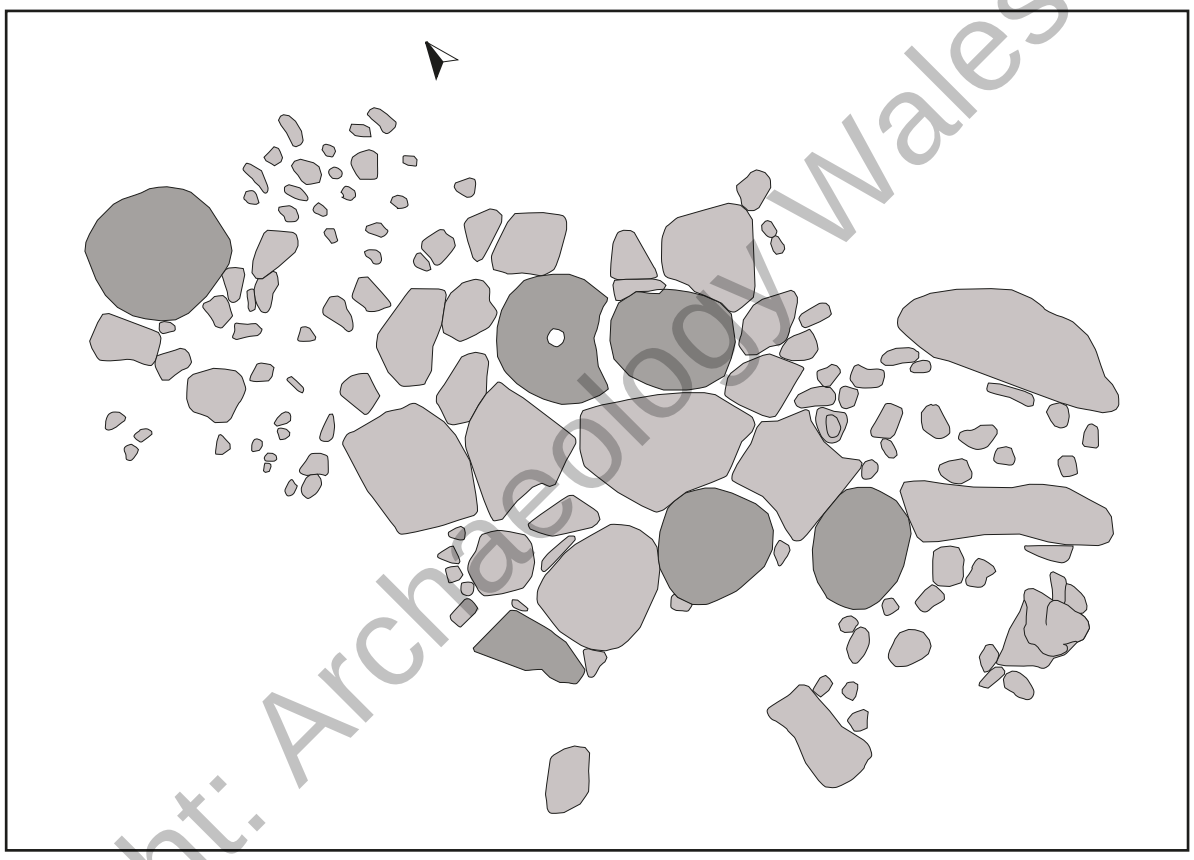
Archaeology Wales

# Llandrillo Campus Extension
# Llangefni (Anglesey)

Assessment Report - Archaeological Excavation



By

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ACIfA Report No. 1670

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# Archaeology Wales

# Llandrillo Campus Extension, Llangefni (Anglesey)

## Archaeological Assessment

Archaeological Excavation

Prepared For: Grwp Llandrillo Menai

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Report No. 1670

**April 2018**

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## Non-Technical Summary

*During August and September 2017, Archaeology Wales Ltd (AW) undertook an archaeological excavation of a section of an Early Medieval cemetery preceding the commencement of ground works connected with a proposed new engineering centre (NEC) and a car park at Llangefni campus, Penmynnyd Road, Llangefni, Anglesey (OS Grid Reference SH4715875762). The associated Planning Reference Number 34C304K/1/EIA/ECON.*

*A previous archaeological evaluation undertaken to target anomalies observed during a magnetometer and ground penetrating radar survey revealed the remains of an Early Medieval cemetery, part of which falls within the boundaries of the development area (Stratascan 2016; Parry et al., 2017). A small section of the cemetery had previously been documented during a Watching Brief associated with the construction of the Llangefni Link Road. Given the fact that the bone preservation was very good and the potential for the cemetery to inform both local, regional and national research frameworks, the cemetery was considered to be of national importance. As result, GAPS requested the full excavation of the cemetery as well as the excavation of features that may be encountered within its immediate surroundings.*

*The excavation revealed two phases of activity within the site, with Phase 1 being represented by evidence of industrial activity as well as the first phase of the cemetery, with seven earth-cut graves. Phase 2 has five distinct sub-phases of activity, the first of which is represented by a single pit likely associated with the earlier industrial activity. The following four sub-phases relate to the continued use of the site as a cemetery after a brief hiatus in burials at the end of Phase 1. By this period the style of burial altered with 25 of the 26 burials from these sub-phases being long cist burials and only one earth-cut grave.*

*The aim of this report is to present an assessment the value of the site archive (artefacts, ecofacts and site records) that resulted from the archaeological investigations and hence to establish recommendations for analysis and publication. Each material type is assessed both in relation to its intrinsic value and its potential to produce a better understanding the site. Recommendations for analysis include further targeted study of: the site records, the small finds, the human bone assemblage and the environmental samples. It is recommended that the results of these studies are published in a single site report, with contributions in specialist journals as appropriate.*

*All work was conducted in accordance with the standards and guidelines of the Chartered Institute for Archaeologists (2014) and complied with the methodologies set out in the Archaeological Method Statement (WSI).*

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# 1. Introduction and planning background

In July 2017, Archaeology Wales (Henceforth – AW) was commissioned to conduct an archaeological excavation at Llangefni College Campus, Anglesey (SH 47158 75762) during the construction of a new engineering centre (NEC) and carpark, Planning Reference Number 34C304K/1/EIA/ECON (Figure 1-2). The excavation was requested by of Grŵp Llandrillo Menai (GLLM) after an archaeological evaluation conducted by Archaeoleg Brython Archaeology indicated that the site was of national importance.

The development site (Site 6) is one of the six areas investigated during previous work conducted on the site, which were subject to geophysical survey prior to evaluation trenches being cut (Stratascan 2016; Parry *et al.,* 2017). In total 41 evaluation trenches were excavated to test anomalies present in the magnetometer data and the ground penetrating radar survey. Particular attention was paid to the area east of Site 6 as it lies adjacent to an Early Medieval cemetery first revealed during the construction of the Llangefni Link Road (Parry *et al.,* 2017).

The evaluation carried out by Archaeoleg Brython Archaeology revealed 15 graves, which included both long cists and earth-cut graves. The results of the evaluation indicate that the part of the cemetery falls within the GLLM, with the majority in the area of the new link road. In addition to the cemetery, the remains of a possible corn dryer, and finds dating to Prehistoric and Romano-British periods were obtained during the archaeological evaluation. Given the national importance of the site, Gwynedd Archaeological Planning Service (GAPS) requested the complete excavation of the cemetery and other archaeological features encountered during the strip of Site 6.

The following Assessment Report has been produced in accordance with both MAP 2 Stage 3 and the condition in Section 8 of AW Written Scheme of Investigation (WSI), which outlines the requirement for a summary report to provide an account of the results obtained by first stage of specialist analysis. The report details the assessment of the human remains, artefactual and ecofactual assemblages recovered during excavation and a discussion of the local, regional and national context of the site. The aim of the report is to provide an assessment of the value of the site and its associated finds and to make recommendations for further analysis and the publication of the results.

The location of the site and the geology of the area is described in Section 2, while the archaeological and historical background are summarised in Section 3. Following this the methodology employed during the excavation is detailed, including how the human remains were excavated and the sampling strategy employed. The

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stratigraphic account is detailed in Section 5, which is followed in Section 6 by the specialist summaries of the human remains, the artefactual and the ecofactual evidence. Finally, in Section 7 all of the evidence is considered in terms of its intrinsic value and its contribution to our understanding of the site as a whole. As previous work in the area has already shown the archaeology to likely be of national importance the evidence is then fully discussed, with its impact on local, regional and national research frameworks considered. The discussion will conclude with recommendations for further work based on this assessment.

## 2. Location and Geology

The development site is located on the extreme eastern edge of Site 6, which itself at the eastern edge of the Coleg Menai campus. The campus is located on the eastern edge of Llangefni, approximately 6 miles to the north-west of Menai Bridge. The site measures approximately 39,250m$^2$ and is bounded to the east by the Llangefni Link road and to the west, south and north by open grassland that lies within the bounds of the college. The site also contains an area of heavily disturbed land, due to heavy plant training at the college. The site lies on land that slopes gently from north-west to the south-east, with the site itself at approximately 40m AOD. To the south-east the land drops off more steeply towards a spring and watercourse approximately 600m away. The surrounding landscape is gently undulating, although low lying, with a number of springs and drains across the immediate area.

The underlying geology is comprised of the Clwyd Limestone Group. This bedrock formation consists of limestone with interbedded sandstone and conglomerate rock. This is a sedimentary rock formed during the Carboniferous period and it dominates most of the surrounding landscape. The town of Llangefni and the area to the west overlies the Gwna Group, which is a Schist bedrock formed during the Cambrian and Ediacaran periods. The Gwna Group also includes small areas of quartzite bedrock, a small pocket of which is located just to the west of the Coleg Menai campus. The superficial deposits within the area of the site are comprised of Devensian Till, formed during the Quaternary period due to the action of the ice sheets and the melt water (BGS, 2017).

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## 3. Historical and Archaeological Background

The wider landscape surrounding the development site is archaeologically rich, with a number of prehistoric monuments recorded close by. These include the standing stone at Hirdre-Faig (AN155) to the south-east and the burial mound of Mynwent y Llwyn (AN065) to the south. The burial chamber of Bryn Celli Ddu (AN002) is located approximately 3km to the south-east. Sites of medieval through to modern date are also well represented with the medieval moated site of Tre-Garnedd (AN047) and Brew Colliery (AN152) located to the south of the site. The site of Capel Eithin (AN120) lies 2km to the south-east of the site. Excavations revealed this to be a multiperiod site with occupation dating from the Neolithic through to the medieval periods. The activity on the site includes a Neolithic horse-shoe shaped enclosure, a Bronze Age cremation cemetery and a Roman stone structure, although the exact nature of this is unknown. The excavations have though focused on the early medieval cemetery, which is thought to be evidence of early Christianity on Anglesey. Of the 99 graves excavated, 40 were long cist types with the remaining being simple earth-cut graves. A number of special graves were identified by the excavators, which had square ditched enclosures around them, thought to possibly have supported timber superstructures although this has not been proven (Longley and Richards, 2000). Other such mortuary enclosures have been excavated at sites such as Ysgol Hendre, Caernarvon and Llandygai (Kenney and Parry, 2012; Longley and Richards, 2000).

The first comprehensive archaeological study of the site and its immediate landscape was undertaken during works related to the construction of sections 1 and 2 of Llangefni Link Road. A Desk Based Assessment (AMEC, 2014) and a subsequent archaeological investigation, which included a geophysical survey and an archaeological evaluation revealed little potential for archaeology in the area (ASDU, 2014; WA, 2014). However, during an archaeological watching brief an Early Medieval cemetery, with exceptional bone preservation, was found centred at SH 4723 7579. Osteological examination of the remains found indicate that at a minimum of 54 individuals are represented in that assemblage (Parry *et al.,* 2017).

The results of archaeological investigation during the work relating to the construction of the Llangefni Link Road led to the recommendation of archaeological mitigation in advance of the expansion of Llangefni Campus. The development plan was sub-divided into six separate areas and an initial stage of non-intrusive investigations was carried out in Areas 4, 5 and 6 (Parry *et al*., 2017; Stratascan 2016). A ground penetrating radar survey was conducted in the eastern extreme of Area 6 in order to try and locate the extent of the Early Medieval cemetery found in previous work on the link road, although this proved inconclusive (Parry *et al.,* 2017). This was followed by an archaeological evaluation, with 38 trenches being excavated in total across all six

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areas. Within Area 6 at least a further 15 graves were revealed, and it was estimated that the cemetery contained a further 20 to 50 graves, with the limits of the cemetery falling within Area 6. In addition to the cemetery, the remains of a possible Bronze Age burnt mound, a potential corn dryer and of finds of prehistoric, Romano-British and medieval date were also recorded. The finds assemblage included two copper alloy brooches, the foot of one bow brooch of early Romano-British date and a penannular brooch, which is likely to be post-Roman in date.

## 4. Methodology

The impact of the development on the archaeological resource was mitigated by a set piece excavation. The program was designed to meet the standards required by *The Chartered Institute for Archaeologist's Standard and Guidance for Archaeological Excavation* (2014). The location of the excavation area (Figure 2) was agreed to with GAPS prior to the commencement of works. The excavation area was stripped to the top of the archaeological horizon, in spits, using a tracked 360º mechanical excavator that was fitted with a toothless grading bucket. All soil stripping was supervised by a competent archaeologist. The excavation area measured 158 metres in length by 35 metres in width and was stripped from the south-west corner moving to the north-east (Plate 1-2). This allowed for the limits of the cemetery to be observed during the stripping and to ensure that any archaeological features outside the cemetery boundary were also observed and recorded.

Following the initial machine excavation, the area was hand cleaned and all archaeological features located and recorded. All features recorded across the site were excavated and all significant archaeological deposits were 100% hand excavated. Such excavation proceeded to the top of the natural subsoil in this area. All archaeological features excavated were recorded with a GPS as well as being hand drawn through the use of sections (where appropriate) and plans. All of the features were photographed using a 12MP digital camera. All the deposits encountered were recorded by means of a continuous context numbering system and recorded on pro-forma context sheets. All features and deposits are described in accordance with CIfA conventions. A register of all contexts and photographs was also made.

The majority of the features encountered during the excavation were long cists or earth-cut graves containing well preserved human remains. The strategy used for the excavation of human remains was periodically reviewed and informed by osteoarchaeologists who formed part of the excavation team; Caroline Sims and Rhiannon Joyce. Furthermore, the osteoarchaeologists supervised and offered advice to the excavation team.

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The excavation of human remains included as a minimum:

- The initial exposure of the cemetery was carried out by a mechanical excavator monitored by a qualified archaeologist. In order to avoid damaging the remains, mechanical excavation ceased before reaching 0.40m below ground level. This measure represents the minimum depth at which the graves have been revealed in previous stages of investigation (see Parry *et al.*, 2017).
- The graves were defined through manual excavation using appropriate tools to avoid the disturbance of burial contents. Once the grave cut was revealed, an initial record was produced using a GPS.
- Graves were 100% excavated in plan.
- The first exposure and cleaning of the skeletons was carried out using suitable tools to avoid any further damage of the remains (Wooden hand tools, brushes etc).
- Recording was carried out using suitable skeleton proforma sheets.
- Plans of the skeletons were produced using rectified photography.
- Soil samples of the abdominal and chest areas of the body were taken to retrieve evidence of gallstones and worm infestations. Forty litre samples were taken from juvenile and adult burials, including samples from the areas of the head, feet, hands, chest and stomach.
- Soil samples were also taken from the fills within the cists to maximise the potential for environmental studies and to obtain material suitable for dating.
- Lifting of human remains was carried out taking into consideration anatomical areas of the body (head, torso, limbs – recording which site). This remains were stored in bags perforated to prevent deterioration. Storage of individual bones were considered if the bones are particularly fragile.
- Great care was given to the retrieval of teeth as these are a fundamental source of information for estimating age, sex, provenance and DNA studies.
- Particular attention was given to the definition of intercutting graves. To avoid difficulties during the post-excavation stage, the fieldwork team took extra care in differentiating between the bones of an articulated individual and those disarticulated remains that may be residual of earlier truncated graves.
- Once the excavation of the burial has been completed, the cist stones were removed to investigate the possibility of earlier phases.

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## 5. Stratigraphic Account (Figure 3-4)

In total 36 cut features and a stone surface were encountered during excavation of the site. These features represent at least two clear phases of activity, with the second phase having five sub-phases. The stratigraphic discussion that follows is split into phases, beginning with the earliest identified phase.

### Phase 1 (Figure 5)

Two main groups of features can be attributed to Phase 1 activity on the site, which relate to possible industrial use of the site and a small cemetery consisting of seven earth-cut graves. The industrial activity appears to have two distinct sub-phases, with the first comprising of two pits and the second a stone surface. It was not possible to assign the cemetery to either of the sub-phases as there is no relationship between the industrial activity and the graves, however there is a clear distinction between these earth-cut graves and the later, Phase 2 cemetery, which is the reason for the inclusion of these graves within the Phase 1 discussion.

The pits and the graves dating to Phase 1 were all cut through the natural horizon, (1002). This was encountered across the site at a maximum depth of 0.40m and was comprised of a hard, mid-yellow orange clay. In places, particularly at the southern end of the site the limestone bedrock was visible.

### Phase 1i: Industrial Activity

Two of the earliest features recorded on site were pits, both cut into the natural. A large sub-oval pit, [1003], was located 21m SSE from the cemetery area and measured 2.40m in length by 1.35m in width, with a total depth of 0.43m (Figure 7; Plate 3). The pit had three fills, with basal fill (1004) being a dark red-brown silty clay. The fill appears to be a burnt clay that has been deliberately dumped in the base of the pit. There is very limited heat treatment evident in the bedrock the pit has been cut through, which indicates the deposit was not burnt in situ and dumped in the pit sometime after firing. Above this was (1006), a thin dark black brown clay, which had frequent small charcoal inclusions. The presence of charcoal within this fill suggests it linked to the same process that formed the basal fill. The presence of a large amount of charred seeds in the final fill, (1005), indicates that this process was likely related to the drying of crops grown in the surrounding landscape.

At the south-western end of the cemetery another large sub-oval pit was recorded, [1042], which measured 2m in length and 1.1m in width with a maximum depth of 0.20m (Figure 8; Plate 8). Singular fill (1043) was a mid-grey brown clay silt. A small

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fragment of potential Romano-British pottery was recovered from this fill. An assemblage of 66 fragments of animal bone was also recovered from this fill, with identified species being sheep, pig and cow. The elements present, which include ribs, pelvis, vertebrae and lower and upper arm bones, coupled with the presence of chop marks on one element, may indicate that they are food waste. One of the elements also has gnaw marks from a dog present on the surface, which may have occurred after the element had been discarded into the pit. Although the faunal assemblage from this fill is moderate in size for the site, it is unlikely that the pit was primarily used for depositing rubbish as there is just not enough material in the fill. Rather this is more likely a secondary use.

### Phase 1ii: Industrial Activity

This sub-phase of activity related to stone surface (1041), which covered an area of 4m by 2m and sealed pit [1042] beneath it. The surface was comprised of several unworked and roughly worked limestone blocks, unworked quartz and six quern stones. Four appear to be base stones from rotary querns while the remaining two are the upper stones with central holes. The surviving area of the surface measured 4m in length and 2m at its widest point (Figure 8; Plate 7).

It is likely that this formed part of a larger surface that was in use for an extended period. The much smaller, rounded stones evident around the larger limestone blocks may represent an earlier phase, with the larger blocks being a second phase of surface. The quartz stones appear to have been used to repair the surface and are unworn suggesting the surface went out of use shortly after these were added. No dateable material was recovered. The surface is located in close proximity to one of the evaluation trenches excavated by Archaeoleg Brython Archaeology, which produced evidence of a possible corn drier. It is unlikely the surface represents the remains of a road; more likely it was part of a courtyard or similar that was connected to the industrial activity taking place within this area of the site.

### Phase 1: Cemetery (Plate 4-6)

To the east and north-east of (1041) seven earth-cut graves were excavated. It is unsure how these relate to pits [1003] and [1042] or surface (1041). It is likely that the graves relate to another phase of activity on the site that post-dates the occupation indicated by the pits. However, there is no stratigraphic relationship between the pits and graves, other than they all cut the natural (1002) and so this is not possible to determine.

All the graves, [1031], [1051], [1074], [1091], [1133], [1170] and [1184], are aligned east to west, with the craniums of each skeleton at the west end of the grave. Two of



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the graves, [1074] and [1133], did not contain any articulated skeletal material. Each grave however contained some disarticulated skeletal remains. It is not possible to discern whether the skeletal remains belonged to a singular individual, therefore they have been catalogued as 'disarticulated'.

Artefacts were recovered from three of the graves, fill (1052) contained two sherds of pottery, possibly Romano-British in date. The size and abrasion evident suggests these are residual. Grave fill (1032) produced several fragments of iron, SFs 002, 006-009 and 013. These were concentrated around the distal ends of both the tibiae and fibulae of skeleton (1033). One of the fragments is clearly riveted but the levels of corrosion are too great to be certain on their function without further work. Grave fill (1075) produced a partial bow brooch, likely to be a T-shape of first or second century AD date, SF 089. It is possible the brooch is residual but the practice of burying early Roman brooches in graves of late Roman and post Roman date is well documented elsewhere in Britain (Thomas, 2015: 212) and so it may have been deliberately placed within the grave with the deceased at time of burial (see Section 6).

All the graves were sealed by a deposit (1139), which covered the entire site and had a maximum depth of 0.30m. This is a light brown orange deposit whose composition varies from silt to sandy silt. This had inclusions of frequent sub-angular stones varying in size from large to small and charcoal flecks. This deposit seals all the features associated with Phase 1 activity on the site and suggests that the site had been abandoned by this point. The time it took for this deposit to form is unclear and so it is not possible to indicate how long this hiatus may have lasted. It is possible it lasted only a very short period.

### Phase 2 (Plate 9 -22)

The bulk of the features excavated on the site are associated with a second phase of activity on the site, with five sub-phases evident. Sub-phases 2ii to 2v all relate to the reuse of the site as a cemetery, with all bar one of the burials being within cist graves. All the cist graves were lined around the sides, and all but nine had limestone capping.

### Phase 2i: Industrial Activity

This sub-phase is represented by sub-oval pit [1115], that measured 1.6m in length and 1.20m wide, with a maximum depth of 0.20m. This had been deliberately backfilled with a dark grey black silty clay, which had frequent charcoal inclusions. The base of the cut showed evidence of heating, similar to pit [1003], and suggests the fill was formed through an industrial process taking place in close proximity to the pit (Figure 10).

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The function of the pit is unclear and only one sherd of pottery was recovered from its fill. This is a small body sherd from a Samian ware vessel, the thickness of the sherd suggests it may come from a large bowl form. The sherd appears to be residual though as it is small and very abraded, with the outer slip being heavily pitted (see Section 6).

### Phase 2ii: First Phase of Later Cemetery

This sub-phase of activity is represented by 18 cist graves, [1124], [1164], [1084], [1007], [1030], [1016], [1034], [1058], [1011], [1061], [1073], [1101], [1140], [1147], [1153], [1159], [1179] and [1189]. Most of the graves are aligned east to west, although [1023], [1073] and [1084] are on a north-east to south-west alignment. All the graves contained well preserved human skeletal remains.

The edges of each grave were lined by large, roughly worked limestone blocks. There was no evidence of the bases of the graves having been lined. Of the 19 cist graves, only 10 had stone lids and it is unclear if stones were ever placed on top of the remaining 9 or if these graves only ever had stones around the edges of the cut.

All of these graves cut through deposit (1139) except grave [1084] which cut through pit [1115]. The fill (1087) contained a Roman coin, SF 131, which is a cooper alloy coin, either a sestertius or a dupondius, of Antoninus Pius. The coin is very worn with little surviving of the legend (see Section 6 and Appendix I). It is possible the coin is residual and originated from the pit through which the grave is cut, although this cannot be certain, and it may be that the coin was deliberately placed in the grave. This was the only dateable material recovered for this phase of activity.

### Phase 2iii: Second Phase of Later Cemetery

This sub-phase is represented by three cist graves, which cut through graves of phase 2ii. These graves are [1023], [1174] and [1110] that cut through graves [1034], [1164] and [1124] respectively. These are again lined with large limestone blocks, although only [1110] had evidence of a stone lid. No dateable evidence was recovered from the fills of either grave.

### Phase 2iv: Third Phase of Later Cemetery

This sub-phase is again represented by two graves, cist grave [1128], which cuts earlier grave [1110] and pit burial [1195], which cuts burial [1174]. Grave [1128] only showed evidence of stone lining, with no lid present. No dateable material was recovered from either of these graves.

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### Phase 2v: Final Phase of Later Cemetery

The final phase of the cemetery is represented by two further cist graves, [1080] and [1119]. These both cut earlier grave [1128] and are both aligned north-east to south-west. Neither grave appears to have had a stone lid, although the stone lining around the edges of both cuts was well preserved. Again, no dating evidence was recovered from either grave.

The cemetery, in this part of the site, appears to have been abandoned after these graves were dug. As the rest of the cemetery was excavated during different stages of the development process, it is unclear if any later graves exist elsewhere within the cemetery.

Over these graves a thin sub-soil was recorded of mid-orange brown silty clay, (1001). This was overlain by modern topsoil (1000).

## 5.1 Discussion

The excavation revealed 36 cut features within the bounds of the site, with the main focus of activity being a small cemetery, with limited evidence of industrial or possibly domestic activity. None of the features could be confidently dated, although it is likely all date to the Romano-British or early post Roman period.

### Industrial Activity

The evidence of industrial or possible domestic activity is linked to the presence of three large sub-oval pits excavated across the site, two of which date to Phase 1i and the third which dates to Phase 2i. None of the pits appear to be directly related to any industrial process, but evidence from the fills of [1003] and [1042] indicate that industrial activity, likely the drying of cereal grains, was taking place near the site. Two sherds of Roman pottery, including a small fragment of Samian ware suggest a date within the Romano-British period but as these sherds appear to be residual an exact date is not possible.

It is possible the surface, (1041), that sealed pit [1042], is connected to this activity, perhaps being a metalled surface between working areas. The fact it appears to have been repaired over the course of its life indicates it may have been in use for a long period. No pottery was found to date the surface, but the pit contained a sherd of Roman pottery, a fine ware that may be from a beaker or similar open form.

A possible corn drier was recorded to the east of this during the evaluation stage of works (Parry, et al., 2017). This indicates that the area surrounding this site was of a more industrial rather than domestic nature. The lack of artefacts from the features



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in this area and no evidence of structures does suggest these pits were not connected to domestic activity.

### Cemetery

The cemetery was unknown prior to the works associated with the Llangefni link road and the archaeological excavation of the current site (Parry, et al., 2017). The excavation revealed 54 inhumations, both in pit and cist graves. With the graves excavated during this stage of the works the total number of graves now stands at 87, although remains of individuals were only recovered from 85 graves. As the full results of the earlier excavation not yet published the graves from that stage are not included in the discussion that follows.

The excavation revealed that the cemetery had two clear phases of use, with a period of hiatus separating these two phases. The second phase had four sub-phases, which were defined by the presence of later graves truncating earlier graves.

The first phase of the cemetery had only seven burials, all of which were pit and aligned eat to west. It is possible these graves are late Roman in date, but it is also possible they are post Roman, radiocarbon dating will hopefully provide a tighter date range. The alignment of the graves could be taken to indicate that these burials were in a Christian fashion although there is no other evidence to support this. One of the individuals buried in this phase appeared to have been wearing boots or shoes at the time of burial as indicated by the iron objects around his ankles. Another of these graves contained a first to third century AD brooch. Brooches are known to have been curated elsewhere in Roman Britain and so the brooch cannot be used as direct dating evidence. First and second century brooches are known from burials in other late Roman and post-Roman cemeteries (Thomas, 2015: 212).

The graves were all sealed by a deposit that seems to signal the end of this phase of the cemetery. It is unknown how long this period of hiatus was. It is possible due to the sloped nature of the site the deposit is a colluvial layer which may have accumulated quickly. The lack of artefacts from this deposit has meant no firm dates were possible to assign.

The second phase of the cemetery saw the burial style switch to cist graves, with all bar one of the graves being in this style with the edges of the grave cuts lined with large limestone blocks. Just over half of the cist graves also had stone lids, again made from large limestone blocks. There are four phases of cist burials, the first consists of 19 graves, while the other phases have only two. Due to the lack of dateable material it has not been possible to indicate the dates of this phase of cemetery, although the fact that a number of graves cut through earlier graves indicates it was in use long

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enough for those burying the deceased to have forgotten the locations of earlier graves.

The brief discussion of the cemetery in the earlier evaluation report suggests it dates to the early Medieval period/post Roman period, which would make this a discovery of local and possibly regional significance, especially due to the high level of bone preservation.

## 6. Specialist Reports

The following section will summarise the specialist reports on the artefactual and ecofactual assemblage recovered during the excavation. The full reports can all be found in Appendix I.

### 6.1 Human Bone, *Rhiannon Joyce and Katie Faillace*

A total of 30 individuals are represented by articulated, skeletal remains. Additionally, there are 52 fragments of disarticulated remains from various grave fill contexts across the site. The majority of the articulated skeletons were less than 50% complete, with only a small number more than 75% complete, (Table 1). Crania were most fragmented, which will make future cranial measurements difficult, or impossible to take. Where long bones were present, many of the epiphyses were absent, which will make stature estimates impossible for many individuals.

