1623

Landscape of Neolithic Axes

Report on fieldwork in 2021 at Llanfairfechan

Cadw

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

Landscape of Neolithic Axes

Report on fieldwork in 2021 at Llanfairfechan

Project No. G2495

Report No. 1623

Event PRN 46206

Prepared for: Cadw

March 2022

Written by: Jane Kenney and George Smith

Illustrations by: Carol Ryan Young and Jane Kenney

Cover photograph: Dinas in its landscape with Llanfairfechan beyond (photograph by David Longley)

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

Published by Gwynedd Archaeological Trust
Gwynedd Archaeological Trust
Craig Beuno, Garth Road,
Bangor, Gwynedd, LL57 2RT

Contents

Figures and plates

Figures

Plates

Landscape of Neolithic Axes: fieldwork in 2021 at Llanfairfechan (G2495)

Report 1623

Event PRN 46206

SUMMARY

Cadw grant aided Gwynedd Archaeological Trust to run the volunteer fieldwork element of the Landscape of Neolithic Axes Project for 2021-22, under the Carneddau Landscape Partnership Scheme. The work focused on sites to the east and west of Dinas, Llanfairfechan (PRN 4720, PRN 81634, and PRN 96144). The fieldwork took place between 22nd and 28th September and between 6th and 18th October 2021, and the work was undertaken by volunteers under the supervision of Gwynedd Archaeological Trust and Snowdonia National Park Authority staff.

T*est pitting was carried out to re-locate and characterise PRN 4720, known as the Maes y Bryn site, in a high ffridd to the east of Dinas. Fourteen test pits were dug, and axe debris was found, with a slight concentration in three test pits. Several flints were also found, including a thumbnail scraper, all suggestive of settlement in the area, rather than just axe-making. A flake of a finished polished axe was also found.*

A field on Ty'n y Llwyfan Farm, at the foot of Dinas, previously investigated in 2019, was further explored by test pitting (PRN 81634). Twenty-three test pits were dug, all of which contained axe debris, showing that the limits of the working area could not be reached within this field. The test pits also demonstrated that the terraces across the field were lynchets and that the axe debris was almost all in disturbed contexts. The exception was TP37, where undisturbed deposits were found, possibly representing repeated dumps of stone and axe debris. Several roughouts were found including one that was aiming at a pick or chisel-shaped tool.

An evaluation trench was dug in an area of known axe-working on the screes at the foot of Dinas (PRN 96144). This revealed dense axe debris with some patterning suggestive of undisturbed working floors. This trench was not fully excavated and is to be completed in a later season of fieldwork.

CRYNODEB

Derbyniodd Ymddiriedolaeth Archaeolegol Gwynedd gymorth grant gan Cadw i gynnal elfen gwaith maes gwirfoddol Prosiect Tirwedd Bwyeill Neolithig ar gyfer 2021-22, dan Gynllun Partneriaeth Tirwedd y Carneddau. Ffocysodd y gwaith ar safleoedd i'r dwyrain a'r gorllewin o Dinas, Llanfairfechan (PRN 4720, PRN 81634, a PRN 96144). Cynhaliwyd y gwaith maes rhwng Medi 22ain a 28ain, a rhwng Hydref 6ed a 18fed 2021, ac ymgymerwyd â'r gwaith gan wirfoddolwyr dan oruchwyliaeth staff Ymddiriedolaeth Archaeolegol Gwynedd ac Awdurdod Parc Cenedlaethol Eryri.

Cynhaliwyd cloddio prawf er mwyn ail-leoli a nodweddu PRN 4720, a adnabyddir fel safle Maes y Bryn, sydd ar ffridd uchel i'r dwyrain o Dinas. Cloddiwyd pedair-ar-ddeg o ffosydd prawf, a daethpwyd o hyd i deilchion bwyeill, gyda mân grynhoad mwy dwys mewn tair ffos brawf. Cafwyd hyd i sawl darn o fflint hefyd, gan gynnwys ysgrafell ewin bawd, gyda'r cyfan yn awgrymu aneddu yn yr ardal yn hytrach na ffurfio bwyeill yn unig. Cafwyd hyd i naddyn o fwyell gaboledig orffenedig hefyd.

Ymchwilwyd ymhellach gyda chloddio prawf y cae ar Fferm Ty'n y Llwyfan wrth droed Dinas yr ymchwilwyd eisoes yn 2019 (PRN 81634). Cloddiwyd tair-ar-hugain o ffosydd prawf, gyda phob un yn cynnwys teilchion bwyeill, sydd yn dangos nad oedd modd cyrraedd ffiniau'r ardal waith o fewn y cae hwn. Dangosodd y ffosydd prawf hefyd mai linsiedi oedd y terasau ar draws y cae, a bod y teilchion bwyeill bron i gyd yn gorwedd o fewn cyd-destunau oedd wedi eu haflonyddu arnynt. Yr unig eithriad oedd TP37, ymhle cafwyd hyd i ddyddodion nas aflonyddwyd arnynt, sydd efallai'n cynrychioli dadlwytho mynych o gerrig a theilchion bwyeill. Daethpwyd o hyd i sawl brasffurf gan gynnwys un oedd yn anelu at gaib neu gelficyn siâp cŷn.

Cloddiwyd ffos werthuso mewn ardal a adwaenir fel ardal o weithio bwyeill ar y sgrïau wrth droed Dinas (PRN 96144). Dangosodd hon deilchion bwyeill dwys gyda pheth patrymu sydd yn awgrymu lloriau gwaith nas aflonyddwyd arnynt. Ni chloddiwyd y ffos hon yn llawn, a'r bwriad yw darfod y gwaith yn ystod tymor pellach o waith maes.

1. INTRODUCTION

1.1. Neolithic stone axeheads

The axe, with a polished stone axehead, was a tool of considerable significance, both practically and socially, in the Neolithic period. Not only did axes enable forest clearance and the construction of large timber buildings, but they were probably also symbols of status. Axeheads were selected as appropriate objects to be offered within ceremonial monuments indicating their cultural and possibly religious significance. Flint was often used for polished axeheads in south-eastern England but elsewhere axeheads were made from fine igneous rocks that could be knapped like flint. Petrological analysis has identified several sources of the stone for these axes in Britain. The stone types identified have been classed as belonging to several Groups. Some sources were preferred and material from these was dispersed widely. The preference for certain sources implies that there were qualities in the stone, or possibly in the location of the source, that made axeheads from these materials particularly desirable. The source that produced the most axeheads, which were most widely distributed, was in the central Lake District, focussed around Great Langdale (Group VI) (Claris and Quartermaine 1989). Axes from this source have been found across Britain and considerable work has been done to study the area and identify quarry and axe-working sites. The second most widely distributed axes come from the Group VII stone source. Group VII axes are found over most of England and Wales, with occasional ones elsewhere (Clough 1988, Houlder 1988). This source can therefore be considered of second in importance in Britain to the Great Langdale source.

Group VII axes were demonstrated to come from a stone source near Penmaenmawr, Conwy, known as Graig Lwyd (Warren 1919, 1922). There has been some recognition that axe-working debris could be found over a much wider area, not just around the hill of Graig Lwyd. Axe debris was recorded as being found around the hills of Garreg Fawr and Dinas above Llanfairfechan (RCAHMW 1956, xliii, Houlder 1976, 58), but little professional archaeological work has been done to investigate the wider landscape and to study the stone sources beyond Graig Lwyd. However, since the 1990s Mr David T. Jones of Llanfairfechan has been collecting axe roughouts and exploring axe-working sites around Llanfairfechan. David Jones' work indicated that there was an extensive landscape between Penmaenmawr and Llanfairfechan across which evidence for Neolithic axe-working could be found. This is a landscape of national importance for British Neolithic studies, which has long deserved detailed study.

1.2. The project

In the uplands above Penmaenmawr and Llanfairfechan there is not a single stone source, but an extensive landscape related to Neolithic axe production. This is a landscape of national importance with axes produced from this area being distributed across much of southern Britain, but it has received remarkably little archaeological study. The current project aims to correct that.

The landscape of the stone sources forms part of the northern end of the Carneddau mountain range. The Carneddau are the focus of the Carneddau Landscape Partnership Scheme (CLPS), a large-scale Heritage Lottery Fund funded project involving a group of 23 agencies and organisations under the leadership of the Snowdonia National Park Authority (SNPA). The project aims to help conserve the threatened heritage of the Carneddau by increasing understanding and enjoyment of the cultural and natural heritage of the area across a wide range of communities, individuals, and organisations. The current project, known as the Landscape of Neolithic Axes Project, has been developed with the CLPS, and has been delivered in partnership with the CLPS and SNPA. The aim of the project is to include the local community and other volunteers in all aspects of the study and to raise awareness and understanding of this important archaeological resource, as well as answering academic research questions.

A major challenge to identifying axe-working locations in this landscape is to recognise sites and deposits obscured under turf and vegetation either in the pasture fields or on the moorlands. To solve this problem the project is concentrating on test pitting to allow deposits to be sampled and artefacts to be recovered. However, small excavations and other work is being used to identify and characterise sites associated with the axe-working.

In 2021 the project was focused two areas; the location of a suspected Neolithic settlement site on the ffridd at the edge of the moorlands above Llanfairfechan and a field at a lower level on Ty'n y Llwyfan Farm, Llanfairfechan, adjacent to an axe-working site previously identified.

1.3. Previous Archaeological Work

Stone axes were made by knapping a piece of natural scree or quarried stone into shape before finishing it by polishing. The roughly knapped pre-form for an axe is known as a "roughout". During the manufacturing process faults in the stone often caused roughouts to break and they were then discarded on the working site. These broken roughouts and the flakes knapped from them are the indicative signs of an axe-working site and they can

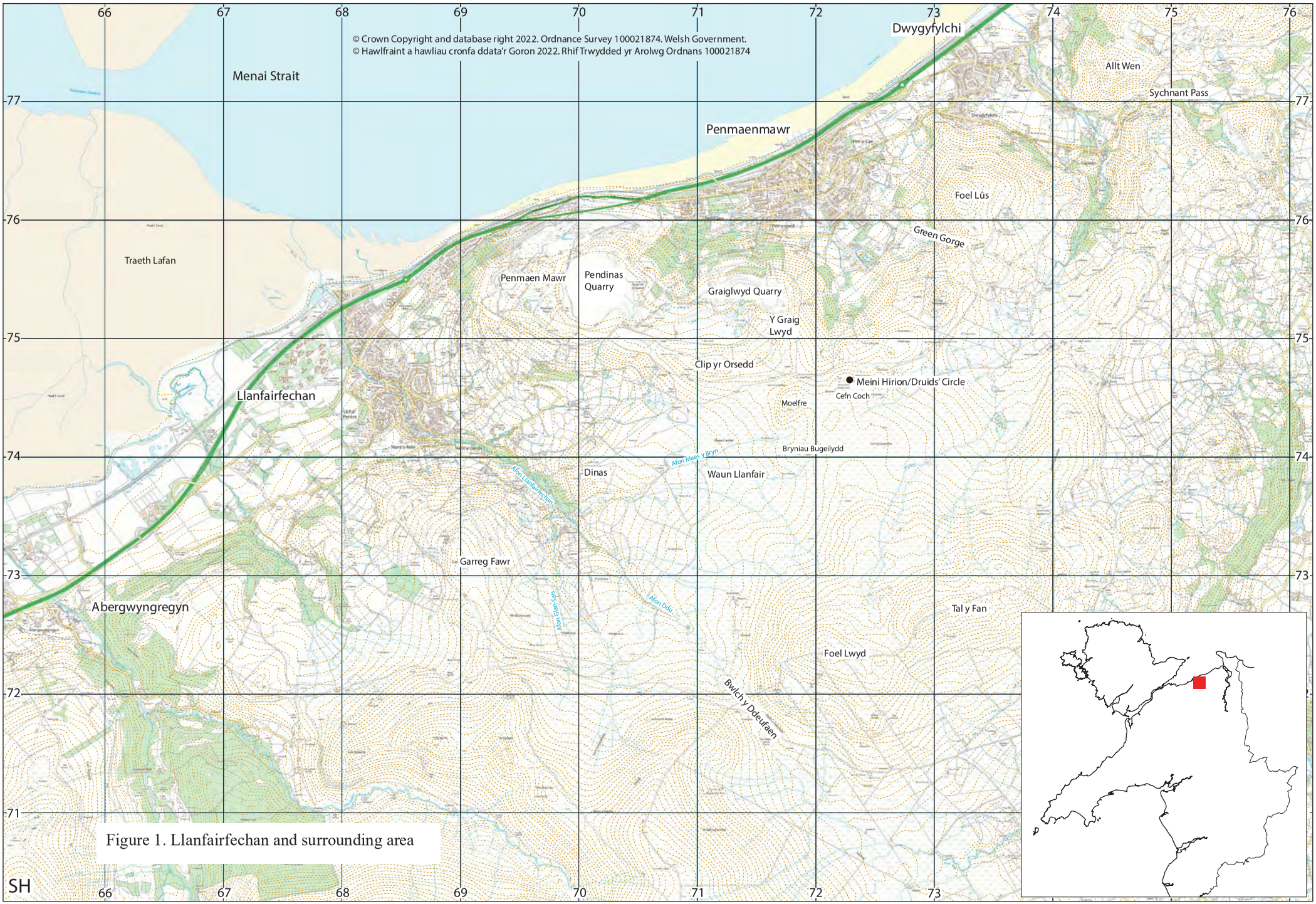


Figure 1. Llanfairfechan and surrounding area

be present in very large numbers on an undisturbed site.

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 1919; Warren 1922). 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 main axe working areas over Graig Lwyd were investigated in the 1990s by Gwynedd Archaeological Trust (GAT) and Bangor University Department of Continuing Education. 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 making, 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 1990s work also included the excavation of two cairns to the west of the main outcrop, which proved to have axe-working debris beneath them (PRNs 67326 and 67327 (Williams and Davidson 1998, 17-18)). A project run by GAT to study the pollen evidence and prehistoric sites on Waun Llanfair, a marshy plateau above Llanfairfechan found axe-working flakes under two other cairns (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. Our understanding of the vegetation history of the uplands in this area is also based on detailed pollen work carried out as part of this project (Caseldine and Griffiths 2014).

In 1961 there was a rare opportunity to fieldwalk one of the ffriddoedd just east of Dinas, when it was ploughed. Mr J. Davies found axe-working flakes scattered over a wide area, with roughouts, hammerstones and a small number of flint flakes (Davies 1961). This represents one of the most likely Neolithic settlement sites identified in the area.

Since the 1990s Mr David T. Jones of Llanfairfechan collected axe roughouts and explored axe-working sites around Llanfairfechan. Mr Jones' collection and knowledge of axe-working sites was recorded in 2017 (Kenney 2017). Mr Jones identified three main axe-working sites: one the screes below the western end of Penmaenmawr Mountain (PRN 67330), on Garreg Fawr (PRN 67328) and in the screes at the foot of Dinas (PRN 67329). Some of his finds were published with John Llywelyn Williams (Jones and Williams 2004, Williams and Jones 2003). In 2017 GAT carried out a review of the environs of the stone sources, which suggested that related use of the landscape was more widespread than has previously been considered and deserves further investigation (Kenney 2017). A Management and Interpretation Plan for this landscape was produced in 2018-19 along with a survey of one of the identified axe-working sites (PRN 67329) (Kenney 2019). These studies provide the basis for the current project.

In 2019 Gwynedd Archaeological Trust and the Snowdonia National Park Authority undertook test pitting in a field just west of site PRN 67329, at the foot of Dinas. Sixteen test pits were dug by volunteers. This demonstrated that the test pit methodology was efficient at locating evidence of axe-working in the pasture fields. It showed that axe debris was present well beyond the limits of the screes and working seemed to extend over a much wider area than previously assumed (Ryan Young, Smith and Kenney 2020). A survey was carried out on the last site in 2018 (Kenney 2019). This information formed the basis of the current project, and the test pitting described in this report aimed to identify how far axe-working activity continued beyond the exposed screes into the pasture field below the previously identified site.

Fieldwork was to continue in 2020 and despite the COVID-19 pandemic plans were made for work in October. However, a local lockdown imposed at the start of October made it inappropriate to have volunteers working on the project and the fieldwork was cancelled. The national lockdown over the winter and into March 2021 made it impossible to carry out fieldwork with volunteers later in the year. The work reported here therefore carried on from the 2019 season, expanding on what had been learnt then.

1.4. Geology and topography around Llanfairfechan

While axe-working sites can be found around both Penmaenmawr and Llanfairfechan the work in 2021 focused on Llanfairfechan as the area with least studied in relation to axe-making sites. Llanfairfechan lies on the north coast of Wales on the southern side of the Menai Strait with Anglesey to the north. At this point the Strait widens as it opens into Conwy Bay and the extensive Lafan Sands cover much of the Strait at low tide (figure 1). The village has developed on an alluvial fan where the Afon Llanfairfechan crosses the coastal plain to the sea after its short journey from the uplands to the south-east. The upper part of the valley is narrow and overlooked by two hills:

Dinas and Garreg Fawr. Dinas is a distinctive hill with a flat summit at about 320m OD, on which was located an Iron Age hillfort (PRN 392). Its southern and western flanks are bare scree with the woodland of Nant y Coed covering its foot to the west. Garreg Fawr is a less dramatic but a bulkier presence with an outcrop of rock at the top reaching 364m OD. To the south are the outliers of the Carneddau range and to the east the long, isolated ridge of Foel Lwyd and Tal y Fan, the latter reaching 610m OD.

To the north-east Llanfairfechan is dominated by Penmaen Mawr, which used to be crowned by the Braich y Dinas hillfort (PRN 712). However, the hillfort and much of the top of the mountain have been quarried away and its slopes remodelled by screes of quarry waste. A length of the original crags and natural scree below them still survives on the western side of the mountain. Running east from Penmaen Mawr is a ridge called Clip yr Orsedd at the eastern end of which is a rock outcrop known as Y Graig Lwyd. The outcrop was formerly much more extensive but has been largely quarried away by the Graiglwyd Quarry. 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 overgrown 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, known as Waun Llanfair (figure 1). 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 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.

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

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

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

1.5. Palaeoenvironmental Evidence

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

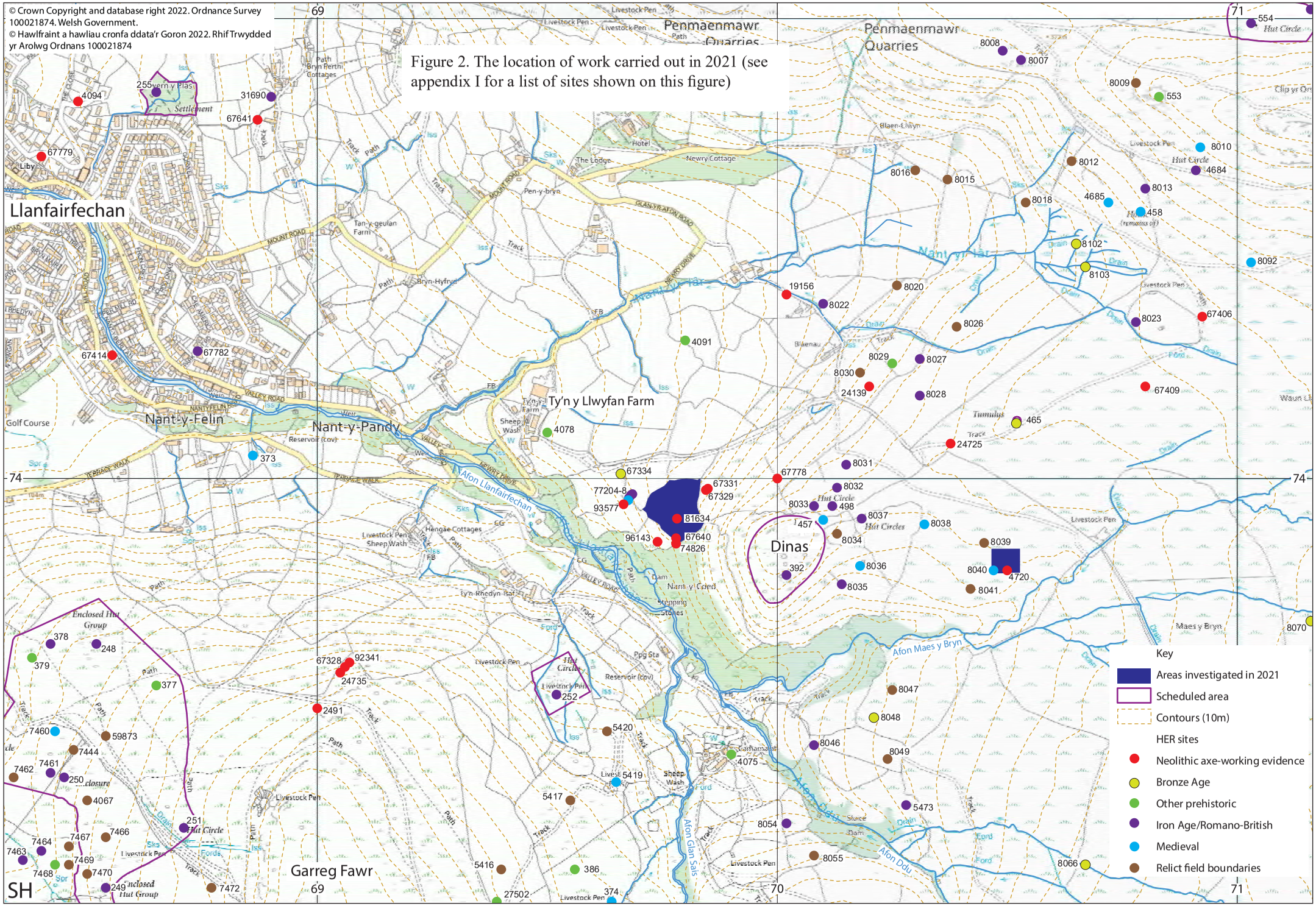
Towards the start of the Neolithic the pine pollen declined, and alder increased. A fire event and drop in hazel pollen suggests an early Neolithic clearance event and there are also hints of pastoral use of the area. A decline in elm pollen occurred at the same time. In the middle Neolithic a decline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

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

Woodland was still present in the area in the Bronze Age, so during the period of exploitation of the Graig Lwyd

© Crown Copyright and database right 2022. Ordnance Survey 100021874. Welsh Government.
© Hawlfraint a hawliau cronfa ddata'r Goron 2022. Rhif Trwydded yr Arolwg Ordnans 100021874

Figure 2. The location of work carried out in 2021 (see appendix I for a list of sites shown on this figure)



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

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

2. METHODOLOGY

2.1. Aims and Objectives

The research objectives of the overall project are to contribute to the understanding of Neolithic axe working in this area, including the identification of sources of raw material and the social context for access to and exchange of materials within the Welsh landscape. Specific aims include identifying the extent of axe working areas, both the limits of known working areas and identifying the distribution of these areas across the landscape. Other potential aims are to identify contemporary occupation and axe-finishing sites, to locate potential quarrying sites, and to obtain dates from the axe-working sites to contribute to dating the duration of the activity.

The specific aim of the 2021 fieldwork was to further investigate the extent of the axe-working area at the foot of Dinas (figure 2). The test pitting in 2019 had shown the axe debris was widely distributed but more test pits were required to attempt to identify foci of activity or potentially any *in situ* working floors. The nature of the terracing across the field slope was also to be investigated to determine the effect this may have had on the preservation of axe-working sites.

The nature and preservation of deposits within the known axe-working areas in the screes at the foot of Dinas was unknown. It was therefore proposed to dig a small evaluation trench in an undisturbed part of the screes to investigate these deposits. A major aim was to determine whether knapping floors survived and other stratigraphy intact, or whether natural movement and human disturbance had caused a loss of archaeological information.

In addition, the site identified by J. Davies on in a high ffridd to the east of Dinas was to be investigated (figure 2). The main aim here was to identify the exact location of the site, as well as to make a preliminary investigation of its extent and nature. This site has been given the name of Maes y Bryn.

The area is rich in Iron Age/Romano-British sites, including a hillfort on the summit of Dinas (PRN 392) (figure 2). There are also medieval long huts scattered over the area. Between these sites are remains of field systems, probably originating in the Iron Age but used into the medieval period, and in some cases up to the present day. The impact of centuries of agriculture on the Neolithic deposits and features was also an aspect of the current investigations.

2.2. Fieldwork

Test pitting

An extensive test pit survey is at the heart of the fieldwork programme for this project. Test pits allow the investigation of deposits obscured beneath pasture and other vegetation in a rapid but controlled manner. Additionally, they provide the opportunity for volunteers of varying experience and ability to experience excavation and recording generally without having to deal with complex features and layers. The test pits were used to identify the quantity and character of axe debris across the areas to be sampled. They enabled the layers with the highest concentrations of debris to be identified and foci of activity to be located.

All the test pits, with one exception, measured 1m square and were situated with the sides facing the points of the compass for consistency and easy recording with volunteers. In some cases, the orientation was rather approximate. The turf from each pit was removed by hand and stacked nearby for reinstatement after the excavation was complete. The spoil from within the pit was removed stratigraphically by layer, sieved onto a tarpaulin and any artefacts found were retained. The test pits were generally excavated down to the natural subsoil, though occasionally this was not reached, or was only reached in one part of the test pit. The layers within the pit were then recorded, using a booklet produced specifically for this project, on simplified context sheets. The numbering system on this project for both contexts and finds uses the pit number as a prefix e.g. (901) is the first context within pit 9. Where the section was of interest a section drawing was created at 1:10. If there were features of interest in the base of the test pit then a post-excavation plan was drawn, also at 1:10. All the test pits

Plate 1. Volunteers digging test pits at the Maes y Bryn site with Dinas in the background (© John Roberts (SNPA))

were photographed during and after excavation. Stony layers were photographed in plan before excavation and at least one representative section was photographed for each pit. The test pits were surveyed using a Trimble Global Positioning System (GPS).

The excavation and recording were carried out by volunteers under the supervision and guidance of GAT and SNPA archaeologists (plates 1, 2, 3 and 4).

Two areas were investigated by test pitting; the Maes y Bryn site in the uplands east of Dinas (centred on SH 705 738), and the Ty'n y Llwyfan site at the foot of Dinas (centred on SH 698 739).

The work at Maes y Bryn was carried out between 22nd and 28th September 2021. At this site the aim was to investigate the location of a find scatter discovered in 1961 when the field was last ploughed. A test pit (TP17) was dug at the central grid reference given for the find scatter. A rough grid of test pits was laid out from this at about 10m intervals. Test pit 17 was located just above an ancient field edge scarp and the grid of pits was laid out above this, to the north, to investigate within this ancient field. However, three test pits were also dug outside the boundaries of the field to compare the deposits and determine whether axe debris could be found outside the limits of the field. One test pit (TP22) proved to be more productive than the others and to test the limits of this concentration of axe debris two other pits were dug close to TP22.

This site is within a ffridd, a large enclosure for sheep, under rough grazing, with parts of it under rushes and bracken. The specific area investigated was under grass, which had been grazed short, making the digging of test pits unproblematic.

The Ty'n y Llwyfan site was located at the foot of Dinas, in one of the highest improved pasture fields on Ty'n y Llwyfan Farm. Sixteen test pits had been dug within this field in 2019, so the aim was to extend this test pit coverage to investigate this field more fully. This work was carried out between 6th and 18th October 2021.

