

# Group VII Axe-working Sites and Stone Sources, Llanfairfechan, Conwy

Report and gazetteer



Llywodraeth Cymru  
Welsh Government



Ymddiriedolaeth Archaeolegol Gwynedd  
Gwynedd Archaeological Trust

# Group VII Axe-working Sites and Stone Sources, Llanfairfechan, Conwy

## Report and gazetteer

Project No. G2495

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Event PRN 44908

Prepared for: Cadw

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Cover photograph: Dinas from Garreg Fawr with Clip yr Orsedd in the background

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# Llanfairfechan Group VII Axe Working Sites (G2495)

## Report 1416

### Event PRN 44908

#### Summary

*The stone source for Neolithic stone axes located at Graig Lwyd, Penmaenmawr is of national importance and is widely known, but it is less well known that the same rock outcrops around Llanfairfechan, Gwynedd and that there was axe working in that area. However Mr David T Jones has been collecting axe roughouts and identifying sites around Llanfairfechan for many years. Gwynedd Archaeological Trust was grant aided by Cadw to record Mr Jones' collection and to briefly record the sites that he has found. Other sites identified in the literature from the area have been brought together in a gazetteer and presented for inclusion in the Gwynedd Historic Environment Record (HER). Descriptions and locations of sites already on the HER have been improved. This provides a basis for future study and the report identifies priorities for preservation and investigation. Opportunities for further work are currently greatly enhanced by the Heritage Lottery Funded Carneddau Landscape Partnership project led by the Snowdonia National Park Authority. It is anticipated that some of the recommendations in this report will be able to be carried out as part of this project.*

*Mae'r ffynhonnell garreg ar gyfer bwyell Neolithig sydd ar Graig Lwyd, Penmaenmawr yn gydnabyddedig ac o bwys cenedlaethol, ond llai hysbys yw'r ffaith fod yr un graig yn brigo o amgylch Llanfairfechan, Gwynedd a bod gweithio bwyell yn digwydd yn yr ardal honno hefyd. Bu Mr David T Jones yn casglu brasffurfiau bwyell ac yn adnabod safleoedd o gwmpas Llanfairfechan ers blynyddoedd lawer. Derbyniodd Ymddiriedolaeth Archaeolegol Gwynedd gyllid grant gan Cadw er mwyn cofnodi casgliad Mr Jones, ac i nodi'n gryno'r safleoedd mae ef wedi ddarganfod. Casglwyd gwybodaeth am safleoedd eraill sydd wedi eu hadnabod mewn llenyddiaeth o'r ardal, fe'i cyfunwyd mewn parthysyllydd a gyftwynwyd i'w gynnwys yn Nghofnod Amgylchedd Hanesyddol Gwynedd (CAH). Diwygiwyd y disgrifiadau a'r lleoliadau sydd eisoes ar y CAH. Mae hyn yn cynnig sylfaen ar gyfer astudiaeth i'r dyfodol, ac mae'r adroddiad yn adnabod blaenoriaethau ar gyfer cadwraeth ac astudiaeth. Hyrwyddir cyfleon ar gyfer gwaith pellach gan brosiect Partneriaeth Tirwedd y Carneddau sydd dan arweiniad Awdurdod Park Cenedlaethol Eryri ac a gyllidir gan Gronfa Dreftadaeth y Loteri. Hyderir y gellir gweithredu rhai o'r argymhellion sydd yn yr adroddiad hwn fel rhan o'r prosiect hwnnw.*

#### 1. Background

##### 1.1. Introduction

The Implement Petrology Committee of the Council for British Archaeology was established in 1952 to identify the origin of stone axes and other prehistoric stone objects (Grimes 1979). They took thin sections from axes and from proposed sources and compared them to identify which sources were used and how far the axes had travelled. By 1988 when they made their second report (Clough and Cummins 1988) over 7500 objects had been sampled and over half of these could be allocated to groups by stone type. The source of most these stone groups could be identified to either specific locations or more general areas (Clough 1988, 1, 3, 7-10). The most important and prolific stone source for axes during the Neolithic period was in the central Lake District, focussed around Great Langdale (Group VI). Axes from this source have been found across Britain and considerable work has been done to study the area and identify quarry and axe-working sites. Though less prolific two other sources were of next importance. Group I was located in Cornwall but axes from this source were found mainly in south-west England. However Group VII axes were found over most of England and Wales, with occasional ones elsewhere (Clough 1988). This source can therefore be considered of second in importance in Britain to the Great Langdale source. Group VII axes were demonstrated to come from a stone source near Penmaenmawr, Conwy, known as Graig Lwyd (for the name and its spelling see Williams and Davidson 1998).

By 1988 over 600 stone implements from Wales had been subjected to petrological analysis. About half of those had been assigned to groups and of those over 100 were identified as Group VII (Graig Lwyd) (Houlder 1988, 133). The majority of these axes were distributed across North Wales but many were found across the whole of

Wales, as well as across England. The distribution pattern in Wales spreads out from the source as if the axes were distributed over land and not along the coast. This is notable for other axes sources entering Wales. Langdale axes seem to have entered Wales from the middle of the Marches and spread out from there, entirely avoiding the coast, and flint axes come in from the south-east. Only axes from Cornwall seem to have been transported by sea; there are several foci for their distribution all starting from points on the coast and spreading inland (Darvill 1989).

It had been known since 1919 that stone axes were produced near a rock outcrop known as Y Graig Lwyd when the first axes were recognised by S Hazzeldine Warren and he subsequently undertook excavations and found several tons of axes and roughouts (Warren 1919, 1922). Glen (1935, 189) records that by the end of his excavations Warren had collected 3 tons of good specimens of unfinished and broken axes as well as immense amounts of waste. He points out, in relation to axe working debris, “Hundreds of tons remain and hundreds more have gone down the quarry” (Glen 1935, 189).



Plate 1. Mr David Thomas Jones photographed on 3rd August 2017

Warren realised that axe roughouts could be found over a much wider area than the proximity of his excavations but this source is always referred to as “Graig Lwyd” and the extent of other stone sources in the area has not been widely considered. In the 1990s GAT carried out detailed surveys of the surviving working area at Graig Lwyd and undertook some small scale excavations. The survey was also extended to the col between Graig Lwyd and Penmaenmawr Mountain, and on the western flank of the mountains. The results of the surveys and excavations were presented in two grey literature reports (Flook and Williams 1992 and Davidson and Williams 1998). The Graig Lwyd survey and excavations were published in Williams and Davidson 1998 and the surveys further west were published in Williams and Davidson 2002. Other work has occasionally revealed axe flakes and John Llywelyn Williams has published some finds from the wider area. The Royal Commission (RCAHMS 1956, xliii) and Houlder (1976, 58) recognised that the stone axe workings extended to Garreg Fawr and Dinas, but little professional archaeological work has been done to investigate the wider landscape and to study the stone sources beyond Graig Lwyd. However, since the 1990s Mr David T Jones of Llanfairfechan (plate 1) has been collecting axe roughouts and exploring axe-working sites around Llanfairfechan. His knowledge of these sites is unequalled and his col-

lection now extends to at least 28 pieces, almost all of known provenance. As Mr Jones is now in his 70s the need to collect and preserve his knowledge and secure his collection is critical. This project was therefore designed to work with Mr Jones to convert his knowledge into a form that can be accessed by other researchers and to lay the foundations of the wider study of this area and understanding of the full range of stone sources.

## 1.2. Other stone axe sources

As the largest source of stone axes in Britain, from which axes have been distributed over the widest area, it is unsurprising that archaeological work has concentrated on the Central Lake District Group VI source area. Although many of the sites, especially quarry sites, are concentrated in the mountains above the valley of Great Langdale, the source rock can be found in a band extending over to Scafell Pike and further north. Detailed surveys of this area have identified the quarrying of cliff faces, open cast digging for rock, exploitation of blockfields and the use of screes at a distance from their source rocks. Working floors away from the source rocks were also recorded. The idea of a single stone source proved to be far too simplistic and Edmonds now prefers to refer to a “source area”. Pollen analysis indicates that the latter sites were generally located around the contemporary tree line on access routes into good quality upland pasture maintained by burning of vegetation, showing how stone working fit into the everyday lives of the groups who exploited these stone sources (Claris and Quartermaine 1989; Bradley and

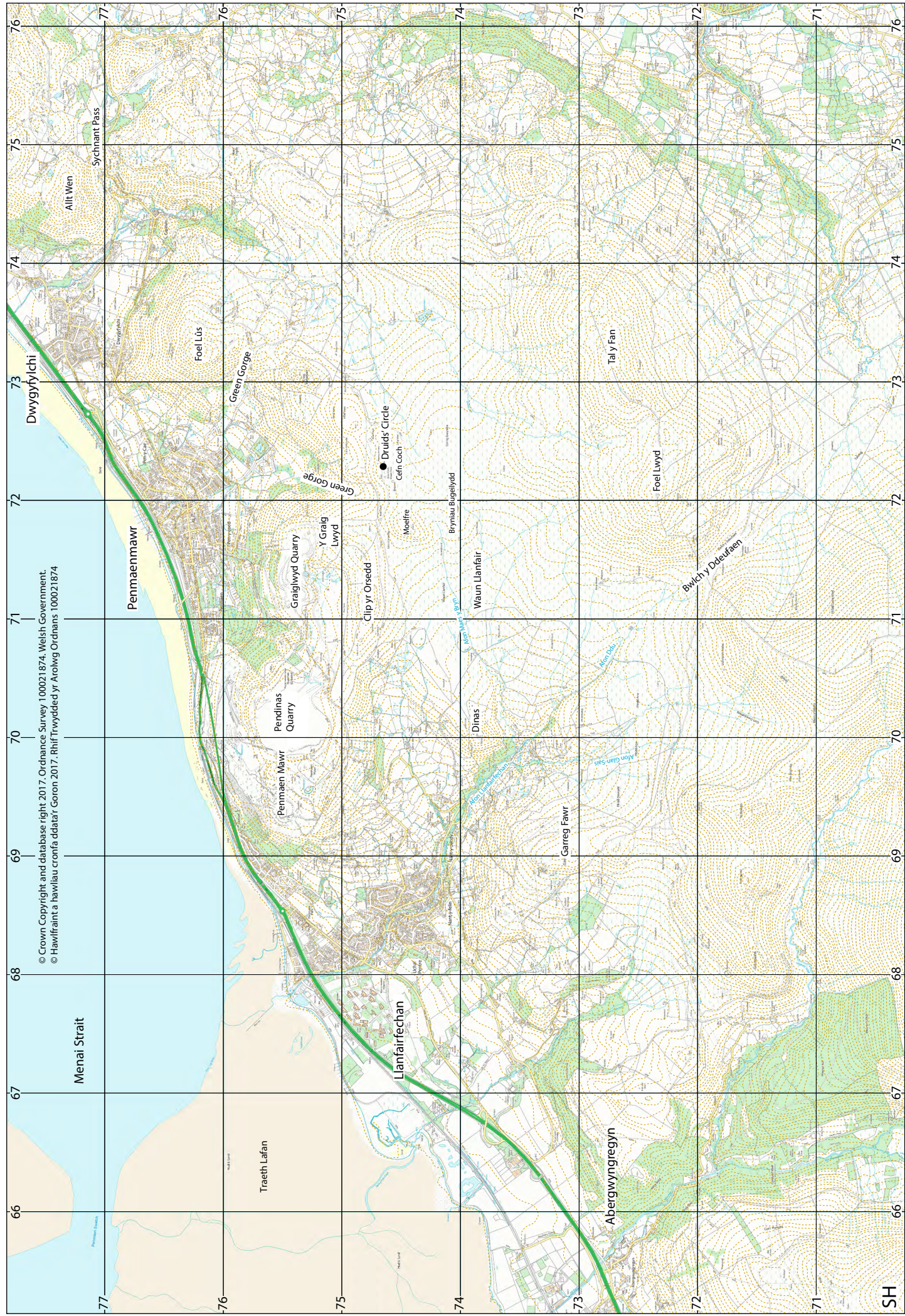


Figure 1. Llanfairfechan and surrounding area

Edmonds 1988).

Work by Reading University, including small excavations, suggests a possible chronology of working in the Great Langdale area, with less well planned, expedient working being replaced by more structured working. Certainly the latter was concentrated on and around the impressive peak of Pike O'Stickle, often in hard to access locations. Not all suitable material was used for axe production with in some cases easily accessible sites being rejected in favour of hazardous crags, some with inferior rock (Watson 1995, 461; Claris and Quartermaine 1989, 3). Watson studied the distribution of quarry locations and found that they occurred at high points on the outcrop and above particularly steep slopes (Watson 1995). The range of methodologies used to study the Great Langdale area provides a guide to how the Penmaenmawr and Llanfairfechan sources might be explored and the results from the Lake District give an indication of the complexities to be expected.

Apart from the Group VII source there is only one other major stone source in North Wales that was used for stone axes, excepting the use of scattered glacial erratics. This source was at Mynydd Rhiw, on the Llŷn Peninsula, and is the source of Group XXI axes, which were mostly distributed locally and none have been found outside Wales. Investigations were carried out at this site by Houlder (1961) and more recently by Steve Burrow of National Museum Wales (Burrow 2011). Burrow's work showed that stone quarrying was much more wide spread than originally thought. In this case most of the stone was obtained by digging pits and recovering blocks from the fractured bedrock. Modelling of radiocarbon dates recovered from the excavations indicated a start date of 3758-3652 and an end date of 3504-3115 cal BC with a duration of probably 167-575 years. This suggests activity covering much of the early Neolithic period but the origin of the charcoal dated and its relationship to the quarrying is not known so these dates must be treated with care as an indication of actual quarrying activity (Burrow 2011, 255).

### **1.3. The use and significance of Neolithic stone axes**

Sources of stone for axes have, in the past, been referred to as "axe factories". This term suggests an industrial and intensive aspect to axe production that would be very unlikely in the Neolithic period. It is more useful therefore to talk about "stone sources" or "source areas". Similarly the movement of stone axes around the country has been referred to as the "axe trade", and this also has anachronistic connotations of an advanced trading economy. It is much more likely that axes were distributed as part of gift exchange networks. The scientific identification of stone types used to make the axes led to a greater understanding of how far these networks reached, even if understanding exactly how they worked is harder to establish (Bradley and Edmonds 1988).

The distribution of stone axes originating from Langdale and Graig Lwyd suggests that they were in demand over a wide area, and at a considerable distance from their source. The distribution and exchange of axes would have led to increased contact between peoples, and the establishment of more clearly defined relationships. Histories associated with the production, exchange and ownership of the axes would become attached to the object, and this associated narrative could form a desirable attribute of ownership (Davies and Edmonds 2011, 171). This associated story may have been as important as the practical qualities of the axe. Bradley and Edmonds stress that it is not possible to separate the physical function of axes from their symbolic importance, as attributes of both may have been associated with everyday usage. The deposition of axes and their association with ritual sites shows that they had a symbolic significance (Bradley and Edmonds 1988, 183); "the axe was both a vital tool and a potent symbol" (Davies and Edmonds 2011, 171).

One important issue to consider is why Neolithic axes were polished. Polishing at the cutting edge and where the haft sits can improve the performance of an axe but there is no practical need to polish the whole axehead. However polishing brings out the character of the stone and gives fine control over the shape of the object suggesting that polishing was about style not function. Axes from local erratics are rarely polished all over while those from major sources that travel considerable distance usually are (Bradley and Edmonds 1993, 49, 50). Polishing seems to emphasise the character of the stone, making it more identifiable, perhaps because the origin was of particular importance.

Jadeite axes were the most finely worked and most widely distributed of Neolithic stone axes. These axes originate from high level quarries in the Italian Alps, near the mountain of Monte Viso, and were distributed across western Europe as far as northern Scotland. It has been suggested that the exotic mountain origin of jadeite axes added to their perceived value by Neolithic people (Sheridan 2007). The Group VI and VII axes are the most widely distributed in Britain, and it might be speculated that the dramatic landscapes associated with their source was partly

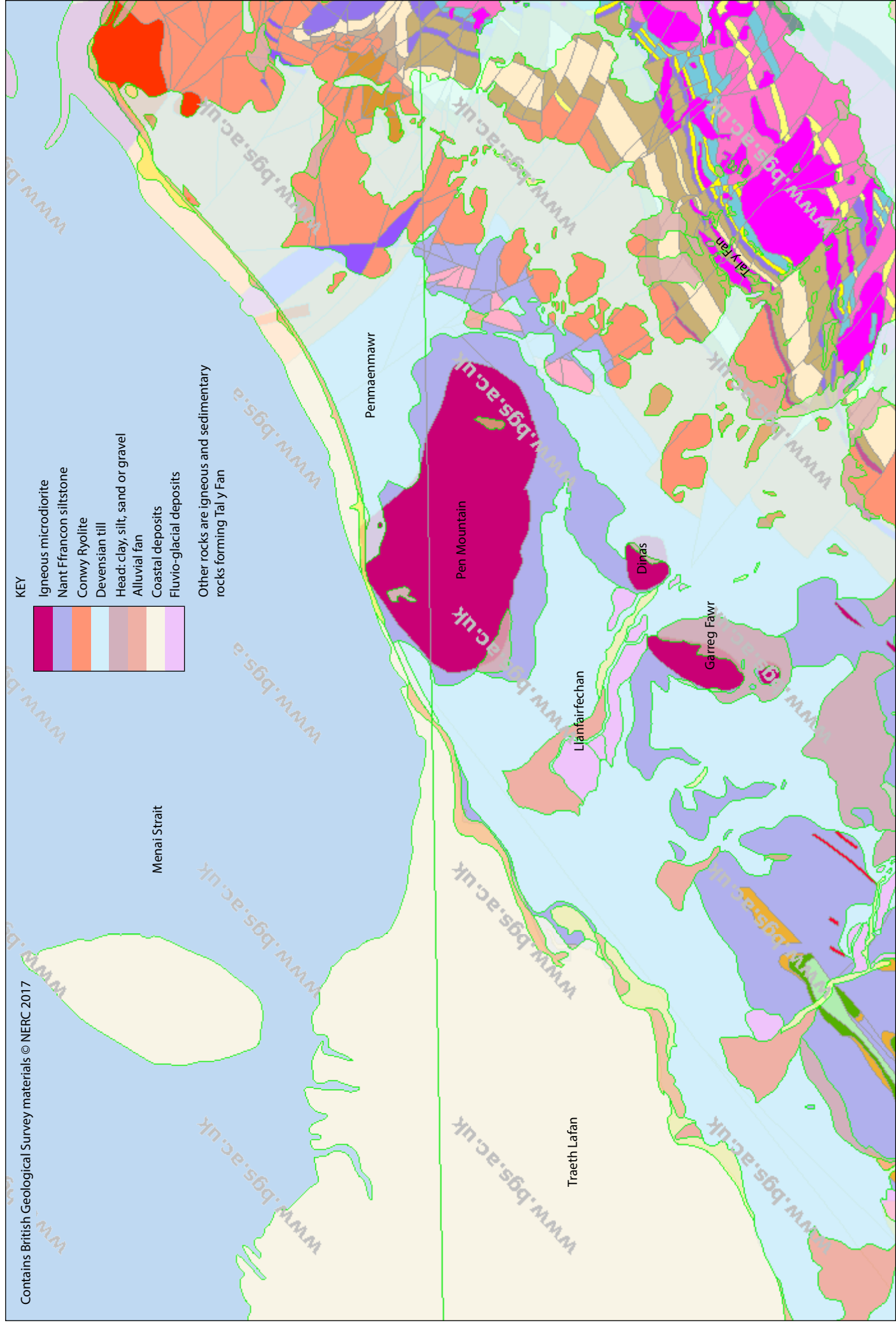


Figure 2. The geology of the Llanfairfechan area

responsible for their wide distribution and popularity, and their significance emphasised by their overall polishing. Pike O'Stickle, the focus of the Langdale axe quarries, is certainly impressive and the position of some quarries in difficult to access places on its face emphasises the unusual and restricted nature of the source. The Graig Lwyd outcrop, although with fine views does not stand out in the landscape like Pike O'Stickle. However, the nearby Penmaen Mawr, a headland surrounded by steep cliffs projecting into the sea, is a very prominent landmark and would have been more so before its top was removed by quarrying. As this study shows axes were produced right at the foot of this mountain. The two most widely distributed axe groups therefore come from dramatic and liminal sources about which associative stories might have been told as axes were exchanged, and so enhancing their value, especially to groups living at a considerable distance from the source.

These associated biographical attributes of source, ownership and memory, thought to enhance the significance of the individual axe, mean study of the rock source is of particular importance. Bradley and Edmonds have argued that "a realistic approach to the problems of the Neolithic 'axe trade' must start from the stone sources themselves" (Bradley and Edmonds 1988, 182). This led to their study of Great Langdale. The Group VII source area would provide an excellent comparison to Great Langdale, but the detailed study of this area is long overdue. By comparing and contrasting these two areas more understanding might be achieved of what motivated the Neolithic people to exploit certain rock sources and why some stone axes were more widely distributed than others.

#### 1.4. Geology and topography around Llanfairfechan

Llanfairfechan lies on the north coast of Wales on the southern side of the Menai Strait with Anglesey to the north. At this point the Strait widens as it opens into Conwy Bay and the extensive Lafan Sands cover much of the Strait



Plate 2.  
Llanfairfechan  
from the top of  
Dinas, showing  
its position on the  
Menai Strait and  
Anglesey beyond

at low tide (figure 1, plate 2). The village has developed on an alluvial fan where the Afon Llanfairfechan crosses the coastal plain to the sea after its short journey from the uplands to the south-east. The upper part of the valley is narrow and overlooked by two hills; Dinas and Garreg Fawr. Dinas is a distinctive hill with a flat summit at about 320m OD, on which was located an Iron Age hillfort (PRN 392). Its southern and western flanks are bare scree with the woodland of Nant y Coed covering its foot to the west (plate 3). Garreg Fawr is a less dramatic but a bulkier presence with an outcrop of rock at the top reaching 364m OD (plate 4). To the south are the outliers of the Carneddau range and to the east the long isolated ridge of Foel Lwyd and Tal y Fan, the latter reaching 610m OD.

To the north-east Llanfairfechan is dominated by Penmaen Mawr, which used to be crowned by the Braich y Dinas hillfort (PRN 712). However the hillfort and much of the top of the mountain have been quarried away and its slopes remodelled by screes of quarry waste. A length of the original crags and natural scree below them still survives on the western side of the mountain. Running east from Penmaen Mawr is a ridge called Clip yr Orsedd at the eastern end of which is a rock outcrop known as Y Graig Lwyd. The outcrop was formerly much more ex-



Plate 3. Dinas from Garreg Fawr with Clip yr Orsedd in the background



Plate 4. Garreg Fawr from Dinas



Plate 5. Aerial photograph of Graig Lwyd Quarry taken in 1993 showing the outcrop of Y Graig Lwyd partly quarried away (photograph by G. I. Davies)

tensive but has been largely quarried away by the Graiglwyd Quarry (plate 5). This also had natural screes running down below it much of which have been buried under quarry waste but some survive on its northern and eastern sides, largely over grown with heath vegetation.

Where the streams of Afon Maes y Bryn, Afon Ddu and Afon Glan-Sais run down to meet and form the Afon Llanfairfechan the mountains form a semi-circular bowl around an upland plateau, the larger part of which is known as Waun Llanfair. This is now a wet, marshy and rather desolate place but is covered with Bronze Age and Iron Age monuments indicative of more intensive use in the past (Caseldine *et al* 2007). The eastern side of the bowl of Waun Llanfair is closed off by a shallow ridge running north from Tal y Fan. At the northern end of this ridge is a group of Bronze Age monuments including the Druids' Circle or Maenau Hirion, a ring cairn and other features with further cairns and a possible stone circle a little to the west and a standing stone and stone circle to the east.

This area was of interest to the Neolithic people, and therefore of interest to us today, because of its geology. The bedrock under most of the Llanfairfechan area is siltstone of the Nant Ffrancon Subgroup, an Ordovician sedimentary rock. Protruding through these deposits are intrusions of silica-poor magma, also of Ordovician date (figure 2). These rocks are a Microdiorite, and they cooled at varying rates so that in places the rock is coarse grain and elsewhere it is very fine grained (Geology of Britain Viewer).

The bedrock protrudes through a blanket of glacial till with some deposits of glacial sands and gravels. Alluvial deposits are restricted to the narrow base of the river valley until they open out to form an alluvial fan under the village of Llanfairfechan. Around the eastern and southern sides of Garreg Fawr are built-up deposits of "head", clay, silt, sand and gravel that have accumulated by down slope movements such as solifluction and soil creep during or after the glacial period (Geology of Britain Viewer).

On a petrological level the igneous rock, referred to locally as "Pen Granite", is defined as augite granophyre (Clough 1988, 7), and generally it is sufficiently fine grained to be coarsely knapped, allowing it to be shaped into setts used to pave the streets of Liverpool and other cities. However where it is very fine grained, around the margins of the intrusions, the rock has a conchoidal fracture and is particularly suitable for stone axe manufacture. The main area of this very fine rock is a zone 50m to 100m wide around the eastern and southern edges of the Graig Lwyd outcrop, (Williams and Davidson 1998, 3-5), and this is usually thought of as the stone axe source, but there is similar rock on Dinas, Garreg Fawr and round the western margin of Penmaen Mawr.