Table 1. Preliminary assessment of skeletal completeness.

| | Percentage of completeness | Number of Skeletons | Percentage of Individuals |
|---|---|---|---|
| Poor | 0-25% | 11 | 36% |
| Fair | 26-50% | 8 | 27% |
| Good | 51-75% | 9 | 30% |
| Excellent | 76% + | 2 | 7% |

The surface preservation was also evaluated as part of the initial assessment work on the assemblage, which provides a generalised indicator of preservation. When



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analysed as complete individuals (rather than by element), preservation was fair, ranging from score 3 to 4 (Table 2). A score of 3 is defined as, “Most of bone surface affected by some degree of erosion…; general morphology maintained but detail of parts of surface masked by erosive action,” and score 4 is defined as, “All of bone surface affected by erosive action…; general profile maintained and depth of modification not uniform across whole surface” (Brickley and McKinley, 2004:16). Tooth preservation was not quantified, but many individuals retained teeth and the overall qualitative preservation of the dentition is excellent.

Table 2. Preliminary assessment of skeletal preservation.

| Preservation Score | Number of skeletons | Percentage of total assemblage |
|---|---|---|
| 1 | - | - |
| 2 | - | - |
| 3 | 16 | 53% |
| 4 | 12 | 40% |
| 5 | - | - |
| Not assessed | 2 | 7% |

Although not demanded of an assessment report, cursory sex and age estimates were recorded where features were obvious during the cleaning of the remains and could be investigated further. The skeletal assemblage consisted of a similar proportion of males and females (Table 3). Sex estimates were based on pelvic morphology, cranial morphology, or both. There are slightly more males than females, however, most individuals require further investigation before assigning a sex estimate. Current age estimates merely classify the remains into cohorts of subadult or adult; precise ages were not estimated (Table 4). Age classification was based on epiphyseal fusion and dental eruption. The majority of the burials were adults, with three subadults present (SK1010, SK1024, and SK1094). Of the 30 individuals, it was not possible to determine age for two individuals, SK1082 and SK1121, due to severe fragmentation and/or degradation.

Table 3. Preliminary sex estimation.

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| Sex | Number of skeletons | Percentage of total assemblage |
|---|---|---|
| Probable Female/Female | 7 | 23% |
| Probable Male/Male | 9 | 30% |
| Not Estimated* | 14 | 47% |

*Individuals not estimated are mostly in poor condition but some may be able to be estimated under more thorough investigation.

Table 4. Preliminary age classification.

| | Number of individuals | Total percentage of assemblage |
|---|---|---|
| Adult | 25 | 83% |
| Subadult | 3 | 10% |
| Unknown | 2 | 6% |

The number of individuals recovered is sizable for the Early Medieval period. Cemeteries with such good levels of bone preservation are particularly sparse in this period in North Wales and full analysis will make an important contribution to the limited corpus of material from this period. Full standard analysis is recommended. In accordance with the framework for archaeological research in Wales (Edwards et al. 2005), mentioned in the Written Scheme of Investigation (Garcia Rovira, 2017), particular foci of the analysis of the skeletal remains should be pathology, diet, and provenance. Due to the fair preservation and completeness of the assemblage, any pathology (evidence of disease and trauma) or lesions relating to overall health (enamel hypoplasia, cribra orbitalia, etc.), should still be visible on the surface of the affected bone or tooth.

A programme of isotope analysis is recommended for investigating diet and provenance. Previous research by Katie Hemer has demonstrated the potential of such analyses for addressing these themes in Early Medieval Wales. Carbon (δ13C) and nitrogen (δ15N) isotope analysis should be undertaken on bone collagen for dietary reconstruction. It is recommended that ribs should be targeted to limit the damage to the assemblage. Although comparative data for Wales is sparse, a large amount of Early Medieval British data is available, and this would make an important contribution to dietary reconstruction in Western Britain. A multi-isotope approach to provenancing is recommended, as has previously employed for Early Medieval Wales (Hemer *et al.*, 2016).

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Strontium (87Sr/86Sr) isotope analysis should be undertaken on dental enamel (M1 or M2) to provide a geological biosphere signal relating to early life origins. Oxygen (δ18O) isotope analysis should be undertaken on adjacent enamel from the same (or an equivalent) tooth to provide a comparable climatic signal for origins. Both dietary and provenancing analysis should be augmented by sulphur (δ34S) isotope analysis of bone collagen. This will provide an indication of coastal proximity and/or the consumption of substantial quantities of marine foods in the years before death.

Detailed analysis of mortuary rites should also form part of the final report. For example, the repeated truncation of certain graves (Figure 4) focal to one area of site, could suggest links to wealth, family relations, or status. To get a better understanding of whether this is a common burial practice of Early Medieval Wales, the Llangefni site should be compared to other contemporary sites found on the Isle of Anglesey such as Tywyn-Y-Capel, Llanbedrgoch, and Llaniestyn. The individuals buried in these graves should also be assessed for non-metric traits that could indicate familial relationships.

## 6.2 Pottery, *Rowena Hart*

A total of six small fragments of pottery were recovered from the excavation, see Table 5. All fragments were Roman in date except for one small fragment of modern drain pipe. Due to the size of the fragments no vessel types could be identified.

Table 5. Pottery sherds found during excavation.

| Context Number | Small Find Number | Comments |
|---|---|---|
| (1043) | SF 028 | Local redware body fragment. Outer surface has deteriorated leaving an uneven surface. |
| (1052) | SF 053 | Tiny fragment of redware. |
| (1052) | SF 054 | Tiny fragment of redware. |
| (1116) | SF 205 | Small fragment of Central Gaulish samian ware. Vessel type not identifiable. c. 120 – L2ndC. |
| (1120) | SF 169 | Modern drain pipe fragment. |
| (1139) | SF 91 | Small body fragment in orange/buff sandy fabric. |

## 6.3 Animal Bone, *Poppy Hodkinson and Richard Madgwick*

The faunal assemblage from Llangefni Campus Extension consists of 270 specimens; only 26% (70) of these can be identified to taxon or taxon size (The material spans most phases of activity, with the majority of specimens recovered from Phase 2ii (39 identifiable fragments). Much of the material consists of tooth fragments (39 tooth fragments to 21 post- cranial elements), which is likely to be the result of poor

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preservation conditions. The taxa present in this assemblage consist solely of domesticates: cattle, caprine, pig and dog. Large and medium sized mammal are also recorded. No sieving took place during excavation, which might account for the lack of small mammal, amphibian and fish remains in the assemblage. However, the poor standard of preservation throughout the rest of the assemblage, suggests that these fragile elements would not have survived deposition.

Table 6. All recorded specimens from Llangefni Campus Extension faunal assemblage (by NISP)

| Phase | Cattle | Caprine | Pig | Dog | Large Mammal | Medium Mammal | Unidentifiable | Total |
|---|---|---|---|---|---|---|---|---|
| **No Phase** | 7 | 1 | 1 | | | 2 | 82 | 93 |
| **Phase 1 C** | | | 1 | | | | | 1 |
| **Phase 1 IA** | 7 | 6 | 2 | | 4 | 2 | 52 | 73 |
| **Phase 2** | 6 | 2 | 1 | | | | 1 | 10 |
| **Phase 2ii** | 5 | 14 | | 1 | | 1 | 59 | 80 |
| **Phase 2iii** | 2 | | | | | | 1 | 3 |
| **Phase 2iv** | | | 1 | | | | | 1 |
| **Phase 2v** | 4 | | | | | | 5 | 9 |
| **Total** | **31** | **23** | **6** | **1** | **4** | **5** | **200** | **270** |

Taxa were present across almost every phase, with the greatest concentration and taxonomic diversity seen in Phase 1 (industrial activity) and Phase 2ii. Cattle, caprine and pig were all recorded in Phases 1 and 2ii, with a dog specimen also being recorded for Phase 2ii. Caprines appear to dominate Phase 2ii, followed by cattle. However, the high incidence of tooth fragments throughout the phase are likely to have inflated the number of identifiable specimens (NISP), beyond the actual number of individuals. The dog specimen recorded here is a tooth (canine), the size of which suggests a medium sized breed. Across the remaining phases, cattle, caprine and pig appear to be present in reasonably similar numbers, with cattle being slightly more prevalent.

Ageing evidence in the form of epiphyseal fusion and dental attrition was very scarce but brief comments are made here for the sake of completeness. Fusion data in this



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assemblage was present on three cattle specimens, two pig and one caprine. Cattle specimens indicate that all three were aged at least 12-18 months, with one fused proximal tibia suggesting that individual was at least 3-4 years old when slaughtered. Both pig specimens, an unfused distal third metacarpal and unfused distal radius suggest that the individuals were under the age of 2-3 years and 3-4 years respectively. The unfused distal caprine metacarpal indicates that the individual was under the age of 1.5-3 years at death. Dental attrition was recorded on only two specimens (table 4), both of which were the third molars of a caprine and pig. The caprine is thought to have been 2-3 years at their time of death, and the pig appears to have been an adult. The absence of juvenile bones in the assemblage cannot be commented upon, as it may be attributed to either preservation conditions, or a non-existent breeding population at the site.

Evidence for butchery was limited in this assemblage. This is not necessarily due to a lack of butchery but could be the result of erosion of any possible bone modification. No cut marks were observed, and chop marks were recorded on only two specimens. Burning was observed on two specimens, in both instances, the burnt specimens are charred, which is suggestive of heating at reasonably low temperatures. This is normally associated with food preparation; however, it is also possible that both of specimens may have been an incidental inclusion at the edge of a fire.

The taxa recorded in the assemblage are broadly consistent with other Roman, post-Roman and early medieval sites in the British Isles. The taphonomy observed throughout indicates that the material underwent a period of sub-aerial exposure prior to deposition. A lack of butchery evidence and minimal post-cranial skeletal elements within this material, means that no conclusions may be drawn about potential meat processing or consumption practices. Age data for the individuals here is inconclusive, highlighting a broad range of ages amongst individuals from all taxa and phases. Sexing information is also largely absent from this assemblage and these factors mean that husbandry regimes cannot be established.

### 6.4 The Roman Metal Small Finds, *Siân Thomas*

During the course of the excavation a Roman brooch and coin were recovered from two of the graves. The brooch, SF 089, was found in the fill of pit grave [1074] from the Phase 1 cemetery. It is made of copper alloy and is a Hod Hill type, similar to Mackreth's types 10d and 10e, which have date ranges between mid-first to third centuries AD (2011, 141). It is not complete with part of the foot and the head missing. The only decorative elements are two parallel grooves at the top of the bow. The bow profile at the head is right angled, with the head being flat. The head of the brooch would have rolled under around an axial bar, which is unusual for a Hod Hill brooch as the head usually rolls forward. Part of the notch where the pin would have attached to the axial bar is still evident.

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The coin, SF 131, was found in the fill of grave [1084], a cist grave from the Phase 2i cemetery. It is a dupondius of Antoninus Pius. The obverse shows Antoninus facing right, but as the coin is worn little other detail is discernible, with most of the legend no longer being present. The reverse shows a standing, draped figure most likely Libertas holding a pileus in her right hand. The only legend that survives on the reverse is SC, 'Senatus Consulto', showing that the value of the coin was supported by decree of the Senate. The coin was possibly minted in the mid AD 150s, however, without the legend it is difficult to be precise.

Both objects are thought to pre-date the cemetery, which is currently thought to be of Early Medieval date. It is possible then that both are residual, but it is also possible that they were deliberately placed within the graves at the time of burial. During the excavation of the cemetery by Archaeoleg Brython Archaeology, two further brooches were recovered, and it may suggest that these items should be considered as grave goods. The deposition of curated objects generations after initial manufacture is not uncommon (Thomas, 2015; Williams, 2006).

### 6.5 Petrological Examination of Quern Stones, *Andrew Haycock*

Six archaeological finds were examined to determine their lithology and a potential geological provenance, by matching the observed characteristics to known lithologies.

It was determined that all six finds are composed of and worked from sedimentary rocks and it is considered highly likely that they have a local source. These finds have been worked from the 'Anglesey Grits': sandstone and conglomerates of the Clwyd Limestone Group (Loggerhead Limestone Formation / Cefn Mawr Limestone Formation). There has been recent stone matching work undertaken within each sandstone horizon of the Carboniferous Limestone to help characterise each horizon individually (Davies, 2018).

Davies (2018) notes 'hard, white and grey, gritty quartz sandstones outcrop at Creigiau and can be traced south-westwards in strips within the Carboniferous Limestone sequence between Llanbedr Goch and Llangefni'. This description closely matches the lithology of the quern stones described below.

Therefore, based on this, with a ready supply of sandstone / conglomerate from the Clwyd Limestone Group close to Llangefni, it would be reasonable to conclude that this was the source for the stone used for the querns.

On the basis of the visual identification and attribution of provenance given to these quern stones, no further investigative work (e.g. thin section analysis) is recommended at this stage. However, as Parry *et al.,* (2017) provide data on quern stones from an adjacent site, it would be beneficial to undertake further work to compare results from these two studies. This can be undertaken as a desk study but highlight where thin section examination of any samples would be beneficial and produce greater clarification of conclusions from visual examination.

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## 6.6. Environmental Data

The excavation of the Early Medieval cemetery at Llandrillo Campus (Llangefni, Anglesey) produced 133 samples. 131 belonged to grave contexts and two were from non-grave related features – pit [1003], and [1115]. The grave fills were sampled to ensure all surviving bones were recovered, along with any possible neonate bones, calcified cartilage, gut parasites, worms and gallstones. Of the non-grave features samples were taken to retrieve any ecofacts preserved within the fills, that may aid with reconstructing the surrounding landscape, including plants and crops grown and processed by the inhabitants of the site.

*Non-burial features: Preliminary environmental assessment*

Sample <001> - context (1005)

[1003] was located 21m SSE from the cemetery area and was associated to industrial activity (Phase 1). A 40L bulk sample was collected from fill (1005). The latter was initially interpreted as a metal working area as slag was found within this context.

Context (1005) was sampled for environmental assessment. The flot produced by this sample weighed 14g and contained a large quantity of charred grain (>100 items) along with fragments of charcoal. The grain appeared to represent a mixture of species, but further specialist analysis will be needed to confirm the species. There is potential for smaller plant remains, such as weed seeds to be present, but confirmation of this will again require specialist analysis.

Sample <086> - context (1116)

[1115] was located to the NE of the cemetery area and was truncated by grave cut [1086]. [1115] was interpreted as a pit belonging to Phase II industrial activity. A Samian ware fragment was recovered during the excavation of the pit.

A 20L sample was obtained from the fill of pit [1115]. Further sample collection was discouraged due to possible contamination issues. The sample was taken from the western region of the pit to avoid contamination with soils belonging to the fill of grave [1086]. Context (1116) produced a flot weighing 11g. Five potential charred cereal grains were recovered from this sample. Specialist analysis will be required to identify species.

*Graves: Preliminary environmental assessment*

The sum of the samples collected from the graves are being processed with the aim to acquire all the bone present in each and any associated finds.

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While it is necessary to highlight that grave fills do not necessarily present secure contexts from within which obtain environmental information, annotated results of the material obtained on flots will be produced to be able to select sub-samples to be analysed by a specialist.

The samples currently processed indicate that cereal crops were grown and being processed in close proximity to the site. The flot from sample <001> shows that the fills in pit [1003] were likely waste products from corn driers. The evaluation conducted by Archaeoleg Brython Archaeology found evidence of a possible corn drier, which may be related to pit [1003].

# 7. Assessment of Value

This section offers an assessment of the value of the evidence gathered during the excavation. The assessment has been split into two parts, the first will assess the intrinsic value of the finds assemblages and the second the value of these assemblages in addressing site specific questions. The second part of the assessment will discuss the potential of the excavated data to place the site within its wider context. This will include an assessment of the importance of the site and explore the research questions and recommendations for the following phase of work, which will also draw on the assessment of the finds assemblage. In order to assess the value of the site and its contributions to research questions, The Research Framework for Wales has been consulted as part of this assessment, in particular the paper addressing the Early Medieval period in North West Wales (Edwards *et al.,* 2017).

## 7.1 Assessment of intrinsic value

An assessment of the finds assemblage (Section 6 and Appendix I) was undertaken to provide a quantification of the assemblage and to provide a clear overview of its potential for further analysis. The discussion and advice offered by the specialists has formed the basis of the following assessment of intrinsic value, and has been supplemented by reference to other sources including The Research Framework for Wales, grey literature reports of comparable sites within the region and online databases such as the Rural Settlement of Roman Britain (Allen *et al.,* 2018; https://doi.org/10.5284/1030449). The potential data further analysis could provide will be discussed in this section, however, full recommendations for further work on these assemblages will be discussed in section 7.3.

### 7.1.1 The Human Bone



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A total of 33 graves were excavated and recorded, 30 of which contained articulated skeletal remains. The level of completeness of the remains is generally good to fair with the preservation being fair. However, for the acidic soils on Anglesey the levels of preservation are unusual (Edwards *et al.,* 2017). The rapid analysis conducted for this phase of work shows that there were 25 adults, 3 sub-adults and 2 unknown individuals buried within this section of the cemetery, with a fairly even split between males and females. The work also showed the presence of pathology on the remains, which included evidence of osteoarthritis, carious lesions and tooth abscesses, further analysis of which would provide data on the overall health of the population as well as the possibility of identifying occupational markers.

As suggested above, two main phases of use of the cemetery are clear, with Phase 2 having five sub-phases, (Figure 7). From the plan of the cemetery, it is clear that further work needs to be conducted on the phasing of the cemetery. Graves in sub-phase 2iii appear to be on a differing alignment, with heads being in the south-west. A small number of graves currently assigned to sub-phase 2ii based on stratigraphy are also aligned with the heads at the south-west and it may be that these graves belong in sub-phase 2iii, which suggests a change in burial rite between sub-phase 2ii and 2iii. There also appears to be different burial alignments practised in Phase 1, with burials ranging from west to east and south-west to north-east, which may indicate more than one sub-phase of use.

From the plan of the graves excavated during the evaluation at Coleg Llandrillo Menai and during the works in advance of the link road (Parry *et al*., 2017: 15), it appears that the phasing suggested here can be seen in the area evaluated. From the plans of both excavations it appears there are separate clusters of graves within the cemetery as a whole. It could be possible to suggest that family groupings may be evident in these clusters. To fully understand the phasing and the potential for family groupings further analysis is necessary on the whole cemetery assemblage.

The fact that the remains are so well preserved for this region is of national significance. It will allow a range of investigations to take place in the next phase of work, which will advance our knowledge of Early Medieval burial practices, population make up and diet, all of which are key topics discussed in the Research Framework for Wales. Stable isotope analysis has been conducted on only a small number of cemetery sites across Wales and so analysis of the population buried here would provide and invaluable dataset. Strontium ($^{87}Sr/^{86}Sr$) isotope analysis should be undertaken on dental enamel along with oxygen ($\delta^{18}O$) isotope analysis, which will allow the origins of these individuals to be determined. This would provide key data on population mobility, potentially not just within north Wales but between Wales and England, Ireland or perhaps even further afield. This has implications for broader questions surrounding trade routes between Wales and the wider world during this period. One of the key questions is the involvement of women and children in population movement (Edwards *et al.,* 2016). A number of females have been firmly identified within the cemetery assemblage, along with at least three sub-adults. These

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remains then have the potential to provide a good dataset for these research questions.

Carbon (δ13C) and nitrogen (δ15N) isotope analysis should also be undertaken on bone collagen, which will allow diet to be reconstructed. Although comparative data for Wales is sparse, a large amount of Early Medieval British data is available, and this would make an important contribution to dietary reconstruction in Western Britain (Hemer et al. 2016). The isotopic analysis of sulphur (δ34S) in bone collagen would also provide an indication of coastal proximity and/or the consumption of substantial quantities of marine foods in the years before death.

The level of bone preservation would also allow a programme of radiocarbon dating to take place. Dating cemeteries with long cists is difficult as such burial rites are observed from the Roman period well in to the medieval period, as evidenced by the cist burial at St Mary's Church, Nefyn, Gwynedd, that dates to the twelfth to thirteenth centuries AD (Edwards *et al.,* 2016). Radiocarbon dates would allow the life span of the cemetery to be assessed and may provide data for the length of the hiatus between the Phase 1 and Phase 2 cemeteries. There is also the potential that radiocarbon dates could provide dates for the sub-phases, although if the timespans are very short this will not be possible.

### 7.1.2 Roman Pottery

Only five sherds of Roman pottery were recovered during the course of the excavation, with three being fragments from one or more local redware vessels. One sherd of Central Gaulish Samian ware was identified, although the vessel form was not identifiable. These fragments indicate that a settlement of Romano-British date exists within the immediate landscape, with the site being on the periphery, with the presence of the samian ware showing that the inhabitants had connections to long distance trade routes.

During the excavation of the cemetery by Archaeoleg Brython Archaeology, a small number of fragments of Roman pottery were also found, along with a partial tegula, indicating at least one building with a tiled roof stood nearby. This assemblage has not been seen as part of this phase of works however, so it has not been possible to assess the true nature of the pottery assemblage from the site. The evidence of industrial activity and the presence of the brooch, coin and imported pottery does suggest a site of some status though and further work that includes the assemblage from the earlier evaluation should be undertaken.

### 7.1.3 Animal Bone

The faunal assemblage from Llangefni was moderate in size, with 270 specimens being recorded. Taxon or taxon size could only be identified for a quarter of the assemblage though, with 31 cattle, 23 caprine, 6 pig and 1 dog specimens within the assemblage.



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Over half of the assemblage was recovered from Phase 1 pit [1042] and Phase 2ii grave fills. The surface preservation of many of the bone fragments indicates that the specimens were lying on the ground surface, or at least open to the elements, for some time prior to final burial, evidence on canine and rodent gnawing on some of the elements supports this. It is then possible that the faunal remains, particularly those in grave fills, are residual, incorporated into the graves at the time they were cut rather than being remains of feasting at the grave side. The majority of the elements recovered are tooth and cranial fragments, which would further support this. The lack of animal bone within the fills of the Phase 1 graves in comparison to those of Phase 2, only one fragment of pig bone was recovered, may suggest that the Phase 1 cemetery pre-dates the use of the area for industrial purposes and so in fact these graves may be of later Roman date rather than early medieval. The accumulation of soil (1139) over these graves supports a period of hiatus in the cemetery.

The only evidence to suggest the deposition of food waste is the faunal assemblage from pit [1042], which belongs to Phase 1i. The pit contained the remains of limb bones, vertebrae and ribs, all more associated with meat cuts than the cranial and teeth fragments common in other phases of activity. One element did have a chop mark on it suggesting butchery, although nothing was evident on the other remains. The size of the assemblage and the poor preservation will not allow much more analysis and the assessment report (see Appendix I) makes it clear that reconstruction of the husbandry and diet practices of the population is not possible. However, the fact that this pit contains what is likely food waste it is clear that cattle, sheep and pigs were being raised and eaten in the area surrounding the site. It is possible that these animals were not reared primarily for meat, but it is not possible to make definitive statements here.

### 7.1.4 The Roman Metal Small Finds

Two metal small finds, a Hod Hill brooch of early to mid Romano-British date and a coin of Antoninus Pius, were recovered from the fills of two graves, [1074] and [1084] respectively, during the course of excavation. Viewed on their own these finds have very little significance; however, two further brooches, the foot of a bow brooch and a complete penannular brooch, were found during the excavation carried out by Archaeoleg Brython Archaeology. Based on the photographs of these objects, the penannular brooch recovered is possibly a Type G, which tend to be found in mortuary contexts and are very late or post-Roman in date (Booth, 2014: 185).

The fact the Type G brooches are found predominantly as grave goods lends support to the suggestion that the Hod Hill brooch and the coin found during the 2017 excavations were in fact deliberately placed in the grave along with the individuals. The fact that only two graves excavated in 2017 returned grave goods, from the 35 excavated, suggests that the burial of such objects was not part of the burial tradition and may indicate that there was something special about these individuals that warranted the inclusion of the artefacts. This can only be confirmed by combining the



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datasets from the both the current excavation and the one undertaken by Archaeoleg Brython Archaeology and conducting further analysis however.

Both the Hod Hill and the bow brooch, found previously, are of mid first to third century AD date, with the coin being of mid second century AD date and indicate that these objects were curated prior to deposition. As previously suggested this is not unusual, with recent excavations at a cemetery in Devon producing a number of first and second century coins and brooches deposited as grave goods. Radiocarbon dating of one of the burials from Ipplepen returned a date of seventh to eighth century AD, although it is thought the earliest burials were likely of very late Roman date, with the cemetery continuing in use into the post-Roman and early medieval periods (Davey and Wood, 2014; Thomas, 2015).

Brooches are not common finds on the Isle of Anglesey, with very few having been found through excavations. Two brooches were published from the site Cefn Cwmwd, and a number were also found during excavations of the extensive roadside settlement at Tai Cochion, although this report is yet to be fully published (Cuttler *et al.,* 2012; GAT: http://www.heneb.co.uk/cadwprojs/cadwreview2011-12/taicochion11-12.html). A total of fifteen brooches have reported through the Portable Antiquities Scheme (PAS). Coins are far more common with 847 being recorded with the PAS (PAS online database: www.finds.org.uk).

### 7.1.5 The Quern Stones

In total six quern stones were recorded, all had been re-used as part of a stone surface that lay to the south-west of the cemetery. The surface had sealed an earlier pit thought to be related to industrial activity, potentially the processing and drying of grain. All of the quern stones have been identified as being of Anglesey Grit and so were produced from stone quarried on the island. A number of other quern stones were found by Archaeoleg Brython Archaeology during the earlier excavation of the site (Haycock, 2018). These are also likely to be of Anglesey Grit, although the results are yet to be fully published.

The quern stones all appear to be rotary querns and so are of later Iron Age or Romano-British date, however further work is needed to confirm this. The fact that all of the quern stones are of Anglesey Grit indicates that there was possibly a production centre somewhere on the island. There was no evidence from the excavations in 2017 to suggest that the stones were being manufactured on site and so were likely brought in.

### 7.1.6 Environmental Data

A total of 133 soil samples were taken during the excavation, with 131 relating to grave fills and two from pit features. At present only the samples from pits [1003] and [1115] have been processed.

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The flot from fill (1005) of pit [1003] included a large amount of charred seeds and charcoal. The seeds are thought to be from a number of different species and will need to be assessed by a specialist to confirm what species are present. The sample was taken from the upper fill of pit [1003], the lower fills of which appeared to have been heat affected. It is possible all of these fills were formed when the waste from cleaning out or the dismantling of a corn drier was deposited within the pit. The lack of heat affection of the surrounding soils as well as the form of the pit indicate that the pit itself was not a corn drier.

The sample taken from context (1116) from pit [1115] produced a flot weighing 11g. Only five potential charred cereal grains were recovered from this sample, which will again require specialist analysis to confirm species identity. The pit had been deliberately backfilled with a dark grey black silty clay. Like pit [1003], the base of [1115] showed evidence of heat affection. This suggests that the fill was formed through similar processes and are likely connected to the drying of corn.

Full analysis of these flots will confirm what species of plants the seeds belong to and so what species were being grown and processed within the area of the site. The arable regimes of the inhabitants should then be possible to reconstruct. The presence of other species, such as weeds and non-crop species, will allow the immediate environs of the corn driers and pits to be reconstructed. Although grave fills do not necessarily present secure contexts from within which obtain environmental information, the processing of these samples may also add to this picture. This will also allow the retrieval of any missed small bones from the inhumations and preserved human parasites that can inform on the overall health of the individuals buried in the cemetery.

The flots from both pit [1003] and [1115] also appear to contain charcoal, which will need to be sent for radiocarbon dating. As yet the relationship between the cemetery and the pits is not well understood and scientific dating of these pits and the phases of the cemetery should make this clearer and allow tighter phasing of the site as a whole.

## 7.2 Assessment of Site Value

An assessment of Early Medieval burial in Gwynedd was conducted by GAT in 2000 (Longley and Richards), which showed a total of 27 cemetery sites of that period on the Isle of Anglesey. Of these only eight had mixed burial rites, with long cists and simple earth-cut graves. Since then further work has been conducted at a handful of cemetery sites including Tywyn-y-Capel and Tŷ Mawr, as well as previously unknown cemeteries at Llandedrgoch and Parc Cybi (Edwards *et al.,* 2016; Kenney *et al.,* 2011). Human remains are though not well preserved in the acidic soils of Anglesey, of the 23 graves excavated at Parc Cybi, for example, only 8 of the graves contained preserved remains but all were extremely fragile (Kenney *et al.,* 2011). The soils on

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Anglesey make the good preservation of 30 articulated skeletons at Coleg Menai Campus Llangefni exceptional.

The cemetery appears to have been in use for many generations, with the seven eath-cut graves of Phase 1 likely being of later Roman date. Two of these skeletons appear to have been buried with grave goods. Grave [1074] contained a Hod Hill brooch of first to third century AD date, while skeleton (1033) had a concentration of iron around the ankles that may be the remains of boots that were worn at the time of burial. The changing alignments of these graves indicates an extended period of use, or perhaps an abrupt change in burial practice driven by changing social factors. This earlier cemetery went out of use at some stage though, with soil accumulation over the graves indicating a period of hiatus. It is possible this hiatus was short, and soil accumulated quickly due to colluvial wash down the slope. However, the very low levels of residual material in these graves compared with those of the Phase 2 cemetery indicate that it was more likely a slow accumulation and the cemetery was out of use for an extended period. This area of the site appears to have been put to new uses with rubbish, animal bones in particular, being scattered over the surface. All of the animal bones show signs of aerial weathering, showing that they were lying on the ground surface before finally being incorporated into the later grave fills.

