

Proposed Nuclear Power Station Wylfa, Ynys Môn

Archaeological Baseline Assessment Report 1.0



Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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Archaeological Baseline Assessment Report 1.0

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PROPOSED NEW NUCLEAR POWER STATION AT WYLFA, ANGLESEY

BASELINE ASSESSMENT REPORT

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1.0 INTRODUCTION

1.1 Overview

The Gwynedd Archaeological Trust (GAT) has been commissioned by Horizon Nuclear Power Ltd to prepare a Baseline Assessment Report to collate and report on all the archaeological work carried out to date in relation to the proposed development of a new nuclear power station at Wylfa, Anglesey (figures 1 and 2).

This report is designed to support the on-going programme of archaeological assessment, evaluation and mitigation at the proposed development site as well as forming a key element of the baseline for the proposed Environmental Statement.

This assessment report is a ‘living’ document that is designed to be reviewed and updated as new information comes to light and further work is undertaken at the proposed development site.

1.2 Version

This document is Version 1. It reports on work undertaken up to the end of February 2012.

1.3 Updates since last version

Not applicable. Future versions will identify key changes since last report.

2.0 WORK UNDERTAKEN TO DATE

Archaeological work associated with the proposed development of a new nuclear power station at Wylfa has been on-going since 2010. This work has covered three stages which can be broadly classed as assessment, evaluation, and mitigation work. The following sets out work completed by the end of February 2012 which has informed the development of this report. The term ‘proposed development site’ refers to the land take marked by the red boundary line in figure 1; the ‘study area’ should be taken to be the area of the wider landscape around this area.

2.1 Assessment

- Davidson, A., 2010. *Proposed Nuclear Power Station at Wylfa, Anglesey, North Wales. GAT report 842*. Desk based assessment of original proposed development site and local context (figure 4).
- Cooke, R., 2011. *Proposed Nuclear Power Station at Wylfa, Anglesey, North Wales, Archaeological Assessment NPDUK. GAT report 966*. Vendor specific desk based assessment undertaken to support development process. Largely based on the 2010 desk based assessment (Davidson 2010) but with some additional work to cover an extension to the proposed development site (figure 4).
- Cooke, R., 2011. *Proposed Nuclear Power Station at Wylfa, Anglesey, North Wales, Archaeological Assessment Areva. GAT report 967*. Vendor specific desk based assessment undertaken to support development process. Largely based on the 2010 desk based assessment (Davidson 2010) but with some additional work to cover an extension to the proposed development site (figure 4).

- Cooke, R., 2011. *Preliminary Environmental Information (PEI) Document. Unassigned GAT report.* Summary report outlining key environmental issues. Document wholly based on preceding work and involved no additional assessment.
- Cooke, R., 2011. *Wylfa Scoping Opinion Response: Archaeology. Unassigned GAT report.* Response to preliminary queries from the Infrastructure Planning Committee. Document wholly based on preceding work and involved no additional assessment.

2.2 Evaluation

- Hopewell, D., 2011. Preliminary outline interpretation of potential archaeological magnetic gradient anomalies in Phase 1 area, Wylfa. GAT report 936. Interpretive report on the magnetic gradient anomalies identified during the Vertical Magnetic Gradient (VMD) survey carried out by Fugro Aperio Ltd. Updated in GAT report 1019. (figure 22).
- Hopewell, D., 2011. Proposed Nuclear Power Station, Wylfa, Ynys Mon. Archaeological Evaluation: Targeted Geophysics. GAT report 987. Report on the findings of a phase of archaeological geophysical investigation by the Gwynedd Archaeological Trust targeting anomalies identified in GAT report 936 (figure 22).
- Shaw, G., 2011. Wylfa Anglesey Marine Geophysical Assessment. Wessex Archaeology report ref. 78800.01. Analysis report of side-scan sonar data collected by Titan Surveys during marine investigation works (figure 22).
- Owen, K., and Roberts, J.A. 2012. Proposed Nuclear Power Station, Wylfa, Ynys Mon. Archaeological Evaluation: Trial Trenching. GAT report 1015. Report on the results of a phase of trial trenching targeting geophysical anomalies identified in GAT reports 987 (figures 27 to 29, and 34).
- Hopewell, D., 2012. Proposed Nuclear Power Station, Wylfa, Ynys Mon. Archaeological Evaluation: Geophysical Survey, Interim report. GAT report 1019. Report combining the second phase of the targeted geophysical survey with reports 936 and 987.

2.3 Mitigation

- Davidson, J., 2011. *Proposed Nuclear Power Station, Wylfa, Ynys Mon. Archaeological Watching Brief: Ground Investigation Works. GAT report 994.* Report on the findings of the archaeological watching brief while monitoring the excavation of ground investigation trenches by Fugro Aperio to target identified geophysical anomalies.

2.4 On-going work at the time of this report

- An interpretation report on the offshore geophysical investigation is currently being produced by Wessex Archaeology.
- A programme of geophysical survey has been carried out by Fugro Aperio Ltd targeting the land take towards the south of the proposed development site. An interpretation report of this data by GAT is complete but is yet to be finalised.

- A programme of level 1, 2, and 3 building surveys targeting upstanding historic structures identified in the desk-based assessment is currently being carried out by GAT. These surveys have been completed however a report on the survey results is forthcoming. A summary of the findings of this work is included in section 4.8.

3.0 BACKGROUND

3.1 Location and Topography

The proposed development site is located on the north Anglesey coast approximately 2 km west of the village of Cemaes (Figures 1 and 2). The nearest village is Tregele, approximately 1 km to the south-east. An existing nuclear power station was built here in the 1960's and has been operating since 1971.

The Wylfa headland projects from the north coast of Anglesey into the Irish Sea between the deeply indented bays of Cemlyn to the west and Cemaes to the east. The coastline is further indented at Porth y Pistyll, 1 km east of Cemlyn, and at Porth y Wylfa, 1.2 km west of Cemaes, and it is between these two smaller bays that the headland is defined. The north tip of the headland is further constricted between the bays of Porth Wnal (west) and Porth yr Ogof (east), 400m from its northernmost point. This area is known as Mynydd y Wylfa (Wylfa Mountain).

The topography in the immediate vicinity of the headland and southwards (figure 20) has a generally low and rolling aspect, rarely rising above 30m OD. An area of lower ground, at around 10-20m OD, occurs at the neck of the headland, from which the ground rises again to 38m at Mynydd y Wylfa with cliffs to seaward. Low hills (drumlins), the highest reaching 45m OD, lie to the south and west of the proposed development area. Within the eastern part of the proposed development area is the low-lying bog of Tre'r Gof, now a Site of Special Scientific Interest (SSSI), after which the ground rises to Park Lodge at about 30m OD.

The underlying geology is of metamorphic rock, flaggy and laminate green-mica schist of the New Harbour Group of the Mona Complex. The schist contains bands and veins of quartz, jasper and calcite. The bedding planes dip in the northerly direction. Dolerite dykes can be seen outcropping along the coastline. Glacial erosion has reduced the landform to a generally level surface. Hollows are filled with brown clay or gravel. The geologist Edward Greenly completed a geological survey of Anglesey in 1919 and he records 'a pre-glacial valley crosses the site from east to west and is filled with overburden to a maximum depth of 7m' (Greenly, 1919, p 741). The location of this valley however is not depicted on any map and its location has not been identified in either the geology report (Halcrow 2010) or in the geophysical survey (GAT report 936) (figure 21).

The Gwynedd Archaeological Trust has undertaken archaeological excavations across Anglesey and North Wales and has found no evidence to suggest that underlying geology influences archaeological site type or frequency. It has been found however, that subtle cut features such as pits and postholes can be particularly difficult to identify when the underlying geology is loose and fragmented, as with shale.

Magnetic geophysical techniques will not work in some geological circumstances, most commonly where there is extensive strongly magnetic bedrock close to the surface. In this case the strong magnetic responses from the bedrock will mask the weaker archaeological responses. Conversely deep deposits of substrates such as wind-blown sand which contain little or no magnetic material may also be unsuitable. However, the site did not have any of these and as such the use of the gradiometer for geophysical prospection was suitable.

The soils in the vicinity of the proposed development site are made up of slightly acidic, loamy soils which are free draining. Acidic soils are common across Anglesey and North Wales and typically dictate that the survival of more perishable artefacts such as ceramic and bone is fairly poor. This soil type typically dictates that the land use is one of arable and pastoral grazing fields. Some areas of the site surrounding Wylfa power station were used historically for temporary works activities. As such, the topsoil in these areas may have been stripped or incorporated into areas of made ground (Halcrow Group, 2010).

The landscape is one of largely dispersed settlement of farms and cottages, though dominated now by the existing Wylfa Power Station. The area, like much of Anglesey, has a windswept appearance, with few natural trees. Field boundaries are largely walls or stone-faced earth banks (in Welsh 'clawdd' or 'cloddiau' (plural)). Rock outcrops occur close to the coastline, where there are areas of rough coastal grazing, but otherwise the majority of fields have been ploughed and are largely pasture. The lands immediately around the existing power station have been landscaped and a new plantation of native and conifer trees was planted shortly after construction on the south-east side.

3.2 Statutory and non-statutory designations

There are no Scheduled Ancient Monuments or Listed Buildings within the proposed development site. There are a number of Scheduled Ancient Monuments and Listed Buildings in the wider landscape around the proposed development site (figure 1).

The proposed development site does not lie within an Outstanding or Special historic landscape as defined in Part II of the Register of Landscapes, Parks and Gardens of Outstanding or Special Historic Interest in Wales.

The proposed development site contains part of Cestyll (figure 32), a historic garden included on the non-statutory Register of Landscapes, Parks and Gardens of Outstanding or Special Historic Interest in Wales. Cestyll is included within Part I of the Register as a garden of special historic interest (Reference number PG W (GD) 45 (ANG)). The garden is a notable inter-war designed landscape created by Violet Vivien from 1922 onwards. It is an informal 'plantsman's' garden that has small, separate but linked areas, orientated and related to the stream which runs through the site. The main garden lies just west of the proposed development site although the kitchen garden, gardener's cottage and associated remains lie within the proposed development site. A part of the essential setting of the garden, as defined in the register, lies within the onshore extent of the proposed development. The significant view north out of the garden, also defined in the register, lies within the offshore extent of the proposed development.

It is also understood that Cadw are examining the potential for including the landscape designs of Sylvia Crowe around Wylfa A within Part I of the register.

4.0 HISTORIC CONTEXT AND DEVELOPMENT OF THE SITE

4.1 Prehistory (4000 BC - 42 AD)

The prehistoric period (figure 39) is well represented on Anglesey and within the wider study area. The settlements most frequently encountered as buried archaeological remains are the roundhouse settlements of the late prehistoric and Romano-British periods. Sites representing other periods occur at a lower density. Archaeological excavations in advance of construction of a business park at Holyhead, approximately 17km to the southeast of the proposed development site, has revealed the presence of a much greater density of settlement than was formerly realised, hidden by many years of cultivation, but still retaining considerable

archaeological evidence, with Neolithic, Bronze Age, Iron Age, and Romano-British settlement all being found clustered around a wetland area.

Evidence of Mesolithic settlement has been found on Anglesey, typically as flint scatters around coastal edges, such as at Aberffraw (PRN 24043) approximately 24km south of the proposed development area. Further evidence of the period has been found on the fringes of Llyn (lake) Alaw approximately 6.4km to the southeast, where three thin blade-like flint flakes (PRN 7046) were discovered. The proposed development site has a coastal strip to the north and the wetland of Tre'r Gof, which lies towards the east of the proposed development site, may once have been a lake prior to silting. Despite this, Mesolithic sites on Anglesey are rare and the potential for discovering activity on the site is therefore low.

Within a 5 Km radius, an important group of Neolithic and Early Bronze Age ceremonial monuments are known. A particular group lie to the west and north of Llanfechell, 2.5 Km south of the proposed development area. These comprise a single standing stone and, in particular, a remarkable group of three standing stones in a triangular arrangement at Llanfechell (Scheduled Ancient Monuments AN 80 and AN 30; PRN 3047, 3048), and a now ruinous chambered tomb nearby (PRN 3046) (figure 1). Such monuments typically occupy ridges of elevated ground and can be found on coastal edges and further inland. An enclosure, possibly of Bronze Age or Iron Age date has been identified on aerial photographs to the north of Llanfechell, and three probable Bronze Age ring barrows alongside (PRN 7362 and PRN 27534).

Neolithic chambered tombs or *Cromlech* are also found fairly frequently across Anglesey and were built by early farming communities to house the cremated remains of their dead. One of the best preserved examples is the Scheduled Ancient Monument of Barclodiad y Gawres (PRN 3032, SAM AN 032) near Aberffraw, located approximately 21km to the southwest of the proposed development site. The tomb is a cruciform passage grave related to the famous tombs of the Boyne valley, Ireland. Originally consisting of a long narrow passage leading to a central chamber and three lower side chambers covered by a large circular mound, it is now partially restored and has been re-roofed with a concrete capping. Five of the stones which make up the walls of the chamber are decorated with abstract designs including spirals, zigzags and lozenges. Such tombs are found along coastal edges and further inland on Anglesey but typically occupy elevated topography such as ridges, promontories, and headlands.

To the south of the existing power station a suspected Bronze Age burnt mound (GAT-1/feature 16) was discovered during the excavation of a test pit by Structural Soils Ltd as part of the ground investigation work (figures 22 and 26, appendix III). This feature was only partially visible in the test pit, however the area was included within a detailed geophysical investigation which identified the feature as being a strong thermoremnant anomaly close to a redundant palaeo-channel. Further to the east a second thermoremnant feature (GAT-23) was identified during the geophysical survey (figures 25 and 29) which may also be a burnt mound. This anomaly is located on a hill slope, which is unusual for burnt mound locations. As such the anomaly may also be interpreted as having been created by fires from the removal of the hedge line and thus not of prehistoric date.

Burnt mounds are typically found opportunistically located near to or alongside watercourses, and can be found in groups or singly on their own. They are fairly common throughout Anglesey and North Wales and figure 39 shows known site locations on Anglesey. It can be seen from this plan that there is a dense distribution along a linear course from the northwest to the southeast of Anglesey, approximately 13.5km southeast of the proposed development site boundary, which depicts the line of the current A55 road. The distribution is mostly a result of archaeological recording on the road. The A55 follows a route that is somewhat more wet and marshy than that found within the proposed

development site, however it demonstrates the potential density of burnt mounds around watercourses and marshes. In closer proximity burnt mounds have been found at Carrog (PRN 27515) located 1.9km to the east of the proposed development site boundary, and east of Penciw (PRN 3565) located 5.8km to the east (figure 39).

The proposed development site has the potential for burnt mounds to be discovered in proximity to the several watercourses which cross the site, but also in proximity to Tre'r Gof marsh (figure 20) towards the east of the site, and any watercourses that have silted up or been deliberately filled in during land improvement since the Bronze Age. Burnt mounds are not traditionally indicative of areas of settlement and can be found in clusters or as an isolated feature.

Further towards the east of the proposed development site the VMD geophysical survey detected a number of linear and circular anomalies (A-67, A-69, A-71, A-72) (figure 22 and 38), mostly in the northern portion of the zone. The sites with the most archaeological potential were two circular anomalies and associated features. Both could be interpreted as prehistoric ditched enclosures although they could also be interpreted as modern disturbance. One anomaly (A-67) lies on the top of a small hill, with good views in all directions and is a typical position for a prehistoric defended enclosure / settlement and many comparable sites have been identified on Anglesey.

Evidence of later prehistoric activity on Anglesey is largely represented by defended enclosures and settlements typified by circular houses. The latter can be built of stone, timber or clay. The place-name 'Cestyll' (English: 'castles') at the western neck of the Wylfa headland at Porth y Pistyll may represent the location of a former coastal promontory fort, although nothing now survives (PRN 3538, 3539) (figure 1). Lewis Morris' coastal survey of c. 1730 (figure 5) marks 'Fort' in comparable locations on the flanks of the headlands which define Cemlyn Bay, 1km to the west (PRN 3532, 3536). A large and prominent headland, 3.5km to the east of Wylfa, at the northernmost extent of the island, is occupied by one of the largest promontory forts on Anglesey called Dinas Gynfor (SAM A038; PRN 3067), which has steep cliffs on the seaward side providing a natural defence. The less steep landward side is protected by a wide swathe of marsh. The enclosure at Llifad (SAM AN 79; PRN 3053) might be of similar date. Undefended and lightly defended hut circle settlements are known to occur sporadically in northern Anglesey. The drumlins located towards the east of the proposed development site (figure 20) would be typical locations for defended prehistoric enclosures or hillforts. Defended prehistoric domestic enclosures can be seen exploiting the natural elevated environs elsewhere on Anglesey, at Fodol (PRN 24792) and at Llanfairpwllgwyngyll (PRN 24788) towards the south of the island (figure 39).

In conclusion suspected prehistoric archaeology has been identified on the site in the form of a possible Bronze Age burnt mound (GAT-1/feature 16) identified during test pitting, and possible prehistoric ditched enclosures (A-67, A-69, A-71, A-72) identified in the targeted geophysical survey, although these features have yet to be confirmed. There is a plethora of prehistoric settlement, funerary and ritual monument sites across Anglesey and within 5km of the proposed development site.

4.2 Roman period (42 AD - 400 AD)

Direct evidence of settlement in the Roman period is absent from the north coast and its hinterland, however Romano-British settlements are found elsewhere on Anglesey such as the domestic hut groups at Porth Dafarch (PRN 2754) near Trearddur bay and at Din Lligwy (PRN 2132), located to the west and east of the island respectively. In closer proximity to the proposed development site a number of Roman finds have been discovered. Within the southern part of the proposed development area a copper cake (ingot) (PRN 3063) was discovered, west of Tregele. This cake was one of twenty-seven found across North Wales,

eighteen on Anglesey. These cakes are ascribed to the Romano period and were originally believed to have come from the mines at Parys Mountain located 9km to the southeast of the proposed development site. However, evidence for Roman workings at Parys Mountain is mostly circumstantial and it is possible that they originate from the mines at The Great Orme or even further afield (figure 1). It is not clear if this was a chance find or whether it is indicative of Roman occupation or activity within or close to the proposed development area.

Approximately 2.7km to the southeast of the proposed development site a Roman saddle quern (PRN 5384), coins (PRN 998), and a brooch (PRN 999) have been discovered. Again, it is not clear whether these are indicative of Romano-British settlement in close proximity to the proposed development area, or whether these items are the result of mercantile activity.

In conclusion there is clear evidence for the settlement of Anglesey by the Romans in what is relatively close proximity to the proposed development site. Moreover, in close proximity to the site a number of Roman finds have been made. There is no tangible evidence for the existence of Roman archaeology within the proposed development site, however it is possible that it currently remains undetected by the geophysical survey and trial trenches.

4.3 The Middle Ages (400 AD to 1485 AD)

Early Middle Ages (400 AD to 1100 AD)

Evidence for the early Middle Ages (from the 5th century AD to the 12th century AD) on Anglesey is slight, though a church and community may have been founded during this period at Llanfechell (PRN 3051) approximately 1.2km to the northeast of the proposed development site (figure 1). In an extent of 1352 the lands there are described as being 'held of St Mechell' (Carr 1972, 209). This would imply the former existence of a quasi-monastic community of canons (in Welsh *claswyr*) and the presence of a *clas* church; that is a church and community headed by an abbot, with its own lands. *Clas* churches were considered archaic and decadent by the 12th century, and were suppressed in the 13th century. The present church at Llanfechell dates from the 12th century (PRN 3051). The parish of Llanbadrig lies east of Wylfa (figure 2), where the presence of a 9th century cross-slab suggests the foundation of an ecclesiastical site prior to the existing 12th century church (PRN 3059, 3052). The parish to the west is Llanrhwydrys, where another 12th century church (PRN 3524) lies secluded on the promontory west of Cemlyn approximately 2km west of the proposed development site.

Evidence to date suggests that the likely centres of activity in the Early Middle Ages lie away from the proposed development site and it is unlikely that such remains would be found at the proposed development site, although the possibility of encountering outlying remains cannot be entirely discounted.

Late Middle Ages (1100 AD to 1485 AD)

By the 12th century the Kingdom of Gwynedd, including Anglesey, had been sub-divided into a number of regional districts for purposes of royal administration and the collection of dues and renders. These regional units were called commotes (Welsh *cwmwd*). There were six on Anglesey and in each commote there was a royal manorial centre (Welsh *maerdref*) which provided a focus for administration and taxation within the commote. The maerdref would have extensive demesne lands which were worked by estate bondmen who were tied to the land under a restrictive tenure (Welsh *tir cyfrif*). In the wider landscape of the commote there existed other bond tenants of the king or prince who held their land under a hereditary tenure (*tir gwelyog*). *Tir gwelyog* tenure reflects the hereditary nature of the tenure and the term derives from the *gwely* (= matrimonial bed) which is a shorthand way of defining the relationship, through kinship, of smallholders, free or bond, within the subdivisions of a

township (*tref*). The *tref* was the principal defining land unit within the commote. In addition to the secular landholders, the Bishop of Bangor held lands throughout Anglesey, and certain churches e.g. Llanfechell held lands of their own.

The north-west corner of Anglesey (including the proposed development site) formed the commote of Talybolion. The proposed development site lies within the ecclesiastical parishes of Llanfechell and Llanbadrig (figure 2). These parishes included several townships, in particular Cemais, Clegyrog, Llanfechell and Caerdegog. Smaller units of land, called hamlets, included Cafnan, Tre'r Gof and Llanddygfael (figure 3). The commotal *maerdref* lay at Cemais. The demesne land here extended to over 400 ha. The hall and royal apartments are thought to have stood in the vicinity of the present farms of Neuadd Fawr and Cemaes Fawr, on the east side of the harbour located 1.0km east of the proposed development site.

The free township of Clegyrog (figure 3) lay to the south of Cemais, and was held by nine *gwelyau*. The lands are largely represented by the farms of Clegyrog Blas, Clegyrog Ganol, Pentreheulyn and Rhosbeirio. A detached hamlet, Tre'r Gof (English: 'township of the smith') lay to the north-west, and includes part of the proposed development site. The hamlet was held by two *gwelyau*, namely Goronwy Wyddel and Ithel ap Dafydd. The name of the former is preserved in the present placenames of *Tyddyn Goronwy* and *Gwyddelyn*, which lie within the south part of the study area (see appendix I, figure 4). The farms of Pentregof, Tre'r Gof Isaf and Tre'r Gof Uchaf denote the location of the remainder of the hamlet (see appendix I, figure 4).

Caerdegog was held by six freeholding *gwelyau* and included two hamlets, Llanddygfael and Cafnan (Carr 1971-2, 202). Though the identification of lands with former townships is difficult to reconstruct, Caerdegog appears to have included a substantial part of the study area (Jones Pierce 1951,8). The present farm of Caerdegog Uchaf lies to the south of the study boundary, however documents preserved within the Llwydiarth Esgob collection at Bangor University record, in 1660, the lands of 'Rwylfa, Tormain and Tyddyn Madog' within the township of Caerdegog (Llwydiarth Esgob, 2). In 1663 the lands of 'Y tu yn y Rwhylfa, Y tormayn, Dryllie porth'r ogo, Pen'r Wylfa, Kay Mawr, Tir Madock, Kay Ucha and Kay Merddyn' are similarly recorded in a marriage settlement of the daughter of William ap Hugh ap John of Rhwylfa. This tells us that the present farms of Wylfa and probably Nant Orman were considered part of Caerdegog township, and the references to 'Kay Mawr, Kay Ucha and Kay Merddyn' (Kay = Cae, in English 'Field') hint at former open field systems (see appendix I, figure 4).

Following the English conquest of Gwynedd in 1283 many aspects of the structure of society changed. Whilst the pattern of regional royal administration which applied during the twelfth and thirteenth centuries had evolved slowly, after 1283 more wide-ranging changes were put in place which were to pave the way for social and landscape change during the succeeding centuries. Lands which were formerly held by the Welsh Prince now accrued to the Crown. Tenures were leased en-bloc as fee-farms to royal favourites and local men of standing. Consolidation took place but, in general, the pattern of landholding held.

The proposed development site and the area within the vicinity appears to have been extensively occupied and utilised during the Middle Ages, forming a substantial part of the township of Caerdegog (Jones-Pierce 1951, 8). This form of land settlement and administration was typical of most of Anglesey at this time. The wider area contained a number of settlements of varying sizes and the land was managed for agricultural purposes. The *Extent of Anglesey* of 1352 indicates that twenty tenants are recorded in Talybolion in 1350-1, each paying an annual fine of 4d and bondman's relief of 6s 8d, and it has been suggested that the immigrant population of the area had increased as a result of labour shortage caused by the Black Death (Carr 1982, 162-3). It also suggests that some of the land was unlet and used for grazing (*ibid.*). Medieval settlement is known from documentary

evidence, but no settlements have been located. Some of these may lie underneath later farms and cottages, but others may have become deserted and not rebuilt, leaving potential for the survival of medieval buried archaeology within the study area.

The VMD geophysical study (figure 22) identified widely spaced anomalies towards the south of the study area (GAT-90) which have been interpreted as possible medieval strip fields. These could be indicative of a former field system but further investigation would be required to confirm the interpretation.

Evidence for the early medieval period (5th-12th centuries) on the development site is very slight, although it has been suggested that some of the lands here were 'held of St. Mechell' (Carr 1972, 209). From at least the 12th century the development area and that surrounding it contained the townships of Cemais, Clegyrog, Llanfechell and Caerdegog, and the hamlets of Cafnan, Tre'r Gof and Llanddygfael (figure 3). It remains difficult to reconstruct the specific lands associated with former townships and hamlets, although Caerdegog appears to have included a large part of the study area, including the hamlets of Cafnan and Tre'r Gof (Jones-Pierce 1951, 8). Whilst evidence for medieval settlement within the development area is known from documentary sources only, and some evidence may lie or have been destroyed beneath the later farms and cottages, there is potential for the discovery of medieval buried archaeology in areas that have not been subsequently developed. This is particularly the case in relation to the medieval township of Caerdegog, where the geophysical study suggests that surviving evidence may be most prevalent in the west of the development area. It is likely that most of the current field boundaries are post-medieval in date, and the survey suggests that evidence of medieval field systems are likely to survive below ground, probably associated with the medieval townships.

4.4 Post-medieval and Early Modern periods (1485 AD to 1900 AD)

By the 16th century AD the enclosure of the open fields with banks and ditches had begun and the dispersed arable quilleys of an earlier landscape were amalgamated into parcels and closes. The sale of Crown lands during the 17th century AD created many opportunities for fragmentation and new groupings and greater consolidation of holdings in the creation of large landed estates. Some jumped the gun, as the bemused surveyor of Crown lands, John Fludde, remarked when he arrived at Cemaes in 1608:

'We find the township of Cemais to have been sometimes the kings majesties manor, and part of ye principality of North Wales: As by a certain reccorde called the Extent book of North Wales, it dooth and may appear. And also we find that there was a patent granteaed of the said manor of Kemmais, by the late King Henry the eighth of famous memory to one Nicholas Hurlton, Clerk. And that nowe one Sir Willm Thomas, Knight dooth hold and enjoy the said manor as his free hold; and hath so doon by himself and his Ancestors, for the space of forty years and upwards ... but by what right and title we know not' (PRO, LR2/205, 128).

The key evidence of the historic period identified through the archaeological desk-based assessment (appendix I) and geophysical survey (appendix III) of the proposed development site appears to be primarily of post-medieval former field boundaries, of which many appear to have gone out of use during the opening up of fields and land improvement in the 19th century. The trial trenching phase dismissed some of the suspected boundaries as being of geological in origin, but confirmed the existence of others, and coupled with good cartographic documentation in the Ordnance Survey maps of 1889 (figures 10, 11, and 12), 1900, and 1924 it appears that the dominant archaeological feature across the area are these field boundaries. However, although the field boundaries are well represented it is possible that some are actually of an older date, possibly medieval, and have merely been retained within the post-medieval field system.

4.4.1 Cartographic and Historical Evidence in the Post-Medieval and Early Modern Periods

A considerable amount of cartographic evidence survives for the proposed development area from the later part of the 18th and early 19th century, connected with the Carreglwyd Estate, these include a volume of estate maps dating to about 1780, a *Survey of the Carreg Llwyd and Berw Estates; the Property of Holland Griffith Esquire* (NLW B/Misc Vols/7) (figure 7), which details the land holdings at that time. The fields associated with Cafnan are shown to be a patchwork of small fields, which are replaced by a more regular field pattern by the time of the 1st edition Ordnance Survey map of 1889 (figures 10, 11, and 12). A map of the mill at Porth Cafnan, dating to about 1800 (NLW Map 7016) (figure 8), shows the mill with associated ponds and enclosures, along with Cafnan House and a barn on the High Road between Llanfechell and Cemaes. The mill is a grade II* listed building (LB 24416) and lies 47m southwest of the proposed development area (figure 40), Cafnan House and barn are however sited within the area.

In conclusion, from the 16th through to the 19th century, a process of amalgamation of land holdings and estate development appears to have taken place, from which a number of estates (Carreglwyd, Plas Coch, Cefn Coch and Bodorgan) held land within the proposed development area. The pattern of land-holding by the estates continued into the time of the Tithe Surveys of 1842 (figure 9) and 1844, although a number of properties, such as Simdda Wen, remained as smaller landholdings. This had developed to such an extent that in Llanfechell 4% of all landholders in the parish held 70% of the total land (NLW, Tithe Maps and Apportionments of the Parishes of Llanbadrig and Llanfechell). Amalgamation and changes to field boundaries, along with agricultural improvement of fields appears to have been carried out by these estates, and this is shown on the map regression.

4.5 The twentieth century

The last decades of the 19th century and the early decades of the 20th century witnessed numerous changes on Anglesey caused, in part, by the desire of the new wealthy classes to own rural homes in addition to their principal homes elsewhere. Up to this time the houses had been largely occupied by the land owners and occupiers who farmed the land. No large estate houses lay within the study area, and the largest farmhouses would have been at Cafnan, Wylfa and Tre'r Gof (figure 4).

Nant Torman was one of the earliest to be developed, in this instance by the boat builder Ishmael Jones. Wylfa was developed and rebuilt by David Hughes; Rosina Buckman rebuilt Galen Ddu, and Violet Vivien developed the house and gardens at Cestyll. Other houses were rebuilt at this time, typically as large square Victorian houses with walled gardens, sometimes including a lodge, and extensive grounds around the house. Simdde Wen was typical of these, rebuilt before 1898, with walled garden, wooded grounds and extensive outbuildings. The house was taken over as offices during construction of the power station at Wylfa and later became the social club, but was recently demolished, though the lodge remains. Tan yr Allt was similarly rebuilt between 1898 and 1900, though on a smaller scale, and to the east of Tan yr Allt a new house 'The Firs' was built on the site of Pen y Groes Isaf, also with extensive grounds laid out around the house (figure 4).

During the Second World War a Chain Home radar defence station was established at Wylfa (feature 13, appendix I, figure 4). A 1945 vertical aerial photograph (WAG 541/RAF/206 Frame 4020, Nov 20 1948) (figure 13) shows the installation. Two tall wireless masts stand close to the cliff edge near Porth Gwartheg while a semi-circular ring of low, dome-shaped, bunker-like structures run from Wylfa House to Porth y Pistyll. The staff complement at these stations was large and several other structures in the vicinity are also likely to be associated with the station. The purpose of a chain home station was detection of enemy aircraft by radar or, in some instances, as along the north coast of Wales, the management of shipping in the

Liverpool approaches. The radar worked by ‘floodlighting’ the sky with pulsed radio waves. The ‘echo’ from obstacles in the path would be received and displayed at the base station. Very little of the chain home guard installation survives as upstanding remains today, due to the landscaping programme associated with the construction of the existing power station, although remains of red-brick and concrete from the period can be seen along the coastline to the north of the proposed development area.

4.6 The existing nuclear power station at Wylfa

The then Central Electricity Generating Board (CEGB) applied for consent to build Wylfa power station in 1960 and a public inquiry commenced in 1961 to consider the application, with consent being given to build an 800MW power station in late 1961, later increasing to 1000MW and eventually 1180MW. In 1963, following various technical reports and site investigations, work began on the construction of the site and its two Magnox reactors. The main construction phase lasted through the 1960’s. Wylfa was the last and largest of the eight Magnox nuclear power stations built in the United Kingdom, and was designed by Farmer and Dark, with William Holford and James Williamson and Partners providing architectural and engineering advice respectively. The landscape around the plant was designed by Dame Sylvia Crowe. The power station was officially commissioned on Friday 12th May 1972 by L Melvyn W Rosser, Chairmen of the Welsh Council. In 1973 the CEGB received a Financial Times Industrial Architecture Commendation for Industrial Design.

The reactor building (figure 41) is 183 feet high and is a large concrete structure housing two Magnox type reactors between which are three primary dry store cells and solid waste voids. The main function of these is the handling of new and spent fuel elements and maintenance of the associated machinery, most of which has to be done remotely. The facility for loading spent fuel flasks and putting them on transporters for transfer to Valley railhead is between this part of the building and the secondary dry store cells. To the west of the reactor building are the secondary dry store cells. The reactor building includes a large concrete basement some 10m below ground level.

The Turbine Hall (including ancillary buildings) occupies the eastern side of the site. The basement level of the building is some 5m below ground level with the reinforced concrete extending to 3m above ground level. South of the Turbine Hall are the main administration buildings, the station canteen and workshops/stores. Adjacent to the offices extensive parking is provided, with overspill at Porth y Gwartheg. A visitor centre stands alongside the approach road to the south-eastern side of the complex, and to the west is the Sport and Leisure club on the site of Simdde Wen.

The northern area of the site contains the water treatment plant. To the north of the building are two sets of tanks set within concrete bunds to supply acid and sodium hydroxide for use in the treatment of the cooling water, two brine tanks and four water holding tanks located across the road to the north, which link to the building via a pipe bridge. The gas turbine plant with its four distinctive exhaust stacks is located adjacent to the water treatment plant.

North of the fuel tanks is an open area leading to the main-site cooling-water outfall. This area is covered in made ground comprising primarily broken bedrock. Adjacent to the outfall are the backup sewage treatment works and holding tanks, where site sewage is stored before being pumped to the main treatment works located to the northeast. The north-western area of the site is occupied by a number of laydown areas, and also contains the active incinerator and the carbon dioxide tanks/plant. North of the carbon dioxide tanks set behind blast walls are two large fuel oil tanks for the gas turbines.

In the western area of the site is the pump house and associated plant, which are set within a deep concrete basement excavated into the bedrock at the level of the intake tunnels. The

pump house draws water from the sea via the intake tunnels, filters and treats this water before pumping it to the turbine hall.

The southern area of the site is dominated by the contractors' compound, which comprise two storey, temporary prefabricated cabins used as offices, rest rooms and change rooms.

To the east of the site is the 400kV switch house which is owned by the National Grid. As well as switch gear it houses the transformers which increases the generated voltage of 17kV to the grid voltage. The 132kV switch house does the same for the 'local' supply to Anglesey Aluminium and the local area.