Over the eastern, upper, wall of the field open and consolidated scree is visible within which axe-working has been identified (PRN 67329). The screes appear to continue into the south-eastern edge of this field but are concealed under turf. However, from the surface it appears that most of the field is not underlain by scree. The field is covered by short, sheep-grazed pasture, improved by ploughing, but there is also evidence of more ancient ploughing, probably in the Iron Age and medieval periods, resulting in the formation of lynchets. As well as attempting to identify foci of axe-working, the test pits were intended to investigate where scree was present and how the scarps across the field were formed; whether these were natural or lynchets, or a combination, and how that might impact on the spread of axe debris. Due to the needs to investigate different features across the field the topography guided the location of test pits rather than imposing a grid across the site.

One test pit (TP15) dug in 2019 produced a large quantity of axe debris. It was unclear from the small test pit how much of this was *in situ*, or whether it had largely moved down the slope on which it was located. To investigate this further a larger test pit (TP39) was dug adjacent to TP15. This pit measured 2m by 2m and was dug in the

Plate 2. Volunteer sieving to ensure finds recovery

Plate 3. Volunteers recording a test pit under the supervision of Carol Ryan Young

Plate 4. Volunteers digging a test pit at Ty'n y Llwyfan (© Beca Roberts (CLPS))

same way as the other test pits, but its larger size allowed for the identification of any features or complexities in the deposits.

Field walking
In most of the areas investigated there was no opportunity to identify finds on the surface, but at the Maes y Bryn site moles had been active and there were many molehills over the area. These molehills were inspected in a casual way, when time between test pit digging allowed. The soil of the molehills was disturbed to expose any finds hidden within it. When flakes were located, they were collected, and their location plotted with the Trimble GPS. This was not a methodical survey but did indicate the presence of axe debris well beyond the area investigated by test pitting (see figure 5).

Evaluation trench
Roughouts and axe-working flakes had been recovered from the screes at the foot of Dinas on its western side. This area (PRN 67329) had been surveyed in 2018 to record surface features and locations where axe debris was visible on the ground surface. The natural screes in this area had been used as a source of stone for making axeheads and these had been worked in this area. However, the nature, depth, and preservation of archaeological deposits in this area could not be determined from surface inspection alone. An evaluation trench was therefore dug to investigate this. This work was carried out between 6th and 14th October 2021, running alongside the test pitting.

The evaluation trench (trench 31) was located towards the southern end of the previously surveyed area where small axe-flakes were visible on the surface, suggesting that the area may not be seriously disturbed. The area was cleared of bracken and a trench measuring 4m by 2m was laid out running directly down the slope across a slight terrace.

The deposits were carefully excavated in thin spits, which coincided with layers where possible. Loose flakes recovered during cleaning were bagged and plotted with the Trimble GPS. When cleaning down to the top of a spit an attempt was made to keep flakes *in situ* as much as possible. When a spit was cleaned, as well as general photographs, numerous photographs were taken for photogrammetry. Targets were laid out and surveyed in with the Trimble GPS and were included in the photographs. The Agisoft Professional program was used to combine the photographs to create a 3D model of the site. This was georectified using the surveyed targets. From this data an orthomosaic could be produced. This is a combined, perfectly horizontal image exactly to scale and georectified. This image was traced onto drafting film and annotated in the field to show which items were flakes and which were roughly flaked blocks. Find numbers were also added as finds were lifted.

Planned finds were lifted before excavating the next spit. Flakes, roughouts and smaller or more complex flaked pieces were bagged for further study. Larger blocks, which had been only roughly worked with one or two flakes removed, were recorded on site. These were photographed, measured and weighed then discarded on the spoil heap and used to backfill the trench. They were marked on the annotated plans.

The same procedure was followed for subsequent spits. The quantity of material and care needed to excavate each spit meant that the trench was only excavated to a maximum depth of 0.2m. It was left with some of layer 3102 to be removed. All the finds from the final spit were recovered but the deposits remain to be cleaned back in a subsequent season of work.

Plastic sheet was laid over the trench before backfilling to clear define where the excavation had reached and to make it easy to reopen.

Excavation was carried out by volunteers under the supervision and with the assistance of Jane Kenney. Volunteers also bagged and recorded finds, annotated the plans and assisted with surveying.

2.3. Post-excavation work

Four volunteers undertook the cleaning and cataloguing all the finds. Finds were washed, dried weighed and counted. A spreadsheet was created to catalogue the finds. George Smith then inspected the collection and assessed the material and identified significant items.

A methodology for studying the whole collection will be specified after the fieldwork seasons are complete.

The current report covers the results of the 2021-22 fieldwork and includes an assessment of the lithic collection by George Smith.

2.4. Outreach

While the project aims to produce archaeological information to understand a nationally important but understudied landscape, of equal importance is the aim to enable volunteers to engage with this landscape and its prehistory and experience archaeological fieldwork. The focus was therefore very much on providing an opportunity for volunteers of all ages, backgrounds and abilities.

Adult volunteers were recruited and managed through the CLPS, with onsite training, supervision and management by GAT and SNPA staff. CLPS also funded welfare facilities and the site vehicle.

Sixty-seven adult volunteers were involved in the fieldwork, some for a day or two and some for the duration. Volunteers who worked at Maes y Bryn were limited to those that were fit and able to walk up to the site, but the Ty'n y Llwyfan site was more accessible. As well as excavation the work provided an opportunity for volunteers to learn recording, photography, finds identification, section drawing and occasionally GPS survey.

Seventy local school pupils from Ysgol Pant y Rhedyn, Llanfairfechan engaged with the project, taking part in test-pitting sessions during October 2021 (plates 5-7). Prior to the fieldwork Dan Amor gave a presentation at the school, along with a question-and-answer session. It was explained to the pupils how they would be helping on site, and that they would be 'archaeologists for the day'.

Pupils also learnt about:

- Archaeology and what archaeologists do
- The Neolithic period in Britain
- Neolithic axe production
- GAT and the Carneddau Landscape Partnership's current project above Llanfairfechan

The site visits were divided into six sessions across three days, led by Dan Amor and Rhys Mwyn, with the assistance of GAT, SNPA and CLPS project staff. Test pitting, especially where there is a good chance of finding artefacts, is well suited to younger audiences and the sessions produced a large number of axe flakes. A re-cap, along with a further question-and-answer session was held at the school.

Plate 8. Members of the Young Archaeologists Club digging a test pit (© John Roberts (SNPA))

A well-attended Young Archaeologists' Club (YAC) family session was also organised. GAT runs the Bangor branch of the YAC club, and GAT staff, Dan Amor and Nina Steele, organised the event. The YAC members enthusiastically participated in test pitting, with everyone finding flakes (plate 8).

The school programme and YAC session prompted a large volume of positive feedback from children and adults alike.

Four volunteers undertook the daunting task of cleaning and cataloguing all the finds. This responsible task involved the use of an Excel spreadsheet and the sorting of finds into an organised system, giving them a good experience of the nature of post-excavation archaeological work.

Covid measures were followed throughout. As the work was outdoors the risk of spreading the virus was low but a cabin was used only for storing and single staff use as it was not advisable for many volunteers to shelter

Plate 5. John G. Roberts instructing pupils of Ysgol Pant y Rhedyn on digging a test pit

Plate 6. George Smith showing pupils of Ysgol Pant y Rhedyn the axe roughout in the section of his test pit

Plate 7. Everyone found flakes. Rhys Mwyn confirming the identification of flakes found by pupils of Ysgol Pant y Rhedyn

together indoors. A trailer with sides that opened was provided by Gareth Wyn Jones, for shelter if necessary. Covid procedures were in place for volunteers working in the GAT office washing finds.

To introduce local people to the wider landscape of the axe-working a guided walk was held on Sunday 17th October 2021. This proved so popular that another was held on 7th November. Fourteen people attended the first walk and 20 the second. The walks visited the Ty'n y Llwyfan test pitting site, the summit of Dinas, looked at the area of Waun Llanfair, visited the quarry sites on Graig Lwyd and finished at the Meini Hirion/Druid's Circle (plate 9). Discussions about all the features seen on the route and the nature of the landscape in the Neolithic period were held at the various stops along the route. The walks were led by Jane Kenney and John G Roberts (SNPA Archaeologist) with the support of two mountain leaders provided by CLPS.

Plate 9. Jane Kenney pointing out the excavated Neolithic quarry site on Graig Lwyd during a guided walk

2.5. Archiving

The current report will be submitted to the Gwynedd Historic Environment Record (HER). A database of sites has been produced for ease of entry into the HER. This includes a summary of each site, which is translated into Welsh, as are the site names.

When the whole project is complete the digital archive will be submitted to RCAHMW for long term curation. The finds will be further studied in a later part of this project. A discard policy will be devised and retained material will be deposited with the Penmaenmawr Museum.

Lidar data © Natural Resources Wales 2022
Digital mapping data © Crown Copyright and database right 2022.
Ordnance Survey 100021874. Welsh Government.

Figure 3. Location of the Maes y Bryn site, showing surrounding features on the lidar plot (NRW 1m resolution lidar)

700
705
740
Track
465
24725
8031
67331
67329
8032
8033
498
457
8037
8038
Dinas
8034
8039
392
8036
Maes y Bryn test pits
8040
4720
8035
8041
Afon Maes y Bryn
SH

Key
Test pits
Scheduled area
Stream
HER sites
Neolithic axe-working evidence
Bronze Age
Iron Age/Romano-British
Medieval
Relict field boundaries

3. RESULTS

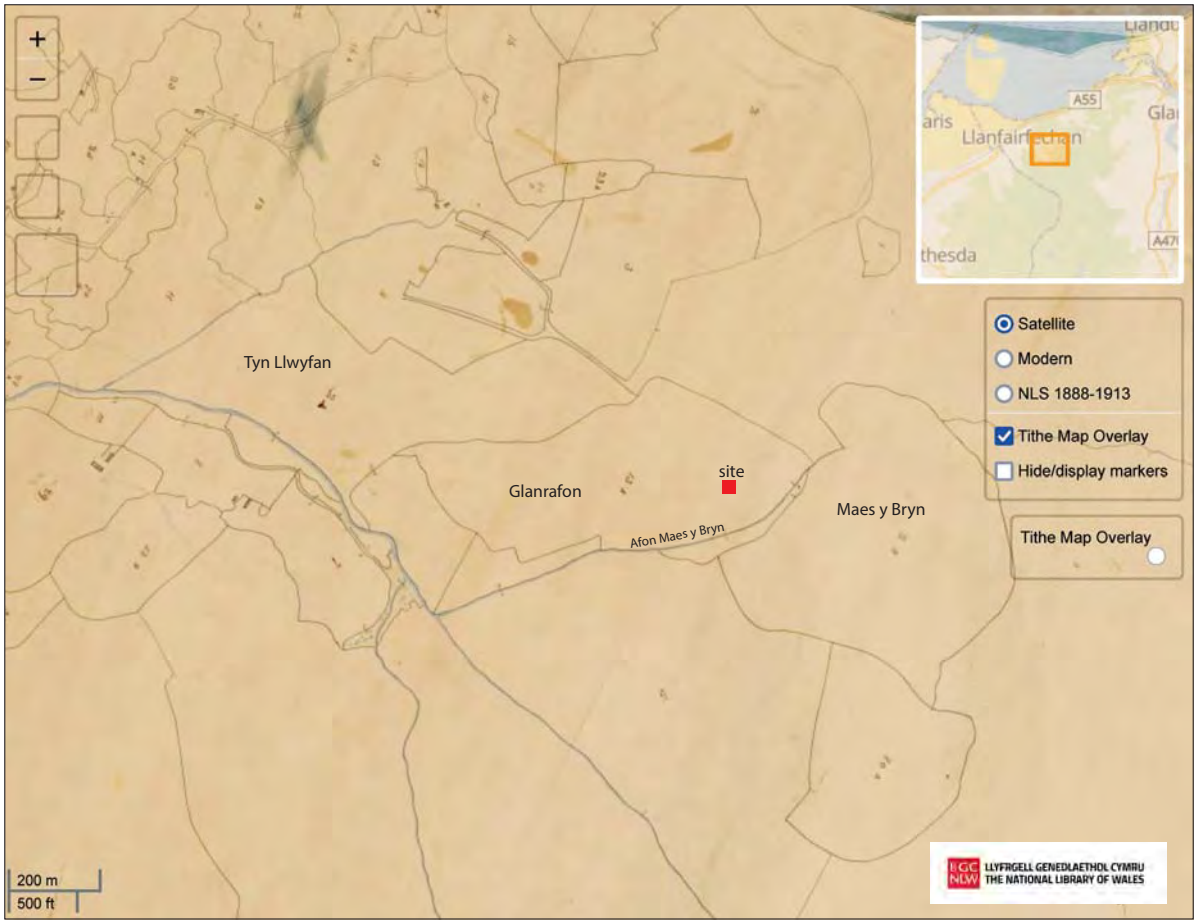
See Appendix II for details of each test pit.

3.1. Maes y Bryn (PRN 4720, centred on SH 70500 73800)

Introduction

In the winter of 1960-61 the ffridd east of Dinas was ploughed for the "first time in living memory" according to Mr H. Jones of Ty'n y Llwyfan Farm (Davies 1961, 1). In May 1961 J. Davies walked the field and, despite it being partially obscured by the sprouting crop, found a quantity of axe debris. A second visit with Ivor Davies, a local historian from Penmaenmawr, produced more finds. This collection included 7 roughout axes or pieces of roughouts and 3 roughouts for smaller, parallel sided implements, possibly picks or chisels. Many axe-flakes were found, including three that appear to have been worked into flake tools. Three pieces of flint were found, one retouched into a borer. Unusually for the area there were also 4 finished polished axes. One had a blade crudely resharpened by reflaking, one was a broken butt end and two were tools made from reworking larger polished axes, so they were a quite different shape to the original and only small areas of the original polish remained. Further finds not described in detail were found on a later visit, including two more flint flakes. The discovery was promptly published in the Transactions of the Caernarvonshire Historical Society, including some excellent finds drawings (Davies 1961).

This site is about 330m from the screes of Dinas, so while close to the source rock it is quite separated from it (figure 3). Davies concluded that "there can be little doubt that the spot represents at the least a temporary encampment of the axe-makers, if not a more permanent settlement" (Davies 1961, 4). He also considered that "the whole area would amply repay systematic excavation" (Davies 1961, 1). No further investigation of this site had taken place, until the current project, but it remains the most likely known site of a possible Neolithic settlement in this area. The field is now thoroughly overgrown, and it is hard to believe that it was ploughed so



Field Number : 2A
Field Name: Tyn llwyfan
Land Use: Arable,Pasture
Occupier: Thomas Griffiths
Landowner: Bulkeley, Sir Richard Bulkeley Williams, Bart.

Field Number: 13A
Field Name: Glanrafon
Land Use: Arable, Pasture
Occupier: John Hughes
Landowner: Edwards, Ellis

Field Number: 2B
Field Name: Maes y bryn
Land Use: Pasture, Meadow
Occupier: Thomas Griffiths
Landowner: Bulkeley, Sir Richard Bulkeley Williams, Bart.

Figure 4. Part of the Llanfairfechan tithe map (dated 1848) showing the correct field names in the area

Plate 10. Location of the Maes y Bryn site to the east of Dinas (photograph by David Longley)

recently. Fieldwalking, except to spot finds in molehills, is no longer a possibility but test pitting seemed to be a useful technique to use to rediscover this site.

Davies gives a central grid reference of SH 705738, essentially indicating a 100m square, so the first task was to identify this site more accurately. As the grid reference was the only guide this general reference was converted into a precise one (SH 70500 73800) and this was plotted with the Trimble GPS as a start point. It is likely that the main scatter is some distance from this precise point, but it proved to be a perfect place to start.

Site name

The name of Maes y Bryn has been used for this site as the nearest named feature on the 1:25000 map is Maes y Bryn, and the site is close to the Afon Maes y Bryn. The name is, however, somewhat inaccurate, as Maes y Bryn correctly refers to the ffridd on the south-eastern side of Afon Maes y Bryn. The Llanfairfechan tithe map (Welsh Tithe Maps, National Library of Wales) (figure 4) shows the enclosure of Maes y Bryn and a separate parcel of land to the north-west of the stream called Glanrafon under different ownership. The site investigated is actually on Glanrafon land. The land use of Glanrafon is recorded as arable and pasture, but this land parcel extended over Dinas and down to the improved fields. It is assumed that it was the improved fields that were under arable cultivation. However, this is relevant to the current project because this must have included the field investigated at the western foot of Dinas. Both Glanrafon and Maes y Bryn are now part of Ty'n y Llwyfan Farm.

Topography and archaeology

The site is on a south facing slope above the Afon Maes y Bryn, which here runs in a deep, steep-sided gorge (figures 2 and 3, plate 10). The field is a ffridd, an enclosure just below the mountain wall in which sheep can be kept enclosed and off the open mountain, without grazing the improved grassland lower down. Davies does not say what the crop was that was planted in 1961, but it was presumably an improved grass seed mix as the grass here is of good quality. Part of the field is overgrown with rushes, and it appears that this lower southern part was not ploughed in 1961. The field is clearly wet in winter. Although used for pasture in recent centuries the south facing slope could have made it suitable for arable agriculture in the past, when high crop yields were not expected, and animal drawn ploughs could cope with rougher ground and steeper slopes. Just to the west on the eastern slopes of Dinas a series of terraces or lynchets can be clearly seen. There are both roundhouses and a small medieval farmstead within these fields, and it is probable that they were first used in the Iron Age but must have still been used in the medieval period.

Closer to the site investigated, the traces of former fields are slighter but still quite visible on the ground and on the lidar[1] (light detection and ranging) plot (figure 5). The lidar data used in this figure is part of a high-resolution

1 The casing of "lidar" follows Deering and Stoker 2014.

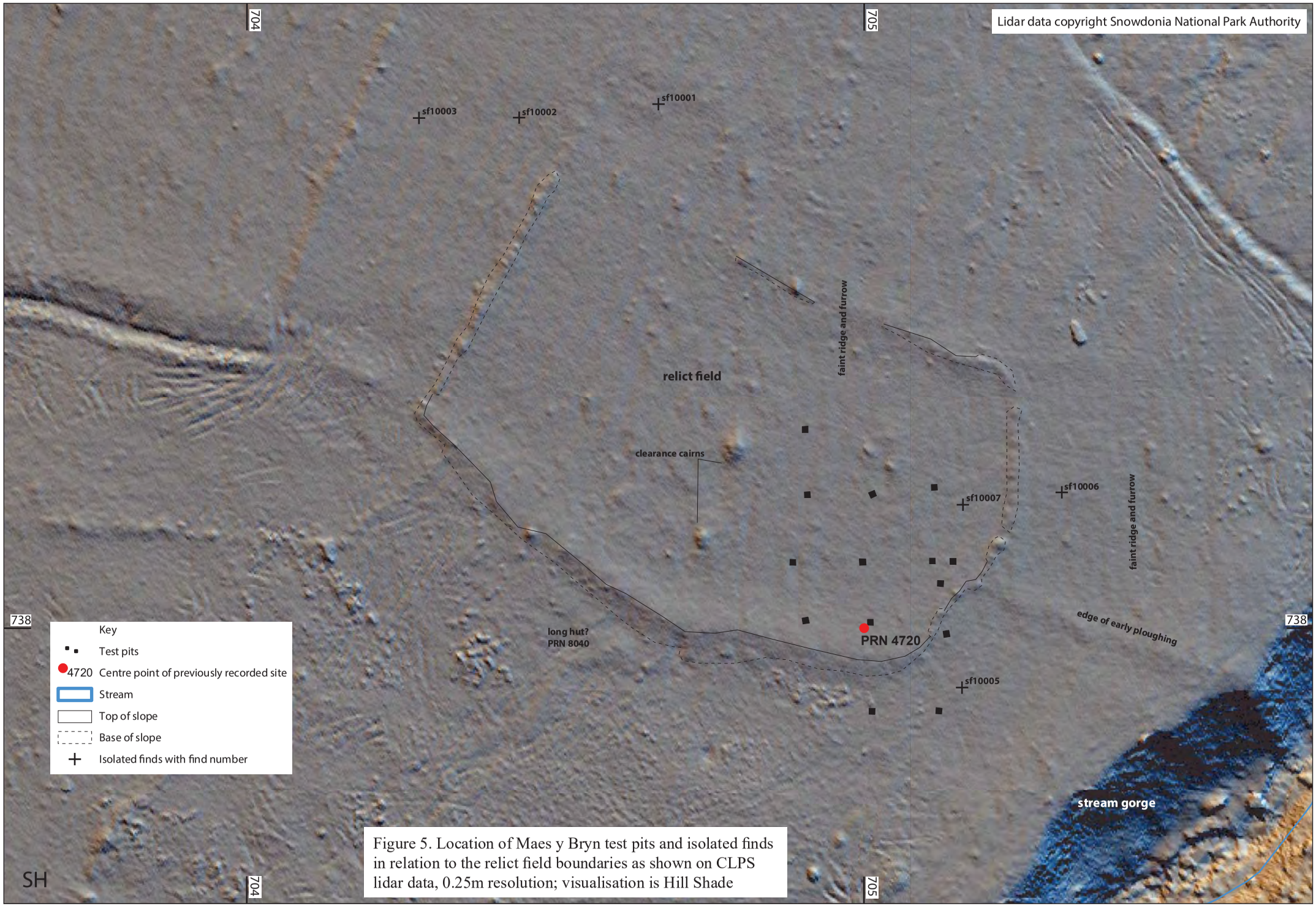


Figure 5. Location of Maes y Bryn test pits and isolated finds in relation to the relict field boundaries as shown on CLPS lidar data, 0.25m resolution; visualisation is Hill Shade

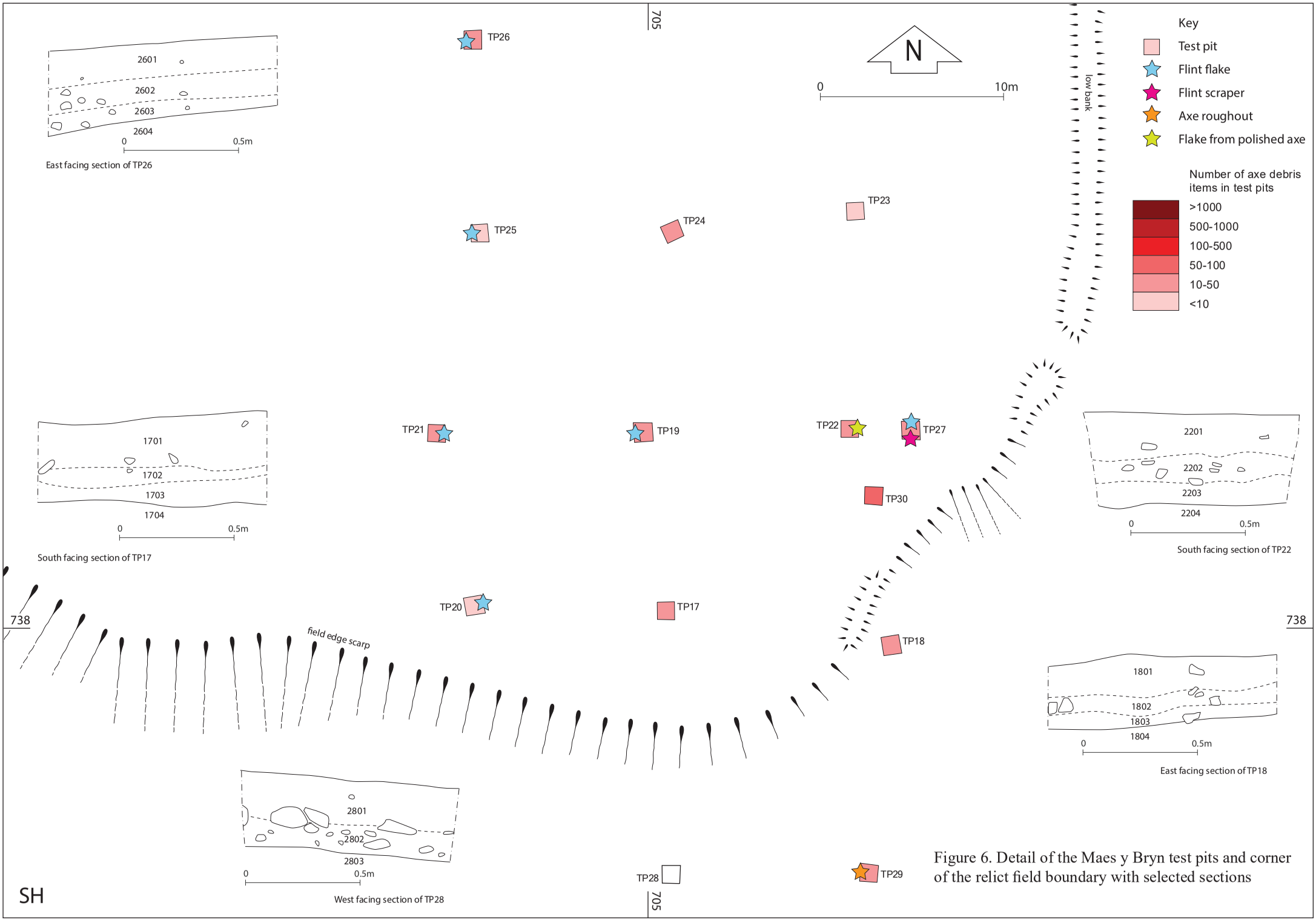


Figure 6. Detail of the Maes y Bryn test pits and corner of the relict field boundary with selected sections

Plate 11. Volunteers digging test pits at the Maes y Bryn site, showing the proximity to the marshland of Waun Llanfair and Foel Lwyd in the background (© John Roberts (SNPA))

survey commissioned by the Carneddau Landscape Partnership Scheme. This provides detail not previously available on other lower resolution lidar data sets. The lidar shows that there are some straight boundaries, visible as low banks, running down the slope and slight traces of narrow ridge and furrow on the same alignment. There are also occasional low mounds that appear to be field clearance cairns. Around the area investigated one of the straight boundaries forms the western side of a small field defined on the southern side by a gently curving scarp up to 0.9m high. Its eastern side is defined by a very slight curving bank. There are faint traces of a northern side to this field indicated by the remains of a bank at the eastern end and a largely ploughed out scarp further east. There are gaps in the eastern boundary that are presumably due to disturbance but may possibly be original. The faint ridge and furrow seems to have crossed the northern boundary of this field but respected the southern scarp edge.

The curving character of the southern and eastern boundaries of this field suggest that these are part of an original, probably Iron Age field, which has been reused in the medieval period, when the ridge and furrow was created and the straight field boundaries. The medieval ploughing seems not to have extended south of the relict field and this southern part of the field was probably only ever ploughed in 1961. That modern ploughing episode must have extended over all the relict field boundaries and other features within the ffridd but as this was a single episode it has not destroyed all evidence of the earlier fields. The nature of the ground surface and vegetation suggests that the modern ploughing extended no further south than the southern scarp.

The site is close to the open, marshy ground of Waun Llanfair, but is on a south facing slope, which would be warmer and drier than much of the surrounding area (plate 11).

Test pits

The central grid reference for the site proved to be in the south-east corner of the relict field and most of the test pits were positioned to explore the deposits within this field, but three were positioned outside the field boundary to compare deposits there (figure 6).

Twelve test pits were dug in this area, in a rough grid, with two additional test pits positioned close to one that was particularly productive, making fourteen test pits in total.