By the time the Phase 2 cemetery was in use, burial rites had altered again, with all bar one of the 26 graves from this Phase being long cist burials. The presence of the cists suggests that this phase of cemetery dates to the Early Medieval period, with a number of similar examples from across Anglesey and indeed Britain. Both the stratigraphy and the burial alignments suggest a number of sub-phases within the Phase 2 cemetery, which currently stands at 4 sub-phases, although further work may highlight further sub-phases. The fact that some of the graves cut through earlier ones may suggest that enough time had lapsed between sub-phases for the community to forget the positions of earlier graves, leading to them being truncated. However, it may also be possible that lack of space was an issue. The cemetery sits in a pocket of clay that has very little limestone outcropping through it, suggesting this area was chosen for the cemetery due to it being easier to dig graves through the clay.

One of the individuals buried in Phase 2ii, skeleton (1086), appears to have been buried with a coin of Antoninus Pius. This individual is buried at the north-western extent of the cemetery and is isolated, which may indicate there was something special about this person.

The fact that clear phases, as well as sub-phases and clustering suggesting possible family groupings can be seen in the cemetery add to the significance of the site. The recent updating of the Research Framework for Wales highlights bioarchaeology and the scientific dating of Early Medieval cemeteries as priorities for future research. The preservation of skeletal remains will allow a full programme of isotopic research as well as radiocarbon dating. From this it will be possible to determine the origins of the people buried within the cemetery, identifying individuals who have migrated into the area; reconstruct the diet of the population, looking at the role of coastal areas against

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arable and pastural farming; look at the overall health of the population, identifying periods of malnutrition, diseases, occupational markers as well as looking at non-metric traits. Radiocarbon dating should allow the lifespan of the cemetery to be determined as well as the length of the hiatus between Phases 1 and 2, although this will depend on the quality of the samples.

At present the relationship between the industrial activity and the cemetery is unclear. Both the Phase 1 cemetery and pits [1003], [1042] and stone surface (1041) are currently thought to be later Roman in date, however, it is unclear if the pits and surface pre-date the cemetery, or vice versa or if they were contemporary (which is unlikely). The industrial activity appears to be connected to the drying of corn, as suggested by the charred cereal grains in the flot from pit [1003], and a possible corn drier was found in close proximity during the evaluation carried out by Archaeoleg Brython Archaeology. The nature of the settlement this activity is connected to is currently unknown. No evidence of domestic structures or enclosures was recorded, however, the ceramic evidence and the cemetery, both suggest that there was domestic activity in the vicinity. More work is needed on the assemblage though to improve our understanding of the industrial activity and any related domestic activity. Closer examination of the finds assemblage as whole may allow discussion on the trade networks the settlement was connected to, the agricultural regimes and the social and political status of the community.

Radiocarbon dating the charcoal present in the flots from the pits will also help determine the dates at which they were in use. If possible, a specialist may also be able to determine the species of tree from which the charcoal came, aiding in the reconstruction of the landscape surrounding the site.

## 8. Recommendations for Further Work

The good preservation of human skeletal material and the clear phasing of the cemetery at Coleg Menai Llangefni make the site of regional and national importance. As such there are a number of recommendations for further research, which will enhance our knowledge of the late Roman occupation of the area, the Early Medieval cemetery and the population who were buried within the cemetery. The recommendations are;

1. The site has been excavated in two halves by separate companies, with Archaeoleg Brython Archaeology currently holding the archive and assemblage from the earliest phase on investigations. In order to fully understand the site and its value the assemblages need to be assessed as a whole. In particular it is important that the human skeletal remains are assessed as one collection rather

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than two separate assemblages and are subjected to the same isotopic analysis and radiocarbon dating programme.

2. A full programme of isotopic analysis needs to be conducted on the human skeletal remains. Strontium and oxygen isotopes will allow the geographical origins of individuals to be assessed and any migration of individuals or groups to be highlighted. Carbon, nitrogen and sulphur isotope analysis will allow the reconstruction of the diet of the population to be conducted, assessing the importance of marine versus terrestrial food sources. To this end, 20 of the best-preserved individuals have been selected for analysis, although a similar sample should be taken from the 54 individuals excavated by Archaeoleg Brython Archaeology. This should include a full cross section of the population to ensure no sample bias.
3. Radiocarbon dating should be undertaken on the cemetery, which will allow the lifespan to be determined as well as date ranges of the different sub-phases. This may also allow changes in burial practice to be dated and the significance of this assessed.
4. Radiocarbon dating of the charcoal in the sample flots should be undertaken to provide a date range for the industrial activity evident on the site.
5. The two paper archives should be combined to provide a full plan and allow more detailed stratigraphic analysis to be undertaken. The phasing clear in this section of the cemetery is hinted at by Archaeoleg Brython Archaeology's evaluation plan of the section previously excavated. Combing the two archives should allow clustering in the cemetery to be highlighted as well as expanding and potentially tightening up of the phases and sub-phases of burial that have been suggested here.
6. The ceramic and small find evidence should be assessed as a whole to allow the nature of the settlement to be determined and how it relates to other settlements of similar date in the region. The brooch and coin in particular appear to have been used as grave goods generations after their initial manufacture. These have to potential to offer more insight into social practice, burial practice and the social standing of the individuals they were buried with. The iron fragments from grave fill (1032) may also provide further insight and it is recommended these are sent for x-ray to allow identification and so further analysis.
7. The soil samples need to be fully processes to gain as much environmental data as possible to help reconstruct the landscape around the site. The analysis of the charred seeds will aid with this and show what crops were being grown and processed, giving a view on the arable regimes practised on the site.
8. Full processing of the samples will also allow the retrieval of any missed human remains, as well as human parasites, gallstones etc which will help assess the health of the population.

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## 9. Acknowledgements

We would like to thank Arfon Morgan and Wyn Thomas for all their support and cooperation during the course of the excavation. Many thanks also to Irma Bernardus for producing all the graphics of this report.

## 10. Bibliography

Booth, A. 2014. *Reassessing the long chronology of the penannular brooch in Britain: exploring changing styles, use and meaning across a millennium.* Unpublished Thesis: University of Leicester.

Brickley, M., McKinley, J.I. 2004. *Guidelines to the Standards for Recording Human Remains.* Institute of Field Archaeologists.

Chartered Institute for Archaeologists. 2014. *Standard and Guidance for Archaeological Excavation*.

Cuttler, R., Davidson, A. and Hughes, G. 2012. *A corridor through time: the archaeology of the A55 Anglesey road scheme.* Oxford: Oxbow Books.

Davey, J. and Wood, I. 2014. *Archaeological Excavations on land off Gropers Lane, Ipplepen, South Hams, Devon, July 2014. Post Excavation Project Design*. Exeter: Exeter University Unpublished Report.

Davies, J., 2018, *Mapping building stones in churches across Wales: Part 5 – Caernarfonshire.* Welsh Stone Forum Newsletter, no 15.

Edwards, N., Lane, A., Bapty, I. and Redknap, M. 2005. Early Medieval Wales: A framework for archaeological research. *Archaeology in Wales*, 55, 33-46.

Edwards, N., Davies, T. and Hemer, K. 2016. *Research Framework for the Archaeology of Early Medieval Wales c AD 400-1070.* A Research Framework for the Archaeology of Wales 3.

Hemer, K.A., Lamb, A.L., Chenery, C.A. and Evans, J.A. 2016. A multi-isotope investigation of diet and subsistence amongst island and mainland populations from early medieval western Britain. *American Journal of Physical Anthropology* 162: 423 – 440.

Kenney, J., McGuinness, N., Cooke, R., Rees, C. and Davidson, A. 2011. *Parc Cybi, Holyhead: post excavation assessment of potential report volume 1.* Unpublished Report: Gwynedd Archaeological Trust Report Number 954.

Copyright: Archaeology Wales Limited

Kenney, J and Parry, L. 2012. 'Cae Ty Gwyn playing fields and environs, development of a new Primary School, Ysgol Hendre, at Llanbeblig, Caernarvon'. Unpublished Excavation Report: Gwynedd Archaeological Trust Report 1025.

Longley, D and Richards, A. 2000. *Early Medieval Burial in Gwynedd.* Unpublished Report: Gwynedd Archaeological Trust, Report 350.

Parry, I.G., Parry, L.W., Owen, K. and Lynes, M. 2017. *Fieldwork report: Archaeological Evaluation Trenching. Coleg Menai Llangefni.* Unpublished Report: Archaeoleg Brython Archaeology.

Stratascan, 2016. *Llangefni, Anglesey (Coleg Menai) Geophysical Survey.* Unpublished Report.

Thomas, S. 2016. *From Treasured Items to Trash? The Use of Brooches in Roman Cornwall in the Creation of Identity and Social Memory.* In. M.J. Mandich, T.J. Derrick, S. Gonzalez Sanchez, G. Savani and E. Zampieri (eds.) *TRAC 2015: Proceedings of the Twenty-Fifth Annual Theoretical Roman Archaeology Conference, Leicester 2015*. Oxford: Oxbow Books: 111–124.

Williams, H. 2006. Death and Memory in Early Medieval Britain. Cambridge: Cambridge University Press.

Online Resources

Allen, M., Blick, N., Brindle, T., Evans, T., Fulford, M., Holbrook, N., Richards, J. and Smith, A. 2018. The Rural Settlement of Roman Britain: an online resource [data-set]. York: Archaeology Data Service [distributor] https://doi.org/10.5284/1030449

Gwynedd Archaeological Trust, Unpublished Report Tai Cochion Roadside Settlement: http://www.heneb.co.uk/cadwprojs/cadwreview2011-12/taicochion11-12.html

Portable Antiquities Scheme: http://www.finds.org

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# APPENDIX I: SPECIALIST REPORTS

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2018

# Llangefni College Campus Site Extension - Osteological Assessment Report

RHIANNON JOYCE AND KATIE FAILLACE, WITH CONTRIBUTIONS FROM RICHARD MADGWICK

Prepared for:
Archaeology Wales Ltd


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## 1. Introduction

During August and September 2017 Archaeology Wales Ltd (AW) undertook archaeological investigation at the site of the New Engineering Center (NEC), Llangefni College campus, Anglesey (SH4715875762). The excavation was undertaken at the request of Grŵp Llandrillo Menai (GLLM) after the pre-excavation evaluation, conducted by Archaeoleg Brython Archaeology, suggested that the site was of national importance. During the pre-excavation evaluation, more than 15 early medieval graves were revealed. This was reflected by AW, where 32 intact graves, representing two clear phases, were revealed during the archaeological investigation.

The purpose of this assessment report is to:

1. Produce data relating to the quantity, nature and condition of remains.
2. Determine importance of materials and whether further study is required.
3. If further investigations are needed, establish what work is to be undertaken and recommend strategies and requirements relating to time and cost.

## 2. Site background

The archaeological site at Llangefni College campus was identified in the initial development stages as an Early Medieval cemetery. Little is known about the burial practices in Wales from this period (Edwards *et al.*, 2017), therefore making the site of national importance. Two phases of cemetery use were identified during the excavation, characterised by a change of burial practice. Refer to the scheme of excavation document (Garcia Rovira nd) for further information on the background to excavation.

## 3. Recovery and methodology

Depending on the preservation levels of each skeleton, the remains were either lifted, or 100% sampled for the retrieval of small fragments post excavation. Additionally, all intact crania were block lifted to ensure safe transportation to the office for further analysis. After cleaning, initial cataloguing was undertaken by Rhiannon Joyce at the Archaeology Wales office in Caerphilly. Remains were then transported to the Cardiff University Bioarchaeology Laboratory. Assessment was undertaken in the laboratory by Rhiannon Joyce (Archaeology Wales) and Katie Faillace (PhD candidate, Cardiff University). This involved rapid scanning of the material for the initial characterisation of the resource. Full quantification and analysis of pathology and demographics was not undertaken at this stage of analysis, as the aim of the assessment is to provide recommendations for further work. All human remains have been assessed in accordance to the guidelines outlined by Historic England (English

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Heritage, 2004) and following standards outlined in Brickley and Mckinley (2004) and Mitchell and Brickley (2017).

## 4. Burial Description

A total of 32 burials were unearthed during the excavation. Seven of these [1031], [1051], [1074], [1091], [1133], [1170], [1184] were earth cut graves and represent the earlier phase of the site. All seven graves were orientated on an East-West alignment with their crania located in the western end of the grave, typical of a Christian burial site. Graves [1074] and [1133] contained no osseous material, likely due to the waterlogged nature of the site accelerating decomposition. All the graves from the first phase were sealed by a deposit (1139), which covered the entire site and had a maximum depth of 0.30m.

A second phase of the cemetery is stratigraphically above the sealed deposit (1139) and is characterised by stone lined cists orientated on an East-West alignment. A total of 25 burials are allocated to this phase, which has been further divided into four sub-phases. The first period contains 19 stone lined cist graves ([1124], [1164], [1084], [1007], [1030], [1023], [1016], [1034], [1058], [1011], [1061], [1073], [1101], [1140], [1147], [1153], [1159], [1179], [1189]), all of which are aligned East-West with the exception of [1084], [1023], and [1073] which were aligned Northeast-Southwest. The second period of phase two contains two cist graves [1174] and [1110] which truncate graves [1164] and [1124] respectively, from the first period. The third period contains one stone lined cist grave [1128] truncating an earlier cist [1110] and one earth cut grave [1195] truncating an earlier cist [1174]. The final period of phase two contains two stone lined cist graves ([1080] and [1119]), both truncating an earlier cist [1128].

The stone lining of at least one burial [1073], had fragmented quern stones included in the lining. Evidence of recycling old material could contribute to explaining why there was a singular earth cut grave [1195], within the second cemetery phase. It is possible that contemporary people reused the original lining of [1195] to line a later cist. This however is purely speculative.

## 5. Skeletal Assemblage

A total of 30 individuals are represented by articulated, skeletal remains (Fig.1). Additionally, there are 52 fragments of disarticulated remains from various grave fill contexts. This will have an effect on the MNI estimation calculated at the reporting phase of analysis.

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Each skeleton was categorised as 'poor,' 'fair,' 'good,' or 'excellent' in regard to their level of completeness, which was highly variable throughout the site (Table 1, Appendix 1). Crania were most fragmented, which will make future cranial measurements difficult, or impossible to take. Where long bones were present, many of the epiphyses were absent, which will make stature estimates impossible for many individuals (Fig. 2). Fragmentation of the crania and post-cranial remains will also negatively affect the potential of sex estimation, which relies on facial and pelvic traits, and age estimation, which relies on joint degradation.

Table 1. Preliminary assessment of skeletal completeness.

| | Percentage of completeness | Number of Skeletons | Percentage of Individuals |
|---|---|---|---|
| Poor | 0-25% | 11 | 36% |
| Fair | 26-50% | 8 | 27% |
| Good | 51-75% | 9 | 30% |
| Excellent | 76% + | 2 | 7% |

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**Figure 3. Left femur of SK1151 (bottom) and right femur of SK1162 (top) illustrating variation in surface preservation. SK1151 is scored as 4; SK1162 is scored as 3.**

Table 2. Preliminary assessment of skeletal preservation.

| Preservation Score | Number of skeletons | Percentage of total assemblage |
|---|---|---|
| 1 | - | - |
| 2 | - | - |
| 3 | 16 | 53% |
| 4 | 12 | 40% |
| 5 | - | - |
| Not assessed | 2 | 7% |

Cursory sex and age estimates were recorded where features were obvious during the cleaning of the remains and could be investigated further. The skeletal assemblage consisted of a similar proportion of males and females (Table 3). Sex estimates were based on pelvic morphology, cranial morphology, or



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**Figure 2. Right humerus of SK1162, illustrating fragmentary completeness and loss of epiphyses characteristic of many long bones in this assemblage.**

Surface preservation was also assessed. This provides a generalised indicator of preservation, rather than one that is process-specific, and encompasses taphonomic processes from a range of agents that can occur both sub-aerially and in subterranean contexts (e.g. weathering, abrasion, erosion). When analysed as complete individuals (rather than by element), preservation was fair, ranging from score 3 to 4 (Table 2; Fig. 3). A score of 3 is defined as, "Most of bone surface affected by some degree of erosion…; general morphology maintained but detail of parts of surface masked by erosive action," and score 4 is defined as, "All of bone surface affected by erosive action…; general profile maintained and depth of modification not uniform across whole surface" (Brickley and McKinley, 2004:16). Tooth preservation was not quantified, but many individuals have associated loose teeth, despite fragmentation of the maxillae and mandibles. The overall qualitative preservation of the present dentition is excellent, with strong potential to identify dental pathologies, such as moderate to severe periodontal recession and carious lesions and estimate age from dental wear. Where arcades are complete or cleanly fractured, mild periodontal recession and abscesses can be identified.

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both. There are slightly more males than females, however, most individuals require further investigation before assigning a sex estimate. Current age estimates merely classify the remains into cohorts of subadult or adult; precise ages were not estimated (Table 4). Age classification was based on epiphyseal fusion and dental eruption. The majority of the burials were adults, with three subadults present (SK1010, SK1024, and SK1094). Of the 30 individuals, it was not possible to determine age for two individuals, SK1082 and SK1121, due to severe fragmentation and/or degradation.

Table 3. Preliminary sex estimation.

| Sex | Number of skeletons | Percentage of total assemblage. |
|---|---|---|
| Probable Female/Female | 7 | 23% |
| Probable Male/Male | 9 | 30% |
| Not Estimated* | 14 | 47% |

*Individuals not estimated are mostly in poor condition, but some may be able to be estimated under more thorough investigation.

Table 4. Preliminary age classification.

| | Number of individuals | Total percentage of assemblage |
|---|---|---|
| Adult | 25 | 83% |
| Subadult | 3 | 10% |
| Unknown | 2 | 6% |

No palaeopathological analysis has been undertaken for this assessment, however, certain conditions were recognised during the cleaning of the remains, including various forms of osteoarthritis, carious lesions, dental abscesses, and tooth impaction (Appendix 1).

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## 5. Potential for Future Analysis

The number of individuals recovered at the Llangefni site is sizable for the Early Medieval period. Cemeteries with good bone preservation are particularly sparse in this period in North Wales and full analysis will make an important contribution to the limited corpus of material from this period. Full standard analysis is recommended. In accordance with the framework for archaeological research in Wales (Edwards *et al.* 2005), mentioned in the Written Scheme of Investigation (Garcia Rovira n.d.), particular foci of the analysis of the skeletal remains should be pathology, diet, and provenance. Due to the fair preservation and completeness of the assemblage, most pathology (evidence of disease and trauma) or lesions relating to overall health (enamel hypoplasia, cribra orbitalia, etc.), should still be visible on the surface of the affected bone or tooth. However, on remains with poorer preservation, some lesions may be obscured, particularly mild or healed abnormal periosteal osteoblastic and osteoclastic activity.

A programme of isotope analysis is recommended for investigating diet and provenance. Previous research by Katie Hemer has demonstrated the potential of such analyses for addressing these themes in Early Medieval Wales (Hemer *et al.* 2016), however, only a few individuals from Llanbedrgoch, Anglesey have been analysed from north Wales (Edwards *et al.* 2017). Carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotope analysis should be undertaken on bone collagen for dietary reconstruction. It is recommended that ribs should be targeted to limit the damage to the assemblage. It will also be necessary to analyse a faunal baseline sample from the substantial assemblage recovered from a pit on the site. Although comparative data for Wales is sparse, a large amount of Early Medieval British data is available, and this would make an important contribution to dietary reconstruction in Western Britain. A multi-isotope approach to provenancing is recommended, as has previously employed for Early Medieval Wales (Hemer *et al.* 2011). Strontium ($^{87}Sr/^{86}Sr$) isotope analysis should be undertaken on dental enamel (M1 or M2) to provide a geological biosphere signal relating to early life origins. Oxygen ($\delta^{18}O$) isotope analysis should be undertaken on adjacent enamel from the same (or an equivalent) tooth to provide a comparable climatic signal for origins. Both dietary and provenancing analysis should be augmented by sulphur ($\delta^{34}S$) isotope analysis of bone collagen. This will provide an indication of coastal proximity and/or the consumption of substantial quantities of marine foods in the years before death.

By taking multiple samples from the same individual, it is possible to examine diet throughout an individual's life. Many individuals from this site have teeth (dentine), rib fragments, and femoral shafts, which, when analysed together, can demonstrate differences from childhood (teeth), 10 to 15 years before death (femora), and up to 5 years before death (ribs). Whilst this would provide a novel contribution to the analytical programme, a standard scheme of isotope analysis is recommended in the first instance. As questions of mobility, economy and diet are central to research priorities for Early Medieval Wales, it is recommended that the five isotope indices are analysed on a minimum of 20 individuals.

As recommended by the Research Framework (Edwards *et al* 2017), detailed analysis of mortuary rites should also form part of the final report. For example, the repeated truncation of certain graves (Fig. 4) focal to one area of site, could suggest links to wealth, family relations, or status. To get a better

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understanding of whether this is a common burial practice of Early Medieval Wales, the Llangefni site should be compared to other contemporary sites found on the Isle of Anglesey including Tywyn-Y-Capel and Arfryn, and from Llanbeblig, Caernarfon, as well as the exceptional remains from Llanbedrgoch, Anglesey (Davidson 2009, Hedges 2016, Kenney and Parry 2012).Tywyn-Y-Capel, Arfryn, and Llanbeblig are all large cemeteries of early medieval date, however, only Tywyn-Y-Capel contained skeletal remains. Poor preservation at Arfryn and Llabeblig make comparisons difficult, however, some burial rites can be inferred, such as the lining of cists, alignment of graves, and at Arfryn, estimates of demography were made based on grave size (more adults than subadults and infants) (Hedges 2016, Kenney and Parry 2012). Tywyn-Y-Capel can be directly compared to the present site, with mixed lined cist and non-cist inhumations in two continuous phases (Davidson 2009). Despite fragmentation, sex and age estimates were possible for most of the sample and demonstrated a variable population. The sample of individuals buried in lined cists had an older age at death than those buried without cists, and there were slightly more females than males in both phases (though not by many) (Davidson 2009). Although metrics were unable to be taken due to fragmentation, cases of healed trauma and degenerative conditions were recorded, and at least three female individuals expressed a retained metopic suture – indicative of possible kinship (Davidson 2009). Due to the similarities in preservation and completeness at Llangefni, it is reasonable to expect a similar level of analysis as completed for Tywyn-Y-Capel. Thus far, only the small Viking site of Llanbedrgoch has performed stable isotope analysis, concluding that the analysed individuals were not local (Edwards *et al* 2017). Comparison to southern sites should also occur, where much more skeletal and isotope analysis has been successful. Hemer *et al.* (2016) examined three sites from the Isle of Man and six from south Wales for Carbon, Nitrogen, and Sulphur, finding slight differences attributable to subsistence strategy between the Isle of Man and Wales, and between ecclesiastical and rural sites. Due to the geographical location of Llangefni, dietary similarities may be greater to the Isle of Man than south Wales and is a relevant line of inquiry for dietary analysis.

**Figure 4. Example of truncated stone lined cists. [1128] (right) is truncated by both [1080] and [1119] (left, parallel).**

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A number of disarticulated remains were commingled among the burials. These should be further quantified to determine a minimum number of individuals (MNI), as well as examined within context which could provide a better interpretation of burial site re-use.

Although the archaeological evidence suggests an early medieval date, there is no historical record to narrow the occupation of the site to a precise date. The site of St Mary's Church in Gwynedd has shown continued use of stone-lined cists into the later medieval period, meaning assumptions cannot be made based on the archaeological evidence alone (Edwards *et al* 2017). Additionally, the stratigraphic evidence is unclear on the temporal relationship between phases. It is therefore strongly recommended that a sample of the human remains are sent for C14 dating to clarify the site's chronology. It is recommended that three samples are sent off for analysis. These represent the two phases of cemetery activity, and pit [1115], truncated by grave [1084] from the second cemetery phase.

Finally, it is standard practice to take samples from the area surrounding the crania, thorax, pelvis, hands, and feet. This allows for the retrieval of small bones (auditory ossicles, phalanges, sesamoid bones etc.) that may have been missed during excavation. Additionally, pelvic samples are taken to ensure that any foetal bones, gallstones, or parasites could be retrieved. Due to these reasons, it is recommended that all samples from the Llangefni site are processed in order to maximize recovery. Pelvic samples could be omitted at the discretion of the project director as previous analysis of remains from the Brython Archaeology excavations produced no parasites (Law pers. comm.).

## 6. Curation and Storage

The human remains from the current Archaeology Wales excavation will be held by AW until further notice. It is recommended that this collection be analysed with the associated site excavated by Archaeoleg Brython Archaeology; it would therefore be sensible to store them together once fully analysed and reported.

## 7. References


Brickley, M., McKinley, J.I., 2004, *Guidelines to the Standards for Recording Human Remains.* Institute of Field Archaeologists.

Davidson, A. 2009. Excavations at Tywyn y Capel, Treaddur Bay, Anglesey, 1997 and 2002-3. *Archaeologia Cambrensis*, 158, 167-224.

Edwards, N., Lane, A., Bapty, I., Redknap, M., 2005, Early Medieval Wales: A framework for archaeological research. *Archaeology in Wales*, 55, 33-46.

Edwards, N., Davies, T., Hemer, K.A. 2017. Research framework for the archaeology of early medieval Wales c. AD 400-1070. *A Research Framework for the Archaeology of Wales* 3.


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English Heritage, 2004, *Centre for Archaeology Guidelines: Human Bones from Archaeological Sites*. Historic England Publications.

Garcia Rovira, I., n.d., *Written scheme of investigation for archaeological excavation at Llangefni College campus site.* Unpublished Report (Archaeology Wales)

Hedges, J. 2016. Bronze Age settlement and early medieval cemetery at Arfryn, Bodedern, Anglesey. *Archaeologica Cambrensis*, 165, 113-185.

Hemer, K.A. 2011. Stable isotope analysis of human remains: Brownslade and West Angle Bay. In Groom, P., Schlee, D., Hughes, G., Crane, P., Ludlow, N., and Murphy, K. (eds.). Two Early Medieval Cemeteries in Pembrokeshire: Brownslade Barrow and West Angle Bay. *Archaeologia Cambrensis* 160: 133-203.

Hemer, K.A., Lamb, A.L., Chenery, C.A., Evans, J.A. 2016. A multi-isotope investigation of diet and subsistence amongst island and mainland populations from early medieval western Britain. *American Journal of Physical Anthropology* 162: 423 – 440.

Kenney, J., Parry, L. 2012. Ysgol yr Hendre, Llanbeblig, Caernarfon: a possible construction camp for *Segontium* fort and early medieval cemetery. *Archaeologia Cambrensis*, 161, 249-284.

Mitchell, P., Brickley, M. (eds.) 2017, *Updated Guidelines to the Standards for Recording Human Remains*. CIfA and BABAO.

## 8. Appendix 1

| Number | Preservation | Completeness | Number of Fragments | Age | Sex | Notes |
|---|---|---|---|---|---|---|
| SK1010 | 4 | Poor | 143 | Subadult | | |
| SK1014 | 4 | Fair | 251 | Adult | | Possible pathology of L femur |
| SK1015 | 3 | Good | 276 | Adult | M | |
| SK1024 | 3 | Excellent | 277 | Subadult | M | |
| SK1029 | 3 | Fair | 222 | Adult | F | Osteoarthritis of pelvis – eburnation |
| SK1033 | 4 | Poor | 449 | Adult | | |
| SK1040 | 3 | Excellent | 270 | Adult | M | |
| SK1053 | 3 | Fair | 176 | Adult | | |
| SK1059 | 3 | Good | 291 | Adult | F | |

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| | | | | | | |
|---|---|---|---|---|---|---|
| SK1064 | 4 | Good | 248 | Adult | M | $LM_3$ impaction |
| SK1072 | 3 | Good | 215 | Adult | M | Carious lesions, vertebral lipping |
| SK1082 | | Poor | 9 | | | Too fragmentary for most estimates |
| SK1086 | 4 | Poor | 142 | Adult | | |
| SK1094 | 3 | Poor | 6 | Subadult | | Neonate |
| SK1099 | 3 | Poor | 103 | Adult | | |
| SK1103 | 3 | Good | 324 | Adult | F | |
| SK1108 | 4 | Poor | 59 | Adult | | Maxillary abscess |
| SK1121 | | Poor | | | | Too fragmentary for most estimates |
| SK1126 | 4 | Fair | 338 | Adult | F | |
| SK1145 | 4 | Fair | 200 | Adult | F | |
| SK1151 | 4 | Good | 223 | Adult | F | |
| SK1155 | 4 | Fair | 139 | Adult | | Possible cranial pathology |
| SK1162 | 3 | Good | 232 | Adult | F | |
| SK1167 | 3 | Fair | 238 | Adult | M | Multiple caries |
| SK1172 | 4 | Poor | | Adult | | |
| SK1177 | 3 | Good | 297 | Adult | M | |
| SK1182 | 3 | Good | 244 | Adult | M | |
| SK1186 | 3 | Poor | 181 | Adult | | Multiple caries |
| SK1188 | 4 | Fair | 184 | Adult | | |
| SK1191 | 3 | Poor | | Adult | M | |

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# *The Faunal Remains from Llangefni Campus Extension, North Wales.*

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## Introduction

Excavation from the Llangefni Campus Extension in 2017, recovered a small faunal assemblage of 270 specimens. 70 of these specimens were identifiable to taxon or taxon size (via ribs/ vertebrae). This material spans a number of occupation phases at the site, with the majority of specimens recorded in Phase 1 (Industrial Activity) and Phase 2ii. 11 of the specimens are from unstratified deposits, and have been recorded but will not be discussed in detail in this report due to their limited interpretative potential. This report is submitted to Archaeology Wales, alongside the primary data excel spreadsheet. This spreadsheet provides context by context information on taxonomic representation, taphonomy and other pertinent information.