Construction of the site was a massive undertaking with deep excavations for the cooling-water pump-house, reactor building, turbine hall and overflow. During the early construction phase of the station the site was levelled into two platforms, which involved the removal of material (both drift and rock) from high areas (mainly to the east) and the deposition of material in low areas (mainly to the west and north). The first platform was constructed to the east for the switch-houses at a level of approximately 18m OD. West of the reactor building, sea walls were constructed and the area backfilled to form a gentle westward dipping slope down to approximately 6m OD. Excavation for the reactor building would have reached 13m below the existing ground surface and to a 7m depth for the turbine hall. During the construction period work camps were established in the areas to the south and east of the current power station site boundary (see zones H and I in section 5.0). Following construction, banks of earth were deposited in this area and planted with trees to create a degree of landscaping from the landward viewpoint.

Geophysical survey carried out by Fugro Aperio Ltd has identified large areas of obvious ferrous anomalies and two areas of curvilinear anomalies (A-05 and A-38) (appendix III) between the minor road and the power-station complex and its access road (figures 22 and 23). The ferrous anomalies were produced by remains of the former construction camps and other buildings dating from the development of the existing power station.

The northern part of the proposed development site, including the area around the existing power station at Wylfa, is highly documented in aerial photographs. Black and white stills from 1968 (figure 14), 1971 (figure 15), and 1972 (figure 16), and colour stills from 1995 (figure 17) were provided by Horizon Nuclear Power and inspected for historical features. The stills from 1968 and 1971 clearly show the construction phase of the power station, and also the large construction platform situated to the immediate south and covering approximately 17.5 hectares. The disturbance of the ground here is evident, and it is likely that any upstanding and buried archaeological remains were destroyed by the construction process (figure 23).

4.7 Historic Landscape

Landmap is a national information system, devised by Countryside Council for Wales, for taking landscape into account in decision-making. The landscape is divided into units using four criteria, and on four hierarchical levels, where level four is the most detailed. The criteria are Earth Science; Biodiversity; Visual and Sensory; History and Archaeology; and Culture. The last two criteria are significant to this report. The proposed development site falls within three Historic Landscapes mapped at Level 3 (figure 18), as listed in the table below:

Table 1: Historic Landscapes as identified by Landmap

Code	Name	Description
YNSMNL056	Cemlyn Coastal Strip	A disparate and large low-lying coastal area of improved fields and scattered farms on the remote northern coast,

		including few individual features of historic interest (Cestyll Park and Garden: Grade II, an unusual, small and intimate 1920's garden, well-suited to its rocky seaside site).
YNSMNHL057	Fieldscape, north-west Môn	An elongated strip of small field systems and clusters of nucleated settlement (which) lies between the upland bloc of Mynydd y Garn and the low-lying systems to the north and east.
YNSMNHL055	Wylfa	There is no direct evidence of prehistoric activity in this area, although early and late prehistoric occupation within the surrounding landscape has been demonstrated. The place-name Cestyll (castles) in the west may represent a promontory fort, although no traces remain, and other defended areas are found in the vicinity of Wylfa. During the Second World War a Chain Home radar defence station was established to detect enemy aircraft and manage shipping. In 1963 work began on the construction of the nuclear power station, and it was commissioned in 1972.

The larger divisions identified within the LANDMAP process are, however, less easy to identify within the smaller proposed development site that is the subject of this report. The existing power station at Wylfa and its associated landscaping retains an identity of its own, but the division of the remainder of the proposed development site into an east and west part along a line which approximately follows the existing power station access road has less meaning within the context of this study. The whole area is largely defined through a common series of historical processes taking place within a largely coastal landscape. The features and processes which define this landscape include:

- coastal location
- dispersed settlement pattern of farms and cottages
- system of tracks and roads linking farms
- fairly regular field pattern of largely 19th century date
- development in the late 19th/early 20th century of larger country houses and gardens
- the construction of the existing power station at Wylfa.

L1. The existing power station at Wylfa

The power station, designed by Farmer and Dark, is completely dominating within the landscape; however the pastel colours and varied skyline help mitigate this, especially when the site is viewed from a distance. The landscaping and planting by Sylvia Crowe helps mitigate the impact when closer to the site. A large part of Sylvia Crowe's design, including two low hills created from material excavated during construction of the power station and the planting on and around these, lie within the proposed development site, though the power station itself lies outside. Sylvia Crowe was a significant figure in landscape design in the decades after the Second World War, and her earlier work at Trawsfynydd Power Station is a registered II* garden (Cadw 2008). The impact of the construction of the Wylfa power station is wider than its immediate footprint, as it led to improvement in roads, purchase and demolition of property, construction of pylons and power transmission cables and changes in agricultural management.

L2. Cemlyn coastal strip North-west Môn

Historic landscapes are the product of human impact, and they are identified through the recognition of historic processes visible within the landscape. There is little doubt that the

dominant forces that shaped the present landscape occurred in the 19th and 20th centuries, though earlier processes can be identified.

The exact location of medieval settlements is not known with certainty, though many place-names remain in use. Similarly the pattern of roads and tracks, though overlain by more modern patterns, is likely to retain a medieval influence, in particular the road linking Cefnallt to Tre'r Gof, with its unexpected right-angle bends and high banks (figure 4). Similarly the route from Caerdegog to Wylfa, through Tyddyn Du, would have allowed necessary communication within the medieval township. Within the Tre'r Gof township, the route linking Gwyddelyn, Tre'r Gof Ucaf, Tre'r Gof Isaf and Penrhyn may also be medieval.

The dispersed settlement pattern of farms and smallholdings is still recognisable by the presence of former farmhouses at Rhwng y Ddau Fynydd and Pen yr Allt, but there are no working farms within the study area, and all farm buildings are either converted or semi-derelict.

The change from farmhouse to country house, typified by the construction of large houses and gardens at Wylfa, Simdde Wen and Cestyll, is considerably less evident now than it would have been before the demolition of the houses at each of the sites (see appendix I). The Firs and Tan yr Allt are remnants of this, as are the remains of gardens at Cestyll, Wylfa and Simdde Wen. The landscape at Cestyll, because of the designation of the adjacent garden within the valley of the Afon Cefnallt, is of significance. The landscape continues outside the area defined within the register, to include Porth y Pistyll and the limekiln and boathouse.

The establishment of the WWII Chain Home Guard, though of historical significance, has left few tangible remains, and has had little lasting impact on the landscape.

The landscape is also typified by the semi-enclosed coastal strip of fields, usually defined by rugged grassland and dry-stone walls. The agriculture is dominantly sheep and cattle grazing, quite often with access to the foreshore.

The Anglesey coastal path has been formalised within the last few years, and occasionally deviates inland. Despite many public rights of way criss-crossing the coastal fieldstrip the landscape is mostly experienced from the coastal path.

L3. Cemlyn enclosed fieldscape North-west Môn

The largely straight field boundaries creating relatively regular field patterns are largely of late 18th and early 19th century date. Some boundaries, particularly those between farms, might, however, be earlier in origin. For example the boundary around Tyddyn Goronwy is, on the west, very irregular, whilst on the east it follows the relatively straight parish boundary between Llanfechell and Llanbadrig. Similarly the boundary between Tan yr Allt and Tai Hirion may be early in origin. The remaining field boundaries are mainly of 19th century date and of these the straight field boundaries around Park Lodge are typical, perhaps denoting the enclosure of an area of previously open rough grazing. The attempt to enclose the marsh at Cors Tre'r Gof has been noted above, but this was less successful, and only faint traces of these boundaries are now visible.

The fields are generally quite large and mostly enclosed by dry-stone walls, although some wire fences, hedgerows and cloddiau can be seen. The agriculture is mostly pastoral with sheep and cows being prevalent, however several fields in the south of the study area are given over to wheat. In the latter parts of the 20th century many of the farm outbuildings were converted into accommodation or allowed to become semi-derelict. Some of the larger farmhouses have become luxury homes and the nearby fields utilised as garden paddocks with no livestock being kept.

4.8 Historic Buildings

4.8.1 Background

The proposed development site contains a range of upstanding buildings, including 24 houses, a barn, a boat house and a lime kiln. Evidence of further buildings in this area dating to the last few centuries may be found in the historical and archaeological records. In order to understand the present buildings it is necessary to put them in their wider contexts and to explore the themes that influence and connect them. The buildings date from the 18th to the late 20th century, although the majority are of 19th century date. The programme of building recording is not yet fully complete, and the inclusion of these, in particular the substantial farmhouse and farm buildings at Cafnan, will allow a more complete analysis to be compiled.

The houses which survive today present a history of agricultural settlement dating back to at least the medieval period, with the houses of Tyddyn Goronwy, Tre'r Gof Uchaf, and Nant Orman (appendix I) retaining references to medieval names. They indicate considerable agricultural rebuilding in the 19th century, but after the Second World War land was amalgamated into larger farms and the smaller cottages became divorced from their holdings. This practice increased following the construction of the power station at Wylfa, when some of the surviving former agricultural dwellings were upgraded to modern houses. In late Victorian and Edwardian times a new wealthy social class moved into the area, and built new larger houses either, as at Wylfa, on the site of earlier dwellings, or as at The Firs, in new locations. Large country house gardens were constructed, and a new society developed. The two World Wars witnessed the end of the country house era, and new houses were constructed in a more modest but comfortable fashion – sited to take advantage of the coastal views, but in an affordable and more understated style. It is of interest that the two prime examples of these, Pennant and Bronydd, were built by the owners of the large farmhouse at Cafnan and the larger ostentatious Victorian house at Wylfa.

A comprehensive exploration of the built heritage of the site will be forthcoming in the report on the historic buildings present within the proposed development area.

4.8.2 Upstanding archaeological features (figure 4)

The upstanding remains range from derelict or ruined buildings, such as the former Cestyll boathouse and adjacent lime kiln (sites 1 and 2, appendix II) to extant houses which are either still lived in or recently vacated. Seven are considered to be of regional (North Wales) importance because of a combination of historical associations, architectural interest and period interest. Seventeen are considered to be of local or lesser importance. None of the standing buildings are known to date from earlier than the 18th century, and most are of 19th century or 20th century date.

Table 2: List of upstanding sites

Site no.	Site name	Category of importance
1	Boat House, Porth y Pistyll	C
2	Limekiln, Porth y Pistyll	B
3.	Cestyll	A
6	Tai Hirion	C
11	Boat house, Porth yr Ogof	C
14	Pennant	C
15	Tan yr Allt	C
16	Bronydd	C
17	The Firs	C
18	Tyddyn Du and Pen y Groes Isaf	C

19	Rhwng y Ddau Fynydd	C
20	Lodge	C
21	Pen Lon	C
22	Ty'n y Maes	C
23	Ty Croes	C
24	Tyddyn Goronwy	B
25	Tre'r Gof Uchaf	B
26	Nant Orman	B
27	Park Lodge	B
28	NDA Depot	D
29	Chequers and Bryn Fferen	D
30	Penrallt	C
33	Caerdegeg Isaf	C
34	Cafnan	B
37	Tyddyn Gele	C
42	Stone barn	C
47	Sheep fold	D
48	Barn/Cottage	E
49	Ysgubor Ddegwm	E

4.8.3 Demolished archaeological features on site (figure 4)

There are thirteen structures identified either from remains or cartographic sources which are now demolished. These structures are mostly of unknown importance as the extent to which they have buried remains at foundation level is unknown.

Table 3: List of demolished sites

Site no.	Site name	Category of importance
4	Pen Pistyll	E
5	Cwt	E
7	Simdde Wen	E
8	Pen y Groes	E
9	Cae'r Brenhin	E
10	Wylfa	E
12	Former lifeboat station (Porth y Ogof)	D
13	Chain Home Guard Installation	E
36	Field Boundary	D
39	Field Boundary	D
40	Field Boundary	D
41	Field Boundary	D
45	Field Boundary	D

5.0 ARCHAEOLOGICAL POTENTIAL OF THE SITE

5.1 Introduction

This section will summarise the findings of the archaeological desk based assessment and evaluation work by dividing the proposed development site into zones (figure 23) to represent areas of known archaeological remains and archaeological potential. These zones are based

upon a range of factors including topography, past ground disturbance, and the recognised archaeological resource based upon the archaeological works to date.

Zone A (figure 25)

Zone A is approximately 0.5 km² and occupies an area encompassing several enclosed grazing fields in the southwest part of the study area centred on NGR SH 3477092840. The zone includes the majority of two isolated hills (drumlins) (figure 20) with a maximum peak height of 45m OD, with a lower ridge of 20m OD located to the southwest and also within the zone boundary.

The zone is well documented in overhead aerial photography stills dating to 1945, 1971, and 1972 (figures 13, 15, and 16). The photographs depict the zone much as it exists today, with the area segmented into open grazing fields occasionally supplemented with arable fields. Moreover, the zone does not appear to have been effected by ground disturbance during the construction of the existing power station at Wylfa.

The existing assessment and evaluation data has been collated to create a map (figure 24) showing the suspected level of disturbance across the zone. The map also depicts the key historic themes present as identified through the geophysical surveys, test pits, and trial trenching investigation. Zone A is dominated by improved agricultural land where disturbance through agricultural activity such as ploughing and late 18th and 19th century land improvements has removed earlier surface features.

The zone is crossed by the road linking Treglele with Cafnan farm which is likely to have removed evidence of earlier remains. Furthermore, the zone has the occasional areas of single dwelling 19th and 20th century development which is likely to have degraded or destroyed earlier remains, although there is the possibility of earlier structures beneath or alongside the existing buildings.

The archaeological desk-based assessment (figure 4, appendix I) report identified two upstanding structures of historic importance within the zone, Pennant house (feature 14) and Rhwng y Ddau Fynydd farm (feature 19), both of which are considered to be of local importance. Pennant was constructed around 1940 while Rhwng y Ddau Fynydd is depicted on the 1889 OS map and appears to be mid to late 19th century in date. Both of these structures have recently been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 4.8).

A total of eight boreholes and seven test pits have been excavated within the zone by Structural Soils Ltd (figure 19) as part of the ground investigation work. Four boreholes and four test pits were monitored by GAT for buried archaeological remains.

A VMD survey has been carried out across the zone (figure 22) and detailed geophysical investigation has targeted four 1ha areas and one larger 4.7ha area (figure 25). A total of eight evaluation trial trenches were then excavated within these areas to target geophysical anomalies (figures 26 to 29).

The VMD survey detected linear anomalies extending across all of Zone A. These were interpreted as being former field boundaries. These were further investigated by four areas of targeted geophysics and five trial trenches (figures 25 to 29). The targeted geophysics (GAT report 987) revealed additional boundaries and when viewed alongside the trial trench results allowed some possible boundaries to be reinterpreted as geological features (A-108 and 107) or modern disturbance (GAT 15 and 16) (see appendix III) (figures 22 and 25).

The boundaries relate to the development of field systems across Zone A which, historically, were mostly holdings of Cafnan, a farm on the western border of the zone. Three of the

former boundaries (A-95, A-96 and A-121) (figure 25) are shown on the 1889 (figure 10) and 1924 Ordnance Survey maps and were therefore subdivisions of the present field system that were removed in the 20th century.

The Ordnance Survey 2inch manuscript dating from the 1820s (figure 6) shows some field boundaries and these correspond to the present system although unfortunately the area around Cafnan is not shown in detail. It does however show that the current field system was established across at least parts of the area around Wylfa at this time.

The earliest map evidence is a Garreglwyd and Berw Estate survey of Cafnan from c.1780 (figure 7). The fields here are much smaller than the current system although the layout to the north of the road appears to be similar. The shape of many of the fields on the map can be recognised as boundaries on the geophysical survey. Unfortunately it appears that the map is semi-diagrammatic and not drawn accurately to scale. Some boundaries can be assigned to the geophysical features and current boundaries with a fair degree of certainty. Field 15 on the map appears to correspond to the present field to the north of the road. Fields 16 and 23 appear to correspond to anomalies A-90 and GAT 17, 18 and 19 (figure 25), and field 3 to anomaly A-124. The southern boundary of the map follows the current boundary/watercourse allowing an estimation of the corresponding boundaries at least in the southern part of the zone. Unfortunately field 6 which appears to contain a building cannot be located with accuracy. It appears to be close to the border of Zone A, but is most likely to be just to the west, at the end of the track that runs south from Cafnan. A small rectangle on the map in field 19 could indicate a barn or animal enclosure and may correspond to anomaly A-114.

Many of the linear anomalies to the south of the road can be assigned to fields on the 1780 map (figure 7). Unfortunately the interpretation must be seen as being somewhat conjectural due to the inaccuracy of the map.

The level of preservation of the former boundaries appears to be variable. Four were examined with trial trenches (trenches 2, 4, 5, and 6) (figures 25 to 29). One boundary was clearly visible as an archaeological feature (GAT-5 figure 25). The three weaker anomalies (GAT-16, GAT-17, GAT-19) could not, however, be located in the trial trenches and were also not obvious as features in the upper soil horizons as seen in the trench section.

The field system to the north of the road (GAT-90, figure 25) is not shown on the 1780 map (figure 7) and may therefore predate the 18th century field system, although the map may not be accurate enough to have depicted every field boundary. Widely spaced parallel anomalies in the southern part of the system may indicate medieval strip-fields. The small triangular former field containing the possible strip-fields also appears to be cut by the road, again suggesting an earlier date. It can therefore be suggested that this area contains early fields, possibly relating to the medieval township of Cafnan (figure 3).

Seven test pits were hand excavated by *Fugro Aperio* within the zone to target suspected buried services identified as part of their programme of geophysical investigation (figure 19). These seven test pits were monitored by GAT for the presence of any buried archaeological remains. In test pits 62a and 76b deposits of fire-cracked stones were found surrounded by black charcoal rich deposits, which were interpreted as possible Bronze Age burnt mounds. These deposits were then included within a detailed programme of geophysics (GAT report 987) which produced significantly enhanced magnetic anomalies (GAT-23 and GAT -1, appendixIII, figure 25) although without the typical random dipoles produced by individual stones usually found in a burnt mound. Two similar anomalies (GAT-24 and GAT-2, figure 25) were also identified in the targeted geophysical survey area. These latter two anomalies were examined with trial trenches (trenches 1 and 8, figures 26 and 29); GAT-2 consisted of a small amount of root burning and GAT-24 a tree bole with mineral panning and further root burning. The possible burnt mound (GAT -23, figures 25 and 29) on the line of boundary A-

96 (in sloping fields, not a typical burnt mound location) may also be interpreted as the result of fires dating from the removal of the hedge line. The possible burnt mound GAT-01 is next to a water source, a typical location for this site type, and is more likely to have been correctly identified.

One further anomaly of interest was identified in this area within geophysics area 3 (figure 28). This comprised a curvilinear cut feature running around the top of a small hill (A-91, figure 25). Trial trenching determined that this was a modern feature, possibly a deep rut caused by earth-moving machinery.

Towards the southern end of the zone within geophysical area 1 (figure 26), the first trial trench revealed a schist stone capped drain running from north to south across the trench which had not been identified during either the VMD or targeted geophysical survey. This drain was identified as a modern stone-capped field-drain at the time which is one plausible interpretation. Another interpretation is that the drain may not be linear as first thought as only a small section was uncovered, and that it may in fact be prehistoric in origin, as it closely resembles drains found in prehistoric round houses.

Archaeological Potential

There is no evidence to suggest that zone A was disturbed by the construction of the existing power station at Wylfa. Although, the historic aerial photography (figures 13, 15, and 16) and c.1780 historic map (figure 7) has shown that the zone has been historically utilised for agriculture, and as such, land improvements in the late 18th and 19th centuries are likely to have removed any visible surface features. The test-pit ground-investigation data has shown that the areas of flat pasture away from the drumlin slopes have fairly deep soils (0.6m to 0.95m), most likely due to land improvement, years of ploughing, and the washing of soil down the steeper slopes of the drumlins. As such, it is expected that buried archaeological features will have escaped the worst of the ploughing and land improvement.

Upon the peak of the central drumlin, the excavation of trial trenches 6 and 7 (figure 28) showed that the soil depth was shallower (0.4m) than the lower areas due to soil creep down the slopes. As such, any buried archaeological remains may have been disturbed by ploughing on the upper slopes of the drumlins.

The elevated environs of the drumlins would have made them favourable for a defended prehistoric enclosure or hillfort (see section 4.1). The Fugro geophysical survey and targeted geophysical survey identified a curvilinear ditch curving around the top of the central drumlin (A-91, figure 25) which was originally interpreted as a possible prehistoric defended enclosure, however the phase of trial trenching targeted this anomaly and determined that it was in fact modern disturbance, possibly from agricultural process or the construction of the existing power station. The geophysical survey did not identify any other anomalies to suggest the presence of such a settlement and there is no further evidence to suggest that the drumlins, although historically favoured for such sites, were in fact utilised for a defended settlement or hillfort. This may be because the elevated environs of the drumlins were not exploited in the prehistoric era, or because the site has remained undetected by the geophysical survey and trial trenches. It is possible that small subtle features such as pits and postholes cut into the substrata could be undetected by the geophysics, however it is likely that a defended settlement with features such as ditches, banks, and roundhouses would be detected by the gradiometer.

The flat and sheltered land around the base of the drumlins, coupled with the proximity of a stream to the east, would have made the site favourable for occupation throughout history, although the geophysical surveys, test pits, and trial trenches failed to find any evidence of settlement. There is however the potential for smaller, more subtle buried archaeological remains across the zone such as pits and postholes, which could have remained undetected by

the geophysical surveys. Such features have been found elsewhere on Anglesey within prehistoric contexts, as at Parc Cybi Holyhead and Llandygai near Bangor where pits dating to the Neolithic period were discovered, with some containing sherds of purposely deposited pottery often found alongside stone tools. These pits were sometimes found to be entirely isolated, and sometimes in small groups, occasionally utilising the base of natural slopes, presumably due to the sheltered aspect.

The key historic period represented through the assessment and evaluation of the zone appears to be primarily of post-medieval former field boundaries, many of which appear to have gone out of use during the opening up of fields in the late 18th and early 19th centuries. The trial trenching phase dismissed some of the suspected boundaries as being of geological in origin, but confirmed the existence of others, and coupled with well documented cartographic sources it appears that the dominant archaeological feature across the zone are these field boundaries. Some boundaries may have earlier, possibly medieval, origins and have been incorporated into the modern field system. The geophysical survey also identified a field system to the north of the road (GAT-90, figure 25) that is not shown on the 1780 map (figure 7) and, as such, may represent a system of medieval strip fields.

The identification of a possible Bronze Age burnt mound (GAT-01, figure 26) during the monitoring of test pits and in the targeted geophysical survey suggests the presence of prehistoric remains within the zone, though the extent of these remains has not been defined. Burnt mounds are typically found located near to or alongside watercourses, and can be found in groups or singly on their own (see section 4.1). The eastern part of the zone is drained by a forked tributary of the Afon Cafnan, which runs from north to south (figure 20) and then marks the southern boundary of zone A. There is the potential for burnt mounds to occur anywhere along this route, but also in areas where earlier water courses have now dried up. The possible burnt mound (GAT-01) identified during the test pit phase lies next to a geophysical anomaly interpreted as a possible dried up palaeo-channel (A-119, figure 25). The geophysical survey did not identify any other palaeo-channels within the zone, however very narrow tributaries may have not been detected. Burnt mounds are not traditionally indicative of areas of settlement and can be found in clusters or as an isolated feature. The date of the stone capped drain (figure 26) has not yet been established; however it could indicate the presence of late prehistoric or Romano-British settlement. Many roundhouses on Anglesey were of clay construction, and these do not show up well on magnetometer surveys. There is potential, therefore, for the preservation of buried remains which have not yet been identified across the zone.

Zone B

Zone B is approximately 0.02 km² and is located towards the southwest of the study area centred on NGR SH 3529092920 (figure 23). The zone occupies the northern half of the peak of the eastern drumlin at a height of approximately 40m OD and is characterised by a small settlement of 19th and 20th century detached houses and their gardens (figure 20).

The zone is well documented in overhead aerial photography stills dating to 1945, 1971, 1972, and 1995 (figures 13, 15, 16 and 17). The photographs depict the zone much as it exists today, with a collection of properties interspersed by the woodland garden of The Firs (feature 17, appendix I, figure 4). What is apparent however on the 1945 AP is the existence of a number of rectangular structures in close proximity of the NDA depot (feature 28, appendix I, figure 4), which were probably associated with the Second World War chain home guard defence. These structures are less apparent in the 1971 and 1972 APs, and cannot be seen in the colour 1995 photograph. It is considered that there is a high chance of buried archaeological remains of these features within zone B. There is no evidence on any of the photographs to suggest that the zone had been disturbed by the construction of the existing power station.

The area of zone B is shown on the Ordnance Survey manuscript of c.1820 (figure 6) prior to the construction of the existing housing development and appears to have been utilised for agriculture. It is probable that land improvement in the late 18th and early 19th centuries would have removed any surface features and potentially impacted upon near surface buried remains prior to the development in the 19th and 20th centuries.

The development of the entirety of zone B in the 19th and 20th centuries is likely to have degraded or destroyed earlier remains, although there is still the potential for the remains of earlier structures beneath or alongside the existing buildings.

The gazetteer (figure 4, appendix I) identified several properties within the zone of mostly local historical importance, including the houses of Bronydd (feature 16), Chequers (feature 29), and The Firs (feature 17) (appendix I). Most of the historical features identified in the archaeological assessment are of upstanding buildings, however there are likely to be the remains of at least one demolished structure, Pen y Groes (feature 8), towards the northwest of the zone. The upstanding buildings in zone B, with the exception of Pen y Groes, have been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 4.8).

There has not been any ground investigation, geophysical or evaluation trench investigation within this zone due to the unsuitability of the terrain.

Archaeological Potential

The archaeological desk based assessment has shown that the primary historic theme represented in this zone is of post-medieval housing, and in particular the collection of structures identified on the 1945 aerial photographic coverage depicting what are most likely to be buildings associated with the Second World War chain home guard. There is a high potential for there being buried remains of these structures and of Pen y Groes, and also the possibility that the standing structures may have replaced earlier buildings, the remains of which could be preserved alongside or under later buildings.

The zone appears to have been utilised for agriculture prior to the development in the 19th and 20th centuries and as such it is probable that late 18th and 19th century land improvements would have removed any earlier surviving surface features. Moreover, decades of ploughing may have degraded or destroyed buried archaeological remains, especially if the soil depth was shallow, as to be expected upon the peak of the drumlin.

The elevated environs of the drumlin peak would have made the zone a favourable location for a prehistoric defended settlement (see section 4.1), although it is probable that land improvement and the housing development would have disturbed buried archaeological remains, and as such it is not likely that the remains of any structures or features older than the medieval period would have been preserved.

Zone C (figure 30)

Zone C is approximately 0.24 km² and is located towards the south of the study area and to the east of the existing power station, centred on NGR SH 3572093190 (figure 23). The zone consists of fairly large and flat enclosed grazing fields (figure 20).

The zone is well documented in overhead aerial photography stills dating to 1945, 1971, 1972, and 1995 (figure 13, 15, 16 and 17). The photographs depict the zone much as it exists today, with the area primarily consisting of enclosed fields mostly utilised for grazing but occasionally for arable purpose.

The zone is first depicted clearly on the Ordnance Survey manuscript of c.1820 (figure 6) where the area is shown much as it exists today, with enclosed fields and the property of Tyddyn Goronwy (feature 24, appendix I, figure 4) to the east. The zone is typified by improved agricultural land where late 18th and early 19th century land improvements are likely to have removed earlier surface features. The geophysical survey identified a number of anomalies suggesting variable amounts of disturbance through the construction of the existing power station (figures 22 and 30).

The zone has the occasional areas of single dwelling 19th and 20th century development which is likely to have degraded or destroyed earlier remains although there is the possibility of earlier structures beneath or alongside the existing buildings.

A total of four boreholes and four test pits have been excavated within the zone by Structural Soils Ltd as part of the ground investigation work (figure 19). All of the boreholes and one test pit were monitored by GAT for buried archaeological remains, none were found

A VMD survey has been carried out across the majority of the zone and detailed geophysical investigation has targeted three 1ha areas and a moderately sized field (figures 22 and 30). There have not been any archaeological trial trenches excavated within this zone.

The properties of Pen Lon (feature 21), Ty Croes (feature 23), and Tyddyn Goronwy (feature 24) were identified in the archaeological desk-based assessment (figure 4, appendix I) as lying within the zone. Pen Lon and Ty Croes are of probable late 19th century date and are considered to be of local importance, while Tyddyn Goronwy preserves a reference to the medieval *Gwely Goronwy Wyddel* and is considered to be of regional importance because of this association. These properties have recently been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 4.8).

Within the northern part of the zone is the location of the demolished property of Wylfa (feature 10, appendix I, figure 4), which was first recorded in documents from the 17th century as part of the township of Caerdegog (figure 3), but almost certainly had earlier origins. Several other buildings were constructed within the grounds of Wylfa, including Wylfa Goch, and later Wylfa Wen and Wylfa Newydd. All the buildings including the house were demolished during the construction of the existing power station, although the walled garden partially survives. Although it is not shown on historic aerial photographs it is possible that the northern part of the zone may have been disturbed during the construction phase of the existing power station, however the existence of the walled garden remains, suggests that there is a possibility of there being buried remains at foundation level.

The 1945 aerial photograph of the northern part of the zone (figure 13) shows a series of earthworks and structures most likely associated with the Second World War Chain Home Guard installation (feature 13a, appendix I, figure 4). There are no visible remains of these structures although there is a possibility of buried remains at foundation level.

The VMD survey detected a range of anomalies, mostly in the southern part of Zone C (figure 30). More than half of these could be identified as being modern features, either access roads or cable trenches associated with the steel tower and environmental monitoring station in the south-westernmost field.

Four areas of targeted geophysical survey were carried out. These examined two mounds that produced VMD anomalies, one sub-rectangular (A-20) and one roughly circular (A-21) and demonstrated that they are most likely to be natural bedrock features (appendix III, figure 30). Two additional small anomalies (GAT-58 and GAT-64) were identified in the targeted geophysics area. These are most likely to be a result of recent disturbance or geology but could possibly be prehistoric or medieval funerary features.

Linear anomalies A-19, A27 and GAT-51 (figure 30, appendix III) may be fragmentary remains of an earlier field system along with a former road or trackway. These features would probably pre-date the present late 18th century field system. All other linear anomalies appear to be the result of agriculture or disturbance from the construction of the existing power station. The northern half of the zone in particular seems to have been extensively disturbed or landscaped.

Archaeological Potential

The geophysical survey has shown that the zone was disturbed during the construction of the existing power station, especially in the northern part. However, the disturbance does not appear to be total, and there is therefore limited potential for the survival of archaeological remains.

The historic aerial photography (figure 13, 15, 16 and 17) and c.1820 map (figure 6) have shown that the zone has been historically utilised for agriculture, and as such will have been extensively ploughed and improved, removing any surviving surface remains and possibly buried near surface remains. The ground investigation data has shown that the zone maintains fairly deep soils (0.6m to 0.95m), most likely due to land improvement, and as such, buried archaeological features such as pits and post-holes which were not disturbed by the construction of the existing power station may have survived.

The topography is fairly flat (figure 20) and in close proximity to Tre'r Gof bog to the north. The bog may have originally been a lake or wetland which either naturally or due to land improvement, has silted up. The flat topography and proximity to a water source would have made the zone a favourable location for settlement throughout history or for Bronze Age burnt mounds (see section 4.1), however the geophysical surveys did not identify any buried anomalies which could be interpreted so. It may be the case that buried archaeology is simply not present, or it may be because disturbance caused by the construction of the existing power station has degraded or eradicated buried archaeological features. Another possibility is that the buried remains are of small cut features such as pits and postholes which have not been detected by the geophysical survey.

Zone D

Zone D is approximately 0.17 km² and is located towards the west of the study area centred on NGR SH 3489093290 (figure 23). The zone occupies the northern lower slopes of the two drumlins and is characterised by fairly large, enclosed, improved grazing fields primarily utilised for sheep (figure 20). It is probable that late 18th to early 19th century land improvements would have removed any surface features and near surface buried remains.

The zone is well documented in overhead aerial photography stills dating to 1945, 1971, 1972, and 1995 (figures 13, 15, 16 and 17) and is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6). The photographs depict the zone much as it exists today, with the area primarily consisting of enclosed fields, mostly utilised for grazing but occasionally for arable purpose. The 1945 photograph depicts fairly frequent outcrops of bedrock towards the western part of the zone, which are less apparent in the later aerial photographs, suggesting that the fields to the west have been improved, probably by the deposition of topsoil across the area. Furthermore, the VMD survey detected bands of igneous geology coming closer to the surface to the west which are almost certainly the same outcrops seen in the photographs.

The zone has had an extensive ground investigation programme carried out, involving the excavation of fifteen Seismic Hazard Investigation Observation Trenches (OT) (figure 19) as

well as twenty-four boreholes, one test pit, and the excavation of topsoil to create two large temporary haul routes with side routes. In total ten of the OT, nineteen of the boreholes, and the haul route topsoil strip were monitored by GAT for unknown buried archaeological remains. Six upstanding field boundary walls were recorded as well as three field drains and a stone-built culvert, all of probable post-medieval date.

The zone has had a VMD geophysical survey across its entirety and has had a detailed geophysical investigation carried out in one large field (figure 31).

The historic aerial coverage did not show any obvious disturbance from the construction of the existing power station at Wylfa, however there was some evidence of disturbance along the northern edge of the Zone in the VMD survey data and in the detailed geophysical survey towards the east of the area.

The gazetteer (figure 4, appendix I) identified four features of historic importance, including a Limekiln (feature 2) the remains of which are located close to the coastal edge. The kiln is of unknown date but is depicted on the 1889 OS map (figure 10) as ‘old limekiln’ and as such most probably dates to the early 19th century. The kiln was modified in the early 20th century to create a bathing hut for the Vivians out of the west draw hole, and is considered to be of regional importance due to being a well preserved example of a small rural limekiln, and as part of the landscape associated with the Vivians’ and the registered garden at Cestyll (feature 3, appendix I) which also partially lies within the zone. The garden at Cestyll physically lies outside of the study area (figure 32), however the eastern range of buildings including the gardener’s cottage, garage, and kitchen garden which are all included within the non-statutory designated area lie within the zone, as is a large part of the essential setting.

The archaeological assessment also identified the properties of Tai Hirion (feature 6) and Tan yr Allt (feature 15) as being of historic interest and lying within the zone (appendix I, figure 4). Both properties are of probable 19th century date, although only Tan yr Allt still stands, with Tai Hirion having been demolished during the construction of the existing power station. A remaining barn at Tai Hirion was included within a programme of archaeological building recording by GAT before its demolition in 2011. Tan yr Allt is considered to be of local historical importance and has recently been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 2.8).

The VMD survey identified only one anomaly of potential significance, a possible former field boundary (GAT-105, appendix III, figure 31) pre-dating the 1889 Ordnance Survey map (figure 10).

Archaeological Potential

The key historic theme of zone D is the 20th century Vivian occupation at Cestyll. The northern part of the zone contains the limekiln adapted into a bathing hut for the Vivians, and the eastern range of buildings of Cestyll gardens, included as part of the non-statutory designated historic garden as well as a large part of the essential setting (figure 32).

The post-medieval period is further represented in the properties of Tai Hirion and Tan yr Allt, as well as the possible former field boundary identified in the VMD survey and the boundaries, field drains and culvert identified during the watching brief phase. There is a high probability of there being buried remains of the demolished property of Tai Hirion.