The natural subsoil was generally a yellow-brown gritty clay representing a glacial till. Sometimes the subsoil had larger stones within it but did not seem particularly stony at this site. This natural subsoil was between 0.28m and 0.4m below the ground surface, with the soil deposits being slightly deeper closer to the southern boundary of the relict field and shallower both south of the field and further north within the field. This suggests some soil movement within the ploughed deposits. A stone embedded in the subsoil in test pit 20 had plough scars from several phases of ploughing in different directions demonstrating that the relict field had been ploughed many times (plate 12).

In all the test pits there was a dark brown slightly clayey silt, with a varying amount of stone that was well mixed and represented a ploughed soil layer under the topsoil (plate 13). In some test pits this layer could be divided into two, with the lower part being slightly lighter in colour and often stonier. This lower layer is probably the remains of the earlier ploughsoil of medieval origin that was not disturbed by the modern ploughing. There was no clear ploughsoil layer in test pits 28 and 29 south of the relict field where the surface suggests that no ploughing had occurred.

In most cases the axe debris was found in the topsoil and the upper ploughsoil and was therefore disturbed from its original context. Even the debris found towards the base of the test pits will have been disturbed by the earlier ploughing, so the likelihood of finding preserved, *in situ* deposits of axe-working debris is unlikely within the area

Plate 12. Stone in test pit 20 showing several phases of plough marks

Plate 13. Section of test pit 22, within the relict field

Plate 14. Section of test pit 28, outside the relict field

of the relict field. Beyond the limits of the relict field TP28 produced no axe debris, but a small amount came from TP29, including a roughout. In these test pits a layer 0.2m deep represented undifferentiated topsoil and modern ploughsoil, with deposits below that appearing largely undisturbed. In TP28 the lowest layer was particularly stony (plate 14), while in TP29 the equivalent layer was a less stony buried soil. This suggests that there may be undisturbed prehistoric deposits surviving south of the relict fields. However, in TP29 the axe debris came from the topsoil/ploughsoil and so was in a disturbed context and could have moved some distance and the absence of axe debris from TP28 suggests that there may have been little activity in this area.

The axe debris was fairly evenly distributed but there was slightly higher number of flakes from TP22, 27 and 30 (figure 6). These may indicate a concentration of working, with number of flakes decreasing further away from this location. The flakes from across the site were generally small with a lack of larger primary material. This suggests that the final trimming and shaping of roughouts was taking place here. Probably a piece of scree was selected, tested and roughly knapped before removing to be further worked at the Maes y Bryn site. The roughout from TP29 may represent the type of object taken to the site ready worked (figure 7, sf2902), though George Smith suggests that this may have been a tool rather than a roughout (current report, section 4). This would explain its presence on a possible settlement site.

Of particular interest are the flint flakes recovered (figure 7). These were small flakes from small beach pebble flint and, with one exception, were not retouched, but they represent the transport of flint to the site and its knapping and use here. The retouched piece is a tiny thumbnail scraper made on a very small flint pebble (sf2702). Clearly the only flint available was very small and poor quality but its use indicates that other tasks were undertaken on this site, not just axe manufacture. Scrapers are traditionally thought to have been used for processing hides into leather, though usewear analysis does indicate that they were used for other scraping tasks. Generally, their use is suggestive of a domestic site, however temporary. The use of very small, difficult to work flint pebbles and the lack finer imported flint suggests this activity may date to the earlier rather than later Neolithic (Smith, current report, section 4).

Although 3 flints (2 flakes and the scraper) were recovered from TP27 at the possible focus of the axe-working activity, the other flint flakes came for the more distant test pits. This general scatter of flints may suggest that the focus of settlement activity is some distance from the test pits. Davies (1961) does not give an indication of the size of the artefact scatter that he identified but implies that finds were recovered over quite a wide area. It is likely that there are several foci of axe-working within the general area and the current test pitting has found only one. The discovery of a few axe flakes in molehills about 87m uphill from the axe-working focus suggests that further test pitting would find axe debris over a much wider area here, and possibly locate a flint concentration indicative of the focus of settlement activity.

In TP22 a flake of Group VII stone was found that had polish over the dorsal face (figure 7, sf2205). This is a flake from a finished stone axehead. Davies found several finished axes that had been reworked or roughly resharpened. This flake is one that could have been produced by reshaping or breaking down a finished axe. It is evidence that finished axes were brought to the site, probably at the end of their useful life and reworked on the site.

No dug features of any sort were located in the test pits. The size of the pits means that it is unlikely that features will be encountered unless there is a high density of them in an area. However, the complete lack of dug features with the evidence of early ploughing, may indicate that pits and postholes could have been heavily truncated. It is unlikely that layers such as hearth deposits would have survived in this area.

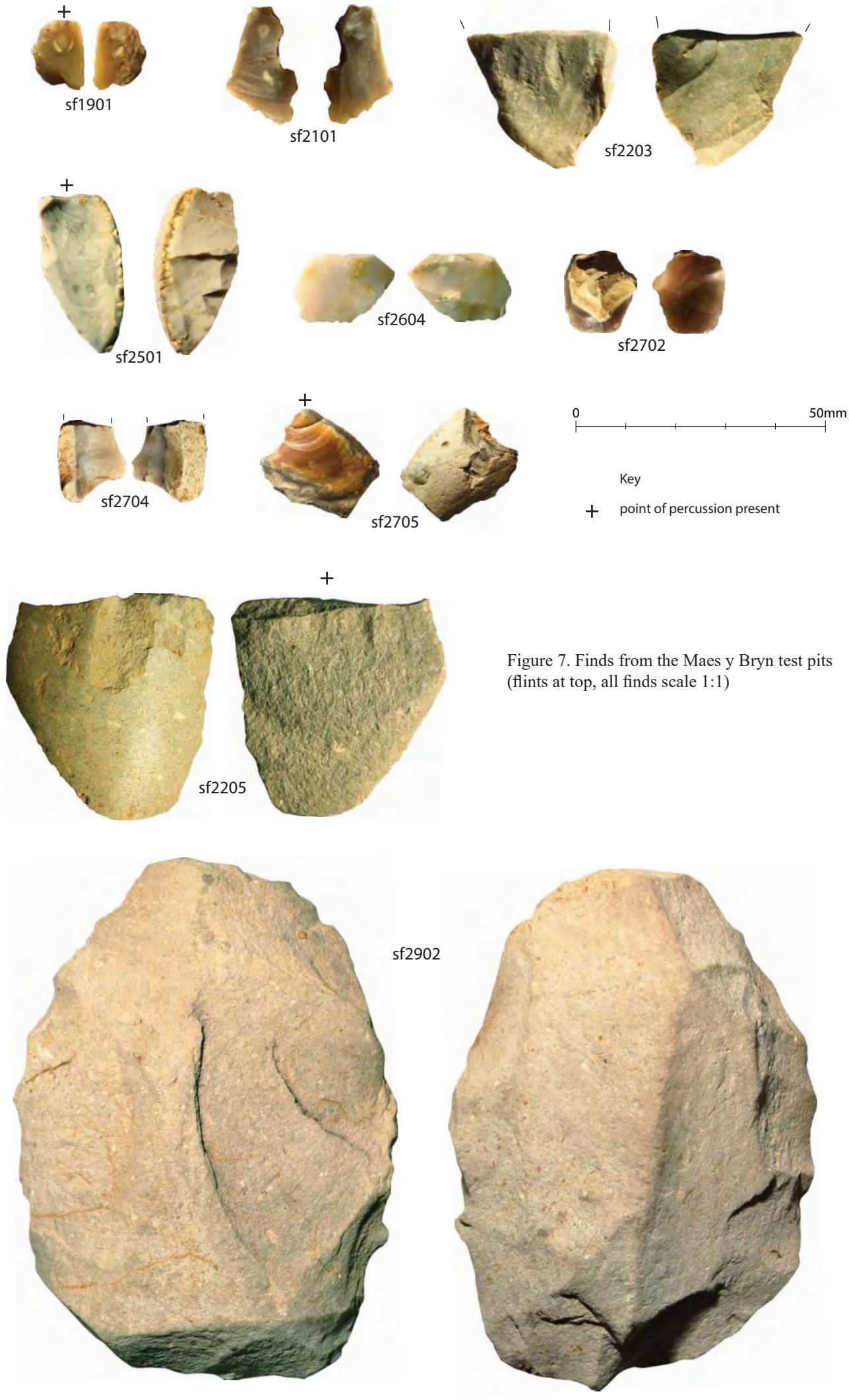


Figure 7. Finds from the Maes y Bryn test pits (flints at top, all finds scale 1:1)

Summary of finds
Pieces of white quartz were also collected and are included in the catalogue, but all appeared to be natural, unworked stone and these are not included below.

Test pit	Type of object	No of items	Total weight of items (g)
17	Axe debris	41	767
18	Axe debris	48	389
19	Axe debris	28	187
	Flint	1	0.3
20	Axe debris	8	30.5
	Flint	1	5
21	Axe debris	12	84
	Flint	1	0.5
22	Axe debris	40	597
	Flint	1	4.5
	Flake from a polished axe	1	22
23	Axe debris	7	67
24	Axe debris	15	184
25	Axe debris	6	27
	Flint	1	5
26	Axe debris	36	442
	Flint	1	0.5
27	Axe debris	31	647
	Flint	3	2.4
28	Axe debris	**0**	**0**
29	Axe debris	16	658
30	Axe debris	82	708

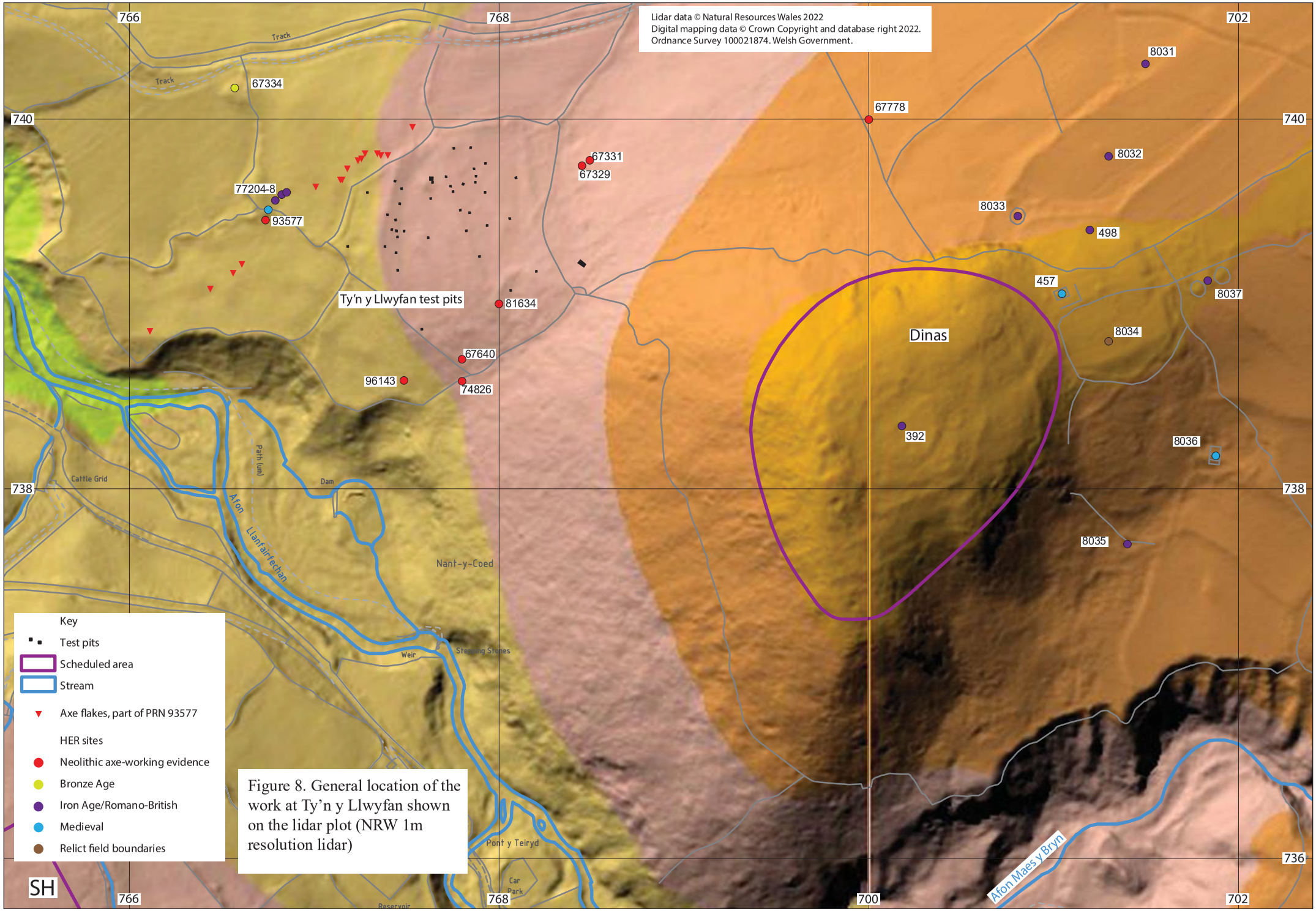


Figure 8. General location of the work at Ty'n y Llwyfan shown on the lidar plot (NRW 1m resolution lidar)

3.2. Ty'n y Llwyfan

Topography
Much of the southern, eastern, and western sides of Dinas are covered in natural screes that are bare and unvegetated. However, further north, where the slopes are covered in grass, there is still scree under the vegetation. In the improved fields below the western side of the hill the continuation of scree under the grass and turf is indicated by the uneven ground surface, with glacial till forming the substrate under the rest of the fields. The field investigated lies just on this boundary between scree and glacial till (figures 8 and 9). It is at the western foot of Dinas and slopes fairly steeply down from east to west, facing west. The scree continues into the eastern and southern margins of the field but most of the field is beyond the scree (figure 9).

Running north-north-west to south-south-east across the field is a steep west-south-west facing scarp, about 10m high (figure 10). Downslope, to the west of this is another steep scarp running about north to south and curving gradually. In the upper eastern part of the field is a slighter scarp, largely formed by the limit of the scree under the turf. The western scarp is sharply defined with a flat area immediately to the east of it. The main central scarp also has a steeper part long the top sharply defining the edge of a narrow flat area. In both cases the overall scarp appears to be a natural slope but the build-up of soil forming the sharp edges and the levelled areas are probably the result of ploughing and can be described as lynchets. These lynchets define an upper terrace and a middle terrace, with a lower terrace in the western edge of the field (figure 10).

Studying the nature and origin of these scarps was an important objective of the test pitting as former ploughing will define where deposits might be preserved and where they are disturbed and how axe debris might have been moved from its original location.

Test pits (PRN 81634, centred on SH 698 739)
Sixteen test pits were dug across this field in 2019 and the 23 test pits dug here in 2021 were located to expand the information gained from these initial test pits (figure 10).

Test pits TP02 and TP08 dug in 2019 were located close to the expected edge of the screes. These showed that scree deposits had largely faded out by this point. TP08 had a 0.3m layer of scree mixed with soil, but TP02 contained only a scatter of scree pieces embedded in the surface of the glacial till. All other test pits revealed the natural subsoil to be an altered glacial till, generally a yellow-brown sandy clay with stones embedded in it but in places it was more orange-brown and in some places had fewer stones. In TP39, on the face of the central scarp, the natural substrate was a very pale whiteish yellow sandy clay, concreted and very hard.

Upper Terrace
Several test pits were located to investigate the upper terrace above the central scarp. Test pits TP51, 52, 53 and 54 were dug towards the back of this terrace. The soil deposits in these test pits were about 0.3m deep, with only topsoil and a single ploughsoil layer distinguishable (plate 15, figure 11). This confirmed a shallow soil depth on this terrace indicated by TP01, TP03 and TP07 dug in 2019. In TP07 there was only 0.21m of soil down to the natural deposits, though TP03 had 0.4m. The terrace slopes gradually down to the north-west and TP 43 had a slightly deeper layer of topsoil and ploughsoil of 0.4m deep. Here, like over most of the field the ploughsoil, was a mid-brown clayey silt with some stone, but a paler yellow-brown sandy clay layer with larger stones could be distinguished below it. This second mixed ploughsoil-like layer could be found in many of the test pits and is interpreted as a relict soil, probably an earlier level of ploughsoil. Of the test pits placed towards the middle of the terrace TP05 was also about 0.4m deep but TP50 was 0.59m deep and had a visible relict soil layer.

Test pits TP04, 37, 42, 44, 45 and 46 were positioned on the top edge of the central scarp specifically to investigate deposits here. TP04 had soil deposits only 0.40m deep but the other test pits showed a very considerable build-up of soil in this area. TP42 has a soil depth of 0.72m, TP44 a depth of 1.05m, TP45 of 0.75m and TP46 of 0.94m (plates 16 and 17, figure 11). All these had a deep build-up of the mixed relict soil layer that here seemed almost certainly to be a colluvial deposit that had moved downslope through the action of ploughing. This layer was up to 0.48m deep, but in TP44 there was a further mixed relict soil layer below it. This had a scatter of charcoal in the top of the layer but had probably formed from eroding till early in the Holocene.
A tiny fragment of flint debitage was recovered from TP42, with a larger piece of cherty flint from TP45. The latter is a piece of a broken pebble and may not have been worked.

TP36 was located towards the northern part of the terrace. Here there was 0.70m of soil with 0.32m of topsoil and recent ploughsoil over about 0.27m of relict soil, the earlier colluvial ploughsoil. This covered a lower mixed layer, probably an old forest soil developed during the early Holocene. Along the interface between the topsoil and ploughsoil was a concentration of stones, indicating the movement of ploughsoil and the sorting of stones. In this was an axe roughout (sf3611, figure 12) that was recorded in the section of the test pit (plate 18, figure 11).

TP37 was quite different to the other test pits in this area. Under topsoil and ploughsoil about 0.20m deep was a layer of densely packed stone including natural scree and numerous pieces of axe debris in a mid-brown sandy silt

Figure 9. Location of test pits and evaluation trench at Ty'n y Llwyfan with NextPerspectives aerial image showing the immediate landscape and extent of the screes

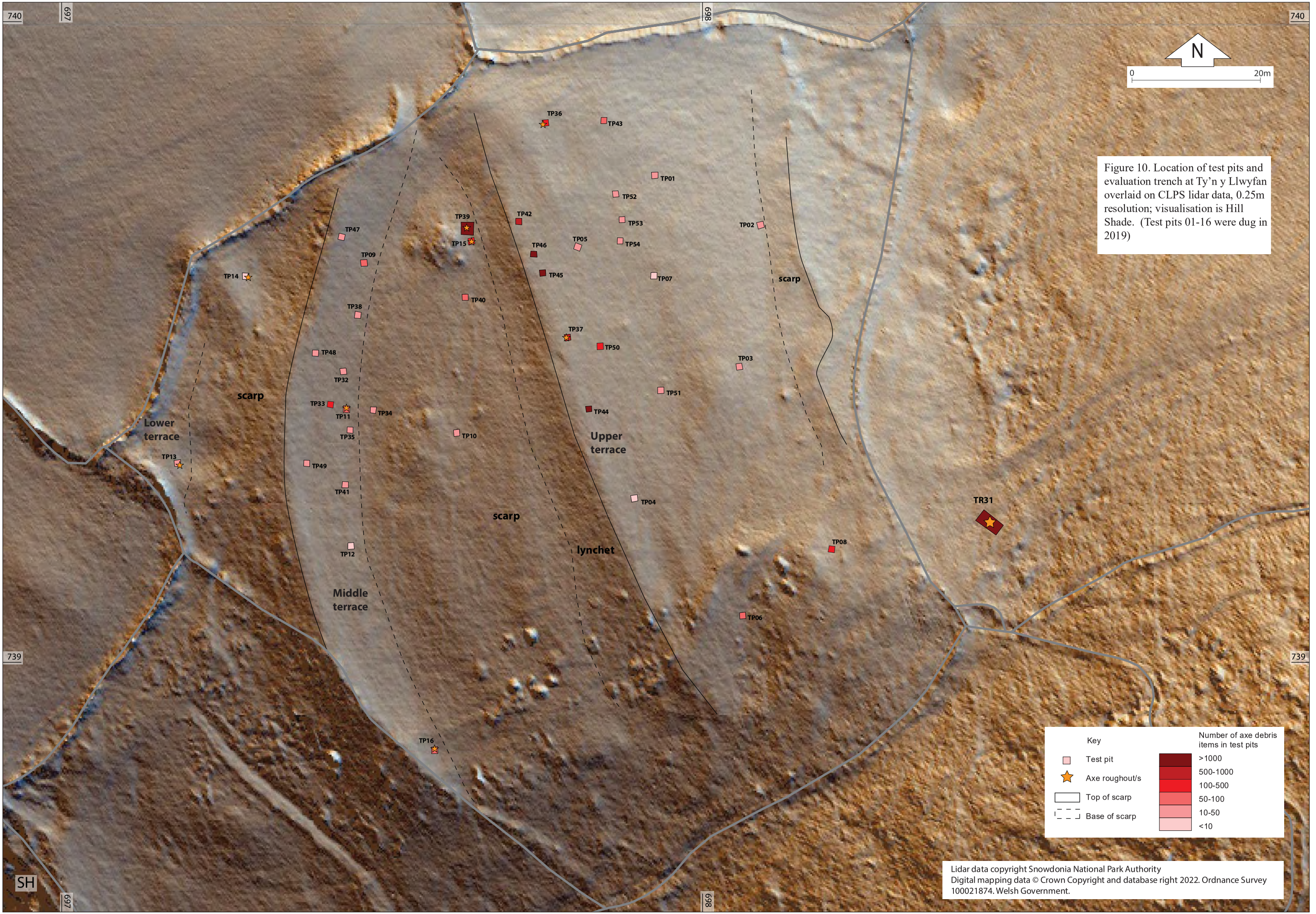
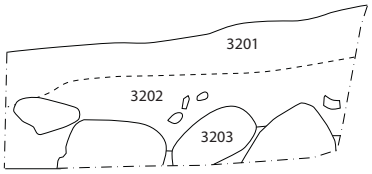
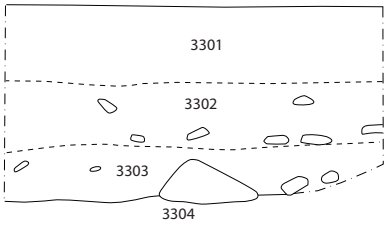


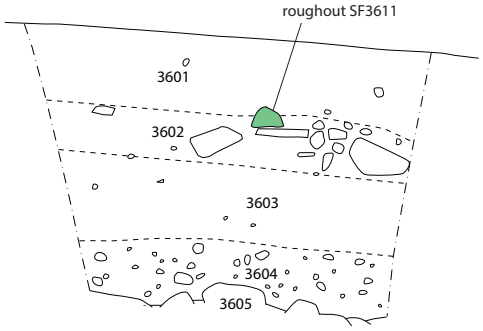
Figure 10. Location of test pits and evaluation trench at Ty'n y Llwyfan overlaid on CLPS lidar data, 0.25m resolution; visualisation is Hill Shade. (Test pits 01-16 were dug in 2019)



South facing section of test pit 32

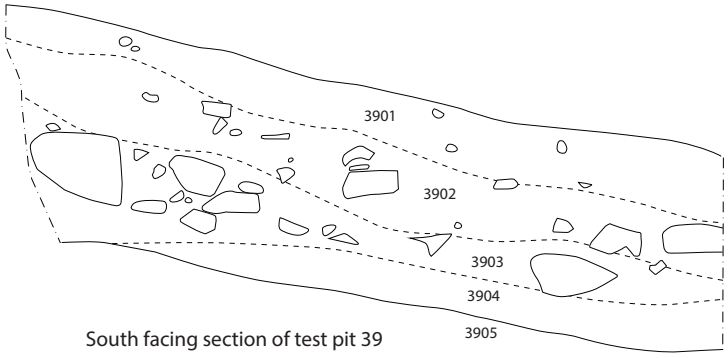


West facing section of test pit 33

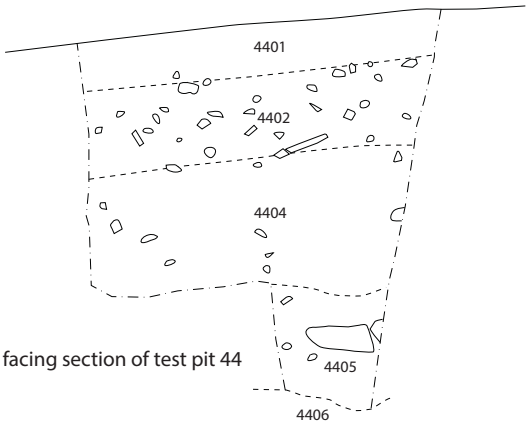


West facing section of test pit 36

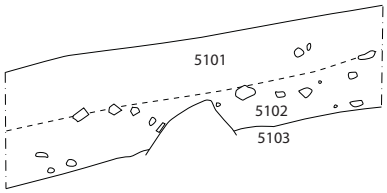
0 0.5m



South facing section of test pit 39

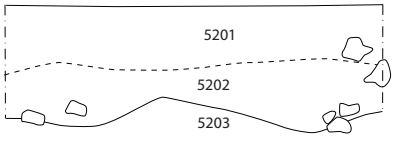


South facing section of test pit 44



0 0.5m

North facing section of test pit 51



North facing section of test pit 52

Figure 11. Selected sections of test pits at Ty'n y Llwyfan

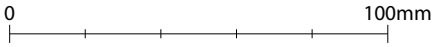


Figure 12. Roughouts from the Ty'n y Llwyfan test pits and from trench 31 (scale 1:2)

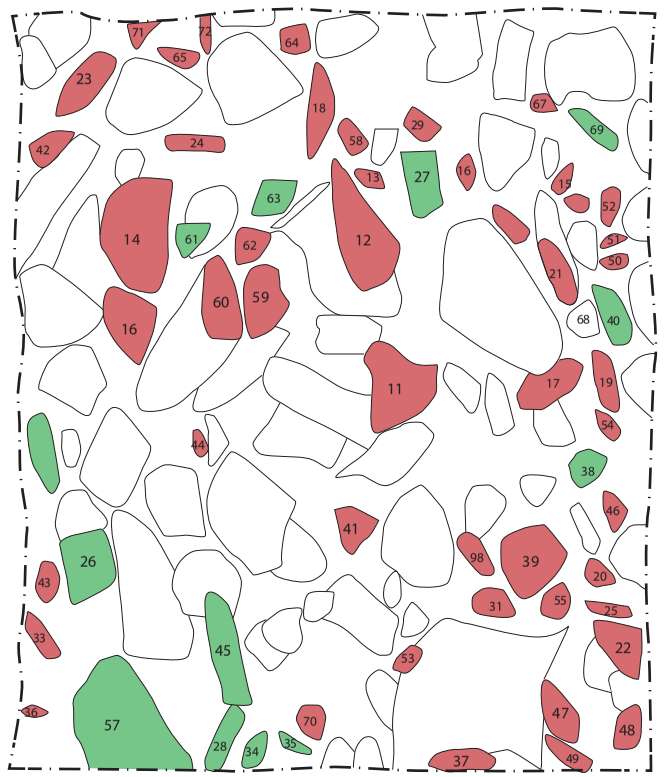
Plate 15. Section of test pit 53 in the uphill part of the lynchet