## **1.5. Palaeoenvironmental Evidence**

Our understanding of the vegetation history of the uplands above Llanfairfechan has been enhanced by some detailed pollen work carried out as part of a project on Waun Llanfair. This work includes three pollen columns and samples taken from buried soils under excavated features (Caseldine and Griffiths 2014). This evidence suggests that in the later Mesolithic period Waun Llanfair was covered in hazel woodland with stands of pine on higher ground and alder in wetter areas. Some birch and probably oak was present with oak woodland with a component of elm at lower levels.

Towards the start of the Neolithic the pine pollen declined and alder increased. A fire event and drop in hazel pollen suggests an early Neolithic clearance event and there are also hints of pastoral use of the area. A decline in elm pollen occurred at the same time. In the middle Neolithic a decline in oak pollen suggests clearances in the oak woodlands. Although much of the area was wooded there are hints of open heath grassland nearby.

In the later Neolithic there was alder woodland in the wetter areas, oak woodland in the higher valleys and open hazel and birch woodland with some grass and heathland on the high, drier slopes. There was some small scale clearance with the use of fire and some grazing activity. Barley type pollen was present in a buried soil with Graig Lwyd flakes and could indicate cereal cultivation but this pollen type is also produced by some wild grasses. Some of the evidence from beneath two cairns that were excavated suggests a more open grass and heathland environment.

Woodland was still present in the area in the Bronze Age, so during the period of exploitation of the Graig Lwyd stone sources the area was largely wooded with some open areas on the higher slopes. The amount of alder pollen shows that parts of Waun Llanfair were wet during the Neolithic, as they are today, but the presence of trees would mean that more of the area would have been better drained than at present. The trees would also make it a more

sheltered environment than at present.

It seems likely that the scree slopes from which the axe material was obtained were never heavily vegetated. The slopes of Dinas, where sheep have been kept off them, have stunted oaks growing on the scree but relatively little undergrowth. The natural screes on the western side of Penmaenmawr Mountain are also wooded but again many areas have little undergrowth, although sometimes considerable amounts of moss. Most of the scree slopes may have been similar in the Neolithic period making them accessible and suitable stones easy to locate.

## **2. Methodology**

### **2.1. Desk-based data collection**

The HER and NMR were searched for Graig Lwyd axe findspots or related sites in the area of Llanfairfechan and Penmaenmawr. Published and unpublished sources for those finds and sites were consulted and corrections and additions made to the records. In some cases the discovery of an axe only had been recorded in the HER, when in fact the source mentioned a working site. In several cases sites were mentioned in the sources that had not been included on the HER. An Access database was created of all sites existing and new and this was used to produce the gazetteer (appendix I).

Surprisingly the list of objects sampled by the CBA Implement Petrology Committee (Clough and Cummins 1988) has not been included in the HER. This leaves many axes and axe roughouts that have been long known and held in museums not accessible through an HER search. No attempt was made to add all those for the GAT area but this is a task that would be well worth carrying out. However those falling within the Llanfairfechan and Penmaenmawr areas were added to the database and given new PRNs.

There was also a lack of information on the HER from the extensive survey and excavations carried out at Graig Lwyd in the 1990s. This is due to no grid references being published for these sites and it being very difficult to work out the grid reference from the published plans. To correct this omission the plans and a list of sites from Williams and Davidson 1998 were used to provide grid references for the main sites. No attempt has been made to locate the trenches and test pits as there was not sufficient information for precise locations.

It should be noted that the terms allowable for entry in the HER for “Class” and “Site Type” are not ideal for describing stone axe sources. Both sources and axe working sites away from the stone sources have been included in the database under the “industrial” class, even though the workings cannot be compared to any later definition of industrial activity. They are also listed as “stone axe factory” despite the erroneous implications of the term “factory” and the inability to distinguish between source and working sites.

### **2.2. Walk-over Survey**

A brief walk-over survey was undertaken by David T Jones and Jane Kenney on 4<sup>th</sup> May 2017. The aim of this was for Mr Jones to indicate locations where he had made finds previously and to spend some time inspecting the areas to confirm the range of material that could be found and identify any visible features. This enabled the extent of the sites to be defined and photographs of their character to be taken, as well as obtaining relatively accurate grid references using a hand-held Global Positioning System (GPS).

There was no intention to collect items as these would require precise recording and flakes identified were returned to their findspot with the exception of a small number collected as representative samples. The location of rough-outs was approximately plotted using a hand-held GPS. In one case a completed axe roughout (PRN 67331) was found and this was recovered and its find location plotted.

On comparing the hand-held GPS grid references with map evidence and georeferenced aerial photographs in the Global Information System (GIS) program MapInfo it was seen that many of the references had a greater error than the 3m that the instrument displayed at the time of recording. Where possible map and aerial photograph evidence was used to improve the precision of the grid references in relation to the map evidence.

### 2.3. Find recording

In order to rapidly create a basic record of David T Jones' collection the objects were photographed on both sides under controlled lighting with a scale. These photographs were then cut out in Photoshop and Adobe Illustrator was used to present them together at the same scale. The photographs were scaled to 1:2 using the photographed scale to adjust the images to the right size. There may be some slight error caused by this methodology but at the reproduction scale errors are very small.

The same process was applied to two other roughouts loaned for the purpose by CR Hughes, Llanfairfechan. Photographs and drawings of other axes that were available in the HER or other GAT archives were obtained and also scaled to present at the same 1:2 scale, allowing all the pieces to be compared directly.

While recording Mr Jones' collection each object was individually bagged and its PRN, find location and grid reference were written on the bag so that the provenance of the finds can be easily identified in future. Where finds were generally located to the Ffridd Tan y Graig site they were given a general central grid reference and a subdivision of PRN 67415.

The length, width and thickness of each item were measured and each was weighed. A brief description was written. This information was recorded in a database which has been used to create appendix II.1.

### 2.4. Archiving

The digital archive will be submitted to RCAHMW for long term curation and the report submitted to the Gwynedd HER. A database of sites has been produced for ease of entry into the HER. This includes a summary of each site, which is translated into Welsh, as are the site names.

## 3. Results

Figure 3 shows the location of all Group VII related sites and findspots in the gazetteer (appendix I). Figure 4 shows the Llanfairfechan and Graig Lwyd areas in more detail. The more significant finds and sites are described individually below.

### 3.1. Sites identified by David T Jones

The names for the sites are the local names of the areas in which they lie or the name of the nearest farm. These are the names that Mr Jones has used for his sites and correspond to labels attached to the objects to identify their provenance.



Plate 6. David T Jones searching for flakes on the northern shoulder of Garreg Fawr

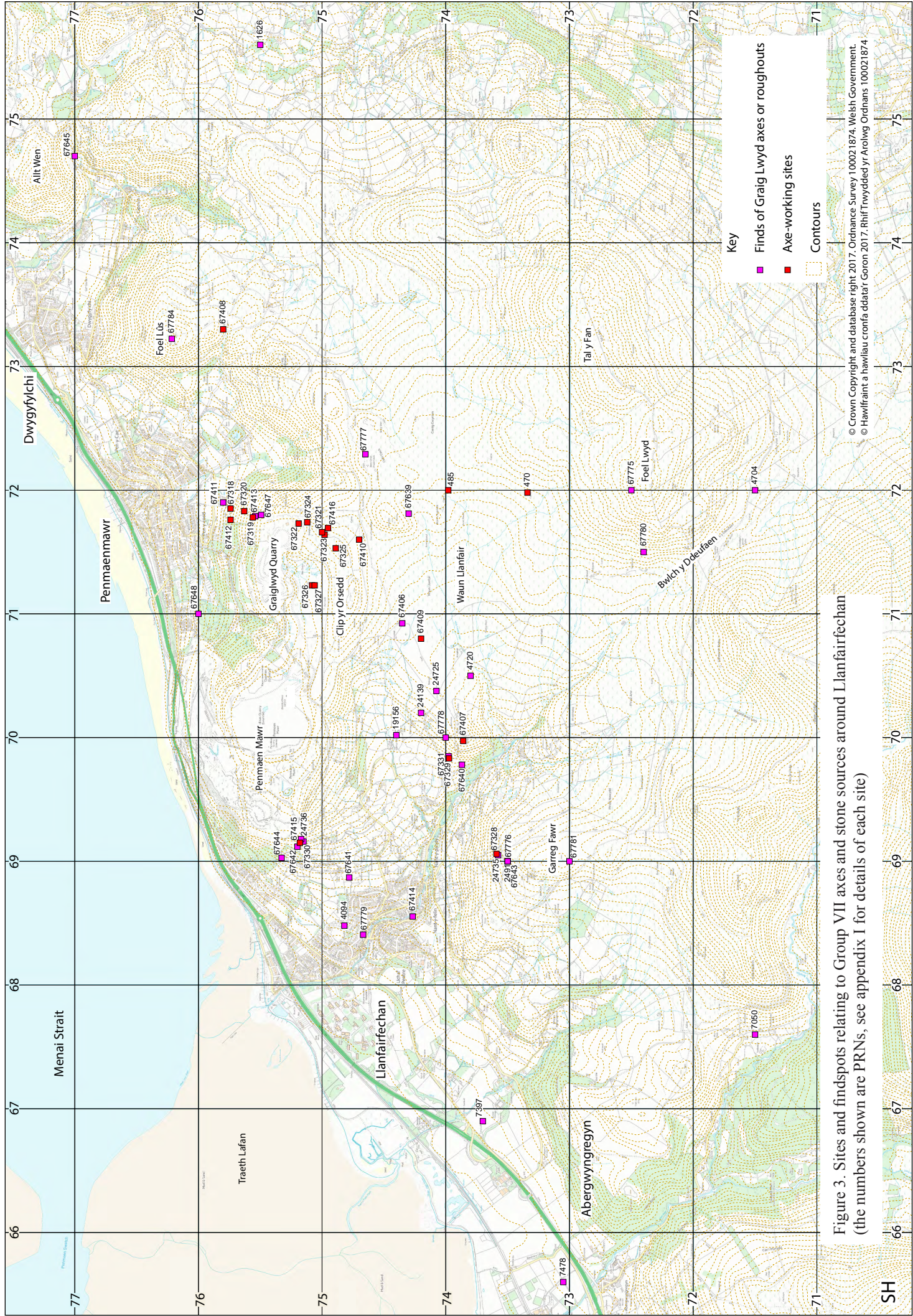
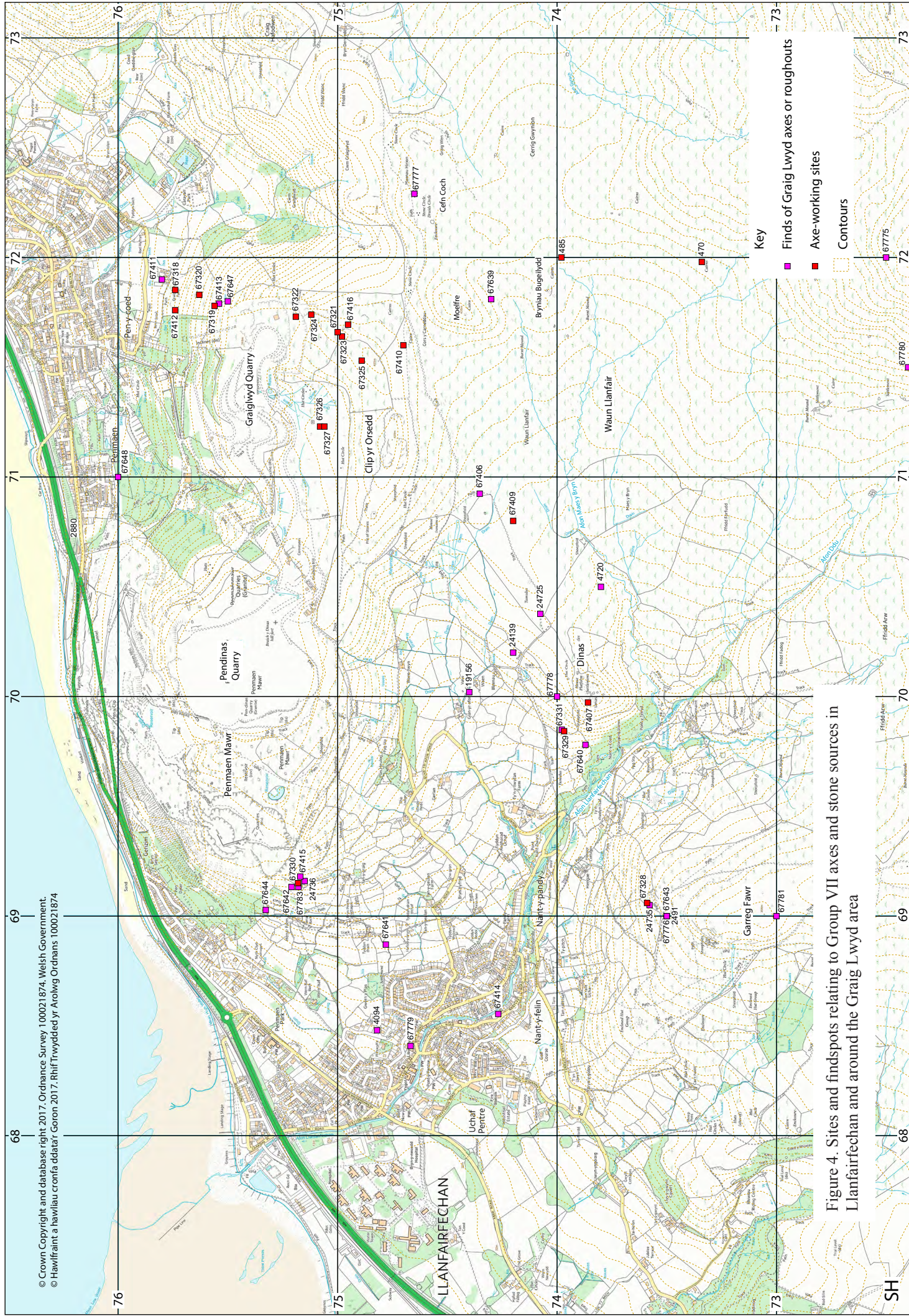


Figure 3. Sites and findspots relating to Group VII axes and stone sources around Llanfairfechan (the numbers shown are PRNs, see appendix I for details of each site)

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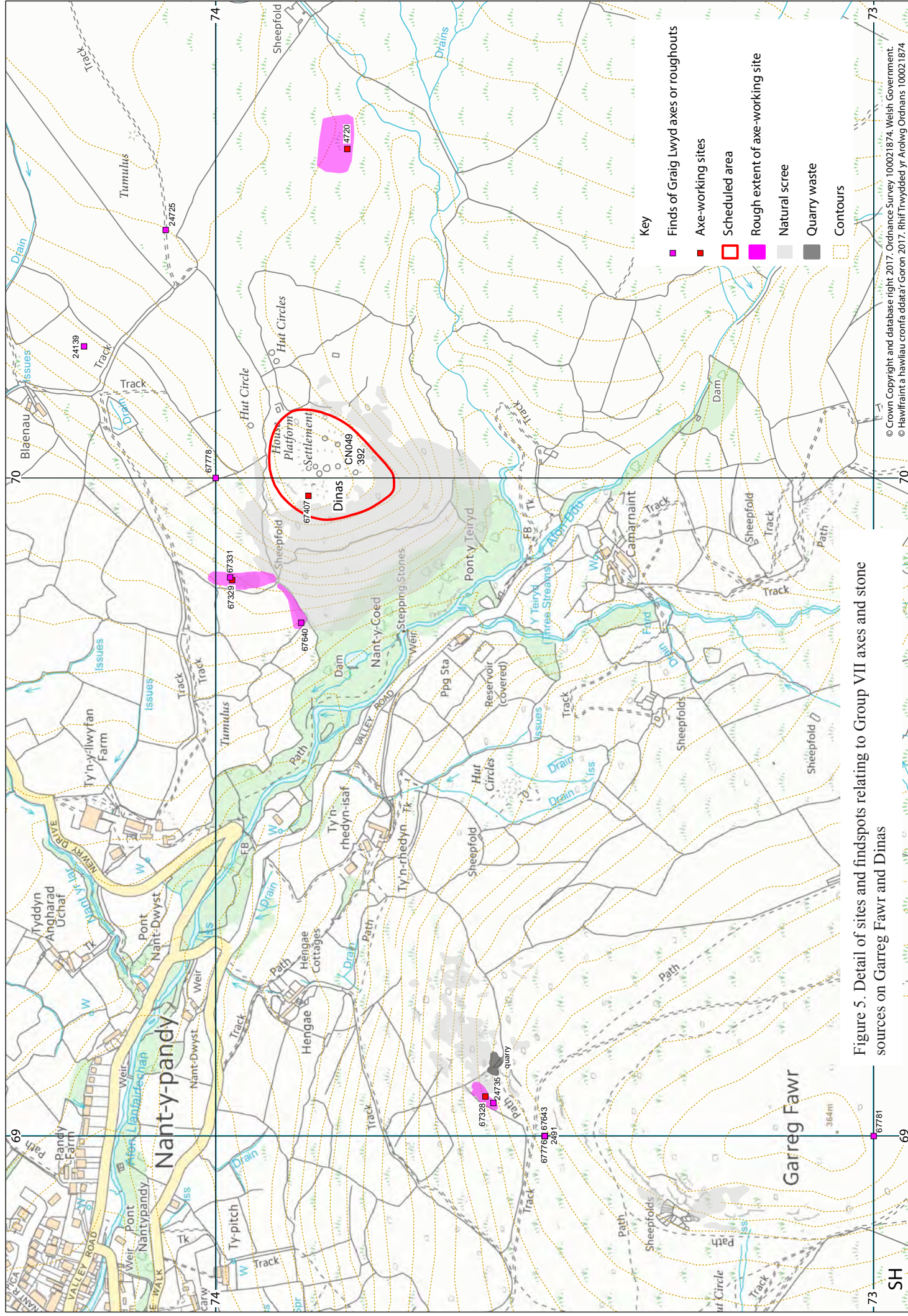


Figure 5. Detail of sites and findspots relating to Group VII axes and stone sources on Garreg Fawr and Dinas

***Northern Shoulder of Garreg Fawr (PRN 67328)***

Central grid reference: SH69067359

(Figure 5)

Field-walking by David T Jones on the north-western side of Garreg Fawr, above Ffridd Hengae, has revealed substantial evidence of axe making at an altitude of approximately 280m OD. The area is an exposed scree slope in which some large tumbled boulders and possibly bedrock protrude (plate 6). Much of the adjacent grass-covered slope is also a scree slope, which has been consolidated by vegetation. Two complete rough-outs (PRN 24735) were found in this area, as well as flaking debitage (Jones and Williams 2004) (plate 7).

The knapping debitage can be found scattered throughout the exposed scree, where generally only the larger flakes are found as the smaller ones have fallen into the gaps between the stones. Smaller flakes can be found in erosion scars beyond the limit of the exposed scree. These are more likely to be *in situ* and indicate that the axe working area extended beyond the exposed scree. In places the scree has been built into small terraces up to about 0.5m high or moved to create small hollows no more than about 1m long (plate 8). This might have been done at any period and they are not noticeably associated with flake scatters, though fallen stones may be obscuring flaking debris. However the slight and partially collapsed condition of these features makes them appear to be of considerable antiquity.

Some of the boulders within the scree have pieces broken from them. The flake scars are generally patinated and covered in lichen, suggesting ancient damage, not relating to the building of the nearby wall (plate 9). Two boulders with considerable numbers of fractures at about SH 69093 73586 have been used as the end of an enclosure wall (PRN 67332). Above this enclosure is a small post medieval quarry (PRN 67333) and the waste from this has been tipped down the hill. This waste contains large numbers of flakes but the fresh, unpatinated surfaces of these make them clearly identifiable from the Neolithic flakes. There are also flakes from wall building close to the field walls but again these have fresh surfaces.

Plate 7. Axe working area on the northern shoulder of Garreg Fawr, the ranging rod is next to the location of two axe roughouts found here (PRN 24735)



Plate 8. Small terrace very roughly built of scree on the northern shoulder of Garreg Fawr





Plate 9. Broken boulder on the northern shoulder of Garreg Fawr, possibly broken for material for axes

The exposed scree continues to the east around the northern side of Garreg Fawr. This area was inspected but no flakes were found here and the stone is generally not as fine and suitable for axe making. However it is possible that some areas of working also exist within these screes or more probably under the grass that thinly covers the scree on the rest of the slope.

During the inspection numerous flakes were found, although only two were retained, including small flakes in sheep scrapes in the turf. The two roughouts (PRN 24735) previously found in the area were found close together, protruding from the scree slope with a single layer of stones above them. They appeared to be deliberately placed, although whether this was done by the axe makers or by previous finders is not known.

***Ty'n y Llwyfan, at the foot of Dinas (PRN 67329)***

Central grid reference: SH6984573975

(Figure 5)

David T Jones has found flakes and rough-outs in an area at the north-western side of the foot of Dinas. The main site is at a height of about 230m OD but the screes running down the slope from this have also been used. Sheep had been concentrated over the winter in an area just above the mountain wall causing the dead bracken to be trampled away and some soil erosion to occur (plate 10). This exposed more of the working area than Mr Jones had seen previously. Part of the area is covered by exposed screes but the most productive areas were those with grass or bracken cover. A search of the area revealed both large and small working flakes scattered over a wide area at the base of the natural screes (plate 11). Some rough-outs were identified and one complete axe roughout (PRN 67331) was found (plate 12 and figure app II.2.4). Small flakes were often found in groups, suggestive of flaking floors, although they were most easily found where sheep had caused slight erosion under trees or similar places. Various small terraces were seen across the area, some of which might have been the result of soil creep but others seem more deliberate (plate 13). There are hollows within the area of larger scree possibly resulting from recovering stone for building the field wall but other hollows and platforms were consolidated by soil cover and seemed much older. Within one of these hollows a possible hammerstone was found. Other coarse rounded stones were found across the area but few had distinctive battering marks from being used as hammerstones.

The main area of working ran along the foot of the screes, including areas of grass covered scree, from about SH 6985 7401 to about SH 6985 7391, but scree to the north-western side of a wall that runs south-west down the slope also contained occasional flakes and a crude rough-out was found at about SH 69781 73877.

In the main area detailed survey could clarify the platforms and test excavation of some of these would almost certainly reveal working floors. From the findings of Hazzledine Warren at Graig Lwyd it is likely that there are some hearths amongst the working floors that could provide a very valuable series of dates for the working.



Plate 10. Part of the area of the Ty'n y Llwyfan axe-working site at the foot of Dinas, showing the condition of the area when inspected

Plate 11. Flakes and very crude roughouts scattered on the surface at the Ty'n y Llwyfan site



Plate 12. Axe roughout (PRN 67331) in situ as found



Plate 13. Slight terraces at the Ty'n y Llwyfan site visible due to the lack of old bracken but due to be buried in bracken again soon after the photograph was taken

***Ffridd Tan y Graig, Pen Penmaen (PRN 67330)***

Central grid reference: SH69157518

(Figure 6)

Field-walking by David T Jones identified an axe flaking area on the western face of the main outcrop of Pen Penmaen. Much of the scree is either covered by vegetation or by quarry waste but a few gaps are left where axe flaking debitage can be found. The discovery in this area of a broken axe roughout (PRN 24736) was published in 2004 (Jones and Williams 2004).

This area is under woodland and the natural scree is much confused by stone dumped from the quarry, some of which has fallen a long way and often smashed, with fresh flakes scars. However it seems probable that this scree was also worked in the early 19th century phase of quarrying before the large companies took over, explaining some of the more deliberate fresh flaking. Much of the scree is natural, especially further down the slope, and



Plate 14. An example of the character of the Ffridd Tan y Graig site under woodland



Plate 15. Mr Jones searching for flakes at Ffridd Tan y Graig

heavily patinated flakes and roughouts can be found in it. David T Jones has found numerous roughouts in this area, amounting to over 60% of his collection. The number of pieces from this site must be partly due to it being on a footpath not far from Mr Jones' house, making it the most accessible of the sites and most frequently visited.

When the area was inspected on 04/05/2017 debris from the trees and moss growth obscured a lot of the area (plate 14), but some flakes and very rough rough-outs were located, especially towards the lower part of the area (plate 15). A few days after the inspection Mr Jones found a new roughout (PRN 67642) (figure app II.2.2) on the side of the footpath. Roughouts (PRN 67644) were found but not collected by Mr Jones to the north of Henar, north-west and down slope of the main site, and it is likely that the axe-working area extends further down slope, but here the scree there are more overgrown.