The drumlins (figure 20) which are mostly included with zone A but also partially within zone C, would have been a favourable location for a prehistoric defended enclosure or Iron Age hillfort (see section 4.1), and any such occupation may have produced deposits or middens of material containing artefacts towards the lower slopes. If the drumlins were

utilised for settlement then there is a reasonable chance that associated buried archaeology would be located within the southern part of zone D. However, the geophysical surveys (figure 31) have shown that the zone has been partially disturbed by the construction of the existing power station and as such there is a reduced potential for the survival of buried archaeological remains. Moreover, the ground investigation work has shown that the soil depth is fairly shallow (0.3m-0.35m) and disturbance through ploughing and land improvement may have further disturbed and degraded buried archaeological remains.

The identification of rock outcrops on the historic aerial photography towards the west of the zone, which are no longer visible, suggests that land improvement in the way of topsoil deposition has taken place. The rock outcrops would have made an unsuitable location for settlement prior to land improvement, and as such there is a reduced potential for the existence of buried archaeological remains towards the west of the zone.

The zone is drained by a forked, surface water course (figure 20) which runs from the south of the zone to Porth-y-pistyll in the north. The proximity of water and the gently sloping terrain towards the centre of the zone would have made a favourable location for settlement throughout history, especially with the shelter provided by the drumlins in zones A and C to the immediate south. The geophysical surveys and ground investigation work did not find any evidence of occupation within the zone, although ground disturbance through the construction of the existing power station and through agricultural process may have degraded or destroyed buried remains. Another possibility is that the buried archaeological remains within the zone are small cut features such as pits and postholes which have not been detected by the gradiometer, although no evidence of settlement was discovered within the monitored test pits.

The presence of a water course would have made the area favourable for Bronze Age burnt mounds (see section 4.1), however the geophysical surveys and test pits failed to locate any such features. This may be because the area was not utilised in the Bronze Age, although a suspected burnt mound has been identified in zone A to the south. Another possibility is that the mound(s) are either too small to be detected by the geophysical survey or have been masked by the underlying geology.

Zone E

Zone E is approximately 0.14 km² and is located towards the south of the study area centred on NGR SH 3547092980 (figure 33). The northern part of the zone occupies the eastern lower slopes of the eastern drumlin, while the southern part of the zone occupies a flat area characterised by fairly large enclosed grazing fields (figure 20).

The zone is well documented in overhead aerial photography stills dating to 1945, 1971, 1972, and 1995 (figures 13, 15, 16 and 17) and is first depicted in detail in the Ordnance Survey manuscript of c.1820 (figure 6). The zone is depicted much as it exists today with large enclosed grazing fields. Of note is the large linear scar running from southeast to northwest from the installation of the HV power cable in the 1971 photograph.

A total of nine boreholes, two test pits, and the topsoil strip for a temporary haul route have been excavated within the zone by Structural Soils Ltd (figure 19) as part of the ground investigation work. Five of the boreholes, one test pit and the haul route topsoil strip were monitored by GAT for buried archaeological remains. Three modern field drains were found within the haul route trench.

The zone was mostly included within the VMD geophysical survey, and two 1ha sized areas were included within the detailed geophysical survey (figure 33). Two archaeological trial trenches were excavated within area 5 (figure 34).

The archaeological desk based assessment identified a trackway (feature 51, appendix I, figure 4) depicted on the 25" first (figure 11), second, and third edition OS maps connecting Tyddyn Du with the A5025. There is no visible trace of this feature although there is the possibility of buried remains.

The VMD survey identified a scatter of linear anomalies along with a large sub-circular anomaly. These were further investigated with two 1ha targeted geophysical survey areas. The south-eastern third of the zone was dominated by a series of large sub-circular anomalies (A-38 and GAT-32 and 33, appendix III, figure 34) that were initially interpreted as recent disturbance. Trial trenching showed that they were probably caused by bedrock that was only 0.35m below the surface in places. A pit of unknown date cut into the natural substrate and filled with stones was also identified in trial trench 10, demonstrating that there is some potential for the survival of buried archaeology.

Linear anomalies A-30, A-32 and A-45 (figure 34) were identified as being elements of the present field system that are shown on the 1924 Ordnance Survey Map and were probably removed fairly recently. The present field system is mostly shown on the 1820s Ordnance survey manuscript (figure 6) and was probably established during estate improvements in the late 18th century. The detailed geophysics revealed many faint parallel anomalies indicating that south-eastern part of the zone has been heavily ploughed.

Additional former boundaries were identified in the central part of the zone; A-34 appears to be a subdivision of the present field system that was removed before the 1889 OS map was drawn. A clear linear anomaly A-35 could be interpreted as a pre-18th century boundary or a stone drain. Most of the other linear anomalies appear to be modern tracks or other disturbance, probably from the construction of the existing power station. Two small anomalies A-36 and GAT-87 could be small cut archaeological features but are most likely to be modern or natural features (appendix III, figures 33 and 34).

Archaeological Potential

The archaeological desk based assessment, Fugro geophysical investigation, targeted geophysical investigation, and trial trench evaluation has shown that the primary historic theme within the zone is represented by former field boundaries probably dating to the post-medieval period. There is a possibility that they are of an earlier date.

The geophysical surveys have shown that the zone has had variable amounts of disturbance during the construction of the existing power station, which may reduce the potential for the survival of buried archaeological remains. Moreover, the historic aerial photographs and maps have shown that the area was historically utilised for agriculture and as such land improvement particularly in the late 18th and 19th centuries would have removed any surface and near surface archaeological remains. The ground investigation work has shown that the soil depth is fairly deep (0.4m-0.45m) across the zone, so despite years of land improvement and disturbance there is good potential for the survival of archaeological remains at lower levels and cut into the substrata where disturbance from the construction of the existing power station has not occurred.

The zone occupies two distinct areas of topography. To the north of the zone is the eastern, lower slopes of the eastern drumlin (figure 20), the peak of which would have made a favourable site for the location of a prehistoric defended enclosure or hillfort (see zones A and D and section 4.1). The steep slopes of the drumlin in this zone would not have made an ideal location for settlement, but any such occupation on the peak may have produced deposits or middens of material containing artefacts towards the lower slopes.

To the south of the zone is the flatter, sheltered lowland area (figure 20). The drumlins to the northwest would have provided shelter and the flat topography and proximity to the watercourses to the east and west in zones K and A would have made the area favourable for occupation throughout history. The area is also in fairly close proximity to Tre'r Gof marsh in zone J which may have originally been a lake, providing water and food. The geophysical survey did not identify any settlement site, however a pit of unknown date and filled with stones was found within evaluation trench 10.

Zone F

Zone F is approximately 0.06 km² and is located towards the north of the study area centred on NGR SH 3559094060 (figure 23). The zone is characterised by a semi-enclosed coastal strip of small undulating hillocks sloping towards the coastal edge and an area of gently sloping land to the southwest between the hillocks and the power station. Utilised for sheep grazing and interspersed with areas of bedrock (figure 20).

The zone is well documented in overhead aerial photography stills dating to 1945, 1971, 1972, and 1995 (figures 13, 15, 16 and 17) and is first depicted in detail in the Ordnance Survey manuscript of c.1820 (figure 6). The area is shown much as it exists today and appears to have not been disturbed by the construction process of the existing nuclear power station.

Two boreholes have been excavated within the zone by Structural Soils Ltd as part of the ground investigation work (figure 19). Both of the boreholes were monitored by GAT for buried archaeological remains, none were found.

The zone was included within the VMD geophysical survey (figure 35) but has not had any detailed geophysical investigation carried out nor any archaeological trial trenches excavated.

The archaeological desk-based assessment (figure 4, appendix I) identified the Boat House / former lifeboat station at Porth y Ogof (feature 11) as lying within the zone. This structure was first opened in 1872, initially to replace the Cemlyn lifeboat, and then to supplement it when Cemlyn reopened. The building is considered to be of local importance and has recently been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 2.8).

The VMD survey detected a small group of anomalies at the west of the zone. Linear A-84 (appendix III, figure 35) corresponds to a boundary of Ty'n-y-maes shown on the 1889 (figure 11) and 1924 Ordnance Survey maps. The short curvilinear anomalies A-85 and A-86 could be evidence of settlement, former boundaries or agricultural disturbance.

A series of linear features were detected in the eastern half of the zone. It seems likely that A-79 (appendix III, figure 35) marks the track from Wylfa (house) shown on the 1889 and 1924 Ordnance Survey maps. The rest of the linear anomalies could be interpreted as former boundaries, pre-dating the 19th century map evidence. The anomalies are however narrower than most of the boundaries so far identified and could well be a result of modern agricultural disturbance. Slight parallel anomalies probably indicate that this area has been ploughed.

Archaeological Potential

The zone appears to have not been disturbed by the construction of the existing power station, however historical aerial photographs and cartographic evidence has shown that the area has historically been utilised for agriculture. As such land improvement, especially in the late 18th and early 19th centuries is likely to have removed any surface features. The ground investigation work has shown that the zone has a fairly deep soil depth (0.4m) between the

areas of bedrock and towards the southwest, and as such features cut into the natural substrate may have avoided being disturbed by ploughing.

The topography to the north of the zone (figure 20) is one of rolling hillocks leading down to the coastal edge, with peaks of exposed bedrock interspersed by troughs of deeper soils. The topography of the coastal strip is not particularly suitable to any form of settlement due to the undulation of the hillocks and the exposed bedrock peaks, however the area of land to the southwest between the strip and existing nuclear power station is much flatter with fairly deep soils and is sheltered by the land to the north. The geophysical survey identified several anomalies in this area (A-85 and A-86) which could be evidence of settlement, former boundaries or agricultural disturbance. The zone is in close proximity to open watercourses to the southeast and the marsh of Tre'r Gof, as well as having access to the coast via the indented and sheltered bay of Porth y Ogof making it a favourable site for occupation throughout history.

Zone G

Zone G is approximately 0.17 km² and is located towards the north of the proposed development site centred on NGR SH 3551094400 (figure 23). The zone is characterised by the unenclosed grassland of Wylfa Head which peaks at 30m OD towards the northeast before falling steeply to the sea from the north, east, and west (figure 20). Outcrops of bedrock occur running around the south, east, and north coastal edge limit of the site. The zone is primarily utilised for sheep grazing.

The zone is partially documented in the available overhead aerial photography stills dating to 1945, 1968, and 1995 (figures 13, 14, and 17) and is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6). The area is shown much as it exists today as an undeveloped, unenclosed area of grassland on the head with outcrops of bedrock around the coastal edge. The zone appears to have not been extensively disturbed by the construction process of the existing nuclear power station.

The zone has not had any ground investigation work carried out, nor has it had any detailed geophysical investigation or archaeological trial trenches excavated. Furthermore, only the very southern limit is included within the VMD geophysical survey.

The archaeological desk-based assessment (figure 4, appendix I) identified three features of historic importance, including two Second World War chain home guard transmitting masts (features 13i), the only surviving remains of which are two concrete anchor blocks. The masts formed part of a group of four, the other two having originally stood where the existing power station now stands. These mast sites are considered to be of unknown archaeological importance due to uncertainty regarding the existence of buried remains, although it is probable that any remains would take the form of additional cable anchor points.

The third site identified within the archaeological assessment as lying within zone G is the former lifeboat station (feature 12, appendix I, figure 4) which was built in 1907 and was in use until 1932 after which it was demolished, leaving only the toe of the slipway and some concrete supports. The station remains are considered to be of minor importance.

The VMD survey only covered the southern part of this zone (figure 22). The only anomalies identified were a buried cable or pipe and some disturbance from the construction of the existing power station along the southern margin.

Archaeological Potential

From historic aerial photography the zone appears to have not been disturbed by the construction of the existing power station. However, the limited area to the south of the zone which was included within the geophysical survey has shown some level of disturbance, although it is unlikely that this continues much further onto the headland.

Historic aerial photographs and cartographic evidence has shown that the area has historically been utilised for agriculture. As such, land improvement, especially in the late 18th and 19th centuries may have removed any surface features, although improvement appears to have been less than in other zones. The soil depth away from the bedrock outcrops is currently unknown as there has not been any ground investigation work in the area, and as such the suspected disturbance to buried archaeological remains through ploughing is also unknown. There is very little potential of finding archaeological remains upon the bedrock outcrops.

The elevated environs of the headland would have made a suitable location for a prehistoric promontory fort (see section 4.1) such as at Dinas Gwynfor (SAM A038; PRN 3067) located 3.5km to the east. However, unlike Dinas Gwynfor, the headland has wide and open approaches without a marsh to provide protection, and no evidence of earthworks. It may be the case that the head was not utilised as a fort, or perhaps that the defensive bank and ditches have been removed by agricultural disturbance and that a marsh in the approximate location of the existing power station has since silted up. If the topography of the headland was not utilised for defence, then the absence of fresh water within the zone, the exposed aspect, and the bedrock outcrops suggests that the zone would not have been particularly favourable for the location of an undefended settlement.

Elsewhere on Anglesey, prehistoric chambered tombs have been found close to the coastal edge and exploiting natural headlands or promontories (see section 4.1) such as Barclodiad y Gawres burial chamber (PRN 3032) (figure 39) near Aberffraw on the west coast of Anglesey.

Zones H and I

Zones H and I are approximately 0.37 km² in total area and are located immediately to the east and south of the existing power station, centred on NGR SH 3533093440 (figure 23). Zone H slopes fairly gently west towards the eastern edge of Porth y Pistyll, while zone I is covered with the artificial landscaped mounds designed by Dame Sylvia Crowe during the construction of the existing power station (figure 20). The zones are characterised by enclosed grazing fields and have been grouped together due to the high disturbance attributed to during the construction of the existing power station, identified from the historic aerial photographs dating to 1968, 1971, and 1972 (figures 14, 15 and 16). The zones are divided by the current road leading to the power station. The zone is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6) as an area of enclosed agricultural land.

Nine Seismic Hazard Investigation Observation Trenches (OT) were excavated in zone H along with nineteen boreholes, three test pits. The topsoil was also stripped for two temporary haul routes and a compound area during the ground investigation by Structural Soils Ltd (figure 19). Eight of the OT, seven boreholes, all three test pits and the haul and compound areas were monitored by GAT for archaeological remains. One feature, a field drain (feature 10) of post-medieval date was discovered in the haul route trench. It was noted at the time of excavation that the test pits in zone H showed that the area had been heavily disturbed, and that the upper deposits were characterised by frequent inclusions of industrial waste, including fragments of wood, metal, and glass up to 1m depth.

Two boreholes and seven test pits were excavated in zone I during the ground investigation by Structural Soils Ltd (figure 19). Only one test pit (TP-580) and one of the boreholes

(BH529) were observed due to the presence of contaminants within the area and the high level of ground disturbance as a result of the construction of the existing power station.

Zone H was partially included within the VMD geophysical survey and has had a 1ha size area of detailed geophysical investigation towards the south of the zone (figure 36).

Zone I was not been included within the VMD geophysical survey nor in the detailed geophysical investigation and there have been not been any archaeological trial trenches excavated within either zone.

The archaeological desk-based assessment (appendix I, figure 4) identified fourteen features of historic importance within zones H and I, six of which are features associated with the Second World War chain home guard (feature 13), including the locations of earth covered bunkers and one of two receiving towers. The surviving upstanding remains of these features are sparse; however there is the possibility of there being unknown buried remains, although it is not expected that these will be substantial due to the disturbance caused during the construction of the existing power station.

The archaeological desk-based assessment also identified the locations of eight buildings of historic interest, three of which exist as upstanding remains. These are the boat house at Porth y Pistyll (feature 1), the Lodge (feature 20), and Penrallt (feature 30), all of which are considered to be of local importance. These features have recently been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 2.8).

The locations of the remaining four demolished buildings are known with some certainty from cartographic sources. Historic aerial photography (figures 11 and 12) suggests that the locations of Pen Pistyll (feature 4), Cwt (feature 5), and Cae'r Brenhin (feature 9) had been highly disturbed during the construction phase of the existing power station and the probability of there being buried remains at foundation level is considered slight. The property of Simdde Wen (feature 7) was used as offices during the construction phase and as a social club post-construction, being demolished in recent years although the garden wall remains. The probability of there being buried remains of this feature is considered to be high.

The VMD survey examined much of Zone H (figure 36). This produced dense anomalies consistent with buried modern materials such as reinforced concrete. This appears to date from the construction of the existing power station. The eastern part of the zone produced a series of curvilinear anomalies (A-05) best interpreted as deep rutting, soil dumping or possibly bedrock similar to that detected in zone E. No other anomalies were detected. A 0.6ha area of targeted geophysical survey again suggested extensive disturbance in this area.

Archaeological Potential

The historic aerial photography, ground investigation works, VMD survey, and targeted geophysical survey have all confirmed that zone H was heavily disturbed during the construction of the existing power station. The potential for the survival of buried pre-20th century archaeological remains in this zone is therefore very low, with the exception of the foundations of Simdde Wen and possible remains of the chain home guard.

The ground investigation data in zone H showed that during the construction of the existing power station, a layer of made ground had been deposited on top of the natural substrate, which had also been heavily disturbed. The made ground lay beneath the topsoil and contained frequent inclusions of concrete, glass, wood, iron, and plastic. However, despite the high level of disturbance the discovery of a post-medieval field drain (feature 10, figure 19) in

the haul route strip shows that there is a limited potential for the survival of features towards the southern limit of the zone.

The historic aerial photography suggests that zone I was also similarly heavily disturbed during the construction of the existing power station. This is supported by evidence from the ground investigation work, although there have been relatively few test pits excavated within the zone, and no geophysical survey has been undertaken to confirm this further.

Zone J

Zone J is approximately 0.1 km² and is located to the east of the existing power station, centred on NGR SH 3589093630 (figure 23). The zone includes the Site of Special Scientific Interest (SSSI) of Tre'r Gof (31 WCD) wetland (figure 20).

The zone is well documented in the overhead aerial photography stills dating to 1945, 1971, and 1995 (figures 13, 15 and 17). The area is shown much as it exists today, as a wetland bog. The zone appears to have not been disturbed by the construction process of the existing nuclear power station.

The archaeological desk-based assessment did not identify any archaeological features within the zone, though historical evidence was found for the attempted drainage and enclosure of 'Cors Tre'r Gof' in 1791.

There has been no geophysical evaluation in this zone due to the unsuitability of the terrain and the SSSI status.

There has been no open-cut ground investigation work in this zone, however four hand-auger cores were taken by Structural Soils Ltd as part of their ground investigation (figure 19) but the augers were not monitored by GAT.

There have been no evaluation trenches in this zone.

Archaeological Potential

The historic aerial photography has shown that the wetland was not disturbed by the construction of the existing power station and that the size of the wetland does not appear to have reduced since the first aerial photograph of 1945, nor since it was first depicted on the First Edition OS map in 1889 (figure 11). The wetland is however surrounded by improved agricultural land and it is very possible that improvements in the late 18th and 19th centuries may have reduced its scale and reclaimed some of the fringe areas for agriculture. There is however no evidence for this in the geophysical survey of the surrounding zones nor in the topography of the surrounding area (figure 20).

The marsh may have once been a lake which had either silted naturally or through land improvement, although either way, the presence of water immediately north of an area of reasonably flat land in zones C and K would have made the area favourable for settlement throughout history. Evidence of this can be seen in recent excavations at Parc Cybi near Holyhead, approximately 17km to the southeast of the proposed development site where Neolithic, Bronze Age, Iron Age, and Romano-British settlement were all found in close proximity to a marshland. It is unlikely that any occupation occurred within the wetland itself, although the marsh may have changed in size and thus there is the potential for remains to be found along the wetland fringe.

The presence of water would also have made the zone favourable for Bronze Age burnt mounds (see section 4.1) and there is the potential to discover these sites anywhere along the fringes of the marsh, but also within the nearby flat area within zones C and K.

Zone K

Zone K is approximately 0.17 km² and is located to the east of the existing power station and proposed development area, centred on NGR SH 3608093260 (figure 23). The zone slopes fairly steeply northwest from the A5025 and then becomes gradually flatter approaching Tre'r Gof marsh (figure 20). It is characterised primarily by enclosed grazing fields although there are some modern houses towards the south of the zone marking the eastern edge of Cemaes village.

The zone is well documented in the available overhead aerial photography stills dating to 1945, 1971, and 1995 (figures 13, 15 and 17) and is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6). The area is shown much as it exists today as an area of enclosed grazing fields with some detached houses towards the southern limit. The zone appears to have not been disturbed by the construction process of the existing nuclear power station.

The zone was mostly included within the VMD geophysical survey and a small field towards the west of the zone was included within a detailed geophysical investigation (figure 37). Eight test pits were excavated along with a topsoil strip for a temporary haul route, carried out by Structural Soils Ltd as part of the ground investigation work (figure 19), of which three boreholes and the haul route were monitored by GAT for buried archaeological remains. Two post-medieval field boundaries were discovered, one in test pit 15A and one in the haul strip.

The archaeological desk-based assessment (appendix I, figure 4) identified two upstanding buildings of historical interest within the zone. The first, Tre'r Gof Uchaf (feature 25), has been demolished in recent years but the outbuildings remain and a new house was constructed close by, the second is Nant Orman (feature 26). Both properties are considered to be of regional historic importance and have recently been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 2.8). There is however the possibility of there being the buried remains of earlier houses beneath or alongside the existing buildings.

Most of this area was covered by the VMD and anomalies were detected in most parts of the survey. There was however a concentration on the western side.

Targeted geophysics examined a sub-circular anomaly A-25 (figure 37), on the west of the zone. It was shown to have significant magnetic enhancement but its origin remains unclear. It could either be interpreted as an unusual geological feature or a thermoremanent or otherwise magnetically enhanced archaeological feature such as a large kiln or modern cut feature, although the close proximity of a Tyddyn Goronwy farm could suggest agricultural disturbance. Linear anomalies also pass to the north and south of the feature. They could be drains or boundaries but this group of features remains unknown.

A series of linear anomalies A-46 A-47 and A-53 are probably drainage features (figure 37). A complex group of anomalies at the south of the zone are best interpreted as modern former boundaries (A-48 to A-50) a track (A-52) along with other agricultural and modern service features. Further former boundaries (A-55 and A-56) shown on the 1889 (figure 11) and 1925 Ordnance Survey maps were detected on the eastern side of the zone. At the north a double linear anomaly (A-23) could be interpreted as a boundary predating the modern field system or perhaps a former trackway. Parallel linear anomalies (A-62) are a result of ploughing.

Archaeological Potential

The archaeological desk-based assessment, VMD survey, and geophysical evaluation have all suggested that the primary historic theme represented within the zone is that of former and existing field boundaries and structures to the south, dating to the post-medieval period. Furthermore, the geophysical results suggest that the area may have had some disturbance due to modern agricultural practices and services. These disturbances appear to be fairly isolated events and as such there is the possibility of unknown buried archaeological remains within the zone. Geophysical thermoremanent anomaly A-25 (figure 37) may be the result of agricultural practice, or could also be interpreted as a large kiln, other cut feature, or geology.

The historic aerial photography and geophysical survey suggests that the zone was not disturbed by the construction of the existing power station at Wylfa. The historic mapping has shown that the zone has historically been utilised for agriculture and, as such, late 18th and early 19th century land improvements are likely to have removed most earlier surface features. Moreover, the geophysical survey showed that varied disturbance had occurred towards the east and west ends of the zone as a result of modern agricultural disturbance.

The ground investigation data has shown that the soil depth within zone K is fairly deep (0.4m) and, as such, archaeological features cut into the substrata may have avoided being degraded by ploughing, although plough scars to the northeast of the zone may be indicative of damage to the underlying substrata, thus reducing the potential of finding preserved buried archaeological remains in this area.

The topography (figure 20) slopes fairly steeply northwest from the A5025 in the direction of Tre'r Gof marsh and is very likely responsible for feeding much of the run-off precipitation into the marsh. The land becomes flatter with a very mild northwest slope towards the edge of the wetland. The topography of the steeper slopes are not particularly favourable for settlement, however the lower flatter slopes would be more suitable and are in close proximity to the marshland and two open watercourses towards the west and centre of the site which feed into the marsh. The proximity of water and the possibility that Tre'r Gof may have originally been a lake prior to land improvement raises the potential of there being historic settlement towards the north of the zone.

The proximity of water would also have made the site suitable for Bronze Age burnt mounds (see section 4.1), and there is potential for finding these towards the north of the zone.

Zone L

Zone L is approximately 0.4 km² and is located to the east of the existing power station and proposed development area, centred on NGR SH 3644093490 (figure 23). The zone slopes fairly gently from the southeast towards the northwest coastal edge. Two isolated hillocks are located to the centre and north of the zone with peak heights of 30m and 20m OD respectively (figure 20). The zone is characterised primarily by enclosed grazing fields.

The zone is partially documented in the available overhead aerial photography stills dating to 1945, 1971, and 1995 (figures 13, 15 and 17) and is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6). The area is shown much as it exists today as an area of enclosed grazing fields with the occasional outcrops of bedrock towards the north. The zone appears to have not been disturbed by the construction process of the existing nuclear power station.

Two boreholes and four test pits were excavated by Structural Soils Ltd as part of the ground investigation work (figure 19). All except one test pit were monitored by GAT to inspect for buried archaeological remains. None were found.

The zone was included within the VMD geophysical survey (figure 38), but there have not been any detailed geophysical investigation or archaeological trial trenches within the zone.

The archaeological desk-based assessment (appendix I, figure 4) identified one building of historical interest, namely The Lodge (feature 27). The English name of this building suggests that it has origins in the 19th century although it could be earlier. The earliest part of the house appears to be the south-west range although in the late 19th and early 20th centuries a large square house was built on the north-east side of the earlier one. The property is considered to be of regional importance and has recently been included within a programme of archaeological building recording by GAT on behalf of Horizon Nuclear Power Ltd (section 2.8). There is the possibility of buried remains of earlier buildings beneath or alongside the existing structure.

The VMD survey detected a range of linear and circular anomalies, mostly in the northern portion of the zone. The sites with the most archaeological potential are two circular anomalies and associated features. Both could be interpreted as prehistoric ditched enclosures. Anomaly A-67 (figure 38) lies on the top of a small hill, with good views in all directions. This is a typical position for a prehistoric defended enclosure/settlement and many comparable sites have been identified on Anglesey. However a degree of caution must be taken as a similar geophysics anomaly was interpreted in zone A and was confirmed by evaluation trench to be from modern disturbance. An area of increased noise (A-68) and one corner of a possible enclosure (A-69) to the south-east could be related features. A second circular anomaly (A-71) is less-well defined and on lower ground so a prehistoric interpretation is less certain.

A series of linear anomalies were also detected (figure 38). Anomaly A-79 appears to be a continuation of the track from the former Wylfa house. Anomalies A-72 and part of A-76 may indicate a continuation in the form of an early route, pre-dating that shown on the 1889 Ordnance Survey map. A-76 and A-74 could indicate early fields, but the rest of the features at the north appear to be related to the cultivation of the present field system. A series of linear anomalies on the west of the zone are best interpreted as land drains. Anomaly A-58 on the eastern side of the zone is a former boundary shown on the 1887 (figure 11) and 1924 Ordnance Survey maps, the other features in this area are probably drains.

Archaeological Potential

The VMD geophysical survey suggests that the key historic themes represented within the zone are post-medieval field systems and of possible prehistoric settlement. The area appears to have been undisturbed by the construction of the existing power station and aside from field improvement appears to have been undisturbed by modern agricultural practice. Therefore any archaeological remains are likely to be well preserved but further evaluation is required to fully ascertain their nature.

The historic aerial photography and geophysical survey has shown that the zone appears to have not been disturbed during the construction of the existing power station at Wylfa. However, the historical maps have shown that the area has historically been utilised for agriculture and, as such, land improvement, especially in the late 18th and 19th centuries is likely to have removed most surviving surface features. The ground investigation data has shown that the soil depth across much of the site is fairly deep (0.35m – 0.5m) and as such it is possible that any archaeological features cut into the substrata may have been unaffected by the ploughing. The area to the north, towards the coastal strip, contains areas of visible bedrock and as such there is a reduced potential for finding archaeological remains in this area.

The topography slopes fairly gently north-westwards (figure 20) towards the coastal edge and would have been favourable for settlement. Towards the centre and north of the zone are two hillocks whose elevated environs would have made favourable locations for prehistoric defended settlements or hillforts (see section 4.1). These hillocks both produced anomalies in the geophysical survey which have been interpreted as potential defended enclosures.

The zone does not have any open watercourses but is in close proximity to some in the east and the marsh of Tre'r Gof (figure 20), which would have also made the area favourable for settlement. Furthermore, the proximity of the marsh to the immediate east of the zone boundary increases the potential for discovering Bronze Age burnt mounds (see section 4.1) along the eastern limit of the zone.

Zone M

Zone M is approximately 0.21 km² and is located to the south of the existing power station centred on NGR SH 3423092700 (figure 23). The zone is fairly flat towards the north but has an elevated ridge of 30m OD towards the south which runs from southwest to northeast into zone A (figure 20). The zone is characterised by enclosed grazing fields bordered to the west by the Afon Cafnan.

The zone is partially documented in the available overhead aerial photography stills dating to 1972 and 1995 (figures 15 and 17) and is first depicted in detail on the 1780 survey map (figure 7). The area is shown much as it exists today as an area of enclosed grazing fields. The zone appears to have not been disturbed by the construction process of the existing nuclear power station.

The archaeological desk-based assessment (figure 4, appendix I) identified one historic building towards the north of the zone, the property known as Cafnan (feature 34). This property was first mentioned in the 1631 estate records, although the current house appears to be 19th century in date. This building is considered to be of regional importance and has not been included within a programme of archaeological building recording. There is the possibility of buried unknown remains of earlier buildings beneath or alongside Cafnan.

The archaeological desk-based assessment identified a further four features of archaeological interest. To the south of Cafnan, a mound of stones (feature 35, appendix I, figure 4) is located at the northern end of a grazing field which may be the result of field clearance as part of land improvement. Further to the south the remains of a possible ruinous field boundary (feature 40) runs from southwest to north-east across the field, although there is no field boundary depicted in this location on any of the early edition OS maps (figure 12). These maps do depict however, two field boundaries (features 36 and 41) which have no visible remains.

A geophysical survey of the zone has recently been carried out by Fugro Aperio Ltd although the report on the interpretation of the data has not yet been finalised.

There has been no ground investigation work in this zone.

There have been no evaluation trenches in this zone.

Archaeological Potential

The historic aerial photographs suggest that the zone was not disturbed during the construction of the existing power station. The land has however been improved and it is likely that late 18th and early 19th century land improvement removed most earlier surface remains. There has not been any ground investigation work in this zone so the soil depth is

unknown and therefore the potential damage to buried archaeological remains through land improvement is also unknown.

The flat topography of the zone (figure 20) and the Afon Cafnan watercourse would have made the area a favourable site for an undefended settlement, and the drumlins to the east in zone A may have provided some shelter. The proximity of the watercourse would also have made the site favourable for Bronze Age burnt mounds (see section 4.1) and there is the potential for these to be found following the river's edge to the west of the zone. There is also the potential for historic settlement to be found towards the south of the zone where the foot of the ridge may have provided some shelter.

The top of the ridge is not wide enough to have been utilised for a defended settlement or hillfort, however elsewhere on Anglesey ridgelines have been utilised in the Bronze Age for the erection of standing stones (see section 4.1). A group of three such stones can be seen at Llanfechell (PRN 3047) located approximately 1.1km to the southeast of the proposed development boundary. There is however no documentary, cartographic, or physical evidence to suggest that the ridge was utilised for such a purpose.

Zone N

Zone N is approximately 0.29 km² and is located to the south of the existing power station centred on NGR SH 3473092260 (figure 23). The southern part of the zone occupies the peak of a broad rise which slopes fairly gently to the northwest (figure 20). The zone is characterised by enclosed arable fields interspersed with the occasional sheep grazing field (figure 14).

The zone is not documented in the available overhead aerial photography stills, however it appears that it is well out of the area disturbed by the construction of the existing power station. The area is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6) and is shown as enclosed agricultural land, much as it exists today.

The archaeological desk-based assessment (figure 4, appendix I) identified three features of historic interest from cartographic sources and historic aerial coverage within the zone, which were not visited during the field walkover due to restrictions on access to the zone. Two of the features, a trackway (feature 46) and a sheepfold (feature 47), are considered to be of minor importance. A building which is probably a barn or cottage (feature 48) is depicted on the early OS maps, however the importance and age of this building cannot be assessed without a site visit.

A geophysical survey of the zone has not been carried out due to restricted access.

There has been no ground investigation work in this zone.

There have been no evaluation trenches in this zone.

Archaeological Potential

The zone is not covered on the available historic aerial photography however the area is quite far from the known disturbance in zone A to the north, caused by the construction of the existing power station. The historic mapping has shown that the zone has historically been utilised for agriculture and as such it is likely that late 18th and 19th century land improvement in particular would have removed any earlier surface features. There has not been any ground investigation data within this zone and thus the depth soil is unknown and therefore the potential damage to buried archaeological remains through land improvement is also unknown.

The raised topography of the broad hill to the south of the zone is not steep enough to be favourable for a prehistoric defended settlement or hillfort, and the exposed aspect would also have made it unfavourable for an undefended settlement. There is an increased potential for historic settlement towards the north and east of the zone as a tributary of the Afon Cefnall flows in an arc from southeast to northwest before joining the river (figure 20). The proximity of water to the north and east and the flatter land would have made these areas more favourable for settlement, and it is likely that the broad rise to the south and drumlins further to the north will have provided some shelter. The watercourse would also have been favourable for Bronze Age burnt mounds (see section 4.1) and there is the potential for them to be found anywhere alongside the tributary and also close to any historic channels which have since silted. The geophysical survey for this area has as yet been finalised.

Cartographic and historic aerial coverage of this zone shows very few features of historic importance, however a programme of evaluation and a site visit is required before the archaeological potential can be comprehensively assessed.

Zone O

Zone O is approximately 0.44 km² and is located to the south of the existing power station centred on NGR SH 3525092360 (figure 23). The zone occupies the peak of a flat and broad rise which slopes gently in all directions towards the zone's boundary (figure 20). It is characterised by sheep grazing fields, with a cluster of arable fields in the northeast corner of the zone.

The zone is not documented in the available overhead aerial photography stills; however it appears that it is well out of the area disturbed by the construction of the existing power station. The area is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6) and is shown as enclosed agricultural land, much as it exists today.

The archaeological desk-based assessment (figure 4, appendix I) identified eleven features of historic interest. Four of these are upstanding buildings including Tyddyn Gele (feature 37), Penrallt (feature 30), Ysgubor Ddegwm (feature 49), and Caerdegegog Isaf (feature 33). With the exception of Ysgubor Ddegwm, all of the properties appear to date from the late 18th century and all of the properties are considered to be of local historical importance. Of these properties, only Penrallt has been included within a programme of archaeological building record.

A geophysical survey of the zone has recently been carried out by Fugro Aperio Ltd although the report interpreting the data has not been finalised.

There has not been any ground investigation work in this zone.

There have not been any evaluation trenches in this zone.

