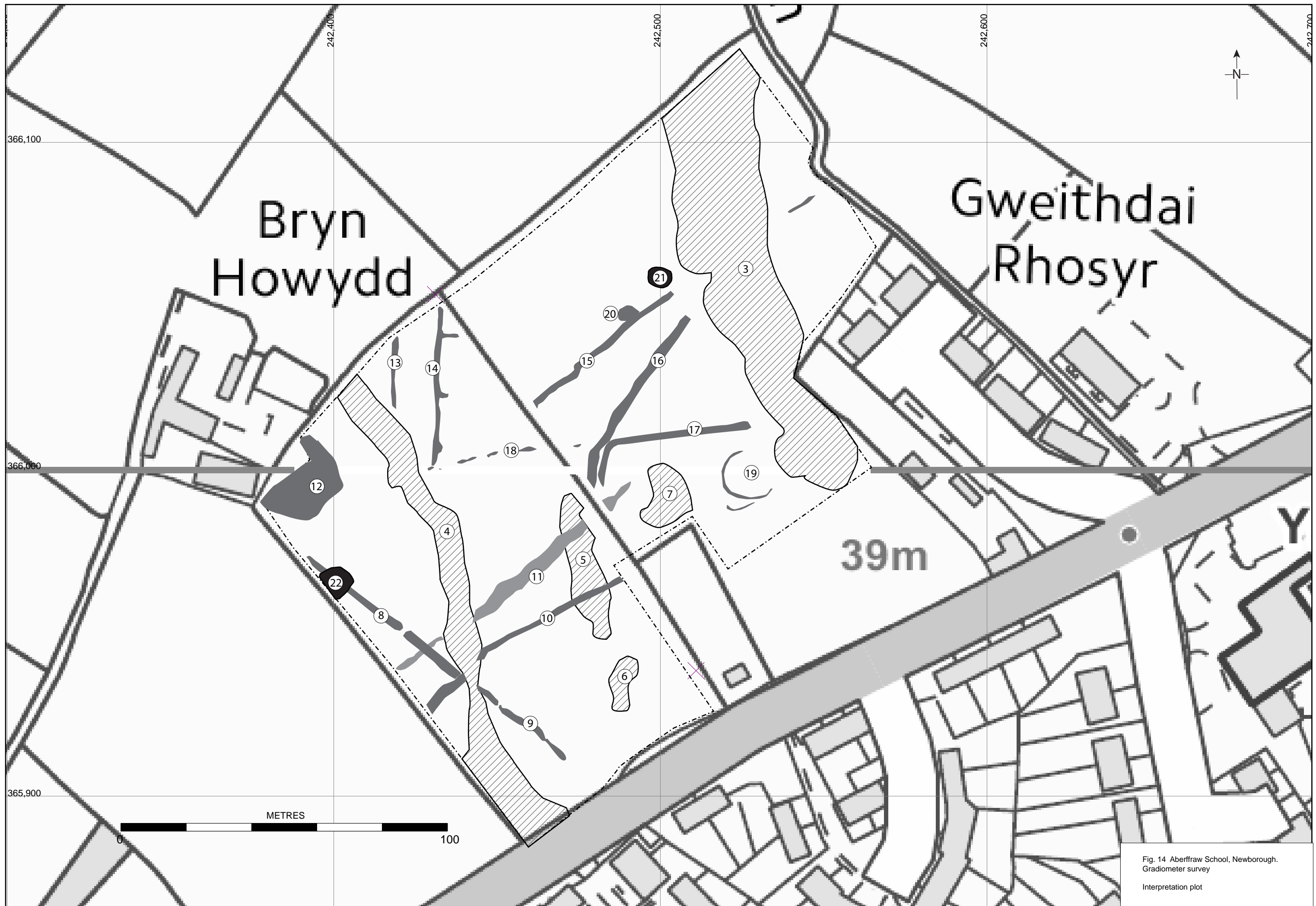


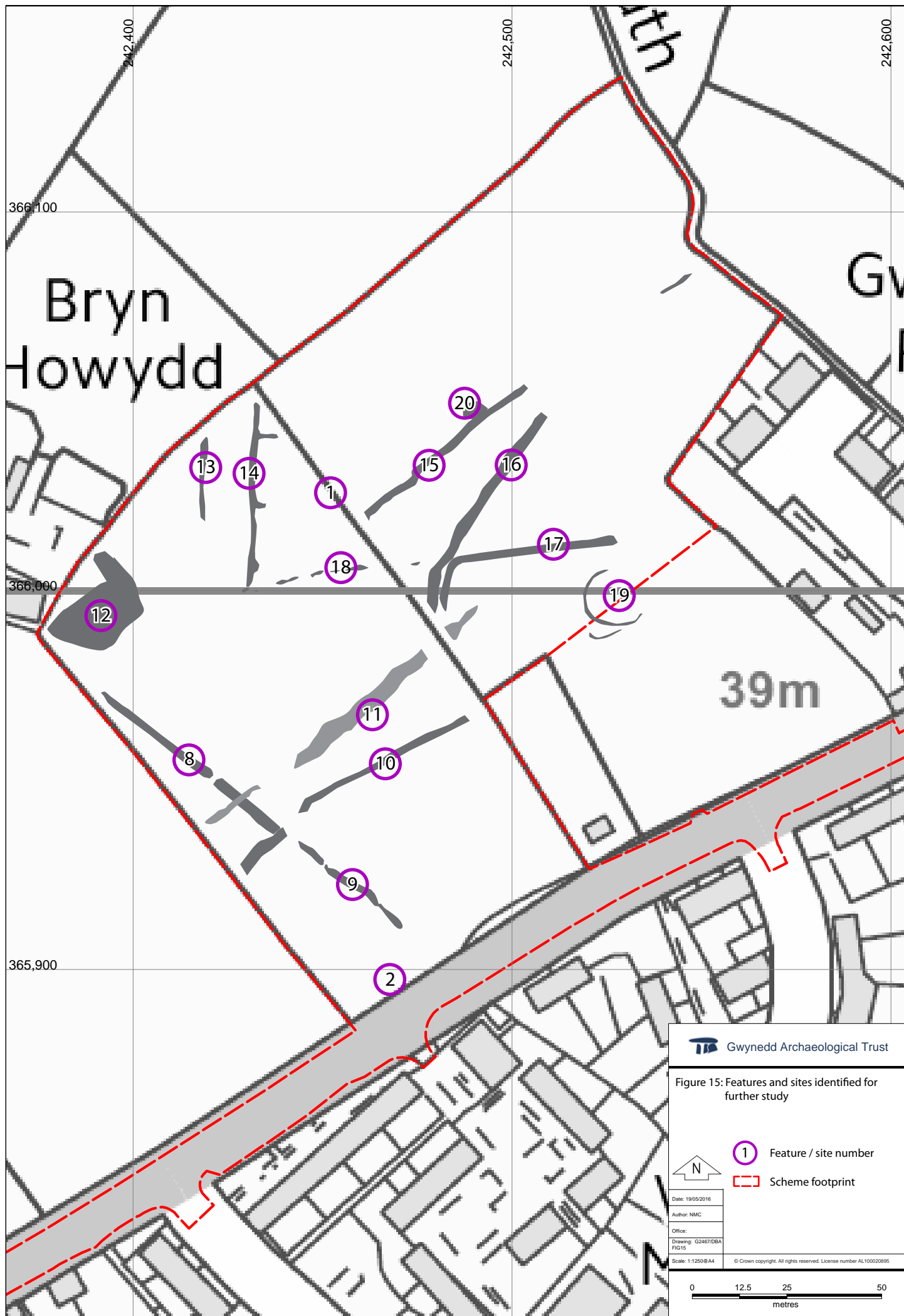














 Gwynedd Archaeological Trust

Figure 15: Features and sites identified for further study

-  Feature / site number
-  Scheme footprint



Date: 19/05/2016
Author: NMC
Office:
Drawing: G2487/DBA FIG15
Scale: 1:1250 @ A4

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0 12.5 25 50
metres



Plate 01: Modern gateway entrance from road B4421, southwest corner of Field 1. View from southwest. 1x1m scale.



Plate 02: Remnant of mortared stone wall boundary in Field 1. View from northwest. 1x1m scale.



Plate 03: Clawdd - Northern site boundary of Fields 1 and 2. View from north-northwest. 1x1m scale.



Plate 04: Stone faced clawdd, boundary between Fields 1 and 2. View from east-southeast. 1x1m scale.



Plate 05: View of 6m wide opening between Field 1 and Field 2. View from southwest. 1x1m scale.



Plate 06: General view of Field 1 from the south. 1x1m scale.



Plate 07: Eastern boundary of Field 2. View from west. 1x1m scale.



Plate 08: View of bank and hedgerow at east-southeast of Field 2, at boundary with Gweithdai Rhosyr. View from northwest. 1 x1m scale.



Plate 09: View of northeastern boundary of Field 2 from the North. 1x1m scale.



Plate 10: General view across Field 2. View from east-northeast. 1x1m scale.

