

# Group VII Axe-working Sites

Management and Interpretation Plan  
with a survey of an example site



Llywodraeth Cymru  
Welsh Government



Ymddiriedolaeth Archaeolegol Gwynedd  
Gwynedd Archaeological Trust

# Group VII Axe-working Sites

## Management and Interpretation Plan with a survey of an example site

Project No. G2495

Report No. 1472

Event PRN 45373, with EPRN 45374 as an appendix

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Cover photograph: Penmaenmawr Mountain from PRN 67329

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## GROUP VII AXE WORKING SITES: MANAGEMENT AND INTERPRETATION PLAN AND SURVEY OF EXAMPLE SITE

GAT Project No. G2495

GAT Report No. 1472

Event PRN 45373, with EPRN 45374 as an appendix

### SUMMARY/ CRYNODEB

*Gwynedd Archaeological Trust was grant aided by Cadw to carry out a management and interpretation plan on sites relating to Neolithic stone axe working around Llanfairfechan and Penmaenmawr, Conwy. The work was carried in 2018-19 and was intended to contribute to a Heritage Lottery Fund bid by the Carneddau Landscape Partnership, which will include a community project to investigate these sites. The work also included a survey of one of the axe-working sites, which was carried out in May 2018.*

*The management and interpretation plan summarised the known sites and assessed the significance of the overall landscape. It considers the constraints and pressures on this landscape and the research opportunities that it presents. Proposals are presented for fieldwork and interpretation that will be carried out as part of the project to be run in conjunction with the Carneddau Partnership.*

*The survey was carried out on an axe-working site at the foot of Dinas, Llanfairfechan (PRN 67329) and this provided a detailed record of earthworks and other features on the site and recorded the surface distribution of axe-working flakes and other objects. This provides basic data to inform the design of further work to investigate this site and provide adequate information to inform the management of the site and potential scheduling.*

Derbyniodd Ymddiriedolaeth Archaeolegol Gwynedd grant cymorthedig gan Cadw i gynnal cynllun rheolaeth a dehongli ar safleoedd sydd yn gysylltiedig â gweithio bwyell carreg Neolithig o amgylch Llanfairfechan a Penmaenmawr, Conwy. Cynhaliwyd y gwaith yn 2018-19, a'r bwriad oedd iddo gyfrannu tuag at gais gan Bartneriaeth Tirwedd y Carneddau am arian Cronfa Treftadaeth y Loteri, gyda'r cais yn cynnwys prosiect cymunedol i ymchwilio'r safleoedd hyn. Roedd y gwaith hefyd yn cynnwys arolwg o un o'r safleoedd gweithio bwyell a gynhaliwyd ym Mai 2018.

Roedd y cynllun rheolaeth a dehongli yn crynhoi'r safleoedd y gwyddid amdanynt, ac yn asesu arwyddocad y tirwedd cyfan. Mae'n ystyried y cyfyngiadau a'r pwysau sydd ar y tirwedd hwn, a'r cyfleon ymchwil mae'n gynnig. Cyflwynir cynigion ar gyfer gwaith maes a dehongli gaiff eu cynnal fel rhan o'r prosiect sydd i'w redeg ar y cyd â Phartneriaeth y Carneddau.

Cynhaliwyd yr arolwg ar safle gweithio bwyell wrth droed Dinas, Llanfairfechan (PRN 67329), a sicrhodd yr arolwg gofnod manwl o'r cloddweithiau a nodweddion eraill ar y safle, yn ogystal â chofnodi lledaeniad arwynebol y darnau gweithio bwyell a gwrthrychau eraill. Mae hyn yn darparu data sylfaenol ar gyfer ysbrydoli patrwm gwaith pellach i ymchwilio'r safle hwn, ac i sicrhau gwybodaeth ddigonol ar gyfer llywio rheolaeth y safle a chofrestru posib.



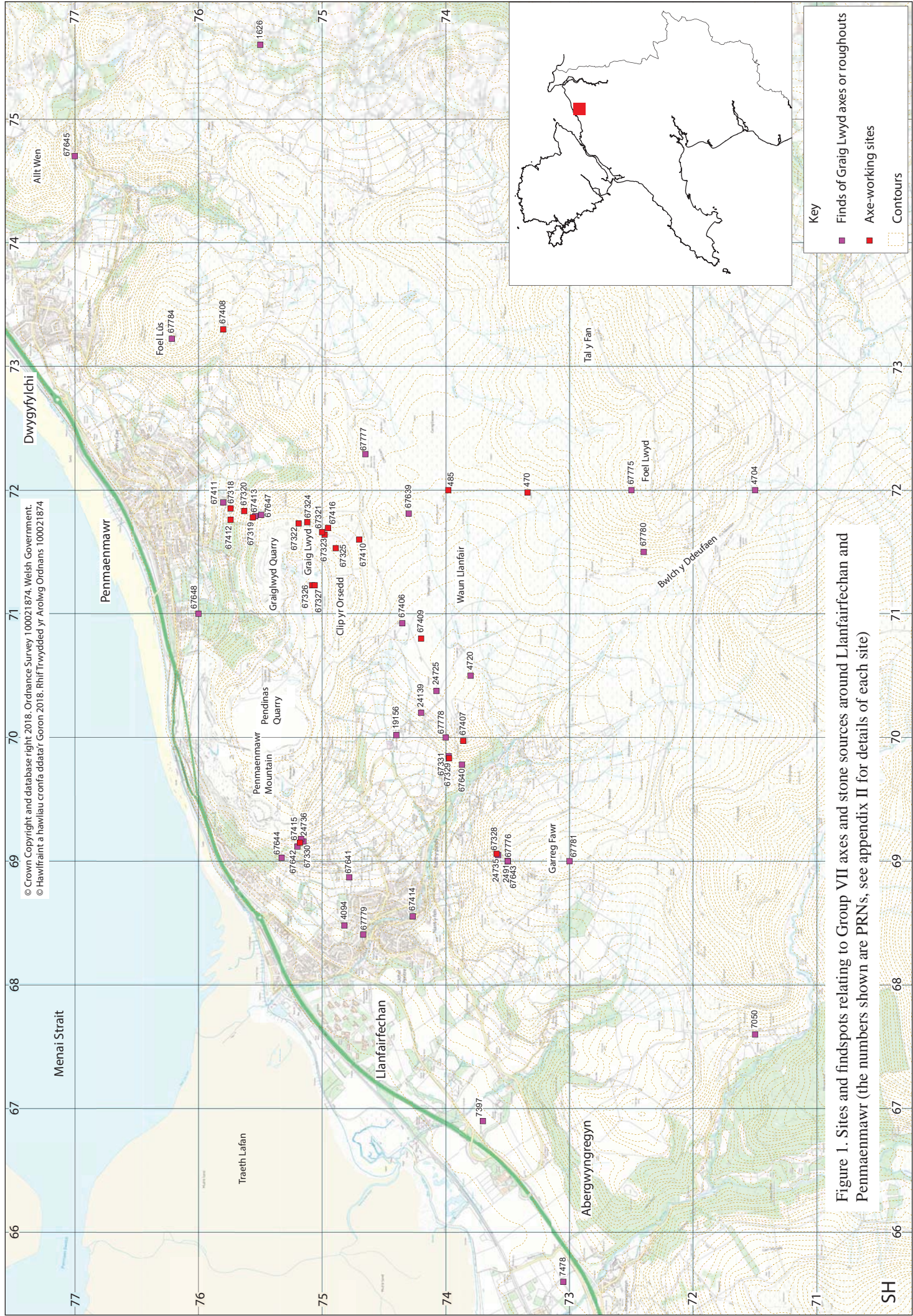


Figure 1. Sites and findspots relating to Group VII axes and stone sources around Llanfairfechan and Penmaenmawr (the numbers shown are PRNs, see appendix II for details of each site)



## **1. INTRODUCTION**

### **1.1. Scope of the Plan**

This report is intended as a management and interpretation plan to be used in relation to the bid to the Heritage Lottery Fund (HLF) by the Carneddau Landscape Partnership. The plan is related to sites associated with Neolithic stone axe working around Penmaenmawr and Llanfairfechan, Conwy. Many of these sites are on the lower hills that form the north-eastern end of the Carneddau range (figure 1), so fall within the scope of the Carneddau Landscape Partnership.

Although not a full conservation management plan the current report has been guided by the Heritage Lottery Fund (HLF) advice on conservation management planning (Heritage Lottery Fund 2012). A management plan typically consists of three stages of development:

- understanding significance;
- developing policies;
- developing an action plan.

This report covers these three stages with the action plan being specifically designed as part of the Carneddau Partnership HLF bid. This means that it concentrates on involving local people with their heritage and bringing these nationally important sites to a wider audience. The steps taken to achieve this stage involve:

- Understanding the place
- Assessing significance
- Identifying issues

This Plan therefore seeks to:

- Further our understanding of the archaeology of the Neolithic exploitation of stone sources in the Penmaenmawr and Llanfairfechan areas and the processes by which stone axes were produced;
- Assess the significance of sites of this period in the area as a whole;
- Identify those issues which surround the management of these sites
- Make recommendations to address those issues and to contribute to the interpretation of the sites for the general public

All historical and archaeological sites in the report are identified by a Primary Reference Number (PRN), which links to records held in the regional Historic Environment Record (HER) maintained by the Gwynedd Archaeological Trust. The HER can be accessed on-line at the following web address: [http://www.cofiadurcahcymru.org.uk/arch/gat/english/gat\\_interface.html](http://www.cofiadurcahcymru.org.uk/arch/gat/english/gat_interface.html).

### **1.2. Methodology**

This plan is based on work carried out in 2017-18 to record sites identified by local resident David T Jones and to make a basic record of his collection of axe roughouts (Kenney 2017). This also included a search of the HER and NMR for stone 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. This has produced a baseline of currently known sites, listed in appendix II.

Some sites were inspected on the ground in May 2017 with David T Jones. This identified a well-preserved working area at the foot of Dinas (PRN 67329) which was surveyed in detail for this report. The survey is included as appendix I.