Archaeological Potential

The zone is not covered on the available historic aerial photography however the area is quite far from the known disturbance in zone A to the north, caused by the construction of the existing power station. The historic mapping has shown that the zone has historically been utilised for agriculture and as such it is likely that late 18th and 19th century land improvement in particular would have removed any earlier surface features. There has not been any ground investigation within this zone and thus the depth soil is unknown and therefore the potential damage to buried archaeological remains through land improvement is also unknown.

The broad hill towards the centre is not steep enough to have been a favourable location for a prehistoric defended settlement or hillfort, and is too exposed to have been favoured for a historical undefended settlement site. There is increased potential for settlement in the flatter, lower areas to the north and south of the rise (figure 20). Furthermore, the zone is bounded to the north and west by open water courses and there is another watercourse in close proximity to the east. This would have made the zone more favourable for historic occupation and also for Bronze Age burnt mounds (see section 4.1) which could potentially occur anywhere along the north and eastern edge of the zone.

Zone P

Zone P is approximately 0.04 km² and is located to the southeast of the proposed development area, centred on NGR SH 3581892840 (figure 23). The zone occupies a gently sloping and large, irregular shaped enclosed grazing field (figure 20).

The zone is partially documented in the available overhead aerial photographs dating to 1945, 1971, and 1995 (figures 13, 15 and 17) and is first depicted in detail on the Ordnance Survey manuscript of c.1820 (figure 6), shown as enclosed agricultural land. The zone appears much as it is today but was originally two enclosed grazing fields, with the field boundary removed some time after 1971.

The archaeological desk-based assessment did not identify any archaeological remains within this zone.

A geophysical survey of the zone has not been carried out.

There has not been any ground investigation work in this zone.

There have not been any evaluation trenches in this zone.

Archaeological Potential

The zone is well documented in the historic aerial photography and has not been disturbed by the construction of the existing power station at Wylfa. The aerial coverage and historic mapping has shown that the zone has historically been utilised for agriculture and land improvement, especially in the late 18th and 19th centuries, will have removed any earlier surface features. Furthermore, ploughing and land improvement may have degraded or destroyed buried archaeological remains, however there has not been any ground investigation work in this area and as such the soil depth is unknown.

The topography (figure 20) is on a very gentle slope leading down to an open watercourse at the southern end of the zone. The gently sloping topography and the proximity to water would have made the zone favourable for historic settlement and for Bronze Age burnt mounds (see section 4.1) which could potentially occur towards the southern end of the zone. Although the small size of the zone means there is potential for buried archaeological remains throughout.

Table 4: Summary of zones

Zone	Key historic themes
A	Post-medieval / possibly older former field boundaries. Possible medieval strip-fields. Probable Bronze Age burnt mound and potential for others along the line of the watercourse and palaeochannel. Potential for prehistoric defended settlement or hillfort upon the drumlin peaks, and potential for settlement of all periods upon the lower and flatter areas. Undisturbed by power station construction but late 18 th and 19 th century land improvements probably removed most earlier surface features.

	good preservation potential.
B	Post-medieval housing especially WWII structures. Potential for buried remains of earlier structures alongside and close to existing structures. Favourable location for a prehistoric defended settlement or fort but very probable that any remains would have been destroyed by late 18 th and 19 th century land improvements, and by the 19 th and 20 th century housing development.
C	Improved land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Evidence for variable amounts of disturbance during construction of existing power station. Possible prehistoric or medieval funerary features but likely to be geological. Favourable location for settlement throughout history and for Bronze Age burnt mounds. Deep soil increases survival potential of buried archaeology where undisturbed by power station construction
D	20 th century Vivian occupation and post-medieval properties and boundaries. High evaluation carried out. Improved land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Reduced potential to the west due to rock outcropping. Evidence for some amount of disturbance during construction of existing power station. Shallow soils may have resulted in damage to underlying archaeology from ploughing. Favourable location for burnt mounds. Possibility of associated remains if drumlin peaks were utilised for settlement.
E	Improved land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features although fairly deep soils may have protected buried remains. Evidence for variable disturbance caused by the construction of existing power station. Post-medieval / possibly earlier former field boundaries. Pit of unknown age. Possibility of associated remains if drumlin peaks were utilised for settlement. Potential for settlement on flat southern areas.
F	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features although fairly deep soils away from coastal strip may have protected buried remains. Geophysical anomalies of unknown date towards the southwest, possible settlement activity or modern disturbance. Fairly good preservation potential towards the southwest, less so towards coastal strip.
G	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Potential for preserved remains towards centre of headland, less so towards coastal edge. Elevated environs suitable for defensive settlement but no evidence. Unlikely to have been utilised for undefended settlement.
H + I	Heavily disturbed due to power station construction. Poor preservation potential.
J	Undisturbed by the construction of existing power station. Marshland area possibly originally a lake. Good preservation potential. May have encouraged settlement close by in zones C and K. Potential for Bronze Age burnt mounds along the fringes.
K	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Fairly deep soils may have protected features cut into the substrata. Increased potential on flatter land towards northwest and close proximity to marsh zone J. Post medieval / possibly earlier field boundaries. Possible modern agricultural disturbance. Possible kiln feature of unknown date.
L	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Fairly deep soils may have protected features cut into the substrata. Reduced potential along coastal strip due to bedrock

	outcrops. Possible defended enclosures on hillocks towards centre and north of zone. Flat land elsewhere favourable for undefended settlement especially towards the watercourses and marsh to the east. Potential for Bronze Age burnt mounds towards the east. Post medieval / possibly earlier field boundaries.
M	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Flat topography and Afon Cefnau make area favourable for settlement and potential for Bronze Age burnt mounds, especially along the western limit of the zone. Post medieval / possibly earlier field boundaries.
N	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Increased potential for historic settlement and bronze age burnt mounds towards north and east of zone due to flatter ground and proximity to water. Decreased potential for archaeological remains towards broad hill in the south.
O	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Increased potential for remains towards the north, east and west of the zone due to flatter ground in proximity to watercourses. Decreased potential towards the centre and south of zone upon broad hill. Potential for Bronze Age burnt mounds along north and east limits of zone.
P	Undisturbed by the construction of existing power station. Improved agricultural land. Late 18 th to 19 th century land improvements probably removed most earlier surface and buried near surface features. Gently sloping land towards open watercourse is favourable for settlement and Bronze Age burnt mounds.

6.0 OFFSHORE ARCHAEOLOGY

6.1 Introduction

A number of shipwrecks have been identified within the vicinity from existing documentary records. This is not a complete record, as it is largely based upon records of 19th century and later date, and nor are the locations known with any certainty. The list does show, however, that there is potential for the discovery of wreck remains off the coast. The importance of the remains will be based upon their nature, age and condition. An interpretation report of the offshore geophysical data is forthcoming from Wessex Archaeology and this section will be expanded on receipt of the report.

6.2 Marine Geophysical Report

Geophysical data was obtained by Titan Environmental Surveys Ltd between 5th October and 15th October 2009. Sidescan sonar, sub-bottom profiler (boomer) multibeam echo sounder and magnetometer data were acquired and subsequently processed and interpreted for archaeological assessment by Wessex Archaeology.

This assessment focussed on the potential for the remains of maritime craft or aircraft of cultural heritage importance to be present within the area of the marine development as part of the proposed new power station at Wylfa and to identify and characterise sedimentary deposits and palaeogeographic features with archaeological potential.

A total of 47 anomalies (figure 4, appendix IV) of potential archaeological interest were observed in the sidescan sonar and magnetometer data and one feature of non-archaeological

interest. Three anomalies were identified as wrecks and therefore of archaeological interest. Further investigation into existing historic marine records could lead to their identification. The remaining 44 anomalies were flagged as being of potential archaeological interest.

7.0 CURRENT GAPS IN KNOWLEDGE

A Bartington Gradiometer 601 was used to carry out the fourteen areas of high-resolution detailed geophysical surveys, and a vertical magnetic gradiometer (VMD) was used by Fugro Aperio Ltd to carry out the geophysical survey across the rest of the proposed development site. Not all geophysical surveys produce good results as anomalies can be masked by large magnetic variations in the bedrock or soil, or by 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. As such there is the potential for the geophysical surveys to fail to detect some features. This limitation can be seen by the discovery of a stone-filled pit of unknown age in trench 10/area 5 in zone E during the archaeological trial trenching (figure 34) and a stone-lined drain of probable post-medieval date was found within trench 1/area 1 in zone A (figure 26). Neither feature was detected by the geophysical surveys.

The interpretation of the geophysical data has the potential for error as it is based on the appearance of features in plan, and several alternative interpretations may be possible. An example of this is the curvilinear anomaly (A-91, appendix III, figure 25) identified in zone A which was initially interpreted as a possible defended prehistoric enclosure but was proven to be modern disturbance during the evaluation trenching phase. In other areas anomalies interpreted as field boundaries were proven to be geological in origin. The majority of anomalies detected in the geophysical surveys have not been investigated by evaluation trenches, and as such their interpretations have not been confirmed.

The VMD data has been shown to be of limited use in the detection of small or low magnetic intensity archaeological features. This is most apparent in zone A where a complex sequence of field boundaries (figures 24 and 25) have been identified within the high-resolution zones, but are not shown within the VMD grey scale survey. As such, it is apparent that there may be areas covered only by the VMD survey where existing archaeological features have not been identified.

There are further gaps in the geophysical data set as the whole of zone N has not had any survey carried out due to access restrictions. These restrictions also apply to the desk based assessment and as such there has not been any field walkover within the zone. Zone P has also not been included within a geophysical survey.

There have not been any intrusive test pits excavated within any of the most southern zones, and as such the depth of soils and therefore potential for the preservation of buried features is unknown.

An interpretation report on the offshore geophysical survey is forthcoming from Wessex Archaeology.

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APPENDIX I

ARCHAEOLOGICAL SITES

DESIGNATED HISTORIC ENVIRONMENT FEATURES IN LANDSCAPE AROUND THE PROPOSED SITE

I.i. Designated Sites

The following Scheduled Ancient Monuments lie within a 4 Km radius of the proposed development site boundary.

Table 1: List of Scheduled Ancient Monuments within 4 Km of the proposed development site

PRN	Sitename	Cadw reference	Distance from proposed development site boundary	Direction from proposed development site
3515	Castell Crwn, Llanfairynghornwy	A029	3.3 Km	SW
3516	N.Standing Stone, Pen yr Orsedd	A081	3.4 Km	SW
3517	S.Standing Stone, Pen yr Orsedd	A081	3.4 Km	SW
3047	Llanfechell Standing	A030	2.2 Km	SE
3048	Standing Stone N. of Llanfechell	A080	2.7 Km	S
3053	Earthwork Enclosure, Llifad	A079	4.3 Km	SE
3067	Dinas Gynfor Promontory Fort	A038	4.2 Km	E

The above Sites of Scheduled Ancient Monuments are shown on Figure 1.

The following Listed Buildings lie within a 4 Km radius of the proposed development site boundary.

Table 2: List of Listed Buildings within 4 Km of the proposed development site

PRN	Cadw Ref	Sitename	Listed status	Distance from proposed development site boundary	Direction from proposed development site
3522	5380	St Mary's Church, Llanfairynghornwy	GI	3.6 Km	SW
	24422	Lych-Gate at St Mary's Church, Llanfairynghornwy	GII	3.6 Km	SW
3524	5382	St. Rhwydrys' Church, Llanrhwydrys	GII*	2.7 Km	W
	24411	Lych-Gate At St Rhwydrys Church	GII	2.7 Km	W
3533	5381	Caerau House	GII*	3.4 Km	SW
12512	5342	Caerau (East) Stable	GII	3.4 Km	SW
	24410	Gatepiers to S Courtyard, Caerau	GII	3.4 Km	SW

3534	5343	Cefn-Coch House	GII	2.9 Km	SSW
3051	5383	St. Mechell's Church	GII*	3.0 Km	S
3052	5356	St. Patrick's Church	GII*	2.8 Km	E
3056	5349	Church Of St Perio	GII	4.1 Km	ESE
3066	5344	Cemaes Windmill (C18th)	GII	1.7 Km	ESE
6331	5384	Llanfechell Rectory	GII	3.0 Km	S
6347	25171	Brynddu House,	GII	3.3 Km	SE
11070	25167	War Memorial, Llanfechell	GII	3.0 Km	S
11073	5386, 25168, 25169	Crown Terrace, Llanfechell	GII	3.0 Km	S
11803	5388	Cefn Coch Windmill	GII	2.2 Km	SSW
	24417	Corn Drying Kiln, Felin Gafnan	GII	0.88 Km	W
7187	24416	Felin Gafnan Corn Mill	GII*	0.88 Km	W
31174	24418	Mill House, Felin Gafnan	GII	0.92 Km	W
31175	24412	Plas Cemlyn Farmhouse	GII	3.7 Km	SE
	24414	Hammels At Plas Cemlyn	GII	3.7 Km	SE
	24415	Old Farmhouse, Plas Cemlyn	GII	3.7 Km	SE
	24413	Agricultural Range At Plas Cemlyn	GII	3.7 Km	SE
31176	25174	Llanddygfael Groes	GII	2.8 Km	SSW
31177	24339	Ty Cefn	GII	1.77 Km	E
31178	24223	Old Rectory, Llanfairynghornwy	GII	3.6 Km	SW
31179	24424	Ty Wian With Servant Quarters	GII	3.1 Km	SW
	24425	Cartshed-Granary At Ty Wian	GII	3.1 Km	SW
31180	25173	Cae Mawr	GII	2.5 Km	SSW

The above Listed Buildings are shown on Figure 1.

Non-designated sites and find spots listed in Historic Environment Record (HER), search carried out August 2011.

The following sites listed within the HER lie within a 4 Km radius of the proposed development site boundary. The sites are identified within the record by a Primary Reference Number (PRN).

Table 3: List of sites in the HER which lie within 4 Km of the study area

PRN	Site name	NGR
7992	Animal Bones - Findspot, Cemlyn	SH32889380
3199	Well, Llanlleiana, Llanbadrig	SH38799503
3514	Castell Rhonyn (Place-Name),	SH33459111A
3521	Spearhead - Findspot, Llanrhwydrys	SH33509050A
3522	St Mary's Church,	SH32729085
3523	Standing Stone - Site Of,	SH33669039A
3524	St. Rhwydrys' Church,	SH32219322
3532	Promontory Fort (Alleged) - Site	SH32969358A
3536	Promontory Fort (Alleged) - Site	SH33709321A
3538	Castell (Place-Name), Cemaes	SH34309290A
3043	Ffynnon Badrig Holy Well,	SH37549468
3044	Chapel, Llanlleiana	SH38789493
3045	Ffynnon Ddygfael, Nr.	SH35109050
3046	Burial Chamber (Poss), Cromlech,	SH36049200
3049	Capel, Site Of, Llanddygfael	SH35079033
3050	Urn Burial - Site Of, Plas Penrhyn,	SH38009300A

3051	St. Mechell's Church (C12th),	SH36949127
3052	St. Patrick's Church (C14th),	SH37619463
3059	Cross-Incised Stone, Llanbadrig	SH37619463
3060	Capel Gwen Hir (Hoyw) - Site Of,	SH39439355
3061	Cist Burial, Llanleiana	SH38609460A
3063	Copper Cake - Findspot, Nr.	SH35309250A
3065	Leper House, Rhyd Y Clafdy, Cemaes	SH39009410
3069	Maen Arthur Standing Stone	SH36849025
3071	Pillow Mound (Poss. Cairnfield), Nr.	SH38459124C
999	Roman Coins & Brooch - Findspot,	SH37559338
3144	Hill-Top Enclosure, W Of Bwlch	SH35059145C
897	Neuadd Cemaes	SH38009370
5198	Ring-Ditch, Sw Of Rhos-Isaf	SH38749348
5384	Saddle Quern - Findspot, Cemaes	SH37429343
4460	Cestyll Garden, Wylfa	SH34009300
1734	Site Of Fulling Mill, Llanfechell	SH36809130A
6347	Brynddu House, Llanfechell	SH37329119
7182	Coronation Tower, Dinas Gynfor	SH38899522
7183	Chimney, Porth Llanlleiana	SH38869502
7184	Quarry Building, Llanlleiana	SH38839502
7188	Limekiln, Penrhyn-Mawr	SH37289410
7362	Ap Site, N Of Llanfechell	SH37209220C
6332	Greosfechan ?Medieval Settlement,	SH35109270
21928	Cemaes Quarry	SH38409470
7693	Bethel	SH37129334
7694	Bethlehem	SH37329349
7695	Bethesda	SH36539308
7697	Moriah	SH39259439
7698	Penrhyn	SH36849374
7754	Salem	SH31899129
7758	Ebenezer	SH36519092
7759	Calfaria	SH36058998
7761	Jerusalem	SH35768970
7762	Libanus	SH36909123
7763	Bethania	SH35779248
7810	Shiloh	SH33979024
7811	Siloam	SH33419226
21930	Dinorben Mine	SH37809430
16575	Llanrhwydrys Submerged Peats	SH31809320A
17144	Cemlyn Character Area	SH32889229
17145	Wylfa Character Area	SH35289376
17146	Llanfechell/Llanfairynghornwy	SH33329028

The above list of sites in the HER are shown on Figure 1.

APPENDIX II

GAZETTEER OF KNOWN HISTORIC ENVIRONMENT FEATURES WITHIN THE SITE

The sections below list the principal features within the study area, and categorises their importance on a scale of A (National); B (Regional); C (Local); D (Other); E (Unknown), these principal features are also shown on Figure 2.

II.i Sites Identified in the Archaeological Desk Based Assessment (GAT reports 966 and 967)

1. Boat House, Porth y Pistyll SH 3479 9362

Category: **C**

The remains of a small rectangular building. The lower walls only remain to a height of approximately 1m. It is said to have been the boathouse belonging to Cestyll, and used by the Vivians.

2. Limekiln, Porth y Pistyll SH 3480 9357 PRN 7186

Category: **B**

The remains of a small limekiln located close to the coast edge. It originally appears to have had draw holes on the west and east sides, however the kiln was modified in the early 20th century to create a bathing hut for use by the Vivians out of the west draw hole. This was partly walled-in and a door placed within the remaining part of the entrance. The location of the east draw hole is overgrown, and is not currently visible. The pot is filled in, and the connection between the draw hole and pot has been blocked. There is no obvious quarry alongside, and it is possible that both stone and fuel were brought in by boat. The date of construction is unknown, but it is shown on the 1889 OS map as 'old limekiln', so probably dates from the early 19th century. The site is of interest both as a well preserved example of a small rural limekiln, and as part of the landscape associated with the Vivian's and the garden at Cestyll.

3. Cestyll SH 3466 9338 PRN 3539

Category: **A**

There is no building shown here on the 1842 tithe map, however there is a small enclosure shown on the manuscript 2" OS map of c. 1830, and this is marked Cestyll on the first edition 1" OS map of c. 1840. The site was originally part of Cafnan farm, owned by the Carreglwyd estate. A substantial square house had been built here by 1889, as it is shown on the OS map of that date, with a large walled garden to the north, and ornamental gardens to the west. Cestyll was bought by William Walter Vivien in 1918, who gave it to his niece Violet Vivien, daughter of Lord Bodmin. Violet Vivien took holidays there, and in time made Cestyll her home. From 1922 onwards she began to construct a garden in the valley of the Cafnan west of the house (and west of the study area boundary, though the site of the house of Cestyll lies within the study area). The house of Cestyll was demolished in 1991. The walled garden is still present, but very overgrown. A south-east range of sheds and a garage may still be seen, though are also very overgrown and difficult to access.

The gardens within the Cafnan valley, main house (demolished), gardener's cottage, garage, and kitchen gardens are all included within the non-statutory *register of historic parks and gardens in Wales* (PGW (Gd) 45 (ANG) as a grade II registered garden. The garden is described as 'an informal plantsman's garden which has many small, separate but linked areas, in many cases defined by the bends and loops of the stream, which give it a very intimate atmosphere' (Cadw 1999, 15). The register is roughly commensurate with that used for listed buildings, and as such the garden can be seen as being of regional importance.

The registered area is divided in two, with the garden of Cestyll to the west and the house of Cestyll (demolished), gardener's cottage, garage, and kitchen gardens to the east with the essential setting making up the ground between. The garden lies outside of the proposed development site but the eastern range of structures and much of the essential setting is within the boundary. Furthermore, the significant views point out to sea into an area which is included within the proposed development site.

4. Pen Pistyll SH 3489 9352

Category: **E**

A small-holding shown on the tithe map of 1842 owned by Edward Williams, who also owned the adjacent Tyddyn Iocyn (later Tan yr Allt). The origins of the plot are not known. A small range of buildings within an enclosure, with another small enclosure to the south, are shown on the OS map of 1889. The site lies above a small stream which feeds into Porth y Pistyll. No upstanding features remain visible, though the ground is rough, and bits of masonry and rubble are visible in the eroding side of the adjacent ditch.

5. Cwt SH 3516 9353

Category: **E**

A small-holding shown on the tithe map of 1842 owned by William Williams. It is mentioned in 1735, when it was the home of William Griffith, part owner and master of the ship 'Cloxan' (Owen and Griffith 1931, 52). On the 1889 OS map it is shown as a single building. By 1924 a larger house had been built to the west called Skerries View. Both were demolished as part of the construction of the existing power station at Wylfa, and lie under the grounds of the sports field behind Simdde Wen.

6. Tai Hirion SH 3508 9329

Category: **E**

A small farm shown on the tithe map of 1842 owned by Rice Owen. The 1889 OS map shows it as a house to the north with farm buildings to the south. The house and some of the buildings were demolished during the construction of the existing power station. One range of farm buildings is derelict but still standing to eaves height. It was converted to a milking parlour, sometime in the mid-20th century by the appearance of the concrete used for the stalls, but appears to have been a corn barn originally. Remains of small triangular windows can be seen – a feature of north Anglesey farm buildings.

7. Simdde Wen SH3533 9329

Category: **E**

The house is shown on the tithe map of 1842 owned by Thomas Griffith and Grace Hughes. It is mentioned in a will of William Hughes of Wylfa dated 1751 (UWB Llwydiarth Esgob 13), when it was also called Pen y Graig. It is shown as a single building in 1842, however by 1889 it is shown as a large square house set in wooded grounds with a range of buildings to the north. A lodge was built by 1900 at the point where the road divided from the Wylfa road, and at the same time the house of Cae'r Brenhin was demolished. The house was used as offices during the construction of the existing power station at Wylfa, and it subsequently became the social club. The house has recently been demolished, though garden walls remain.

8. Pen y Groes SH 3516 9299

Category: **E**

A small-holding shown on the tithe map of 1842 owned by Reverend Edward Owen Hughes (Llysdulas Estate). The site is still shown on the 1924 OS map, but by 1946 it had been demolished, and a new house, Bronydd, had been built to the north. There are no visible remains.

9. Cae'r Brenhin SH 3545 9315

Category: E

A small-holding shown on the tithe map of 1842 owned by Reverend Robert Williams. It is shown on the OS map of 1889, but by 1900 it had been demolished, and the lodge to Simdde Wen had been built to the east. There are no visible remains.

10. Wylfa SH 3564 9390

Category: E

The name Wylfa is to be found in documents from the 17th century onwards and almost certainly had earlier origins. It is recorded in 17th century documents as part of the township of Caerdegog. William Hughes, mentioned in William Bulkeley's diary in the 18th century, lived there, and John Hughes, possibly his father, before him. William Hughes heir is John Thomas according to Bulkeley. By 1741 we hear of Wylfa Goch, and later of Wylfa Wen and Wylfa Newydd. It is possible that Wylfa Goch was on the site of the later gardens and farm buildings of Wylfa. Wylfa Newydd was said by William Williams (died c. 1860) to have been built by him c. 1831, and to have been next to Wylfa Wen. A house called Ty Newydd is shown on the 1st first edition OS map by Ty'n y Maes, so perhaps these two were originally Wylfa Wen and Wylfa Newydd. After the death of William Williams Wylfa was bought by David Hughes, originally from the area, who made a fortune in the building trade in Liverpool. He rebuilt the house at the north edge of the site, and built a walled garden and farm buildings below, as well as a lodge at the entrance. David Hughes died 1904. All the buildings, including the house, were subsequently demolished during the construction of Wylfa A. A carpark lies on the site of the farm buildings. The walled garden partially survives next to the car park.

11. Boat house (former lifeboat station, Porth yr Ogof) SH 3556 9418

Category: C

A lifeboat station was first opened here in 1872, initially to replace the Cemlyn lifeboat, and then to supplement it when Cemlyn re-opened. The lifeboat was housed in this building until 1907, when a new station was built a short distance to the north. The building still stands with slate roof supported on king-post trusses and rendered walls, though is not used at present.

12. Former lifeboat station (Porth yr Ogof) SH 3564 9423

Category: D

The second of two Cemaes lifeboats houses, this was built in 1907 to house the 'Charles Henry Ashley', a 38ft non-self-righting Watson class lifeboat. The Charles Henry Ashley was in use until 1932. The boat has survived, and has been recently restored. The station was closed in 1932 and was subsequently demolished, only the toe of the slipway and some concrete supports remaining.

13. Chain Home Guard Installation

Category E

During the Second World War a Chain Home radar defence station was established at Wylfa. A series of contemporary aerial photographs (WAG 541/RAF/206 Frame 4020, Nov 20 1948; WAG 541/69 Box C55; Jul 19 1948 Frame 0056) shows the installation. Two receiver towers, probably of wood, stand close to the cliff edge near Porth Gwartheg, and three thin steel transmitter masts stand further east. A semi-circular ring of low, dome-shaped, bunker-like structures run from Wylfa House to Porth y Pistyll, which would have included transmitter blocks, receiver blocks, electricity sub-station, air raid shelters and watch houses. The staff complement at these stations was large and several other structures in the vicinity are also likely to be associated with the station. The purpose of a chain home station was detection of enemy aircraft by radar or, in some instances, as along the north coast of Wales, the management of shipping in the Liverpool approaches. The radar worked by 'floodlighting' the sky with pulsed radio waves. The 'echo' from obstacles in the path would be received and displayed at the base station.

13a Structures SH3568 9386

Category E

A series of structures and earthworks are visible on aerial photographs south-west of the house of Wylfa. The extent to which these were part of the Chain Home Guard is not known, though it is probable some of the buildings there were requisitioned for use. A small circular feature is visible in the field to the south. No remains are visible on the site, apart from bricks of this period visible close to the location of the circular feature and within the former garden wall to the west.

13b Mounds south-west of Ty'n y Maes SH 3544 9384

Category E

Two earth-covered bunkers and other earthworks are visible south-west of Ty'n y Maes. This area is now covered with trees, and has been partly landscaped. No features are visible associated with the WWII installation, though a stone gatepost and remains of a stone wall from the earlier field system survive in the woodland.

13c Mound SH 3539 9365

Category E

A square mound with boundary around it is shown in the east corner of a field. The site lies within the woodland belt planted around the existing power station at Wylfa. Nothing is visible on the ground other than a round stone gatepost belonging to the former field system.

13d Mound SH 3532 9344

Category E

A circular mound with surrounding wall is shown in the east corner of a field. The site now lies under, or immediately alongside, the access road to the existing power station at Wylfa. No visible remains survive.

13e Mound SH3509 9356

Category E

A mound is shown north of the house 'Skerries View'. These lie at the north-west end of the playing fields associated with the sports and social club. The area was landscaped during the construction of the existing power station at Wylfa, and no visible remains survive.

13f Earthworks SH 3482 9364

Category E

An enclosure and mound are shown close to the coast in the west corner of a field. No structures survive here, but remains of concrete and brick can be seen both here and along the coastline to the north.

13g Receiving tower SH 3483 9379

Category E

One of two receiving towers which formerly lay close to the coast edge. Concrete and brick visible in the grass may be former remains of anchor points, though these have been partly cleared during landscaping.

13h Receiving tower SH 3492 9387

Category E

One of two receiving towers which formerly lay close to the coast edge. The site lies outside the study area under the existing power station at Wylfa.

13i Transmitting masts SH 3509 9408; SH 3517 9413; SH 3538 9424; SH 3545; 9429

The site of four transmitting masts close to the coast edge. All lay outside the study area, two under the existing power station at Wylfa and two on Wylfa headland. Concrete anchor blocks are visible at the latter site.

14. Pennant SH 3475 9308

Category C

A detached house built c. 1940. It was built by the owners of Cafnan when the main farmhouse was taken over for WWII purposes.

15. Tan yr Allt (Tyddyn Iocyn) SH 3494 9314

Category C

This small-holding was recorded on the tithe map, when it was called Tyddyn Iocyn and owned by Edward Williams. On the 1889 OS map the site is shown as a cottage and adjoining outbuilding and called Tan yr Allt. On the 1900 OS map a much larger house (the present one) is shown, with new ranges of outbuildings to the west. It consists of a two-storey house with part-gabled dormers and bay window. There are four-pane sash windows in most of the openings, and a later conservatory around part of the house. The walls are rendered, and the chimneys are of red brick.

16. Bronydd SH 3517 9301

Category C

This house was built in the mid-20th century north of the original house of Pen y Groes. It is almost square in plan, of one and a half storeys with hipped roof and gabled dormers. Tall chimneys rise from the corners. Black and white timber detail to the dormers, but the remaining walls are rendered, making it difficult to confirm that they are of brick, though this is very likely.

17. The Firs SH 3523 9296

Category C

This large house was built in the late 19th century. It is shown on the 1889 OS map within wooded gardens, with a cottage to the north. It is a double pile two-storey house with slate roof and rendered walls. Much of the wooded grounds remain, though two new houses have been built on the west side (Chequers and Bryn Fferen). The house looks as though it has been modernised and altered since its original construction.

The cottage to the north has been rebuilt recently as a separate house in its own grounds as a modern two-storey house.

18. Tyddyn Du and Pen y Groes Isaf SH 3542 9289

Category C

This is shown on the OS map of 1889 as two ranges of buildings. The eastern range is called Tyddyn Du, whereas the western range is not named, but is shown on the tithe map as Pen y Groes Isaf, and associated with the land to the west. In 1842 Tyddyn Du was owned by Edmund Meyrick of Cefn Coch, and Pen y Groes Isaf by Edward Williams. A 2-storey farmhouse was built at Tyddyn Du in the late 19th/early 20th century. The range of buildings attached to the north-west gable has been converted into domestic accommodation. Pen y Groes Isaf, now called Clonmel, has been modernised and the outbuildings also converted into living accommodation.

19. Rhwng y Ddau Fynydd SH 3506 9282

Category C

This farm is shown on the tithe map as belonging to William Bulkeley Hughes of Brynddu. The 1889 OS map shows the present farmhouse with scattered outbuildings to the west. The present house appears mid- to late-19th century in date, and one of the outbuildings, which are now largely derelict, may have been the earlier house. One outbuilding contains an example

of a small triangular window – a style peculiar to north and west Anglesey. The farmhouse is a two-storey rendered building with a slate roof.

20. Lodge SH 3549 9312

Category C

The lodge was built between 1889 and 1900, presumably to serve the house at Simdda Wen. At the time the lodge is built, the earlier cottage at Cae'r Brenin which lay in the field to the west is demolished. The lodge is single storey, with rendered walls, slate roof with ornate ridge tiles, and red brick chimney. It consists of two wings at right angles to one another, the north wing projects forwards with an angled gable. The door, with a small open porch, lies in the angle between the two wings. A plain shield ornaments the south gable.

21. Pen Lon SH 3578 9296

Category C

This house, according to the tithe map of 1842, lay across the road in a rectangular enclosure. The enclosure is still shown on the 1889 map, but the house has, by that date, been rebuilt across the road, with a range of farm buildings alongside. The house was owned by the Reverend Robert Williams in 1842. It has recently been modernised, though the outbuildings are largely derelict.

22. Ty'n y Maes SH 3550 9387

Category C

This house lies in a block of land west of Wylfa house. A building is marked on the tithe map in this location, though its orientation is different. The 1889 OS map shows two parallel ranges of buildings, with a small enclosed paddock, perhaps an orchard or garden, to the north. The west range has been modernised and is the present Ty'n y Maes, whilst the east range has been rebuilt in modern times and is called Haul y Gwynt. The first edition of the 1" OS map, of approximately 1838, shows a house that may be Wylfa Newydd referred to by William Williams (see above). Ty'n y Maes is of 1½ storeys with gabled dormers. The outbuildings attached to the north end have been converted into part of the house.

23 Ty Croes SH 3561 9348

Category C

The small farm of Ty Croes is shown on the tithe map when it was owned by Owen Jones. The 1889 map shows it as a cottage with attached outbuildings, with other scattered outbuildings in the vicinity. The cottage and attached outbuildings have been modernised, and consist of a single storey range with a garage at the south end. The other outbuildings are partially derelict, though two are still roofed.

24. Tyddyn Goronwy SH 3583 9325

Category B

The name of this holding preserves a reference to the medieval *Gwely Goronwy Wyddel* (see 5.3 above), when it formed part of a common holding with Gwyddelyn. A house is shown on the tithe map, when the farm was owned by Mary Hughes. The house is shown on the 1889 map as a single range of house and farm buildings aligned north-south. The house has been modernised and the buildings converted to form part of the house. It is of 1½ storeys with gabled dormer windows, the walls are rendered, and the roof is of slate.

25 Tre'r Gof Uchaf SH 3627 9319

Category B

Tre'r Gof was a medieval township (see 5.3 above). It became part of the estate of William Broadhead on his marriage to Catherine Williams in 1730, and was lived in by two successive generations of the Broadhead family. An inscribed stone at the entrance to the new house records the initials B R M and the date 1773 for Richard and Martha Broadhead. Their daughter Elizabeth married John Elias. In 1842 the farm was owned by Mary Broadhead,

sister of Elizabeth. The farmyard lies within the study area, and is shown on the 1889 OS map as a yard with farm buildings around the north and west sides, and the house to the south. The house was demolished in recent years, and a new house built closer to the road. One of the farm buildings contains early 20th century graffiti of marine paintings – these appear to date from the time of the First World War. Graffiti of this date is unusual, and is identified in national guidelines as being of regional or national significance (*War Art*, English Heritage and CBA 2006). The buildings are therefore assessed at regional importance.

26. Nant Orman SH 3619 9335

Category B

The origins of the name Orman may be found in the name ‘Tithin y Torment’ recorded in the 16th century. (UWB Llwydiarth Esgob, 1). In the 17th century ‘Tormain’ is referred to, and this might be translated as ‘stony hill’, referring to the hill east of the present house. However this is speculation only, as the site of *Tithin y Torment* or *Tormain* cannot be located with certainty. The tithe map of 1842 shows a small holding surrounded by Tre’r Gof land, as though it had once formed part of the Tre’r Gof township. It was owned then by Ishmael Jones, and his inscription and the date 1843 can still be seen in the building behind the house. The style of the house is typical of this date. It is double pile plan, of two storeys, with a hipped slate roof and tall chimneys rising from the two gable walls. A garden lies east of the house, in the north wall of which is a row of bee boles. These are a row of rectangular openings within the wall in which bee skeps were placed. West of the house are a group of outbuildings, one of which has recently been converted into a dwelling. A well preserved house in late Georgian style, with contemporary garden features and known relationship with Ishmael Jones, a figure of significance in the economic development of Cemaes Bay, make this site of regional significance.