APPENDIX I: PROJECT DESIGN

**NEW YSGOL BRO ABERFFRAW PRIMARY SCHOOL,
NEWBOROUGH, ANGLESEY**




**PROJECT DESIGN FOR GEOPHYSICAL SURVEY
AND DESK-BASED ASSESSMENT**

Prepared for

Cyngor Sir Ynys Môn

May 2016

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Approvals Table				
	Role	Printed Name	Signature	Date
Originated by	Document Author	DALE MEMCOE		10/5/16
Reviewed by	Document Reviewer	JOHN ROBERTS		10/05/16
Approved by	Principal Archaeologist	JOHN ROBERTS		10/05/16

Revision History			
Rev No.	Summary of Changes	Ref Section	Purpose of Issue

All GAT staff should sign their copy to confirm the project specification is read and understood and retain a copy of the specification for the duration of their involvement with the project. On completion, the specification should be retained with the project archive:

Name

Signature

Date

NEW YSGOL BRO ABERFFRAW PRIMARY SCHOOL, NEWBOROUGH, ANGLESEY

PROJECT DESIGN FOR GEOPHYSICAL SURVEY AND DESK- BASED ASSESSMENT

Prepared for *Cyngor Sir Ynys Môn*, May 2016

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Figure 1: Site Location

1.0 INTRODUCTION

Gwynedd Archaeological Trust (GAT) has been asked by *Cyngor Sir Ynys Môn* to undertake a geophysical survey and desk-based assessment as phase one of a two phase field evaluation at the proposed site for the New Ysgol Bro Aberffraw Primary School, Newborough, Anglesey (NGR 242475 366010). The site is currently a greenfield site, consisting of two fields set aside for pasture (Figure 1).

This project design is produced in response to a Tender Invitation letter issued by *Cyngor Sir Ynys Môn*. The requirements were for a two phase field evaluation consisting of:

- Phase 1: A desk-based assessment and geophysical survey
- Phase 2: Trial trenching

This design relates only to Phase 1, and an updated project design will be submitted for Phase 2 along with the report for this phase. Both this design and the updated project design will need to be approved by the Gwynedd Archaeological Planning Services (GAPS) Archaeologist.

All work will be planned, managed and undertaken by Gwynedd Archaeological Trust in accordance with the following standards and guidance:

- English Heritage, 1991. Management of Archaeological Projects (MAP2)
- English Heritage, 2006. Management Of Research Projects in the Historic Environment (MORPHE)
- Chartered Institute for Archaeologists, 2014. Standard and guidance for historic environment desk-based assessment
- Chartered Institute for Archaeologists, 2014. Standard and guidance for geophysical survey

2.0 SITE LOCATION AND GEOLOGY

The site is currently a greenfield site, consisting of two fields set aside for pasture and covering an area of approximately 28,571 m². It is located on the northeastern edge of the town of Newborough, on Anglesey (NGR 242475 366010). The fields are bounded by further pasture land to the north, east, and west; by a farm to the northwest; housing to the southeast; and a road to the south (Figure 1).

The underlying geology comprises of Central Anglesey Shear Zone and Berw Shear bedrock, overlain by Devensian Till (British Geological Survey, Geology of Britain Viewer).

3.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

A brief examination of the regional Historic Environment Record has confirmed that there are known archaeological receptors within proximity to the proposed site. These include:

3.1 Historic Environment Record

- Primary Reference Number (PRN) 8111 – Post-medieval Baptist Chapel, Pendref Street, located to the SSW of the site at NGR SH4244 6568;
- Listed Building 20552 – Post-medieval Chapel, Capel Ebenezer, Church Street, Grade II, located to the south of the site at NGR SH4250 6553;
- Listed Building 20554 – Pritchard Jones Institute, Grade II*, located to the south of the site at NGR SH42523 65807;

3.2 Previous Work

In 2013 an archaeological watching brief on land off Church Street, Newborough (Brooks 2013) uncovered two medieval middens (PRN 59777 and 59776) to the southwest of the site.

4.0 METHOD STATEMENT

4.1 Geophysical Survey

Summary

The survey will be carried out in a series of 20m grids, which will be tied into the Ordnance Survey grid using a Trimble high precision GPS system. The survey will be conducted using a Bartington Grad 601-2 dual fluxgate gradiometer with a 1.0m traverse interval and a 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 within 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 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 is 1.0m and readings are logged at intervals of 0.25m along each traverse. Marked guide ropes are used to ensure high positional accuracy during the high resolution survey. 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.

Aims

The results of the geophysical survey will be used to decide on the location of the trial trenching to be carried out as part of Phase 2.