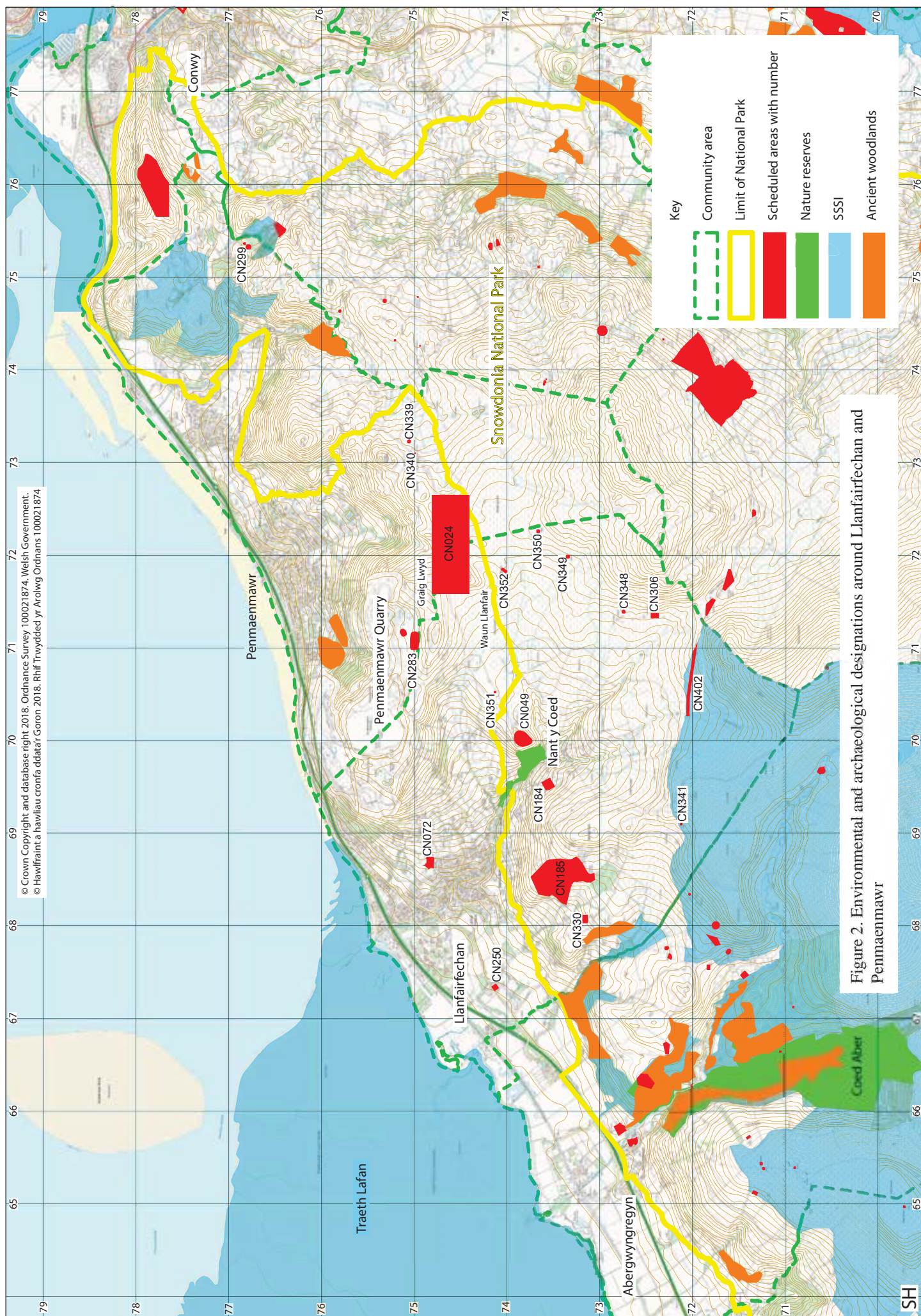


Figure 2. Environmental and archaeological designations around Llanfairfechan and Penmaenmawr



### 1.3. Ownership and Existing Designations

Most of the uplands that form the northern part of the Carneddau are within the Snowdonia National Park (figure 2); however the park boundary avoids the area known as Cefn Coch on which the Druids Circle (Meini Hirion) stone circle stands with many other Bronze Age monuments (scheduled area Cn024). The most famous source of stone axes, at Graig Lwyd above Penmaenmawr, is also well outside the park boundary, as is about half of the wet upland plateau known as Waun Llanfair, on and around which it is suspected stone axes were worked.

Most of the uplands are owned by the Crown Estate, with much of the land around the main Graig Lwyd outcrop leased to Hansen Aggregates Penmaenmawr, who run the quarries previously known as the Pendinas and Graiglwyd Quarries. This includes the Graig Lwyd exposures themselves, the ridge of Clip yr Orsedd and the western slopes of Penmaenmawr Mountain, the scree from which was also used for axes.

The rest of the area is owned by individual farmers, most of whom manage the uplands through a Graziers Association.

The area is popular with walkers and most of the uplands are open access land, though the locations of some sites on the lower slopes are on private land that is not open access.

The area is largely open, either heathland or farmland but some of the small areas of woodland around the edge of the uplands are classed as ancient or semi-natural woods. At the foot of Dinas (scheduled area Cn049) Nant y Coed is a Local Nature Reserve and off the coast Traeth Lafan (the Lavan Sands) is also a Local Nature Reserve. The closest national nature reserve, Coed Aber, lies just south-west of the main area being investigated. Coed Aber is also a SAC and SSSI.

The whole of the Menai Strait and Conwy Bay is a SAC, an SPA and SSSI. Most of the higher Carneddau to the south-west of the study area is a SAC and SSSI. The Sychnant Pass area, to the north, is also a SSSI.

Within the communities of Llanfairfechan and Penmaenmawr there are 19 scheduled areas, all but two scheduled to protect prehistoric monuments, reflecting the importance of prehistoric remains in the area. However none of these sites are Neolithic in date. Even the main axe source at Graig Lwyd is not scheduled, due to it being on quarry concession land. The large area of SAM CN024 does however cover the location of a probable axe working site and a roughout was found in the Druids' Circle.

The entire area, with the exceptions of the villages of Llanfairfechan and Penmaenmawr is within the North Arllechwedd Landscape of Outstanding Historic Interest (HLW (Gw) 12) (Cadw 1998, 113-116). This is described as "A dissected, mainly upland, area situated on the northern flanks of the Carneddau ridge in north Snowdonia, containing well-preserved relict evidence of recurrent land use and settlement from the prehistoric to medieval and later periods. The area includes: a Neolithic axe factory site (sic); dense and remarkable concentrations of Bronze Age funerary and ritual monuments; Iron Age hillforts, settlements, field systems; prehistoric trackways; a Roman road; medieval settlements, field systems, a motte and commotal centre at Abergwynnregyn; recent mining and quarrying remains" (Cadw 1998, 116).

*List of scheduled areas in Llanfairfechan and Penmaenmawr*

<b>SAM number</b>	<b>SAM name</b>	<b>Grid reference</b>	<b>Community</b>	<b>Site type</b>	<b>Period</b>
CN024	Penmaenmawr Stone Circle	SH722746	Penmaenmawr	Stone circle	Prehistoric
CN049	Dinas Camp	SH700738	Llanfairfechan	Hillfort	Prehistoric
CN072	Gwern y Plas Ancient Village	SH686748	Llanfairfechan	Unenclosed hut circle	Prehistoric
CN184	Pont y Teiryd Hut Group and Ancient Fields	SH695735	Llanfairfechan	Enclosed hut circle	Prehistoric
CN185	Garreg Fawr Hut Groups, Ancient Fields and Cairns	SH685734	Llanfairfechan	Enclosed hut circle	Prehistoric
CN250	Hut Circles near Wern Newydd	SH673741	Llanfairfechan	Unenclosed hut circle	Prehistoric
CN283	Hut Circles at Clip yr Orsedd	SH710750	Penmaenmawr	Hut circle settlement	Prehistoric
CN299	Gwern Engan Concentric Enclosed Hut Circle	SH753767	Penmaenmawr	Hut circle settlement	Prehistoric
CN306	Hut Circles West of Foel Llwyd	SH713724	Llanfairfechan	Unenclosed hut circle	Prehistoric
CN330	Cae'r Haidd Deserted Rural Settlement	SH680732	Llanfairfechan	Platform house	Medieval
CN339	Bryn Derwydd stone circle	SH732750	Penmaenmawr	Stone circle	Prehistoric
CN340	Maen Crwn standing stone	SH731749	Penmaenmawr	Standing stone	Prehistoric
CN341	Yr Orsedd, cairn to NNW of	SH690721	Llanfairfechan	Round cairn	Prehistoric
CN348	Foel Lwyd, cairn to NW of	SH713727	Llanfairfechan	Round cairn	Prehistoric
CN349	Foel Lwyd, cairn to N of	SH719733	Llanfairfechan	Round cairn	Prehistoric
CN350	Cerrig Gwynion cairn	SH722736	Llanfairfechan	Round cairn	Prehistoric
CN351	Waun Llanfair barrow	SH705741	Llanfairfechan	Round barrow	Prehistoric
CN352	Bryniau Bugeilydd cairns	SH718740	Llanfairfechan	Ring cairn	Prehistoric
CN402	Roman Road N of Llannerch Fedw	SH706720	Llanfairfechan	Road	Roman

#### **1.4. Acknowledgements**

The project has been grant aided by Cadw and undertaken in partnership with the Carneddau Landscape Partnership. Thanks are due to John G Roberts for extensive discussions, the Penmaenmawr Museum for support and contributions to the planning, and especially to Gareth Wynn Jones for permission to survey the axe working site on his land and for help and support with the project.

#### **1.5. Copyright**

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*Plate 1. Llanfairfechan from the top of Dinas, showing its position on the Menai Strait and Anglesey beyond.*



*Plate 2. Dinas from Garreg Fawr with Clip yr Orsedd in the background*

*Plate 3. Garreg Fawr from Dinas*



## 2. LOCATION AND LANDSCAPE

### 2.1. Landscape

Llanfairfechan and Penmaenmawr lie on the north coast of Wales on the southern side of the Menai Strait with Anglesey to the north (figure 1). At this point the Strait widens as it opens into Conwy Bay and the extensive Lafan Sands cover much of the Strait at low tide (plate 1). The village of Llanfairfechan 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. Penmaenmawr occupies a narrow coastal plain at the foot of a steep escarpment. It is enclosed from the outside world by Penmaenmawr Mountain to the west and Alltwen and Penmaenbach to the east. The village is dominated by quarries which have hollowed out Penmaenmawr Mountain and also quarried much of a rocky outcrop known as Graig Lwyd (the grey crag).

Llanfairfechan is also overlooked by Penmaenmawr Mountain but has a more open aspect to the west. The upper part of the valley above Llanfairfechan 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 2). Garreg Fawr is a less dramatic but a bulkier presence with an outcrop of rock at the top reaching 364m OD (plate 3). To the south are the higher mountains of the Carneddau range and to the east the long, isolated ridge of Foel Lwyd and Tal y Fan, the latter reaching 610m OD.

Penmaenmawr Mountain 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 Penmaenmawr Mountain 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 extensive but has been largely quarried away by the Graiglwyd Quarry (plate 4). 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 (plate 5). 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 Meini 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.

### 2.2. Geology

This area was exploited by the Neolithic people, and is still of commercial interest 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 3). 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).

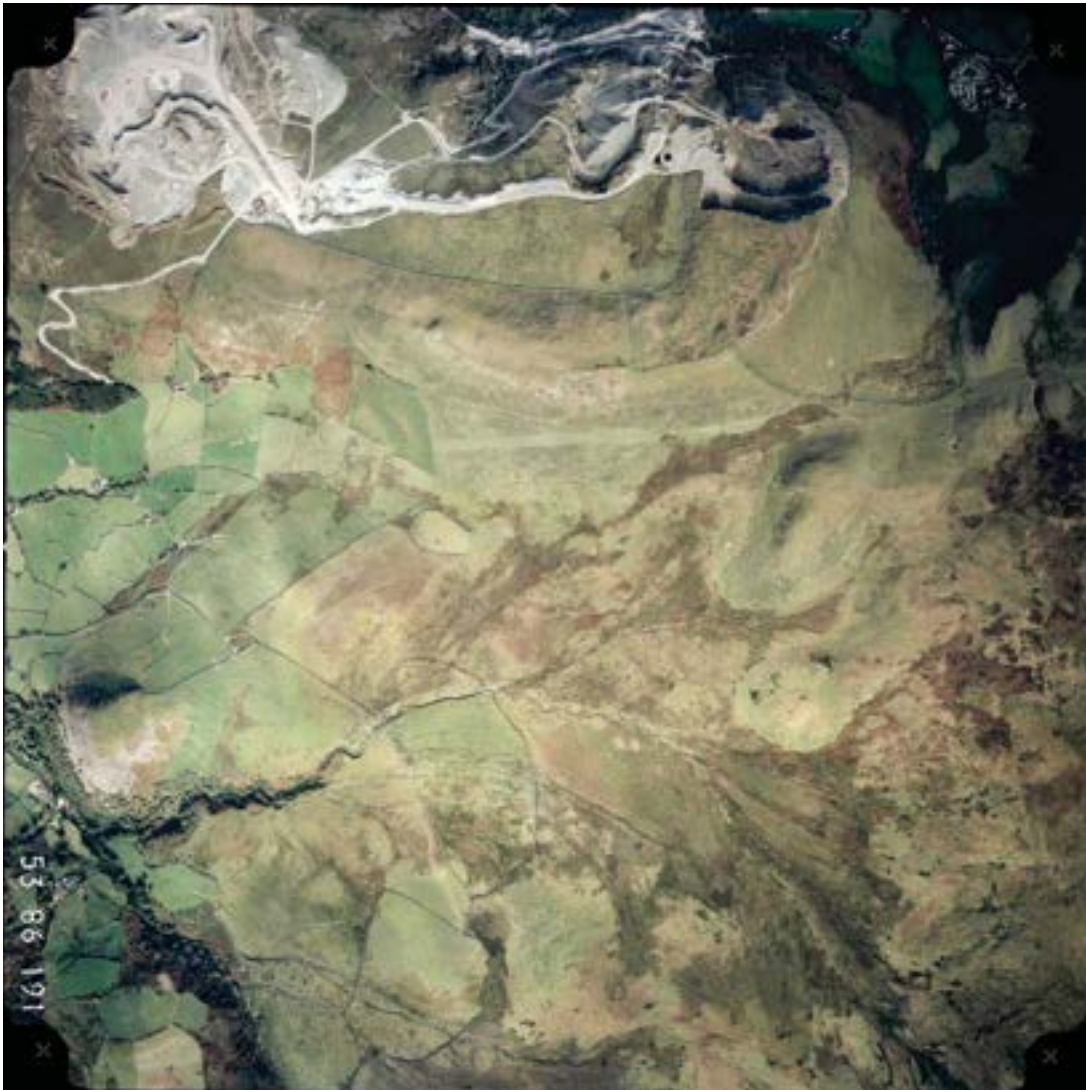
The bedrock protrudes through a blanket of glacial till with some deposits of glacial sands and gravels. Alluvial deposits are restricted to the narrow base of the river valley until they open out to form an alluvial fan under the village of Llanfairfechan. Around the eastern and southern sides of Garreg 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.