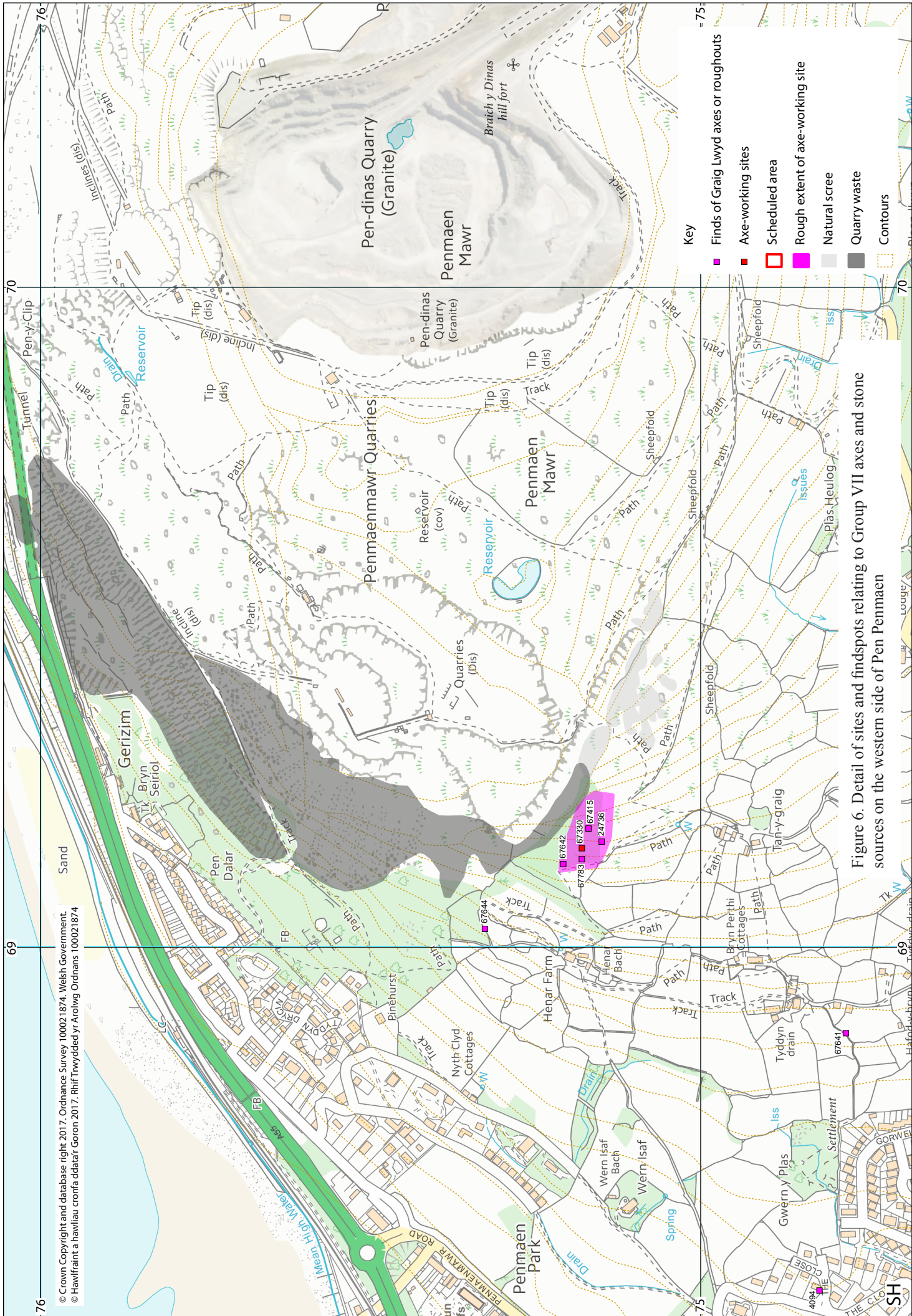


Figure 6. Detail of sites and findspots relating to Group VII axes and stone sources on the western side of Pen Penmaen



Plate 16. Outcropping rock on the top of Dinas that has had some blocks prised out

***PRN 67407 Small scale quarrying, Dinas***

Grid reference: SH6997373859

Figure 5, plate 16

On the north-western edge of the plateau on top of Dinas some of the small areas of rock outcropping appears possibly to be quarried. The quarrying involves prising small blocks out of the fractured bedrock. The fractures are patinated so this is of considerable antiquity. This is presumably related to the hillfort but it is just possible that this may have been to obtain stone for axe making.

### **3.2. Axe-working sites around Waun Llanfair**

Figure 4

Identifying axe-working sites away from the stone sources is difficult in this terrain as the ground is generally well-covered in vegetation and there are few open areas. Sites can therefore only be located by chance finds of flakes or roughouts, however such chance finds have been made and do give an idea of the location of these sites. Some of these sites are ones identified in the literature and others are ones found by Mr Jones.

The most important of these sites away from the stone sources is a site on Maes y Bryn (PRN 4720), on the western edge of Waun Llanfair and just east of Dinas. This is close to Afon Maes y Bryn and Davis and Edmonds (2011, 173) note that axe-working sites in the Lake District are often close to streams. Unlike those sites this one is higher than the closest stone source, if the stone was being obtained from the foot of the Dinas screes. The south-facing slope and proximity of water however would make this a fairly suitable settlement site. There are the remains of a long hut (PRN 8040) nearby and extensive cultivation terraces (PRN 8039) in the area, so the area was used for occupation and cultivation in later periods.

The site is centred on SH705738 and was found by J Davies in May 1961 (Davies 1961). It is rare that the ffriddoedd are ploughed but in the winter of 1960-1 this area was ploughed “for the first time in living memory” (Davies 1961, 1). It has probably not been ploughed since but Davies took advantage of the ploughing to field walk the area. This site has previously been recorded on the HER as just an axe findspot, obscuring the importance of the site.

Davies found axe-working flakes scattered over a wide area. The full extent of this site is not known as no map has been published. It is notable that three of the flakes found are described as being worked into tools; a scraper, a borer and a chopper. Seven axe roughouts are described and three narrow roughouts with triangular cross sections are described as roughouts for picks. Several of the roughouts had broken perpendicularly across their thickest part. Hammerstones, mainly pebbles from the glacial till, were found and three small pieces of worked flint. The site also yielded four polished axes, but these were all reworked to resharpen them or modify them into new tools. The modifying axes had not been repolished. Warren also reports some polished axes from his excavations (Warren 1922, 24-26) which had also been reworked probably after the breakage of the original axe.

The people using the Maes y Bryn site seem to have been producing roughouts and reusing old polished axes but

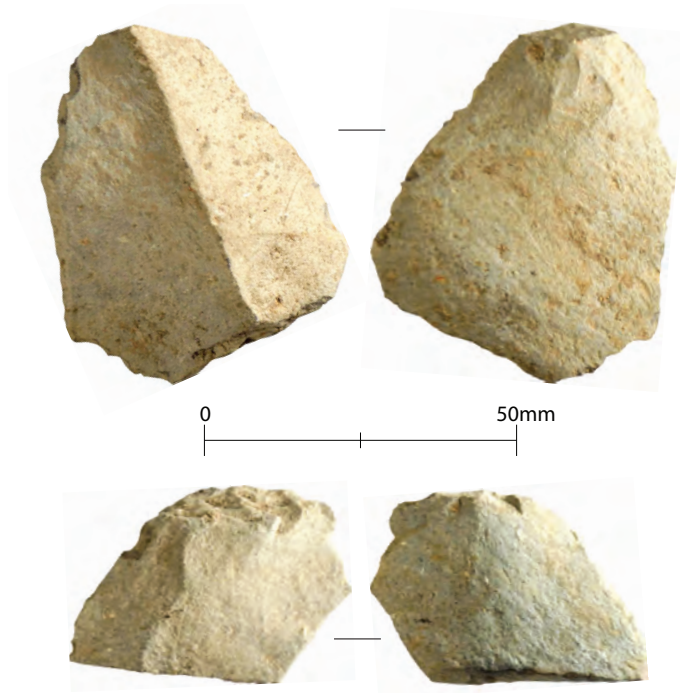


Plate 17. Flakes from Pen Cefn (PRN 67406)

there is no evidence from Davies' finds of polishing to finish axes at this site. The presence of a few flint flakes and other tools made of Group VII stone suggests at least a temporary occupation site rather than just manufacturing roughouts.

David T Jones has also found axe flakes in this general area, including scattered flakes near the sheepfold next to Afon Maes y Bryn and in other locations along the western edge of Waun Llanfair. During the walk-over survey David T Jones found two flakes on Pen Cefn in erosion on the path (PRN 67406, plate 17). Previously he had also found a complete and finely-worked axe roughout (PRN 24725) (Williams and Jones 2003) made on stone that seems to be of too high quality to be from the Dinas screes. This could have been brought here for finishing off at an axe-working site.

In June 1919 Hazzledine Warren found what appears to be an axe working floor (PRN 67409) on Waun Llanfair. This cannot be located with much precision. Warren describes the find and location as "a small chipped axe, with numerous flakes in the same 'felsitic' material, not far from the Dinas behind Llanfairfechan" (Warren 1919, 342) and "a small chipped axe between Clip yr Orsedd and the Dinas" (Warren 1922, 2). The 1919 description suggests it was closer to Dinas than Clip yr Orsedd and it is probable that it was found close to the path that runs along the western side of Waun Llanfair. The description of numerous flakes suggests that this was probably an axe working site.

Hazzledine Warren also found what appears to be an axe working floor (PRN 67410) on Cors y Carneddau, described as "to the west of Carneddau (also on top of the moors) nearly every mole-hill was seen to have several small flakes upon it, and when one dug through the turf evidence of a true chipping-floor was at once apparent" (Warren 1919, 342) and "a great quantity of flakes near the Carneddau Cairn" (Warren 1922, 2). Both reports suggest an extensive axe-working area and intact flaking floors beneath the turf. David T Jones has also found numerous flakes in this area in molehills. This site is not far from the Graig Lwyd stone sources and is on a route across the hills used since at least the Bronze Age.

The distribution of possible axe-working sites is extended by a discovery by Hazzledine Warren of a site at the top of the "Green Gorge" near Foel Lûs (PRN 67408) (Warren 1919, 342; 1922, 2) (location shown on figure 3). Warren describes the find as consisting of "a great number of flakes, a few scrapers, and a fragment of a partly polished axe" (Warren 1922, 2) and "an abundance of 'felsitic' flakes, a few scrapers, and one broken butt-end of a partially polished axe" (Warren 1919, 342). This is a considerable distance from the stone sources but on an obvious route from the uplands down onto the coastal plain. Warren also mentions an axe found on the summit of Foel Lûs (PRN 67784) (Warren 1922, 2).

In addition to the above finds from molehills and eroding areas some axe-working debris has been recovered by

excavation away from the source sites. The axe-working flakes were found in the buried soil beneath cairns. Two of the cairns investigated lay just west of the Graig Lwyd source area. In a pit under cairn PRN 67326 (Cairn 65 in the survey records) were numerous axe-making flakes of Graig Lwyd stone, lumps of charcoal and several sherds of coarse pottery. On the surface of the pit fill was a flat stone that might have been a capping stone and a possible anvil stone was standing upright towards the centre of the pit (Williams and Davidson 1998, 17-18).

In a buried soil under cairn PRN 67327 (Cairn 67 in the survey records) were numerous axe-making flakes. A mixed sample of charcoal from this layer was radiocarbon dated to 4350-3990 cal BC at 95.4% confidence (5330 $\pm$ 90 BP (SWAN-142)). An upright stone was found under the cairn with a concentration of flakes to the south of it. A rough-out axe was also found under the cairn (Williams and Davidson 1998, 18-19). The radiocarbon date has been suggested as indicating an early start to the use of Graig Lwyd stone (Williams *et al* 2011, 269), but it is a date with a large error on bulk charcoal with no direct relationship to the axe flakes so it is not a reliable date to be used in this way.

The other two cairns were some distance away, well within Waun Llanfair. Cairn PRN 470 partially sealed a buried soil containing a scatter of waste pieces of flint and Graig Lwyd stone. Under cairn PRN 485 was a scatter of artefacts, including three flint scrapers, a flint knife, a broken oblique arrowhead and a small and narrow axe or pick of Graig Lwyd rock (see figure app II.2.5) as well as several waste flakes of flint and Graig Lwyd rock, including axe-trimming flakes. The style of the flint tools indicates a late Neolithic date (Caseldine, Roberts and Smith 2007, 5-8). The presence of flint tools at these sites suggests more activities than just axe-working taking place and they could be significant settlement sites.

It is possible in all these cases that there was some relationship between the cairns and the activity below but it seems more likely that axe-working sites are widely distributed in this area and there is a high chance of a cairn being incidentally built on top of them. Some of these sites seem to be more general occupation sites and as the activity under cairn PRN 67326 was associated with a pit some of these sites may have buried features, pits and postholes, and not just be scatters of artefacts.

### 3.3. Graig Lwyd

#### Figure 7

While collecting information for this project it was noticed that the sites at Graig Lwyd investigated in 1992 and 1993 had not been included on the HER. The main sites investigated or referred to in that project (sites A-G and I) have been given grid references from the unpublished reports and plans and have been allocated PRNs and added to the database for inclusion in the HER. They also appear in the gazetteer (appendix I). Individual trenches have not been added to the HER because there is insufficient available information to allow precise grid references.

The 1990s investigations were detailed and important but the report on this work (Williams and Davidson 1998) was completed in haste without sufficient resources and there are some important omissions. There is no plan of



Plate 18. Trench E excavated in 1993 showing axe roughout placed in the corner, photograph taken by John Llywelyn Williams in 1993

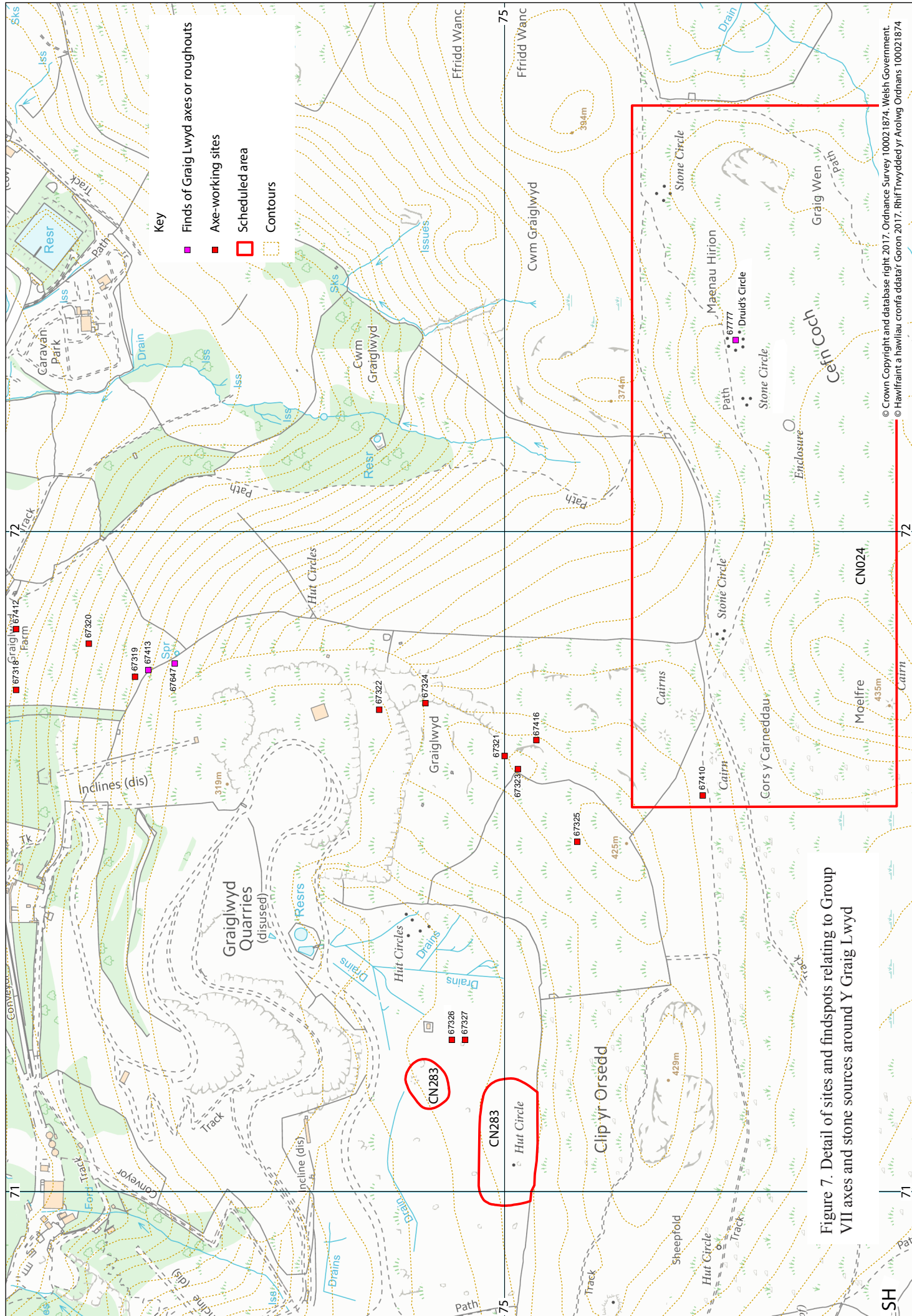




Plate 19. Polished axe found in the 1992/3 excavations, photograph taken by John Llywelyn Williams in 1992/3

Plate 20. Main rock face (PRN 67416 ) in site F/D with base shattered probably by quarrying



Plate 21. John Llywelyn Williams indicates the point of percussion of large flake scar at PRN 67416

test pit E where an area of Neolithic quarrying was excavated. A complete and well-finished roughout was found placed upright in one corner of the quarried area. The position of this roughout has not been illustrated in the published or unpublished reports. Images of the excavations have been provided by John Llywelyn Williams, including one showing this roughout, and it is reproduced here (plate 18).

The finds from that project have not been recorded, analysed or even listed in any of the reports. John Llywelyn Williams' photographs include a ground, if not polished, stone axe *in situ* (plate 19), but this cannot be identified from the reports unless it is the "roughout" found under cairn 67 (PRN 67327). A study of artefacts from this project would be useful so that roughouts can be compared to other sites in the area. The finds and site records are held by Conwy Archive Service and it would be worthwhile in future investigating this archive to obtain better locations for the plans and to make available a report on the finds.

Part of site D/F is a prominent outcrop face and it is worthy of a record in its own right, especially as it was not described in Williams and Davidson 1998 or the related unpublished reports. This rock face has been allocated PRN 67416 and it is located at SH7169474952. This is a natural rock face but its lower part has been broken and roughly quarried creating an overhang and quantities of waste debris at the foot of the face (plate 20). Some of the lower part of the quarrying seems to be relatively recent with some very fresh breaks, but higher up faces that clearly appear deliberately broken are much more patinated. The evidence that much of this is the result of Neolithic quarrying is from a large flake scar on the rock (plate 21). Of particular note are the ripple marks that indicate the point of percussion is the bottom of the flake showing that it was struck from below. The size of the flake, height above ground level and point of percussion suggest this flake was struck off by a large stone maul swung upwards manually or possibly swung on an A-frame. It seems highly likely that traces of the quarrying process are buried in the debris at the foot of the rock face and possibly even the maul that struck off the flake.

The survey work indicated hollows, mostly probably relating to axe-working, extending down the hill slope almost as far as Graig Lwyd Farm. This is confirmed by a sketch map created by Warren (Warren 1922, fig 1) that marks the discovery of flakes all across this area. He describes finding "a great number of flakes a little above the farm buildings" at Graig Lwyd farm in 1919 (PRN 67412) (Warren 1919, 342). He also reports the discovery by his wife of a broken axe on a track at Graig Lwyd Farm (PRN 67411) (Warren 1919, 342).

### **3.4. Petrologically sampled axes and roughouts**

Figure 3

Axes and roughouts sampled by the CBA Implement Petrology Committee falling within the Llanfairfechan and Penmaenmawr areas (Clough and Cummins 1988, 247-8) have been included in the database for this project and given new PRNs. They are included individually in the gazetteer (appendix I). All the sampled roughouts were, unsurprisingly, of Group VII stone except one that is described as "near Group VII". These are quite widely distributed and hint at patterns since demonstrated by David T Jones' collecting. Perhaps most significant in the distribution of these finds is a group of three roughouts found on the mountain of Foel Lwyd to the south-east of Llanfairfechan. These may suggest axe-working sites in this area. A roughout was also found nearby in Bwlch y Ddeufaen. Foel Lwyd was probably used for upland grazing in the Neolithic period and the finds could represent axe-working close to seasonal settlement sites. Two of the roughouts are very approximately located but one is placed towards the foot of the hill close to the location of probable Iron Age settlements. If this area was used for settlement in the Iron Age then there is no reason that it could not also have been settled in the Neolithic.

### **3.5. David T Jones' Collection and Comparisons to Other Finds**

#### ***Axe roughouts***

The axe roughouts in David T Jones' collection were photographed and briefly recorded with measurements and basic features noted. Photographs and drawings of other axes were obtained from the HER or GAT collections. All the recorded axes have been presented in appendix II.2, figures app II.2.1-5 at the same scale so that their variation in size can be seen. Almost all of these are roughouts, not finished axes, although some are close to completion.

All the axes have been made on blocks of scree in most cases collected near where they were found and worked up to roughout stage near where they were collected. There is no suggestion of axes made on quarried stone, apart possibly from an example on very fine stone (PRN 24725), which Williams has suggested may have come from the quarrying at Graig Lwyd (Williams and Jones 2003). The suitability of scree for axe manufacture is easily

detected as there is a distinctive ringing sound when walking over scree of sufficiently fine rock.

Although some very large chunky pieces of scree have been used at Ffridd Tan y Graig it is noticeable that several of the roughouts from this area are on very thin, flat pieces. These would have produced broad but thin axes if they had been completed. These would seem to be too thin for use in felling trees and possibly had another function. The roughout (PRN 67331) from Dinas is also fairly flat and the fine example from just east of Dinas (PRN 24725) is a good example of this style of thin axe. It has a fairly broad blade, that is only slightly curved and the sides taper to a slightly narrower butt. The sides are straight with no hint of waisting as seen on the classic Langdale axes. Other complete roughouts follow this same pattern (e.g. PRN 7397 and 7478), and many of the broken roughouts seem to have been aiming for this style.

However there was some variation in style as PRN 24736 from Ffridd Tan y Graig has a much more rounded blade and its sides are also curving rather than straight. The axe, if it has been finished, may have been almost a tear-drop shape. The two roughouts from Garreg Fawr are also different in shape. Their sides barely taper so that much of the axe is as wide as the blade with just a little narrowing at the butt. With the shorter of the two axes the blade and the butt are much the same width, but this would perhaps have been corrected in the finished axe. They are also thicker and rounder in profile than the flat form.

Some of the roughouts indicate that large axes were being aimed at. PRN 67415.11 could have been up to 300mm long before it broke, although the final axe would have been somewhat reduced from this size. In contrast PRN 67415.10 might have been little over 100mm long, though if it was the end of a chisel rather than an axe it may have been longer.

Chisel-like forms seem to have been a product of this industry, though rare. The best of these is a small example from under cairn PRN 485, but Davies (1961) mentions finding three such roughouts and, as mentioned above, PRN 67415.10 could be the end of a chisel roughout. PRN 67413 also seems very narrow and could have been the roughout for a chisel. Warren mentions some roughouts of this form from his excavations at Graig Lwyd (Warren 1919 353-5).

Many of the roughouts from Ffridd Tan y Graig are broken near the middle, across the thickest point. These are usually broken perpendicularly to the long axis of the axe. Such breaks do not seem to follow any fault in the stone and the faces of these breaks are all as patinated as the rest of the item so there is no doubt that these breaks were made in antiquity. It is possible that some of these breaks were made deliberately to put a roughout that had failed out of commission; occasionally there is a suggestion of a point of percussion from a flat face. However Mark Edmonds states that “perpendicular snaps are a common error during production - a result of blows being delivered with too much force and/or at the wrong angle” (pers. comm. 2017), and it is probable that most of these breaks are accidental. This fracture pattern of roughouts is commonly seen at the Langdale source quarry sites, where “end shock” has caused roughouts to snap in half (Davis and Edmonds 2011, 174).

Some of the pieces found by J Davies at Maes y Bryn (Davies 1961) are also broken in the same way as are some of those published by Warren (Warren 1922). Warren does not comment on the breaks but he did find one roughout where he could refit the two halves and the axe maker seems to have continued with the blade half and made it into

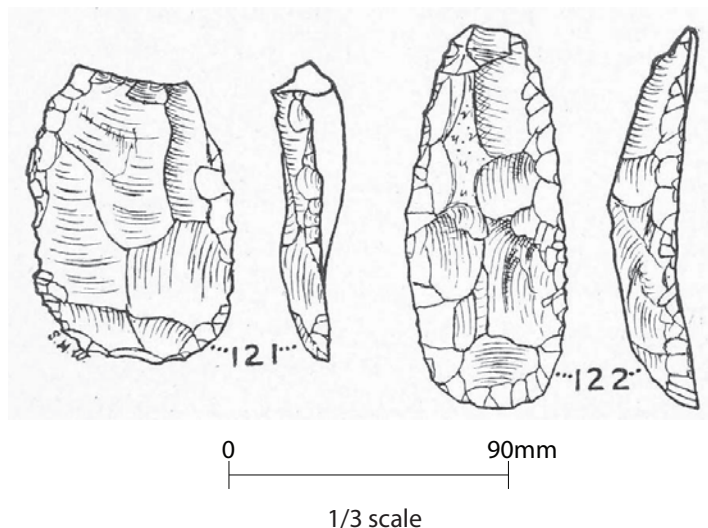


Plate 22. Scrapers from Graig Lwyd illustrated in Warren (1922, fig. 14)

a shorter axe blade (Warren 1922, 10-11). Other axes are illustrated as broken but he has also been able to refit the other half so he is able to draw the complete axe.