4.2 Desk-Based Assessment

A desk-based assessment is defined as “a programme of study of the historic environment within a specified area or site on land, the inter-tidal zone or underwater that addresses agreed research and/or conservation objectives. It consists of an analysis of existing written, graphic, photographic and electronic information in order to identify the likely heritage assets, their interests and significance and the character of the study area, including appropriate consideration of the settings of heritage....Significance is to be judged in a local, regional, national or international context as appropriate” (ClfA 2014, 4).

The desk-based assessment will involve a study of the following resources:

- The regional Historic Environment Register (HER, Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, Gwynedd LL57 2RT) will be examined for information concerning the study area. This will include an examination of the core HER, the 1:2500 County Series Ordnance Survey maps and any secondary

information held within the. A list of archaeological receptors will be prepared for the report using information from the HER; this will include information sourced from within a 500m assessment buffer to examine any potential impact. This information will be used to prepare a gazetteer and will include information from the walkover survey if any previously unidentified receptors are also located;

- The National Monuments Record (NMR RCAHMW, National Monuments Record of Wales, Plas Crug, Aberystwyth SY23 1NJ) will be checked for sites additional to the HER, and if required additional supporting information will be examined at the NMR.
- On-line catalogue search of the National Library of Wales; and
- Archive data and historic maps will be consulted in the regional archives of the Anglesey Archives Service (Anglesey Archives, Isle of Anglesey County Council, Industrial Estate Road, Bryn Cefni Industrial Estate, Llangefni, Anglesey, LL77 7JH).

Part of the assessment will involve a walkover of the study area; the aim of this stage of the work is to:

- Verify the results of the desktop study.
- Identify any further archaeological sites which may exist as above ground features
- Photograph and record the present condition of all sites noted.

Any inaccessible areas will be noted during the walkover and in the assessment report. A photographic record will be maintained in RAW format using a digital SLR set to maximum resolution and a photographic metadata table will be completed and included in the report. Photographic images will be archived in TIFF format. The walkover survey will be completed in May 2016.

A gazetteer will be compiled for any identified sites within and within proximity to the specified route based on information sourced from the regional HER and the walkover survey; the gazetteer will include:

- Feature Number
- Site name
- PRN number
- Grid reference
- Period
- Site type
- Assessment category
- Description
- Impact
- Recommendation for further assessment/evaluation
- Recommendation for mitigatory measures

5.0 REPORT AND DISSEMINATION

Following completion of the record as outlined above, a report will be produced incorporating the following:

- Non-technical summary
- Introduction
- Project Design
- Methods and Techniques
- Geophysical Survey Results
- Desk-Based Assessment Results
- Summary and Conclusions
- Bibliography of sources consulted
- A gazetteer of all sites and features
- Approved Project Design (Appendix I)
- Photographic Index (Appendix II)

Illustrations will include plans of the study area and archaeological sites. Historical maps, when appropriate and if copyright permissions allow, will be included.

A full archive including plans, photographs, written material and any other material resulting from the project will be prepared in accordance with English Heritage's MoRPHE 2006 document. All plans, photographs and descriptions will be labelled and cross-referenced, and lodged in an appropriate place (to be decided in consultation with the regional Historic Environment Record) within six months of the completion of the project. All digital data will be written to CD-ROM and stored with the paper archive.

- one or more copies (as required) will be sent to the client
- one or more copies (as required) will be sent to the GAPS
- one or more copies (as required) sent to the regional Historic Environment Record Archaeologist for the area (HER, Gwynedd Archaeological Trust, Craig Beuno, Garth Road, Bangor, LL57 2RT;
- A digital report and archive (including photographic and drawn) data will be provided to Royal Commission on Ancient and Historic Monuments, Wales, in accordance with their guidelines (RCAHMW 2015).

5.1 Historic Environment Record

In line with the regional Historic Environment Record (HER) requirements, the HER must be contacted at the onset of the project to ensure that any data arising is formatted in a manner suitable for accession to the HER. At the onset, the HER Enquiry Form provided by the HER, will be completed and submitted.

5.2 Updated Project Design

An updated project design will also be produced, incorporating both the geophysical and desk-based assessment results. This design will use these results to determine the best placement of the trial trenches required as part of the Phase 2 field evaluation. The updated project design will need to be approved by the GAPS Archaeologist.

6.0 STAFF AND TIMETABLE

The project will be supervised by John Roberts, Principal Archaeologist: Contracts Section. The work will be carried out GAT personnel (Full CV's are available upon request).

Gwynedd Archaeological Trust's Equal Opportunity Policy aims to treat everyone equally and to ensure that no job applicant, employee, worker or clients are discriminated against on the grounds of a protected characteristic as defined by the Equality Act 2010.