Plate 16. Section of test pit 44 close to the edge of the main scarp

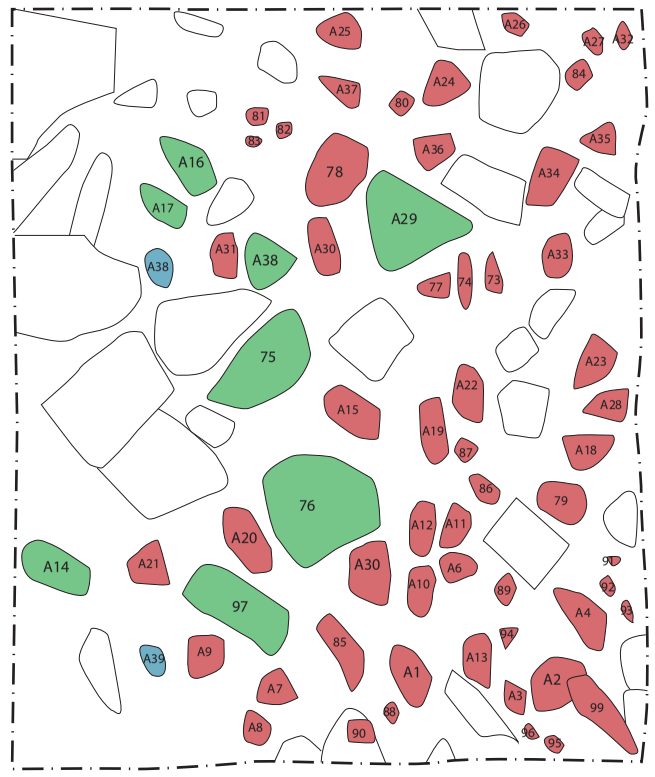
Plate 17. Section of test pit 46 close to the edge of the main scarp

Plate 18. Section of test pit 36 with roughout in section

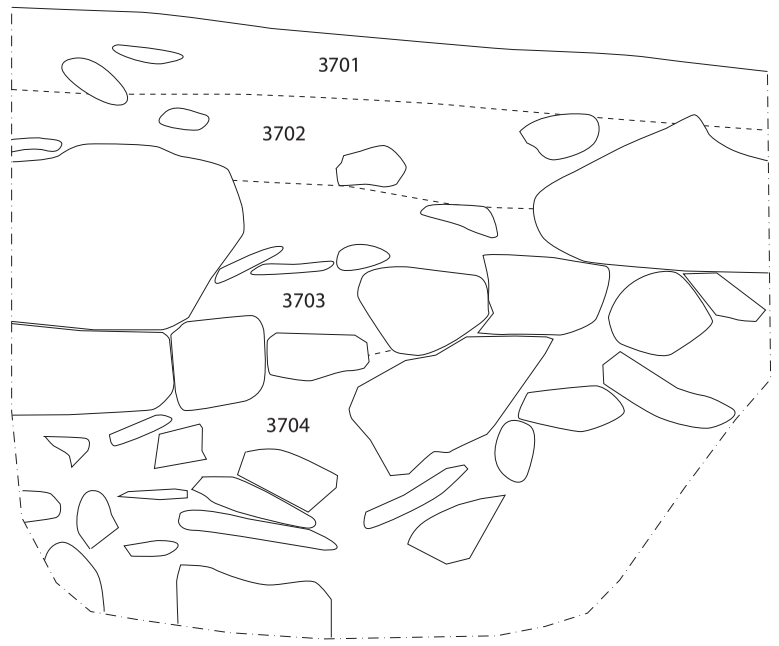
Plate 19. Surface of layer 3703 in test pit 37



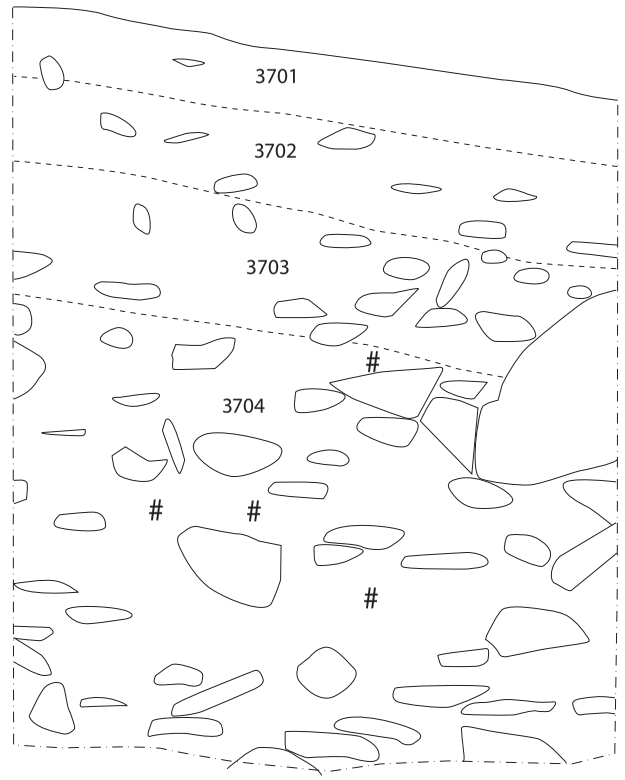
Plan of layer 3703 spit 1



Plan of layer 3703 spit 2

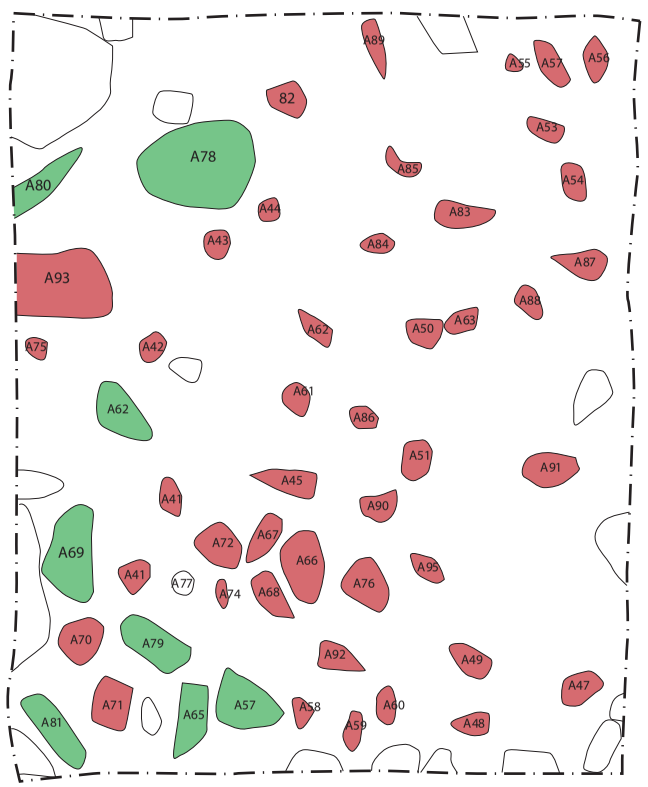


West facing section of test pit 37

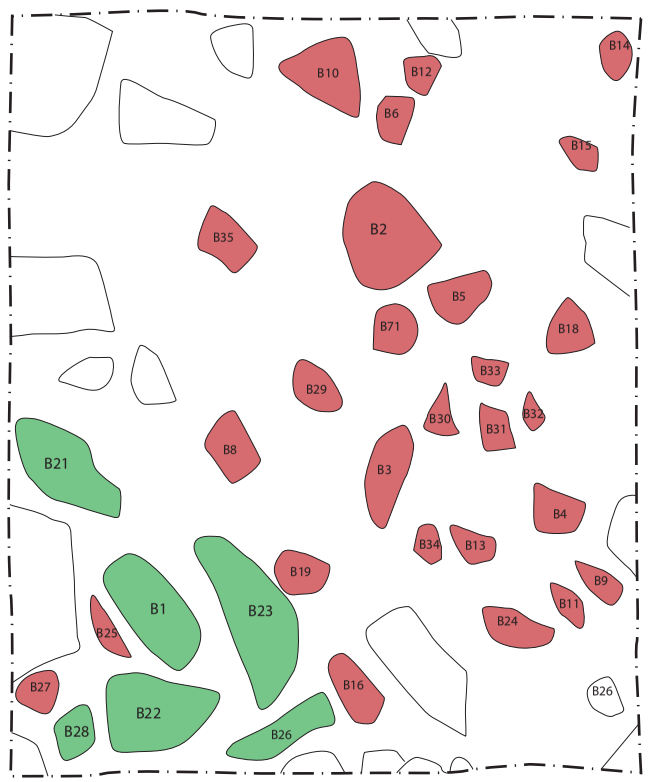


North facing section of test pit 37

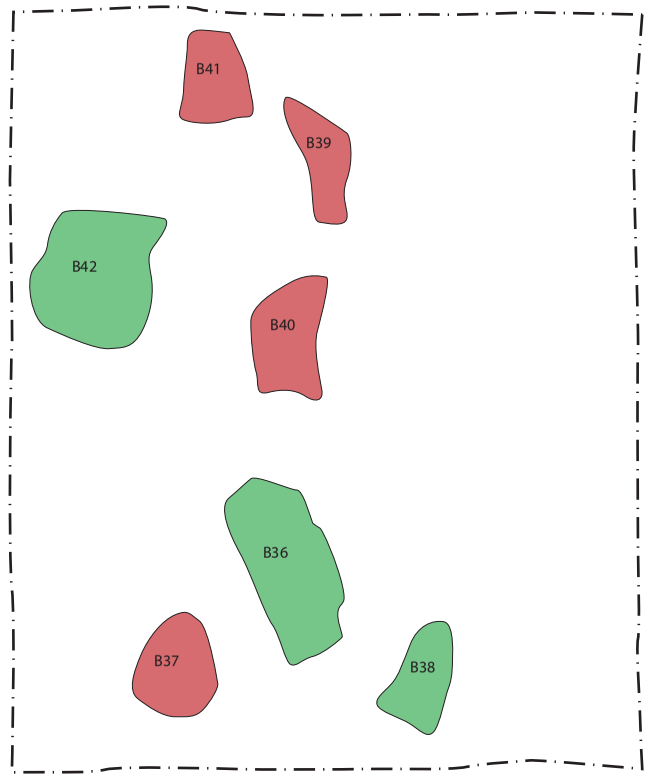
Figure 13. Plans of spits in TP37 and sections of the test pit



Plan of layer 3703 spit 3



Plan of layer 3704 spit 1



Plan of layer 3704 spit 2

Key

- Axe-working flakes
- Larger flaked pieces or core
- Possible hammerstone
- Unworked stone
- Trench edge
- 231 Find number (minus prefix 37)

matrix (layer 3703) (plate 19). This was 0.17m deep and below that was a similar layer of stone and axe debris in a yellow-brown sandy silt (layer 3704). This layer was at least 0.6m deep, but there was not enough time to reach the natural subsoil in this pit. Layer 3703 was dug in three spits, with the axe debris planned for each spit (figure 13). Layer 3704 was dug in two thicker spits, each planned. Layer 3703 contained numerous small flakes and many large flakes laid as if *in situ* and undisturbed amongst blocks of scree. There were also smaller flakes in layer 3704 but more larger flakes and worked pieces. This might represent a ridge of scree but the presence of axe debris through-out suggests this could be a cairn or mound of dumped material that has built up over time, with axe-working taking place on it at various stages. Much of this mound or ridge must be buried under the colluvial ploughsoil, as it is not visible as a feature on the ground surface. Further excavation is necessary to define the shape and character of this feature.

Central scarp

The central scarp was up to about 10m high and up to about 40m wide. In 2019 TP10 was dug on the face of the scarp and showed that the soil depth here was shallow, as might be expected on a steep slope, at 0.2m total depth. More soil had built up over some areas of the scarp, especially towards the northern end where there was a shelf in the slope, on which a hawthorn bush is currently growing. TP15 located on this shelf was 0.6m deep with 0.30m of ploughsoil packed with axe debris, and a relict soil/earlier ploughing layer 0.25m deep also containing axe debris and some burnt stones. TP40 located a little further south showed that the soil depth here was 0.40m, also with some trace of the relict soil. To further investigate the concentration of axe debris a larger test pit (TP39) was dug adjacent to TP15. TP39 measured 2m by 2m and it was 0.58m deep. It was hoped that the larger size might reveal more detail of the stratigraphy, but instead it confirmed that these were disturbed deposits. This slope had been ploughed and the ploughsoil (layer 3902) up to 0.2m deep (figure 11) contained a large amount of axe debris, including a broken roughout. Below that a stony colluvial layer (layer 3903) also contained axe debris, including large roughly flaked blocks and a roughout. Below that was an interface layer with the natural substrate that also contained some flakes. The hard, concreted natural contained stones up to 0.6m long that protruded into the layers above.

There was one piece of pottery from layer 3902 (sf3916) and two pieces from layer 3903 (sf3931 and 3932) (figure 14). All appear to be medieval pottery but need to be studied by a specialist to identify the ware type and date.

It seems that material has been moved down this scarp mainly by the action of ploughing and it has collected on this slight shelf, but the quantity of axe debris suggests axe-working taking place probably just up slope from these test pits. The discovery of medieval pottery in the colluvial layer suggests that the movement of soil took place due to ploughing in the medieval period.

Figure 14. Pot sherds found in test pit 39

Middle Terrace
This is a level terrace with a very flat surface, so that it appears that it has been levelled by ploughing running along the length of the terrace over a long period. Four pits dug in 2019 (TP09, 11, 12 and 16) suggested deeper soil here with depths ranging from 0.33m to 0.60m. Further test pitting on this terrace showed that although there was a substantial build-up of soil across the terrace it was shallower on the eastern, uphill side and deeper on the western, downhill side as is typical of lynchets formed by ploughing.

TP47, TP48 and TP49 were located on the built-up edge of the terrace. TP47 was 0.71m deep, TP48 was 0.78m deep and TP49 was 0.86m deep but the natural substrate was not reached within it. These had an orange-brown silt representing the lower a lower ploughsoil beneath the more recent ploughsoil. It is possible that the lower ploughsoil is Iron Age in origin and that the upper ploughsoil was due to medieval ploughing. TP34, located near the base of the central scarp was only 0.31m deep, showing where ploughing had eroded into the slope and caused soil to move downhill. Test pits TP32, 35 and 38 also had depths of between 0.30m and 0.36m, while test pits TP33 and TP41, more towards the middle of the terrace were slightly deeper at 0.52m and 0.41m respectively. The ploughsoil on this terrace is a mid-brown sandy silt with relatively little stone, that looks more improved than ploughsoil in some other parts of the field.

A partial roughout was recovered from the ploughsoil layer in Pit 11 (SF1101) with a fairly high amount of axe debris. Test pits TP33, 34 and 35 were dug round TP11 to try and define the limits of an activity focus. TP33 also had a fairly large quantity of axe debris with much less in the other surrounding test pits (figure 10). This suggests that although the axe debris has been disturbed by ploughing on this terrace test pits 11 and 33 located a concentration of debris that indicates that there was a focus of axe-making activity here.

In 2019 TP16 was dug to explore the southern end of this terrace. This test pit was 0.5m deep and a partial axe roughout (SF1601) was found within a charcoal rich deposit (1603). This area was not investigated in 2021 and would repay further exploration, probably using a larger test pit like TP39.

A small number of test pits on both the middle and upper terrace, as well as TP39 produced a few pieces of burnt stone. The significance of this is currently unclear. While burnt stone can be associated with prehistoric activity it could also be the result of gorse burning.

Bottom Terrace
The bottom terrace was small and mostly covered in bracken. In 2019 two pits were located on this terrace, TP13 and TP14. TP13 was 0.43m in depth and TP14 was 0.50m in depth. They both contained only topsoil and ploughsoil over the natural. This area was not further investigated in 2021. Both these test pits contained a small amount of axe debris and also each produced a roughout. It would be useful to determine how much further down the slope axe-working is represented.

In 2018 an archaeological watching brief by Aeon Archaeology on the renewal of a water pipeline found axe flakes on the continuation of this terrace just below the bottom boundary of the investigated field (Dean and Cooke 2019). Twenty-seven flakes were found (PRN 93577) along the route of the pipeline in this area; a few scattered south-west towards the cliff above the Afon Llanfairfechan (figure 8). This watching brief was occasioned by the need to replace a burst water pipe. When the pipe first burst Dŵr Cymru dug a pit to investigate the burst. David T Jones took Jane Kenney to see this pit and they found numerous flakes in the spoil from the pit (PRN 96143, see figure 8). Seven flakes were collected and given to Rich Cooke when the watching brief started. These have been included in the watching brief report (Dean and Cooke 2019).

These finds show that axe debris can be found down to the edge of the wooded gorge in which the Afon Llanfairfechan flows. These fields have been ploughed and some debris might have moved downslope due to the action of ploughing, but it is likely that these finds represent axe-working taking place in this area. This area would repay future test pitting to determine whether concentrations of axe-working debris can be found here.

Trench 31 (PRN 96144, centred on SH 69845 73922)
An evaluation trench measuring 4m by 2m was dug across an area of consolidated scree to investigate the deposits within the natural screes at the foot of Dinas (plate 20). This area had previously been surveyed (Kenney 2019) and slight terrace-like scarps were seen to run across it (figure 15). These might be due to the movement or disturbance of the scree or could be in origin more deliberate structures. The trench was positioned across one of these scarps (plates 21 and 22). Roughly worked blocks of scree can be seen all over this area but some small flakes were also visible on the surface. The presence of these flakes was taken to indicate that there might be undisturbed deposits here.

The upper layer in the trench (layer 3101) was a very dark brown organic silt, essentially the topsoil but largely composed of semi-decayed bracken (plate 23). This and the layer below were full of bracken roots that must have caused some disturbance but equally would have resisted erosion. There were many flakes loose within this soil and the position of these were recorded by GPS.

Below the topsoil was a layer of consolidated scree with large amounts of axe debris in a mid-brown sandy silt matrix (layer 3102) (plates 24 and 25). Most of this layer was removed in two spits, after recording. The finds in the last recorded spit were collected but the remainder of the layer is to be removed next season (plate 26). Within the upper spit of (3202) in the upper south-eastern corner of the trench was a distinct group of small flakes, suggestive of a knapping floor where fine working of a roughout was taking place (figures 16 and 17). There were generally larger flakes towards the lower, north-west end of the trench. It is possible that the larger flakes had rolled further downhill, but it seems likely that this represents another concentration of working, this time representing the initial shaping of a roughout.

In the second spit the flakes were distributed over almost all the trench with less clear patterning though generally more of the larger flakes were found towards the bottom end of the trench (figures 18 and 19). More detailed analysis of the flakes is necessary to confirm these patterns. If it is possible to refit flakes (join them back together to reveal the object that they were struck from) that would demonstrate that specific episodes of knapping are presented.

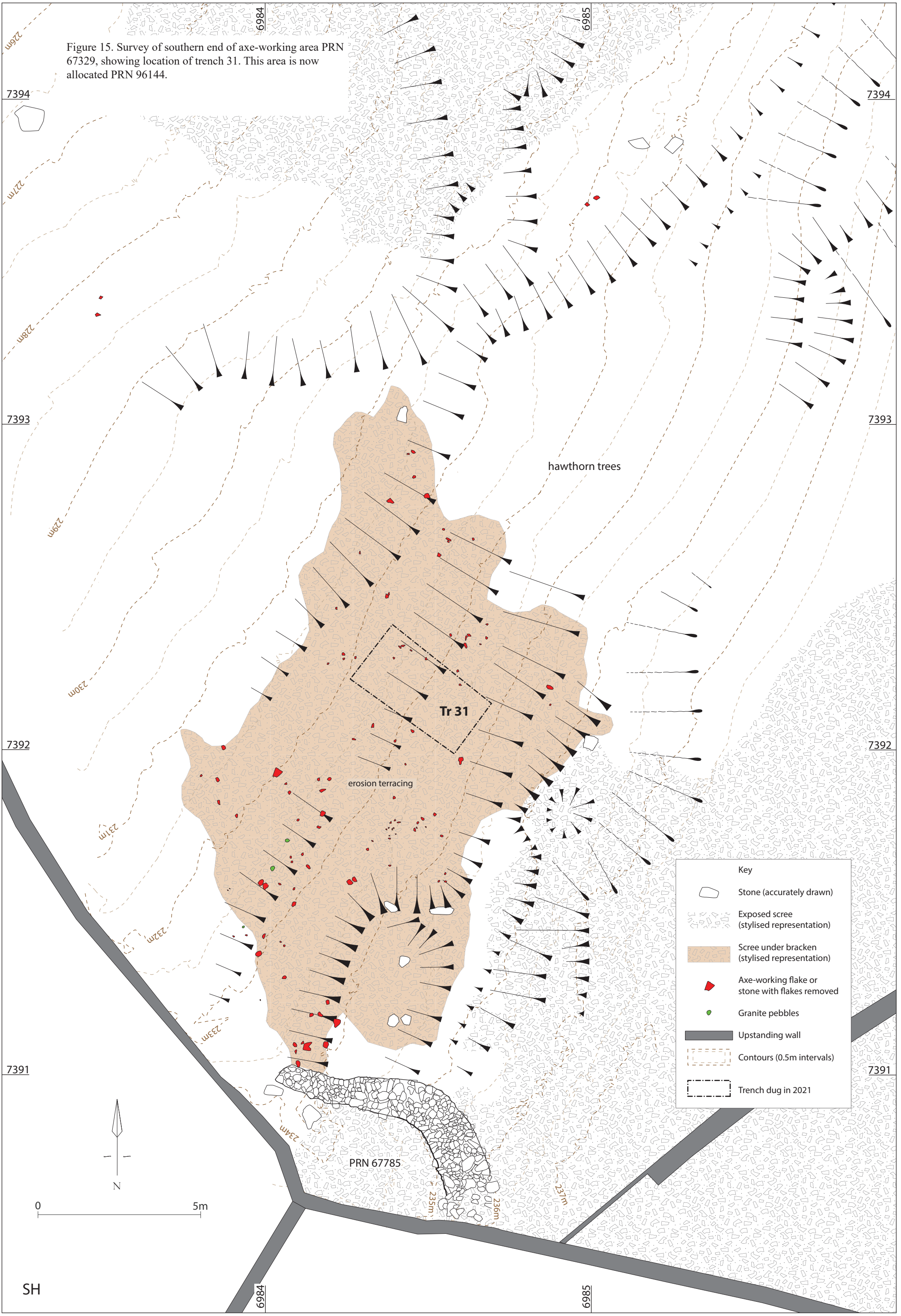
The terrace-like landform did not become much clearer with excavation but was still visible and further excavation may reveal that it is based on the shape of underlying deposits.

No charcoal was seen in the deposits and certainly no layers or lenses of charcoal indicative of fires. It is a particular aim of the project to find such layers of charcoal that could be dated by radiocarbon assay to give an indication of when working occurred. Possibly such a layer might be found lower down.

The trench was dug to a maximum of 0.2m in depth, and generally no more than 0.1m, and requires the excavation to be completed to determine whether it is underlain by undisturbed natural scree, till or whether there is a great depth of axe debris. The latter seems unlikely as a gritty brown deposit was already becoming visible in places that could be the soil just above the till. However, this interpretation needs to be confirmed and it is not impossible that this is a colluvial soil hiding earlier axe debris.

Plate 20. View for the drone of the evaluation trench (trench 31) during excavation, showing its location on the consolidated screes (© John Roberts (SNPA))

Figure 15. Survey of southern end of axe-working area PRN 67329, showing location of trench 31. This area is now allocated PRN 96144.