*Plate 4. Aerial photograph of Graig Lwyd Quarry taken in 1993 showing the outcrop of Y Graig Lwyd partly quarried away (photograph by G. I. Davies)*



*Plate 5. Aerial photograph of the uplands to the east of Llanfairfechan and south of Penmaenmawr showing the boggy area of Waun Llanfair in the middle and the Penmaenmawr Quarry at the top (Snowdonia National Park Authority, flight 5386, frame 191, date 1986)*

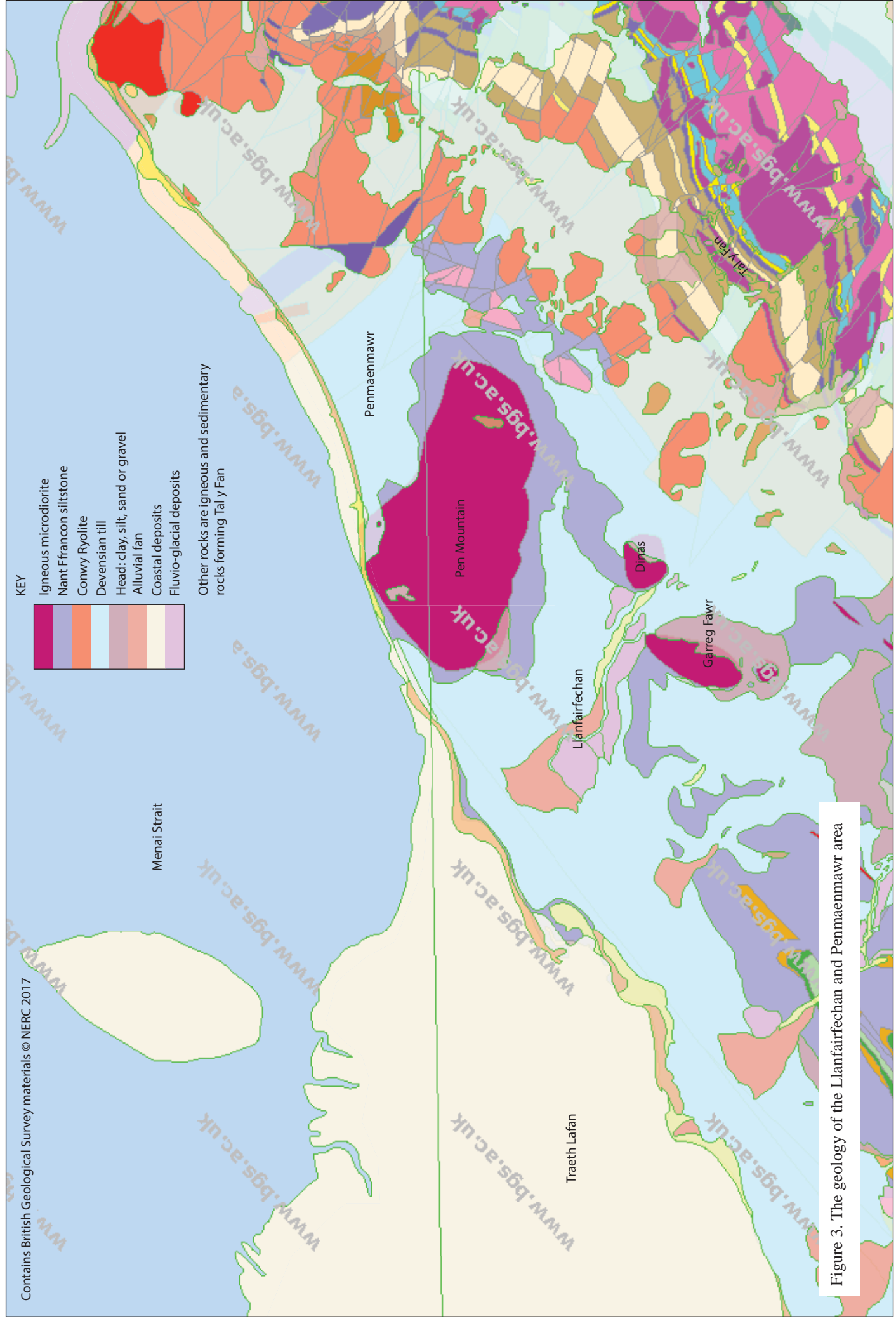


Figure 3. The geology of the Llanfairfechan and Penmaenmawr area

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 Penmaenmawr Mountain.

### **2.3. Palaeoenvironmental Evidence**

Our understanding of the vegetation history of the uplands in this area 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.

## **3. ARCHAEOLOGICAL SUMMARY**

### **3.1. Background and previous archaeological work**

It has been known since 1919 that Neolithic stone axes were produced near a rock outcrop known as Y Graig Lwyd above Penmaenmawr. The first axe roughouts were recognised by Samuel Hazzledine Warren and he subsequently undertook excavations in the early 1920s. Warren found several tons of axes and roughouts, many of the best specimens of which were distributed to museums across Britain (Warren 1919, 1922; Glen 1935, 189). The excavations were carried out on the screes on the northern side of Graig Lwyd and showed that the natural screes were a major source of stone for the axes.

The full importance of the site was not understood until the Implement Petrology Committee of the Council for British Archaeology (established in 1952) (Grimes 1979) started reporting on their results from analysing axes to identify their sources. 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. This showed that after the prolific stone source in the central Lake District, focussed around Great Langdale (Group VI) Graig Lwyd (Group VII) was the most productive and widely distributed source with axes from this source being found across most of England and Wales, with occasional ones elsewhere (Clough



1988; Houlder 1988).

The main axe working areas over Graig Lwyd were investigated in the 1990s by GAT. This included detailed surveys of the surviving working areas and some small excavations. The surveys revealed the extent of the preserved working hollows in the northern screes but the excavations and test pitting also demonstrated that the summit of the hill had been exploited for axe working, including quarrying of bedrock, rather than just the use of natural screes (Flook and Williams 1992, Davidson and Williams 1998, Williams and Davidson 1998, Williams and Davidson 2002).

The stone source is always referred to in the archaeological literature as “Graig Lwyd” but the same rock suitable for axe production also outcrops above Llanfairfechan and it has long been realised that Graig Lwyd was not the only source of this rock in the area. Warren realised that axe roughouts could be found over a much wider area and the Royal Commission (RCAHMW 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 stone sources above Llanfairfechan. However, since the 1990s Mr David T Jones of Llanfairfechan has been collecting axe roughouts and exploring axe-working sites around Llanfairfechan. Mr Jones’ collection was recorded in 2017 and he shared his knowledge of the axe working sites with the author. The results are reported in Kenney 2017.

### **3.2. Sites related to Neolithic axe working**

Currently there are 59 sites identified in the Llanfairfechan and Penmaenmawr areas that are related to Neolithic axe working; see appendix II for gazetteer of sites and figure 1 for their locations. Of these 38 are findspots, almost all of roughout axes, discarded in the process of production, with a single polished axe (PRN 67645) found towards the eastern edge of the area in Sychnant Pass. At four sites axe flakes and objects made from Graig Lwyd stone have been found under cairns of probable later date. Sixteen of the sites are axe working sites, mostly on the source rock or screes but with a small number where evidence has been found of axe working away from the source sites.

The main Graig Lwyd stone source (PRN 731) (the term “axe factories” is avoided as suggesting an industrial and intensive aspect to axe production that would be very unlikely in the Neolithic period) is a hill above the farm of Graig Lwyd, part of which has been removed by the Graiglwyd Quarry. The quarrying has removed a considerable amount of natural scree but it is likely that much of the Neolithic quarrying remains. Only the rock at the margins of the igneous intrusion is fine enough for stone axes, but this rock is too fine, and flakes too easily, so was not desirable for setts, which the quarry originally produced, and is of little use for the road stone that it now produces. The quarry therefore had no reason to remove the finer rock on the summit and southern and eastern margins of Graig Lwyd.

The work of Warren and GAT shows that both scree and quarried rock were used for axe production and the distribution of axe working sites on and around the hill is very extensive, from the base of the surviving northern screes over the summit of the hill and down the eastern side. It is highly likely that working floors extend much further, and beyond the limits of the finest rock. Penmaenmawr Mountain is formed of the same igneous intrusion and has fine rock suitable for axes along its margins. David T Jones has demonstrated that the screes along the western side of the mountain were used for axe working (PRN 67330) and it is possible that traces of Neolithic quarrying may also survive here. Between Penmaenmawr Mountain and Graig Lwyd is the ridge of Clip yr Orsedd, which may also contain some suitable stone and could possibly have axe working sites, although none have yet been identified here.

David T Jones has identified significant axe working sites on Garreg Fawr (PRN 67328) and at the foot of Dinas (PRN 67329). At both of these scree was used as the source for stone for the axes, and axe flakes and roughouts can be found. These show that the other outcrops of augite granophyre were used for axe production. It is likely that axe working sites might be found at other locations in the screes on Dinas and Garreg Fawr and it is not impossible that some quarrying also occurred on these outcrops.

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.

The largest such site is on Maes y Bryn (PRN 4720), on the western edge of Waun Llanfair and just east of Dinas, found by J Davies in May 1961 (Davies 1961) when the area was ploughed “for the first time in living memory” (Davies 1961, 1). Davies found axe-working flakes scattered over a wide area, with roughouts, hammerstones and a small number of flint flakes.