It seems that a piece of scree was selected that was about the right size, shape and thickness for the desired finished axe. This was then roughly worked all round to produce the approximate shape and uneven areas on the faces removed. It seems that often this last process was the one that failed. If a few strokes did not remove these lumps the piece was discarded. If the piece seemed to be tractable at this stage it was probably often removed from the scree for further working elsewhere, but even once it had been carefully worked into shape it could still be discarded before the fine secondary working and polishing.

Considering the very large quantity of waste flakes associated with axe production there were few tools made on these flakes. However some Group VII flakes were certainly used in this way. Warren (1922, 26-28) comments on the scarcity of these tools but does illustrate scrapers and other tools (plate 22). Kendall (1927, 140) found "a dozen or more distinct scrapers" on the site he excavated at Graig Lwyd and Davies (1961, 3) mentions three worked flakes, one of which was a scraper. Away from the stone sources tools other than axes on Group VII stone are even rarer, but there are two crude scrapers from under the tomb of Bryn yr Hen Bobl, Anglesey (Lynch 1991, fig 29, p108). In the list of Graig Lwyd finds from across Britain compiled by Glen (1935, 202-203, 218) he includes a scraper made from a Graig Lwyd axe found on the Great Orme.

#### ***Axe-hammer/battle-axe (PRN 67638)***

Although not part of the study of Group VII sites and finds the axe-hammer or battle-axe held by David T Jones is briefly recorded here as it forms part of his collection. It is a fine example of a stone battle-axe (Figure app II.2.6) and a description and details of its discovery have been published (Williams 1982). It was found by Mr E. Bailey in 1961 in the Penmaenmawr Quarry at the base of an incline located at about SH 70207525, but now removed by quarrying. The object is damaged from use cracking nuts, and probable use as a hammer in antiquity, but is finely made. The shaft hole is neatly drilled from both sides, there is an incised decorative line along the upper and lower sides of the axe and it has been finely polished. It is made out of dolerite (Williams 1982).

There seem to have been a number of axe-hammers found in the Llanfairfechan area (figure 8). Five other find spots have been identified from the HER and Clough and Cummins 1988 in Llanfairfechan or the western end of Penmaenmawr. For one findspot (PRN 4075) three axe-hammers are mentioned as being found, although only



Plate 23. Barrow at Ty'n y Llwyfan (PRN 67334)

one has been described. The two axe-hammers that have been thin sectioned and their stone identified are both of dolerite (Clough and Cummins 1988, 248), like Mr Jones' example.

An investigation of why there is a concentration of axe-hammers here is beyond the current project but would be worth investigating. It might be considered whether it is purely coincidence that three of the findspots are close to the prominent burial mound (PRN 67334) at Ty'n y Llwyfan (plate 23), and a fourth is not far away.



#### 4. Discussion

The extent to which this stone axe source has been ignored by the archaeological fraternity is extraordinary. Instead of a single stone source it represents an extensive and complex landscape comparable to that at Great Langdale, Cumbria, including several stone sources and numerous working sites. Some of this extent and variety has been known about since Hazzledine Warren's work but his main excavations at Graig Lwyd have perhaps distracted attention from the other sites. The survey and small excavation work of GAT in the 1990s was very valuable in identifying and recording in detail the locations and surface traces of the Graig Lwyd sites, but sites from this work are not yet included in the HER. The published plans also lack grid references and because of that are difficult to follow on the ground. This and the publication in *Archaeology in Wales*, which may not be seen by many stone axe researchers, may have worked to minimise the impact of this publication. The broader range of stone sources was highlighted in the introduction to Williams and Davidson 1998, and in other publications by John Llewelyn Williams, but this has not resulted in any further work.

Bradley and Edmonds (1988, 184) suggest they ruled out the Graig Lwyd area for their study of an axe source because of the destruction of much of the rock source by the modern quarry. However they actually visited the area and were well aware of the Dinas and Garreg Fawr sources (Edmonds pers. comm. 11/10/2017). It is true that a considerable area of axe grade rock has been lost from the main Graig Lwyd source. The cliffs that produced the screes in which Warren found his tons of axes were removed by the modern quarry. Much of the original scree on this side is also covered with recent quarry waste. The Graig Lwyd outcrop must have had a fairly broad top on which stone would have been easily available and the site dug by Kendal (Kendall 1927) provides an example of the type of site that has been lost. However there is still much that is left. When the full extent of the landscape from Graig Lwyd to Garreg Fawr is taken into account the lost portion can be seen to be relatively small. The Garreg Fawr and Dinas sources are undamaged and although some of the screes to the west of Penmaen Mawr are buried under quarry waste there are extensive areas still exposed. The information to be obtained from this landscape cannot be much inferior to that gained from the Great Langdale area.

The current project has demonstrated that the stone sources utilised in the Penmaenmawr and Llanfairfechan area were mainly scree sources. Opencast workings similar to those investigated in the Lake District and Mynydd Rhiw (Bradley and Edmonds 1988, 185-187, 193-195; Burrow 2011) have not been identified. There was some quarrying of bedrock at Graig Lwyd, such as the removal of blocks from the bedrock seen in test pit E and the quarrying of the main outcrop (PRN 67416). However current evidence suggests that quarrying was very small scale compared to the production of axes from scree. Certainly the vast proportion of axes must have come from the screes considering the 3 tons or more of axes and roughouts recovered by Warren from his excavations on the screes (Glen 1935, 189).

In Great Langdale fire setting was used in the quarrying leaving quantities of charcoal within some of the layers (Bradley and Edmonds 1988, 200-204). It is probable that the main crag at Graig Lwyd (PRN 67416) was quarried in the same way and that charcoal from fire setting might be found by excavation to provide a sequence of radiocarbon dates.

In some cases the roughouts seems to have been worked to quite an advanced stage on the source sites. Some of the roughouts from Ffridd Tan y Graig are carefully worked and PRN 24736 is very finely worked and seems ready for polishing if it had not broken. Roughouts PRN 24735.01 and .02 from Garreg Fawr are also well-shaped. The working of roughouts on the source sites may be due to these being generally lower and more sheltered than those at Great Langdale, however much of the secondary working probably occurred away from the source sites. Out-lying axe-working sites may be comparable to finishing sites at Great Langdale, often located a short distance away from the stone sources, where crude roughouts were more carefully worked by secondary flaking. While still high on the hills these were in more sheltered location, below the summits and almost certainly below the contemporary tree line (Bradley and Edmonds 1988, 194). It is likely that the site on Maes y Bryn east of Dinas (PRN 4720) was something of this sort.

The scatter of flakes across Waun Llanfair from near Dinas to the "Carneddau" cairn near the Graig Lwyd outcrop suggests numerous sites away from the rock sources where flaking took place. Roughouts such as PRN 24725 from north-east of Dinas and PRN 67639 from Bryniau Bugeilydd may have related to such working sites. The discovery of Graig Lwyd flakes under cairns during the 1990s Graig Lwyd project and the Waun Llanfair project further extends the spread activity. It would appear likely that there are working floors in many areas across Waun Llanfair that could only be found by excavation due to the current vegetation cover. Although much of the plateau

is covered with peat, it is probable that working areas were concentrated on the drier margins, which are generally under moorgrass and heather, and might be more amenable to test pitting.

Warren's find of an extensive area of axe working debris near Foel Lûs is particularly interesting. This is about 1.7km to the north-east in a straight line from the main Graig Lwyd outcrop and about 2.5km by a reasonable walking route. It may indicate that axe working sites spread in a north-easterly direction as well as towards Dinas. This area has been studied for Bronze Age sites but is rarely considered in relation to the axe source.

There is also the question of where the final polishing took place. It is usually stated that the polishing of axes took place in settlements some distance away from the source but with the exception of Ehenside tarn, discovered in the 19<sup>th</sup> century, roughouts, polished axes and grinding slabs have rarely been found with settlement evidence (Bradley and Edmonds 1993, 144, 182). An axe polishing stone was found at Llandygai, near Bangor (Lynch and Musson 2004, 45-46, fig 18), but suggestions that axe polishing was taking place there near a settlement site can be dismissed. The house found on the site was early Neolithic while the axe polisher, located a considerable distance from the house, was dated to the later Neolithic. A later Neolithic pit near the house containing a broken Graig Lwyd axe and flakes represented the breaking up of a polished axe, not its manufacture. The adjacent site of Parc Bryn Cegin had evidence for the destruction, or at least reuse, of axes rather than manufacture (Kenney 2009, 53). Other occupation sites have produced axes but again often suggestive of use or reuse rather than manufacture (e.g. a reused axe at Penmynydd, Anglesey (Davidson *et al* 2010, 13, 16)). "A great number" of Graig Lwyd flakes and a hone stone from the settlement deposits under the chambered tomb of Bryn yr Hen Bobl, Anglesey (Lynch 1969, 166) have been suggested as evidence of axe production at this settlement (Lynch 1991, 108). The presence of reworked flakes from polished axes could hint that here also axes were being broken down rather than made, and a detailed reassessment of the Graig Lwyd material from this site would be valuable. It must be concluded that the location of axe finishing sites has not been identified in north-west Wales and they should perhaps be sought on the uplands of Waun Llanfair close to the sources, rather than on distant lowlands settlements.

It is tempting to consider the "magic mountain" hypothesis (Sheridan 2007), where it is suggested that the dramatic distant location of an axe source made the axes produced from it more highly valued. The prominent eminence of Pike O'Sickle in Great Langdale and the restricted access to quarries on its face may be related to the popularity of axes from that source reflected in the numbers produced and their wide extent of their distribution across Britain. As Group VII axes are the next most numerous and widely distributed axes in Britain it might be expected that these also came from a source with a dramatic and prominent character. This aspect of the source has been largely ignored because of the concentration on Graig Lwyd, which while visible from long distances is not particularly dramatic. However if the whole source landscape is considered the area is marked by a feature even more prominent than Pike O'Sickle. The great boss of Penmaenmawr Mountain, surrounded by steep cliffs, is a dramatic landmark (plate 24), and would have been even more so before its top was removed by quarrying and its crags were buried in quarry waste. It is currently on the coast but in the Neolithic period would have overlooked a level coastal plain. The discovery of extensive axe-working in the screes on its western side shows that this landmark would not have been peripheral to the workings but within the middle of them. There is still much to consider about this distinctive and unusual landscape that may have influenced its use in the Neolithic.



Plate 24. Penmaenmawr Mountain from Llanfairfechan showing its prominence

## 5. Condition, Threats and Recommendations

The amount of work required to bring the understanding of the Group VII axe source up to the level of that of the Great Langdale Group VI source is considerable but there is plenty of evidence that it would repay the effort.

An urgent priority is to protect the axe-working sites, particularly Ty'n Llwyfan, Dinas, which is both the best preserved and the most vulnerable. One episode of field improvement would entirely destroy this site. Although high sheep numbers have exposed the site and made it clearly visible this year, high sheep concentrations, such as if a feeder were placed here, could also cause considerable disturbance. This area is strongly recommended for scheduling. To ensure preservation by record in case of superficial damage it is recommended that a detailed survey be carried out to record the slight hollows and platforms visible across this area. More detailed study would require excavation to expose working floors and would involve a considerable commitment as the position of all flakes and other finds would need to be recorded and these should then be thoroughly studied to allow working practices to be investigated.

The other two working sites on the screes are much less vulnerable as they are open scree and unlikely to be improved in any way. It is possible that in this case scheduling may draw attention to these sites and cause more damage by people disturbing the screes searching for axes.

The Maes y Bryn site would be well worth investigation. This could only be done by excavation as it has probably not been ploughed since the occasion recorded by J Davies in 1961. However the risk remains that it might be ploughed again or more intensively improved. The nature and extent of this site is not known. It is away from the source rock, so it is not a primary production site, and it is possible that it may be a settlement site where axes are being further worked.

It is assumed that existing quarry concessions make scheduling of the Graig Lwyd source difficult or it would already have been done. However it is recommended that this be explored to see what is possible. As the quarry does not seem to intend to expand further in this direction they may agree to scheduling with suitable negotiations.

Detailed inspection is required to define the extent of the axe source sites and to identify any others. It is probable that there are other sites on Garreg Fawr, especially near the main crags at the summit, which could be found by methodical searches. Fieldwalking and possibly test pitting might be used to find secondary working sites. David T Jones relates finding occasional flakes over a wide area on the uplands and identifying and defining such sites would be useful in understanding how the axes are worked. The discovery of axe flakes under later cairns shows that these must be widely distributed.

Understanding the use of the landscape as a whole would be an important aim of any research. Further pollen work could make a contribution to that and might locate areas with Neolithic cereal growing. These areas could then be targeted by test pitting. Further investigation near locations where axe flakes have been found could explore the extent of any scatters. The flakes found by Caseldine *et al* (2007) were assumed to be in some way related to the cairns over them but this is not necessarily the case. Perhaps Neolithic activity is widely distributed in the buried soil in these areas, but later use leading to the building of cairns could be an indicator of areas also suitable for Neolithic. More excavation could test these ideas.

Of considerable importance is finding some indication of where people were living. As most of the fields are under pasture the opportunities for fieldwalking are small but most pasture is occasionally ploughed to improve it and if the opportunity could be taken to walk these fields whenever they arose flint and other find scatters might be identified. It seems likely that there was some occupation on the uplands and this could only be found by excavation. Extensive test pitting might provide a start to this process. Investigation might also be made of probable occupation sites. The most probable, in the author's opinion, is the summit of Dinas. John Llywelyn Williams commented to the author that Dinas has many similarities with Clegyr Boia (Williams 1952; Vyner 2001) in Pembrokeshire. It is a very prominent hill, close to the coast, in an area of known Neolithic activity. The attribution of the rampart at Clegyr Boia to the Neolithic might be open to discussion, though defended sites of Neolithic date certainly existed in Cornwall (Mercer 1986). It is possible that one of the three walls or ramparts identified on Dinas could even be Neolithic in date. No Neolithic finds were reported from the 1925 excavations on Dinas (Hughes and Lowe 1925) but the excavated area was small and focused on an Iron Age roundhouse as well as small trenches across the ramparts. It is probable that any potential Neolithic houses were small and post-built and would be hard to detect with geophysical survey but a high resolution survey might pick up hearths and suggest areas to explore. Only

trenching could attempt to detect any Neolithic activity on the hill top.

There is also still much that could be done in the Graig Lwyd area. It would be recommended that the previous work there be published in more detail, especially the quarrying excavated at test pit E. This could be done as all the site records are held in Conwy Archives with photographs and plans. It would also be useful if finds from this work were published. Even the roughout found deliberately placed in test pit E has not been drawn and published and no attempt has been made to analyse flakes recovered.

New work could establish the extent of the workings by test pitting, which was very successful in the 1990s. More exploration of the extent of quarrying rather than working screes would also be useful. An obvious place to target would be the main crag of exposed high quality rock at Graig Lwyd. This has clearly been quarried to some extent and it would be valuable to test how much of this quarrying was Neolithic. Extensive debris lies at the foot of the crag and a trench through this would soon identify where there was Neolithic working here as axe working flakes would be likely to be numerous. Photographic techniques for creating 3D models would provide an ideal way to record the face of the crag itself and produce an annotated interpretive elevation or orthomosaic.

Many people in Penmaenmawr and Llanfairfechan have found axes and roughouts. Contacting these people and recording their finds, especially where the provenance of these is known, would provide a wider range of axe types to study and might also lead to the identification of new sites, particularly axe-working sites away from the stone sources. A detailed study of available axes and roughouts could expand on the very basic notes made here on David T Jones' collection in detecting the forms aimed at and variety in manufacturing techniques.

A petrological study of the outcrops and screes might reveal variations in the rock that could be used to sub-divide the Group VII attribution and identify which source was used for certain styles of axe. In the long term excavation and radiocarbon dating of hearths or fires for fire setting near the axe sources might provide a range of dates over which the sources were used and possibly indicate any sequence in the use of the different sources. Currently the use of even the main Graig Lwyd screes is very poorly dated and the use of the source can only be dated by dating the axes found away from the source. It would be particularly useful to study the cliffs to the west of the Penmaenmawr Quarry. Some of these must be fine grained rock to generate the screes below used for axes. If the extent of this fine rock was identified it would be possible to search for possible Neolithic quarrying activity there as well.

More attention needs to be paid to hammerstones. These are often not collected so a deliberate search would have to be made. It seems likely that suitable stones were collected from the beach for hammerstones but it is possible that they were obtained from different sources which might indicate where people were coming to the rock source sites from.

It is noted that the RCAHMW recognise the work done by Ivor E Davies of Penmaenmawr in investigating sites around Dinas and Garreg Fawr, including carrying out minor excavations (RCAHMW1956, xliii). It seems likely that he made some record but Dennis Roberts of Penmaenmawr Historical Society, who has some of Ivor Davies's notes and has been involved in archiving others, remembers very little on axes. He suggests that some material in Llandudno Museum, the National Museum or the Royal Commission archives might be relevant but even if it exists Ivor Davies's handwriting is very difficult to decipher so any project to try and recover this information could be time consuming and not necessarily successful (Dennis Roberts pers. comm. 04/10/2017).

Opportunities for work in this area are currently greatly enhanced by the Heritage Lottery Funded Carneddau Landscape Partnership project led by the Snowdonia National Park Authority (SNPA). A meeting has been held with John G Roberts who is leading the project for the SNPA and he would like to include work in the Llanfairfechan and Penmaenmawr areas on the stone axe sources in partnership with GAT and Cadw. It is therefore proposed that GAT produce a management and interpretation plan in relation to the stone sources highlighting the issues and opportunities. This would include priorities for protection and investigation, promotion of the archaeology and identify who would be involved and how involvement can be achieved. This would be associated with some detailed survey of the most vulnerable site to inform proposals for further work there, possibly including excavation. It would include liaison with relevant landowners and local groups, as well as contact with universities which may be willing to be involved and provide expertise. The finished plan would contribute to the Landscape Conservation Action Plan being produced by the Carneddau Landscape Partnership, leading to a range of activities and archaeological work during the delivery phase of the project.

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#### **Gwynedd Historic Environment Record**

Further Investigation Files: PRN 19156 and 24139

#### **Websites**

Geology of Britain Viewer, British Geological Survey: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (accessed 05/07/2017)

## Appendix I: Gazetteer of Sites Relating to Group VII Axes Around Llanfairfechan and Penmaenmawr

### Axe-working Sites

#### PRN 470

##### Cairn, N of Foel Lwyd

*Grid Reference:* SH71987334

*Community:* Llanfairfechan

##### *Existing HER description*

Cairns and mounds on and S of Bryniau Bugeilydd, at about 1200-1350ft above OD. More than 20 low mounds are scattered over an area of about 1000 yards by 500 yards and E of Bryniau Bugeilydd. Four at least are certainly sepulchral and although most of the others resemble the field clearance dumps SE of Braich y Dinas, their close association with the burial mounds suggests that the whole group is a cairn cemetery. Mound of stones with kerb of large stones, cist NE of centre 4ft 6ins, and 3ft coverstone lying near. <1>

No change. Surveyed at 1:10560. <2>

The monument comprises the remains of a burial cairn, probably dating to the Bronze Age (c. 2300 BC - 800 BC) and situated within open moorland, on the lower NW-facing slopes of Foel Lwyd. The stone-built cairn is circular on plan, with a kerb of large, mainly long, blocks of stone; it measures about 8m in diameter and up to 0.5m in height. There is an exposed cist in the centre of the cairn, constructed of several large orthostats. A large capstone is situated immediately to the W of the cist. <4>

A quite large and substantially kerbed cairn. Two slabs of a slightly off centre cist are visible and a large cover slab is lying just to the west next to a neat line of stones, probably just robbing material. 50m to the south-east is the circular platform of a probable BA house, not previously recorded. (Smith, 2002)

This cairn had previously been planned by the RCAHMW (1956, Fig. 124) and consisting of a platform with a kerb of orthostatic edging slabs and a central cist. It is approximately circular, 8m diameter and 0.5m high (Fig. 17a). The cist lies off-centre, to the north-east and has been exposed by robbing with the cover slab pulled to one side, but there are no records of any finds. It has an upright side slab and an end slab surviving and appears to have been about 1.8m long and 0.8m wide overall. The size within the cist walls was probably about 1.6m by 0.6m. There are two other small depressions, probably also robbing pits and some dumped stone. Some of the kerbstones are still intact an upright but several have collapsed. The absence of surrounding loose stones indicates that the cairn was built as a low platform and was never a mound, and the cist was apparently never buried. The off-centre position of the cist suggests that it may be a secondary burial, in which case the primary burial may still survive, in which case it is probably in a pit sealed by the cairn.

The excavation proved to be more complex than had been thought, even though no burial deposits of any kind were encountered. A buried soil was present and this produced a number of waste flakes of flint and of Graig Lwyd stone. A new plan was made of the whole cairn (Fig. 16), to replace that by the RCAHMW. The buried soil was stony and environmental samples were taken with difficulty. Some charcoal was also collected and has already been sent for dating. Bulk samples were also taken for flotation and these may produce some macrobotanical evidence. (Caseldine, Roberts & Smith, 2007)

##### *NMR description*

##### *New description*

The buried soil beneath the cairn produced a scatter of waste pieces of flint and Graig Lwyd stone, some clearly sealed beneath the cairn kerb and some beyond the kerb. This demonstrates that the activity predates the cairn construction but could still have been associated with the builders of the cairn. It was not a deliberate deposit and could mean that there is more widespread activity close by, or it could be quite localised and created casually immediately prior to the cairn construction. The flint was of good quality and possibly imported. The presence of Graig Lwyd flakes is unexpected and suggests that a wider evaluation of use of the area needs to be made, with the possibility of more extensive activity in the area associated with the axe factory than might be imagined (Caseldine, Roberts and Smith 2007, 8).

##### *Sources consulted*

Caseldine, Roberts and Smith 2007, 8

**PRN 485****Cairn, Bryniau Bugeilydd**

**Grid Reference:** SH72007398

**Community:** Llanfairfechan

**Existing HER description**

Mound of stones. <1>

Small mound of stones and earth. <2>

Heap of stones c.3m diameter and a maximum of 0.4m high. Some stones around north side are suggestive of kerb stones but all are loose. There is a slight hollow in the centre which holds water. Some smallish stones are set on edge but no cist visible. Cairn is largely covered by grass and bilberry but stones in centre are exposed and stones outcrop elsewhere. Stones up to 0.5m in length. (Smith, 2002)

This cairn was one of three on a fairly level plateau area to the south of a small valley at the south side of Bryniau Bugeilydd. The cairn was approximately circular, c. 6m diameter and 0.5m high with a slight hollow in the centre where exposed stones could be seen, presumed to be a robbing pit although not central to the mound (Fig. 14a). The cairn was low and poorly defined, merging into the surrounding contours. A trench (Trench 6), 3m by 2m was excavated in the south-west quadrant of the cairn. After removal of the turf and heather mat the stones of the cairn were revealed. After planning the cairn surface (Fig. 14b) a smaller area of 2m by 1m was excavated through the cairn fill. The cairn itself was built of small sub-angular boulders with some smaller sub-angular stones with no real evidence of structure although one slightly larger stone was set upright at the edge of the cairn and may have been part of a wider pattern of intermittent edging stones.

The cairn stones overlay a thin grey silty horizon, about 0.08m deep that appeared to be the remnant of a buried soil and within this was a slightly darker area. On and in the buried soil were found a scatter of artefacts, including three flint scrapers, a flint knife, a broken oblique arrowhead and a small and narrow axe or pick of Graig Lwyd rock as well as several waste flakes of flint and Graig Lwyd rock. On excavation the darker area was shown to be simply a darkening, perhaps of humus, of the buried soil and not deliberate cut feature such as a pit. No charcoal was seen but a bulk sample was taken of the buried soil. A column sample could not be taken from the buried soil because of obstructing stone but three individual micro samples were taken through the depth of the soil. (Caseldine, Roberts & Smith, 2007)

**NMR description****New description**

On and in the buried soil underneath the cairn were found a scatter of artefacts, including three flint scrapers, a flint knife, a broken oblique arrowhead and a small and narrow axe or pick of Graig Lwyd rock as well as several waste flakes of flint and Graig Lwyd rock. The Graig Lwyd material is mainly of waste flakes, including primary axe-trimming flakes, and smaller, thin flakes. None of the flakes seem likely to derive from manufacture of the one tool present. This is a very narrow axe of chisel-shape, 112mm long and 32mm wide with the butt broken off. A small chunk found separately could be the tip of the broken off butt although this cannot be confirmed (Caseldine, Roberts and Smith 2007, 5-8).

The objects found were associated with the small feature 67, but not confined within it as most were scattered around it in a random way. They therefore do not seem to have been carefully placed and so seem more like casually abandoned objects than a meaningful deposit under the cairn. They also are objects that have been used and have been made elsewhere. However, their association with the cairn is very unlikely to be fortuitous. They might have been deliberately placed but deposited as a scatter. They might also have been part of an activity area, such as a house, over which the cairn was deliberately built. No charcoal was seen but two natural stones showed signs of burning and the dark patch 67, within the buried soil horizon, could be the remains of a deposit of organic matter. The scrapers and knives are of a similar material and workmanship and so clearly belong together. Their style indicates a Later Neolithic date but they are finer than other similar tools of that period found at the Llandygai henges, Bangor (Lynch 2004). The probable oblique arrowhead (SF10) can be paralleled widely in Later Neolithic Grooved Ware contexts but also found in Beaker contexts (Green

1984, 26-7, 33-4) and the suggested dates for the flintwork accords with the narrow stone axe. This is an unusual and not a dated type but several examples are known from the Graig Lwyd axe factory area (Wheeler 1925), where they were described as of chisel-type (Warren 1919 353-5). This one has a ground edge and seems to have also been abraded from use. These tools are no different except in

width to an axe and there seems to be a range of widths of axes, grading down to the chisel type, rather than the chisel being a distinct form. Use as an axe, i.e. in a chopping rather than a hammered chisel action is most likely. These implements, although far narrower than most axes are just as long. This makes them more fragile and must have been necessitated by a similar hafting method. The narrowness

of the blade might mean that they were designed for chopping out mortises in timber, rather than for cutting or shaping the outside of timbers (Caseldine, Roberts and Smith 2007, 7-8).