## Chronology

No comprehensive chronology exists for Llangefni Campus Extension, at the time of writing. However, the site appears to have two phases of activity, both of which can be split into sub-phases (table 1). Phase 1 has some evidence to suggest Romano-British occupation, while Phase 2 is thought to be indicative of Post-Roman to Early Medieval activity. The faunal material recorded here, has been presented by phase/ sub-phase rather than time period, to allow for any necessary alterations to be made to site chronology at a later date.

| Phase | Suggested Time Period |
|---|---|
| Phase 1 Cemetery<br>Phase 1 Industrial Activity | Romano British |
| Phase 2<br>Phase 2ii<br>Phase 2iii<br>Phase 2iv<br>Phase 2v | Post-Roman to Early Medieval |

***Table 1: Chronology for phases at Llangefni Campus Extension***

## Method

The material was analysed by the authors in the Osteoarchaeology laboratory at Cardiff University following Cardiff Osteoarchaeology Research Group (CORG) protocol (see Mulville

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2005). Identification was aided by the CORG comparative collection and reference library. Every fragment was examined and recorded as identifiable to taxon, to taxon size for vertebrae and ribs (e.g. large [cattle-size], medium [sheep-size] or small [hare-size] mammals) or as unidentifiable. Fragments were considered identifiable if they comprised at least 50% of one zone (following Serjeantson 1996). Rib fragments with surviving vertebral articulations were recorded to taxon size, as were vertebral centra (atlas and axis were recorded to taxon rather than size category). Of cranial specimens, only occipitals, zygomatics, maxillae with at least two teeth and nasals were recorded. Non-articulating carpals and tarsals (except for the calcaneum, navicular-cuboid and astragalus) were not recorded.

Dental age of mandibles was carried out following Grant's (1982) tooth wear stages; age stage categories were then defined by Halstead (1985) for cattle, Payne (1987) for caprines and O'Connor (1988) for pigs. Epiphyseal fusion categories followed those laid out by Silver (1969). Where possible, the sex of an individual was recorded. Measurements of postcranial elements were taken according to Von den Driesch (1976). Burning was observed according to type: calcination (white, brittle bone) or charring (blackened bone). Butchery was recorded by the mark present (chop, cut, saw etc.) and its location on the specimen (by zone, following Serjeantson 1996). Gnawing was assessed via the appearance of the tooth mark, e.g. canid, rodent etc. Weathering of specimens was assessed according to Lyman (1994). Each individual specimen was assigned a weathering stage, and an average of those specimens was used to decide an overall weathering stage for each context.

**Assemblage Summary**

The faunal assemblage from Llangefni Campus Extension consists of 270 specimens; only 26% (70) of these can be identified to taxon or taxon size (table 2). The material spans most phases of activity, with many of the specimens recovered from Phase 1 (Industrial Activity) and Phase 2ii (21 identifiable fragments in each). Much of the material consists of tooth fragments (45 tooth fragments to 25 post-cranial elements), which is likely to be the result of poor preservation conditions. The taxa present in this assemblage consist solely of domesticates: cattle, caprine, pig and dog. Large and medium sized mammal are also recorded. No sieving took place during excavation, which might account for the lack of small mammal, amphibian and fish remains in the assemblage. However, the poor standard of preservation throughout

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the rest of the assemblage, suggests that these fragile elements would not have survived deposition.

| Phase | Cattle | Caprine | Pig | Dog | Large Mammal | Medium Mammal | Unidentifiable | Total |
|---|---|---|---|---|---|---|---|---|
| **No Phase** | 7 | 1 | 1 | | | 2 | 82 | 93 |
| **Phase 1 C** | | | 1 | | | | | 1 |
| **Phase 1 IA** | 7 | 6 | 2 | | 4 | 2 | 52 | 73 |
| **Phase 2** | 6 | 2 | 1 | | | | 1 | 10 |
| **Phase 2ii** | 5 | 14 | | 1 | | 1 | 59 | 80 |
| **Phase 2iii** | 2 | | | | | | 1 | 3 |
| **Phase 2iv** | | | 1 | | | | | 1 |
| **Phase 2v** | 4 | | | | | | 5 | 9 |
| **Total** | **31** | **23** | **6** | **1** | **4** | **5** | **200** | **270** |

***Table 2: All recorded specimens from Llangefni Campus Extension faunal assemblage (by NISP)***

The potential for investigating chronological trends in taxonomic representation is very limited, due to the small assemblage size for most phases. Because of this, detailed contextual analysis cannot be supported and only particularly noteworthy contexts are highlighted in the discussion. Ageing evidence in the form of epiphyseal fusion and dental attrition data, was present on only two specimens. Butchery evidence was also rare. Evidence of burning was also scarce throughout this assemblage; calcination was absent, two charred fragments were observed. A few instances of canid and rodent tooth marks were recorded, but the level of weathering across the assemblage negates the possibility of observing extensive bone modifications. In accordance with this level of weathering, the potential to gather metric data was limited, and only possible on five identifiable specimens.

**Taphonomy**

Much of the material from Llangefni Campus Extension is medium brown in colour, with some lighter and darker specimens observed throughout. This variation in colour is likely to be the result of differences in depositional microenvironment, but may also related to variation in

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pre-depositional treatment. A small amount of post/ excavation damage was present, concentrated in context 1043 where a number of fresh breaks were observed on much of the unidentifiable material. A high proportion (74%) of this assemblage is unidentifiable, and the majority of identifiable material consists of tooth fragments. This, along with the absence of small or juvenile animals, is indicative of poor preservation conditions at the site. The level of weathering seen throughout the assemblage is reasonably high, as most contexts (80%) were assigned a stage 3 or lower (table 3).

| Phase | 0 | 1 | 2 | 3 | 4 | 5 | Total Contexts |
|---|---|---|---|---|---|---|---|
| **Phase 1 C** | | | | 1 | | | **1** |
| **Phase 1 IA** | | | | 1 | 1 | | **2** |
| **Phase 2** | | | | 1 | | | **1** |
| **Phase 2ii** | | | 3 | 3 | 3 | 1 | **10** |
| **Phase 2iii** | | | | | 1 | | **1** |
| **Phase 2iv** | | | 1 | | | | **1** |
| **Phase 2v** | | | | | | 2 | **2** |
| **No Phase** | | | | | 2 | | **2** |
| **Total %** | **0%** | **0%** | **20%** | **30%** | **35%** | **15%** | **20** |

***Table 3: Average weathering stages of each specimen by context***

Black mould staining was observed on one specimen, a cattle first phalanx; such a small amount is unlikely to be significant. Gnawing was observed on three specimens, with tooth marks appearing in accordance with canid and rodent activity. Canid gnawing was observed on one unidentifiable fragment, as well as a cattle radius and ulna. The cattle ulna also displayed signs of rodent gnawing, in the form of narrow striations around the coronoid process. This, combined with the level of weathering observed in the assemblage, suggests that the material was not deposited immediately, and was subject to sub-aerial exposure.

Evidence for butchery was limited in this assemblage, as may be expected of material with such poor surface preservation. This is not necessarily due to a lack of butchery, but could be the result of erosion of any possible bone modification. No cut marks were observed, and chop marks were recorded on only two specimens: an unidentifiable (likely to be a rib)

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fragment cleaved in two, and an unstratified cattle distal tibia. No conclusions can be drawn about butchery practices from such a small sample, consisting of unidentifiable and unstratified material.

Burning was observed in on two specimens: the third metacarpal of a pig and a caprine maxillary tooth. In both instances, the burnt specimens are charred, which is suggestive of heating at reasonably low temperatures. This is normally associated with food preparation, and the charred pig metacarpal could indicate the roasting of a joint of meat or an entire animal. The calorific value of a caprine head is reasonably low, and it is unlikely that teeth would become charred during the cooking process, meaning that food preparation is less likely in the case of the charred tooth. It is also possible that both of these specimens may have been an incidental inclusion at the edge of a fire, rather than evidence for any specific food preparation practices.

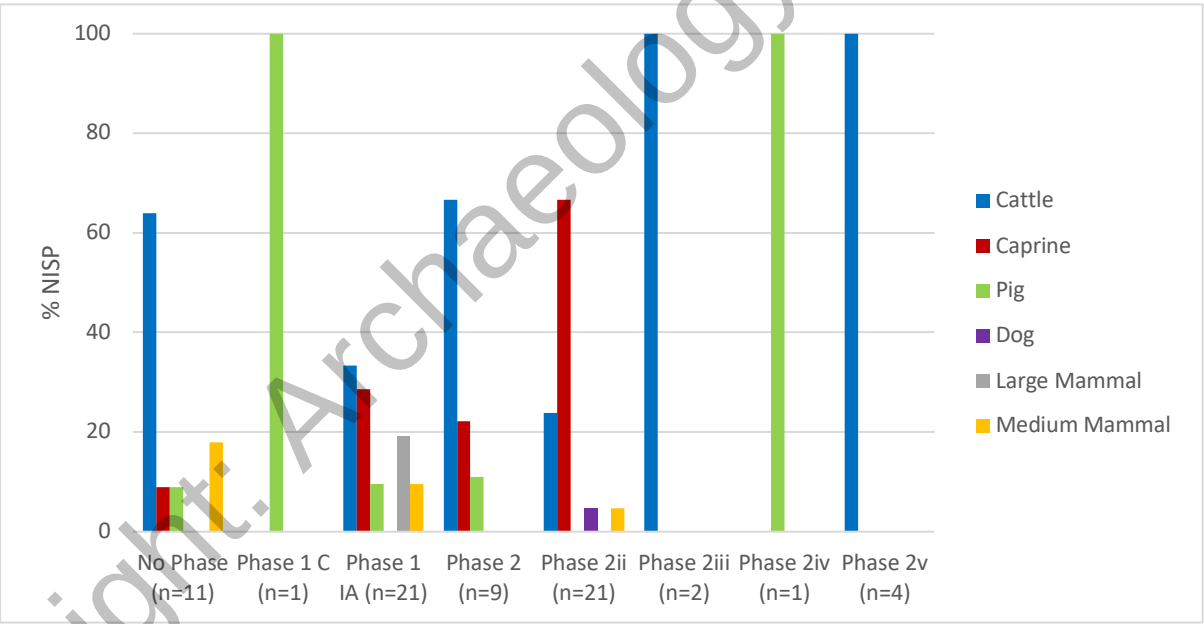


***Figure 1: Relative percentage (by NISP) of taxa, by phase***

## Results

*Taxonomic Representation*

A total of four taxa were identified in this assemblage, with a further two taxon sizes also recorded. Cattle, caprine, pig and dog were all present, as were large and medium sized mammals (figure 1). Taxa were present across almost every phase, with the greatest

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taxonomic diversity seen in Phase 1 (Industrial Activity) and Phase 2ii. The sample sizes for each phase are very small, and may only be briefly commented upon, as interpretation for these phases is limited. Because of this, no attempt will be made to observe inter-phase taxon variation. Additionally, specimens without an assigned phase have been recorded, but will not be discussed in detail, due to their limited interpretative potential.

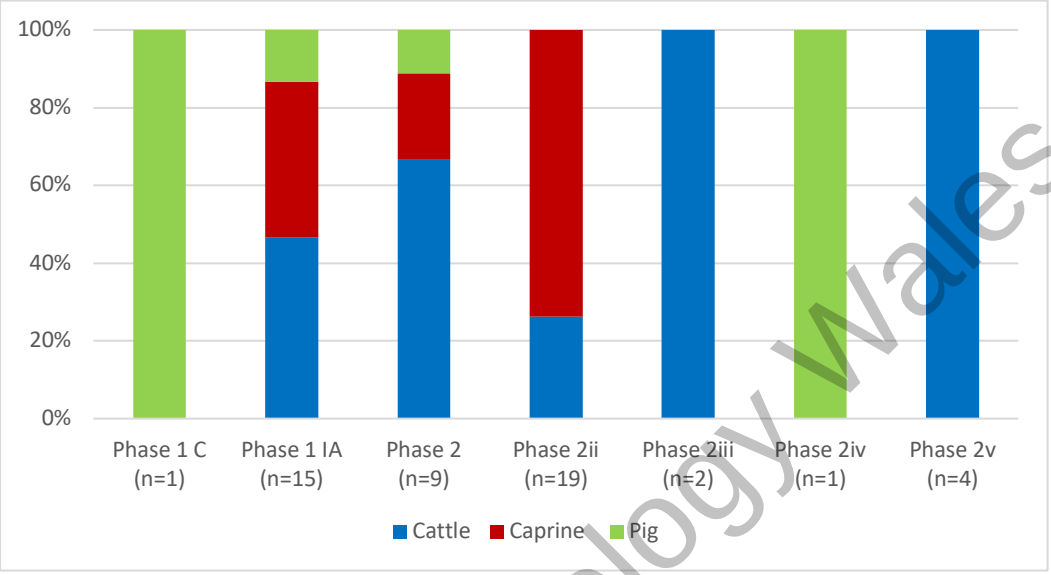


***Figure 2: Relative percentage of domestic taxa (by NISP) by phase***

Cattle, caprine and pig were present in Phase 1 (Industrial Activity), as were large and medium sized mammals. These mammals are likely to reflect further presence of cattle, caprine or pig. Cattle and caprine are both numerous, with cattle exceeding caprines by one specimen. Phase 2ii comprised of cattle, caprine, medium mammal and a single dog specimen. Caprines appear to dominate this phase, followed by cattle. However, the high incidence of tooth fragments throughout the phase are likely to have inflated the number of identifiable specimens (NISP), beyond the actual number of individuals. The dog specimen recorded here is a tooth (canine), the size of which suggests a medium sized breed. Across the remaining phases, cattle, caprine and pig appear to be present in reasonably similar numbers, with cattle being slightly more prevalent. However, this is unlikely to be significant due to the small sample size of these phases.

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*Skeletal Element Representation*

Analysis of the representation of skeletal elements was undertaken for cattle and caprines across all phases (figures 3 and 4). The assemblages for other taxa were too small to undertake this analysis. The majority of skeletal elements present for both taxa were teeth, consisting of: maxillary and mandibular molars, as well as other indeterminate tooth fragments. Some postcranial elements were present for both taxa, but these were not in any significant number: never exceeding three specimens in all cases. It is unlikely that any kind of pattern in meat processing or consumption be identified from this evidence.

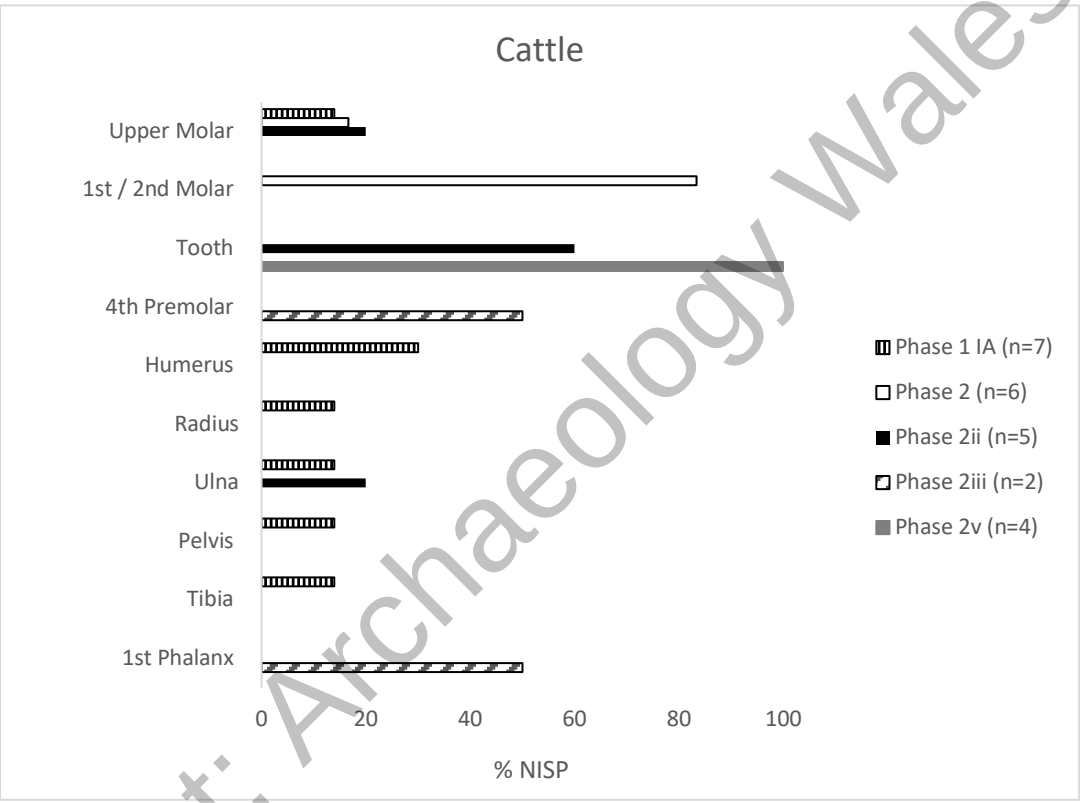


***Figure 3: Relative percentage (by NISP) of cattle skeletal elements across all pertinent phases***

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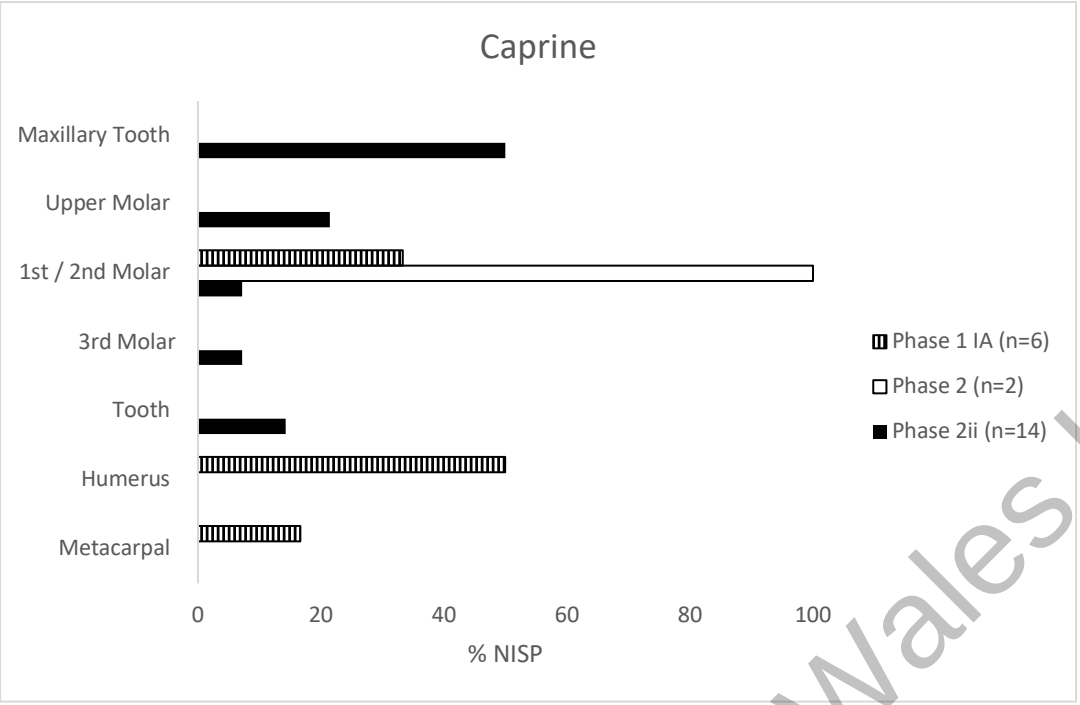


***Figure 4: Relative percentage (by NISP) of caprine skeletal elements across all pertinent phases***

*Ageing*

Ageing evidence in the form of epiphyseal fusion and dental attrition was very scarce but brief comments are made here for the sake of completeness. Far more data would be required to make inferences concerning animal management. The absence of juvenile bones in the assemblage cannot be commented upon, as it may be attributed to either preservation conditions, or a non-existent breeding population at the site. Epiphyseal fusion data provides a less precise method of age determination, generally giving minimum or maximum ages only. Whilst dental attrition is more precise, only two specimens could be analysed in this assemblage. In some instances, approximate ages could be posited even without the use of tooth wear charts, by observing the level of dental attrition on a specimen. These findings will not be discussed by phase, as the sample size is too small to make any robust interpretation.

Fusion data in this assemblage was present on three cattle specimens, two pig and one caprine. Cattle specimens indicate that all three were aged at least 12-18 months, with one fused proximal tibia suggesting that individual was at least 3-4 years old when slaughtered. Both pig specimens, an unfused distal third metacarpal and unfused distal radius suggest that the individuals were under the age of 2-3 years and 3-4 years respectively. The unfused distal caprine metacarpal indicates that the individual was under the age of 1.5-3 years at death.

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| Phase | Taxon | Element | Age |
|---|---|---|---|
| Phase 2ii | Caprine | M3 | 2-3 Years |
| Phase 1 C | Pig | M3 | Adult |

***Table 4: Tooth wear analysis of caprine and pig specimens***

Dental attrition was recorded on only two specimens (table 4), both of which were the third molars of a caprine and pig. The caprine is thought to have been 2-3 years at their time of death, and the pig appears to have been an adult. The tooth fragments that could not be applied to a tooth wear chart were found to range from light to heavy wear, with the majority of specimens displaying medium wear.

*Sexing*

Only one specimen was able to give information about the sex of an individual: a pig canine, the morphology of which was clearly female.

**Discussion and Interpretation**

The faunal assemblage from Llangefni Campus Extension comprised 70 identifiable specimens, all of which belonged to domestic taxa. This small sample size has drastically limited the interpretive value of this material, and it must be stressed that this discussion focuses on an assemblage commentary, rather than making firm inferences concerning husbandry and diet. The taxa recorded in the assemblage are broadly consistent with other Roman, post-Roman and early medieval sites in the British Isles. It is not possible to draw any firm conclusions about the inter-phase abundance of each taxon recorded here, or draw meaningful comparisons with any other sites of each period. The taphonomy observed throughout indicates that the material underwent a period of sub-aerial exposure prior to deposition. There is no evidence indicate any particular waste disposal patterns or management.

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*Subsistence and Economy*

A lack of butchery evidence and minimal post-cranial skeletal elements within this material, means that no conclusions may be drawn about potential meat processing or consumption practices at Llangefni Campus Extension. Poor preservation conditions at the site mean that it is impossible to say whether the absence of foetal and juvenile remains in the assemblage is genuine. Age data for the individuals here is inconclusive, highlighting a broad range of ages amongst individuals from all taxa and phases. Sexing information is also largely absent from this assemblage, as the presence of a single female pig is all that can be confirmed. These factors combined, mean that reliable age profiles cannot be reconstructed and therefore husbandry regimes cannot be established.

**References**

Grant, A. 1982. The use of tooth wear as a guide of age of domestic animals. In B. Wilson, C. Grigson, and S. Payne (eds.) *Ageing and Sexing Animal Bones from Archaeological Sites*. B.A.R. British Series 109. pp. 91-108. Oxford: Archaeopress.

Halstead, P. 1985. A study of mandibular teeth from Romano-British contexts at Maxey. In Pryor, F., French, C., Crowther, D., Gurney, D., Simpson, G., Taylor, M. (eds.). *The Fenland Project: Archaeology and Environment in the Lower Welland Valley.* Volume 1. East Anglican Archaeology Report, No. 27. The Fenland Project Committee, Cambridgeshire Archaeological Committee, pp. 219e224.

Lyman, R.L. 1994. *Vertebrate taphonomy*. Cambridge University Press.

Mulville, J. 2005. Methodology: Mammalian Bone. In N. Sharples (ed.) *A Norse Farmstead in the Outer Hebrides.* Oxford: Oxbow Books.

O'Connor, T. 1988. *Bones from the General Accident Site, Tanner Row*. York: Council for British Archaeology.

Payne, S. 1987. Reference Codes for Wear Stages in the Mandibular Cheek Teeth of Sheep and Goats. *Journal of Archaeological Science.* 14: 609-614

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Serjeantson, D. 1996. The Animal Bones. In S. Needham and T. Spence (eds.) *Runnymede Bridge Research Excavations, Volume 2: Refuse and Disposal at Area 16 East, Runnymede*. pp. 194-223. London: British Museum Press.

Silver, I. 1969. The ageing of domestic animals. In D. Brothwell and E. Higgs (eds.) *Science in Archaeology*. 2nd edition. London: Thames & Hudson, pp. 283-302.

von den Driesch, A. 1976. *A Guide to the Measurement of the Animal Bones from Archaeological Sites.* Peabody Museum Bulletin 1, Cambridge, MA: Harvard University.

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**The Roman Small Finds,** *Siân Thomas*

The Roman Brooch

A Roman brooch was found during the course of the excavation, SF 089 (Figure 1). The brooch is made of copper alloy and is a Hod Hill type, similar to Mackreth's types 10d and 10e, which have a broad date range from mid first to third centuries A.D (2011, 141). The brooch is not complete with part of the foot and the head missing. At the top of the bow there are two parallel groves, with no other decorative elements observable. The bow profile at the head is right angled, with the head being flat. The head of the brooch would have rolled under around an axial bar, which is unusual for a Hod Hill brooch as the head usually rolls forward. Part of the notch where the pin would have attached to the axial bar is still evident.


Figure 1: View of the brooch, the decorative elements are visible at the top of the bow.

The Roman Coin

The coin, SF 131, was found in the fill of grave [1084], a cist grave from the Phase 2i cemetery (Figure 2). It is a *dupondius* of Antoninus Pius. The obverse shows Antoninus facing right, but as the coin is worn little other detail is discernible, with most of the legend no longer being present. The reverse shows a standing, draped figure most likely Libertas holding a pileus in her right hand. The only legend that survives on the reverse is SC, '*Senatus Consulto'*, showing that the value of the coin was supported

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by decree of the Senate. The coin was possibly minted in the mid AD 150s, however, without the legend it is difficult to be precise.


Figure 2: Photos show the obverse and reverse of the Roman coin. Lighting is from the side to highlight the relief on both surfaces.

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**The Roman Pottery,** *Rowena Hart*

A total of six small fragments of pottery were recovered from the excavation. All fragments were Roman in date except for one small fragment of modern drain pipe. Due to the size of the fragments no vessel types could be identified.

SF 028 (1043)

Local redware body fragment. Outer surface has deteriorated leaving an uneven surface.

SF 053 (1052)

Tiny fragment of redware.

SF 054 (1052)

Tiny fragment of redware.

SF 91 (1139)

Small body fragment in orange/buff sandy fabric.

SF 169 (1120)

Modern drain pipe fragment.

SF 205 (1116)

Small fragment of Central Gaulish samian ware. Vessel type not identifiable. c. 120 – L2ndC

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# A Petrological Examination of archaeological finds from Llangefni College Campus Site Extension, Anglesey


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Amgueddfa Cymru – National Museum Wales

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## 1. Introduction

This report was commissioned by Archaeology Wales Ltd. to provide a petrological characterisation of 6 quern-stones excavated from a medieval cemetery at Llangefni College Campus during August / September 2017. The excavation was undertaken prior to groundworks associated with the proposed development of a new engineering centre (NEC) and car park to the east of the development, associated to Llangefni campus, Penmynnyd Road, Llangefni, LL77 7H4 (Ordnance Survey grid reference: SH 47158 75762).

The report was undertaken by Andrew Haycock, Curator of Mineralogy and Petrology, Department of Natural Sciences, Amgueddfa Cymru – National Museum of Wales.

## 2. Methodology

A petrological examination of the archaeological finds was undertaken following standard methodology detailed in British Standard EN 12407(2007); initial observation was made with the naked eye followed by use of a x10 Gowllands lens and x20 Gem-A lens. Observations were restricted to visual identification.

During visual examination, the colour of the stone was estimated using standard Munsell colour charts and is presented thus (Munsell number [colour name]), and the grain size characterised using standard terminology (very-fine grained < 125 µm, fine-grained 125 – 250µm, medium-grained 250 – 500µm, coarse 500 – 1000µm, very coarse 1 – 2mm, granules 2 – 4mm, small pebbles 4-8mm, medium pebbles 8-16mm, large pebbles 16-32mm and very large pebbles 32-64mm.

Images of the samples included within this report were taken using a Nikon Coolpix with a 4.5 – 90mm lens. Images of samples are included to reference specific features in particular samples, or highlight areas of interest found during observations (scale units are in centimetres).

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## 3. Background Geology

Llangefni sits on the junction between older Gwna Group rocks (predominantly greenschists) to the west and Palaeozoic rocks, namely Carboniferous Limestones to the east. The limestones are underlain by Devonian age Old Red Sandstone, which are in turn underlain by Silurian and Ordovician rocks.