David T Jones has also found axe flakes and a roughout in this general area and along the western edge of Waun Llanfair. Hazzledine Warren found an axe working floor (PRN 67409) on Waun Llanfair (Warren 1919, 342; Warren 1922, 2), as well as another closer to the main Graig Lwyd source on Cors y Carneddau (PRN 67410) (Warren 1919, 342; Warren 1922, 2). The distribution of possible axe-working sites is extended by a discovery by Hazzledine Warren of a site near Foel Lûs (PRN 67408) (Warren 1919, 342; 1922, 2); 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. Two cairns excavated in the 1990s to the west of the main outcrop had axe working debris beneath them (PRNs 67326 and 67327 (Williams and Davidson 1998, 17-18)). Axe-working flakes were found under two other cairns on Waun Llanfair (PRN 470 and 485), as well as a small and narrow axe or pick of Graig Lwyd rock under one of the cairns (Caseldine *et al* 2007, 5-8). These finds were associated with flint tools and other evidence of more general occupation, suggesting that a range of activities took place at these sites and they could be the remains of significant settlement sites.

The discovery of roughouts may give an indication of axe-working sites. These are generally more easily found and identified than axe-working flakes. Roughouts are widely found with examples coming from the axe-working sites near Dinas and Garreg Fawr and many from the screes below Penmaenmawr Mountain, but also from locations well away from the stone sources. They have been found as far away as Foel Lwyd and the pass of Bwlch y Ddeufaen and within the village of Llanfairfechan. It is possible that especially the lower level finds could indicate the location of axe finishing sites, where roughouts were polished to produce the finished axes.

## **4. ASSESSMENT OF SIGNIFICANCE**

### **4.1. Introduction**

For Cadw the “Understanding the significance of historic assets is vital” (Cadw 2011, 10), but establishing their significance in an objective way can be difficult. Worthing and Bond (2008, 62-69) discuss a range of possible values that could be used to assess historic assets. These include aesthetic, scenic, architectural/technological, historical, associational (with a person or event), archaeological, economic, educational, recreational, artistic, social, commemorative, symbolic, spiritual, inspirational. The Secretary of State’s Criteria for Scheduling Ancient Monuments (Welsh Office Circular 60/96, annexe 3) use the following criteria:-

Period, Rarity, Documentation, Group Value, Survival/Condition, Fragility/Vulnerability, Diversity, and Potential.

Most of these criteria are included within the four component values recommended by Cadw that should be considered to assess the significance of an historic asset:

Evidential value: provides evidence about past human activity

Historical value: illustrates a particular aspect of past life or associated with a notable person or event.

Aesthetic value: the sensory and intellectual stimulation to be drawn from an historic asset

Communal value: the meanings an historic asset has for people, relation to identity, social or spiritual value

(Cadw 2011, 10, 16-17).

It is usual to use these values to categorise individual sites but the sites being discussed here have significance mainly as part of the wider Neolithic landscape of this area. Understanding the production of axes requires understanding the full range of sites in relation to each other and to their landscape, so their individual significance is less useful. The significance and potential of the landscape as a whole will be assessed as the most useful approach to designing further investigations and interpretation of this group of sites.

This assessment will start from an archaeological perspective but the Aesthetic and Communal value allow for a wider consideration of importance. Cadw (Cadw 2011, 11) stresses that the historic environment is a shared resource and values other than those of historic environment professionals are important. The proposals in this report will consider how these aesthetic and communal values can be enhanced and brought to a wider audience.

#### **4.2. Statement of significance**

The Graig Lwyd axe source is the second most widely distributed source of stone axes in Britain. The distribution of stone axes originating from Graig Lwyd suggests that they were in demand over a wide area, and at a considerable distance from their source. Although most axes would have had important practical uses to fell trees and work wood it appears that they were also of symbolic importance. Axes are often found in pits or ditches within ceremonial monuments, often ritually broken, indicating their major symbolic role in society. The axes were probably distributed through gift exchange networks and may have been exchanged along with stories about their origins and the histories of people who had previously owned them. Fine axes would have conferred status on those who could acquire them (Bradley and Edmonds 1988, 183; Davies and Edmonds 2011, 171). Graig Lwyd can therefore be seen as having a critical and central role in British Neolithic society. Comparisons of this site to other large stone sources such as Great Langdale (Claris and Quartermaine 1989; Bradley and Edmonds 1988) and smaller ones such as Mynydd Rhiw on the Llŷn peninsula (Burrow 2011, Houlder 1961) has huge potential not just to show how axe production was organised but to inform a much wider understanding of Neolithic society.

The practical and symbolic use of axes in the Neolithic makes them a critical tool type for understanding this society. The apparent importance of certain sources to the Neolithic people makes those specific sources particularly significant in understanding Neolithic culture. The role of axes in social exchange also means that they must have been a fundamental part of Neolithic social expression.

Instead of a single stone source at Graig Lwyd the Group VII axe source 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 has not been followed up or widely recognised by stone axe researchers. 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 also not resulted in further work on the wider landscape.

The stone source is often seen as partially preserved and damaged (Bradley and Edmonds 1988, 184) and 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 and much of the original scree on this side is also covered with recent quarry waste. 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 Penmaenmawr Mountain 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.

Following Cadw's four component values for assessing significance the Neolithic landscape as a whole can be assessed as having very high significance as an historic asset. The Evidential Value is considerable as the various different sites in the landscape individually preserve evidence about past human activity and together they have the potential to contribute very substantially to the understanding of the Neolithic period. However much of this Evidential Value is still to be realised by future work. The landscape represents a prehistoric period but the Historical Value can still be applied as it certainly has the potential to illustrate a particular aspect of past life. The importance of stone axes to Neolithic economy and society makes this a particularly important aspect to explore. The Aesthetic Value of this landscape is high but requires information on the Neolithic use of the landscape to be more widely distributed to be fully realised. The upland landscape with its extensive views is of considerable aesthetic value in itself but if people enjoying that landscape can be made aware of the time depth and cultural changes that have place there the value will be enhanced. The individual sites relating to axe working are generally either buried or very subtle and difficult to find and understand, however it is easy to appreciate the landscape in which this activity took place.

Possibly the most important of the values of this landscape is the Communal Value. The landscape is accessible by numerous footpaths and is well used by walkers, both locals and visitors. The later quarrying heritage is valued in the area and the Penmaenmawr Museum has been introducing local people to this much older heritage of quarrying. Many local residents who are interested in history are aware of the Neolithic axe working in the area but there is potential for making a much wider sector of the population aware of their local heritage and its national importance. This will increase pride of place and could strengthen community identity and engagement. These are very local sites that people know and have a direct link to but with a national significance.

The significance of the landscape can be summarised by looking at Secretary of State's Significance Criteria. These can be summarised as below with 3 being a high score and 1 being low.

Period	3
Rarity	3
Documentation/evidence	3 (potential)
Group Value	3
Survival/Condition	largely unknown
Fragility/Vulnerability	2
Diversity	3
Potential	3

Though there are no direct, specific threats currently known to sites the wide distribution of related sites and the varied uses of the uplands and extension of the sites into lowland areas makes threats from agriculture, erosion, tourist development and even industry a continual risk.

The condition, extent and nature of many sites are currently unknown or not fully defined and there are certainly many related sites in the landscape that have not yet been identified. This lack of knowledge increases the risk as advice on avoiding or mitigating damage cannot be fully informed. Much of the potential value in evidence and information is also yet to be realised.

This landscape is therefore considered to be of very high significance and its importance is of a British national level because of the spread of axes from these sources across the country and the importance of stone axes in Neolithic culture. Much of the potential value of the landscape is however yet to be realised giving very significant opportunities.

## **5. CONSTRAINTS, PRESSURES AND OPPORTUNITIES**

### **5.1. Constraints and Pressures**

As discussed above much of the area is part of the Crown Estate while lowland fields are in private ownership but large parts are within the National Park and this plays a large role in the management of the area. The management of the uplands depends in practice on the local Graziers Association. The landscape is therefore important for habitat conservation and is a working environment of economic importance. The relatively low-level impact of habitat management does not generally create a risk to the historic environment, though occasionally there are management issues which arise from opposing needs. Farming the hills is also quite low impact but the creation of tracks for agricultural access is now easily done and not regulated by planning. The more the local farmers know about the archaeology in general on their land and that they graze the lower the risk of accidental damage.

Hanson Aggregates have control over some areas adjoining the active quarry as they have mineral concessions in these areas. In the past the quarry has obviously been the cause of the loss of sites relating to axe-working but it might also be considered to be instrumental in the discovery of the use of these stone sources in the Neolithic. Colonel Darbishire, then the owner of the quarry, provided support and men to Samuel Hazzledine Warren enabling his original researches, without which the sites would not be known (Williams 1998).

The quarry is not currently a threat to the surviving sites, as it is unlikely that the quarry will expand beyond its present limits. However there are less obvious industrial risks, such as the recent case of electricity poles being inserted through the scree slopes on the north side of Graig Lwyd without archaeological monitoring. This is in an area of known axe-working and the spoil from the hole dug is reported to contain numerous axe-working flakes.

A new water pipeline has recently been laid across the fields east of Llanfairfechan to replace an old pipeline that had burst. This was carried out with archaeological monitoring and few traces of axe-working were found as it ran a little below the axe-working areas at the foot of Dinas, but it provides another example of the types of threats that do arise.

The Druid's Circle (Meini Hirion) attracts many visitors and the North Wales Path runs through the area making this area popular with walkers and other visitors. Although quiet compared to the main tourist foci of Snowdonia the area must receive a significant number of visitors. The main axe-working areas of Graig Lwyd are not on open access land and few people go there but Garreg Fawr is all open access and is much used by people from Llanfairfechan and walkers gaining access to the higher hills. Dinas is on private land, although there is a permissive route to the summit of the hill. Damage has been caused recently to the Iron Age roundhouses on the summit of Dinas with stones being removed to make cairns, but there is no current evidence of any risk to the Neolithic sites, which are on the lower slopes. Visitors can be a threat to the more high profile monuments, especially Druid's Circle, where graffiti and fires have caused damage, but generally the Neolithic sites are not at risk.

However there is a specific risk that should be considered when the profile of the sites is raised. If stone axe roughouts are perceived as desirable objects local people, and possibly some from further away, may actively search for these. Collecting surface roughouts without recording them could cause a loss of information, but digging through screes to find roughouts could cause very considerable damage to archaeological deposits in otherwise entirely unthreatened areas. Even scheduling sites cannot remove this risk and the most obvious sites are currently protected by not being widely known and by the difficulty of recognising and spotting roughouts. It is hoped that increased information and understanding of the importance of the sites will actually reduce the risk but this cannot be guaranteed and the risk must be considered when planning archaeological work and outreach activities.

The area is generally well-vegetated and natural erosion is unlikely to pose a threat but erosion along tracks by vehicle use or walkers may cause a low level of damage. Sheep also wear holes in the slopes on shaley rock, largely for mineral licks, but this does not apply to the volcanic rocks used for the axes. In most cases erosion is more likely to create opportunities for finding axe-working flakes and other objects than to cause significant damage to sites. Damage by vehicle ruts may be relevant to the Ty'n y Llwyfan axe-working site (PRN 67329). At the northern limits of that site there is vehicle rutting related to access to a sheep feeder in this area (plate 6).



*Plate 6. Vehicle ruts to the north of axe-working site PRN 67329*



## 5.2 Management and Research Opportunities

The opportunities for further research identified below take into the account the opportunities presented by the Carneddau Landscape Partnership Project. The potential for research is large, particularly when compared to the results achieved by the studies of the Great Langdale Group VI axe source landscape. The work undertaken to date suggests that further research would add considerably to our understanding of the Carneddau sites.

There are also more urgent practical priorities for management. The main priority is to protect the axe-working sites, particularly Ty'n Llwyfan, Dinas (PRN 67329), which is both the best preserved and the most vulnerable. One episode of field improvement would entirely destroy this site. Although high sheep numbers in the area over winter helped exposed the site and made it clearly visible, higher concentrations of stocking, or if a feeder were placed on the site, could cause considerable disturbance. The study suggests the site is of national importance, however further work is required if recommendations are to be made for statutory protection.