### ***Sources consulted***

Caseldine, Roberts and Smith 2007, 5-8

### **PRN 731**

#### **Axe Factory, N of Graig Lwyd**

***Grid Reference:*** SH71807550

***Community:*** Penmaenmawr

#### ***Existing HER description***

The Graig Lwyd group of axe factories [SH718755]. See plan 2. There are three main outcrops of the hard intrusive igneous rock from which Graig Lwyd axes are made. The properties of the rock of easy flaking, giving good bulbs of percussion and fairly smooth conchoidal fracture, is only found at its best at the margins of the outcrops, and it is on these margins that the working floors occur. The first thorough excavation took place 1919-1921. Subsequent excavation and collection have recovered numerous specimens, and collections of Graig Lwyd implements are preserved in the National Museum of Wales and many other museums. The lack of polished implements found at the site indicates that the implements were only chipped there and polished elsewhere. <1><2> (RCAHMW, 1956)

There is nothing visible on the ground to indicate the three areas of axe production. The activity of the site is shown by the great mass of flakes and broken roughouts on the downhill side of a large hearth (15ft x 20ft), itself covered with burnt flakes and with smaller chippings accumulated around it. <4>

Site visit on 12/02/79. Sample of material were taken from the axe site. Nothing of note was found. <5>

Large piles of flaked stones were found left and right of the boundary wall. Examples of possible axes were found. Some excavation had taken place with the flake screes. All the sites mentioned were visible some contained burnt stone. <6>

Field survey and excavation have confirmed the wealth of evidence which remains at Graiglwyd for both Neolithic stone extraction and processing, and for sites of other periods which remain within the quarry permission area. It is hoped that the identification of the archaeology within the quarry permission area will be used as an aid to sensitive and effective management of the remainder of the archaeological resource. All extant monuments to the south-east of the crushing complex would be endangered by any future plant expansion, though the threat to those in the central col area, being further away, is not so immediate. The cutting of an archaeologically unsupervised drainage ditch in 1995, bisecting the col area from north-west to south-east, did not disturb any of the surveyed monuments; this was by luck rather than by design. <7>

#### ***NMR description***

Graig Lwyd is one of the largest Neolithic axe factories known in Wales. Here, surface outcrops of igneous rock were exploited which not only dominated the local market, but reached as far as the Peak District, Yorkshire and Midlands.

At Graig Lwyd blocks of raw material were selected from the natural scree and crags and firstly roughly flaked into manageable form before being worked to roughly the correct shape and size. At this point the 'roughouts' as they are termed, appear to have moved from the site and were ground and polished to their finished form elsewhere.

Excavation were carried out here, during 1919-21 and in addition to the large quantity of flakes and roughouts noted across the hillside, five working floors were discovered.

#### ***New description***

The National Museums of Wales hold the following items from Graig Lwyd:-

23 axe roughouts, 149 axe roughouts (broken), 1 axe roughout (reused as a hammerstone), 235 axe roughouts (unfinished), 103 hammerstones, 3 stone knives, 4 pick roughouts, 266 pieces of debitage, 1 polished stone axe (butt missing, blade reworked), 1 stone scraper. Also 2 flint cores and 1 flint retouched piece (Burrow 2003, 138). These were from various donors but including Hazzledine Warren and CH Darbshire. Burrow 2003 also gives a full list of other museums housing material from Graig Lwyd.

### ***Sources consulted***

Burrow 2003

### **PRN 67318**

#### **Axe-working floor, site A, Graig Lwyd**

***Grid Reference:*** SH71767574

***Community:*** Penmaenmawr

#### ***Existing HER description***

#### ***NMR description***

#### ***New description***

Warren's site A on the Prisoner of War Path. The path (PRN 58758), made during the First World War was still quite new when inspected by Warren in 1919. It cut through the scree and exposed an axe-working floor where Warren found "an accumulation of waste flakes, broken axes, &c." (Warren 1922, 6).

On his sketch plan Warren (Warren 1922, fig 1) shows 3 trial holes dug below his site A and marks the discovery of axe flakes all across this hillside.

This area was surveyed in detail in 1992 when it was noted that the hillside is largely turfed over and that Warren can only have found axe-working sites where footpaths and tracks had caused erosion (Flook and Williams 1992, 11). The hollow defining site A is listed as feature 53 and described as "large shallow depression with smaller internal depression; appears to correspond to Hazzledine Warren's Site A" (Flook and Williams 1992, 8). The grid reference for this feature (here listed as 3053) is given in Davidson and Williams 1998, 34.

***Sources consulted***

Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67319**

**Axe-working floor, site B, Graig Lwyd**

***Grid Reference:*** SH71787556 C

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Warren's site B. His excavations in 1920 and 1921 were mainly concentrated on this site. The excavations revealed a large hearth and another smaller hearth with numerous layers of charcoal. Under the upper talus and above the natural scree was an extensive layer (in fact many complex overlapping layers) of axe debris. A large number of finds were recovered, including more than 400 broken axes found in the 1920 excavation alone. Complete axes included a cache of well-made axes found sealed under the field wall. A small number of the axes were polished, all of which had been broken and reworked. Warren suggests that polishing did not take place on the site. Beach pebbles used as hammers were found and a small number of other tools made on Graig Lwyd rock including a few scrapers. A flat pebble with engraved zigzag lines on it was also found. Warren illustrates some of his finds and includes in square brackets to museum to which they have been sent (Warren 1922). 3 tons of material representing 1100 finds, mainly of axe knapping debris, was recovered by Warren (Williams and Davidson 1998, 10). On his sketch plan Warren (Warren 1922, fig 1) shows a trial hole to the north-east and several to the south-east of the main site. On this map he marks the discovery of axe flakes all across this hillside.

This area was surveyed in detail in 1992 when it was noted that the hillside is largely turfed over and that Warren can only have found axe-working sites where footpaths and tracks had caused erosion (Flook and Williams 1992, 11). The area of disturbance defining site B is listed as feature 60 and described as "area of intense disturbance, mounds and hollows on both sides of the field wall, corresponds to Warren's Site B; subject to much modern disturbance post-Warren (also sampled by 1992 trial excavation)" (Flook and Williams 1992, 8). The grid reference for this feature (here listed as 3060) is given in Davidson and Williams 1998, 34.

In 1992 a trench was excavated to investigate surviving stratigraphy where Warren had dug and also other trenches were dug in nearby hollows. Intact working floor deposits were found and charcoal from a scree layer containing axe debitage was radiocarbon dated (4400±40BP (Beta-128505) 3110-2910 cal BC at 95.4% confidence) (Williams and Davidson 1998).

***Sources consulted***

Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67320**

**Axe-working floor, site C, Graig Lwyd**

***Grid Reference:*** SH71837563

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Warren's site C marked on his sketch plan Warren (Warren 1922, fig 1) just below a peat cutting track running across the hillside. On this map Warren marks the discovery of axe flakes all across this hillside.

This area was surveyed in detail in 1992 when it was noted that the hillside is largely turfed over and that Warren can only have found axe-working sites where footpaths and tracks had caused erosion (Flook and Williams 1992, 11). The area of depressions defining site C is listed as feature 57 and described as "area of shallow depressions, appears to correspond to Warren's site C" (Flook and Williams 1992, 8). The grid reference for this feature (here

listed as 3057) is given in Davidson and Williams 1998, 34.

***Sources consulted***

Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67321**

**Axe-working area, site D, Graig Lwyd**

***Grid Reference:*** SH71667500 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Warren's site D marked on his sketch plan Warren (Warren 1922, fig 1) but with no description, flakes are shown as having been discovered in the area. Flook and Williams (1992, 7) include this site within their site F and have surveyed the area in detail. The grid reference for this site (listed as 3046) is given in Davidson and Williams 1998, 34.

***Sources consulted***

Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67322**

**Axe-working floor, site E, Graig Lwyd**

***Grid Reference:*** SH71737519 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Warren's site E, marked on his sketch plan close to the working face of the quarry (Warren 1922, fig 1). The site was excavated in 1926 by Rev. HGO Kendal in advance of it being quarried away. "a fair number" of axes and roughouts were found and several flat anvil stones. There were also a large number of hammerstones. There were extensive knapping floors with quantities of debris and hearths. Patches of small chips indicate a very well-preserved undisturbed knapping floor. Scrapers made on Graig Lwyd flakes were also found and a spindlewhorl. No illustrations of finds are given.

An approximate location for the site is given by Davidson and Williams 1998, 34. It is listed as feature 51 by Flook and Williams (1992, 8) and described as "approximate location of Kendall's Site E". This confirmed that the site has been quarried away.

***Sources consulted***

Kendal 1927; Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67323**

**Stone axe quarry, site F, Graig Lwyd**

***Grid Reference:*** SH71647498 C

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Warren's site D marked on his sketch plan (Warren 1922, fig 1) is essentially part of this site. He also marks axe flakes in other parts of this area.

This area was surveyed in detail in 1992 and designated as Site F, a possible early quarry site. The general character of this area is described as "The area consists of a small dome of the igneous outcrop further along on the SE side of Graiglwyd. The dome is largely turfed but the western face contains significant areas of protruding stone. The stone forms irregular blocks with occasional single block overhangs and there are many sub-circular depressions, some fairly prominent, on top of, as well as down the W face of the dome. Even at the base of the dome it would appear that the bedrock is not far from the surface as many apparent single boulders when tested appear in fact to represent protruding bedrock" (Flook and Williams 1992, 7). The site includes features 38-47. The features include an area of boulders, funnel shaped areas between faces of rock, 2 patches of flakes, the drystone wall in which 5 stone axes have been found, Warren's site D, and a vertical stone face with a depression at the base (Flook and Williams 1992, 7).

Nineteen test pits were dug in this area in 1993. These revealed layers of knapping debris and a quarry site. Three mounds containing large quantities of knapping debris were also investigated. A grid of further smaller sample pits

was dug to investigate the overlying depth of deposits (Williams and Davidson 1998).

***Sources consulted***

Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67324**

**Axe-working area, site G, Graig Lwyd**

***Grid Reference:*** SH71747512 C

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

This area was surveyed in detail in 1992 and designated as Site G, a possible axe making site. The general character of this area is described as “This is a reasonably level area on top of the outcrop on the eastern side between the modern quarry edge and the E edge of the outcrop. It contains many shallow sub-circular depressions, some prominent” (Flook and Williams 1992, 7). Features included in this area are feature 49 - an erosion scar revealing a concentration of flakes and at least one roughout; feature 50 - a large ledge or platform following the natural bed of the stone. Site E is also considered to have been an extension of this site (Flook and Williams 1992, 8). The grid references for the features (listed as 3049 and 3050) are given in Davidson and Williams 1998, 34.

***Sources consulted***

Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67325**

**Stone axe quarry, site I, Graig Lwyd**

***Grid Reference:*** SH71537489 C

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

This area was surveyed in detail in 1992 and designated as Site I, a possible early quarry site. The general character of this area is described as “This area is similar to Area F though more completely turfed over. It contains many single large blocks of protruding stone with occasional larger expanses of stone. Also evident is a concentrated series of semi-circular depressions set into the hillside sometimes forming prominent ledges. The depressions are often defined by a stone edge on the hill side of the feature. Along the base of the outcrop the depressions form embayments, some cut back into the hill with a depth of 1m or so. No obvious overhangs” (Flook and Williams 1992, 7). The grid reference for this site (listed as 3048) is given in Davidson and Williams 1998, 34.

***Sources consulted***

Flook and Williams 1992; Williams and Davidson 1998; Warren 1922; Davidson and Williams 1998

**PRN 67326**

**Cairn, W of Graig Lwyd**

***Grid Reference:*** SH71237508

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Cairn 65 surveyed in 1993 and excavated in 1994 as part of the Graiglwyd survey project. A round grassy mound 4m across and c 0.6m high. Two opposing quadrants were cleaned up and recorded and the SE quadrant fully excavated. The stones were randomly heaped with no kerb. Occasional flecks of charcoal, flakes of Graiglwyd rock and fragments of pottery were found within the body of the cairn. Bracken roots and animal burrows were present throughout the cairn, and these finds were probably disturbed from below. No buried soil was noted but a straight sided pit was found under the cairn. The pit was 0.6m across and 0.45m deep. It contained numerous axe-making flakes of Graiglwyd stone, lumps of charcoal and several sherds of coarse pottery. On the surface of the pit fill was a flat stone that might have been a capping stone and a possible anvil stone was standing upright towards the centre of the pit (Williams and Davidson 1998, 17-18).

It is likely that the relationship between the pit and cairn was coincidental and that the cairn could be Bronze Age in date, while the pit was Neolithic.

***Sources consulted***

Williams and Davidson 1998

**PRN 67327****Cairn, W of Graig Lwyd**

**Grid Reference:** SH71237506

**Community:** Penmaenmawr

**Existing HER description****NMR description****New description**

Cairn 67 surveyed in 1993 and excavated in 1994 as part of the Graiglwyd survey project. A low grassy mound 4.5m by 3.0m and 0.3m high. Two opposing quadrants were cleaned up and recorded and the NW quadrant fully excavated. The edge of the cairn was well-defined although there was no kerb. Numerous hand-sized pebbles of a rock foreign to the area were found in the cairn, either these were hammerstones or from the glacial till. Under the cairn was a layer, probably of buried soil, containing numerous axe-making flakes. Charcoal flecks and lumps (i.e. a mixed sample) were dated from this layer (5330+/-90 BP (SWAN-142) 4350-3990 cal BC at 95.4% confidence). An upright stone was found under the cairn with a concentration of flakes to the south of it. A rough-out axe was also found under the cairn (Williams and Davidson 1998, 18-19).

It is likely that the relationship between the flake scatter and cairn was coincidental and that the cairn could be Bronze Age in date, while the flake scatter is Neolithic.

**Sources consulted**

Williams and Davidson 1998

**PRN 67328****Stone Axe Working Area, Garreg Fawr, Llanfairfechan**

**Grid Reference:** SH69067359 C

**Community:** Llanfairfechan

**Existing HER description****NMR description****New description**

Field-walking by David T Jones on the north-western side of Garreg Fawr has revealed substantial evidence of axe making at an altitude of approximately 280m OD. The area is an exposed scree slope in which some large tumbled boulders and possibly bedrock protrude. Much of the adjacent slope which is grass covered is also a scree slope, which has been consolidated by vegetation. Two roughouts (PRN 24735) were found in this area and there is flaking debitage in the same area (Jones and Williams 2004).

The knapping debitage can be found scattered throughout the exposed scree, where generally only the larger flakes are found as the smaller ones have fallen into the gaps between the stones. Smaller flakes can be found in erosion scars beyond the limit of the exposed scree. These are more likely to be in situ and indicate that the axe working area extended beyond the exposed scree. In places the scree has been built into small terraces up to about 0.5m high or moved to create small hollows no more than about 1m long. This might have been done at any period and they are not noticeably associated with flake scatters, though fallen stones may be obscuring flaking debris. However the slight and partially collapsed condition of these features makes them appear to be of considerable antiquity.

Some of the boulders within the scree have pieces broken from them. The flake scars are generally patinated and covered in lichen, suggesting ancient damage, not relating to the building of the nearby wall. Two boulders with considerable numbers of fractures at about SH 69093 73586 have been used as the end of an enclosure wall (PRN 67332). Above this enclosure is a small quarry (PRN 67333) and the waste from this has been tipped down the hill. This waste contains large numbers of flakes but the fresh, unpatinated surfaces of these make them clearly identifiable from the Neolithic flakes. There are also flakes from wall building close to the field walls but again these have fresh surfaces.

The exposed scree continues to the east around the northern side of Garreg Fawr. This area was inspected but no flakes were found here and the stone is generally not as fine and suitable for axe making. However it is possible that some areas of working also exist within these screes or more probably under the grass that thinly covers the scree on the rest of the slope.

This area was inspected by David T Jones and Jane Kenney on 04/05/2017.

**Sources consulted**

Jones and Williams 2004

**PRN 67329****Stone Axe Working Area, Ty'n y Llwyfan, Llanfairfechan**

**Grid Reference:** SH6984573975 C

**Community:** Llanfairfechan

**Existing HER description****NMR description****New description**

David T Jones has found flakes and rough-outs in this area and it was inspected on 04/05/2017 by David T Jones and Jane Kenney. Sheep had been concentrated in the area over winter causing the dead bracken to be trampled away and some soil erosion to occur. This exposed more of the working area than David had seen previously. Part of the area is covered by exposed screes but the most productive areas were those with grass or bracken cover. A search of the area revealed both large and small working flakes scattered over a wide area at the base of the natural screes. Some rough-outs were identified and one complete axe (PRN 67331) was found. Small flakes were often found in groups, suggestive of flaking floors, although they were most easily found where sheep had caused slight erosion under trees or similar places. Various small terraces were seen across the area, some of which might have been the result of soil creep but others seemed more deliberate. There were hollows within the area of larger scree possibly resulting from recovering stone for building the field wall but other hollows and platforms were consolidated by soil cover and seemed much older. Within one of these hollows a possible hammerstone was found. Other coarse rounded stones were found across the area but few had distinctive battering marks from being used as a hammerstone.

The main area of working ran along the foot of the screes, including areas of grass covered scree, from about SH69857401 to about SH6985 7391, but scree to the NW side of a wall that runs SW also contained occasional flakes and a crude rough-out was found at about SH69781 73877.

**Sources consulted**

David T Jones, pers. comm.

**PRN 67330****Stone Axe Working Area, Ffridd Tan y Graig, Llanfairfechan**

**Grid Reference:** SH69157518 C

**Community:** Llanfairfechan

**Existing HER description****NMR description****New description**

Field-walking by David T Jones identified an axe flaking area on the west face of the main outcrop of Pen Penmaen. Much of the scree is either covered by vegetation or by quarry waste but a few gaps are left where axe flaking debitage can be found, including a broken axe (PRN 24736) (Jones and Williams 2004).

This area is under woodland and the natural scree is much confused by stone dumped from the quarry, some of which has fallen a long way and often smashed, with fresh flakes scars. However it seems probable that this scree was also worked in the early 19th century phase of quarrying before the large companies took over. That would explain some of the more deliberate fresh flaking. However natural scree is present and heavily patinated flakes and roughouts can be found in it. David T Jones has found numerous roughouts in this area, almost all broken in half. The area was visited on 04/05/2017 by David T Jones and Jane Kenney but debris from the trees and moss growth obscured a lot of the area. However some flakes and very rough rough-outs were located, especially towards the lower part of the area

**Sources consulted**

Jones and Williams 2004

**PRN 67407****Small scale quarrying, Dinas**

**Grid Reference:** SH6997373859

**Community:** Llanfairfechan

**Existing HER description****NMR description****New description**

On the NW edge of the plateau on top of Dinas some of the small areas of rock outcropping appears possible quarried. The quarrying involves prising small blocks out of the fractured bedrock. The fractures are patinated so this is of considerable antiquity. This is presumably related to the hillfort but it is just possible that this may have been to obtain stone for axe making.

***Sources consulted***

David T Jones, pers. comm.

**PRN 67408****Axe working site, Green Gorge, Foel Lûs**

***Grid Reference:*** SH733758 A

***Community:*** Penmaenmawr

***Existing HER description******NMR description******New description***

The location of S Hazzledine Warren's first stone axe find has perhaps been subject to some confusion due to the presence of two "Green Gorges" in Penmaenmawr. In 1919 he describes discovering his finds when "passing through the small elevated valley just above the Green Gorge at Penmaenmawr" (Warren 1919, 342), which might be assumed to refer to the Green Gorge near Graig Lwyd considering that he goes on to discuss the axe finds from near that area. However in 1922 he describes his first stone axe find, made in June 1919, as being found "at the foot of the higher portion of Foel Llys [Foel Lûs], and just at the top of the Green Gorge" (Warren 1922, 2). This clarifies that the Green Gorge referred to is not that near Graig Lwyd but the one that runs from Mountain Road directly up hill to the track to Ty'n y Ffridd, near Foel Lûs. The location of the site can, therefore, be identified with some confidence if not very great accuracy. Warren describes the find as consisting of "a great number of flakes, a few scrapers, and a fragment of a partly polished axe" (Warren 1922, 2) and "an abundance of 'felsitic' flakes, a few scrapers, and one broken butt-end of a partially polished axe" (Warren 1919, 342). Clearly this was not just the findspot of an isolated axe but of an axe-working site. The 1919 description also states that Warren "traced this site a short distance along two of the branches of this small valley, but failed to find evidence of its further extension in any direction" (Warren 1919, 342). This presumably means that he looked along the route of the Jubilee Path and the Ty'n y Ffridd track and that the site was close to the junction of these.

***Sources consulted***

Warren 1919 and 1922

**PRN 67409****Axe working site, Waun Llanfair**

***Grid Reference:*** SH708742 A

***Community:*** Llanfairfechan

***Existing HER description******NMR description******New description***

In June 1919 Hazzledine Warren found what appears to be an axe working floor on Waun Llanfair. This cannot be located with much precision. Warren describes the find and location as "a small chipped axe, with numerous flakes in the same 'felsitic' material, not far from the Dinas behind Llanfairfechan" (Warren 1919, 342) and "a small chipped axe between Clip yr Orsedd and the Dinas" (Warren 1922, 2). The 1919 description suggests it was closer to Dinas than Clip yr Orsedd and it is probable that it was found close to the path that runs along the western side of Waun Llanfair. A possible location of SH 708 742 has been chosen but this must not be considered any more than a very rough estimate.

While in the 1922 report Warren only mentions the axe it is clear from the 1919 report that flakes were also found and that this was probably an axe working site.

***Sources consulted***

Warren 1919 and 1922

**PRN 67410****Axe working site, Cors y Carneddau**

***Grid Reference:*** SH716747 A

***Community:*** Llanfairfechan

***Existing HER description******NMR description******New description***

In June 1919 Hazzledine Warren found what appears to be an axe working floor on Cors y Carneddau. This cannot be located with much precision. Warren describes the find and location as "to the west of Carneddau (also on top of the moors) nearly every mole-hill was seen to have several small flakes upon it, and when one dug through the turf evidence of a true chipping-floor was at once apparent" (Warren 1919, 342) and "a great quantity of flakes

near the Carneddau Cairn” (Warren 1922, 2). The “Carneddau Cairn” is most probably the large cairn (PRN 464) on Cors y Carneddau, with Warren probably presuming that the label ‘carneddau’ was indicating the name of the cairn whereas it actually indicates the presence of several cairns in this area. A possible location of SH 716 747 has been chosen but this must not be considered any more than a very rough estimate.

Both reports suggest an extensive axe-working area and intact flaking floors beneath the turf.

David T Jones of Llanfairfechan has also found numerous flakes in this area.

***Sources consulted***

Warren 1919 and 1922; David T Jones pers. comm.

**PRN 67412**

**Axe working site, Graig Lwyd Farm**

***Grid Reference:*** SH7185275740 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Hazzledine Warren describes finding “a great number of flakes a little above the farm buildings” at Graig Lwyd farm (Warren 1919, 342) in 1919. Warren’s sketch map (Warren 1922, fig 1) marks flakes at about SH 71852 75740, which is above the farm buildings and may be the location described. However it is likely that flakes and working floors are found all across this hill slope.

***Sources consulted***

Warren 1919 and 1922

**PRN 67416**

**Quarried face, Graig Lwyd**

***Grid Reference:*** SH7169474952

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

The main quarried face within the area of site F/D. This is a natural rock face but its lower part has been broken and roughly quarried creating an over hang and quantities of waste debris at the foot of the face. Much of the lower part of the quarrying seems to be relatively recent with some very fresh breaks, but higher up faces that clearly appear deliberately broken are much more patinated. The evidence that much of this is the result of Neolithic quarrying is also from a large flake scar on the rock. This measures about 7m long and is about 7m above the ground. Of particular note are the ripple marks that indicate the point at which it was struck from. The point of percussion is at the bottom of the flake showing that it was struck from below. The size of the flake, height above ground level and point of percussion suggest this flake was struck off by either a large stone maul swung upwards and hitting the rock at about shoulder height or possibly swung on an A-frame, in which case the upward strike would be a natural movement. It seems highly likely that traces of the quarrying process are buried in the debris at the foot of the rock face and possibly even the maul that struck off the flake.

The identification of this site and interpretation of it are from John Llewellyn Williams.

***Sources consulted***

John Llewellyn Williams pers. comm.