27. Park Lodge SH 3642 9351

Category B

Park Lodge also gives the appearance of having been carved out of Tre’r Gof lands. Its English name suggests an origin in the 19th century, though it could be earlier. The tithe map of 1842 records the owner as Thomas Edward Fanning, who married Gwen Broadhead, another daughter of Richard and Martha, so perhaps this was Gwen’s inheritance. It is first linked with Thomas Fanning in 1814. The earliest part of the house appears to be the south-west range. In the late 19th and early 20th centuries a large square house was built on the north-east side of the earlier one. This later house has a central door with projecting angled bays either side with large stone mullioned and transomed windows. The corners of the bays carry above the parapet of the flat roof, creating a castellated effect. The out buildings south-west of the house have been converted into living accommodation. The early relationship with Thomas Fanning is of interest, as his family came to play a significant role in the development of the copper mines at Amlwch. The house is a good example of early 20th century gentrification of an earlier vernacular building, and as such is of regional importance.

28. NDA Depot SH 3530 9291

Category D

A plot lying between the Firs and Tyddyn Du called Pen y Groes Isaf on the tithe map (site 18 above). An aerial photograph of 1946 shows considerable activity within the area, possibly related to WWII activities, and the Home Chain Guard. It has subsequently been used as a storage yard for the existing power station at Wylfa, and has large modern storage sheds on it.

29. Chequers and Bryn Fferen SH 3519 9297

Category D

Two new houses built on land formerly part of, and west of, The Firs.

30. Penrallt SH 3534692591

Category C

A farmhouse and buildings. Access to the buildings was not possible because of excess vegetation growth. The house is a typical mid-19th century stone-built Anglesey farmhouse, of two storeys. The north-facing front has a central door with windows either side, and matching windows above. The brick lintels are painted in green and yellow stripes. Though the house does not look earlier than mid-19th century, there is documentary evidence for a house here from the later 18th century.

31. Sylvia Crowe landscaping east of the current power station at Wylfa

Category **A**

Two significant mounds and a plantation of coniferous and broad-leaved trees through which nature trails are laid, as well as the route of the Anglesey Coast path, form the principal elements of this landscape. It largely hides the power station when close to the east side. Sylvia Crowe was a significant figure in the development of landscape architecture in the mid-20th century, at a time when new large scale industrial monuments were dramatically changing the rural landscape, and new methods of integrating these had to be found. Her work at Trawsfynydd is accepted as being of national importance through its designation as a registered garden. The landscaping at Wylfa followed a few years later, after the publication of her book on *Landscapes of Power* (1952), and as such should also be seen in a national context.

32. Trackway to Caerdegog Isaf SH 3518192692

Category **D**

A single lane trackway leads to the properties Tyddyn Gele, and Caerdegog Isaf. The track is first depicted on the 2nd Ordnance Survey manuscript c.1820s.

33. Caerdegog Isaf SH3477092490

Category **C**

A farmhouse and outbuildings. The farmhouse is stone built with white painted plaster and is first depicted on the 2nd Ordnance Survey manuscript c.1820s and the tithe map of 1840. A small stone-built outbuilding lies close by, as does a large stone-built barn which has been converted into a dwelling.

34. Cafnan SH3426593072

Category **B**

Cafnan is mentioned in the estate records in 1631, and remained a part of the estate until the 20th century. The present building is a two-storey house, plus attic, with pitched slate roof. It has bay windows to ground floor front, one either side of doorway with three sash windows to first floor front and three dormer windows above, suggesting an early 19th century date for the building. Several stone outbuildings and newer barns are situated within the vicinity of the house. Cafnan is an excellent example of a substantial Anglesey farmhouse of early 19th century date, and as such is of regional importance.

35. Mound SH3433792957

Category **E**

At the northern end of the field is an overgrown mound measuring approximately 1.50m in height, and 20.00m by 25.00m. The mound has several large blocks of stone within it, and is depicted on the 25th first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924). The feature may represent general field clearance, or perhaps the remains of a structure of unknown date.

36. Field boundary SH3424292885

Category **D**

A field boundary is depicted on the 25th first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) splitting the current field in two. No sign of the boundary exists today.

37. Tyddyn Gele SH3505792600
Category **C**
A farmhouse and associated outbuildings. The farmhouse has been modified, and extended with a conservatory, and the largest outbuilding has been converted into accommodation. The building is first depicted on the Carreg Lwyd estate map of 1780.
38. Trackway from Tyddyn Gele SH3511792566
Category **D**
A track is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) running southeast from Tyddyn Gele to access a large field. The track exists today as an overgrown area with two parallel 1.0m high dry-stone walls in poor condition.
39. Field boundary SH3506292532
Category **D**
A field boundary is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) splitting the current field in two. No sign of the boundary exists today.
40. Field boundary SH3429292245
Category **D**
A line of large stones running southwest to northeast across the field appears to indicate a field boundary wall, however no boundary is depicted on the 25" Ordnance Survey maps. The boundary therefore may predate cartographic evidence.
41. Field boundary SH3423092279
Category **D**
A field boundary is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) splitting the current field in two. The boundary is no longer existence; however a 1.20m high upright stone marks the original gate pier.
42. Stone barn SH3538892166
Category **C**
A barn is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) set within a large field. The barn is stone built and mortared, sits within a quarried terrace, and has a dry-stone perimeter wall with upstanding gate pier encircling it. No track links the barn with the road, and none are depicted on the OS maps. The barn measures 4.0m by 6.0m, and 2.0m to the eaves. The roof was of corrugated sheeting, which has since collapsed into the interior of the structure, which is now overgrown.
43. Well SH3466892548
Category **C**
A stone built circular well lies within the centre of a field. The well is depicted on the 25" second and third edition Ordnance Survey maps (1900, and 1924), and labelled as a 'spring' on the 25" first edition 1889 Ordnance Survey map.
44. Quarry SH3505792081
Category **D**
A small quarry is depicted on the 25" second edition 1900 Ordnance Survey map in the western corner of the field. The area is now overgrown and marshy.
45. Field boundary SH3505492280
Category **D**

A field boundary is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) splitting the current field in two. No sign of the boundary exists today.

46. Trackway SH3442392343

Category **D**

A trackway linking the farms of Mynydd Ithel and Caerdegog Isaf is depicted on the 25" first and second edition Ordnance Survey maps (1900 and 1924), running from southwest to northeast through fields. The track exists today as a roughly worn track.

47. Sheepfold SH3459992278

Category **D**

A sheepfold is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) in the northeast corner of the field. Access on to the land was not permitted, and thus the feature has been identified from cartographic sources only.

48. Barn/cottage SH3492192334

Category **E**

A building, probable barn or cottage, is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) surrounded by a perimeter boundary with three smaller structures close by to the west. Access on to the land was not permitted, and thus the feature has been identified from cartographic sources only.

49. Ysgubor ddegwm SH3547292592

Category **E**

A cottage labelled Ysgubor ddewm is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924) within a field on the approach to Penrallt. Access on to the land was not permitted, and thus the feature has been identified from cartographic sources only.

50. Trackway to Penrallt SH3547492606

Category **D**

A track leading to Penrallt is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924), and exists today as a single track lane. The Carreg Lwyd estate map of 1780 depicts the house of Penrallt, so does the tithe map of 1840 however the smaller trackways are not depicted, although it is likely that the track dates to the construction of Penrallt.

51. Trackway from Tyddyn du to the A5025 SH3555392969

Category **D**

A track leading to from Tyddyn du to the current A5025 is depicted on the 25" first, second, and third edition Ordnance Survey maps (1889, 1900, and 1924). No sign of the track is visible today.

52. The current road from Tregele to Cafnan SH3501893088

Category **C**

The current road running from Tregele to the house known as Cafnan is first depicted on the Carreg Lwyd estate map of 1780, however the road may have much earlier origins and as such is of local importance

53. The current track to Simdde Wen and Tai hirion SH3523793284

Category **D**

A single lane track runs from the main Wylfa road to where Simdde Wen previously stood, and on to the property known as Tai Hirion. The track is first depicted on the Ordnance Survey 2" manuscript c.1820s.

54. The current road from Tregele to Wylfa SH3551093457

Category C

The current road from Tregele to Wylfa is first depicted on the Ordnance Survey 2” manuscript c.1820s, however the road may have much earlier origins and as such is of local importance.

55. Field boundaries

Category D

A large number of field boundaries, mostly dry-stone walls but also hedgerows and stone-faced earth banks (in Welsh ‘clawdd’ or ‘cloddiau’ (plural)), cross the proposed development area. Many of these boundaries are depicted on maps from the late 18th century, and some may follow field boundaries established in the prehistoric period.

56. Buried archaeology

Category E

There is a high potential for unknown buried archaeological remains, particularly of prehistoric origins, across the site.

APPENDIX III

IDENTIFIED GEOPHYSICAL ANOMALIES

III.i Geophysical evaluation

Table 1 – Interpretation of magnetic gradient anomalies

Anomaly Number	Interpretation	Confidence	Alternative Interpretation	Confidence	x-ref to GAT Features (Report 987)
A-01	Former field boundary, unclear as aligned with geophys traverse direction	M	Modern disturbance, possibly a track or even a data gathering artefact	M	
A-02	Modern disturbance associated with pipeline	M	Former field boundary or enclosure bank.	L	
A-03	Minor feature, probably agriculture or fragments of former field boundaries shown on 1889/1924 OS County Series maps	M			
A-04	Minor features, probably agriculture or fragments of former field boundaries shown on 1889/1924 OS County Series	M			

	maps				
A-05	Roughly concentric circular anomalies. Modern disturbance associated with Wylfa A construction	H			80
A-06	Modern surface track	H			61
A-07	Minor feature, probably agricultural	M			
A-08	Narrow trench, probably modern carrying a pipe or cable	H			
A-09	Narrow trench, probably modern carrying a pipe or cable	H	Possibly a narrow ditch forming an enclosure with A-13	L	62
A10	Double parallel anomaly, probably former field boundary shown on 1889/1924 OS County Series maps	H	Narrow double feature, probably modern trench carrying a pipe or cable.	L	
A-11	Meandering feature, probably agricultural or pipe trench	M	Possibly a narrow ditch, former boundary or enclosure	L	
A-12	Meandering feature, probably agricultural or pipe trench, continuation of A-11	M	Possibly a narrow ditch, former boundary or enclosure	L	
A-13	Narrow curvilinear trench, possibly modern carrying a pipe or cable	H	Possibly a narrow ditch forming an enclosure with A-09	L	59
A14	Faint curvilinear features with some additional associated noise. Natural subsoil/bedrock variation	H			60
A-15	Small discrete circular anomaly, either natural or a processing artefact	M	Small round barrow, prehistoric or Roman. Possible but unlikely	L	
A-16	Parallel anomalies, modern ploughing as opposed to medieval ridge and furrow	H	The central (NW – SE) wider anomaly could be a former field boundary shown on 1889/1924 OS County Series maps	M	
A-17	Modern surface	H			56

	track, continuation of A-06				
A-18	Former field boundary shown on 1889 OS map	H			
A-19	Long curvilinear feature, possibly a former trackway	M	Modern disturbance	M	45
A-20	Mound visible on 1948 aerial photograph, natural feature	M			40
A-21	Mound visible on 1948 aerial photograph, natural feature	M			41
A-22	Widely spaced parallel linear anomalies, poss. former field boundary	M	Agriculture or modern disturbance	M	
A-23	Parallel linear anomalies, former field boundary	M	Agriculture or modern disturbance	M	
A-24	Faint linear anomaly, drainage or former boundary	M			71
A-25	Strong roughly circular anomaly 20m diam, central feature. Thermoremnant feature possible kiln	M	Geology or modern disturbance	M	69
A-26	Faint linear anomaly, drainage or former boundary	M			72
A-27	Two linear anomalies with right angle turn. Enclosure or boundary ditches	M	Agriculture or modern disturbance	L	46
A-28	Linear anomaly. Agriculture or modern disturbance	M			
A-29	Linear anomaly. Agriculture or modern disturbance	M			
A-30	Former boundary and footpath shown on 1889 OS map	H			
A-31	Former track from Tyddyn Du	H			
A-32	Former boundary and drain shown on 1889 OS map	H			82
A-33	Geology	H			86
A-34	Narrow linear anomaly, probably	H			83

	a 18 th or 19 th century boundary				
A-35	Narrow linear anomaly, possibly a drain or early boundary	M	Agriculture or modern disturbance	M	84
A-36	Oval anomaly, recent disturbance	M	Unknown archaeological feature	L	
A-37	Linear anomaly possibly former boundary	M	Modern disturbance	M	
A-38	Geology or modern disturbance	H			31
A-39	Linear anomaly, possibly former boundary or drainage	M	Modern feature	L	
A-40	Large oval anomaly, quarry pit	M	Modern disturbance	M	
A-41	Modern disturbance poss. former access track	M	Curvilinear anomaly possibly part of former boundary or enclosure	L	
A-42	Modern disturbance	M	Curvilinear anomaly possibly part of former boundary or enclosure	M	
A-43	Modern disturbance poss. former access track	M			
A-44	Linear anomaly, possibly former boundary or drainage	M			
A-45	Former boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-46	Two linear anomalies, probably modern drainage or agriculture	H			
A-47	Linear anomaly, crosses modern boundaries, post-medieval field boundary	M	Drain	M	
A-48	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-49	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			

A-50	Former field boundary possible continuation of A-49	H			
A-51	Weak linear anomaly, possible former field boundary	M			
A-52	Double parallel linear anomaly, former trackway	M	Linear anomaly, possibly former double ditched boundary	M	
A-53	Linear anomaly crosses current field system possibly former early boundary	M			
A-54	Ferrous and linear anomaly modern services	H			
A-55	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-56	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-57	Linear anomaly possibly former boundary or drain	M			
A-58	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-59	Curvilinear anomaly, drainage channel	M			
A-60	Curvilinear anomaly, drainage channel, continuation of A-59	M			
A-61	Linear anomaly, former boundary or drain	M			
A-62	Plough scarring, prob. modern	H			
A-63	Field drains	H			
A-64	Field drains	H			
A-65	Linear anomaly, former boundary or drain	M			
A-66	Linear anomaly,	M			

	former boundary				
A-67	Circular anomaly, 40m diameter. Prehistoric enclosure or settlement	M	Modern disturbance	L	
A-68	Area of noise, possible activity associated with A-67	M	Modern disturbance or landscaping	L	
A-69	Linear anomaly, former boundary or enclosure, poss. associated with A-67	M	Modern disturbance or landscaping	L	
A-70	Modern dumping	H			
A-71	Weak circular anomaly, 40m diameter. Prehistoric enclosure or settlement	M	Modern disturbance	M	
A-72	Linear anomaly, former trackway from Wylfa house	M	Linear anomaly, former boundary	M	
A-73	Parallel anomalies, modern drainage or ploughing	H			
A-74	Parallel anomalies, modern drainage or ploughing	H			
A-75	Linear anomaly, former boundary, part of current field system	M			
A-76	Group of linear anomalies and increased noise. Early boundaries and poss. trackway (see A-72)	M	Modern disturbance	L	
A-77	Linear anomaly, former boundary	M			
A-78	Circular anomaly, modern disturbance	M	Circular anomaly, 40m diameter. Prehistoric enclosure or settlement	L	
A-79	Broken and forking linear, former trackway, from Wylfa (house) shown on 1889 and 1924 Ordnance Survey County Series maps	H	Modern disturbance	L	
A-80	A series of linear anomalies at approx right-angles. Medieval or post-medieval field	M	Modern drainage	L	

	system				
A-81	Faint linear anomalies, probably ploughing or drainage	L			
A-82	Data artefact?	M	Modern services / drain	L	
A-83	Fragmentary double linear anomaly, former trackway	M	Modern erosion	L	
A-84	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-85	Two curvilinear anomalies, former boundaries, poss. prehistoric or medieval	M	Modern disturbance	L	
A-86	Linear and right-angled anomalies. Medieval or post-medieval settlement/buildings	M	Geology or modern disturbance	L	
A-87	Curvilinear anomaly, modern disturbance	M	Curvilinear anomaly, prehistoric or medieval enclosure or settlement	L	
A-88	Linear anomaly, part of a field system shown on 1780 Carreglwyd estate map	M			
A-89	Footpath shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-90	Linear anomaly, part of a field system shown on 1780 Carreglwyd estate map	H			17
A-91	Curvilinear anomaly, modern disturbance	H			20
A-92	Linear anomaly, part of a field system predating current 18th/19 th century system	M	Modern agricultural features or disturbance	L	
A-93	Linear anomaly, probably geological	H			
A-94	Possible terracing, medieval or	M	Modern drainage or agricultural features	M	

	prehistoric field system				
A-95	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-96	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			25
A-97	Linear anomaly, part of a field system predating current 18th/19 th century system	M	Modern agricultural features or disturbance	L	
A-98	Linear anomaly, part of a field system predating current 18th/19 th century system	M	Modern agricultural features or disturbance	L	
A-99	Rectangular and ferrous or thermo-remnant anomaly, Enclosure and building unknown date	L	Geology	M	
A-100	Area of increased noise, post medieval or modern landscaping	M	Geology	L	
A-101	Double linear anomaly, probably vehicle erosion	M			
A-102	Linear anomaly, part of a field system possibly medieval	M	Modern agricultural features or disturbance	L	11
A-103	Geology	H			13
A-104	Linear anomaly, part of a field system, possibly as shown on 1780 Carreglwyd estate map	M			7
A-105	Linear anomaly, part of a field system, possibly as shown on 1780 Carreglwyd estate map	M			
A-106	Linear anomaly, part of a field system, possibly as shown on 1780 Carreglwyd estate	M			8

	map				
A-107	Geology	H			12
A-108	Geology	H			14
A-109	Geology	H			
A-110	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-111	Linear anomaly, part of a field system possibly shown on 1780 Carreglwyd estate map	M	Modern agricultural features or disturbance	L	
A-112	Linear anomaly, part of a field system predating current 18th/19 th century system	M	Modern agricultural features or disturbance	L	
A-113	Linear anomaly, part of a field system predating current 18th/19 th century system	M	Modern agricultural features or disturbance	L	
A-114	Modern drainage	M	Barn shown on 1780 estate map	L	
A-115	Two linear anomalies, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-116	Modern disturbance or land drains down W side of fields	M			
A-117	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-118	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-119	Palaeochannel or other natural sub-soil feature	M			
A-120	Linear anomaly, part of a field system possibly shown on 1780 Carreglwyd estate map	M	Modern agricultural features or disturbance	L	6
A-121	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			5
A-122	Linear anomaly,	M	Modern agricultural	L	

	part of a field system predating the map evidence		features or disturbance		
A-123	Linear anomaly, part of a field system predating the map evidence	M	Modern agricultural features or disturbance	L	
A-124	Linear anomaly, part of a field system shown on 1780 Carreglwyd estate map	M			
A-125	Area of increased noise, former pond or marsh	H			4
A-126	Linear anomaly, possibly part of a field system shown on 1780 Carreglwyd estate map	M	Modern agricultural features or disturbance	L	
A-127	Linear anomaly, part of a field system predating current 18th/19 th century system	M	Modern agricultural features or disturbance	L	
A-128	Linear anomaly, former field boundary	M			
A-129	Parallel anomalies, modern drainage or ploughing	H			
A-130	Linear anomaly, probably geological	H			100
A-131	Linear anomaly, probably geological	H			101
A-132	Irregular anomaly, probably geological	H			132
A-133	Trackway or modern erosion	H			
A-134	Linear anomaly and parallel anomalies, probably a field boundary and ploughing. It appears to predate the 1780 Carreglwyd estate map. Possibly a medieval field system including strip fields or ridge and furrow	H			90
A-135	Trackway or modern erosion	H			100

A-136	A series of linear anomalies, probably field drains post-dating removal of boundary A-95	H			
A-137	Curvilinear anomaly, perhaps part of a ditched enclosure, date unknown	M			
A-138	A Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-139	Former field /rectangular enclosure shown on 1889 and 1924 Ordnance Survey County Series maps	H			
A-140	Narrow linear anomalies, probably drainage	M			
A-141	Linear anomaly, former ditch or trench for services	M			
A-142	Narrow linear anomalies, probably drains	M			
A-143	Former field boundary	M			
A-144	Parallel anomalies, modern drainage or ploughing	H			
A-145	Parallel anomalies, modern drainage or ploughing	H			
A-146	Parallel anomalies, modern drainage or ploughing	H			

Table 2: GAT targeted geophysical anomalies

Anomaly Number	Interpretation	Confidence	Alternative Interpretation	Confidence
1	Burnt Mound	M		
2	Mineral Panning/root burning	H		
3	Geology	M	Thermoremnant archaeological feature	L
4	Edge of former pond or marsh	H		

5	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H		
6	Geology	H		
7	Field boundary, possibly part of a field system shown on 1780 Carreglwyd estate map	M		
8	Field boundary, possibly part of a field system shown on 1780 Carreglwyd estate map	M		
9	Field boundary, possibly part of a field system shown on 1780 Carreglwyd estate map	M		
10	Former field boundary or drain	M	Agricultural disturbance	M
11	Former field boundary or drain	M	Agricultural disturbance	M
12	Geology	H		
13	Geology	H		
14	Geology	H		
15	Geology or modern disturbance	H		
16	Geology or modern disturbance	H		
17	Field boundary, part of a field system shown on 1780 Carreglwyd estate map	H		
18	Field boundary, double bank, possibly part of a field system shown on 1780 Carreglwyd estate map	M		
19	Field boundary, part of a field system shown on 1780 Carreglwyd estate map	H		
20	Modern curvilinear cut. Possibly rut from earthmover	H		
21	Modern ferrous	H		
22	Unknown noise, probably geological	M		
23	Fire dating from removal of hedge line	M	Burnt mound	L
24	Tree-bole and fire	H		
25	Former field boundary, removed in 20 th century	H		
26	Field Drain	M		
27	Former boundary or drain	M		
28	Field Drain	M		

29	Plough scarring	H		
30	Number not used			
31	Geology	H		
32	Geology	H		
33	Geology	H		
34	Geology	H		
35	Linear feature probably modern agricultural	M		
36	Linear feature probably modern agricultural	M		
37	Linear feature probably modern agricultural	M		
38	Linear feature probably modern agricultural	M		
39	Linear feature probably modern agricultural	M		
40	Linear feature probably modern agricultural	M		
41	Geology	H		
42	Geology	H		
43	Geology	H		
44	Geology	H		
45	Field boundary, part of a field system predating the current field system	M		
46	Field boundary, part of a field system predating the current field system	M		
47	Linear feature probably modern agricultural	M		
48	Linear feature probably modern agricultural	M		
49	Linear feature probably modern agricultural	M		
50	Linear feature probably modern agricultural	M		
51	Field boundary, part of a field system predating the current field system	M		
52	Linear feature probably modern agricultural	M		
53	Modern ploughing	H		
54	Modern ploughing	H		

55	Modern ploughing	H		
56	Modern Haul road	H		
57	Modern Ferrous	H		
58	Natural Subsoil features	M	Prehistoric ring cairns or barrows	L
59	Cable, environmental monitoring	M	Ditched enclosure (with 62)	L
60	Modern disturbance	H		
61	Modern Haul road	H		
62	Cable, environmental monitoring	M	Ditched enclosure (with 59)	L
63	Field boundary, part of a field system predating the current field system	L	Linear feature modern agricultural	M
64	Modern disturbance	M	Medieval funerary enclosure	L
65	Modern ferrous mast	H		
66	Modern ferrous	H		
67	Modern ferrous pylon	H		
68	Modern ferrous/cable	H		
69	Strong roughly circular anomaly 20m diam, central feature. Thermoremnant feature possible kiln	M	Geology or modern disturbance	M
70	Cut for 69	M	Geology or modern disturbance	M
71	Linear feature, either boundary or drain	M		
72	Linear feature, either boundary or drain	M		
73	Geology	H		
74	Modern ferrous	H		
75	Faint oval anomalies, possibly geological	M	Archaeological cut features	M
76	Parallel linear anomalies modern ploughing or landscaping	H		
77	Parallel linear anomalies modern ploughing	H		
78	Modern disturbance	H		
79	Modern trackway or vehicle erosion	H		
80	Modern disturbance	H		

81	Buried HV cable	H		
82	Former field boundary shown on 1889 and 1924 Ordnance Survey County Series maps	H		
83	Former field boundary probably a subdivision of current field system	H		
84	Negative linear anomaly perhaps an early field boundary	M	Stone lined culvert/drain	M
85	Modern disturbance	H		
86	Geology	H		
87	Faint oval anomalies, possibly geological	M	Archaeological cut features	M
88	Buried HV cable	H		
89	Number not used			
90	A series of linear anomalies indicating former field system. This predates the field system shown on 1780 Carreglwyd estate map. Possibly medieval	H		
91	Probably a continuation of Feature 90	M	Modern disturbance	L
92	Probably a continuation of Feature 90	M	Modern disturbance	L
93	Parallel linear anomalies respecting boundary 90. Possibly medieval strip fields	M	Ridge and furrow	M
94	A small subdivision in the corner of feature 90. Former pen or small plot	M		
95	Parallel narrow linear anomalies, probably modern vehicle erosion	M		
96	Parallel narrow linear anomalies probably ploughing	H		
97	Modern ferrous	H		
98	Modern ferrous	H		
99	Modern pipe/cable	H		
100	Geology	H		
101	Geology	H		
102	Geology	H		
103	Geology	H		
104	Modern haul road	H		

105	Linear anomaly marking edge of an area of increased noise. Former boundary	M	Geological feature or edge of soil spread from Wylfa A	M
106	Area of increased noise, possibly modern disturbance	M		
107	Area of increased noise, possibly modern disturbance	M		
108	Geology	H		
109	Geology	H		
110	Geology	H		

APPENDIX IV

LIST OF OFFSHORE ANOMALIES IDENTIFIED (Shaw, G., 2011. Wylfa Anglesey Marine Geophysical Assessment. Wessex Archaeology report ref. 78800.01).

A total of 168 sidescan sonar and 36 magnetometer anomalies thought to be of potential anthropogenic origin were identified within the study areas. These identified anomalies were subsequently grouped into 48 features of archaeological and potential archaeological interest.

The sites identified from the sidescan sonar data were then given the following archaeological discriminations:

Table 1: Sites of Archaeological Potential

Archaeological Discrimination	Number of Anomalies	Interpretation
A1	3	Anthropogenic origin of archaeological interest
A2	44	Uncertain origin of possible archaeological interest
U2	1	Known non-archaeological feature
Total	48	

Furthermore, the sidescan sonar and magnetometer anomalies can be classified by probable type, which can further aid in assigning archaeological potential and importance:

Table 2: Types of anomalies identified

Anomaly Classification	Number of Anomalies
Wreck	3
Debris	10
Dark Reflector	18
Bright Reflector	1
Seafloor Disturbance	5
Rope / chain	1
Magnetic	9
Pier structure	1
Total	48

Dark reflector - this is a strong reflector that reflects a large amount of energy; likely to be hard objects, such as metal wrecks or rocks.

Bright reflector - this is a weaker reflector that absorbs energy, and is composed of softer materials such as saturated wood.

The anomalies identified are discussed below. The locations of all the anomalies are shown in **Figure 2**.

Three geophysical anomalies identified have been interpreted as wrecks and have been classified as of archaeological interest.

7009 is a sidescan sonar anomaly of three approximately circular small dark reflectors in a linear orientation measuring 9.1 x 2.2m. There are no shadows to indicate height. If this is a wreck then it is almost wholly buried in sediment with only the tallest ship structures visible. There is no associated magnetic anomaly and no charted wrecks in the vicinity (UKHO 1991).

7024 is a sidescan sonar anomaly of an area of curvilinear dark reflectors with shadows measuring approximately 12.7 x 7.9 x 1m. Height is measured from the largest shadow and it appears to be a wreck, partially buried in an area of sediment. Not much detail or structure can be seen and it appears isolated. There is no associated magnetic anomaly and no charted wrecks in the vicinity (UKHO 1991).

7033 is a sidescan sonar and magnetic anomaly of large proportions. Numerous dark reflectors and bright reflectors area scattered over an area approximately 78 x 75m. These dark and bright reflectors indicate severely broken up debris lying on the bedrock of the coastline. The largest anomaly visible within the area measures 13.7 x 0.6 x 0.2m. The magnetic contact is a significant anomaly with amplitude of 5060nT. An anomaly of this size indicates that the wreck is probably of metal construction. There is also a broad geological trend in this area, possibly a dyke, with amplitude ranging between 40nT-50nT, but this is nowhere near the strength of the wreck.

44 anomalies are identified and interpreted as of possible archaeological interest but their origin is uncertain.

7001 is a bright reflector approximately 2.6 x 2.7m in size. It is a small anomaly lying in a depression in the seabed. The bright reflector indicates that it is made of a material such as plastic or waterlogged wood.

7025 is a sidescan sonar anomaly of an area containing numerous faint dark reflectors with shadows measuring 19 x 13.5 x 3.5m. The anomaly is directly below the towfish and is therefore difficult to scan for any further detail other than it strongly looks like debris of some kind. There is no associated magnetic anomaly and no charted wrecks in the vicinity (UKHO 1991).

Ten anomalies were identified and classed as debris (**7008, 7011 – 7012, 7022 – 7023, 7025, 7026, 7034 - 7035 and 7038**). **7008** is an area measuring approximately 9.3 x 6.3m containing a sidescan sonar anomaly of mostly dark reflectors without shadows and up to three bright reflectors possibly indicating a waterlogged material such as wood. There is no associated magnetic anomaly. **7011** is a strong u-shaped dark reflector with a diffuse dark reflector within it measuring 5.4 x 1.8 x 0.8m. It could be debris on the seafloor but the structure although visible does not suggest what it is. A further anomaly nearby is of a similar nature and has a hard defined outer edge with a diffuse area black reflector inside measuring 3.8 x 2.2m with a shadow indicating a height of 0.9m. Associated with this anomaly is a magnetic contact of 13.25nT (**4017**) suggesting this could be metallic in origin. **7035** is a sidescan anomaly of a bright reflector with a dark reflector beneath indicating an elongated structure with rounded ends. The anomaly measures approximately 5.2 x 0.8 x 0.4m and it lies on the edge of a sand ripple, it is isolated with no associated magnetic anomaly.

7035 is a sidescan anomaly of a bright reflector with a dark reflector beneath indicating an elongated structure with rounded ends. The anomaly measures approximately 5.2 x 0.8 x 0.4m and it lies on the edge of a sand ripple, it is isolated with no associated magnetic anomaly. **7025** is a sidescan sonar anomaly of an area containing numerous faint dark reflectors with shadows measuring 19 x 13.5 x 3.5m. The anomaly is directly below the towfish and is therefore difficult to scan for any further detail other than it strongly looks like

debris of some kind. There is no associated magnetic anomaly and no charted wrecks in the vicinity (UKHO 1991).

Five seafloor disturbances were identified (**7004**, **7007**, **7014**, **7019** and **7029**). The interpretation was based on identifying an area containing several associated reflectors with the possibility that they were anthropogenic in origin due to their appearance. The seafloor disturbances range in size from 6.5 x 6m to 28.7 x 4.3 x 0.3m.

7004 comprises two parallel linear alignments of four dark reflectors with shadows each, totalling eight individual anomalies in all. The data is quite severely banded therefore the quality is poor obscuring some of the features, however the seafloor disturbance is located in an area of outcropping bedrock and is probably all one feature partially buried. **7007** is a series of five dark reflectors with distinct shadows with a maximum height of 1m. They are grouped in a linear fashion and are located in an area of outcropping bedrock. It is unclear as to whether they are partially buried or lying on the seabed.

7014 is a small amorphous shaped area containing several closely spaced dark reflectors with shadows. Structure is difficult to distinguish in this particular case due to the quality of the data where banding is present and masks the features. **7019** is a large diffuse dark reflector which is very different in appearance from the bedrock immediately adjacent to it; therefore it is unlikely to be geological in origin. There is however no structure discernible, therefore it is classed as being of possible archaeological interest. **7029** is a sidescan anomaly consisting of linear and curvilinear dark reflectors in an oblong shape. It appears partially buried and could be a buried wreck or debris but not enough structure is discernible. None of the seafloor disturbances have magnetic anomalies associated with them.

Eighteen anomalies were classed as dark reflectors (**7002** - **7006**, **7010**, **7013**, **7015** - **7018**, **7020**, **7027** - **7028**, **7030** - **7032** and **7036**). The anomalies are under 5 x 5m in size with the exception of **7013** which although measuring 7.5 x 1.2 x 1m it is unclear whether it is debris as no detail is visible.

One linear anomaly (**7021**) was identified and is probably a length of rope or chain coiled on the seabed.

Nine anomalies (**7039** - **7047**) are magnetic anomalies without any visible corresponding sidescan sonar or multibeam bathymetry contacts. The majority are relatively small (9nT to 15nT) and could represent small pieces of buried ferrous debris or natural features. Five, however, are larger features.

7040 is a 24nT magnetic anomaly identified on a number of adjacent survey lines. It measures approximately 140m long and is orientated NNE-SSW. Although it is not especially large, the concentration of a number of anomalies in a small area indicates the possibility of buried ferrous debris. Anomaly **7041** (13nT) located approximately 120m to SSW could also be related though this is uncertain.

Magnetic anomaly **7039** (66nT) is a distinct, isolated anomaly located adjacent to an elongate rock outcrop observed on the multibeam bathymetry data. It is not thought to be related to the outcrop itself though could represent a piece of buried ferrous debris which has been washed up against it. Anomalies **7042** and **7047** (111nT and 56nT respectively) are located right along the coastline and at the end of survey lines. Because of this, they could either represent ferrous debris, geological features, or be caused due to pulling in of the survey equipment/vessel turning at the end of the survey lines. However, the size of the anomalies is too large to discount outright.

A large grid-like structure is visible in several survey lines close to the shoreline of Wylfa power station (7037). The dark reflector is identified as a modern standing structure serving as a landing station. Because of the modern period of this anomaly it is classed as U2 and not of archaeological interest.

II.iii SUB-BOTTOM PROFILER AND MULTIBEAM BATHYMETRY ASSESSMENT

Analysis of the sub-bottom profiler data has highlighted two geological units across the survey area. Unit 1 is the Pre-Cambrian basement, and outcrops over much of the survey area, especially close to the shore. Unit 2 is recent Holocene seabed sediments that have mainly been found to infill hollows between the bedrock outcrops. Twenty-one of these features were identified, and no palaeochannels or potential relict land surfaces were observed across the survey area.

None of the geological features identified are expected to be of archaeological potential, and therefore have been classified as features of non-archaeological interest (U1).




The multibeam bathymetry data provided a topographical relief model of the current seabed and it was used for reference when identifying and interpreting sidescan sonar, magnetometer and sub-bottom profiler data. No anomalies of archaeological interest were identified.

II.iv CONCLUSIONS

The construction of the proposed new Power Station at Wylfa includes a number of proposed structures that might impact on marine archaeological features. These relate to the likely impacts of the marine off-loading facility, the intake and outfall of the cooling water system required by the new station and the potential impacts from the breakwater construction.

A total of 47 anomalies of potential archaeological interest were observed in the sidescan sonar and magnetometer data, and one feature of non-archaeological interest. Three features were identified as wrecks being of archaeological interest and further investigation into existing historic marine records could lead to their identification.