This phase of work will be completed by the end of May 2016.

6.0 HEALTH & SAFETY

The Trust subscribes to the SCAUM (Standing Conference of Archaeological Unit Managers) Health and Safety Policy as defined in **Health and Safety in Field Archaeology** (1999).

All GAT staff will conform fully with the requirements of the Health and Safety at Work etc. Act (1974). All GAT staff will be CSCS certified. Copies of the site specific risk assessment will be supplied to the client prior to the start of fieldwork. Any risks and hazards will be indicated prior to the start of work via a submitted risk assessment. All staff will be issued with required personal safety equipment.

7.0 INSURANCE

Public Liability

Limit of Indemnity- £5,000,000 any one event in respect of Public Liability

INSURER Aviva Insurance Ltd
POLICY TYPE Public Liability
POLICY NUMBER 24765101CHC/000405
EXPIRY DATE 22/06/2016

Employers Liability

Limit of Indemnity- £10,000,000 any one occurrence.

INSURER Aviva Insurance Ltd
POLICY TYPE Employers Liability
POLICY NUMBER 24765101CHC/000405
EXPIRY DATE 22/06/2016

Professional Indemnity

Limit of Indemnity- £2,000,000 in respect of each and every claim

INSURER Hiscox Insurance Company Limited
POLICY TYPE Professional Indemnity
POLICY NUMBER HU PI 9129989/1208
EXPIRY DATE 23/07/2016

8.0 SOURCES CONSULTED

Brooks, IP, 2013 *Land off Chruch Street, Newborough, Ynys Mon*, EAS Report No. 2013/08

Chartered Institute for Archaeologists, 2014. Standard and guidance for historic environment desk-based assessment

Chartered Institute for Archaeologists, 2014. Standard and guidance for geophysical survey

English Heritage, 1991. Management of Archaeological Projects (MAP2)

English Heritage 2006 *Management of Research Projects in the Historic Environment (MoRPHE)*