Plates 21 and 22. Volunteers digging in trench 31 on a misty day, showing the fairly steep slope of the ground

Plate 23. Trench 31 cleared of bracken and laid out showing the ground surface before excavation (layer 3101)

Plate 24. Trench 31 from the north-west showing the surface of layer 3102

Plate 25. Trench 31 from the south-east showing layer 3102 and showing the position of the trench just above the improved fields

Plate 26. Trench 31 from the north-west showing the second spit of layer 3102 (3102B)

Figure 16. Orthomosaic of the surface of layer 3102

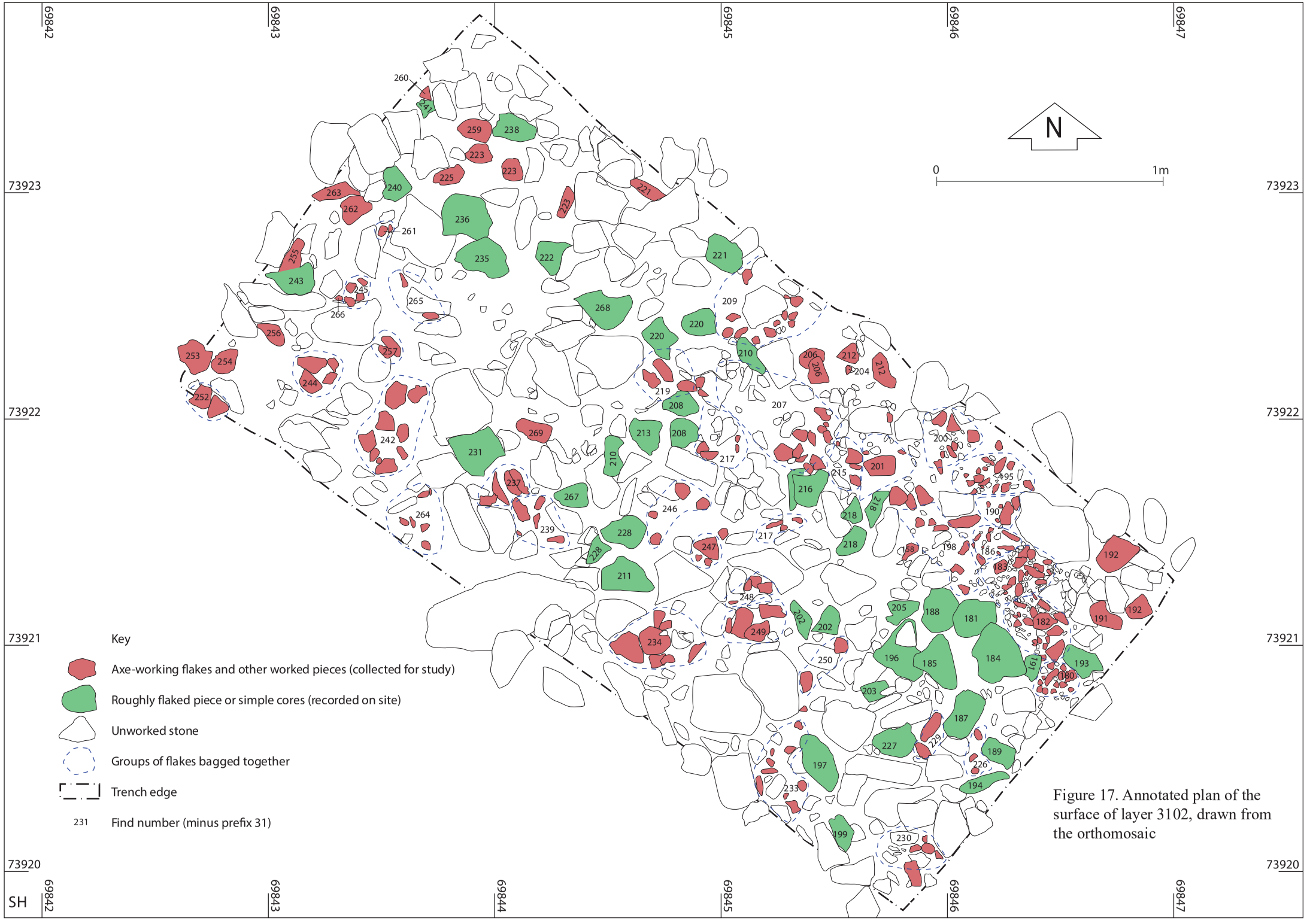


Figure 17. Annotated plan of the surface of layer 3102, drawn from the orthomosaic

Figure 18. Orthomosaic of the second spit in layer 3102 (3102B)

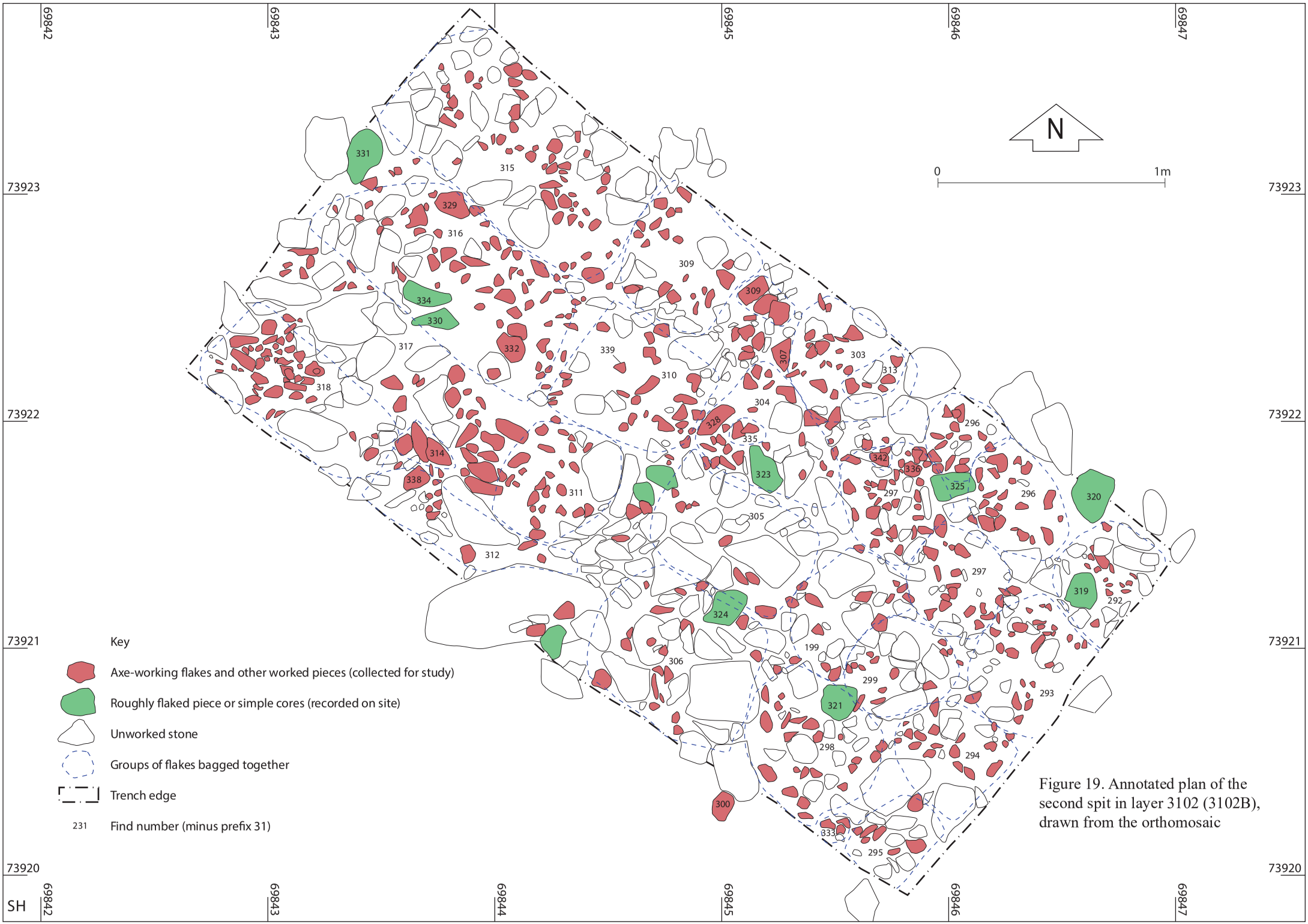


Figure 19. Annotated plan of the second spit in layer 3102 (3102B), drawn from the orthomosaic

Summary of finds

Pieces of white quartz were also collected and are included in the catalogue, but all appeared to be natural, unworked stone and these are not included below. Not all the potential axe debris has been checked in detail so final numbers and weights may be less than shown here when unworked items are discarded. The totals for trench 31 include large pieces recorded on site but not retained.

Test pit	Type of object	No of items	Total weight of items (g)
31	Axe debris	2160	228448.5
32	Axe debris	37	1217
33	Axe debris	203	727
34	Axe debris	32	170
	Burnt stone	7	693
35	Axe debris	41	559
36	Axe debris	200	14382
	Burnt stone	1	403
37	Axe debris	835	88760
	Hammerstones?	2	1332
38	Axe debris	30	1589
39	Axe debris	2253	76051
	Burnt stone	42	2685
	Pot sherds	3	28
40	Axe debris	58	1435
41	Axe debris	18	1340
42	Axe debris	985	17589
	Flint	1	1
43	Axe debris	62	1567
	Hammerstone?	1	795
44	Axe debris	1127	15184
	Burnt stone	5	527
45	Axe debris	1506	16764
	Flint	1	4
46	Axe debris	1055	12377
47	Axe debris	43	1672
48	Axe debris	40	675
49	Axe debris	24	2147
50	Axe debris	300	2429
51	Axe debris	15	263
52	Axe debris	18	321
53	Axe debris	48	246
54	Axe debris	26	214

Soil samples/charcoal

Test pit	Context	Material
37	3703	Charcoal fragments
37	3704	Small sample of soil containing charcoal
41	4102	Charcoal fragments
44	4404	Bag of soil containing charcoal
45	4503	Small sample of soil containing charcoal

4. LITHIC FINDS ASSESSMENT REPORT

By George Smith

4.1. Introduction

The project aims to investigate an area around the slopes of Dinas, Llanfairfechan, an outcrop of a fine augite granophyre where surface finds of Neolithic stone axe heads and part-finished axe heads (roughouts) show that such objects had been produced, forming an outlier to the well-known major Neolithic stone axe head production site of Graig Lwyd, 1.5km to the north-east. It aims to understand how extensive the working was, at what period or periods it took place, whether there was associated settlement and how the lithic working took place. In 2019 sixteen 1m square test pits were excavated in a field below the scree slopes of the hill of Dinas. These were widely scattered across the area to provide a sample of whatever activity might be present (figure 10). Surprisingly, every pit produced some evidence of stone working in the form of stone flakes, flake fragments and larger irregular primary pieces, as well as five axe-head rough-outs (Table 1). The latter occurred mainly lower down the hill, away from the scree slopes and not in association with particular concentrations of waste material, suggesting that the later stages of working took place separately from the primary stages. One rough-out, however, was associated with a greater concentration of waste material. This was from pit 15 behind a slight knoll on the hill slope, which may have provided a convenient natural working platform.

Table 1 Summary of lithic objects from the 2019 test pits, Ty'n y Llwyfan

Test pit no.	*Group VII stone axe rough out*	*Group VII stone primary frag*	*Group VII stone flake/ frag*	*Group VII stone angular frag*	*Chert/ Other: flake/ frag*	*Utilised pebble, hammer stone?*	*Split pebble frag*	*Other rock angular frag*
1			10	2		1	2	8
2			12	6	2			16
3		2	25					
4			7					
5		2	24		7			
6			46		11			
7			3					
8		4	147				3	
9			33		17		2	
10		1	12			1	1	
11	1	3	84			2		
12			3		1		1	
13	1	7	34					
14	1		4					
15	1	52	241	1	4	5	122	2
16	1	12	11	32				
Total	**5**	**83**	**694**	**41**	**42**	**8**	**131**	**26**

In 2021 a further series of trial pits were excavated across the whole area that had been examined in 2019, as well as one larger trench, trench 31, which provided a sample of the lower scree slopes themselves, where previous surface finds indicated that working had taken place. In addition, a further series of fourteen pits, Trenches 17 to 30, were excavated on an area, named Maes y Bryn, to the east of the hill of Dinas. That area had been ploughed some years ago, and surface collection from the exposed soil produced a number of finds showing evidence of stone axehead production (Davies 1961). This area, because of its level nature, had potential to have been the location for settlement associated with the axehead production.

4.2. Assessment design

The work in 2021 was more extensive and located some areas of intensive stone working which produced large quantities of lithic material, over 4000 objects. It was not possible to individually study this much material for the assessment, so a large sample was selected, including substantial samples from five of the seven trenches that produced significant amounts of stone-working material and study of all material from nine of the remaining seventeen test pits with lesser quantities of objects. The assessment evidence was recorded in an Access database and is shown in Appendix III. Otherwise, the material is summarised in Tables 2 and 3, below.

Assessment of the lithics from the 2019 work had looked at the material in the terms of the accepted metrical analysis of lithics normally used in the analysis of flint and chert. This did not seem to be useful where the parent material was sourced from quarrying or scree, where the objective was the production of a large bifacial object. All the material is weathered to some extent, much more so than would be the case with flint or chert. There is also a very high breakage rate of the smaller, thinner flakes, demonstrating the amount of trampling that must have taken place. That limits the opportunity for metrical analysis. This is also accompanied by trample damage to edges, which, along with weathering, makes it difficult to distinguish what is just damage from what is deliberate secondary retouch. The present assessment has, therefore, tried an alternative approach by putting the material into three size classes, which attempted to assess the stages of stone-working, from creation of primary blanks, to initial rough shaping, to fine shaping and thinning. The classes are based on maximum dimension, not standard flake length and are first up to 50mm, second 51mm to 100mm and third over 100mm.

4.3. Raw Material

The raw material appears to have all been derived from scree blocks rather than quarrying, although quarrying would have produced unweathered and better-quality stone. The worked waste pieces were also nearly all considerably weathered subsequent to their manufacture. The material itself also seems, from surface observation, to have varied considerably in texture, from finer to coarser, and that might have led to purposeful selection from the scree. This variation in the quality of the Group VII raw material is of interest and proper geological study of samples from material here at Dinas and comparison with material from at Garreg Fawr and Graig Lwyd would be useful.

4.4. Maes y Bryn

All but one of these pits produced some evidence of stone working debitage (Table 2).

Table 2 Maes y Bryn test pits lithic finds summary

Test Pit no.	*Group VII stone axe/ rough-out*	*Group VII stone flake/ frag*	*Group VII stone flake/frag size class*			*Flint retouched piece*	*Flint or Chert flake/ frag*	*Utilised? pebble*	*Vein quartz frag*
			0-50mm	*51-100mm*	*>100mm*				
17		40	31	9	-				11
18		43	25	8	-				26
19		18	16	2	-		1		31
20		7	7	7	-		1		
21		12	11	1	-		1		20
22	1 re-worked pol-ished axe frag	39	32	1	-				1
23		7	6	1	-				60
24		15	12	3	-				37
25		15	13	1	2		1		19
26		15	13	2	-		1	1	39

27		13	9	4	-	1	2		
28		0	-	-	-				16
29	1 rough-out	15	10	5	-				
30		50	41	9	-				33
Total	**2**	**291**				**1**	**7**	**1**	**293**

Although Maes y Bryn is some 300m from the nearest exposure of Group VII stone from the scree slopes of Dinas there is a significant quantity of stone debitage. It is notable that, although light, it is quite evenly spread with no evidence of localised, intensive stone working. Larger, primary material is almost absent as might be expected at a distance from the source, and such working as there was may have been limited to some final trimming or sharpening. Nine stone flake fragments were also collected from molehills in the area (figure 5), all small pieces. That is emphasised by the presence of one axe roughout from a pit (TP29) that has only a low number of waste flakes. The roughout, SF2902 (figure 7), is unusual, short and broad, possibly as a result of its 'tail' end breaking off. That might have led to its discard, but its edges are unusually sharp, and another possibility is that it was an artefact in its own right, such as a chopping tool, without further shaping.

The presence also here, of a few flint and chert pieces including one small 'thumbnail' scraper (SF2702, figure 7) also suggests some more settled activity, as well as a fragment of a broken polished axe (S2205, figure 7) from which a few small flakes had been struck. Such apparently non-utilitarian re-working of axes has elsewhere been interpreted as of symbolic activity. The axe or axe-fragment itself would have been imported to the site. The flint and chert is all produced from small pebble material, either from beaches or glacial gravels, likely to have been sourced at some distance from Maes y Bryn. The sole use of such small and difficult material and the lack of any finer imported material suggests a date in the earlier, rather than later Neolithic period for the activity here.

Although the amount of lithics is sparse, its spread is consistent and there is a slight concentration of stone debitage in pits 17, 18, 19, 22 and 30, in the south-east area of the pitting and that coincides with the presence of the flint scraper and the re-worked polished axe fragment. The depth of deposits here, varies from approximately 0.28m to 0.4m and, as shown by the surface finds, the recent ploughing must have at least disturbed any underlying ancient activity horizon. Nevertheless, the depth of deposit suggests that more must remain and especially any features below the depth of ploughing as shown by the distribution of the Group VII stone finds. Combining the three main horizons recorded, the uppermost produced 135 pieces, the middle 113 pieces and the lowermost 20 pieces. Notably only four pits produced more lithics from the middle layer than the top, pits 17, 18, 22 and 30, all again in the south-east corner of the area suggesting better preservation there.

4.5. Ty'n y Llwyfan

This field, close to the western edge of the scree slopes of the Dinas hill, had been investigated by several test pits in 2019 (Table 1, above). This identified a general spread of stone debitage associated with five stone axe roughouts. The amount of waste material was relatively slight and well-distributed except in the case of one trial pit, TP15, which produced a large number of waste pieces as well as one axe roughout. Interestingly, the other four of the axe roughouts came from pits with only small numbers of waste pieces, as well as being furthest from the scree slopes, where the raw material, presumably, was sourced. This immediately suggests that there could have been some separation of areas for initial creation of axe blanks and others where final finishing took place.

*Table 3 Ty'n y Llwyfan test pit lithic finds summary, detail only from pits studied, shown by *. Quantities from pits not studied are liable to be reduced by later discard*

Test pit no.	Area	Group VII stone axe roughout	Group VII stone flake/ frag total	Group VII stone flake/frag size class			Flint/ Chert flake/ frag	Utilised? pebble	Burnt stone frags, sandstone or dolerite
				0-50mm	51-100mm	>100mm			
Middle terrace									
32			35						
33			203						
34			32						
35			41						
38	*		13	8	3	2			
41			18						
47	*		30	23	6	1	1		10
48	*		38	33	5	-			
49	*		12	8	1	3			7
Upper terrace									
36		1	192						
37	*	3	305	237	52	16			
39	*	3	546	405	120	21	1	1	2
40			58						
42			984				1		
43			62						
44			1127						
45	*		446	383	63	-	2		
46	*		522	501	19	2	3		
50	*		283	279	4	-			
51	*		11	9	2	-			
52	*		13	12	1	-			
53	*		40	37	3	-			
54	*		19	17	2	-			
Lower scree slope									
31	*	4	839	606	192	35			
To-tal		11							

The pits excavated in 2021 were focussed on two areas of terrace, the middle and the upper terrace (Table 3). The test pits on the middle terrace had produced only small quantities of lithic waste in 2019, although one did produce an axe roughout. One pit on the upper terrace, TP15, had produced a concentration of lithic waste in 2019 as well as an axe roughout, and another, larger trench (TP39) was therefore excavated beside it in 2021 and another series of seven pits along the edge of this terrace just upslope from TP15. Another, larger trench, trench 31, was also excavated within the lower scree slope of the hill to the east where there were indications of a possible working platform.

Middle terrace: Pits 32, 33, 34, 35, 38, 41, 47, 48, 49

The test pits excavated in 2021 on this terrace produced only minor quantities of waste material and no roughouts so there was no indication of any focus of activity. However, two pits produced small quantities of burnt, fragmented

stone, usually associated with some cooking process, which might suggest that small scale domestic activity took place there.

Upper terrace: Pits 36, 37, 39, 40, 42, 43, 44, 45, 46, 50, 51, 52, 53, 54
Of the pits studied from this area, the greatest quantities were from pits 37 and 39. Only a sample was studied from each of these, 2 boxes out of 10 from pit 37 and 2 boxes out of 8 for pit 39. The final quantities from these pits will therefore be about 5 times that shown for pit 37 and four times that shown for pit 39. Pit 37 exposed a deep layer of lithic waste material, which by comparison with the depth of soil in adjacent pits appeared to show a mound of lithic material that had been incorporated in a later build-up of cultivation soil. Pit 39 was close to the 2019 pit 15, which had produced a considerable quantity of material. It produced more worked lithics as well as four axe roughouts showing that the area of stone-working identified in 2019 extended over a larger area.

Scree slope: Pit 31
This trench was a small area excavation of 4m x 2m. It showed that lithics had been worked on the scree slope itself. This produced 13 boxes of material, of which 5 boxes were studied. The final quantities will therefore be at least twice those shown in Table 3.

The final products: blanks and roughouts
The results from trench 31 showed that lithics had been worked directly on the parent material of the scree, and some larger blocks of stone were present that had been split in the initial process of reduction (not included in Table 3). However, the presence of quantities of flakes and of four axe roughouts showed that stone had been worked there to the final stages of roughout production. This is in contrast to the areas on the terraces where parent material must have been carried from the scree. The presence of only one larger block there (in TP37) shows that some primary working must have taken place on the scree slopes and then large fragments carried to the working area. There are certainly some large primary fragments in the terrace trenches, that is, with unworked scree cortex. It seems likely that 'blanks' were produced that had potential for working down to axe roughouts. These could, potentially, just be complete pieces of scree of the right size and shape but more likely were very large, thick flakes, of which the dorsal surface consisted of a previous flake facet or a thick flake of which the dorsal surface consisted of a ridge between two previous flake facets. The presence of occasional large, long blades shows there was some methodical approach to producing a roughout shape. Pit 37 produced some large angular pieces with a few facets from secondary flake removals. These pieces could have been 'blanks' as discussed above.

Of the eleven roughouts from the Ty'n y Llwyfan excavations, most were shapes suitable for creation of simple, elongated axe heads but two were for production of narrow, chisel type axe-heads, e.g. figure 12, SF37A81, which is thick with a pronounced triangular cross-section. Most were of asymmetric cross-section, with one flattish face and one steeper. This seems to have resulted from the use of blanks that were large thick flakes of which the dorsal surface retained a ridge from the previous block core preparation, easily seen in the case of figure 12, SF37A67. That ridge would then need thinning, with difficulty, as seen in the hinge fracture on SF31317. In the case of the unusual large ovate roughout SF31318, the asymmetric cross-section is very pronounced, producing a boat-shaped profile more suitable for production of an adze than axe.

Five of the roughouts were snapped across, most medially, e.g. figure 12, SF31317, SF31202 and SF37A67, while others snapped at angle like SF3611. The latter seems likely to have happened as an accident during manufacture, while the medial breaks could be deliberate, perhaps destruction of a failed product. Two had been abandoned after reaching a point where a complete piece could no longer be achieved, e.g. SF37A81, while SF3318 seems to just be an unfinished piece.

Ty'n y Llwyfan Discussion
The overall results show that lithic working was very widespread both around and on the scree slope of the hill. Every trench excavated in both 2019 and 2021 produced some lithic debitage and finds from a watching brief during pipeline trenching on an area further downslope showed that a light scatter of debitage extended even further (Dean and Cooke 2019). The result from the test pits showed clearly that there were areas of quite intensive and probably prolonged working, but that some working also took place more widely. This is not surprising for an activity that may have occurred spasmodically over a considerable period, but shows that the lithic working was not solely a specialised mass production process.

The provisional study of stone waste fragment sizes was aimed at trying to identify stages in the roughout production. First of all, broadly the results show the presence of some primary flakes in all areas, whereas it could

have been expected that the working on the scree would have included much higher numbers of large primary fragments. For this purpose, it is actually the proportions of fragments of different sizes that is relevant and proportions for the pits with substantial numbers of waste pieces is shown in Table 4.

Table 4 Waste pieces by size class shown as % proportions from selected pits

	Group VII stone flake/frag size class	0-50mm	51-100mm	>100mm
		%	%	%
Middle terrace	Combined pits	77	16	6
Upper terrace	Pit 37	78	17	5
	Pit 39	74	22	4
	Pit 45	86	14	-
	Pit 46	96	4	-
	Pit 50	99	1	-
Scree slope	Pit 31	72	23	4[1]

Table 4 shows that proportions of different flake/fragment sizes are fairly similar across all the areas studied with only a slightly greater proportion of small pieces beyond the scree slopes. The medium sized fragments are quite large flakes of varying shapes and the ones essentially from producing a basic roughout shape. The small fragments are those that derive specifically from actually shaping the roughout. These flakes are mainly thin and broad, with a concave ventral surface and often with an S-shaped twist.

4.6. Final assessment

Maes y Bryn: This location is valuable for the possibility of producing dated settlement activity associated with stone axe working at Dinas. The distribution of lithic material from the test pits identifies one area that could be targeted for further evaluation by geophysics and then by excavation.

Ty'n y Llwyfan: The area of pits 15 and 39 consisted of a slight platform upslope from what appears to be a small natural promontory, creating a natural topographic focal point and working platform. However, seven of the test pits, 37, 42, 44, 45, 46 and 50, along the edge of the nearby upper terrace also produced significant quantities of lithic material. The implication of this and the adjoining pits is that there is an extensive, well-preserved area of lithic working below the later soil accumulation. This area appears to be quite localised along the terrace as the nearby test pits, 51-54, just upslope produced markedly fewer lithic objects. The lithic assemblage from this area, produced from only small test pits, will run into some thousands of waste pieces (Table 3), showing how substantial was the amount of activity there. The depth of stratigraphy in pit 37 also provides the possibility of obtaining carbon dating samples from well-sealed contexts. This area could be chosen for larger scale excavation.

The lithic assemblages from pits 37 and 31 are those most likely to contain material from associated flaking episodes that can be compared to the abandoned or broken axe roughouts they contained. So, these have the greatest chance of understanding the lithic reduction process and deserve further study. However, the assemblages from all the pits needs processing to the same basic level that was carried out for the selection studied for the assessment.

As discussed above, the working of stone, together with the high breakage rate here does not make full metrical analysis worthwhile, apart from perhaps a trial sample, probably from TP37.

There are a few flakes that might have secondary working to produce smaller retouched tools, as was found on a few pieces from Graig Lwyd itself (Warren 1921). These need further study.

Although the assemblage contains a few cobbles that were identified as possible hammer stones, none so far have shown any evidence of impact, so how the stone was being worked is still uncertain. A similar situation had already been noted from earlier excavations at Graig Lwyd (Warren 1921; Williams and Davidson 1998), although apparently genuine hammer stones have been found at the Langdale stone axe quarrying and manufacturing site in Cumbria (Bradley and Suthren 1990). It is likely that soft hammers were used for final shaping of roughouts, but large hammerstones must have been needed for primary splitting of blocks and for removal of large primary

flake blanks.

5. POTTERY

Three sherds of pottery were recovered from test pit 39 (figure 14). One from context 3902 and two from context 3903.

SF3916 is a small body sherd with a red-orange exterior and a dark interior. The fabric is quite gritty with occasional larger grits in it. It is undecorated and unglazed but marks from wheel turning are visible on the inner face.

SF3931 is rim sherd with a grey fabric oxidised to red-orange on both the inner and outer faces. The fabric is quite fine and hard. The rim is flat topped and has a groove just below it. The exterior of the sherd has a dark grey-brown slip.

SF3932 is made of grey gritty fabric. It has a sharp curve, and one end is rounded as if it is part of a small conical object or perhaps a spout. There are two grooves on the exterior, one running close to the rounded end.

These pot sherds could be medieval in date but require inspection by a specialist to determine their origin and date.

Find No	Context	Weight (g)	Length (mm)	Breadth (mm)	Thickness (mm)	Description
3916	3902	10	37	36	7	Body sherd
3931	3903	15	48	32	8	Rim sherd
3932	3903	3	28	22	5	Spout?

6. DISCUSSION

6.1. Maes y Bryn

The test pitting at the Maes y Bryn site located axe debris in association with flints. Axe-working was clearly taking place on this site despite it being at least 330m from the source screes, but the flints, especially the thumbnail scraper indicate that other activities took place here as well. It is therefore highly possible that there was Neolithic settlement in this area, though that may have been a very temporary settlement.

The presence of a flake struck from a finished polished axe suggests that axes, when too old and broken to be useful for their original function, where either repurposed or deliberately broken down. The presence of similar flakes from polished axes found in pits at Parc Bryn Cegin, Llandygai were interpreted as possibly from the ritual destruction of polished axes (Williams, Kenney and Edmonds 2011). In one pit in particular there were many such flakes, and they had no traces of reuse. They were buried with a large piece of a Mortlake ware bowl (Kenney 2009, 33-35, 47-48). However, the polished axes found by Davies on the Maes y Bryn site appeared to have been reused rather than being in the process of being destroyed (Davies 1961). One had been resharpened by rough flaking and two others had been cut down to make smaller cutting tools. These axes were presumably made in the vicinity of the source rock then taken away for use and brought back towards the ends of their useful life. Bringing these axes back to where they were made does suggest a ritual function, though it may just have been considered appropriate to deposit some old axes when acquiring new ones. Possibly residents of the areas felt able to reuse deposited axes if it was expedient to do so.

Samuel Hazzledine Warren also found several of these old axes in his excavations at Graig Lwyd (Warren 1922), so it is likely that this was a phenomenon that applied to all the source areas. Only further work will reveal the significance of these old axes. It is possible that some were deliberately buried in pits, in which case the Maes y Bryn site, with its shallow deposits and lack of confusing scree might be the best place to find such a deposition.

The test pitting also showed that within the area of the relict field earlier archaeological deposits were unlikely to survive, though cut features might be possible. However, there is a possibility that south of the ploughed area there could be *in situ* Neolithic deposits.

The finds from molehills indicate that the find scatter extends beyond the area investigated in 2021 and it is possible that several foci of axe-working were present across the hillside. The work so far has been very successful in confirming the location of this site and investigating the environment in which it survives but much more work is necessary to find its extents. Searching for possible surviving features and deposits relating to a settlement is a high priority.

6.2. Ty'n y Llwyfan

All the test pits produced axe debris meaning that the limits of the working area have not yet been found. With the flakes found in the pipe trench lower down the hill this indicates that working extended over a very wide area. It can no longer be assumed that working just took place on or very close to the screes.

The test pits demonstrated that the terraces across the field were at least partially shaped by ploughing and can be described as lynchets. Ploughing had caused the soil to move downslope and build up at the edge of each terrace. This seems to have had an impact on the distribution of axe debris. Most of the flakes recovered came from ploughsoil and it is likely that they had moved some distance downslope. Material found lower in the test pits within the earlier ploughsoil may not have moved so far. There were several concentrations of axe debris found, but most could have been formed by soil movement. It was notable that there was a concentration of axe debris along the outer edge of the lynchet of the upper terrace, but the quantity of material seems to be too great to be due solely to soil movement. There must have been axe working deposits in the vicinity. In a similar position on the middle terrace much less material was found, suggesting there were fewer or small concentrations of working in this area.