-  Llanbadrig Parish
-  Llanfechell Parish
-  Cylch-y-Garn Parish

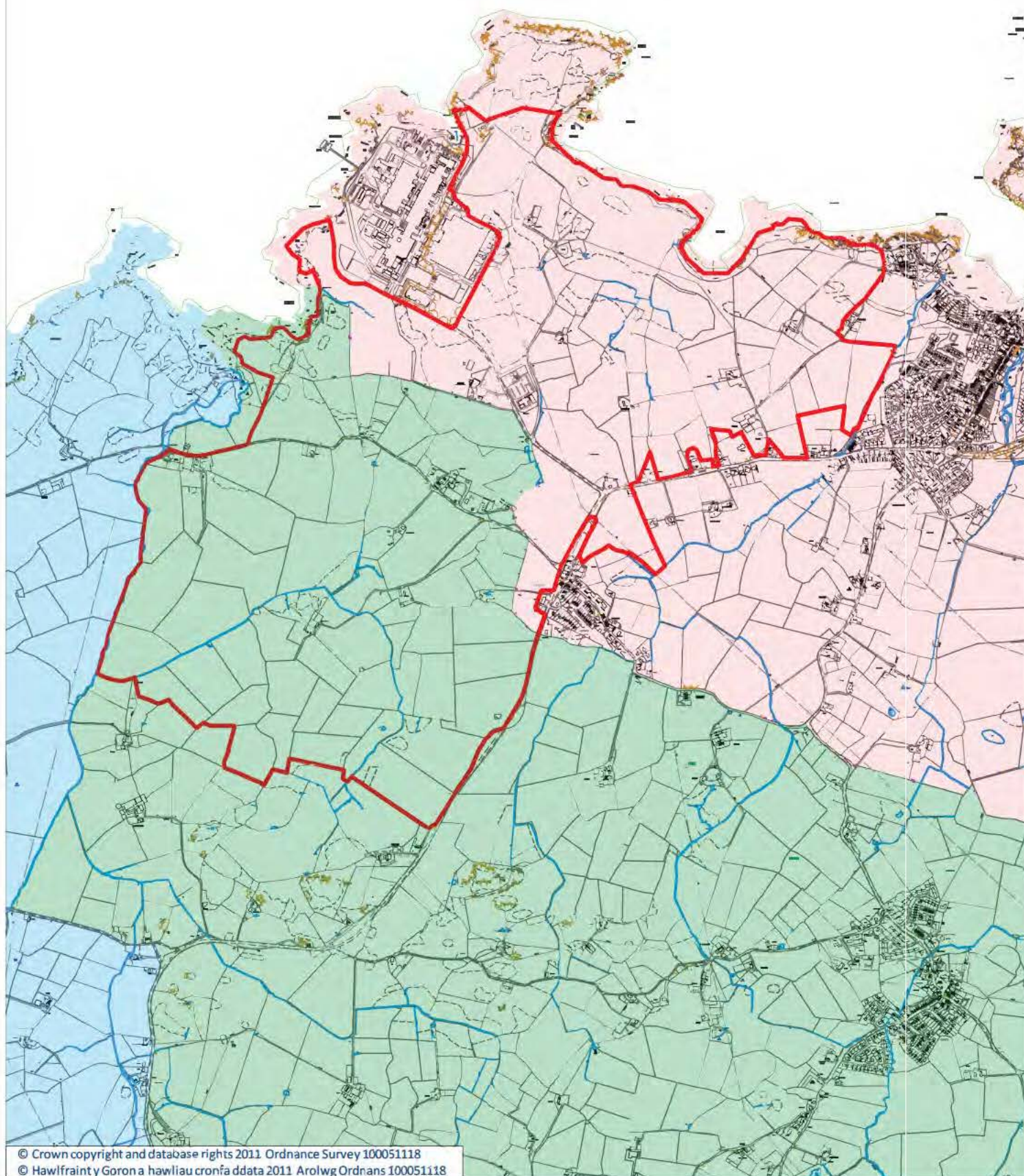


Figure 2: Map of Parishes 1:18000 at A4

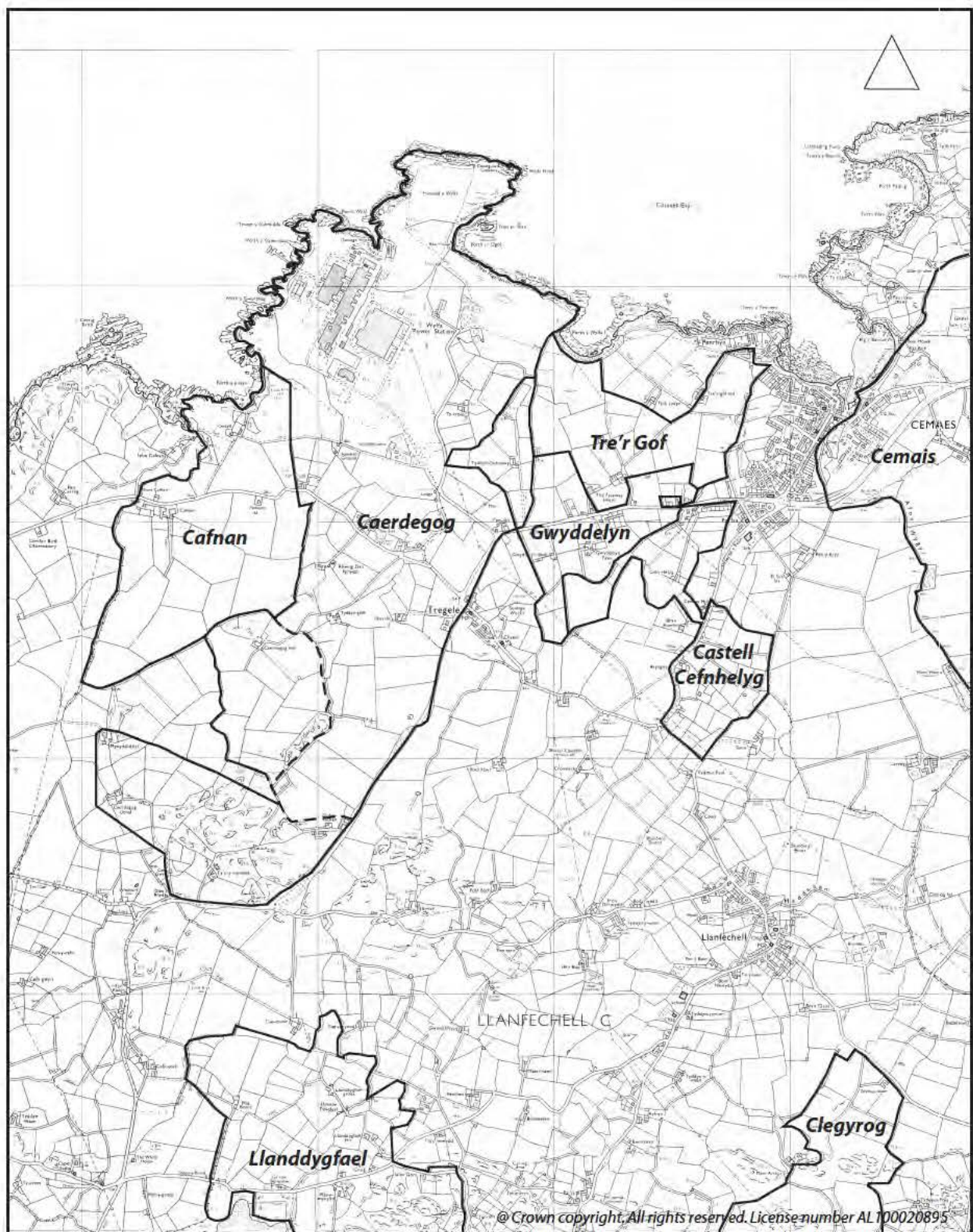


Figure 3: Possible reconstruction of the medieval townships and hamlets in the vicinity of Wylfa headland (Scale 1:25,000)

ARCHAEOLOGICAL SITES & FEATURES			
1	Boat House, Porth y Pistyll	42	Stone barn
2	Limekiln, Porth y Pistyll	43	Well
3	Cestyll	44	Quarry
4	Pen Pistyll	45	Field boundary
5	Cwt	46	Trackway
6	Tai Hirion	47	Sheepfold
7	Simdde Wen	48	Barn/ cottage
8	Pen y Groes	49	Ysgubor Ddegwm
9	Cae'r Brenhin	50	Trackway to Penrallt
10	Wylfa	51	Trackway from Tyddyn Du to A5025
11	Boat house	52	Road from Treglele to Cafnan
12	Former lifeboat station	53	Track to Simdde Wen and Tai Hirion
13	Chain Home Guard Installation	54	Road from Treglele to Wylfa
14	Pennant		
15	Tan yr Allt		
16	Bronydd		
17	The firs		
18	Tyddyn Du and Pan y Groes Isaf		
19	Rhwng y Ddau Fynydd		
20	Lodge		
21	Pen Lon		
22	Ty'n y Maes		
23	Ty Croes		
24	Tyddyn Goronwy		
25	Tre'r Gof Uchaf		
26	Nant Orman		
27	Park Lodge		
28	NDA depot		
29	Chequers and Bryn Fferen		
30	Penrallt		
31	Sylvia Crowe landscaping		
32	Trackway to Caerdegog Isaf		
33	Caerdegog Isaf		
34	Cafnan		
35	Mound		
36	Field boundary		
37	Tyddyn Gele		
38	Trackway from Tyddyn Gele		
39	Field boundary		
40	Field boundary		
41	Field boundary		

Figure 4b: Archaeological sites map key

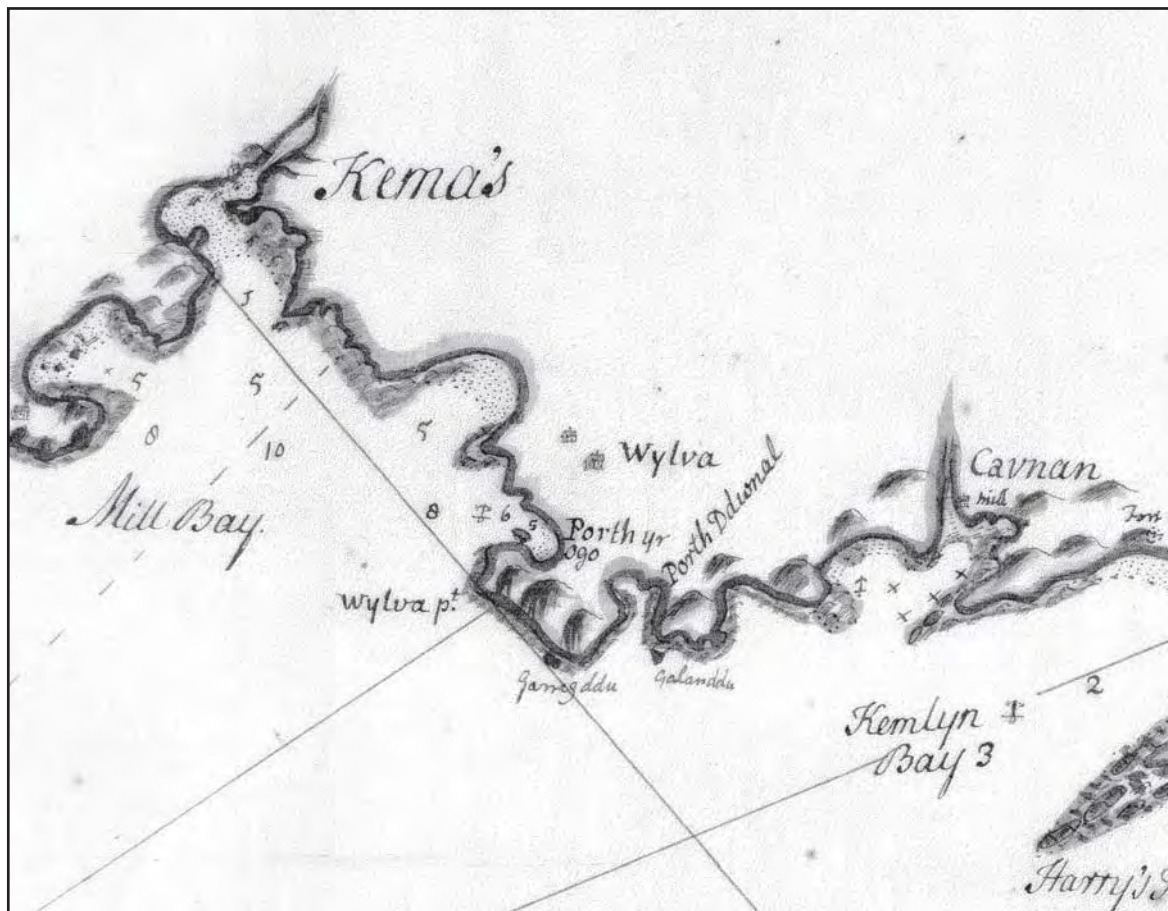


Figure 5: Lewis Morris Coastal Survey c. 1724



Figure 6: Ordnance Survey 2 inch manuscript c. 1820's

Fields & Names.	Anable	Pasture	Meadow
Cafnan	4 R.P.	4 R.P.	4 R.P.
1		3. 1. 27	
2	20. 2. 6		
3			4. 2. 17
4		7. 1. 0	
5	9. 2. 19		
6	0. 2. 13		
7			4. 1. 8
8		5. 2. 36	
9		2. 3. 9	
10	0. 2. 7		
11			0. 2. 1
12	4. 2. 10		
13		17. 3. 31	
14	14. 3. 17		
15	6. 0. 34		
16	5. 2. 19		
17	2. 3. 12		
18	10. 1. 22		
19	5. 2. 7		
20			0. 3. 1
21			7. 2. 10
22	16. 3. 30		
23	7. 0. 33		
24	1. 3. 30		
25	1. 0. 22		
	108. 2. 1	37. 0. 23	17. 2. 37
	163. 1. 21	Total	



Figure 7: Cafnan from *Survey of Carreglwyd a Berw Estates - The Property of Holland Griffith Esq. (c.1780)* (NLW B/Misc Vol.7)

THE PARISH OF
LLANFECHELL
IN THE COUNTY OF
ANGUS
Scale 8 chains to 1 inch. Area

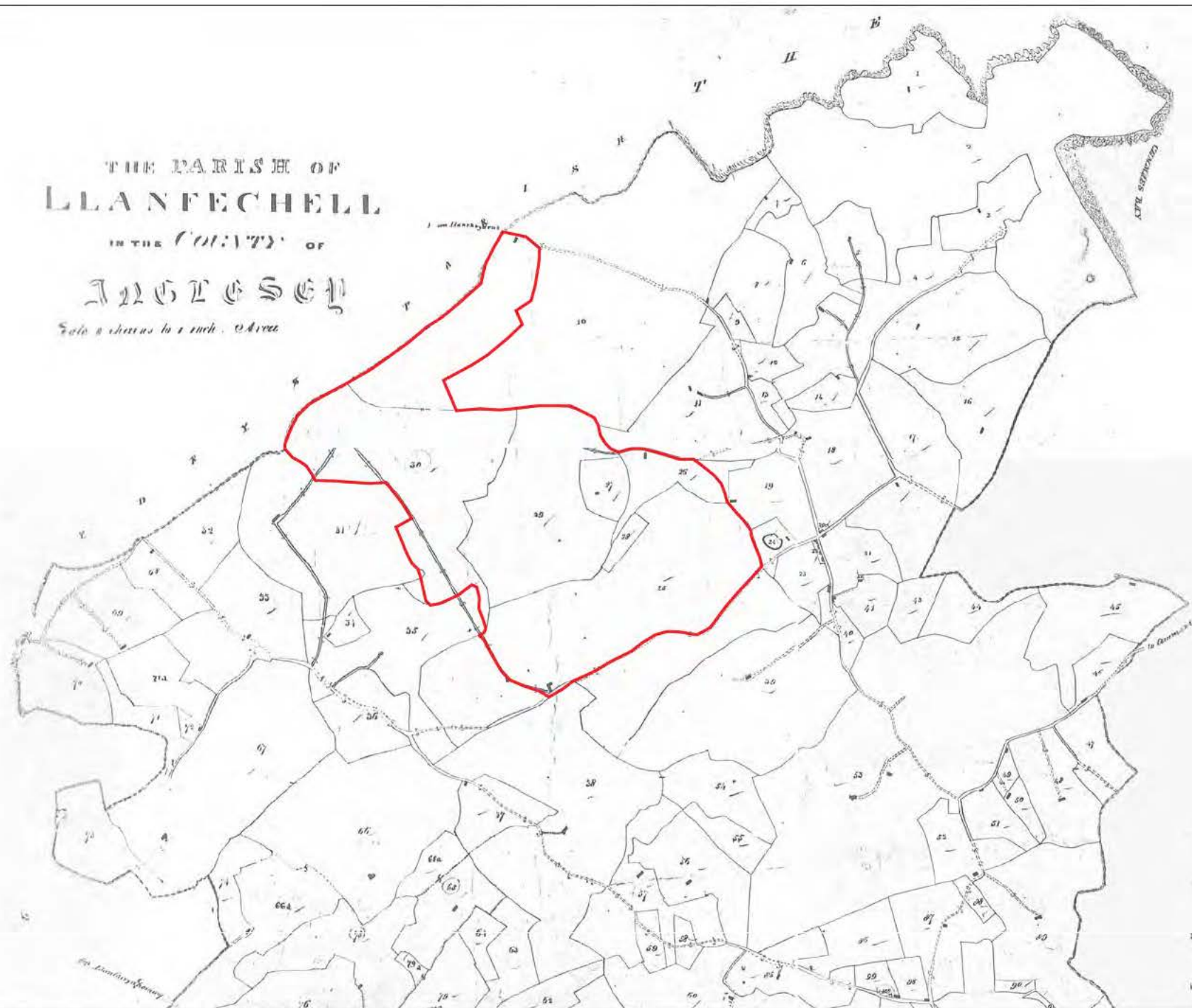


Figure 9. Tithe Map of Llanfechell 1842 (NLW) with the additional study area outlined in red

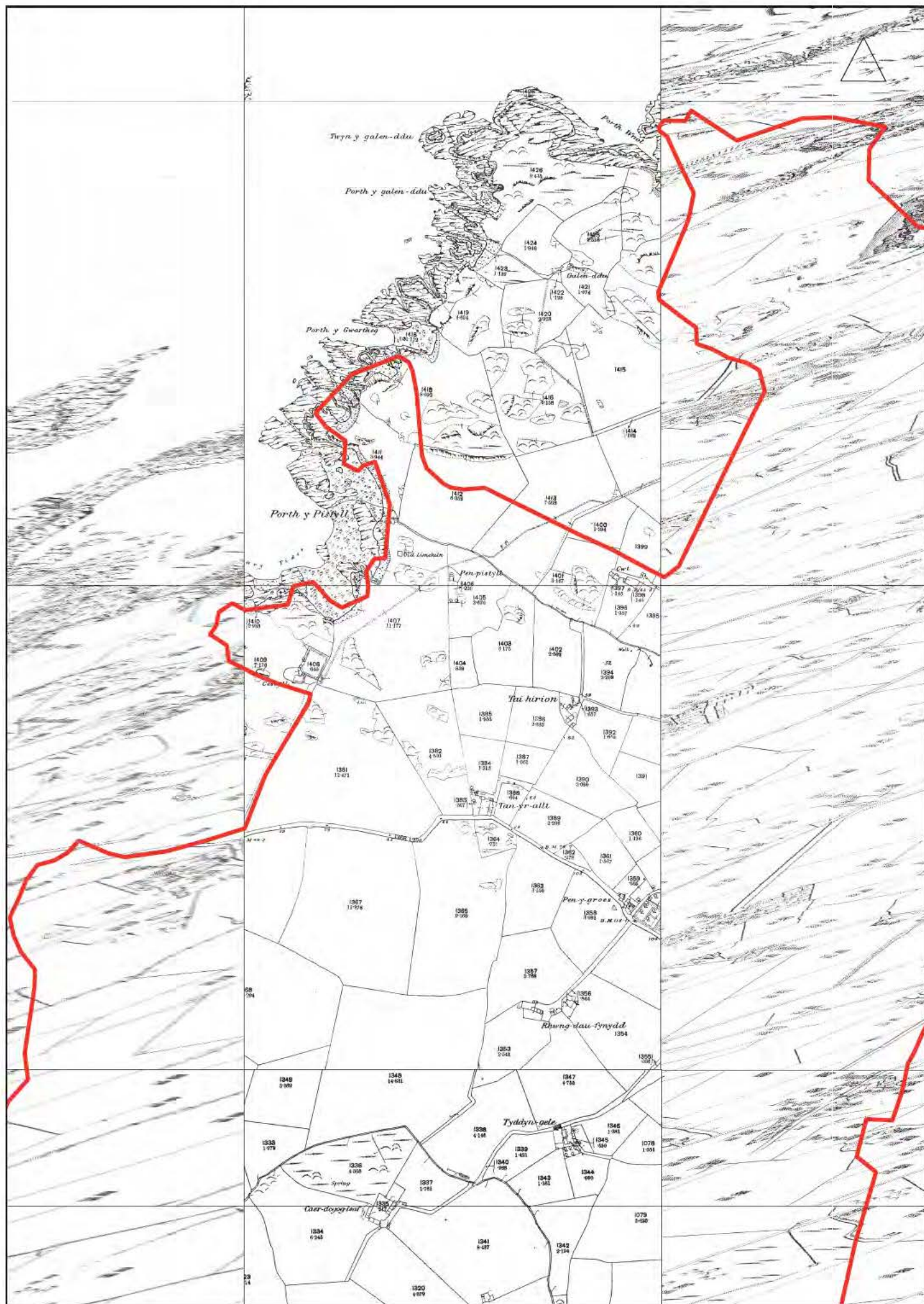


Figure 10: Wylfa west 1889. Ordnance Survey, Anglesey County Series, XX.2, XX.6, XXI.0. Scale 1:8,000

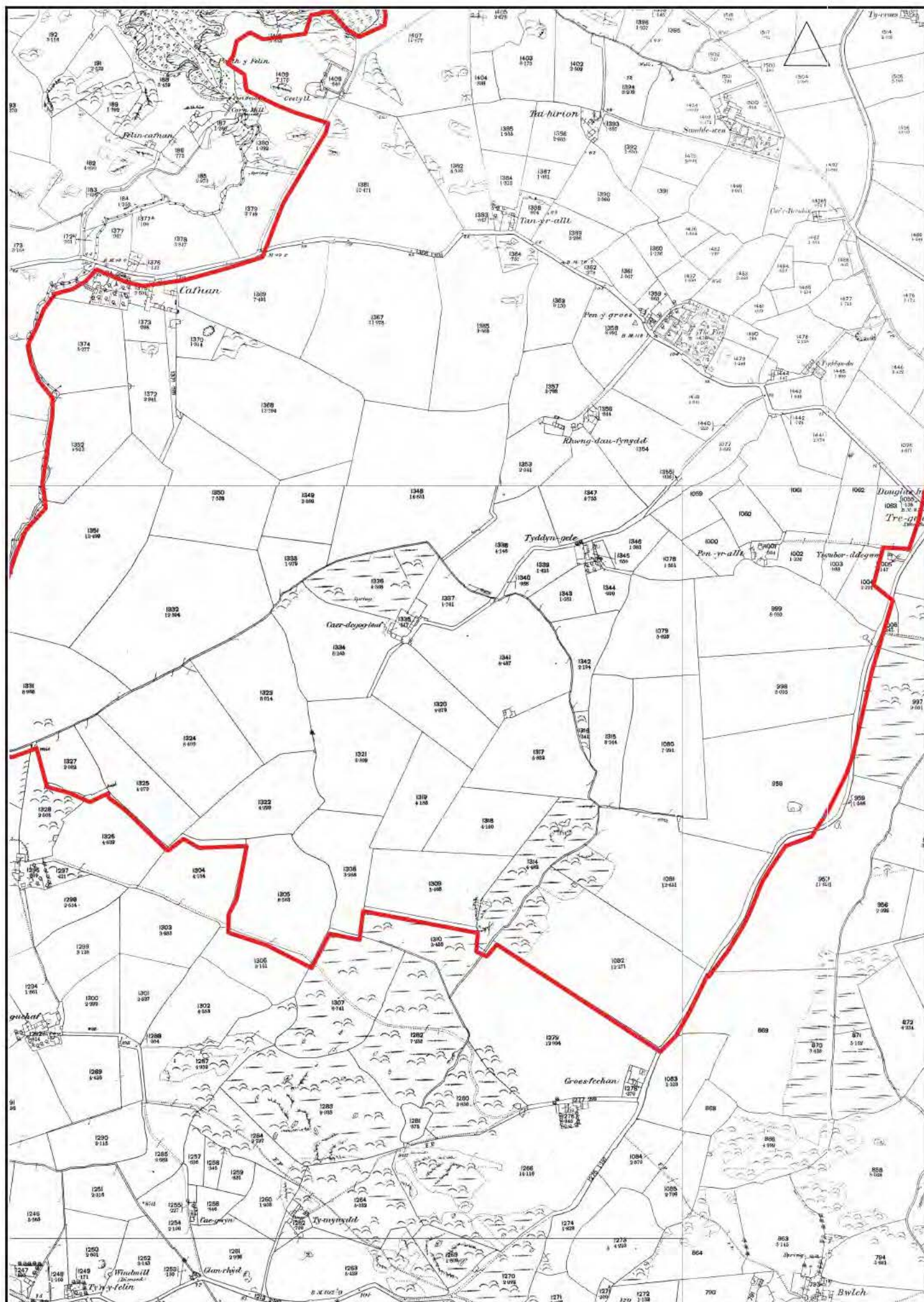




Figure 13:
1945 Aerial Photograph,
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Rev	By	Chgd	Appvd	Date	Description
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Chart

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Project

Drawing

Historical Features
Pre 1945

Drawn by: J/E	Date: Feb 2011
Checked by: CSD	Date: Feb 2011
Approved by: RJK	Date: Feb 2011

Drawing No.	Revision
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Drawing Scale: N.T.S

0



Figure 14:
1968 Aerial Photograph,
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Rev	By	Chk	Appr	Date	Description
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e-mail: c.croft@halcrow.com
www.halcrow.com

Halcrow

Project

Drawing

Historical Features
Pre 1968

Drawn by: LJE	Date: Feb 2011
Checked by: CSD	Date: Feb 2011
Approved by: RJK	Date: Feb 2011

Drawing No.	Revision
-	0

Drawing Scale: N.T.S.

10271043



Figure 15:
1971 Aerial Photograph,
reproduced by kind
permission of Halcrow
Group Ltd.

Rev	To	From	Date	Description
1				

Halcrow Group Limited
One Victoria Road, 10th Floor
London W1B 4DA
www.halcrow.co.uk
020 7591 5000

Halcrow

Project

Drawing

Historical Features Pre 1971

Drawn by: LJE	Date: Feb 2011
Checked by: CSD	Date: Feb 2011
Approved by: BUK	Date: Feb 2011
Drawing No.	0

Drawing Scale: N.T.S.



116

72 061

Figure 16:
1972 Aerial Photograph,
reproduced by kind
permission of Halcrow
Group Ltd.

Rev	By	Check	Issue	Date	Description

Sheet

Halcrow Group Limited
One Watlington Court, Watlington
Oxford OX12 9JF
01865 861000
www.halcrow.com

Halcrow

Project

Historical Features
Pre 1972

Drawing

Drawn by: LE	Date: Feb 2011
Checked by: CSD	Date: Feb 2011
Approved by: EAL	Date: Feb 2011
Drawing No.	Revisions
	0

Drawing Scale: 1:25



Figure 17:
1995 Aerial Photograph,
reproduced by kind
permission of Halcrow
Group Ltd.

Rev	By	Chk	Appr	Date	Description
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Client

Halcrow Group Limited
One Kingsway, Cardiff, CF11 3SQ
Tel: +44 (0)29 2072 5000 Fax: +44 (0)29 2072 5000
e-mail: cardiff@halcrow.com
www.halcrow.com



Project

Drawing

Historical Features Pre 1995




Drawn by: LJE	Date: Feb 2011
Checked by: CSD	Date: Feb 2011
Approved by: RJK	Date: Feb 2011

Drawing No.	Revision
-	0

Drawing Scale: N.T.S.

Drawing No. 17-01 & 17-02
 Project: Cardiff Bay
 Drawing Scale: N.T.S.



-  L1. Wylfa
-  L2. Cemlyn coastal strip
-  L3. Cemlyn enclosed fieldscape

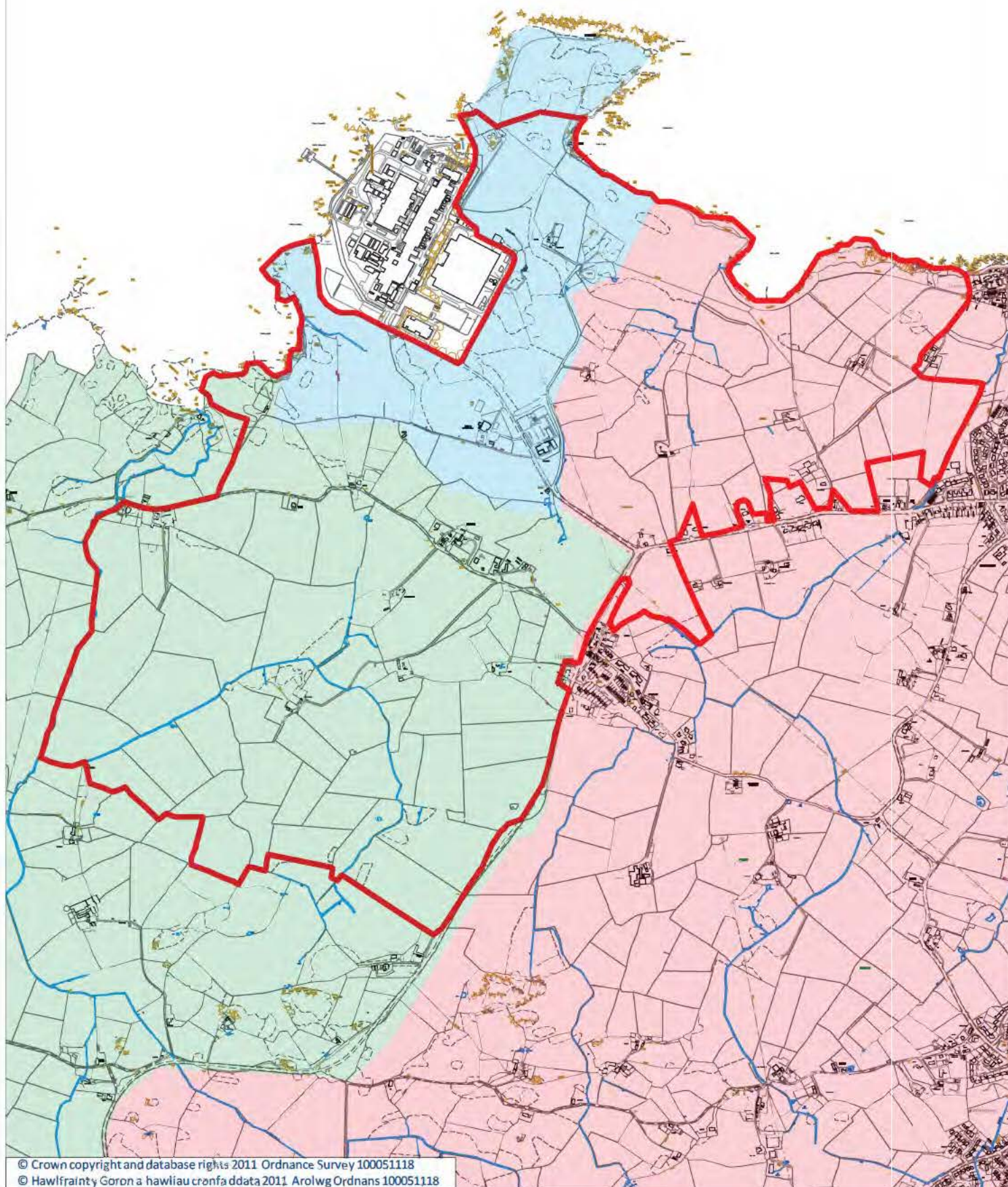


Figure 18: Historic landscape areas 1:18000 at A4

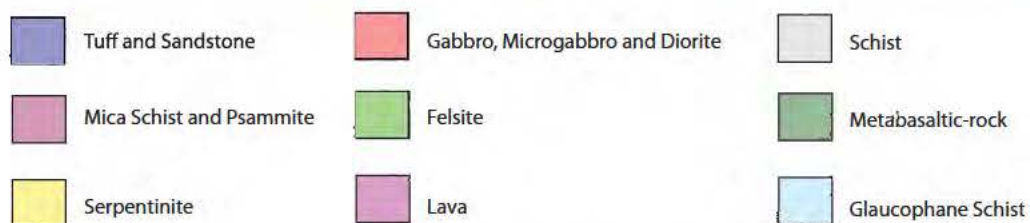
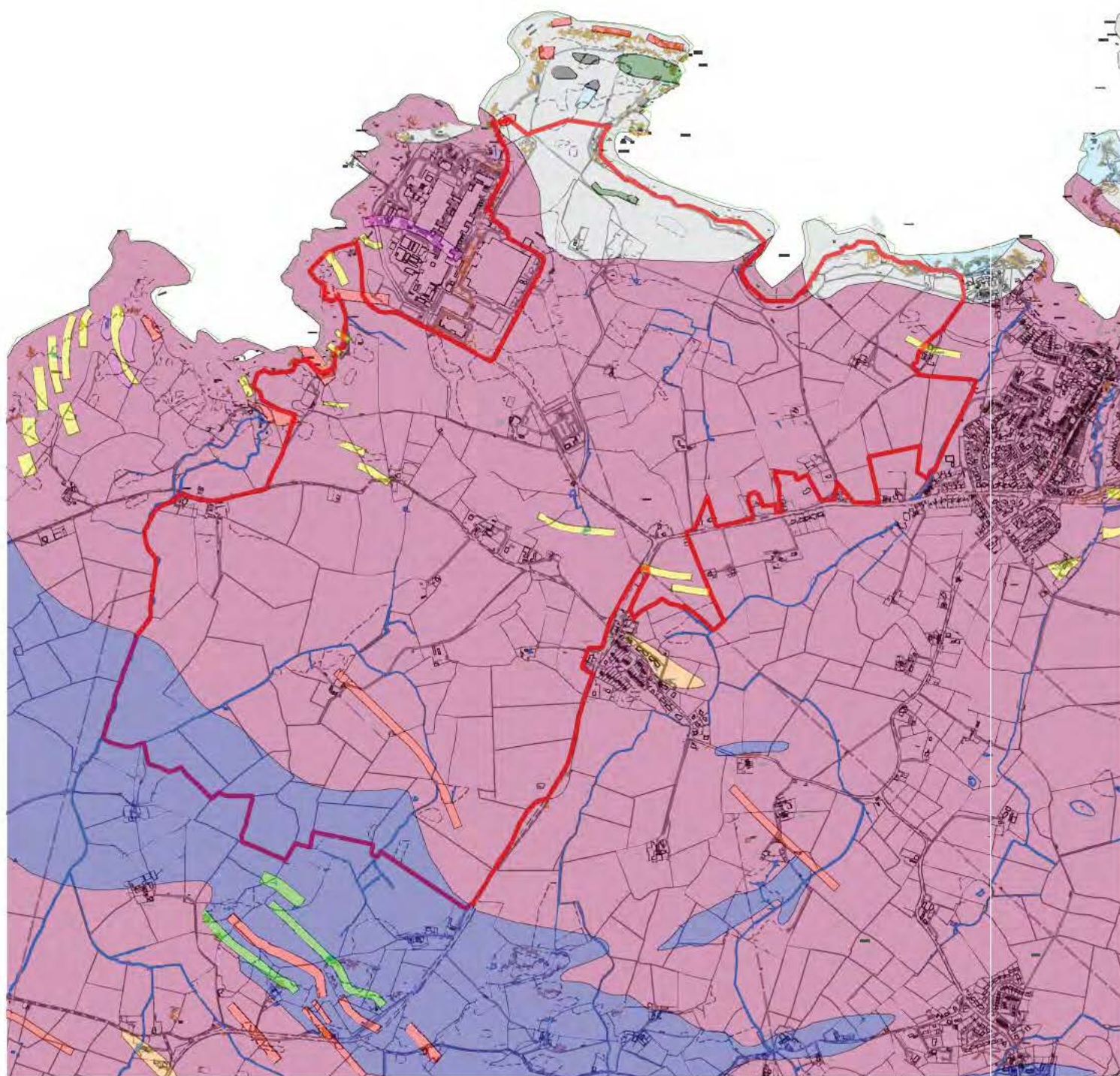