**Finds of polished axes and roughouts**

**PRN 1626**

**Polished Stone Axe, Findspot, Llechen Uchaf**

***Grid Reference:*** SH75607550

***Community:*** Henryd

***Existing HER description***

Polished stone axe, found on a waste tip near an abandoned copper (?) mine on land belonging to Llechau Uchaf, Llechwedd, by Meirion Jones (of that farm). Sent in by Mrs. Geraint James of Tregarth. <1>

***NMR description***

***New description***

Studied by Implement Petrology Committee: ref. no. CAE 8. Petrology: Group VII. Macroscopic description:

Light grey-brown even textured rock. Little weathering. Microscopic description: Usual characteristics of Group VII. No variant characteristics.

**Sources consulted**

GAT FI File PRN 1626

**PRN 2491**

**Axe Heads, Findspot, Garreg Fawr**

**Grid Reference:** SH69007350

**Community:** Llanfairfechan

**Existing HER description**

Three unfinished rough-out stone axe heads, probably rejected because they proved unsuitable for final shaping, together with one upper section of an incomplete unfinished rough-out. There is also a rectangular tool of the same factory material. It has concave edges, which have been deliberately serrated with secondary working. Perhaps it was used to perform some sawing or scraping task. It measures 240mm in length, 115mm in width (95mm at waist) and 35mm in thickness. <1>

A findspot of axe heads. No further artefacts were discovered. (Schofield, 2004)

**NMR description**

**New description**

**Sources consulted**

Dunn 1968

**PRN 4094**

**Graig Lwyd Roughout, Findspot, The Close, Llanfairfechan**

**Grid Reference:** SH68487482

**Community:** Llanfairfechan

**Existing HER description**

A small triangular-shaped rough out 9.4cm maximum length, 4.6cm maximum width and 1.8cm thick was found by Mr. E. Lloyd Jones, Llanfairfechan. A petrological section shows it to be made of typical Group VII rock and therefore a product of the Graig Lwyd axe factories. <1>

The finder of the above axe provided a grid reference of SH 68487482 marked on a 6" map copy. <2>

**NMR description**

**New description**

A roughout found by Mr E Lloyd Jones at The Close, Llanfairfechan. It is a rather small triangular shaped object with a maximum length of 9.4cm, maximum width of 4.6cm, and a thickness of 1.8cm. It is made on a flake of rock which retains its original weathered surfaces on the middle of each face and has been coarsely flaked around the edges (Williams 1982, illustration fig. 4.4).

The roughout has been sampled for the national petrological study (Caernarvonshire no. 111) and demonstrated to be made of Group VII stone. Held in a private collection (Clough and Cummins 1988).

**Sources consulted**

Williams 1982b; Clough and Cummins 1988, 247-8, 148-9

**PRN 4704**

**Graig Lwyd Axe, Findspot**

**Grid Reference:** SH72007150

**Community:** Caerhun

**Existing HER description**

A Graig Lwyd axe, unusual in that it was ground all over, was found in 1916 at a ford over a stream 'among some stones near a sheep-washing place' at Bwlch y Ddeufaen. <1>

Lent to the NMW by Prof. PJ White, Acc No 25.195. <2>

No further artefacts were discovered at this site. (Schofield, 2004)

**NMR description**

**New description**

This axe has been analysed by the CBA Implement Petrology committee (Clough and Cummins 1988, Caernarvonshire no. 3). It is classed as "near VII". The grid reference given by Clough and Cummins is SH714718, but the current reference, presumably from Wheeler 1925, is likely to be the correct one as it fits the description of the find spot, placing it near the ford at the end of the Bwlch y Ddeufaen road (now a carpark). Burrow 2003 (136-7) uses the Clough and Cummins grid reference.

**Sources consulted**

Clough and Cummins 1988; Burrow 2003

**PRN 4720**

**Axe-working site, Maes y Bryn, near Dinas**

**Grid Reference:** SH70507380 C

**Community:** Llanfairfechan

**Existing HER description**

Polished stone axes (3 complete, 1 fragment) were found together with many rough-outs and waste flakes, on the surface of a 'ffridd' E of Dinas on the N slope of Afon Maes y Bryn when the site was ploughed in the winter of 1960-1 'for the first time in living memory.' <1>

A further visit to the site by Davies yielded several roughed-out axes, hammer stones, scrapers, cores, choppers, a very fine borer, and a knife. (RCAHMW, 1956)

This assemblage bears a considerable resemblance to SH Warren's finds at Graig Lwyd and probably represents the site of another Neolithic axe factory. The finds are in private possession. <3>

A findspot of a Graig-Llwyd axe. No further artefact discoveries. (Schofield, 2004)

**NMR description**

A findspot of a Graig-Llwyd axe. No further artefact discoveries.

**New description**

This is an axe working site as roughouts and flakes were found as well as axes. Hammerstones were also found. Some of the axes were ground or polished, which is unusual for a site where axes are being roughout. These polished axes were reworked, one had been heavily resharpened and two had been entirely reshaped from larger polished axes. The reworked areas had not been polished. One broken axe butt was ground but had not been polished. Three narrow roughouts with triangular cross sections were found described as roughouts for picks. Flint flakes were also found (Davies 1961).

**Sources consulted**

Davies 1961

**PRN 7050**

**Stone Axe, Findspot, Nr Hafod y Gelyn**

**Grid Reference:** SH67607150

**Community:** ABER

**Existing HER description**

**NMR description**

**New description**

There seems to be nothing recorded about this axe. There is no Further Information file.

**Sources consulted**

**PRN 7397**

**Graig Lwyd Axe Roughout, Findspot, Gorrddinog**

**Grid Reference:** SH66907370

**Community:** ABER

**Existing HER description**

Graig Lwyd roughout similar to that found at College Farm, found in 1970 when the field was used for potatoes. <1>

**NMR description**

**New description**

The axe was found during potato harvesting in 1970. It is a complete axe with all the surface flaked and some damage on the cutting edge. The dark bluish grey of the unpatinated rock identifies it as the augite granophyre of Group VII axes. Length = 215mm, width at widest point = 84mm, width at narrowest point = 53mm (Williams 2000, 14).

**Sources consulted**

Williams 2000

**PRN 7478**

**Graig Lwyd Axe, Findspot, Henfaes, Aber**

**Grid Reference:** SH65607305

**Community:** ABER

**Existing HER description**

The axe was found in Cae front of Henfaes farm in the soil excavated from a water pipe trench. <1>

***NMR description***

***New description***

The axe was found in soil from a water pipe trench. It is a complete axe with all the surface flaked and some damage on the cutting edge. The dark bluish grey of the unpatinated rock identifies it as the augite granophyre of Group VII axes. Length = 220mm, width at widest point = 79mm, width at narrowest point = 63mm (Williams 2000, 14).

***Sources consulted***

Williams 2000

**PRN 19156**

**Stone Axe Fragment, Findspot, Llanfairfechan**

***Grid Reference:*** SH70027440

***Community:*** Llanfairfechan

***Existing HER description***

Graig Lwyd (?) Neolithic axe fragment. Some chips on the surface, but still very smooth. Discovered compacted into the path towards Dinas hillfort, Llanfairfechan, two years ago (2002).

The axe does appear to have been polished, although the surface is now pitted and worn. The colour of the stone is pale grey.

The fragment is roughly 62mm in length (truncated), 72mm in width, and c.28mm in thickness. (Steele, 2004)

***NMR description***

***New description***

PAS find (PAS number 81982; GAT-CA5C70).

The photographs show clear areas of polish on both faces.

***Sources consulted***

GAT FI File PRN 19156

**PRN 24139**

**Graig Lwyd Roughouts, Findspot, Blaenau**

***Grid Reference:*** SH70207420

***Community:*** Llanfairfechan

***Existing HER description***

Two Neolithic Graig Lwyd roughouts were found eroding out of a bank near to Blaenau, Llanfairfechan. Both have been bifacially-worked and have well-defined flake removals. However, they have been subject to erosion for some time and as such all edges are smooth.

The smaller axe has a prominent butt. A dark greyish-brown patina has built up on parts of the object and contrasts with the light brownish-grey colour of the stone

The larger axe is unusually big. It has a dark grey patina, particularly on one face. The remainder of the object has a mottled grey/orange/brown appearance.

They are likely to date to the earlier Neolithic (c. 4000 to 3000 cal BC) and are made during the process of creating polished axes. These items form the third stage of the process: first, a suitable chunk of rock is selected from loose material or direct from a bedding plane; second, it is shaped into axe blanks using rounded hammer stones; and thirdly, finer bifacial working produces a roughout, ready for transportation to another site for polishing. It is thought likely that the majority of axes were polished away from the quarry and the large number of roughouts found elsewhere supports this theory (Burrow, 2003, 43). Graig Lwyd stone axes have been found all over Britain, and the extensive quarrying is thought to have been initiated in the earlier Neolithic and developed into the later Neolithic (ibid.). (Steele 2009)

***NMR description***

***New description***

These roughouts were found by Raymond Edwin Jones.

***Sources consulted***

GAT Digital FI File PRN 24139, David T Jones

**PRN 24725**

**Graig Lwyd Axe, Findspot, Llanfairfechan**

***Grid Reference:*** SH7037774076

***Community:*** Llanfairfechan

***Existing HER description***

A Group VII Penmaenmawr Graig Lwyd rough-out axe was discovered at the edge of an eroding track. It measures 210mm in length; 92mm in width, has a maximum thickness of 26mm and weighs 805g. A secondary flaking and retouch has not been undertaken so it qualifies more as a pre-form rather than as a finished axe. This axe confirms the extended range of flaking activity around the Penmaenmawr/Llanfairfechan outcrops. <1>

***NMR description***

***New description***

The grid reference given for this find in Williams and Jones 2003 is SH7043174050. This was obtained by David T Jones by hand-held GPS but the accuracy was not very good. During a field visit on 04/05/2017 David T Jones pointed out the find spot of this axe and it is much closer to SH70377 74076. It was certainly found on the track running across this area.

It has been roughly flaked from a tabular shaped core block and retains on one face much of the original joint plane surface. Secondary flaking and retouch has not been undertaken so it qualifies more as a pre-form rather than as a finished axe. Although found near the Dinas outcrop it is unlikely that the axe was made from this source material since, over much of the hill the rock breaks into narrow, badly jointed fragments that could not have produced the present slender specimen (Williams and Jones 2003).

This is a finely worked roughout with a rounded blade and narrower butt. Some of the ridges of the flake scars have been ground down slightly as if the first stages of polishing had been started. Although a particularly good piece, other fairly flat roughouts have been found in the screes at the foot of Dinas (e.g. PRN 67331), so might be possible that some good pieces are present in the Dinas screes. However it does resemble some of the broken flat roughouts from Ffridd Tan y Graig and this might be the origin of the stone.

***Sources consulted***

Williams and Jones 2003

**PRN 24735**

**Stone Axes, Findspot, Garreg Fawr**

***Grid Reference:*** SH6905073578

***Community:*** Llanfairfechan

***Existing HER description***

Two stone axes were found lying on the surface of the ground approx. 2m from each other. They are typical examples of the short, oval cross-sectioned preforms that appear in the scree deposits flanking the Graig Lwyd and its subsidiary outcrops in the Llanfairfechan area. Dimensions of axe 1: length 16.7cm; width 7.5cm; max thickness 4.3cm; weight 630gms, axe 2: length 19.6cm; width 6.3cm; max thickness 3.8cm; weight 535gms. <1>

***NMR description***

***New description***

The grid reference given in Jones and Williams 2004 (SH 6870 7370) is incorrect. David T Jones showed Jane Kenney the location of the findspot and it is at about SH6905073578. Mr Jones also describes the axes as being found close together, not found 2m apart as described in Jones and Williams 2004.

***Sources consulted***

Jones and Williams 2004 ; David T Jones

**PRN 24736**

**Stone Axe, Findspot, Ffridd Tan y Graig**

***Grid Reference:*** SH69167515 A

***Community:*** Llanfairfechan

***Existing HER description***

Broken flaked Graig Lwyd axe, presumably once forming part of a large axe (approx. length 22.5cm; width 8.7cm; max thickness 3.0cm). Interestingly, both faces of the axe have a surface gloss. It is unclear if this is the product of deliberate polishing. <1>

***NMR description***

***New description***

The grid reference for this find in Arch in Wales has been transposed. The correct grid reference is SH69007500, but David T Jones indicated a more precise location on the map and this new grid reference has been given here. This was first axe found by David T Jones, Llanfairfechan at Ffridd Tan y Graig. Found on 16th December 1999. Neatly flaked with invasive flaking over much of the surface and the blade end nicely rounded. The butt end has been removed by a break across a fairly thick part of the axe. The break seems to have been made deliberately and struck from one of the flat faces of the axe. The break scar is curved and runs at an angle across the axe rather than perpendicularly across as in most cases. Both faces have a surface gloss in patches over both ridges and within flakes scars which would appear to be the start of polishing. It is unclear why this axe was rejected as it has been

carefully and successfully flaked into shape.

Surviving length = 157mm, width = 87mm, max. thickness = 31mm

***Sources consulted***

Jones and Williams 2004

**PRN 67331**

**Stone axe found at foot of Dinas, Llanfairfechan**

***Grid Reference:*** SH6984973978

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

During inspection of the axe working area on 04/05/2017 a stone axe was found lying on the surface of the ground. This is a complete flaked axe but presumably not good enough to take away for polishing. The axe was found by David T Jones and is kept by him as part of his collection of axes from the area.

A fairly well shaped roughout found on the ground surface so one face has lichen and the other is fairly unweathered. The blade is shaped but a bit irregular and not very well rounded. There has been some attempt to remove material from the faces of the axe but there is still a fairly high ridge on one side. The piece is complete and unbroken.

Measurements: 166mm long, 77mm wide, 35mm thick.

***Sources consulted***

David T Jones pers. comm.

**PRN 67406**

**Axe-working flakes, Pen Cefn**

***Grid Reference:*** SH7092474352

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

On 04/05/2017 David T Jones and Jane Kenney inspected sites where David T Jones had previously found stone axes and flakes. While walking between sites along Pen Cefn David T Jones found 2 flakes in an area of erosion on the path. As this was a new site the flakes were retained and have been photographed and are currently in David T Jones' possession. David T Jones has previously found occasional flakes in this general area and axe-working is likely to have taken place in the vicinity.

***Sources consulted***

David T Jones pers. comm.

**PRN 67411**

**Stone axe, Graig Lwyd track**

***Grid Reference:*** SH719758 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

In 1919 Hazzledine Warren's wife found a broken axe on a track at Graig Lwyd Farm. Warren describes the find and location as "a damaged axe on a cart-road at Graig-lwyd farm" (Warren 1919, 342) and "a broken axe on the cart road at Graig Lwyd farm, and it was so greatly damaged that only a well-trained eye could have recognized it for what it was" (Warren 1922, 2). The reports suggest that the track was close to or within the farm and yard but there is no clue as to which track it might have been so a general grid reference is given for the farm (SH 719 758).

***Sources consulted***

Warren 1919 and 1922

**PRN 67413**

**Stone axe findspot, Graig Lwyd**

***Grid Reference:*** SH7179075540 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

A small stone axe roughout found by CR (Beaver) Hughes of Llanfairfechan above Graig Lwyd Farm close to Warren's site B.

***Sources consulted***

CR Hughes pers. comm.

**PRN 67414**

**Stone axe findspot, Llanfairfechan**

***Grid Reference:*** SH6855474268

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

A large stone axe roughout found by CR (Beaver) Hughes of Llanfairfechan in the back garden of a house on Nant y Felin Road.

***Sources consulted***

CR Hughes pers. comm.

**PRN 67415**

**Stone axe roughout findspot, Ffridd Tan y Graig**

***Grid Reference:*** SH69187517

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

Numerous stone axe roughouts have been found by David T Jones of Llanfairfechan amongst the screes on Ffridd Tan y Graig. 17 roughouts generally attributed to this area have been photographed. There are two others with more precise provenances that have separate PRNs. Many of the roughouts are on fairly thin, flat blocks and a large proportion are broken in half.

***Sources consulted***

David T Jones pers. comm.

**PRN 67639**

**Stone axe roughout, Bryniau Bugeilydd**

***Grid Reference:*** SH71817430 A

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

A roughout found on Bryniau Bugeilydd by David T Jones of Llanfairfechan on 6th June 2001. It has been shaped by large flake removals some of which have left rather deep hollows. There is a distinct narrow butt and rounded blade end but ridges and lumps remain and hinge flake scars suggest that there was some difficulty in removing these. The roughout has not been broken in any way.

It measures 210mm long, 83mm wide and 47mm thick.

***Sources consulted***

David T Jones pers. comm.

**PRN 67640**

**Stone axe roughout, Ty'n y Llwyfan**

***Grid Reference:*** SH69787387 A

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

Axe roughout found by David T Jones, Llanfairfechan at the foot of Dinas in May 2011. A fairly thick roughout roughly shaped. One face has been on the surface of the ground and is covered with lichen. It has a fairly neat rounded blade end and a slightly narrower butt end but has not been thinned down and has few invasive flake

scars. The roughout measures 183mm long, 93mm wide and 55mm max. thickness.

***Sources consulted***

David T Jones pers. comm.

**PRN 67641**

**Stone axe roughout, Tyddyn Drain**

***Grid Reference:*** SH68877478 A

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

Small stone axe roughout found by David T Jones, Llanfairfechan in a wall near Tyddyn Drain. Roughly shaped with neater flaking at one end, presumably intended to be the blade but steep ridge left on one side and slighter ridge on the other giving very diamond-shaped cross section. Two small fresh flakes presumably from when it was put into the wall. It has not been broken. There is gloss on some of the ridges, again perhaps from being in the wall and rubbing against other stones, certainly the ridges are too high to have started polishing them.

***Sources consulted***

David T Jones pers. comm.

**PRN 67642**

**Stone axe roughout, Ffridd Tan y Graig**

***Grid Reference:*** SH6912775210 A

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

A stone axe roughout found by David T Jones, Llanfairfechan next to the footpath going up to Ffridd Tan y Graig on 9th May 2017. It has been roughly shaped into an axe form with a rounded blade end and fairly narrow butt, but the thickness of the piece has not been significantly reduced. There is a hinge fracture near the butt which might have made it too narrow. This piece has not been broken like many of the roughouts from this area. One surface has lichen on but the other is largely unweathered.

It measures 220mm long, 86mm wide and 52mm thick.

***Sources consulted***

David T Jones pers. comm.

**PRN 67643**

**Stone axe roughout, Llanfairfechan**

***Grid Reference:*** SH690735 A

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

Stone axe roughout found by David T Jones, Llanfairfechan. He is uncertain about where he found it but probably on Garreg Fawr.

This is a long narrow complete roughout which has been roughly shaped all round but hinge fractures taken out of one side probably led to its abandonment.

It measures 210mm long, 80mm wide and 36mm thick.

***Sources consulted***

David T Jones pers. comm.

**PRN 67644**

**Stone axe roughouts, N of Henar**

***Grid Reference:*** SH6902875327 A

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

In 1999 David T Jones of Llanfairfechan found 2 stone axe roughouts in a wall at about this location. He left them

were they were but returning some time later could not find them again.

***Sources consulted***

David T Jones pers. comm.

**PRN 67645**

**Stone axe, Sychnant Pass**

***Grid Reference:*** SH747770 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

A stone axe listed as found at Sychnant Pass. Sampled for the national petrological study (Caernarvonshire no. 18) and demonstrated to be made of Group VII stone. Held in National Museums of Wales (accession no. 64.273) (Clough and Cummins 1988). Listed by Burrow (2003, 140) with little further description but the piece is described as a “polished stone axe”.

***Sources consulted***

Clough and Cummins 1988; Burrow 2003

**PRN 67646**

**Stone axe, Rhaiadr Fawr, Aber**

***Grid Reference:*** SH668701 A

***Community:*** ABER

***Existing HER description***

***NMR description***

***New description***

A broken stone axe listed as found at Rhaiadr Fawr. Sampled for the national petrological study (Caernarvonshire no. 48) and demonstrated to be made of Group VII stone. Held in a private collection (Clough and Cummins 1988).

***Sources consulted***

Clough and Cummins 1988

**PRN 67647**

**Two stone axe roughouts, Graig Lwyd**

***Grid Reference:*** SH718755 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

Two stone axe roughouts listed as found at Graig Lwyd. Sampled for the national petrological study (Caernarvonshire nos. 63 and 80) and demonstrated to be made of Group VII stone. Held in National Museums of Wales (accession no. 21.79.48) (Clough and Cummins 1988).

These are just two of the many axes found by Hazzledine Warren at Graig Lwyd. Burrow (2003, 138) lists others held by the National Museums of Wales.

***Sources consulted***

Clough and Cummins 1988; Burrow 2003

**PRN 67648**

**Stone axe, Penmaenmawr**

***Grid Reference:*** SH7176 AA

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

A stone axe listed as found in Penmaenmawr town. Sampled for the national petrological study (Caernarvonshire no. 64) and demonstrated to be made of Group VII stone. Held in a private collection (Clough and Cummins 1988).

***Sources consulted***

Clough and Cummins 1988

**PRN 67775****Two stone axe roughouts, Foel Lwyd**

**Grid Reference:** SH720725 A

**Community:** Llanfairfechan

**Existing HER description**

**NMR description**

**New description**

Two stone axe roughouts listed as found on Foel Lwyd. Sampled for the national petrological study (Caernarvonshire nos. 65 and 66) and demonstrated to be made of Group VII stone. Held in Chester Museum (accession no. 26.P.53) (Clough and Cummins 1988).

**Sources consulted**

Clough and Cummins 1988

**PRN 67776****Stone axe roughout, Garreg Fawr**

**Grid Reference:** SH690735 A

**Community:** Llanfairfechan

**Existing HER description**

**NMR description**

**New description**

A stone axe roughout listed as found on Garreg Fawr. Sampled for the national petrological study (Caernarvonshire no. 67) and demonstrated to be made of Group VII stone. Held in a private collection (Clough and Cummins 1988).

**Sources consulted**

Clough and Cummins 1988

**PRN 67777****Stone axe roughout, Dwygyfylchi**

**Grid Reference:** SH72297465 A

**Community:** Penmaenmawr

**Existing HER description**

**NMR description**

**New description**

A stone axe roughout listed by Clough and Cummins (1988, 248, no. 70) as found at Monument No. 280, Dwygyfylchi (grid reference SH721746). Sampled for the national petrological study (Caernarvonshire no. 70) and demonstrated to be made of Group VII stone. Held in National Museums of Wales (accession no. 64.65.1).

Listed in Burrow 2003 (p137) as from the Druids' Circle, found during the excavation in 1959. The grid reference given by Burrow (SH702753) is completely erroneous. The Clough and Cummins grid reference has been improved to place this find in the Druids' Circle.

Burrows does not describe the piece in detail but does provide a drawing (figure 26.3).

**Sources consulted**

Clough and Cummins 1988; Burrow 2003

**PRN 67778****Stone axe roughout, Dinas**

**Grid Reference:** SH700740 A

**Community:** Llanfairfechan

**Existing HER description**

**NMR description**

**New description**

A stone axe roughout listed as found at Dinas. Sampled for the national petrological study (Caernarvonshire no. 77) and demonstrated to be made of Group VII stone. Held in Manchester Museum (Clough and Cummins 1988).

**Sources consulted**

Clough and Cummins 1988

**PRN 67779****Stone axe roughout, Llanfairfechan**

**Grid Reference:** SH684747 AA

**Community:** Llanfairfechan

**Existing HER description**

**NMR description**

**New description**

A roughout probably found in Llanfairfechan but precise findspot unknown. Formerly owned by Miss G Pierce Jones of The Close, but given to John Llywelyn Williams. It is made on a large flake of weathered rock, almost certainly Graig Lwyd. The flake is 15.9cm max length, 7.7cm wide and 3.5cm max thickness. On one face about half is unworked, and on the other face finer flaking covers the surface (Williams 1982, illustration fig 4.3).

Grid reference given is a general one to place it in Llanfairfechan.

**Sources consulted**

Williams 1982b

**PRN 67780****Stone axe roughout, Foel Lwyd**

**Grid Reference:** SH715724 A

**Community:** Llanfairfechan

**Existing HER description**

**NMR description**

**New description**

A stone axe roughout listed as found on Foel Lwyd. Sampled for the national petrological study (Caernarvonshire no. 112) and demonstrated to be made of “near” Group VII stone. Held in Salford Museum (accession no. 78.21.5) (Clough and Cummins 1988).

**Sources consulted**

Clough and Cummins 1988

**PRN 67781****Stone axe roughouts, Garreg Fawr**

**Grid Reference:** SH6973 AA

**Community:** Llanfairfechan

**Existing HER description**

**NMR description**

**New description**

1 axe roughout (thin sectioned but results unknown). 2 axe roughouts (Burrow 2003, 138). Held by National Museums of Wales, accession numbers 78.40H and 82.4H. Located only to Garreg Fawr, Llanfairfechan.