The other two working sites identified above Llanfairfechan are much less vulnerable as they are on open scree and unlikely to be improved in any way. Whilst statutory protection might not be the best method of management for these sites, there are potential threats from visitor erosion and those searching for axe roughouts, so methods of visitor control should be identified. The Graig Lwyd axe source is of national significance, and as such statutory protection through scheduling should be explored.

Research opportunities are numerous, both at individual site locations, and on a wider landscape level. A good example of a site suitable for further research is that at Maes y Bryn (PRN 4720) to the south-east of Dinas. Here a dense scatter of axe-working debris and other finds were recovered after ploughing, which suggests there might be settlement evidence here, in addition to the working of axes. Excavation would be necessary to further investigate this site, but it is quite remote and difficult to access so would not be the easiest target. Excavations at Ty'n Llwyfan, Dinas (PRN 67329) and on the main Graig Lwyd site could enhance our understanding of working at the location of stone sources. 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.

The information recovered so far demonstrates that the stone sources utilised in the Penmaenmawr and Llanfairfechan area were mainly from scree. 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. Quarrying of bedrock has been identified at Graig Lwyd, but current evidence suggests that quarrying was very small scale compared to the production of axes from scree. The technology of extraction of the Group VII stone needs further investigation.

The processes of working are also quite poorly understood, largely because the only large scale investigations were by Hazzledine Warren, who did published representative examples of the technology but did not carry out extensive analysis of the excavated material. In some cases the roughouts seem to have been worked to quite an advanced stage on the source sites. Some of the roughouts are finely worked and seem ready for polishing. Only excavation could address many of these issues in detail, although traces of quarrying might be found by inspecting and recording suitable rock outcrops. 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. 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.

Excavation is also necessary to address one of the main questions, that of the date and duration of the working of the stone sources. Most of the dates for the use of Group VII rock have been obtained from finished axes found elsewhere, but this can only relate to the peak of production when the axes were most widely distributed. It could also be confused by the potentially long life of axes which might have been curated for generations before being deposited in the ground. The number of dates from on or near the axe sources themselves are few (Williams and Kenney 2011), so it is currently impossible to know when the working of these sources started or ended. The use of fire setting in quarrying or fires at axe-working sites could provide datable material to solve this question.

Understanding the use of the landscape as a whole would be an important aim of any research. The full extent

of source working areas is not known, but other sites away from the sources also seem to have been used for axe-working and finding these is a priority. Waun Llanfair appears to be a likely place to look but there is the possibility of sites at lower levels and further away such as near Foel Lûs. 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.

Further pollen work could make a contribution as it might locate areas with Neolithic cereal growing suggesting possible areas of settlement. Axe flakes have been found in excavations and erosion scars and Neolithic activity might be widely distributed. It is proposed that a programme of test pitting might be used to find the limits of axe-working sites and also to potentially locate other sites obscured by vegetation, ploughsoil and peat.

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) a defended hilltop Neolithic settlement 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 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 sources but evidence of polishing has rarely been found with settlement anywhere in Britain (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; Williams, Kenney and Edmonds 2011). 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. 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.

One aspect of the Graig Lwyd stone source that has rarely been considered is the physical appearance of the landscape. Studies of the impressive Pike O'Stickle in Langdale and particularly the area of Monte Viso in the Italian Alps, the source of very finely worked and very widely distributed jadeite axes, have led to the suggestion that the origin of the more widely distributed axes was important and that the axes were polished largely to emphasise the characteristics of the stone and demonstrate the genuine provenance (Bradley and Edmonds 1993, 49, 50, 182; Sheridan 2007). As the Graig Lwyd axes were widely distributed it is possible that this source was in demand because it also came from a dramatic location. The hill of Graig Lwyd itself is not very dramatic but Penmaenmawr Mountain certainly is and was even more so before its summit was quarried away. The occupation, exploitation and management of the Neolithic landscape and how it was perceived by the Neolithic people are all key contributory factors to our understanding of the area, and its significance.

## **6. PROPOSALS FOR FIELDWORK AND INTERPRETATION**

### **6.1. Introduction**

The Carneddau Landscape Partnership is a partnership of organisations developing a large scale project under the leadership of the Snowdonia National Park Authority. The project aims to help people discover, record, care for and celebrate the Carneddau. The project has been awarded a Heritage Lottery Fund (HLF) development grant, which is being used to put together a bid for a 5-year project to run from 2019 to 2024. The bid is due to be submitted to the HLF in early March 2019.

The key aims of the Partnership are:-

- To protect rare habitats and species, nationally important archaeological remains and distinctive landscape features.
- To keep the traditions, knowledge, and place names of the landscape alive.
- To promote sustainable land use practices.
- To help as broad an audience as possible to discover, record, conserve and celebrate the Carneddau through events, activities, training, new interpretation and better access.
- To maintain the overall number of visitors within sustainable levels.

The aims will be fulfilled by providing new ways of learning about the area, better information, events and activities, resources for schools and young people, skills training, access improvements, landscape conservation demonstration projects and grants for conservation works and community activities.

As part of the Partnership's activities a project is being developed to involve local people in the investigation of the Neolithic landscape related to stone axe working above Llanfairfechan and Penmaenmawr. The Group VII Axe Sources Project fits the aims of the Carneddau Landscape Partnership because it will contribute to the protection of the historic landscape by providing new information on the Neolithic sites while providing opportunities for a wide range of people to become engaged with their local archaeology. The project will provide a range of opportunities for training and learning skills, as well as celebrating this nationally important heritage.

This is an opportunity to undertake further research work at the site as suggested above and also to provide enhanced information for management and scheduling. It is also an ideal opportunity to increase local awareness of the archaeology of the area, and to engage the local population in its study. Penmaenmawr Museum has promoted local consciousness of the early twentieth century work by Hazzledine Warren at Graiglwyd. As part of the museums imminent, HLF funded, redevelopment the story can be brought up to date, with the museum acting as a conduit for information generated by a renewed focus on the landscape of the stone sources.

The Group VII Axe Sources Project will be run by Gwynedd Archaeological Trust (GAT) and staff from the Snowdonia National Park Authority (SNPA) with assistance from the other partners. It is proposed that Cadw will provide match funding for the project, through a grant to GAT.

The project will focus on defining the extent and nature of the axe-working evidence in the area of Llanfairfechan and Penmaenmawr. Various techniques will be used to obtain a broad range of evidence leading to an understanding of the use of the landscape in the Neolithic and an identification of sites to be protected by scheduling or other means, such as community adoption initiatives.

### **6.2. Participation and Training**

The project will provide volunteer opportunities for a wide range of audience sectors. The aim will be to encourage involvement by local people and schools as well as to provide opportunities for participation by members of disadvantaged groups such as long-term unemployed people, people with mental health issues, and offenders in rehabilitation by working with bodies such as Groundwork North Wales, OPUS, CAIS and Berwyn Jail.

In addition there is an aim to establish a volunteer network in north-west Wales amongst a number of parties with historic environment interests and responsibilities. The Carneddau Landscape Partnership scheme will provide the focus and resource to establish this group on a firm footing so that it can continue to grow beyond the end of the project. There will be on-going meetings, training and contact with this group, which will be recruited through

Carneddau Partnership events, and through Carneddau Partnership partners.

Many of the tasks will require training volunteers in a variety of skills to various levels. Training will be delivered through the Carneddau Partnership links with the Conwy Culture Centre and Agored Cymru qualification units will be offered. There will be the development of bilingual online training resources.

### **6.3. Fieldwork**

A range of fieldwork programmes will be at the heart of the project, particularly an extensive test pit survey. The aim of the test pitting programme is to detect axe-working sites under areas currently obscured by vegetation or ploughsoil, and to identify any related settlement activity. The test pits will measure 1m square and will cause minimal disturbance to any archaeological deposits found. The work will be undertaken by volunteers supervised by professional archaeologists. The results of this work will make a significant contribution to our understanding of the Neolithic period, and to the issues identified within Research Framework Wales.

To obtain more in depth information, especially material for radiocarbon dating, small trenches will be excavated. One trench would be beneath the main rock face at Graig Lwyd and one at the Tyn'y Llwyfan axe-working site above Llanfairfechan. Other locations will be informed by the test pit results. Like the test pitting the excavations will be carried out largely by volunteers under professional supervision.

A programme of post-excavation work will follow the fieldwork phase of the project. This will provide numerous opportunities for volunteer involvement, including finds and data processing. Specialist expertise will be required and it is proposed to work with Professor Mark Edmonds of York University for the study of axe-working flakes, and Seren Griffiths of University of Central Lancashire for the radiocarbon dating programme.

These central fieldwork objectives will sit within a wider landscape study including plotting the distribution of known axes and roughouts by inviting people to bring in objects that they have found. There will also be a programme of fieldwalking on the lowland fields as they are ploughed, a walk-over survey of the uplands studying rock outcrops for evidence of quarrying, and XRF analysis of rock outcrops to identify their mineralogical signature. A geologist, possibly from Bangor University, would be involved to provide a macroscopic study of the rocks and understanding of the general geological landscape. Penmaenmawr Museum is applying for funding for a 'hands-on' exhibition microscope and prepared geological slides as part of their redevelopment. This would provide a great opportunity for promotion of the projects findings and of the basis for geological provenancing of prehistoric stone tools. 3D photogrammetric surveys of axe-working locations could be carried out to record and monitor their condition, and this technique is ideal for recording rock outcrops with traces of quarrying and is popular and practical for meaningful volunteer participation. On a smaller scale 3D modelling of axes and other related objects would allow these not only to be precisely recorded but to be presented through a wide range of digital media.

All these tasks would involve volunteers, school children and students.

Specialist knowledge and equipment will be supplied by a wide range of organisations, potentially including Bangor University, York University, the University of Central Lancashire, RCAHMS, NMW and the British Museum.

### **6.4. Outreach and dissemination**

The project aims not only to involve local people in fieldwork but to engage them in a variety of events related to Neolithic axe production. Local schools will be closely involved in the project, not only in carrying out fieldwork but also with specific events, such as activities relating to the exchange and distribution of axes. A cartoon booklet would also be produced based on a story about the life history of an axe.

Exhibition and events would be held at Penmaenmawr Museum during the project with a major weekend event as a festival to celebrate stone axes. Other events would also be held around the area to record axes and disseminate the results of the project.

It is aimed to raise funding from arts or landscape funding bodies for a special performance at the Graig Lwyd axe quarry. This would be filmed and could be presented at other events to be seen by those who could not attend the live performance.

The fieldwork will lead to formal reports and finally an academic publication, but there is a commitment to disseminating the results of the work through popular formats beyond summary reports and talks in the form of a wider range of events and displays. Digital resources, including blog and vlog diaries, and other online resources will be established. Tours during fieldwork and walks (targeted at different audience segments) at other times will create opportunities for people to engage with the project and learn about the landscape. The public outreach and engagement activities will be bilingual, Welsh and English.

To link with the research findings of the project a day school with invited academic speakers making short accessible presentations would put the project into the wider academic context and demonstrate to volunteers their nationally important contribution to archaeology.

## **6.5. Timetable**

The project is seen as extending over 5 years, both to tie in with the duration of the Carneddau Partnership Project and also to allow the development of community engagement and training.

### ***Year 1: October 2019- April 2020***

Introductory events and volunteer recruitment, range-finder test pitting

### ***Year 2: April 2020- March 2021***

Fieldwork: Extensive test pitting, excavation trenching, walk-over survey and investigation of rock outcrops

Outreach: Tours and walks, schools project, project up-date events and exhibitions of provisional results

Preliminary post-excavation analysis

### ***Year 3: April 2021- March 2022***

Fieldwork: Extensive test pitting, excavation trenching, 3D photogrammetrical recording of rock outcrops and recording of axe-working sites

Outreach: Tours and walks, schools project including find recording, project up-date events and exhibitions of provisional results

Preliminary post-excavation analysis

### ***Year 4: April 2022- March 2023***

Performance at main Graig Lwyd outcrop to be filmed and shown at other events

Festival of the Axe: display of excavation and test pitting results with information about axes more generally, demonstration of axe making with other Neolithic crafts

Post-excavation work and application for funding for radiocarbon dates.