Figure 21: Geological map 1:18000 at A4



Figure 22: Fugro geophysical evaluation with interpretation

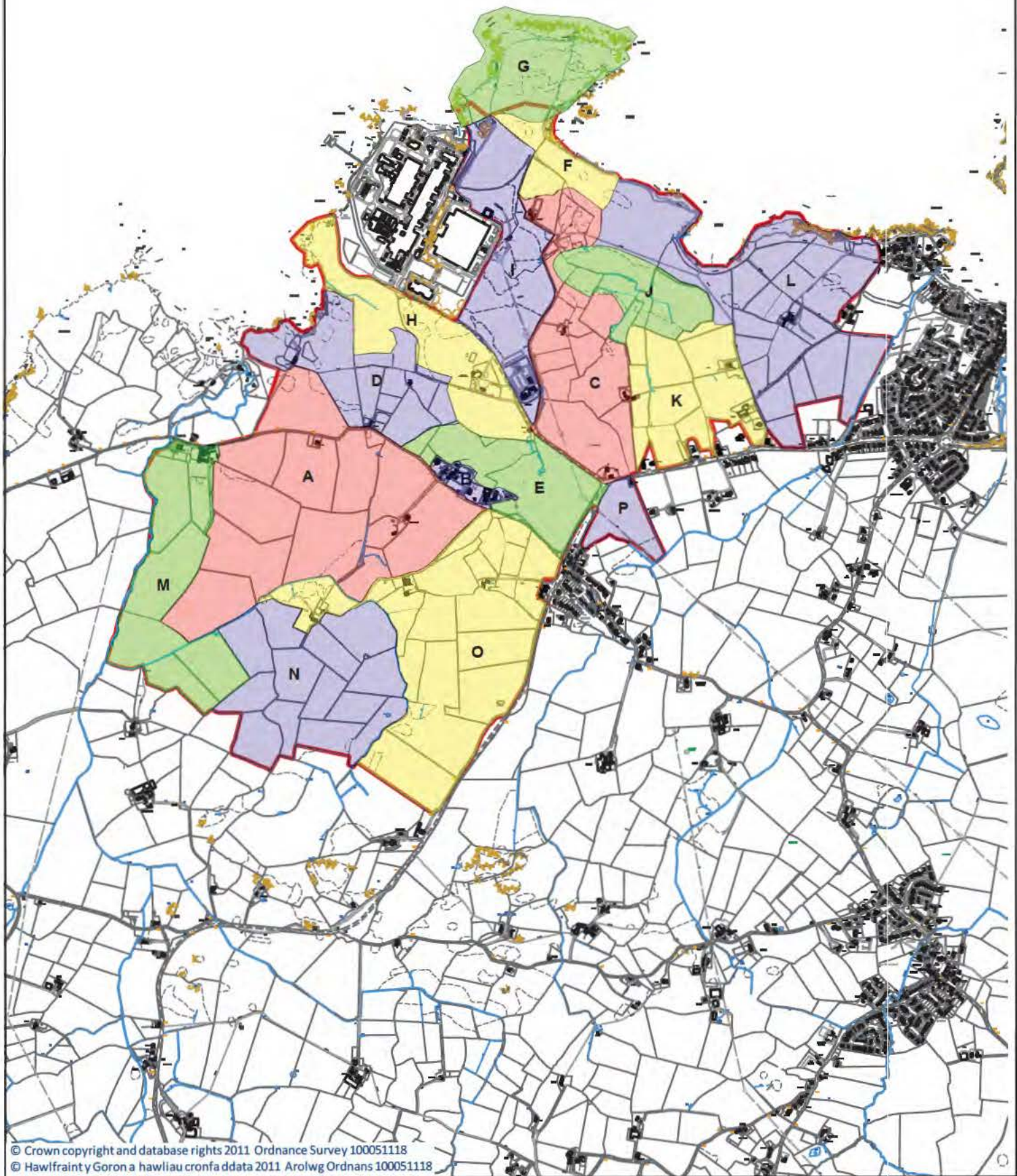


Figure 23: Location of Zones, 1:18000 at A4

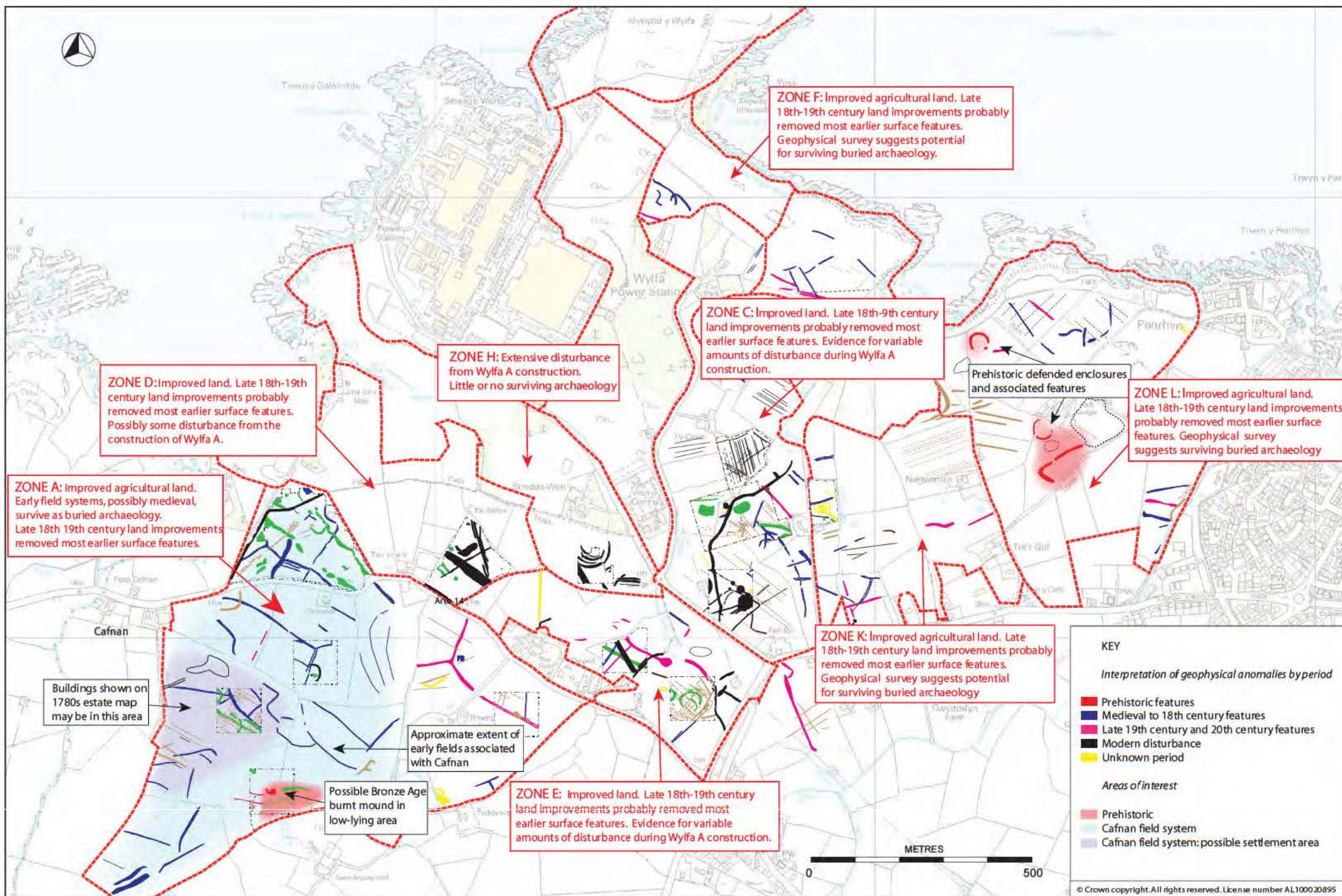


Figure 24: Geophysical anomalies by period and zonal historical themes

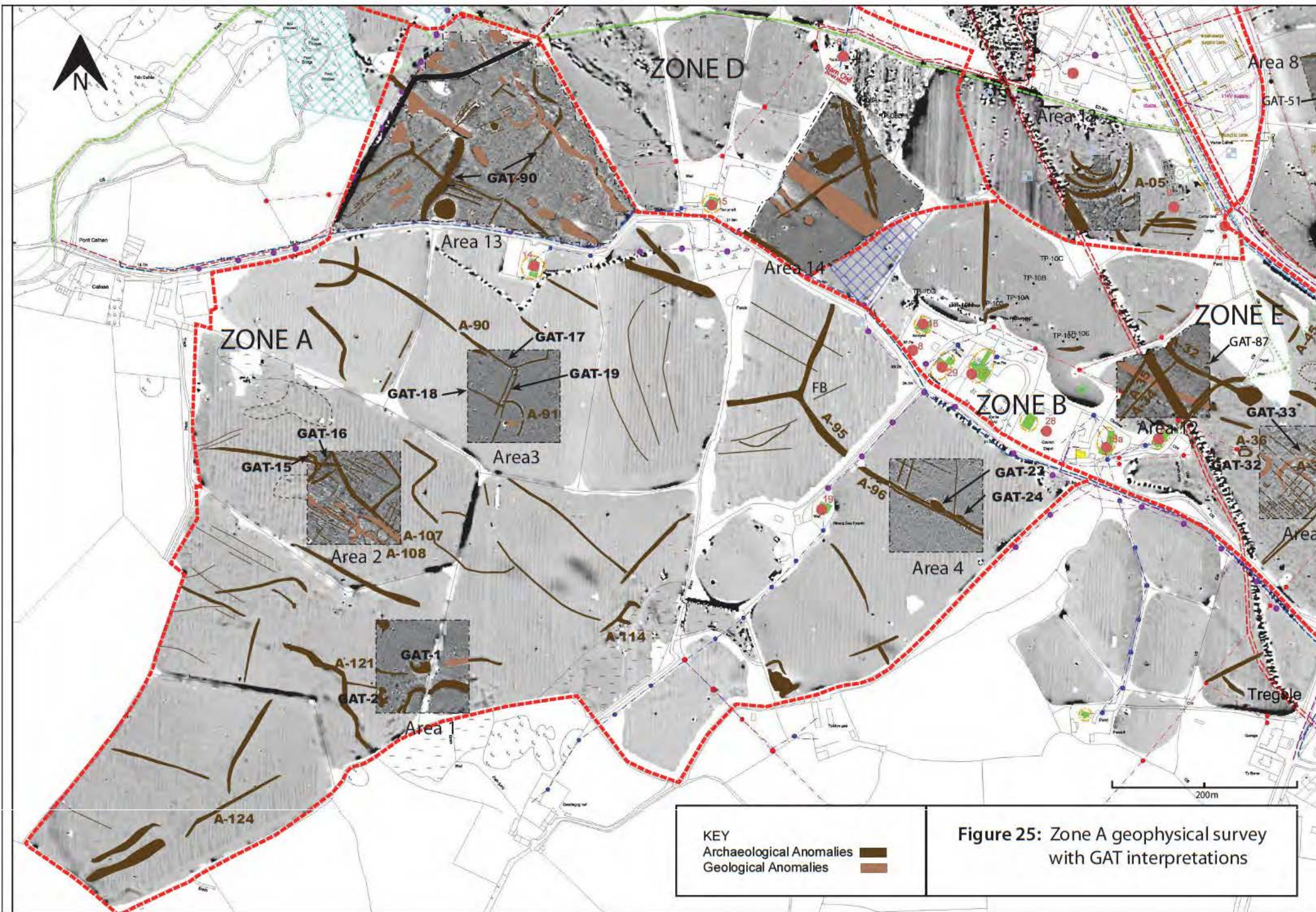




Fig. 26 Zone A, Area 1: trench locations with GAT geophysics zone; note: feature nos. refer to GAT Report 987

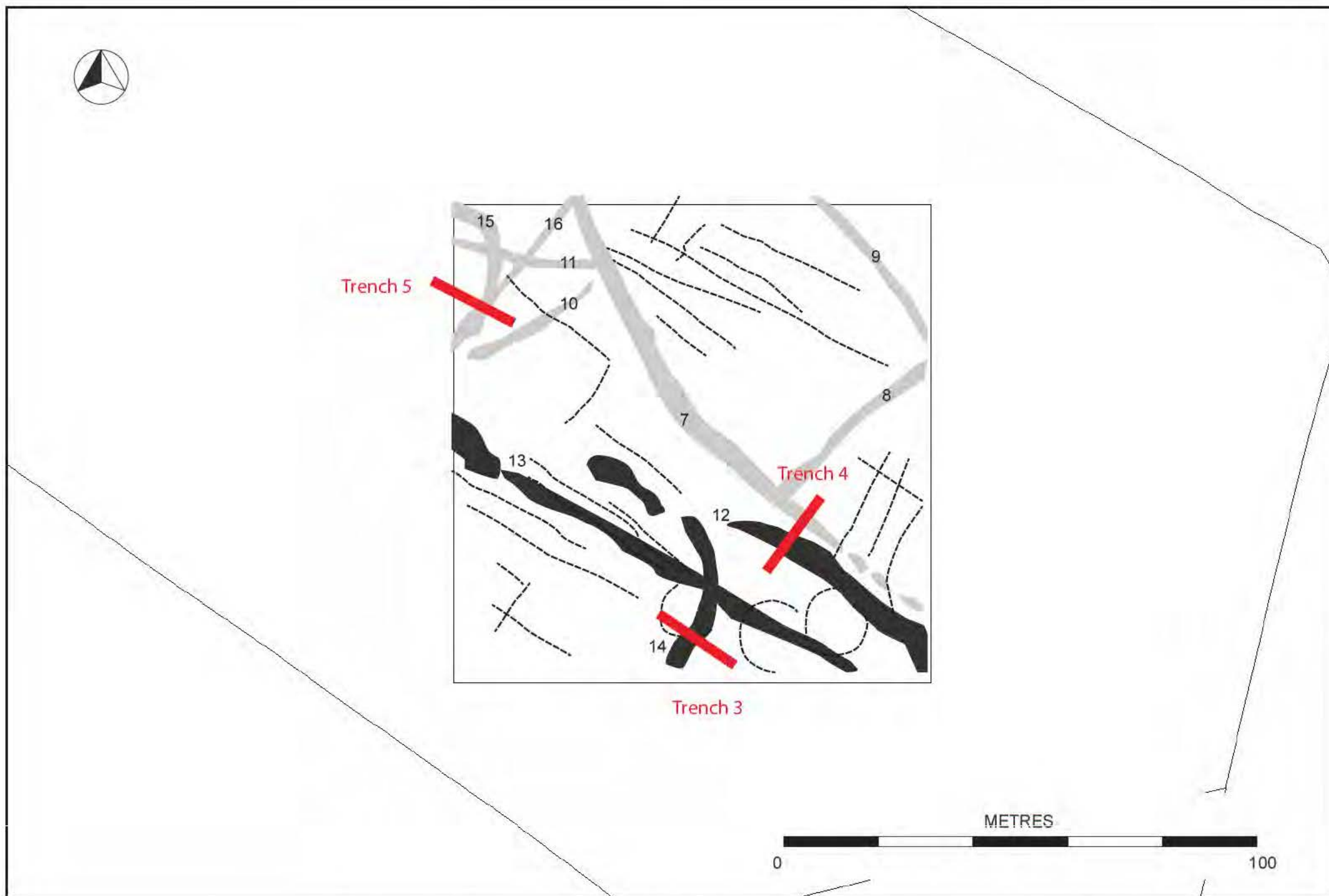


Fig. 27 Zone A, area 2: trench locations with GAT geophysics zone; note: feature nos. refer to GAT Report 987

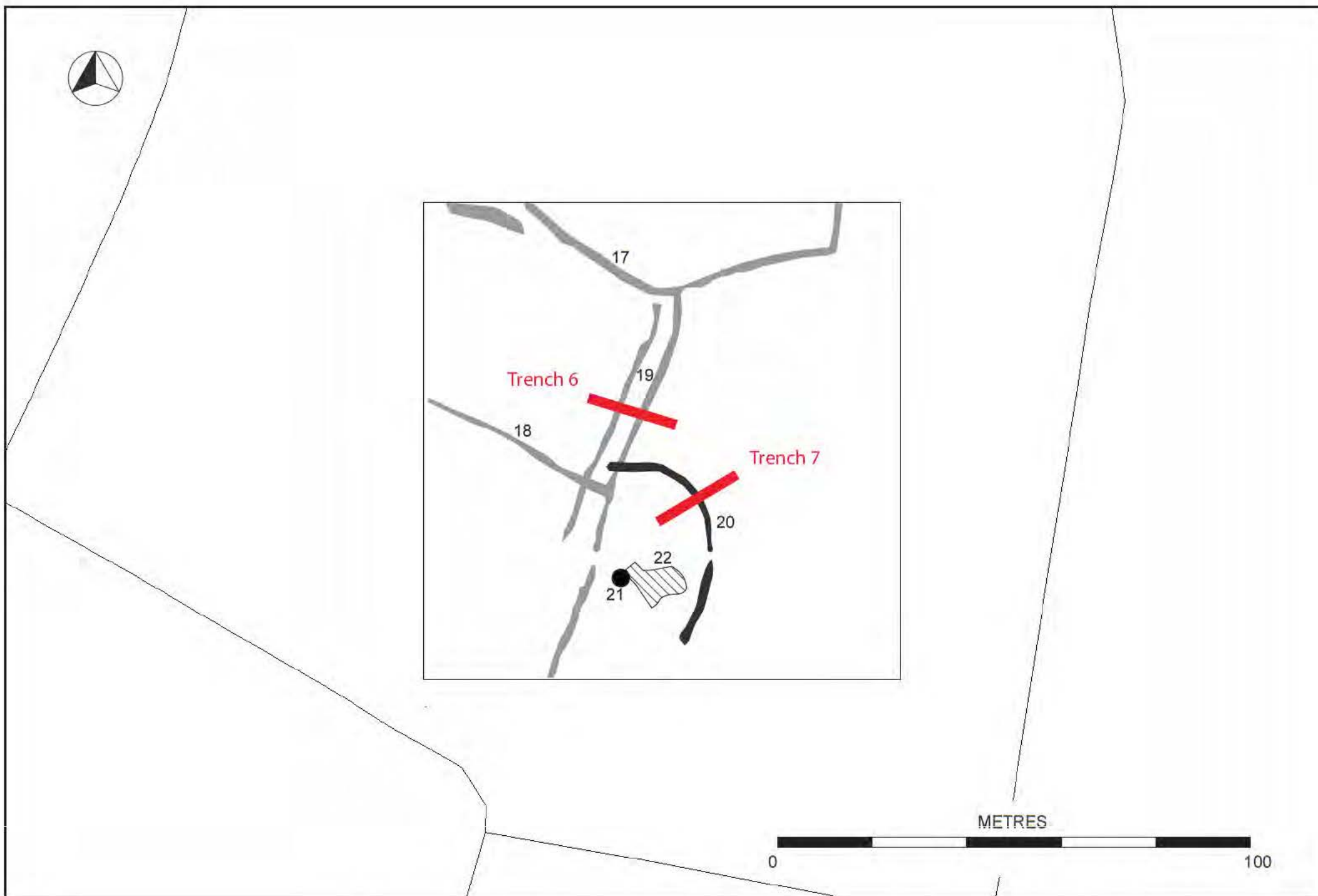


Fig. 28 Zone A area 3: trench locations with GAT geophysics zone; note: feature nos. refer to GAT Report 987

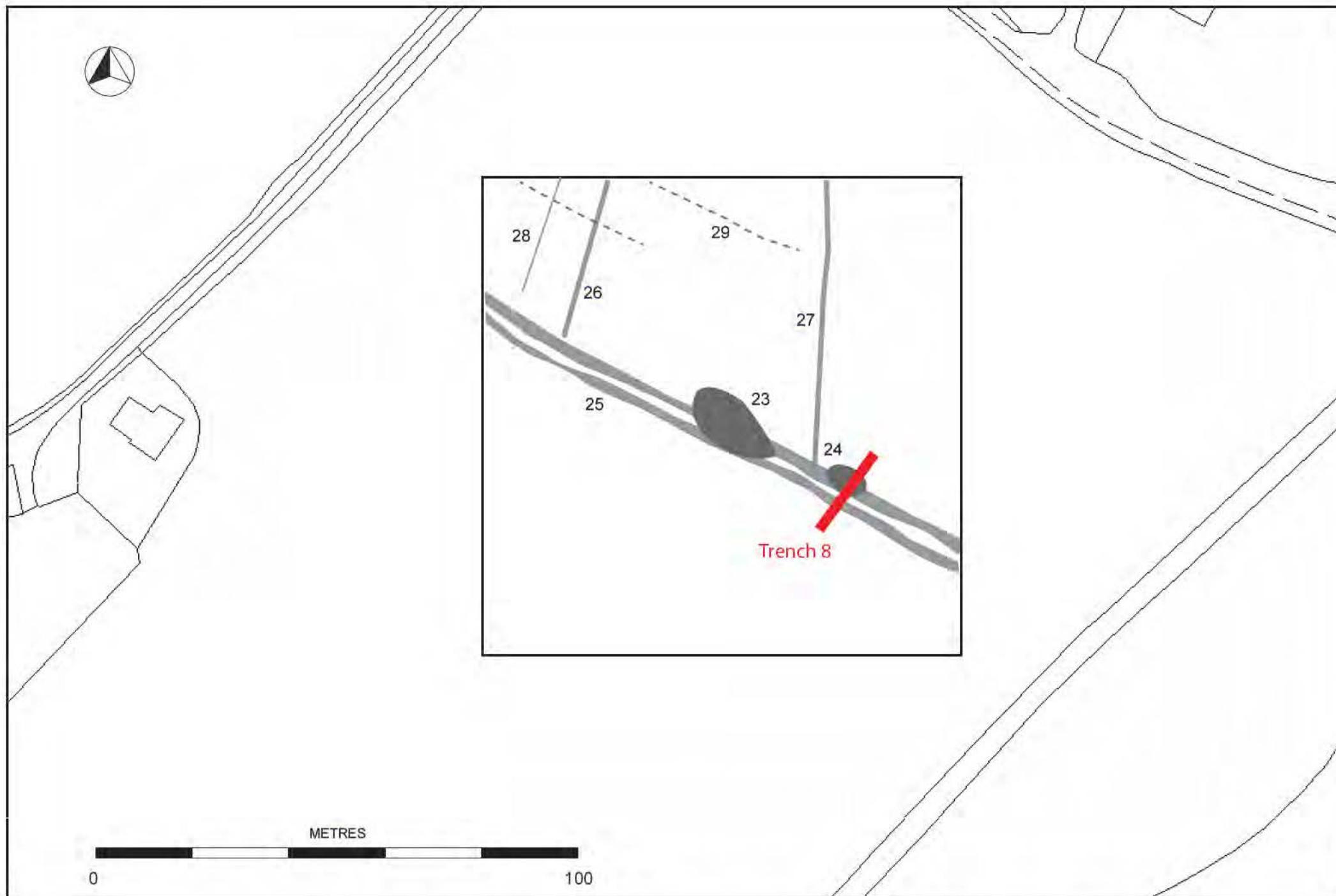
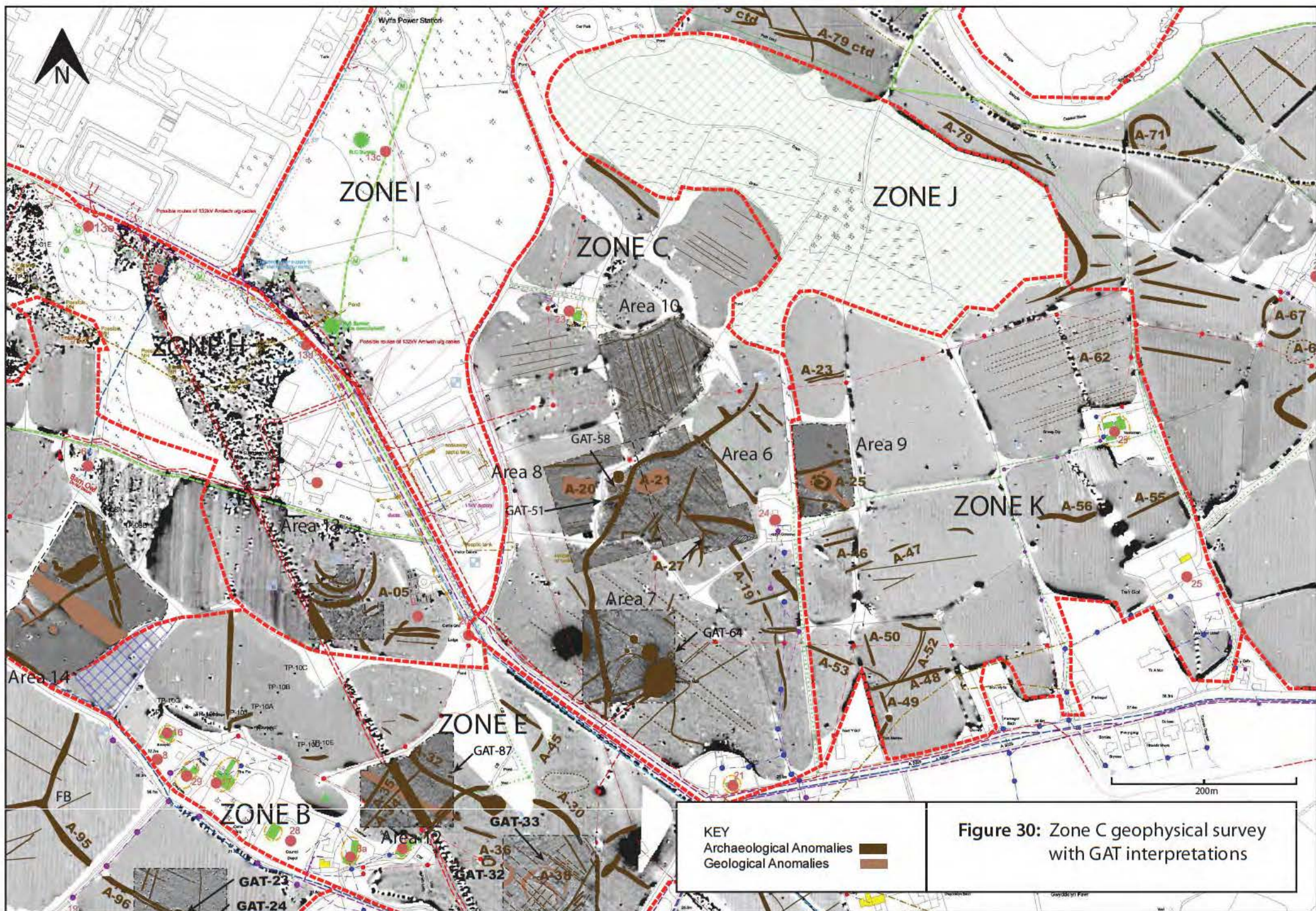
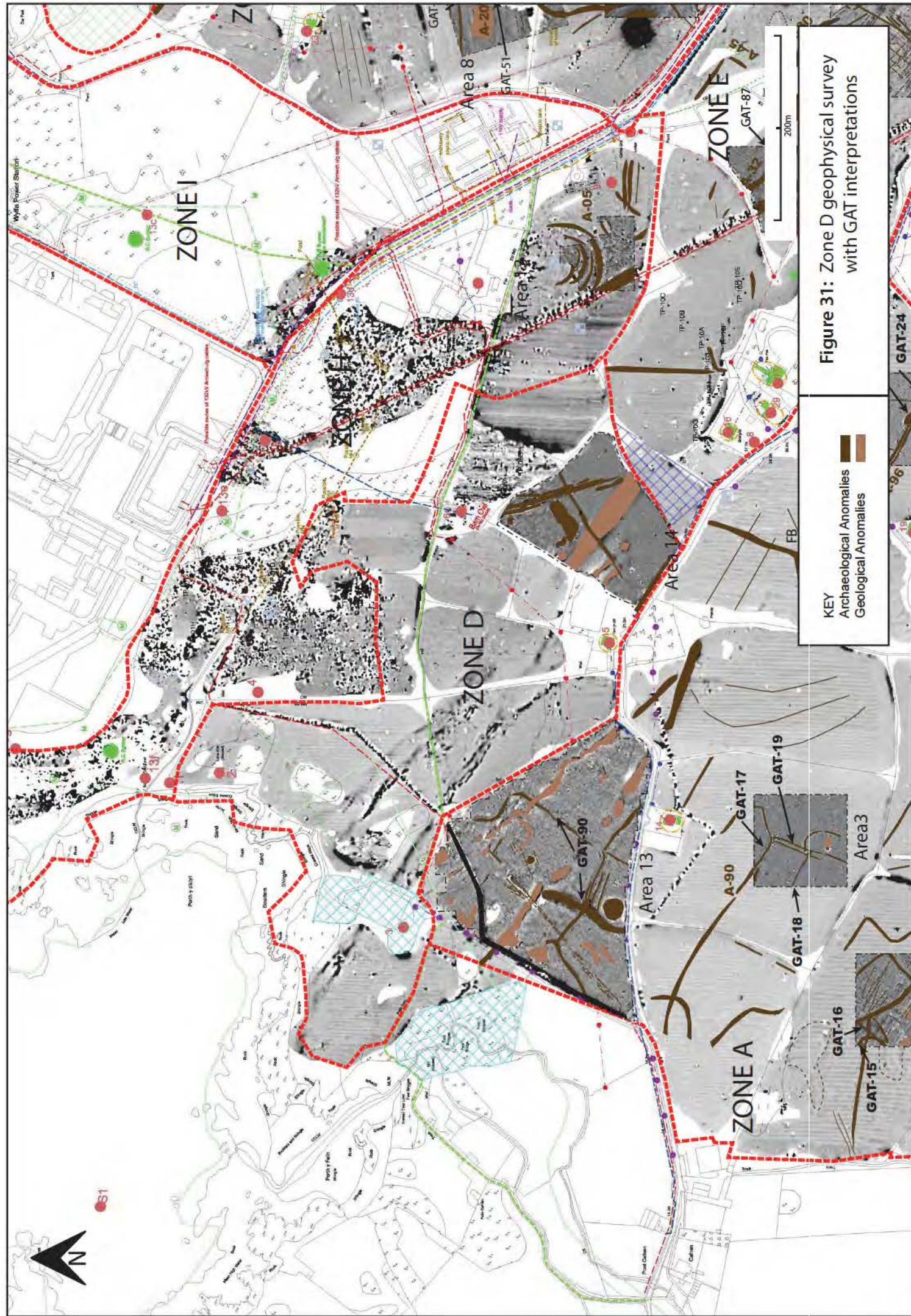


Fig. 29 Zone A area 4: trench locations with GAT geophysics zone; note: feature nos. refer to GAT Report 987