**Sources consulted**

Burrow 2003

**PRN 67783****Stone axe roughout, Ffridd Tan y Graig**

**Grid Reference:** SH6913575178

**Community:** Llanfairfechan

**Existing HER description**

**NMR description**

**New description**

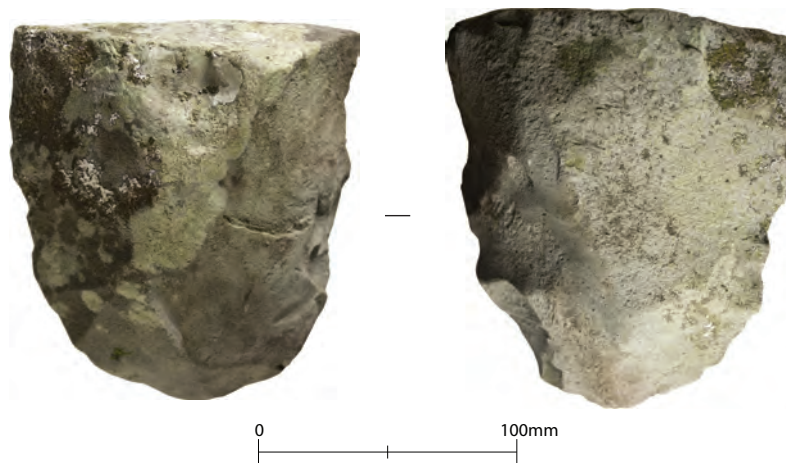
Broken roughout found at Ffridd Tan y Graig. Held by Jane Kenney.

It was found on Ffridd Tan y Graig by David T Jones and left for Jane Kenney to find when they inspected the area on 18/08/2017. It is the broken blade end of a roughout and was lying on the surface so one face has lichen cover and the other is fairly clean. The lower face has a small area of polish but the piece is still large and chunky and has not been sufficiently worked for polishing. This polish is therefore almost certainly due to the piece moving against other stones causing accidental polish. The piece has been roughly knapped into shape to give a rounded blade but no reduction of the thickness has been attempted. The piece has broken in half with the break being perpendicularly across the thickest part of the roughout. The break is probably due to end shock when a miss-hit occurred during knapping.

The roughout weighs 1187g and measures 136 x 114mm with a maximum thickness of 70mm

**Sources consulted**

David T Jones pers. comm.



PRN 67783

**PRN 67784**

**Stone axe, Foel Lûs**

**Grid Reference:** SH732762 AA

**Community:** Penmaenmawr

**Existing HER description**

**NMR description**

**New description**

Warren (1922, 2) mentions that prior to his first axe discovery in 1919 Mr A Leslie Armstrong found a Graig Lwyd axe on the summit of "Foel Llys" [Foel Lûs]. It is not clear whether this was a finished polished axe or a roughout. Mr Armstrong was training at the nearby training camp during the First World War when he found the axe.

**Sources consulted**

Warren 1922

**Finds of axe-hammers and similar objects in the Llanfairfechan area**

**PRN 2880**

**Perforated Axe Hammer, Findspot, Penmaenan**

**Grid Reference:** SH70707620

**Community:** Penmaenmawr

**Existing HER description**

Probable area SH 707762. An hour-glass perforated stone axe hammer of basalt, 9ins long and 1lb 10oz. Found in March 1849 at a depth of 6ft by the side of the old road from Penmaenmawr to the landing place for Puffin Island. In the NMW; donor - UCW - Aberystwyth. <1> <2> <3>

No further information. <4>

**NMR description**

**New description**

**Sources consulted**

**PRN 4075**

**Perforated Stone Axe Hammer, Findspot**

**Grid Reference:** SH69907340

**Community:** Llanfairfechan

**Existing HER description**

3 Stone hammers found in the vicinity of Bangor by Capt. Jones. <1>

Found between Camarnant and the reservoir at Llanfairfechan approximately 1890 and formed of Preseli Blue-stone and discovered by Mr. Owen Griffith. <2>

Perforated stone axe hammer and classed CI under S. J. Evans' classification in The Ancient Stone Implements of Great Britain. Measurements are; maximum length 175mm, maximum breadth 81mm and maximum thickness 94mm. Found near farm owned by R. J. Jones. It weighs 10.5lbs. <3>

An hourglass perforated axe hammer made of local stone probably in an area around SH 699 734. Now in Bangor

Museum Acc No. 4007.35. <5>

Confirms axe-hammer comes from Capt. Jones collection. <6>

No further artefacts were discovered. (Schofield, 2004)

***NMR description***

***New description***

This object was thin sectioned by the CBA Implement Petrology Committee and proved to be dolerite, not Preseli Bluestone (Clough and Cummins 1988, 248, Caernarvonshire no. 60).

***Sources consulted***

Clough and Cummins 1988, 248

**PRN 4078**

**Perforated Stone Axe Hammer, Findspot, Ty'n y Llwyfan**

***Grid Reference:*** SH69507410

***Community:*** Llanfairfechan

***Existing HER description***

Perforated stone axe hammer was found at Ty'n-y-llwyfan farm. <1>

Present whereabouts unknown. <2>

No further information. <3>

***NMR description***

***New description***

***Sources consulted***

**PRN 4091**

**Stone Tool (Mace), Findspot, N of Dinas Fort**

***Grid Reference:*** SH69807430

***Community:*** Llanfairfechan

***Existing HER description***

A holed stone of uncertain date, with hourglass perforation, was found N of Dinas Fort, Llanfairfechan, in private possession. <1>

Half of a macehead with hourglass perforation was found in 1962 in a field near Dinas. It was held in the possession of Mr. J. Davies until his collection was ransacked in 1966. <2>

***NMR description***

***New description***

***Sources consulted***

**PRN 67638**

**Axe hammer/battle axe, Llanfairfechan**

***Grid Reference:*** SH70207525 A

***Community:*** Penmaenmawr

***Existing HER description***

***NMR description***

***New description***

A fine example of a stone battle axe found by Mr E. Bailey in 1961 whilst working at the Penmaenmawr granite quarry near the summit of Braich y Ddinas. The findspot lay at the foot of the incline on Bonc Isaf about 70 feet below the summit of the mountain (NGR SH 70 75). The incline followed the original slope of the mountain and the battle axe was found in a pile of stone rubble which was being cleared. There is no evidence that the battle axe might be associated with one of the burial cairns which formerly stood within the hillfort. Since its discovery the axe was used as a doorstop and has been damaged, but it is still a very fine example. In its damaged state it measures 143mm in length, 94mm breadth, the hole is 63mm deep and 25mm in diameter. It weighs approx 1.1kg. The shaft hole is central to the length of the axe and is neatly drilled from both sides. There is an incised decorative line along the upper and lower sides of the axe. The stone used is an evenly textured greenish tinged dolerite. The surface has been expertly polished. The dimensions of the axe place it in Roe's Intermediate Stage and the decoration and butt shape places it in the Codford St Peter Group. The axe is in the possession of Mr David T Jones of Llanfairfechan (Williams 1982, illustration fig.1).

The axe is still held by David T Jones. Its ends are battered as if used as a hammer probably in antiquity rather than when it was a doorstop. It has spots of red paint from its history as a doorstop. This object was not included on the HER when first reported, probably because of the very general grid reference given. The 1953 6 inch OS map (revised 1948) shows a short incline on the SE side of the mountain. David T Jones confirms that near the base of

this incline is where the axe hammer was found. All features in this area have since been quarried away but a grid reference of SH 70207525 is obtained from the 6 inch map.

***Sources consulted***

Williams, J. Ll., 1982a; David T Jones pers. comm.

**PRN 67782**

**Stone axe-hammer, Park Nant, Llanfairfechan**

***Grid Reference:*** SH694740

***Community:*** Llanfairfechan

***Existing HER description***

***NMR description***

***New description***

This object was thin sectioned by the CBA Implement Petrology Committee and proved to be made of dolerite (Clough and Cummins 1988, 248, Caernarvonshire no. 59). Its findspot is described as Park Nant, Llanfairfechan and it is held in Bangor Museum (accession no. 4007.33).

Clough and Cummins (1988, 248) give a grid reference of SH694740, but this is not the location of Park Nant, so this grid reference would appear to be incorrect. Grid reference SH68740 74277 is on Park Nant but only gives an approximate location for the find spot.

***Sources consulted***

Clough and Cummins 1988, 248

David T Jones

## **Appendix II.1: Catalogue of David T Jones' Collection**

### **Site: Bryniau Bugeilydd**

#### **PRN 67639**

**Length (mm):** 210; **Breadth (mm):** 83; **Thickness (mm):** 47; **Weight (g):** 888

A roughout found on Bryniau Bugeilydd by David T Jones of Llanfairfechan on 6th June 2001. It has been shaped by large flake removals some of which have left rather deep hollows. There is a distinct narrow butt and rounded blade end but ridges and lumps remain and hinge flake scars suggest that there was some difficulty in removing these. The roughout has not been broken in any way.

### **Site: Garreg Fawr, northern shoulder**

#### **PRN 24735.01**

**Length (mm):** 167; **Breadth (mm):** 75; **Thickness (mm):** 43; **Weight (g):** 620

Well-shaped complete roughout. The surfaces are largely unweathered. Most of the piece has been invasively flaked but it is not as neatly knapped as PRN24735.02 and has a broader butt and less neatly shaped blade. There is a slight ridge on one side but it is not obvious why this piece was rejected. There is a small patch of polish on one side. This might possibly have resulted from movement against other rocks in the scree but it is very fine and smooth.

#### **PRN 24735.02**

**Length (mm):** 196; **Breadth (mm):** 63; **Thickness (mm):** 38; **Weight (g):** 529

Well-shaped complete roughout possibly rejected because it has a fault line running through it but this has not given any trouble during knapping. This has been exposed on the surface of the scree and is weathered and heavily lichen covered on one face. The reverse face being unweathered. Occasional patches of the original stone surface are visible but most of the piece has been invasively flaked and the blade is very neatly rounded. There are some minor hinge fractures but, apart from the fault line, it is not obvious why this piece was rejected and not polished after being so carefully worked.

#### **PRN 67643**

**Length (mm):** 210; **Breadth (mm):** 80; **Thickness (mm):** 36; **Weight (g):** 598

Stone axe roughout found by David T Jones, Llanfairfechan. He is uncertain about where he found it but probably on Garreg Fawr.

This is a long narrow complete roughout which has been roughly shaped all round but hinge fractures taken out of one side probably led to its abandonment.

### **Site: Ffridd Tan y Graig**

#### **PRN 24736**

**Length (mm):** 157; **Breadth (mm):** 87; **Thickness (mm):** 31; **Weight (g):** 585

First axe found by David T Jones, Llanfairfechan at Ffridd Tan y Graig. Found on 16th December 1999. Neatly flaked with invasive flaking over much of the surface and the blade end nicely rounded. The butt end has been removed by a break across a fairly thick part of the axe. The break seems to have been made deliberately and struck from one of the flat faces of the axe. The break scar is curved and runs at an angle across the axe rather than perpendicularly across as in most cases. Both faces have a surface gloss in patches over both ridges and within flake scars which would appear to be the start of polishing. It is unclear why this axe was rejected as it has been carefully and successfully flaked into shape.

#### **PRN 67415.01**

**Length (mm):** 182; **Breadth (mm):** 125; **Thickness (mm):** 70; **Weight (g):** 1954

Crude broken roughout. Made on a thick, heavy piece of stone and shaped to a rounded point as if intended to be the butt end of an axe. The stone appears to have been fairly pointed originally and was chosen because it was already roughly axe-shaped. However flakes attempting to reduce the thickness of the stone end in hinge fractures and it seems that the stone was resisting being easily worked into shape. There are 11 main flake scars on the surviving half of the piece and it suggests rapid flaking to roughly shape the stone and abandonment when that stone proved not to be easy to work. The piece has been broken in half across the thickest part. Chipping suggests a percussion point on a flat face of the axe to deliberately break the piece in two. Found by David T Jones,

Llanfairfechan.

**PRN 67415.02**

**Length (mm):** 123; **Breadth (mm):** 105; **Thickness (mm):** 52; **Weight (g):** 801

Blade end of broken roughout. The end has been fairly neatly rounded off in preparation for making the blade. One side has some invasive flaking, though several of these flakes end in hinge fractures. The other side is more crudely shaped leaving a slight ridge and a diamond shaped cross section. It has been broken perpendicularly across the thickest part of the piece. Found on 31st January 1999 by David T Jones, Llanfairfechan.

**PRN 67415.03**

**Length (mm):** 145; **Breadth (mm):** 125; **Thickness (mm):** 34; **Weight (g):** 794

A broken roughout. The underside seems to have been entirely protected from weathering. It has a slightly pointed shape as if it was intended as a butt end. It has only been roughly shaped with long invasive flakes. The underside is uneven and barely worked and has a recent break on it. The piece has broken perpendicularly across through the thickest part. Found by David T Jones, Llanfairfechan.

**PRN 67415.04**

**Length (mm):** 140; **Breadth (mm):** 105; **Thickness (mm):** 42; **Weight (g):** 744

Broken roughout. Crudely flaked to give initial shape, rather pointed so possibly intended to be the butt end. It has broken at an angle across the thickest part. Found by David T Jones, Llanfairfechan.

**PRN 67415.05**

**Length (mm):** 150; **Breadth (mm):** 127; **Thickness (mm):** 50; **Weight (g):** 1070

Blade end of large broken roughout. The end has been fairly neatly rounded and there has been a small amount of invasive flaking but there are still some unsightly lumps on the underside. There is a fault running at an angle down the length of the piece but it has broken perpendicularly across the piece, not along the fault. Found on 31st January 1999 by David T Jones, Llanfairfechan.

**PRN 67415.06**

**Length (mm):** 180; **Breadth (mm):** 100; **Thickness (mm):** 70; **Weight (g):** 1465

Crude broken roughout. This is made on a chunky piece of stone that seems to have resisted reduction. Occasional flakes have been removed around the edge of the piece and there is a sequence of bad hinge fractures along one side where attempts have been made to reduce its thickness however the roughout remains almost diamond-shaped in cross section at its thickest point, with a prominent ridge of rock left down one side. This has been broken across at about the thickest point but more towards what was probably intended as the butt end than many of the other roughouts. Some chipping possibly indicates the point of percussion on one side of this break. Found by David T Jones, Llanfairfechan.

**PRN 67415.07**

**Length (mm):** 166; **Breadth (mm):** 100; **Thickness (mm):** 44; **Weight (g):** 1081

Large broken roughout. The end is neatly rounded to start forming a blade with invasive flaking in this area but the body of the piece still has angular chunks which seem to have resisted removal. It is broken at an angle across the thickest part. Found by David T Jones, Llanfairfechan.

**PRN 67415.08**

**Length (mm):** 150; **Breadth (mm):** 120; **Thickness (mm):** 30; **Weight (g):** 813

Flat broken roughout. Roughout made on a flat stone. The end has been fairly neatly shaped to round it into a blade but there has been little invasive flaking. The original surface of the stone used can still be seen on both sides showing that it was originally no thicker. It has been broken perpendicularly across at a fairly thick place. Found by David T Jones, Llanfairfechan.

**PRN 67415.09**

**Length (mm):** 90; **Breadth (mm):** 80; **Thickness (mm):** 30; **Weight (g):** 245

Small broken roughout. Rather crudely shaped. The end is quite pointed so probably intended as a butt end. The piece has broken almost perpendicularly across the thickest part. Found by David T Jones, Llanfairfechan.

**PRN 67415.10**

**Length (mm):** 78; **Breadth (mm):** 60; **Thickness (mm):** 30; **Weight (g):** 150

Small broken roughout. This appears to have been intended as the blade end as it is fairly neatly rounded. Most of the knapping is around the edge but there is one large invasive flake intended to reduce the thickness of the piece but it seems to have taken too much off and has left a hollow in the side. The piece is broken perpendicularly across at the thickest point. Found 20th March 2004 by David T Jones, Llanfairfechan.

**PRN 67415.11**

**Length (mm):** 160; **Breadth (mm):** 130; **Thickness (mm):** 52; **Weight (g):** 1395

Large broken roughout. Rounded, presumably blade end, roughly formed with flaking mainly around the edge. This piece has been exposed on the surface of the screes and one side is weathered and lichen covered and the reverse is patinated but unweathered. On the unweathered side some invasive flaking has taken place to reduce the thickness on this side but this has not been successful as there is still a lump left. The roughout has been broken perpendicularly across a fairly thick part. Found by David T Jones, Llanfairfechan.

**PRN 67415.12**

**Length (mm):** 127; **Breadth (mm):** 94; **Thickness (mm):** 20; **Weight (g):** 463

Flat broken roughout. Very thin roughout only 20mm thick, made on a flat stone with knapping around the edges only, little invasive flaking. The piece has broken almost perpendicularly across what was probably intended as the butt end. The other end has been curved as if it was intended to be the blade end but that too is broken with a small piece broken off spoiling the curve of the blade. This seems to have been done accidentally during flaking the blade. Found by David T Jones, Llanfairfechan.

**PRN 67415.13**

**Length (mm):** 132; **Breadth (mm):** 102; **Thickness (mm):** 40; **Weight (g):** 665

Small roughout, roughly triangular in shape with butt end broken off. Blade end fairly well formed but serious hinge fractures towards the butt end. Break is almost perpendicular. Found by David T Jones, Llanfairfechan.

**PRN 67415.14**

**Length (mm):** 225; **Breadth (mm):** 110; **Thickness (mm):** 75; **Weight (g):** 2074

Large, thick roughout. Roughly shaped all round but no invasive flaking. Ridges and lumps still left. Unusually for Ffridd Tan y Graig it has not been broken.

**PRN 67415.15**

**Length (mm):** 160; **Breadth (mm):** 120; **Thickness (mm):** 44; **Weight (g):** 817

A broken roughout found by David T Jones, Llanfairfechan on 22nd February 2004 at Ffridd Tan y Graig. The surviving end is fairly narrow so it was probably intended to be the butt end. There has been quite a bit of rough shaping including some rough invasive flaking but ridges on both faces seem to have been resistant to removal. Some of the ridges are ground-down but they are too high for polishing to have started and it is assumed this is due to movement against other rocks in the scree. The piece is broken in half near the thickest point and the break runs perpendicularly across the piece.

**PRN 67415.16**

**Length (mm):** 127; **Breadth (mm):** 76; **Thickness (mm):** 31; **Weight (g):** 358

A small broken roughout found by David T Jones, Llanfairfechan at Ffridd Tan y Graig. It has a fairly pointed end so was presumably intended to be the butt end and it has been roughly shaped. Some of the original scree block surface survives on the faces. It has been broken across the thickest point and the break runs at an angle across the piece.

**PRN 67415.17**

**Length (mm):** 80; **Breadth (mm):** 82; **Thickness (mm):** 30; **Weight (g):** 192

End of a broken roughout found by David T Jones, Llanfairfechan. Small piece made on what may have been a thick flake. It is roughly shaped and may represent the start of the blade end of an axe. It has been broken with the break running at an angle across the piece. It has an unusually white patina.

The provenance of this piece is a little uncertain but it is probably from Ffridd Tan y Graig. The break would seem to confirm that.

**PRN 67642**

**Length (mm):** 220; **Breadth (mm):** 86; **Thickness (mm):** 52; **Weight (g):** 1160

A stone axe roughout found by David T Jones, Llanfairfechan next to the footpath going up to Ffridd Tan y Graig

on 9th May 2017. It has been roughly shaped into an axe form with a rounded blade end and fairly narrow butt, but the thickness of the piece has not been significantly reduced. There is a hinge fracture near the butt which might have made it too narrow. This piece has not been broken like many of the roughouts from this area. One surface has lichen on but the other is largely unweathered.

**Site: NE of Dinas**

**PRN 24725**

**Length (mm):** 210; **Breadth (mm):** 97; **Thickness (mm):** 26; **Weight (g):** 807

A fine roughout found by David T Jones, Llanfairfechan on a track NE of Dinas. The piece has been roughly flaked from a tabular shaped core block and retains on one face much of the original joint plane surface. Secondary flaking and retouch has not been undertaken so it qualifies more as a pre-form rather than as a finished axe. Although found near the Dinas outcrop it is unlikely that the axe was made from this source material since, over much of the hill the rock breaks into narrow, badly jointed fragments that could not have produced the present slender specimen (Williams and Jones 2003).

This is a finely worked roughout with a rounded blade and narrower butt. Some of the ridges of the flake scars have been ground down slightly as if the first stages of polishing had been started. Although a particularly good piece, other fairly flat roughouts have been found in the screes at the foot of Dinas (e.g. PRN 67331), so might be possible that some good pieces are present in the Dinas screes. However it does resemble some of the broken flat roughouts from Ffridd Tan y Graig and this might be the origin of the stone.

**Site: Penmaenmawr Quarry**

**PRN 67638**

**Length (mm):** 143; **Breadth (mm):** 64; **Thickness (mm):** 73; **Weight (g):** 1046

A fine example of a stone battle axe found by Mr E. Bailey in 1961 whilst working at the Penmaenmawr granite quarry near the summit of Braich y Ddinas. The findspot lay at the foot of the incline on Bonc Isaf about 70 feet below the summit of the mountain (NGR SH 70 75). The incline followed the original slope of the mountain and the battle axe was found in a pile of stone rubble which was being cleared. There is no evidence that the battle axe might be associated with one of the burial cairns which formerly stood within the hillfort. Since its discovery the axe was used as a doorstop and has been damaged, but it is still a very fine example. In its damaged state it measures 143mm in length, 94mm breadth, the hole is 63mm deep and 25mm in diameter. It weighs approx 1.1kg. The shaft hole is central to the length of the axe and is neatly drilled from both sides. There is an incised decorative line along the upper and lower sides of the axe. The stone used is an evenly textured greenish tinged dolerite. The surface has been expertly polished. The dimensions of the axe place it in Roe's Intermediate Stage and the decoration and butt shape places it in the Codford St Peter Group. The axe is in the possession of Mr David T Jones of Llanfairfechan (Williams 1982).

The axe is still held by David T Jones. Its ends are battered as if used as a hammer probably in antiquity rather than when it was a doorstop. It has spots of red paint from its history as a doorstop. This object was not included on the HER when first reported, probably because of the very general grid reference given. There is an incline from the top of the mountain that would have been disused in 1961 and the level at the base of that may have been Bonc Isaf. If that is correct the findspot would be about SH69897557.

**Site: Tyddyn Drain**

**PRN 67641**

**Length (mm):** 146; **Breadth (mm):** 67; **Thickness (mm):** 57; **Weight (g):** 573

Small stone axe roughout found by David T Jones, Llanfairfechan in a wall near Tyddyn Drain. Roughly shaped with neater flaking at one end, presumably intended to be the blade but steep ridge left on one side and slighter ridge on the other giving very diamond-shaped cross section. Two small fresh flakes presumably from when it was put into the wall. It has not been broken. There is gloss on some of the ridges, again perhaps from being in the wall and rubbing against other stones, certainly the ridges are too high to have started polishing them.

**Site: Ty'n y Llwyfan**

**PRN 67331**

**Length (mm):** 166; **Breadth (mm):** 77; **Thickness (mm):** 35; **Weight (g):** 491

Complete axe roughout found by David T Jones, Llanfairfechan on 04/05/2017. A fairly well shaped roughout

found on the ground surface so one face has lichen and the other is fairly unweathered. The blade is shaped but a bit irregular and not very well rounded. There has been some attempt to remove material from the faces of the axe but there is still a fairly high ridge on one side. The piece is complete and unbroken.

**PRN 67640**

**Length (mm):** 183; **Breadth (mm):** 93; **Thickness (mm):** 55; **Weight (g):** 1118

Axe roughout found by David T Jones, Llanfairfechan at the foot of Dinas in May 2011. A fairly thick roughout roughly shaped. One face has been on the surface of the ground and is covered with lichen. It has a fairly neat rounded blade end and a slightly narrower butt end but has not been thinned down and has few invasive flake scars.