### ***Year 5: April 2023- March 2024***

Completing post-excavation work and writing full report incorporating radiocarbon dates and study of lithics.

Publication preferably in Proceedings of the Prehistoric Society

Archiving

Dissemination of final results in popular format

Day school



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### **Maps**

County Series 25 inch map, Caernarvonshire sheet VIII.5, first, second and third editions, 1889, 1900, 1914

### **Gwynedd Historic Environment Record**

Further Investigation Files: PRN 1626, 19156 and 24139

### **Websites**

Geology of Britain Viewer, British Geological Survey: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (accessed 20/12/2017)

## **8. APPENDIX I: Survey and Recording of an Axe-working Site (PRN 67329) at the Foot of Dinas, Llanfairfechan**

**Event PRN 45374**

### **8.1. Aims and objectives**

An axe-working site on Ty'n y Llwyfan land at the foot of Dinas, Llanfairfechan (PRN 67329, centred on SH6984573975) (figure app I.1) was found by David T Jones of Llanfairfechan and inspected and reported on during the 2017-18 phase of this project. The site is just above the improved fields and, while not currently directly threatened, there is an animal feeder close by and it could be accidentally at risk through the farmer not knowing its location and extent. It was proposed that survey work be carried out on the site to establish a baseline record against which any future erosion or disturbance could be compared to assist in the monitoring of the condition of this site. It would also provide information to assist in the decision of what further work might be appropriate to carry out here. This site might be suitable for a volunteer excavation but the positioning of a trench requires full understanding of the wider site from a detailed survey. Alternatively surface recording of finds might be considered more appropriate, in which case the survey would be necessary to provide a context for find recording.

### **8.2. Methodology**

The survey was carried out using a combination of a traditional topographic survey and photogrammetry. The topographic survey was carried out using a Global Positioning System (GPS) and allowed for close inspection of slight earthworks in the field. The photogrammetry was used to enable individual worked and unworked stones to be located and to rapidly obtain a detailed contour plot of the site. A geophysical survey to identify hearth sites was considered but the scree slopes of the site were highly unlikely to produce useful results due to the volcanic rock and probable lack of soil deposits within the screes. No geophysical survey was therefore attempted.

The main survey was carried out on 17<sup>th</sup> and 18<sup>th</sup> May 2018. The data was then downloaded and processed and the photogrammetric images were taken on to site on 28<sup>th</sup> May to check and highlight the individual finds. It was important to complete the survey work before the bracken grew up as this would have entirely obscured most of the site.

A Trimble GPS with real-time correction was used for the survey. This was used to record breaks of slope and other earthwork features and walls. It was also used to plot targets used to locate the photogrammetric survey. This survey was carried out using a digital camera on a specially designed camera pole at a height of roughly 2.5 to 3m. The camera was triggered by a remote control and focused automatically. The operator walked across the area in a methodical pattern, generally along the slope as this was easier. Photographs were taken every couple of meters, ensuring overlap between photographs, with some more general shots taken especially on very uneven ground to ensure coverage. The targets, individually identified by numbers and different patterns, were scattered over the area and were included on some of the photographs.

The outline topographic survey was downloaded into Bricscad and plotted out to scale. This plot was taken back into the field and hachures drawn on the outlines with annotations to describe the height of the scarps recorded. The photographs were downloaded, converted to jpgs at a reduced resolution and processed using Agisoft Pro. This combines the photographs to produce a 3D model of the site. The coordinates and altitudes of the targets were input to allow the model to be accurately scaled and located. A georeferenced photomosaic could then be produced which could be combined with map detail and the topographic survey in MapInfo, a Geographical Information System program. From there the combined data was output into Illustrator, a drawing package, to finish into final drawings. Probably more photographs than necessary were taken giving a very large amount of data to process. The site was therefore processed in two parts, which then had to be joined together.

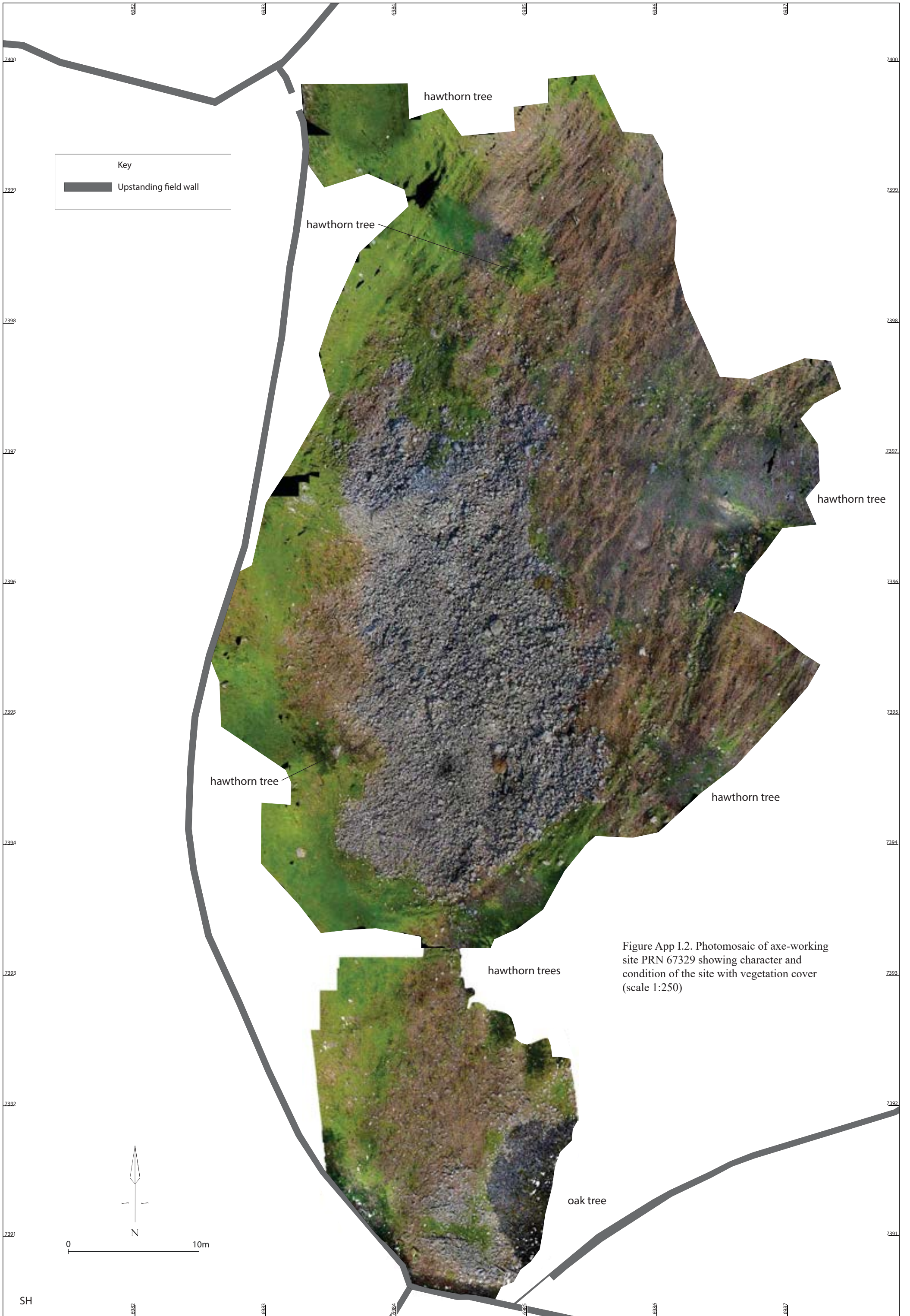
The 3D model contains height information and this was extracted to give a very high resolution contour plot at 0.1m intervals but also as a more general plot at 0.5m intervals as a background for the topographic survey.

The completed photomosaic was printed out at a suitable scale and taken back into the field. This showed all the stones on the surface and inspection on the ground identified which of these was a flake, a struck stone or other possible artefact. These were indicated on the printout and added to the final drawings.

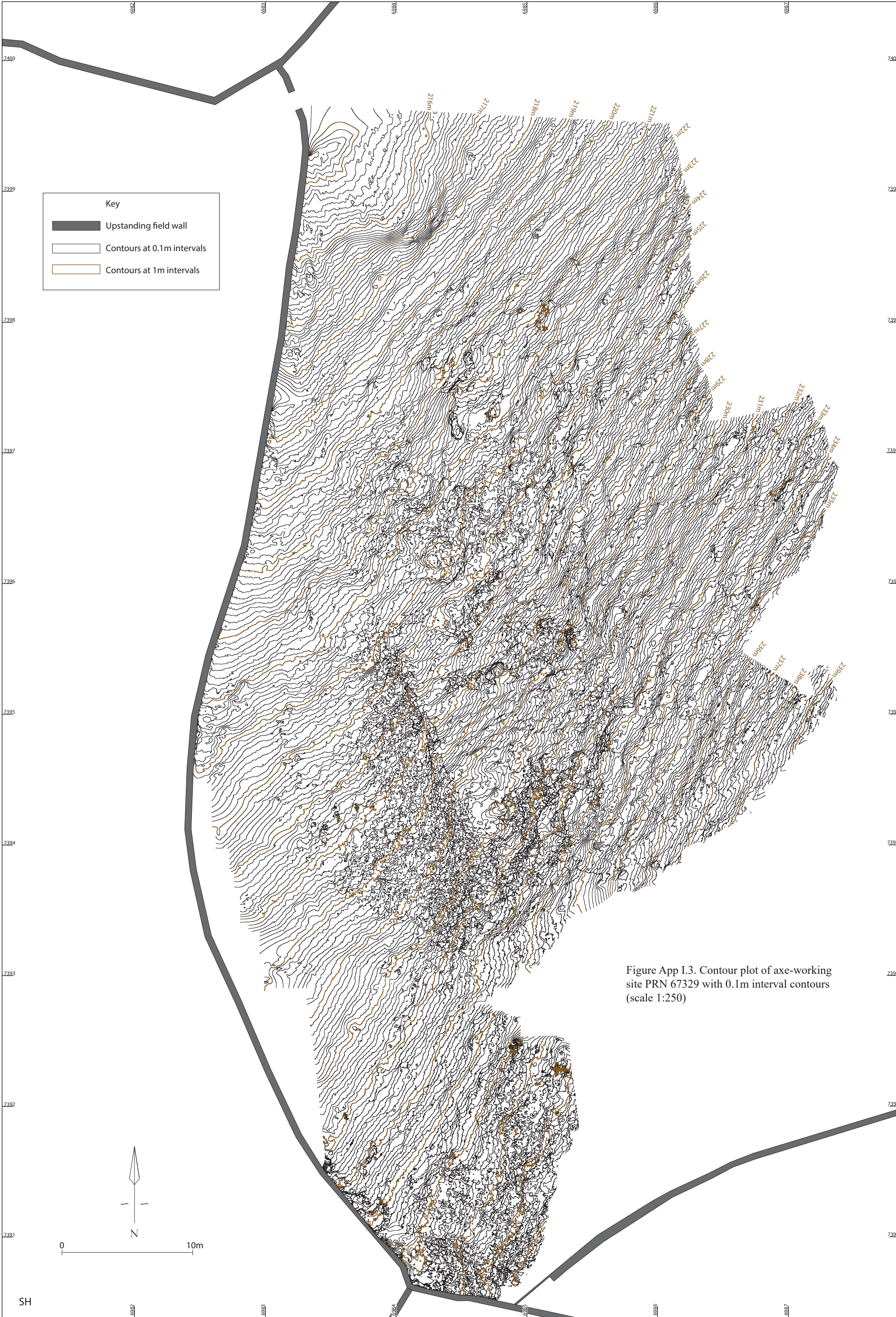














### 8.3. Results

#### *Surveyed area*

The area surveyed covered about 98m by up to 40m at the foot of Dinas on the western side (plate 7). The area is immediately east of the wall marking to upper edge of the improved fields. Next to the wall there was a relatively flat area covered in grass but most of the area was on a fairly steep north-west facing slope. Where this had soil cover it was covered by bracken, which in winter dies off leaving fairly bare ground on which axe flakes and other objects could be seen, although in places the dead bracken did obscure the ground to some extent. Other parts of the slope were open natural screes with little or no vegetation cover (plate 8). At the southern end of the area the very extensive scree slope that covers the western side of Dinas extends into the surveyed field (plate 9). The open screes were generally less productive for spotting axe working debris as small items would fall between the larger stones, especially where the scree had been disturbed. Relatively few worked pieces could be recognised in these areas.