Cestyll Gardens significant view

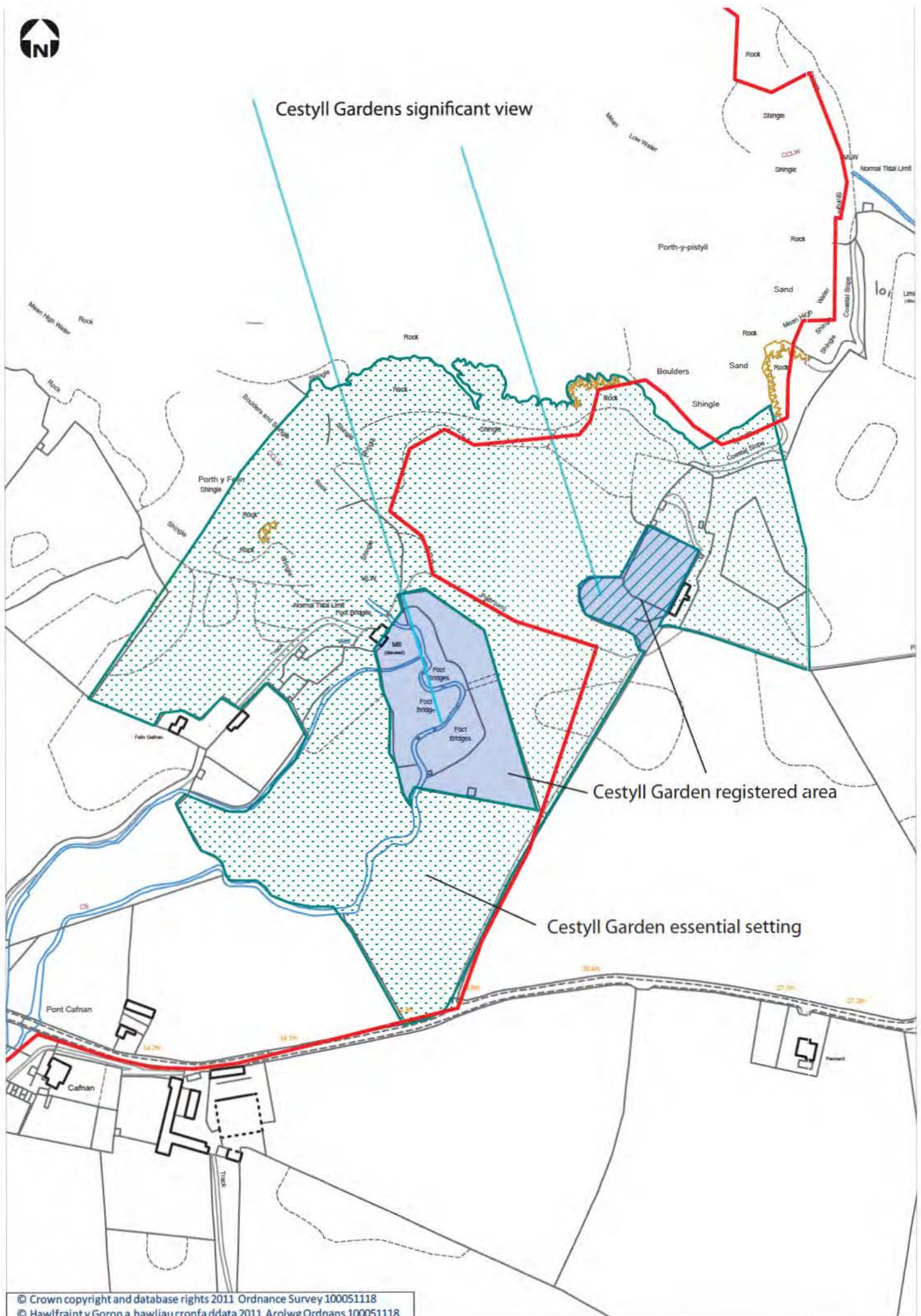


Figure 32: Map of Cestyll Garden 1:3000 at A4

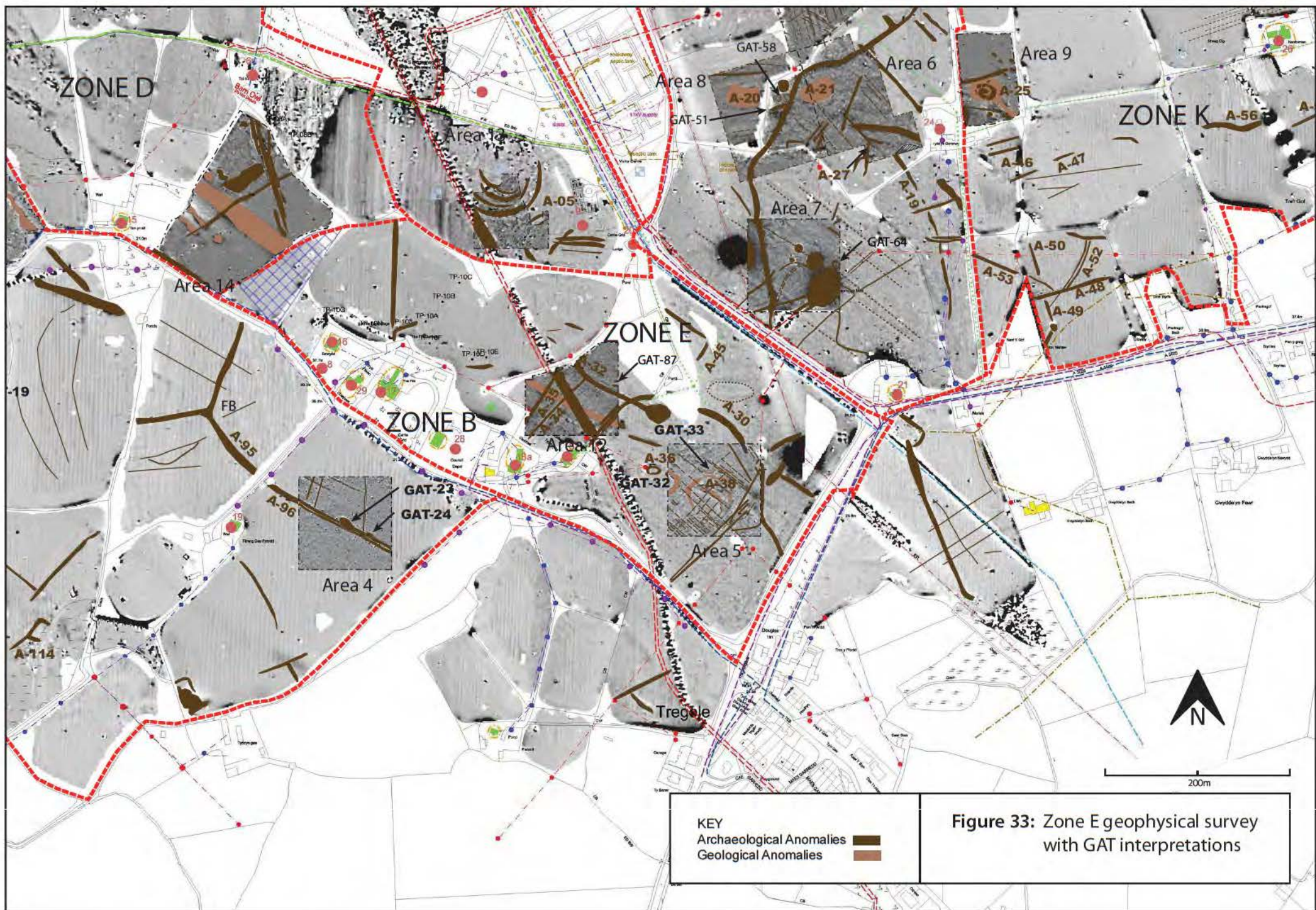


Figure 33: Zone E geophysical survey with GAT interpretations

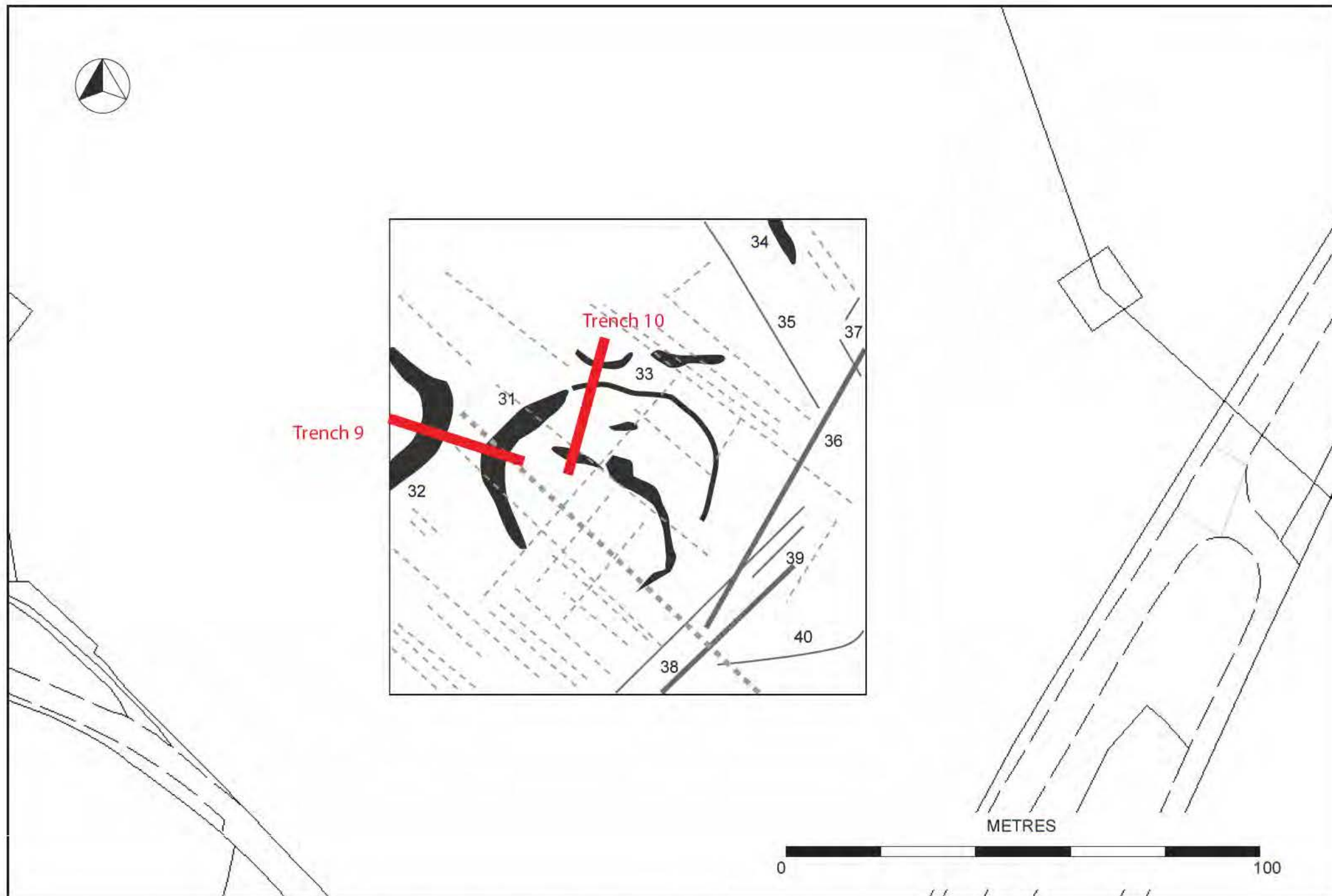


Fig. 34 Zone E area 5: trench locations with GAT geophysics zone; note: feature nos. refer to GAT Report 987

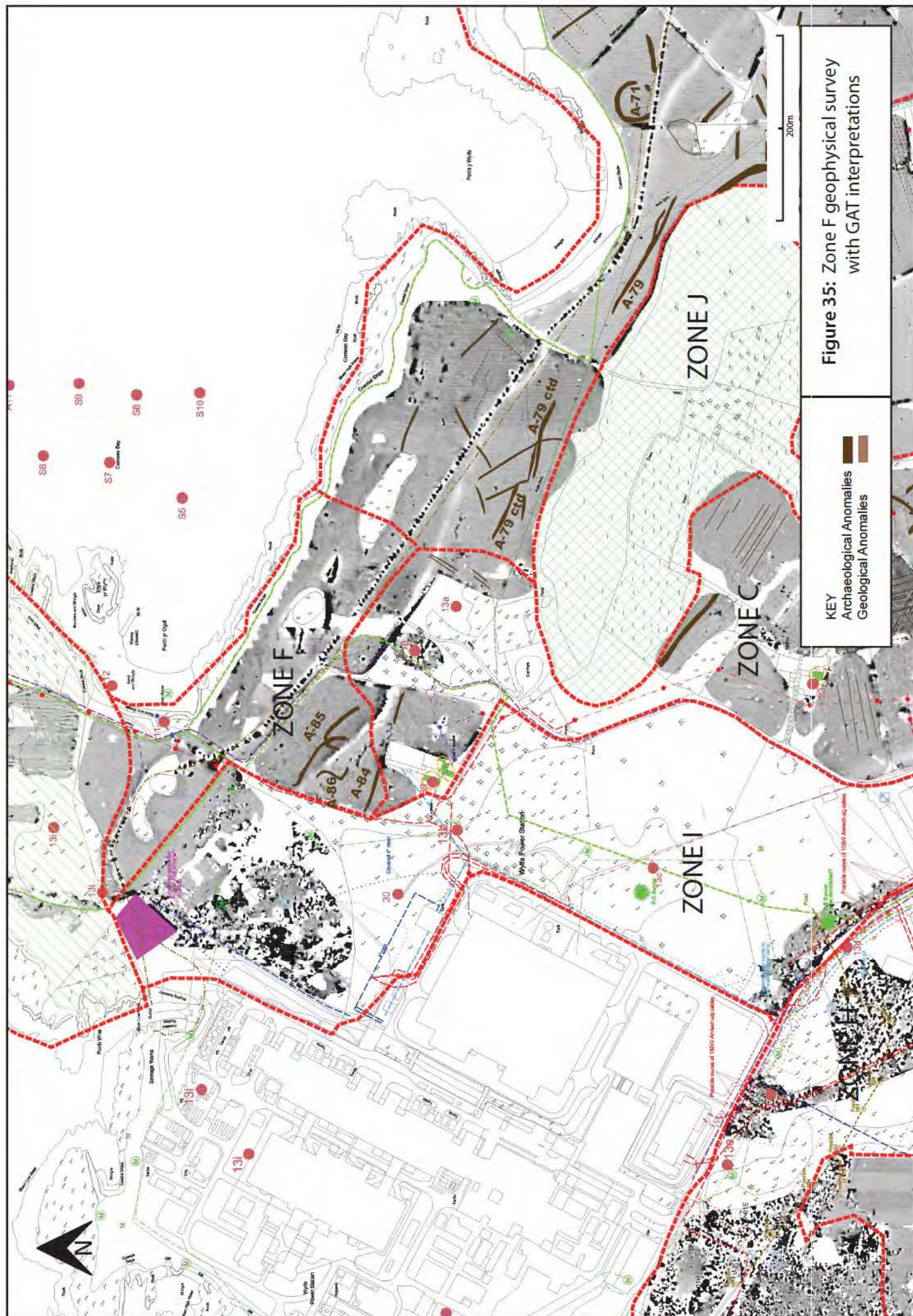
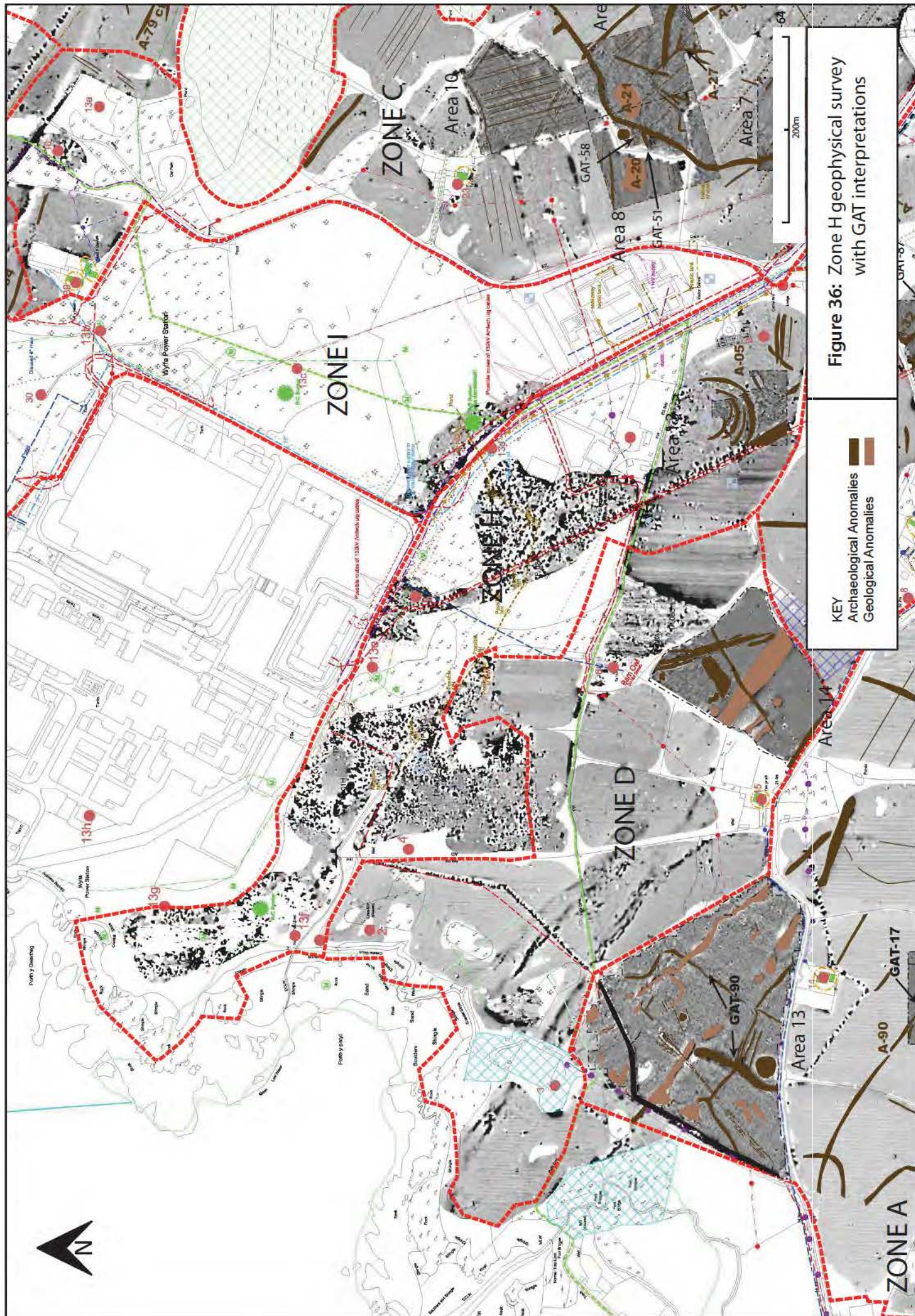
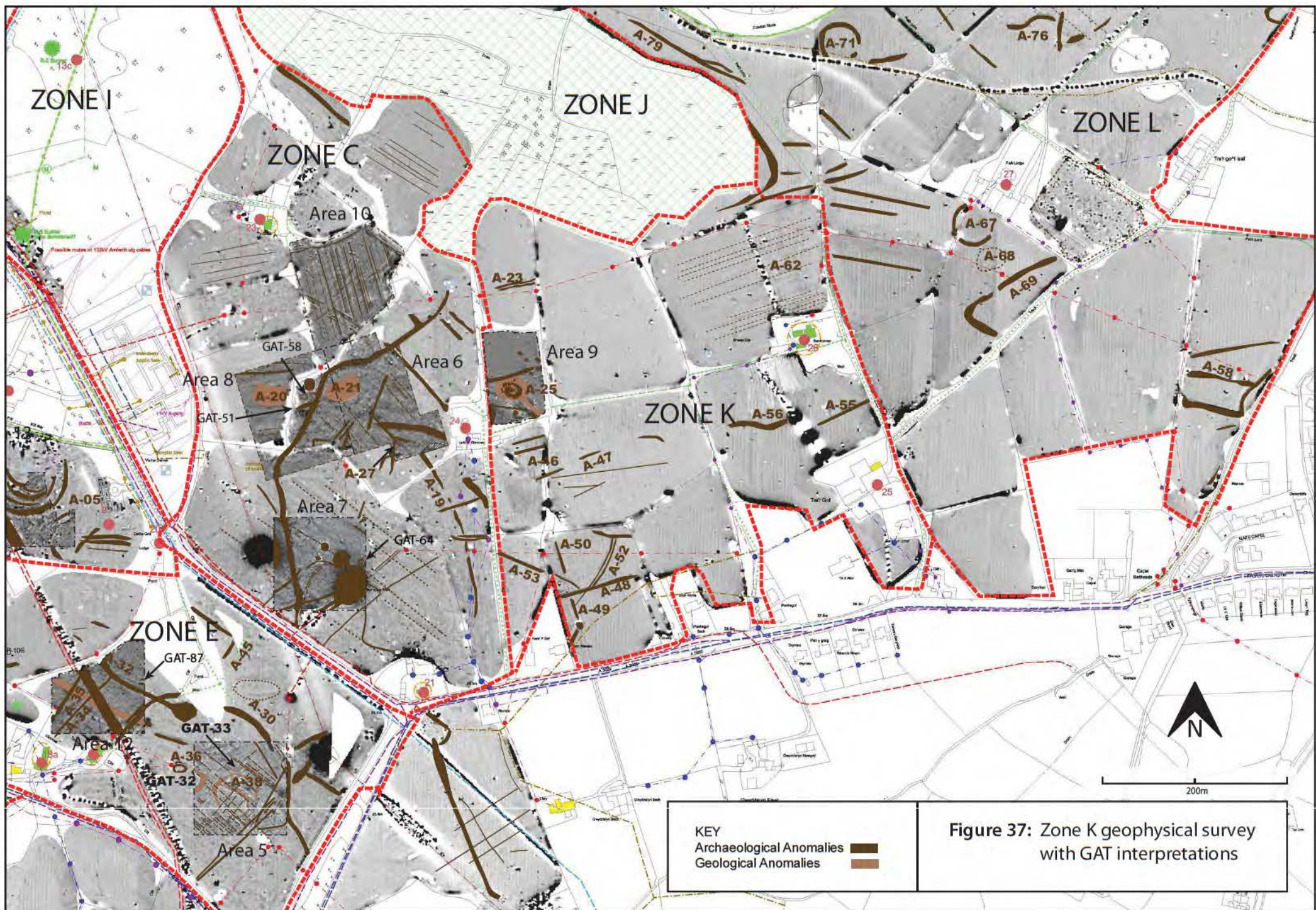
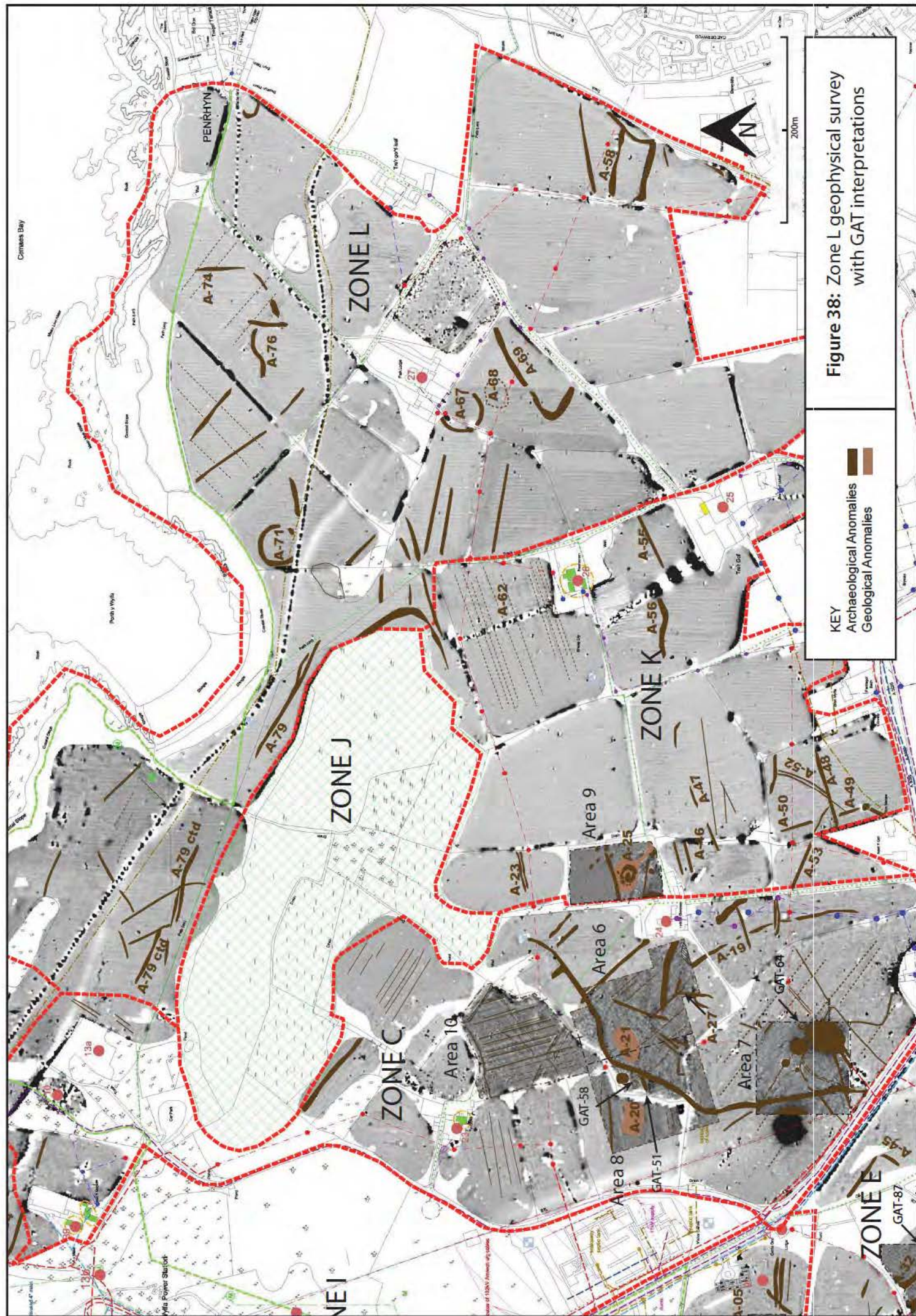


Figure 35: Zone F geophysical survey with GAT interpretations







- ★ Known Bronze Age burnt mound locations
- ▲ Known prehistoric and Romano-British hut-group locations
- Known prehistoric ritual site locations

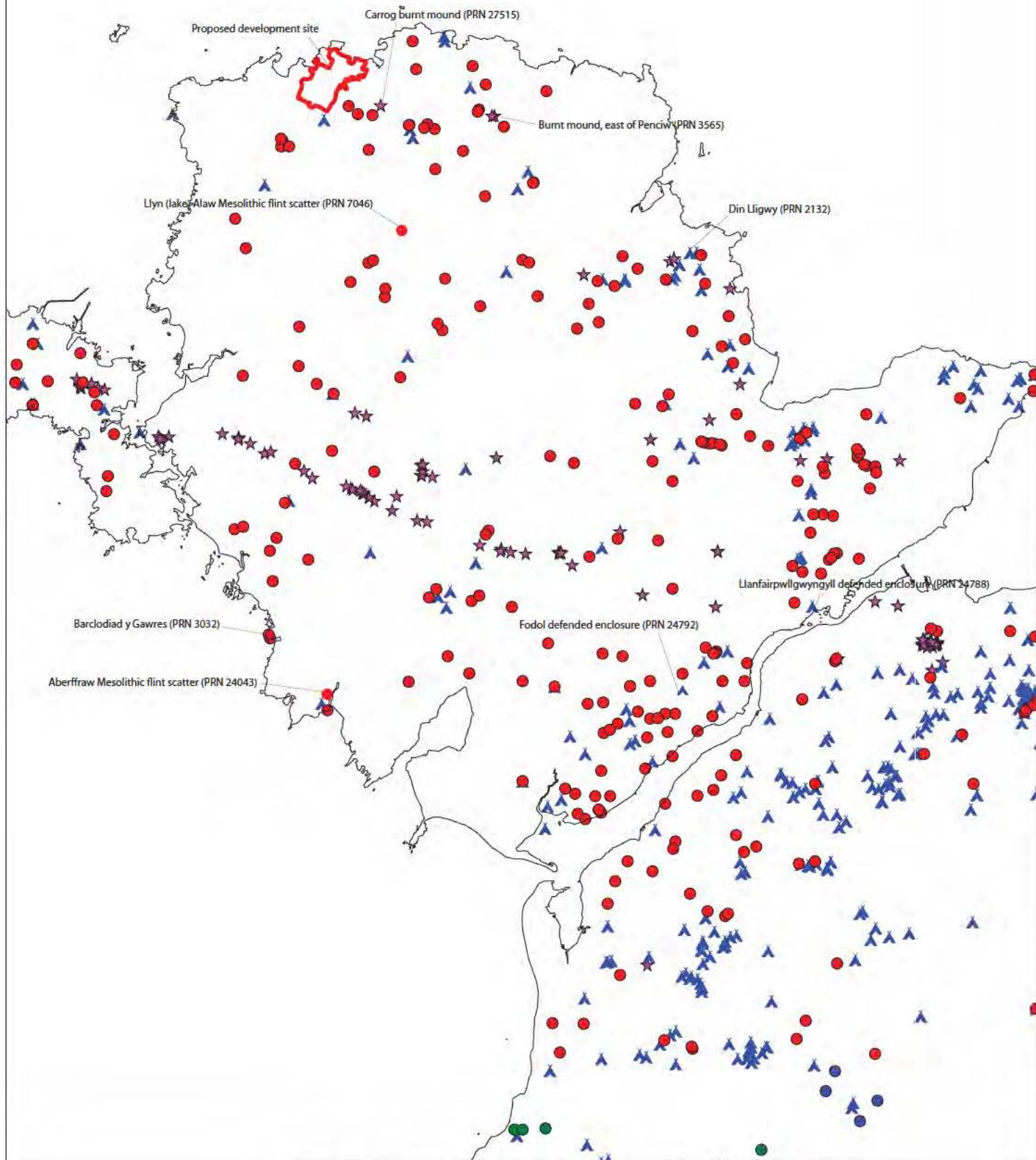


Figure 39: Map of prehistoric features 1:200,000 at A4

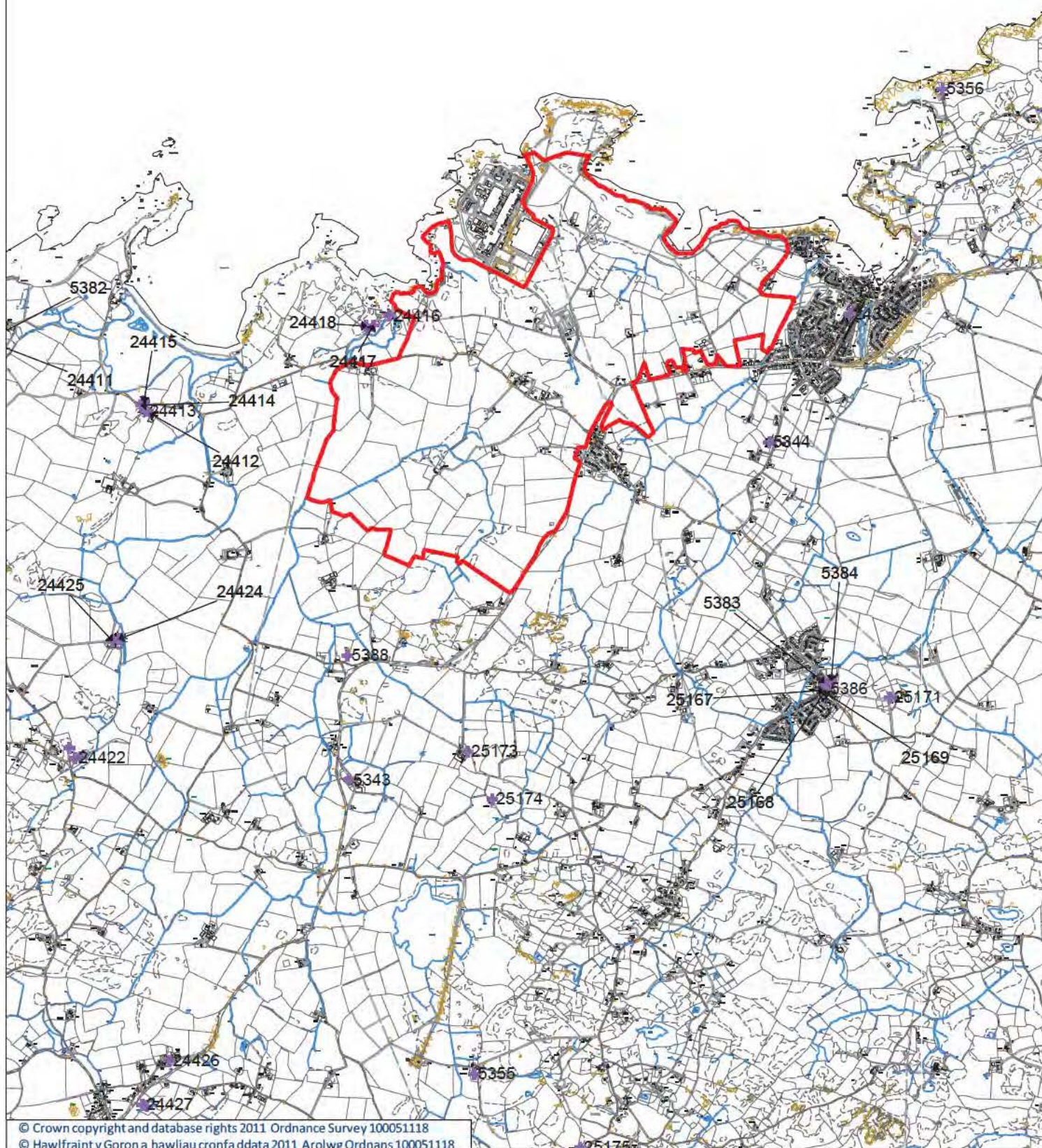


Figure 40: Proximity of Listed Buildings 1:30000 at A4

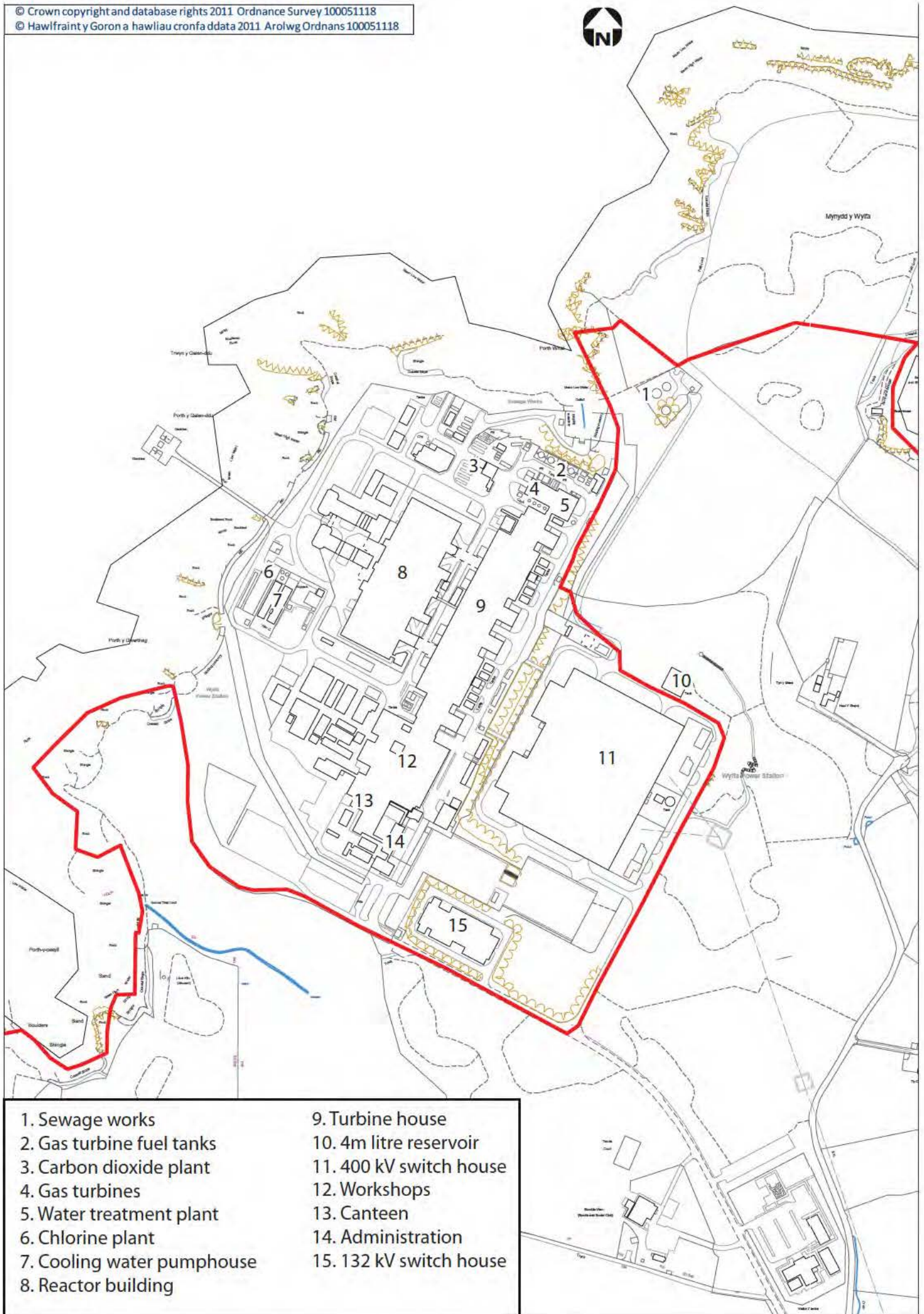


Figure 41: Layout of existing power station



Gwynedd Archaeological Trust
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