RCAHMW, 2015 *RCAHMW Guidelines for Digital Archives*

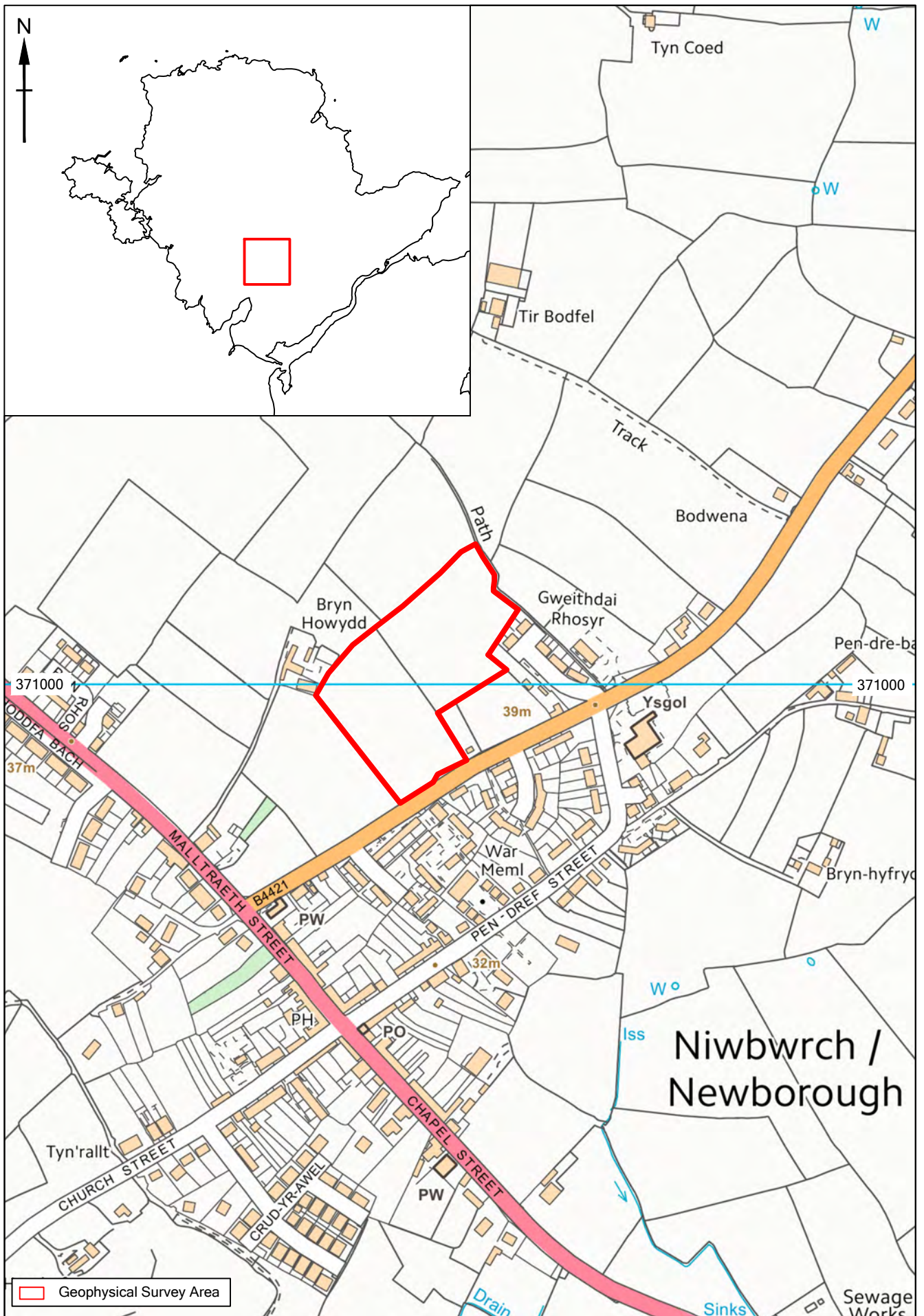


Fig. 1: Site Location

APPENDIX II: PHOTOGRAPHIC METADATA

Appendix II – Photo metadata

File reference	Project name	Project phase	Sub-division	Description	View from	Scale (s)	Type	Date	Originating	Originating organisation
G2467_001	New Ysgol Bro Aberffraw	Assessment	Field 1	View of SE boundary showing hedge and drystone capped wall	ENE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_002	New Ysgol Bro Aberffraw	Assessment	Field 1	View of mortared stone wall, forming boundary of field 1 with road B4421	NW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_003	New Ysgol Bro Aberffraw	Assessment	Field 1	View of mature hawthorn hedge at SW of wall	NE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_004	New Ysgol Bro Aberffraw	Assessment	Field 1	View of modern entrance gate to the SW of field 1	NW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_005	New Ysgol Bro Aberffraw	Assessment	Field 1	View of field boundry (G) within field 1	SE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_006	New Ysgol Bro Aberffraw	Assessment	Field 1	General view of corner of (G) and (C)	E	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_007	New Ysgol Bro Aberffraw	Assessment	Field 1	General view of boundary (C)	SE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_008	New Ysgol Bro Aberffraw	Assessment	Field 1	Detail of clawdd in boundary (D)	ESE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_009	New Ysgol Bro Aberffraw	Assessment	Field 1	General view of boundary (D)	NNW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_010	New Ysgol Bro Aberffraw	Assessment	Field 1	View of opening in (D) into Field (2)	SW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_011	New Ysgol Bro Aberffraw	Assessment	Field 2	View of boundary (C) in Field 2	W	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust

File reference	Project name	Project phase	Sub-division	Description	View from	Scale (s)	Type	Date	Originating	Originating organisation
G2467_012	New Ysgol Bro Aberffraw	Assessment	Field 2	View of boundary (F?) in Field 2	SW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_013	New Ysgol Bro Aberffraw	Assessment	Field 2	View of boundary (F?) in Field 2	NE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_014	New Ysgol Bro Aberffraw	Assessment	Field 2	View (detail) of bank and hedgerow (F)	NW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_015	New Ysgol Bro Aberffraw	Assessment	Field 2	Junction of field boundaries (F) and (G)	NNW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_016	New Ysgol Bro Aberffraw	Assessment	Field 2	Field boundary (G)	N	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_017	New Ysgol Bro Aberffraw	Assessment	Field 2	Junction of boundaries (G) and (C)	S	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_018	New Ysgol Bro Aberffraw	Assessment	Field 2	General view along boundary (C) in Field 2	NE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_019	New Ysgol Bro Aberffraw	Assessment	Field 2	General view of Field 2 from the north, showing boundary (?)	N	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_020	New Ysgol Bro Aberffraw	Assessment	Field 2	General view of Field 2 from the ENE, showing boundary (G) and modern lanes beyond	ENE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_021	New Ysgol Bro Aberffraw	Assessment	Field 2	General view of Field 2 from the SSE (from outside study area) showing boundary (C)	SSE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_022	New Ysgol Bro Aberffraw	Assessment	Field 2	Field boundary (D) from Field 2	SE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_023	New Ysgol Bro Aberffraw	Assessment	Field 1	General view of Field (1) from corner of (C) and (D)	N	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust

File reference	Project name	Project phase	Sub-division	Description	View from	Scale (s)	Type	Date	Originating	Originating organisation
G2467_024	New Ysgol Bro Aberffraw	Assessment	Field 1	General view from Bryn Howydd corner	E	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_025	New Ysgol Bro Aberffraw	Assessment	Field 1	General view from junction of boundaries (A) and (D)	SE	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_026	New Ysgol Bro Aberffraw	Assessment	Field 1	Detail of drystone wall/clawdd, boundary of junction (A) and (D)	W	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_027	New Ysgol Bro Aberffraw	Assessment	Field 1	General view from junctions (A) and (G) in SW corner	SW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_028	New Ysgol Bro Aberffraw	Assessment	Field 1	General view from centre of Field 1 looking north	S	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_029	New Ysgol Bro Aberffraw	Assessment	Field 1	General view from centre of Field 1 looking south	N	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_030	New Ysgol Bro Aberffraw	Assessment	General view	General view showing gated entrance to the site on B4421	SW	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust
G2467_031	New Ysgol Bro Aberffraw	Assessment	General view	General view showing gated entrance to the site on B4421	S	1x1m	Photograph	17/05/2016	RE	Gwynedd Archaeological Trust

APPENDIX III: SITES LISTED ON THE GWYNEDD HER

Appendix III: Sites on the Gwynedd HER, NMR and Listed Buildings within 500m of the study area:

Cadw Listed Building Number	Name	Grade	NGR
20552	Ebeneser Chapel	II	SH 42500 65538
20554	Prichard Jones Institute	II*	SH 42518 65804
20555	Prichard Jones Institute Cottage Home (No. 1)	II	SH 42518 65785
20556	Ebeneser Chapel house and Sunday school	II	SH 42490 65554
20562	Prichard Jones Institute Cottage Home (No. 2)	II	SH 42526 65779
20563	Prichard Jones Institute Cottage Home (No. 3)	II	SH 42533 65772
20564	Prichard Jones Institute Cottage Home (No. 4)	II	SH 42540 65806
20565	Prichard Jones Institute Cottage Home (No. 5)	II	SH 42549 65799
20566	Prichard Jones Institute Cottage Home (No. 6)	II	SH 42556 65793
20573	War Memorial	II	SH 42536 65790

RCAHMW NPRN	Name	Period	NGR
8825	Soar Independent Chapel, Church Street, Newborough	Post Medieval	SH 42350 65620
8826	Niwbwrch Baptist Chapel (Salem), Pendref Street, Newborough	Post Medieval	SH 42440 65680
8827	Ebeneser Chapel (Calvinistic Methodist;Ebenezer;Capel Isaf), Chapel Street, Newborough	Post Medieval	SH 42500 65530
8828	Niwbwrch Methodist Chapel (Wesleyan;Capel Ucaf), Maldraeth Street, Newborough	Post Medieval	SH 42230 65850
15763	Newborough, Reset Doorway	Medieval	SH 42300 65700
15796	Plas	Post Medieval	SH 42250 65870
23148	Pritchard-Jones Institute And Almshouse	Post Medieval	SH 42530 65780
32992	Newborough;New Borough	Medieval	SH 42402 65671
43646	St Thomas's Church	Post Medieval	SH 42340 65780
97214	Penlon Calvinistic Methodist Sunday School, Penlon, Newborough	Post Medieval	SH 42480 65550
404922	Prichard Jones Institute, Newborough	Modern	SH 42520 65800
417451	Newborough Former British School	19th Century	SH 42684 65881

Gwynedd HER PRN	Site Name	Period	NGR
3195	Newborough Township, Site of, Newborough	Medieval	SH 42400 65600
7827	Capel Ebenezer, Church Street, Newborough	Post Medieval	SH 42500 65530
8111	Baptist Chapel, Pendref Street, Newborough	Post Medieval	SH 42440 65680
34931	Pritchard Jones Institute, Newborough	Post Medieval	SH 42523 65807
36279	Hendre Bach, Former Site of, Newborough	Post Medieval	SH 42192 65474
59776	Midden, Site of, Newborough	Medieval	SH 42268 65605
59777	Midden, Site of, Newborough	Medieval	SH 42309 65652
60255	Occupation Site, Site of, Newborough	Medieval	SH 42307 65623

APPENDIX IV: DEFINITION OF TERMS

Categories of importance

The following categories were used to define the importance of the archaeological resource.

Category A - Sites of National Importance.

Scheduled Ancient Monuments, Listed Buildings of grade II* and above, as well as those that would meet the requirements for scheduling (ancient monuments) or listing (buildings) or both.