The photomosaic of the survey area (figure app I.2) gives a good indication of the vegetation cover. A contour plot at 0.1m intervals (figure app I.3) shows the topography. This effectively represents the numerous slight terraces caused by soil creep and sheep movement on the hill slope in the northern part of the area. This slope has a reasonable soil cover but is under bracken and so it less stable than areas under grass, resulting in the slight terracing, some of which initially were considered as significant but inspection of the wider area revealed their actual nature. The plot does not clearly indicate broader but less steep terracing in the southern part of the area, caused by similar processes. The plot is not interpretive and it is difficult to use it to identify features that appeared significant on the ground. This is where the topographic survey is valuable as this provides for archaeological interpretation and specific features can be highlighted.

#### *Features*

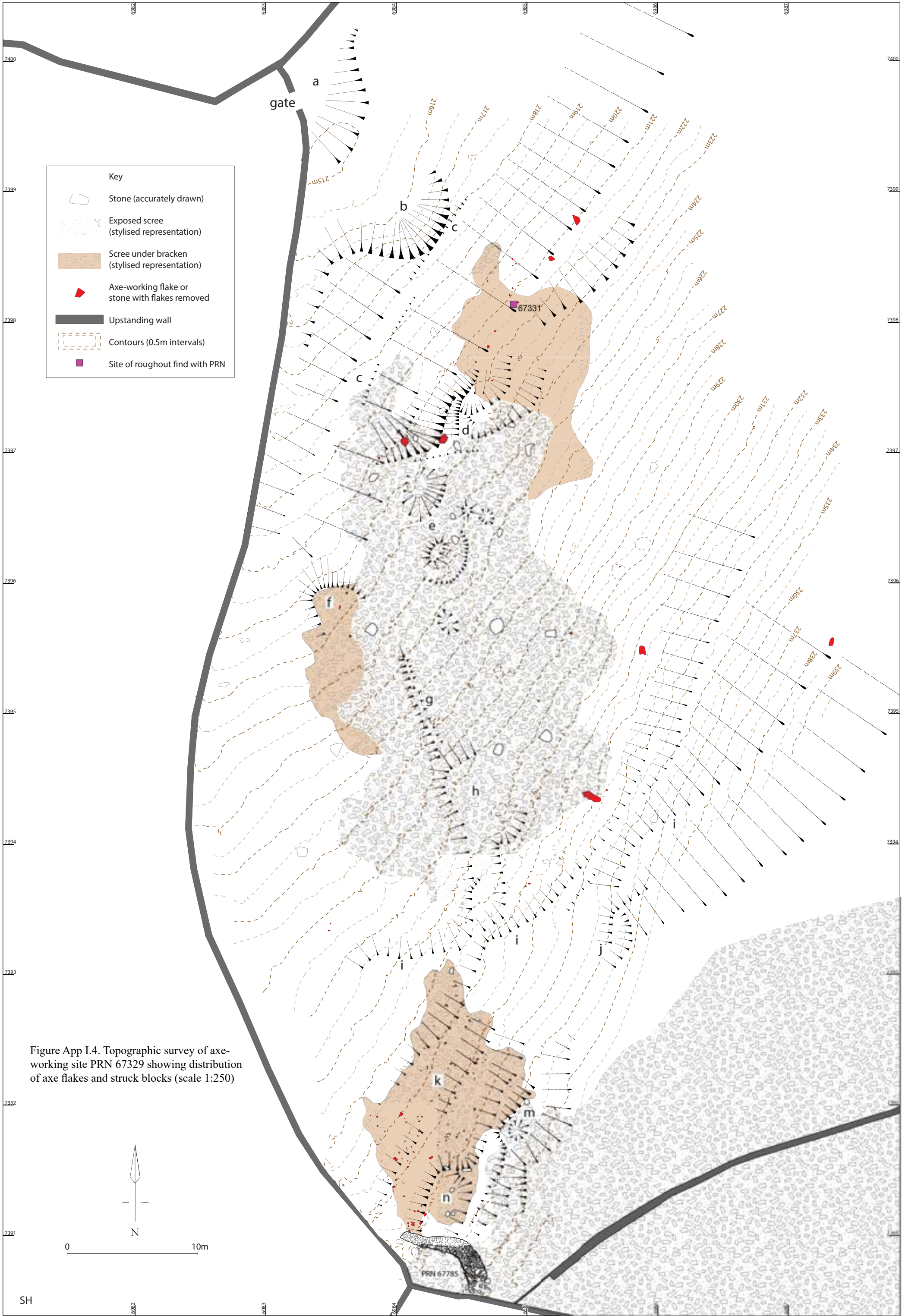
##### Figure app I.4

Various earthwork and stone features were recorded in the area, most of which were probably not related to the axe-working site. At the north end is a roughly semi-circular scarp up to 0.5m high towards its southern end (figure app I.4, a). This was at the junction of two walls and adjacent to a gate in the wall. The hollow was certainly related to the gate, presumably to level the area next to the gate to make access easier.

Just south-east of this was a prominent hollow about 8m across and up to 2.3m deep (figure app I.4, b). This was semi-circular, dug into the hill slope and opened to the north-west (plate 10). This appeared to be a small quarry hollow, probably for stone for the field walls, although there was plenty of scree on the surface for building walls. Running across the south-eastern side of this hollow were the slight traces of a track (figure app I.4, c) (plate 11). This ran about NNE to SSW, gently up slope from the NNE. It was visible as a levelling across the general natural slope and was in places further defined by low scarps. It was visible for about 30m and was up to 1.5m wide, although generally much narrower where soil had moved downslope, partly obscuring the track. The track was thoroughly overgrown with grass and had not been used for more than a sheep track for a long time, but its definition and regularity and width suggested that this had been an access track. It would not have given access to anything significant, except perhaps the possible sheepfold (PRN 67785) in the corner of the field so it may have been used in conjunction with the building of the field walls.

On the south-east side of the track there was a small shelf in the hill slope ((figure app I.4, d). This was defined on the north-west side by a fairly steep scarp up to 2m high (plate 12) and had the very slight trace of a path up the slope on its southern side. There was a very small, narrow flat platform on top and the northern side was confused by other hollows and scarps. This was on the edge of the open scree where it was partly covered and consolidated by bracken growth and the earthworks are probably the result of digging in the scree to obtain stone for walling. However this feature was associated with some flakes and struck stones on the surface. Just south of this feature within the open screes were several small hollows and mounds (figure app I.4, e), which were almost certainly due to obtaining stone for walling from the screes (plate 13). On the lower, western edge of the scree however was a more consolidated mound (figure app I.4, f). This formed a level platform about 3m across on a mound 0.6m high on its highest, north-western side. Three pieces of worked stone were identified on or very near this platform, which was much more consolidated with soil than the open screes.

Running down the slope across the areas of open scree was a very rough wall (figure app I.4, g) up to a maximum of 0.8m high (plate 14). This partially formed a terrace edge so that it was higher on its south-west side. The wall was about 11m long and was barely more than a linear heap of stones though in some places it was rather more







*Plate 7. View of Dinas from the survey area*



*Plate 8. Part of the survey area showing open scree*



*Plate 9. View of open screes on western side of Dinas, just over the wall from the survey area*



*Plate 10. Small quarry, viewed from the north*



*Plate 11. Slight traces of a track, view from north-east*





*Plate 12. Mound or shelf  
in the hill slope, view from  
north-east*



*Plate 13. Hollow in the scree  
with others beyond, view from  
north-east*



*Plate 14. Edge of platform and  
rough wall running across the  
scree, view from south*





*Plate 15. View down former path from north-east*

*Plate 16. Southern part of survey area showing slight terracing, view from north-east*



*Plate 17. Possible remains of small structure, view from north*

deliberately constructed. The wall ran from what appeared to be a deliberately levelled platform in the scree (figure app I.4, h). This platform was orientated NNW-SSE like the wall, was roughly rectangular and measured about 6m by 4m. It had a levelled access route about 6.5m long and 1.6m wide coming in to it from the SSE. Neither the platform nor the access route were paved in any way and were formed of rough scree but were rather more even than the rest of the scree slope. The function of the wall and platform and why they were built in the scree is unclear. The scree is quite unstable and it seems unlikely that these features would have remained relatively well defined if they were more than a couple of centuries old.

The access route joined what appeared to be another short track curving from the west up slope to the north-east (figure app I.4, i). The north-eastern end of this was confused by sheep tracks. These run across the slope forming very narrow terraces but the track itself may have continued up the slope in a north-easterly direction where a feature rather more defined than a sheep track could be followed (plate 15). This was partially obscured by the movement of soil down slope and was eventually lost. The total length of this track that could be traced was about 43m. It was probably no more than a footpath up the hill but must have been in use consistently for some time to form the relatively coherent earthwork that can still be seen. To the south of this feature was a small hollow in the slope (figure app I.4, j), which resembled a very small borrow pit and could indicate that this path was deliberately built up or surfaced in places using material from hollow j.

The walled field came almost to a point in the south and in this narrower area there were several parallel scarps running along the hill slope (figure app I.4, k) (plate 16). These were almost certainly erosion features where the soil and scree below had moved down slope, but the bare soil beneath the bracken in this area revealed a particular concentration of axe-working flakes. In places these natural terraces seem to have been enhanced. One such enhanced terrace (figure app I.4, m) had a small sub-circular hollow, about 1.6m in diameter, on top formed largely by stone being mounded up around it (plate 17). This may have been a small, much collapsed structure that originally had stone walls, though these were probably no more than the low rough walls that are found on small sheep shelters. Nearby was another flat platform (figure app I.4, n) measuring about 4.8m by 2m with possible traces of much collapsed walling in places around the edge (plate 18).

Right in the very corner of the field was a stone structure (PRN 67785), see figure app I.5 for detail. This structure was defined by a low curving wall up to 0.8m high and 1.4m wide (plate 19). The maximum width is probably partly due to collapse on the outside of the structure obscuring the outer face. At its highest point, near the field wall at its south-eastern end, the inner face of the wall was fairly well-preserved (plate 20) but elsewhere the faces of the wall were poorly defined. The interior of the structure was full of loose stones as well as an old iron gate. This feature is shown on the 25 inch County Series maps from 1900 but does not appear on the 1889 map. The maps show it as a semi-circular structure against the field corner and it is most likely to be a sheepfold, and is labelled as such on the maps.