The large concentration of material in TP15 and TP39 part way down the central scarp could also indicate that extensive working went on just near the top of the slope with material then moving downslope top collect on this slight shelf. The suggestion is therefore that axe making did take place on the top of the central scarp.

This is confirmed by the only undisturbed deposits found in the test pits. TP37 produced very valuable evidence of *in situ* axe debris that was too dense to be disturbed by ploughing. There seems to have been several episodes of axe-working represented amongst natural scree pieces. More work is needed to establish the full nature and extent of these undisturbed deposits. They are entirely invisible on the ground surface, and this demonstrates the value of test pitting to identify such deposits.

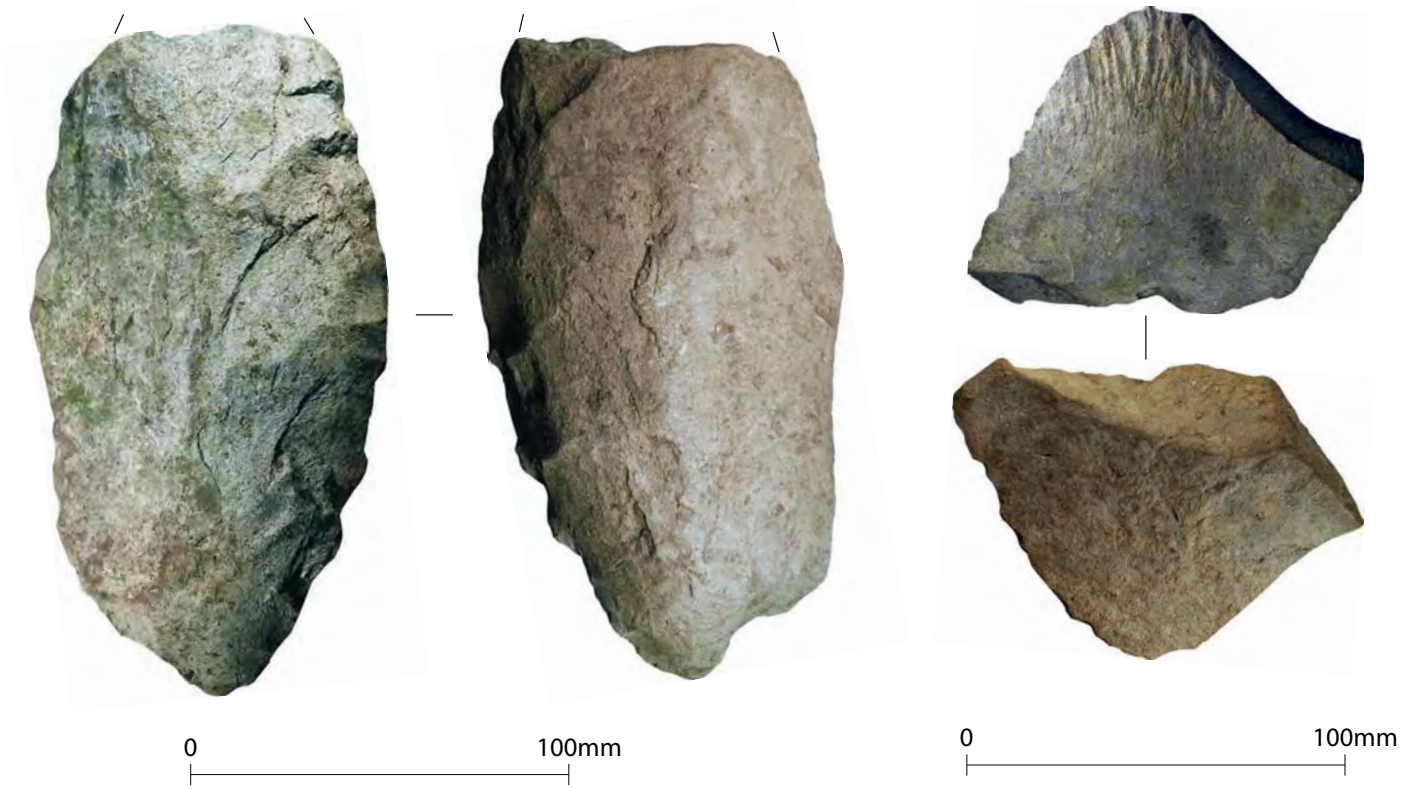


Plate 27. Axe roughout and flake found at Graig Lwyd, Penmaenmawr (PRN 91683)

7. NEW AXE ROUGHOUT FINDS

Some axe roughouts have been found and reported to the Portable Antiquities Scheme or the author in the last year or so. These are recorded on the Gwynedd Historic Environment Record (HER). In addition, a note is included here on work on the Ffridd Tan y Graig axe-working site at Llanfairfechan, which is to be reported on more fully in future.

Roughout and axe-working flake from Graig Lwyd Farm, Penmaenmawr (PRN 91683)
The roughout and flake were found at SH 71803 75805 in an area of erosion next to the path. The find location was next to a track running from Graig Lwyd Farm immediately west just south of the boundary to the improved field and at the base of the hillslope running down from Y Graig Lwyd. The finder described this track as the Prisoner of War Path, though Warren marks a track a little higher up the slope as the "German Prisoners Path" (Warren 1922, fig 1). Warren's site A, an axe-working floor, was next to the German Prisoners Path, but he marks flakes found all down this hillslope. The current find is useful as it confirms that axe-working debris extended right down this hill.

Both finds are of Group VII stone, as would be expected from this location.

Plate 27
Roughout
170mm by 93mm, 43mm maximum thickness. Weight 816g
The roughout has been shaped on both faces along one edge and round one end. On the other edge are a couple of hinge fractures next to the point at which the roughout has broken right, across towards one end. The fractures are probably the traces of the blow that accidentally broke the roughout. Much of the surface of the roughout is unworked and represents the natural surface of the piece of scree used to form it.

Flake
102mm by 76mm, 28mm maximum thickness. Weight 158g
This is a typical axe-working flake from early in the process of making a roughout. It has been struck to remove part of the natural surface of a piece of scree, which has a distinct ridge. There is a clear striking platform present on the flake and a well-formed bulb of percussion.

Bod Hyfryd Roughout PRN 91684
A small roughout found by John Good while digging his garden at Bod Hyfryd, Graiglwyd Road, Penmaenmawr. Find location SH 72093 75917.

The find is a small broken roughout on Graig Lwyd rock. The blade end is quite neatly shaped but there is a ridge on one side, and it appears that the roughout broke while the maker was trying to remove the ridge. The break is directly across the axe towards the butt end, causing the loss of all the butt end of the roughout (plate 28).
The roughout measures 110mm by 70mm and is up to 33mm thick. It weighs 321g.

Plate 28. Axe roughout found at Bod Hyfryd, Penmaenmawr (PRN 91684)

The find site is about 220m from the base of the hillslope down from Graig Lwyd. Hazzledine Warren recorded finds of axe-working flakes across this slope and most of the slope is probably natural scree used as a source of stone for making axes. The current find site is well beyond the limits of the scree and much more level ground. It is probable that material was brought here from the screes for working into axes and there may be a working site in the area.

Object inspected and photographed by Jane Kenney on 07/04/2019. John Good intends to donate it to Penmaenmawr Museum.

Plate 29. Roughout found on Garreg Fawr, Llanfairfechan (PRN 92341) (from PAS report, image by Sean Derby)

Axe roughout found on Garreg Fawr (PRN 92341)
Found on Garreg Fawr in an area of known axe-working at SH 6907 7360. Portable Antiquities Scheme Number: GAT-E810AC (The text below is from the PAS report by Sean Derby)

A complete Neolithic axehead roughout of Group VII type. The axe has been roughly shaped (plate 29).
The butt of the axe is relatively flat. From the butt, the sides gently convex before tapering to a rounded tip. One of the faces is significantly flatter than the other.

The axe was found in a known area of axe working activity where a number of other roughouts have been found. There is also a lot of knapping debitage which can be found scattered throughout the exposed scree in this area (GAT HER PRN 67328).

The stone source for this axe, as with many of the other finds within this area, was likely scree, rather than quarried stone. This particular find has been roughly worked before it was abandoned. Roughouts could be abandoned for a number of reasons, for example they may have broken or fractured while being worked. They may also have been discarded if it was not possible for uneven areas to be removed (Kenney 2017, 27).

Measurements: Length: 205mm, Width: 110mm (Widest) 34mm (Narrowest), Thickness: 56mm (Butt) 8mm (Tip), Weight (g): 1294

Work by David Thorpe at Ffridd Tan y Graig, Llanfairfechan (PRN 67330)

Inspired by the current work, David Thorpe investigated an area on Ffridd Tan y Graig, Llanfairfechan in the winter of 2021/2022. This is an extensive area of scree identified as an axe working area (PRN 67330). Mr Thorpe identified roughouts (plate 30) over a larger area than previously recorded, and it is probable that the working area spread much further west along the screes (figure 20). He also found many rounded stones; most are cobble sized (10-20 cm diameter) with a few small boulders. They are quite common and found extensively in screes across the area. He suggests that these are hammerstones. These stones were well known to David T Jones, who found this site. They could be found in the bedrock in the quarry, and he said that the quarrymen often threw them down over the cliffs. As they are from within the bedrock, they must have formed in the cooling magma and are essentially part of the diorite. Neither David Jones, nor Jane Kenney has seen any of these stones that they found convincing as hammerstones, but David Thorpe does describe some that he found as broken and with chipped surfaces.

Of considerable importance are flakes scars that David has identified on the crags above the screes at the western end of Penmaenmawr Mountain. This may indicate quarrying of the rock on the face of the crag for axe production as well as using the screes.

David Thorpe will be producing a full report on his work.

Roughout no.48. One of 2 good roughouts found by D. Thorpe, 10/02/2022

Roughout no. 63. Roughout found by Ian Thorpe weekend of 12/02/2022 (blade down, broken top)

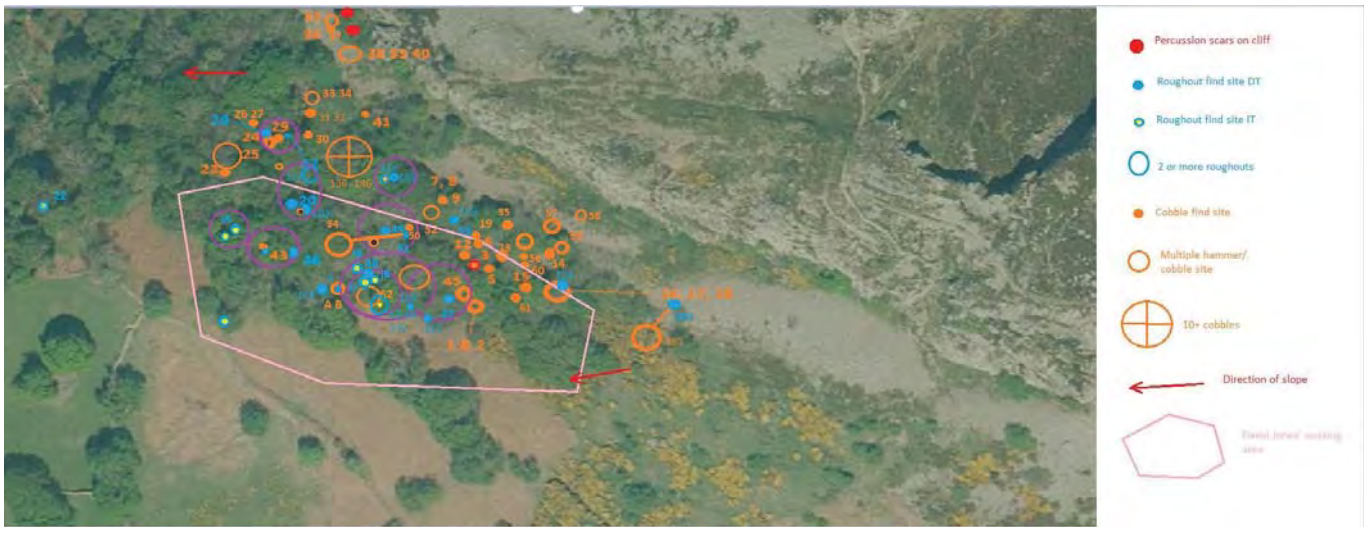


Figure 20. Plan of finds on Ffridd Tan y Graig produced by David Thorpe

8. FURTHER WORK

This season has been very successful but is very much just the start of the work. The Maes y Bryn site has been located, the presence of flint confirmed and even a piece of a flake from a polished axe has been found. It does seem very likely that this site was a settlement site. The test pits dug in 2021 provide a start in investigating this site. More work is necessary to determine the limits of the finds scatter and to identify if there are other concentrations of activity, perhaps where flakes were found in molehills. The possibility of the survival of *in situ* Neolithic deposits south of the relict fields needs investigating, as well as attempting to locate any dug features that could have survived under the ancient and modern ploughing.

The field at the foot of Dinas has now been fairly thoroughly investigated, but the limits of the axe-working have not yet been found. Test pitting in other fields around might help determine this limit. Working in the fields close to the edge of the river gorge may be informative.

Activity in the southern corner of the field near TP16, which produced a roughout and a layer of charcoal could not be investigated in 2021 and so this still needs to be considered. This discovery of undisturbed stone deposits in TP37 is of considerable importance. Axe debris was found throughout these deposits, and it is a priority to establish what this feature is. A long narrow trench across this area might reveal if this is a dumped cairn of material.

The evaluation trench (Tr31) still needs to be completed. This should be dug down to the top of undisturbed scree or to the natural subsoil to determine the depth of the axe debris. There is still the possibility that material that could be radiocarbon dated might be found in this trench.

In the wider landscape work on Garreg Fawr would appear to be a priority as there has been very little study of this hill for axe-working evidence. Close inspection of the screes and the crag face may reveal evidence without the need of digging. The possibility of finding other areas of activity around Waun Llanfair would also be worth investigating, though it is quite a challenging area for access with volunteers. Although much good work has been done on Graig Lwyd there is still more that could be done there, most particularly looking at the main cliff face there that was almost certainly quarried in the Neolithic and possibly excavating below this face.

Work to involve local people in this process of investigation will continue, as will disseminating the results in a variety of ways to make them widely accessible.

9. COPYRIGHT

The copyright of this report is held by Cadw and Gwynedd Archaeological Trust Ltd. The maps used in this report are reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Welsh Government. Licence Number: 100017916 (2022). Historic Mapping, reproduced here, is covered under Crown Copyright and Landmark Information Group. All rights reserved. Gwynedd Archaeological Trust Ltd., on behalf of Welsh Government 2022. SAM polygon data in this report is based on Cadw's Historic Assets Data (Crown Copyright-Cadw).

10. ACKNOWLEDGEMENTS

The project has been grant aided by Cadw and undertaken in partnership with the Carneddau Landscape Partnership. The project was led by Jane Kenney of GAT and John G Roberts (SNPA Archaeologist). Beca Roberts and Lowri Roberts helped develop the project, recruited volunteers, and advertised the work. Suryiah Evans and Nina Steele were also involved in developing the project. Dan Amor ran the school sessions with the assistance of Rhys Mwyn and John G Roberts. George Smith assessed the lithic finds.

Many thanks go to the volunteers who carried out the hard work. There were too many volunteers to name all individually, but special mention must be made of Jeff Marple for taking on one of the most challenging test pits and to George Smith, who worked on site as a volunteer and did some of the finds assessment on a voluntary basis. Special thanks also to the find washers Barbara Marshall, Louise Ingham, Judit Abou-Sambra and Martin Lewis. Carol Ryan Young, Neil McGuiness and Jane Kenney of GAT and John G Roberts (SNPA) supervised the work on site, and Carol supervised volunteers while finds washing, and Dan Amor helped to organise the finds washing volunteers. Special thanks to Gareth Wynn Jones for permission to work on his land and for help and support with the project.

David T Jones, on whose work this project is based, and who has given us expert advice in previous years sadly died in June 2021. He was in our thoughts through-out this year's project.

11. REFERENCES

Bradley, R. and Suthren, R. 1990. Petrographic analysis of hammerstones from the Neolithic quarries at Great Langdale, *Proceedings of the Prehistoric Society* 56, 117-22

Bevan, L. 2019. An assemblage of Group VII stone tools and flakes from DCWW Newry, Llanfairfechan. IN Dean and Cooke, 2019.

Caseldine, A. E. and Griffiths, C. J., 2014. *Land use and environmental history of Waun Llanfair, an upland landscape above Penmaenmawr, North Wales: The Palaeoenvironmental Evidence*, unpublished GAT report 1361

Caseldine, A., Roberts, J. G. and Smith, G., 2007. *Prehistoric Funerary and Ritual Monument Survey. Burial, Ceremony and Settlement Near the Graig Lwyd Stone Axe Factory, Palaeo-Environmental Study at Waun Llanfair*, unpublished GAT report no. 662

Claris, P. and Quartermaine, J., 1989. 'The Neolithic quarries and axe-factory sites of Great Langdale and Scafell Pike: a new field survey', *Proceedings of the Prehistoric Society* 55, 1-25

Clough, T. H. McK., 1988. 'Introduction to the regional reports: prehistoric stone implements from the British Isles', in Clough and Cummins (eds) 1988, 1-11

Clough, T. H. McK. and Cummins, W. A. (eds), 1988. *Stone Axe Studies Volume 2*, CBA Research Report No 67

Davidson, A. and Williams, J., Ll., 1998. *Survey and Excavation at the Graiglwyd*, unpublished GAT report no. 296

Davies, J., 1961. Stone axes from near Dinas, Llanfairfechan, *Transactions of the Caernarfonshire Historical Society*, Vol 22, 1-5

Davies, V. and Edmonds, M. (eds), 2011. *Stone Axe Studies III*, Oxbow Books, Oxford

Dean, J. and Cooke, R., 2019. *DCWW, Newry Llanfairfechan, Conwy, Water Main Renewal, watching brief*, unpublished Aeon Archaeology Report 0192

Deering, C. A. and Stoker, J. M., 2014. 'Let's Agree on the Casing of Lidar', LiDAR News Magazine, vol 5, no. 6 (https://lidarmag.com/wp-content/uploads/PDF/LiDARNewsMagazine_DeeringStoker-CasingOfLiDAR_Vol4No6.pdf)

Flook, R. M. and Williams, J., Ll., 1992. *Graiglwyd Archaeological Survey*, unpublished GAT report no. 50

Glen, T. A., 1935. 'Distribution of the Graig Lwyd Axe and its Associate Cultures', *Archaeologia Cambrensis* vol. XC, part 2, 189-218

Houlder, C. H., 1976. 'Stone axes and henge-monuments', In Boon, G. C. and Lewis, J. M. (eds), 1976, *Welsh Antiquity*, National Museum of Wales, Cardiff, 55-62

Houlder, C. H., 1988. 'The petrological identification of stone implements from Wales', in Clough and Cummins (eds) 1988, 133-136

Jones, D. and Williams, J. Ll., 2004. Garreg Fawr, Llanfairfechan, *Archaeology in Wales*, Vol. 44 p. 145-6

Kenney, J., 2009. 'Recent excavations at Parc Bryn Cegin, Llandygai, near Bangor, North Wales', *Archaeologia Cambrensis* 157 (2008), 9-142

Kenney, J., 2017. *Group VII Axe-working Sites and Stone Sources, Llanfairfechan, Conwy: report and gazetteer*, unpublished GAT report no. 1416

Kenney, J., 2019. Group VII Axe-working Sites: Management and Interpretation Plan with a survey of an example site, unpublished GAT report no. 1472

RCAHMW (Royal Commission on the Ancient and Historical Monuments of Wales) 1956. *An Inventory of the Ancient Monuments of Caernarvonshire, Volume I: East*, HMSO, London

Ryan Young, C., Smith, G. H., and Kenney, J., 2020. *Landscape of Neolithic Axes Project: Year 1 Test Pitting, Ty'n y Llwyfan, Llanfairfechan*, unpublished Gwynedd Archaeological Trust Report 1536

Warren, S. H., 1919. A Stone Axe-factory at Graiglwyd, Penmaenmawr, *Journal of the Royal Anthropological Institute of Great Britain and Ireland*, 49, 342-365

Warren, S.H. 1921. Excavations at the stone axe factory of Graig Lwyd, Penmaenmawr, Proc. Royal Anthropological Institute of Great Britain and Ireland, 51, 165-99

Warren, S. H., 1922. The Neolithic Stone Axes of Graig Lwyd, Penmaenmawr, *Archaeologia Cambrensis*, vol LXXVII, part 1, 1-32

Williams, J., Ll. and Davidson, A., 1998. 'Survey and Excavation at the Graiglwyd Neolithic Axe-factory, Penmaenmawr', *Archaeology in Wales,* vol. 38, 3-21

Williams, J., Ll. and Davidson, A., 2002. 'Field Survey at Graiglwyd, Penmaenmawr', *Archaeology in Wales,* vol. 42, 3-16

Williams, J. Ll. and Jones, D., 2003. 'Llanfairfechan, north-east of Dinas', *Archaeology in Wales*, Vol. 43, 96-7

Williams, J. Ll., Kenney, J. and Edmonds, M., 2011. 'Graig Lwyd (Group VII) assemblages from Parc Bryn Cegin, Llandygai, Gwynedd, Wales – analysis and interpretation', In Davies and Edmonds (eds) 2011, 261-278

Websites

Geology of Britain Viewer, British Geological Survey: http://mapapps.bgs.ac.uk/geologyofbritain/home.html (accessed 17/02/2022)

Welsh Tithe Maps, National Library of Wales https://places.library.wales/ (accessed 17/02/2022)

APPENDIX I: List of Sites

HER sites shown on figure 2. Sites later than the medieval period are not shown on this figure.

PRN	Site name	Period	Site type	NGR
248	Enclosed Hut Group, Carreg Fawr	Roman	Hut circle settlement	SH68527364
249	Enclosed Hut Group, Carreg Fawr	Roman	Hut circle settlement	SH68547311
250	Enclosure, Carreg Fawr	Roman	Hut circle settlement	SH68457335
251	Enclosure, Carreg Fawr	Roman	Hut circle	SH68717324
252	Hut Group and Field System, Pont y Teiryd	Prehistoric	Hut circle settlement	SH69527353
255	Hut Group, Gwern y Plas, Llanfair-fechan	Roman	Hut circle settlement	SH68657484
373	Long Huts, Remains of, Nant y Pandy	Early medieval	Long hut	SH68867405
374	Hut Platform, South of Camarnaint	Medieval	Long hut	SH69647308
377	Cairn, Carreg Fawr	Unknown	Clearance cairn	SH68657355
378	Cairn, Carreg Fawr	Bronze age	Cairn	SH68427364
379	Cairn, Carreg Fawr	Unknown	Cairn	SH68387361
386	Arrow Stone, South-West of Camar-naint	Prehistoric	Arrow sharpening stone	SH69567315
392	Dinas Camp Hillfort, Llanfairfechan	Roman	Hillfort	SH70027379
457	Platform House, S of Llanfairfechan	Medieval	House platform	SH70107391
458	Long Huts, Waun Llanfair	Unknown	Long hut	SH70797458
465	Waun Llanfair Barrow, Llanfair-fechan	Bronze age	Barrow	SH70527412
498	Hut Circle Settlement, Dinas Camp	Unknown	Hut circle settlement	SH70127394
553	Cairn, Clip yr Orsedd	Prehistoric	Cairn	SH70837483
554	Hut Circle, Clip yr Orsedd	Unknown	Hut circle	SH71037499
2491	Axe Heads, Findspot, Garreg Fawr	Prehistoric	Findspot	SH690735
4067	Field System, Carreg Fawr	Roman	Field system	SH685733
4075	Perforated Stone Axe Hammer, Findspot	Prehistoric	Findspot	SH699734
4078	Perforated Stone Axe Hammer, Findspot, Ty'n y Llwyfan	Prehistoric	Findspot	SH695741
4091	Stone Tool (Mace), Findspot, N of Dinas Fort	Prehistoric	Findspot	SH698743
4094	Graig Lwyd Roughout, Findspot, The Close, Llanfairfechan	Prehistoric	Findspot	SH68487482
4684	Hut Circle, Waun Llanfair	Roman	Hut circle	SH70917467
4685	Long Hut, Remains of, Waun Llan-fair	Medieval	Long hut	SH70727460
4720	Axe-working site, Maes y Bryn, near Dinas	Neolithic	Findspot	SH705738
5416	Enclosures, Garreg Fawr	Unknown	Enclosure	SH69407315
5417	Terraces, Garreg Fawr	Unknown	Terraced ground	SH69557330
5419	Long Hut, Garreg Fawr	Unknown; me-dieval	Settlement; long hut	SH69657334
5420	Cultivation Terraces, Garreg Fawr	Unknown; me-dieval	Terraced ground; cultivation terrace	SH69637345

PRN	Site name	Period	Site type	NGR
5473	Enclosed Hut Group, Ffridd Forfudd	Unknown	Hut circle settlement	SH70287329
7444	Enclosure, SE of Gwyllt Road	Unknown	Enclosure	SH68477341
7460	Possible Long Hut, Garreg Fawr	Medieval	Long hut	SH68437345
7461	Hut Circle, Possible, Near Garreg Fawr	Roman	Hut circle	SH68427336
7462	Enclosure, Near Gwyllt Cottages	Unknown	Enclosure	SH68347335
7463	Circular Enclosure or Hut, W of Garreg Fawr	Unknown	Circular enclosure; hut circle	SH68367317
7464	Hut Circle, Near Garreg Fawr	Roman	Hut circle	SH68407319
7466	Sub-Circular Enclosure, Near Garreg Fawr	Unknown	Enclosure	SH68547322
7467	Rectangular Enclosure, Near Garreg Fawr	Unknown	Enclosure	SH68467320
7468	Cairn, Possible, Near, Garreg Fawr	Unknown	Cairn	SH68437316
7469	Enclosures, Near Garreg Fawr	Unknown	Enclosure	SH68467316
7470	Enclosure, Near Garreg Fawr	Unknown	Enclosure	SH68507314
7472	Oval Enclosure, Near Garreg Fawr	Unknown	Enclosure	SH68777311
8007	Hut Circle, W of Clip yr Orsedd	Prehistoric	Hut circle	SH70537491
8008	Poss. Hut Circle, W of Clip Yr Orsedd	Prehistoric	Hut circle	SH70497493
8009	Enclosures, W of Clip yr Orsedd	Unknown	Enclosure	SH70787486
8010	Hafods, W of Clip yr Orsedd	Unknown; medieval	Structure; hafod	SH70927472
8012	Cultivation Ridges, SW of Clip yr Orsedd	Unknown	Ridge and furrow	SH70647469
8013	Possible Hut Circle, Waun Llanfair	Prehistoric	Hut circle	SH70807463
8015	Field Boundary, SE of Blaen Llwyn	Unknown	Field boundary	SH70377465
8016	Oval Enclosure, Blaen Llwyn	Unknown	Enclosure	SH70307467
8018	Former Field Boundary, Nr Waun Llanfair	Unknown	Field boundary	SH70547460
8020	Field Boundary, Near Waun Llanfair	Unknown	Field boundary	SH70267442
8022	Hut Circle and Enclosure, N of Waen	Prehistoric	Hut circle	SH70107438
8023	Sheep Shelter, Waun Llanfair	Prehistoric; post medieval	Hut circle; sheep shelter	SH70787434
8026	Field Boundaries, Llanfairfechan	Unknown	Field boundary	SH70397433
8027	Hut Circle, N of Dinas Hillfort	Unknown	Hut circle	SH70317426
8028	Circular Enclosure, N of Dinas Hillfort	Unknown	Enclosure	SH70317418
8029	Field Clearance Cairns, Possible, North-East of Dinas	Unknown	Clearance cairn	SH70257425
8030	Field Boundary/Holloway, NE of Dinas	Unknown	Earthwork	SH70187423
8031	Hut Circle and Enclosure, NE of Dinas	Prehistoric	Hut circle	SH70157403
8032	Hut Circle, NE of Dinas	Prehistoric	Hut circle	SH70137398
8033	Hut Circle, Near Dinas Hillfort	Prehistoric	Hut circle	SH70087394
8034	Area of Cultivation, E of Dinas Hillfort	Unknown	Cultivation ridge	SH70137388