The archaeological site sits on bedrock of the Carboniferous Limestone Supergroup, at a boundary between sandstone and conglomerate, and limestone of the Clwyd Limestone Group. Further sandstone and conglomerate can be found to the north near Talwyn (SH 4856 7680) and in numerous outcrops around Brynteg (SH4930 8262). The limestone of the Clwyd Limestone Group continues in a wide band northwards from Llangefni to the coast between Trwyn Gribin (SH 5065 8732) and Penrhyn (SH 5192 8475) near Traeth Bychan.

North of Llangefni (SH 4651 7653) a narrow band of sandstone and conglomerates of the Lligwy Sandstone Formation can be found in close association with the Clwyd Limestone on its western edge. The Lligwy Formation follows a narrow 'S' shaped band to the coast west of Moelfre (SH 4963 8712).

On the coast between Moelfre and Benllech are exposures of the Cefn Mawr Limestone Formation, within this formation are coarse sandstone units. Between Bwrdd Arthur (SH 5861 8142) and Penmon (SH 6372 8070) further Carboniferous aged limestones outcrop with associated sandstone units. These include the Leete, Loggerheads and Cefn Mawr Limestone formations of the Clwyd Limestone Group, Carboniferous Limestone Supergroup.

On Anglesey, the coarse-grained and pebbly sandstones within the Clwyd Limestone Group are commonly referred to as the 'Anglesey Grits'. The sandstones (quartz arenites) are extremely quartz rich (more than 95 %), with grains lightly cemented by quartz. Pebbles of quartz and jasper are common throughout. Davies (2018) notes that 'the Clwyd Limestone Group contains a number of bands of conglomerate, quartz sandstones, hard coarse, gritty, quartz sandstones, whitish-cream, coarse, sugary sandstones and yellowish cream, fine dolomitic sandstones. These deposits vary in grain size and composition both vertically within the stratigraphical sequence and laterally'.

Overlying much of the solid geology in this region are Devensian age glacial tills, gravels, and clay and silt of tidal flat deposits.

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## 4. Petrological assessment of archaeological finds

### 4.1 Summary

Six archaeological finds were examined to determine their lithology and a potential geological provenance, by matching the observed characteristics to known lithologies.

It was determined that all six finds are composed of and worked from sedimentary rocks and it is considered highly likely that they have a local source. These finds have been worked from the 'Anglesey Grits': sandstone and conglomerates of the Clwyd Limestone Group (Loggerhead Limestone Formation / Cefn Mawr Limestone Formation). There has been recent stone matching work undertaken within each sandstone horizon of the Carboniferous Limestone to help characterise each horizon individually (Davies, 2018).

Davies (2018) notes 'hard, white and grey, gritty quartz sandstones outcrop at Creigiau and can be traced south-westwards in strips within the Carboniferous Limestone sequence between Llanbedr Goch and Llangefni'. This description closely matches the lithology of the quern stones described below.

Therefore based on this, with a ready supply of sandstone / conglomerate from the Clwyd Limestone Group close to Llangefni, it would be reasonable to conclude that this was the source for the stone used for the querns.

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## 4.2 Description of individual Archaeological finds

### 4.2.1 LMCE / 17 / Ex SF. 001 (1002)

A very quartz-rich sandstone (95 %) with varied grain-size, predominantly coarse (500-1000µm) to very-coarse (1-2mm) grained with granules (2-4mm) to large pebbles up to 20 mm. The lithology is white to very pale brown coloured on a fresh surface (Munsell 10YR 8/1 – 8/2), variably weathering darker, with orange-brown iron speckling and discolouration throughout. It has a grain-supported, moderately to well-sorted texture composed of sub-rounded to rounded grains / pebbles of quartz (See Figure. 1), with very rare red-coloured lithic granules. Numerous voids are present representing where granules and pebbles have been eroded out. The block shows clear evidence of working to produce a quern-stone.

The sandstone (quartz arenite) matches the lithology of the Anglesey Grits described by Davies (2018), found within the Clwyd Limestone Group outcropping between Llanbedr Goch and Llangefni. It is therefore reasonable to conclude it has a source in this or similar sandstone and conglomerate of the Clwyd Limestone Group.

### 4.2.2 *LMCE / 17 / EX (1041) 022*

A very quartz-rich sandstone (95 % quartz) with varied grain-size. The lithology is medium (250-500 µm) to very-coarse grained (1-2 mm) with granules (2-4 mm) to medium pebbles up to 10mm; white to pale yellow coloured on a fresh surface (Munsell 2.5Y 8/1 – 7/4), weathering much darker, with iron discolouration throughout. It is composed of sub-rounded to rounded quartz grains and pebbles with a moderately to well-sorted, grain-supported structure. The quern-stone has broken across a natural joint surface in the block (see Figure. 2); with crude bedding visible perpendicular to the joint. The block shows clear evidence of working to produce a quern-stone. The bedding surfaces are parallel to the large faces of the stone, it is therefore apparent that the natural bedding surfaces have been utilized to produce the shape of the stone.

The sandstone (quartz arenite) matches the lithology of the Anglesey Grits described by Davies (2018), found within the Clwyd Limestone Group outcropping between Llanbedr Goch and Llangefni. It is therefore reasonable to conclude it has a source in this or similar sandstone and conglomerate of the Clwyd Limestone Group.

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4.2.3 *LMCE / 17 / EX (1041) 023*

A very quartz-rich sandstone with very varied grain-size. The lithology is predominantly medium (250-500 µm) to very-coarse (1-2 mm) grained with granules (2-4 mm) to very large pebbles (up to 10mm). White to pale yellow coloured on a fresh surface - (Munsell 2.5Y 8/1 – 7/4) on the flat side of the quern-stone, weathering much darker on the opposite face, with iron discolouration throughout. It has a sub-rounded to rounded, moderately to poorly-sorted, grain-supported structure composed of sub-rounded to rounded pebbles of quartz, white to cream in colour. Occasional pebbles of jasper (up to 23mm) in contrast to rest of rock (see Figure. 3). The block shows clear evidence of working to produce a quern-stone.

The sandstone (quartz arenite) matches the lithology of the Anglesey Grits described by Davies (2018), found within the Clwyd Limestone Group outcropping between Llanbedr Goch and Llangefni. It is therefore reasonable to conclude it has a source in this or similar sandstone and conglomerate of the Clwyd Limestone Group.

4.2.4 *LMCE / 17 / EX (1041) 024*

A very quartz-rich sandstone with varied grain-size. The lithology is predominantly medium (250-500 µm) to very-coarse (1-2 mm) grained with granules (2-4 mm) to small pebbles (4-8 mm), and occasional medium pebbles up to 22mm, and very crudely bedded. White to light yellowish brown coloured on a fresh surface (Munsell 2.5Y 8/1 – 6/3). It has a moderately to poorly-sorted, grain-supported structure composed of sub-rounded to rounded grains / pebbles of quartz. The pebbles are white, cream and grey in colour, and occasionally red/pink (iron-stained), as well as rare red-coloured weathered jasper pebbles (See Figure. 4). The rock is very weakly cemented by a carbonate cement (a strong reaction to dilute hydrochloric acid confirms the presence of calcium carbonate), and as a result many of the grains have weathered out to stand proud of the surface. As a result the rock is very friable, with grains falling away from the surface quite easily. The block shows clear evidence of working to produce a quern-stone. The crude bedding is parallel to the large faces of the stone, it is therefore apparent that the natural bedding surfaces were utilized to produce the shape of the stone.

Although this quern-stone appears quite different to the other examples. This sandstone (quartz arenite) matches the lithology of the more carbonate-cemented Anglesey Grits, found within the Clwyd Limestone Group. Described by Davies (2018) as ‘pale cream dolomitic sandstone’, outcrops do occur between Llangefni and Llanbedr Goch’. It is therefore

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reasonable to conclude it has a source in this or similar sandstone and conglomerate of the Clwyd Limestone Group.

4.2.5 *LMCE / 17 / EX (1041) 025*

A very quartz-rich (95 %) sandstone with varied grain-size. The lithology is composed of predominantly medium (250-500 µm) to very-coarse (1-2 mm) grained with granules (2-4 mm) to large pebbles (up to 20mm). White to pale yellow coloured on a fresh surface (Munsell 2.5Y 8/1 – 7/4), with iron speckling and discolouration throughout. It has a sub-rounded to rounded, moderately sorted, grain-supported structure with sub-rounded to rounded pebbles of quartz, white to cream in colour. There is evidence of cross-bedding depicted by coarser and finer-grained horizons, with a sharp contact between the two (See Figure. 5). There are also voids throughout the rock, where granules and pebbles have been eroded out. The block shows clear evidence of working to produce a quern-stone. The large faces of the quern are likely parallel to the main bedding surfaces and fabric of the stone.

The sandstone (quartz arenite) matches the lithology of the Anglesey Grits described by Davies (2018), found within the Clwyd Limestone Group outcropping between Llanbedr Goch and Llangefni. It is therefore reasonable to conclude it has a source in this or similar sandstone and conglomerate of the Clwyd Limestone Group.

4.2.6 *LMCE / 17 / EX (1041) 026*

A very quartz-rich sandstone with varied grain-size. The lithology is predominantly medium (250-500 µm) to very-coarse (1-2 mm) grained with granules, and small to large pebbles (up to 20mm). White to pale yellow coloured on a fresh surface (Munsell 2.5Y 8/1 – 7/4), with iron speckling and discolouration throughout. It has a sub-rounded to rounded, moderately to well-sorted, grain-supported structure with sub-rounded to rounded pebbles of quartz. There are also small voids throughout the rock, where granules and pebbles have been eroded out. The block shows clear evidence of working to produce a quern-stone.

The sandstone (quartz arenite) matches the lithology of the Anglesey Grits described by Davies (2018), found within the Clwyd Limestone Group outcropping between Llanbedr Goch and Llangefni. It is therefore reasonable to conclude it has a source in this or similar sandstone and conglomerate of the Clwyd Limestone Group.

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## 5. Recommendations

On the basis of the visual identification and attribution of provenance given to these quern stones, no further investigative work (e.g. thin section analysis) is recommended at this stage. However as Parry et al. (2017) provide data on quern stones from an adjacent site, it would be beneficial to undertake further work to compare results from these two studies. This can be undertaken as a desk study but highlight where thin section examination of any samples would be beneficial and produce greater clarification of conclusions from visual examination.

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## 6. Figures

*Figure. 1: Specimen LMCE / 17 / Ex SF. 001 (1002) - Granular texture of sandstone with large sub-rounded quartz pebble (centre top) and rare red-coloured lithic grain (bottom right)*

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*Figure. 2: Specimen LMCE / 17 / EX (1041) 022) – showing break across a natural joint surface in the block, and crude bedding visible perpendicular to the joint*

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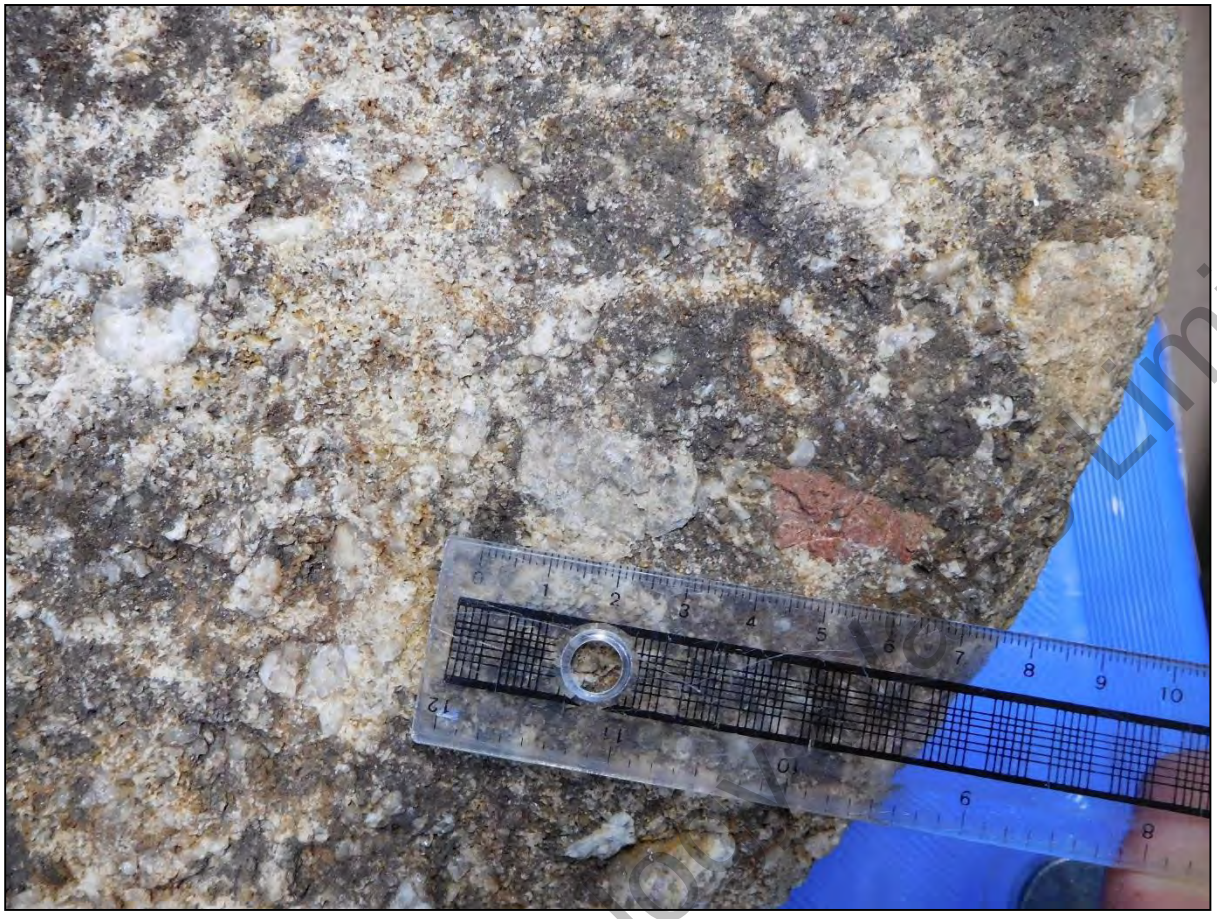

*Figure. 3: Specimen LMCE / 17 / EX (1041) 023 – large quartz and jasper pebbles within sandstone conglomerate*

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*Figure. 4: Specimen LMCE / 17 / EX (1041) 024 – weathered jasper (centre) and protruding quartz grains in weak carbonate cement*

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*Figure. 5: Specimen LMCE / 17 / EX (1041) 025 – sharp contact between medium-grained (bottom) and very coarse to granular material (top)*

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*Figure. 6: Specimen LMCE / 17 / EX (1041) 026 – overview of texture, showing voids within specimen (label size for scale: 7x5 cm)*

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## 7. Bibliography

British Geological Survey: The BGS Lexicon of Named Rock Units: http://www.bgs.ac.uk/lexicon/home.cfm (20/03/2018).

British Standards Institution, (2007). *Natural Stone Test Methods – Petrographic Examination:* BS EN 12407, BSI, London.

Campbell, S., Wood, M.,& Windley, B.F. 2014. *Footsteps through Time. The rocks and landscape of Anglesey explained*. Geomôn. Isle of Anglesey County Council, 193pp.

Davies, J. R. Somerville, I. D. Waters, C. N. & Jones, N. S. 2011. In: *A Revised Correlation of Carboniferous Rocks in the British Isles.* Geological Society, London, Special Publications Volume 26. pp 49 - 56.

Davies, J., 2018, Mapping building stones in churches across Wales: Part 5 – Caernarfonshire. *Welsh Stone Forum Newsletter,* no 15, @@-@@**.**

Edwards, N. 2013. *A Corpus of Early Medieval Inscribed Stones and Stone Sculptures in Wales Volume III*. North Wales. University of Wales Press, 524pp.

Geological Survey of England and Wales 1:50,000 geological map series, New Series. *Anglesey Sheets 92 & 93 and parts of sheets 94,105 & 106*. Solid edition. 1980.

Geological Survey of England and Wales 1:50,000 geological map series, New Series. *Anglesey Sheets 92 & 93 and parts of sheets 94,105 & 106*. Drift edition. 1974.

Greenly, E. 1919. *The Geology of Anglesey*, Memoirs of the Geological Survey of Great Britain. Vol I & II.

Waters, C.N. Somerville, I.D. Jones, N.S. & Cleal, C.J. 2011. *A revised correlation of Carboniferous rocks in the British Isles.* Geological Society special report; 26.

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# Llangefni Campus Extension – Environmental assessment

The excavation of the Early Medieval cemetery at Llandrillo Campus (Llangefni, Anglesey) produced 133 samples. 131 belonged to grave context and two were from non-grave related features – pit [1003], and [1115].

### Non-burial features

A minimum of 40l sample was collected for each non-grave feature, however, only 20l were sampled from context (1116) due to possible contamination (see below). The entire bulk of the samples obtained during the excavation of pits [1003], and [1115] were processed, using a flot sieve with a mesh size of 250-300 µm, and a residue mesh size of 0.5mm.

### Non-burial features. Preliminary environmental assessment

Sample <001> - context (1005)

[1003] was located 21m SSE from the cemetery area and was associated to industrial activity (Phase I). A 40l bulk sample was collected from fill (1005). The latter was initially interpreted as a metal working area as slag was found within this context.

Context (1005) was sampled for environmental assessment. The flot produced by this sample weighed 14g and contained a large quantity of charred grain (>100 items) along with fragments of charcoal. The grain appeared to represent a mixture of species, but further analysis via a specialist will be needed to confirm species identities. There is potential for smaller plant remains, such as weed seeds to be present.

Sample <086> - context (1116)

[1115] was located to the NE of the cemetery area and was truncated by grave cut [1086]. [1115] was interpreted as a pit belonging to Phase II industrial activity. A Samian ware fragment was recovered during the excavation of the pit.

A 20l sample was obtained from the fill of pit [1115]. Further sample collection was discouraged due to possible contamination issues. The sample was taken from the western region of the pit to avoid contamination with soils belonging to the fill of grave [1086]. Context (1116) produced a flot weighing 11g. Five potential charred cereal grains were recovered from this sample. Specialist analysis will be required to specify identity.

**Recommendations:** Pits [1003], and [1115] – alongside [1042] – are the only testimonies of non-burial activity in the area. It is therefore key to analyse the content of their flots, to be able to shed light into the function of these pits and their relationship to the cemetery**.**

Initial assessment of the samples taken from non-grave contexts has shown excellent potential for the recovery of charred plant remains. Further assessment of the remains by a specialist archaeobotanist is therefore recommended in order to assess the potential relationship between these features and the rest of the site and to provide an insight into to the availability and utilisation of local plant resources, agricultural activity and economic evidence from this period.

### Grave features - sample strategy

During the excavation burial contexts, a sample was taken from the areas surrounding the cranium, thorax, pelvis, and feet. The strategy for collecting hand samples differed according

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to their positioning. If the hands were placed on either the thorax or pelvis during burial, the hand sample was included within these samples. Where hands were not placed on the body itself, separate samples were taken. This strategy was taken to ensure that all small bones were retrieved where possible. Small bones from the hands and feet, such as phalanges and sesamoid bones, are frequently missed during excavation. By sampling these areas, bone retrieval is ensured.

Where possible, cranial remains were block lifted and samples were taken from the surrounding deposits to aid the retrieval of small bones, such as auditory ossicles. Additionally, after the block lifted crania was transported to the Caerphilly office, the soil within was sampled for the same reasons stated above.

Samples were taken from around the pelvis to ensure any foetal bones were retrieved. Additionally, the pelvis and thorax were sampled for the retrieval of any gut parasites, worms, or gallstones.

It was not generally necessary to sample areas surrounding the long bones unless there was a high level of fragmentation. Where this was the case, further samples were taken to ensure full recovery.

**Burial features. Preliminary environmental assessment**

The sum of the samples collected from human graves are being processed with the aim to acquire all the bone present in each grave and possible associated finds.

While it is necessary to highlight that grave fills do not necessarily present secure contexts from within which obtain environmental information, annotated results of the material obtained on flots will be produced to be able to select sub-samples to be analysed by a specialist.

**Recommendations:** around 60% of the samples taken from graves have been processed. It is therefore recommended that all remaining samples are floated, and a list of sub-samples is defined and sent for further analysis.

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# APPENDIX II:
# FIGURES

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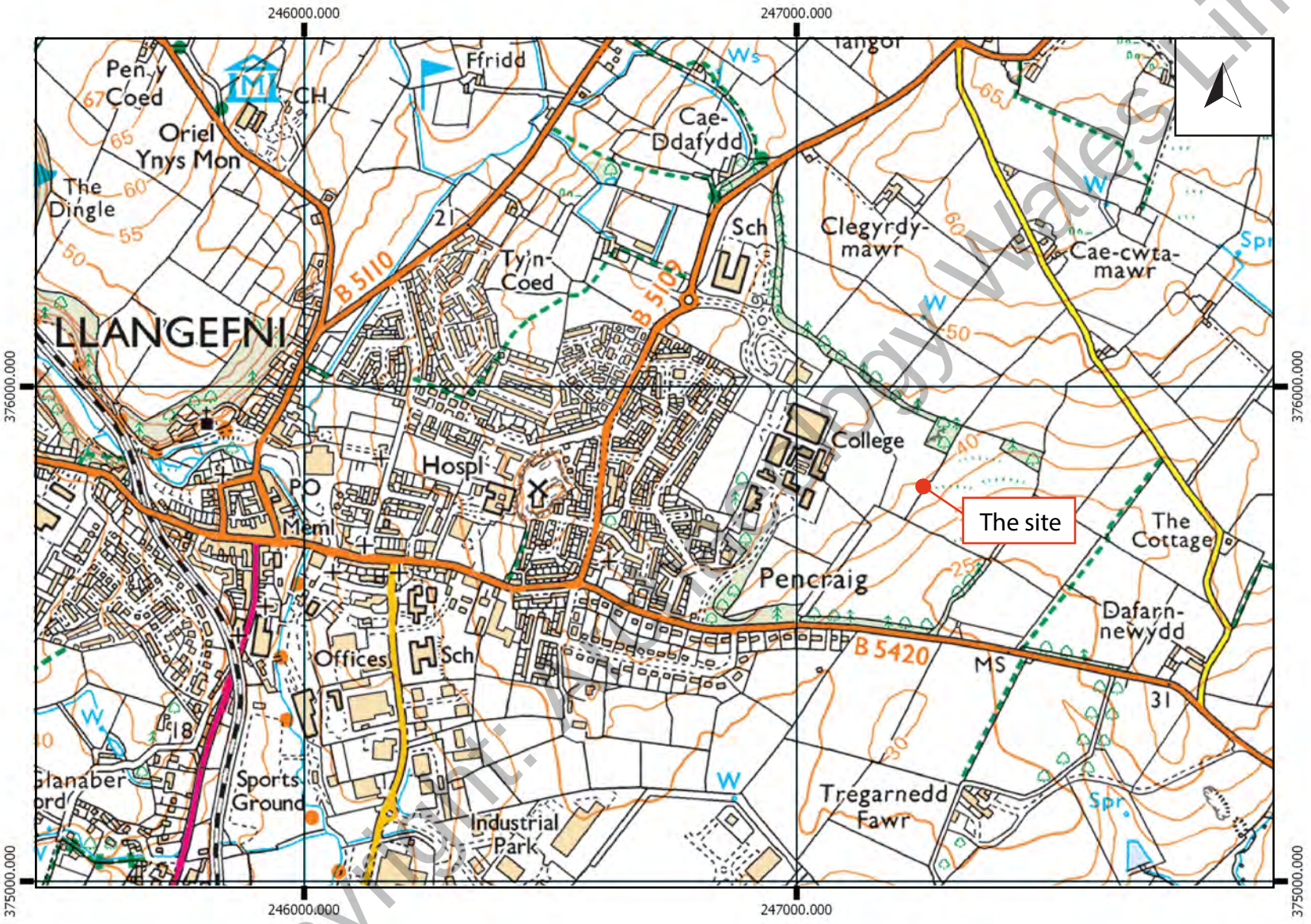


Figure 1. Site location

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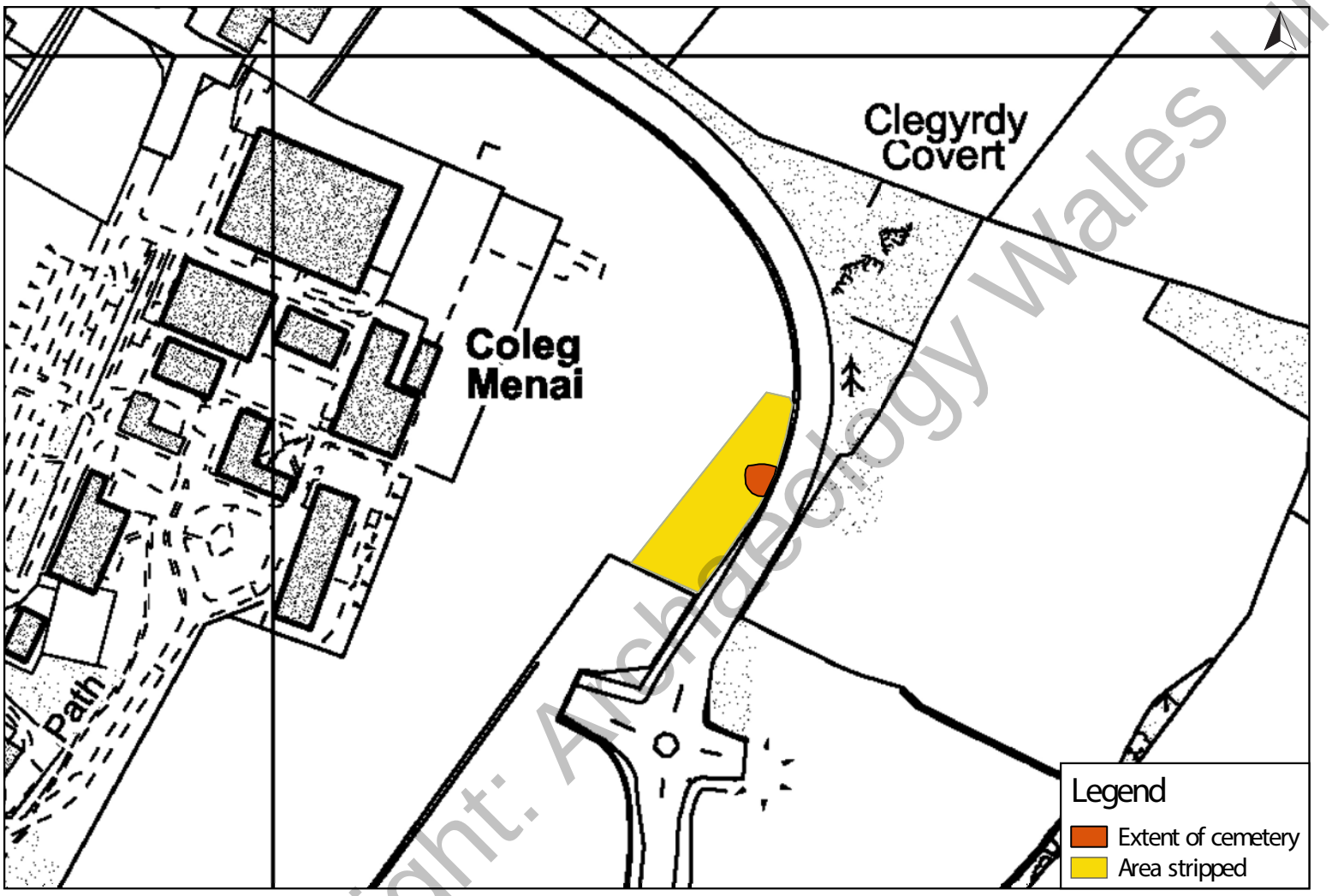


Figure 2. Location of cemetery.