### ***Find distribution***

Figures app I.4 and app I.5

This site is very close to field walls built or improved probably in the 19<sup>th</sup> century. This means that care should be taken when looking for stone flakes. The stone used for walling was often roughly shaped by knocking off flakes and as the stone is of the same type as that used for axes it breaks with a neat conchoidal fracture closely resembling axe-working flakes. However axe-working flakes and roughouts on the surface of the ground at least are heavily patinated, so that they are very pale with some being almost white. The wall building flakes are unpatinated and so are dark in colour and are generally quite easily separated from the ancient flakes. Walling flakes were frequently found in the southern corner of the surveyed area and along the wall but it was felt that these could be reliably identified. Initially an attempt was made to record these modern pieces but this was soon felt to be too time consuming and probably just confusing so this was abandoned.

Patinated flakes and larger blocks with broken patinated faces were found at a low level across the area surveyed. In much of the area only the larger blocks were seen, almost certainly because the soil and vegetation cover obscured the smaller flakes. The significance of these larger blocks (plates 21 to 23) is currently unclear but they have had flakes broken off them and the flake scars are patinated, suggesting that these breaks are ancient. Some of the breaks could possibly be frost shattering but some are clearly conchoidal flake scars and appear to have been deliberate. These blocks may have been larger pieces of scree used to break off pieces to produce axes.

Very little apart from larger blocks were found in the open scree, though very occasional large flakes were seen so it is possible to find some worked objects within this area. However it is likely that most flakes have fallen





*Plate 18. Rough platform in the  
screes, view from north-east*

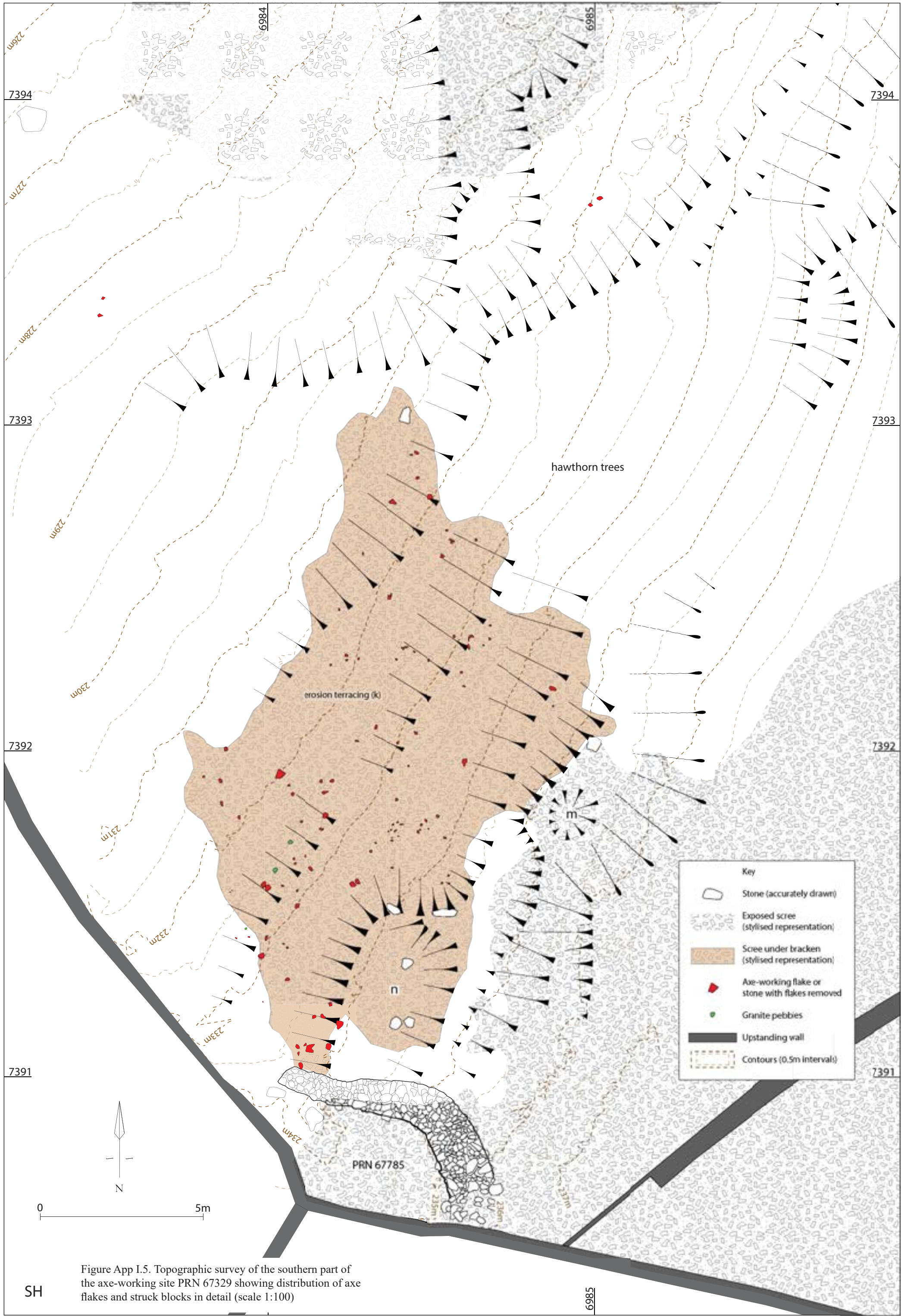


*Plate 19. Sheepfold PRN 67785,  
view from north-west*



*Plate 20. Surviving inner face of  
sheepfold, from west*









*Plates 21 to 23. Larger blocks of  
stone with patinated flake scars*







*Plate 24. Scatter of small stones including axe-working flakes*

*Plate 25. Knapped blocks and flakes in the southern part of the survey area including a granite pebble*



*Plate 26. Scatter of flakes in southern part of survey area*



*Plate 27. Rounded stone or "granite pebble" not obviously used as a hammerstone*

between the larger stones and could not be found without moving surface stones.

The distribution of small axe-working flakes seemed to be directly related to conditions where erosion had exposed them. Areas with bracken over fairly unconsolidated scree seemed to be the best for finding flakes. Much of the slope had bracken cover but away from the loose scree there was a fairly good soil layer, mainly recent soil developed from bracken debris. This probably obscured any flake scatters. On the looser scree some soil had built up but the bracken was less dense and this soil seems to have been more subject to erosion leaving flakes more exposed on the surface. In places sheep had also caused slight erosion. This was particularly noticeable under a hawthorn in the northern part of the survey area. Sheep shelter under this tree and had caused small scrapes and bare patches. In these some very small flakes less than 50mm long were found. Other flakes were found under the bracken nearby (plate 24) and this was also the location of a find of a roughout (PRN 67331) in 2017.

The densest concentration of flakes was in the southern part of the survey area (figure app I.5). Here there was a patch of bracken over fairly loose but soil covered scree. This scree was subject to movement, possibly partly encouraged by sheep trample but also by weathering, as shown by the well-developed linear terraces in this area (figure app I.4, k). These conditions seem to have been particularly favourable for exposing small flakes on the surface but probably not disturbing them very much. Some of the objects seen here were larger blocks with flakes struck from them (plate 25) but there were also small and fine flakes suggestive of the later stages for roughout production (plate 26). In some cases these were grouped so as to suggest a largely undisturbed knapping floor, but the evidence of soil movement does imply that the surface finds at least must have been disturbed to some extent.

In this area there were also a small number of rounded stones of a coarser grain that would have formed useful hammerstones (plate 27) but none showed any sign of being used. These rounded stones would be worth geological study. Apparently such rounded stones were commonly found in the quarries and are probably natural formations that occur within the volcanic rocks, which erode and become more rounded on exposure. They may therefore be a natural component of the scree, but with the lack of other potential hammerstones on most surface axe-working sites these do need close inspection to determine whether they have been used or not as hammerstones.

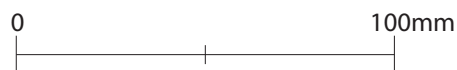
No flakes or other objects were collected as part of this phase of the project as this was designed as a general indication of surface finds. Collection would be appropriate as part of a more detailed recording programme linked to full study of the objects.

#### ***New roughout find (PRN 74826)***

Figure app I.1

On 12<sup>th</sup> April 2018 David T Jones found a new roughout on the western slope of Dinas. The roughout was found at SH69780 73858. On 17<sup>th</sup> May 2018 Mr Jones showed the find location to Jane Kenney. The find was made just to the south-east of the field wall between the Ty'n y Llwyfan fields and the woodland on the western slopes of Dinas. The roughout was found at the base of an oak tree. In open patches around the base of the tree small stones could be seen including some that were clearly axe-working flakes. There were also larger blocks next to these. It is possible that this was an axe-working floor disturbed by the growth of the tree.

The roughout measures 172mm by 78mm and is 48mm thick. It weighs 779g. It is complete and has been given



*Plate 28. Roughout PRN 74826*



a good outline shape but has received no invasive flaking (plate 28). It is quite thick with a prominent ridge down one side. There are occasional hinge fractures on scars alongside the ridge and it is possible that the ridge was resisting easy removal so the roughout was discarded.

#### **8.4. Discussion and Conclusions**

Close inspection of earthworks in the survey area suggested that most were not old enough to be related to the axe-working and most are almost certainly post-medieval in date and mainly related to the building of the field walls, although some could be for other agricultural functions.

The only exception is the small mound or platform (feature f). This was more consolidated than the other features. It may be the result of natural slumping of the scree but the top seemed very level and there were no other natural mounds or lumps of a similar form anywhere along the slope in this area. This suggests that the feature may have been artificially modified. Whether this was done as long ago as the Neolithic could only be answered by excavation.

The general if slight scatter of find across the survey area suggests that the whole area potentially has evidence of axe-working buried under the soil surface. Occasional flakes can also be found north of the survey area towards the modern access track where vehicle ruts have exposed the ground. The main determining factor for finding flakes is the exposure of the soil surface and the absence of too much bracken debris. Flakes are also hard to find in the open screes but this also does not rule out axe-working in these areas.

As with all fieldwalking further walking would result in more pieces being found so there is no claim that all objects visible on the surface have been found, but it does indicate that surface inspection of many areas is relatively unproductive.

The most productive area was the southern part of the survey area, and this is also likely to be due to surface conditions rather than this necessarily being the main focus of activity. However the small flakes found here do indicate that there are working floors in this area.

The survey has provided a detailed investigation of the general area. It has shown where there has been disturbance and the nature of that disturbance. It has highlighted area that almost certainly contain working floors but has also shown the potential for activity over much of the rest of the area, which might be revealed by excavation. This does not provide detailed answers to questions about the extent and nature of the axe-working here but provides a strong basis for designing methods of finding the answers to those questions.

#### **8.5. Recommendations**

It is likely that this is a site worthy of protection by scheduling. However the limits of the site, its full nature and depth of deposits as well as their preservation are not yet known so robust recommendations for scheduling are difficult. To inform scheduling more information is needed. Test pitting would be an ideal technique for determining the limits of the axe-working debris. It is likely that little more than removing the thin topsoil would be needed to locate scatters of flakes. It is possible that much of the entire hillside is covered with axe-working activity, but it would be useful to establish this and to gain an idea of the intensity of this activity. The depth and complexity of the deposits would be worth establishing. It is also necessary to determine the effect of the soil and scree movement down the hill slope on archaeological deposits to determine the chance of finding intact working floors. This would require trial excavations rather than test pits. A wide enough area should be opened to allow deposits to be understood but a small enough area to not cause too much disturbance to what could be a very valuable archaeological resource. The obvious place for such an excavation is the southern end of the survey area where most flakes are seen on the surface.

## 9. APPENDIX II: 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 RCAHMS (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 and 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 RCAHMS. 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> (RCAHMMW, 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 screens. 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 Darbishire. 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. 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 where 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 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 Lllys" [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 Bluestone 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 doorstep 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 doorstep. It has spots of red paint from its history as a doorstep. 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





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