PRN	Site name	Period	Site type	NGR
8035	Hut Circle, SE of Dinas Hillfort	Prehistoric	Hut circle	SH70147377
8036	Long Hut, Possible, SE of Dinas Hillfort	Unknown; medieval	Structure; long hut	SH70187381
8037	Hut Circle, Possible, East of Dinas Hillfort	Prehistoric	Hut circle	SH70217394
8038	Long Hut, E of Dinas Hillfort	Medieval	Long hut	SH70327390
8039	Area of Cultivation, E of Dinas Hillfort	Medieval	Field system	SH70457386
8040	Long Hut/Platform House, E of Dinas Hillfort	Medieval	Long hut	SH70477380
8041	Circular Enclosure, E of Dinas Hillfort	Unknown	Enclosure	SH70427376
8046	Possible Hut Group, W of Fridd Forfudd	Prehistoric	Hut circle settlement	SH70087342
8047	Field System, W of Fridd Forfudd	Unknown	Field system	SH70257354
8048	Platform, W of Fridd Forfudd	Bronze age; unknown	Burnt mound; platform	SH70217348
8049	Circular Enclosure, W of Fridd Forfudd	Unknown	Enclosure	SH70247339
8054	Possible Hut Group, N of Fridd Fadog	Prehistoric	Hut circle settlement	SH70027325
8055	Cultivation Terraces, Ffridd Fadog	Unknown	Cultivation terrace	SH70087318
8066	Burnt Mound, Ffridd Forfudd	Bronze age; unknown	Burnt mound; natural feature	SH70677316
8070	Possible Burnt Mound, E of Maes y Bryn	Bronze age; unknown	Burnt mound; natural feature	SH71167369
8092	Enclosure, S of Clip yr Orsedd	Unknown; medieval	Feature; enclosure	SH71037447
8102	Burnt Mounds, Possible, Near Waun Llanfair	Bronze age	Burnt mound	SH70657451
8103	Burnt Mound, Near Waun Llanfair	Bronze age	Burnt mound	SH70677446
19156	Stone Axe Fragment, Findspot, Llanfairfechan	Neolithic	Findspot	SH70027440
24139	Graig Lwyd Roughouts, Findspot, Blaenau	Neolithic	Findspot	SH702742
24725	Graig Lwyd Axe, Findspot, Llanfairfechan	Neolithic	Findspot	SH7037774076
24735	Stone Axes, Findspot, Garreg Fawr	Neolithic	Findspot	SH6905073578
27502	Cup Marked Stone, Camarnaint	Prehistoric	Cup marked stone	SH69397308
31690	Hut Circle, Possible, Tyddyn Drain	Roman	Hut circle	SH68907483
59873	Field system, Garreg Fawr	Prehistoric; medieval	Field system	SH685734
67328	Stone Axe Working Area, Garreg Fawr, Llanfairfechan	Neolithic	Stone axe factory	SH69067359
67329	Stone Axe Working Area, Ty'n y Llwyfan, Llanfairfechan	Neolithic	Stone axe factory	SH6984573975
67331	Stone axe found at foot of Dinas, Llanfairfechan	Neolithic	Findspot	SH6984973978
67334	Barrow, Ty'n-Y-Llwyfan	Bronze age	Barrow	SH69667401

PRN	Site name	Period	Site type	NGR
67406	Axe-working flakes, Pen Cefn	Neolithic	Findspot	SH7092474352
67409	Axe working site, Waun Llanfair	Neolithic	Stone axe factory	SH708742
67414	Stone axe findspot, Llanfairfechan	Neolithic	Findspot	SH6855474268
67640	Stone axe roughout, Ty'n y Llwyfan	Neolithic	Findspot	SH69787387
67641	Stone axe roughout, Tyddyn Drain	Neolithic	Findspot	SH68877478
67778	Stone axe roughout, Dinas	Neolithic	Findspot	SH7074
67779	Stone axe roughout, Llanfairfechan	Neolithic	Findspot	SH684747
67782	Stone axe-hammer, Park Nant, Llanfairfechan	Bronze age	Findspot	SH6874074277
74826	Stone Axe Roughout, Findspot, Dinas	Neolithic	Findspot	SH6978073858
77204	Ditch, Llanfairfechan	Early medieval	Ditch	SH6967673953
77205	Ditch, Llanfairfechan	Roman	Ditch	SH6967873958
77206	Pit, Llanfairfechan	Roman	Pit	SH6968273964
77207	Gully, Llanfairfechan	Roman	Ditch	SH6968473965
77208	Pit, Llanfairfechan	Roman	Pit	SH6968573966
81634	Stone Axe Working Area, Ty'n y Llwyfan Farm	Neolithic	Findspot	SH697739
92341	Axe Roughout, Findspot, Garreg Fawr	Neolithic	Findspot	SH69077360
93577	Worked Stone Assemblage, Findspot, Llanfairfechan	Prehistoric	Findspot	SH6966673944
96143	Axe-working flakes, Ty'n y Llwyfan Farm	Neolithic	Findspot	SH7674873826

APPENDIX II: Test Pits

Grid references for test pits rounded to the nearest metre. All test pits measured 1m by 1m, with the exception of TP 39 and trench 31.

Maes y Bryn

TP17
Location: SH 70501 73801
Height OD: 296m
Maximum depth of test pit: 0.39m

Context No.	Depth (m)	Description	Colour & Composition
1701	0.21	Turf and topsoil	Pale Grey/brown mid greyish brown sandy silt
1702	0.11	Ploughsoil	Darker brown clayey silt, some stone
1703	0.12	Relict soil	Yellow/brown silty clay, stony
1704		Natural subsoil	Pale yellow sandy silt, stony

TP18
Location: SH 70513 73799
Height OD: 296m
Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
1801	0.24	Turf and topsoil	Mid brown sandy silt
1802	0.07	Ploughsoil	Dark brown sandy silt, some stone
1803	0.06	Relict soil	Yellower paler brown clay silt, stony
1804		Natural subsoil	Yellowish silty clay, stony

TP19
Location: SH 70500 73811
Height OD: 296.5m
Maximum depth of test pit: 0.28m

Context No.	Depth (m)	Description	Colour & Composition
1901	0.17	Turf and topsoil	Mid brown sandy silt, some stone
1902	0.11	Ploughsoil	Mid brown silty clay, stony
1903		Natural subsoil	Brownish yellow silty clay, stony

TP20
Location: SH 70491 73801
Height OD: 295.5m
Maximum depth of test pit: 0.28m

Context No.	Depth (m)	Description	Colour & Composition
2001	0.20	Turf and topsoil	Mid brownish grey sandy silt
2002	0.09	Ploughsoil	Mid brownish brown sandy silt, occasional stones
2003		Natural subsoil	Mid brownish orange clayey silt, with large stone embedded

TP21
Location: SH 70488 73811
Height OD: 296m
Maximum depth of test pit: 0.27m

Context No.	Depth (m)	Description	Colour & Composition
2101	0.15	Turf and topsoil	Light brown grey sandy silt
2102	0.09	Ploughsoil	Darker brown clayey silt, very stony
2103		Natural subsoil	Pale brown-yellow orange silty clay, stony

TP22
Location: SH 70511 73811
Height OD: 297m
Maximum depth of test pit: 0.40m

Context No.	Depth (m)	Description	Colour & Composition
2201	0.22	Turf and topsoil	Light grey brown silty sand, some stone
2202	0.10	Ploughsoil	Mid brown silty clay, very stony
2203	0.12	Relict soil	Light yellow brown sandy clay, some stone
2204		Natural subsoil	Light yellow sandy clay, some stone

TP23
Location: SH 70511 73823
Height OD: 298m
Maximum depth of test pit: 0.29m

Context No.	Depth (m)	Description	Colour & Composition
2301	0.20	Turf and topsoil	Mid brown silty sand, some stone
2302	0.09	Ploughsoil	Darker brown sandy silt, stony
2303		Natural subsoil	Yellow/brown sandy clay, very stony

TP24
Location: SH 70501 73822
Height OD: 298m
Maximum depth of test pit: 0.31m

Context No.	Depth (m)	Description	Colour & Composition
2401	0.16	Turf and topsoil	Light/mid greyish brown sandy silt, some stone
2402	0.09	Ploughsoil	Mid/dark brown slightly clayey silt, stony
2403		Natural subsoil	Brownish yellow sandy clay, stony

TP25
Location: SH 70491 73822
Height OD: 297.5m
Maximum depth of test pit: 0.36m

Context No.	Depth (m)	Description	Colour & Composition
2501	0.20	Topsoil	Grey brown friable silt
2502	0.14	Ploughsoil	Dark brown slightly clayey silt, some stone
2503		Natural subsoil	Yellow brown gritty clay, stony

TP26
Location: SH 70490 73832
Height OD: 299m
Maximum depth of test pit: 0.35m

Context No.	Depth (m)	Description	Colour & Composition
2601	0.20	Turf and topsoil	Light brown silt
2602	0.12	Ploughsoil	Dark brown clayey silt, some stone
2603	0.07	Relict soil	Yellow brown clayey/gritty silt, some stone
2604		Natural subsoil	Orangey yellow clayey silt, some stone

TP27
Location: SH 70514 73811
Height OD: 297m
Maximum depth of test pit: 0.40m

Context No.	Depth (m)	Description	Colour & Composition
2701	0.22	Topsoil	Grey brown sandy silt

Context No.	Depth (m)	Description	Colour & Composition
2702	0.07	Ploughsoil	Mid brown silty sand, some stone
2703	0.10	Relict soil	Mid brownish yellow sandy clay, some stone
2704		Natural subsoil	Pale yellow silty clay

TP28
Location: SH 70501 73787
Height OD: 294m
Maximum depth of test pit: 0.34m

Context No.	Depth (m)	Description	Colour & Composition
2801	0.20	Topsoil	Dark grey friable silt, rather organic, some stone
2802	0.18	Relict soil	Dark grey gritty silt, numerous stones
2803		Natural subsoil	Pale yellow brown gritty sandy clay, stony

TP29
Location: SH 70512 73787
Height OD: 295m
Maximum depth of test pit: 0.35m

Context No.	Depth (m)	Description	Colour & Composition
2901	0.20	Topsoil	Mid brown silty sand, stony
2902	0.06	Relict soil	Greyish brown silty sand, some stone
2903	0.06	Interface	Yellowish brown clayey silt, some stone
2904		Natural subsoil	Yellow silty clay

TP30
Location: SH 70512 73807
Height OD: 297m
Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
3001	0.11	Topsoil	Brown sandy silt
3002	0.09	Ploughsoil	Mid brown sandy clay, some stone
3003	0.08	Relict soil	Dark brown silty clay, stony
3004		Natural subsoil	Yellow brown sandy clay, very stony

Ty'n y Llwyfan

Trench 31
Location: SH 69845 73922
Height OD: 233.5m to 232m
Size: 4m by 2m
Maximum depth of trench: 0.20m (not fully excavated)

Context No.	Depth (m)	Description	Colour & Composition
3101	0.1	Topsoil	Very dark brown organic silt, stony
3102	0.2	Consolidated scree with axe debris	Mostly stone with mid brown sandy silt matrix

TP32
Location: SH 69744 73945
Height OD: 203m
Maximum depth of test pit: 0.36m

Context No.	Depth (m)	Description	Colour & Composition
3201	0.14	Topsoil	Dark brown silt, some stone
3202	0.16	Ploughsoil	Mid brown sandy silt, frequent stones

Context No.	Depth (m)	Description	Colour & Composition
3203		Natural subsoil	Orangey brown silty clay
3204		Stones in natural subsoil	Large and medium stones in orange sandy clay

TP33
Location: SH 69742 73940
Height OD: 203m
Maximum depth of test pit: 0.52m

Context No.	Depth (m)	Description	Colour & Composition
3301	0.22	Topsoil	Mid grey-brown clayey silt
3302	0.18	Ploughsoil	Mid grey-brown clayey silt, some stones
3303	0.13	Relict soil	Mid orangey brown clayey silt, occasional stones
3304		Natural subsoil	Brownish orange gravelly sandy silt, one large and some medium stones

TP34
Location: SH 69749 73939
Height OD: 204m
Maximum depth of test pit: 0.31m

Context No.	Depth (m)	Description	Colour & Composition
3401	0.13	Topsoil	Dark brown silty sand, occasional stones
3402	0.11	Ploughsoil	Lighter brown clayey silt, stony
3403	0.06	Relict soil	Yellowish brown clayey silt, stony
3404		Natural subsoil	Yellow sandy clay, stony

TP35
Location: SH 69745 73936
Height OD: 203m
Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
3501	0.14	Topsoil	Mid brown sandy silt, occasional stones
3502	0.09	Ploughsoil	Mid/dark brown sandy silt, stony
3503	0.08	Relict soil	Orange-brown clayey silt, stony
3504		Natural subsoil	Yellow/orange sandy clay, stony

TP36
Location: SH 69776 73984
Height OD: 211m
Maximum depth of test pit: 0.70m

Context No.	Depth (m)	Description	Colour & Composition
3601	0.20	Topsoil	Very Dark brown humic silt
3602	0.12	Ploughsoil	Dark grey - brown humic silt, very stony
3603	0.27	Relict soil	Yellow brown silty loam, stony
3604	0.32	Relict soil	Brownish-yellow clayey silt, very stony
3605		Natural subsoil	Yellow clayey silt, mostly stone

TP37
Location: SH 69779 73951
Height OD: 215m
Maximum depth of test pit: 0.95m (not bottomed)

Context No.	Depth (m)	Description	Colour & Composition
3701	0.10	Topsoil	Mid brownish brown silty sand, stony

Context No.	Depth (m)	Description	Colour & Composition
3702	0.10	Ploughsoil	Mid brownish brown silty sand, stony
3703	0.17	Scree and axe debris	Mid brown sandy silt, very stony
3704	>0.60	Scree and axe debris	Yellowish brown sandy silt, very stony, occasional charcoal

TP38
Location: SH 69746 73954
Height OD: 204m
Maximum depth of test pit: 0.33m

Context No.	Depth (m)	Description	Colour & Composition
3801	0.14	Topsoil	Grey/brown sandy silt
3802	0.33	Ploughsoil	Dark brown sandy silt, some stone
3803		Natural subsoil	Orange sandy silt, very little stone

TP39
Location: SH 69763 73968
Height OD: 209m
Size: 2m by 2m
Maximum depth of test pit: 0.58m

Context No.	Depth (m)	Description	Colour & Composition
3901	0.10	Topsoil	Dark grey/brown silty clay, some stone
3902	0.20	Ploughsoil	Lighter grey/brown clayey silt, stony
3903	0.25	Relict soil	Mid grey orangey brown clayey silt, stony
3904	0.10	Relict soil	Yellow with orange patches clayey silt, stony
3905		Natural subsoil	Very pale whiteish yellow sandy clay, concreted and very hard

TP40
Location: SH 69763 73957
Height OD: 209m
Maximum depth of test pit: 0.42m

Context No.	Depth (m)	Description	Colour & Composition
4001	0.12	Topsoil	Mid brown sandy silt
4002	0.13	Ploughsoil	Mid brown silty clay, stony
4003	0.10	Relict soil	Yellow/brown sandy clay, stony
4004		Natural subsoil	Yellow sandy clay, stony

TP41
Location: SH 69744 73928
Height OD: 203m
Maximum depth of test pit: 0.41m

Context No.	Depth (m)	Description	Colour & Composition
4101	0.15	Topsoil	Mid brown sandy silt, some stone
4102	0.09	Ploughsoil	Mid brown sandy silt, some stone
4103	0.08	Relict soil	Mid orangish brown sandy silt, stony
4104		Natural subsoil	Orange sandy clay, some stone

TP42
Location: SH 69771 73969
Height OD: 212m
Maximum depth of test pit: 0.72m

Context No.	Depth (m)	Description	Colour & Composition
4201	0.20	Topsoil	Dark grey brown silty loam, some stone

Context No.	Depth (m)	Description	Colour & Composition
4202	0.20	Ploughsoil	Mid brown gritty silty loam, stony
4203	0.25	Relict soil	Yellowish brown clayey silt, stony
4204		Natural subsoil	Yellow brown silty clay, occasional stones

TP43
Location: SH 69785 73985
Height OD: 212.5m
Maximum depth of test pit: 0.40m

Context No.	Depth (m)	Description	Colour & Composition
4301	0.16	Topsoil	Grey/brown silty clay
4302	0.15	Ploughsoil	Mid brown clay silt, some stone
4303	0.16	Relict soil	Yellow/brown sandy clay, some larger stones
4304		Natural subsoil	Yellow brown silty clay, some stones

TP44
Location: SH 69782 73940
Height OD: 216m
Maximum depth of test pit: 1.05m

Context No.	Depth (m)	Description	Colour & Composition
4401	0.15	Topsoil	Dark grey brown silty loam
4402	0.21	Ploughsoil	Mid grey brown stony silty loam, stony
4404	0.29	Relict soil	Yellow-brown stony silt, stony
4405	0.28	Relict soil	Yellow-brown clayey silt, some stone. Scatter of charcoal within the top of the deposit.
4406	Layer	Natural subsoil	Yellow clayey silt (sondage)

TP45
Location: SH 69775 73961
Height OD: 216m
Maximum depth of test pit: 0.75m

Context No.	Depth (m)	Description	Colour & Composition
4501	0.18	Topsoil	Dark grey brown silty loam, occasional stones
4502	0.20	Ploughsoil	Mid brown gritty silt, some stone
4503	0.30	Relict soil	Yellowish mid brown gritty clayey silt, some stone
4504		Natural subsoil	Strong yellow brown gritty silty clay, some stone

TP46
Location: SH 69775 73964
Height OD: 213m
Maximum depth of test pit: 0.94m

Context No.	Depth (m)	Description	Colour & Composition
4601	0.16	Topsoil	Dark grey brown silty loam
4602	0.27	Ploughsoil	Mid brown gritty silt, some stone
4603	0.48	Relict soil	Yellowish Mid brown slightly clayey gritty silt, some stone
4604		Natural subsoil	Yellow brown gritty silty clay, stony

TP47
Location: SH 69744 73966
Height OD: 204.5m
Maximum depth of test pit: 0.71m

Context No.	Depth (m)	Description	Colour & Composition
4701	0.19	Topsoil	Mid/light brown sandy silt, some stone
4702	0.12	Ploughsoil	Mid/dark brown sandy silt, some stone
4703	0.42	Relict soil	Orangey brown clayey silt, some stone
4704		Natural subsoil	Orangey brown silty clay, some stone

TP48
Location: SH 69740 73948
Height OD: 203m
Maximum depth of test pit: 0.78m

Context No.	Depth (m)	Description	Colour & Composition
4801	0.19	Topsoil	Mid brown sandy silt, some stone
4802	0.13	Ploughsoil	Mid/dark brown sandy silt, some stone
4803	0.42	Relict soil	Orangey brown clayey silt, some stone
4804		Natural subsoil	Brownish orange gravelly sandy silt, some stone

TP49
Location: SH 69738 73931
Height OD: 202m
Maximum depth of test pit: 0.86m

Context No.	Depth (m)	Description	Colour & Composition
4901	0.25	Topsoil	Mid brownish silt, some stone
4902	0.28	Ploughsoil	Mid orange-brown silt, some stone
4903	>0.33	Relict soil. Base of layer not reached	Mid orange-brown clayey silt, some stone

TP50
Location: SH 69784 73949
Height OD: 216m
Maximum depth of test pit: 0.59m

Context No.	Depth (m)	Description	Colour & Composition
5001	0.26	Topsoil	Mid brown sandy silt
5002	0.18	Ploughsoil	Mid brown gritty silt, some stone
5003	0.17	Relict soil	Yellow/brown gritty sandy silt, some stone
5004		Natural subsoil	Brownish yellow gritty clay

TP51
Location: SH 69794 73942
Height OD: 218m
Maximum depth of test pit: 0.31m

Context No.	Depth (m)	Description	Colour & Composition
5101	0.11	Topsoil	Dark grey brown silty loam
5102	0.15	Ploughsoil	Dark grey brown compact silty loam
5103		Natural subsoil	Yellow buff very compact clayey silt, some stone

TP52
Location: SH 69786 73973
Height OD: 214m
Maximum depth of test pit: 0.38m (dug into the natural in parts)

Context No.	Depth (m)	Description	Colour & Composition
5201	0.17	Topsoil	Dark brown silty loam
5202	0.13	Ploughsoil	Reddish brown silty clay, some stone
5203		Natural subsoil	Pale yellowish grey sandy clay, stony

TP53
Location: SH 69787 73969
Height OD: 214.5m
Maximum depth of test pit: 0.31m

Context No.	Depth (m)	Description	Colour & Composition
5301	0.12	Topsoil	Light/Mid brown sandy silt
5302	0.17	Ploughsoil	Mid brown sandy silt, some stone
5303		Natural subsoil	Orangey yellow sandy clay, concreted

TP54
Location: SH 69787 73966
Height OD: 215m
Maximum depth of test pit: 0.34m

Context No.	Depth (m)	Description	Colour & Composition
5401	0.10	Topsoil	Mid brown sandy loam
5402	0.20	Ploughsoil	Mid/dark-brown sandy loam, some stone
5403		Natural subsoil	Light brown/orange sandy clay, some stone

APPENDIX III: Lithic Assessment Catalogue

Key to abbreviations

Material

c black chert
cig coarse igneous
fe iron
bgl Graig Lwyd
mix mixed rock types
nig non-igneous
sst sandstone
tuff tuff?
unc unclassified
vq vein quartz

Object class

angf angular frag
anv anvil/working slab
axr axe roughout
bs burnt stone
charc charcoal
cr core reject
f/ff struck flake/frag
hst? Possible hammerstone
pf struck primary frag
rp retouched piece
sl slag
sp split pebble
up ?pecked/utilised pebble

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
1	100	104	?hst	gl	1				?pecked
1	100	104	sp	gl	1				chip removed
1	100	104	sp	gl	1				chip removed
1	101	101	f/ff	gl	1				
1	101	101	angf	gl	2				small angular frags. Non-conchoidal
1	102	103	nat	?	0				saved for ref
1	102	102	f/ff	gl	9				
1	102	102	angf	mix	8				small angular frags. Non-conchoidal
2	201	201	f/ff?	bc	2				
2	201	201	f/ff	gl	2				
2	202	202	angf	bc?	11				
2	202	202	f/ff	gl	5				
2	202	202	angf	gl?	6				
2	203	203	f/ff	gl	5				
2	203	203	angf	bc?	5				
3	300	303	f/ff	gl	3				
3	301	301	f/ff	gl	5				
3	302	302	pf	gl	2				primary frags
3	302	302	f/ff	gl	17				
4	401	401	f/ff	gl	7				
5	500	503	f/ff	gl	1				
5	500	504	nat		0				unmodified cobbles, discarded

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
5	501	501	f/ff	bc	2				
5	501	501	f/ff	gl	14				
5	502	502	pf	gl	2				
5	502	502	f/ff	gl	9				
5	502	502	if	bc?	5				
6	602	601	f/ff	gl	4				
6	602	601	f/ff	gl	30				
6	602	601	f/ff	bc?	11				
6	602	601	f/ff	gl	12				
7	701	701	f/ff	gl	3				
8	802	801	sp	vq	2				indicates human action
8	802	801	sp	unc	1				indicates human action
8	802	801	pf	gl	4				
8	802	801	f/ff	gl	66				
8	802	801	f/ff	gl	80				a few with possible retouch
8	802	801	f/ff	gl	1				has possible bituminous adhesions. Possible dating
9	901	901	f/ff	gl	7				
9	902	902	f/ff	gl	19				
9	903	904	sp	sst	1				labelled find 903
9	903	904	sp	cig	1				labelled find 903
9	903	903	f/ff	gl	7				
9	903	903	if	bc?	17				
10	1002	1001	up?	unc	1				
10	1002	1001	sp	gl	1				
10	1002	1002	pf	gl	1				
10	1002	1002	f/ff	gl	12				
11	1102	1106	nat		0				natural hole, 1 discarded
11	1102	1102	if	gl	48				
11	1102	1102	f/ff	gl	5				
11	1102	1102	pf	gl	2				
11	1102	1101	axr	gl	1				
11	1102	1102	if	gl	19				
11	1102	1102	f/ff	gl	3				
11	1102	1103	nat		0				3 discarded
11	1102	1103	up?	cig	1				?pecked
11	1102	1103	cr?	bc	1				
11	1103	1104	pf	gl	1				
11	1103	1104	if	gl	9				

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
11	1103	1105	up?	cig	1				
12	1202	1201	f/ff	gl	1				
12	1202	1201	if	bc	1				
12	1203	1202	if	gl	1				
12	1203	1202	sp	cig	1				
12	1203	1202	f/ff	gl	1				
13	1302	1303	f/ff	gl	11				
13	1302	1302	nat	gl/cig	2				2 prob nat kept for ref
13	1302	1303	pf	gl	2				
13	1302	1304	pf	gl	5				
13	1302	1304	f/ff	gl	23				
13	1302	1301	axrf?	gl	1				
14	1402	1401	f/ff	gl	4				
14	1402	1401	axr	gl	1				
15	1501	1502	rp?	gl	2				
15	1501	1502	f/ff	gl	50				
15	1502	1503	pf	gl	6				
15	1502	1503	f/ff	gl	40				
15	1502	1503	f/ff	gl	18				
15	1502	1503	sp	cig	2				
15	1502	1503	pf	gl	6				
15	1502	1503	up?	cig	2				cobbles with poss pecking
15	1502	1503	sp	vq	5				small angular frags. Deliberately broken
15	1502	1503	if	bc?	2				
15	1502	1503	up?	sst	2				
15	1502	1503	pf	gl	1				
15	1502	1503	f/ff	gl	31				
15	1502	1503	if	mix	4				non-gl
15	1502	1503	f/ff	gl	19				
15	1502	1503	pf	gl	5				
15	1502	1503	f/ff	gl	13				
15	1502	1503	f/ff	unc	1				
15	1502	1503	bs	gl	1				
15	1502	1503	if	tuff?	2				
15	1502	1503	bs	nig	2				
15	1502	1507	sp	gl	1				split ?scree frag
15	1502	1503	sp	gl	1				?accidental fracture
15	1502	1503	bs		2				
15	1502	1503	pf	gl	1				