Sites that are scheduled or listed have legal protection, and it is recommended that all Category A sites remain preserved and protected *in situ*.

Category B - Sites of regional or county importance.

Grade II listed buildings and sites which would not fulfil the criteria for scheduling or listing, but which are nevertheless of particular importance within the region.

Preservation *in situ* is the preferred option for Category B sites, but if damage or destruction cannot be avoided, appropriate detailed recording might be an acceptable alternative.

Category C - Sites of district or local importance.

Sites which are not of sufficient importance to justify a recommendation for preservation if threatened.

Category C sites nevertheless merit adequate recording in advance of damage or destruction.

Category D - Minor and damaged sites.

Sites that are of minor importance or are so badly damaged that too little remains to justify their inclusion in a higher category.

For Category D sites, rapid recording, either in advance of or during destruction, should be sufficient.

Category E - Sites needing further investigation.

Sites, the importance of which is as yet undetermined and which will require further work before they can be allocated to categories A - D are temporarily placed in this category, with specific recommendations for further evaluation. In this report several sites of unknown potential have been allocated to this category.

Definition of Impact

The impact of the proposed development on each feature was estimated. The impact is defined as *none, slight, unlikely, likely, significant, considerable or unknown* as follows:

None:

There is no construction impact on this particular site.

Slight:

This has generally been used where the impact is marginal and would not by the nature of the site cause irreversible damage to the remainder of the feature, e.g. part of a trackway or field bank.

Unlikely:

This category indicates sites that fall within the band of interest but are unlikely to be directly affected. This includes sites such as standing and occupied buildings at the margins of the band of interest.

Likely:

Sites towards the edges of the study area, which may not be directly affected, but are likely to be damaged in some way by the construction activity.

Significant:

The partial removal of a site affecting its overall integrity. Sites falling into this category may be linear features such as roads or tramways where the removal of part of the feature could make overall interpretation problematic.

Considerable:

The total removal of a feature or its partial removal which would effectively destroy the remainder of the site.

Unknown:

This is used when the location of the site is unknown, but thought to be in the vicinity of the proposed works.

Definition of field evaluation techniques

Field evaluation is necessary to fully understand and assess most class E sites and to allow the evaluation of areas of land where there are no visible features but for which there is potential for sites to exist. Two principal techniques can be used for carrying out the evaluation: geophysical survey and trial trenching. Topographic survey may also be employed where sites are thought to survive as earthworks.

Geophysical survey most often involves the use of a magnetometer, which allows detection of some underground features, depending on their composition and the nature of the subsoil. Other forms of geophysical survey, including resistivity survey and ground penetrating radar might also be of use.

Trial trenching allows a representative sample of the development area to be investigated at depth. Trenches of appropriate size can also be excavated to evaluate category E sites. Trenching is typically carried out with trenches of between 20 to 30m length and 2m width. The topsoil is removed by machine and the resulting surface is cleaned by hand, recording features. Depending on the stratigraphy encountered the machine may be used to remove stratigraphy to deeper levels.

Definition of Mitigatory Recommendations

Below are the measures that may be recommended to mitigate the impact of the development on the archaeology.

None:

No impact so no requirement for mitigatory measures.

Detailed recording:

This requires a full photographic record and measured survey prior to commencement of works.

Archaeological excavation may also be required depending on the particular feature and the extent and effect of the impact.

Basic recording:

Requiring a photographic record and full description prior to commencement of works.

Strip, Map and Sample:

The technique of Strip, Map and Sample involves the examination of machine-stripped surfaces to identify archaeological remains. The stripping is undertaken under the supervision of an archaeologist. Stripping and removal of the overburden is undertaken in such a manner as to ensure damage does not take place to surfaces that have already been stripped, nor to archaeological surfaces that have not yet been revealed.

Stripping is undertaken in as careful a manner as possible, to allow for good identification of archaeological features. A small team of archaeologists will be responsible for subsequently further cleaning defined areas where necessary. Complex sites which cannot be avoided will need to be fully excavated.

Watching brief:

This is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.

Avoidance:

Features, which may be affected directly by the scheme, or during the construction, should be avoided. Occasionally a minor change to the proposed plan is recommended, but more usually it refers to the need for care to be taken during construction to avoid accidental damage to a feature. This is often best achieved by clearly marking features prior to the start of work.

Reinstatement:

The feature should be re-instated with archaeological advice and supervision.



Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd



Craig Beuno, Ffordd y Garth, Bangor, Gwynedd. LL57 2RT
Ffon: 01248 352535. Ffacs: 01248 370925. email: gat@heneb.co.uk