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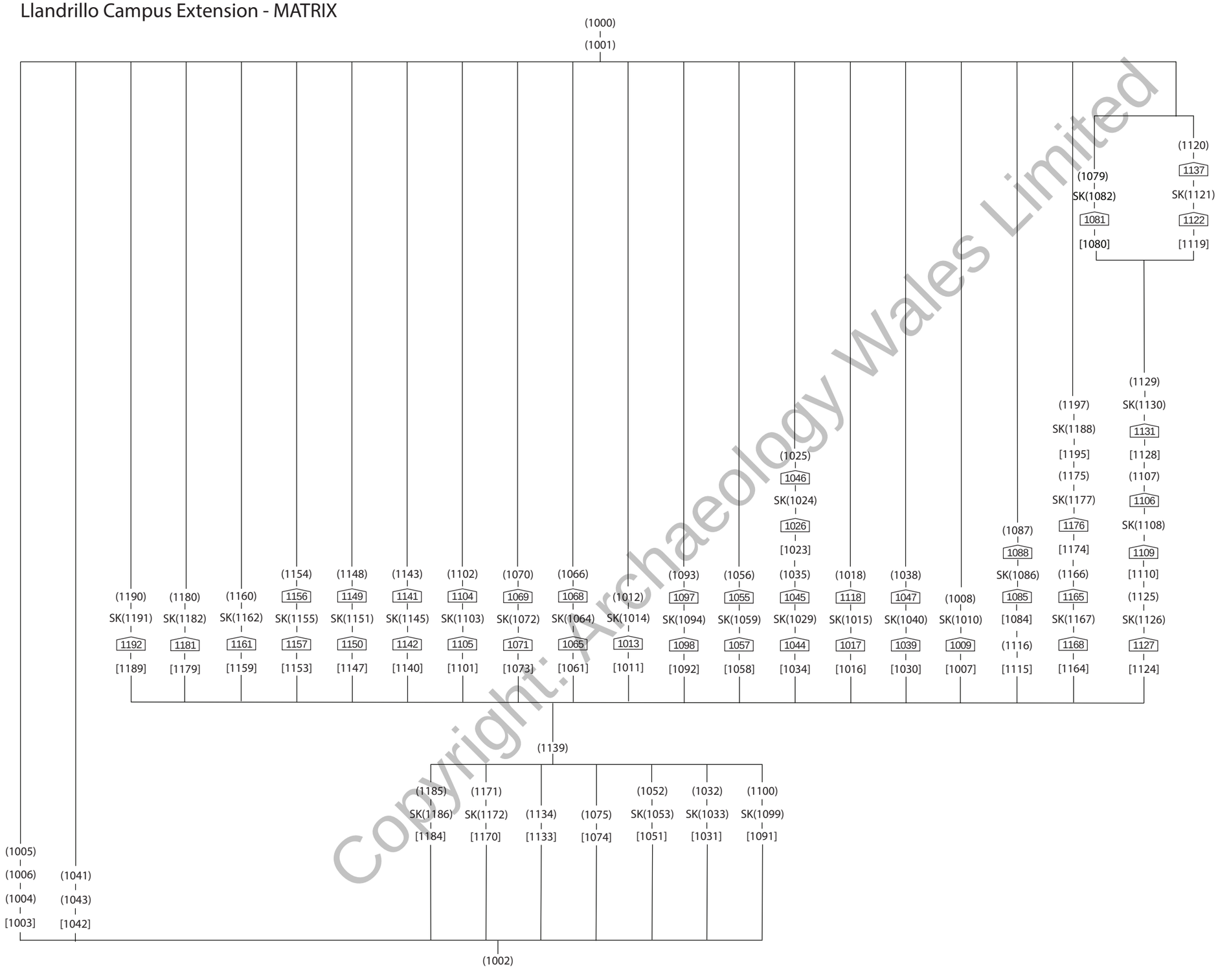
# Llandrillo Campus Extension - MATRIX

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**Job Title:** Llandrillo Campus Extension

**Drawing Title:** Site Matrix

**Date:** April 2018

**Figure 3**

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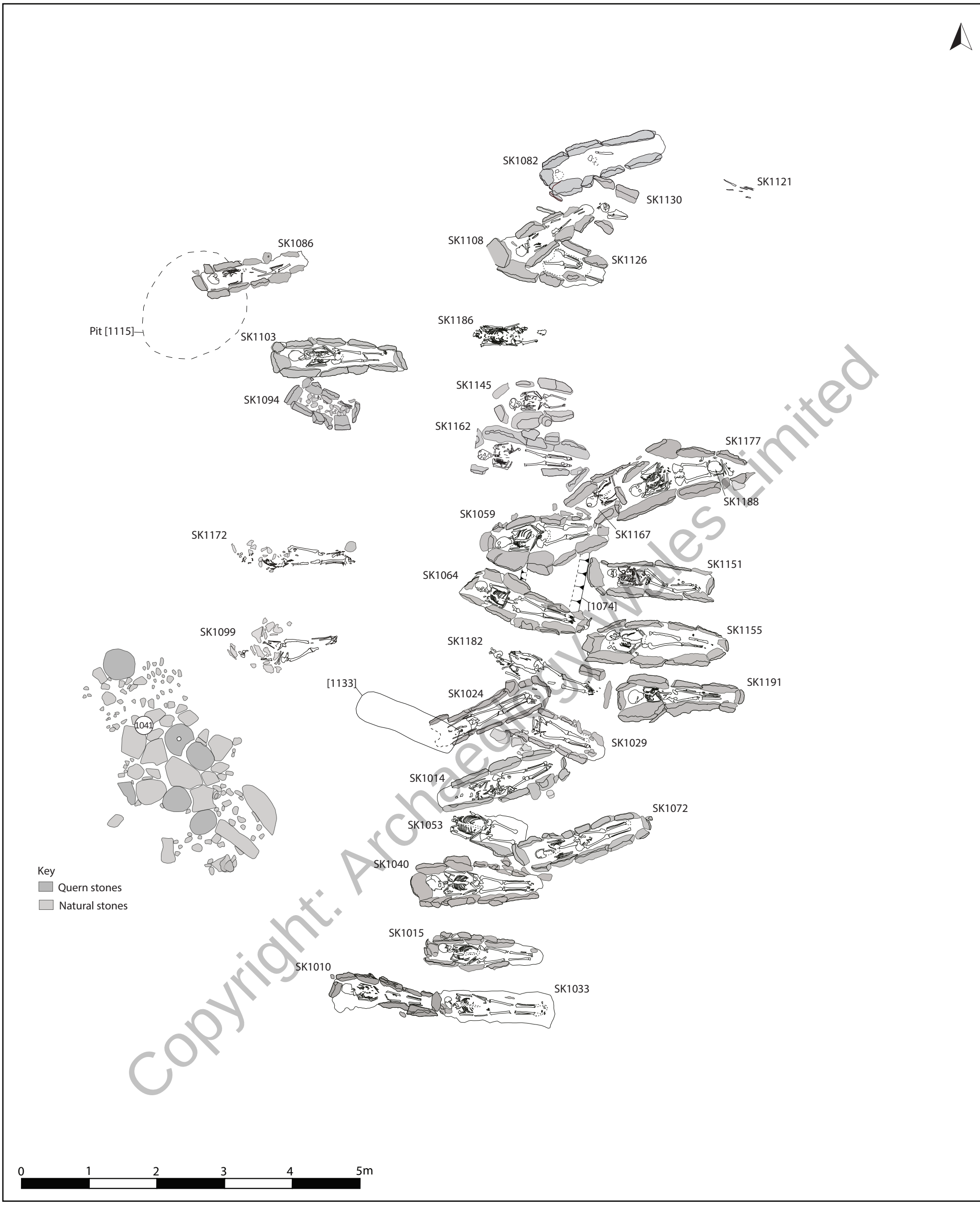


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Figure 4. Overall plan of the cemetry

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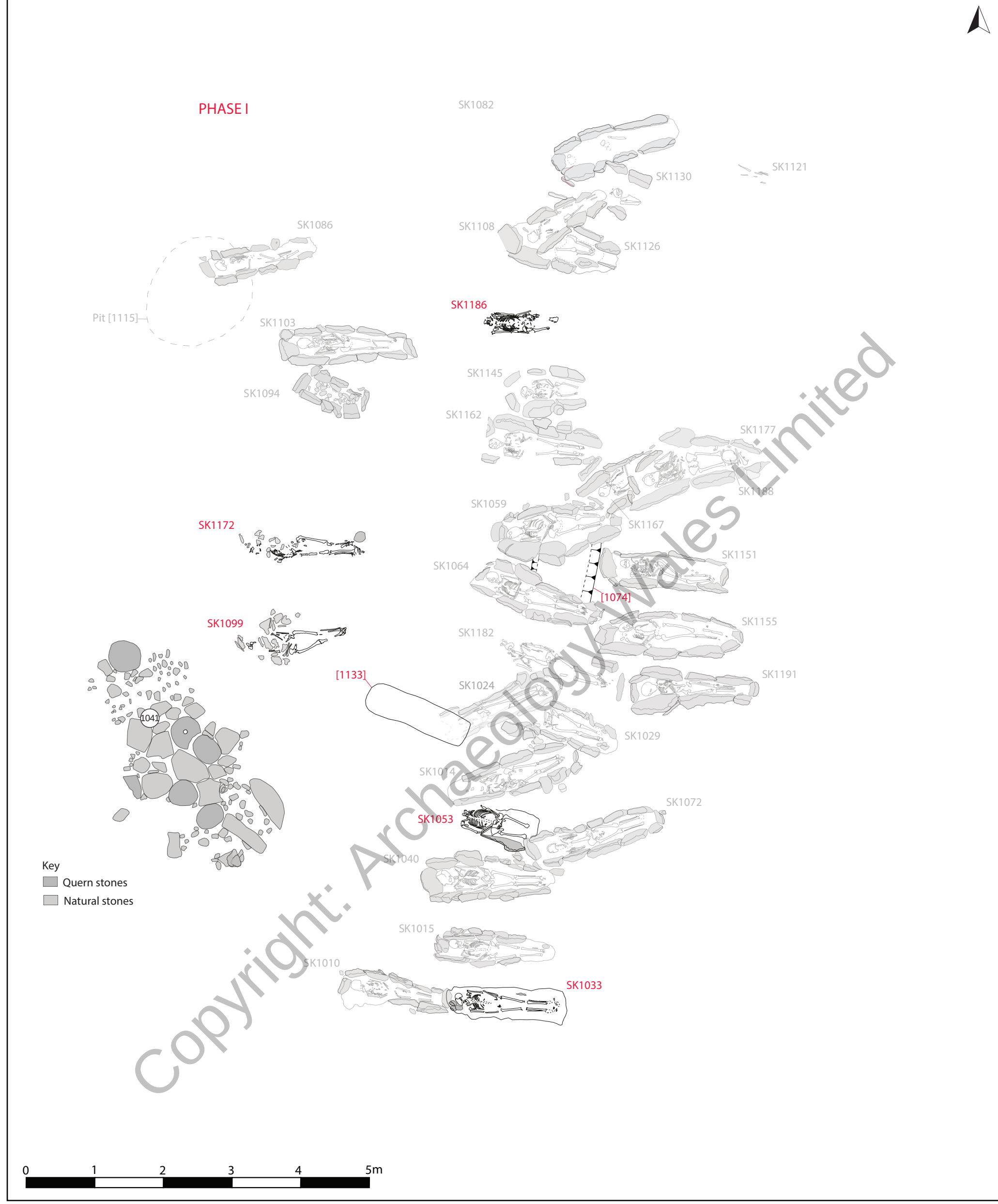


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Figure 5. Plan showing phase I of the cemetery

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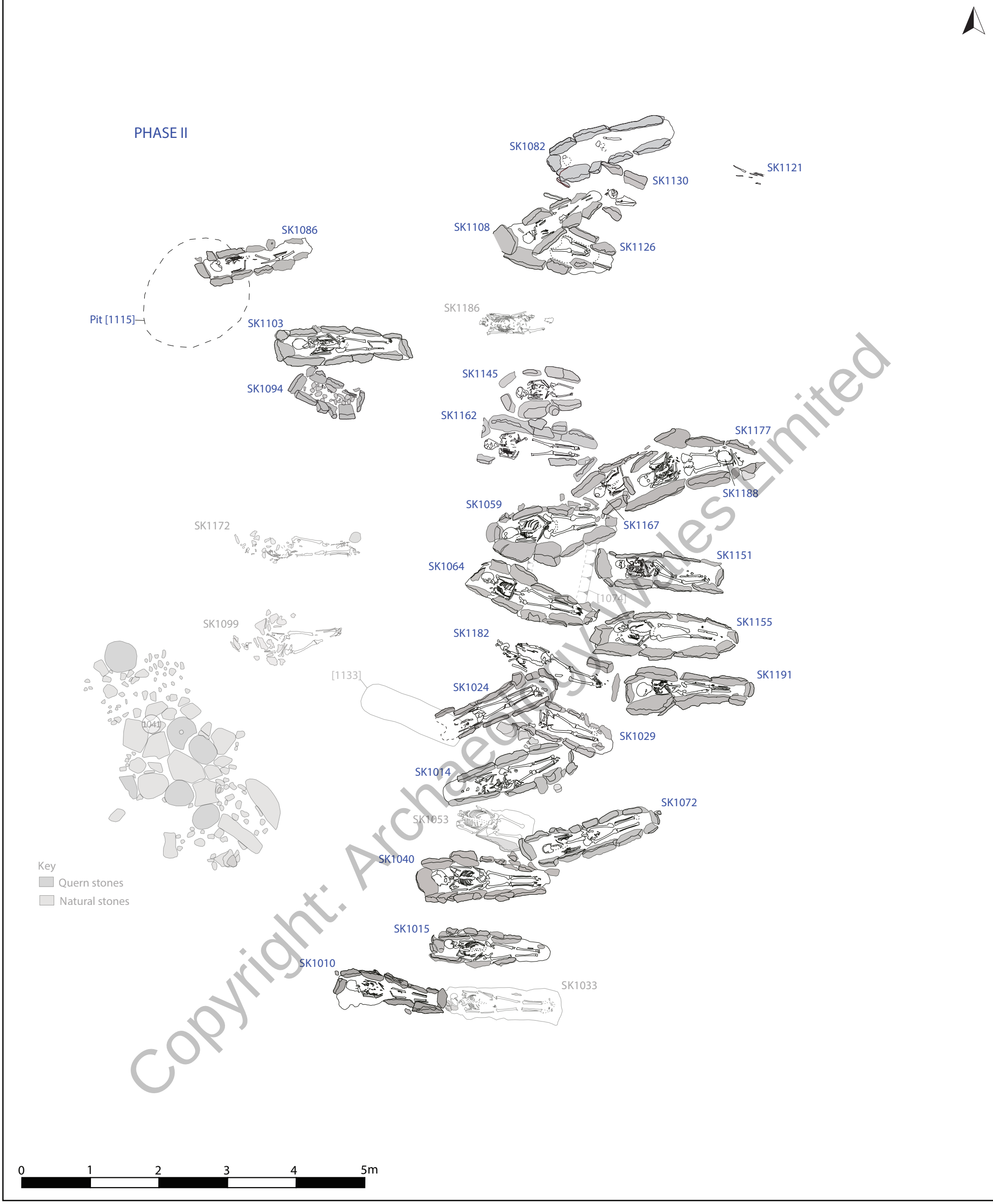


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Figure 6. Plan showing phase II of the cemetery

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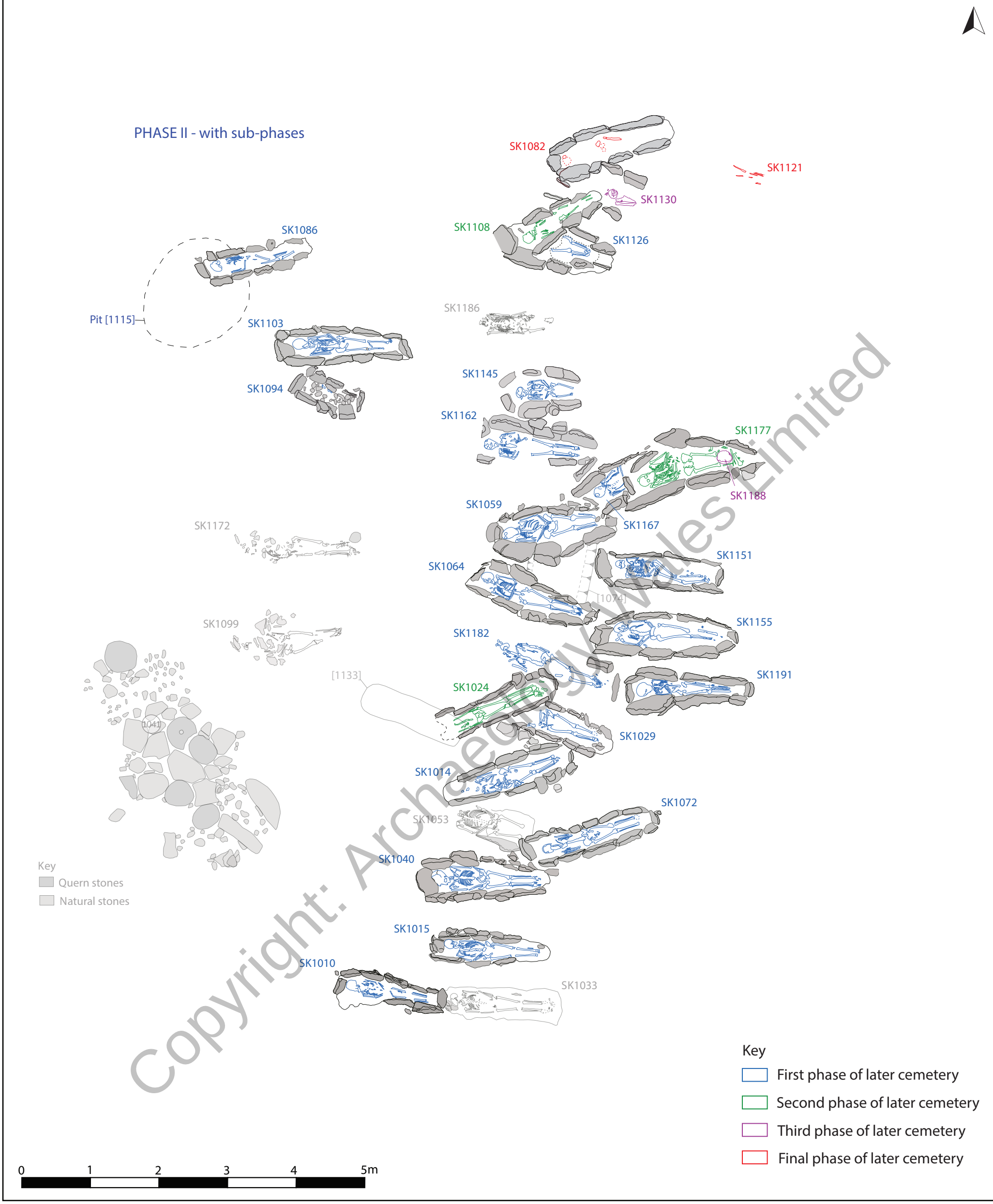


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Figure 7. Plan showing phase II with sub-phases of the later cemetery

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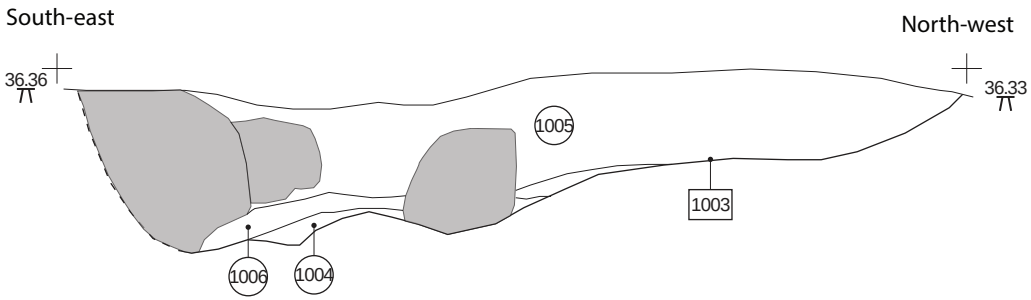
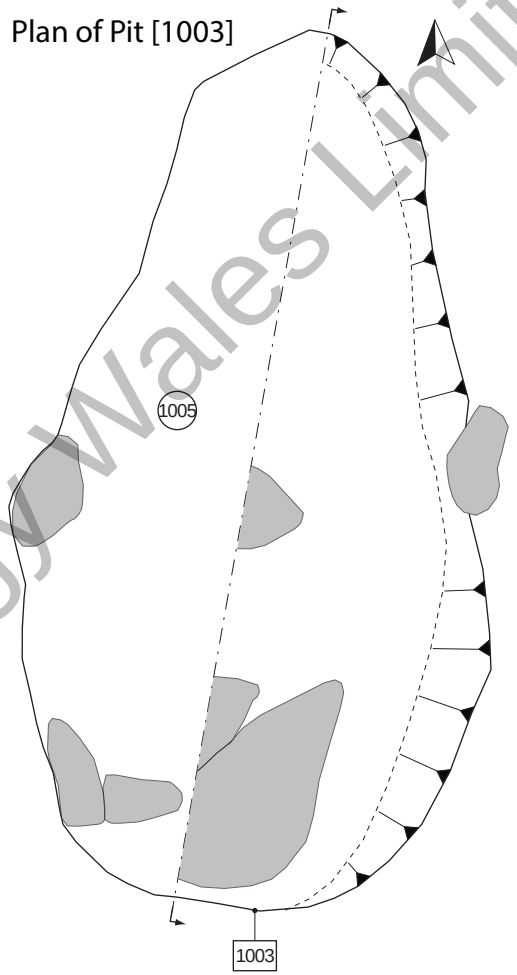
Section of Pit [1003]




Plan of Pit [1003]





Plan showing location of Pit [1003]

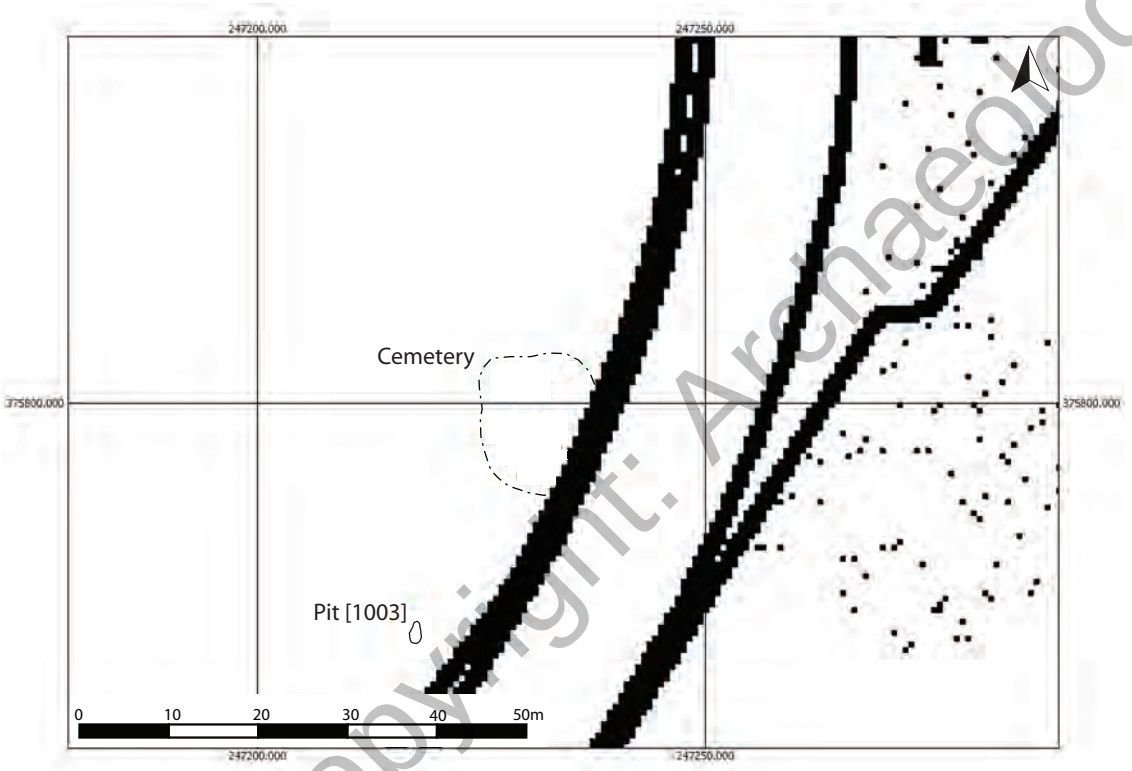



Figure 8
Plan, section and location plan of Pit [1003]

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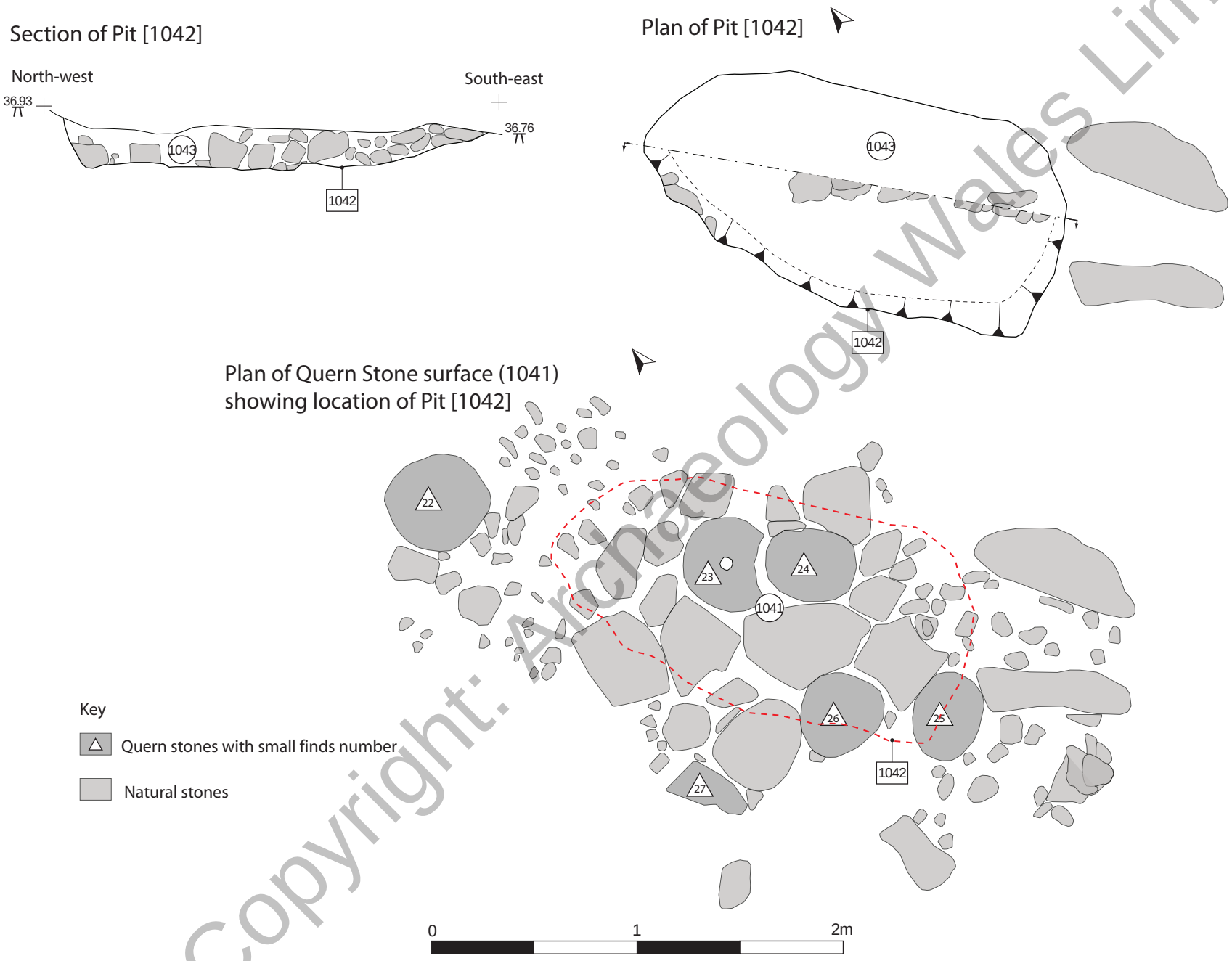


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Figure 9
Plan & section of Pit [1042] and plan of quern stone surface (1041) showing location of Pit [1042]

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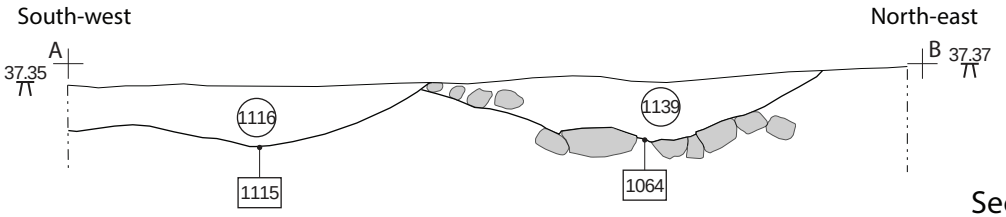
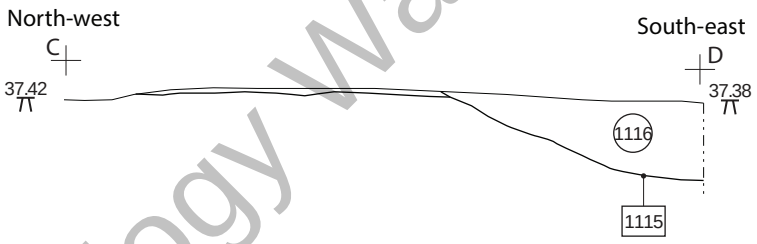
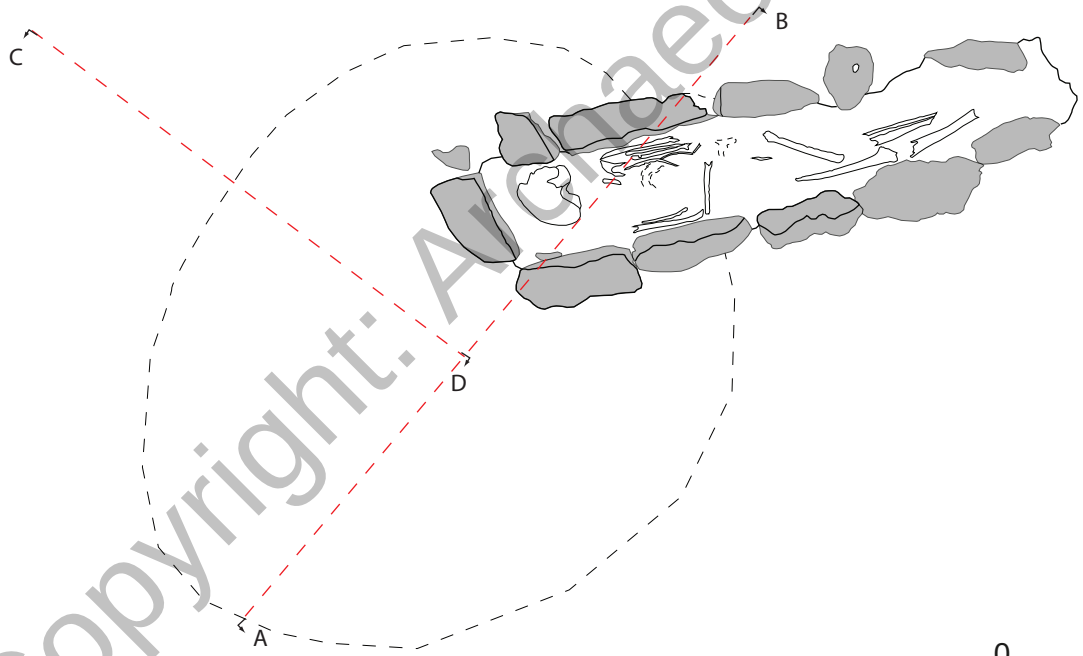
Section of Pit [1115] truncated by Grave cut [1064] of SK1086