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
15	1502	1503	bs	gl	3				
15	1502	1503	f/ff	gl	15				
15	1502	1503	pf	gl	12				
15	1502	1503	f/ff	gl	11				
15	1502	1503	pf	cig	1				
15	1502	1503	pf	gl	3				
15	1502	1503	f/ff	gl	6				
15	1502	1503	pf	gl	5				
15	1502	1503	if	gl	6				
15	1502	1503	up?	gl	1				?pecked
15	1502	1501	axrf	gl	1				
15	1502	1503	sp	cig	1				
15	1502	1503	bs	gl	3				
15	1502	1503	f/ff	gl	2				
15	1502	1503	bs	gl	1				cobble with two heat fractured facets
15	1502	1508	nat	gl	1				nat boulder frag with glacial scratches
15	1502	1503	pf	gl	5				
15	1502	1503	f/ff	gl	14				
15	1503	1504	f/ff	bc	2				
15	1503	1504	sp	mix	11				
15	1503	1504	nat		2				2 of 3 kept for ref. No obvious impact evidence
15	1503	1504	bs?	cig	1				
15	1503	1504	f/ff	gl	16				
15	1503	1505	anv?/ rawmat	gl	1				Large flat slab. No working evidence. Possible unused raw material
15	1503	1506	rp	gl	1				cutting tool. Some bifacial retouch
15	1503	1504	pf	gl	1				
15	1503	1504	pf	gl	7				
16	1601	1607	perfp	unc	1				small naturally spherical pebble with a central drilled small partial perforation. Possibly a natural found object
16	1601	1602	if	gl	3				
16	1601	1602	f/ff	gl	1				
16	1602	1603	angf	gl	32				natural?
16	1602	1606	sl	fe?	2				
16	1602	1604	nat	gl	6				no evidence of use. Kept for reference
16	1602	1606	charc	charc	1				
16	1602	1603	pf	gl	12				

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
16	1602	1604	nat	cig	2				no evidence of use. Kpet for reference
16	1602	1603	f/ff	gl	7				
16	1603	1601	axr	gl	1				broken (recent break?)
16	1603	1605	sl	fe?	6				
17	1701	1701	ff	gl	9	5	4		
17	1702	1704	angf	vq	2				
17	1702	1702	f/ff	gl	16	15	1	0	
17	1703	1705	angf	vq	9	0	0	0	
17	1703	1703	pf	gl	1	0	0	0	
17	1703	1703	f/ff	gl	15	11	4	0	
18	1801	1801	f/ff	gl	13	10	3	0	
18	1801	1803	angf	vq	11	0	0	0	
18	1802	1802	f/ff	gl	20	15	5	0	
18	1802	1804	angf	vq	15	0	0	0	
19	1901	1902	f/ff	gl	12	10	2	0	
19	1901	1902	angf	gl	1	1	0	0	Heat fractured
19	1901	1901	f/ff	f	1	1	0	0	Mid brown flint pebble frag. Probably anvil-struck
19	1901	1904	angf	vq	31	0	0	0	
19	1902	1903	f/ff	gl	5	5	0	0	
20	2001	2001	f/ff	gl	4	4	0	0	
20	2002	2003	f/ff	ch	1	1	0	0	Lt grey chert
20	2002	2002	f/ff	gl	3	3	0	0	
21	2101	2101	f/ff	f	1	1	0	0	Frag, probably from an anvil-struck core
21	2101	2104	angf	vq	17	0	0	0	
21	2101	2102	f/ff	gl	8	8	0	0	
21	2102	2103	f/ff	gl	4	3	1	0	
21	2102	2105	angf	vq	3	0	0	0	
22	2201	2201	f/ff	gl	6	3	3	0	
22	2202	2202	f/ff	gl	32	28	4	0	
22	2202	2205	axeff	gl	1	1	0	0	Flake frag struck from the distal end of re-worked polished axe fragment
22	2202	2203	angf	vq	1	0	0	0	
22	2203	2204	f/ff	gl	1	1	0	0	Butt end of a thin flake
23	2301	2301	f/ff	gl	7	6	1	0	
23	2301	2303	angf	vq	47	0	0	0	
23	2302	2302			0	0	0	0	
23	2302	2304	angf	vq	13	0	0	0	
24	2401	2401	f/ff	gl	13	10	3	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
24	2401	2404	angf	vq	33	0	0	0	
24	2402	2402	f/ff	gl	2	2	0	0	
24	2402	2403	angf	vq	4	0	0	0	
25	2501	2504	angf	vq	19	0	0	0	
25	2501	2501	f/ff	f	1	1	0	0	Frag of split pebble
25	2501	2502	f/ff	gl	15	12	1	2	
25	2502	2503			0	0	0	0	
26	2601	2601	angf	vq	14	0	0	0	
26	2601	2605			0	0	0	0	
26	2602	2602	f/ff	gl	13	13	0	0	
26	2602	2606	angf	vq	25	0	0	0	
26	2602	2604	f/ff	f	1	1	0	0	
26	2603	2603	f/ff	gl	2	0	2	0	
26	2603	2607	angf	vq	9	0	0	0	
26	2603	2608	up?	sst	1	0	0	0	No visible usewear
27	2701	2701	f/ff	gl	13	9	4	0	
27	2701	2702	rp	f	1	1	0	0	Thumbnail scraper on a flake with pebble cortex
27	2702	2704	f/ff	f	1	1	0	0	Secondary flake with pebble cortex
27	2702	2705	f/ff	f	1	1	0	0	Primary flake, probably from an anvil-struck core
28	0	2801			0	0	0	0	
28	2801	2803	angf	vq	3	0	0	0	
28	2802	2804	angf	vq	13	0	0	0	
28	2802	2702			0	0	0	0	
29	2901	2901	f/ff	gl	15	10	5	0	
29	2901	2902	axrf	gl	1	0	0	0	Large, thick flake with dorsal ridge on one face and bifacial secondary flaking. Possibly accidentally broken off proximal end, but possibly meant as an oval shaped chopping tool as one edge is unusually thin and sharp
30	3001	3001	f/ff	gl	20	17	3	0	
30	3001	3004	angf	vq	26	0	0	0	
30	3002	3002	f/ff	gl	28	23	5	0	
30	3002	3005	angf	vq	7	0	0	0	
30	3003	3003	f/ff	gl	2	1	1	0	
31	3101	3140	f/ff	gl	1	1	0	0	
31	3101	3120	f/ff	gl	1	0	1	0	
31	3101	3139	f/ff	gl	1	1	0	0	
31	3101	3195	f/ff	gl	3	3	0	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
31	3101	3121	f/ff	gl	1	0	1	0	
31	3101	3130	f/ff	gl	1	0	1	0	
31	3101	3141	f/ff	gl	1	1	0	0	Recent break
31	3101	3132	f/ff	gl	1	1	0	0	
31	3101	3111	f/ff	gl	1	0	1	0	
31	3101	3137	f/ff	gl	1	1	0	0	
31	3101	3112	f/ff	gl	1	0	0	1	
31	3101	3172	f/ff	gl	1	0	0	1	
31	3101	3145	f/ff	gl	1	1	0	0	
31	3101	3102	f/ff	gl	1	1	0	0	
31	3101	3147	f/ff	gl	2	1	1	0	
31	3101	3104	f/ff	gl	1	0	1	0	Core frag
31	3101	3105	f/ff	gl	1	0	1	0	
31	3101	3148	f/ff	gl	1	1	0	0	Recent break
31	3101	3129	f/ff	gl	1	0	1	0	Has some edge damage
31	3101	3173			0	0	0	0	
31	3101	3114	f/ff	gl	1	1	0	0	
31	3101	3142	f/ff	gl	1	0	1	0	
31	3101	3189	f/ff	gl	2	1	1	0	
31	3101	3179	f/ff	gl	1	0	1	0	
31	3101	3163	f/ff	gl	4	0	4	0	
31	3101	3169	f/ff	gl	1	0	0	1	
31	3101	3178			0	0	0	0	
31	3101	3170	f/ff	gl	4	4	0	0	
31	3101	3176	f/ff	gl	3	2	0	1	
31	3101	3174	f/ff	gl	1	0	1	0	
31	3101	3167	f/ff	gl	5	3	2	0	Has some recent trample edge damage
31	3101	3165			0	0	0	0	Recently broken
31	3101	3181	f/ff	gl	1	0	1	0	Has some trample edge damage
31	3101	3184	f/ff	gl	3	1	1	1	
31	3101	3177	f/ff	gl	1	0	0	1	
31	3101	3180	f/ff	gl	3	0	2	1	
31	3101	3166	f/ff	gl	3	2	1	0	
31	3101	3182	f/ff	gl	5	3	2	0	Has some recent trample edge damage
31	3101	3187	f/ff	gl	1	0	1	0	
31	3101	3150	f/ff	gl	1	1	0	0	
31	3101	3196	f/ff	gl	10	10	0	0	
31	3101	3136	f/ff	gl	1	0	1	0	
31	3101	3109	f/ff	gl	1	0	1	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
31	3101	3101	f/ff	gl	1	1	0	0	
31	3101	3199	f/ff	gl	2	2	0	0	
31	3101	3164	f/ff	gl	3	3	0	0	Has some recent trample edge damage
31	3101	3124	f/ff	gl	1	0	1	0	
31	3101	3110	f/ff	gl	1	1	0	0	
31	3101	3107	bf	gl	1	0	0	0	
31	3101	3154	f/ff	gl	1	0	0	1	
31	3101	3193	f/ff	gl	1	0	0	1	
31	3101	3125	f/ff	gl	1	0	1	0	
31	3101	3152	f/ff	gl	1	0	0	1	
31	3101	3161	f/ff	gl	6	4	2	0	
31	3101	3135	f/ff	gl	1	1	0	0	
31	3101	3151	f/ff	gl	5	3	2	0	
31	3101	3153	f/ff	gl	1	0	0	1	
31	3101	3159	f/ff	gl	1	0	1	0	This rf number used twice
31	3101	3191	f/ff	gl	2	0	1	1	
31	3101	3146	f/ff	gl	1	0	0	0	
31	3101	3118	f/ff	gl	1	0	1	0	Has some possibly later, edge retouch or just trample damage
31	3101	3198	f/ff	gl	6	4	2	0	
31	3101	3123	f/ff	gl	1	0	0	1	
31	3101	3156	f/ff	gl	1	0	0	1	
31	3101	3192	cr	gl	2	0	0	2	
31	3101	3116	f/ff	gl	1	0	1	0	Has some recent trample edge damage
31	3101	3106	f/ff	gl	1	0	1	0	
31	3101	3183	f/ff	gl	1	0	0	1	
31	3101	3126	f/ff	gl	1	1	0	0	Has some old trample edge damage
31	3101	3149	f/ff	gl	1	0	0	1	
31	3101	3144	f/ff	gl	1	1	0	0	
31	3101	3133	f/ff	gl	1	1	0	0	
31	3101	3138	f/ff	gl	1	0	1	0	Has some old trample edge damage
31	3101	3117	f/ff	gl	1	1	0	0	Has some old trample edge damage
31	3101	3115	f/ff	gl	1	0	1	0	Has some recent trample edge damage
31	3101	3122	f/ff	gl	1	0	1	0	
31	3101	3197	f/ff	gl	5	2	3	0	
31	3101	3143	f/ff	gl	1	0	1	0	
31	3101	3155	f/ff	gl	1	1	0	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
31	3101	3119	f/ff	gl	1	1	0	0	
31	3101	3134	f/ff	gl	1	0	1	0	
31	3101	3131	f/ff	gl	1	1	0	0	
31	3101	3137	f/ff	gl	1	1	0	0	
31	3101	3113	f/ff	gl	1	1	0	0	
31	3101	3108	f/ff	gl	1	1	0	0	
31	3101	3138	f/ff	gl	1	0	1	0	
31	3101	3159	f/ff	gl	1	1	0	0	
31	3101	3194	f/ff	gl	8	7	1	0	
31	3101	3103	f/ff	gl	1	0	1	0	
31	3101	3190	f/ff	gl	2	0	2	0	
31	3101	3158	f/ff	gl	2	1	1	0	
31	3101	31136	f/ff	gl	4	3	1	0	
31	3101	31102	f/ff	gl	4	3	1	0	
31	3101	31142	f/ff	gl	6	4	2	0	
31	3101	31137	f/ff	gl	9	7	2	0	
31	3101	31101	f/ff	gl	1	0	1	0	
31	3101	31109			0	0	0	0	
31	3101	31143	f/ff	gl	9	9	0	0	
31	3101	31122	f/ff	gl	2	0	2	0	
31	3101	31110	f/ff	gl	1	1	0	0	
31	3101	31114	f/ff	gl	1	0	0	1	
31	3101	31111	f/ff	gl	14	14	0	0	
31	3101	31134	f/ff	gl	5	4	1	0	
31	3101	31123	f/ff	gl	2	0	2	0	
31	3101	31135	f/ff	gl	8	6	2	0	
31	3101	31115	f/ff	gl	1	0	1	0	
31	3101	31103	f/ff	gl	1	0	1	0	Has some old trample edge damage
31	3101	31145	f/ff	gl	6	5	1	0	
31	3101	31139	f/ff	gl	10	7	3	0	
31	3101	31119	f/ff	gl	1	1	0	0	
31	3101	31100	f/ff	gl	2	1	1	0	
31	3101	31112	f/ff	gl	2	2	0	0	
31	3101	31127	f/ff	gl	1	0	1	0	
31	3101	31107	f/ff	gl	3	2	1	0	Has some trample edge damage
31	3101	31144	f/ff	gl	13	13	0	0	
31	3101	31117	f/ff	gl	6	6	0	0	
31	3101	31141	f/ff	gl	4	2	2	0	
31	3101	31128	f/ff	gl	6	3	3	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
31	3101	31120	f/ff	gl	4	3	1	0	
31	3101	31124	f/ff	gl	3	2	1	0	
31	3101	31129	f/ff	gl	1	0	0	1	Unusual large, long, curving blade
31	3101	31105	f/ff	gl	4	3	1	0	
31	3101	31127	f/ff	gl	12	10	2	0	
31	3101	31158	f/ff	gl	5	2	3	0	
31	3101	31152	f/ff	gl	10	4	6	0	
31	3101	31150	f/ff	gl	2	2	0	0	
31	3101	31168	f/ff	gl	4	3	1	0	
31	3101	31149	f/ff	gl	9	9	0	0	
31	3101	31162	f/ff	gl	1	0	0	1	A very large, thick secondary flake. A probable attempt to create a roughout blank
31	3101	31126	f/ff	gl	1	1	0	0	One flake with what may be a deliberate retouched, scraper type notch but which might be just chance edge damage
31	3101	31160	f/ff	gl	3	3	0	0	
31	3101	31176	f/ff	gl	7	7	0	0	
31	3101	31159	f/ff	gl	9	7	2	0	
31	3101	31175			0	0	0	0	
31	3101	31157	f/ff	gl	3	0	3	0	Surface black from heavy iron-panning
31	3101	31151	f/ff	gl	2	1	1	0	
31	3101	31164	f/ff	gl	5	3	2	0	
31	3101	31170	f/ff	gl	8	8	0	0	
31	3101	31174	f/ff	gl	1	0	0	1	A very large, thick secondary flake. A probable attempt to create a roughout blank. Some later edge damage
31	3101	31156	f/ff	gl	1	0	1	0	
31	3101	31166	f/ff	gl	4	2	2	0	
31	3101	31146	f/ff	gl	15	11	2	2	
31	3101	31138	axr	gl	1	0	0	0	Complete, part-finished, large, oval roughout with very asymmetric profile, perhaps designed to produce an adze, not an axe
31	3101	31161	f/ff	gl	1	0	1	0	Possibly just a natural scree frag
31	3101	31172	f/ff	gl	8	5	2	1	
31	3101	3157	f/ff	gl	1	0	0	1	
31	3101	31167	f/ff	gl	12	12	0	0	
31	3101	31171	f/ff	gl	5	4	1	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
31	3101	31163	f/ff	gl	5	5	0	0	
31	3101	31169	f/ff	gl	3	3	0	0	
31	3101	31165	f/ff	gl	5	4	1	0	One flake is a blade
31	3101	31177	f/ff	gl	3	3	0	0	
31	3101	31154	f/ff	gl	7	6	1	0	
31	3101	31153	f/ff	gl	4	2	2	0	One large flake possibly an attempt to create an axe blank
31	3101	31140	f/ff	gl	1	1	0	0	
31	3101	31155	f/ff	gl	21	19	2	0	One flake a large blade
31	3101	3186	f/ff	gl	3	0	3	0	
31	3101	31104	f/ff	gl	2	2	0	0	
31	3101	31173	axrr	gl	1	0	0	0	Abandoned roughout. Large core fragment with some bifacial secondary flaking
31	3101	3171	f/ff	gl	6	0	4	2	
31	3101	3162	f/ff	gl	2	0	2	0	
31	3101	3185	f/ff	gl	2	0	2	0	
31	3101	3175	f/ff	gl	1	1	0	0	
31	3101	3168	f/ff	gl	3	3	0	0	
31	3101	31113	f/ff	gl	2	2	0	0	Recent breaks
31	3101	31116	f/ff	gl	1	1	0	0	
31	3101	31108	f/ff	gl	2	1	1	0	
31	3101	31118	f/ff	gl	2	2	0	0	Recent break
31	3101	31132	f/ff	gl	3	1	2	0	
31	3101	31147	f/ff	gl	4	1	4	0	
31	3101	31125	f/ff	gl	12	8	4	0	
31	3101	31148	f/ff	gl	6	4	2	0	
31	3101	31106	f/ff	gl	1	0	1	0	Has some old trample edge damage
31	3101	3188	f/ff	gl	1	0	1	0	
31	3101	31131	f/ff	gl	7	4	3	0	
31	3101	31130	f/ff	gl	7	5	2	0	
31	3101	31133	f/ff	gl	1	0	1	0	
31	3102	31183	f/ff	gl	73	72	1	0	
31	3102	31192	f/ff	gl	2	0	1	1	
31	3102	31195	f/ff	gl	30	27	3	0	
31	3102	31200	f/ff	gl	19	18	0	1	One large piece probably a broken discarded roughout blank
31	3102	31201	f/ff	gl	17	13	2	2	One very large frag prob an attempt at a roughout blank
31	3102	31181			0	0	0	0	
31	3102	31198	f/ff	gl	22	14	7	1	One flake v large

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
31	3102	31191	f/ff	gl	1	0	0	1	Very large flake
31	3102	31186	f/ff	gl	46	44	2	0	
31	3102	31180	f/ff	gl	16	13	3	1	
31	3102	31190	f/ff	gl	16	10	6	0	
31	3102	31204	f/ff	gl	21	16	5	0	
31	3102	31202	axrf	gl	1	0	0	0	Distal end of a broken, near complete roughout with asymmetric cross-profile
31	3102	31179	spf	other	1	0	0	0	Small split pebble, possibly just of natural glacial origin.
31	3102	31206	axrf and f	gl	2	0	0	0	One axe roughout frag and one large flake
31	3102	31182	f/ff	gl	32	27	5	0	
37	3701	3701	f/ff	gl	51	47	4	0	
37	3701	3705	angf	vq	4	0	0	0	
37	3702	3706	angf	vq	5	0	0	0	
37	3702	3702	f/ff	gl	108	100	8	0	
37	3702	3702	f/ff	gl	53	32	21	0	
37	3703	3714	f/ff	gl	1	0	0	1	Large broad curving flake
37	3703	3717	f/ff	gl	1	0	0	1	Large blade
37	3703	3721	f/ff	gl	1	0	1	0	Thick curving flake from a scree block
37	3703	3716	f/ff	gl	1	1	0	0	Curving
37	3703	3719	f/ff	gl	1	0	0	1	Primary piece split from a block
37	3703	3726	f/ff	gl	1	0	0	1	Thick block with one flake removal. Rout reject?
37	3703	3722	f/ff	gl	1	0	0	1	
37	3703	3708	angf	vq	3	0	0	0	
37	3703	3703	f/ff	gl	12	2	7	3	Small flakes are thin and curving
37	3703	3703	f/ff	gl	60	52	4	4	Small flakes are thin and curving
37	3703	3723	f/ff	gl	1	0	0	1	Large broad flake
37	3703	3713	f/ff	gl	1	1	0	0	
37	3703	3731	f/ff	gl	1	0	0	1	
37	3703	3729	f/ff	gl	1	1	0	0	
37	3703	3730	f/ff	gl	1	0	1	0	
37	3703	3727	f/ff	gl	1	0	0	1	Has some recent trample edge damage, not retouch
37	3703	3711	f/ff	gl	1	0	1	0	
37	3703	3728	f/ff	gl	1	0	0	1	Thick split block, not a flake.
37	3703	3725	f/ff	gl	1	1	0	0	Curving
37	3703	3720	f/ff	gl	1	0	1	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
37	3703	3724	rp	gl	1	0	1	0	Thick flake with steep re-touch along one straight edge
37	3703	3715	f/ff	gl	1	0	1	0	
37	3703	3712	f/ff	gl	1	0	1	0	
37	3703	3718	f/ff	gl	1	0	1	0	
38	3801	3801	f/ff	gl	3	2	1	0	
38	3802	3802	f/ff	gl	4	4	0	0	
38	3802	3803	angf	vq	2	0	0	0	
38	3802	3802	f/ff	gl	6	2	2	2	2 large fragments are both possibly axr blank rejects
39	3901	3908	bsf	dol	1	0	0	0	Possible pot boiler
39	3901	3907	angf	vq	73	0	0	0	
39	3901	3901	f/ff	gl	118	94	24	0	
39	3901	3901	f/ff	gl	67	60	7	0	
39	3901	3901	f/ff	gl	34	25	9	0	
39	3901	3901	f/ff	gl	119	105	13	1	The large fragment is a block and probably from a recent fracture
39	3901	3901	f/ff	gl	70	65	5	0	
39	3901	3011	f/ff	gl	1	0	0	1	Large split scree block reject
39	3901	3909	bsf	unc	1	0	0	0	
39	3901	3910	spp	ch	1	0	0	0	Light grey chert. Possible core reject
39	3901	3906	up	sch	1	0	0	0	Elongated cobble, 220x80x60, with scratch marks on one side and one edge. Possible medieval plough tip.
39	3903	3903	f/ff	gl	24	2	12	10	
39	3903	3921	bsf	sst	5	0	0	0	Split cobble frags
39	3903	3923	bsf	sst	4	0	0	0	Split cobble frags
39	3903	3903	bsf	other	5	0	0	0	
39	3903	3903	f/ff	gl	3	0	0	3	Two large ff and 1 large core f. Scree cortex, possibly showing what scree shapes were selected
39	3903	3912	axrf	gl	1	0	0	1	Distal end of a broken roughout, thin and probably an abandoned piece
39	3903	3903	f/ff	gl	80	44	34	2	
39	3903	3903	f/ff	gl	30	10	16	4	
39	3903	3924	axrf?	gl	1	0	0	0	
45	4503	4506	angf	vq	1	0	0	0	
45	4503	4505	angf	vq	3	0	0	0	
45	4503	4504	f/ff	ch	2	2	0	0	Light grey chert. One possibly part of a larger struck object

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
45	4503	4503	f/ff	gl	137	112	25	0	
45	4503	4503	f/ff	gl	130	102	28	0	
45	4503	4503	f/ff	gl	179	169	10	0	
45	4503	4506	angf	vq	1	0	0	0	
46	4601	4608	angf	vq	10	0	0	0	
46	4601	4604	angf	vq	5	0	0	0	
46	4601	4601	f/ff	f	1	1	0	0	Angular frag
46	4601	4601	f/ff	bc	2	2	0	0	?struck
46	4601	4601	f/ff	gl	63	58	5	0	
46	4601	4601	f/ff	gl	80	75	3	2	
46	4601	4601	f/ff	gl	50	48	2	0	
46	4602	4605	angf	vq	5	0	0	0	
46	4602	4602	f/ff	gl	107	107	0	0	
46	4602	4606	angf	vq	11	0	0	0	
46	4602	4602	f/ff	gl	74	71	3	0	
46	4603	4607	angf	vq	3	0	0	0	
46	4603	4603	f/ff	gl	148	142	6	0	
47	4701	4701	f/ff	f	1	0	0	0	
47	4701	4701	f/ff	gl	8	5	3	0	
47	4702	4705	angf	vq	2	0	0	0	
47	4702	4702	bsf	other	10	0	0	0	Heat shattered frags
47	4702	4702	f/ff	gl	10	8	1	1	
47	4703	4703	f/ff	gl	6	5	1	0	
47	4703	4703	f/ff	gl	6	5	1	0	
47	4703	4704	angf	vq	3	0	0	0	
48	4801	4801	f/ff	gl	2	2	0	0	
48	4802	4802	f/ff	gl	18	17	1	0	
48	4802	4804	angf	vq	1	0	0	0	
48	4803	4803	f/ff	gl	1	1	0	0	
48	4803	4803	f/ff	gl	17	13	4	0	
49	4901	4905	angf	vq	3	0	0	0	
49	4901	4901	f/ff	gl	3	1	1	1	Scree cortex on the large flake
49	4902	4902	bsf	cig	2	0	0	0	?heat shattered
49	4902	4906	angf	vq	2	0	0	0	
49	4902	4902	f/ff	gl	2	2	0	0	
49	4903	4907	angf	vq	4	0	0	0	
49	4903	4903	f/ff	gl	3	1	0	2	
49	4903	4903	spp	other	4	0	0	0	Split cobble frags
49	4903	4904	angf	vq	2	0	0	0	
49	4903	4903	bsf	cig	5	0	0	0	Coarse, probably burnt
49	4903	4903	f/ff	gl	4	4	0	0	

Trench	Context	Find No	Class	Material	Number	0-50mm	51-100mm	101mm +	Comment
50	5001	5001	f/ff	gl	17	17	0	0	Includes 2 small burnt frags
50	5001	5004	angf	vq	6	0	0	0	
50	5002	5006	angf	vq	9	0	0	0	
50	5002	5002	f/ff	gl	57	57	0	0	ditto
50	5003	5005	angf	vq	4	0	0	0	
50	5003	5003	f/ff	gl	50	46	4	0	
50	5003	5007			0	0	0	0	
50	5003	5003	f/ff	gl	159	159	0	0	Includes some very small finishing flakes
51	5102	5102	f/ff	gl	11	9	2	0	
52	5201	5201	f/ff	gl	7	7	0	0	
52	5202	5202	f/ff	gl	6	5	1	0	
53	5301	5301	f/ff	gl	10	10	0	0	
53	5301	5304	angf	vq	3	0	0	0	
53	5302	5302	f/ff	gl	6	6	0	0	
53	5302	5303	angf	vq	4	0	0	0	
54	5401	5401	f/ff	gl	14	13	1	0	
54	5402	5402	f/ff	gl	5	4	1	0	
Molehill	0	10001	f/ff	gl	1	1	0	0	Thin, tertiary flake frag
Molehill	0	10002	f/ff	gl	2	2	0	0	Thin, shaping flakes
Molehill	0	10003	f/ff	gl	1	1	0	0	Thin, curving, finishing flake
Molehill	0	10004	f/ff	gl	1	1	0	0	Probably natural rolled frag
Molehill	0	10005	f/ff	gl	1	1	0	0	Thin, shaping flake
Molehill	0	10006	f/ff	gl	2	2	0	0	Thin, shaping flakes
Molehill	0	10007	f/ff	gl	1	1	0	0	Thin, shaping flake

Cadw

Gwynedd Archaeological Trust
Ymddiriedolaeth Archaeolegol Gwynedd

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

REGISTERED ORGANISATION CIfA