## **Appendix II.2: Illustrations of David T Jones' Collection and Other Axe Roughouts from the Llanfairfechan Area**

Figure app II.2.1: Roughouts from David T Jones' collection found at Ffridd Tan y Graig (all at scale 1:2)

Figure app II.2.2: Roughouts from David T Jones' collection found at Ffridd Tan y Graig (all at scale 1:2)

Figure app II.2.3: Roughouts from David T Jones' collection found at Ffridd Tan y Graig (all at scale 1:2)

Figure app II.2.4: Roughouts from David T Jones' collection found at Garreg Fawr, Dinas and other locations (all at scale 1:2)

Figure app II.2.5: Roughouts found on Garreg Fawr (drawings by Tanya Williams, published in Jones and Williams 2004) (scale 1:2)

Figure app II.2.6: Other roughouts found in the Llanfairfechan area (see figure 3 for locations) (all at scale 1:2)

Figure app II.2.7: Published roughouts and axes (PRN 4720 from Davies 1961, fig. 1; PRNs 4094 and 67779 from Williams 1982, fig. 4; other axes and roughouts from Warren's excavations at Graig Lwyd (Warren 1922))

Figure app II.2.8: Stone battle-axe/axe-hammer in David T Jones' collection (scale 1:2)



PRN 67415.11



PRN 67415.15



PRN 67415.03



PRN 67415.05



Figure app II.2.1: Roughouts from David T Jones' collection found at Ffridd Tan y Graig (all at scale 1:2)

0 100mm



PRN 67415.01



PRN 67415.02



Figure app II.2.2: Roughouts from David T Jones' collection found at Ffridd Tan y Graig (all at scale 1:2)



PRN 67415.08



PRN 67415.04

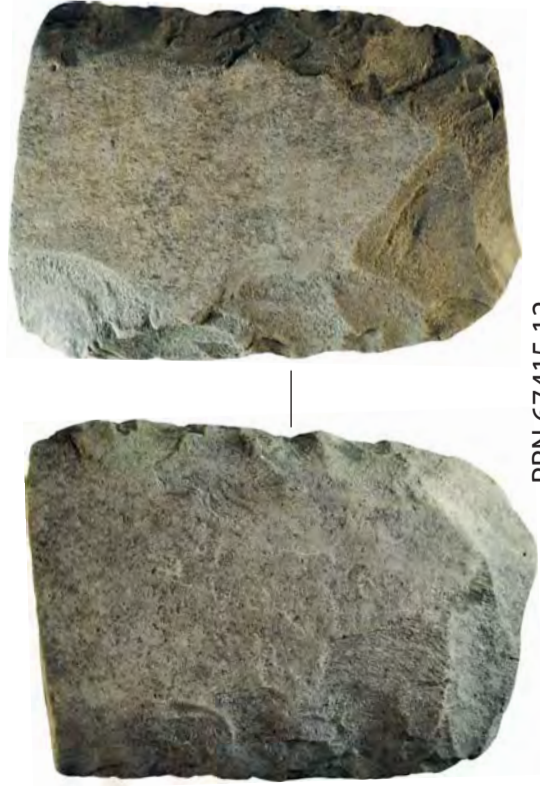


PRN 67642



PRN 67415.06





PRN 67415.12

PRN 67415.13



PRN 24736

PRN 67415.07



PRN 67415.09

PRN 67415.10



PRN 67415.16

PRN 67415.17

Figure app II.2.3:  
Roughouts from David T  
Jones' collection found at  
Ffridd Tan y Graig (all at  
scale 1:2)



PRN 67331  
Ty'n y Llwyfan



PRN 24725  
E of Dinas



PRN 67641  
Tyddyn Drain



PRN 67643  
Uncertain provenance



PRN 67640  
Ty'n y Llwyfan

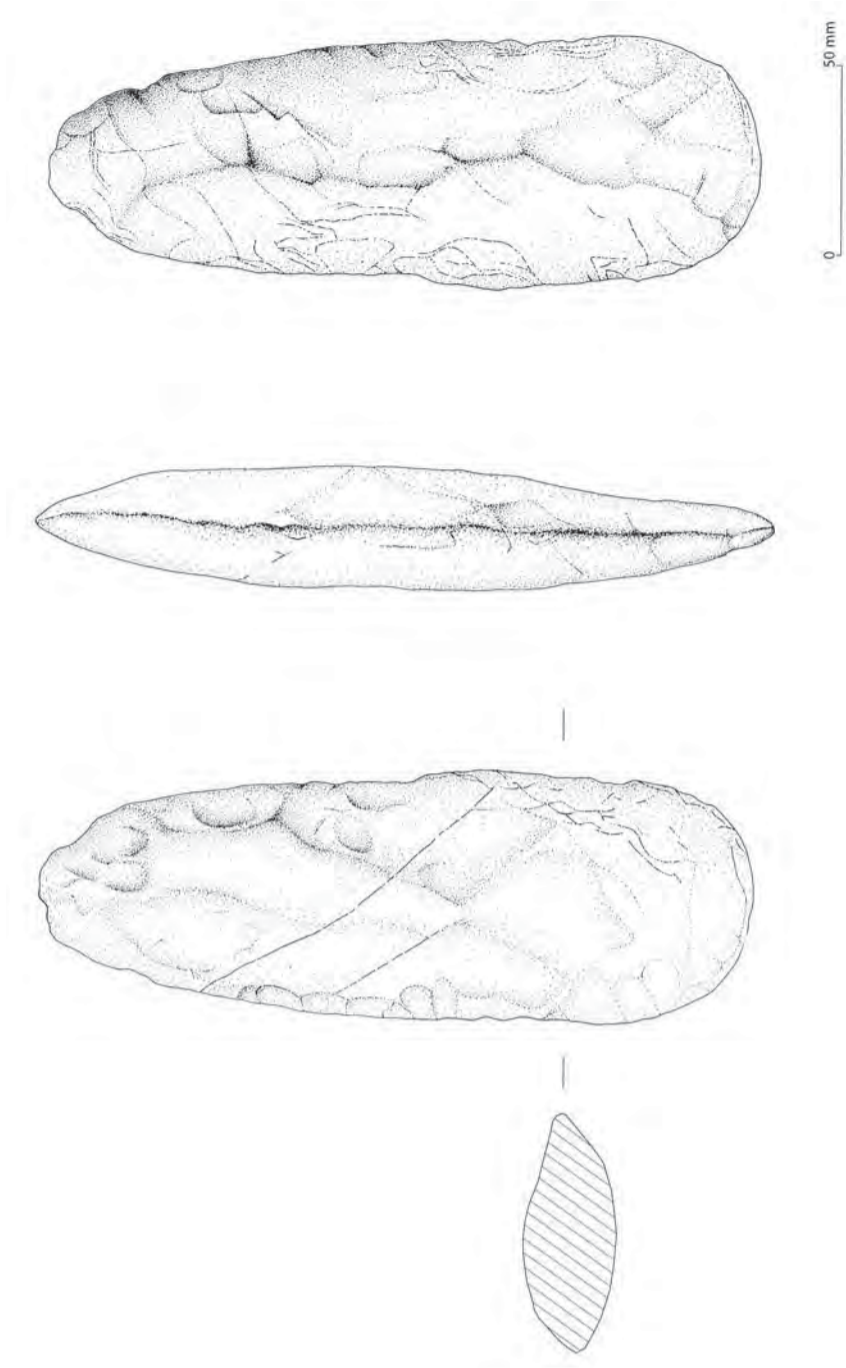


PRN 67639  
Bryniau Bugeilydd

Figure app II.2.4: Roughouts  
from David T Jones'  
collection found at Garreg  
Fawr, Dinas and other  
locations (all at scale 1:2)



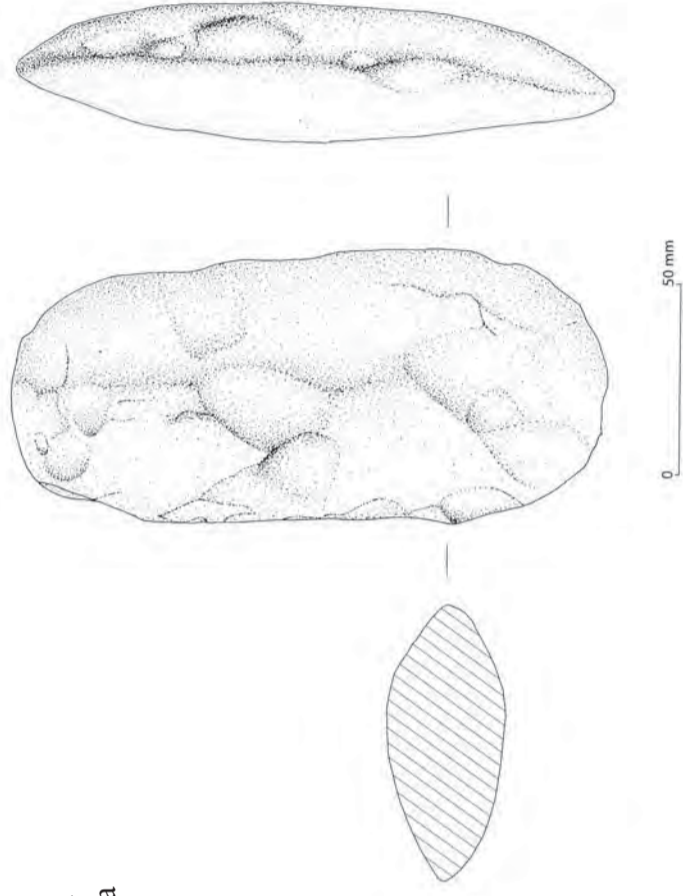
PRN 24735.02



0 100mm

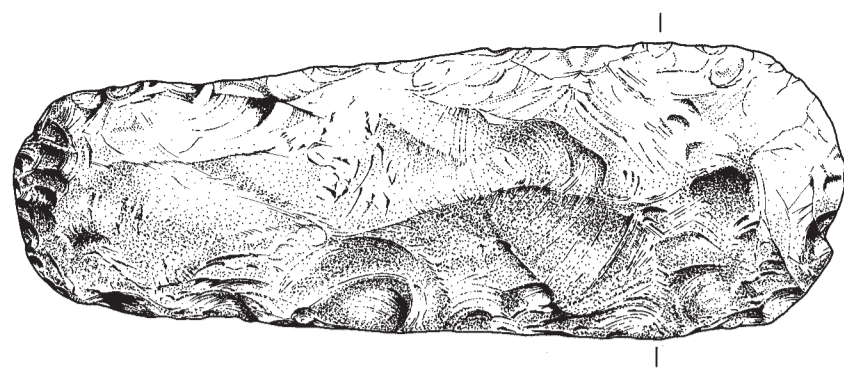


PRN 24735.01

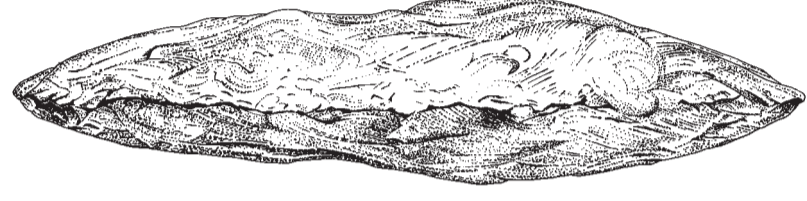
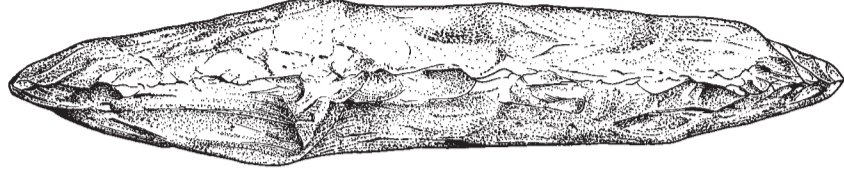
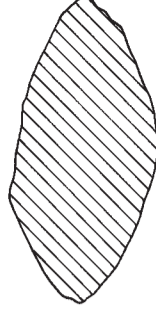


0 50mm

Figure app II.2.5: Roughouts found on Garreg Fawr (drawings by Tanya Williams, published in Jones and Williams 2004) (scale 1:2)



PRN 7478  
Henfaes, Aber



PRN 7397  
Gorddinog

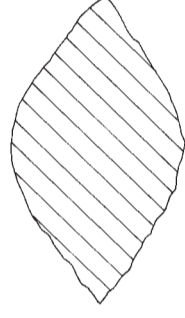
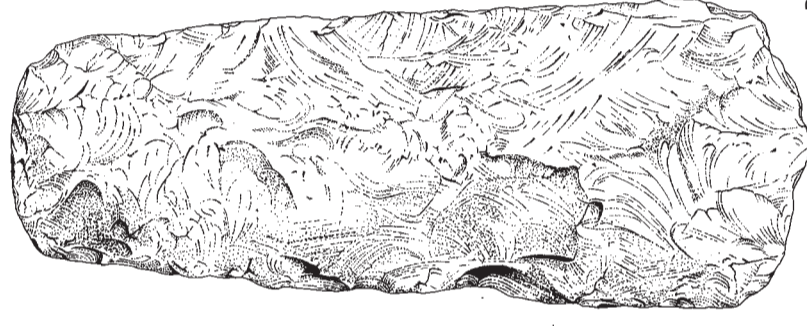
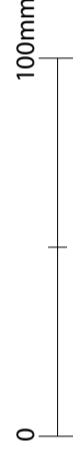


Figure app II.2.6: Other  
roughouts found in the  
Llanfairfechan area (see  
figure 3 for locations)  
(all at scale 1:2)



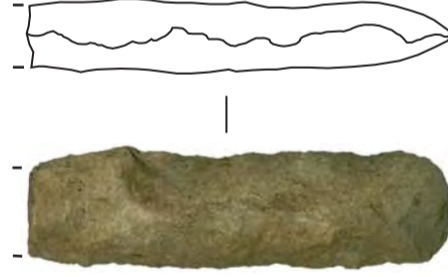
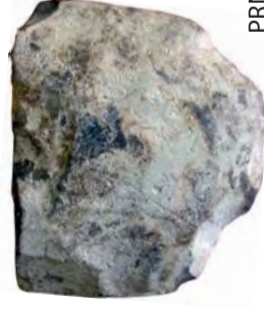
PRN 67414  
Nant y Felin Road



PRN 24139.2  
Blaenau, N of Dinas



PRN 19156  
N of Dinas



From under cairn PRN 485,  
Waun Llanfair

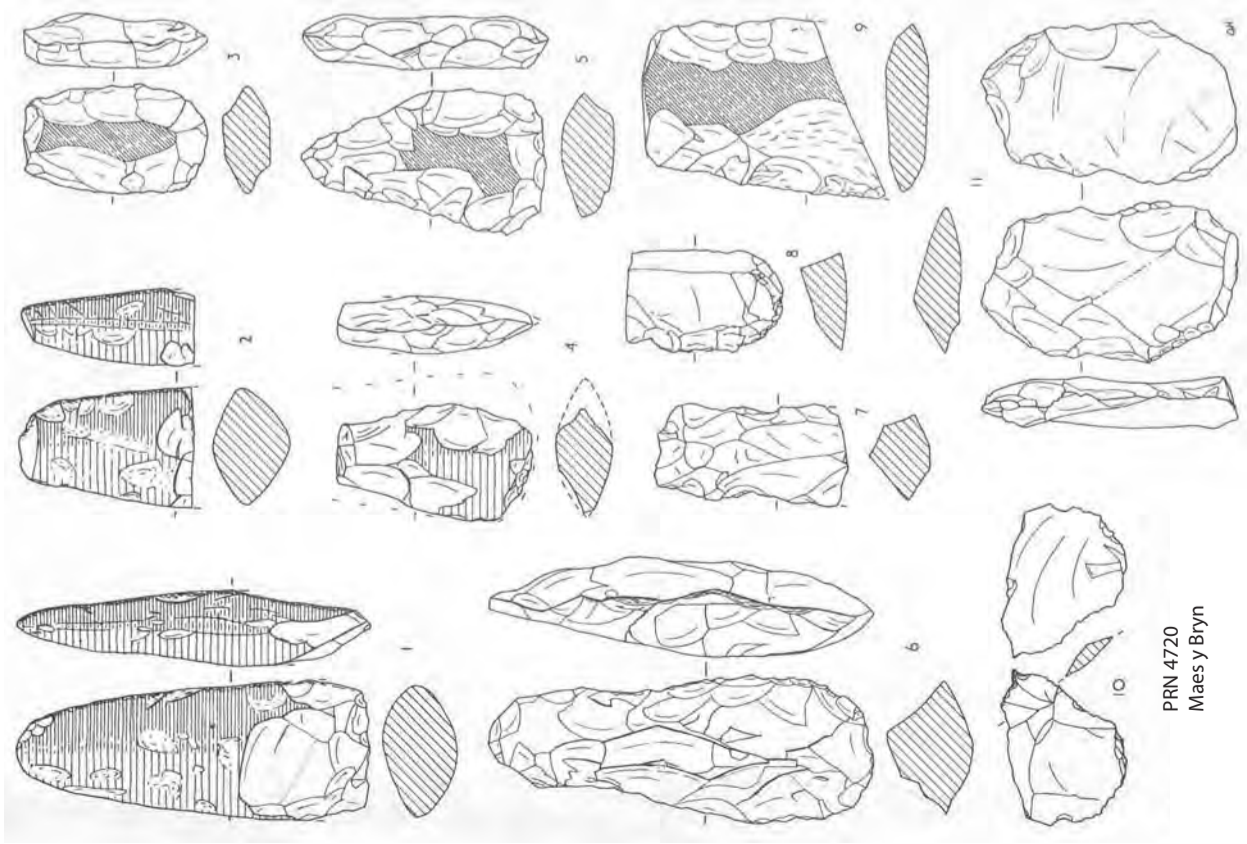


PRN 24139.1  
Blaenau, N of Dinas

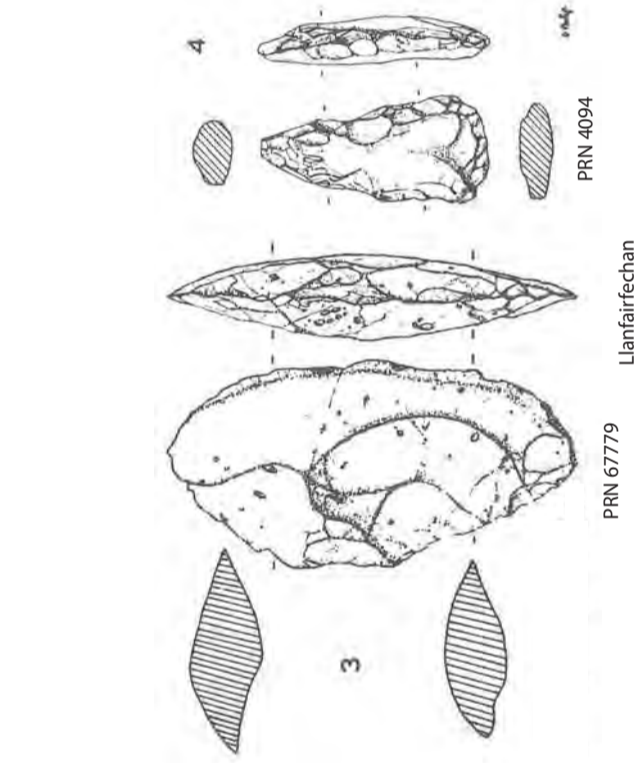


PRN 67413  
above Graig Lwyd Farm





PRN 4720  
Maes y Bryn

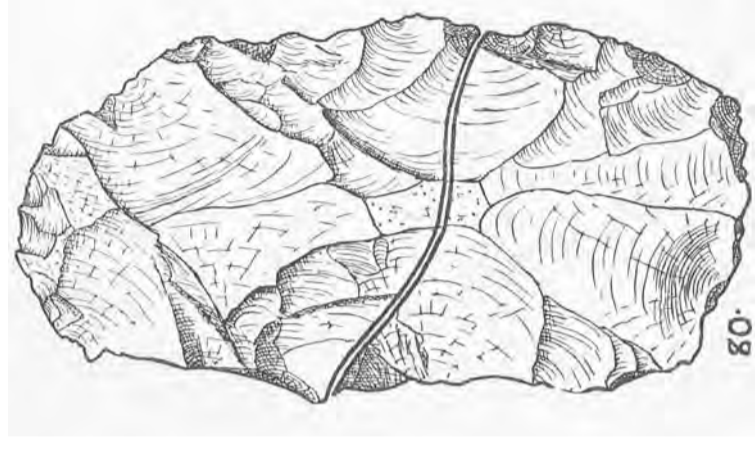


PRN 67779

Llanfairfechan

PRN 4094

0 90mm  
1/3 scale



79

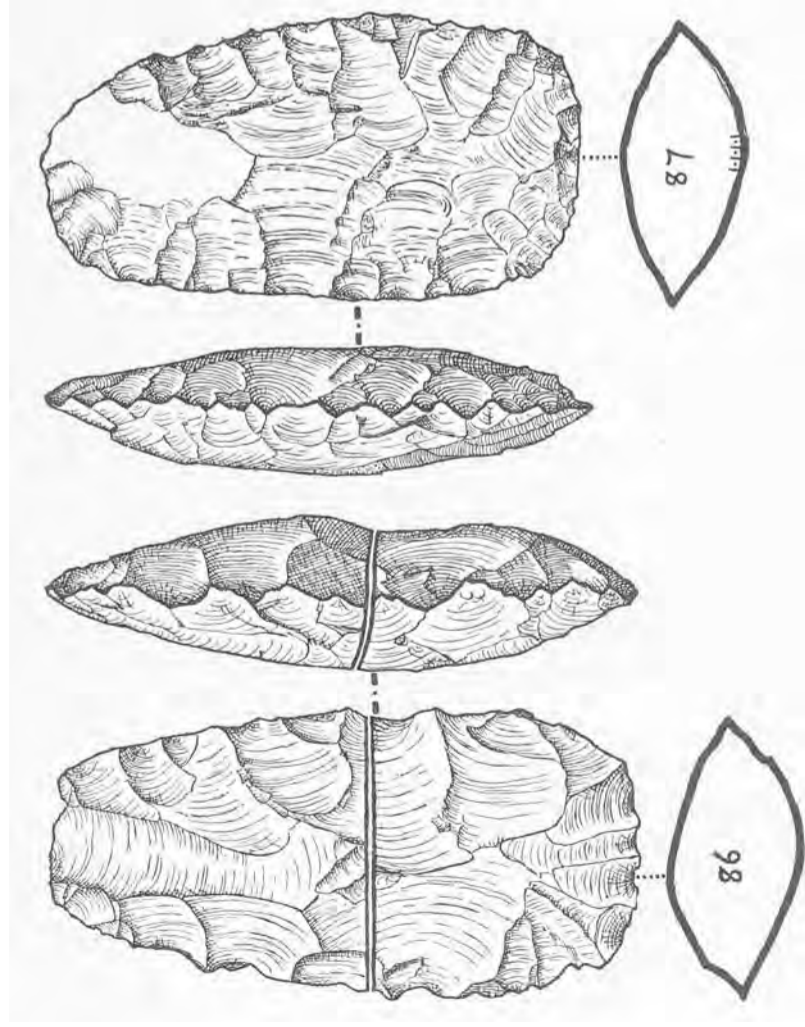
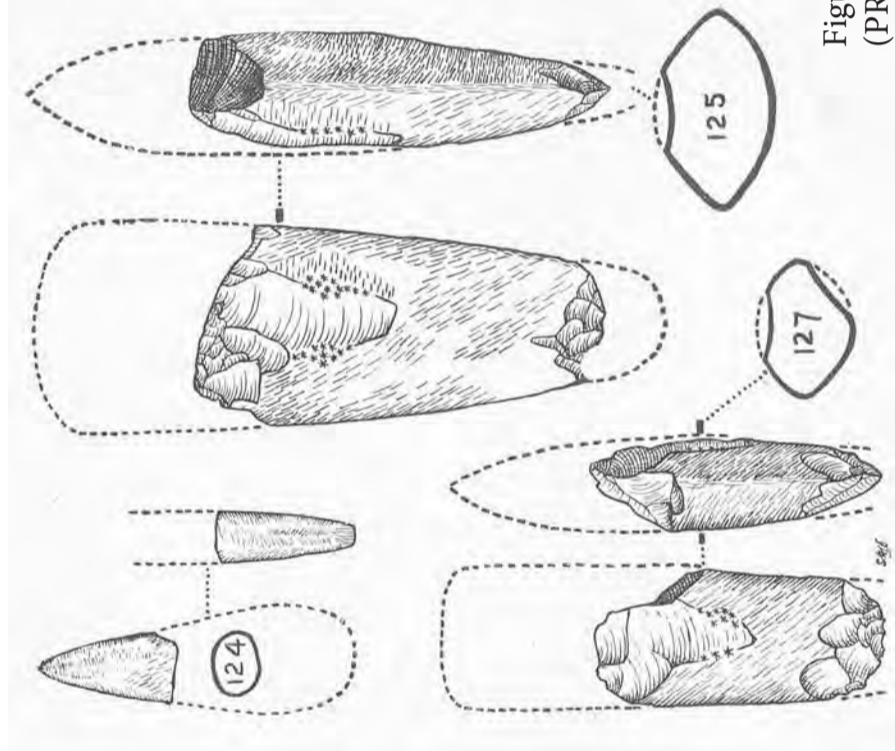
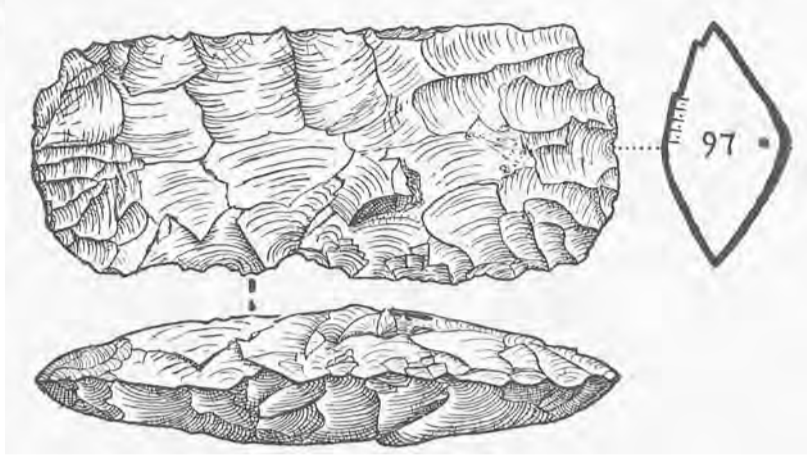
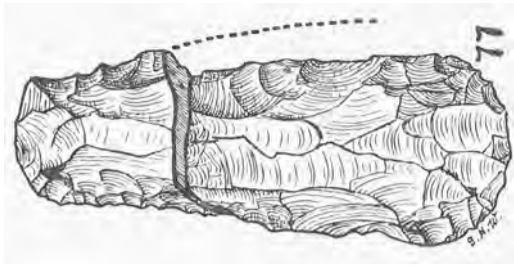


Figure app II.2.7: Published roughouts and axes  
(PRN 4720 from Davies 1961, fig. 1; PRNs 4094 and  
67779 from Williams 1982, fig. 4; other axes and  
roughouts from Warren's excavations at Graig Lwyd  
(Warren 1922))



Figure app II.2.8: Stone battle-axe/  
axe-hammer in David T Jones'  
collection (scale 1:2)



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