Section of Pit [1115]




Plan of Pit [1115] truncated by Grave cut [1064] of SK1086





Note: all heights are metres above Ordnance Datum

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Figure 10
Sections and plan showing Pit [1115] truncated by Grave cut [1064]

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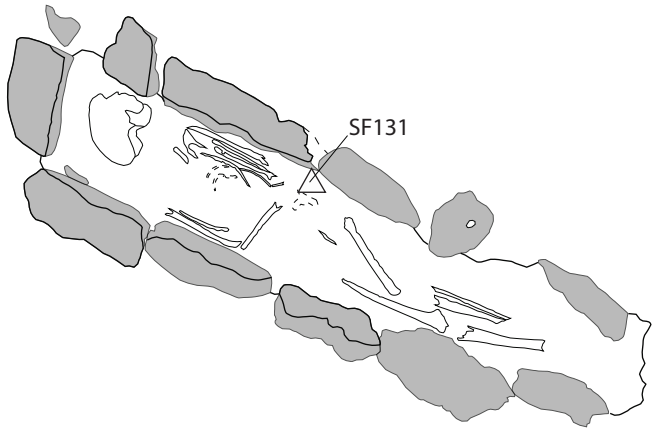
Plan of cist burial of SK1086 showing location of Small Find 131 (coin)




Plan of grave cuts [1061] of SK1064 and [1058] of SK1059 (both phase 2) showing location of Small Find 89 (brooch) within grave cut [1074] of SK1076 (phase 1)

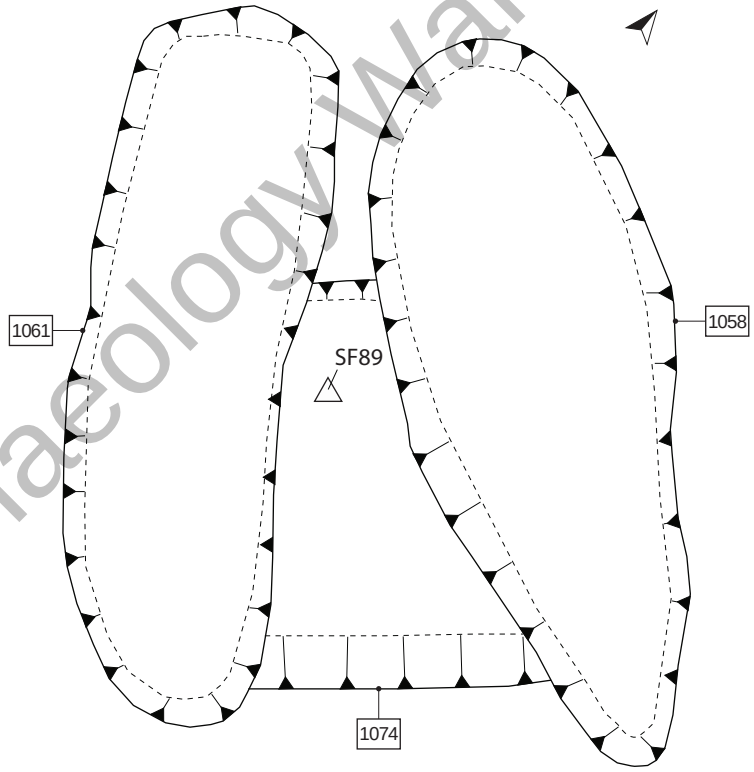



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Figure 11
Plans of graves showing location of Small Finds SF131 and SF89

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# APPENDIX III: PLATES

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Plate 1. Working shot of topsoil stripping. Looking NE

Plate 2. Stripping of site completed. Looking SW

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Plate 3. View of Pit [1003], looking ENE. Scale 2m

Plate 4. Earth cut grave of SK1186, looking W. Scale 1m

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Plate 5. Earth cut grave of SK1053, looking W. Scale 1m

Plate 6. Earth cut grave of SK1033, looking W. Scale 1m

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Plate 7. View of cut [1042] after excavation, looking SW. Scale 1m

Plate 8. View of Quernstone surface (1041) after excavation, looking NE. Scale 1m

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Plate 9. View of SK1015 exposed.

Plate 10. View of SK1040 with capstones *insitu,* looking SW. Scale 2m

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Plate 11. View of SK1029 exposed, looking SW. Scale 1m

Plate 12. Cut of grave corresponding to SK1040, looking W. Scale 2m

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Plate 13. View of SK1064 and SK1066, looking W. Scale 1m

Plate 14. View of SK1059, looking W.

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Plate 15. View of SK1094, looking SW. Scale 1m

Plate 16. Pre-excavation shot of SK1103. Looking N. Scale 1m

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Plate 17. Post-excavation view of SK1103, looking S. Scale 1m

Plate 18. View of SK1151, looking N.

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Plate 19. View of SK1191, looking W. Scale 1m

Plate 20. View of SK1086, looking W. Scale 1m

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Plate 21. View of SK1108, looking NW. Scale 1m

Plate 22. View of SK1177 and SK1188 (on the right), looking N.

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# APPENDIX IV:
# CONTEXT INVENTORY

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| Context number | Context type | Description |
|---|---|---|
| **1000** | Deposit | Topsoil covering the whole site. Dark orange brown. Frequent small angular and subangular stone inclusions. 0.10m-0.15m thick. |
| **1001** | Deposit | Subsoil. Dark/mid orange brown. Small subangular limestone inclusions. Depth is variable across site, maximum 0.08m thick. Stone lined graves mostly cut into this deposit. |
| **1002** | Deposit | Natural. Mid-yellow orange clay and bed rock (limestone). Earth cut burials are cut into this deposit. |
| **1003** | Cut | Cut of pit containing fills (1004), (1005), and (1006). |
| **1004** | Fill | Moderate, mid-red brown, silty clay. Fill of [1003]. |
| **1005** | Fill | Moderate, dark brown grey, silty clay. Fil of [1003]. |
| **1006** | Fill | Moderate, dark black brown, clay with charcoal inclusions. Fill of [1003]. |
| **1007** | Cut | Cut cist burial, containing (1008), (1009), and SK1010. |
| **1008** | Fill | Mid-grey brown, silty clay, grave fill. Fill of [1007]. |
| **1009** | Fill | Limestone lining of grave [1007]. |
| **SK1010** | Skeleton | Sub-adult burial. |
| **1011** | Cut | Cut of cist burial, containing (1012), (1013), and SK1014 |
| **1012** | Fill | Mid-grey brown, silty slay, grave fill. Fill of [1011]. |
| **1013** | Fill | Limestone lining of grave [1011]. |
| **SK1014** | Skeleton | Adult burial. |
| **SK1015** | Skeleton | Adult burial. |
| **1016** | Cut | Cut of cist burial, containing SK1015, (1017), and (1018). |
| **1017** | Fill | Limestone lining of grave [1016]. |
| **1018** | Fill | Soft, dark brown grey, silty soil grave fill. Fill of [1016]. |
| **1019** | Void | Void |
| **1020** | Group | Group which includes [1007], (1008), (1009), and SK1010. |
| **1021** | Group | Group which includes [1016], (1017), (1018), SK1015, and (1118). |
| **1022** | Group | Group which includes [1011], (1012), (1013), and SK1014. |
| **1023** | Cut | Cut of cist burial, containing SK1024, (1025), (1026), (1046). |
| **SK1024** | Skeleton | Sub-adult burial. |
| **1025** | Fill | Friable, dark orange brown grave fill. Fill of [1023]. |
| **1026** | Fill | Limestone lining of grave [1023]. |
| **1027** | Group | Group which includes [1023], SK1024, (1025), (1026), and (1046). |
| **1028** | | |
| **SK1029** | Skeleton | Adult burial. |
| **1030** | Cut | Cut of cist burial, containing (1038), (1039), SK1040, and (1047). |
| **1031** | Cut | Earth cut grave containing (1032), and SK1033. |
| **1032** | Fill | Lose, mid grey brown, silty clay, grave fill. Fill of [1031]. |
| **SK1033** | Skeleton | Adult burial. |
| **1034** | Cut | Cut of cist burial containing SK1029, (1035), (1044), and (1045). |

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| | | |
|---|---|---|
| **1035** | Fill | Friable, dark orange brown, grave fill. Fill of [1034]. |
| **1036** | | |
| **1037** | Group | Group which includes [1031], (1032), and SK1033. |
| **1038** | Fill | Moderate, dark grey brown, silty clay grave fill. Fill of [1030]. |
| **1039** | Fill | Limestone lining of grave [1030]. |
| **SK1040** | Skeleton | Adult burial. |
| **1041** | Deposit | Quernstone, stone surface. Fill of [1042]. |
| **1042** | Cut | Cut of pit. Filled by (1041), and (1043). |
| **1043** | Fill | Lose, mid-grey brown, silty clay. Fill of pit [1042]. |
| **1044** | Fill | Limestone lining of grave. Fill of [1034]. |
| **1045** | Fill | Limestone capstones of grave [1034]. |
| **1046** | Fill | Limestone capstones of grave [1023]. |
| **1047** | Fill | Limestone capstones of grave [1030]. |
| **1048** | Group | Group which includes SK1029, [1034], (1035), (1044), (1045). |
| **1049** | Void | Void |
| **1050** | Group | Group which includes [1030], (1038), (1039), (1040), and (1047). |
| **1051** | Cut | Cut of earth cut grave. Containing (1052), and (1053). |
| **1052** | Fill | Lose, dark grey brown, silty grave fill. Fill of [1051]. |
| **SK1053** | Skeleton | Adult burial. |
| **1055** | Fill | Conglomerate capstones of grave [1058]. |
| **1056** | Fill | Lose dark orangey brown, silty fill of grave [1058]. |
| **1057** | Fill | Limestone stone lining of grave [1058]. |
| **1058** | Cut | Cut of cist grave. Containing (1055), (1056), (1057), and SK1059. |
| **SK1059** | Skeleton | Adult burial. |
| **1060** | Group | Group which includes (1055), (1056), (1057), [1058], and SK1059. |
| **1061** | Cut | Cut of cist grave. Containing SK1064, (1065), [1066]. |
| **1062** | Void | Void. |
| **1063** | | |
| **SK1064** | Skeleton | Adult burial. |
| **1065** | Fill | Limestone lining of grave [1061]. |
| **1066** | Fill | Firm, dark brown grey, silty clay. Fill of grave [1061]. |
| **1067** | Group | Group including [1061], SK1064, (1065), (1066), (1068). |
| **1068** | Fill | Limestone capstone of grave [1061]. |
| **1069** | Fill | Limestone capstones of grave [1073]. |
| **1070** | Fill | Soft, dark orange brown, clay. Fill of grave [1073]. |
| **1071** | Fill | Limestone/conglomerate stone lining of grave [1073]. |
| **SK1072** | Skeleton | Adult burial |
| **1073** | Cut | Cut of grave containing (1069), (1070), (1071), and SK1072. |
| **1074** | Cut | Earth cut grave containing disarticulated fragments and fill (1075). |
| **1075** | Fill | Firm, mid-brown grey, silty clay. Fill of grave [1074]. |
| **SK1076** | Void | Void |
| **1077** | Group | Group including [1074], and (1075). |

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| | | |
|---|---|---|
| **1078** | Group | Group including (1069), (1070), (1071), SK1072, and [1073]. |
| **1079** | Fill | Firm, dark orange brown, clayey loam. Fill of [1080]. |
| **1080** | Cut | Cut of cist burial containing (1079), (1081), and SK1082. |
| **1081** | Fill | Limestone/ conglomerate stone lining of grave [1080]. |
| **SK1082** | Skeleton | Probable adult burial. |
| **1083** | Group | Group including (1079), [1080], (1081), SK1082. |
| **1084** | Cut | Cut of cist burial containing (1085), SK1086, (1087), (1088). |
| **1085** | Fill | Limestone stone lining of grave [1084]. |
| **SK1086** | Skeleton | Adult burial |
| **1087** | Fill | Firm, mid-brown grey, silty clay. Fill of grave [1084]. |
| **1088** | Fill | Limestone capstones of grave [1084]. |
| **1089** | Group | Group including [1084, (1085), SK1086, (1087), and (1088). |
| **1090** | Group | Group including SK1099, (1100), and [1091]. |
| **1091** | Cut | Cut of earth cut grave containing SK1099, and (1100). |
| **1092** | Cut | Cut of cist burial. Containing (1093), SK1094, (1097), (1098). |
| **1093** | Fill | Moderately lose, dark orange brown, silty grave fill. Fill of grave [1092]. |
| **SK1094** | Skeleton | Sub-adult burial. |
| **SK1095** | Void | Void |
| **1096** | Group | Group including [1092], (1093), SK1094, (1097), (1098). |
| **1097** | Fill | Limestone/ conglomerate capstones of [1092]. |
| **1098** | Fill | Limestone/ conglomerate stone lining of burial [1092]. |
| **SK1099** | Skeleton | Adult burial. |
| **1110** | Fill | Soft, dark orange brown, clayey loam. Fill of grave [1091]. |
| **1101** | Cut | Cut of cist burial. Containing (1102), SK1103, (1104), and (1105) |
| **1102** | Fill | Moderately lose, mid-orange brown silt. Fill of grave [1101]. |
| **SK1103** | Skeleton | Adult burial. |
| **1104** | Fill | Limestone/ conglomerate capstones of grave [1101]. |
| **1105** | Fill | Limestone/ conglomerate stone lining of grave [1101]. |
| **1106** | Fill | Limestone/ conglomerate capstones of grave [1110]. |
| **1107** | Fill | Soft, dark orange brown, clayey loam. Fill of grave [1110]. |
| **SK1108** | Skeleton | Adult grave. |
| **1109** | Fill | Limestone/ conglomerate lining of burial [1110]. |
| **1110** | Cut | Cut of cist burial. Filled by (1006), (1007), SK1008, and (1009). |
| **1111** | Group | Group including (1106), (1107), SK1108, (1109), and [1110]. |
| **1112** | Void | Void |
| **1113** | Void | Void |
| **1114** | Group | Group including [1101], (1102), SK1103, (1104), (1105). |
| **1115** | Cut | Cut of Roman pit. Filled by (1116). |
| **1116** | Fill | Firm, dark grey black, clay silts. Fill of pit [1115]. |

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| | | |
|---|---|---|
| **1117** | Group | Group including (1069), (1070), (1071), SK1072, and [1073]. |
| **1118** | Fill | Limestone capstones of burial [1016]. |
| **1119** | Cut | Cut of cist burial containing (1120), SK1121, (1122), and (1137). |
| **1120** | Fill | Soft, orange brown, clay. Fill of [1119]. |
| **SK1121** | Skeleton | Probable adult burial |
| **1122** | Fill | Limestone/ conglomerate lining of cist burial [1119]. |
| **1123** | Group | Group including [1119], (1120), SK1121, (1122), and (1137). |
| **1124** | Cut | Cut of cist burial containing (1125), SK1126, and (1127). |
| **1125** | Fill | Friable, dark orange brown, clayey loam. Fill of [1124]. |
| **SK1126** | Skeleton | Adult |
| **1127** | Fill | Limestone/ conglomerate lining of grave [1124]. |
| **1128** | Cut | Cut of cist burial containing (1129), and (1131). |
| **1129** | Fill | Lose, dark orange brown, silt. Fill of [1128]. |
| **SK1130** | Void | Void |
| **1131** | Fill | Limestone lining of burial [1128]. |
| **1132** | Group | Group including [1128], (1129), and (1130). |
| **1133** | Cut | Cut of earth cut containing (1134) |
| **1134** | Fill | Soft, mid-grey brown, clay. Fill of grave [1133]. |
| **1135** | | |
| **1136** | Group | Group including [1133], and (1134). |
| **1137** | Fill | Limestone/ conglomerate capping of grave [1119]. |
| **1138** | Group | Group including [1124], (1125), SK1126, and (1127). |
| **1139** | Deposit | Firm, light brown orange, silty sand. Deposit covering whole site and has cist burials cut into it. |
| **1140** | Cut | Cut of cist burial containing (1141), (1142), (1143), SK1145. |
| **1141** | Fill | Limestone capping of grave [1140]. |
| **1142** | Fill | Limestone/ conglomerate lining of grave [1140]. |
| **1143** | Fill | Moderately lose, dark grey brown silt. Fill of grave [1140]. |
| **1144** | | |
| **SK1145** | Skeleton | Adult burial. |
| **1146** | Group | Group including [1140], (1141), (1142), (1143), and SK1145. |
| **1147** | Cut | Cut of cist burial containing (1148), (1149), (1150), and SK1151. |
| **1148** | Fill | Firm, dark grey brown, silt. Fill of grave [1147]. |
| **1149** | Fill | Limestone capstones of grave [1147]. |
| **1150** | Fill | Limestone lining of grave [1147]. |
| **SK1151** | Skeleton | Adult burial |
| **1152** | Group | Group including [1147], (1148), (1149), (1150), and SK1151. |
| **1153** | Cut | Cut of cist burial containing (1154), SK1155, (1156), and (1157). |
| **1154** | Fill | Moderately lose dark grey brown silt. Fill of grave [1153]. |
| **SK1155** | Skeleton | Adult burial. |
| **1156** | Fill | Limestone capstones of grave [1153]. |

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|---|---|---|
| **1157** | Fill | Limestone/ conglomerate lining of grave [1153]. |
| **1158** | Group | Group including [1153], (1154), SK1155, (1156), and (1157). |
| **1159** | Cut | Cut of cist burial containing (1160), (1161) and SK1162. |
| **1160** | Fill | Slightly compact, dark grey brown, silt, Fill of grave [1159]. |
| **1161** | Fill | Limestone/ conglomerate lining of grave [1159]. |
| **SK1162** | Skeleton | Adult burial |
| **1163** | Group | Group including [1159], (1160), (1161), and SK1162. |
| **1164** | Cut | Cut of cist burial containing (1165), (1166), SK1167, and (1168). |
| **1165** | Fill | Limestone capstones of grave [1164]. |
| **1166** | Fill | Slightly compact, dark grey orange, silt. Fill of grave [1164]. |
| **SK1167** | Skeleton | Adult burial. |
| **1168** | Fill | Limestone lining of cist burial [1164]. |
| **1169** | Group | Group including [1164], (1165), (1166), SK1167, and (1168). |
| **1170** | Cut | Cut of earth cut grave containing (1171), and S1172. |
| **1171** | Fill | Moderately lose, dark grey brown silt. Fill of grave [1170]. |
| **SK1172** | Skeleton | Adult burial |
| **1173** | Group | Group including [170] (1171), and SK1172. |
| **1174** | Cut | Cut of cist burial containing (1175), (1176), and SK1177. |
| **1175** | Fill | Moderately lose, dark grey orange, silt. Fill of grave [1174]. |
| **1176** | Fill | Lime stone lining of grave [1174]. |
| **SK1177** | Skeleton | Adult burial. |
| **1178** | Group | Group including [174], (1175), (1176), and SK1177. |
| **1179** | Cut | Cut of cist burial containing (1180), (1181) and SK1182. |
| **1180** | Fill | Moderately compact, dark orange grey silt. Fill of grave [1179] |
| **1181** | Fill | Limestone lining of cist burial [1179]. |
| **SK1182** | Skeleton | Adult burial. |
| **1183** | Group | Group including [1179], (1180), (1181), and SK1182. |
| **1184** | Cut | Cut of earth cut grave containing (1185), and SK1186. |
| **1185** | Fill | Firm, dark grey brown, silt. Fill of grave [1184]. |
| **SK1186** | Skeleton | Adult burial. |
| **1187** | Group | Group including [1184], (118) and SK1186. |
| **SK1188** | Skeleton | Adult burial. |
| **1189** | Cut | Cut of cist burial containing (1190), SK1191, and (1192). |
| **1190** | Fill | Firm, dark grey orange, silt. Fill of grave [1189]. |
| **SK1191** | Skeleton | Adult burial. |
| **1192** | Fill | Limestone lining of burial [1189]. |
| **1193** | Group | Group including [1189], (1190), SK1191, and (1192). |
| **1194** | Void | Void |
| **1195** | Cut | Cut of earth cut burial containing SK1188, and (1196). |
| **1196** | Group | Group including SK1188, [1195], and (1197). |
| **1197** | Fill | Firm, dark grey brown, silt. Fill of grave [1195]. |
| **SK1198** | Void | Void |

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| | | |
|---|---|---|
| **SK1199** | Void | Void |
| **SK1200** | Void | Void |

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# APPENDIX V:
# FINDS INVENTORY

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| Context number | Description | Animal bone | | Pottery | | Roman pottery | | Fe Object | | Slag | | Flint | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Number | Weight | Number | Weight | Number | Weight | Number | Weight | Number | Weight | Number | Weight |
| **1001** | Subsoil. Dark/mid orange brown. Small subangular limestone inclusions. Depth is variable across site, maximum 0.08m thick. Stone lined graves mostly cut into this deposit. | 5 | 10g | | | | | | | | | | |
| **1005** | Moderate, dark brown grey, silty clay. Fill of [1003]. | 7 | 44g | | | | | | | 3 | 30g | | |
| **1008** | Mid-grey brown, silty clay, grave fill. Fill of [1007]. | 17 | 20g | | | | | | | | | | |
| **1013** | Limestone lining of grave [1011]. | 21 | 35g | | | | | | | | | | |
| **1015** | | 8 | 56g | | | | | | | | | | |
| **1025** | Friable, dark orange brown | 2 | 17g | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | grave fill. Fill of [1023]. | | | | | | | | | | | | |
| **1032** | Lose, mid-grey brown, silty clay, grave fill. Fill of [1031]. | | | | | | | 17 | 21g | | | | |
| **1038** | Moderate, dark grey brown, silty clay grave fill. Fill of [1030]. | 22 | 45g | | | | | | | | | | |
| **1043** | Loose, mid-grey brown, silty clay. Fill of pit [1042]. | | | | | 1 | 5g | | | | | | |
| **1052** | Loose, dark grey brown, silty grave fill. Fill of [1051]. | | | 1 | 2g | 1 | 2g | | | | | | |
| **1056** | Lose dark orange brown, silty fill of grave [1058]. | 4 | 25g | | | | | | | | | 1 | 4g |
| **1066** | Firm, dark brown grey, silty clay. Fill of grave [1061]. | 2 | 19g | | | | | | | | | | |
| **1075** | Firm, mid-brown grey, silty clay. Fill of grave [1074]. | 1 | 17g | | | | | 1 | 21g | | | | |
| **1076** | | | | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1079** | Firm, dark orange brown, clayey loam. Fill of [1080]. | 5 | 15g | | | | | | | | | | |
| **1087** | Firm, mid-brown grey, silty clay. Fill of grave [1084]. | | | | | | | | | | | 1 | 2g |
| **1093** | Moderately loose, dark orange brown, silty grave fill. Fill of grave [1092]. | 4 | 13g | | | | | | | | | | |
| **1100** | Soft, dark orange brown, clayey loam. Fill of grave [1091]. | | | | | | | 3 | 1g | | | | |
| **1102** | Moderately lose, mid-orange brown silt. Fill of grave [1101]. | 12 | 20g | | | | | | | | | | |
| **1107** | Soft, dark orange brown, clayey loam. Fill of grave [1110]. | 4 | 17g | | | | | | | | | | |
| **1116** | Firm, dark grey black, clay silts. Fill of pit [1115]. | | | | | 1 | 4g | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1120** | Soft, orange brown, clay. Fill of [1119]. | | | 1 | 3g | | | | | | | | |
| **1139** | Firm, light brown orange, silty sand. Deposit covering whole site and has cist burials cut into it. | | | 1 | 7g | | | 2 | 306g | | | | |
| **1143** | Moderately loose, dark grey brown silt. Fill of grave [1140]. | 3 | 8g | | | | | | | | | | |
| **1160** | Slightly compact, dark grey brown, silt, Fill of grave [1159]. | 3 | 15g | | | | | | | | | | |
| **1166** | Slightly compact, dark grey orange, silt. Fill of grave [1164]. | 4 | 16g | | | | | | | | | | |
| **1197** | Firm, dark grey brown, silt. Fill of grave [1195]. | 1 | 6g | | | | | | | | | | |
| **Unstratified** | | 98 | 345g | | | | | | | | | | |

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# APPENDIX VI:
# WRITTEN SCHEME OF INVESTIGATIONS

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Revealing the past, informing the future

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# WRITTEN SCHEME OF INVESTIGATION

# FOR AN ARCHAEOLOGICAL EXCAVATION AT LLANGEFNI COLLEGE CAMPUS SITE (ANGLESEY)

**Prepared for:**

**Grŵp Llandrillo Menai (GLLM)**

**Planning Reference Number: 34C304K/1/EIA/ECON**

**Project No: 2538**

**17th July 2017**

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## Contents Page



Figure 1. Site location

Figure 2. Detailed plan with location of Site 6.

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## *Summary*

*This Written Scheme of Investigation (WSI) details a programme of archaeological excavation to be undertaken by Archaeology Wales at the request of Grŵp Llandrillo Menai (GLLM).*

*The excavation, and will be undertaken prior to the commencement of ground works associated with the proposed development of a new engineering centre (NEC) and a car park to the east of the development (Site 6), associated to Llangefni campus, Penmynnyd Road, Llangenfi, LL77 7H4 (SH4715875762).The associated Planning Reference No. is 34C304K/1/EIA/ECON.*

*A previous archaeological evaluation defined to target anomalies observed during a magnetometer survey, and a ground penetrating radar survey (Stratascan 2016; Parry et al 2017), revealed the remains of an Early Medieval cemetery within the boundaries of the development area. This site had already been documented during a Watching Brief associated to the construction of the Llangefni Link Road.*

*Given the bone preservation obtained from this site and its potential to inform research, the cemetery has been considered to be of national importance. As result, GAPS has requested the full excavation of the cemetery as well as the strip and excavation of features that may be encountered within Site 6.*

*All work will be undertaken in accordance with the standards and guidelines of the Chartered Institute for Archaeologists (2014).*


## 1. Introduction and planning background

This WSI details the methodology for a programme of archaeological excavation to be undertaken in association with the proposed development of a new engineering centre (NEC) and a car park to the east, associated to Llangefni campus, Penmynnyd Road, Llangenfi, LL77 7H4 (SH4715875762) (Figure 1 and 2). The associated Planning Reference No. is 34C304K/1/EIA/ECON.

The development site (Site 6) represents one of the 6 areas investigated in previous stages of investigation which included non-intrusive techniques as well as an archaeological evaluation (see Stratascan 2016; Parry et al 2017) (Figure 2). The latter was carried out by cutting 41 evaluation trenches targeting the results obtained during a magnetometer survey. Particular attention was placed to the area east of Site 6 as it lies adjacent to an Early Medieval cemetery first revealed during the construction of the Llangefni Link Road. Three trenches were located within this area in view of the results obtained during a ground penetrating radar survey.

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The evaluation carried out by Archaeoleg Brython Archaeology revealed 15 graves, including long cists and simple pit graves. This stage of investigations led to estimate that a large proportion of the cemetery falls within the area selected for the construction of the new engineering centre (NEC), and most likely within the footprint for the car park located to the east. Furthermore, the remains of a possible corn dryer, and finds dating to prehistoric and Roman times were obtained during the aforementioned archaeological intervention.

Given the national importance of the find, GAPS has requested a new stage of investigations focused on the excavation of the cemetery and other archaeological features encountered during the strip of Site 6.

This WSI has been prepared by Irene Garcia Rovira, Project Officer, Archaeology Wales Ltd (henceforth - AW) at the request of Grŵp Llandrillo Menai (GLLM). The project will be managed by Mark Houliston, MCIfA (AW Company Director). The fieldwork will be supervised by Chris Smith MCIfA (Archaeology Wales). The site osteoarchaeologist will be Caroline Sims.

The methodology set out in this WSI has been agreed with GAPS in its capacity as archaeological advisors to Isle of Anglesey County Council. GAPS has recommended that an archaeological excavation of the development area is undertaken prior to the commencement of ground works.

The purpose of the archaeological excavation is to provide the local planning authority with sufficient information regarding the nature of archaeological remains on the site of the development, the requirements for which are set out in Planning Policy (revised edition 9, November 2016), Section 6.5, and TAN24. The work is to ensure that all buried artefacts and deposits are fully investigated and recorded if they are disturbed or revealed as a result of activities associated with the development.

All work will be undertaken to the standards and guidance set by the Chartered Institute for Archaeologists (2014). AW is a Registered Organisation with the CIfA.

## 2. Site Description

The development area measures *circa* 39,250 m2 and contains parts of the existing campus and land to the east of it. The area is bounded by Llangefni Link Road to the east. It is generally characterised by improved grassland, however, it also contains a region heavily disturbed land by heavy plant training associated with the college. The topography of the development site drops from the west to the east, ranging from 44m to 36m AOD.

The underlying geology is defined by the Clwyd Limestone Group. Most of the area to the east of the development is characterised by sedimentary rock formed during the Carboniferous period, while to the west the geology is to some extent different

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presenting sandstone and conglomerates. The superficial soils are defined as Till, Devensian Diamicton formed during the Quaternary period (BGS 2017).

## 3. Archaeological background

A first comprehensive study of the archaeological background of the area was related to the construction of sections 1 and 2 of Llangefni Link Road. A Desk Based Assessment (AMEC 2014) and a subsequent stage of archaeological investigations - including a geophysical survey and an archaeological evaluation (see ASDU 2014; WA 2014) – revealed little potential for archaeology in the area. However, this view changed significantly when an Early Medieval cemetery was found during a Watching Brief centred at SH47237579.

The results obtained during the work relating to the construction of the Llangefni Link Road led to the recommendation of archaeological investigations in advance of the expansion of Llangefni Campus. An initial stage of non-intrusive investigations was carried out in Areas 4, 5 and 6 (see Parry et al 2017; Stratascan 2016). Ground penetrating radar was used as a technique within the eastern extreme of Area 6 to inform about the extent of the Early Medieval cemetery. This stage of investigations was followed by an archaeological evaluation in which more than 15 graves were revealed, allowing the estimation of the extent of the cemetery within the boundaries of the proposed development site. This stage of investigations also led to the discovery of remains of a possible Bronze Age burnt mound; a potential corn dryer and of finds of prehistoric and early historic chronologies.

## 4. Objectives

This WSI sets out a program of works to ensure that the archaeological excavation will meet the standard required by The Chartered Institute for Archaeologist's *Standard and Guidance for Archaeological Excavation (2014).*

*Archaeological Excavation*

The objective of the proposed excavation is to preserve, by record, detailed information on all archaeological deposits in the area of the proposed development, prior to their likely destruction as a consequence of the development. Overburden and modern deposits will be removed by mechanical excavator equipped with a toothless bucket under archaeological supervision. All archaeological deposits, horizons and artefacts encountered will be recorded and removed stratigraphically by the excavation team.

An assessment report will be produced that will provide a detailed account of all the archaeological work undertaken. Sufficient desk-top research will be undertaken to

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ensure that the results of this work are properly understood, interpreted and reported.

The report will include a comprehensive assessment of the historic context within which the archaeological evidence rests and will aim to highlight any relevant research issues within regional, national and, if relevant, international research frameworks. A full report will be produced following agreement with GAPS.

### 4.1. Site Specific Research Aims

It is important to recognize that whilst primarily designed to mitigate impacts, developer-led archaeology is also regarded as research activity with an academic basis, the aim of which is to add to the sum of human knowledge. Curators recognize the desirability of incorporating agreed research priorities as a means of enhancing the credibility of the development control process, ensuring cost-effectiveness and legitimately maximizing intellectual return.

A research framework for the archaeology of Wales has been produced (2011-2014) and currently in the process of review. The relevant research aims specified in the document have helped outlining the strategy to be used during the excavation of the Early Medieval cemetery known to exist within the boundaries of the development site.

The Research framework for Wales indicates the need to produce better understandings of Early Medieval activity in the region; a situation that can begin to change with the results obtained through excavation and full analysis of assemblages of sites that fall within these chronologies in the aforementioned region.

Among the recommendations for further work stated within the Research Framework it is noted that:

- There is a need for the identification and analysis of environmental samples, with a particular emphasis on pollen sampling.
- It is recommended that efforts are placed at obtaining suitable material for C14 dating from secure contexts. In order to maximise our understanding of the lifespan of cemetery sites, C14 results should be examined using Bayesian methods.
- There is a need to improve our understanding of palaeopathologies, diet and provenance through suitable analysis (e.g. isotope analysis) of the skeletal material of Welsh assemblages falling within Early Medieval chronologies.

The results obtained through the excavation of the cemetery known to exist within the development boundaries can help shedding light into the aforementioned themes. Furthermore, the results obtained during excavation and post-excavation stages should be compared with other sites of similar nature found in the Isle of Anglesey (e.g. Tywyn-y-Capel; Llanbedrgoch and Llaniestyn).

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Broader themes are also to be addressed as follows:

- The changing nature of funerary activity across different historical periods.
- Patterns of landscape occupation in North West Wales and, more precisely in the Isle of Anglesey.
- Novel information regarding human activity on the aforementioned area during prehistoric and early historic times.

# 5. Timetable of works

## 5.1. Fieldwork

The programme of mitigation will be undertaken prior the commencement of ground works associated with the proposed development. The work is proposed to start in 31st of July 2017. Archaeology Wales will update GAPS with the exact date. The duration of the work is of 7 weeks.

## 5.2. Report delivery

The assessment report will be submitted to Grŵp Llandrillo Menai (GLLM), and to GAPS within three months of the completion of the fieldwork. A copy of the report will also be sent to the regional HER. A final report containing analysis and results of the bone assemblage obtain from this stage of investigations and the previous archaeological evaluation will be produced following agreement with GAPS.

# 6. Fieldwork

## 6.1. Detail

*Archaeological excavation*

The work will be undertaken to meet the standard required by The Chartered Institute for Archaeologist's *Standard and Guidance for Archaeological Excavation* (2014).

The archaeological project manager in charge of the work will satisfy him/herself that all constraints to ground works have been identified, including the siting of live services and Tree Preservation Orders.

The location of the strip-map-sample and excavation area (Figure 2) will be agreed with GAPS prior to the commencement of works.

The agreed excavation area will be excavated to the top of the archaeological horizon by a 360 machine fitted with a toothless grading bucket under close archaeological supervision.

The resulting surface will be hand cleaned using hoes and/or pointing trowels, as appropriate, to prove the presence, or absence, of archaeological features and to

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determine their significance. All such features will be recorded, and where appropriate, excavated.

All significant archaeological deposits will be 100% hand excavated stratigraphically. Such excavation will proceed to the top of the natural subsoil in this area. The trenches will be stepped to reach the required depths following health and safety guidelines.

The excavation will include as a minimum:

• The investigation of the intersections of archaeological features to obtain a phasing of the site.

• Structural remains and other areas of significant and specific activity (domestic, industrial, religious, hearths, significant deposits etc) will be excavated fully to maximise data recovery.

Representative non-structural linear cut features will be sampled, excavated and recorded to establish the feature's nature and extent and to provide information on activities taking place in close proximity to the feature. A 20% sample will be taken of all linear features up to 5m in length; for features greater than this the sampling requirement will require 10%, which could be reduced with the agreement of GAPS. The junctions and intersections of linear features will be removed over a sufficient length to determine the nature of the relationship. All terminal ends will be investigated. Sections will be, at least, 1m wide.

Non-structural pits will be half-sectioned unless the character, number or size of the pits made this unpractical. For instance, if a pit contains several intersections and recuts, it will not always be appropriate to half-section it. In this situation, 'quadranting' or single context planning should be considered. Equally if significant deposits are expected, pits will be excavated in plan rather than half-sectioned.

Non-structural post and stake-holes will be half-sectioned to clarify character, relationships and chronology.

The sampling excavation strategy will be reviewed continuously throughout the course of fieldwork and, if necessary, amended in order to take account of changing circumstances and understanding. Any changes or amendments will be agreed in advance of implementation with GAPS.

Human remains

The strategy used for the excavation of human remains will be periodically reviewed and informed by a designated osteoarchaeologist. Furthermore, a site osteoarchaeologist will supervise and offer advice to the excavation team. Any changes to the methodology will be previously agreed with GAPS.

The excavation of human remains will include as a minimum:

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- The initial exposure of the remains of the cemetery will be carried out by a mechanical excavator monitored by a qualified archaeologist. In order to avoid damaging the remains, mechanical excavation will cease before reaching 0.4m below ground level. This measure represents the minimum depth at which the graves have been revealed in previous stages of investigation (see Parry et al 2017).
- The first definition of the features will be carried out through manual excavation using appropriate tools to avoid the disturbance of burial contents. Once the feature is revealed, an initial record of the grave will be produced using a GPS.
- If cremations are revealed during the excavation, these will be recorded *in situ* and block-lifted to allow full excavation in laboratory conditions.
- Graves will be 100% excavated in plan. If neonates are revealed during the excavation, these will be block-lifted with the surrounding soil matrix to preserve the integrity of the fragile remains.
- The first exposure and cleaning of the skeletons will be carried out using suitable tools to avoid any further damage of the remains.
- The recording will be carried out using suitable skeleton proforma sheets. Plans of the skeletons will be produced using rectified photography.
- Soil samples of the abdominal and chest areas of the body will be taken to retrieve evidence of gallstones and worm infestations. Samples of hair and nails will be taken if soft tissue has been preserved. Neonates will be 100% sampled. 40l will be sampled with juveniles and adults, including samples from the areas of the head, feet, hands, chest and stomach.
- Soil samples from the cist will also be taken to maximise the possibility to carry out environmental studies and to obtain material suitable for dating.
- Lifting of human remains will be carried out taking into consideration anatomical areas of the body (head, torso, limbs – recording which site). This remains will be stored in bags perforated to prevent deterioration. Storage of individual bones will be considered if the bones are particularly fragile.
- Great care will be given to the retrieval of teeth as these are a fundamental source of information for estimating age, sex, provenance and DNA studies.
- Particular attention will be given to the definition of intercutting graves. To avoid difficulties during the post-excavation stage, the fieldwork team will take extra care in differentiating between the bones of an articulated individual and those disarticulated remains that may be residual of earlier truncated graves.
- Once the excavation of the burial has been completed, the cist stones will be removed to investigate the possibility of earlier phases.

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## 6.2. Recording

Recording will be carried out using AW recording systems (pro-forma context sheets etc) using a continuous number sequence for all contexts.

Plans and sections will be drawn to a scale of 1:50, 1:20 and 1:10 as required and related to Ordnance Survey datum and published boundaries where appropriate.

All features identified will be tied in to the OS survey grid and fixed to local topographical boundaries.

Photographs will be taken in digital format with an appropriate scale, using a 12MP camera with photographs stored in Tiff format.

The archaeologist undertaking the watching brief will have access to the AW metal detector and be trained in its use.

## 6.3. Finds

The professional standards set in the Chartered Institute for Archaeologists' *Standard and guidance for the collection, documentation, conservation and research of archaeological* (2014) will form the basis of finds collection, processing and recording.

All manner of finds regardless of category and date will be retained.

Finds recovered that are regarded as Treasure under *The Treasure Act 1996* will be reported to HM Coroner for the local area.

Any finds which are considered to be in need of immediate conservation will be referred to a UKIC qualified conservator (normally Phil Parkes at Cardiff University).

## 6.4. Environmental sampling strategy

Deposits with a significant potential for the preservation of palaeoenvironmental material will be sampled, by means of the most appropriate method (bulk, column etc). Where sampling will provide a significant contribution to the understanding of the site AW will draw up a site-specific sampling strategy alongside a specialist environmental archaeologist. All environmental sampling and recording and will follow English Heritage's *Guidelines for Environmental Archaeology* (2002).

## 6.5. Human remains

In the event that human remains are encountered, their nature and extent will be established and the coroner informed. All human remains will be left *in situ* and protected during backfilling. Where preservation *in situ* is not possible the human remains will be fully recorded and removed under conditions that comply with all current legislation and include acquisition of licenses and provision for reburial following all analytical work. Human remains will be excavated in accordance with

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the Chartered Institute for Archaeologist's *Excavation and Post-Excavation Treatment of Cremated and Inhumed Human Remains: Technical Paper Number 13* (1993).

An MoJ licence has been obtained taking into consideration that human burials are the main target of the excavation.

### 6.6. Specialist advisers

In the event of certain finds, features or sites being discovered, AW will seek specialist opinion and advice. A list of specialists is given in the table below although this list is not exhaustive.

| Artefact type | Specialist |
|---|---|
| Flint | Kate Pitt (Archaeology Wales) |
| Animal bone | Richard Madgwick (Cardiff University) |
| CBM, heat affected clay, Daub etc. | Rachael Hall (APS) |
| Clay pipe | Hilary Major (Freelance) |
| Glass | Rowena Hart (Archaeology Wales) |
| Cremated and non-cremated human bone | Richard Madgwick (Cardiff University) |
| Metalwork | Kevin Leahy (University of Leicester)/ Quita Mold (Freelance) |
| Metal work and metallurgical residues | Dr Tim Young (GeoArch) |
| Neo/BA pottery | Dr Alex Gibson (Bradford University) |
| IA/Roman pottery | Jane Timby (Freelance) |
| Roman Pottery | Rowena Hart (Archaeology Wales)/ Peter Webster (Freelance) |
| Post Roman pottery | Stephen Clarke (Monmouthshire Archaeology) |
| Charcoal (wood ID) | John Carrot (Freelance) |
| Waterlogged wood | Nigel Nayling (University of Wales – Lampeter) |
| Molluscs and pollen | Dr James Rackham |

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| | |
|---|---|
| Charred and waterlogged plant remains | Wendy Carruthers (Freelance) |

### 6.6.1. Specialist reports

Specialist finds and palaeoenvironmental reports will be written by AW specialists, or sub-contracted to external specialists when required.

# 7. Monitoring

GAPS will be contacted approximately five days prior to the commencement of archaeological site works, and subsequently once the work is underway.

Any changes to the WSI that AW may wish to make after approval will be communicated to GAPS for approval on behalf of Planning Authority.

Representatives of GAPS will be given access to the site so that they may monitor the progress of the field excavation. No area will be back-filled, until GAPS has had the opportunity to inspect it, unless permission has been given in advance. GAPS will be kept regularly informed about developments, both during the site works and subsequently during post-excavation.

# 8. Post-fieldwork programme

## 8.1. Archive assessment

### 8.1.1. Site archive

An ordered and integrated site archive will be prepared in accordance with: *Management of Research Projects in the Historic Environment* (MoRPHE) (Historic England 2006) upon completion of the project.

The site archive (including artefacts and samples) will be will be prepared in accordance with the National Monuments Record (Wales) agreed structure and deposited with an appropriate receiving organisation, in compliance with CIfA Guidelines (*Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives'*, 2014). The legal landowners consent will be gained for deposition of finds.

### 8.1.2. Analysis

Following a rapid review of the potential of the site archive, a programme of analysis and reporting will be undertaken. This will led to the production of an Assessment Report (MAP 2 Stage 3). This report will include:

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- Non-technical summary
- Location plan showing the excavation area/s covered, all artefacts, structures and features found
- Plan and section drawings (if features are encountered) with ground level, ordnance datum and vertical and horizontal scales.
- Written description and interpretation of all deposits identified, including their character, function, potential dating and relationship to adjacent features. Specialist descriptions and illustrations of all artefacts and soil samples will be included as appropriate.
- An account of the results obtained by a first stage of analysis carried out by specialists, including comprehensive assessments of the data obtained during excavation and recommendations for further work.
- A discussion of the local, regional and national context of the remains by means of reviewing published reports, unpublished reports, historical maps, documents from local archives and the regional HER as appropriate.
- An assessment of intrinsic and site value of the data recovered with recommendations for further work.
- A detailed archive list at the rear listing all contexts recorded, all samples finds and find types, drawings and photographs taken. This will include a statement of the intent to deposit, and location of deposition, of the archive.

## 8.2. Reports and archive deposition

### 8.2.1. Report to client

Copies of all reports associated with the mitigation, together with inclusion of supporting evidence in appendices as appropriate, including photographs and illustrations, will be submitted to Grŵp Llandrillo Menai (GLLM), and GAPS upon completion.

### 8.2.2. Additional reports

Copies of all reports will be deposited with the relevant county Historical Environment Record, the National Monuments Record and, if appropriate, Cadw at the earliest convenience.

### 8.2.3. Summary reports for publication

A full archaeological report will be submitted for publication in relevant journals (e.g. Transactions of the Anglesey Antiquarian Society and other period-specific journals); as a minimum, a report will be submitted to the annual publication of the regional CBA group or equivalent journal. These publications will incorporate the results obtained during this phase of excavation and those obtained by the works carried out by Archaeoleg Brython Archaeology.

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#### 8.2.4. Notification of important remains

Where it is considered that remains have been revealed that may satisfy the criteria for statutory protection, AW will submit preliminary notification of the remains to Cadw.

#### 8.2.5. Archive deposition

The final archive (site and research) will, whenever appropriate, be deposited with a suitable receiving institution, usually the relevant Local Authority museums service. Arrangements will be made with the receiving institution before work starts.

Although there may be a period during which client confidentiality will need to be maintained, copies of all reports and the final archive will be deposited no later than six months after completion of the work.

Copies of all reports, the digital archive and an archive index will be deposited with the *National Monuments Record*, RCAHMW, Aberystwyth.

Wherever the archive is deposited, this information will be relayed to the HER. A summary of the contents of the archive will be supplied to GAPS.

#### 8.2.6. Finds deposition

The finds, including artefacts and ecofacts, excepting those which may be subject to the Treasure Act, will be deposited with the same institution, subject to the agreement of the legal land owners.

## 9. Staff

The project will be managed by Mark Houliston, MCIfA (AW Company Director) and the fieldwork undertaken by Chris Smith MCIfA (Archaeology Wales), Cassandra Davies (Archaeology Wales) and Caroline Sims PIfA (member of the CSFS; the British Association for Human Remains and a member of the BABAO) Any alteration to staffing before or during the work will be brought to the attention of GAPS and Grŵp Llandrillo Menai (GLLM)

# Additional Considerations

## 10. Health and Safety

### 10.1. Risk assessment

Prior to the commencement of work AW will carry out and produce a formal Health and Safety Risk Assessment in accordance with *The Management of Health and Safety Regulations* 1992. A copy of the risk assessment will be kept on site and be available for inspection on request. A copy will be sent to the client (or their agent as necessary) for their information. All members of AW staff will adhere to the content of this document.

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### 10.2. Other guidelines

AW will adhere to best practice with regard to Health and Safety in Archaeology as set out in the FAME (Federation of Archaeological Managers and Employers) health and safety manual *Health and Safety in Field Archaeology (2002)*.

## 11. Community Engagement and Outreach

Wherever possible, AW will ensure suitable measures are in place to inform the local community and any interested parties of the results of the site investigation work. This may occur during the site investigation work or following completion of the work. The form of any potential outreach activities may include lectures and talks to local groups, interested parties and persons, information boards, flyers and other forms of communication (social media and websites), and press releases to local and national media.

The form of any outreach will respect client confidentiality or contractual agreements. As a rule, outreach will be proportional to the size of the project.

Where outreach activities have a cost implication these will need to be negotiated in advance and in accordance with the nature of the desired response and learning outcomes.

## 12. Insurance

AW is fully insured for this type of work, and holds Insurance with Aviva Insurance Ltd and Hiscox Insurance Company Limited through Towergate Insurance. Full details of these and other relevant policies can be supplied on request.

## 13. Quality Control

### 13.1. Professional standards

AW works to the standards and guidance provided by the *Chartered Institute for Archaeologists*. AW fully recognise and endorse the Chartered Institute for Archaeologists' *Code of Conduct*, *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* and the *Standard and Guidance for archaeological watching briefs* currently in force. All employees of AW, whether corporate members of the Chartered Institute for Archaeologists or not, are expected to adhere to these Codes and Standards during their employment.

### 13.2. Project tracking

The designated AW manager will monitor all projects in order to ensure that agreed targets are met without reduction in quality of service.

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## 14. Arbitration

Disputes or differences arising in relation to this work shall be referred for a decision in accordance with the Rules of the Chartered Institute of Arbitrators' *Arbitration Scheme for the Institute for Archaeologists* applying at the date of the agreement.

## 15. References

AMEC, 2014. Llangefni Link Road, Historic Environment Assessment. Unpublished report.

Archaeological Services Durham University (ASDU), 2014. Llangefni Link Road, Geophysical Survey. Unpublished report.

Chartered Institute for Archaeologists, 2014. Standards and guidance for the collection, compilation, transfer and deposition of archaeological archives.

Chartered Institute for Archaeologists, 2014. Standards and guidance for the collection, documentation, conservation and research of archaeological materials.

Chartered Institute for Archaeologists, 2014. Standards and guidance for excavation.

Chartered Institute for Archaeologists, 2014. Standards and guidance for an archaeological watching brief.

Edwards, N., Davies, T., Henier K. 2016. Research Framework for the Archaeology of Wales: Early Medieval.

English Heritage, 2002. Guidelines for Environmental Archaeology.

English Heritage, 2006. Management Of Research Projects in the Historic Environment (MORPHE).

McKinley, J., Roberts C., 1993, Excavation and post-excavation treatment of cremated and inhumed human remains, Technical Paper 13.

Parry I.G., Parry L.W., Owen K., Lynes M., 2017. Fieldwork report: Archaeological Evaluation Trenching. Coleg Menai Llangefni. Unpublished report.

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Research Framework for the Archaeology of Wales, 2003. A Research Framework for the Archaeology of Wales. North West Wales, Early Medieval. Regional Seminar paper, 23/12/2003.

Stratascan, 2016. Llangefni, Anglesey (Coleg Menai) Geophysical Survey. Unpublished report.

British Geological Survey: Geology of Britain viewer: www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html

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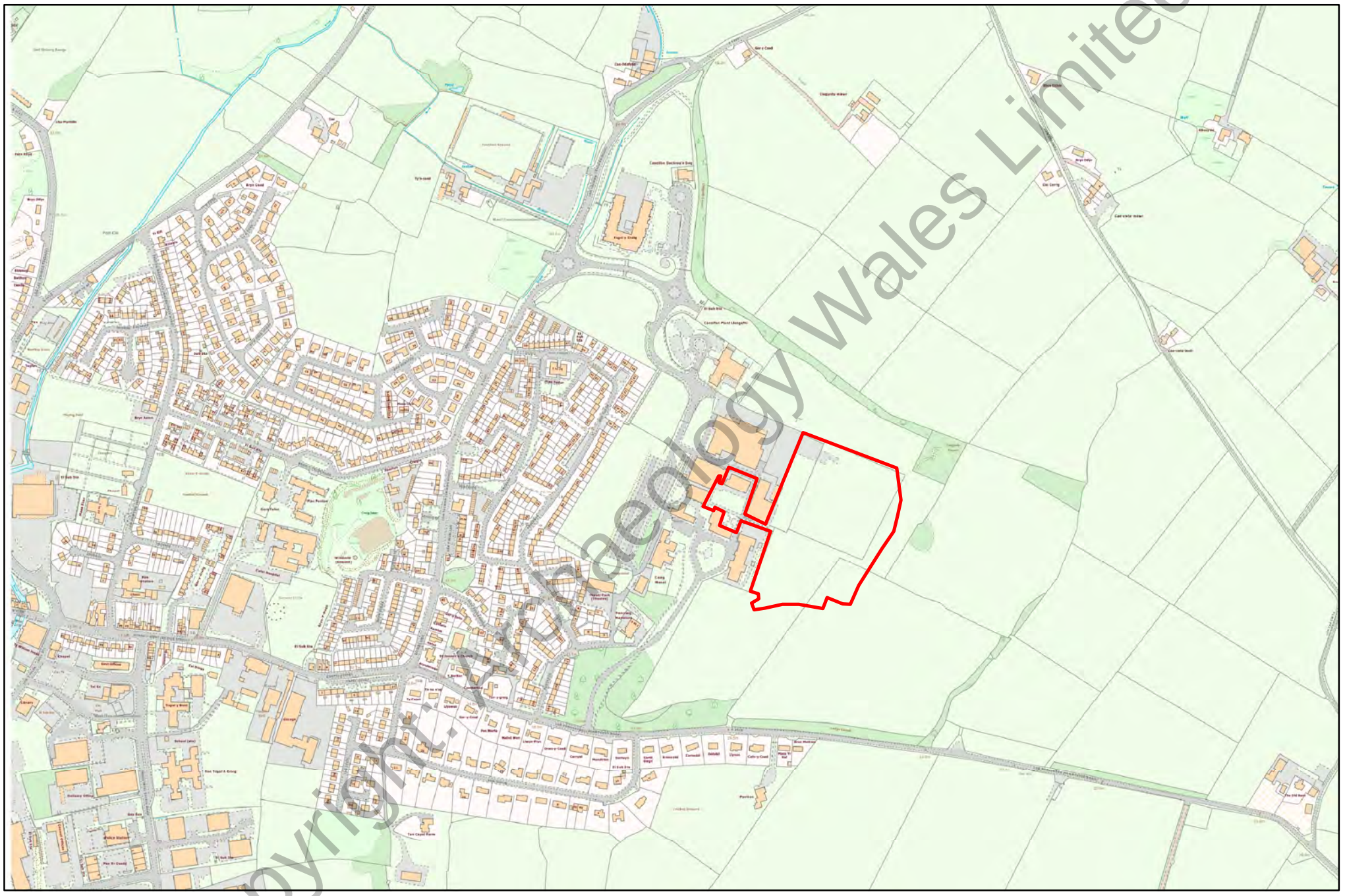


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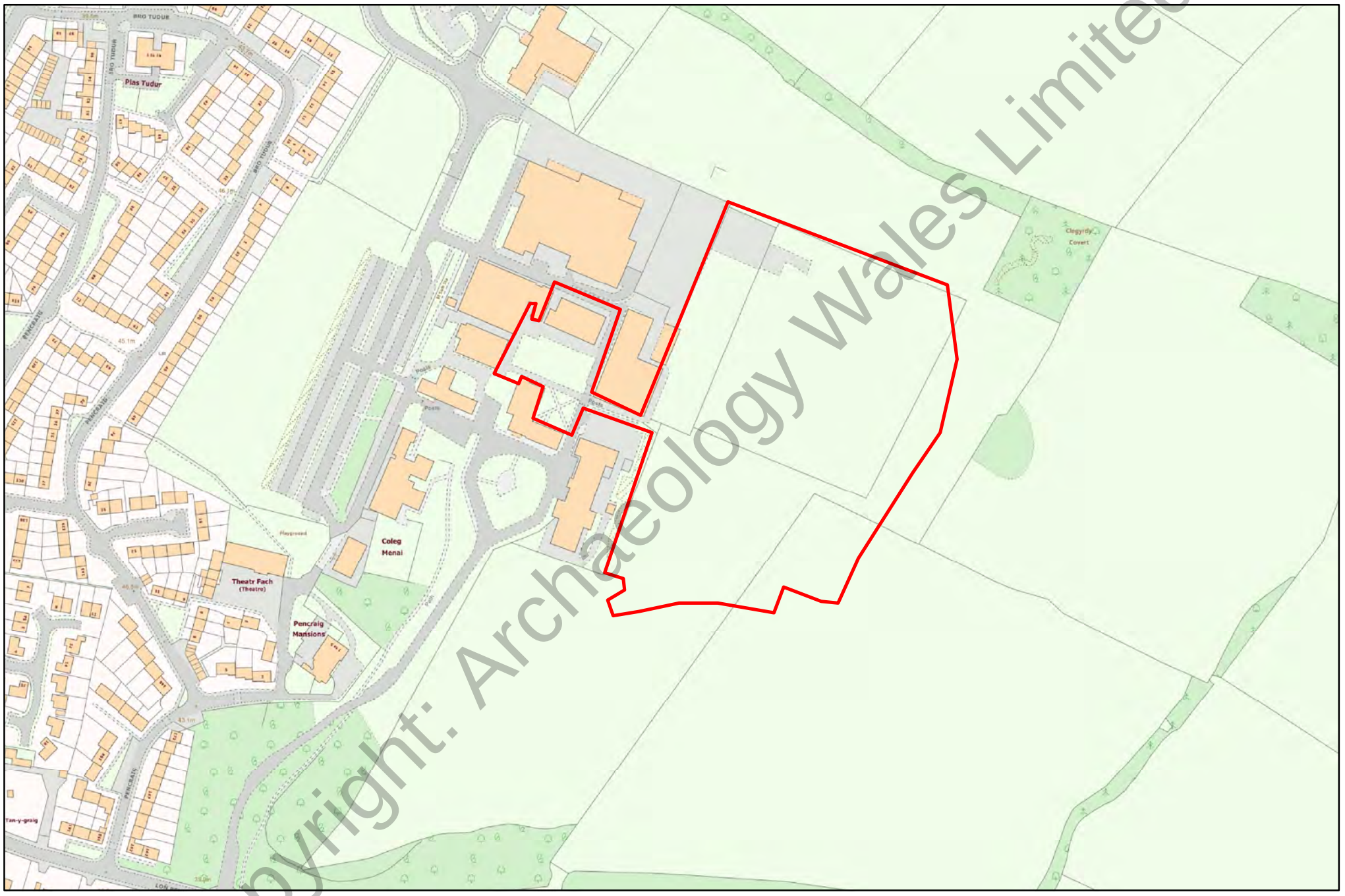


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